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Documents of the World Telecommunication Development Conference (WTDC-94)
(Buenos Aires, 1994)

To reduce download time, the ITU Library and Archives Service has divided the conference documents into sections.

- This PDF includes Document No. 51-170
- The complete set of conference documents includes Document No. 1-170, DT No. 1-51

Please note:

The WTDC-94 conference documents were published as part of a three volume set:

- Volume I : Final Report
- Volume II : Reference Documents
- Volume III : Telecommunications for sustainable development.

Volume II and Volume III contain a non-sequential selection of reference documents, contributions, and official statements. For scanning, the volumes were cut and put in numeric order.

Documents No. 115-140 (Summary records of the WTDC meetings) were not published and are not included in the PDF version of the conference documents. A copy of these documents was printed in 2013 and is available for consultation at the ITU Archives.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 51-E

Telespazio-STET Group
(Italy)

TELESPAZIO'S CAPABILITY FOR IMPLEMENTING RURAL NETWORKS VIA SATELLITE

Abstract

Rural satellite systems are suited to scarcely populated areas where no or very poor communication facilities exist. Further, a rural satellite network meets traffic requirements in a more rapid way than a terrestrial network, because of its inherent flexibility.

As a matter of fact, the major advantages of a rural satellite system can be summarized as follows:

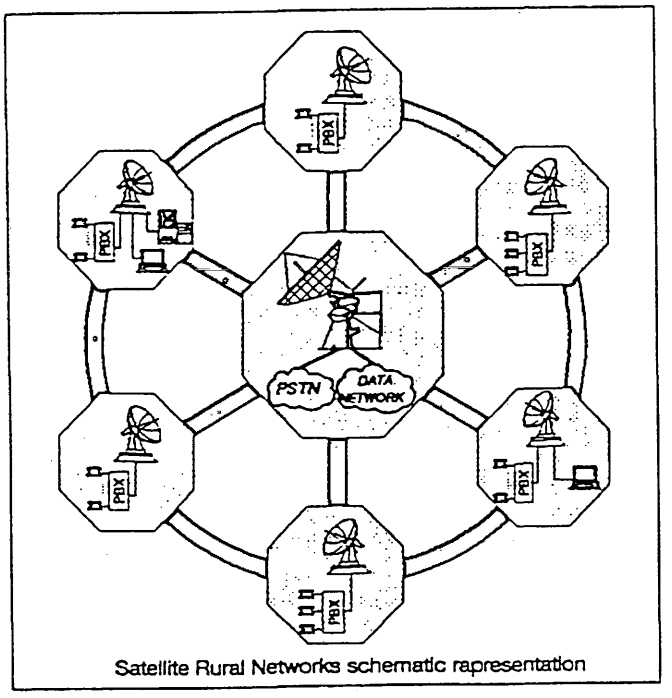
a) once a satellite system has been set up, services to additional remote areas can be implemented in a very short time;

b) small Earth terminals can easily be moved to new sites when the old site is reached by a terrestrial network;

c) capacity growth of satellite systems can easily be utilized in case of inadequate traffic projections, i.e. Earth terminal equipment can be increased simply by adding baseband devices.

In the light of the above considerations, this document describes satellite networks configurations developed by Telespazio which are based on the following assumptions:

- network topology: star configuration and fully meshed configuration;



Satellite Rural Networks schematic rapresentation

- number of remote users: up to some thousands (4 000 - 5 000);
- type of peripheral Earth terminals: equipped with 2, 4, 12, 24, 96 voice channels at 16 Kb/s;
- solar power generation: in the case of energy shortage from other sources, the power generated by solar panels with battery backup is considered. If the power requirement is higher, a combined generation system (solar + diesel motor generator) can be installed;
- passive conditioning: a passively conditioned shelter, with no power consumption, is envisaged for housing the Earth terminal equipment;
- Earth terminal surveillance: terminals are normally unattended and remotely monitored.

1 Thin route telephone and data network

1.1 System design criteria

These networks are based on a star configuration and make available voice data connections among a large number of earth stations, no matter how distributed inside the area covered by the satellite footprint.

The implementation of these networks allows to satisfy, cheaply and effectively, telecommunications requirements of people who live in non-urbanized areas. In such areas a lot of low dimension villages with a lack of means of telecommunications may typically be found.

The same system also meets the telecommunications needs of national companies and administrations (like railways operating companies, oil companies, mining companies, police national department etc.) when the network must interconnect small traffic routes that primarily allow communications among many peripheral sites and a central office without excluding the possibility to interconnect peripheral stations.

These networks assure voice and data services for all the sites distributed in the area. Moreover, the system does not limit any future expansion (e.g. increment of traffic, TV reception, additional station in the network).

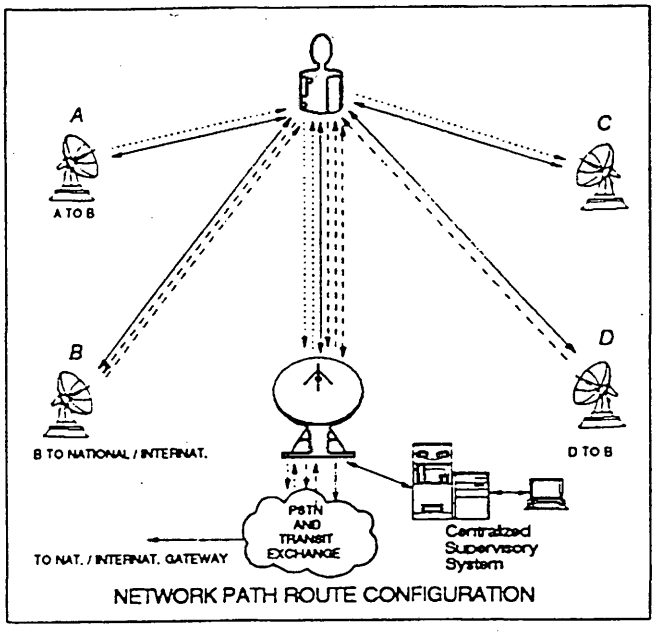
The system is designed to supply all peripheral centres with low cost earth stations and to collect at the hub station the function of traffic management, network control and monitoring of remote alarms. The general criteria adopted to design the satellite network are the following:

- a toll quality of transmitted voice;
- an optimal use of transponder capability;
- a reduction in complexity and cost of the remote earth stations;
- easy expandability of the service both for single station and for the whole network;
- high reliability of the system also obtained with minimization of electronic components;
- low power consumption that allows the use of non-conventional power supplying (e.g. solar cells);
- simplified operation and maintenance;

1.2 Network architecture

The star configuration is obtained through point-to-point connections between peripheral stations and the hub.

Connection between two peripheral stations is made possible through double satellite hop, driven by the switching center located near the hub station.



NETWORK PATH ROUTE CONFIGURATION

The network is completely supervised from a computer system (Centralized Supervisory System - CSS) located in the master station connected to all the local supervisory system located in each remote terminal.

Each remote terminal is equipped with a microprocessor unit that collects the status of each equipment and operates parameters change. The status signals are transmitted to the master station through a dedicated data channel.

In the master station a network control centre continuously monitors the situation of the peripheral stations, receives the alarms and transmits commands to the remote sites.

The CSS can also monitor the variations of the supervised parameters and perform statistic evaluations.

By means of the CSS it is possible to change the operating parameters and to provide maintenance strategy in order to maximize the network availability.

1.3 Traffic capacity and system overview

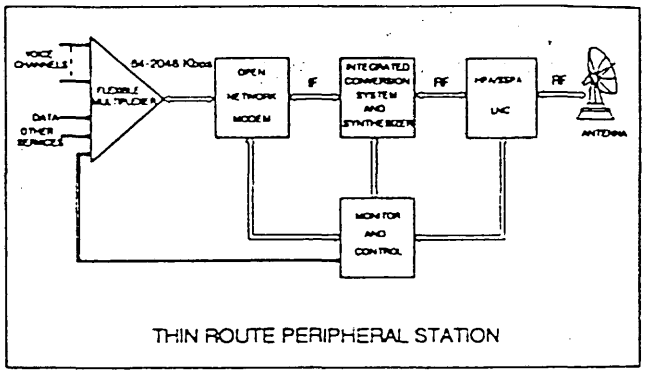
The system shows great advantages in terms of flexibility, cost, efficiency and quality of the service.

The peripheral stations can be equipped with a number of voice channels from 1 to 36; they also make available a great number of digital channels with a wide range of interfaces and data rates.

The limit in the number of data channels is given by the hardware configuration and the output data rate. For each couple of voice interfaces it is possible to arrange up to eight low rate data channels.

Analogue to digital codecs with high performance, low bit rate compression and flexible multiplexing provide aggregate streams to be transmitted as satellite IDR (Intermediate Data Rate) channels.

As far as the IF/RF conversion is involved, the integrated equipment adopted for the peripheral stations, represents the best solution considering both the efficiency and the quality of service on one side and the low cost on the other.



THIN ROUTE PERIPHERAL STATION

Stations can be equipped with low diameter antennas (typically from 1.8 to 4 metres). Each peripheral station can be upgraded, using the modularity and programmability of codex/multiplex equipment and the flexibility of the IDR modems, to support a greater number of voice or data channels.

Hub stations will be equipped with interface for point-to-point connection and it will be able to send to the PSTN (Public Switched Telephone Network) all the voice channels.

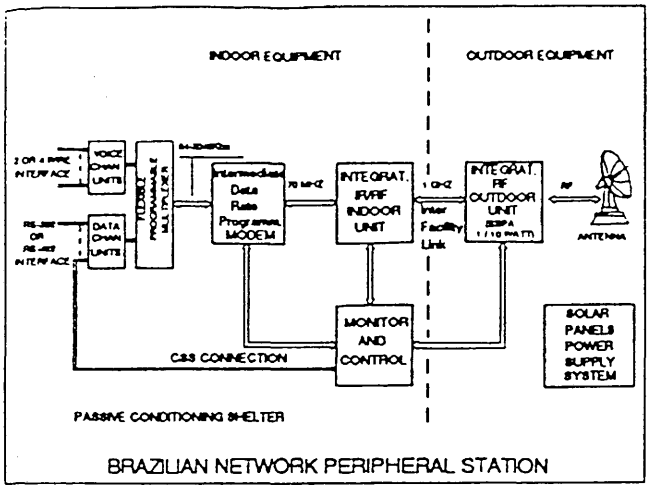
There is no theoretical limitation to the number of peripheral stations of the network, the only limit being the available bandwidth and power of the satellite.

1.4 Application: Brazilian satellite rural network for the state of Mato Grosso

A typical application of Thin Route Networks is related to the Brazilian satellite rural network where Telespazio is due to implement satellite telephone networks for rural areas where no telecommunication infrastructure exists at all.

The project concerns the Federal State of Mato Grosso and follows the guidelines provided by the local telephone company.

The technical approaches of the project provide a solution to a number of critical problems arising from the nature of Brazilian territory, such as lack of electric power, the tropical climate and logistic difficulties.



BRAZILIAN NETWORK PERIPHERAL STATION

The network is composed by 26 remote stations, spread all over the State territory, and one master station located on the State capital. All the terminals have the RF part equipped for 24 voice channels, but at the beginning only 4 will be fully equipped while the others will have only 12 voice channels.

The voice channel will be compressed at 16 Kbps using a proprietary compression algorithm that will assure a good voice quality.

Twenty two stations will also be solar powered and passive conditioned. The network makes use of the Brasilsat satellite; taking into account the maximum efficiency of the space segment, the size of the peripheral stations antenna is 4 metres.

The master station uses a 10 metre antenna already in service for the regional connections.

In the master station a centralized remote control will also be installed in order to monitor the performances of each peripheral station and to make the most efficient use of the available resources.

2 CDMA rural network

2.1 Introduction

This network has been specifically designed to operate in rural and remote areas, where communication facilities are an imperative support for social and economical development.

Potential applications are:

- voice communication;
- distribution of entertainment TV programmes.

The network consists of several small terminals and one main terminal. Due to the adopted spread spectrum CDMA technique and proper remote terminal design, a fully meshed access scheme is possible without main terminal involvement.

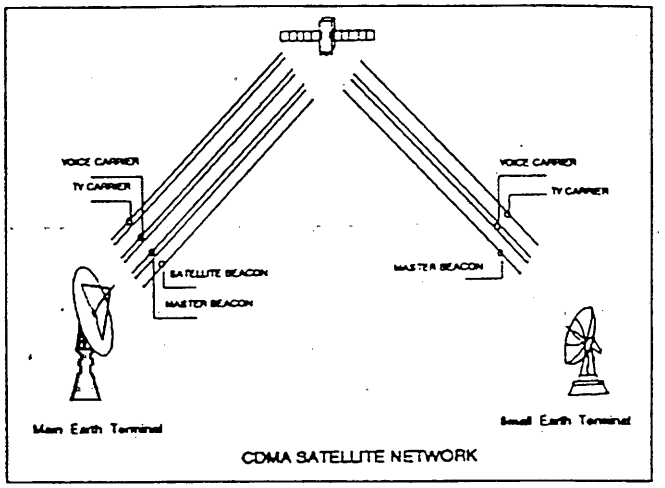
Furthermore, this technique allows a very strong protection from interferences associated with a very simple operation for interconnection set-up.

Network expansion (up to a maximum of 300 simultaneous voice channels can be allocated in a 36 MHz transponder) does not require any re-adjustment.

2.2 System architecture

The network is based on an asynchronous CDMA access scheme. The key features of such a solution can be summarized as follows:

- all the active channels are transmitted with isofrequential carriers (therefore they employ the same band at the same time);
- each CDMA terminal is provided with its own PN code;
- the called party is determined in the Tx terminal selecting the spreading code associated to the destination demodulator;
- each demodulator is continuously searching its own code in order to detect an incoming call.



The status of the network traffic load conditions is monitored by the main terminal through a dedicated CDMA channel, which is automatically received by any small terminal prior to starting the set-up phase, In this way the access of the terminal to the network is denied in case the system is working near the saturation.

Capacity effectiveness is achieved by means of the following functions:

- a voice activated subsystem, through which a Tx power reduction is enforced during speech pause;
- an AFC (Automatic Frequency Control) subsystem, reducing the frequency uncertainty of the received carrier;
- an ALC (Automatic Level Control) subsystem providing the correction of the Rx level variation of the CDMA channel;
- A ULPC (Up Link Power Control), dedicated to compensate the power imbalance among the CDMA channel.

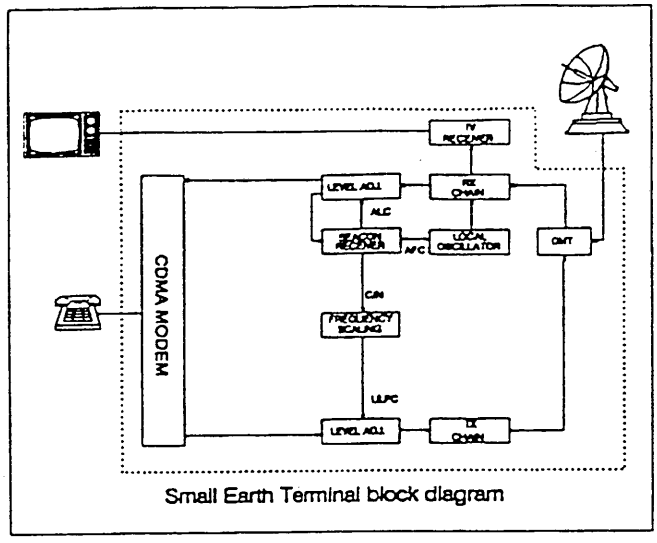
2.3 Small Earth Terminal (SET) configuration

The SET, providing voice and TVRO services, is designed to be operated directly by the end user without the support of external facilities.

In particular the stations integrated with passive conditioning shelter and solar power generation system.

Two step IF/RF conversion system is used with a second IF at 1 GHz. The AFC, ALC and ULPC functions are implemented in the 70 MHz/1 GHz converter utilizing a reference modulated carrier transmitted by the reference station.

To allow unattended operations the SET is equipped with a telemonitoring system which collects and transmits the information on its status to the main terminal, using a particular CDMA channel.



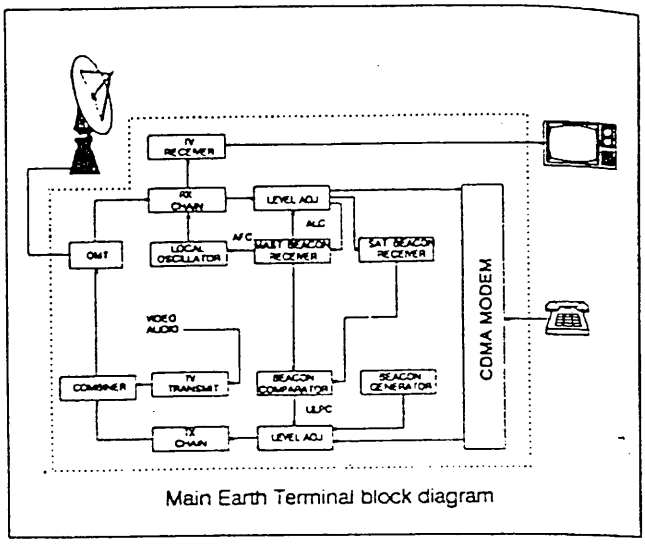
Small Earth Terminal block diagram

In case of an alarm detection, the SET will start automatically the transmission of the telemonitoring data. Otherwise it will respond to the polling request coming from the main station.

2.4 Main Earth Terminal (MET) configuration

The MET performs the following functions:

- Generates the Reference Carrier (RC) used by all the SET in the network to perform the AFC, ALC and ULPC functions. The RC is characterized by a high frequency stability (typically better than one part 10^9), and it is BPSK modulated by a PN modulator to reduce e.i.r.p. spectral density. The RC transmitted power is controlled in order to keep constant the relevant e.i.r.p. from the satellite utilzing a closed loop ULPC.



Main Earth Terminal block diagram

- Operates the polling CDMA channel from and to all the SET of the network for telemonitoring purposes and collects and elaborates the relevant information.
- Measures the RF network loading (saturation level) and stops the incoming calls if a prefixed loading threshold is reached.
- Generates a TV carrier for broadcasting purposes.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 52-E

BUENOS AIRES 1994

ITU/BR

INTER-SERVICE SHARING AND COMPATIBILITY

STATEMENT ON THE PAST, CURRENT AND PLANNED WORK OF SG2

Scope of the Study Group

The XVII Plenary Assembly of the CCIR in Düsseldorf, 1990 decided to establish Study Group 12 with the following scope of activity:

> *"Development of Recommendations in answer to a limited number of urgent Questions on inter-service sharing and compatibility requiring special attention, as referred by the Plenary Assembly, or if the Question arises during the interval between Plenary Assemblies, by the Director after consultation with interested Chairmen and administrations, to work in association with Study Group 1."*

The Radiocommunication Assembly, 1993 decided to continue the existence of SG 12 with essentially the same scope. The Study Group was, however, renumbered to be SG 2.

Past activities of the Study Group

In accordance with the above scope of action and in response to Study Questions referred to it SG 2 has prepared the following Recommendations:

Recommendation No.	Title
ITU-R IS.847	Determination of the coordination area of an earth station operating with a geostationary space station and using the same frequency band as a system in a terrestrial service
ITU-R IS.848	Determination of the coordination area of a transmitting earth station using the same frequency band as receiving earth stations in bidirectionally allocated frequency bands
ITU-R IS.849	Determination of the coordination area for earth stations operating with non-geostationary spacecraft in bands shared with terrestrial services
ITU-R IS.850	Coordination areas using predetermined coordination distances
ITU-R IS.851	Sharing between the broadcasting service and the fixed and/or mobile services in the VHF and UHF bands
ITU-R IS.1009	Compatibility between the sound-broadcasting service in the band of about 87 - 108 MHz and the aeronautical services in the band 108 - 137 MHz

Recommendations IS.847, 848, 849 and 850 are intended to complement and possibly update the information in Appendix 28 of the Radio Regulations. Until such time that a competent World Radiocommunication Conference (WRC) may decide to update Appendix 28, these Recommendations will be helpful in practical coordination cases, subject to acceptance by the Administrations involved. It should be noted, in particular, that Recommendations IS.848, 849 and 850 are helpful for certain coordination cases not covered by the existing Appendix 28 of the Radio Regulations.

Recommendation IS.851 has been produced specifically for the purpose of helping Administrations to analyze and ensure the compatibility between the broadcasting service (sound or television) on one hand and the fixed and/or mobile services on the other in the shared VHF- and UHF bands. The Recommendation contains standardized compatibility analysis procedures which will facilitate the development of frequency assignment plans and equipment specifications applicable to national and multinational arrangements.

Recommendation IS.1009 is essential for assessing compatibility between the sound-broadcasting service and the aeronautical services in the bands around 108 MHz. There is a growing demand for new or improved broadcasting services as well as aeronautical services in these bands. It is of paramount importance that the protection of ILS (Instrument Landing System) and VOR (VHF Omni-directional Radio Range) radionavigation systems can be assured at the same time that the broadcasting service is given good opportunities for development. The Recommendation describes a compatibility analysis method which is particularly suited for identifying potential incompatibilities associated with a large broadcasting assignment plan (e.g. the Geneva Plan of 1984 for Region 1 and certain countries in Region 3), and another more detailed method for case-by-case investigation of potential incompatibilities indicated by the previous method or of proposed individual broadcasting or aeronautical assignments.

Current and planned work of the Study Group

Task Group 2/1 is carrying out further studies conserning the compatibility between the broadcasting service and the aeronautical services in the bands around 108 MHz. In particular, measurements have to be carried out in order to assess all the immunity characteristics of new receivers meeting the ICAO standard coming into effect after 1 January 1995. Another important area of new studies is the compatibility between future digital sound broadcasting systems in the band below 108 MHz and the aeronautical radionavigation systems operating above 108 MHz. These studies should be completed in good time before the next Radiocommunication Assembly in 1995.

In response to a request by the World Administrative Radio Conference of 1992 (WARC-92), Study Group 2 assigned to Task Group 2/2 the work to produce draft Recommendations on a number of sharing situations between different services allocated in the bands of about 1000 to 3000 MHz. Modifications to frequency allocations in these bands led to new sharing situations and in order to allow proper development of the newly allocated services and, at the same time, to offer sufficient protection to the existing services, new or improved sharing criteria must be developed. These studies are to be carried out urgently and it is anticipated that the task should be completed by December 1994.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 53-E

Asia-Pacific Telecommunity

STATEMENT BY MR. HIROYASU SONOKI, EXECUTIVE DIRECTOR

Mr. Chairman,
Excellencies,
Distinguished Delegates,
Ladies and Gentlemen,

Please accept our most cordial greetings from APT.

I express my sincere thanks to Dr. Pekka Tarjanne, Secretary-General ITU, for inviting APT to this first World Telecommunication Development Conference which will be a landmark event in the history of world telecommunications.

We are looking for the global goals and objectives for telecommunication development for the 21st century. We all realize that the transition from industrial society to the information age will be much faster, much more comprehensive and smoother than the transition from the agricultural age to the industrial one. Telecommunication administrations throughout the world and the concerned international and regional organizations as well as the funding agencies have to plan their strategies keeping this important point in mind.

Obviously, there will be too much to do. Conducive policy orientation, choice of appropriate technology and adequate funding support will decide the extent of success of our initiatives. On our part, the international and regional organizations must take the necessary steps to avoid duplication.

In doing so, we have to add on the strongest points of each organization so that one plus one makes a value-added eleven and not just an arithmetical two. The regional organizations especially should be entrusted with more responsibility for those matters which are not global in character. This will not only help in avoiding duplication but will also help ITU in utilizing its resources more on global matters.

We also have the responsibility of giving unbiased advice to our respective Member administrations in deciding their policy, technology and funding options so that the telecom sector and the end-user do not get enmeshed into the cobweb of shifting monopolies from government to private sector. Our prime concern is the end-user, for whom the availability, affordability, quality and variety of service matter most. He is not bothered about anything else.

As you are aware, Asia-Pacific Telecommunity is an inter-governmental organization which has been created to ensure a balanced development of telecommunications in the Asia-Pacific region. The success which APT has achieved during these 15 years of its inception is attributed to the support from its membership, cooperation from sister international organizations such as the ITU and our other well-wishers.

Since APT is a regional inter-governmental organization, its activities are concentrated upon planning, implementation, development and maintenance of regional and subregional networks, policy and regulatory aspects in regional context, technology transfer among the countries of the region, harmonization of standards within the Asia-Pacific region, human resource development etc. APT Study Group activities are also focused on regional issues. These activities can go in compatibility with ITU activities.

The APT Management Committee in its 17th session held in Bali in November 1993 adopted a Resolution for submission to the WTDC. The Resolution calls for active cooperation between BDT and APT for planning and implementation of various programmes and for Buenos Aires Action Programme.

We represent a region which is the home of about 58% of humanity. Most of our Members are developing countries which are trying their level best to raise the quality of life of their people. All of them realize the important role which telecommunication plays in fuelling economic growth. The Asia-Pacific Declaration adopted at the meetings of Ministers-in-charge of telecommunication in June 1992 spells out the strategies for accelerating the growth of telecommunications. We feel that the strategies will be applicable in other regions of the world also. We are willing to share our experiences with other regional and international organizations or their Member countries.

We believe that since sincere cooperation is the key to success and we offer all possible cooperation for the success of this important Conference as well as for the implementation of decisions taken at Buenos Aires.

Long live telecommunication fraternity.

Thank you.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 54-E

Ukraine

DEVELOPMENT OF TELECOMMUNICATIONS IN UKRAINE

by H.E. Mr. Oleg P. Prozhivalsky, Minister of Posts & Telecommunications

Ladies and Gentlemen,
Distinguished Colleagues,

Allow me first of all to express my gratitude to the organizers of this Conference for giving us the opportunity to exchange views on the status of the telecommunication infrastructure in the CIS countries and ways and means of attracting additional investment in order to develop that infrastructure. I should like to say a few words about Ukraine. Ukraine is a State with a population of 52 million and a surface area of 603 300 square kilometres, i.e. comparable to France.

It is an industrial and agricultural country, possessing much fertile land and many valuable resources, such as coal, iron and oil. The metallurgical, coal, power, chemical, mechanical engineering, food and textile industries, and the building and transport systems are well developed.

The infrastructural sectors, however, including the level of development of telecommunication facilities, are inadequate to meet the needs of Ukraine's population and economy.

Many problems remain to be solved in the development of the local, trunk and mobile radiotelephone networks, and data networks are underdeveloped.

Unfortunately, the role of telecommunication facilities in daily life and the significant impact which telecommunications has on economic and social development have in the past been underestimated, and the policy has been to finance the sector from any surplus funds left over. As a result, telephone density in the Ukraine today stands at only 16 per hundred inhabitants, which is nearly three times lower than the desired level of telephone penetration. Equipment using obsolete technology needs replacing.

To bring Ukraine's telecommunication sector up to the level required in the modern world and make up the ground which has been lost over a period of many years, the PTT Ministry of Ukraine has developed a National Telecommunication Development Programme up to 2005.

The programme provides, *inter alia*, for a number of measures by 1996: completion of the construction of modern digital trunk telephone exchanges in all the provincial capitals; laying of the optical fibre links Kiev-Lvov-Krakow, Kiev-Odessa-Istanbul-Palermo; and digitization of trunk telecommunication lines. This will virtually solve the problems of satisfying Ukraine's needs for high-quality trunk and international telecommunications. By 2005, it is planned under the programme to double the current capacity of local telephone networks and achieve a teledensity of 30 telephones per hundred inhabitants.

By the year 2000, all provincial capitals, large towns and major motorways in Ukraine will be served by a cellular mobile network. By 1995, a packet-switched data transmission network will be set up in all provincial capitals and main towns. Television and sound broadcasting, paging, facsimile, videotex and other such telecommunication services will also be developed.

Successful implementation of the programme will require a vast effort which will simply not be feasible unless we can channel the efforts of research, industrial, construction and operating enterprises in the telecommunication field, employ modern equipment and the latest technologies, and attract significant investment, including from abroad.

History is such that Ukraine has no experience in the development and manufacture of digital switching and transmission systems and indeed many other types of telecommunication equipment.

As a result of the conversion which has taken place over the last two to three years, however, more than 100 enterprises in the military sector have changed over to the production of telecommunication equipment. They are now producing semi-electronic exchanges, digital transmission systems for local networks and certain other equipment. The development of high-capacity digital transmission and switching systems would take five to seven years and entail considerable financial outlay, which is hardly a realistic proposition in Ukraine's current economic situation. In this area, we cannot do without foreign investment and assistance.

The most rational way of introducing advanced technologies for countries like Ukraine is recourse to funding from the World Bank (IBRD) and the European Bank for Reconstruction and Development (EBRD). However, obtaining loans from those banks is contingent on a lengthy process of expert evaluations and the imposition of many conditions requiring changes in the structure of the sector, tariff policy and other domains, which take a significant amount of time to put in place. In our case, however, time is of the essence. Owing to the conditions under which the market evolved in the countries members of the Council for Mutual Economic Assistance, the CIS countries inherited no market infrastructure and, as a result, all their economies are in deep crisis, the standard of living of their populations is constantly falling and the people are beginning to lose faith in the democratic reforms.

In order to gain time, therefore, we have set up three joint ventures:

UTEL - A Ukrainian/American/Dutch/German enterprise, formed by Ukraine's regional telecommunication directorates together with the companies AT&T, PTT Telecom and DBP Telecom. This joint venture should complete the reconstruction and development of 25 provincial automatic trunk telephone exchanges by 1996 and play a part in the construction of 6 million local lines by 2005.

UMS - A Ukrainian/Dutch/Danish/German enterprise formed by Ukraine's regional telecommunication directorates together with the companies PTT Telecom, Danish PTT and DBP Telecom. This joint venture is to set up a cellular telephone network in 21 towns in Ukraine over a period of five to seven years.

INFOCOM - A Ukrainian/German enterprise, formed by the "Kievelektrosvyaz" industrial company, the information-computing centre (IVC) together with the German firm Controlware. This joint venture will over a number of years establish the national packet-switched network "UKRPAC".

These undertakings have only been in existence for a year or two, but results have already been achieved.

For instance, in the space of little over a year UTEL has constructed an automatic trunk exchange in Kiev and a further five transit exchanges in provincial capitals. This has enabled a threefold increase in international telephone traffic in each of the provinces equipped with a modern transit exchange, and overall international traffic has doubled.

The work of the UTEL joint venture in 1993 has generated 10% of income for the sector in local currency. Naturally, this figure is affected to a large extent by the weakness of the national currency against hard currency. Nonetheless, it has had a significant impact on the financial situation of telecommunication enterprises and part of the income has been able to be set aside for reinvestment.

In 1993, INFOCOM set up a packet-switched network in Ukraine reaching all the provincial capitals, thereby providing better conditions for the business operations of banks, stock exchanges and other users.

Despite the economic crisis, the telecommunication sector in Ukraine enjoyed 35% more income than in 1992 under comparable conditions.

This stems from the fact that the rate of development of trunk telecommunications has doubled and from the introduction of new services: mobile telecommunications, paging, etc. Even in the local networks, 15% more numbers were introduced in 1993 than in 1992. Of course, these positive results in terms of improvement of the sector may be attributed to many factors, but the work of the joint enterprises has had a huge impact.

Our experience has shown that the best approach to development is a combined approach, i.e. specific projects requiring speedy solutions are better carried out through joint ventures and loans from commercial banks, while global reconstruction of the network cannot be carried out without loans from the IBRD and EBRD.

In parallel with the projects for the development of trunk communications being carried out through joint ventures, specialists from the PTT Ministry, the "UKRTEK" concern, are working with specialists from the IBRD and the EBRD on projects for the financing of the Ukraine's major international optical fibre links Kiev-Lvov-Krakow and Kiev-Odessa-Istanbul-Palermo, and we hope to obtain financial support from the IBRD and EBRD for the implementation of those projects. Financing for other projects is also under consideration.

Ukraine's legislation offers conducive conditions for foreign investment. Under the "Law on Foreign Investment", foreign investments cannot be nationalized, provision is made for the awarding of damages in the event of unlawful actions on the part of State bodies or officials, and the right to transfer receipts and profits is guaranteed after payment of taxes and dues. Joint ventures are exempted from taxation for five years, and thereafter are taxed at a rate 50% below companies operating under Ukrainian law. No tax is levied on any portion of profits which is reinvested in Ukraine.

This creates propitious conditions for investment and for implementation of the adopted strategy and specific projects.

Adoption of the legal foundations for the transition to a market economy has given a considerable boost to entrepreneurial activity.

Small businesses have begun to emerge in the most profitable areas of telecommunication services. Taking into account worldwide experience and realizing that free competition in an under-supplied market for telecommunication services may lead to a situation in which services of a higher quality fully meeting demand are provided in economically developed regions, while regions where economic returns are low may be deprived of any services whatsoever, thereby leading to lopsided development of the State's infrastructure, the PTT Ministry has adopted a policy on the regulation of business activity in the telecommunication sector.

Considering that the joint ventures which have been set up will not only be providing highly profitable services but also a significant portion of services with a low profit margin, in most cases for local currency, and that international telecommunication services constitute one of the basic sources of the hard currency required for development purposes and to repay the hard currency contribution of our western partners, we do not plan to introduce any competition at this stage.

In due course, when the network is fully saturated, it is highly likely that parallel competing international and trunk networks will be set up with different owners.

Any attempts by companies to obtain the right to construct and operate telephone networks in specific regions will be unsuccessful. Ukraine's anti-monopoly legislation forbids geographical segmentation of markets.

UTEL, UMS and INFOCOM have been granted licences to develop telecommunications throughout the whole of Ukraine. The licences include agreed time limits for the implementation of projects.

If we were to grant a licence to someone for a specific region, this would place competitors on an unequal footing, and this is also ruled out by Ukraine's legislation.

There would be no sense at the moment in thinking of constructing alternative nationwide networks in Ukraine, and no western investor would contemplate it.

The establishment of the joint ventures and the introduction of some features of a free-market approach have revealed shortcomings in the management structure of the sector, and so restructuring is currently under way. The PTT Ministry has already ceased fulfilling the functions of operator and does not interfere with enterprises' economic and financial activity.

Work has begun on the establishment of large enterprises each responsible for a single process, thus separating posts and telecommunications.

Under the new structure in Ukraine, we have set up the "Ukrelektrosvyaz" enterprise which brings together all the regional telecommunication directorates, Ukrtek and the UTEL, UMS and INFOCOM joint ventures, i.e. it acts as the focal point for the joint ventures.

We have established the new enterprise, "Ukraine Post Office" and "Post Office Bank".

The articles of incorporation of these two enterprises have already been approved and their directors appointed.

According to our estimates, the process of separation and incorporation will be fully completed in 1995. After that, the Supreme Council will consider the possible privatization of the communication enterprises.

I should like to emphasize that despite the current monopoly situation in the sector, we have accomplished much in the way of privatization of all enterprises which are not directly involved in the actual posts or telecommunication process. In the sector, all construction organizations have been privatized, industrial enterprises whose activity used to come within the remit of the PTT Ministry are in the process of being privatized, and dozens of small and medium-sized private enterprises have been set up.

INTERNATIONAL TELECOMMUNICATION UNION

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ITU/BR

PROGRESS AND NEW STUDIES IN TELEVISION BROADCASTING OF INTEREST TO THE DEVELOPING COUNTRIES

by Academician Prof. Dr. Mark I. Krivosheev (Russian Federation)

(Chairman of ITU-R Study Group 11 (Television))

Introduction

The first Radiocommunication Assembly (formerly Plenary Assembly of the CCIR) took place in Geneva from 8 to 16 November 1993.

The Radiocommunication Assembly re-emphasized the need for an active participation of developing countries in the work of the Radiocommunication Sector, particularly as regards the Study Groups dealing with broadcasting.

In response to these guidelines, a seminar on advanced broadcasting techniques was organized by the BDT, the BR and the ABU (Asia-Pacific Broadcasting Union) in Singapore in May 1993, with the attendance of more than 70 participants. Attendance from participants from developing countries is also to be mentioned at the ITU/BR workshop on enhanced television (Auckland, October 1993) and the ITU/SMPTE workshop on digital terrestrial television broadcasting (Los Angeles, November 1993). The ITU/BDT funded participation by granting fellowships to developing countries. The Chairman of Study Group 11 according to the provisions of Resolution 108 participated in the Regional Development Conferences for Europe (Prague, November 1991), for America (Acapulco, April 1992) and in Buenos Aires (1994), where suitable information about the progress of work of Study Group 11 was given in the framework of a comprehensive survey of the CCIR activities.

Furthermore, due attention has been given by Study Group 11 and its related Working Parties and Task Groups to the specific needs of developing countries. The Assembly adopted the Report prepared by the ITU-R (formerly CCIR) Study Group 11 for the 1990-1993 period (ITU-R, 1993, Doc. 11/1001). The new scope of work will be:

"International exchange of programmes and the systems aspects of the broadcasting and broadcasting-satellite services, including video frequency and recording equipment, as well as the overall public when they are used for television, data and associated ancillary services."

We shall start a new study period (1994-1995) having nearly 70 Recommendations and 100 Questions. Figure 1 shows the new structure of Study Group 11, its Task Groups and Working Parties after the Study Group 11 meeting in March 1994.

RADIOCOMMUNICATION STUDY GROUP 11
ORGANIZATION OF WORK

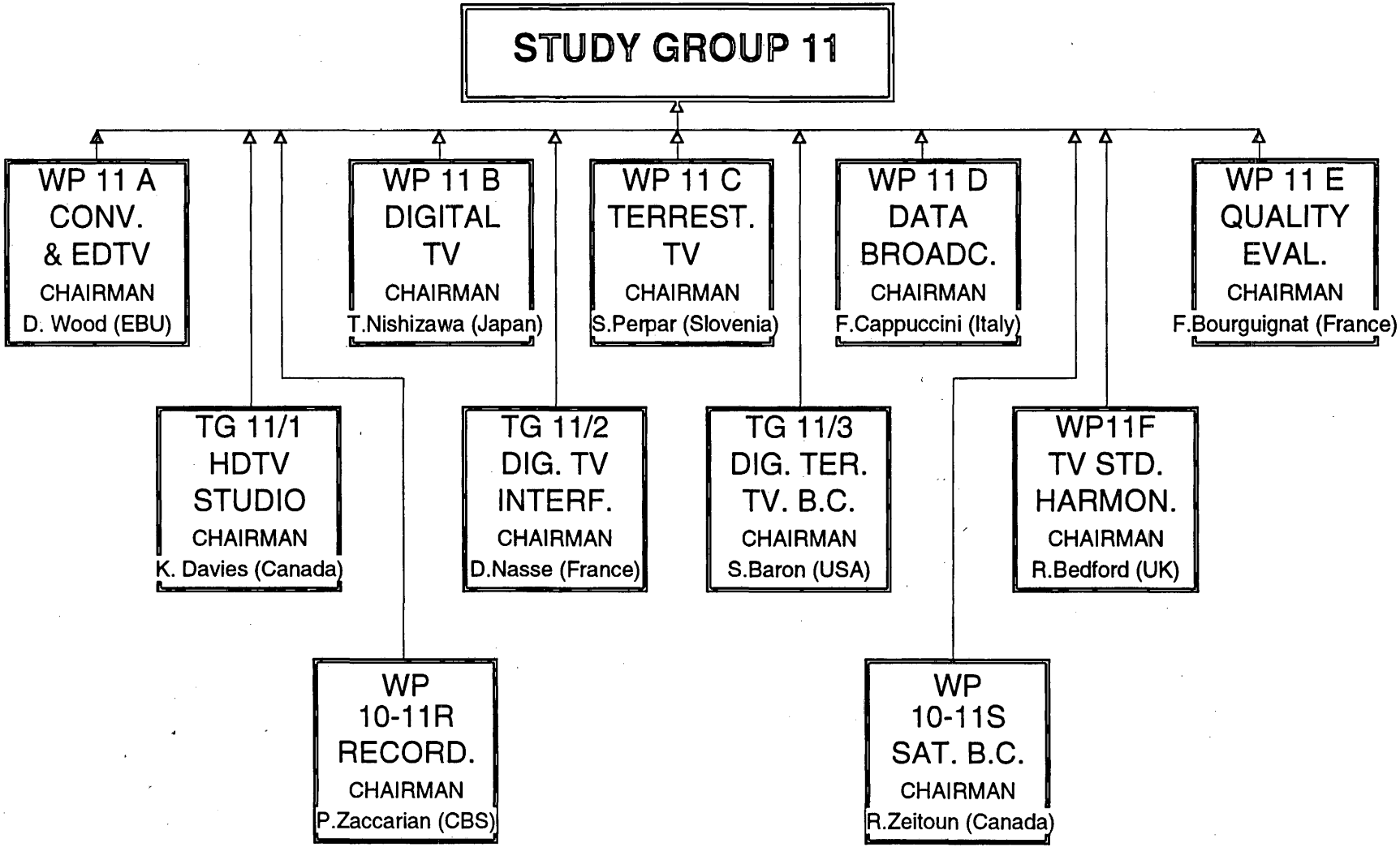


FIGURE 1

Radiocommunication Study Group 11
Organization of work

Radiocommunication Study Group 11 is to-date called to promptly react in a fast moving broadcasting environment. This requirement demands a coordinated effort among all the participants to its work.

In drafting this paper the Chairman of Study Group 11 was helped by the Chairmen of the Task Groups and Working Parties that met in this interim period and by the participants in the meetings of the Study Group 11 Coordinating Group. This Group proved to be a powerful tool to ensure the coordination required to efficiently manage the work of the Study Group.

The paper consists of three aspects. Firstly, a brief summary of the results of work of Study Group 11. Next, the new approaches and strategies that will characterize the forthcoming study period (1994-1995). Finally, the new challenges with the assumption that the progress in these studies should be of great assistance for both broadcasting organizations and manufacturing industry in their development of products and services of interest to the developing countries.

I have selected from among the multitude of texts just a few of the most important Recommendations and Questions, the adoption of which entailed a great deal of intensive work to overcome sharp difference of opinion and to arrive at an international consensus.

Besides reflecting the official texts, I shall be happy to share some of my personal ideas and viewpoints.

Global approach

We have now arrived at a new era in television broadcasting with many new developments being initiated by the work on HDTV and digital television (Figure 2). It is now 22 years since Japan started HDTV work in CCIR, and on 25 November 1991 regular programs started on the 1 125 line system. Then, in February 1992, the 1 250 line standard was used at the Albertville Olympic Games. Last year was the 25th anniversary of colour TV in Europe. Forty years ago NTSC was demonstrated to be compatible with existing channels, now on 23 March 1992 in Washington digital HDTV is being demonstrated in the same channel bandwidth, and work to establish a standard is under way. A demonstration of the feasibility of multiprogramme TV has been given on 21 August 1992 with simultaneous transmission of two digitally compressed NTSC programmes in one conventional channel from New Jersey to Moscow via a Russian satellite transponder, etc. The CCIR had established 16:9 and colorimetry standards that would encourage the development of new types of receiver. This will have substantial economic implications in the world today. Tomorrow's television is a critical matter for the public in general, for broadcasting, communications, industry and governments.

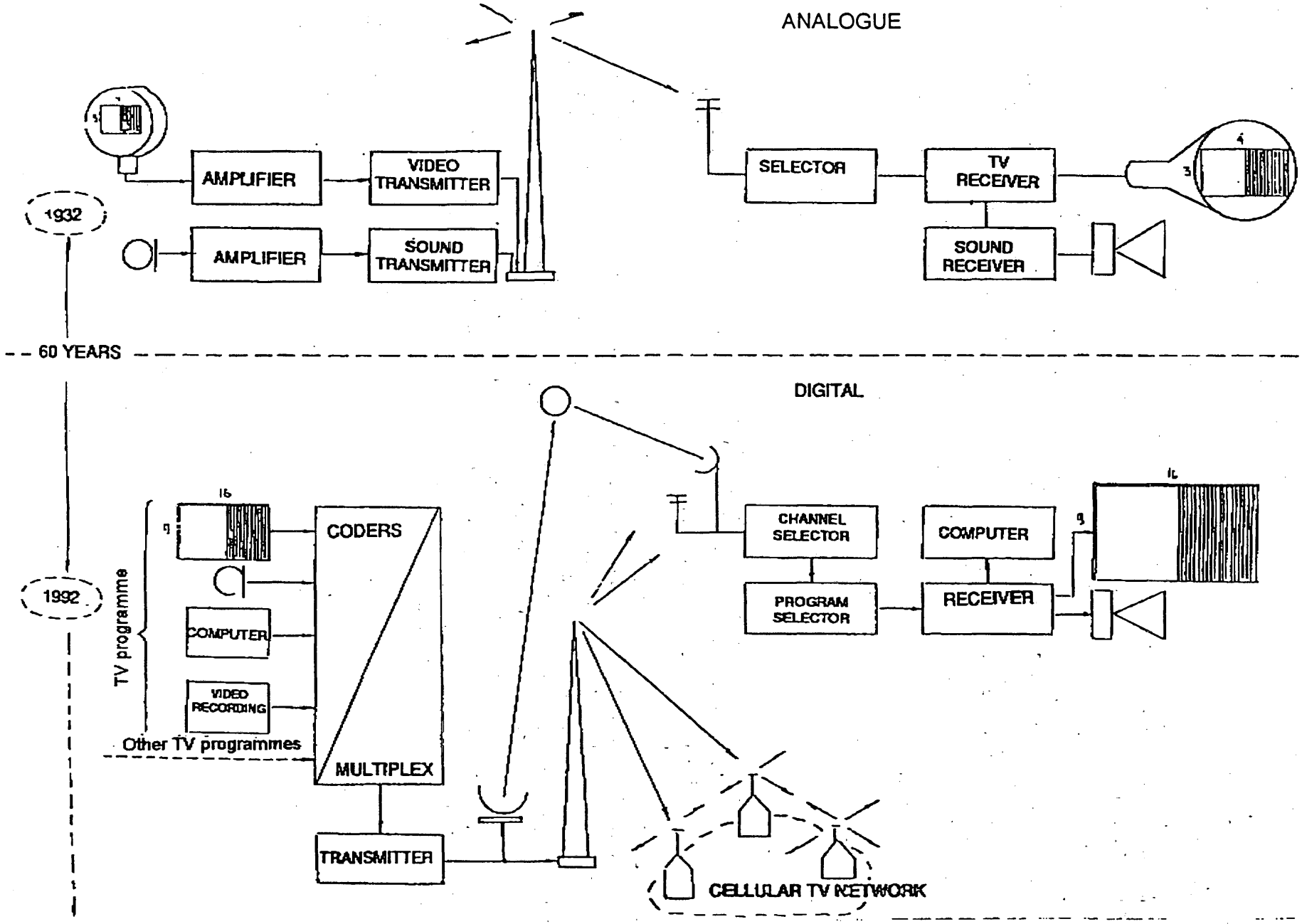


FIGURE 2

Extremely resolution imagery

It should be pointed out that the exceptionally wide range of interrelated investigations carried out in various fields of TV engineering reflecting fundamentally new concepts in TV information transmission will be a distinctive feature of the next study period. This calls for the urgent preparation of a number of Recommendations relating to the introduction of future TV systems making effective use of radio spectrum, which should be developed in close coordination with the number of leading international organizations to provide for the harmonization of TV broadcasting interests with numerous non-broadcasting TV applications.

We are now moving towards new systems standardization. In doing so, I commend an important approach we are using in Study Group 11. This is the concept of a GLOBAL APPROACH. The idea is that we try to look at the development of a particular system in the context of the totality of new developments in related areas. That is to say, to look at all methods of delivering pictures to the consumer and to design compatibility and inter-operability into the system to the largest possible extent.

The broadcasting environment of the coming years may include, in addition to Conventional TV, Enhanced Television, HDTV analogue and digital broadcasting by satellite and terrestrial transmitters and digital multi-channel broadcasting by satellite. New TV systems have to be developed so that they accommodate themselves to the environment. Receivers need to be developed which are usable in all environments and which are not redundant as technology changes.

Figure 3 shows a proposal, a new concept for the TV set, including additional information possibilities, broader interactive operations and a wider approach to media-metric systems.

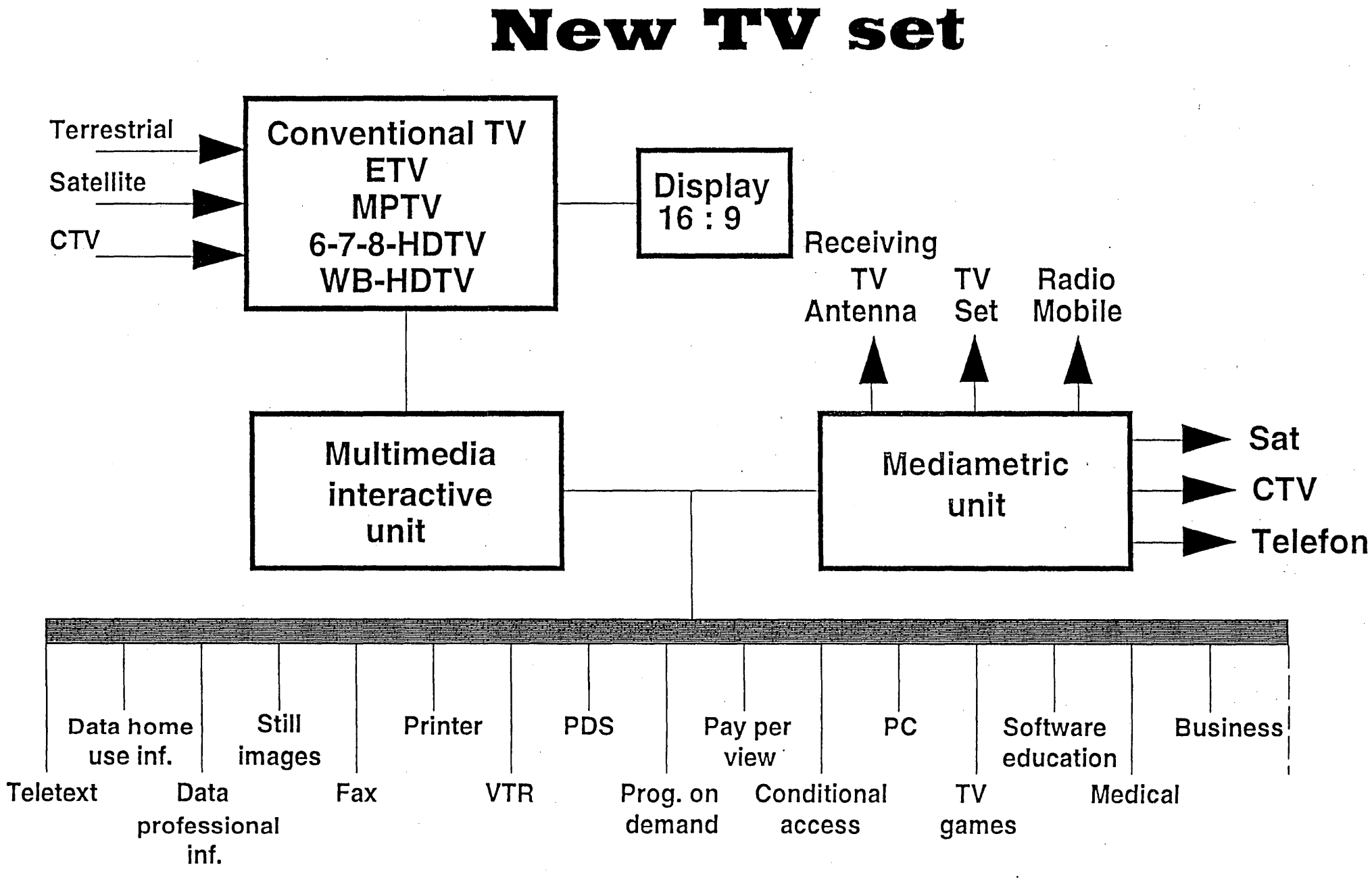


FIGURE 3

New TV set

In our study we must take into account what kind of benefits, above all for viewers and broadcasters, justify costs for the introduction and implementation of new systems. That means that the new systems must have additional possibilities and positive features in new television and information environments.

There is a need to emphasize the need for a clear view of the opportunities presented by current technical development and for the formulation of tasks and strategies that would pave the way into the 21st century. With 1 000 million TV sets in the world today, and these having a long expected lifetime, one has to be relatively conservative in the planning of new services. On the other hand, digital techniques are introducing exciting new possibilities. Decisions had to be made in the 1950s about the choice between 525 and 625 for monochrome television. Further decisions followed in the choice of colour systems. But these decisions were relatively easily made as compared with today's requirements for a family of digital standards covering both standard- and high-definition television.

We welcome the recent joint Steering Committee Meeting of Study Groups 10 and 11 and including representatives from Broadcasting Unions from around the world. The EBU, ABU, NANBA, IAB and OTI were all represented, and Mr. Gavilan attended as Chairman of the Standing Committee of the World Broadcasting Unions. This was an important step forward for the ITU at a time when technical developments were having a significant impact on the broadcasters. In addition it enabled links to be forged with several developing countries who were not directly involved with the ITU but were closely associated with the rest of the Broadcasting Unions.

Terminology

The terminology used to describe analogue and digital quality levels is described in ITU-R texts.

Analogue television systems

The phrase "Conventional Television Systems" is used extensively in ITU-R texts to signify the analogue PAL, SECAM and NTSC television systems as defined in Recommendation ITU-R BT.470.

Digital television systems

In digital television the quality achievable in transmission and/or emission depends upon the picture source standard, the particular digital coding system and the bit rate employed.

In Document 11/174 quality levels for digital television systems are defined as follows:

HDTV quality, where the potential exists for the delivery of a picture which is subjectively identical with the interlaced HDTV studio standard. Quality shall remain consistent with this for a given proportion of television programme material (where this is a percentage in the high nineties, but is yet to be identified).

EDTV quality, where the potential exists for the delivery of a picture which is subjectively indistinguishable from the 4:2:2 level of Recommendation ITU-R BT.601. This quality shall be maintained for a given proportion of television programme material (where this is a percentage in the high nineties, but is yet to be identified).

SDTV quality, where the quality is approximately equivalent to that of current PAL or SECAM. This equivalent quality may be achieved from pictures sourced at the 4:2:2 level of Recommendation ITU-R BT.601 and subjected to processing as part of the bit rate compression. The result should be such that, when judged across a representative sample of programme material, subjective equivalence with PAL and SECAM is achieved.

LDTV quality, where the quality is equivalent to that obtainable with the MPEG-1 system, which operates on a source resolution approximately 1/4 of that of the 4:2:2 level of ITU-R Recommendation 601. This quality is considered by some to resemble that of VHS (albeit over a relatively small proportion of programme material).

Note 1 - Documents currently under consideration state that:

- the phrase "conventional definition TV" should be replaced by "standard definition TV", and
- the abbreviation "CDTV" should be replaced by the abbreviation "SDTV".

Note 2 - NTSC should be added to the definition of SDTV above.

Conventional TV systems

Report 624 on television systems (for terrestrial broadcasting) was revised by WP 11A and included in Recommendation 470.

The scope of work in the field of planning terrestrial TV networks is of extreme importance for developing countries. There exist many television broadcasting receivers in the whole world capable to receive one of the various existing television systems.

Therefore many developing countries will probably decide to enlarge their existing television networks or even to introduce a new one, before the new digital terrestrial television services will be introduced and majority of receivers being capable of receiving them.

In many countries the frequency spectrum allocated to terrestrial television is already relatively congested and occupied in their or in some neighbouring countries and therefore much importance should be put into efficient frequency planning. This may be of quite importance for developing countries.

A large amount of work has been made within Working Party 11C in this domain (Figure 4).

Recommendation 417-4 **(Doc. 11/BL/45)**

MINIMUM FIELD STRENGTHS FOR WHICH PROTECTION MAY BE SOUGHT IN PLANNING A TELEVISION SERVICE

Recommendation 419-3 **(Doc. 11/BL/46)**

DIRECTIVITY AND POLARIZATION DISCRIMINATION OF ANTENNAS IN THE RECEPTION OF TELEVISION BROADCASTING

Recommendation 655-2 **(Doc. 11/BL/47)**

RADIO-FREQUENCY PROTECTION RATIOS FOR AM VESTIGAL SIDEBAND TELEVISION SYSTEMS

Recommendation 804 **(Doc. 11/BL/49)**

CHARACTERISTICS OF TV RECEIVERS ESSENTIAL FOR FREQUENCY PLANNING WITH PAL/SECAM/NTSC TELEVISION SYSTEMS

Recommendation 805 **(Doc. 11/BL/50)**

ASSESSMENT OF IMPAIRMENT CAUSED TO TELEVISION RECEPTION BY A WIND TURBINE

FIGURE 4

The three main and most important Recommendations dealing with planning are the following:

- Recommendation 417: Minimum Field Strengths for which Protection may be sought in Planning a Television Service.
- Recommendation 419: Directivity and Polarization Discrimination of Antennas in the Reception of Television Broadcasting.
- Recommendation 655: Radio-frequency Protection Ratios for AM Vestigial Sideband Terrestrial Television Systems.

In last years Recommendation 417 dealing with minimum field strengths has been completed with the values used for rural districts having low population areas.

The values given are based on calculations and actual measurement from different countries from different parts of the world and indicate it is possible to obtain satisfactory reception with relatively low field strengths in absence of interference and with use of more complex receiving installations (e.g. high gain antennas).

Recommendation 419, dealing with receiving antennas, more information on advantages gained by using orthogonal polarization are given. These results may be of extreme importance for planning new low power transmitters to cover small gaps in the coverage area. On the other hand they may also be used to obtain the necessary additional discrimination needed to introduce new digital services into existing analogue environment.

In Annex 2 of Recommendation 419 some guidelines are given about introducing circular or elliptical polarization in television emission. Although this may enable some broadcasters to radiate higher power, they will lose the advantages that may be gained by using orthogonal polarization and that might be very important for a broadcaster introducing new or additional channels.

The important text for planning is believed to be Recommendation 655, dealing with protection ratios for terrestrial television systems. In the last few years many calculations and tests were made to define all possible interference combinations and adequate protection ratios.

In this respect it should also be stressed, that values given in Recommendation 655 are for tropospheric interference, for continuous interference and for limit of visibility. For developing countries it is important to select the adequate protection ratios.

For cases where interference is expected to be present for relatively short periods of time, between 1 to 10%, the protection ratios for tropospheric interference apply. The impairment in the picture for this short period of time will be about grade 3.

In the case of interference presented about 50% of the time, the value for continuous interference is to be used. The impairment will in this case be about grade 4.

In the case when the interference is present virtually 100% of the time, the values somewhere around limit of perceptibility are to be used.

Another part of Recommendation 655 is also the part dealing with precision offset. Using technique of precision offset is one of the ways of improving frequency efficiency and should as such be kept in mind of every television network planner.

Annex 3 of Recommendation 655 gives the basic knowledge for understanding the effect of precision offset. In Annex 4 the precise frequency positions are given, based on actual tests.

This Recommendation gives also protection ratios for different combinations between different television systems and also for different sound carrier positions. The latest version has also been revised to be more user friendly.

Speaking about frequency planning also Recommendation 804 "Characteristics of Television Receivers Essential for Frequency Planning with PAL/SECAM/NTSC Television Systems" should be mentioned. This Recommendation gives the reference receiver parameters and also some important receiving antenna parameters. References are made to IEC and CISPR documents defining these parameters and giving measuring methods for them.

Also current IF values for different TV systems are given. This enables the planning engineer to calculate protection ratios for some very specific circumstances.

For limited use also Recommendation 805 "Assessment of Impairment Caused by Television Reception by a Wind Turbine" may be important.

At the last meeting of Study Group 11 two draft new Recommendations were presented. One is dealing with planning methods for 625-line terrestrial television in VHF/UHF bands. Annex 1 of this draft new Recommendation describes initial planning at frequency planning conferences, which may also be of interest for planners in developing countries.

In Annex 2 an even more important matter of planning constraints is dealt with.

In another draft new Recommendation ghost cancelling signals are described. Ghost cancelling methods seem to be important for some countries having difficulties with multipath propagation due to specific terrain configuration.

Enhanced television systems

The relative quality requirements of conventional, enhanced and HDTV are shown in Figure 5.

Parameters for enhanced compatible coding systems based on 625-line PAL and SECAM

Parameters for wide aspect and 4:3 enhanced television systems with NTSC-compatible

Studio format parameters for an enhanced compatible 625-line PAL and SECAM television emission system

The relative timing of sound and vision signals

Relative quality requirements of conventional, enhanced and high-definition television

FIGURE 5

Conventional and enhanced TV

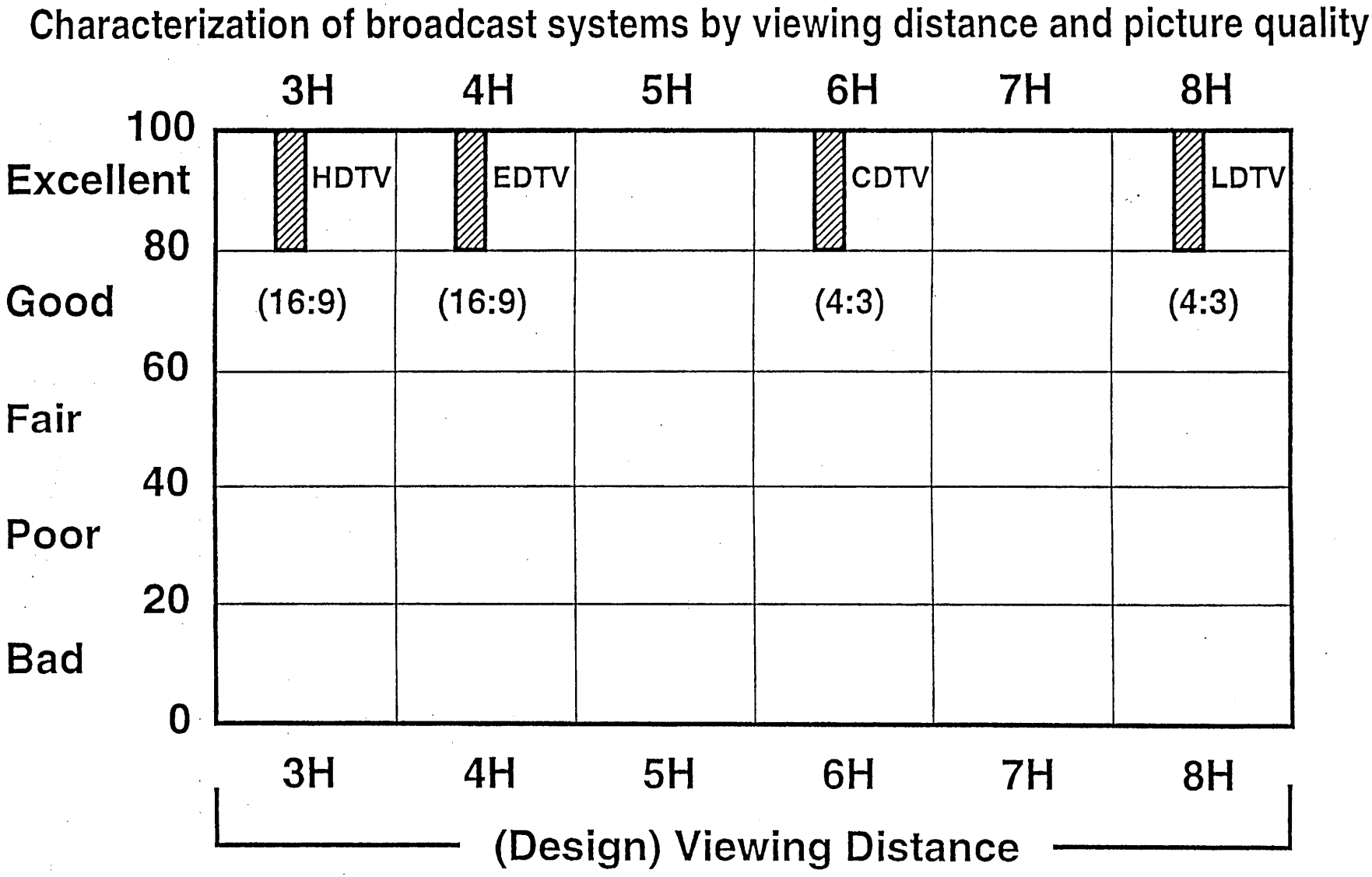


FIGURE 5a

Characterization of broadcast systems by viewing distance and picture quality

		Frequency range	
		I - III	IV - V
1	B (B,G)/SECAM	12	2
2	G/SECAM	--	11
3	D/SECAM	9	--
4	K/SECAM	--	7
5	L/SECAM	2	2
6	K1/SECAM	17	16
7	B (B,G)/PAL	57	2
8	G/PAL	3	44
9	D/PAL	3	1
10	I/PAL	10	13
11	N/PAL	2	1
12	H/PAL	--	1
13	K/PAL	--	1
14	M/PAL	1	1
15	M/NTSC	19	11
Number of countries		135	113

FIGURE 5b

International television standards
Recommendation 470-2

Since the development of the broadcasting services will likely be different from country to country due to various factors such as telecommunications policy, socio-economical impact and industrial development, it is necessary for Study Group 11 to offer the widest choice of options that will assure the desired transition from conventional TV to HDTV. In the light of this strategy, a consolidation of new enhanced systems is expected in the forthcoming study period. Advanced tests and developments are already reported on enhanced NTSC and PAL systems.

At the last meeting of WP 11A in 1991, it was agreed to set in motion the establishment of a workshop for enhanced television to be held in Region 3.

The event took place in Auckland, New Zealand (October 1993) and was a major success in terms of the number of participants, level of interest and value of the technical information to the delegates.

The Group prepared a new draft Recommendation on widescreen signalling.

Following a proposal of the Chairman of Study Group 11, Working Party 11A prepared a draft new Recommendation "Enhanced compatible widescreen TV based on conventional TV systems" intended to cover all widescreen enhanced television systems. The Recommendation suggests common features of all systems, 525-line and 625-line, and gives some details of the modules to be used for enhanced systems. This document should be the key document for enhanced widescreen television. Information available suggests that it may well be possible to complement the text in the annexes to this Recommendation with significantly more information in about one year's time.

One of the most immediate subjects for study is surely represented by the impact of new receivers in 16:9 format, already mentioned in Recommendation 709.

One of the activities to be carried out in Study Group 11 is the elaboration of proposals on a coordinated international approach to the implementation of the 16:9 format in its various aspects: broadcasting, TV sets, VTRs, optical discs, programme exchange, etc. Widescreen television receivers also open the door for the introduction of new electronic still picture photography with 16:9 format. (Q-ITV-R 201/11).

Digital TV

The digital TV studio production standards adopted by Study Group 11 already represent a major step forward to meet the needs of different countries. The majority of new studio equipment is based on digital techniques and the availability of a reference CCIR standards will surely help in achieving economic performance and quality.

Modifications were made by WP 11B to Recommendation 601 to include the 4:4:4 member of the coding family. The 4:4:4 member is required in complex processing where additional resolution is needed, for example in high quality chromakey operations (Figure 6).

REC. 601-3

ENCODING PARAMETERS OF DIGITAL TELEVISION FOR STUDIOS

REC. 656-1

INTERFACES FOR DIGITAL COMPONENT VIDEO SIGNALS IN 525-LINE AND 625-LINE TELEVISION SYSTEMS OPERATING AT THE 4:2:2 LEVEL

REC. 779

OPERATING PRACTICES FOR 4:2:2 DIGITAL TELEVISION RECORDING

REC. 799

INTERFACES FOR DIGITAL COMPONENT VIDEO SIGNALS IN 525-LINE AND 625-LINE TELEVISION SYSTEMS OPERATING AT THE 4:4:4 LEVEL

REC. 803

THE AVOIDANCE OF INTERFERENCE GENERATED BY DIGITAL TELEVISION STUDIO EQUIPMENT

FIGURE 6

Recommendation 656 on studio interfaces for the 4:2:2 level now incorporates recent and widely accepted developments in serial interfaces and in ancillary signals. It is followed by a new Recommendation specifying parallel and serial interfaces for the 4:4:4 level. Draft new Recommendations and draft revisions of existing Recommendations were prepared:

- User requirements for broadcasting systems

Rapid progress is being made in the bit-rate reduction coding techniques of digital TV signals. These techniques will be widely used for contribution, in recording, for primary and secondary distribution, and for emission by terrestrial means and by satellite.

In this circumstance the important responsibility of WP 11B is to coordinate the tasks for the standardization of the contribution, recording, distribution and emission systems from the points of view of bit-rate reduction coding.

WP 11B produced three draft new Recommendations on user requirements for SNG, for contribution and primary and for secondary distribution and emission of television signals. These requirements will be the basis for the systems now being studied in the ITU-R and in various parts of the world. These requirements are also used as the guideline for the introduction of systems in many countries including developing countries.

- Generic video coding

WP 11B is studying generic coding standards which are suitable for various parts of broadcasting chains. WP 11B established a Special Rapporteur Group to study the picture quality impairment caused by codecs cascaded in tandem in broadcasting chains. This Group will analyse the behaviour of of codecs cascaded in tandem which use different algorithms at different or the same bit rates and also this Group studies the methods to minimize picture quality degradation due to cascaded codecs.

Based on the studies mentioned above, WP 11B will prepare a Recommendation for the generic bit-rate reduction coding systems. This Recommendation will be very useful for developing countries as well as other countries when digital systems using bit-rate reduction coding are introduced in these countries.

For the standardization of generic coding standards, MPEG-2 profiles are clearly candidates of them. It is important for WP 11B to give the information on the relationship between picture quality and bit rates on the various MPEG-2 profiles and levels and to recommend an appropriate range of bit rates for these profiles and levels from broadcasting points of view. This information will be very useful for many countries including developing countries.

- Measurement methods

Evaluation methods for bit-rate reduction codecs for SDTV, EDTV an HDTV signals to be used for various parts of broadcasting chains are being studied by WP 11B.

For the measurements of methods of digital equipment with analogue input/output, WP 11B is preparing a draft new Recommendation. This Recommendation will be useful for testing digital equipment having analogue input/output which will be widely used for long years before total digital broadcasting chains are introduced in many countries.

- Handbook for digital coding

The Handbook on "Coding and interfacing of digital television signals" prepared by WP 11B will be published soon. This handbook is dealing with technical matters closely related to Recommendations ITU-R BT.601 and 656. The Handbook on "Bit-rate reduction for digital television signals" which is now being prepared by WP 11B will also be useful to know the relevant information on bit-rate reduction coding and error correction.

These handbooks will be useful for readers in both developed and developing countries.

The definition of the users requirements in the digital coding domain represents a reference for any further development of video coding techniques. In this context, the activities carried out by Study Group 11 in answering with the ISO/IEC MPEG should be considered as one of the highest priorities (Chairman of ad-hoc Group on digital coding, T. Nishizawa (Japan)).

Data broadcasting

A revision of Recommendation 653 on teletext systems was approved. This Recommendation is a unique encyclopaedia of the world teletext systems. In connection with the studies of still images transmission it was suggested to add a new concept for radio mobile services to include to a portable receiver, a small video display with memory which can be used for pictures, data and other video information.

WP 11D prepared Recommendations concerning (Figure 7):

- A PDC (Programme Delivery Control) for video recording. This system will allow the viewer to exactly programme his home VTR to record any selected programme by data signals inserted in the vertical blank interval. This Recommendation will be of interest to consumer equipment sector worldwide.
- Conditional access broadcasting systems. This Recommendation includes the fundamental principles of such systems. These systems are important for the new forms of programme delivery.
- The broadcasting of time and date information in coded form. It establishes that all coded broadcast time and date signals should be expressed in accordance with Recommendations 457 and 460.

REC. 653

TELETEXT SYSTEMS

REC. 808

THE BROADCASTING OF TIME AND DATE INFORMATION IN CODED FORM

REC. 810

CONDITIONAL-ACCESS BROADCASTING SYSTEMS

REC. 812

SUBJECTIVE ASSESSMENT OF THE QUALITY OF ALPHANUMERIC AND GRAPHIC PICTURES IN TELETEX AND SIMILAR SERVICES

FIGURE 7

Data broadcasting

Recognizing the importance of data services, in 1985, Study Group 11 proposed the development of systems similar to teletext for use in HDTV and expressed the hope that HDTV - teletext system would be unique and international in scope (CCIR Doc. 11/485, 195, page 2).

Advances are expected as concern to teletext services to be associated to digital TV systems, multi-programme TV (MPTV) and in a HDTV environment. In view of the large coverage areas of TV stations, new possibilities for the most speedy and cost-effective way of high speed transmission to the public and offices of considerably larger streams of various types of digital information opens up for broadcasting media. Thus, it is possible to propose the study of a new concept of transmission of large volumes of data in the same TV channel, including addressing and printing on-demand information using interactive methods, and also progress in conditional access systems (ITU-R, 1993, Doc. 11/1001, section 10.3).

New studies on conditional access for digital TV and MPTV broadcasting are required.

In particular the impact of the adoption of the 16:9 format on teletext and other data broadcasting services will be reflected in a number of related Recommendations.

Finally, further progress is also expected in the still-image broadcasting services where new applications are foreseen in a more integrated broadcasting-computer digital environment.

HDTV is the main trend towards radical improvement of the TV picture quality. Based on the Study Group 11 Chairman's report to the XVIth on the Plenary Assembly of CCIR (Dubrovnik, 1986), the author proposed a global approach to HDTV. The model takes into account the different broadcasting interests, the many possible uses of HDTV and necessity of harmonization between broadcasting and non-broadcasting applications (Doc. 11/164; Doc. 11/173; period 1986-1990). (Figure 8.)

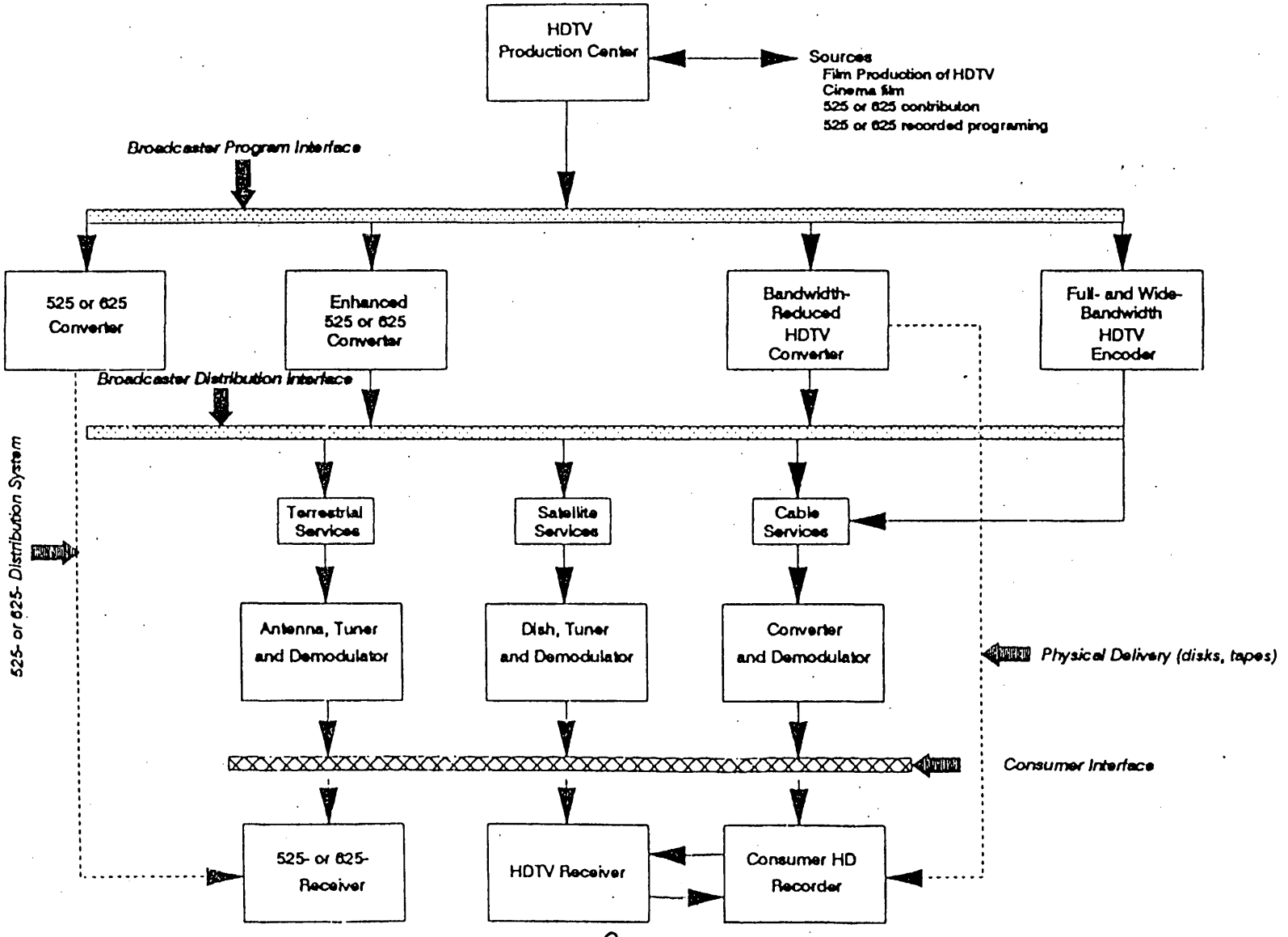


FIG. 8

HDTV delivery - the future environment

FIGURE 8

HDTV delivery - the future environment

As the first step in this direction Recommendation 709 was developed. "Basic parameter values for the HDTV standard for the study and for international programme exchange" gave for the first time many of the basic parameters for the HDTV standard. In particular, it fixes a high aspect ratio (16:9), colorimetric parameters, luminance characteristics and bit rates for interlace and progressive scanning, etc. It is planned to supplement this Recommendation with a number of picture characteristics and indicate scanning parameters. Recent developments in several countries (including MPEG) indicate that it may be possible in the near future to overcome the difficulties experienced in the past; this may well result in being able to agree on all the outstanding parameter values in Recommendation 709, possible in 1995. A Recommendation on the digital HDTV standard prepared by TG 11/1 would need to be harmonized with those used in other media, notably in computer applications; it might well be agreed in 1995. A draft Recommendation on the bit rate-reduction method to be possibly used for interconnections in HDTV studios would naturally follow, probably in 1995.

With regard to colorimetry, a fundamental concern of all television and image systems, studies of methods to expand the reproducible colour gamut to include all real surface colours have progressed rapidly and are converging to a highly viable solution.

A draft new Recommendation on HDTV interfaces has been set up by TG 11/2. It relates to the 1 125/60 and 1 250/50 systems. It is in full agreement with already existing specifications and in particular those issued by the SMPTE. The future work of Task Group 11/2, in addition to improving the specifications of interfaces for already defined systems, will concentrate on bit-rate reduced interfaces for single and multiple television signals in order to permit safe and reliable operation of future digital television systems.

The function of the wideband HDTV interface is to provide "transparent" HDTV transmission, (JWP 10-11S, Recommendation 788). For the simultaneous transmission of video signals with sound, error protection and other signals, a standard 140 Mbit/s digital channel (or lower) may be used.

The wideband HDTV designed to demonstrate video information on large wide format screens may present interest for most various spheres of human activity in the field of culture, business, education, etc.

The use of large screens with high quality picture is of undoubted interest also for advertising and information services in places with big masses of people to display operational and commercial information. Probably the system can find wide application in the field of education to observe the process to which wide public does not have free access.

Along with such WB-HDTV studies, current progress in bit-rate reduction techniques and new types of modulation had an impact on the development of new broadcast systems. From the standpoint of continued use of existing transmission networks, maintaining frequency plans currently in force as well as while introducing HDTV, requirements for the NB-HDTV interface are determined by the nominal bandwidths for standard TV/radio channels (HDTV 6-7-8 concept). (Figure 9).

NOMINAL RADIO-FREQUENCY	COUNTRIES/GEOGRAPHICAL AREAS IN BANDS			
Channel bandwidth	BAND 8		BAND 9	
6 MHz M, N (NTSC, PAL)	25	(18.3%)	14	(12.3%)
7 MHz B (PAL, SECAM)	68	(49.5%)	6	(5.2%)
8 MHz G, H, I, D, K, K1, L (PAL, SECAM)	44	(32.1%)	94	(82.5%)
	137		114	

FIGURE 9

Nominal radio frequency
Countries/geographical areas using RF channels 6, 7 and 8 MHz

Presently, three nominal television channel bandwidths are standardized:

- 6.0 MHz: systems M, N (NTSC, PAL);
- 7.0 MHz: system B (PAL, SECAM);
- 8.0 MHz: systems G, H, I, D, K, K1, L (SECAM, PAL).

The difference between the bandwidths of 6, 7 and 8 MHz channels might in principle give rise to the development of three HDTV 6-7-8 systems, with each fully using the bandwidth of their appropriate channels, i.e. HDTV-6, HDTV-7 and HDTV-8. It is therefore desirable that the different HDTV testing centres in different countries include comprehensive tests of HDTV 6-7-8 systems in their work programmes and submit their results to Study Group 11 for international discussion.

These tests might assess whether sufficiently high picture quality can be provided by the narrower-band systems and whether a 1- or 2-MHz increment in the bandwidth for domestic reception is a critical factor. This evaluation might assist in the adoption of worldwide standards.

The first answer to this - the approval of the first Recommendation 798 on digital terrestrial TV represents a milestone in the activity of the CCIR. This Recommendation is fully in line with a global approach to HDTV and responds to the demand of administrations (especially of developing countries) to continue to use their existing or planned radio and cable networks to broadcast HDTV services.

The same concept is currently applied to enhanced television (ETV 6-7-8 concept).

When, some years ago, the HDTV 6-7-8 concept was proposed by the Chairman of Study Group 11, several experts considered it to be a fantasy. However, the recent demonstrations of DTV systems in Alexandria, by the HD-DIVINE consortium and by others in Europe show that narrow-band emission of digital HDTV in 6, 7 and 8 MHz channels is not a fantasy but a reality.

However, time is limited and therefore Study Group 11 should actively respond before Regions adopt standards which would hinder this common feature.

Multiprogramme TV in existing channels

The digital television systems presently being studied by Study Group 11 offer significant improvements in many aspects such as wide-screen, increased resolution, cross-colour elimination etc., which contribute to a considerably improved picture quality.

These design goals will match the rising expectations and the demand of the general public in the years to come by a generalized use of digital techniques both for the programme generation and the user's equipment such as receivers and video recorders.

However the time-scale that might be selected to implement the new digital television systems may vary from country to country according to specific needs and therefore different approaches might be considered.

One of these possibilities is represented by the multiprogramme systems.

The Chairman of Study Group 11 proposed the MPTV 6-7-8 concept (multiprogramme digital TV broadcasting), based on HDTV 6-7-8 methodology. Such a system is currently being considered in various countries for delivery to the public and transmission over conventional satellite or terrestrial links or cable TV networks of a certain number of conventional digitally compressed TV programmes instead of single conventional, enhanced or HD programmes (Figure 10).

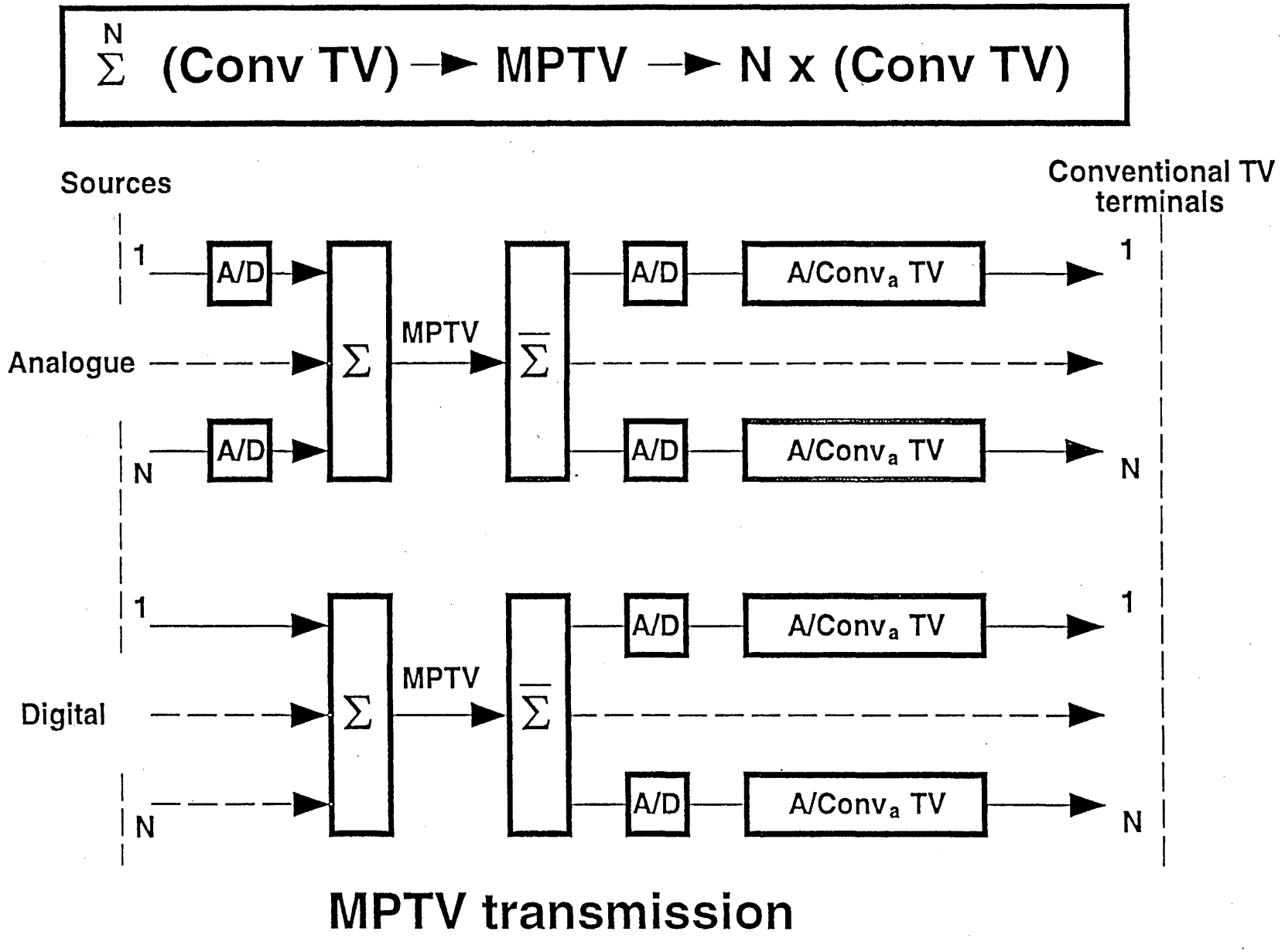


FIGURE 10

MPTV transmission

DIGITAL MULTI-PROGRAMME TV EMISSIONS WITHIN A SATELLITE TRANSPONDER

RECORDING OF TV PROGRAMMES IN THE CASE WHERE SEVERAL PROGRAMMES MIGHT BE BROADCASTING IN SAME DIGITAL MULTIPLEX

SUBJECTIVE ASSESSMENT OF DIGITAL SYSTEMS INCLUDING MULTIPROGRAMMING AND SCALABLE SYSTEMS

FIGURE 10a

Multi-programme TV systems

$$\sum_{N} (\text{conv. TV}) \rightarrow \text{MPTV} \rightarrow N \times (\text{conv. TV})$$

MPTV can be achieved through different methods such as, for example, N compressed TV programmes transmitted on N carriers, multiplexed N TV programmes transmitted on single carriers, etc.

MPTV opens new possibilities for multiprogramme cinema TV.

These digitally compressed TV signals will be accompanied by digital high-quality sound, coded conditional access information and ancillary data channels.

Since the development of these systems would be beneficial to the end-user only if carried out orderly in an international context where appropriate standards can be set, Study Group 11 should be in a position to promptly respond to this need by preparing new Questions on the subject.

It is particularly necessary to formulate the requirements related to the complete channel and a scalable picture and sound quality in each "compressed" channel as a function of the occupied percentage of a single standard channel bandwidth. It is also important to develop standards for the various portions of the channel used to transmit digital MPTV signals. During the meeting of JWP 10/11S in October 1993, a statement from the EBU (Doc. 10-11S/147) was presented entitled "Digital Multiprogramme TV Broadcasting within a Satellite Transponder". The statement referred to a Memorandum Of Understanding (MOU) for the development of harmonized digital video broadcasting (DVB) services in Europe. It also made reference to the intention of submitting to the ITU-R a draft new Recommendation on digital multiprogramme TV broadcasting by satellite on a worldwide basis.

Interactive television

The development of interactive television systems, enabling television viewers and users of large volumes of digital television data to transmit different types of information to the corresponding collection and processing centres needs to be studied.

Interactive broadcasting computer systems constitute a new field of study (Figure 3). Their development will be facilitated by MPTV systems which substantially increase the number of programmes provided. These can be ordered by the viewer by telephone, and also using satellite and new possibilities in mobile radiocommunication system in both real time and in videoteque "memory".

The Chairman of Study Group 11 proposed the study of new approaches to interactive systems using receiving TV antenna and radio circuits of TV set for transmission of various signals to the Computer Centre from viewers at the corresponding frequency bands. (ITU-R 1993, Doc. 11/1001, section 10.6). Such approaches would also facilitate the development of perspective systems of remote collection and processing of information about the TV programme being received, its assessment (mediametric systems, etc.)

Following this proposal, Working Party 11C prepared a new draft Question on "Interactive TV broadcasting systems" (Annex 1). As broadcasting systems are also foreseen to be used for other purposes, therefore it seems to be of great advantage to incorporate the broadcasting receiver into interactive systems. For such purpose the return channel seems to be an important part of the system, which will probably transmit back the data signals to the base station. A good isolation between receiving and transmitted signal should be obtained, and therefore a certain frequency separation is needed. With the development of such interactive system on one side and also cellular digital radiocommunication systems on the other, some similar technical approach may be used.

It is important to realize that there are about one billion TV sets throughout the world, and that this figure is bound to rise. Even if TV viewers and TV data users only gradually begin to "plug in" to interactive systems, this in itself is already a good enough reason to envisage new studies on the establishment and effective operation of hundreds of thousands of narrow-band digital return channels for the transmission by TV viewers and TV data users of various types of conventional information of both local and international significance, and in many cases conventional. Low orbit satellite links might also be used.

It is therefore reasonable to suggest that this new, major and specific load should be already taken into account at the present stage in the development of FPLMTS ITM-2000 and UPT. Given the need to integrate such terrestrial and satellite systems, it will be necessary to consider ways in which to design the various satellite systems of this kind such as LEOS that are currently under development so as to cope with the large information volumes.

For developing countries, this new draft Question. In such a case the receiver will be connected over return channel to some information centre and then television broadcasting receiver may be used for a broad variety of applications, which will emerge in the near future. In this way television receivers will become one of the most important telecommunication elements to communicate from your home.

Digital television broadcasting

Scientists from all world regions are actively investigating into technologies involved in digital television broadcasting. At this point in time, none of the world regions is committed to a solution. Therefore, the opportunity exists to provide the global community with a set of Recommendations that shall maximize the probability of arriving at a common standard. (Figure 11 shows a list of important draft Recommendations.)

REC. 798 - DIGITAL TELEVISION TERRESTRIAL BROADCASTING IN THE VHF/UFH BANDS

REC. - VIDEO CODING FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING

REC. - ERROR CORRECTION METHODS FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING

REC. - SERVICE TRANSPORT METHODS FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING

REC. - SERVICE MULTIPLEX METHODS FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING

REC. - MODULATION AND EMISSION METHODS FOR DIGITAL TERRESTRIAL TELEVISION BROADCASTING

REC. - CRITERIA REQUIRED FOR PLANNING DIGITAL TERRESTRIAL TELEVISION SERVICES IN THE VHF/UHF TELEVISION BANDS

FIGURE 11

Digital TV systems will be built up of many sub-elements. It may make the issue of commonality more manageable if to consider, for each sub-element, how important it is to have worldwide agreement, and how difficult it is likely to be to achieve it. In this way the process could be started at a common standard by concentrating on those elements which offer the best combination of priority and ease of agreement. The remaining standardization measures could be then persuaded, step by step.

To develop a means of identifying the best opportunities for a common approach, a document "Prospects for a common worldwide digital terrestrial TV system" was produced by TG 11/3 which discusses the process of arriving at a common standard by concentrating on those elements which offer the best combination of priority and ease of agreement.

It is certainly a simplification, but two major dimensions to commonality should be considered:

- the international dimension, the use in different regions of the world of the same system;
- the application dimension, the use by different bearers of the same system, terrestrial, satellite, cable, B-ISDN.

Equally, it may be simplification but the digital system could be considered as formed by the following sub-elements: modulation system, channel coding system, multiplexing system, baseband sound system, baseband data coding.

The future work of Study Group 11 on digital terrestrial TV broadcasting will further extend the work performed to date to achieve a set of consistent Recommendations and standards in the four areas of interest: source coding and compression, service multiplex and transport layer, modulation and the physical layer and planning factors and implementation strategies.

A new Question ITU-R 205/11 "Parameter for integrated services digital broadcasting (ISDB)" by WP 11D was prepared.

TG 11/3 produced two draft Recommendations on the criteria required for planning digital terrestrial television services and on basic objectives for the planning and implementation of services. This may be considered as a starting point for the preparation of technical basis for new regional radio conferences for the planning of terrestrial TV broadcasting networks.

A global approach to digital TV systems

The complex interaction among all components of the digital broadcast chain is to be kept in mind when specifying the characteristics and performance of any section so that a global approach to digital systems should be envisaged (ITU-R 1993, Doc. 11/1101, section 10.7). It is therefore proposed to define the characteristics of a unique digital broadcasting space from the source to the end user's screen where the specific sections could be optimized not only individually but the overall system characteristics, (scalable picture quality with variable process of coding-decoding, joining optimization channel and source coding in studio, the adaptation of these processes to various transmission and reception conditions, etc.).

The interests of society would best be served by developing flexible and reconfigurable digital satellite systems which allow the broadcasting of a range of qualities, bit rates, and different degrees of robustness. This should be particularly considered for new services operating in the recently agreed areas around 20 GHz and may also be valuable for digital services operating in the 12 GHz band. Hence the question is to study new concepts of digital TV systems which might cover the range of requirements from transparent WB-HDTV for large screens to MPTV systems and even extending to individual reception of a single conventional TV programme.

There will be a need for studying optimal distribution of terrestrial digital TV and sound stations, cellular networks, their interrelation with branched networks created for mobile radiocommunication services and so on. All this points out the possibility to propose to study a new concept for dovetailing and harmonizing terrestrial and satellite networks intended for DTV and DAB as well as other related networks (ITU-R 1993, Doc. 11/1001, section 10.10).

Alternative strategies for terrestrial broadcasting

A critical question, which television broadcasters have to answer, is the choice of future strategy in broadcasting systems. As technological possibilities increase, and the expectations of viewers increase, broadcasters will be confronted with several alternative strategies or scenarios, on which to base their future services.

At first sight it appears that the options available will probably amount to compatible analogue widescreen extensions of the current composite televisions systems, or digital (and therefore non-compatible) HDTV or conventional systems. The reality is rather more complex, largely because, in some circumstances, not all options will be open, and also because the issue of where HDTV stops and starts in quality terms can be difficult to quantify.

It is always acknowledged that the success of a new system will be linked to a multidimensional set of factors, which include the quality increment provided, the range and quality of the programmes available, and the local economic climate. With so many variables, making a meaningful model of the systems' likely success is very difficult. Nevertheless, it is necessary to begin somewhere.

The ITU-R has begun a discussion of the advantages and disadvantages of the alternative routes forward for terrestrial television, and hopes that this will provide some food for though, and helpful indications (Doc. 11A/TEMP/17(Rev.1)-E, October 1993).

To illustrate the spectrum of opinion involved in these discussions four scenarios have been identified as described below. It should be noted that the points made in describing the scenarios have been selected to represent a forthright statement of all the possible arguments in favour of the scenario without an attempt to achieve a balanced point of view.

Scenario 1: Unique use of digital systems

1.1 There is no room in the terrestrial television market for different standards, and a plurality of standards is not in the public interest.

1.2 The introduction of digital systems is inevitable, sooner or later, and analogue systems can only ever be an interim solution. In the long run, the cheapest solution is to avoid interim standards, and the most efficient approach is to go straight to digital, without passing via enhanced analogue systems.

1.3 Digital technology is superior, in the sense that it will give clearer pictures with lower signal strengths.

1.4 The use of helper signal system and letterbox transmission will never be possible for countries who use the black bands for subtitles.

Scenario 2: Use of both enhanced composite systems and digital terrestrial systems

2.1 Digital terrestrial HDTV is really many years away, and there is a significant window of opportunity for analogue widescreen systems before then. This is because of the time it will take to develop the digital system, because of today's limited display technology, and because it will take time to convert production to full HDTV.

2.2 With today's affordable and practical displays , the public will not be able to tell the difference between enhanced analogue quality and HDTV. It will be a few years until the quality benefits of digital HDTV are apparent. In any event, for feature films, which are the most important type of programme material in terms of audience size, it is nearly impossible to tell EDTV from HDTV.

2.3 Even if digital services providing less than HDTV quality are introduced quickly, the existing analogue transmission systems will continue to have a long life, and they will need to be upgraded to provide enhanced quality on widescreen receivers.

2.4 Getting the public and broadcasters used to widescreen services (whether delivered by enhanced composite or digital means, or both) will serve well the subsequent introduction of digital HDTV.

Scenario 3: Use only enhanced systems on terrestrial networks, (and possibly use digital systems only for satellite and cable)

3.1 There is no room in the terrestrial market for several standards, and a plurality of standards is not in the public interest.

3.2 Planning difficulties will make complete digital terrestrial coverage, especially with HDTV, impossible for most of Europe. Public broadcasting is founded on universal availability. It will never be possible to switch off the analogue composite broadcasts. Analogue broadcasts will always be needed, and, to compete, will need to be widescreen.

3.3 All that the public wants in terms of HDTV quality of multichannel programme choice (in addition to the terrestrial networks) will be to be provided by digital services on satellite or cable. Portable reception of terrestrial television is already adequate with existing analogue systems. There is therefore no need to introduce digital TV terrestrially. Furthermore, satellite systems will

provide digital coverage for new services at much less cost than installing thousands of new digital terrestrial transmitters.

3.4 Enhanced composite systems will provide all the public may want, or be able to appreciate, from terrestrial television, for very many years to come. There is no evidence that the public can distinguish EDTV from HDTV, particularly for feature films, which are among the most audience-attractive types of programmes.

3.5 The expense of introducing digital HDTV terrestrially will not be justified by the revenue received. EDTV will be much less expensive for the broadcaster.

Scenario 4: Retain existing 4:3 systems on terrestrial services, (and possibly use digital systems only for satellite and cable)

4.1 There is no room in the terrestrial market for several standards, and a plurality of standards is not in the public interest.

4.2 Planning difficulties will make complete digital terrestrial coverage, especially with HDTV, impossible for most of Europe. Public broadcasting is founded on universal availability. It will never be possible to switch off the analogue composite broadcasts. Analogue broadcasts will be needed.

4.3 All that the public wants in terms of HDTV quality or multichannel programme choice (in addition to the terrestrial networks) will be to be provided by digital services on satellite or cable. Portable reception of terrestrial television is already adequate with existing analogue systems. There is therefore no need to introduce digital TV terrestrially. Furthermore, satellite systems will provide digital coverage for new services at much less cost than installing thousands of new digital terrestrial transmitters.

4.4 Broadcasts in letterbox format would be foolish, because they will inevitably be annoying to 4:3 viewers, who will form the majority for many years at least.

4.5 Analogue widescreen broadcasts will always be a difficult compromise for production because the same picture needs to be received on sets with limited resolution and small screen size.

Observations

Before choosing the best route forward for terrestrial broadcasting several technical analyses would be helpful.

The first is the extent to which it will be technically possible to provide the required coverage with digital systems, and with what quality, whilst analogue systems are still being broadcast. The importance of portable reception, and how it might be improved by using digital systems also needs to be considered.

A second is an appraisal of the relative costs of providing a service in HDTV compared to providing a service in a widescreen format and the revenue sources that would be available to offset the costs.

A third is the degree of deterrence caused by the letterbox format for viewers with 4:3 receivers.

A fourth is the extent to which a widescreen receiver designed for an enhanced composite service can be adapted easily to receive a digital service or vice versa.

Even with this information, the choice will not be a simple one. In the short term it may be most prudent to pursue standardization of both enhanced and digital systems, so that the best strategic decision can be made at the time financial resources allow the extension of services.

Satellite TV broadcasting

Most of the work undertaken in Working Party 10-11S is of interest to developing countries to a lesser or greater degree since the mandate of the Working Party is the study of broadcast satellites. Some Recommendations reports deal with a range of equipment which allow for low cost receiver and minimum expenditure on the total system. Others present alternative methods in system planning and implementation. This approach is being continued in recent studies on new broadcast technologies (Figure 12).

REC. 650 - STANDARDS FOR CONVENTIONAL TV SYSTEMS FOR SATELLITE BROADCASTING IN THE CHANNELS DEFINED BY APPENDIX 30 OF THE RADIO REGULATIONS

REC. 652 - REFERENCE PATTERNS FOR EARTH-STATION AND SATELLITE ANTENNAS FOR THE BROADCASTING-SATELLITE SERVICE IN THE 12 GHZ BAND AND FOR THE ASSOCIATED FEEDER LINKS IN THE 14 GHZ AND 17 GHZ BANDS

REC. 788 - CODING RATE FOR THE WIDE RF-BAND HDTV BROADCASTING-SATELLITE SERVICE

REC. 790 - CHARACTERISTICS OF RECEIVING EQUIPMENT AND CALCULATION OF RECEIVER FIGURE-OF-MERIT (G/T) FOR THE BROADCASTING-SATELLITE SERVICE

REC. 792 - INTERFERENCE PROTECTION RATIOS FOR THE BROADCASTING-SATELLITE SERVICE (TELEVISION) IN THE 12 GHZ BAND

REC. 794 - TECHNIQUES FOR MINIMIZING THE IMPACT ON THE OVERALL BSS SYSTEM PERFORMANCE DUE TO RAIN ALONG THE FEEDER-LINK PATH

FIGURE12

Satellite TV broadcasting

The review of the 1977 12 GHz broadcast satellite plan for Regions 1 and 3 and its associated feeder links as contained in Appendices 30 and 30A should offer an opportunity to build higher efficiency and more flexibility in the plan. This in turn translates into lower costs per channel and makes the satellite service more affordable. Among the Questions that have been approved by the 1993 Radio Assembly, several are pertinent to this subject. The answers to at least three of these Questions should result in more flexibility and reduced operating costs in the broadcasting-satellite service. These are:

- Q.85-1/11 - Improved use of the bands allocated to the broadcasting-satellite service in the frequency range 11.7 - 12.7 GHz.
- Q.217/11 - Digital multiprogramme TV emissions within a satellite transponder.
- Q.224/11 - Simultaneous transmission of TV programmes on BSS and FSS services from a multiservice space station.

Technical studies on these (and other) Questions are expected to be submitted to the meetings of Working Party 10-11S during the next few years and the results used in the preparation for WRC-95 and WRC-97 in response to the item on the agenda concerning the review of Appendices 30 and 30A.

Some studies have already started. At the November 1993 meeting of WP 10-11S a revision to a draft new Report (Doc. 11/207) was prepared. Its title is "Work towards a Recommendation on the review of the BSS frequency plans for Region 1 (11.7 - 12.5 GHz) and Region 3 (11.7 - 12.2 GHz) and associated feeder links plans as contained in Appendices 30 and 30A of the Radio Regulations". It addresses directly most of the issues to be considered in item 3 a) of the WRC-95 agenda. Other reports of 10-11S are also relevant to this agenda item such as a draft new Report on digital multiprogramme television broadcasting by satellite [Doc. 10-11S/TEMP/91(Rev.1)], and draft new Report on considerations for the introduction of BSS HDTV, [Doc. 10-11S/TEMP/57(Rev.3)].

The following Annexes 2, 3 and 4 contain excerpts of texts from the above reports, which give an indication of the type of studies under way.

Video recording

Programme exchange is a major area of concern, including format for television tape recording and telecine (WP 10-11R) (Figure 13).

REC. 265	-	STANDARDS FOR THE INTERNATIONAL EXCHANGE OF PROGRAMMES ON FILM FOR TELEVISION USE
REC. 496	-	ANALOGUE COMPOSITE TELEVISION TAPE RECORDING (STANDARDS FOR THE INTERNATIONAL EXCHANGE OF TV PROGRAMMES ON MAGNETIC TAPE)
REC. 657	-	DIGITAL TELEVISION TAPE RECORDING (STANDARDS FOR THE INTERNATIONAL EXCHANGE OF TV PROGRAMMES ON MAGNETIC TAPE)
REC. 716	-	AREA OF 35 MM MOTION PICTURE FILM USED BY HDTV TELECINES
REC. 781	-	HDTV TELECINE COLOUR BALANCE FOR FILM PROGRAMMES
REC. 783	-	AREA OF 35 MM RELEASE PRINT FILM USED FOR 16:9 CONVENTIONAL TV SYSTEMS PREFERRED STORAGE CONDITIONS FOR TV TAPE RECORDING AND CINEMATOGRAPHIC FILM

FIGURE 13

An overwhelming proportion of TV programmes is constituted by video recordings, which are being exchanged on an increasing scale. The advent of new digital TV systems, including HDTV, ETV, MPTV, widescreen TV, etc., coupled with the use of digital compression in video recording, calls for a number of studies in this field. They would be particularly addressed to the evaluation and standardization of the signal parameters at the recorder output and the digital TV programme storage devices (computers, storage, animation units, desktop systems, etc.). Thus it is possible to propose the study of a new concept of measurements in video recording (ITU-R 1993, Doc. 11/1001, section 10.16).

Study Group 11 will continue to monitor technology progress on tape recording and on the use of film for "conventional" television applications, video disks, various memory and storage devices and to regularly update the existing Recommendations on those subjects and also develop new ones.

The main past and current activities in support of the interests of developing countries are recalled below.

1. Correct operating practices are recommended for television tape recordings; this facilitates the exchange of recorded programmes and promotes the setting up of correct in-house practices.

2. It is planned to issue new Recommendations that will address the international exchange of programmes by the use of the new digital television recording formats currently being placed on the market; this will help developing countries to choose those recordings formats that are best adapted to their situation.

3. Correct operating practices are recommended for the use of film programmes in television; this currently applies to 35 mm and 16 mm film; it will also apply in the future to the use of Super16 film; again this facilitates uniform operation based on correct operating principles.

4. A Rapporteur is currently drafting a Recommendation on practices for the correct storage of films and recorded programme tapes; this will help developing countries to ensure a long life to their archives of programmes, some of which may even have a historical value.

5. The current Recommendations on the exchange of television programmes for viewing purposes and on the international exchange of ENG recordings are also of interest to developing countries; they assume a special importance for those developing countries where budget constraints may prompt broadcasters to resort to the use of ENG equipment or even of semi-professional or consumer-class equipment in some areas of their technical operation.

Progress in TV measurements (Figure 14)

REC. 500

METHOD FOR THE SUBJECTIVE ASSESSMENT OF THE QUALITY OF TELEVISION PICTURES

REC.710

SUBJECTIVE ASSESSMENT METHODS FOR IMAGE QUALITY IN HIGH-DEFINITION TELEVISION

REC. 802

TEST PICTURES AND SEQUENCES FOR SUBJECTIVE ASSESSMENTS OF DIGITAL CODECS

REC. 812

SUBJECTIVE ASSESSMENT OF THE QUALITY OF ALPHANUMERIC AND GRAPHIC PICTURES IN TELETEXT AND SIMILAR SERVICES

REC. 814

SPECIFICATIONS AND ALIGNMENT PROCEDURES FOR SETTING OF BRIGHTNESS AND CONTRAST OF DISPLAYS

REC. 815

SPECIFICATION OF A SIGNAL FOR MEASUREMENT OF THE CONTRAST RATIO OF DISPLAYS

FIGURE 14

All new technologies depend on quality assessment for the process of system selection. This will be particularly important in the current study period when a selection of several new TV systems will be made. It was observed that the establishment of monitoring techniques and appropriate devices must precede new TV system implementations. By the time such systems are brought into service, a usable measurement database should be available.

New measuring signals and methods for processing them will be required to measure existing 6-, 7-, and 8-MHz channels to accommodate the planned transmission over them of signals for enhanced TV systems, HDTV 6-7-8 and MPTV 6-7-8 systems. Such signals will also contain analogue/digital or fully digital picture information, digital sound and additional information signals, test signals and other types of signals.

Subjective assessment of digital TV systems requires a somewhat different methodology where the picture content failure characteristic, and the probability of occurrence of the picture material play a very important role. For channel monitoring in the transmission of digital TV signals with scalable picture quality, new approaches will be required to the digital test line, weighting functions and the basic design of quality meters, a new family of TV measuring devices, based on statistical processing of a large number of picture image files and on development of optimized algorithms for their processing.

A significant further development of this matter is expected in the next years. The subjective testing of complex television chains is also very important.

The work of WP 11E is believed to be beneficial to developing countries by enabling them to optimize their utilization of new techniques and in particular digital techniques that permit substantial spectrum saving. The work of WP 11E consists globally in specifying the basic procedures and techniques necessary to evaluate the picture quality of TV services. It is to be used in conjunction with that of other Working Parties or Task Groups that develop new technologies or systems.

In order to be more readily usable without requiring preliminary costly investments, the structure of the various relevant Recommendations has been improved in order to be easier to use in the context of a specific TV service.

A first series of four Recommendations relates to general purpose methods:

- List of basic procedures usable for all visual picture quality assessments (Recommendation ITU-R BT.500-5). This Recommendation contains the main two procedures used for all types of subjective assessments. The first one addresses the evaluation of the global picture quality, while the second one allows the evaluation of the impairments in the picture. It also gives readily usable instructions on how to process and present results.
- Alignment and setting procedures for brightness and contrast of picture monitors used in subjective assessments by means of the test signal (Recommendation ITU-R BT.814).
- Specification of a signal for the measurement of the contrast ratio of monitors (Recommendation ITU-R BT.815).
- Specification of the relationship between subjective quality and analogue degradation (Recommendation ITU-R BT.654). This particularly addresses composite analogue systems.

A second series of five Recommendations applies to specific television systems, addressing conventional TV, digital TV, enhanced composite systems, HDTV and the specific problems of alphanumeric and graphic pictures. These Recommendations are related to the application of general procedures specified in Recommendation ITU-R BT.500-5 to the evaluation of specific television systems:

- Subjective assessment of conventional TV systems (Recommendation [Doc. 11/189]).
- Subjective assessment of digital television systems at or near the quality of conventional systems (Recommendation [Doc. 11/182]).
- Subjective assessment of enhanced composite analogue systems (Recommendation ITU-R BT.811).
- Subjective assessment methods for image quality in high definition television (Recommendation ITU-R BT.710), which takes into account hierarchical services (allowing gradual introduction for low-cost receivers).
- Subjective assessment of the quality of alphanumeric and graphic pictures in teletext and similar services (Recommendation ITU-R BT.812).

A last Recommendation deals with the objective measurement of the picture quality and aims at defining measuring methods and equipment for such a purpose (Recommendation ITU-R BT.813).

All this documentation will be the main component of a handbook on subjective assessment to be issued in 1994.

Future work will be mainly addressing the improvement of the relevant Recommendations concerning the evaluation of new digital services, including multiprogramming and the use of a hierarchical approach. Although the development of a genuine quality measuring device is not likely to be completed in the near future, important progress is anticipated. The overall set of subjective and objective assessment means will facilitate the matching of the selected service parameters to the needs to be satisfied.

Harmonization of TV standards between broadcast and non-broadcast applications

First Recommendation on "Harmonization of digital methods for delivery systems for TV services to the home" was prepared. Rapidly increasing mass production of computers and new 16:9 format receivers stresses the need for forcing further efforts of WP 11F aiming at harmonizing TV broadcasting technology with perspective computers.

Prospects for videoconferencing developments also call for the need for further actions to harmonize standards for broadcast TV and videoconferencing. This work has to be done in close cooperation with the TSS, the IEC, and the ISO.

In some applications (computer graphics, printing, movies and so on), an extremely high resolution TV system is expected. Studies on digital image architecture are being conducted in some organizations. Working Party 11F should start studying the relationship that exists between such an extremely high resolution imagery broadcasting and non-broadcasting systems; and what kind of parameters should be determined for these systems such as programme origination, transmission and display terminals.

Conclusions

1. It is necessary to emphasize the need for a clear view of the opportunities presented by current technical development and for the formulation of tasks and strategies that would pave the way into the 21st century. With 1 000 million TV sets in the world today, and these having a long expected lifetime, one had to be relatively conservative in the planning of new services. On the other hand, digital techniques are introducing exciting new possibilities. Decisions made in the past about the choice of 525 and 625 monochrome and NTSC, PAL, SECAM colour systems were relatively easily made as compared with today's requirement for a family of digital standards covering both standard- and high-definition television. This introduces new challenges in terms of spectrum management for television broadcasting: power levels, interference and sharing criteria, protection ratios for terrestrial and satellite systems, requiring extensive coordination among the countries involved and between organizations within countries.

2. The problem of new dynamics of TV coverage in developing countries can be solved most effectively by harmonizing the development of terrestrial and BSS and FSS satellite television broadcasting networks, making full use of progress in new television technologies.

3. In parallel with improvements in technology and in planning methods for existing analogue TV systems within the framework of the current frequency plans, the development of TV coverage areas will be considerably accelerated by digital techniques for the processing, compression and by transmission of TV signals, and by multiprogramme digital TV broadcasting systems. Together with more precise ways of developing the new technical bases for the planning of terrestrial television broadcasting networks in developing countries.

4. An important stage in the new dynamics of TV coverage in developing countries will be the introduction of the Plan for satellite television broadcasting in the 12 GHz band, a review of which is included in the agendas of WRC-95 and WRC-97. Here again advances in digital television broadcasting technology will play a role.

5. New approaches to the development of interactive television systems, will enable television viewers and users of large volumes of digital television data to transmit different types of information to the corresponding collection and processing centres need to be studied with account being taken of the interests of developing countries in mind.

6. The important results achieved by Study Group 11 have confirmed the vitality of this Group as an international forum for the broadcasting activities.

Study Group 11 will play a dominant role in the new era of digital TV, HDTV and HRI that will characterize the 21st century. It will be an ideal international framework for the worldwide recognition of these studies placing new important challenges for broadcasting, computer, multimedia communication industry. It will be very useful for developing countries.

7. Special thanks are addressed to the ITU-R secretariat, and in particular to Mr. R.C. Kirby, Director, Mr. R.L. Nickelson, Mr. G. Rossi and Mrs. R. Zecha for their valuable and efficient support.

I wish to express profound thanks to Mr. P. Kantchev, Counsellor BDT for the teamwork and valuable advice offered.

Biography

Professor Dr. Mark Krivocheev is an academician and Head of a Scientific Department on Television in the Radio Research Institute (NIIR) in Moscow (Russian Federation).

In 1946, Prof. Krivocheev designed a scanning unit which, for the first time led to realization of a new standard 625-line raster. He headed the studio production complex of Moscow TV Centre. At the beginning of September 1948, he was fortunate in being able to press the button which inaugurated the first-in-the-world 625-line TV transmission. The first frequency plan for USSR TV stations was worked out by Prof. Krivocheev in 1951. He is the originator or co-originator of more than 90 inventions and patents in TV technology. Books and papers of Prof. Krivocheev are published in several countries.

Prof. Krivocheev has been a participant and leader in international TV studies of the ITU's (CCIR) since 1948, serving as Vice-Chairman from 1970, and from 1974 as Chairman of ITU-R TV Study Group (SG 11), formerly CCIR. Prof. Krivocheev's contributions have been widely recognized by national and international bodies. He is Honorary Member of the A.S. Popov Society, of the IEEE, of the Institute of TV Engineers of Japan (ITEJ), Honorary Fellow of the British Kino, Sound and TV Society (BKSTS). He is also a Fellow of the SMPTE and of the Chinese Institute of Electronics (CIE).

ANNEX 1

INTERNATIONAL TELECOMMUNICATION UNION

RADIOCOMMUNICATION STUDY GROUPS

Revision 2 to
Document 11/216-E
3 March 1994
Original: English

Study Group 11

DRAFT NEW QUESTION [DOC. 11/216]

INTERACTIVE TELEVISION BROADCASTING SYSTEMS*

The ITU Radiocommunication Assembly,

considering

a) the progress in information processing and transmission technologies;

b) the rapid progress towards enhanced and digital television delivery systems using terrestrial, cable, satellite and network channels;

c) the need within such systems for interactivity for a variety of purposes;

d) the development of transmission methods suitable for use in receiving from viewers return information related to the programme material (vision, sound and data);

e) the large number of domestic receivers likely to be impacted by the adoption of interactive services,

decides that the following Question should be studied

1. What are the possible channels to return data from the receiver to the broadcaster and other users of such data for different reception media (e.g. cable, common antenna, terrestrial or satellite reception?

2. What interactive services are likely to be needed and what are the requirements for the return data channel?

3. What are the appropriate management methods and modulation/transmission techniques for such channels?

4. For the systems using radio-reception, what allocated frequencies may be best suited and what are the planning objectives for such return channels?

5. What possibilities exist for the harmonious use of other available data communications channels (e.g. switched network, PCS, LEOS etc.) to provide the return channel for interactive broadcasting?**

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* This Question should be brough to the attention of the IEC, the ISO and the Telecommunication Standardization Bureau of the ITU.

** See also Recommendation ITU-R M.687 and Recommendations ITU-T S 750, 751, 770 and 771.

further decides that

1. the results of the above studies should be addressed to the preparation of new Recommendation(s);

2. the studies should be completed within the 1997-1998 study period.

ANNEX 2

INTERNATIONAL TELECOMMUNICATION UNION

RADIOCOMMUNICATION
STUDY GROUPS

Revision 1 to
Document 10-11S/TEMP/91-E
25 October 1993
Original: English only

Source: Doc. 10-11S/135, 136

DRAFT NEW REPORT

WORK TOWARDS A RECOMMENDATION ON DIGITAL MULTI-PROGRAMME TELEVISION BROADCASTING BY SATELLITE

(Draft new Question [Doc. 10-11S/TEMP/67(Rev.1)])

1. Introduction

In response to Question [10-11S/TEMP/67(Rev.1)], this Report provides preliminary information towards the development of a Recommendation on multi-programme television broadcasting by satellite. A draft of a possible new Recommendation is given in Appendix 1, the considerations of which are of interest to this Report. Preliminary studies on this topic are summarized below.

2. Multiplexing techniques

There are several multiplexing techniques available for accommodating multiple television programmes within a single transponder. Three of these techniques are discussed below: time division multiplexing and two forms of frequency division multiplexing (FDM).

In the case of TDM, the TV programmes are time multiplexed on a single carrier, while in the case of FDM the TV programmes are carried by N different independent carriers, sharing the transponder bandwidth. Doc. 10-11S/135 discusses a comparison of these two techniques. QPSK modulation with convolutional code rate 3/4 is assumed in the study, with total useful bit rates between 34 to 45 Mbit/s in a 36 MHz transponder. Similar bit rates could also be accommodated in transponder bandwidths in the range 24 to 33 MHz, modifying the coding rate accordingly. The results show that the C/N penalty of the FDM approach is relevant. For example the FDM approach requires 2.3 dB (2 carriers per transponder) and 5.8 dB (4 carriers) additional C/N with respect to TDM, for an equal total bit rate of 34 Mbit/s.

Within FDM, orthogonal frequency division multiplex (OFDM) modulation, both for digital terrestrial television systems, and for satellite channels, potentially would allow the achievement of maximum commonality for digital emissions on the various media (terrestrial, cable, satellite). However, in light of investigations [1] and Doc. 10-11S/136, it can be concluded that this modulation technique does not seem to provide the best exploitation of the satellite power resources, because of its high sensitivity to TWTA non-linear distortions. It should be noted that these preliminary conclusions apply to fixed reception only, with directive antennas, for which multipath propagation and selective fadings are not expected. In the case of portable or mobile

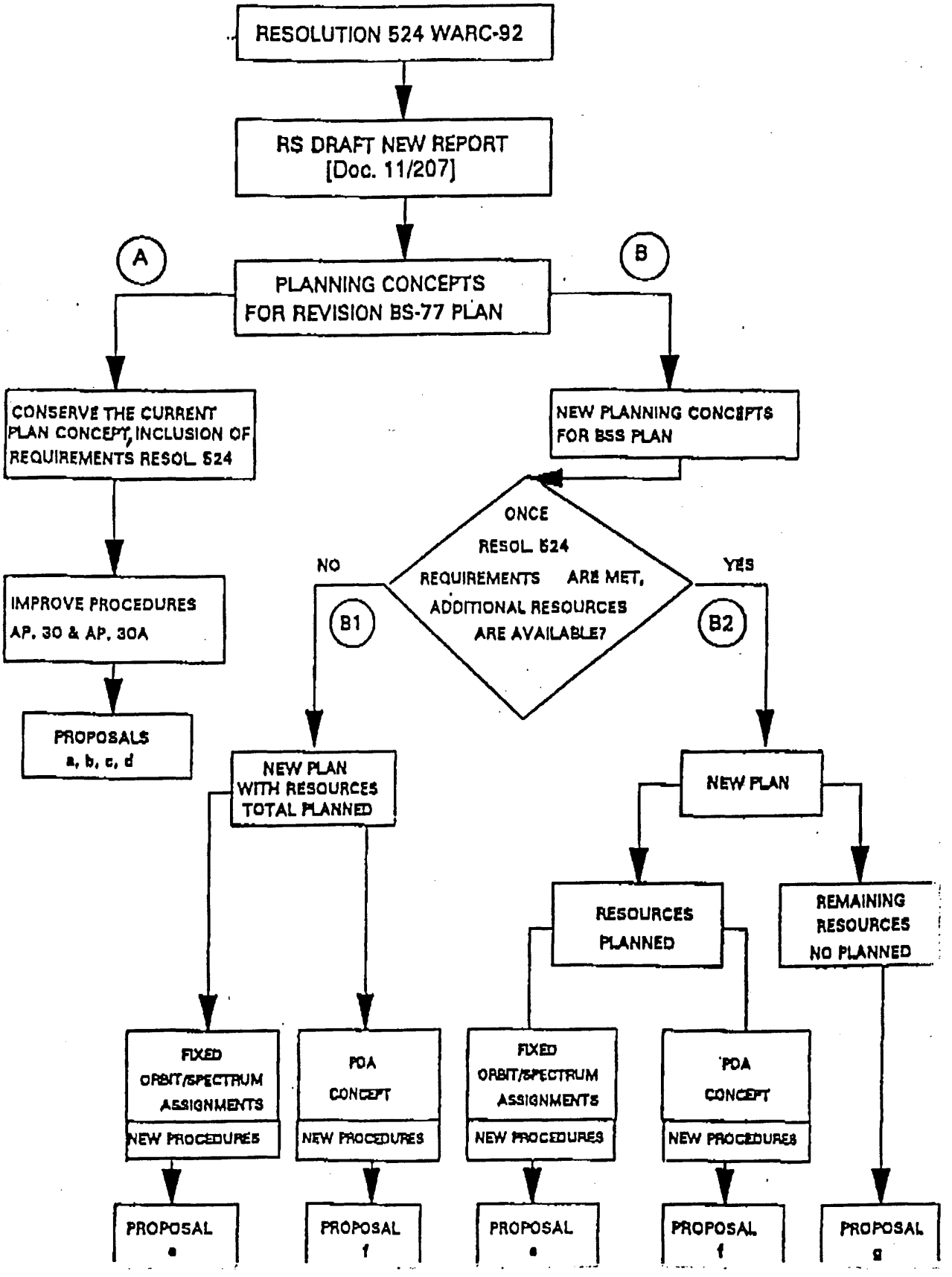
reception (such as for the case of digital audio broadcasting by satellite), the advantages of OFDM in terms of selective fading margins could largely compensate for the losses due to the sensitivity to non-linear TWTA distortions.

Reference

[1] COMINETTI, M., MORELLO, A., and VISINTIN, M. - "Digital multi-programme TV and HDTV by satellite", EBU Tech. Review No. 256, Summer 1993.

FIGURE 2

Summary of possible ways to proceed in order to improve the flexibility of BSS-77 Plan



ANNEX 3

INTERNATIONAL TELECOMMUNICATION UNION

RADIOCOMMUNICATION
STUDY GROUPS

Document 10-11S/TEMP/86-E(Ed)
22 October 1993
Original: English only

Source: Doc. 10-11S/TEMP/86

PRELIMINARY DRAFT NEW RECOMMENDATION

ON DIGITAL MULTI-PROGRAMME TELEVISION BROADCASTING BY SATELLITE

(Question 10-11S/TEMP/67(Rev.1))

[The ITU Radiocommunication Assembly],

considering

a) that digital emissions of multi-programme TV signals are technically possible owing to the advances in video compression technique (a data rate from 40 Mbit/s to about 60 Mbit/s can for example be accommodated in a 27 MHz wide channel);

b) that digital emissions may require less protection against interference than analogue emissions and thus, by virtue of this technique, spectrum efficiency may be improved;

c) that the digital multiplex can provide greater flexibility as to what concerns the number of programmes and the total data rate associated with each programme contained in the same multiplex;

d) that digital compression techniques for the sound allows the transmission of CD quality multichannel sound for multilanguage and for surround sound application with relatively low data rates (typically 100 kbit/s per monophonic sound),

considering further

e) that multi-programme satellite broadcasting services are currently planned and will begin operation by 1994 in the United States and by 1995 in Europe;

f) that the ITU has been studying integrated services digital broadcasting (ISDB) for many years;

g) that ISO/IEC is currently standardizing vision and sound compression as well as multiplexing techniques for multi-programme television and sound transmissions (ISO/IEC JTC 1/SC 29 MPEG-2 family);

h) that for the purpose of standardization of multi-programme satellite broadcasting and cable distribution in Europe, a memorandum of understanding has been signed by more than a hundred entities (manufacturers, broadcasters, operators and research centres) and that a draft European Telecommunications Standard will be ready for public enquiry in early 1994,

Noting - that the interest of the general public will best be served by a development of an open system which could allow receiver technology to be used throughout the world.

[unanimously] recommends

1. that the multiplex should be flexible enough to allow, in compatible form, the association of all or of part of the available data rate to one or several broadcasting services sharing the same multiplex;

2. that all types of broadcasting (television, sound radio, data services) could be accommodated by the emission system;

3. that the system to be used should conform with the system described in the attached annex.

Annex to be developed

ANNEX 4

(from Doc. 11/207, 9 December 1993)

Working Party 10-11S

DRAFT NEW REPORT [DOC. 11/207]

WORK TOWARDS A RECOMMENDATION ON THE REVIEW OF THE BSS FREQUENCY PLANS FOR REGION 1 (11.7 - 12.5 GHZ) AND REGION 3 (11.7 - 12.2 GHZ) AND ASSOCIATED FEEDER-LINK PLANS AS CONTAINED IN APPENDICES 30 AND 30A OF THE RADIO REGULATIONS

(Resolution No. 524, WARC-92)

1. Introduction

In 1977 a frequency plan was established by the ITU which regulates the use of the BSS in the band 11.7 - 12.5 GHz (Region 1) and 11.7 - 12.2 GHz (Region 3). The plan assigned, with a few exceptions, five channels to each country. The plan was based on frequency modulation of the analogue TV systems PAL, SECAM, NTSC with one FM sound-subcarrier. In accordance with the Radio Regulations (Appendix 30) other modulation systems are, however, not precluded "provided that the use of such characteristics does not cause greater interference than that caused by the system considered in the appropriate Regional Plan".

Since 1977, new advanced analogue TV standards have been developed, such as the MAC/packet family, with its compatible evolution toward HDTV through the HD-MAC standard, and the MUSE system, both of which allow a wide screen format (16:9) with digital sound. They operate, as well as the digital sound radio system (DSR), under the above-mentioned provisions.

Furthermore, digital systems, including HDTV, are now under development which may be used at 12 GHz. Improvements have also been made in satellite technology which reduce the need for orbit position selection in order to establish eclipse protection.

DTH (direct to home) services in the FSS band (fixed satellite service), no longer penalized by the relatively low e.i.r.p.s, owing to the drastically improved receiver sensitivity and a very efficient and economical approach, achieved encouraging audience results, because of the large number of channels available from a single satellite and because of the wide, often regional coverages.

All these factors have contributed to the need for a modernization of the WARC-77 Plan.

3.2 Digital systems

By adopting digital techniques, the capacity and the flexibility of the Plan can already be substantially improved without the need for change. Keeping the Plan as it stands but using digital modulation each assigned channel could provide increased programme capacity (for normal definition pictures). Owing to the lower requirements for protection ratios, wider coverages could be achieved. The overall capacity could be further increased if, eventually, the Plan itself would be revised.

Apart from improving the antenna characteristics of the home receiver terminal the capacity and hence the flexibility of the existing Plan can only be increased by applying systems requiring less protection than the FM reference system. Such a solution is offered by the adoption of digital modulation. In addition, this approach drastically reduces the power requirements on board the satellite.

Also the use of digital systems would significantly reduce any interregional sharing problems around 12 GHz.

At present, a large number of projects on digital TV and HDTV are in progress, dealing with source coding, point-to-point satellite links, wide RF-band HDTV in the 22 GHz band and terrestrial TV/HDTV [1, 2, 10].

The growing interest in digital picture coding compression techniques is based on the mos recent results which have proved the feasibility of multi-programme TV transmission via satellite in the 12 GHz band.

The introduction of digital techniques would allow an improvement in the channel capacity Each individual WARC-BS-77 channel assigned to a service area could provide, a number of EDTV programmes (Enhanced Definition TV, 16:9 aspect ratio, Recommendation ITU-R BT.601, with a bit rate of about 11 Mbit/s for each programme) or an even larger number of SDTV programmes (Standard Definition TV, equivalent to PAL and SECAM quality, with a bit rate of about 5.5 Mbit/s) which are time multiplexed on a single carrier.

As an alternative to the multi-programme TV transmission, at least one HDTV programme could be transmitted.

3.2.1 Characterization of a digital multi-programme TV/HDTV approach for the WARC-BS-77 Plans

3.2.1.1 Example system

A WARC-BS-77 channel allows the transmission of about 60 Mbit/s useful bit rate, using TCM-8 PSK (2/3), while complying with the levels of interference (both CCI and ACI) required by the Plan (i.e. with the protection ratios required for the analogue system). See detailed information in [5], which also describes in a parametric study other modulation schemes trading in data capacity against C/N and C/I requirements.

Other modulation and channel-coding systems, based on QPSK modulation, convolutional punctured inner codes and Reed-Solomon outer codes, are being proposed. Since these systems, although less spectrum efficient, require reduced C/N and C/I with respect to TCM-8 PSK (2/3) at 60 Mbit/s, this latter system will be considered in the following as a worst case to assess the protection ratios and power requirements.

3.2.1.2 Service continuity and power requirements

In the 12 GHz band propagation problems are not so pronounced that layered coding would necessarily be required. In rain zone K for example, a power margin of 5.5 dB (this value includes the increase in sky noise) covers 99.7% of the worst month (elevation about 35°). Applying this power margin and assuming a 60 cm receive antenna and the front end noise figure of 1.5 dB, a minimum e.i.r.p. of 56 dBW is required for a given location in order to provide 12 dB C/N in 27 MHz of bandwidth for 99.7% of the worst month. This C/N value corresponds to the total drop out threshold (i.e. BER = 2.10-3) for the example TCM-8 PSK system providing 60 Mbit/s of useful bit rate, including 1.5 dB of implementation margin and 1 dB interference margin [5].

Under the same conditions, a C/N value of about 9 dB corresponds to the drop-out threshold for the case of QPSK (3/4) system, providing 45 Mbit/s of data rate before convolutional coding.

3.2.1.3 Protection ratio considerations

Table 1 gives the protection ratios of the example digital system with a useful bit rate of 60 Mbit/s versus analogue PAL and MAC at the threshold of visibility (C/N = 30 dB for the analogue systems) [24]. The protection ratios of PAL and MAC interfered by the digital signal have been obtained by expert subjective assessments [viewing distance 4H, "clown" still picture, FM frequency deviation 13.5 MHz/V in 27 MHz receiver bandwidth], making use of a satellite simulator with TWTA at saturation to produce side-lobe regeneration on the digital signal. The protection ratios of the digital signal interfered by MAC or by another digital signal of the same baud rate have been obtained by computer simulations, and refer to a C/N degradation of 1 dB (at BER = 2.10-4 after Viterbi decoding) of the digital signal due to interference.

It should be noted that the figures of Table 1 refer to a 38 MHz satellite OMUX filter (-3 dB bandwidth). The protection ratios have been measured using a 27 MHz receiving filter for the analogue signal, while a receiving filter of 30 MHz has been assumed for digital signals.

TABLE 1

Protection ratios of digital and analogue systems on WARC-77 channel matrix*

Wanted signal	Unwanted signal	Protection Ratio*	
		CCI	ACI
PAL/FM	PSK R_s = 30 Mbaud	25 (19)	14 (11)
D2-MAC	PSK R_s = 30 Mbaud	23 (18)	15 (12)
8 PSK TCM 2/3 R_s = 30 Mbaud	D2-MAC	17 (17)	11 (13.5)
8 PSK TCM 2/3 R_s = 30 Mbaud	PSK R_s = 30 Mbaud	16	11.5

* The frequency deviation of 13.5 MHz/V is normally used for analogue signal. Figures in the brackets refer to the frequency deviation of 22 MHz/V and 33 MHz receiver bandwidth.

Note - R_S = Modulator symbol rate.

The co-channel protection ratios are significantly lower than the value of 31 dB required by the WARC-77 Plan. The ACI protection ratios are at the limits of the WARC-77 requirements (i.e. 15 dB) in the case of digital system interfering with analogue FM, while a 4 dB margin is achieved for D2-MAC interfering to digital. This gives the possibility of using for the digital system an e.i.r.p. reduced by 4 dB with respect to the analogue signals. In a full digital exploitation of the Plan, a 3.5 dB margin is achieved on PR (ACI) and 15 dB on PR (CCI), allowing to achieve a greater flexibility on the coverage area design. It should be noted that digital systems tend to produce significant degradations on the second adjacent channel, but this can be countered by a suitable OMUX filter in the satellite.

Another consequence of a lower co-channel protection ratio is the possibility of a more efficient reuse of the same RF channel. Planning studies [19] of digital satellite systems by the EBU, primarily intended for the 21 GHz band, demonstrate that it could be possible to have the whole frequency band available for a given service area on its orbit position.

If this approach, the so-called "common frequency plan", can be used in the 12 GHz band then this frequency band can be used freely on each orbit position without an a priori planning. In order to guarantee to all countries an access to the resource, it would however be preferable to make an a priori selection of the orbit position.

3.2.1.4 Further approach for digital HDTV in the WARC-BS-77 Plan

From further studies [8] it appears that HDTV could also be broadcast in a WARC-77 Plan channel at bit rates of about 45 Mbit/s, with QSPK modulation and rate 3/4 FEC without prejudice to the existing Plan.

With the same modulation parameters, it could be possible in some cases to transmit 70 or 140 Mbit/s by merging two or three BSS standard channels, respectively, with the same polarization without prejudice to the existing Plan. This of course would be subject to the geographical and already planned conditions, and the agreement of administrations concerned.

This accommodation could be done by inserting these carriers into the channelling scheme of the present Plans and transmission of these carriers would result in an exchange of the C/I and C/N margins: sizeable improvement of C/I margins, at the cost of a slight degradation of the C/N margin (less than 0.4 dB). Overall, the corresponding modifications of the Plan would generally result in an improvement in the interference situation.

Conversely, 45 Mbit/s carriers would not suffer excess interference from the regular carriers of the Plan. In the case of 70 Mbit/s or 140 Mbit/s HDTV, it is difficult to draw a general conclusion. However, the analysis of a few examples in the most congested area of the Plan (31° West to 5° East) indicates that this situation should result in interference levels well within the acceptable criterion, at least for the 70 Mbit/s HDTV carriers.

The present evolution show that HDTV carriers transmitted in the Plan assignments tend to use a lower e.i.r.p. than the nominal Plan value, e.g. 57 dBW instead of 61 dBW.

5. How new procedures may help to improve flexibility

5.1 New planning objectives

The revision of the WARC-BS-77 Plan for Regions 1 and 3 of Appendices 30 and 30A should (in accordance with Resolution No. 524):

- maintain each country's assigned BSS capacity in the Plan, as a minimum;
- provide for the needs of new countries;

- protect notified systems which are in conformity with Appendices 30 and 30A;
- take account, as far as possible, of systems which have been communicated to the IFRB under Article 4 of Appendices 30 and 30A.

In addition further key assumptions for a revision of the WARC-BS-77 Plan should be the following:

- to consider the required C/N ratio;
- to consider new protection ratios for analogue TV systems;
- to consider the planning requirements of broadcasting of digital TV signals;
- to consider the possibility of improving the channel capacity by introduction of digital multi-programme TV transmission;
- to consider improved receiver antenna characteristics;
- to consider a new orbital planning concept which establishes the coexistence of planned orbital locations and non-planned resources;
- to consider the needs for some administrations to implement multi-mission payloads (BSS, FSS,...).

Detailed planning targets should be:

- to define the picture impairment grade of the received signal in terms of nominal quality and service continuity taking into account the experience gained with satellite broadcasting up until now. The nature of the service (whether conventional TV or HDTV, whether analogue or digital) should be also taken into account;
- to define in accordance with the preceding point the reception quality objectives (the S/N ratio or bit-error rate, threshold margin and the protection ratios);
- to continue to permit (within the restrictions of the protection ratios) changes to the modulation scheme of an RF channel;
- to introduce the principle of supranational coverages in addition to national coverage;
- to explore maximum commonality of parameters between BSS and FSS (modulation parameters, e.i.r.p., antenna diameters, polarization);

2 Considerations for the introduction of additional analogue and digital TV broadcasting services

Several lines of action (also in some combination) seem possible:

a) To utilize each RF channel to broadcast, on the same channel, arbitrarily an analogue or a digital TV signal. To this end the coding and modulation characteristics of the digital signal must be compatible with the system parameters (C/N ratio, channel bandwidth and protection ratios) agreed for analogue broadcasting. These parameters must be compatible for both the digital versus digital and the digital versus analogue (and vice versa) case.

This implies that the quality of the received TV picture (in terms of the CCIR Recommendation 500 quality scale for analogue and in terms of the maximum acceptable bit error ratio for digital) be agreed in advance for what concerns the effects both of the interferences and the thermal noise.

- As concerns analogue reception, the following point should be agreed: either to continue to accept a minimum image quality degradation due to the interference (e.g. a 4.5 impairment grade) as per the WARC-BS-77 Plan, or to revise this Plan on the basis of a unique overall (thermal noise plus interferences) picture impairment quality grade (as it is common practice in the direct-to-home transmissions in the FSS band).
- As concerns digital reception, reference should be made to two agreed bit error ratios (BER) due to noise: for "high quality", and for "outage" (i.e. "service continuity") respectively (see Report ITU-R BO.1075 Chapter 2). Consequently, in order to plan a digital broadcasting system, reference should be made to the two corresponding C/N values.

Reference should be made also to an agreed amount of the C/N degradation due to the interference. Moreover the C/N values to be considered should take into account a suitable system implementation margin. It is furthermore to be noted that the BER value corresponding to a "high quality" or to the "outage" is dependent on the coding and modulation system. Choosing a BER, and a corresponding C/N value, it implies that the modulation and coding system itself be compliant with the chosen limit whatever is the system chosen.

Administrations are urged to express their views on these points. Because according to resolves c) and d) of WARC-92 Resolution No. 524 analogue broadcasting cannot be neglected and consequently should be assumed to coexist with the digital one for a certain number of years, the set of C/N and protection ratio values to be chosen should be valid both for analogue and digital systems assuring, at the same time their mutual compatibility. In choosing the C/N and protection ratio values for analogue systems, the experience gained in the direct-to-home transmissions in both the BSS band and in the FSS band should be taken into account.

b) to reserve a suitable continuous subband in the centre of the 11.7 - 12.5 GHz band and to adequately re-plan it. Note that all administrations sharing the same orbital position are affected equally. For a start it seems thus suitable to reserve a continuous band from channel 17 to 24. The inherent repetition of assigned channels in the WARC-BS-77 Plan makes it possible to free a continuous central band of 153 MHz (8 channels) or 306 MHz (16 channels) wide and so on. Eventually this centre band could be extended to coincide with the entire 11.7 - 12.5 GHz band. This approach could be especially useful if digital broadcasting services with high bit rates should be introduced (e.g. studio quality HDTV).

The continuous central band could be utilized for two purposes: - to realize supranational coverage from the same orbital position of the WARC BS-88 Plan utilizing the existing RF-channels (at the same time both for analogue and digital broadcasting) and to completely replan the WARC-BS-77 Plan in order to realize a more suitable digital broadcasting. In particular a virtually transparent studio quality HDTV could be implemented in such a frequency slot satisfying at the same time, the requests of the WARC-92 Resolution No. 524.

c) Due to the fact that all satellite networks may not be satisfied with the maximum number of channels allotted, or coverage areas, etc. and that present demand for the future use of the BSS band in Europe (Europesat, Kepler, UKDBS, DBL, HISPASAT-2, etc.), it would be convenient in order to facilitate the coordination to look at the concept described in § 5.4.

On the one hand, all countries would have a number of channel allocations to satisfy national demand on an equality basis. This planification, according to the technological improvement of TVRO equipment, less eclipse constraints operation, satellite manufacturing and minimum orbital separation will be done in such a way that each country's assigned BSS capacity in the Plan will be maintained. In this planning study, all new countries (ITU members) should be taken into account as well as previously notified systems which operate in accordance with Appendices 30 and 30A. Provisions for the addition of further upcoming new countries should be established.

On the other hand, due to the advantage that the above requirements could be accommodated without using all the available orbit-spectrum resources (the frequency band 11.7 - 12.5 GHz from all possible orbital locations), one or preferably several orbital arcs, possibly in conjunction with a limited number of channels only, will be identified for which there is no plan, i.e., there are no allocations for certain orbital locations and/or a certain number of channels in the concerned orbital position and therefore, in this part of the orbit-spectrum resource, very flexible procedures could be applied.

This new planning approach implies that new orbital positions (or arcs) be determined in order to permit an analogue/digital broadcasting without causing harmful interference to the already planned orbital positions and channels.

To this end the protection ratio values to be respected are to be determined in advance (i.e. to confirm the WARC-BS-77 Plan values or to determine new values).

In addition it could be possible to use the aggregate interference criteria in the establishment of a newly revised plan, and to subsequently use a single entry C/I criteria for modifications to the revised plan. This approach may improve the flexibility of the revised plan as the insertion of new networks becomes easier. The following two paragraphs compare the basic characteristics of the existing modification procedure for the WARC-77 BS Plan with those of a possible "single entry C/I" approach.

Considering the existing WARC-77 Plan protection procedure which is based on a maximum degradation of 0.25 dB on equivalent protection margin (EPM) (effectively based on an aggregate C/I ratio):

- each additional network can progressively degrade the aggregate C/I by an additional 0.25 dB without limit. For digital systems it is important to preserve a minimum guaranteed C/I;
- as the value of the aggregate C/I becomes lower and lower, it could be possible for any new network to create steadily higher and higher interference while still conforming with the allowed EPM degradation (0.25 dB).

Considering a possible "single entry C/I" procedure:

- as only the two networks involved need to be taken into account, at a time, to establish the corresponding single entry C/I;
- the degradation of the aggregate C/I becomes lower and lower as new networks, given a minimum required (C/I) single entry, are introduced. Such assumption may assure a minimum limit value for the aggregate C/I will always be maintained.

To establish the aggregate and "single entry" protection ratios, an example methodology could be based on the approach used in the coordination between FSS networks (Recommendations ITU-R S.483-2 and ITU-R S.735) [25] (see Table 4).

TABLE 4

An example methodology to assess both aggregate and "single entry" C/I for FSS (applying values from Recommendations 483-2 and 735) and BSS (values to be defined)

		FSS	BSS
Analogue	C/N	16 dB (App. 30B)	To be defined
	(C/I)agg.	I = 10% N obj. C/I = C/N + 10 dB	I = x% N obj. C/I = C/N + X dB
	(C/I)s.e.	I = 4% N obj. C/I = C/N + 14 dB	I = y% N obj. C/I = C/N + Y dB
Digital	C/N	To be defined	To be defined
	(C/I)agg.	I = 20% N obj. C/I = C/N + 7 dB	I = z% N obj. C/I = C/N + Z dB
	(C/I)s.e.	I = 6% N obj. C/I = C/N + 12.2 dB	I = w% N obj. C/I = C/N + W dB

x, X, y, Y, z, Z, w, W are values to be defined.

(C/I)agg. is the aggregate C/I.

(C/I)s.e. is the "single entry" C/I.

N obj. is the total noise: thermal noise + interference noise.

5.3 Considerations for the introduction of Integrated Services Digital Broadcasting (ISDB)

Due to interest in providing Integrated Services Digital Broadcasting, provisions for such use on specific channels could be made, which do not cause more interference to or require more protection from TV use.

5.4 Possible scenarios about planning concept and associated procedures that would improve the flexibility in a revised/modernized WARC-BS-77 Plan*

Many administrations are of the opinion that the rigidity of procedures is the main reason for a lack of flexibility of the Plan. Some administrations consider that a complete review of WARC-BS-77 procedures would give the wanted flexibility to the Plan. However, it is also seen that many approaches could be adopted and further investigations are required for the feasibility of each.

For political reasons it seems highly probable that a future planning conference may be based on the national coverage hypothesis as well as on the equal rights principle among the different administrations. It is however highly advisable to take into due account the experience gained in the past years with the DBS and the direct home satellite services. Rigid planning and regulatory procedures, such as those agreed at the WARC-BS-77 Conference, may prevent viable services.

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* Due account should be taken of the proposals of the Voluntary Group on the simplification of the Radio Regulations (VGE), which will be available in due course.

The description of new or revised procedures, that would allow offering more flexibility to the satellite broadcasting Plan in Regions 1 and 3, depends on the revision concept to be finally adopted. A provision of possible evolution of national coverages into supranational ones should be facilitated as well as the possibility of introducing new orbital positions in addition to those agreed by the revised Plan. It is noted that the current Article 4 procedures of Appendix 30 and Appendix 30A do not prohibit new orbital positions as long as the requirements of Annex 7 to Appendix 30 are met or subregional coverages from being incorporated in the Plans. Also noting that in Region 2, Article 4.1.1 expresses that administrations should normally have brought into service their assignments in the Plan before notifying a new assignment.

To permit new or enlarged coverages and/or new orbital positions to be introduced easily, it is necessary to have the appropriate regulatory procedures. In particular, suitable modification procedures are required which should specify the limitations needed to protect other services in terms of the C/I values required by those services, rather than in terms of permitted relative increases in pfd values.

The adoption of the shaped antenna technique may be helpful in solving difficult national coverage situations or in introducing supranational coverage, although it could raise some political and administrative problems. In fact, while the unavoidable spillover radiation of an elliptical antenna is well-defined, the situation is different for shaped antennas. A realistic pfd contour on the surface of the Earth can, however, in all likelihood, not be defined prior to construction of a real satellite.

Suitable C/I values will need to be derived for the BS, for the BSS (taking account of up and downlink protection margins) and for the FS, but the latter should continue to be subject to the requirement of non-interference to the BSS (see Footnote 838 to Article 8 of the Radio Regulations). In principle it would be possible to distinguish "*a priori*" the two following scenarios. These scenarios and their alternatives are drawn in Fig. 2.

a) Conserve the current Plan (scenario A), just as is included in Article 11 of the Radio Regulations, Appendix 30, in what is referred to as orbital position, assigned channels, beams and polarization associated to each assignment, revising the regulatory procedures associated to the actual Plan. An update of the technical assumptions would be made according to the present technology (better satellite antenna performances and side lobes, etc.) which would improve the flexibility to use the Plan and facilitate the additional requirements of the new countries.

Anyway, it should be necessary to review the current procedures established in Appendices 30 and 30A with the aim to understand the minimum required modifications in procedures that will be needed to improve the efficiency and flexibility of the current planning concept as it was made in WARC-BS-77.

b) Carry out a new Plan (scenario B), based on the updating of the technical parameters used for the establishment of the current BS-77 Plan (Appendix 5), which would imply the introduction of new orbital locations or moving some of the previous ones and facilitating the addition of requirements from other systems (different coverage, different number of channels, etc.). Provisions to ease the future amendments, modifications or additions of current and future assignments would be ensured through a review of the regulatory procedures. A graphical representation of the planning concept, described under scenario B, is provided in Fig. 3.

In this scenario B, two alternatives are set forth:

- Scenario B.1: A <u>total</u> planification of the orbital arc and spectrum associated to the Plan is made, being possible to consider either fixed nominal orbital locations or introducing the predetermined arc concept (PDA). The first case would be the most limited, minimizing in principle the flexibility for future additions to the Plan. The second case would allow the introduction of flexible procedures similar to those of the Allotment Plan for the FSS.

Scenario B.2: If it were possible to fulfil the Resolution 524 requirements without the total use of available spectrum-orbit resources in the Plan due mainly to the consideration of update of technical assumptions, it would be possible to carry out the new planning spending only a part of the total resources to satisfy the capacity of each country under equal basis and to provide for the needs of new countries. The other remaining part of resources not planned, would be kept free without any a priori planning In order to accommodate future requirements of administrations, accessing for this part, through conventional procedures similar to Articles 11 and 13 of the Radio Regulations. Likewise, the planned part of the new Plan would include the use of fixed nominal orbital locations with associated flexible procedures, or even the predetermined arc (PDA) concept could be applied.

A series of regulatory proposals applicable to each alternative planning concept to be adopted are described as follows, with the objective of improving the flexibility in the regulatory procedures.

Table 5 illustrates the correspondence between the regulatory proposals and the revisio concept to be adopted.

TABLE 5

Scenarios to Improve the flexibility of the WARC-BS-77 Plan

Scenario	Orbital position and planning concept	Applicable proposals
A (current plan)	Fixed	a, b, c, d
B.1 (New plan/resources total planned)	Fixed	e
	PDA	f
B.2 (New plan/resources no total planned)	Fixed	c
	PDA	f
	Remaining resources	g

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 56-E

Republic of Burundi

ADDRESS BY H.E. MR. SCHADRACK NIYONKURU,
MINISTER OF TRANSPORT, POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Your Excellencies,
Distinguished Guests,
Ladies and Gentlemen,

It is an honour and a privilege for me to address this august forum, and to enlarge upon my country's concerns regarding the future development of its telecommunications network, as well as the possibilities open to it.

It is a well-known fact that fast and reliable communications and the penetration of public telecommunication networks in rural areas facilitate the economic and social integration of local communities, while improving security, the dissemination of information and the administration of public affairs.

As Burundi is landlocked and far from any sea routes, one of the main aims of a telecommunications sector geared to modern technology should be to open Burundi up more to the outside world and thus facilitate the integration of its economy in regional and international markets.

At the national level, the aim of the telecommunication sector should be to facilitate the decentralization and diversification of economic activities throughout the country, to promote new activities with the emphasis on setting up concerns, in particular in the field of agriculture, to develop the services sector, especially banks, and through the private sector to set up job-creating small and medium-size businesses. In order to ensure that it fulfils its socio-economic function, the telecommunications sector should undergo reforms and development to meet the constantly increasing and varied demands placed upon it.

1. Introduction to ONATEL

Since November 1979, the construction and operation of telecommunication networks have been the responsibility of the Office National des Télécommunications (ONATEL), an industrial and commercial State enterprise attached to the Ministry of Transport, Posts and Telecommunications.

ONATEL is a general directorate comprising three directorates:

- administrative and financial;
- commercial and operating;
- technical.

ONATEL is a state company, entirely state-owned. It has a turnover of approximately FB 3.2 thousand million, and liquid assets of FB 1.3 thousand million (FB 260 = $US 1).

The automatic services provided by the national telecommunication network consist basically of telephone, telex, telegraph and facsimile. At present, it employs 631 persons in the following categories:

- managers and engineers 10%
- technicians and specialists 32%
- workmen 48%

2. Development of telecommunications in Burundi

Over recent years, Burundi's network has developed as follows:

1980: Entry into service of the Standard B earth station at Bujumbura

1984: Entry into service of the international transit exchange and automation of main international links with the entry into service of the earth station

1985: Modernization of primary exchanges and establishment of a second telephone exchange at Bujumbura

1987: Modernization of radio relay links serving the primary exchanges, establishment of three new telephone exchanges and rehabilitation of local networks

1990: Entry into service of the Bujumbura E10B exchange and its satellite

1992: With the purchase of new cables, recommencement of work to rehabilitate Bujumbura's cable network. Inauguration of direct analog trunk routes to Rwanda, Tanzania and Uganda as part of the OBK regional telecommunication project.

The 1993-1995 telecommunication development programme includes the following investments:

a) Investments already under way as part of the initial 1992-2005 telecommunication development programme, financed from ONATEL's own funds:
   i) introduction of a new Standard A earth station working with its satellite over the Atlantic Ocean and functioning in the IDR mode;
   ii) creation of four (4) remote digital concentrators to be connected by new digital links to the Bujumbura E10B automatic exchange;
   iii) introduction of the automatic, digital international transit function;
   iv) introduction of TDMA networks in areas west and mid-east (63 sites);
   v) introduction of a packet switched exchange for data transmission;
   vi) computerization of ONATEL's management.

b) Investments for which funding is needed (1993-1996):
   i) digitization and extension of exchanges outside the capital and possible creation of a major server exchange at Bujumbura or appropriate conversion out of the E10B exchange;
   ii) digitization and extension of the national network's radio relay equipment;

iii) continued introduction of the rural telecommunication network in areas north and south (49 TDMA sites);

iv) accompanying measures:

- further training for planning managers.;
- further training for ONATEL's senior management;
- updating of the NPIM;
- increased intake capacity of the Post and Telecommunications Training Centre.

The cost of the above investments is estimated at FB 6 thousand million, of which FB 2 thousand million are for current projects and FB 4 thousand million for new projects.

The network's digitization will be the main activity, as it is fundamental to a network intended to comprise:

a) an integrated digital network (IDN);

b) a packet switched public data network (PSPDN);

c) a message switching telex network (Teletex).

3. Network capacity

The investment plan will raise the network's capacity to 24 597 main subscriber lines, including rural subscriber lines.

4. Rural communications

ONATEL is preparing to launch a rural telephony system as part of the drive for effective telecommunication penetration in rural areas. While the system will contribute relatively little to any increase in commercial and financial transactions, it will be extremely expensive to operate and maintain. This is therefore a special kind of investment where financial backers are concerned.

5. Telecommunication development strategy

In order to ensure the best possible environment for telecommunications to contribute fully to the country's socio-economic development, the Government intends to reform the sector's constituent bodies in the near future.

The main objectives are:

a) to identify the government's responsibility for sectoral policy and for establishing and regulating strategies, with that function clearly separated from operating, which is to be the service providers' responsibility;

b) to improve the organization and management of the public telecommunications operator, i.e. ONATEL, as well as the latter's autonomy, responsibility and commercial competence;

c) to extend the geographical coverage of telecommunications as far as possible, while maintaining and improving the quality of its services;

d) to strengthen the sector's capacity for mobilizing resources for the government (through taxes and dividends), thereby increasing the sector's net contribution to the state budget.

In order to achieve the above objectives, the following legislation will be prepared:

- a general telecommunications law to replace the decree governing Burundi's state enterprises;
- a decree setting up a regulatory, supervisory body;
- a decree establishing ONATEL as a state holding and restricting interaction between ONATEL and the government to the following three areas:
  - matters of sectoral policy;
  - regulatory and supervisory matters;
  - the framework contract.

The sector will comprise the following bodies:

- the government represented by the ministry responsible;
- the national regulatory and supervisory commission;
- service providers, including mainly ONATEL.

According to the terms of the new basic telecommunications law:

- ONATEL will operate the general public telecommunications network on a monopoly basis, including subscriber installations, the transmission network and switching equipment, as well as the concentration and processing equipment, in order to provide subscribers with basic telephone, telex and cellular radio services.
- data transmission services, value added services and supplementary services will be open to competition subject to the decisions and regulations drawn up by the regulatory supervisory body.
- the general tariff policy will stem from the sector's financial policy, which advocates that ONATEL's operations should be profitable. Tariffs should therefore be such that:
  a) costs are covered by the gross revenues generated;
  b) returns on investment are such as to allow autonomous growth;
  c) revenues are stable despite the differing profitability of the various types and categories of services and despite any changes affecting the national economy: this will allow planned, autonomous and regular growth of network and services.

6. Private sector participation

The basic telecommunications law will create a legislative framework allowing private sector participation in telecommunication services.

ONATEL will give careful consideration to the advantages of private participation.

Such participation will take the form of joint ventures in the provision of certain value-added services and peripheral services.

Under the said law, foreign persons or private bodies shall not be entitled to participate directly or indirectly in excess of 50% in the shareholding of the companies providing the supplementary or value-added telecommunication services. However, the government may establish other percentages by decree on an ad hoc basis, in the light of the development of the telecommunication services market.

7. Conclusion

Given the investment requirements of our telecommunications sector, Burundi needs the assistance of several partners.

We should therefore like to take this opportunity to invite the ITU, the countries represented here and all companies involved in the sector to maintain, increase and initiate cooperation with Burundi by making the necessary investments as part of either assistance programmes or partnerships.

Burundi undertakes at the legislative and regulatory level to safeguard the interests and security of national and foreign investors.

Long live the ITU.

Long live international cooperation.

Thank you.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 57-E

ITU/BDT

INTERIM REPORT TO THE WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE BY THE ASIA PACIFIC WORKING GROUP ON TELECOMMUNICATIONS POLICIES AND STRATEGIES

A Background

The Working Group was established by a Resolution of the Asia Pacific Regional Development Conference (AS-RDC). It held its first meeting in Indonesia on 3 December 1993 and elected Haji Mohamed Ali Yusoff, Director-General, Jabatan Telekom Malaysia, to chair the Working Group.

The meeting also formed a Drafting Group, to be coordinated by Australia, to prepare a report on the views and the experiences of countries of the Asia Pacific region regarding structural reform of their telecommunications industries.

The Drafting Group has settled an outline of the issues to be dealt with in the Working Group report. The proposed outline of the report follows. The major policies and strategies to be addressed are:

- the separation of regulatory and operating functions;
- the introduction of competition; and
- the role of the private sector.

The next step is to invite input from all ITU Member countries in the region regarding their attitude to and actual experience of restructuring of the telecommunications sector. It is proposed that this input be forwarded to the Drafting Group by 29 April 1994. The Drafting Group will then draw the experiences of the region together in a draft report that will be considered at another meeting of the Working Group in early August 1994.

B Proposed outline of the report

1 Introduction - The telecommunications sector in the Asia Pacific region

- This section of the report will include a brief description of Member countries' national telecommunications environments including:
  - current situation (including relevant statistics as appropriate);
  - main features of applicable legislation and regulations;
  - government policy goals for the next 5-10 years.

- This descriptive material is likely to highlight the wide diversity of current telecommunications development in the Asia Pacific region; the varying development requirements of individual countries of the region; and hence their different policy approaches to restructuring their telecommunications sectors.

2 The separation for regulatory and operating functions

- This section of the report will include a description of Member countries' policy approaches to establishing regulatory bodies separate from their national carrier(s).
- Where a separate regulator body has been established the following will be described:
  - the Government's policy rationale for separation;
  - the structure, role and functions of the regulatory body;
  - a brief account of the country's experience to date of the separation of operating and regulatory functions.
- [Note - AS-RDC Resolution No. 2 resolved that countries in the region should endeavour, taking into account their individual circumstances and requirements, "to encourage the separation of regulatory and operating functions".]

3 Introducing competition

- This section of the report will include, where relevant, a description of Member countries' guiding principles and policy rationale in introducing competition and could cover:
  - carrier competition (including mobile carriers);
  - non-carrier competition (including competition in voice and/or value added services);
  - all relevant regulatory licensing arrangements including where relevant:
    - price controls;
    - quality of service;
  - policies to ensure competition delivers benefits to all users, including:
    - universal access to services;
    - the sharing of universal service costs.
- [Note - AS-RDC Resolution No. 2 resolves "to ensure, to the greatest extent practicable, access for all people to at least basic telecommunications services at a reasonable price". AS-RDC Resolution No. 4 deals with this issue in greater detail.]
- This section will also specifically address policies Member countries have introduced to support, or encourage competition and new competitor(s) and could cover:
  - interconnection arrangements between carriers;
  - access arrangements for non-carriers to carrier facilitates.
- This section will also provide a summary account of the experience to date in those countries that have introduced competition.

4 Role of the private sector

- This section of the report will include a description of those parts of Member countries' telecommunications sectors where government policy permits participation by the private sector and could cover:
  - carriers (including mobile carriers);
  - non-carrier providers of telecommunications services;
  - equipment and manufacturing industry.
- Where relevant, this section will also outline specific privatization experience of Member countries including a statement of the government's policy rationale for privatizing telecommunications assets and a description of the privatization process.
- This section will also include, where appropriate, a statement of Government policy on the involvement of foreign investors in the telecommunications sector.
- [Note - AS-RDC Resolution No. 2 recognizes "the need to move towards market-based economic principles which permit the attraction of public capital, and private capital to the extent practicable and consistent with national policies and priorities".]

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(21-29 March 1994)

Document 58-E

Indonesia

PART I - ASSISTANCE PROGRAMME FOR THE ESTABLISHMENT OF NETWORK PLANNING CAPABILITIES INDEVELOPING COUNTRIES

Background

In most developing economies, the condition of network planning process is in many cases insufficient because of the scarcity of resources. Network planning practice has been very practical at a very low level process and it is known as a detailed planning. On the other hand, the telecommunication penetration is very low, which makes the developing economies will mostly be required by the people to expand the network planning capacity in a very challenging rate.

In short, insufficient capability in master planning will result in unacceptable conditions of network because the quality of network, as it is expanding, will be at the same time degrading because expansion is not based on clear and comprehensive plan.

Observation has indicated that this situation can even be more complicated when loan funding is involved in the execution of the project.

The application to soft loan is normally not supported by self-generated comprehensive plan as how to use the loan according to the debtor's plans. When the ability is missing, there will be too many uncoordinated foreign interventions which resulting conflicting "master plans", developed by many different bodies.

In general, good quality of network planning is very essential tools for developing economies and less developing economies to be able to "take off" and to upgrade the efficiency of the economy as a whole.

Indonesia's experience

The situation in Indonesia is almost the same as it is mentioned. Until is was 1991 when Indonesia (PT. TELKOM) and the ITU agreed to cooperate to introduce PLANITU from the Indonesia's experiences in determining the strategic tool for network planning methodology, some important result could be mentioned, i.e.

a) After evaluation of several tools which were offered to Indonesia (PT TELKOM), PT TELKOM decided to adopt PLANITU as a single standardized tool for network planning methodology.

The activities during PLANITU implementation cover:

- PLANITU acquisition session;
- donor-recipient constructive relationship;
- involvement TELKOM's role in the development of the tools/method.

During the acquisition session, the most complicated case was chosen to run for load-test of the tools/method with the hope that once the most complicated case was solved, other cases will go through relatively smoothly. To support the implementation of the new method/tool, fixed resources especially human resources were developed and allocated while a consistent path for the expertise development was maintained.

b) It is worthy to mention that for countries like Indonesia, decentralization of network planning capabilities to the regional body of the operator is very essential because data is much better accessible by regions than by the headquarters. This is specifically important for PLANITU since its operations is widely based on the availability of a full set of microscopic data.

The most important thing that must be done before the decentralization process seems to be more managerial than technical, i.e.:

- establishment of appropriate organization and required tools and system;
- provisions of a complete and detailed network planning infrastructure to complement with the network master planning system PLANITU.

Those two activities in Indonesia's experience are assisted by the German Government (GTZ) in some harmony with the activity supported by the ITU.

By having revised fundamentally the previous scheme of planning in the past, which was not based on the microscopic data and which was practically very fragmented to switching, transmission and outside plant planning, Indonesia is aiming to achieve the following objectives:

- Self-supporting/independent in network master planning and detailed planning. This is considered very appropriate since planning is very strategic and should be considered as internal activities like it is normally pursued in developed countries.
- Improving the quality of planning, by this, as soon as the network deployment is completed, it is ready to be marketed.
- Home-based master plan as a basis for loan application. This is to avoid "uncontrollable" projects, in terms of time, technology, locations, because of "surprises" which may occur during implementation.
- Contribution of TELKOM, together with ITU-BDT, to assist other countries in the network planning capability establishment especially by utilizing PLANITU.
- Pursuing directly the network planning preparation of newly emerging technologies such as SDH and its management system, WLL, digital cellular, ATM, etc.
- Saving in network infrastructure investment as much as 15% compared to the investment required if the optimization of network is not done.

Conclusion

Network master planning's ability of developing and less developing economies shall continuously be improved by cooperation effort among members, and Indonesia is ready to participate actively to support that programme.

Note - PLANITU is a computer tool developed by ITU for optimization and dimensioning of telecommunications networks. It can be applied to most kinds of telecommunications networks: there are no limitations due to size or complexity except ... depending on the best computer. The network model is sufficiently sophisticated to allow for all standard network types, and most local variations. Due to its model structure, new facilities can be added with reasonable ease.

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PART II - INTEGRATED RURAL DEVELOPMENT THROUGH TELECOMMUNICATIONS DEVELOPMENT INITIATIVES

General overview

Indonesia is an archipelago country, consisting of widely scattered islands of 17 508 islands with fewer than 1 000 inhabited. The sea area is about 81% of the total area. The governmental administration is divided into 27 provinces, 350 kabupaten (regencies), 57 kotamadya (municipal) and 3 638 kocamatan (subdistricts). The population is a little more than 180 million, in which, the rural population itself is nearly 120 million.

Although the Indonesian are composed of many ethnic groups, speaking various regional languages and practising various religions, Indonesia has developed as a single country with general political unity and harmonious society. Most people in the smaller city earn their living from agriculture including plantation, forestry, farming and fishery.

The rural condition in developing countries including Indonesia is often characterized by lack of economic infrastructure and poverty, although in fact it provides most of the national food stock and other vital resources. There are a lot of exciting places, artistic cultures and other specific things in rural areas that have not been exploited yet because of the infrastructure.

There is a pressing need to accelerate rural development and rapid progress can only be achieved by a properly balanced infrastructure that must include and adequate telecommunications network besides roads, education, health services and information.

This paper discusses the initiatives that have been taken by telecommunications sector in Indonesia which eventually promote the integrated rural development in Indonesia. The idea of integrated rural development (IRD) approach is to join the necessary forces from the concerned sectors to plan and implement them together to bring a harmony and prosperous country to the people of Indonesia.

With regards to integrated rural development, the telecommunications sector development in Indonesia has undergone a sustainable process in phases. The first landmark was the launching of PALAPA satellite to serve domestic telecommunication.

Rural development strategy

Rural development is a part of regional development which is a continual process of every short-term development plan as mentioned in the state constitution and nation development guidelines.

Regional development is performed based on priority and potency in its region in the form of integration and harmony; while the whole development of each region is an integrated development to integrate Indonesia as a political, economic, social, culture, security and defense integration.

Since Indonesia's largest area is in rural area, rural development plays an important role in Indonesian development frame. Nowadays, about 70% of Indonesian people live in rural areas. Therefore, rural development has to be improved, particularly through developing the ability and capability of its human resources, so that its creativity and otoactivity can be developed rapidly.

Knowing how important to develop its rural areas and realizing its huge areas, Indonesia is committed to rural area development. Furthermore, Indonesia has embarked upon its own funded R&D programme to develop its rural areas by developing a prototype of cost-effective rural telecommunications equipment using state-of-the-art technology.

The telecommunications infrastructure outlook

Increasing awareness of telecommunication's role in economic, social, culture and political development has led the government to a better and more systematic telecommunications development programmes in the early 1970s. One of the most important decisions taken in this period was to launch a dedicated satellite system for domestic communication services that has a far reaching impact. Indonesia's domestic satellite communication system PALAPA, was brought into operation in August 1976, the moment that was marked as the landmark of Indonesian telecommunication development. The benefit derived from the system proves the validity of the original provision and from that time the satellite services have become an essential of our national telecommunication system.

Another strategic decision, taken in 1980, was adopting digital technology as the solution for switching and transmission.

The development programmes brought rapid expansion of telecommunications facilities, especially in providing telephone facility that increased the telephone density including automation of all existing telephone exchanges in all kabupaten's (around 350 kabupaten's) in 1991. At the end of the fifth five year development plan (REPELITA V), expansion of automatic telephone exchanges will be completed to all kecamatan's (approximately 3 000 kecamatan's).

Efforts to achieve and expand customer access have been concentrated on providing basic telephone access across the archipelago with service to government administrative centres as priority. All 27 of Indonesia's province's capitals have long been connected to the national network since the launch of the PALAPA satellite system. Connecting the next layer of government administration, however, took much longer. Indonesia's 243 regions and municipalities were connected in December 1991. Current efforts are being directed to connect all of the administrative centres of the subsdistricts in the regions. By December 1992, 714 out of the 3 836 subdistricts' capitals had automatic exchanges, whilst 1 510 subdistricts' capitals still had manual telephone exchanges. Meanwhile, 1 412 subdistrict capitals have not yet been connected to the national network.

Extending connectivity to the centres of the lowest level of government administration, the desa or village remains a difficult task. The area of desa may vary from as little as ten square kilometres to more than 200 square kilometres. Desa may also contain many small settlements or kampung in barely accessible terrain such as dense jungle, rugged mountains or spongy swamps.

Along with the effort to expand communications for Indonesia's government administration, PT TELKOM (a state owned company serving domestic telecommunications) has attempted to increase telephone subscriber density and simultaneously improve service quality.

In the last decade, Indonesia has increased the number of telephone lines available by five times from 500 203 in 1983 to nearly 2 600 000 in 1993. Most of this growth has occurred in the last five years. For example, approximately 600 000 new lines were installed in 1992 compared to only 70 000 in 1987. The goal is to add approximately 800 000 new lines in 1993 with 1 million additional lines every year thereafter. This rapid growth in the line capacity has helped nearly double subscriber density levels from 0.44 lines per 100 inhabitants in 1987 to 1.1 lines per 100 inhabitants in 1992.

Integrated rural development through telecommunication

With rural telecommunication as information bridge, the economic aspect can be handled in a better way. People from one particular rural area are able to make economic transaction with the outside world including international partners. These telecommunications facilities also open the possibilities of inviting domestic and international tourists to visit Indonesian rural areas without any anxiety that they can not communicate with the outside world. Attracting tourists to rural areas, indirectly improves rural economic development. Hence telecommunications sector has opened global access to rural, especially rural with home industry and tourism centre potencies.

Launching PALAPA satellite in 1976 truly made the rural development growing rapidly, by which any kind of information are able to reach almost all remote areas. At the present, the number of earth stations is more than 250, not including private company's owned station, placed all over the remote areas mostly in the eastern part of Indonesia.

Entertainment and education purposes are some of the examples of introducing and utilizing television via PALAPA. Realizing satellite's capability, the Department of Information introduced several TV/Radio programmes which enable to change the way society think, by which their creativity and otoactivity will be improved.

Kelompencapir and Sambung rasa are some examples of TV programmes that help people developing its area by exchanging information with others. Kelompencapir is a competing game programme participated by groups of people from rural areas with the same profession. They discuss things related to their profession. Hence improving their degree of ability, broadcasting this programme all over the country helps distributing any useful information to other rural areas.

Sambung rasa, the other programme, is a simulation programme which gathers most of problems related to specific topics and discusses them to obtain solutions with guidance from someone experienced. This programme is also a nationwide broadcast and is intended to change the rural's role from development object to development subject.

Following the success of those programmes, the Department of Justice has also created a similar programme which attracts people from rural areas to know and understand the law and their own rights in a society they reside. This programme is also a nationwide broadcast.

The domestic satellite has also influenced educational atmosphere. A limited number of universities and disperse geographic area are an obstacle for some people, especially those who live in rural areas, to obtain a higher education, introducing open universities through satellite by which students attending the classes in their own home or assigned classroom has motivated them to have a better education. Indonesia has also a special TV station named TPI (Indonesian Educational Television), that broadcasts tele-education programmes periodically and serves high school students particularly those who live in rural areas with up-to-date materials.

From those experiences, it goes without saying that the initiative to launch PALAPA does not only support telecommunications infrastructure development, but also creates a strategic value in social, educational and cultural aspects. Partial information has been moved since then into an integrated information.

In 1991, Indonesian telecommunications sector achieved the new age of telecommunications by implementing digital telephone exchanges to all over kabupaten, which was marked as the second milestone of Indonesian telecommunications development. This phenomenon is considered giving very positive impact, rural economic development was improved tremendously. Rural areas that have industries are able to access their market fast and efficiently. In addition to this, some industries, that did not have market access outside their area, are now able to expand their markets.

Moreover, introducing digital telephones to all kabupaten in Indonesia has also enabled people to practice their basic right in democracy which is in the form of vote. The gathered vote on the election day in 1992 were able to achieve more than 90% in only two days. This is relatively very fast compared to Indonesian geography.

The third milestone of telecommunication development in Indonesia will be marked by the availability of telecommunication facilities in kecamatan, the area below kabupaten. Kecamatan is the nearest access area for rural to interact with the outside world.

The desire to have a telecommunications facilities in kecamatan is targeted to be realized at the end of the sixth five-year development plan, in 1999. This is very important in supporting the integrated rural development.

As a basic need, integrated rural development needs to be supported by provisioning telephone services. The provision of telephone services in a rural area can improve the efficiency of government administration, strengthen the defense structure and reinforce the social services. Law enforcement, education and health care are aspects of social service that will immediately benefit from the provision of telecommunications services. The advantages of good communication to law enforcement are very obvious. For health care, the service will enable the remote treatment of patients by existing paramedical staff under guidance of centralized specialists. Indirect social benefits may also be achieved through the provision of public telephones to give access to the national telecommunications network for the whole population including the low income groups.

However, the possible gains are not only social. Commercial development is enhanced by the improved proximity of producers to customers. For example, farmers have better access to market information, distribution of agriculture products is eased, farming requirements (seed, fertilizer) can be obtained easily and services (machinery repair) are more readily available to farmers.

Conclusion

1. Utilization of satellite technology to open remote isolated areas is still considered to be very important.

2. Exchanging information and experiences regarding development programmes of rural areas among members is clearly significant and Indonesia's experiences can be employed by other members.

INTERNATIONAL TELECOMMUNICATION UNION

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TELECOMMUNICATIONS AND DEVELOPMENT

The role of the European Union
- Document of the Commission services prepared jointly by DG I, VIII, and XIII -

ABSTRACT

A telecommunications gap persists between developed and developing countries. Nevertheless, the telecommunications sector plays a major role in the growth of developing countries. Indeed, the last decade has witnessed the growing importance of telecommunications in enabling and facilitating development in the low development countries of Africa, in the dynamic economies of Asia, and in the developing economies of both Central & South America and Central & Eastern Europe. This paper focuses on the present role of the European Union (EU) and its present evolution in the field of telecommunications and development. Of particular interest to developing countries are both the long and extensive policy and regulatory experience of the EU, and its wide sample of policy instruments involving telecommunications. Also, some issues are given for future reflection on co-operation between the EU and developing countries.

EXECUTIVE SUMMARY

The telecommunications sector is going through dramatic changes on the threshold of the XXIth century. Several forces are driving restructuring in the sector. One of these forces is the rapid technological innovation resulting from the convergence of informatics, telecommunications, and audio-visual. Also to be mentioned are the globalisation of economic activities and the increased information intensity. Furthermore, world-wide trends of liberalisation and privatisation are affecting all types of governmental activities, telecommunications sector included. Reforms started in North America in the early 1970s and have progressed in all EU Member States, in line with the 1987 Green Paper and its 1992 Review.

This dynamic is affecting not only developed but also developing countries. Indeed, many developing countries are reorganising their telecommunications sector. Liberalisation or even privatisation have taken place in a growing number of countries of Central & South America (Argentina, Chile, Mexico), Asia (Singapore, Thailand, Korea), Africa (Nigeria, Kenya), and Central & Eastern Europe (Hungary, Czech Republic). **In this context, the document investigates the telecommunications and development issue, and seeks how EU experience (general telecommunications policy, R&D policy, telecommunications development programmes, etc.) is relevant.** Keeping in mind the differences in economic and political context, developing countries could draw from EU experience when formulating their own policies. Several issues are of common concern. Among these one could mention: liberalisation/monopoly, private/public ownership, new services in urban areas/basic services in rural and poor areas (concept of "universal service"), national modernisation/regional co-operation, domestic investments/foreign investments, and telecommunications' role in development.

This document also underlines EU support for telecommunications reforms. This support covers co-operation on policy aspects with other countries as well as assistance and financing by the European Commission through mainly the PHARE and TACIS Programmes, and the European Development Fund, and by the EIB. From 1975 to 1993, telecommunications projects have been funded in developing countries for a total of circa 964 Mecu.

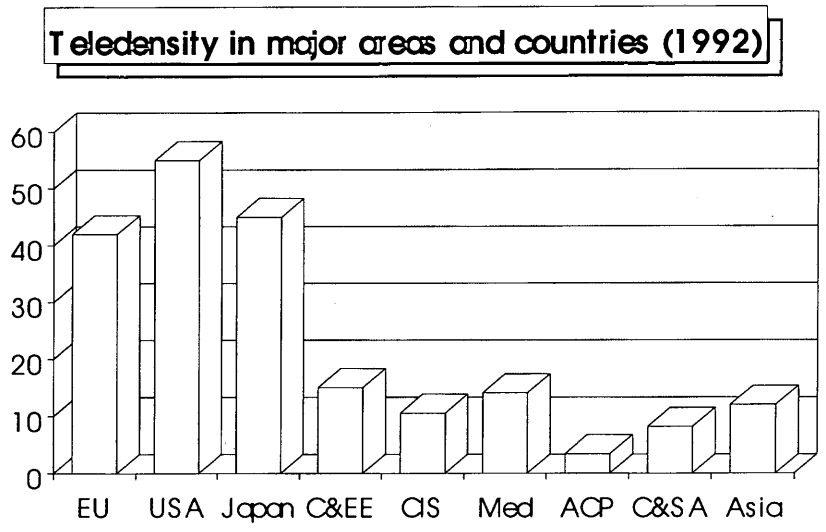
For future co-operation, the following issues could be addressed in a common reflection in the field. First, interconnectivity and interoperability of networks and services as well as access to technical standards should be encouraged. Second, new technologies such as satellites could provide workable solutions to bridge the development gap bewteen developed and developing countries and also within the latter between rural and urban areas. Third, telematics could provide benefits to developing countries in fields such as agriculture, commerce, education and health. Fourth, regional co-operation with Asean, Mercosur, or SADC should be encouraged since the EU has built up a broad experience in this field. Fifth, financing facilitation for rural and low-income areas could be envisaged to promote cohesion and development.

This paper is divided into three sections. The first section examines the relationship between telecommunications and development. The second section presents EU activities in this field: general telecommunications policy, R&D policy, telecommunications development programmes within the EU, and EU's telecommunications projects in developing countries. The third section examines new issues for regional and international co-operation.

1. THE KEY ROLE OF TELECOMMUNICATIONS IN DEVELOPMENT

World-wide differences in telecommunications infrastructures

Telecommunications infrastructures in most developing countries are still very poor compared to developed countries. **The chart below shows teledensities (telephone lines per 100 inhabitants) in major developed (EU, USA, Japan) and developing areas (C&E Europe, the CIS, the Mediterranean region, ACP countries, C&S America, Asia).**



Clearly, **the telecommunications gap remains wide.** While all developed countries have a teledensity higher than 30 and reaching 55 in the USA, developing countries are lagging behind and are generally characterised by low teledensities (below 5 in ACP countries), long waiting lists (the waiting list in Mauritania is up to 50 years) and poor quality services.

However, there are disparities in profiles among developing countries. Teledensity is 2 in Botswana, 11 in Argentina and 45 in Hong Kong. **Annex A gives a more detailed situation of teledensities per developing area and country. There are also gaps within developing countries between urban and rural areas.** In India 90% of all telephones are located in the metropolitan areas.

A slow process of convergence is nevertheless underway if one takes into account regional developments. **Asia seems to have made the greatest progress** in providing its people with access to information compared to other regions of the developing world. Indeed, several Asian countries (Hong Kong, Singapore, Taiwan) have developed advanced communications to meet teledensity levels of developed countries and are now challenging to become the leading region for development of communications (see teledensities of Asian countries in Annex A).

General problems of developing countries

Telecommunications development encounter several problems of both economic as well as political nature.

These problems are the following:

- a **lack of financing and investment** which remains the major constraint. While private investments (domestic/foreign) are likely to invest mainly in new services and profitable urban areas, public investments (national/international) provide services in non-economic rural areas in order to ensure cohesion and development;

- general constraints include **skill shortages, hard currency shortage, and limited equipment imports.** These constraints usually lead to poor financial performance and poor quality service;

- **lack of policy formulation at national level and co-operation at regional level**;

- **low priority of telecommunications in overall development policy**. General public services, health care facilities, and school systems are of short-term priority while telecommunications (a) are characterized only by long-term effects on growth, (b) have a visibility problem insofar the more visible benefits accrue to the wealthier, urban population and commercial enterprises, and (c) are perceived as a luxury item rather than a basic service;

- **lack of regulatory framework**. The development of a regulatory capacity and expertise often lags far behind privatisation trends of state enterprise.

The link with development

A link between telecommunications and development exists and can be illustrated at international, regional and national levels (see Annex B). Such link is reflected quantitatively in the strong correlation between telecommunications and economic growth in particular for countries which depend on tourism, and for city-sates or island economies such as Singapore and Hong-Kong. **Estimates of simple correlation analysis show that an 1% increase in teledensity correlates to a 1% or more increase in GDP per capita**.

At the international level, telecommunications have definitively gained a more strategic importance with the increasing globalisation of the economy. Indeed, information and communications technologies are **determinant for the economy competitiveness in a global market economy and for the efficiency of trade**. Telecommunications also meet some of the broader aspects of development which are not necessarily linked to economics. They play an important role in providing adequate instruments for growing global concerns such as **the environment and the efficient management of natural resources** through satellites and remote sensing techniques.

At the regional level, telecommunications are essential for the economic and commercial operation of an healthy economy and **reinforce regional economic integration schemes** such as Asean, Mercosur, and SADC. Besides, they might allow to spread the benefits of economic dynamism from developed to developing countries or from more dynamic to less dynamic developing countries. This could be the case of South Africa's recent participation within the SADC regional scheme.

At the national level, telecommunications are part of the basic infrastructure alongside transports and energy. **Telecommunications improve administrative and management efficiency, help saving on scarce foreign resources, and create an environment conducive to new investment**. It also opens up unexplored remote areas to commerce, tourism, and agriculture.

Economic considerations often cover the role telecommunications have in a civil society. They allow citizens' participation not only in local community but beyond, disseminate ideas and cultural standards through radio and educational television and are an important element in underpinning democracy.

Towards new opportunities

Telematic systems linked to telecommunications could provide for the effective mobilisation of the economic potential of developing countries, in particular rural areas where most of the GDP is produced and where most of the labour forces are located. The following benefits and opportunities can be identified:

- telecommunications reduce isolation of rural areas by facilitating communications and **reducing the economic constraints associated with geography**. They also allow for the decentralization of economic activities to rural areas, teleworking, remote transaction, access to information, entertainment;

- telematic systems may address the problems of agriculture by **increasing agricultural productivity** through a permanent access to information on crop pests, weather conditions, production and shipments, and market prices;

- telematics accompanies well new needs of SMEs in service sectors (wholesale, retail trade) and in producers services (banking, finance, insurance) in their **increasing use of just-in-time production methods**, producer to customer transaction services such as EDI, sector specific value added services, etc.;

- telematics lead to new methods of providing education, health services, social services, and cultural activities. **Distance learning**, for instance, extends educational possibilities by reaching remote areas where access is difficult. Such applications forebode well for financing telecommunications alongside actions in other sectors especially infrastructure improvements such as education and health;

- finally, there is the added benefit of **reducing rural-urban migration** and thereby alleviating rapid urbanization, crime and poor sanitation. The provision of employment by moving jobs to people rather than people commuting to jobs, and a varied cultural entertainment in rural areas could reduce motivations (work, "city lights") to migrate to the urban areas.

Clearly, these opportunities cannot be reaped immediately by all developing countries especially the less developed ones. Nevertheless, recent developments in telecommunications (satellites, fibre optics and mobile communications) allow these opportunities a wider spreading among developing countries. Personal Communications Networks for instance could speed economic development by facilitating business. **Thus, workable solutions are available to overcome the development gap and providing the missing link.**

2. POLICY OF THE EU

The EU has much to offer in terms of regulatory experience and telecommunications policy but also in terms of approach to outlying areas. Furthermore, the EU carries out scientific and technological (S&T) co-operation and launches projects in the field of telecommunications within the broader EU co-operation policy with developing countries.

A. General EU telecommunications policy

The Telecommunications policy of the EU has developed in three distinct stages. The first stage started in 1984 with the Council's adoption of **the first action programme** in the telecommunications sector. Its initial objective was to co-ordinate the future development of telecommunications in fields such as ISDN, Digital Mobile Communications, the introduction of broad band communications, the establishment of common standards and pre-normative, pre-competitive R&D activities.

The second stage began in **1987 with the Green Paper and the Council Resolution of 30th June 1988** on the development of a common approach for telecommunications services and equipment. These acted as a major watershed for EU initiatives in the sector by proposing several positions and action lines. With the publication of the Green Paper, the scope of EU policy was extended to cover regulatory matters and the opening-up of the sector to competition.

The third stage began recently with **the 1992 Review and the conclusions of the Council of 16th June 1993** on the review of the situation in the telecommunications sector and the need for further development in that market. This started a process of collective debate -with policy-makers and industry- on the course European telecommunications policy should take up to the turn of the century.

The basic elements of EU policy as set out mainly in these successive stages are the following:

- first, the introduction of full liberalization with regard to the equipment market and the establishment of procedures for the mutual recognition of equipment conforming;

- second, a progressive but ultimately complete liberalization of the market for telecommunications services. At the Telecommunications Council of 16th June 1993, the EU Member States adopted a resolution paving the way for the liberalization of voice telephony services by the end of 1998. Four countries (Spain, Portugal, Greece, Ireland) will benefit from a delay of five years maximum to make adjustments to the tariffs before putting liberalization into action;

- third, the policy of harmonization and Open Network Provision (ONP) for free access to the infrastructures as part of the worldwide move towards the definition of network access and interconnection principles;

- fourth, the clear separation of regulatory and operational functions of telecommunication administrators within EU Member States to ensure more autonomy in both activities;

- fifth, the continuation of the standardization process notably through the establishment in 1988 of the European Telecommunications Standards Institute (ETSI) to prepare the necessary EU wide specifications;

- sixth, the support of a variety of horizontal measures with the aim of ensuring universal service and preserving social and economic cohesion through the full-participation of the Less Favored Regions (LFRs) in the new market;

- seventh, the publication in 1990 of a Green Paper on satellite communications laying down the foundations of a satellite communications policy;

- lastly, the Green Book as well as the Councils of Ministers of 1989 and 1993 have underlined cooperation and coordination of telecommunications policy with third countries;

EU Telecommunications policy shows that Europe has build an original model which balances market liberalisation with regulatory necessities, and openness with administrative competencies.

B. EU R&D policy

EU R&D policy has also developed through several steps. In 1984, the EU decided to improve the co-ordination of its research and technological development activities by bringing them within multiannual framework programmes. The multiannual programmes, also called **Framework Programmes (FWP) RTD,** have since become the basis and instrument of EU R&D policy. The FWPs set aims and priorities, and outline the budget for research support over a 5 year period, thus providing a clear structure for long term overall objectives.

Within the III FWP (1990-1994) which has a 6600 Mecu budget, the EU manages activities in several areas such as information technologies, communications technologies, information systems of general interest, etc. The specific programmes in the areas of **communications technologies and information systems of general interest** are the following:

- the Research and technology development in Advanced Communications in Europe (RACE) Program contributes to the creation of a common network of advanced communications. It gives the necessary incentive to precompetitive technologies and focuses on actions which promote the development of the integrated broadband communication (IBC);

- the Telematic systems of general interest Program contributes to the successful completion of the single market. It seeks to improve the performance of general public services which are confronted with technological, social and economic challenges of European integration by providing for a coherent use of telematic systems in various areas among others national administrations, transports, health, education and rural areas.

EU R&D policy has an external element which consists of carrying out **international S&T co-operation** with third countries. The legal basis for such co-operation is provided by co-operation agreements between the EU and developing countries which include a specific heading for telecommunications. For instance, sector memoranda of technical co-operation with both China and India have been signed. Also, in Latin America several projects were launched under a bilateral and regional co-operation framework (Andin Pact). Similarly, Association Agreements have been signed with Central & Eastern European countries. S&T co-operation has been undertaken with countries of C&EE but also with countries of the CIS under the PECO-COPERNICUS programme and under INTAS (International association for the promotion of co-operation with scientists from countries of the former Soviet Union).

Annex B shows S&T co-operation projects carried out in the field of telecommunications. S&T projects have launched for a total budget of 30 Mecu over the period 1990-1993. Most projects concern the areas of networking, training, information exchange, and seminars.

This external element will take a distinct form in the forthcoming IV FWP (1994-1998). Indeed, the proposal for the IV FWP includes four main headings among which a specific one for S&T co-operation with third countries and international organisations.

C. Telecommunications development programmes within the EU

Many of the challenges and the conditions found in some EU areas (scattered populations, challenges of geography, harsh environments) are to a certain extent similar to those in developing countries. Several EU initiaves have tackled the problems of regional development and have confirmed telecommunications potentials for development.

The STAR Programme

The Special Telecommunication Action for Regional Development (STAR) Programme, launched in 1986, was the first of its kind in the field of regional telecommunications. It remained operational over the period 1987-1991. The background for this initiative was provided by the acknowledgement that technologies tended to be utilised earlier, and better, in the more advanced regions of the EU. In the absence of countervailing measures, this process would have exacerbated the development gap between core and periphery and would have pushed the goal of social and economic cohesion, and the creation of the single European market further away.

The objective of STAR was therefore **to improve the telecommunications infrastructure capable of hosting advanced telecommunications services and to encourage the use of such services in LFRs** and peripheral regions of the EU (Ireland, Ulster, Portugal, Greece, parts of Spain, Southern Italy, the French PTOM or Overseas Departments and Corsica). The STAR Programme rested on a budget of 1500 Mecu, of which 780 Mecu was provided by the EU while the remainder was provided by the beneficiary EU Member States. From this budget, around 80% was allocated for investment in infrastructure while 20% was intended for the introduction of advanced telecommunications services. Annex C gives an outline of main STAR features and projects.

The Telematic Programme

The Telematic Programme acted as a follow-up of the STAR Programme by amplifying the process begun in the regions which development was lagging behind. Funded by a smaller budget (200 Mecu) and operational over the period 1991-1993, **its focus is the development of services and networks related to data communications** thereby augmenting STAR which had only allocated 20% of its resources to the field of implementation of applications. In particular, the main areas of action are to:

- facilitate the introduction of advanced telecommunications services into SMEs;
- support the introduction of data communications services in the public sectors such as health, education and transport drawing on the results of EU R&D programs like RACE, AIM, DELTA, and DRIVE;
- improve the access to data communication networks within the EU.

The focus is firmly set on SMEs in various areas (commerce, agriculture, tourism, etc.) using services rather than on the development of an advanced infrastructure as in the STAR Programme.

The Growth Initiative and Trans-European Networks (TEN)

The European Council meeting of Edinburgh in December 1992 launched the Growth Initiative aimed at promoting economic recovery and employment through among others a common information infrastructure. This Initiative reflects the commitment to **the development of TENs in the areas of energy, transport and telecommunications.**

Among the measures that will sustain this initiave is the "temporary lending facility" established by the EIB for 5000 Mecu. In 1993, loans for 3000 Mecu have already been granted under this facility for projects in the areas of transport, telecommunications, energy and environment. Table 1 presents telecommunications projects which have been approved by July 1993.

In addition, further loans of 246 Mecu have been approved for projects in C&EE in respect of TENs of mutual interest. Finally, the European Commission is in process of preparing a list of projects in the transport, telecommunications and energy sectors which may benefit from the additional resources available under the temporary lending facility.

Table 1

Title of projects	Loans granted with temporary lending facility (in Mecu)
Modernisation of telecommunications in Italy	196
Extension/modernisation of telecommunications in Ireland	63
Modernisation of network in the UK	93
Modernisation of network in Portugal	84
Total	*589*

The European Councils of Brussels of 10-11th December 1993 have given a further support to this initiative by approving the White Book on growth, competitiveness, and employment. The White Book estimates a substancial investment (120000 Mecu) will be needed for developing TENs over a 6 years period (1994-1998).

For the 1994-1998 period, priority projects in the area of telecommunications have been identified for an amount of 67000 Mecu. These projects cover:

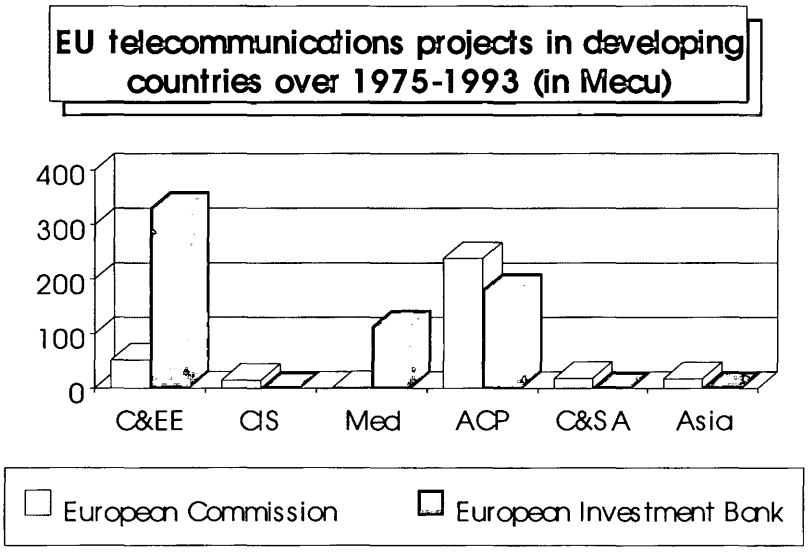
- infrastructure (advanced networks);
- general electronic services (interactive video, electronic mail, etc.);
- telematic applications (teleworking, teleeducation, teleadministration, etc.).

D. EU telecommunications projects in developing countries

Telecommunications projects are carried both by the European Commission and by the EIB, in the frame provided by the various association and co-operation agreements. Indeed, agreements with developing countries have among other headings a telecommunications component providing for various forms of co-operation: scientific and technological, technical assistance, infrastructure, etc. Annex D gives some examples of texts of these agreements.

From 1975 up to 1993, **the European Commission and the EIB have funded 200 telecommunications projects for a total of 964 Mecu** of which 396 Mecu in C&EE and the CIS, 114 Mecu in Mediterranean countries, 418 Mecu in ACP/OCT countries, and 36 Mecu in Central & South America (C&SA) and in Asia.

The type of assistance given by the European Commission is mainly grants for technical assistance used for regulatory activities, structure studies, training, and feasibility studies, while the EIB finances bankable capital investment projects frequently in co-financement with other financing institutions like the World Bank, the EBRD, the Asian Development Bank, the Inter-American Development Bank, etc. (see Annex E for a list of telecommunications projects).



Central & Eastern Europe (C&EE) and the Commonwealth of Independent States (CIS)

Following the political changes of the end of the eighties, this region has embarked in a process of political and economic reform which the EU has supported right from the start through the PHARE and TACIS Programmes. The geographical proximity makes the EU a privileged actor for promoting the European integration of these countries. Since 1988, the EU has concluded trade and co-operation agreements with a number of C&EE countries. Subsequently, the EU concluded "Europe Agreements" with Poland, Hungary, the Czech and Slovak Republics, and later Bulgaria and Romania. With regard to the States of the former Soviet Union, the EU is negotiating the "Partnership and Co-operation Agreements".

The PHARE Programme initially covered Poland and Hungary but includes now all of C&EE[1]. PHARE has launched projects in the field of telecommunications in several countries such as Bulgaria, the Czech Republic, Slovakia, Latvia, Poland, Romania, and Slovene. The focus is on regulatory reform, restructuring of the sector, standards and certification, and training. The budget allocated over the period 1990-1993 to these projects was 50 Mecu, including 10 Mecu in S&T Co-operation projects. The main project (7 Mecu) concerns regional telecommunications development programme in C&EE and aims to provide a framework for know-how transfer and training. The TACIS Programme covers the CIS and Georgia[2]. Over the period 1992-1993, TACIS has launched projects in Russia, Ukraine, and in Central Asian Republics for 15 Mecu. The focus is the same as for PHARE (regulatory reform, sector restructuring, training, etc.).

The EIB is highly focused on C&EE. From 1990 to 1993, **the EIB has provided lending for the modernisation of the telecommunications network in some C&EE countries (Hungary, Poland, Bulgaria, the Czech Republic and Slovakia) for a total of 330 Mecu. This represents around 19% of all EIB lending in the region.**

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[1] Beneficiaries of this programme are Albania, the Baltic States, Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia and potentially the other republics of former Yugoslavia.

[2] Telecommunications was mentioned as a priority in the 1992 Indicative Programmes for Russia and Ukraine while for the other countries of the region support for telecommunications is channelled through the general headings "government advice" or "regional cooperation".

The Mediterranean region (MED)

Association and co-operation agreements have been signed with 12 countries of the Mediterranean region. Projects in the area of telecommunications are launched under the Financial Protocols attached to these agreements. The European Commission and the EIB have launched projects for 115 Mecu in the Mediterranean region. **Two significant actions were carried out in (a) Malta where the European Commission and the EIB have jointly assisted a project for the rehabilitation of telecommunications, and (b) Morocco on a project which provides telecommunications linking with Spain.**

Africa, the Caribbean and the Pacific (ACP)

For its development co-operation policy, the EU has signed agreements known as the Lomé conventions with 70 ACP countries. These agreements cover telecommunications among others subjects of co-operation[3]. Next to ACP countries, a further 20 Overseas Countries and Territories (OCT) are eligible for assistance under the heading of financial and technical co-operation. Assistance is channelled through the European Development Fund (EDF) over periods of 5 years. For instance, the VII EDF currently in operation covers the 1990-1995 period while the IV, V, and VI EDF covered respectively 1975-1980, 1980-1985 and 1985-1990.

With regard to telecommunications, the focus for the European Commission in Africa is given **to developing rural telecommunications and satellite communications**. For instance, two major projects were carried out in Mozambique (13 Mecu) within the VI EDF and in Tanzania (25 Mecu) within the VII EDF on rural telecommunications services. Also, one major project was launched in Western and Central Africa (38 Mecu) within the VI and VII EDF on satellite communications for civil aviation security. In the Pacific, several projects were launched to meet specific problems encountered by islands such as the Fiji and Solomon islands, Kiribati, Western Samoa, and the Papua New Guinea. Among others an Intelsat B satellite earth station was financed in Western Samoa, Papua New Guinea and Kiribati. **An important project was launched in Kiribati on digital switching (9.2 Mecu).**

Furthermore, the EIB has financed several projects in ACP/OCT countries (Kenya, Zimbabwe, Senegal), including two regional projects.

The joint presence of the Commission and EIB in these regions has been a significant one since projects amounted to a total of 418 Mecu.

Central & South America (C&SA) and Asia

The European Commission has also signed co-operation agreements with countries of Central & South America and Asia. In Central & South America, projects have amounted to 18 Mecu among which in particular a project in Central America, part of a global co-operation plan, consisting in a **Regional Technical Assistance Programme in the field of telecommunications.**

In Asia, Commission projects for 18 Mecu are S&T and industrial co-operation projects. Over the last few years, major ones were launched in China on data transmission systems, information networks, computer and application networks, and in India on software services support and education. The EIB has not been present with projects in this region. However, the EIB has been authorised from 1993 onwards to operate in Asia and Latin America with a budget of 750 Mecu over a period of three years.

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[3] See in annex excerpts of EC/ACP agreements dealing with information and communication technology (articles 114, 115, 119, 120, 122, 123, 124, 132, and 133 in Title IX).

3. EU AND DEVELOPING COUNTRIES: ISSUES FOR FUTURE REFLECTION

A common reflection could be launched on issues for co-operation between the EU and developing countries in the field of telecommunications.

Standards, interoperability and interconnectivity

Market pressures in developing countries can lead to unexpected results and to incoherence of networks when the telecommunications infrastructure is not yet in place. Co-operation should therefore contribute to the development of harmonised networks and services in order to **secure global technical interoperability and interconnectivity of networks and services**. Particular attention should be paid to the development of **standards** for instance by providing telecommunications managers access to technical standards through training.

Diffusion of technologies

If delivered within a coherent and appropriate strategy, telecommunications and information technologies could contribute to reduce, and eventually close, the gap between the developed and the developing countries through increased production and trade. **Co-operation should encourage the diffusion of new advanced technologies of telecommunications** to developing countries.

Advanced telecommunications for agriculture, education and health

Advanced telecommunications and telematic systems could open new opportunities for developing countries in particular for rural areas. Co-operation should promote actions which **encourage the use of advanced telecommunications for agriculture, education and training, relaying information for medical treatment, disaster prevention, etc.** Several EU R&D programmes have been launched in these fields and both results as applications could be of interest for developing countries.

Support for regulatory change

Within the world-wide trend towards liberalisation due to technological change, developing countries have still to fully develop regulatory experience as well as an appropriate organisational framework. **Co-operation should sustain efforts of regulatory changes by encouraging liberalisation and contributing to the restructuring of the telecommunications sector and aiming at its satisfactory management both technically and financially. Co-operation in this area can benefit from EU's experience on regulatory and institutional policies.**

Regional co-operation

Telecommunications do play a role in facilitating regional integration of economies through increased trade and commerce and by facilitating communications between populations. EU policy could serve as a reference considering its experience in the field. **Regional actions with organisations such as Mercosur, Asean or SADC should therefore be particularly encouraged** also in order to promote interconnectivity and interoperability of networks.

Telecommunications in development programmes

Telecommunications are still not given a sufficient priority in most developing countries and still play a limited role in EU co-operation with developing countries. Nevertheless, there is a broad consensus that telecommunications are indeed playing a key role in the economic, social, cultural, and political development. It is therefore **essential that telecommunications are effectively included in all development programmes**, in particular for rural development and the management of the environment. This effort could provide support and facilitate the implementation of the European Commission's initiative: the European Network for Research in Global Change (ENRICH). ENRICH aims to provide networking and promote regional co-operation with developing countries in the research field of global environment issues.

Towards universal services

While the concept of universal service itself is still evolving, access for all people to at least basic telecommunications services at a reasonable price remains a necessary development in developing countries. Co-operation should make sure that the concept of universal service is obtained and safeguarded. **Networks in rural and low-income areas of developing countries should therefore be extended in order to secure cohesion and development.** It should be noted that new technologies such as satellites allow to expand teledensity rapidly and to overcome geographical difficulties.

Sectors with financing difficulties

Private investment does not reach all areas and sectors mainly because of economic imperatives. Public investments, in particular grants and low cost loans, should therefore focus assistance on areas and sectors with financing difficulties such as **rural and low-income areas** where private investment is unwilling to provide the needed capital.

Increased concertation

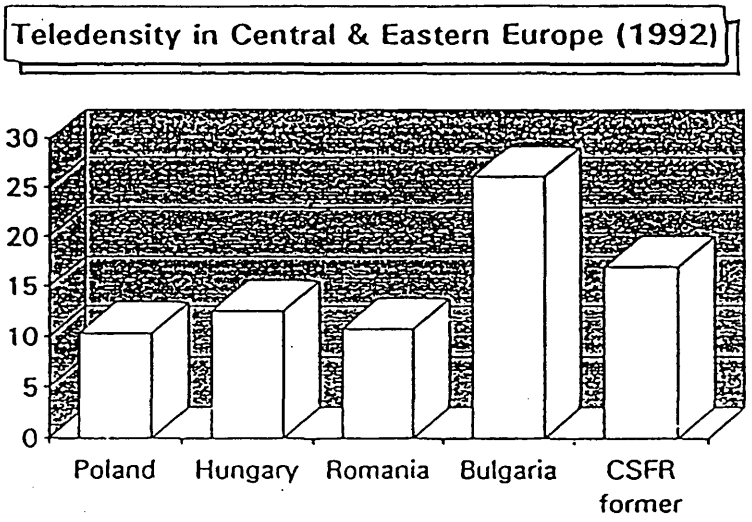
Increased concertation should be achieved between EU Member States, other donors, and international organisations. Concertation between EU Member States is necessary to ensure that a coherent doctrine and co-operation policy is developed at European level. Such an European position is being coordinated within the Conference of Postal Telecommunications Administrations (CEPT). **Concertation with other donor countries and with international organisations (World Bank, EBRD, Asian Development Bank) should be ensured in order to optimise aid and increase synergies between projects.**

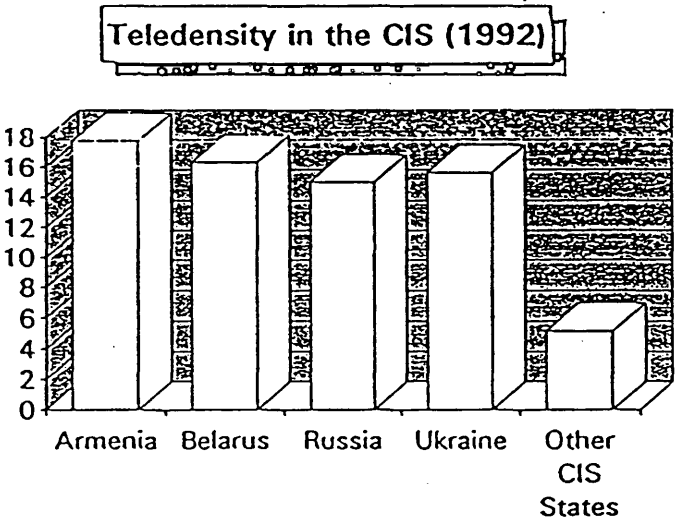
LIST OF ACRONYMS

ACP	Africa Caribbean Pacific
AIM	Advanced Informatics in Medecine
C&EE	Central & Eastern Europe
C&SA	Central & South America
DELTA	Developing European Learning Technology Advance
DRIVE	Dedicated Road Infrastructure for Vehicle safety in Europe
EIB	European Investment Bank
EBRD	European Bank for Reconstruction and Development
EU	European Union
ETSI	European Telecommunication Standard Institute
FWP	Framework Programme Research and Technological Development
GDP	Gross Domestic Product
ISDN	Integrated Services Digital Network
ITU	International Telecommunication Union
LFR	Less Favoured Region
Mecu	Million European Currency Unit
ONP	Open Network Provision
PHARE	Poland and Hungary Assistance for the Reconstruction of the Economy
RACE	Research and technology development in Advanced Communications in Europe
SADC	Southern African Development Conference
STAR	Special Telecommunications Action for Regional development
SME	Small and Medium sized Enterprise
TACIS	Technical Assistance to the Commonwealth of Independent States
TEN	Trans European Networks

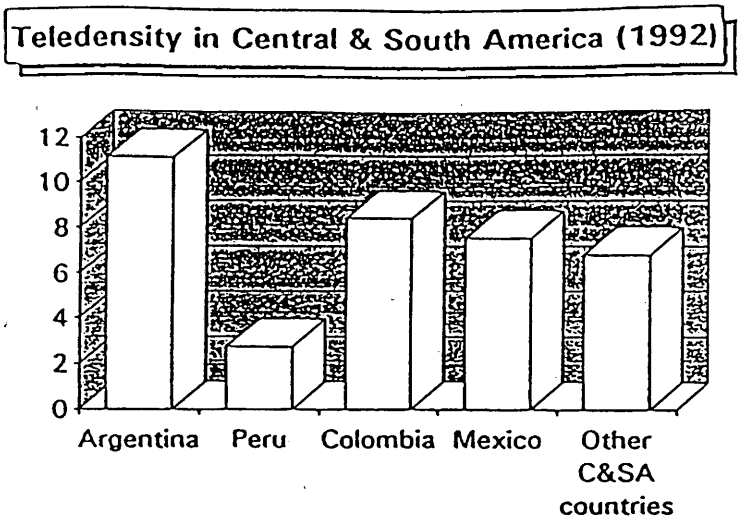
ANNEX A

Teledensity in major countries and areas

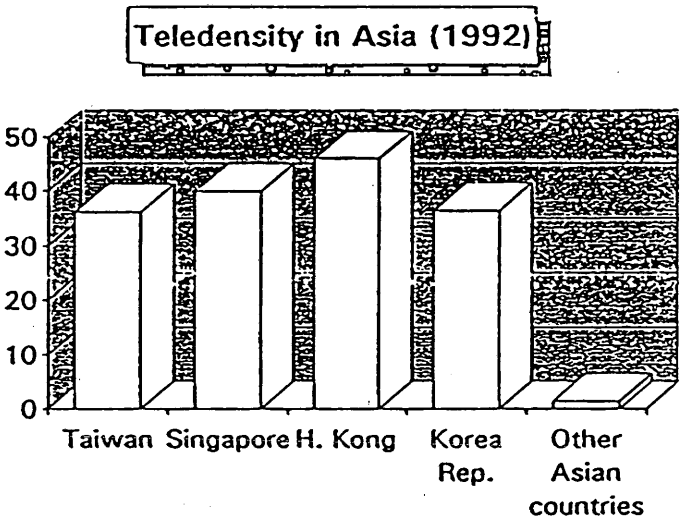




1. Other CIS States include Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tadzhikistan and Uzbekistan.

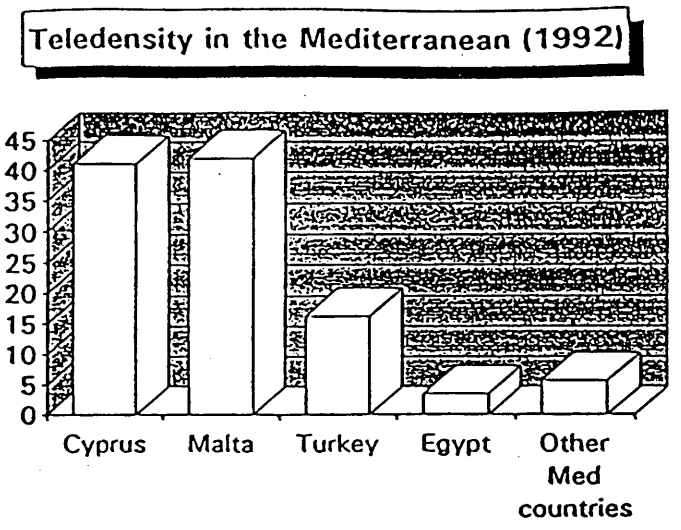


1. Other C&SA countries include Bolivia, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Haiti, Mexico, Nicaragua, Panama, Paraguay, Puerto Rico, Uruguay and Venezuela.

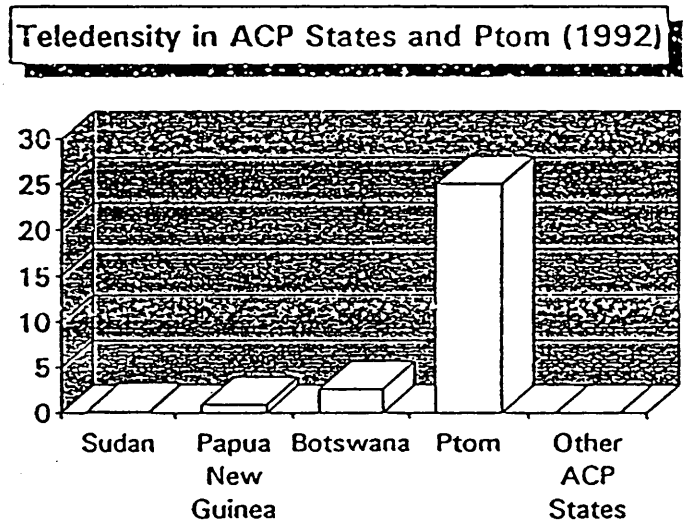


1. Other Asian countries include China, India, Thailand, Philippines, Indonesia, DPR Korea, Viet Nam, Lao PDR, Malaysia, Bangladesh and Cambodia

Sources: ITU, EU



1. Other Mediterranean countries include Morocco, Algeria, Israel, Libya, Lebanon, Syria, Tunisia and Albania.



1. Ptom include French and British Overseas Departments, countries and territories and the Netherlands Antilles.

2. Other ACP States include Antigua and Barbuda, Bahamas, Barbados, Belize, Benin, Burundi, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Djibouti, Dominican Republic, Equatorial Guinea, Ethiopia, Fiji, Gabon, Gambia, Ghana, Grenada, Guinea, Guinea-Bissau, Jamaica, Kenya, Kiribati, Lesotho, Liberia, Madagascar, Malawi, Mauritania, Mauritius, Niger, Nigeria, Rwanda, St. Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Solomon Islands, Somalia, Suriname, Swaziland, Tanzania, Togo, Tonga, Trinidad and Tobago, Tuvalu, Uganda, Western Samoa, Vanuatu, Zaire, Zambia and Zimbabwe.

ANNEX B

A qualitative and quantitative analysis of telecommunications and development

1 Introduction

The question of telecommunications' contribution to development has been investigated in numerous studies and there is a growing recognition that telecommunications do play a key economic, social, cultural and political role.

In 1984, the Independent (Maitland) Commission of the ITU which stated in a volume entitled the Missing Link: "it is our considered view that henceforward no development programme of any country should be regarded as balanced, properly integrated, or likely to be effective unless it includes a full and appropriate role for telecommunications"[1].

Nevertheless, telecommunications role is still not yet fully appreciated at international/national level and among developing countries. In this section both qualitative and quantitative aspects of the telecommunications and development issue are brought forward. Also, a cautionary note on the subject is given.

2 The qualitative approach

International level

At the international level, telecommunications have definitively gained a more strategic importance with the increasing globalization of the economy. This has already been recognized by the United States, Japan and in Europe while it has still to be recognized by most developing countries. While the introduction of railways provided the physical infrastructure on which the developed countries were built, the increasing role of telecommunications in the Information Economy has equally important implications for developing countries.

Information and communications technologies are a determinant for the economy competitiveness in a global market economy. Telecommunications enable countries to participate in the global economy by exploiting their comparative advantage in production more easily at the international level, by providing access to market information for trading with the implication that goods can be sold at the most advantageous times, and by providing access to global markets[2].

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1 Stone [1993], p. 460.

2 It should be noted that telecommunications also has side effects. While it enables participation in the global economy, it also imparts tradability to traditionally non-tradable services such as banking, insurance, travel and financial services. These services are then opened up to foreign competition. This is the major factor behind the reticence of developing countries such as India and Brazil to include services in the General Agreement on Trade in Services (GATS) of the Uruguay Round. Jussawalla [1992], pp. 502-503.

Furthermore, telecommunications play an important part in shaping the pattern of international production and trade. Indeed, it appears that a country's comparative advantage increasingly depends on its ability to use new technology effectively and to absorb it into its production processes[3]. In this context, the case of Newly Industrialized Countries (NIC) in Asia is illustrative in showing that some countries can rapidly adopt advanced telecommunications and even leap-frog certain OECD countries[4].

Lastly, the role of telecommunications at international level is not only important for economic concerns like the competitiveness of countries and the efficiency of economic systems, but also for issues of growing concern such as security of civil aviation or remote control of fishing boats, as well as environment, management of natural resources, the latter being tackled through remote sensing techniques.

Regional level

At the regional level, telecommunications are to be perceived as part of the infrastructure which is essential for the economic and commercial operation of a healthy trading economy[5]. Without a solid backbone of telecommunications infrastructure most developing countries could be condemned to decreasing efficiency and economic inferiority compared to more developed ones which might retain new investment and secure domestic, regional and also international markets.

Also, a solid telecommunications infrastructure could allow the spread of benefits of economic dynamism from developed to developing countries or from more dynamic to less dynamic developing countries. In Africa, the rapidly evolving SADC region has opened opportunities for growth, greater self-sufficiency and substainability of the region. However, without improved telecommunications, most of the opportunities will not be exploited for the benefit of the people of the region[6].

National level

Most developing countries are still proceeding through their stages of economic development and structural change which goes from agriculture through industry towards a service-based society[7]. This is mainly why telecommunications do not appear as a priority policy for developing countries. Nevertheless, telecommunications have a triggering effect on development. Also, they become a bottleneck when these countries leave the early stages of development and move towards an increasing degree of internationalization and a further increase in economic exchanges. Besides, telecommunications improve administrative and management efficiency and thereby help savings on scarce foreign resources which are so necessary to development.

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[3] An OECD study shows that pessimism and inaction is not always the rule in a difficult continent such as Africa. Case studies show that new and emerging technologies are being used in the SADC region to set up new businesses, create new employment and develop capabilities to protect the natural environment. Tiffin [1992], pp. 7-8.

[4] Antonelli [1991].

[5] Closer cooperation in telecommunications might also reinforce economic integration schemes such as Asean or Mercosur.

[6] Africa's economic decline could be caused by the absence of a country with sufficient economic strength to serve as a catalyst for the region. With the emergence of Southern Africa, the region could have the stimulus to break out of its decline. Breiner [1992], p. 443.

[7] For a more comprehensive discussion of the stages of economic development see Todaro [1989], pp. 62-114.

Moreover, a well-functioning telecommunications infrastructure and a well-functioning transportation system would allow the division of labour to increase the degree of specialization, resulting in growing productivity and a higher degree of competition. Telecommunications have therefore important spill-over effects. Its special significance arises from the pervasive nature, the linkages effects and the importance of information as a factor of production alongside the more traditional ones such as labour, capital and land. They are also a determinant of productivity, a resource and a commodity, and can be perceived as a lubricant for the functioning of the markets.

With information flowing speedily, producers can learn market conditions in time, firms can coordinate their operations efficiently and distribution systems can be effectively synchronized. For instance, the lack of good information and telecommunications, along with a lack of foreign currency, is singled out in Zimbabwe as the most significant constraint to tourism, its most important growth industry[8]. Clearly for SMEs to increase and for a solid industrial backbone to develop, all activities in sectors in commerce, agriculture, industry and services need reliable, varied and speedy information.

Focus on telecommunications economics often sidelines their role in a civil society. Telecommunications also have a social, cultural and political function[9]. Telecommunications, radio and educational television enhance communication among citizens allowing them to participate not only in local community but beyond. They spread national cultural standards, allow public participation in the political system, enhance solidarity and stability, and combat urban/rural dualism.

Developing countries should nevertheless be wary of assuming any linkage between liberalization and/or privatization of telecommunications and increased democracy. A democratic political system is not the same as a market-led economic system while a consumer is not the same as a citizen[10].

2 A quantitative link

From a quantitative point of view, many studies reveal a clear correlation between telecommunications and economic growth showing that they do often proceed together. A well-known illustration of this dependence is the so-called "Jipp's law" showing a strong correlation, usually about 0.9 or higher, between the density of main lines and GDP per capita[11].

However, the causality relationship and the dynamics of the process involved are rather complex. What remains to be answered is the nature of the relation and its causality: is it telecommunications that lead development or is it development that creates demand for more telecommunications?

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8 Breiner [1992], p. 445.

9 Telecommunications in developing countries raise the issue of the cultural implications on the original indigenous social structures. Experiences in Europe and North America do not seem to raise too many worries. It may also be the case that the cohesiveness in rural areas of the developing world may be stronger than in developed countries. Stone [1993], pp. 468-469.

10 It is illustrative that in the United Kingdom, 45% of unemployed people are without a telephone. Hills [1993], p. 22.

11 Karlson [1993], p. 23.

A number of studies have concluded that telecommunications are indeed a factor of development and growth as they increase efficiency and have strong multiplier effects[12]. One study concludes that the role of the telephone in economic development appears to be even more important in the developing countries than in the developed ones, and that the lower a country's level of development the greater the potential contribution of telecommunications to economic development. Also, the contribution to national income of the telephone is particularly high in the countries with the lowest teledensity as in Africa.

In addition, another study concluded that the introduction of broadband communications results in a substantial benefit for the economy. Maximum benefits are achieved in economies which have an intensive use of information technologies in particular where information processing and communications represent the production technologies (such as banking, insurance, services in general)[13].

However, other studies suggest on the contrary that it is development that leads telecommunications. A study shows that telecommunications investments are relatively more effective in upper-middle income countries than in low-middle-income countries[14]. This supports the idea of the complementary nature of telecommunications, according to which telecommunications should follow rather than lead development.

Most probably, a two-way casual relationship exists with a feedback between telecommunications and economic activity[15]. It remains nevertheless difficult to quantify the benefits of telecommunications to development since productivity gains do not flow only out of telecommunications equipment but also from telecommunications services. The latter have an economic impact which is quite difficult to measure.

3 Necessary but not sufficient?

The provision of telecommunications is a necessary but not a sufficient condition for economic growth of developing countries. One should be aware that simply creating a telecommunications infrastructure may not necessarily lead to development. Such process is more problematic than it would seem at first sight. In particular, telecommunications infrastructure might merely provide an efficient system to "suck out" the economic benefit and opportunities that would otherwise remain within developing countries, lock certain areas of developing countries into low-wage and low-skills developments while enhancing power structures and external control[16].

In order to contribute to development, telecommunications must be promoted within the particular economic, social, political and cultural situation of the country involved. It is therefore essential that local and regional activities are complemented and strengthened by the new

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[12] Mutambirwa [1992], p. 31. Studies also show that benefits from telecommunications investments have been significant, and in many cases exceed cost by at least a factor of 10. Breiner [1992], p. 444.

[13] CEC [June 1993], p. 70.

[14] Stone [1993], p. 459.

[15] Cronin *et al.* [1993], p. 415.

[16] In pressing for structural adjustment of economies in general and for liberalization and privatization of the telecommunications sector in particular, some international instances notably seem to be concerned more with the opportunities for profit of large companies than the overall economic development of the receiving developing country. Hills [1993], p. 24.

technologies, rather than replaced[17]. Clearly the danger of delivering telecommunications outside of a coherent and comprehensive strategy in developing countries would be to create "new cathedrals in the desert"[18]. Thus, the modernization paradigm of technology transfer to developing societies is to be replaced by participatory communications policies. In addition, telecommunications must contemplate a wider agenda of economic development to the benefit of developing countries and be used as an instrument for development rather than a cause for increasing gaps.

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[17] It should be noted that some semi-industrialized developing countries (Brazil, India and South Korea) are an example of successful own development efforts. The national programmes of these countries have led to an accumulation of knowledge and competence in the sector, and to self-sufficiency in their telecommunications equipment sector. Göransson [1993], pp. 247-248.

[18] A similar negative development might occur in cities of developed countries where telematics network may speed up disinvestment and deindustrialization of peripheral cities. Gibbs [1993], p. 253.

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ANNEX C

STAR CONTRIBUTION TO REGIONAL TELECOMMUNICATIONS

1 Major effects of STAR

The major effect of STAR has been in the sphere of advanced telecommunications infrastructures (ISDN, data networks and mobile services, etc.). Apart from its effect in stimulating infrastructural investment, STAR also induced new applications in the following areas:

a) database access, especially via videotex systems;

b) office automation services;

c) electronic data interchange (EDI), teleworking services, videoconferencing systems;

d) new telecom service centres.

2 Main STAR projects in Portugal

STAR has had a major effect in the modernization of networks and services in Portugal. The most important STAR-related developments in Portugal were:

a) digitalization of the network (ISDN);

b) introduction of new services (mobile radio, paging, videotex, videoconferencing) and extension of packet-switching;

c) promotion of individual services and, in particular, the promotion of ATS in the SME sector;

d) aid to help SMEs access ATS, the Sisat programme.

3 Main STAR projects in Spain

The biggest emphasis in Spain has been placed on CAD/CAM systems using telephone or data networks. The most important STAR-related projects in Spain included:

a) an electric CAD/CAM system for use by manufacturers of high voltage electrical equipment, in which a CAD/CAM design centre was established in Bilbao;

b) a CAD/CAM transmission centre for SMEs in the mechanical and plastic parts sector; a total of 13 companies operate with this centre in Murgia (eczkadi) from remote locations;

c) an experimental distance working network for textile manufacturers in Talavera de la Reina (Castilla-la-Mancha);

d) an integrated telecom service centre in Mataro (Catalonia) which included a distance working CAD/CAM service for the textile industry, the applications available (design of new models, pattern designs, etc.) are used by several textile companies.

ANNEX D

EXAMPLES OF TEXTS OF EU AGREEMENTS WITH DEVELOPING COUNTRIES COVERING TELECOMMUNICATIONS

1. Lomé Convention
2. Framework Agreement with Brazil
3. Framework Agreement with Bolivia, Colombia, Ecuador, Peru and Venezuela

TITLE VIII

Enterprise development

Article 110

1 The Community and the ACP States stress that:

i) enterprises constitute one of the main instruments for achieving the objectives of strengthening the economic fabric, encouraging inter-sectoral integration and increasing employment, incomes and the level of skills;

ii) present ACP efforts to restructure their economies should be complemented by efforts to strengthen and enlarge their productive base. The enterprise sector should play an important part in the ACP States' strategies to revive growth;

iii) a stable and propitious environment should be created together with an effective domestic financial sector with a view to reinvigorating the enterprise sector in the ACP States and to encouraging European investment;

iv) the private sector needs to be made more dynamic and play a greater role, in particular through small and medium-sized enterprises, which are better suited to conditions prevailing in the ACP economies. Micro-firms and crafts should equally be encouraged and supported;

v) private foreign investors complying with the objectives and priorities of ACP-EEC development cooperation should be encouraged to participate in the development efforts of the ACP States. Fair and equitable treatment should be accorded to such investment as well as a propitious, secure and predictable investment climate;

vi) the fostering of ACP entrepreneurship is crucial for unlocking the considerable potential of the ACP States.

2 Efforts should be made to channel an increased proportion of the convention's financial resources both to the encouragement of entrepreneurship and investment and towards directly productive activities.

Article 111

In pursuit of the above-mentioned objectives, the Contracting Parties recognize the need to utilize the full range of instruments provided for by this Convention, including technical assistance, in the following areas with a view to sustaining private sector development:

a) support for the improvement of the legal and fiscal framework for business and development of a greater role for professional organizations and chambers of commerce in the process of enterprise development;

b) direct assistance for the creation and the development of business (specialized business start-up services; assistance for the redeployment of ex-public sector employees; assistance for technology transfers and development; management services and market research);

c) the development of services in support of the enterprise sector so as to provide enterprises with advisory services in the legal, technical and managerial fields;

d) specific programmes to training and developing the capacity of individual entrepreneurs, particularly in the small-scale and informal sectors.

Article 112

In order to support the development of the savings and domestic financial sectors, the following areas of action merit special attention:

a) assistance for the mobilization of domestic savings and the development of financial intermediaries;

b) technical assistance for the restructuring and reform of financial institutions.

Article 113

With a view to assisting enterprise development in ACP States, the Community shall provide technical and financial assistance, subject to the conditions laid down in the development finance cooperation Title.

TITLE IX

Development of services

CHAPTER 1

Objectives and principles of cooperation

Article 114

1 The Community and the ACP States recognize the importance of services in the formulation of development policies and the need to step up cooperation in this sphere.

2 The Community shall support the ACP States' efforts to increase their domestic capacity to provide services with a view to improving the working of their economies, relieving balance of payment constraints and stimulating the process of regional integration.

3 The object is to ensure that the ACP States derive maximum benefit from the provisions of this Convention, at national and regional level, and to enable them to:

- participate under the most favourable conditions in Community, domestic, regional and international markets by diversifying the range and increasing the value and volume of ACP States' trade in goods and services;
- increase their collective capacity by means of greater economic integration and consolidation of functional cooperation or cooperation on specific themes;
- stimulate enterprise development, notably by encouraging ACP-EEC investment in services, with a view to creating employment, generating and distributing revenue and facilitating the transfer and adaptation of technology to specific ACP needs;
- derive maximum benefit from national or regional tourism and improve their participation in world tourism;
- set up the transport and communications networks and informatics and telematics systems needed for their development;
- step up vocational training activities and transfer of know-how in view of the determining role of human resources in the development of services.

4 In pursuit of these aims, the Contracting Parties shall have recourse, in addition to the specific provisions on services to those on trade, trade promotion, industrial development, investment and education and training.

Article 115

1 In view of the wide range of services and their unequal contribution to development, and with a view to maximizing the impact of Community aid on the development of ACP States, the two Parties agree to pay particular attention to services necessary for their economies in the following areas:

- services that support economic development;
- tourism;
- transport, communications and information technology.

2 In order to implement cooperation in services, the Community shall help carry out programmes, projects and operations submitted to it on the initiative of the ACP States. To this end, it shall use all the means provided for in this Convention, notably those at its disposal under development finance cooperation, including those which are the responsibility of the Bank.

Article 116

In the field of the development of services, particular attention shall be given to the specific needs of landlocked and island ACP States arising from their geographic situation and also to the economic situations of least-developed ACP States.

CHAPTER 2

Services that support economic development

Article 117

In pursuit of cooperation objectives in this sector, cooperation shall concern marketed services, without, however, this leading to neglect of certain para-statal services required to improve the economic environment, such as customs computerization, by giving priority to the following services:

- services that support foreign trade;
- services required by the business sector;
- services that support regional integration.

Article 118

To help restore the ACP States' external competitiveness, cooperation in the field of services shall give priority to services that support external trade, the scope of which is as follows:

i) the creation of appropriate infrastructure for trade, in particular through operations to improve external trade statistics, automation of customs procedures, port and airport management and the establishment of closer links between the various protagonists in trade, including exporters, trade financing bodies, customs and central banks;

ii) the promotion of specifically trade-oriented services such as trade promotion measures that are also applicable to services;

iii) the development of other external trade-linked services such as trade financing and clearing and payment facilities, and access to information networks.

Article 119

To foster a strengthening of the economic fabric of ACP States, taking account of the provisions on enterprise development, particular attention shall be paid to the following areas:

i) business advisory services to improve the running of firms; notably by facilitating access to services in the fields of management, accountancy, information technology, legal advice, tax consultancy and finance;

ii) the setting-up of adequate, appropriate and flexible business financing facilities to stimulate the growth or setting-up of firms in the field of services;

iii) strengthening of the ACP States' capacity in financial services, technical assistance for developing insurance and credit institutions in the field of trade development and promotion.

Article 120

To underpin economic integration designed to create viable economies, and in view of the provisions on regional cooperation, particular attention shall be given to the following areas:

i) services to support trade in goods between ACP States through trade measures such as market studies;

ii) services required for the expansion of trade in services between ACP States with a view to enhancing their complementarity, notably by extending traditional trade promotion measures, adapted where necessary to the services sector;

iii) the creation of regional centres of services aimed at supporting specific economic sectors or jointly implemented sectoral policies, notably through the development of modern communications and information networks and computerized data banks.

CHAPTER 3

Tourism

Article 121

Recognizing the real importance of the tourist industry for the ACP States, the Contracting Parties shall implement measures and operations to develop and support tourism. These measures shall be implemented at all levels, from the identification of the tourist product to the marketing and promotion stage.

The aim shall be to support the ACP States' efforts to derive maximum benefit from national, regional and international tourism in view of tourism's impact on economic development and to stimulate private financial flows from the Community and other sources into the development of tourism in the ACP States. Particular attention shall be given to the need to integrate tourism into the social cultural and economic life of the people.

Article 122

Specific tourism development measures shall aim at the definition, adaptation and development of appropriate policies at national, regional, subregional and international levels. Tourism development programmes and projects shall be based on these policies on the basis of the following four components:

a) Human resources and institutional development, *inter alia*:
   - professional management development in specific skills and continuous training at appropriate levels in the private and public sectors to ensure adequate planning and development;
   - establishment and strengthening of tourism promotion centres;
   - education and training for specific segments of the population and public/private organizations active in the tourism sector, including personnel involved in the support sector of tourism;
   - intra-ACP cooperation and exchanges in the fields of training, technical assistance and the development of institutions;

b) Product development, *inter alia*:
   - identification of the tourism product, development of non-traditional and new tourism products, adaptation of existing products including the preservation and development of cultural heritage, ecological and environmental aspects, management, protection and conservation of flora and fauna, historical, social and other natural assets, development of ancillary services;
   - promotion of private investment in the tourist industry of ACP States, including the creation of joint ventures;
   - promotion of technical assistance for the hotel industry;
   - production of crafts of a cultural nature for the tourist market.

c) Market development, *inter alia*:
   - assistance for the definition and execution of objectives and market development plans at national, subregional, regional and international levels;
   - provision of support for ACP States' efforts to gain access to services for the tourist industry such as central reservation systems and air traffic control and security systems;
   - provision of marketing and promotional measures and materials in the framework of integrated market development plans and programmes and with a view to improved market penetration, aimed at the main generators of tourism flows in traditional and non-traditional origin markets as well as specific activities such as participation at specialized trade events, such as fairs, production of quality literature, films and marketing aids.

d) Research and information, *inter alia*:
   - improving tourism information and collecting, analysing, disseminating and utilizing statistical data;
   - assessment of the socio-economic impact of tourism on the economies of ACP States with particular emphasis on the development of linkages to other sectors in ACP States and regions such as food production, construction, technology and management.

CHAPTER 4

Transport, communications and informatics

Article 123

1 Cooperation in the area of transport shall be aimed at the development of road transport, railways, port installations and shipping, transport by domestic waterways and air transport.

2 Cooperation in the area of communications shall be aimed at the development of postal services and telecommunications, including radiocommunications and informatics.

3 Cooperation in these areas shall be directed particularly towards the following objectives:

a) the creation of conditions fostering the movement of goods, services and persons at national, regional and international level;

b) the provision, rehabilitation, maintenance and efficient operation of cost-effective systems serving the requirements of social and economic development and adjusted to the needs of users and to the overall economic situation of the States concerned;

c) greater complementarity of transport and communications systems at national, regional and international level;

d) the harmonization of the national systems installed in ACP States, while facilitating their adjustment to technological progress;

e) the reduction of barriers to frontier-crossing transport and communications, in terms of legislation, regulations and administrative procedures.

Article 124

1 In all cooperation projects and programmes in the fields concerned, efforts shall be made to ensure an appropriate transfer of technology and know-how.

2 Particular attention shall be given to training ACP nationals in the planning, management, maintenance and operation of transport and communications systems.

Article 125

1 The Contracting Parties recognize the importance of air transport in forging closer economic, cultural and social links between the ACP States and between them and the Community, in improving the communications of isolated or not easily accessible regions and in developing tourism.

2 The objective of cooperation in this field shall be to promote the harmonious development of national and regional ACP air transport networks and the modernization of the ACP fleet of aircraft in line with technical progress, the implementation of the International Civil Aviation Organization air navigation plan, the improvement of reception infrastructures and the application of international operating standards, the development and improvement of air maintenance centres, the provision of training and the development of modern airport security systems.

Article 126

1 The Contracting Parties acknowledge the importance of shipping services as one of the forces behind economic development and promotion of trade between them.

2 The objective of cooperation in this field shall be to ensure harmonious development of efficient and reliable shipping services on economically satisfactory terms by facilitating the active participation of all parties according to the principle of unrestricted access to the trade on a commercial basis.

Article 127

1 The Contracting Parties underline the importance of the United Nations Convention on a Code of Conduct for Liner Conferences and the ratification instruments thereof, which safeguard the terms of competition in maritime matters and afford, *inter alia*, the shipping lines of developing countries extended opportunities to participate in the conference system.

2 Consequently, the Contracting Parties are agreed, when ratifying the Code, on taking prompt measures for its implementation at national level, in conformity with its scope and provisions. The Community shall assist ACP States to apply the relevant provisions of the Code.

3 In conformity with Resolution 2 on non-conference lines, annexed to the Code, the Contracting Parties shall not prevent non-Conference lines from operating in competition with a Conference line as long as they comply with the principle of fair competition on a commercial basis.

Article 128

Attention shall be given in the context of cooperation to encouraging the efficient shipment of cargo at economically and commercially meaningful rates and to the aspirations of ACP States for greater participation in such international shipping services. In this respect, the Community acknowledges the aspirations of the ACP States for greater participation in bulk cargo shipping. The Contracting Parties agree that competitive access to the trade shall not be impaired.

Article 129

In the framework of financial and technical assistance for shipping, special attention shall be given to:

- effective development of efficient and reliable shipping services in the ACP States, notably the gearing of port infrastructure to meet traffic requirements and the maintenance of port equipment;
- maintenance or acquisition of handling equipment and watercraft and their modernization in line with technical progress;
- development of interregional shipping with a view to encouraging intra-ACP cooperation and improvements in the functioning of ACP shipping;
- technology transfer including multimodal transport and containerization for the promotion of joint ventures;
- setting-up of appropriate legislative and administrative infrastructure and the improvement of port management, notably through vocational training;
- development of inter-island shipping services and connecting infrastructure and to increased cooperation with economic operators.

Article 130

The Contracting Parties undertake to promote shipping safety, security of crews and the prevention of pollution.

Article 131

In order to ensure the effective implementation of Articles 126 to 130, consultation may take place, at the request of either Contracting Party, where necessary under the conditions provided for in the rules of procedure referred to in Article 11.

Article 132

1 In the field of cooperation on communications, particular attention shall be paid to technological development in supporting ACP States' efforts to establish and develop effective systems. This includes studies and programmes concerning satellite communication, where this is justified by operational considerations, in particular at regional and subregional level. Cooperation shall also cover means of observation of the Earth by satellite for meteorology and remote sensing purposes, notably their use for desertification control, halting all forms of pollution, the management of natural resources, agriculture and mining in particular, and land use planning.

2 Particular importance shall be attached to telecommunications in rural areas, in order to stimulate their economic and social development.

Article 133

The aim of cooperation in the field of information technology shall be the building-up of the ACP States' information technology and telematics capacity by offering countries which wish to give high priority to this sector support for their efforts to acquire and install information technology systems; the development of efficient telematic networks, including international financial information, the production, in time, of computer components and software in the ACP States, their participation in international activities in the field of data processing and the publication of books and reviews.

Article 134

Cooperation activities in the transport and communications fields shall be carried out in accordance with the provisions and procedures laid down in Title III, Part Three, of this Convention.

Framework Cooperation Agreement between the European Economic Community and the Cartagena Agreement and its Member Countries, Bolivia, Colombia, Ecuador, Peru and Venezuela

Article 14

Cooperation in the fields of information technology and telecommunications

1 The Contracting Parties recognize that information technology and telecommunications constitute one of the key sectors in modern society and are vital to its economic and social development, and declare themselves prepared to promote cooperation in fields of common interest, chiefly in respect of the following:

- standardization, testing and certification;
- earth- and space-based telecommunications such as transmission networks, satellites, fibre optics, integrated service digital network (ISDN), data transmission, rural and mobile telephone systems;
- electronics and microelectronics;
- information and automation;
- high-definition television;
- research and development in new information technologies and telecommunications;
- promotion of investment and joint investment.

2 Such cooperation shall take place in particular through:

- collaboration between experts;
- expert assessments, studies and exchanges of information;
- training of scientists and technicians;
- formulation and implementation of projects of mutual benefit;
- promotion of joint projects relating to research and development, the establishment of information networks and databanks, facilitation of access to existing databanks and information networks.

Framework Agreement for Cooperation between the European Economic Community and the Federative Republic of Brazil

Article 16

Information technology and telecommunications; use of space technology

The Contracting Parties recognize that information technology and telecommunications are vital to the development of the economy and society and declare themselves prepared to promote cooperation in fields of common interests, chiefly in respect of the following:

- standardization, testing and certification;
- earth and space-based telecommunications such as transport networks, satellites, fibre optics, integrated systems of digital network (ISDN), data transmission;
- electronics and microelectronics;

- information and automation;
- high-definition television;
- research and development in new information technologies and telecommunications;
- promotion of investment and joint investment.

Such cooperation shall take place in particular through:

- collaboration between experts;
- studies and interchange of information;
- training of scientists and technicians;
- formulation of specific projects of mutual benefit;
- promotion of joint projects relating to research and development, the establishment of information networks and databases linking universities, research centres, testing laboratories, enterprises and operators in the public and private sectors in Brazil and the Community.

Article 17

Tourism

Within the bounds of their laws, the Contracting Parties shall contribute to cooperation on tourism, which is to be achieved through specific measures including:

- an interchange of information and the carrying out of forward studies;
- assistance in statistics and data processing;
- training;
- the organization of events;
- the promotion of investment and joint investment in order to expand tourist travel.

ANNEX E

EU TELECOMMUNICATIONS PROJECTS IN DEVELOPING COUNTRIES

Country PAYS	Title	Budget kEcu	Nature	Year
	PROJECTS IN CENTRAL AND EASTERN EUROPEAN COUNTRIES			
	European Commission PROJECTS (PHARE and S&T Co-operation)			
Regional	Telecoms development programme	7000	Technical cooperation	1992
Bulgaria	Modern telecoms services I	3000	Technical cooperation	1991
Bulgaria	Modern telecoms services II	3000	Technical cooperation	1992
Czech and Slovak Republics	Reorganisation of telecoms I	6000	Technical cooperation	1991
Czech and Slovak Republics	Reorganisation of telecoms II	6000	Technical cooperation	1992
Latvia	GTAF-sub-comp. Transport	800	Technical cooperation	1992
Poland	Rural telecoms	6000	Technical cooperation	1990
Poland	PPTT project with EIB/EBRD	5000	Technical cooperation	1991
Romania	GTAP-sector reform support	2000	Technical cooperation	1992
Slovenia	GTAF-sub component Public infrastructure	645	Technical cooperation	1992
Albania	Extension and Mod. of telecoms	1700	Technical cooperation	1992
Central & Eastern Europe	PECO/COPERNICUS joint projets	5408	S&T Cooperation	1992
Central & Eastern Europe	PECO/COPERNICUS joint projets	5267	S&T Cooperation	1993
Total		51820		
	EIB PROJECTS			
Hungary	Improvement and modernisation of telecoms network	80000	Loans	1990
Poland	Extension and modernisation of telephone system	70000	Loans	1991
Bulgaria	Modernisation of telecoms network	70000	Loans	1992
Czech Republic	Telecommunications	65000	Loans	1993
Slovak Republic	Telecommunications	45000	Loans	1993
Total		330000		
	PROJECTS IN THE COMMONWEALTH OF INDEPENDENT STATES (CIS)			
	European Commission PROJECTS (TACIS)			
Regional	Training centre Central Asia Tashkent	1000	Technical cooperation	1993
Russian Federation	Local telecoms Western Siberia	300	Technical cooperation	1993
Russian Federation	BETO (switching) support Urals region	2000	Technical cooperation	1993

Russian Federation		Mod. Post offices Moscow/St Petersburg		1000		Technical cooperation	1993
Russian Federation		Training programmes		1300		Technical cooperation	1993
Russian Federation		Data information exchange system		1000		Technical cooperation	1992
Russian Federation		Development terrestrial communications		1850		Technical cooperation	1992
Russian Federation		Review/adaptation of legal/regulatory framework		940		Technical cooperation	1992
Russian Federation		Reconversion of military satellites		300		Technical cooperation	1992
Russian Federation		Telecoms training		840		Technical cooperation	1992
Ukraine		Ministry of Communications		830		Technical cooperation	1992
Ukraine		Optical fibre cable links development		550		Technical cooperation	1993
Kazakhstan		Ministry of Communications		600		Technical cooperation	1992
Uzbekistan		Ministry of Communications		550		Technical cooperation	1992
Turkmenistan		Ministry of Communications		500		Technical cooperation	1992
Azerbaijan		Ministry of Communications		500		Technical cooperation	1992
Georgia		Ministry of Communications		500		Technical cooperation	1992
Total				14560			
		PROJECTS IN MEDITERRANEAN COUNTRIES					
		European Commission PROJECTS					
Regional		Computerizing library Institut Monde Arabe		25		S&T Cooperation	1991
Regional		MODARABTEL		25		S&T cooperation	1993
Regional		Seminar new communication technologies		15		S&T cooperation	1993
Tunisia		Training Centre National d'Informatique		100		Technical cooperation	1992
Turkey, Malta, Algeria		VLSI design training		680		S&T Cooperation	1991/2
Israel, Tunisia		EDI promotion		31		S&T Cooperation	1992
Israel		MEDITEL plus		130		S&T Cooperation	1992
Tunisia, Turkey, India, China		Stand-alone workstation		336		S&T Cooperation	1991/3
Tunisia, Turkey, India, China		Training courses and free access to ECHO		198		S&T Cooperation	1991/3
Total				1540			
		EIB PROJECTS					
Malta		Rehabilitation telecoms		13000		Loans	1986
Morocco		Telecoms link Morocco/Spain		80000		Loans	1992
Jordanie		Telecommunications		20000		Loans	1993
Total				113000			

		PROJECTS IN ACP/OCT COUNTRIES					
		European Commission PROJECTS (Lomé Convention)					
Regional		Western Samoa satellite		15		Technical cooperation	EDF 7
Regional		Follow-up SRNRS project		100		Technical cooperation	EDF 7
Regional		Epidemiology Telematics		50		S&T cooperation	1993
Ethiopia		Telecoms rehabilitation		6000		Telecoms	EDF 7
Niger		Sysmin Telecoms sturdy		36		Technical cooperation	EDF 7
Senegal		Sonatel II		2585		Interest bonification	EDF 7
Tanzania		Southern Telecoms		25000		Subvention	EDF 7
Nigeria		Satellite telecoms Central Africa		20000		Subvention	EDF 7
Regional		Regional telecoms		2850		Subvention	EDF 6
Regional		Regional telecoms		2700		Quasi Capital	EDF 6
Regional		Intelcom 2		2500		Quasi Capital	EDF 6
Regional		Telecoms Guyana/Surinam		37		Telecoms	EDF 6
Regional		Satellite telecoms Nigeria		89		Technical cooperation	EDF 6
Regional		Air navigation		103		Transfer from FED 4 to 6	EDF 6
Regional		Tender doc. satellite telecoms		532		Technical cooperation	EDF 6
Regional		Spot util. info. Spatial		55		Technical cooperation	EDF 6
Regional		Satellite telecoms Central Africa		18500		Subvention	EDF 6
Regional		Coop.meteorology tropical cyclon		1000		Subvention	EDF 6
Regional		Coop.meteorology tropical cyclon		4000		Special loan	EDF 6
Regional		Feasibility study CIMH		38		Technical cooperation	EDF 6
Regional		Rectas teledetection Nigeria		38		Technical cooperation	EDF 6
Benin		Project OPTB		7000		Telecoms	EDF 6
Mozambique		Rural telecoms		33		Technical cooperation	EDF 6
Mozambique		Rural telecoms		735		Technical cooperation	EDF 6
Mozambique		Rural telecoms services		13000		Subvention	EDF 6
Mozambique		Study on interv. on meteorology		59		Subvention	EDF 6
Rwanda		Rwanda telecoms		8000		Quasi Capital	EDF 6
Senegal		Sonatel project		12000		Quasi Capital	EDF 6
Sierra Leone		Telecoms network		2500		Special loans	EDF 6
Sierra Leone		Telecoms network		2500		Special loans	EDF 6

Sierra Leone		Telecoms network		5500		Subvention	EDF 6
Sierra Leone		Assets evaluation SLNTC/SLET		160		Technical cooperation	EDF 6
Sierra Leone		Merger SLNTC and SLET		750		Technical cooperation	EDF 6
Somalia		Satellite telecoms links		63		Technical cooperation	EDF 6
Somalia		Tender evaluation satellite link		170		Technical cooperation	EDF 6
Sudan		Telephone cable study		47		Technical cooperation	EDF 6
Sudan		Telecoms link Sudan/Egypt		300		Technical cooperation	EDF 6
Tanzania		Telecoms southern highlands		212		Technical cooperation	EDF 6
Tanzania		Telecom network West Tanzania		39		Technical cooperation	EDF 6
Togo		Project Post and Telecoms		9300		Quasi Capital	EDF 6
Zimbabwe		Telecoms 2 project Zimbabwe		3450		Interest bonification	EDF 6
Ivory Coast		ONT2 project -Nat.Office Telephone		1640		Interest bonification	EDF 6
Fiji		Fij telecoms		1320		Interest bonification	EDF 6
Kiribati		Telecoms focal sector		5700		Subvention	EDF 6
Kiribati		Inter Island Telecoms link		90		Technical cooperation	EDF 6
Kiribati		Evualuation Tenders Equipment		29		Technical cooperation	EDF 6
Kiribati		Telecom 4 09 04		10		Transfer from FED 4 to 6	EDF 6
Kiribati		Digital switching		248		Transfer from FED 4 to 6	EDF 6
Kiribati		Digital switching 10.91		87		Technical cooperation	EDF 6
Kiribati		Prep. Kiribati Telecoms		60		Technical cooperation	EDF 6
Western Samoa		Pacific Telecoms 44417		59		Transfer from FED 4 to 6	EDF 6
Netherlands Antilles		Landsradio international communications		345		Interest bonification	EDF 6
Regional		Regional telecoms network Fiji		2545		Subvention	EDF 5
Regional		Indian ocean navigation telecoms		2956		Subvention	EDF 5
Regional		Pacific region telecoms suppl.		600		Subvention	EDF 5
Regional		Regional telecoms network Fiji		5000		Special loan	EDF 5
Regional		Intelcom region project		9935		Quasi Capital	EDF 5
Regional		Satellite telecoms Congo		493		Technical cooperation	EDF 5
Regional		Teledetection regional center		480		Technical cooperation	EDF 5
Regional		Training Cedeao Nigeria		66		Technical cooperation	EDF 5
Regional		Cedeao telecoms Haute-Volta		188		Technical cooperation	EDF 5
Regional		Install. center transit int.telecoms		68		Subvention	EDF 5
Regional		African cartography		300		Technical cooperation	EDF 5
Regional		Actvities CRTO-teledetection		232		Technical cooperation	EDF 5

Congo		ONPT international telecoms		869		Telecoms	EDF 5
Comoros		Telecoms study		3		Technical cooperation	EDF 5
Comoros		AT PTT		322		Technical cooperation	EDF 5
Equatorial Guinea		Malabo Douala telecoms link		210		Technical cooperation	EDF 5
Kenya		KPTC 3D telecoms project		2557		Interest bonification	EDF 5
Kenya		Aeronautical telecoms study		57		Technical cooperation	EDF 5
Lesotho		Lesotho telecoms corporation		194		Technical cooperation	EDF 5
Sierra Leone		Rehabilitation telecoms study		8400		Special loan	EDF 5
Sierra Leone		Nation telecoms study		181		Technical cooperation	EDF 5
Sierra Leone		Telecoms proj. detailed study		597		Technical cooperation	EDF 5
Sierra Leone		Telecoms services assistance		676		Technical cooperation	EDF 5
Sierra Leone		Rehabilitation telecoms network		4850		Subvention	EDF 5
Togo		Study OPTT Lome-Kara		83		Quasi Capital	EDF 5
Nigeria		Effects of privatisation telecoms		20		Technical cooperation	EDF 5
Zimbabwe		Telecom Zimbabwe		1914		Interest bonification	EDF 5
Kiribati		South Tarawa telephone system		300		Subvention	EDF 5
Kiribati		Inter island telecom links		115		Technical cooperation	EDF 5
Guinea		National meteorology		73		Subvention	EDF 5
Regional		Regional telecoms network Fiji		18		Subvention	EDF 4
Regional		Indian ocean navigation telecom		7467		Subvention	EDF 4
Regional		Telecoms Regional Center (FID)		4300		Special loan	EDF 4
Regional		Indian ocean navigation telecom		48		Technical cooperation	EDF 4
Regional		ECOWAS telecoms project		28		Technical cooperation	EDF 4
Regional		Telecoms study Brazzaville		187		Technical cooperation	EDF 4
Regional		UAPT meeting		49		Technical cooperation	EDF 4
Regional		Meteosat station Senegal		195		Technical cooperation	EDF 4
Comoros		Inter island links		2040		Telecoms	EDF 4
Comoros		Telecoms study		7		Technical cooperation	EDF 4
Comoros		Telecoms study		214		Technical cooperation	EDF 4
Comoros		Interurban telecoms study		74		Technical cooperation	EDF 4
Comoros		PTT service study		20		Technical cooperation	EDF 4
Lesotho		Rural post offices		1328		Subvention	EDF 4
Lesotho		Telecoms corporation		22		Technical cooperation	EDF 4
Sudan		Improvement of telecoms		5896		Subvention	EDF 4

Swaziland		Radio services improvement		1121		Subvention	EDF 4
Kiribati		South Tarawa telephone system		2626		Subvention	EDF 4
Kiribati		Prep. supervisory telecoms project		41		Technical cooperation	EDF 4
Kiribati		Digital switching telecoms		42		Technical cooperation	EDF 4
Solomon Islands		Telephone transm.system development		5961		Special loan	EDF 4
Western Samoa		Pacific telecoms		87		Subvention	EDF 4
Seychelles		Meteorology station		147		Subvention	EDF 4
Total				237832			
		EIB PROJECTS					
Congo		ONPT		6100		Loans	1985
Ivory Coast		Intelci ONT		10000		Loans	1982
Ivory Coast		ONT 2		10000		Loans	1986
Kenya		KPTC Third Telecoms		22000		Loans	1985
Zimbabwe		Zimbabwe telecoms		15000		Loans	1983
Zimbabwe		Telecom II		18000		Loans	1989
Netherlands Antilles		Landsradio international telecoms		3100		Loans	1988
Fiji		Fiji telecoms		7000		Loans	1989
Senegal		Sonatel II		13000		Loans	1992
Regional		Intelcom		10000		Risk capital	1983
Regional		Intelcom		21000		Risk capital	1987
Benin		OPTB		7000		Risk capital	1989
Rwanda		Telecoms		8000		Risk capital	1989
Senegal		Sonatel		12000		Risk capital	1987
Togo		OPTT		9300		Risk capital	1989
Ethiopia		Telecoms rehabilitation		6000		Risk capital	1992
Guinee Bissau		Guinee Telecom		2500		Risk capital	1993
Total				180000			
		PROJECTS IN CENTRAL AND SOUTH AMERICA					
		European Commission PROJECTS					
Regional		Development telecoms Central America		13800		Technical cooperation	1991
Regional		Satellite telecoms stduy (SATS)		2200		Technical cooperation	1988
Regional		Seminars in Latin America (AHCIET)		375		S&T cooperation	1991/3

Regional		REDALC (Networks for universities)		219		S&T cooperation	1991/3
Regional		ROCOMI		190		S&T cooperation	1992
Regional		Potential for inter-regional coop. in sofware		32		S&T cooperation	1993
Regional		FLEXSYS		136		S&T cooperation	1992
Brasil		Partcipation Midest 92 Paris		95		Subvention	1992
Argentina		Stand/certifcation electronic products		669		Technical cooperation	1989
Mexico		Rehabilitation telecoms school		85		S&T cooperation	1991/2
Costa-Rica and Brasil		Distributed information systems for CIM		162		S&T cooperation	1992
Venezuela		Human resources		98		S&T cooperation	1993
Total				18061			
		PROJECTS IN ASIA					
		European Commission PROJECTS					
China		Data transmission system for decision support system		4852		S&T/industrial cooperation	1992
China		Comformance testing laboratory		1533		S&T/industrial cooperation	1991/3
China		Computer intergrated manufacturing system		1180		S&T/industrial cooperation	1991/3
China		Movable computer training and service station		1602		S&T/industrial cooperation	1990/2
China		Information network SSTC		2211		S&T/industrial cooperation	1992/3
China		Computer and application network		1993		S&T/industrial cooperation	1993
China		Telecoms banking network		35		S&T/industrial cooperation	1993
China		S&T telecoms network		212		S&T/industrial cooperation	1993
China		Training		82		S&T/industrial cooperation	1993
India		Software services support and education 3SE		2753		S&T/industrial cooperation	1993
India		Telecoms programme 93		577		S&T/industrial cooperation	1993
Mongolia		Telecoms training courses		320		S&T/industrial cooperation	1993
Mongolia		Telecoms technical visits		133		S&T/industrial cooperation	1993
Total				17482			
TOTAL EC/EIB PROJECTS IN DEVELOPING COUNTRIES (in kEcu)				964294			

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INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 60-E

Kingdom of Cambodia

STATEMENT BY H.E. MR. SO KHUN, SECRETARY OF STATE,
MINISTRY OF POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General,
Distinguished Guests,
Ladies and Gentlemen,

I am pleased to have the honour of representing the Government of Cambodia's Ministry of Posts and Telecommunications for the first time in many years at the ITU World Telecommunication Conference.

My country has experienced many years of turmoil which has led to the destruction of much of our infrastructure and telecommunications facilities.

But thanks to the efforts of the international community, the United Nations and the people of Cambodia we are now beginning the task or reconciliation and reconstruction.

Telecommunications facilities and services will be essential for the reconstruction and rehabilitation of the social and economic system of Cambodia. With a density of 8 telephones per 100 people Cambodia lags far behind most of the other countries in the Asia Pacific region and indeed the rest of the world. In Phnom Penh, the capital of Cambodia, we have only 7 000 lines to serve a population of over 800 000 people and in our 19 provinces containing over 7 millions people most of the existing 1 200 lines are connected to old and outdated equipment.

The country has only limited national trunking facilities and until recently international services were limited to a few satellite channels and HF radio links to Vietnam.

In the past few years improvements have been made to our international services and later this year we will inaugurate a new standard A earth station. Earlier this month our Ministry with the assistance of the ITU, negotiated the donation of a considerable amount of telecommunications equipment from UNTAC the UN peace keeping operation in Cambodia. This will be the basis of a national trunking network linking Phnom Penh with all provincial capitals and our international services. However, our basic domestic network still remains very undeveloped in the capital and throughout the country.

In 1993 ITU began a programme of technical assistance to the Government of Cambodia providing a resident advisor and implementing a number of short-term experts to lay the ground work for our restructuring and rehabilitation activities. Continuation and expansion of the ITU programme and the production of our first comprehensive Master Plan is anticipated for 1994 and is considered essential if a balanced and planned development of the sector is to be accomplished.

The immediate infrastructure needs of Cambodia have been estimated to cost $US 140 million over the next four years. The financing of these capital projects and associated technical support will require a combination of donor assistance, concessional loans and private sector funds. Training and management support for our staff will be needed to insure long-term operations and maintenance of the facilities.

Our immediate goals are:

- to achieve a telephone penetration of 1% over the next few years;
- to install digital equipment in our main switching centres throughout the country;
- to reconfigure and make operational the national trunking network;
- to introduce public call office services in all provincial capitals and expand subscriber networks accordingly;
- to prepare a Master Plan in 1994 and to begin a comprehensive training programme for our technical and management staff.

To achieve these goals Cambodia will rely on a partnership with the ITU, the private sector and international donors to achieve our development objectives and to insure access to the latest in technology, information, financing, training, standards of operation and participation in the worlds telecommunications family.

Cambodia is the home of Angkor Wat, considered one of the great wonders of the world and we possess a strength of spirit which will enable us to once again prosper within the international community. These old virtues combined with the access to modern technologies, expertise and adoption of new management techniques will, I am sure, allow us to rapidly build our telecommunications facilities and services to a world class standard.

We welcome your assistance and investments and we thank the international community and particularly the ITU for the opportunity to meet in this forum and I look forward to our future as a full member of the global network village.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 61-E

INTELSAT

SATELLITE COMMUNICATIONS AND HUMAN RESOURCE DEVELOPMENT: ESSENTIAL ELEMENTS FOR ECONOMIC GROWTH

by Mr. Irving Goldstein, Director-General and CEO

The power and immediate impact of satellite communications is absolutely essential for economic and social development. The reliable telephone, broadcasting, and data services provided by satellites have created better medical and education services, a healthier business climate, and increased social cohesiveness in countries around the world. Furthermore, a satellite network can be installed relatively quickly and inexpensively, especially when compared to the time and expense of constructing terrestrial networks within a country, and laying submarine cables to other countries. And, given today's advances in digital technology, the signal quality of satellite communications is comparable to that of optic fiber cables.

Given the current pace of geopolitical, economic, and technological change throughout the world, a reliable and cost-effective communications network becomes even more crucial to the achievement of development goals. A developing country must implement a telecommunications network which enables its citizens and businesses to interact with counterparts in other countries on an equal basis. Otherwise, the country's economic development will lag.

For developing countries and the newly independent states (NIS), therefore, satellite systems are a ready answer to regional and world-wide communications requirements. Not only can satellites provide instant access to other countries, they can serve as the foundation for the development of integrated domestic networks. For many years now, INTELSAT has proven the applicability of satellite communications to developing countries. At present, more than 40 countries use INTELSAT for their own domestic services.

Regional and domestic applications

Satellites have made possible enhanced economic prosperity and improved standards of living for millions of people throughout the world. Most nations, in fact, established their first high-quality international telecommunications connections via the INTELSAT system. Many have used INTELSAT domestic and regional services, as well, to augment terrestrial networks, or to act as the backbone for the provision of basic telephony service. The wealth of communications possibilities created by the global system has made it easier for people to talk to one another, made health and educational resources more accessible, and made it easier for business to conduct business around the world.

Satellite services can be provided practically anywhere and are truly "non-discriminatory" with regards to a country's economic status or size. In fact, one of the largest countries, China, and one of the smallest, Guatemala, illustrate how satellites act as catalysts for economic, educational and social growth. China's national "TV University," distributed via INTELSAT and a domestic satellite, has provided educational opportunities to students throughout the country. This system, which distributes televised college-level courses to students, began 14 years ago using only one transponder serving less than 100 sites. Since then, more than 15,000 downlinks have been added and more than 1.57 million Chinese students have received their degrees.

In Guatemala, local authorities are installing an INTELSAT-based network to bring modern telephony to rural villagers throughout the country. Already, ten villages each have been equipped with two public telephones linked via a VSAT to the network's control center. The second stage of this project will incorporate another 120 remote terminals in the coming months.

The 11-meter antenna in Guatemala City that anchors this domestic thin-route service network also supports digital carriers to boost international telephone capacity for the public-switched network. In addition, the antenna will increase the availability of private-line systems for multi-national corporations located in Guatemala. These enhanced telecommunications facilities may attract other companies to the country and stimulate other forms of investment.

Today, and into the next century, regional requirements constitute some of the most critical services throughout the world. National telecommunications planners usually require flexible options to: first, reach out to their immediate neighbors (domestic); second, establish trans-continental type services (regional); and third, initiate more trans-oceanic links to complete a telecommunications infrastructure (international). As mentioned earlier, INTELSAT satellites currently serve about 40 countries with high-quality and cost-effective services to meet domestic and regional needs. And, with the new generation INTELSAT VII and VIII satellites to come, higher power beams, flexible zone coverages, and the ability to connect with smaller, less expensive earth stations will enable the Organization to serve more and more users in the coming years.

The capabilities of the next generation satellites will promote the development of regional networks, as seen in the ASETA and RASCOM efforts, both of which have chosen an INTELSAT solution to their telecommunications challenges. Both ASETA (comprising the countries of Peru, Ecuador, Chile, Bolivia, and Colombia) and RASCOM (the Regional African Satellite Communications organization) are turning to INTELSAT in order to implement a working satellite-based telecommunications network as soon as possible.

In the case of ASETA's Project Condor, planners decided that the existing capability of the INTELSAT system would enable the five Andean nations to hasten the development of the most technologically-advanced system possible, which will position the region for growth in the 21st century. ASETA and INTELSAT have agreed on a final plan for the implementation of its regional system in 1995, through the use of, initially, twelve and a half 36 MHz transponders on an INTELSAT satellite located at 329°E. Through the use of this leased capacity, ASETA members have minimized their own financial investment and opted for a flexible approach to meet their needs in an incremental fashion.

RASCOM, a cooperative effort involving many African countries, and INTELSAT, are in the process of devising a plan to consolidate all of the existing domestic use leases currently held by RASCOM members on several INTELSAT satellites to only one or two. Both ASETA and RASCOM are using INTELSAT capacity as a prelude to the deployment and operation of dedicated satellites for their regions. At this time, RASCOM is working with INTELSAT to find a spacecraft tailored to meet its needs.

With respect to the NIS in Europe and Asia, Turkey is already providing broadcast programming to the Central Asian republics via an INTELSAT satellite over the Indian Ocean. In this area of the world, network growth has been stunted because, formerly, all international calls originating in the former Soviet Union and Eastern Europe were routed through Moscow. The

tradition of this centralized network runs counter to the global trend, which is the realization of a "geodesic dome" concept of multiple origination and destination points all intertwined in a virtually seamless network. Satellites constitute a reliable and efficient means to "jumpstart" the communications networks of the Central Asian republics and put them in touch with other nations directly.

Geographical barriers and population considerations also play a role in determining the efficacy of satellite communications in a particular region. The Central Asian republics are, for the most part, land-locked countries with relatively low density populations. These are the classic characteristics for the type of thin-route links that satellites provide at much-lower costs than land lines.

The creation of viable regional networks will receive impetus from the establishment of INTELSAT's fourth operating region, which will increase the availability of services to the Asia-Pacific area. Satellites stationed at orbital locations approximately midway between the Indian and Pacific Oceans will enhance regional communications, and provide expanded options for international traffic as well as a wide base for television distribution and business networks. These spacecraft also will provide direct links between Japan, Australia and the Western Pacific Islands to Central and Eastern Europe, as well as direct connectivity from Russia and the Central Asian republics. In order to provide immediate capacity to this vital area, the INTELSAT 501 satellite has been redeployed there, and will serve on an interim basis until an advanced VII-series, or other satellite, is available to replace it in 1994.

Lower costs - in the sky and on the ground

Lower costs are encouraging increased use of satellite communications for development. Today, the provision of basic telephony and even more advanced services is much less expensive than before. Advances in antenna design, electronics, and microchip technologies have meant lower-priced earth station facilities with more features than earlier equipment. The transition from analog to digital operations, and other advanced transmission means, will contribute to a more efficient use of the frequency spectrum and capacity.

The goal of lowering earth station sizes and costs, while increasing service flexibility, has led to phenomenal growth in the VSAT market. Today's VSATs can handle a range of voice, data, and video applications -- everything from satellite news gathering operations used by major broadcasters to low-cost data networks bringing market prices to isolated farmers in rural areas. Furthermore, many VSATs are transportable, which makes service implementation even easier.

VSAT networks offer features that cannot be provided via terrestrial networks, for example, greater control over operations and costs. The number of parties involved in the communications circuit between any two locations in the network is significantly reduced when the VSAT is located on the customer's premises. The network manager, therefore, has greater control over the resources of the network and can allocate the resource as needed to meet changing requirements. VSAT technology also provides consistency and flexibility. Every location can have the same equipment, or VSATs can provide protocol conversion to allow devices with different protocols to communicate across the network.

Already, the use of small antennas has brought telephone service to people who may otherwise have had to wait months, if not years, for a terrestrial network to reach them. Several satellite operators are looking at ways to improve and expand VSAT services. For instance, INTELSAT is considering the implementation of C-band, portable "microterminals" as small as 50 centimeters in diameter. This concept has applications in thin-route telephony, broadcast or print news gathering operations, two-way data and duplex voice applications and emergency service restoration. Furthermore, users will find C-band more advantageous as the beams cover a much larger area than the Ku-band equivalent and C-band service is generally provided at a lower cost.

Another example of a technology that is keeping access costs down is demand assignment multiple access, or DAMA, which is often used in VSAT networks. With DAMA, an operator pays only for capacity in service, not for standby capacity that goes unused during most of the day. This system works even on the level of a single telephone call, as shown by INTELSAT's Signatory for Australia, Telstra. Telstra operates the Pacific Area Cooperative Telecommunications network, called "PACT," which is a completely meshed DAMA service connecting Australia and ten other countries in the area.

Several developing countries use PACT as a cost-effective and high-quality solution for "thin route" inter-island and international links. Controlled from Sydney, the network provides direct satellite connection on demand, thus sparing users the burden of transit tariffs. The control center can connect any two stations in the network by assigning a unique pair of frequencies to which they have exclusive use for the duration of their call. A proposed expansion and the coming digitization of the system will create even better quality and greater potential for network growth.

INTELSAT's VSAT services, together with cost reduction incentives -- as evidenced by progressive tariff reductions, long-term commitment discounts and various promotional programs -- demonstrate the Organization's goal of increasing access to the system at reduced cost. INTELSAT is helping to make progress affordable by reducing the cost of its capacity, so that today's space segment cost component has fallen to the range of one to two dollars a day for a voice channel on the system. Actions such as this will bring access to basic telephony and other services closer and closer to all end users in all parts of the world. Advanced satellites, such as the INTELSAT VII and others, will play an integral role in achieving this goal.

Other satellite applications

With regards to the capital required to construct earth station facilities and install switching equipment, a number of ways exist to ease the cost of implementing a modern satellite network -- joint ventures, development loans, and the establishment of separate facilities that supplement or replace existing, outdated equipment. This option has been used with immediate success in a number of areas.

In Russia, many digital overlay networks installed by joint venture companies carry local traffic and international traffic via the INTELSAT and INTERSPUTNIK systems. These networks were constructed to achieve a more reliable infrastructure -- separate from the existing public-switched facilities -- in a relatively short time. Such overlay networks are making it easier to conduct business there by facilitating the flow of domestic and international voice and data communications.

Many developing countries also are choosing cellular telephone systems to overcome extremely low telephone penetration rates, while eliminating the cost of wiring every domicile and business. Satellites play an important role in the implementation of cellular services. For instance, in Zaire, INTELSAT and a local company, Telecel, have implemented a system that links the various cells throughout that country with three MHz of satellite capacity leased from INTELSAT for domestic use. Using an 11-meter hub station in Kinshasa and smaller antennas elsewhere, the network will operate in a star configuration, allowing connection between one station and any other via the hub station and INTELSAT.

Human resource development

INTELSAT's training programs and those offered by training institutions around the world help satellite network operators use technology to their greatest benefit. Given the current environment of change and restructuring, human resource development includes much more than traditional manpower training programs. The industry today is experiencing change that is transforming its human resource needs. For example, state-owned enterprises are converting to privately-held status and greater competition is being introduced into previous monopoly markets. Furthermore, new products and services are emerging from the converging dynamics of telecommunications, data processing, video and broadcasting. This situation requires continuous learning in order to meet consumer demand with the highest levels of reliability.

The success of recent joint ventures between companies in industrialized nations and entities in developing nations shows the potential benefit to all concerned of greater cooperation in this field. INTELSAT stands ready to assist in a greater exchange of facilities and expertise between telecommunications administrations, to create greater distance education opportunities, and to establish closer ties between training institutions.

Conclusion

For almost 30 years, INTELSAT has provided a variety of domestic, regional and international services to many countries. Although a great many people around the world enjoy access to instantaneous, world-wide communication -- so much so that it is taken for granted -- such is not the case for the majority of the world's citizens. For this reason, INTELSAT's goal in the next century is to ensure the continued viability of satellites for economic and social development. INTELSAT's commitment to unmatched world-wide connectivity, unparalleled technical reliability, customer service and training initiatives will help people in developing countries realize their economic and social potential.

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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ICAO

THE ICAO FORMULA

by Dr. Philippe Rochat,
Secretary-General of the International Civil Aviation Organization

Mr. Chairman,
Ladies and Gentlemen,

Thank you, Mr. Chairman, and good afternoon ladies and gentlemen. First, the President of the ICAO Council, Dr. Assad Kotaite, joins me in extending to you ICAO's greetings and best wishes for the success of this important Conference.

Aviation and communication are allies. This fact has been recognized since the birth of aviation. Indeed, states have cooperated on aviation and communication issues long before ICAO was established 50 years ago. In 1910, that is, more than 80 years ago, a diplomatic conference had been convened in Paris to address the issue of air navigation regulations. The subsequent 1919 Paris Air Navigation Convention, then the Panama and Madrid Conventions of 1926 and 1928 and the Chicago Convention of 1944, have been steps in the continuous evolution of international civil aviation communication and navigation practices, policies and regulations.

In 1946, a special radio technical meeting was convened to evaluate wartime communications and navigational devices and technologies that might be adaptable to civil aviation needs. The results were regulatory and technical provisions for an essential terrestrial air navigation system which to date, is still in use. The results were also reflected in the ITU regulatory provisions, mainly the Radio Resolutions which were agreed at the WARC in 1947 in Atlantic City. This system, while basically unchanged since the war, has been modified and adapted through the years by ICAO in the light of technological developments and traffic growth requirements.

Recognizing the increasing limitations of contemporary air navigation and communications systems, ICAO, in 1983, embarked on a challenging and ambitious task. The outcome of this challenge is ICAO's communications, navigation, and surveillance/air traffic management (CNS/ATM) systems. CNS/ATM is a revolutionary new approach to expand airspace capacity while advancing aviation safety and efficiency. the concept is essentially the application of today's technologies in satellites and computers, data links and advanced flight deck avionics to cope with tomorrow's growing operational needs. In doing so, it will make obsolete much of today's expensive ground-based equipment with its inherent line-of-sight limitations.

One of the main elements required for a successful transition to the new system is the availability of adequate frequency spectrum. During the transition phase, current and new systems will have to co-exist. This may put an extra burden on the efforts to keep adequate aviation access to the frequency spectrum.

Air traffic control (ATC) communications will be primarily digital, voice and data using satellite, VHF and secondary surveillance radar (SSR) Mode S data links, integrated through an aeronautical telecommunications network (ATN) concept. The VHF and SSR Mode S make use of the 118-137 MHz band and some of the IGHz frequencies. The use of global navigation satellite system (GNSS) through global orbiting navigation satellite systems/global positioning systems (GLONASS/GPS) at 1.5-1.6 GHz frequencies will require adequate L-band frequencies to be available and measures to ensure interference free operation. The withdrawal of non-directional radio beacon (NDB) and VHF omnidirectional radio range/distance measuring equipment (VOR/DME) facilities will reduce aviation use of LF/MF frequency bands and the VHF/UHF frequency bands for NDB and VOR/DME respectively, although DME (960-1215 MHz) will continue to be used in conjunction with microwave landing system (MLS), to be operating at 5 GHz frequencies.

The above considerations on the future air navigation system will, of course, take effect after implementation, which may in some areas of the world, be after the year 2000. Until such time, and in particular in some oceanic and remote areas, the current navigation and communication systems need to be maintained, expanded and, where possible, improved.

Of increasing interest presently are a series of unresolved "institutional" questions relating to the funding, ownership, management or operation and control of the systems or the conditions under which such a system will be provided. However, while there is as yet no agreement on institutional issues, there is an interesting and potentially useful precedent for international co-operation. This is the precedent of the COSPAS-SARSAT system, an international satellite system for search and rescue (SAR). A group of States, Canada, France, the Russian Federation and the United States, assisted by other participating States and organizations, are providing this service. The COSPAS-SARSAT system consists of a constellation of satellites and a network of ground earth stations which provide search and rescue information to appropriate rescue authorities. The agreement details the responsibilities of the parties and ensures the administrative, operational and technical coordination among them.

The global transition to the ICAO CNS/ATM systems presents ICAO with significant new challenges and oppportunities for global civil aviation improvements. As instruments of communication they provide mechanisms for mutually enriching cooperation between our organizations. ICAO and its Member States are well aware of the magnitude of this transition and mindful of the tasks which must be accomplished. With the commitment of the aviation community to a future of continued growth and achievement, ICAO will be able to continue planning and developing a civil aviation system, and this includes communication and navigation, which meets the needs of the peoples of the world for safe, regular, efficient and economical air transport.

In the technical cooperation field, ICAO, like ITU, is dedicated to providing sophisticated technical advice in the civil aviation sector. Our sources of objective and impartial advice have been utilized for the development process by many countries. However, the limited availability of funds for technical cooperation, which is partly the result of the state of the world economy, is affecting the delivery of the assistance. This reduction is taking place particularly at a time when we are facing unprecedented demands for assistance from countries which are undergoing structural adjustment.

The new ICAO global initiatives in communications and air navigation will require enormous sums of investment, not only in equipment but also in human resources. Currently, ICAO relies on only one major multinational partner - UNDP - for funds for the implementation of civil aviation projects. It is thus imperative that we develop a new and dynamic approach to the funding of our objectives. We intend to propose to our next Assembly the establishment of a voluntary mechanism whereby Member States can deposit funds for the implementation of ICAO's own programme such as the implementation of our technical standards and regional air navigation plans and advancing specific matters such as CNS/ATM.

These global objectives require the full support of all our partners, particularly the developed nations and funding institutions, to make these technologies meaningful and available to all in the interest of a safe and efficient air transport system all over the world.

As small specialized technical agencies, ICAO and ITU have a lot to offer in the development process. Some of ITU's ideas on technical cooperation have been an inspiration to us. Accordingly, we must further examine the areas and the means whereby we can combine our complementary expertise in the assistance of our Member States. This means broadening our periodic consultations to embrace topics of technical cooperation. It also includes establishing linkages and common strategies in the delivery of programmes. I am confident that these contacts will lead in future to the delivery of integrated technical cooperation programmes.

That is why I am so pleased to have had the opportunity to address this august conference, thanks to ITU's invitation and to confirm not only our willingness to cooperate with ITU in the field of development, but also our special interest for the type of conference you have organized this week in this wonderful city of Buenos Aires. Your experience today in Argentina should be a model for us in ICAO.

Thank you, Mr. Chairman, for giving me the opportunity to address this gathering. Ladies and gentlemen, I wish you a very successful conference.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

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COMMITTEE 2

Note by the Secretary-General

SITUATION OF THE ACCOUNTS OF THE CONFERENCE AS AT 28 FEBRUARY 1994

I have the honour to submit herewith for examination by the Budget Control Committee an estimate of the expenditure of the Conference as at 28 February 1994.

The situation as at 28 February 1994 shows that the estimated expenditure of the Conference remains globally unchanged in relation to the budget approved by the Council and adjusted to allow for changes in salaries and allowances under the common system.

Pekka TARJANNE
Secretary-General

Annex: 1

ANNEX

Estimate of expenditure for the World Telecommunication Development Conference

Recapitulation	Budget value 1/1/93	Adjusted value 28/2/94	Actual expenditure 28/2/94	Committed and estimated expenditure	Total expenditure charged to reg. budget	Total expenditure charged to Host Administration
	- Swiss francs -					
Staff expenses						
Salaries and related expenses	380,000	386,600	-	386,600	386,600	-9,000
Travel (recruitment)	90,000	90,000	-	90,000	90,000	-87,000
Staff provided for the Conference	-	-				-15,000
Sub-total I	470,000	476,600	-	476,600	476,600	-111,000
Premises and equipment						
Premises, furniture, machines	20,000	20,000	-	20,000	20,000	1,537,000
Document production	60,000	60,000	23,800	36,200	60,000	-
Supplies and office expenses	30,000	30,000	9,300	20,700	30,000	-
PTT	40,000	40,000	12,800	27,200	40,000	-
Technical installations	20,000	20,000	-	20,000	20,000	-
Sundry and unforeseen	10,000	10,000	600	9,400	10,000	-
Sub-total II	180,000	180,000	46,500	133,500	180,000	1,537,000
Travel costs away from Geneva						
Per diem	-					492,000
Travel expenses	-					670,000
Travel expenses for fellows	-					33,000
Transport costs for materials and equipment	-					42,000
Local transport costs	-					165,000
Sub-total III	-					1,402,000
Social activities, reception costs	-					
TOTAL	650,000	656,600			656,600	3,197,000

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

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COMMITTEE 2

Note by the Secretary-General

CONTRIBUTION OF ENTITIES OR ORGANIZATIONS TO THE EXPENSES OF THE TELECOMMUNICATION DEVELOPMENT SECTOR OR TO THOSE OF THE CONFERENCE

A. Participants in the work of the Telecommunication Development Sector

The entities or organizations given in Annex 1 to this document contribute to the expenses of the Telecommunication Development Sector as a whole.

According to the 1994 budget approved by the Council, the value of the contributory unit for defraying the expenses of meetings of the Telecommunication Development Sector has been fixed at 63,840 Swiss francs in accordance with Nos. 479 and 480 of the Geneva Convention, 1992.

B. Entities or organizations non members of the Telecommunication Development Sector contributing to the expenses of the Conference

The entities or organizations which are not members of the Telecommunication Development Sector contribute to the expenses of the World Telecommunication Development Conference in accordance with Nos. 478, 479 and 481 of the Convention (Geneva, 1992).

The amount of the contribution per unit is set by dividing the total amount of the budget of the Conference by the total number of units contributed by Members as their share of Union expenses. The budget of the Conference amounts to 2,050,000 Swiss francs. The total number of Members' contributory units being 375 11/16, the contributory unit for entities and organizations which are not exempted amounts to 5,600 Swiss francs.

A list of these entities or organizations which are not members of the Telecommunication Development Sector and which contribute to the expenses of the Conference is given in Annex 2 to this document.

Pekka TARJANNE
Secretary-General

Annexes: 2

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ANNEX 1

List of participants in the work of the Telecommunication Development Sector

Position on 21 March 1994

	Number of contributory units
A. Recognized Operating Agencies and Scientific or Industrial Organizations	
Germany	
Deutsche Telepost Consulting GmbH (DETECON), Bonn	1/16
Argentina	
CADAS, Buenos Aires	1/16
Copitec, Buenos Aires	1/16
ERICSSON SACI, Buenos Aires	1/8
Telecom Argentina STET-France Telecom SA, Buenos Aires	1/16
Telefónica de Argentina, SA., Buenos Aires	1/16
Telintar, Buenos Aires	1/16
Australia	
Telstra Corporation Ltd., Sydney	1
Belgium	
Belgacom, Brussels	1/4
Canada	
SR Telecom Inc., St. Laurent	1/2
Korea (Republic of)	
Korea Telecom, Seoul	1/2
Denmark	
Tele Danmark A/S , Taastrup	1/2
Ecuador	
Empresa Estatal de Telecomunicaciones (EMETEL), Quito	1/2

	Number of contributory units
Spain	
Teléfonica de España, Madrid	1
United States of America	
American Telephone & Telegraph Co. (AT & T), Bedminster	1/4
ESL Incorporated, Sunnyvale	1/16
GTE SC/Telephone Operations, Irving	1/16
Iridium Inc., Washington	1/16
MCI Telecommunications Corporation, Mc. lean	1/16
Motorola, Washington	1/4
Panamsat, Greenwich	1/16
Telular International, Miami	1/16
Finland	
NOKIA Corporation , Espoo	1
France	
France Telecom, Montrouge	1
Société Française du Radiotéléphone (SFR), Paris	1/2
Société Télécommunications Radioéléctriques et Téléphoniques (TRT), Paris	1/2
Thomson-CSF, Paris	1/16
Indonesia	
PT Telkom, Bandung	1/4
Israel	
Tadiran, Holon	1/16
Telrad, Lod	1/16
Italy	
Societá Finanziaria Telefonica (STET), Roma	1
SIP - Societá per l'Ezercizio delle Telecomunicazioni, Roma	1
Japan	
The New ITU Association of Japan, Tokyo	1/16
Mexico	
Telecomunicaciones de México, México	1/16
Norway	
Norwegian Telecom, Oslo	1/2
Portugal	
Telefonos da Lisboa e Porto - TLP, Lisboa	1/8

	Number of contributory units
Slovak Republic	
Slovak Telecommunications, Bratislava	1/16
Czech Republic	
SPT Telecom S.P., Praha	1/8
United Kingdom	
British Telecom International, London	1
Cable and Wireless Public Ltd. Co., London	1/2
Sweden	
Telefonaktiebolaget L.M.ERICSSON, Stockholm	1/16
TELIA AB, Farsta	1
Switzerland	
Admerco Corporation, Zurich	1/8
B. Other entities dealing with telecommunication matters	
Canada	
Telecommunications Executive Management Institute of Canada (TEMIC), Montreal	1/16
C. Regional and other international organizations	
European Communities (EC)	1
International Maritime Satellite Organization (INMARSAT)	1/4
International Telecommunications Satellite Organisation (INTELSAT)	1
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ANNEX 2

List of entities or organizations non members of the Telecommunication Development Sector contributing to the expenses of the Conference

Position on 21 March 1994

	Number of contributory units
1. United Nations and its specialized agencies*	
Ecomic and Social Commission for Western Asia (ESCWA)	
International Civil Aviation Organization (ICAO)	
United Nations Development Progamme (UNDP)	
United Nations Educational, Scientific and Cultural Organization (UNESCO)	
World Health Organization (WHO)	
World Bank/International Finance Corporation (IFC)	
2. Regional telecommunications Organizations*	
Asia - Pacific telecommunity (APT)	
Caribbean Telecommunication Union (CTU)	
3. Intergovernmental organizations operating satellite systems	
4. Other international organizations	
Asia-pacific Broadcasting Union (ABU)*	
Hispano-American Association of Telecommunications Research and Study Centres (AHCIET)*	
Association of State Telecommunication Undertakings of the Andean Sub-Regional Agreement (ASETA)*	
Pacific Telecommunication Council (PTC)	1/16

* exempt from any contribution in accordance with Council Resolution No. 925

	Number of contributory units

5. Members of the Telecommunication Standardization Sector or of the Radiocommunication Sector, not yet members of the Telecommunication Development Sector

a) Recognized Operating Agencies and Scientific or Industrial Organizations

Germany	
Philips Kommunikations Industrie AG, Nürnberg	1/16
Canada	
Bell-Northern Research Ltd., Ottawa	1/4
Mitel Public Switching, Kanata	1/16
Spar Aerospace Limited, St. Anne-de-Bellevue	1/16
Teleglobe Canada Inc., Montreal	1/16
Telesat Canada, Gloucester	1/16
Chile	
Compania de Teléfonos de Chile, Santiago	1/16
United States of America	
Ameritech Services Inc., Schumburg	1/2
Bell Atlantic International, Arlington	1/16
Bell South, Washington D.C.	1/16
Communications Satellite Corporation (COMSAT), Washington D.C.	1/16
Hughes Network Systems International, Germantown	1/16
Nynex, White Plains	1/16
Sprint International Communications Corp., Reston	1/16
France	
ALCATEL, Paris	1/16
MET, Massy	1/16
Italy	
Fondazione Hugo Bordoni, Roma	1/16
Telespazio S.p.A., Roma	1/16
Japan	
Fujitsu Ltd., Kawasaki	1/16
Hitachi Ltd., Tokyo	1/16
Kokusai Denshin Denwa Company, Ltd. (KDD) , Tokyo	1/4
NEC Corporation, Tokyo	1/16
Nippon Telegraph and Telephone Corporation (NTT), Tokyo.	1/4
Oki Electronic Industry Co. Ltd., Tokyo	1/16

	Number of contributory units
Mexico	
Televisa S.A., México	1/16
Portugal	
Telecom Portugal, Lisboa	1/8
Singapore	
Singapore Telecom, Singapore	1/16

b) Regional and other International organizations

International Telecommunications Users Group (INTUG)	1/16
International Society for Aeronautical Telecommunications (SITA)	1/16
Total	2 15/16

INTERNATIONAL TELECOMMUNICATION UNION



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France Télécom

ADDRESS BY MR. BRUNO BROCHIER, DEPUTY CEO

Mr. Secretary-General,
Presidents,
Excellencies,
Ladies and Gentlemen,

Albert Einstein, a lucid and prophetic figure, was one of the first to foresee the fundamental role which information technologies would play in the world in the next century.

Today, with the 21st century just around the corner, everyone is aware of the radical changes already under way, the considerable impact they will have, and the imperative need for mankind to master those changes world-wide. Our meeting in Buenos Aires for this first World Telecommunication Development Conference is a striking testimony to this universal awareness and to our common determination to spare no effort in bringing about development within the community of ITU members.

France Télécom is particularly honoured to be invited to address the inaugural meeting of this historic assembly. We have four reasons to be gratified.

First of all, because we have not forgotten that the decision to institutionalize telecommunication development conferences was a central issue in France, five years ago, when the ITU Plenipotentiary Conference was held at Nice in 1989.

A second cause for satisfaction is the choice of Buenos Aires as the venue for the first WTDC. This is a highly symbolic and worthy choice, since Argentina is a fine example of the effectiveness of a policy of modernizing telecommunication networks and services as a driving force to speed up economic progress.

The third reason is directly related to the second. France Télécom is closely involved in the vast effort to modernize telecommunications in Argentina, as a partner of the operator Telecom Argentina, with whom we share the highs and lows of extremely rapid transformations and ambitious projects.

Finally, the fourth and last reason is that we, along with TELSTRA, the Australian public operator with whom we have many affinities, are the only operators to have the privilege of expressing their point of view in the opening addresses to this Conference. France Télécom thus has a duty to highlight the key role that the large operators in advanced industrial countries have a responsibility to play in the vast movement of world telecommunication development.

Back in 1991, France Télécom separated from the PTT Ministry, becoming an autonomous enterprise, in other words an organization which can only survive if it is capable of satisfying its customers and balancing its books.

In this way, we are adjusting to a totally new situation, where competition is rapidly gaining ground and, in the European Union, will embrace all telecommunication services by 1998. At the same time, the public authorities are preparing their new function as market regulators.

In this new context, France Télécom's approach to telecommunication development is guided by three main factors, namely:

- the desire to remain faithful to our tradition of solidarity
- our great technical and commercial potential
- the search for synergies from balanced and lasting partnerships.

Let me say a few words about each of these three topics.

The tradition of solidarity goes back a long way and constitutes a fundamental aspect of France Télécom's culture. The French operator has always been concerned with telecommunication development in other countries, especially those with whom France has had historical ties. Today, our enterprise is expanding its international presence to the world as a whole, reflecting its role as a global telecommunication operator.

This expansion is consistent with our tradition of solidarity and indeed reinforces that tradition. While continuing to support old-style technical assistance activities, which are being persued under the aegis of public authorities and remain extremely useful, we are also moving into new forms of exchange and transfer more germane to private enterprise, thus making a full and effective contribution to world telecommunication development. The balance and discipline required in commercial dealings imposes greater rigour in the economic allocation of development resources.

Our contribution to the world development effort hinges on the great technical and commercial potential which we can offer to share. In this regard, France Télécom has an exceptional amount of know-how to exchange, thereby conferring on it special responsibility. The know-how in question is the ability to master increasingly complex and forward-looking technology, a domain where there is no room for improvization and where France Télécom enjoys a strong foothold thanks to the CNET, its powerful research and development centre where 4,000 researchers are at work. Even some of the largest industrial companies, lacking long experience in the field, find it difficult to break into these complex domains where one has to cope with the constraints involved in the management of large networks and at the same time the need for flexibility in an increasingly tailor-made customer service.

Various players may of course gain a significant foothold in certain sectors such as mobile or satellite telecommunications. But fewer and fewer operators have the capability to master the complete gamut of communication media. The services offered by the France Télécom group, a true telecommunication specialist, cover the entire range from voice to image, not forgetting data, from fixed to mobile, from wireline to wireless and from submarine cable to satellite. I would add that our know-how also takes in management, including skills in software, planning, billing and, probably the most essential item, training of manpower.

It is this complete range of technical capabilities and professional skills which France Télécom intends to place at the service of world telecommunication development.

We are convinced that, to form part of the development team and play our full part, in everyone's interest including our own, we should not seek to go it alone but, on the contrary, strive to foster synergies from balanced and lasting partnerships. It is with this in mind that we have recently embarked on an important strategic alliance with the German operator Telekom in order to respond without delay to the highly sophisticated needs of the world market for business communications. It is also with this in mind that we are working in Argentina and many other countries on the American continent and on other continents: Europe, Africa, Asia, Oceania. Invariably, we endeavour first of all to establish a relationship of trust with the public authorities, given the overriding importance of a stable regulatory, tariff and fiscal framework and of a clear perception of the duties of a public service. Similarly, we look as matter of priority to establishing ties with entrepreneurs in the host country, which are essential if the actions undertaken are to be dynamic, be built on a solid foundation and produce a knock-on effect. The ties established with such enterprises are even more solid if they open up the way to foreign investment. Lastly, more often than not we act in a consortium with other foreign operators, a formula which safeguards against the dangers of domination, but nevertheless requires that the respective responsibilities of each participant be identified without ambiguity, so that business operations follow a consistent tack.

France Télécom's experience tends to confirm the validity of this process, in which an open network of partnerships is gradually formed, giving more and more people in all countries access to modern information technologies. This approach which we have selected appears to be fully consistent with the thrust of the future Buenos Aires Action Plan to which, in a certain manner of speaking, we have subscribed in advance by our actions. The Action Plan is an ambitious and intelligent document. We are particularly gratified that the vision adopted in the draft is a broad one, embracing areas such as information services and telematics which will be a key feature of tomorrow's societies. Or even today's societies in the case of certain services for which our country is already, in a manner of speaking, a step ahead. One striking example is the Minitel where the mine of information offered by 20,000 servers to over 6 million customers is providing us with unique and valuable experience as we approach the age of multimedia.

We have no doubt that the work of the Conference will feed and consolidate the lines of action already drawn in the Action Plan. France Télécom will endeavour to foster this process, striving to reconcile the technical and financial realism it has acquired from its experience, particularly in large multi-service network projects, with the tremendous -sometimes excessive- enthusiasm, generated by the prospect of future world-wide information highways.

On behalf of France Télécom, I therefore wish every success to the Conference, its Action Plan and ITU which, by way of this initiative, is channelling the forces of world telecommunication development towards the ideals of justice, solidarity and peace, to which all its members subscribe.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 66-E

United Kingdom

OPENING REMARKS BY H.E. SIR PETER HALL,
AMBASSADOR TO ARGENTINA

Mr. Chairman,
Ladies and Gentlemen,

I welcome this opportunity to offer some thoughts on some of the major issues to be considered by this important Conference.

The influences on economic growth are many, but few approach the effectiveness of telecommunications as an engine for development. It is a strategic resource, with the potential to affect the entire economy of a country. It also has a role in balance of trade and foreign exchange. Therein lies a danger. No one who has worked in Government will need to be reminded of the ever-hungry Finance Ministry and its readiness to seek any form of revenue. This has often affected telecoms which has been traditionally, prices above its cost for those services for which it is best suited - long distance and international links to overcome geographical distances. I do not need to spell out the potential benefit for development in exploiting the fact that modern technology allows much the same cost for X km as for Y km. By pricing telecoms too high and keeping it a scarce resource, economic and social development is held back. This needs a radical change both in the commercial and regulatory attitudes. I can truthfully say that the UK's experience since we made such a change in 1984 has been only positive.

The resources that the Development Sector has at its disposal are still quite limited. We have a budget within which to work and it is not elastic. In carrying out our work at this conference, it is vital that we focus sharply on the core issues and set tasks that will produce the maximum benefits from those finite resources.

However efficient we are in using the resources of the ITU Development Sector, the need for investment in infrastructure will remain. The UK fully understands the limitations imposed by national budgets and believes that the interests of the world telecoms system would best be served by ITU Members looking at a wide range of sources of finance for infrastructure development. There is for example, considerable scope for Joint Ventures. There are many well established and innovative organizations both large and small in many countries that are eager to become involved in telecommunications projects throughout the world. In the UK and in a growing number of countries in all parts of the world, - and very notably in Argentina - we have seen the introduction of competition play a major role in attracting new sources of investment into network development. But if those organizations are to commit their own resources, they must be confident that the risks are commercial ones that they understand. Across the world, companies will need the requirements for entry into the market to be fair and equal and for operations to be carried out under a stable regulatory and economic environment.

One of the questions that will be under discussion at this conference is that of new and innovative approaches to introducing and spreading services. Technology constantly evolves in a way which puts existing regulatory regimes into question. Satellite communications is a case in point. Small satellite terminals can be a comparatively cheap way of providing communications in a fast efficient way. Heavy up-front investment in infrastructure is avoided and a network can be allowed to grow organically in line with market demand. The dangers inherent in installing a fixed network to meet an uncertain market can be avoided. Equally, some of the new developments in using radio based links to provide telephony have shown the way towards rapid expansion of telephone penetration in the local area at low cost.

We in the UK have found that letting go of regulatory constraints on market entry creates a profusion of new ideas and new investment. We recognize the need to keep certain safeguards to ensure consumers benefit and universal service is provided. But we have found with the benefit of hindsight, that you can relax more controls than you think when starting the process. By attracting new investment and new technology, competition can help positively in developing a network and by stimulating market growth, actually strengthen the position of the previous monopoly. In the UK, we have seen profitability of operators and the universality and the quality of service improve dramatically.

An unreliable and restricted telecoms system is also a powerful brake on development. Investors in manufacturing need to be able to order supplies and communicate with customers. If neither they, nor their customers can get services they need, the investment will not happen. The same is even truer of service and distribution industries, which are more reliant still on easy access to information.

The UK recognizes this in its work in telecommunications in the developing countries.

The UK is an active member of the Commonwealth Telecommunications Organization (CTO) which provides a useful forum for facilitating cooperation between its member countries. Both BT and Cable and Wireless support the activities of the CTO and contribute more than half the organization's £3 million annual budget. The CTO's ongoing Programme of Development and Training for telecommunications professionals is a good example of the kind of cooperative programme which can deliver practical benefits for individual countries as well as the wider telecommunications community. The CTO's new business plan - which has the active support of BT and Cable and Wireless - is designed to ensure amongst other things that the organization's expenditure is focused on the maximization of real benefits by the most efficient means.

We all understand that, given the immense and growing demands on aid resources globally, it is inevitable that the telecommunications sector will often be a low priority of the recipient Government compared to humanitarian assistance or the provision of basic human needs. Nevertheless, through our bilateral aid programme, the UK has been able to provide assistance for a wide range of telecommunications and broadcasting projects in a number of countries, including Ghana, Kenya, Indonesia, India and Colombia. Many of these projects have involved the expansion of telephone networks in less well developed countries, pursuing this aspect of their development. UK Government aid for telecommunications and telecommunications related projects amounted to £13 million in 1992/93. This is, of course, in addition to the involvement of British telecommunications companies in assisting expansion and growth of the networks of a large number of developing countries throughout the world.

Ladies and Gentlemen, I do not wish to delay the work of this Conference. But I would like to record our thanks to the Argentine authorities for their work in organizing this event. My delegation regards the Conference as a major event in the area of telecommunications, and we look forward to making our contribution to its work.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 67-E

INMARSAT

TELECOMMUNICATIONS AND DEVELOPMENT: THE EMERGING OPPORTUNITIES

by Mr. Olof Lundberg, Director-General

Gauging the new optimism

There are few people who will have failed to register a growing confidence and optimism in many developing countries and emerging markets in the early 1990s. Nowhere is this more apparent than in the telecommunications field. There is a conviction now that real telecommunications progress can now be made in areas where, even a few short years ago, the problems seemed insurmountable.

What has changed in these past few years? What has given rise to this new "can-do" spirit?

On the surface, the telecommunications disparity between the industrialized and the emerging world appears to be just as acute as it was when the Maitland Commission first diagnosed the extent of the problem in its "Missing Link" report 10 years ago. "Teledensity" - the number of telephone lines per 100 inhabitants - increased by 10 per cent in industrial countries and only 1.4 per cent in the rest of the world from 1983 to 1992. At this rate of increase, as the ITU points out, teledensity will actually decrease for developing countries since population growth is outstripping these numerical gains.[1]

A new landscape of opportunities

Despite these somewhat gloomy statistics, I believe that conditions are as ripe as they have ever been for substantive advancement, growth and modernization in telecommunications in developing countries. The argument is based on the fact that conditions have improved radically over the past 10 years in at least three major areas crucial for telecommunication growth. These improvements are in:

- the choice in technology and services,
- new regulatory and commercial options, and
- expanding sources of funding and assistance.

[1] Draft ITU World Telecommunication Development Report, 1993

Let us explore the impact of each of these in turn.

1. New choices in technology and services

Ten years ago, Plain Ordinary Telecommunications Service pretty well dominated the landscape of service possibilities. A fixed telecommunication service infrastructure, while perhaps economically viable in large population centres, is too burdensome to extend to smaller towns, or rural and outlying areas in many countries. Microwave or satellite links for trunking and thin route telephony were options, but both are capital intensive. Ten years ago, there was very little around in the way of mobile. And mobile satellite options were restricted to niche markets such as the maritime user, with both equipment and communication charges relatively expensive.

Today, scores of newer technologies such as cellular mobile for both voice and data, V-Sat, fibre optics and personal mobile satellite services have become available. These technologies have led to cheaper, smarter networks, cheaper, smarter terminals and more cost-effective services. In doing so, they have brought a new range of choices for telecommunications planners. More than ever before, solutions can be found or tailor made to meet precisely defined communications needs or to solve specific communications problems.

Personal mobile satellite services

In the mobile satellite sector, technology and service advances have already changed the landscape. In the 1980s, services such as Inmarsat-A could provide full data, voice and telex services to moving terminals, but the terminals themselves, at US$35,000 were expensive and hardly small enough to be classed as "portable".

Today, we have Inmarsat-M, the briefcase satellite telephone - usable anywhere - at about a third the cost of Inmarsat-A. Similarly, Inmarsat-C - gives us inexpensive store and forward data services. In a few years, the briefcase will shrink to about half the current size, once Inmarsat brings into service its powerful third-generation satellite series. This evolution is leading, inevitably, to the hand-held satellite phone.

Personal satellite services have already begun to steepen the growth curve from today's mobile satellite market of 35,000 to hundreds of thousands and eventually millions of customers.

Even by the year 2000, terrestrial cellular coverage will reach only a fraction of the world's population leaving millions without cellular access. But mobile satellite communications are available virtually anywhere in the world. This is precisely why the service holds out so much promise for many parts of the developing world.

An instant telephone exchange in the middle of nowhere

Satellite phones can be brought and used anywhere with no need for any infrastructure investment whatsoever. With Inmarsat-M, for example, reliable phone service can be extended to any village or to any remote area instantly. Using Inmarsat-M, it may be possible for a medium-sized country to extend a rudimentary telephone service to every village at the cost of installing cellular in a single city. As long as traffic remains moderate, the solution could be far more cost-effective than alternatives. Multi-channel Inmarsat-M linked to a PABX can provide an instant telephone exchange - in the middle of nowhere if one is needed. And this can happen not tomorrow, or three years down the pipe, but today.

2. New regulatory and commercial options

The growing number of technology choices is one cause for optimism. But there are many others.

Many developing countries are experimenting with new regulatory, institutional and investment options for the delivery of telecommunications services -- often with successful results. Ten years ago, we find that virtually everywhere, the traditional government PTT or commercial monopoly were the only institutional models available -- or even allowed -- in most countries.

Today, we have a growing catalogue of success stories where, through regulatory reform, often combined with new commercial and investment vehicles, remarkable progress and turnarounds can be made in a relatively short time.

In Latin America, most of the region's leading operating companies have been privatised, or soon will be. In the last few years, Argentina, Mexico, Chile Venezuela and Peru have all sold majority shares in their national telephone companies while others have privatisation programmes in the offing.

In Africa, Kenya, Nigeria and the Sudan are considering telecom privatisation programmes, under the tutelage of the World Bank. In Asia, Eastern Europe and the CIS republics, similar moves toward different regulatory regimes and new ways of doing business are providing the impetus for modernization. Everywhere, strategic alliances, joint ventures and partnerships provide new sources of investment and funding. India's international telecom company, Videsh Sanchar Nigam Ltd., is planning to raise $1 billion through a stock issue on the Euromarket.

In many of today's developing economies and emerging markets, there is a greater willingness to explore novel ways of achieving objectives rather than remaining with those which may or may not have worked all that well in the past. In many countries, there is a new intellectual and political flexibility - a readiness to explore new models, new ideas, new approaches. And it seems to be working.

Inmarsat and institutional change

Institutional change is not only on the agenda of national telecommunications operators. It is quite clear to us at Inmarsat that we too must change.

Inmarsat began life in 1979 as an intergovernmental treaty organization. We have already moved a considerable distance from that starting point and function more commercially. But, as mobile satellite markets expand and competition increases, Inmarsat needs a greater degree of commercial and investment flexibility than that available to us under our current structure.

There is broad agreement among our 73 member countries that significant changes are needed to meet the challenges of the future, to take advantage of growing opportunities and to ensure that Inmarsat remains successful. The Inmarsat of tomorrow will likely more closely resemble a corporation with an investment and management structure similar to that of a private company.

Debate and discussions on the future of Inmarsat are now taking place.

The active participation of **all of Inmarsat's member countries** and investors in the decisions which will affect the future of Inmarsat is crucial. I particularly invite the participation of developing countries in the process. As we have seen, mobile satellite communications will become more important to developing countries in the future, and as a result, it is more important than ever that all member countries join in shaping Inmarsat's future. For the same reasons, I would also urge smaller countries to consider membership in the organization.

It is up to all of us to devise a structure which is flexible enough so that all participants can participate in and benefit from a "reborn" Inmarsat.

3. Expanding sources of funding and assistance

Inadequate levels of funding and assistance have always presented a problem for telecommunications planners, and have often hampered development. But here, too, we have some grounds for optimism.

To begin with, the report of the Maitland Commission and other studies have focused on the close link between telecommunications and economic development. This has had an important result. By raising awareness, it has increased the attention given to telecommunications within funding agencies and development banks.

According to a recent survey, the World Bank, the European Investment Bank, and the European Bank of Reconstruction and Development, EBRD, have taken the lead in securing finance for international gateways, cellular telephone networks and digital trunk backbone networks.[2]

A World Bank discussion paper calls for the regulatory changes and the licensing of competing telecommunications providers as "probably the best way" to meet Asia's growing demand for telecom services.[3] The EBRD has outlined the financing options for four different stages of telecommunications infrastructure development.

Since the publication of the "The Missing Link", the ITU itself has become an increasingly assertive and effective catalyst in telecommunications development.

Conferences such as this one also help to raise the awareness of the close link between telecommunications development and overall economic progress and further the process of finding practicable solutions to telecommunications development problems.

Inmarsat and development

Inmarsat has also increased its focus on the developing world and, although the effort is a modest one, the reasons why we are doing so are plain to see. The future of mobile satellite communications will depend to a large extent on its acceptance and take up in the developing world. For, as we have seen, it is in areas where traditional telecommunications infrastructures are weak or non-existent that the benefits of mobile satellite communications become readily apparent.

The dream of cheap, reliable communications anywhere, anytime is largely a dream of the developing world. As we help to realize the dream, the benefits of mobile satellite communications will become available to hundreds of thousands of users in developing nations.

We have taken several measures to improve contacts with developing countries and emerging markets.

- First, we have created a system of regional directors to get Inmarsat closer to the people it serves. Regional directors have been designated for five regions - Latin America and the Caribbean, Africa, the Middle East, South-East Asia, Eastern Europe and the former Soviet Union republics, and we have opened an office in China. Regional Directors act as a two-way communications highway for us: making Inmarsat more aware of the needs of regional users and generating greater awareness of the potential of mobile satellite services in developing countries.
- Second, we operate a programme of assistance through which we provide free use of satellite communications terminals for approved projects, conduct regional seminars, and provide training assistance.
- Third, although the ruling Inmarsat Council is made up of the 18 largest Signatories or Signatory groupings, four seats on the Council are nominated expressly to give adequate geographical representation and this ensures that smaller countries are represented.

Conclusion

I admit that my words today have been positive ones. And I do not wish to minimize the difficulties inherent in telecommunications development. The issues are complex, the problems enormous, the challenges immense.

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2 Financial Times, 18 October 1993 / Survey of International Telecommunications.

3 Telecom Highlights International, February 23, 1994.

But at the same time, I am convinced that we have good grounds for optimism. If a sequel to the Maitland report were commissioned now, I suspect that it would confirm that the discrepancies in terms of access to telecommunications services between the developing and the industrial world are just as large now as a decade ago. But I also suspect that today, it would find many more potential routes toward solving many of the problems than were available to us ten years ago.

Let us use these opportunities as the starting point for the future.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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PLENARY MEETING

Note by the Secretary-General

CONFERENCE CHAIRMANSHIPS

(as approved at the First Plenary Meeting)

Chairman of the Conference	:			Dr. Oscar Felix GONZALEZ (Argentina)
Vice-Chairmen of the Conference	:			Mr. Zhu GAOFENG (China) Mr. A. KROUPNOV (Russia) Mr. S. AL-BASHEER (Saudia Arabia) Mr. R. RODRIGUES (United States) H.E. Mrs. A. LIPOU MASSALA (Congo)
Committee 1 (Steering)	:	(composed of the Chairman and Vice-Chairmen of the Conference and of the Chairmen and Vice-Chairmen of the other Committees)		
Committee 2 (Budget Control)	:	Chairman	:	Mr. U. MOHR (Germany)
		Vice-Chairman	:	Mr. T. de BONO (Malta)
Committee 3 (Development policies, investment strategies and mobilization of resources)	:	Chairman	:	Mr. A. BERRADA (Morocco)
		Vice-Chairmen	:	Mr. C. COLAVITO (Italy) Mr. L.M. BROWN (Mexico)
Committee 4 (Harmonization of telecommunications networks, and human development and management)	:	Chairman	:	Mr. N. VITTAL (India)
		Vice-Chairmen	:	Mr. K. SUZUKI (Japan) Mr. R. SHINGIRAH (Kenya)
Committee 5 (Editorial)	:	Chairman	:	Mr. T. PILLET (France)
		Vice-Chairmen	:	Mr. V. RUBIO CARRETÓN (Spain) Mr. M. JOHNSON (United Kingdom)
Working Group of the Plenary (Least Developed Countries (LDCs))	:	Chairman	:	Mr. H. VIGNON (Benin)
		Vice-Chairmen	:	Mr. T. ZEITOUN (Canada) Mr. M.A. YUSOFF (Malaysia)

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PLENARY MEETING

Note by the Secretary-General

SECRETARIAT OF THE CONFERENCE

Secretary of the Conference	Mr. P. Tarjanne Secretary-General
Executive Secretary	Mr. X. Escofet
Administrative Secretary	Mr. J. Escudero
Coordinator	Mr. J. Ernberg
Plenary Meeting and Committee 1 (Steering)	Mr. A. Laouyane
Committee 2 (Budget Control)	Mr. A. Tazi-Riffi
Committee 3 (Development policies, investment strategies and mobilization of resources)	Mr. D. Stagliano
Committee 4 (Harmonization of telecommunication networks and human resources development and management)	Mr. P. Kurakov
Committee 5 (Editorial Committee)	Mr. J. Ernberg
Working Group of the Plenary (Least Developed Countries (LDCs) and rural communications)	Mr. J. Elotu

Pekka Tarjanne
Secretary-General

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INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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United States of America

ADDRESS BY MR. AL GORE, VICE-PRESIDENT

I have come here, 8 000 km from my home, to ask you to help create a Global Information Infrastructure. To explain why, I want to begin by reading you something that I first read in high school, 30 years ago.

"By means of electricity, the world of matter has become a great nerve, vibrating thousands of miles in a breathless point of time... The round globe is a vast ... brain, instinct with intelligence!"

This was not the observation of a physicist - or a neurologist. Instead, these visionary words were written in 1851 by Nathaniel Hawthorne, one of my country's greatest writers, who was inspired by the development of the telegraph. Much as Jules Verne foresaw submarines and moon landings, Hawthorne foresaw what we are now poised to bring into being.

The ITU was created only 14 years later, in major part for the purpose of fostering an internationally compatible system of telegraphy.

For almost 150 years, people has aspired to fulfil Hawthorne's vision - to wrap nerves of communications around the globe, linking all human knowledge.

In this decade, at this Conference, we now have at hand the technological breakthroughs and economic means to bring all the communities of the world together.

We now can at last create a planetary information network that transmits messages and images with the speed of light from the largest city to the smallest village on every continent.

I am very proud to have the opportunity to address the first development conference of the ITU because President Clinton and I believe that an essential prerequisite to sustainable development for all members of the human family, is the creation of this network of networks. To accomplish this purpose, legislators, regulators, and business people must do this: build and operate a Global Information Infrastructure.

This GII will circle the globe with information superhighways on which all people can travel. These superhighways - or, more accurately, networks of distributed intelligence - will allow us to share information, to connect, and to communicate as a global community. From these connections we will derive robust and sustainable economic progress, strong democracies, better solutions to global and local environmental challenges, improved health care, and - ultimately - a greater sense of shared stewardship of our small planet.

The Global Information Infrastructure will help educate our children and allow us to exchange ideas within a community and among nations. It will be a means by which families and friends will transcend the barriers of time and distance. It will make possible a global information marketplace, where consumers can buy or sell products.

I ask you, the delegates to this Conference, to set an ambitious agenda that will help all governments, in their own sovereign nations and in international cooperation, to build this Global Information Infrastructure. For my country's part, I pledge our vigorous, continued participation in achieving this goal - in the Development Sector of the ITU, in other sectors and in plenipotentiary gatherings of the ITU, and in bilateral discussions held by our Departments of State and Commerce and our Federal Communications Commission.

The development of the GII must be a cooperative effort among governments and peoples. It cannot be dictated or built by a single country. It must be a democratic effort.

And the distributed intelligence of the GII will spread participatory democracy.

To illustrate why, I would like to use an example from computer science.

In the past, all computers were huge mainframes with a single central processing unit, solving problems in sequence, one by one, each bit of information sent back and forth between the CPU and the vast field of memory surrounding it, Now, we have massively parallel computers with hundreds - or thousands - of tiny self-contained processors distributed throughout the memory field, all interconnected, and together far more powerful and more versatile than even the most sophisticated single central processor, because they each solve a tiny piece of the problem simultaneously and when all the pieces are assembled, the problem is solved quickly.

Similarly, the GII will be an assemblage of local, national, and regional networks, that are not only like parallel computers but in their most advanced state will in fact be a distributed, parallel computer.

In a sense, the GII will be a metaphor for democracy itself. Representative democracy does not work with an all-powerful central government, arrogating all decisions to itself. That is why communism collapsed and is fading.

Instead, representative democracy relies on the assumption that the best way for a nation to make its political decisions is for each citizen - the human equivalent of the self-contained processor - to have the power to control his or her own life.

To do that, they must have available the information they need and be allowed to express their conclusions in free speech and in votes that are combined with those of millions of others. That is what guides the system as a whole.

The GII will not only be a metaphor for a functioning democracy, it will in fact promote the functioning of democracy by greatly enhancing the participation of citizens in decision-making. And it will greatly promote the ability of nations to cooperate with one another. I see a new Athenian Age of democracy forged in the fora the GII will create.

The GII will be the key to economic growth for national and international economies. For us in the United States, the information infrastructure already is to the U.S. economy of the 1990s what transportation infrastructure was to the economy of the mid 20th century.

The integration of computing and information networks into the economy makes U.S. manufacturing companies more productive, more competitive, and more adaptive to changing conditions and it will do the same for the economies of other nations.

These same technologies are also enabling the service sectors of the U.S. economy to grow, to increase their scale and productivity and expand their range of product offerings and ability to respond to customer demands.

Approximately 60% of all U.S. workers are now "knowledge workers" - people whose jobs depend on the information they generate and receive over our information infrastructure. As we create new jobs, eight out of ten are in information-intensive sectors of our economy. And these new jobs are usually well-paying jobs for financial analysts, computer programmers, and other educated workers.

The global economy also will be driven by the growth of the Information Age. Hundreds of billions of dollars can be added to world growth if we commit to the GII. I fervently hope this Conference will take full advantage of this potential for economic growth, and not deny any country or community its right to participate in this growth.

Now we all realize that, even as we meet here, the Global Information Infrastructure is being built, although many countries have yet to see any benefits at all.

Digital telecommunications technology, fibre optics, and new high-capacity satellite systems are transforming telecommunications. And all over the world, under the seas and along the roads, pipelines, and railroads, companies are laying fibre optic cable that carries thousands of telephone calls per second over a single strand of glass.

These developments are greatly reducing the cost of building the GII.

In the past, it could take years to build a network. Linking a single country's major cities might require laying thousands of kilometres of expensive wires whereas today, a single satellite and a few dozen ground stations can be installed in a few months - at much lower cost.

The economics of networks have changed so radically that the operation of a competitive, private market can build much of the GII. This is dependent, however, upon sensible regulation. Within the national boundaries of the U.S. we aspire to build our information superhighways according to a set of principles that I outlined in January in California. The National Information Infrastructure, as we call it, will be built and maintained by the private sector.

It will consist of hundreds of different networks, run by different companies and using different technologies, all connected together in a giant "network of networks", providing telephone and interactive digital video to almost every American.

Our plan is based on five principles:

- first, encourage private investment;
- second, promote competition;
- third, create a flexible regulatory framework that can keep pace with rapid technological and market changes;
- fourth, provide open access to the network for all information providers, and
- fifth, ensure universal service.

Are these principles unique to the United States? Hardly. Many are accepted international principles endorsed by many of you. I believe these principles can inform and aid the development of the Global Information Infrastructure and urge this Conference to incorporate them, as appropriate, into the Buenos Aires Declaration, which will be drafted this week.

Let me elaborate briefly on these principles.

First, we propose that private investment and competition be the foundation for development of the GII. In the U.S. we are in the process of opening our communications markets to all domestic private participants.

In recent years, many countries, particularly here in Latin America, have opted to privatize their state-owned telephone companies in order to obtain the benefits and incentives that drive competitive private enterprises, including innovation, increased investment, efficiency and responsiveness to market needs.

Adopting policies that allow increased private sector participation in the telecommunications sector has provided an enormous spur to telecommunications development in dozens of countries, including Argentina, Venezuela, Chile, and Mexico. I urge you to follow their lead.

But privatization is not enough. Competition is needed as well. It did make sense in the past to have telecommunications monopolies. In many cases, the technology and the economies of scale meant that it was inefficient to build more than one network. In other cases - Finland, Canada, and the U.S. for example - national networks were built in the early part of this century by hundreds of small, independent phone companies and cooperatives.

Today, there are many more technology options than in the past and it is not only possible, but desirable, to have different companies running competing - but interconnected - networks, because competition is the best way to make the telecommunications sector more efficient, more innovative - and more profitable as consumers make more calls and prices decline.

That is why allowing other companies to compete with AT&T, once the world's largest telephone monopoly, was so useful for the United States.

Over the last ten years, it has cut the cost of a long-distance telephone call in the U.S. by more than 50%.

To promote competition and investment in global telecommunications, we need to adopt cost-based collection and accounting rates. Doing so will accelerate development of the GII.

International standards to ensure interconnection and interoperability are needed as well. National networks must connect effectively with each other to make real the simple vision of linking schools, hospitals, businesses, and homes to a Global Information Infrastructure.

Hand in hand with the need for private investment and competition is the necessity of appropriate and flexible regulations developed by an authoritative regulatory body.

In order for the private sector to invest and for initiatives opening a market to competition to be successful, it is necessary to create a regulatory environment that fosters and protects competition and private sector investments, while at the same time protecting consumers' interests.

Without the protection of an independent regulator, a potential private investor would be hesitant to provide service in competition with the incumbent provider for fear that the incumbent's market power would not be adequately controlled.

Decisions and the basis for making them must also be made public so that consumers and potential competitors are assured that their interests are being protected.

This is why in the U.S. we have delegated significant regulatory powers to an independent agency, the Federal Communications Commission. This expert body is well-equipped to make difficult technical decisions and to monitor, in conjunction with the National Telecommunications and Information Administration and the Department of Justice, changing market conditions. We commend this approach to you.

We need a flexible, effective system for resolution of international issues, too - one that can keep up with the ever-accelerating pace of technological change. I understand that the ITU has just gone through a major reorganization designed to increase its effectiveness. This will enable the ITU, under the able leadership of Mr. Tarjanne, to streamline its operations and redirect resources to where they are needed most. This will ensure that the ITU can adapt to future and unimaginable technologies.

Our fourth principle is open access. By this I mean that telephone and video network owners should charge non-discriminatory prices for access to their networks. This principle will guarantee that every user of the GII can use thousands of different sources of information - video programming, electronic newspapers, computer bulletin boards - from every country, in every language.

With new technologies like direct broadcast satellites, a few networks will no longer be able to control your access to information - as long as government policies permit new entrants into the information marketplace.

Countries and companies will not be able to compete in the global economy if they cannot get access to up-to-date information, if they cannot communicate instantly with customers around the globe. Ready access to information is also essential for training the skilled workforce needed for high-tech industries.

The countries that flourish in the twenty-first century will be those that have telecommunications policies and copyright laws that provide their citizens access to a wide choice of information services. Protecting intellectual property rights is absolutely essential.

The final and most important principle is to ensure universal service so that the Global Information Infrastructure is available to all members of our societies. Our goal is a kind of global conversation, in which everyone who wants can have his or her say.

We must ensure that whatever steps we take to expand our worldwide telecommunications infrastructure, we keep that goal in mind.

Although the details of universal service will vary from country to country and from service to service, several aspects of universal service apply everywhere. Access clearly includes making service available at affordable prices to persons at all income levels. It also includes making high-quality service available regardless of geographic location or other restrictions such as disability. Constellations of hundreds of satellites in low-Earth orbit may soon provide telephone or data services to any point on the globe. Such systems could make universal service both practical and affordable.

An equally important part of universal access is teaching consumers how to use communications effectively. That means developing easy-to-use applications for a variety of contexts, and teaching people how to use them. The most sophisticated and cost-efficient networks will be completely useless if users are unable to understand how to access and take full advantage of their offerings.

Another dimension of universal service is the recognition that marketplace economics should not be the sole determinant of the reach of the information infrastructure.

President Clinton and I have called for positive government action in the United States to extend the NII to every classroom, library, hospital, and clinic in the United States by the end of the century.

I want to urge that this Conference include in its agenda for action a commitment to determine how every school and library in every country can be connected to the Internet, the world's largest computer network, in order to create a Global Digital Library. Each library could maintain a server containing books and journals in electronic form, along with indexes to help users find other materials. As more and more information is stored electronically, this global library would become more and more useful. It would allow millions of students, scholars and business people to find the information they need whether it be in Albania or Ecuador.

Private investment ... competition ... flexibility ... open access ... universal service.

In addition to urging the delegates of this Conference to adopt these principles as part of the Buenos Aires Declaration, guiding the next four years of telecommunications development, I assure you that the U.S. will be discussing in many fora, inside and outside the ITU, whether these principles might be usefully adopted by all countries.

The commitment of all nations to enforcing regulatory regimes to build the GII is vital to world development and to many global social goals. But the power of the Global Information Infrastructure will be diminished if it cannot reach large segments of the world population.

We have heard together Dr. Tarjanne's eloquent speech setting forth the challenges we face. As he points out: the 24 countries of the OECD have only 16 per cent of the world's population, but account for 70 per cent of global telephone mainlines and 90 per cent of mobile telephone subscribers.

There are those who say the lack of economic development causes poor telecommunications. I believe they have it exactly backwards. A primitive telecommunications system causes poor economic development.

So we cannot be complacent about the disparity between the high- and low-income nations, whether in how many phones are available to people or in whether they have such new technologies as high-speed computer networks or videoconferencing.

The United States delegation is devoted to working with each of you at this Conference to address the many problems that hinder development.

And there are many.

Financing is a problem in almost every country, even though telecommunications has proven itself to be an excellent investment.

Even where telecommunications has been identified as a top development priority, countries lack trained personnel and up-to-date information.

And in too many parts of the world, political unrest makes it difficult or impossible to maintain existing infrastructure, let alone lay new wire or deploy new capacity.

How can we work together to overcome these hurdles? Let me mention a few things industrialized countries can do to help.

First, we can use the Global Information Infrastructure for technical collaboration between industrialized nations and developing countries. All agencies of the U.S. government, for example, are potential sources of information and knowledge that can be freely shared with partners across the globe.

The Global Information Infrastructure can help development agencies link experts from every nation and enable them to solve common problems. For instance, the Pan American Health Organization has conducted hemisphere-wide teleconferences to present new methods to diagnose and prevent the spread of AIDS.

Second, multilateral institutions like the World Bank, can help nations finance the building of telecommunications infrastructure.

Third, the U.S. can help provide the technical know-how needed to deploy and use these new technologies. USAID and U.S. businesses have helped the U.S. Telecommunications Training Institute train more that 3 500 telecommunications professionals from the developing world, including many in this room.

In the future, USTTI plans also to help business people, bankers, farmers, and other from the developing world find ways that computer networking, wireless technology, satellites, video links, and other telecommunications technology could improve their effectiveness and efficiency.

I challenge other nations, the development banks, and the UN system to create similar training opportunities.

The Head of our Peace Corps, Carol Bellamy, intends to use Peace Corps volunteers both to help deploy telecommunications and computer systems and to find innovative uses for them.

Here in Argentina, a Peace Corps volunteer is doing just that.

To join the GII to the effort to protect and preserve the global environment, our Administration will soon propose using satellite and personal communication technology to create a global network of environmental information. We will propose using the schools and students of the world to gather and study environmental information on a daily basis and communicate that data to the world through television.

But regulatory reform must accompany this technical assistance and financial aid in order for it to work. This requires top-level leadership and commitment - commitment to foster investment in telecommunications and commitment to adopt policies that ensure the rapid deployment and widespread use of the information infrastructure.

I opened by quoting Nathaniel Hawthorne, who was inspired by Samuel Morse's invention of the telegraph.

Morse was also a famous portrait artist in the U.S. - his portrait of President James Monroe hangs today in the White House. While Morse was working on a portrait of General Lafayette in Washington, his wife, who lived about 500 kilometres away, grew ill and died. But it took seven days for the news to reach him.

In his grief and remorse, he began to wonder if it were possible to erase barriers of time and space, so that no one would be unable to reach a loved one in time of need. Pursuing this thought, he came to discover how to use electricity to convey messages, and so he invented the telegraph and, indirectly, the ITU.

The Global Information Infrastructure offers instant communication to the great human family.

It can provide us with the information we need to dramatically improve the quality of their lives. By linking clinics and hospitals together, it will ensure that doctors treating patients have access to the best possible information on diseases and treatments. By providing early warning on natural disasters like volcanic eruptions, tsunamis, or typhoons, it can save the lives of thousands of people.

By linking villages and towns, it can help people organize and work together to solve local and regional problems ranging from improving water supplies to preventing deforestation.

To promote; to protect; to preserve freedom and democracy, we must make telecommunications development an integral part of every nation's development. Each link we create strengthens the bonds of liberty and democracy around the world. By opening markets to stimulate the development of the Global Information Infrastructure, we open lines of communication.

By opening lines of communication, we open minds.

And this summer, from my country, cameras will bring the World Cup Championship to well over one billion people.

To those of you from the 23 visiting countries whose teams are in the finals, I wish you luck - although I will be rooting for the home team.

The Global Information Infrastructure carries implications even more important than soccer.

It has brought us images of earthquakes in California, of Boris Yeltsin on a tank in Red Square, of the effects of mortar shells in Sarajevo and Somalia, of the fall of the Berlin Wall. It has brought us images of war and peace, and tragedy and joy, in which we all can share.

There is a Dutch relief worker, named Wam Kat, who has been broadcasting an electronic diary from Zagreb for more than a year and a half on the Internet, sharing his observations of life in Croatia.

After reading Kat's Croatian diary, people around the world began to send money for relief efforts. The result: 25 houses have been rebuilt in a town destroyed by war.

Governments did not do this. People did. But such events are the hope of the future.

When I began proposing the NII in the U.S., I said that my hope is that the United States, born in revolution, can lead the way to this new, peaceful revolution. However, I believe we will reach our goal faster and with greater certainty if we walk down that path together. As Antonio Machado, the Spanish poet, once said, "Path walker, there is no path, we create the path as we walk".

Let us build a global community in which the people of neighbouring countries view each other not as potential enemies, but as potential partners, as members of the same family in the vast, increasingly interconnected human family.

Let us seize this moment.

Let us work to link the people of the world.

Let us create this new path as we walk it together.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 71-E

ITU/SG

OPENING ADDRESS BY DR. PEKKA TARJANNE,
SECRETARY-GENERAL OF THE INTERNATIONAL TELECOMMUNICATION UNION (ITU)

Your Excellency, Dr. Carlos Menem, President of the Argentine Republic,
Mr. Vice-President of the United States,
Excellencies,
Ladies and Gentlemen,
Dear Friends,

Mr. President, on behalf of the ITU and of all delegations here present, I would like to express our sincere gratitude to you for having shown us the honour to preside over this opening ceremony of our historic Conference in your beautiful capital city of Buenos Aires. This World Telecommunication Development Conference brings together many of the most influential thinkers in the field of development and provides an opportunity for us to listen to them, to learn and to share our experiences.

For the ITU, this Conference marks the *coming of age* of its youngest offspring, the Telecommunication Development Sector, which can now take its rightful place alongside the Telecommunication Standardization and Radiocommunication Sectors, as one of the three pillars of the Union. This Conference is the culmination of a process of evolution over the last forty or more years whereby the Members of the Union have agreed to focus their efforts on extending the benefits of telecommunication technologies to all peoples of the world.

But the significance of the Conference is much wider than this. The holding of this Conference will push telecommunications to the fore in international policy-making alongside issues such as the environment, human rights, or the fight against poverty. Over the next nine days, we have a unique opportunity to send a clear message to the world on the immense potential that telecommunications can offer in promoting economic, social and cultural development. The challenge before us is to ensure that telecommunications remains a central concern to policy-makers long after the conclusion of this Conference.

In this context, I am delighted that this Conference is being held in Argentina. We are won over, Mr. President, not only by the natural beauty of your country and the proverbial hospitality of its inhabitants, but also by the example it sets of what can be achieved in a short space of time if there is a common commitment -- between the State, the banks and private firms -- to improving the level of telecommunication networks and services. Through a process of sector reform, privatization, market liberalization, the adoption of new technologies and a commitment to infrastructural investment, Argentina has succeeded in *transforming* its telecommunication sector. In its first two years, some 600 000 new lines have been installed at a growth rate which has been one of the highest in the world. This has been achieved by a substantial rise in the level of

investment which now stands at more than US$ 1.2 billion per year, or around 50 per cent of revenues. Both the State and its new partners have benefited from this reform in terms of higher income from taxes and higher profits. The telecommunication sector in Argentina is in the forefront of economy-wide reforms which have given the country one of the highest rates of economic growth in the region. We will have an opportunity to see during the Conference that rural areas and other issues of social interest are not being neglected in this process.

This year, 1994, marks the tenth anniversary of the Report of the Independent Commission for World-Wide Telecommunications Development, *The Missing Link*. This report, which was commissioned by the ITU from a multi-disciplinary group of independent experts, proved to be seminal in focusing the attention of policy-makers on the telecommunication development gap between the industrialized countries and the developing world. As part of the preparations for this Conference, the ITU Secretariat has prepared a new report, the *World Telecommunication Development Report*, published today, which traces the development of the telecommunication sector over the decade since *The Missing Link* report. The development gap is still very much in evidence. For instance, the 24 advanced industrialized democracies of the OECD account for 70 per cent of global telephone main lines, 80 per cent of service revenues, and 90 per cent of mobile phone subscribers, even though they are home to just 16 per cent of the world's population. More than two-thirds of households around the world still have no telephone.

Nevertheless, the report concludes that the telecommunications development gap *is* narrowing, although at a much slower rate than had been hoped. Furthermore, new technologies that were barely available in 1984 -- such as digital switching, fibre optics, and mobile communications, both terrestrial and satellite -- are making the installation of a high performance telecommunication network much quicker, much easier and, in relative terms, much cheaper than ever before. But it is important that we employ these new technologies to close the telecommunications development gap, not to widen it. Today, the talk is of *information superhighways,* and this has rightly captured the imagination of telecommunication policy-makers and network developers. We are privileged to have with us as our guest speaker today Vice-President Al Gore of the United States, the godfather of the information superhighways. The ITU is founded on the principle of universality and therefore the challenge is to extend this concept to become an *international information infrastructure* which will benefit mankind as a whole.

Since 1984, more than 200 million lines have been installed across the world. Many of the larger developing countries -- such as China, Egypt, India, Indonesia and Pakistan -- are now emerging as major telecommunication markets and are attracting high levels of investment. Some of the smaller ones, such as Burkina Faso, the Maldives and Nepal, have also sustained double-digit network growth rates over the last decade. Our Report focuses on four countries from different parts of the world which have been particularly successful in promoting growth: Botswana, Chile, the Republic of Korea and Turkey. These case studies show that, while there is no blueprint for success, there are certain common elements which are essential and which can be adopted by most developing countries, providing there is sufficient political will.

In discussing the problems of the telecommunications development gap, it is all too easy to assume that this is an issue that mainly affects the developing countries. Certainly it is the developing countries themselves that must play the major role in changing the situation through the establishment of new regulatory frameworks, through sector reform, and through accelerated investment programmes. But, the development gap is a problem which affects us all.

Narrowing the telecommunications development gap requires a global approach which recognizes the interdependent nature of the modern world. Many of the problems that face telecommunication policy-makers today are fundamentally global, rather than national or regional in nature. Let me take three examples:

- By the end of this decade, we could see the development of global mobile satellite services offering personal communication services to handheld receivers anywhere in the world. The promise of this technology is that it makes any locality potentially accessible to the global telecommunication network. But at the same time it raises issues of global coordination, cooperation and competition that have never previously been faced.
- A second major policy issue is the reform of the accounting rate process. Accounting rate payments provide an important source of income to some of the developing countries but they also tend to keep telephone charges to end users high, and they can act as a disincentive to economic efficiency. The challenge here is to reform the system while still maintaining the vital flow of investment funds to assist with network development.
- Thirdly, the liberalization of international trade in services, the rise of foreign direct investment and the creation of inter-firm alliances have created a new set of global players in the international telecommunications market with revenues that are greater than those of many of the smaller nation states. How can we ensure that global corporations continue to work for the benefit of their customers as well as their shareholders?

Globalization brings a new set of challenges to the system of intergovernmental regulation which has evolved for international telecommunications and radiocommunications. The ITU is founded on the principles of national sovereignty and universality, and provides an appropriate forum for the discussion of these issues. A Conference like this can ensure that the voices of the developing world are afforded equal weight alongside those of the industrialized nations and the global corporations.

So what is this Conference intended to achieve? I would like to set three broad objectives which I feel are practical and achievable: first, to provide guidance to the ITU Development Sector on its future work programme; second, to increase awareness of the role of telecommunications in economic and social development; and third, to share our experiences as to what policies have proved the most effective in improving the provision of telecommunication networks and services.

This Conference does not have the power to establish the budget of the Development Sector -- that is the role of the Plenipotentiary Conference which meets in six month's time -- but it is important that this Conference provide a clear message to the Plenipotentiary Conference on the priorities for development and on the future role of the Development Sector.

To guide you in this important task I would offer a number of observations:

- The mission of the ITU is to provide to the international telecommunications community with those products and services that are *best provided* by an international organization. Many of the traditional technical cooperation activities of the BDT are now provided through national execution, through the development agencies and through private sector consultants.
- On the other hand, the ITU's role in information exchange and know-how has become much more important over time, notably through the organization of workshops, seminars and conferences such as this, through the gathering of telecommunication indicators and the publication of reports, and through the organization of exhibitions and trade shows such as Africa TELECOM '94 which will take place next month in Cairo. Until recently, little of the work of the BDT has been published, but we are now committed to changing this policy and introducing far more transparency into the operations of the Development Sector.

- The services that the BDT can offer in terms of human resources development, regulatory/policy advice, project identification and definition, and bringing together project planners and potential investors are now more in demand than ever. In order to respond to these new demands, we need to optimize the use of resources available to the BDT and to build upon our existing core competencies.
- Finally, the BDT must focus more of its efforts on the requirements of the Least Developed Countries. One of the clear messages from the *World Telecommunication Development Report* is that most of the middle income developing countries are now in a position to attract investment finance on the commercial market and to self-finance their remaining needs. The BDT's efforts must therefore concentrate on those countries where the needs are greatest and the available resources least.

The second broad objective of this Conference is to raise public awareness of the benefits of investment in telecommunications to society as a whole. This is a message that is addressed not so much to national Ministries of Posts and Telecommunications but rather to Ministries of Finance or Ministries of the Economy. In this respect, the role of the representatives of the private sector, telecommunication users, and the press who are joining the traditional ITU Members at the Conference will be critical in conveying the message on the benefits that can be drawn from telecommunications. This is officially the *first* World Telecommunication Development Conference and it provides a unique opportunity to bring telecommunications on to the policy agendas, on to the television screens and into the newspapers of the world.

Finally, the third broad objective of this Conference is to listen, to learn and to share our experiences -- between countries, between private and public sector, and between telecommunication professionals and specialists in other areas. The 1980s and early 1990s have been a period of unparalleled experimentation with different policies and different ways of structuring the telecommunication sector. Even among the industrialized nations, no two countries have followed the same path or moved at the same pace. While there are certain elements which are recognized to be important -- such as competition, market liberalization, private sector participation, regulation, universal service -- the exact mix of these ingredients will vary considerably between countries. So, it is important that we speak with honesty and we listen with open minds concerning the successes and failures of the past decade. This is the only way in which we can learn from one another and avoid repeating each other's mistakes.

At the ITU, we ourselves have been undergoing a process of restructuring following the Additional Plenipotentiary Conference that was held in December 1992. One of the main objectives of our restructuring exercise has been to become a "listening organization", one that hears and responds to the wishes of its Members and customers. Thus in the spirit of the "new ITU", I hope you will join me in *listening, learning and sharing* during the course of this historic Conference.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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United Nations

STATEMENT BY MR. HANS ZIMMERMANN,
DEPARTMENT OF HUMANITARIAN AFFAIRS

Summary

The United Nations Department of Humanitarian Affairs (DHA) has the mandate to assist countries in disaster mitigation and to co-ordinate international response to natural and man-made disasters. Telecommunications are an indispensable tool for the fulfilment of these tasks as well as a substantial aspect of sustainable development. DHA is prepared to discharge any functions the Buenos Aires Conference might entrust to it, and supports the proposal presented by Member States of the Caribbean Telecommunications Union (CTU) for work towards an International Convention on Disaster Communications, as a continuation of the work initiated during the 1990 UNDRO Conference of Emergency Telecommunications and as requested in the Tampere Declaration on Disaster Communications of 1991.

The United Nations Department of Humanitarian Affairs appeals to the participants of the Buenos Aires Conference, to further facilitate the optimum use of telecommunication to alleviate human suffering.

Mr. Chairman,
Distinguished Delegates,

Let me, first of all, congratulate the International Telecommunications Union for the excellent organisation of this important conference. Let me furthermore express my thanks to the Government and the People of the Host Country, who's hospitality provides the ideal frame for the a conference of such importance.

The mandate of the United Nations Department of Humanitarian Affairs (DHA) was defined by the United Nations General Assembly in its resolution 46/182 and includes the collection and dissemination of information related to humanitarian emergencies, the mobilization, co-ordination and facilitation of international response to natural and man-made disasters, and the provision of support to national and regional efforts towards disaster mitigation, preparedness and prevention. None of these tasks can be accomplished without the extensive use of telecommunications.

Early warning requires the gathering and constant up-dating and processing of large volumes of data. Among the most disaster-prone areas are many, who are also among those with the least developed telecommunications infrastructure, and even the advanced systems used by DHA for the distribution of information can not fulfil their purpose, unless adequate input from the field is available.

The immediate mobilisation of effective and appropriate international response in case of a sudden-onset disaster depends on up-to-date facts from the site of the event. Disasters inevitably affect, and often totally disrupt, the existing local and national communications infrastructure, and during an emergency situation, regional and international links are likely to be overloaded.

The vulnerability of key elements of the sophisticated communications systems which have in the recent past been installed in newly industrialized countries presents a new danger: unless a minimum of de-centralized, independent communications facilities is maintained, a disaster-affected country risks complete isolation, with possibly dramatic consequences: Not only could international assistance, if required, be delayed - when search-and-rescue teams are needed, as in case of an earthquake, or if specialized expertise is needed, to cope with a chemical or other technological disaster, every hour counts - but a lack of communications also affects the economy and the security of a country, far beyond the direct impact of the disaster itself.

Two means of communications are, thanks to their ability to survive a disaster, particularly suited to serve in an emergency situation: Portable and land-mobile satellite terminals for voice and data communications, and the Amateur Radio Service. Suitable terminals are nowadays available from many manufacturers. The services of Amateur Radio are, provided the administration of a disaster-prone country has enabled the development and use of this service, ready available on the spot, when a disaster strikes. The skills of these volunteers are as valuable today as they were ever since radio was invented. DHA is grateful to the industry, who develops and provides small and increasingly affordable equipment and, unfortunately still very costly, services. DHA is also grateful to the International Amateur Radio Union (IARU), who encourages the further development of Amateur Radio in countries where it is most needed, and appeals to the ITU member states, to facilitate and encourage such development.

The scientific monitoring of risks in respect to natural disasters requires real-time data links and the use of technologies such as satellite images, which are also expected to play a increasing role in the co-ordination of disaster relief. Last but not least, Humanitarian Diplomacy, a increasingly important tool of the United Nations in its efforts to prevent man-made disasters, can only function if the parties concerned can talk to each other.

It is in view of the above, that the predecessor of the Department of Humanitarian Affairs, UNDRO, the Office of the United Nations Disaster Relief Co-ordinator, organized the First International Conference on Disaster Communications in Geneva in 1990, and co-sponsored the 1991 Tampere Conference on Disaster Communications. The recommendations adopted by the Geneva Conference were endorsed in Tampere. The Tampere Declaration on Disaster Communications requested UNDRO to co-ordinate the further development of the proposed Convention on Disaster Communications and to convene an inter-governmental follow-up conference.

The increasing demand on the very limited resources of UNDRO, a small office, which in early 1992 became the core of the newly created Department of Humanitarian Affairs with a much larger mandate, did not allow a pro-active follow-up on these issues. The increasing number of humanitarian crises in many parts of the world dictate the priorities and demand a pragmatic approach: Increasingly field-oriented, DHA established the United Nations Disaster Assessment and Co-ordination (UNDAC) stand-by teams and has implemented the concept of the On-Site Operational Co-ordination Centre (OSOCC).

Both these new instruments dispose today of own, independent communications facilities, including VHF, HF and Satellite voice and data equipment. They are supported and complemented by the new Geneva Telecommunications and Emergency Operations Centre of DHA. During "Exercise 93" in Vienna, in the framework of the International Search and Rescue Advisory Group (INSARAG) and the DHA project on the use of Military and Civil Defense Assets (MCDA) for disaster relief, they passed their first test. Only weeks later they were deployed in full strength: During the conflict in Abchazia, a DHA team co-ordinated the humanitarian assistance to more than

200'000 displaced persons, 50'000 of which had to be evacuated by helicopter from mountainous regions in Georgia.

As its most valuable asset, the Department today benefits from close links with important partners: The Secretariat of the International Decade for the Reduction of Natural Disasters (IDNDR) is part of the Disaster Mitigation Branch of DHA, and a very close operational co-operation between the United Nations Centre for Urgent Environmental Assistance (UNCUEA) and the Relief Co-ordination Branch of DHA has been established. Based on experience gained during an exercise, simulating a chemical accident, the delegate from Tunisia to the Second Support Group Meeting of this Conference in Geneva, November 1993, suggested to give Disaster Communications their appropriate place in the agenda for Buenos Aires.

Furthermore, the importance of the link between disaster mitigation and disaster relief on one side, and development on the other side, has been fully recognized in the close collaboration between DHA and the United Nations Development Programme (UNDP) on the continuum from relief to development. Sustainable Development can not be achieved without due consideration of the implications of disasters.

In accordance with the mandate defined by the United Nations General Assembly, the Department has established a Register of Stockpiles of Emergency Relief Goods as well as of Expertise; the inclusion of equipment and expertise for disaster communications into these registers is in progress.

Specialized Agencies of the United Nations as well as many governmental and non-governmental agencies have greatly increased their emergency communications capabilities. Harmonization among these networks, as well as with those of the national and regional response systems, is indispensable for their optimum use. Always keeping in mind, that disaster mitigation and response are, first of all, national tasks, both, the International Telecommunications Union and the United Nations Department of Humanitarian Affairs, are mandated, to assist in such international co-ordination.

Trusting in the continuous support from all partners inside and outside the United Nations system and in particular from Member States, on which the United Nations Department of Humanitarian Affairs entirely depends for the fulfilment of all its tasks, I am pleased to announce, that DHA is prepared to convene a Second International Conference on Disaster Communications, and I wish to stress our willingness and determination, to discharge any functions in the field of disaster communications the Buenos Aires Conference may entrust to us.

It is in this sense, that I would like to strongly support the proposal made to this conference by member states of the Caribbean Telecommunications Union, to work towards an International Convention on Disaster Communications, and I would like to offer the services of DHA for its preparation and implementation. This issue needs its place in the agenda of the study groups and in the Buenos Aires Action Plan.

Mr. Chairman,
Distinguished Delegates,

The awareness of the need for preparedness measures is never higher than in the aftermath of a disaster. Unfortunately, the years since the Tampere Conference have seen a dramatic increase of both, natural and man-made, disasters. I appeal to you, to use the resulting, global awareness: Modern technology does not only bring live pictures of death, destruction and suffering onto the TV screen and thereby right into our daily live, it also gives us the tools to improve our capability to provide humanitarian assistance where it is needed most. In this respects it only remains, to reiterate the appeal to the powerful telecommunications industry, to make equipment, and, even more important, related services, affordable for those, who provide humanitarian assistance.

But it is up to this Conference, to strongly encourage all ITU Member States, to authorize and to further facilitate the unrestricted use of all means available for disaster communications, in particular by allowing the trans-border use of satellite and other communications equipment and by encouraging the work of Radio Amateurs - all this for the most noble of tasks :

The prevention and alleviation of human suffering.

Thank you for your attention and support.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 73-E

India

ADDRESS BY H.E. MR. SUKH RAM
MINISTER FOR COMMUNICATIONS, GOVERNMENT OF INDIA

Mr. Chairman,
Dr. Tarjanne, Secretary-General of the ITU,
Excellencies,
Delegates to the WTDC-94,
Ladies and Gentlemen,

At the outset, on behalf of the Indian delegation and on my own behalf, I would like to compliment the Secretary-General and the ITU for organizing this first WTDC. I would also like to thank our gracious hosts, the President and the people of Argentina for hosting this Conference in the lovely city of Buenos Aires. The objectives of this Conference are highly laudable in view of the fact that telecommunications is an ideal medium for making the world a truly global village. This goal, which was referred to by Vice-President Al Gore of the USA as the network of networks, may now appear to be a distant dream but I am convinced that it is not too distant a dream and that it should well be possible within our lifetimes. We all realize that telecommunications is an important infrastructure requirement for accelerating economic growth.

I would like to congratulate the Secretary-General of the ITU for organizing this Conference with two main committees to discuss the major issues including technology, financing telecommunications development, harmonization of the network, etc., as it provides an ideal opportunity for all countries to profitably learn from each other's experiences

TECHNOLOGY: The telecommunication sector is highly technology intensive and we have to keep pace with the rapid technological developments and upgradings. No country can afford to lag for fear of being totally left behind. In this task a responsibility is cast on the advanced countries to share their technologies with the rest of the world. We were very happy to note the emphasis laid by Vice-President Gore in his address on the need for technology sharing. He rightly observed that such sharing helped the receiving country without weakening the giver.

We felt that this issue of technology transfer is important enough to warrant a separate committee. No doubt, one of the sub-committees would examine it in detail and give its considered views.

My country, India, has the capacity to absorb any technology. Our human resource endowment is so strong as to enable us to install, operate and maintain the latest technology with suitable training and skill upgrading. We fully realize that human resource development is a continuous process and we attach considerable importance to this in our plans.

Our R&D establishment, the Centre for Development of Telematics (CDOT) has developed a whole host of small and medium switching systems which are ideally suited for coping with climatic vagaries and extreme conditions. We are prepared to share this technology with the rest of the countries.

LIBERALIZATION: The liberalization of the economic and industrial policies over the past two years under the sagacious leadership of our Honourable Prime Minister, Mr. P.V. Narasimha Rao has made it possible to attract private capital for stepping up industrialization in India. The telecommunication sector has also been covered and there are numerous tie ups of leading multinationals with Indian companies for the transfer of technology and manufacturing, state-of-the-art equipment covering switching, transmission, wireless, cables and terminal equipment. The process of liberalization has also made it possible for us to import any technology in a wide variety of sectors.

STRUCTURAL CHANGES: As emphasized by a number of speakers, a competitive environment is essential for achieving growth and increasing the efficiency of telecommunication networks. In the area of value-added services, we have already thrown open the field to the private sector and are hopeful that the needs of those engaged in business and industry would be fully met. Basic services still remain a government monopoly in India. However, the telecommunication policy is under active consideration in the government and we expect it to be announced shortly.

We are prepared to put in place the right policy package mix including structural changes if required, but the decisions would be taken at an appropriate time keeping in view all the relevant circumstances and considerations.

POTENTIAL & PROBLEMS: Of the more than 840 million people in India, according to the 1991 census, over 200 million constitute the middle class who require telephone facilities. Our network has grown with NSD/ISD connectivity. However, there is currently a waiting list of over 3 million people with a waiting period varying from between 2 to 8 years. Though the growth in this sector over the last 2 years has been over 15 per cent, it is clearly not sufficient. In fact,even the 8th Five Year Plan (1992-1997) target of providing 7.5 million lines is insufficient. In view of the magnitude of the problem, we have taken the initiative to provide a gross capacity of 2 million lines in the current year and 3.65 million lines the following year with 3 million DELs. This will only liquidate today's waiting list, and demand will continue to swell as we expect the GDP growth rate to be higher at 6 per cent per annum.

Our only problem is the financial constraint of making the massive investment required for the rapid expansion of the network. Ours is the only ministry that gets no budgetary support but generates revenue from the present assets and invests the surplus in development activities. Telecommunications is a highly profitable business although the rural areas are at present a losing proposition. We have deliberately kept the tariff low so as primarily to ensure that all persons get telephone facilities. With the growth in traffic, the day will soon come when these services will also pay for themselves.

With over 70 per cent of our population living in rural areas, and for enabling our farmers to get better markets for their cash crops and horticultural produce or for agricultural processing, a telephone connection has become a necessity. With this in view, we have taken the decision that each of our over 234,000 Gram Panchayat (Village Council) villages will be given a 'phone before the end of 1995-1996. The remaining more than 345,000 villages will also be covered in the next five years.

Even if we add 10 million lines every year, it will still take us between 10 and 15 years to fully meet our demand. However, in view of the reasonably safe, regular and high returns, the telecommunication sector offers an attractive investment alternative. I would urge all financial institutions, the World Bank and other similar funding agencies, to provide financial assistance on reasonable terms to help us meet our ambitious goals. I am sure that the loans and other assistance will be repaid with interest within seven to eight years.

We have already been reminded of the topicality and relevance of how best to capitalise on the convergence of technologies in telecommunications, television and computer networking. A single worldwide information network with a capability to communicate voice, data, text and images will drive the change towards a global economy. In this we can fruitfully use the experience of the advanced countries and avoid duplication and wasteful expenditure through a planned exploitation of available resources and technologies. Conferences like WTDC-94 play a very useful role and should be held at regular intervals so that developing countries and LDCs can profitably exchange ideas and acquire the latest know-how at a single forum.

In the brief time allotted to me, I have attempted to give a bird's-eye view of the status of the telecommunication sector in my country and where we intend to go from here. I have also attempted to cover our priority areas and list those areas in which we would be keen on strengthening ties with interested parties. I would like to convey my thanks to the Chairman of the Conference and the Secretary-General of the ITU for having given me this opportunity to address such an august gathering. Having been at the helm of affairs for little more than a year, I can truly say that the Indian telecommunication sector is poised for very exciting times ahead and I look forward to heightened interest and awareness leading to concrete tie ups in the very near future.

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(21-29 March 1994)

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European Commission

ADDRESS BY MR. JOHN RIETBROEK, CHIEF ADVISOR (DG XIII)

On the eve of the 21st century, the telecommunication sector is experiencing profound changes. Several forces are leading this evolution: accelerating technological change, the globalization of business activities and the increasing demand for information which characterizes all these activities. In other words, an inescapable trend towards the information society is taking place on a large scale, telecommunications being one of its most important factors. There are already signs in the industrialized world that this trend will extend globally, including all modern economies.

In addition, a world-wide trend of liberalization and privatization is occurring which has affected all branches of the public sector including telecommunications.

These changes are not limited only to the industrialized world. In fact, their effects are also being felt in the developing countries, in certain circumstances even to a greater extent.

Nevertheless, the gap between the industrialized and the developing countries remains wide notwithstanding the growth many developing countries have experienced since the end of the 1980s.

Obviously, there is an undeniable link between telecommunications and economic and social development. This can be observed every day.

Accordingly, the European Union has decided to encourage and develop an active telecommunication policy employing a balanced framework of shared decision making and coordinated action between the Community and the Member States.

This action should cover the following four areas (described in the working document):

- the regulatory framework of the European Union
- Research & Development
- the economic and social cohesion within the European Union
- one of the main objectives of the Union for the future as established by the Maastricht Treaty: the development of trans-European networks.

Along with these actions which are directed towards the internal market, there are also corresponding actions to be taken within the framework of our external relations, such as:

- international scientific and technical cooperation
- development cooperation.

In the regulatory field, three main orientations have inspired the European Union's new posture:

- to introduce regulatory reforms based on a liberalization programme in order to ensure the development of markets and new technologies
- to offer the appropriate conditions for the adjustment of telecommunication operators
- to create opportunities for the realisation of economies of scale.

In brief, the main stages are as follows: the 1987 Green Paper on the development of the common market for telecommunication services and equipment, and then the following directives on the liberalization of telecommunication terminal equipment and telecommunication value-added services, the creation of ETSI which ensures a technical basis to the standardization process, the Green Paper on satellite communications and, most recently, the 1993 Review which opens the way to the full liberalization of services by 1998 and foresees a definition of universal service in order to maintain a necessary balance between the requirement of competition and the interest of users.

In the field of R&D, the Union's activities are organized within a framework of a five-year global programme; in the one about to be adopted by the Council of Ministers, three specific programmes concern the field in question and represent nearly 40 per cent of the research work, namely:

- information technologies
- communication technologies
- telematic services of public interest.

The new Framework Programme (FP) which will cover a period running from 1994 to 1998 is designed to consolidate the advances already made.

Nonetheless, a community must always be alert to the social and economic aspects that dominate it, and note that telecommunications play a major role in this which derives from their ability to emancipate and set the stage for the further development of other activities.

Since 1986, the STAR regional action programme, which had a total budget of ECU 1540 million, has permitted the development of infrastructures in the less favoured and peripheral regions, that is to say eight of the 12 Members of the Union.

Recently started in 1992, a new initiative includes telecommunications in large European-wide projects; these will be the trans-European networks stipulated in the Maastricht Treaty of the European Union, the implementation of which is foreseen in the Commission's recent White Paper on Growth, Competitiveness and Employment.

The aim is to provide the Union with a telecommunication infrastructure, conceived from the beginning on a continental scale, and with the technical performance such as to allow large-scale undertakings and organizations new possibilities in the field of basic electronic services (i.e., interactive video, electronic mail) or telematic applications (work, education and training, public administration).

In other words, it is a restructuring of the economy and the space around the developing core of large communication networks.

Moreover, the Union has also developed this area within the framework of its external relations and in particular in the field of economic co-operation and development aid. Furthermore, from 1975 to 1993, the European Investment Bank and the European Commission financed some 200 projects for an amount approximating one billion ECU.

As regards Central and Eastern European countries, telecommunications were immediately taken into account and are fully integrated in specific programmes such as the PHARE and TACIS, with budgets estimated at ECU 50 and 15 million, respectively. These programmes are primarily concerned with the advancement of telecommunications and the management of infrastructure investment by funding institutes.

The situation is similar with respect to the developing countries with which agreements have been signed, either within the framework of the Lome Convention with African, Caribbean or Pacific countries, or with Latin American, Mediterranean or Asian countries. All these agreements provide explicitly for cooperation with regard to the development of telecommunications.

Finally, it should be stressed that if the majority of action concerns development, a significant part of these operations should be directed towards scientific and technological cooperation, and this should be even more explicit in the future as the next Research & Development Framework Programme provides for cooperation with third countries and international organizations.

This leads me to the Community's relationship with the ITU. Since 1989, the Community has been an observer member of the CCIR and the CCITT and has also provided support to the CTD. The Community is now an active observer in all three ITU sectors.

It should also be emphasized that the activities of the ITU in the development field, as for instance in regional telecommunication development conferences, have largely contributed to inform an increasing number of countries of the emerging new telecommunication environment and to create the conditions to merge different forms of experience and to strengthen those countries that are implementing reforms.

In this respect international cooperation offers the opportunity to create a framework for coherence or useful references so as to amplify the actions of the different actors by their synergy. The aim of the European Commission is to contribute to these orientations together with the CEPT and its Member States.

It should also be underlined that some apparently paradoxical ideas have to progress simultaneously, as for instance more competition and more cooperation, or even more efficiency and solidarity. In my opinion, this is the main challenge of the work that we are currently undertaking.

I mention more competition because in most circumstances the objectives of efficiency and service are best served through alternative choices for the users. More efficiency in order to allow a larger group of users today to have access to the basic services and tomorrow to the new services which will condition their capacity for integration in an economic circuit at a continuously lower cost.

But more cooperation also to allow those countries that have failed to keep pace to improve, and to allow less favoured regions to develop the necessary infrastructures for communications.

This leads to a critical analysis of governmental responsibilities and of the ambit of international cooperation.

International cooperation should contribute both to an environment which is beneficial to the development of telecommunications while allowing the area its dynamism and to maintaining the necessary balances. Thus, action should focus on:

- the regulatory framework for operators' activities, including universal service complemented by policies for human resources, standardization, and other aspects;
- regional and global cooperation to ensure the creation of infrastructure compatible with the areas of economic integration and interoperability through world-wide standards;
- the sustainable development of telecommunications in less favoured areas which may not be assured by market forces alone, for instance in rural areas.

In conclusion, the results of this Conference will be analyzed carefully and within the context of its decision making process the European Commission will propose appropriate measures regarding general and sectoral policies so that the contribution of telecommunications may be re-evaluated and the priorities granted to cooperation action in this field may be increased.

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Federal Communications Commission (USA)

SPEECH BY CHAIRMAN REED E. HUNDT

The purpose of this first World Telecommunication Development Conference of the International Telecommunication Union should be to end the solitude that inattention and poverty have meted out to millions of people in this world.

As our country's Vice-President did yesterday, I would like to begin by quoting a great writer:

"Many years later, as he faced the firing squad, Colonel Aureliano Buendia was to remember that distant afternoon when his father took him to discover ice."

That is, of course, the first line of Gabriel Garcia Marquez' One Hundred Years of Solitude, the most influential Spanish language novel since Don Quixote. The book is the story of the mythical town of Macondo, a place isolated from its nation, cut off from the world.

We gather here in Buenos Aires, at this first Conference of telecommunication regulators called for the purpose of discussing development, because we know that much of the world lives in towns like Macondo, isolated from their country, hundreds of years apart from modern technology, cut off from communication with the world.

Just as in Garcia Marquez' novel "ice" was an object of infinite rarity and preciousness in the tropical climate of the fictional Macondo, so the telephone is today a rare thing in thousands of communities.

More than half the people on our planet have never made a telephone call. Less than a third have ready access to telephones. In the world's low income countries, there is less than one telephone per 100 people.

Where there are no telephones, there is isolation.

An efficient communications system means an end to isolation. Where people are in communication there is a possibility of health care, of education, of democracy, of economic growth, of sustainable development.

Telecommunications can hasten the arrival of participatory democracy. As we meet, South Africa is using telecommunications to inform people about how to vote, how to exercise their democratic rights.

Telecommunications can improve health care. In Guyana, rural health workers improve the quality of health care by discussing diagnoses in conference calls with physicians in the capital of Georgetown.

Communication by telephone is not a luxury, but is the key to economic growth and the essential condition to full participation in the modern world.

For that reason, in my job as Chairman of the Federal Communications Commission I and my colleagues have emphasized two themes in our decision making: economic growth and access.

First, we attempt to increase economic growth through our decisions. Communication makes economies grow, domestically and internationally. In our country the communications and information sector will be one-sixth of the total economy by the year 1997.

Tokyo is one of the major financial, commercial and industrial centres of the world. It is no coincidence that Tokyo has more than 66 lines per 100 people, and has the highest ratio of fax machines to people. Japan's communications infrastructure is a key reason for the tenfold increase in its GNP during the last 40 years.

But there are fewer telephones in the whole of Africa than in Tokyo. This marks not only Japan's accomplishment but also the tragic shortcomings of development elsewhere.

Another measure of the uneven state of communications development is the pattern of international fibre optic cables and satellite services. Most serve the northern hemisphere, and extend East-West. The southern hemisphere is grossly underserved.

As a consequence, a phone call from the Ivory Coast to Nigeria -- only 800 miles away -- often is routed through London, then Paris, and finally to Abidjan. The 6000-mile route vastly increases the cost of the call. In the information age, the lack of an effective infrastructure frustrates sustainable development.

The second theme of our decision making at the FCC is access. This means access of our people to each other and access of businesses to customers, whether they want to sell soap or software.

The objectives of economic growth and access are achievable in our country and in every country because of breakthroughs of invention and entrepreneurship.

As an example, AT&T is building in Indonesia wireline networks employing state-of-the-art fibre optic technology. Advanced digital switching is being installed in Bangalore, India. A nationwide cellular system is being deployed here in Argentina.

Satellite technology offers opportunities to build a global, seamless connection among all networks. There is no more compelling case for governmental cooperation and parallel regulation than that presented by satellite providers. They seek to serve the globe, and all countries should cooperate by opening markets to their services.

However, in order to make the most out of modern technology and entrepreneurship, all countries must not only develop adequate infrastructures, they must adopt appropriate regulatory regimes. As Vice-President Gore said yesterday, the key principles of regulation should include:

- First, reliance on private investment

  As a corollary, the private sector must be guaranteed a reasonable opportunity to obtain a fair return on investment. And to maximize the investment incentive, state-owned telecommunication facilities should be privatized.

- Second, competition instead of monopolies

  Competition will lead to pricing toward cost, and therefore will hasten the development of universally available communication networks.

  Competition increases innovation, reliable service, and economic growth. But competition must be fair. We aggressively seek in our domestic markets to eliminate cross subsidies and discriminatory access.These policies should be applied internationally.

The competitive model also dictates that international accounting rates and collection charges should be cost-based. Lower prices for telecommunication services dramatically increase demand. This in turn creates more revenues, extending and sustaining world communication networks.

We believe that all countries will benefit from reducing accounting rates and calling prices to appropriate cost-based levels, because then networks will be used more efficiently and domestic businesses will be more competitive.

- Third, a flexible regulatory framework

  Regulators must have the freedom to accommodate evolving technological changes and to ensure that regulations are responsive to market demands, while safeguarding the public interest.

- Fourth, open access, interconnection and interoperability

  If all the members of the ITU do not work together to develop open, interconnected and interoperable networks, the vision of a Global Information Infrastructure will give way to isolated, fragmented systems. These have less value in all respects than globally interconnected systems.

  It is especially important not to permit a monopolistic incumbent carrier to block competition through financial and technical barriers. Regulators should issue effective interconnection rules and fair pricing policies.

- Finally, universal service

  As President Menem said yesterday, we have a moral duty to find a way to link people to everyone in their country, and all countries should be linked to the Global Information Infrastructure.

I hope all of you will embrace this commitment to the full implementation of universal service.

Achieving it will require in each country a careful assessment of economic efficiencies, technical capabilities and social benefits. Fortunately, expanding communication markets and diverse new low-cost technologies offer regulators new solutions to the problems of universal service.

In my country we are focusing now on the question of how to extend communications networks to every classroom in the United States. The President, the Vice-President, the Secretary of Commerce Ron Brown, the Assistant Secretary of Commerce Larry Irving, Senators Hollings and Kerrey, and Congressmen Dingell and Markey are working hard to pass legislation accomplishing this goal. Extending communication networks to the classrooms will revolutionize education.

As Vice-President Gore said yesterday, I hope you here will assume the task of developing a plan to connect every school and library in the world to the Internet and ultimately to the Global Information Infrastructure.

We recognize that, to a degree, the development of the world's telecommunication networks will take place regardless of whether governments adopt appropriate policies, or make commitments to provide universal service.

The issue before us is not whether technological innovation and business investment will take place, but whether the potential for economic growth through telecommunications development can be fully realized and whether its benefits will be available to all the world's people.

As Cervantes wrote in Don Quixote, "There are but two families in the world ... the Haves and the Have-nots." We can be sure that the world will always include the Haves -- those who can communicate, those who are successful in the world economy.

But we are concerned that every day, everywhere in the world, more people are added to the family of the Have-nots. Through modern communications we can begin to end the division of the world into two separate, non-communicating families. We can bring a real hope of progress to people now isolated from the rest of the world.

The great Argentine writer Jorge Luis Borges wrote a story called The Library of Babel in which he compared the universe to a library. In his characteristically dark manner, he wrote that even if "the human species" were "extinguished, ... the Library would endure: illuminated, solitary, infinite, perfectly motionless, equipped with precious volumes, useless, incorruptible, secret."

Today, that Library is the world of modern knowledge, created and built by communication. It is accessible through telephone links and computers. It is usable through the information infrastructure. This Library, this world of modern knowledge, has the potential to make its users far better off then they are today. Yet, in the words of Borges, that Library is "solitary" and "useless" for everyone in the world who lacks modern means of communication.

Access to Borges' Library for all communities, for all the Macondos of the world, must begin with the discovery of the humble rare tropical ice of the telephone.

We should commit here to hastening this discovery. Our mission is imperative and crucial, because, as Garcia Marquez wrote in the very last line of his great novel, communities "condemned to one hundred years of solitude [do] not have a second opportunity on earth."

We know that millions alive today have no second opportunity to participate in the world economy and the world community.

By grace of human genius, we know how to give them that opportunity. By our efforts in this Conference, let us not fail them. Let us everywhere bring isolation to an end through the miracle of telecommunications.

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(21-29 March 1994)

Document 76-E

COMMITTEES 3 AND 4

NOTE BY THE CHAIRMAN OF COMMITTEE 2

TO THE CHAIRMEN OF COMMITTEES 3 AND 4

Under its terms of reference, the Budget Control Committee is requested to present a report to the Plenary Meeting showing, as accurately as possible, the estimated total expenditure of the Conference, as well as an estimate of the costs that may be entailed by the execution of the decisions taken by such Conference in accordance with Article 32 of the Convention (Geneva, 1992).

To enable me to provide the Plenary Meeting with the necessary information, I should be grateful if you would supply me, as soon as possible but no later than 26 March 1994, an estimate of the costs that may be entailed by the execution of the decisions taken by the World Telecommunication Development Conference.

U. MOHR
Chairman, Committee 2

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Document 77-E

Sri Lanka

BACKGROUND DOCUMENT

The national operator, Sri Lanka Telecom (SLT), came into being on 1 September 1991 having taken over the functions of its predecessor, the Sri Lanka Telecommunications Department (SLTD). The SLTD was a government agency which handled all aspects of telecommunications including regulatory issues and the management of the frequency spectrum. With the corporatization, regulatory issues and the management of the frequency spectrum were assigned to the newly formed Telecommunications Authority working under the Director General of Telecommunications.

SLT is a public corporation (wholly owned by the government) which is controlled by a 7-member board of directors but still strictly under the control of the government through a cabinet minister in charge of posts and telecommunications. However, the main achievements of corporatization has been the flexibility in the management of its own resources as well as a degree of management in terms of recruitment and organization.

The procurement procedure, however, has not been liberated to the desired extent in that ministry or government approval are required for tender awards above US$ 100,000. Sri Lanka, with a population of about 17.5 million, had at the end of 1991 only about 126,000 main telephones (DELs), while the telephone exchange capacity was about 160,000 and an effective cable capacity of about 268,000 main pairs. Although the figures for both of the capacities indicated that more telephone connections could be given, there were imbalances since, on several occasions, where there was cable capacity there was no exchange capacity and vice versa. This situation was the result of many years of limitation of funds as a government department.

With the corporatization, the primary duty has been twofold. Firstly to improve the quality of service and, secondly, to provide for those on waiting lists, a figure which stood at 66,500 at the end of 1991. In order to meet this challenge a considerable amount of funds were secured from the World Bank, the ADB, the OECF of Japan, the Finnish Export Credit and the French Protocol. Taken together, a total of US$ 220 million were committed and the work is in progress for the expansion of the telephone base, the trunk network, the international facilities and the computerized MIS system.

Besides these conventional sources of funding, new approaches were explored, foremost among which was the utilization of international in-payments for procurement of equipment. As much as 50,000 line exchange capacity was commissioned in this way in the Colombo Metropolitan area.

INSTITUTIONAL STRENGTHENING

Having considered the need for institutional strengthening owing to the corporatization, the World Bank attached much importance to this aspect and funds were provided for engaging consultants for this purpose. With this funding facility new measures have been taken, notably the launching of the corporate planning process, the improvement of quality of service, the speeding up of telephone connections, and the management of key/corporate customers. Accordingly, the management structure is being changed and various new measures are now being implemented to achieve this objective. Productivity was to be doubled by limiting the total staff strength while doubling the DELs during the period 1991-1995.

Alongside this, a UNDP/ITU project on management development was undertaken simultaneously and several senior officers were trained in management organization in developed countries. ITU consultants were engaged to conduct several seminars and workshops to improve the management process. The ITU consultants also helped produced manpower forecasts and these are being studied for implementation shortly.

As an extension to that project, and in order to speed up the provision of telephone service, a computerized customer services unit concept was initiated. Two such customer service units are in operation to date in the Colombo Metropolitan area where service orders themselves are being computer generated. The SLT will extend this project to all parts of the country utilizing its own resources to better serve its customers.

THE INTERNATIONAL SCENARIO

Until 1991, the international circuits were provided by a standard A earth station and coaxial submarine cable (SEA-ME-WE I) through two gateway switches. The total number of circuits stood at only 375.

Rapid expansion was carried out and a new standard B digital earth station with 6 IDR carriers was set up within a short span of about six months, again utilizing a non-conventional funding method. The 375 number of international circuits at the end of 1991 is now about 630. This figure will rise to over 1000 with the commissioning of the SEA-ME-WE II optical fibre submarine cable. With the funding from the ADB, the international facilities will be further strengthened by adding a new gateway switch and a standard A IDR earth station which will come on stream in 1995.

FINANCIAL MATTERS

Two of the major problems that the SLTD was faced with were the delays in the issue of bills and the timely collection of revenue. With regard to the former, a delay of about 5 months at the time of corporatization has now being reduced very satisfactorily in that a previous month's bills are issued before the expiry of the current month. Further, the billing cycle has been reduced from a two-monthly to a one-monthly period, i. e., monthly bills are despatched. As regards international calls, detailed bills are issued, whereas even for long-distance calls, no details are given. While the billing has been brought up to a satisfactory level, what is most difficult to achieve is the actual collection. At the time of corporatization, the account receivable was equivalent to over six months and still remains high, primarily due to the large amount of accumulated arrears which were taken over from the Department. In order to improve collection, a Key/Corporate Customer Unit has been formed and subscribers thereto are closely monitored. Measures are also being adopted to give good quality of service to those key customers who pay their bills promptly and, simultaneously, to follow up on those who delay payment of their bills. The undesirable but inevitable measure of blocking the outgoing facility, sometimes even disconnection, is being taken regularly against defaulting subscribers, and it is hoped that the situation will improve over time.

The average telephone revenue per line is approximately US$ 770 per annum and is expected to drop gradually as subscriber penetration increases, since the percentage of corporate to residential subscribers will keep on decreasing. The average operating cost per telephone line is US$ 387 per annum which also is expected to drop with the increase of productivity.

The total assets of the corporation is in the region of US$ 420 million and the return on total assets is around 13 per cent.

LIBERALIZATION

A regulatory authority headed by the Director General of Telecommunications was created in July 1991 as required by the provisions of the new Telecommunications Act. The regulatory authority is required to advise the minister on the granting of licences to operators of telecommunication systems. It monitors the conduct of the operating entities and ensures that they act in conformity with the licence conditions and the provisions of the Telecommunications Act. It also stipulates technical standards, type approves terminal apparatus, specifies tariffs, determines terms and conditions of interconnection between networks when operating entities fail to agree, and is the sole authority to manage the radio frequency spectrum.

Specialized services such as cellular radio, packet switched data, radio paging, trunked mobile radio have been opened to competition and foreign investment. Three analogue cellular licences, one digital cellular licence (not yet in operation) , two licences for switched data, five paging licences, and one trunked radio licence have been issued. Licences for digital cordless telephony (CT2) are under consideration.

THE ISSUES

1. The main issue at present is the inability of Sri Lanka Telecom to meet the demand for telephone services within a reasonable time. While the total number of main lines stands at only about 160,000, those waiting for telephone service number some 125,000. With the expansion programme being handled by the SLT, financed by multilateral and unilateral funding agencies, it is intended to increase the capacity to about 340,000 by end of 1995. However, the government is not satisfied with this expansion and has initiated the formation of another company, Sri Lanka Telecom Services Ltd. as an implementing agency to undertake a separate programme by adding a capacity of some 150,000 on a suppliers' credit basis. This activity is now in progress and every effort is being made to meet the government's objectives of increasing capacity to provide 0.5 million telephones by the end of 1995. With an estimated population of 17.5 million, it is expected that the number of DELs per 100 population will exceed the 2.5 mark -- a considerable improvement on the current 9 per 1000 population.
2. Sri Lanka Telecom is now facing competition only in data communications and cellular mobile communications (SLT is operating the service on a BOT basis) and is competing with another two private operators. No competition seems to be evident for the basic telephone services and the international services. However, with increasing liberalization, the government may consider some degree of competition, perhaps on long-distance or even international communications. The latter will of course have repercussions on SLT as there is presently a virtual cross-subsidy from international to local revenue. Considering that only 13 per cent of the telephones generate 77per cent of the revenue and that Sri Lanka has a very large rural population, it is not possible to dispense with cross subsidy without raising tariffs. It is necessary, therefore, to discuss this issue in the course of this Conference so as to ascertain how other developing countries are meeting the challenge in an environment where multinational companies could apply pressure to obtain a slice of this international revenue.
3. In view of the non-availability of a manufacturing base for telecommunications equipment in Sri Lanka, we are in the very difficult situation of having to manage five switching systems, with the sixth soon to be introduced. Considering that most administrations advocate having no more than three systems, Sri Lanka will find itself in a difficult situation. It may thus be preferable to negotiate and at least set up assembly plants, initially for about two systems, to allow for several benefits such as the transfer of technical know-how, long-term procurement agreements and standardization.

4. In the event of privatization, it is essential to discuss how a balance could be reached between public and private capital investment.
5. As a public corporation the development of telecommunication infrastructure must fit into the total development of the country. It is therefore necessary to discuss how to reach a balance between telecommunication investment *vis-à-vis* investment in other infrastructure developments.

Key indicators of the national operator, Sri Lanka Telecom, may be found in the Annex.

Annex

SRI LANKA TELECOMS

KEY OPERATIONAL HIGHLIGHTS

	1991	1992	1993
Main line telephones (DELs) in service	125,834	135,504	157,774
Public payphones	363	447	673
Telex connections	1,739	1,783	1,966
Network capacity			
Exchange line capacity	159,667	180,000	207,227
Effective cable capacity	267,831	284,834	290,600
International telephone traffic (in million paid minutes)			
Incoming	49.7	53.5	54.4
Outgoing	15.6	16.7	20.2
Both ways	65.3	70.2	74.6
International voice-grade Circuits	375	481	630
Total staff employed	7,141	7,572	7,360
Productivity terms of employees*/1000 DELs (includes International Services Division staff)	57	56	47

KEY FINANCIAL INDICATORS
(in Rs: '000)

	1991 Sep-Dec (Since the formation of the Corporation)	1992 Jan-Dec	1993 Jan-Dec (Provisional)
OPERATING REVENUE	1,547,000	5,366,000	5,516,000
OPERATING EXPENDITURE	795,000	2,586,000	2,799,000
OPERATING PROFIT (BEFORE TAX)	752,000	2,780,000	2,717,000
TOTAL ASSETS	13,736,000	18,072,000	21,000,000
RETURN ON TOTAL ASSETS %	16.42	15.38	12.90
DEBT/EQUITY RATIO %	33	32	46

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 78-E

PROGRAMME FOR WEDNESDAY, 23 MARCH 1994

08.30	Special session by the World Bank	Golden Horn
09.30	Plenary meeting Statements by distinguished personalities	Libertador
12.30	*Lunch*	
14.30	Plenary meeting	Libertador
	Agenda item 3 - Recommended approaches for telecommunication development Agenda item 4 - Special programme for the Least Developed Countries (LDCs)	
	Report by the Director of the BDT	
	Report of the TDAB[1]	
	Policy perspectives on the role of the ITU in development	
16.00	*Coffee break*	
16.30	Plenary meeting	Libertador
	Introduction of proposals, including the draft Buenos Aires Action Plan	
18.00	TIES ITU Telecommunication Information Exchange Services	Auditorium Ground Floor

[1] Telecommunication Development Advisory Board

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 79-E

Indonesia

TELECOMMUNICATION DEREGULATION AND PRIVATE SECTOR PARTICIPATION IN INDONESIA

I. GENERAL

Deregulation policy in Indonesia started in 1989 by the issuance of Law No. 3/1989 to replace Law No. 5/1964 which had been designed to monopolize telecommunication industry.

Basic philosophy in introducing deregulation:

- to response to the need of keeping pace with technological progress,
- to meet public demand for modern telecommunication services.

Through deregulation policy, the private sector is invited to participate in telecommunications business in Indonesia and to develop innovative ideas in telecommunication industry. However, the participation must be based on technologies that are suitable to the existing environments.

Challenges which are faced by the government in the development of the telecommunication sector:

- acceleration of telephone lines penetration nationally, especially in the big cities such as Jakarta;

- Expanding accessibility of the telecommunication network which at the moment merely covers the province and district capitals.
  Today, 50% of the 4600 sub-districts capital and 25% of 65.000 villages have access to a telephone despite of Indonesia's geographic nature with over 17.000 islands.

- Management of national resources to support vast expansions of the telecommunication network at around 8 to 10 billion US Dollars which are needed for the sixth Five Year Development (Pelita VI).

II. TELECOMMUNICATION REGULATORY AND NEW POLICY

The need to restructure the telecommunication industry was motivated by the rapid progress of technology and expanded role of telecommunication not only to serve the business and industrial sectors but also significant growth of residential demand. The telecommunication infrastructure is prioritized by the government to induce economic development.

The telecommunication law No. 3/1989 is expected to response to the above questions by inviting the private sector, including foreign investors, to take part in the development of telecommunications industry.

The distinction of telecommunication services is drawn between:

- BASIC telecommunication services such as telephone, telex, telegram and leased circuit which involve in the delivery of pure information between sender and receiver transparently with respect to the telecommunication facility.

- NON-BASIC telecommunication services which are defined as services that emerge due to the enhancement that occurs in the characteristics and capabilities of telecommunication facilities. The enhancement is done through the use of computers and other equipment to process and transfer data and information.

The government of the Republic of Indonesia is actively undertaking a significant policy development towards a more liberalized market structure by deregulation of the telecommunication sector under guidance of Law No. 3/1989 and government regulation No. 8/1993 which has been effective since February 1993.

III. PRIVATE SECTOR PARTICIPATION

The private sector can participate in the provision of Basic telecommunication services through cooperation agreements with operating agencies such as PT TELKOM and PT INDOSAT.

The private sector can participate in the provision of Non-Basic telecommunication services without the requirement for cooperation with telecommunication operating agencies.

The cooperation scheme can be listed as follows:

- Revenue sharing arrangement under joint operation scheme
- Management contract
- Joint venture scheme.

The current situation is in accordance to the government guidance. The joint venture scheme is more attractive for the private sector since it allows private sector to operate without transfer of ownership.

IV. THE ROLE OF REVENUE SHARING SCHEME (PBH)

The PBH projects has developed 1.000.000 Line Units in Jakarta since 1989, which is about one half of the total investment.

The PBH project has accelerated the rate of development of telecommunication infrastructure in the magnitude of 830%. The development capacity has been increased from an average of 50.000 Line Unit per year in Pelita I through IV to an average of 415.750 Line Unit per year in Pelita V.

V. THE ROLE OF JOINT VENTURE SCHEME

The first milestone between private sector, PT. TELKOM and PT INDOSAT is the establishment of joint venture companies to operate International Gateway Telephone service, Cellular Network and Domestic Satellite in January 1993.

PT. Satelindo will use GSM standard for its cellular network of 50.000 Line Units in Jakarta which is part of 350.000 Line Units throughout Indonesia. PT Satelindo will also launch and operate the third (latest) generation of domestic satellite which will be designated as Palapa CI and Palapa C2.

The other major milestone is the establishment of a joint venture company to operate overlay network for fixed cellular services between private sector (PT Bakrie Electronics Company) and PT. TELKOM.

PT. Ratelindo will use AMPS standard for its fixed digital cellular radio network of 250.000 Line Unit in Jakarta and 30.000 Line Unit in West Java. Furthermore, the network will be expanded and include additional 220.000 Line Unit that will cover all other major cities in Indonesia. In addition, the network will penetrate the rural market through 50.000 Line Unit of rural telephony technology as a part of the government Universal Service Obligation programme.

VI THE INDUSTRIAL DEVELOPMENT

The fast rate of development of telecommunication infrastructure in Indonesia will be based on advanced technology from foreign countries. Therefore, in order to maintain the national economic growth, the government minimizes cross subsidy between economic sector such that Indonesia retains its competitive advantage internationally.

Furthermore, the government has foreseen the development of telecommunication infrastructure as a momentum that will propel the development of telecommunication industry and electronic industry in general.

Part of the policy is to induce local manufacturing and transfer of equipment technology to Indonesia. This policy has been applied in the limitation of switching standards that can be manufactured and used in Indonesia to 3 standards (Siemens, AT&T and NEC).

PT. TELKOM has started a joint research and development programme with the private sector in rural communication technology that may well be Indonesian prime telecommunication product of the future.

VI. CONCLUSION

The government has a very serious intention to fulfill the national goal in the installation of additional 5 Million telephone lines within the next five years (1994-1999) at the minimum. PT. TELKOM will install 3 Million Line Unit whereas the private sector will install the rest of the target or 2 Million Line Unit at the minimum. This target means an even higher rate of development than Pelita V which had installed an average of 415.750 Line Unit per year.

The government also plans to have additional 600.000 Lines of Cellular Network based on GSM standard which will be built by two national operators. However, the real market of cellular service, with future restructurization of regulation and more transparent business environment may explode to 2.000.000 Lines.

In conclusion, the government of Indonesia with the private sector dedicate all of the national resources to develop the national telecommunication infrastructure based on specifically applicable technology while maintaining the national economic trade balance.

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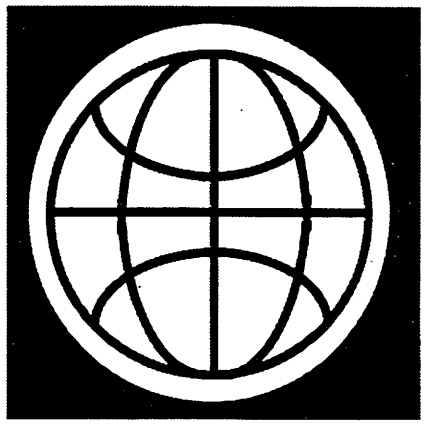
(21-29 March 1994)

Document 80-E

World Bank

Telecommunications Development

The Changing Role of the World Bank Group



International Telecommunications Union
World Telecommunications Development Conference

Björn Wellenius
Telecommunications Advisor
Telecommunications and Informatics Division
The World Bank

Assaad Jabre
Manager
Telecommunications Division
The International Finance Corporation

Part 1: What's going on in the telecommunications sector?

Part 2: Where do our client countries stand?

Part 3: What actions are needed?

Part 4: How is the Bank Group role shaping up?

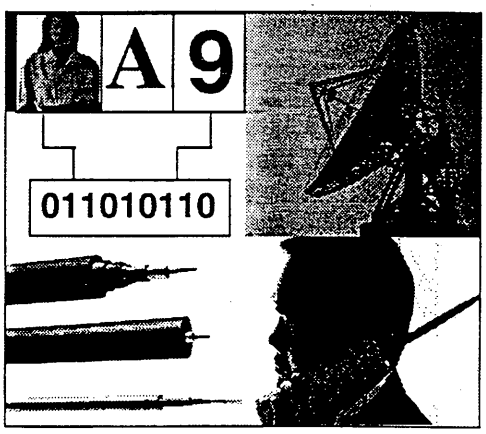
In mid-February, staff of The World Bank went to the Board of Directors to brief them on what is happening in telecommunications worldwide and to exchange views on what that means for the World Bank Group.

Drawing on that presentation, today we share with you our own views on the directions in which the World Bank Group is likely to move. Please note that these views are not necessarily those of our Board and member Governments. Also keep in mind that our figures on investment levels and sources of financing are tentative and may not be reliable beyond the scope of today's presentation.

What's going on?

The telecommunications sector is experiencing unprecedented change worldwide

- **Fast growth**
- **Major changes in technology**
- **Declining costs**
- **Wide range of network structures**
- **Diversity of market structures**



Telecommunications is a fast-growing industry by any measure.

Fast growth is associated with rapid changes in technology. At the root of these technologies are microelectronics, optics, and software—the technology of computers—which augur further change.

Technological change coupled with fast growth results in declining costs.

Technology has opened the way for a wide range of solutions for developing telecommunications systems. Whereas just a few years ago there was generally only one cost-effective manner to develop a given network, today there is a wide range of choices.

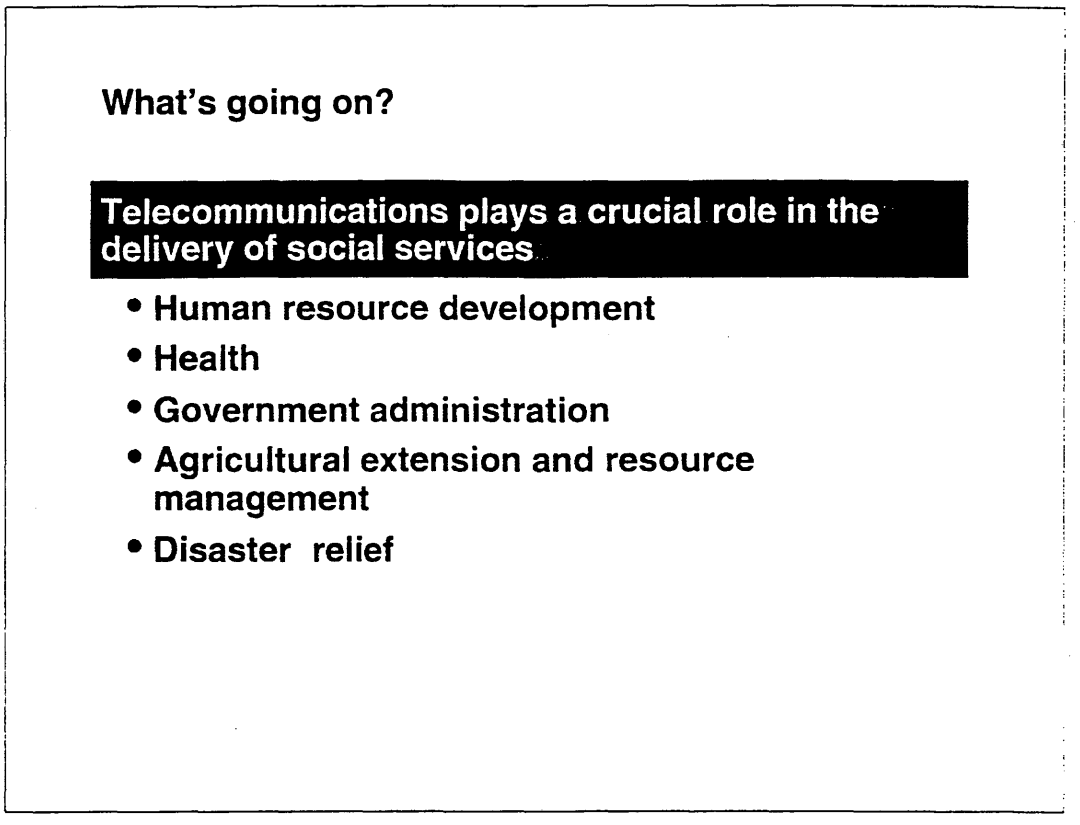
This diversity of network options, in turn, has enabled changes in market structures. Monopolies are being eroded, competition is building up, and opportunities for private business are multiplying.



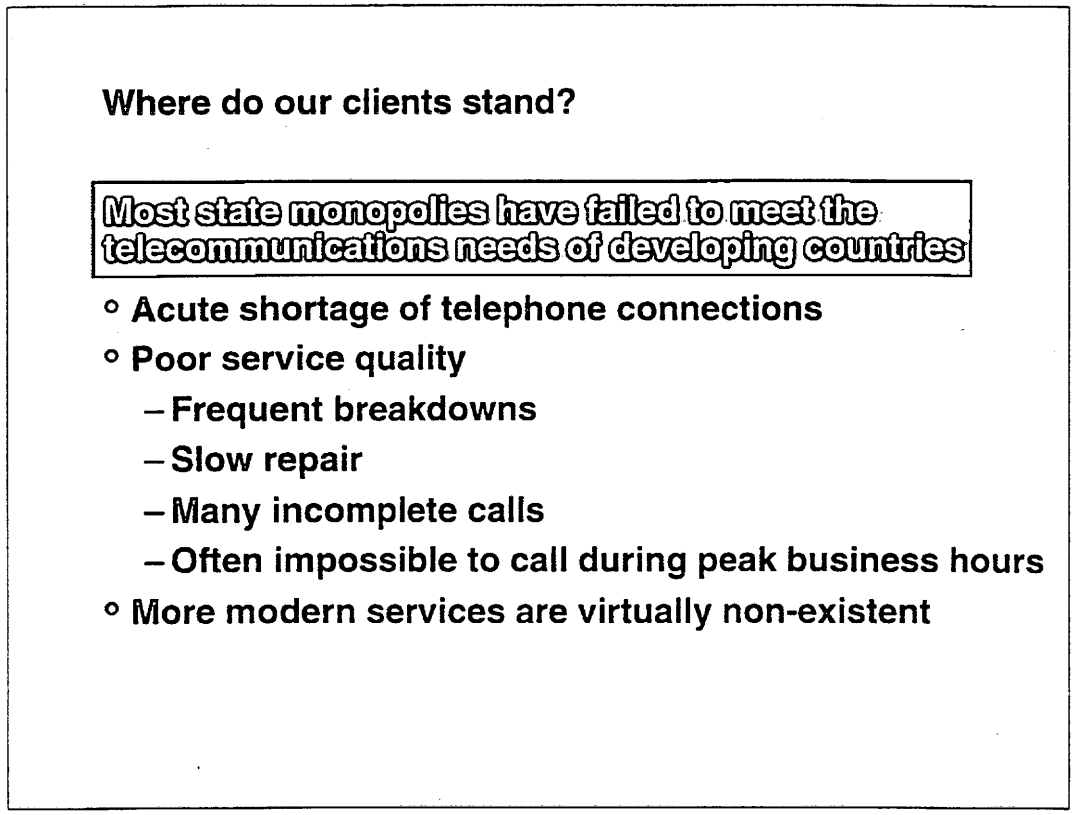
Information has become a fundamental factor of production, alongside capital and labor.

Telecommunications is both the core and infrastructure of the information economy. *Core* because major economic activities are themselves mostly information processing and transmission (e.g., financial services, commodities markets, media), and others depend critically on these facilities (e.g., publishing, transportation, travel). Telecommunications itself is a large and rapidly growing business—telecommunications operating revenues worldwide probably exceed $500 billion, which is roughly equal to the GNP of Canada or 2 to 3 times that of Africa. *Infrastructure* because telecommunications facilitates market entry, improves customer service, reduces costs, and increases productivity in all sectors.

Telecommunications has now become a strategic investment to maintain and develop a competitive advantage at all levels. Countries and firms that lack access to modern telecommunications services can no longer effectively participate in the global economy.



Telecommunications systems also can be effectively deployed in the extension of social services and regional development. They have been used to support human resource development through distance education and training; to facilitate health services in rural areas through linkages to interactive medical information networks; to extend and consolidate government administration to regions; to enhance agricultural development and resource management by enabling farmers to access such information as market trends, weather reports, and modern growing techniques; and to support the mobilization of aid for disaster relief operations, among other things.



Unlike in Europe, Japan, and several other countries, state monopolies in developing countries have generally failed to meet telecommunications demand. Widespread shortfalls include acute shortage of telephone connections (e.g., waiting times up to 10 years and more to obtain a new telephone line, compared with days or weeks in developed countries), poor service quality (in many countries it is virtually impossible to get through by telephone during peak business hours), and an absence of more advanced services (such as facsimile, data transmission, electronic mail).

Where do our clients stand?

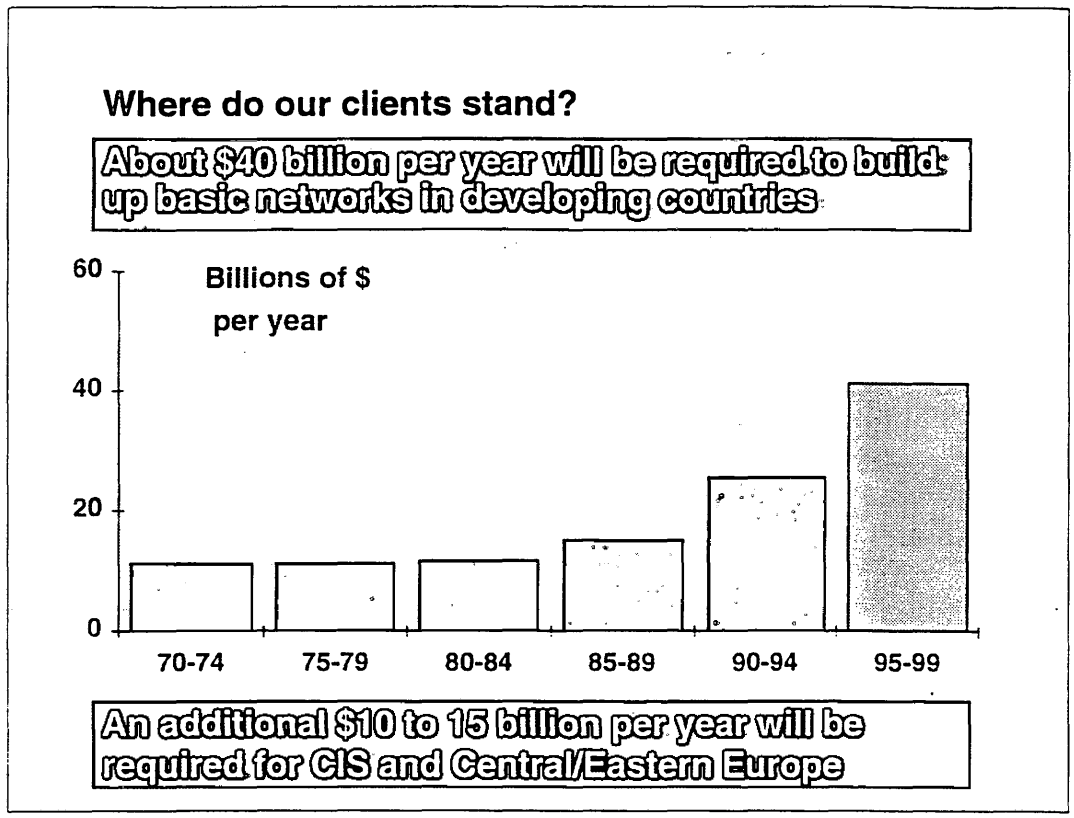
Why have state monopolies failed to meet needs?

- **Chronic underinvestment**
- **Ineffective management**
- **Outmoded sector policies and structures**
  - **Insufficient autonomy**
  - **Lack of incentives**
  - **Low and distorted tariffs**
  - **Conflicting objectives**
  - **No access to capital markets**
  - **No new entry**

These shortfalls have three main (interrelated) causes. First, despite high economic and financial returns from investment (typically 30 and 20 percent, respectively, for World Bank-supported programs in the 1980s), telecommunications suffers from a general shortage of state funds for investment, many competing demands (e.g., for more schools and hospital beds), and government appropriation of telecommunications operating surpluses for uses other than reinvestment. And given its high requirements for imported equipment, telecommunications is critically dependent on foreign currency funds.

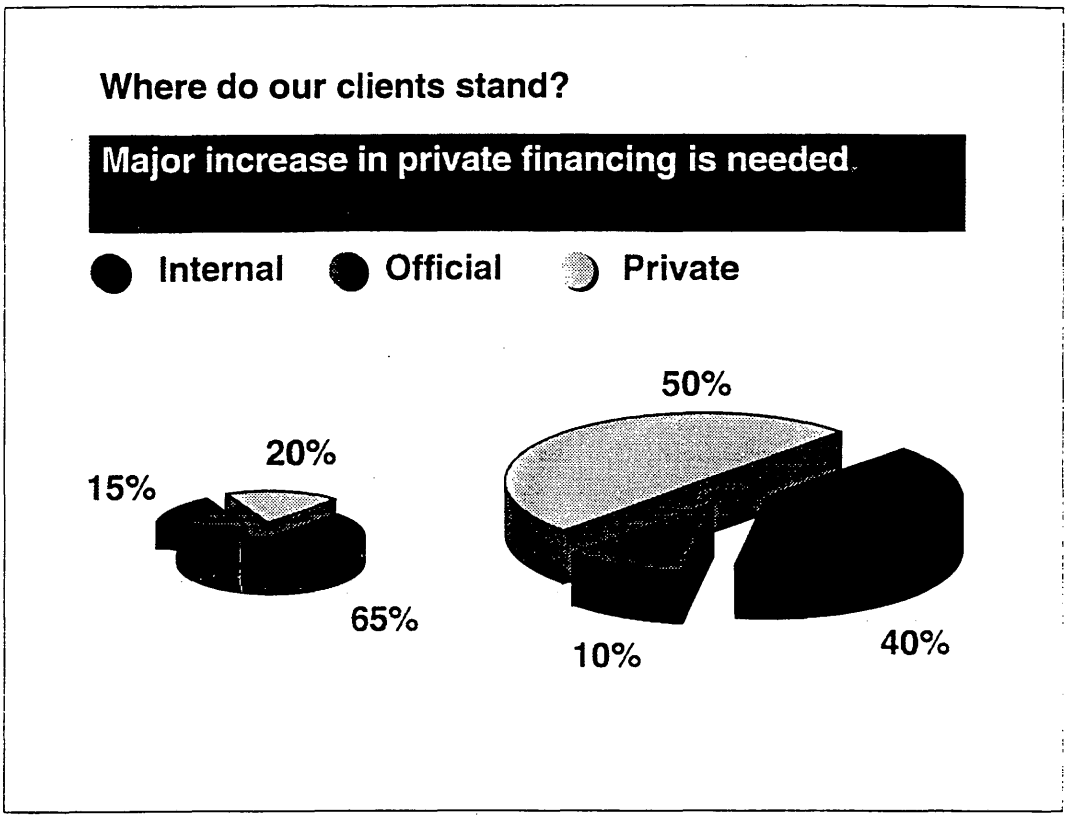
Second, telecommunications entities are organized and managed more like parts of government administrations, rather than as customer-oriented, market-driven, technology-intensive, rapidly-changing businesses.

Third, telecommunications entities are weighed down by lack of autonomy and incentives to perform, low and distorted tariffs, objectives (e.g., employment, health, housing, social security) that conflict with the main business, and lack of access to capital markets. And—most importantly—no new entry is allowed, despite the incumbent's inability to meet demand.



Source: Pyramid Research Inc. and World Bank (1994). Figures are in 1990 U.S. dollars. Tentative data.

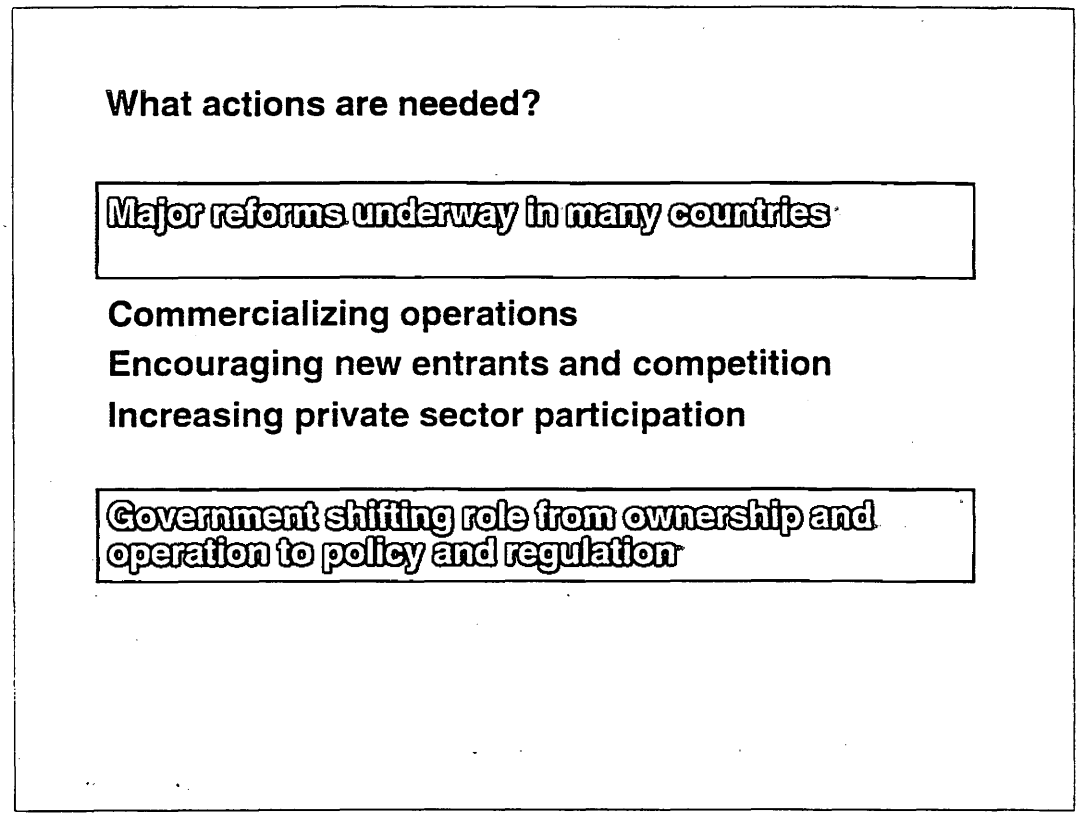
Given the wide gap in telecommunications between developing countries and the industrialized world, it is clear that huge amounts of investment in the sector are necessary. About $40 billion a year must be invested by developing countries over the next five years to build up the basic telecommunications infrastructure. This figure does not even assume that by the year 2000 these countries will meet all demands for basic telephone service; makes no allowance for more advanced services; and does not include the $10 to $15 billion of investment per year that will be required for the CIS and Central and Eastern European countries.



Source: Pyramid Research Inc. and World Bank (1994). Tentative figures.

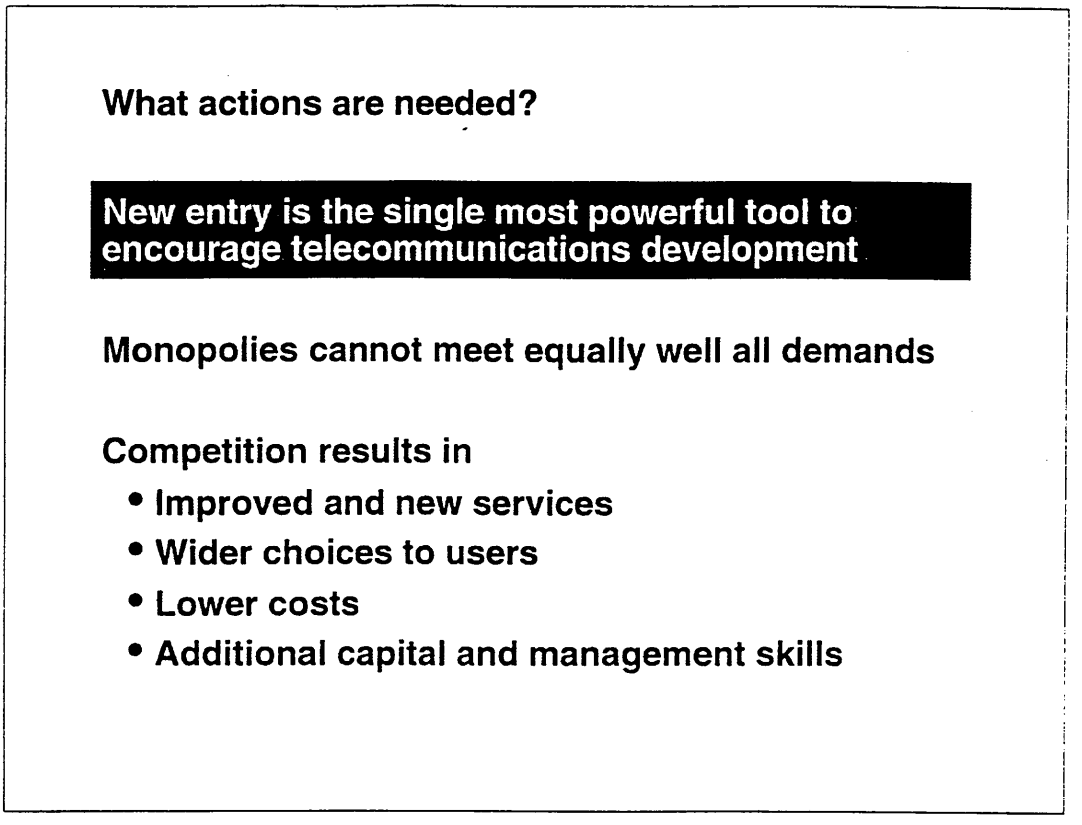
Where will all this capital come from? In the 1980s, about 65 percent of telecommunications investments in developing countries were financed from funds generated by the operating companies themselves, about 15 percent from official sources (mainly bilateral and multilateral credit, export development credits, and government contributions), and about 20 percent from private sources (mostly commercial bank and supplier-arranged loans for creditworthy countries).

If a major increase in total funding is to materialize, about one-half of the much larger total for 1995-99 would have to come from private sources. This requires creating conditions to attract direct private investment and accessing domestic and foreign capital markets. About 40 percent of the necessary funds could still come from internal cash generation. This is a substantial increase in funds (although a smaller proportion) stressing the need to make operations profitable and efficient. Official sources are unlikely to provide more than about 10 percent. This means that official funds will have to be mostly used to catalyze private investment and improved performance.



Realizing the opportunities and the need to overcome persistent past shortfalls, a growing number of our client countries are reforming telecommunications sector policy and structure along three main avenues: commercialization of operations, encouraging new entrants and competition, and increasing private participation. The role of government is thus shifting from ownership and management of operations to sector policy and regulation.

It is now widely accepted that telecommunications operating entities perform best when they are run as commercial, for-profit businesses. Commercialization involves distancing operations from government, thus subjecting the entity to the freedoms, incentives, and disciplines of the market. Commercialization also involves changing internal organization and management to enable the entity to respond to these new conditions.



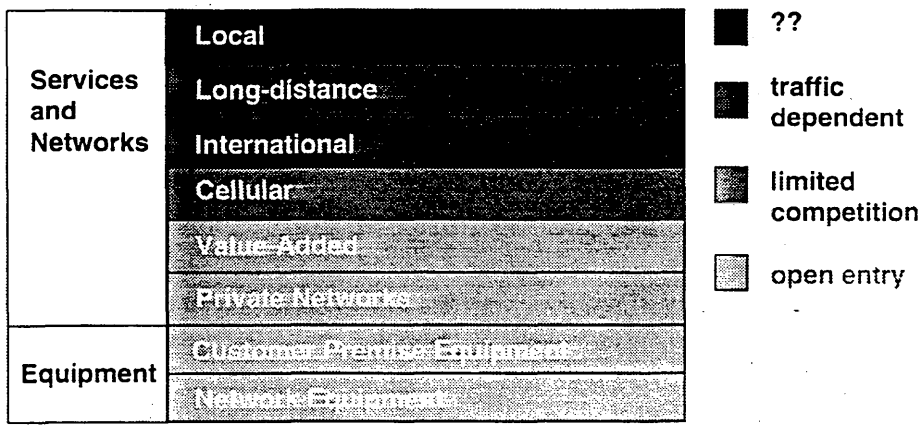
The single most powerful tool to encourage telecommunications development is new entry, including competition.

There is growing evidence that new entry results in improved and new services, wider choices to users, additional capital and management skills, and lower costs.

In most developing countries, growth is a more urgent objective than efficiency. Where the incumbent's networks meet only a small fraction of total demand, new entry is likely to have a greater impact on meeting demand than improving the incumbent.

What actions are needed?

Growing opportunities for competition in services and networks



Technological and market changes are gradually making competition economically viable throughout the sector. In some segments (network and customer equipment, private networks, value-added services), open entry is beneficial to all. In others (e.g., cellular), availability of radio spectrum capacity (a reusable but finite natural resource) currently limits the number of operating companies in a given territory to about four. The extent to which competition is viable in some core business segments (e.g., long-distance and international voice communication) varies with the volume and growth rate of traffic. In the local telephone network, accounting for about one-half of total investment, prevailing natural monopoly features are being challenged by fixed applications of cellular, cordless, and other wireless technologies.

What actions are needed?

Many other ways to bring in new entrants

- **Divide existing telephone monopolies by region**
- **License new telephone operators in unserved areas (including rural)**
- **Open non-basic services to new providers**
- **Encourage specialized networks and interconnection**

New entrants can also be brought in by dividing existing monopolies into regional operators (as was done in Argentina); opening new services to new providers rather than burdening an incumbent unable to meet demand for existing services; and encouraging railways, power, and other corporate networks to interconnect with the public network, lease capacity to each other, and offer public service in their areas.

Liberal entry and pricing policies are likely to be important tools to extend service to rural areas. Once the market has been allowed to run its course, however, some areas that are not commercially viable may still need to be connected. At that time the amount of subsidy needed, and who would pay, can be addressed. In many countries the residual that needs subsidy is likely to be quite small.

What actions are needed?

Private participation is essential to accelerate growth

The state is unable to provide sufficient funds

Increasing private sector participation brings

- **Faster growth**
- **Improved management**
- **Access to technology**
- **Access to capital markets**

Private participation is essential to accelerate telecommunications growth. The need for large amounts of private investment was illustrated earlier.

There is growing evidence that, under the right conditions, private participation in telecommunications leads to faster growth, improved management, access to technology and capital markets, and welfare gains by most or all stakeholders (customers, workers, governments, investors). This is consistent with the World Bank Group's experience in other sectors.

While treasury concerns for the loss of control of telecommunications surpluses sometimes work against privatization initiatives, experience so far indicates that fiscal revenues actually increase, sometimes quite dramatically, as the telecommunications sector grows faster under private management and financing. Other benefits to treasuries have included large proceeds from sales and reduction of sovereign debt through swaps.

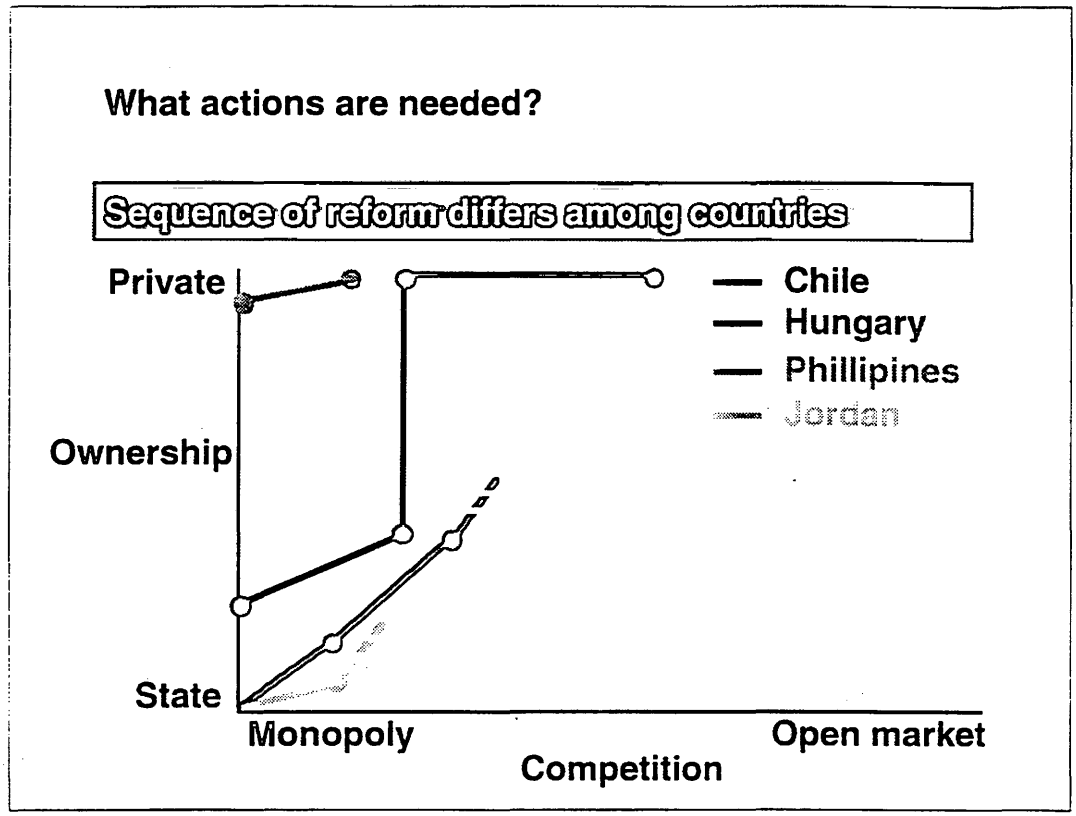
What actions are needed?

Increasing private sector participation	
Privatization of state operating enterprises	Sale to strategic partner, public offering
Create new private business opportunities without privatizing state operations	Licensing or franchising of services and territories, BOT, outsourcing
Attract private financing to state-controlled enterprises	Debt and equity market financing, subscriber financing

There are many ways to increase private participation in telecommunications. Chile, Argentina, Mexico, and Venezuela privatized their former state telecommunications operating enterprises by first selling controlling or majority interests to experienced and financially strong investors, followed by public offerings once the companies appreciated under private management.

In Poland, the main telecommunications enterprise remains in the public sector, but a number of private regional and rural operators have been licensed to compete with it. Build-transfer-operate arrangements, as they are being used to more than double system capacity in Thailand, are another way to increase private participation without privatizing the incumbent state operator. At a more modest level, state enterprises are increasingly contracting out to private companies such non-core functions as construction, cable laying, equipment installation, billing, collection, and directory publication.

Some countries with favorable macroeconomic conditions (e.g., Malaysia, Singapore) have successfully attracted private investment to state-controlled (and highly commercialized) companies through the sale of minority shares and placement of long-term debt in local markets, where they quickly became some of the largest traded companies.



There is no universal blueprint for reform.

For example, Chile began with minority private telecommunications entities. It then licensed cellular and new small operators before privatizing the main entities entirely. Now there is also competition for long-distance service.

The telecommunications operator in Hungary was state-owned when reforms were undertaken. The first move was to make it a 100 percent government-owned joint-stock company and enter into a cellular joint venture with a foreign operator. Recently a controlling share (30 percent) of the company was sold to a foreign strategic consortium, and value-added services and several regional telephone companies were franchised. More private participation and competition are expected in the near future.

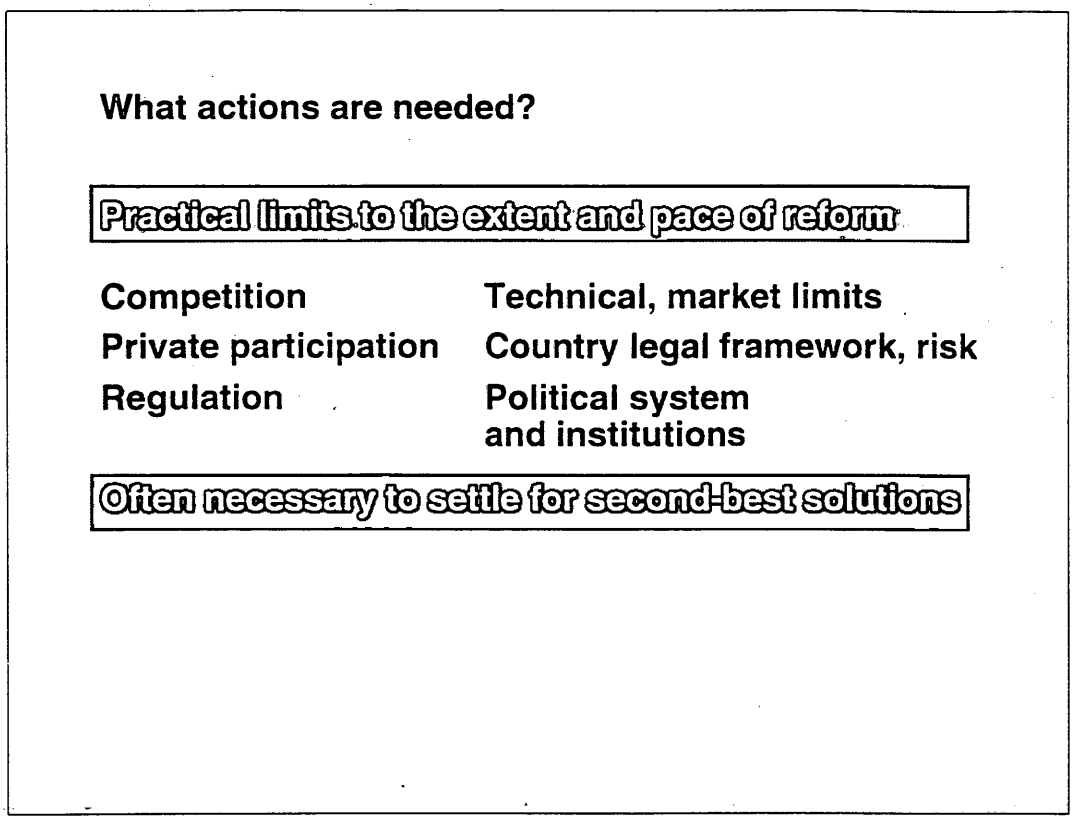
The main telecommunications entity in the Philippines has been a private monopoly for decades. The government has recently licensed other operators to compete with it.

Jordan has just begun its reform by issuing a tender for a cellular license. It intends to commercialize and then privatize operations with assistance from the World Bank Group.



Reform requires explicit government arrangements for sector regulation. While telecommunications operations are in the public sector, the political system serves, however imperfectly, to direct the course of the sector and resolve conflicting objectives and interests. As the enterprises are commercialized, private owners take over, and multiple providers enter the market, the government needs to formalize regulatory arrangements and institutional responsibilities.

As in other sectors, the main objectives of telecommunications regulation are to promote investment, facilitate new entry, and protect the public interest. The means to do this involve various mixes of legislation, rules and regulations, contracts and licenses, and regulatory institutions.



There are practical limits to the extent and pace of telecommunications reform. Competition, for example, is conditioned by radio spectrum availability and market characteristics. Private participation cannot materialize without an appropriate national legal framework and other features that contain country risk to the investors. The regulatory arrangements that are possible depend on the country's political system and institutional endowment. It is thus often necessary to settle for very imperfect solutions.

What actions are needed?

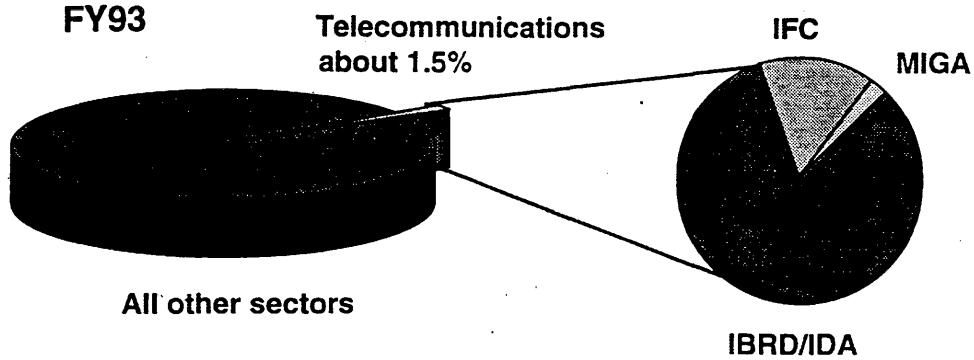
Reform and adjustment: a demanding and lengthy process	
Groundwork for reform	**3 to 5 years** **Substantial technical assistance** **Financial support**
Post reform period	**Private finance will not flow in overnight** **Country must establish track record** **Slow progress of regulation, competition** **Local capital markets not yet developed**

Reform is a dynamic process. Although singular events can be completed rapidly, the necessary groundwork takes typically 3 to 5 years, during which substantial technical and financial support is needed. For example, in Argentina, where privatization of the state enterprise was completed in 1990 (in less than two years), the reform process had begun in 1986 and arguably is still not complete today as major flaws in the regulatory arrangements remain unsolved.

In some cases, reform decisions will bring results only gradually. Private financing may not flow in immediately, regulation and competition will often progress much more slowly than privatization, and sustained growth will ultimately depend on building up domestic capital markets, investors' perceptions of country risk, and general economic developments in the country. Governments will need to establish a track record of abiding by their rules and agreements.

What has the Bank Group done in the sector?

Telecommunications is a small part of Bank Group operations

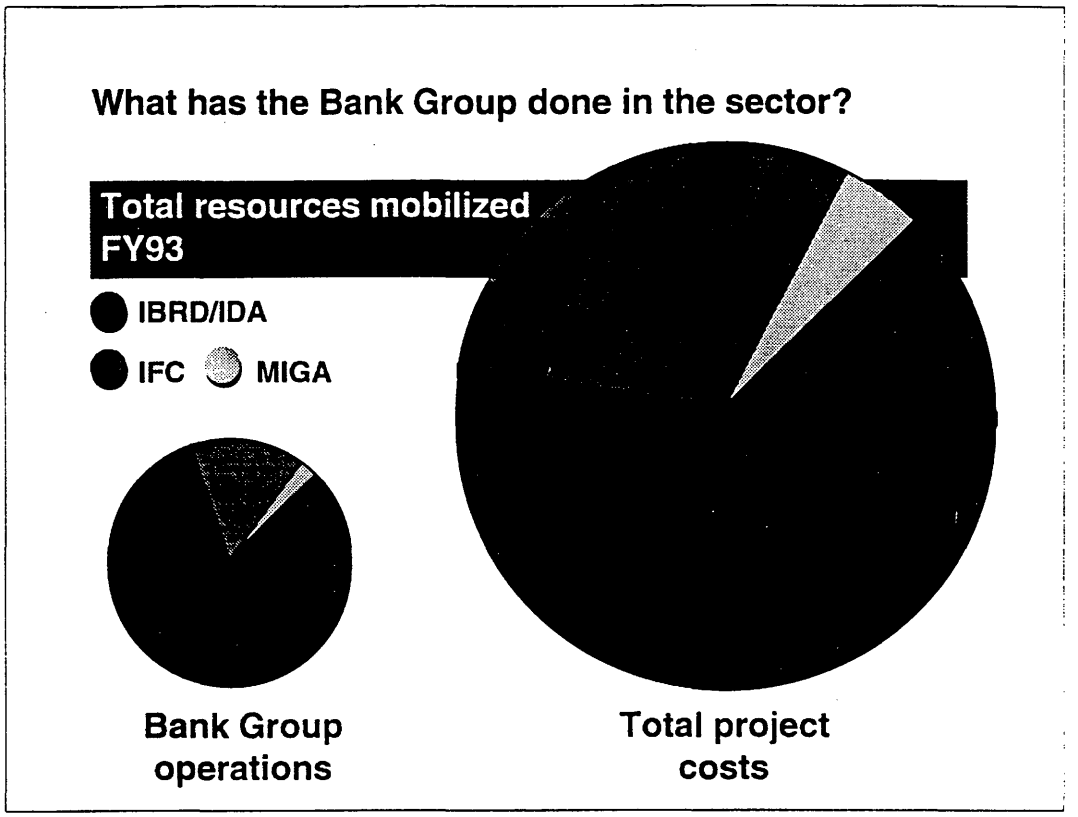


Impact is broader when measure includes all countries where we are active

The World Bank Group comprises several institutions. The International Bank for Reconstruction and Development (IBRD) and its soft loan arm, the International Development Association (IDA) provide loans and credits to governments as well as to public and private enterprises with government guarantee. The International Finance Corporation (IFC) invests (for its own account and others) without government guarantee in privately controlled enterprises. It also provides project structuring, fund, mobilization, and privatization services. The Multilateral Investment Guarantee Agency (MIGA) insures foreign private investments against political risk.

The level of funding by the World Bank Group has always been low in telecommunication. In FY93 telecommunications operations made up about 1.5 percent of total Bank Group operations and monies. This number has remained fairly constant over the years, rarely going above 2 percent.

But this under-represents our impact on the sector. Because the World Bank's projects have typically been time slices of entire government investment programs, and because it has been active in technical assistance projects, telecommunications components of sector adjustment and public enterprise restructuring operations, and country economic work, the Bank's involvement has actually been larger. In addition, IFC and MIGA are playing a growing role as private participation in the sector increases. In FY93 we were involved in about 50 percent of all our active client countries.



Our impact is also larger when the resources mobilized by our operations are taken into account. The IBRD and IDA typically mobilize $3 to $4 for every $1 lent; IFC and MIGA mobilize between $8 and $10 per $1. The higher mobilization rates achieved by IFC and MIGA reflect to a large extent the ability of private sector projects to attract substantial funding from other lenders and investors.

What has been the Bank Group's role?

Old Agenda (to 1985): Focus on State Monopoly

Objectives	• Expand the network • Introduce new technology • Strengthen operating entities
Emphasis	• Least-cost program design • Efficiency of procurement • Financial and managerial autonomy of operating entities
Instruments	• IBRD/IDA investment loans • Co-financing

IFC's activities in the sector were limited; MIGA was not formed until 1988.

The Bank Group's old agenda, as implemented to 1985, focused on building the efficiency of the main public operating entity and funding major new investments to meet demand. This agenda was consistent with the prevailing practices of the times, since nearly all telecommunications operators were public monopolies. The main assistance instruments utilized under this agenda were IBRD/IDA investment loans and co-financing. IFC's activities were limited during this time, and MIGA had not yet been formed.

Despite the overall satisfactory performance of Bank-supported projects in the sector, we had clearly reached the limits of the traditional model. A new agenda—one that recognized telecommunications' rapid technological change, dramatic growth, extreme sensitivity to political and regulatory decisions, and inseparable link with economic development—was needed.

How is the Bank Group's role shaping up?

New Agenda: Focus on Entire Sector

Objectives	• Accelerate sector growth • Increase efficiency, innovation, user choice
Emphasis	• Commercialization • Competition • Private participation • Regulation
Instruments	
IBRD/IDA	• Investment, adjustment, and TA loans • Country economic and sector work
IFC	• Equity and debt investments • Underwriting and syndication • Structuring and advisory services
MIGA	• Political risk insurance • Policy and advisory services

Since 1985 we have shifted our emphasis away from the traditional public telecommunications monopoly. Instead we have focused our attention on overall sector policies, regulatory environment, and institutional structures and assisted our clients in the formulation and implementation of sector strategies designed to meet demand. This approach has included advocating policies designed to promote new entry, competition, and private participation.

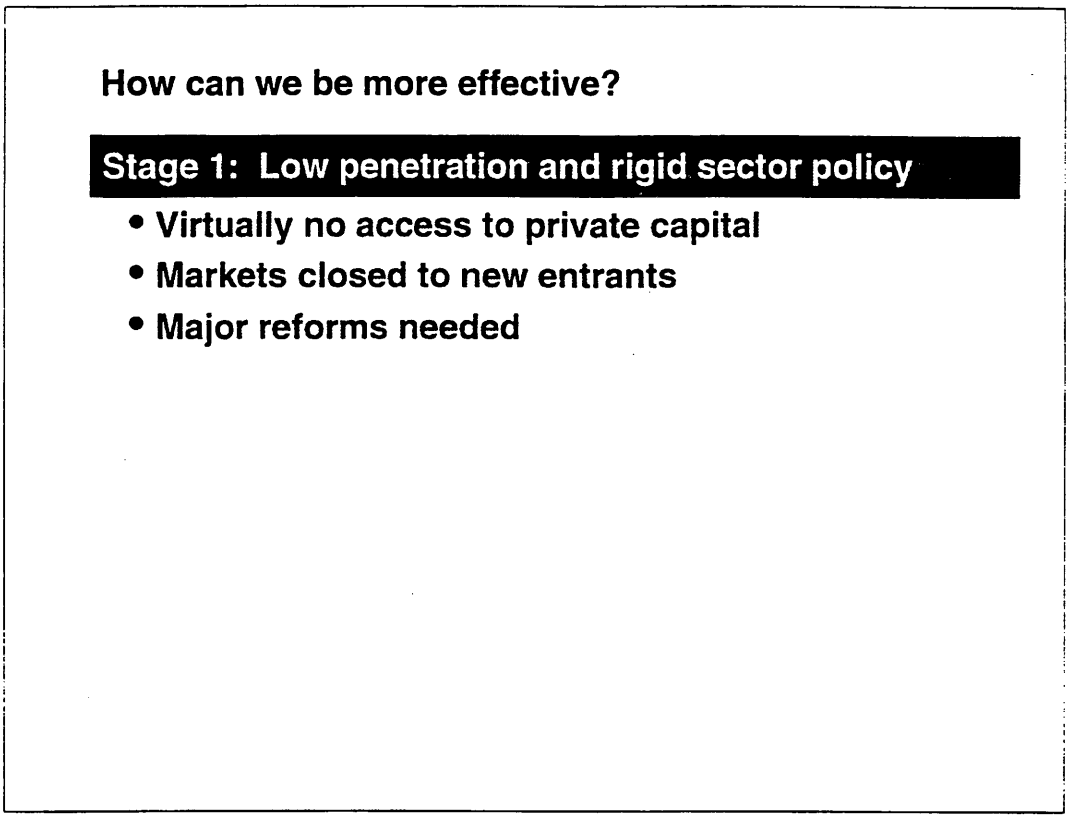
In order to implement this new agenda we are making fuller use of the range of assistance instruments available in the Bank Group, including sector work, investment lending, adjustment lending, guarantees, technical assistance, underwriting and syndication, and political risk insurance.

How can we be more effective?

The new agenda requires a different mix of interventions according to stage of sector development

- **Stage 1: Low penetration and rigid sector policy**
- **Stage 2: Telecommunications sector in transition**
- **Stage 3: Liberal sector policy, competition, growth**

For purposes of discussion, let us distinguish three stages of telecommunications sector development.



Stage 1 is characterized by low penetration and rigid sector policy. It is the situation in which many developing countries are today—traditional state monopoly, not much growth, little or no opportunity for anybody else to get in. Major reforms are needed, but the process of change is not yet underway.

How can we be more effective?

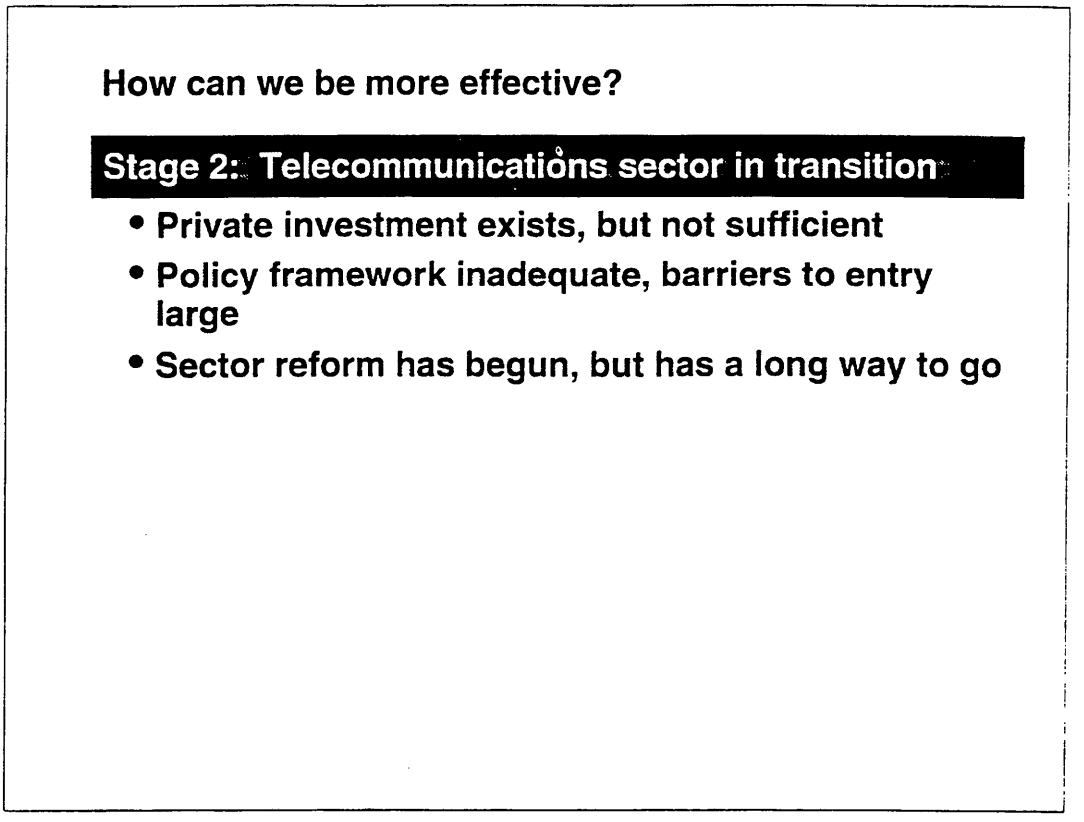
Stage 1: World Bank Group role:	IBRD	IFC	MIGA
° Develop government awareness of need for reform	✓		
° Help examine options and formulate reform plans	✓		
° Finance technical assistance	✓		
° Finance urgently needed investments subject to concrete progress toward reform	✓	✓	
° Possibly invest in non-core private operations		✓	
° Graduate to Stage 2			

The main thrust of the World Bank Group in Stage 1 is likely to be towards promoting change: help the governments understand that there is a need for reform; what are the main options; how a reform package can be put together; what is a reasonable time plan to do this; what sort of technical and financial inputs are needed to prepare and carry out these reforms. When necessary the World Bank Group can provide financial and technical assistance to jumpstart and support this process.

In Stage 1, lack of movement towards reform typically coexists with acute service shortages. Investment may be desperately needed to overcome critical communication bottlenecks in the economy. Under our old agenda, much of IBRD and IDA support to these countries aimed precisely at helping overcome urgent needs through investment loans and credits. We believe, however, that our Board of Directors will increasingly expect any telecommunications investment financing by IBRD or IDA to be closely tied to specific progress towards reform.

In Stage 1, when opportunities for private investment arise (e.g., to set up a private or joint venture cellular operator) the IFC has invested and will continue to do so. The same applies to MIGA. In addition, as a country is moving out of Stage 1, the IFC can start to play a greater role—investing, for example, in an existing operator which is about to be privatized.

The main objective of the World Bank Group when dealing with Stage 1 situations is to move the sector to Stage 2.



Stage 2 is a transition stage in which a growing number of the developing countries will find themselves as they start to move away from the old model. In Stage 2 some private capital is flowing in, but not nearly enough. The policy framework, although there has been some change, is still not adequate. Major barriers to entry remain. The reform process has started, but has a long way to go.

How can we be more effective?

Stage 2: World Bank Group role:	IBRD	IFC	MIGA
° Help develop policy and regulatory framework	✓		
° Finance technical assistance	✓		
° Mobilize private capital and management			
– Equity and debt investments		✓	
– Underwriting and syndication		✓	
– Structuring and advisory services		✓	✓
– Guarantees	✓	✓	✓
– Sovereign loans and credits	✓		
° Graduate to Stage 3			

It is in Stage 2 where the World Bank Group is likely to have its greatest impact in the next five years. There is the need to help the country improve the reform programs and keep them going. This may involve substantial assistance for several years. The IBRD and IDA are likely to lead this effort.

A primary objective in Stage 1, however, is to start mobilizing private capital and management, and this is where IFC and MIGA are uniquely equipped to help. IFC equity and debt investment, for its own account or mobilizing other investors, is going to be a major tool. Underwriting and syndication by IFC is an extension of the same principle. Political risk insurance can be provided to those investors by MIGA. Various forms of structuring and advisory services are offered by both IFC and MIGA.

In many countries, however, it will not be enough to set the rules right. We also have to take into account country risk. Even if the political willingness to change is there, even if all the right policy and institutional measures are taken, it does not necessarily mean that private capital will flow. In addition to whatever IFC and MIGA can do, there may be a number of situations in which guarantees and sovereign loans and credits may be needed to enable private investment to materialize. There is scope for considerable expansion and innovation in the use of existing IBRD/IDA instruments to these ends.

The measure for success in Stage 2 is graduating our clients to Stage 3.

How can we be more effective?

Stage 3: Liberal sector policy, competition, growth

- **Substantial capital flow to the sector**
- **Functional policy and regulatory regime**

In Stage 3 there is a very substantial volume of private funds coming into the sector. The policy and regulatory regime, imperfect though it may be, more or less works. One could expect that the country can manage by itself without a development agency holding its hand.

How can we be more effective?

Stage 3: World Bank Group role:	IBRD	IFC	MIGA
° Help improve policy and regulatory framework	✓		
° Finance technical assistance (probably multisectoral)	✓		
° Invest in/guarantee new entrants, competitors	✓	✓	✓
° Increase fund mobilization		✓	✓
° Possibly finance rural	✓	✓	
° Get out			

In Stage 3 the World Bank Group's financing role is likely to be played mainly by the IFC and MIGA. Whereas the main operating companies (e.g., say the privatized state enterprise) will be finding by itself all the necessary resources, emerging competitors may not. We are interested in promoting competition as a key tool to enhance resource mobilization, efficiency, innovation, and choice. IFC and MIGA could have an important role investing in and guaranteeing new entrants.

Even after the market has been allowed to work, there may be some telecommunication needs that cannot be met on a purely commercial basis—for example, extending service to the more rural and remote areas and to the urban poor. That might result in government having to assume a residual financing role. IBRD/IDA would be prepared to help.

IBRD/IDA can also help improve regulatory arrangements (which typically lag behind privatization) and, if necessary, provide some financial assistance for the technical inputs required.

The measure of the World Bank Group success in Stage 3 is exiting.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 81-E

Argentine Republic

STATEMENT BY THE CHAIRMAN OF THE CONFERENCE,
DR. OSCAR FELIX GONZALEZ

Mr. Secretary-General,
Ladies and Gentlemen,

I should like to begin by expressing my gratitude at having been appointed Chairman of this Conference. In so doing, I can assure you that I shall do my utmost to ensure that the results of the Conference are everything that I am sure we would all want them to be.

I should also like to echo the words of welcome to our country that were expressed to you by the President of Argentina, Mr. Carlos Menem. It is my hope that your stay here, in addition to being a fruitful one on the work front, will also be a happy one; I am sure you will find that the Argentine people will make every effort to ensure that this is so.

One structural difficulty that we may well have to face during this Assembly is the limited time in which we will be seeking to complete an ambitious programme. I should therefore like to request at the outset that we all cooperate in making the most rational use of this time in such a way that anyone who wishes to participate will have the opportunity to do so.

I also feel that the decisions we take over the coming days and the achievements of this Assembly as a whole should be the fruit of discussion and consensus, with broad agreement expressing the will of the majority of participants being far preferable to the vote.

The international scenario within which we begin this Conference is really a very interesting one for telecommunication development. In today's world there is a tendency, in my view unstoppable, to introduce policies of deregulation, demonopolization, investment and private sector participation, together with that of the state, in the move toward the more rapid achievement of development goals. As far as I can see, this tendency is gradually taking hold in every corner of the globe. For its part, Argentina was very quick to catch on to the changes that were occurring in the communication sector.

In 1989, the people of this country were still burdened by a state communications monopoly which had brought the national communication sector to the brink of collapse. Then, in the same year, with President Carlos Menem having taken over the helm of government, we implemented a programme of state reforms which included, in the communication sector as in all the other sectors of our economy, four basic concepts designed to further their development, namely deregulation, demonopolization through privatization, competition and the encouragement of private investment.

I should like very briefly to outline the results of these policies which Argentina applied under very difficult circumstances, at a time when it had not yet achieved economic stability or even secured support for the proposed state reforms.

Since 1990, the year in which the former state telecommunication enterprise ENTEL was transferred to the licensees for the basic telephone service, namely TELECOM and Telefónica de Argentina, these two enterprises alone have to date invested some 5 000 million dollars in our country, and have thus been without doubt the main protagonists in the phenomenal transformation which has occurred in the Argentine communication sector.

This investment of 5 000 million dollars by the licensees of the basic telephone service, coupled with investments associated with competing services and cellular telephony, gives a total investment since 1990 of 7 000 million dollars. And we are confident in our expectation that between now and the year 2000 this level of investment will be repeated, if not exceeded. We thus expect investment in the Argentine communication sector in the period 1990-2000 to be very close to 15 000 million dollars.

Allow me to quote a few more figures to give you an idea of the changes that are taking place in Argentina. Over one million new telephone lines have been installed since the state enterprise was privatized. In 1990, the cost of a telephone line in Argentina was 1 500 dollars. The average waiting time of between of between five and ten years to obtain a telephone line was totally absurd, and the quality of service over most of the country was altogether inadequate. Since then we have raised the telephone density from barely 10 lines per 100 inhabitants to 14 or 15 lines, and are confident that by the year 2000 we shall have taken the lead in Latin America with 18 lines per 100 inhabitants.

As further proof of the phenomenal transformation that has taken place through the success of our policies, we would point to the wide use of fibre optics and the almost 50% level of network digitization.

As regards cellular telephony, we now have two competing companies providing services to over 150 000 users in the metropolitan area alone, and we are currently in the process of privatizing the license to provide cellular mobile telephony to the interior of the country, where we expect at least 150 000 new users to subscribe to the cellular service over the next five years. On 28 March of this year, a contract will be signed between the State of Argentina and the consortium which has been awarded the license for cellular telephony, made up of ET&T, GTE, the Arte Gráfico Argentino company, the Rollo company and Deutsche Bank.

Since 1990, over 200 licenses have been granted for competing services, and we are also proud of the fact that at this time Argentine enterprises such as INSAT have over 2 000 stations in the service network providing VISAT services, and that a number of Argentine enterprises, such as the one I have just mentioned, are also providing services in other countries of Latin America.

We are in the process of installing a fibre optic cable capable of carrying 46 000 voice channels to link the Mercosur countries, among which primarily Argentina, Uruguay and Brazil.

And finally, to complete this overview of recent developments in the Argentine communication sector, in 1993 our Government awarded a consortium as a pure risk venture the task of putting an Argentine domestic satellite into orbit in 1997. The award was made on the basis of the satellite radiated power over Argentine territory, the bandwidth and the service tariffs. For the time being, this domestic satellite service in the Nawel system is being provided by a temporary system until the definitive system becomes operational in 1997.

Ladies and Gentlemen, we believe that it has been important to familiarize you with Argentina's ambitious telecommunication development programme, since we feel that during this Conference we will be able to share with you the wealth of experience we have acquired during our continuing efforts to forge ahead in this field and to provide full service coverage to every inhabitant of our country. This is why I wanted to take these few moments to summarize the developments

that have occurred in Argentina since we launched our policy of deregulation, demonopolization, privatization, competition and encouragement of private investment.

While ours is not necessarily the most appropriate model for other countries to follow, we are nevertheless confident that we have valuable experience that merits discussion and analysis, and that this first World Telecommunication Development Conference represents a good forum within which this can occur.

In conclusion, I would like to thank all of you for being here, and to thank you in advance for the spirit of cooperation that will be essential to the rapid progress of the Conference and to the achievement of its objectives.



World Telecommunication Development Conference
(Buenos Aires, 21-29 March 1994)

Documents No. 82-E – not allocated

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 83-E

Chile

SPEECH BY H.E. MR. JORGE ROSENBLUT,
UNDERSECRETARY FOR TELECOMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General of the ITU,
Distinguished Delegates,

It is for me both a great honour and professional pleasure to speak in front of this selected audience. This is an international summit event within the telecommunications development process.

In the first place, it is also a pleasure to fulfil the request of His Excellency the President of the Republic, Mr. Eduardo Frei Ruiz-Tagle, who sends a fraternal greeting to all the participants in this event and he expresses his best wishes for a big success in their work.

The Conference global objective has been defined by the International Telecommunication Union as a means to draw the attention of the political sectors, the decision-makers of both the public and private sectors, of the users' associations and the broad public. We must highlight the importance of telecommunications so that their rapid evolution may receive the appropriate priority they deserve within the countries development plans. We are convinced that this is a strategic objective which is reflected in the choice of the subject-matters considered in the agenda that will orient our discussions.

As Telecommunication Administration we have submitted a contribution with some important criteria which should be kept in mind while assigning telecommunications the priority they deserve within the essential conditions required by the national development.

I think this is the right time to point out some of these criteria:

- The telecommunication development and evolution are indispensable conditions to enhance the countries growth, to articulate the fragmentation in the economies and give rise to more and better progress conditions for the people.

- The Government has regulating and leading functions in the telecommunication sector and it must state the policies to promote and strengthen the private investment process, the free competition and to protect the interests of users and consumers.

Nowadays the technological innovation process has had an unprecedented dynamism which makes that old borders become mere cartographic details; the communications globalization is no more a futuristic dream but an actual reality. The Government must be prepared to face such challenges and must become a promoter and not an obstructer of this process.

The arrival of many elements that will allow a better life quality in the next millennium will be based on the telecommunication infrastructure. We have the challenge and the obligation not to postpone the arrival of this progress for the population as a whole.

In Chile we think we are going in the right direction. During the last few years we have established an exportation-oriented model. We have created an economy integrated to the rest of the world and a political system that gathers the basic consensus which allows the development of the democratic process. We are confident that we shall be able to enhance such progress based on more work, more growth and more equity.

As regards telecommunications, the Government's policy is to consider them not only as a service in itself but as a support and an accelerating element for the economic growth, as a source of competitive advantages, as an important means of social prosperity and as a means of geographic and administrative decentralization. Telecommunications are one of the supports of the country's international competition.

During the last few years, the telecommunication sector in Chile has had the highest growth, investment and profitability rates in the economy. The legislative and standard infrastructures, which are practically finished, are very modern and give rise to competition from the private national and international investment.

During the last three years its growth has been about 25% annually. In 1993 the incomes for the exportation of the sector companies were over US$ 100 million and the investment reached an amount of US$ 4250 million.

The public telephone service has doubled its service lines since 1990, from 690.000 to 1.400.000 service lines, by the end of the millennium it is expected to have over 2.000.000 lines. The telephone density is over twelve lines per 100 inhabitants and both the automation and digitalization of the network is practically 100%. The telecommunications authority that I represent has authorized the optic fiber network installation over eight thousand kilometers, the half of which has already been installed and is presently in operation. The access to international long distance telecommunications has also been improved through the introduction of competitive elements that mean better benefits for users and consumers.

During the next five-year term the sector investments are expected to reach an amount of US$ 300 million annually. The telephone density by the end of the period will be 15 lines per 100 inhabitants.

Distinguished Delegates,

I do not think this is an opportunity to talk longer about the different aspects of my country's telecommunications sector, such as the regulations framework, the origin of the resources or the market opening. I only want to add that the future with its many challenges is very promising. The government has a strong will to progress, the sector companies have creative capability and the professionals and workers possess innovating ability. Our commitment as men appointed for a certain period is to do our best efforts to create new things, to be really free and innovating and, with our knowledge, to cooperate for the sector development and therefore for the development of our country.

I must give my appreciation to the Conference Chairman for the opportunity he has given me to speak here and I want to reiterate both the commitment and the efforts of my country to achieve the best results of this meeting. I also want to say that your presiding over this Conference gives us the assurance of achieving the purpose one had in mind when it was convened.

Thank you very much.

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 84-E

Indonesia

THE MISSING LINK AND THE VISION 2000

by Mr. Jonathan L. Parapak,
Secretary-General, Ministry of Tourism, Posts and Telecommunications

Mr. Chairman,
Excellencies,
Ladies and Gentlemen,

On behalf of the Minister of Tourism, Posts and Telecommunications of the Republic of Indonesia and the Indonesian delegation, I would like to express our appreciation and our admiration to H.E. the President, the government and the people of Argentina for hosting our first World Telecommunication Development Conference in this very dynamic country.

I would also like to thank the Secretary-General of the ITU, the Director of the BDT and the ITU staff for the excellent preparation and organization of our Conference.

Yesterday, we were indeed fortunate to hear the excellent and inspiring speech by H.E. the President of Argentina and H.E. the Vice-President of the United States.

We certainly hope that early in the next century "the Global Information Infrastructure, the information superhighway" will be easily accesible by most of us and the peoples of our countries.

It was not by coincidence that the ITU World Telecommunication Development Report (1994) was released underlining to us the "still missing link" as had already been highlighted by the High Level Committee in 1991. We have heard of many fantastic technological breakthroughs such as satellite systems and, more recently, the Low Earth Orbit (LEO), optical fibre, and cellular systems. All have contributed to the fantastic development of telecommunications.

We are all excited by the waves of deregulation, privatization and liberalization that are sweeping the globe. At the same time, however, we hear and read about the practically non-existing telecommunication services in some of the least developed countries and our isolated rural areas and that 75% of homes in the world do not have a telephone. Indeed, the challenge facing many governments is to select the right technology, to develop the necessary human resources for management and operational expertise as well as mobilizing the necessary capital for even just a basic telephone connection.

It is indeed fitting and timely that we are here in this dynamic and beautiful country of Argentina to confer on this critical issue of telecommunications development.

Mr. Chairman,
Excellencies,
Ladies and Gentlemen,

We are here to share experience and formulate action plans for coordinated actions in telecommunications development. It is for this purpose that we would like to share with you the experience of Indonesia which we hope will be a useful input for our discussion.

We in Indonesia recognize that telecommunications are an essential engine for national development and for our competitiveness in the global economy and society. We need a well developed telecommunications infrastructure with a high quality of service at affordable rates, easily accessible by everyone, including the people in the rural area.

Let me share with you the accelerated development of telecommunications in Indonesia. Indonesia is the largest archipelagic country in the world, with 17,508 islands. It stretches along the Equator over a distance of 5,000 km from West to East, about the same distance as between San Francisco and New York. It now has a population of almost 190 million people, making it the fourth most populous country in the world.

Ten years ago, we had only 576,700 automatic telephones in the country. However, by the end of 1993, we had reached a capacity of 3,000,000 units, an increase of almost 500 per cent in 10 years. We are now committed to more than treble that capacity by the end of the century, increasing the penetration from about 0.4 telephones/100 people 10 years ago to about 5 telephones/100 people by the year 2000. The expansion of at least 7 million line units over the next 7 years will need a capital expenditure of at least US$ 10 billion. Our international services have improved significantly during that same period with international direct dial from all Indonesian towns to practically the whole world. International traffic growth has averaged more than 25% during those same 10 years.

Our application of modern, up-to-date technology has consistently been based on the "leap-frog" principle, starting with our domestic satellite in 1976. We are now in the process of implementing the third generation satellites for domestic and regional use. Our digitalization of networks is progressing very rapidly and will reach nearly 100% by the turn of the century.

Our internal capacity for financing telecommunications development has rapidly been strengthened through creative financing mechanisms. Multilateral and bilateral arrangements as well as enhancing private participation in our development have also contributed to our accelerated development.

Our human resources development programme has been effectively implemented and thus the planning, operating and maintenance of our sophisticated networks are all carried out by young Indonesian engineers. We currently have several thousand engineers in the telecommunications field and we expect to train up to 2000 more during the next 7 years.

Our policy of deregulation and an increased role of the private sector in the development of telecommunications has been a major factor in the success of accelerated development. We have established several joint venture companies. We have privatized the provision of value-added services, terminal equipment and public 'phone facilities and even satellite services.

These initiatives have certainly played a major role in national development, both for economic growth and for the equitable distribution of development. Our telecommunication services can reach all towns in Indonesia and by the year 2000 we hope to reach all villages which need telecommunication services. Rural development is now being given a high priority.

Policies and strategies

Our accelerated development has been made possible by the adoption of the right set of policies and strategies for telecommunications development:

a) We are giving a high priority to telecommunications development. Such a policy decision needs to be re-emphasized over and over again and supported by all sectors of the government.

b) We are carrying out deregulation and privatization in the provision of services. Indonesia corporatized in the early 1960s, and began privatization in the late 1980s.

c) We are continuing to explore creative financing approaches through local, bilateral and multilateral sources and the development of a mechanism for enhanced private sector participation.

d) We are implementing a dynamic, "leap-frog" application of technology for network and service improvement.

e) We are applying a consistent policy on human resources development, including overseas education and training, establishing telecommunication centres for education and training as well as a special school and university and a nationwide foundation for scholarships for telecommunication study.

f) We are promoting local industries, such as telephone exchange, cable and transmission and terminal equipment manufacturing. Indonesia is now ready to export telecommunication products.

Mr. Chairman,
Excellencies,
Ladies and Gentlemen,

Today we are living in the rapidly changing environment of telecommunications due to accelerated globalization, the explosion of technology, the informatization of society and competition due to deregulation and privatization.

Soon we will see the implementation of LEO systems, global optical fibre information highways, GII and increasing strategic alliances of the major players in the world.

The challenges for the developing world are not going to be easier. Maybe, the "Still Missing Link" will continue to "remain the missing link". But surely, we must not allow that to happen.

We must all do our utmost to support the efforts of the ITU's BDT to mobilize resources for telecommunications development, especially in the least developed countries. We in Indonesia are doing our part by providing scholarships and opportunities to learn from our experience. Indeed, we are ready to share our experience with other countries.

As we look forward to the new century, we all should position ourselves to take advantage of the economy and service improvement brought about by the new technologies; we should enhance our cooperation in modernising our networks; we must be aware of and take advantage of the benefits of competition, deregulation and privatization.

The environment that is increasingly globalized is also increasingly sophisticated due to technology, the GATT and competition. We must work hard to minimize or eliminate the " missing link".

Therefore, our vision for the year 2000 should be:

a. achieving balanced and harmonious telecommunications development for all the countries of the world;

b. improving cooperation in human resources development, the transfer of technology- and the financing of telecommunications development with the aim of eliminating the missing link, encouraging regional cooperation through regional organizations;

c. expanding networks so that everyone on planet Earth will have easy access to a telephone by the turn of the century. It may not be the GII superhighway, but at least one of its branches, I hope;

d. implementing services introduced by the new technologies for the benefit of all countries, developed and developing.

Therefore, it is our wish that this Conference and the ITU should continue to give priority to finding ways of accelerating telecommunications development in the developing world. We must seriously address the issue of the transfer of technology, human resources development, financing mechanisms and regulatory reform for the benefit of the developing world and rural areas.

Mr. Chairman,
Excellencies,
Ladies and Gentlemen,

Indonesia has played and will continue to play an active part in the ITU. We fully support the concepts and initiatives taken by the Union to accelerate telecommunications in developing countries.

Indonesia has received benefits from many of the programmes and initiatives, and it has enjoyed an accelerated development during the past 10 years. We are ready to share our experience with others for the benefit of harmonious and balanced telecommunications development.

We invite you, Your Excellencies, and the eminent persons attending this Conference to work together to ensure that by the end of this century everyone in our country has easy access to a telephone as well as access to the global network of knowledge.

Thank you.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 85-E

Uruguay

ADDRESS BY THE DELEGATION OF URUGUAY,
BY MRS. ROSARIO MEDERO, PRESIDENT OF ANTEL

Mr. Chairman,
Mr. Secretary-General,
Ladies and Gentlemen,

On behalf of the delegation of Uruguay, I should like to congratulate the organizers of the Conference and the Argentine authorities for bringing about this meeting.

I should also like to say that we welcome the message of the Vice-President of the United States, Mr. Al Gore, with which we agree.

We Uruguayans, or "Orientales" as we are known in the South, are very proud of our telecommunication system and we are making every effort to improve it, being unwilling to be satisfied with what we have already achieved.

I should like in a few words to summarize the state of communications in my country. Uruguay has given priority to the telecommunication sector, being convinced that they are an essential instrument for the promotion of investments and for improving the quality of life of the population.

Uruguay has a future as a country of services, and communications, as we all know, are the service of services. Telecommunications will help improve the quality of services and therefore the quality of life.

By the end of this year, 1994, telephone penetration in Uruguay will exceed 20 lines per 100 inhabitants and the exchange digitization rate will exceed 79%. All this has been achieved alongside a reduction in tariffs of 40% in real terms, without reducing revenues and therefore with a considerable increase in traffic.

The development which telecommunications have undergone has been conducted while trying to maintain a balanced social distribution of services, to ensure that users are affected equally by the new technologies.

During the administration of President Lacalle, lines in service have been increased by approximately 50% and a great variety of new services have been introduced, such as IBS and VSAT .

We have made significant investments in the optical fibre cable network. Uruguay is a small country, only 187,000 km^2, but already has over 4,000 km of optical fibre.

We are working towards achieving a universal service and we have already made considerable progress. All localities of over 200 inhabitants have a telephone service and soon all localities of over 100 inhabitants will be provided with a basic service.

We have also undertaken a programme to provide all rural schools with telephone services. That target will be achieved by the end of this year. Fully in accordance with what the Vice-President of the United States was saying yesterday, we are trying to place telecommunications in the service of education and information. We feel convinced that this is a significant way of contributing to the growth of nations.

Uruguay shares common borders with Argentina and Brazil and a number of projects have been undertaken to integrate the region, including in particular the submarine cable UNISUR. This submarine cable, which will come into operation before the end of this year, will connect Argentina, Brazil and Uruguay and will further be connected with the cable systems Americas I and Columbus II, allowing further connections with the rest of America and with Europe, in other words as part of a global infrastructure.

The law reforming public enterprises in Uruguay, in its section referring to telecommunications, was submitted to a referendum, the result of which was a continuation of the present structure, to which we have committed our greatest effort.

In the future, Uruguay will need to convert to a competitive market, incorporating new services and trying to achieve a greater participation by the private sector in telecommunications. The development of the sector and new technologies will require changes in the legal framework. Uruguayans will have to seek the model best adapted to the country's situation.

The delegation of Uruguay would like to avail itself of this opportunity to reiterate its support for the activities of the first World Telecommunication Development Conference.

In line with its tradition, Uruguay will continue taking an active part in the work of the ITU, as it has done since its creation, in an effort to achieve agreed objectives.

We therefore undertake to cooperate actively to obtain practical results from this meeting, such as the future Action Plan and the Buenos Aires Declaration, and we have the firm intention of continuing to reduce the inequalities of development.

In conclusion, I would like to wish the Conference every success in its objectives.

Thank you very much.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 86-E

Bangladesh

TELECOMMUNICATION POLICY, ORGANIZATIONAL REFORM, FINANCE, TECHNOLOGY AND NETWORK, OPERATION AND CUSTOMER SERVICE, HUMAN RESOURCE ISSUES

The Telecommunication Development Conference for Developing Countries of West and South Asia, Dhaka, Bangladesh, 3-5 February, 1994,

endorses

the AS-RDC/93 Resolution Nos. 1 to 15 and the Recommendations made by the Regional Development Conference for Asia and the Pacific, Singapore, 10-15 May 1993;

with a view to focusing attention and evolving future strategies on issues of great concern to the developing countries of West and South Asia and the LDCs of the region, in particular, the Conference has adopted the following additional Resolutions for the speedy development of the telecommunication sector,

considering that

1. telecommunications is a vital infrastructure for economic development and any investment made in telecommunications has a multiplier effect in the development of a country;

2. the developing countries particularly the LDCs, are caught in a vicious cycle of poor telecommunication infrastructure and inadequate resources (human, financial and material);

3. the global average telephone density is 10.5% in the developed countries, while it is generally less than 1% in developing countries, the average in LDCs being 0.27%. The penetration in low income areas within a country are still substantially lower;

4. the economic growth of the successful countries shows that:

   a) the Governments of those countries had given high priority to the telecommunication infrastructure;

   b) the telecom entities were not only supported by the political will but were also given administrative and organizational freedom of action;

   c) they are moving away from the bureaucratic and Government monopolies towards liberalization and privatization;

   d) the functions relating to regulation, service providing and manufacturing are clearly demarcated;

5. the telecommunication development is not given high priority because other issues such as food, security, education and public health are considered more demanding;

6. the revenue generated by the Government owned telecom entities in some countries are being used to support the Government's budget and such entities also do not have adequate flexibility or freedom of operation for development and resource mobilization;

7. revenues depend on the tariff structures, levels of cost and revenue realization;

8. no guidelines are there for the establishment of agreements, revenue sharing arrangements etc. in a multi-operator environment;

9. the national security and defence considerations should not be lost sight of while framing the telecom policy of the country;

10. the PSTN services need to be extended to the rural areas by adopting appropriate technology;

11. the major role is played by the software in modern telecommunication technology and the driving force in today's world is leading it towards information technology;

12. the capability for country adaptations and management of new and emerging technologies to be inducted in the networks for their efficient utilization, needs to be enhanced;

13. manufacturers and suppliers of telecommunication equipment have a responsibility to provide appropriate and effective training to the purchasers, so that they gain full capability to operate and maintain the equipment;

14. the existing training technology needs to be utilized more effectively and new training technology needs to be developed and made available to the interested countries;

15. some countries provide incentive to trainers and trainees, resulting in better development of human resources, which needs to be emulated by other countries;

16. the fact that some ITU assisted training institutes are not fully utilized nationally and international sharing could help appropriate utilization,

recognizing that

1. the development of telecommunication in most of the countries is lagging behind and the level of budgetary support required is not available;

2. the internal resources, consisting of surplus revenue, depreciation, deposit from subscribers etc. from telecommunication services, need to be re-invested for the expansion and maintenance of the same;

3. new ways of generating capital for telecommunication development such as "Build Operate and Transfer (BOT)", "Build Lease and Transfer (BLT)" etc. have become a mode of financing for the telecommunications development;

4. adequate funding and authority, particularly for project sanctioning, execution and other works relating thereto, has not been delegated to various telecommunication authorities, resulting in undue delays in execution of projects;

5. the fast technological changes result in rapid obsolescence and difficulties have arisen in long term support;

6. in the event of development of new networks, the developing countries are facing problems of its integration with the existing old networks;

7. there are training centres in the region, which with some upgradation, can meet the advanced training requirement of the region;

8. there are financial, administrative and procedural constraints in matters of human resource management and development,

resolves that

1. access to basic telecommunication services should be considered as a fundamental Human Right. Governments should formulate their Telecommunication Policies, according high priority to it for achieving long-, medium- and short-term goals;

2. a global strategy for balanced telecommunication development by the year 2000 and beyond be formulated to provide an umbrella for policy initiatives, with the objective of providing a telephone without long waiting period in urban areas and accessibility at affordable price in rural areas;

3. the Operational, Regulatory and Policy making functions should be separated. Independent Regulatory Authority with professional bias should be created. Amendment/new enactment of Telecommunication Acts are to be made to meet changing requirements;

4. liberalization should be allowed in appropriate areas of telecommunication. Governments may decide the extent of liberalization taking relevant factors into consideration. Should telecommunication in urban areas be opened to private operators, provision in the licence for proportionate investment in rural areas, be ensured;

5. adequate financial and administrative autonomy should be vested to the public sector for efficient functioning on commercial basis and to compete with private operators. The public sector entity may be restructured in such a way so as to enable it to exercise the executive authority of the Government;

6. internal resources, generated by the Government owned telecommunication sector, should be re-invested in the expansion of the sector;

7. a regional Telecommunication Development Bank should be created to meet the telecommunication development needs for which restructuring of the operating entity should not be a pre-condition;

8. the benefits of low rate of interest and soft term of loan repayment in case of foreign loans or grants, should be passed on to the Government owned telecom entities;

9. the policy initiatives to reduce tax, customs and excise duty etc. should be adopted which would provide higher economic growth and increased overall revenue;

10. cost effective domestic production should be encouraged;

11. administration should undertake detailed study of costs and tariffs with a view to implementing cost based tariffs;

12. bilateral/regional/international cooperation in the field of training, technology, transfer, manufacturing, repair and maintenance service should be encouraged to facilitate telecommunication development;

13. standardization of signalling, synchronization, etc. be achieved for harmonization in telecommunication networks of the region;

14. a regional software centre be set up to enhance the operational capabilities of the telecommunication system;

15. customer service centres capable of attending to customers' requests and grievances should be established at central locations for groups of exchanges of 25 000-50 000 customers;

16. special attention be given for Human Resource Development to use modern management techniques, with allocation of more funds and easing of administrative procedures;

17. training incentive schemes, as introduced by several countries in the region, should be adopted by others to improve the quality of training,

requests the ITU, in cooperation with APT and other regional organizations concerned, as necessary,

1. to devise required means to encourage exchange of information regarding:
   a) comparative prices and offer of the supplier of equipment to different countries;
   b) R&D activities of the countries of the region;
   c) training incentive schemes adopted by different countries, particularly by the developing countries;
   d) sharing of training materials and information;
2. to form Working/Study Groups for:
   a) supporting the countries of the region in integrating the old network with the new one, giving special emphasis on interfacing compatibility;
   b) carrying out the study to extend cost-effective PSTN services to the rural areas for the long-term benefits of the majority of the people;
   c) formulation of procedures, laws and regulations necessary for dealing with contracts, business practices etc. between various operators and laying down guidelines in the form of a Handbook;
   d) formulation of three or four models for granting licenses for the provision of new/existing services and for revenue sharing;
   e) laying down the obligations of the manufacturers for long-term support and supply of spares for maintenance and expansion of their systems and framing guidelines with typical clauses in a Handbook;
   f) developing models to achieve simplicity and economy of operations of network with number/type of systems in different scenarios of developing countries;
3. to contribute in setting up facilities for regional cooperation in training, manufacturing spare parts or providing maintenance services and setting up of repair centres;
4. to help establish R&D units for adaptation and development of the emerging technologies, commensurate with the requirement and objective in the developing countries;
5. to assist in the establishment of Network Management Systems in the countries of the region;
6. to formulate policies and methodologies for the pricing of the frequency spectrum;
7. to include detailed methodology in the scope of studies, envisaged in Resolution No. 3 of AS-RDC/93, relating to financial strategies;
8. to support strengthening and effective utilization of existing training institutes of the LDCs and upgradation of the Telecommunication Staff College, Gazipur, Bangladesh to a regional training institution.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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The World Bank

TELECOMMUNICATION SECTOR REFORM IN ASIA TOWARD A NEW PRAGMATISM

BY PETER L. SMITH AND GREGORY STAPLE

EXECUTIVE SUMMARY and CONCLUSIONS

(i) The Asia-Pacific region now has the most dynamic and rapidly growing regional economy in the world. A crucial question is whether the region's telecommunication sectors. apart from those in the half-dozen wealthiest states, can keep pace with the region's growth and expansion. Their ability or inability to do so will affect the region's economic prospects, especially those of the low- and middle-income countries (LICs and MICs), well into the next century.[1]

(ii) There is reason for optimism. It is generally agreed that the limited attention accorded telecommunications in the past and the prevalence of state-run monopolies has cost Asia's poorer countries dearly, economically and socially. Today more than 2.8 billion persons in Asia's LICs have access to little more than 25 million telephone lines. This has prompted nations as different as China and Sri Lanka, and Thailand and Indonesia to make rapid expansion of their telecommunications infrastructure a priority.

(iii) China, for example, has set a target of installing 4-5 million new telephone lines annually to 1995, and at least 8 million lines per year thereafter, to more than triple the current base of 17.5 million lines by 2000. Similarly, Indonesia aims roughly to double its base of telephone lines, to more than 2.5 million, by 1995 and add another 5 million lines by 2000. The new investment required for these and other programmes in Asian LICs is estimated to exceed $90-120 billion for switching and transmission facilities alone.

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1 Based on 1990 per capita GNP, Asian countries may be classified as *Low-income* ($610 or less): Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Myanmar, Nepal, Pakistan, Sri Lanka, and Vietnam; *Lower middle-income* ($611-2,465): Malaysia, the Philippines and Thailand; *Upper middle-income* ($2,466-7,619): Republic of Korea. *World Development Report 1992* (Oxford U. Press, New York, 1992) p. 306.

A New Pragmatism

(iv) The economic and political challenge of raising these funds and meeting the underlying demand for services has given birth to a new pragmatism in sector policy. The role of state-owned monopolies is receding, and investment by private companies in the telecommunication sector is growing; the range of telecommunication suppliers also is increasing, especially for wireless services (e.g., cellular radio), and regulation is being refashioned.

(v) The impact of these new policy initiatives, if sustained, may be profound. Asia's LICs and MICs are home to almost half the world's population. But the will to adopt and implement a new direction for telecommunications varies greatly from one country to another. In India, for example, despite the estimated demand for 40-60 million new lines, the debate over how best to increase supply is unresolved. And in the Philippines, although the telecommunication sector is almost entirely privately owned, its performance has been disappointing.

(vi) This report concludes that if the new pragmatism on telecommunications policy is to succeed in doubling, or even tripling, the region's telephone base, current policy initiatives will need to be broadened and deepened. Recent international experience and sector studies suggest that the following points are of utmost importance:

Telecommunication Sector Reform in Asia: Toward A New Pragmatism

(1) The cost to national economies of providing only very limited or no telecommunications service to millions of people will be, in most cases, greater than any loss of economies of scale and scope from franchising new service providers.

(2) The very small base of telephones in most LICs (fewer than two lines per hundred population) means that divestiture and privatization of a state-owned operator is, at best, a partial solution to closing the gap between demand and supply. More important than this "top-down" approach are likely to be various "bottom-up" approaches, funded by a mix of public and private capital, involving new concessions to independent wireline and wireless (cellular radio) telephone companies, build-transfer schemes, joint ventures, and revenue sharing contracts for transmission and switching facilities.

(3) A broadly available, mature telephone network is not a prerequisite to liberalizing market entry. To the contrary, the history of wireline and cellular service teaches that where telephone density is low, licensing multiple service providers is probably the best way to accelerate the investment necessary to create a more broadly based and mature national network.

(4) New service suppliers are unlikely to obtain reasonable interconnection terms from the incumbent operator without regulatory aid. Regulation is thus essential to foster the type of bottom-up investment necessary to close the telecommunications gap in Asia.

Background

(vii) The reappraisal of telecommunications policy in Asia is part of a wider international process that began in the 1970s. In rich and poor nations alike, governments are trying to adapt their policies to meet the changing technological and economic conditions affecting the supply of telecommunication services on the one hand, and to satisfy the rising and more diverse demand for services on the other. Telecommunications now touches most sectors of the economy: farming and finance, tourism and textiles, merchandising and manufacturing. Thus, getting sector policy "right" is of great economic consequence.

(viii) At the centre of the current policy reappraisal are questions of structure: Should more than one telephone company be permitted? And if so, should the market be divided geographically (by region), functionally (by service), technologically (by transmission method), or otherwise? The answers to these questions are still being debated, but the conventional view, which favoured one supplier with a legal monopoly, a pyramid-like network architecture largely dependent on wireline facilities, and a homogenous product, is rapidly losing support.

(ix) In the past, a centralized, state-owned monopoly was preferred by most countries because basic telecommunications service was thought to be a natural monopoly -- i.e., economies of scale and scope made it more efficient for one company to provide service. However, the changing pattern of demand and falling switching and transmission costs appear to have made telecommunications a competitive industry for the majority of services including, in many cases, basic telephony. The most efficient structure for the sector thus is one that is plural and competitive, with a mix of service providers, private and public, using various technologies (wireless and wireline) and offering heterogeneous services to meet the different needs of users: in sum, a community of networks.

(x) The case for a plural industry structure has gained additional support from the belief that where demand for service is not being met and the existing supplier is unresponsive, the economic cost to users and the national economy from continuing the status quo is much greater than any loss of economies of scale and scope from franchising new providers.

(xi) Local economic reforms also are spurring a reappraisal of telecommunications policy in Asia. Throughout the region, liberalization of trade and foreign investment rules, banking reforms, export promotion schemes, and increased reliance on market forces have made access to high-quality telecommunication services ever more important. Improved telecommunications now is generally seen as a vital component of a multistaged structural adjustment because efficient information flows foster the wider introduction of product and service markets. Further, because many of the light manufacturing businesses (electronics, auto parts) and labour-intensive products (garments, leather goods, agricultural produce) which Asia's LICs export are sensitive to shifts in foreign economic conditions and tastes, reliable telecommunication facilities are often crucial to the very businesses that are at the forefront of these reform programmes. The pressure on LICs to address the shortfall of the telecommunication sector consequently is often more urgent than in industrialized countries.

(xii) Achieving agreement on the proper response to the telecommunications crisis in Asia, as elsewhere, has proven to be a contentious and often drawn-out process. International precedents are rarely decisive. Most of Asia's telecommunications policy-makers now have some familiarity with sector reforms in South America (Argentina, Mexico, Venezuela), various Commonwealth States (the U.K., Australia, Canada, New Zealand) and Japan. But although these initiatives offer important lessons, programs that seem promising in a country that already has five or ten telephone lines per hundred persons (let alone 30 or 40) may be wholly inadequate where there are fewer than two telephone lines in service per hundred persons, as is the case in most of Asia.[2]

(xiii) In such countries, privatizing the state-owned carrier, may have only a small impact on sector performance. The base of telephones is simply too small and the demand too great. The overriding issue is, how best to mobilize other sources of capital, especially from the private sector, to meet the demands of the great majority of people who must now do without any telephone service. In these circumstances, traditional arguments that market liberalization (i.e., competitive service suppliers, independent telephone companies) will impair the ability of the existing operator to promote nationwide service are not persuasive: the current service is anything but universal and, in the absence of changed policies, the prospects for achieving significant improvement are small. Further, in many Asian LICs, competitive entry is likely to accelerate network expansion by providing additional channels for investment as well as by improving technical efficiency through greater use of foreign expertise.

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[2] See the figures in the Appendix for country-by-country statistics.

(xiv) Likewise, arguments that multiple service providers are inefficient make little sense in a country where the telecommunications network covers only a fraction of demand. In India, for example, the gap between current supply (approximately seven million lines) and potential demand is so large that worry about "excess" or duplicative investments is, at best, a distant concern. Of necessity, therefore, Asia's LICs and MICs will increasingly become a test-bed, technically and institutionally, for building out telephone networks in innovative ways.

(xv) This is already happening in several countries. Yet if the new pragmatism is to succeed, it must be extended along several dimensions. For instance, liberalization has already led some countries to grant new licences to provide value-added services (electronic mail, store-and-forward facsimile) on a nationwide basis, but telephone service, which is geographically limited to a small fraction of the population, is still a countrywide monopoly. In some countries, competing cellular radio licences have been granted in major urban areas, but the new licensees are not authorized to construct microwave radio links to provide intercity or regional coverage. Elsewhere, private companies are permitted to install very small aperture terminals (VSATs) to ensure reliable satellite-based communications, but they may not resell the excess capacity to other users. Further, the failure of a monopoly operator to provide service has prompted governments to launch "crash programmes" to construct new exchange facilities with foreign partners, but once built, all new facilities must be turned over to the existing monopoly operator.

(xvi) Similarly, despite the significant resource constraints the region faces, many countries have continued to favour capital-intensive programs for expanding access to telecommunication services rather than employing more decentralized and often less expensive access options that new technologies are making available. Household telephone service is favoured over public pay telephones, land-line extensions over wireless systems, cellular radio over trunked mobile and paging services, new telephone exchanges over voice mail, and contiguous (predominantly urban) telephone networks over stand-alone or independent ones.

(xvii) Against this background, a key question today is, how can Asia's LICs and MICs begin to move their new pragmatism from the periphery to the centre of the telecommunications reform agenda? This report makes a number of detailed suggestions to promote that shift. It is also designed to provide a policy almanac for those countries that are still debating the best way to meet the unsatisfied demand for telecommunications service; however, detailed country-specific analysis will still be required to determine which policy options are best suited to national conditions. There is no universally applicable template for sector reform.

(xviii) The report consists of five main chapters, summarized below, beginning with Chapter II; the first chapter contains an introduction. Some of the main conclusions are also in Box 1, and Box 2 contains an overview of sector reforms in five Asia-Pacific countries, based on the country profiles compiled in the Working Papers.

Chapter II. Economic Principles

(xix) The traditional argument that the telephone industry is a natural monopoly remains controversial. Moreover, the existence of economies of scale and scope, *per se*, has limited significance for policies toward entry of new service providers. If entrants do not impose congestion costs on incumbents and interconnection is not foreclosed, either by the exercise of market power or by relatively high transaction costs, it can be argued that a *laissez-faire* attitude toward entrants on the part of government policy-makers is warranted, especially for low-income countries, which tend to suffer chronic capacity shortages and other inefficiencies on the part of protected incumbent suppliers.

(xx) Arguments that network externalities or other external economies mitigate against the benefits of competitive entry implicitly assume that interconnection among competing networks is either not possible or that would-be subscribers discount the possibility of interconnection. If, for one reason or another, the market cannot efficiently promote interconnection within both the toll and local sectors as well as between toll and local, there is a case for public policy intervention. Examples of policies to promote competitive entry in the United States include the mandatory unbundling of basic exchange services and mandatory interconnection.

(xxi) Arguments against allowing competitive entry also tend to minimize the existence of users with diverse needs and priorities. Heterogeneous demands on the part of telephone users accentuate the advantages of having a number of rival suppliers, since it is unlikely that any single supplier could satisfy a broad range of heterogeneous customers. Even in the case of "plain old telephone service" (POTS), the speed with which installations are made and the commitment to maintaining quality are relevant dimensions of performance. Given the more limited experience of telephone operators in low-income countries compared to that of operators in high-income countries, there is likely to be greater heterogeneity among suppliers of POTS in the former countries than in the latter. This strengthens arguments for allowing diversity in the supply of telephone services in low-income countries.

Chapter III. Diversifying Supply

(xxii) Once a government is persuaded that encouraging new service suppliers is more likely to close the gap between demand and supply than maintaining the *status quo*, hard choices still must be made about where to start and how to proceed. This chapter argues that liberalization should be given a high priority in the area where the shortfall of supply typically is the greatest: local exchange service.

(xxiii) By and large, governments should adopt a "serve it or lose it" policy to require carriers to meet the paid demand for new service within a given time or face the prospect of (a) having a competing company licensed to provide service or (b) having portions of their service territory refranchised to other carriers. The histories of wireline and cellular radio service both suggest that a broadly available, mature telephone network is not a prerequisite to liberalizing market entry. In fact the opposite is true: licensing multiple service providers probably is the best way to accelerate the investment necessary to establish a more broadly based and mature national telecommunications network.

(xxiv) Liberalizing market entry does not require a vertical divestiture of the existing carrier, although that may be desirable in some cases to promote equitable interconnection. At root, a serve-it-or-lose-it policy should be designed to lift the artificial (legal) barriers to market entry which to date have blocked the type of "bottom-up" network expansion programmes led by independent local telephone companies, municipal enterprises, and public-private joint ventures that successfully developed telephone service throughout North America and Finland during the early twentieth century and are playing a major role in building out China's telephone network today.

(xxv) Any policy to liberalize the provision of local exchange services should be technologically neutral; wireless operators (cellular radio) should be permitted to meet the demand for both mobile and fixed service. Further, government policy should be institutionally neutral: private and public enterprises (including municipalities and cooperatives) should be able to apply for service licences.

(xxvi) In many cases, the liberalization of local exchange service might be complemented by introducing competition for long-distance transmission services, although generally this step is not needed as urgently. Competitive transmission networks for long-distance telephony have proven viable even in relatively small countries with approximately 1 million exchange lines (such as New Zealand), and it is likely that competition would be beneficial in other Asian countries (India, China, and Indonesia, for example). The growth of domestic satellite carriers might provide a platform for a second long-distance carrier in some of these countries.

(xxvii) Competition for transmission service (local or long distance) does not mean that a government must abandon subsidies for socially desirable services, where they are necessary. The key is properly to cost out the desired subsidies and assign the cost equitably among carriers so that they can be recovered through network connection charges or (preferably) general tax revenues.

(xxviii) Even where a country decides to proceed slowly with facilities-based competition for local or long-distance service, resale of the monopoly carrier's service offerings should be permitted. At a minimum, companies must be free to lease dedicated circuits in bulk and to resell them to provide value-added data processing and information services to business and residential users. Value-added service providers should also be permitted to own the necessary switching facilities they need to operate their businesses efficiently.

(xxix) Serious consideration also should be given to the introduction of basic resale services. Experience suggests that resale leads to price and service competition (custom calling plans, volume discounts, and itemized billing options, for example) which would otherwise be unavailable. It also encourages the underlying carrier to adopt a more cost-based tariff structure, and thus to operate more efficiently to reduce the margin for resale.

(xxx) Governments should speed up the liberalization of telecommunications terminal equipment. The benefits of allowing users to buy or lease the equipment of their choice, subject to appropriate measures to ensure that technical standards are met, have now been demonstrated in numerous countries. Asian LICs are in a position to reap a harvest of benefits from the successful experiences of others.

Chapter IV. **Increasing Private Sector Participation**

(xxxi) Fostering more private investment in telecommunications is already an important part of most sector reform programmes in Asia. But the privatization or divestiture of the state-owned carrier is only one measure among many and, given the very low telephone penetration in Asia's LICs, may not be the most significant for boosting private investment. Of greater importance may be fostering bottom-up schemes for private-sector entry to the market to promote construction of new telecommunication facilities by a mix of independent enterprises.

(xxxii) A large body of international experience with the divestiture of state-owned telecommunication operators suggests the importance of several common procedural and substantive issues. They include the need (1) to state clearly the objectives for divestiture at the outset; (2) to allow sufficient time to prepare a carrier for sale (typically two to three years); and (3) to secure the legal conditions for sale, which usually involve adopting a legislative reform package and organizing a regulator that is independent of the incumbent operator. Experience also suggests that the success of a divestiture will be decisively affected by the economic incentive reflected in the price-control rule and the network performance targets, both quantitative (number and location of access lines to be added) and qualitative (number of permissible faults and response to outages).

(xxxiii) New entry and other "bottom-up" measures for private-sector development are likely to become increasingly important in Asia's LICs, and they may become the prevalent means of closing the gap between demand and supply. They may take several forms: competitive franchises granted to independent telephone companies in designated areas, refranchising of unserved or underserved areas of the country, capital provided by municipalities or the private sector through a build-transfer (B-T) scheme, or a joint venture. The service provider may be a stand-alone company or a subcontractor for an existing licensee; the scope of service may be limited to local exchange services or may extend to interexchange offerings.

(xxxiv) A bottom-up programme for promoting more private investment, like a top-down divestiture, will not be effective without matching regulatory and institutional commitments. Among other things, where multiple operators are to be licensed a clear policy decision must be made regarding interconnection and pricing. However, full interconnection will not always be necessary for all services because, as with electronic mail and database services, some subscribers may be satisfied initially with self-contained networks, the growth of which may in fact speed new service to users.

Chapter V. Regulation

(xxxv) Regulation has been the weakest part of sector reform in poorer countries, and Asia's LICs are no exception. If this deficiency is not addressed, ambitious plans for sectoral expansion are likely to be compromised. Effective regulation, to the extent that it contributes to establishing appropriate incentives, is important for attracting substantial amounts of private capital to telecommunications.

(xxxvi) Regulation must be broadly understood to include a country's political and judicial competence as well as its commercial customs. Whether or not an effective regulatory regime can be designed for telecommunications (or any other industry) will depend on how well the new regime fits with existing governmental institutions. Regulatory designs cannot easily be transplanted unchanged from one country to another.

(xxxvii) The increasing scope for competition and private service suppliers in the telecommunication sector have led some to argue that no special public utility or common carrier rules are needed: the general application of competition laws will be sufficient. Experience in several countries (New Zealand, Mexico, and the U.S.) suggests that the "no regulation" option is illusory. One principal reason is that new service suppliers are likely to be stillborn unless they can interconnect their facilities with the incumbent carrier's network on reasonable terms. Without regulatory intervention, interconnection has proven to be unsatisfactory. Further, absent regulatory oversight, either the dominant carrier or the ministry responsible for the carrier become the *de facto* rule maker for the sector, often to the disadvantage of would-be competitors and consumers.

(xxxviii) It is desirable that market liberalization be accompanied by the creation of a regulatory body at arm's length from the dominant operator. Further, there are advantages to organizing the regulator as a multimember commission rather than a single director general, in part to spread the workload; continuity can be provided by staggering the terms of a multimember commission. In any event, the regulator should have a clear legislative mandate, secure funding, and a staff of competent professionals. The regulatory process should be accessible to both the regulated providers and to users. Relevant policies and rules should be published and adequate scope provided for public participation in their formulation. A politically strong, professionally competent, and publicly accountable regulatory commission is most likely to be able to employ a light-handed approach to regulation appropriate to many situations.

(xxxix) The scarcity of regulatory resources in LICs makes setting priorities especially crucial. In this regard, interconnection matters, the price-control rule for the dominant supplier, policing transactions with affiliated companies, frequency management (which directly affects the options for market entry), and data collection deserve to be at the top of the agenda. Further, the time required to address each of these matters may be reduced by writing clear price and performance standards into carrier licences or concessions; outside contractors can be used to monitor these standards.

(xl) Other regulatory functions such as frequency allocation can also be contracted out and the cost recovered from user fees. The initial licensing decision, however, should be made by the government.

Chapter VI. Implementing Sector Reform

(xli) The timing and sequencing of reforms is crucial. There is frequently a fairly short period to launch a reform programme, often tied to the calendar of a government's overall economic programme as well as to election cycles. A purely technocratic initiative which does not adequately consider the overall context of a reform programme and the need to manage a restructuring process over several years (even divestiture is never a singular event) is likely to fail.

(xlii) Most countries, including those in Asia, have followed a sequential approach to market liberalization. Typically, the terminal equipment market is opened to competitive supply; then value-added services, satellite-based and wireless services (mobile radio, paging) are liberalized; finally the market for basic switched services is opened to competition, starting with interexchange services. Such a progression may be beneficial where a country has limited experience with managing economic restructuring and a new regulator must be put in place. However, sequencing may have an unacceptably high cost where there are very large unmet demands for service-demands that might be more quickly satisfied by lifting barriers to market entry at the outset of a sector reform programme, not toward the end. Beyond that, incrementalism can dissipate public support for reform. Once expectations have been raised, only a bold initiative, one that makes a real break from the past, is likely to be acceptable.

(xliii) Notwithstanding the drawbacks to incremental market liberalization, experience suggests that a step-by-step approach to divestiture is essential. Unless divestiture is preceded by a restructuring process in which the state-owned carrier is commercialized and the government's regulatory responsibilities are separated from its policy-making and operational roles, the sales price of the carrier may be reduced and sector efficiency greatly hurt in the postdivestiture period.

(xliv) International experience has also shown that a successful telecommunications reform programme must have the unflagging commitment of the head of government. A nation's telecommunications network, no matter how underdeveloped, is one of its chief national assets, and the complex task of restructuring the sector, let alone managing a divestiture with competing economic, social, and national security interests involved, cannot be effectively carried out without strong leadership.

(xlv) Such leadership is a necessary -- but *not* a sufficient -- condition for change. For that to occur, a cross-government and cross-private-sector coalition must be built. Again, experience shows that momentum for reform comes most often from without (that is, outside the state-owned post, telephone, and telegraph department), and not from within. Reform is most likely to move forward if championed by a broad coalition of users and would-be suppliers. Telecommunication sector reform can also be hastened by links to other sector reform programmes. Initiatives to restructure the electric power sector, which is often also dominated by a poorly run state monopoly, may be particularly instructive.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 88-E

The World Bank

IMPLEMENTING REFORMS IN THE TELECOMMUNICATION SECTOR: LESSONS FROM EXPERIENCE

BY BJORN WELLENIUS AND PETER A. STERN

This study compiles a wealth of information from a worldwide pool of experts on their practical experiences in telecommunication sector reform . It provides an up-to-date account of approaches to the major policy and structural issues, and describes the developments in Latin America, Asia-Pacific, and Europe. The study also examines issues related to investment, regulation, and implementation.

While each of the eight parts centres on a particular aspect of telecommunication sector reform, the study highlights several recurring themes and looks at a number of country experiences from the perspective of policy-makers,. regulators, investors, operators, the international development community, and other industry specialists.

This volume provides valuable information on how telecommunication reforms are implemented. It also gives insight into the effectiveness of these reforms and the critical areas where further development is recommended. Finally, the study aims to stimulate further discussion of related policy and implementation issues in this increasingly important economic sector.

Contents:

Introduction - Implementing Reforms in the Telecommunication Sector: Background, Overview, and Lessons

Part 1 - Current State of Telecommunications Policy and Structural Issues

Part 2 - Recent Experiences in Latin America

Part 3 - Recent Experiences in the Asia-Pacific Region

Part 4 - Recent Experiences in Western, Central and Eastern Europe

Part 5 - Privatizations: Foreign Operators' Perspective

Part 6 - Mobilizing Capital for Privatization

Part 7 - Issues of Regulation

Part 8 - Conclusion: Strategic Issues of Implementation

Annex: Current Sector Structure and Regulatory Framework in Selected Countries (with over 80 countries analyzed)

Glossary (over 500 subject related terms defined)

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(21-29 March 1994)

Document 89-E

The World Bank

"LE COMMUNICATEUR"
NEW RELEASE
RESTRUCTURER LES TELECOMMUNICATIONS
BY JEAN-PIERRE CHAMOUX & PETER-ANDRE STERN

A transformation has occurred in the telecommunications industry over the last ten years. Structural changes first observed in the United States, the United Kingdom and Japan have progressively spread throughout the European Community, the Asia-Pacific region and the Americas. Progress in some other regions has, however, been slower.

This publication describes the current state of telecommunications reform in the world. More specifically, it reviews the events which have shaped international practices as well as the experiences of various governments -- including those of Canada, the U.S., France and the U.K. -- in redefining their policies and regulatory frameworks for the sector.

But policies alone are not sufficient. Given the scarcity of public funds, innovations in this area also require the participation of entrepreneurs willing to implement creative financial strategies. This book therefore provides examples of such strategies, put forth by a number of world-renowned experts.

The international organizations that sponsored this publication wanted to inform those most concerned of the methods that have been used in different parts of the world to optimize and modernize telecommunication networks. This publication is therefore destined for government officials, operators, industrialists and investors who now have at their disposal a reference document containing ideas on how to accelerate network development in regions where reform is now being seriously contemplated. A case in point is Africa which is examined through fourteen case-studies presented in the final section of the book.

Published with the support of the ACCT, the World Bank and the ITU

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INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 90-E

Islamic Republic of Iran

STATEMENT BY MR. SAYYED MANSOUR HOSSEINI
DEPUTY MANAGING DIRECTOR
MINISTRY OF POSTS, TELEGRAPH AND TELEPHONE

IN THE NAME OF GOD

Mr. Chairman,
Secretary-General, Dr. Tarjanne,
Ladies and Gentlemen,
Distinguished Delegates,

On behalf of the Iranian Delegation I would like to express my warmest regards to ITU staff and to our Argentinian hosts for their hospitality and their best efforts for organizing this Conference.

A very long distance exists between our countries and we believe that by using new and advanced telecommunication technology together with the ever increasing activities of service providers, these distances will seem to shorten every day.

Mr. Chairman, Iran is an ancient country with a 3000 year history of organized communications and in modern history Iran joined ITU roughly two years after its foundation 127 years ago. Telecommunications in Iran did not improve very much until 1979; there were only 800.000 working telephone lines at that time. But since the advent of the Islamic Revolution 15 years ago, the telecommunication network of our country has gone through rapid changes, which I will shortly explain:

There are at present about 4.000.000 working telephone lines in Iran and with a population of 60 million, the telephone density is therefore of 6.6/100 inhabitants. Although this achievement is in fact a 5 times increase compared to pre-Revolution time, it should be realized that the development of our network only started after the eight-year-old imposed war on Iran ended about 5 years ago. During this period our telecommunication industry has made a lot of effort to achieve this. For a country as vast as ours with 1.648.000 sq. km this is not still satisfactory and we are determined to bring this figure to 12 million lines during the next five year development plan before the turn of the century with new services such as ISDN, packet switching and cellular mobile telephony.

At present in Tehran, the capital city, all the preparations for the implementation of 1.000.000 lines has been done and will be put in service during 1994, and also the first mobile telephone exchange with a capacity of 10.000 subscribers will be put in service during the next two months.

Mr. Chairman, during the eight year old imposed war, many of our telecommunication equipments were either damaged or were completely ruined. In spite of economic boycotts and other shortcomings, because of the sincere belief and support of our President H.E. Mr. Hashemi Rafsanjani, and our PTT Minister H.E. Mr. Gharazi, priorities were given to telecommunication development and although for political reasons we were denied many advanced technologies, new industries were born in Iran to fulfill our needs. We have established factories to produce copper cables, fibre optics, low and high capacity switches, transmission equipments and solar batteries. The mentioned factories in fact provide some of our needs for network developments.

There are about 60.000 villlages in Iran. The number of villages with telecommunication facilities were only 30 before 1979, but at present about 7.000 of them enjoy telecommunication facilities. Although we have also utilized satellite communication, still only 11% of our villages have telecommunication facility. During the next 5 year development plan we are determined to bring telecommunication facilities to about 30.000 villages.

During the next 5 year development plan, we will have used 20.000 km of fibre optics. In the past 5 years we have had a transition from analog to digital technology and at present only 15% of our switches are analog which will be changed to digital in due time.

Mr. Chairman, we believe that the telecommunication network should naturally be a universal network, but until everyone on our planet can have access to this network, it will not really be universal.

We believe that the Least Developed Countries will not achieve telecommunication development and as a result economic, social and cultural development, without ITU intervention and without real support of the developed industrialized nations.

We believe ITU shall take an ever more active role in this respect in order to achieve some sort of technological balance between ITU Members, by means of:

- holding seminars and conferences regarding new technology and services;
- publishing guidelines;
- providing software packages for planning and training purposes
- coordination and cooperation with APT;
- establishment of an international telecommunication university with joint investment by the member countries.

We believe that achievement of telecommunication development ;without technology and adequate investment is impossible, and that is where the help of industrialized nations is required.

Mr. Chairman, Iran is not a poor country, but when our precious oil reserves are sold at prices cheaper than the price of water, we may not obtain necessary capital to fund our development. And this is in an era in which many countries in the world are even worse off and lack the most basic commodities.

We therefore believe that developed nations must take necessary action to invest in countries where the telephone density is below 5 for every 100 inhabitants and at the same time give necessary knowhow to developing countries.

Although I was deeply impressed by the reference made to the death of Morse's wife, I should like to remind you that thousands of millions of people still live in a situation in which they receive such news late. We suggest that if we really want GII to be realized and have a real meaning, the industrialized nations must take a realistic stand on this issue and help the least developed and developing countries technically and financially.

Our next suggestion is that as developing countries share some common problems with the Least Developed Countries the former can help the LDCs by sharing their experiences with them.

In this regard, the Islamic Republic of Iran is by all means ready to share its experiences with all the interested countries. We invite all the experts who believe they can help us by any means to contact us.

At the end, I would like to thank you all for listening and wish the ITU and Member countries success in all of their activities.

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INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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(Source: DT/3(Rev.3))

Note by the Chairman

ORGANIZATION AND WORKING METHODS
(as adopted by the first Plenary Meeting)

1. Meeting of Heads of Delegations

As stipulated in Article 32 of the Convention, the WTDC should be preceded by a meeting of the Heads of delegations. The Heads of delegations should prepare the agenda for the first Plenary Meeting and make proposals for the organization, chairmanships and vice-chairmanships of the WTDC and its committees (see Annex - Tentative Conference programme).

2. First Plenary Meeting

The Chairman of the WTDC should be elected at the first Plenary Meeting and generally should be a person nominated by the inviting government. Four Vice-Chairmen should also be elected by the Plenary, one from each of the other four regions related to the Regional Telecommunication Development Conferences.

In addition, the Plenary should set up Committees of the WTDC, as listed below, and appoint their respective Chairmen and Vice-Chairmen.

3. Conference Committees

Bearing in mind Nos 356 to 367 inclusive of the Convention of the International Telecommunication Union, Geneva, 1992, the following Committees with their terms of reference are suggested. These terms of reference have been drawn up within the framework of the Constitution and Convention and Conference agenda.

- Committee 1 - Steering Committee (composed of the Chairman and Vice-Chairmen of the Conference, the Chairmen and Vice-Chairmen of the other Committees and the Chairman and Vice-Chairman of the Working Group of the Plenary).

  Terms of reference:

  To coordinate all matters connected with the smooth execution of work and to plan the order and number of meetings, avoiding overlapping wherever possible in view of the limited number of members of some delegations (No. 360 of the Convention, Geneva, 1992).

- Committee 2 - Budget Control Committee

Terms of reference:

To determine the organization and the facilities available to the delegates, to examine and approve the accounts for expenditure incurred throughout the duration of the Conference, and to report to the Plenary Meeting the estimated total expenditure of the Conference, as well as an estimate of the costs that may be entailed by the execution of the decisions taken by such Conference (No. 364 to 366 of the Convention, Geneva, 1992).

The Heads of Delegations' Meeting of 21 March 1994, recommended that the Conference establish two main committees divided in the following way:

- Committee 3 - Development Policies, investment strategies and mobilization of resources.

Terms of reference:

Committee 3 will consider documents and proposals, including the corresponding parts of the draft Buenos Aires Action Plan and the Work Programme for the BDT, with reference to the following items of the agenda:

1. Analysis of the situation of telecommunication development
2. Global goals and objectives up to the year 2000*

3.1. Development policies - Organization and management of telecommunications - Regulatory and structural issues;

3.2 Investment strategies and mobilization of resources for telecommunication development world-wide;

5.1 Programme and priorities 1994-1998: Conferences, Study Groups, other follow-up activities, **with reference to the issues dealt with in the above agenda items;**

5.3 Establishment of Study Groups and their mandate, **with reference to the issues dealt with in the above agenda items.**

Committee 3 may also wish to consider any policy matter implied in the proposals submitted to Committee 4 with reference to other agenda items and the Buenos Aires Declaration.

- Committee 4 - Harmonization of telecommunications networks, and human resource development and management.

Terms of reference:

Committee 4 will consider documents and proposals, including the corresponding parts of the draft Buenos Aires Action Plan and the Work Programme for the BDT, with reference to the following items of the agenda:

1. Analysis of the situation of telecommunication development

---

* ❑ improving the conditions of deprived people living in **rural** and **remote areas** and **in low-income urban settlements**;

❑ the generation of new business and services and, hence, to the creation of **new employment opportunities;**

❑ facilitating **regional** and **global cooperation** across a virtually unlimited range of human concerns and activities;

❑ preserving and improving the **environment;**

❑ **disaster** prevention and **rescue** operations;

3.3 Harmonization of telecommunication networks,transfer of technology, etc.;

3.4 Development and management of human resources - Telecommunication management;

5.1 Programme and priorities 1994-1998: Conferences, Study Groups, other follow-up activities, **with reference to the issues dealt with in the above agenda items;**

5.3 Establishment of Study Groups and their mandate, **with reference to the issues dealt with in the above agenda items.**

Both Committees 3 and 4 will address programmes and priorities for the 1994-1998 period and consider the establishment of Study Groups and their respective mandates.

Working Group of the Plenary on agenda item 4 (Special programme for the Least Developed Countries - LDCs) and Integrated rural development

Terms of reference:

To examine the specific situation in the Least Developed Countries and to define a special programme for the latter, consistant with the Buenos Aires Action Plan and deal with issues related to transfer of technology to these countries and integrated rural development.

Committee 5 - Editorial Committee

Terms of reference:

To perfect the form of the texts prepared in the various committees of the Conference without altering the sense, for submission to the Plenary Meeting (Nos. 362 and 363 of the Convention, Geneva, 1992).

Other sub-committees and working groups may be set up as necessary.

4. Conference Submissions

All members are free to submit proposals or background documents to the Conference. Although there is no deadline for contributions, in order to ensure translation, documents must be submitted to the ITU as soon as possible, preferably not later than 15 February 1994. Any documents received after this date may not be translated.

5. Study Group Chairmen

If the WTDC decides to create Study Groups, the Conference should appoint a Chairman and Vice-Chairmen for each Study Group. Additional Vice-Chairmen may be appointed as deemed necessary. When electing Chairmen, consideration should be given to the requirements of competence and equitable geographical distribution, and the need to promote participation of developing countries.

6. Interpretation

All Plenary and Committee meetings will be conducted in the six official languages of the Union (i.e., Arabic, Chinese, English, French, Russian, and Spanish). Working Groups, if created, will be conducted in three languages (i.e., English, French, and Spanish).

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BUENOS AIRES 1994

CONFERENCE MONDIALE DE DEVELOPPEMENT DES TELECOMMUNICATIONS

(21-29 mars 1994)

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Plénière/Commission Plenary/Committee Plenaria/Comisión	Documents/Documentos
PL Séance plénière *Plenary Meeting* Sesión Plenaria	- DT/9 - DT/10 - DT/12 - DT13/2 - DT21/1, 3, 8, 17 - DT23/4, 5 - DT24/4
COM 2 Contrôle budgétaire *Budget control* Control del presupuesto	- Doc/29 - Doc/45 - Doc/63 - Doc/64

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GTPL WGPL GTPL	Groupe de travail de la plénière *Working Group of the Plenary* Grupo de Trabajo de la Plenaria	- DT/1 - DT/2 - DT/4 - DT/6 - DT/14 - DT15/11 - DT/18

Pekka TARJANNE
Secrétaire général

INTERNATIONAL TELECOMMUNICATION UNION

WTDC BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 93-E

Chairman COM3
Chairman COM4

NOTE TO THE CHAIRMAN OF PLENARY

Following decisions taken at the Steering Committee the informal group of the Vice-Chairmen of the Conference, the Chairmen and Vice-Chairmen of Committees 3, 4 and the Working Group of the Plenary on LDCs has reviewed the various proposals to conference and the result of this review is summarized and consolidated in Documents DL4 and DL5.

Some proposals, namely:

- DT10/1
- DT10/2
- DT19/4
- DT21/1
- DT21/8
- DT12/1
- DT23/4
- DT23/5
- DT11/5
- DT16/1
- DT24/4
- DT13/1
- DT13/3
- DT13/4

have been considered for submission to the plenary.

M. N. VITTAL
Chairman COM4

M. A. BERRADA
Chairman, COM3

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

BUENOS AIRES 1994

Document 94-E

World Meteorological Organization

TELECOMMUNICATION AND THE ENVIRONMENT THE GLOBAL TELECOMMUNICATION SYSTEM (GTS)

GENERAL

1. The World Weather Watch Plan for 1992-1995, adopted by the WMO Congress, specifies the purpose and principles of the Global Telecommunication System (GTS) as well as the objectives and implementation of the GTS plan in order to raise its level of effectiveness and the homogeneity of its operation. The purpose of the GTS is primarily to provide communication services for the rapid and reliable collection, exchange and distribution of the required meteorological observational data, as well as processed information from meteorological centres operating within the World Weather Watch, with a view to meeting Members' operational and research needs in real or quasi-real time.

2. The GTS also gives telecommunication support for the implementation of other WMO programmes, joint programmes with other international organizations and environmental programmes including the Tropical Cyclone Programme, the International Decade on Natural Disaster Reduction, the Global Climate Observing System, the Global Ocean Observing System, Environmental Emergency Response Activities and also aspects related to follow-up action to the United Nations Conference on Environment and Development, as decided by the WMO Congress or the Executive Council.

3. To meet these requirements, the WWW Plan calls for the establishment and operation of an integrated system of point-to-point circuits, data collection and data distribution systems, and meteorological telecommunication centres operated by WMO Members and mainly organized on a three-level basis, namely:

(a) The Main Telecommunication Network (MTN);

(b) The regional meteorological telecommunication networks (RMTNs);

(c) The national meteorological telecommunication networks (NMTNs).

4. Within this framework, the major telecommunication functions are carried out by the following types of centre:

(a) World Meteorological Centres (WMCs);

(b) Regional Telecommunication Hubs (RTHs);

(c) Regional/Specialized Meteorological Centres (RSMCs) not associated with RTHs;

(d) National Meteorological Centres (NMCs), or centres with similar functions.

5. The Main Telecommunication Network and regional meteorological telecommunication networks are illustrated diagrammatically in the Annex as presently planned and implemented. They are based on the operation of three WMCs, 30 RTHs, six RSMCs not associated with RTHs and 148 NMCs or centres with similar functions. In addition, a number of RTHs/RSMCs provide radio-teleprinter and radio-facsimile broadcasts of observational data and processed information. In many parts of the world, these provide the main sources of information, in particular facsimile information, for many centres. In some areas, such broadcasts have been discontinued and replaced by more efficient techniques, in particular satellite-based distribution systems.

STATE OF IMPLEMENTATION OF THE GTS

Main Telecommunication Network

6. The Main Telecommunication Network (MTN) consists of 23 point-to-point circuits linking together three WMCs and 15 designated RTHs which are as follows:

WMCs: Melbourne, Moscow and Washington;

RTHs: Algiers, Beijing, Bracknell, Brasilia, Buenos Aires, Cairo, Dakar, Jeddah, Nairobi, New Delhi, Offenbach, Prague, Sofia, Tokyo, and Toulouse.

7. All MTN circuits are in operation. Nineteen MTN circuits are operating at a data-signalling rate of 9600 bit/s or higher, including three circuits at 64 Kbit/s. The X.25 procedures which permit the exchange of data in binary form (for example GRIB or BUFR code form) are implemented on sixteen circuits of the MTN.

8. All MTN centres are automated.

Regional meteorological telecommunication networks

9. The regional meteorological telecommunication networks (RMTNs) in the six regions consist of an integrated system of circuits, satellite-based systems and radio broadcasts in accordance with the regional telecommunication plans established by the WMO regional associations. In addition to the telecommunication centres on the Main Telecommunication Network (all of which have regional functions), the regional meteorological telecommunication networks also require the establishment and operation for telecommunication purposes of 15 RTHs, six RSMCs not associated with RTHs, and 148 NMCs or centres with similar functions.

10. The present plans of the regional meteorological telecommunication networks comprise 268 circuits. Out of the 268 circuits called for in the GTS plan, 220 circuits have been established (i.e., 82 per cent).

11. These 220 circuits have been established as follows:

(a) Seventy-seven (35 per cent of the 220 established circuits) are leased telephone-type circuits. Thirty-seven are now operating at 9600 bit/s and 40 others are operating at data-signalling rates higher than 1 200 bit/s. The X.25 procedures which permit the exchange of data in binary form are implemented on 20 of these circuits;

(b) One hundred and fourteen (52 per cent of the 220 established circuits) are leased telegraphic circuits operating at a low data-signalling rate (generally 50 or 75 bauds, in some cases 100 or 200 bauds);

(c) Twenty-nine (13 per cent of the 220 established circuits) are radio HF circuits operating at a low data-signalling rate (50 or 75 bauds). Most of these HF circuits are located in Region 1 - Africa.

12. Twenty RTT broadcasts and 26 radio-facsimile broadcasts are operating to disseminate observational data and processed information. The use of satellite-based distribution systems, such as the METEOSAT data distribution system (MDD), is developing as a complementary means to the point-to-point circuits.

13. With a view to meeting the needs of ever-increasing volumes of traffic, calling for greater speeds in the relay of data, a number of RTHs and RSMCs, and NMCs or centres with similar functions, have automated their telecommunication functions or have plans to do so. Thirty RTHs (including three WMCs and fifteen RTHs located on the MTN) and 59 NMCs or RSMCs (not associated with RTHs) are automated.

National meteorological telecommunication networks

14. The national meteorological telecommunication network (NMTN) in each country is established to meet the needs of that country for the collection and distribution of meteorological data. A survey, concerning the national telecommunication means used to collect observational reports from stations had indicated that leased point-to-point circuits are used for 29 per cent of the stations, public switched network for 40 per cent, satellite data collection platforms for five per cent and HF circuits for 23 per cent.

Collection of ships' weather reports

15. Through conventional HF radiocommunications, 327 coast stations are accepting ships' weather reports without charge to ships.

16. Three INMARSAT Coast Earth Stations covering the Atlantic Ocean region, three covering the Indian Ocean region and four others covering the Pacific Ocean region are accepting weather reports from ships equipped with earth stations (SESs) without charge to the ships. The number of Voluntary Observing Ships equipped with SES was 2 947 in 1992; 40 per cent of the Voluntary Observing Ships were thus equipped with SES.

Satellite-based telecommunication systems

17. Special satellite-based telecommunication systems are playing an increasing role within the World Weather Watch at the global, regional and national levels of the GTS. This is particularly true in those geographical areas where conventional telecommunications cannot provide the cost-effective services required by Members. These systems are based on both public satellite-based communication services and data-collection/dissemination missions of meteorological and environmental geostationary and polar-orbiting satellites.

18. All environmental observation geostationary satellites have the capability to collect messages from Data Collection Platforms (DCPs) which are made available, as required, on the GTS. The International Data Collection System (IDCS), operated through the satellites GOES (USA), GMS (Japan) and METEOSAT (EUMETSAT), provides a quasi-global coverage for the collection of data from DCPs on ships, aircraft or balloons.

19. The polar orbiting meteorological TIROS-type satellites have a data-collection system to receive, store and relay data from fixed or mobile platforms. This capability is used by the Service Argos for the collection of data from mobile platforms, in particular from drifting buoys.

20. In addition to the provision of cloud imagery and meteorological sounding data, some environmental observation geostationary satellites have the capability of distributing meteorological information. The METEOSAT operational programme includes a Meteorological Data Distribution (MDD) service which contributes greatly to overcoming the existing GTS deficiencies in Africa with respect to availability of meteorological data and products in NMCs.

21. Some countries (e.g., Argentina, Canada, China, France, India, Indonesia, Mexico, Thailand, USA) have implemented or have firm plans for the implementation of satellite-based multi-point telecommunication systems for the distribution of meteorological data and products on a national basis, using services provided by public (commercial) telecommunication satellites. Furthermore, the implementation of the new Regional Meteorological Telecommunication Network (RMTN) covering Central America and the Caribbean area, based on two-way multipoint telecommunication services via satellite using VSAT technology is currently planned for end of 1994. Similar plans are under consideration for other parts of the world.

CONCLUSIONS

22. The WWW Programme for 1992-1995 calls for the following implementation objectives for the GTS:

(a) Upgraded MTN capacity to transport the global data and processed information required, within agreed time limits

(b) Upgraded relay and selection capabilities of RTHs to collect, exchange and distribute meteorological and related information

(c) Upgraded telecommunication links and terminal facilities at national centres

(d) Enhanced capability for distribution of products, for example via satellite-based point-to-multipoint distribution systems

(e) Improved use of satellite-based telecommunication systems.

23. WMO Members' constant efforts have resulted in good progress in the further implementation and upgrading of GTS circuits, and in the automation of centres of the GTS . The capacity of the MTN has been increased significantly through the further upgrade of circuits as well as introduction of X.25 communication procedures, and all RTHs on the MTN are automated. Nevertheless, three MTN circuits are still operating at low speed.

24. The efficiency and reliability of Regional Meteorological Telecommunication Networks have also improved through the steady replacement of radio-HF circuits by satellite/cable circuits and the upgrading of the capacity of the circuits. However, 53 per cent of the circuits called for in the RMTN plans are still operating at low speed (50-200 bauds) and 18 per cent have not yet been implemented; much remains to be done to meet the requirements of countries for basic and processed meteorological information enabling them to provide meteorological services for the safety of life and property, the protection of the environment, and for the efficiency and economy of a wide range of weather-sensitive activities.

ANNEX

IMPLEMENTATION OF POINT-TO-POINT GTS CIRCUITS

(January 1993)

GTS	*Circuits called for in the GTS plan*	*Implemented circuits*	*Telecommunication means*		
			Satellite/cable/microwave		*HF Radio*
			Telephone type	*Telegraphic*	
MTN	23	23	20	2	1
Region I	83	59	2	32	25
Region II	48	38	11	23	4
Region III	16	12	1	11	0
Region IV	36	34	22	12	0
Region V	14	13	4	9	0
Region VI	49	45	29	16	0
Inter-regional circuits	22	19	8	11	0
Total	**291**	**243**	**97**	**116**	**30**

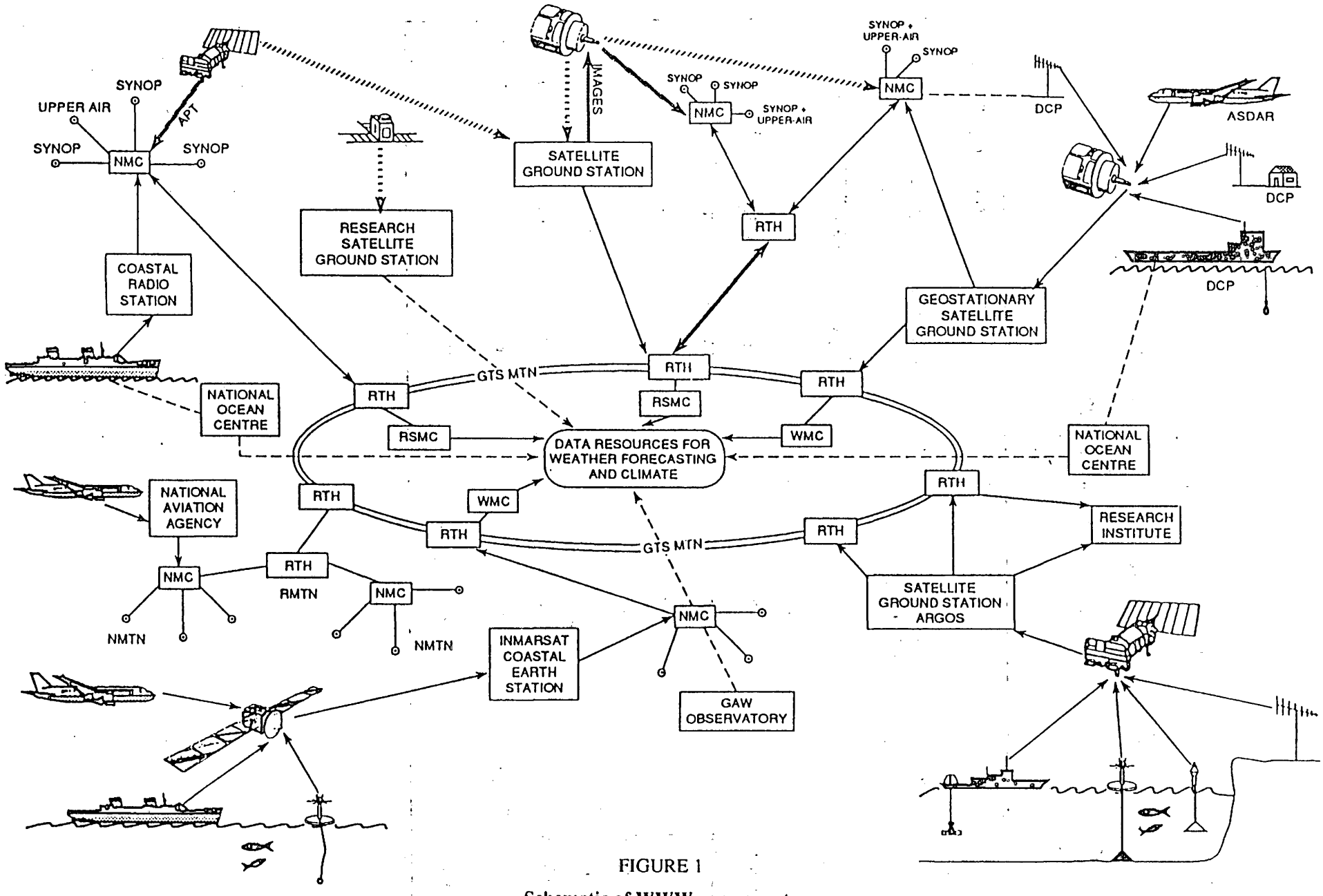


FIGURE 1

Schematic of WWW components

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 95-E

Argentine Republic

STATEMENT BY DR. CARLOS SAUL MENEM,
PRESIDENT

Vice-President of the United States of America, Dr. Al Gore,
Secretary-General of the International Telecommunication Union, Dr. Pekka Tarjanne,
Ministers,
Your Eminence, the most reverend papal nuncio, Monsignor Calabrese,
Under-Secretary of Communications of the Argentine Republic, Dr. Oscar Félix González,
Deputy Secretary-General of the International Telecommunication Union, Dr. Jean Jipguep,
Ambassadors,
Esteemed officials,
Leaders of the armed and security forces,
Visiting delegations,
Distinguished dignitaries,
Brothers and sisters of the world,

It gives me great satisfaction, on behalf of my people and my Government, to welcome all of you, from the four corners of the world, to Buenos Aires to play leading roles in the FIRST WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE.

As Argentines, we are doubly proud, in the first place for the honour bestowed on us as hosts for this meeting, and secondly, for the opportunity to show the world what we have achieved in the arduous task which we have undertaken of transforming the state, and in particular of privatizing and deregulating the communication sector.

An essential stage of our policy has been to modernize the country's structures so that we can face the challenges of the 21st century better prepared. Throughout this process, everything we have undertaken, are undertaking and will undertake has been done with our future generations in mind. For this reason, the transformation process which we have completed has avoided any kind of demagogic or dogmatic speculation and ideological limitation. Our pragmatic approach has managed to break the vicious circle in which our economy was caught up. We have removed the root causes which had led the state to monopolize more than half the gross national product and to stifle the initiatives of the private sector, draining the scarce resources of the financial system.

From an inefficient public sector, we have been able to restore the state's ability to fulfil basic functions such as justice, public health, education and security. In the case of public services, which have passed into private hands, regulatory entities arbitrate disputes and protect users, especially in situations where monopolies or oligopolies restrict the moderating influence of competition.

The dream, the Utopia of building a single world with many voices, in which the benefits of telecommunications are a reality for all mankind - this is the challenge which has called us together today as leading actors in this Conference. This year, 1994, is World Telecommunication Year, and I should like to take this opportunity to reaffirm that communications are a political matter, and that it believes the difficult and most noble art of politics to take the necessary decisions for communications to become the driving force behind economic, social, cultural, scientific and technological progress. All our peoples yearn for democracy, and we must pledge ourselves to making communications democratic; and let there be no mistake or misunderstanding: just as there is no peace without justice, so no one is free if the right to communicate is not guaranteed. This is a natural, inalienable right, which the international community should hold up as its banner and bear on to victory. Telecommunications, and their democratization so that no human being remains isolated, must come to represent for all of us a value which, in the interest of all mankind, is placed on an equal footing with environmental protection, human rights and the struggle against poverty. For telecommunications has become a vital means of denouncing, monitoring and notifying infringements and of underpinning everything that is being done in those fields.

When I took over the leadership of my country, I warned my people of the very difficult times ahead for the Argentine Republic. Argentina, rise up and go forth! This appeal, this plea, this summons has given us a new country.

I should like to extend my sincere thanks to all the countries which have come to Argentina to participate in this Conference to discuss the fascinating world of telecommunications. Needless to say, I extend those thanks to the Secretary-General of the International Telecommunication Union and to the Vice-President of the United States for the enlightened views which they have expressed and which I fully share.

I beseech you, let us not pass up this opportunity, this great opportunity presented to us today; rather, let us give our children and our grandchildren good reason to be grateful to us. In this spirit, I extend to you the warm wishes of all Argentines, entreating you to feel at home in our blessed land and to regard each and every one of its inhabitants as true brothers in the constant and unrelenting struggle to rid our planet once and for all of war and conflict, and to raise high the banner of peace, hope, faith and love of all peoples. Thus do I formally declare open the FIRST WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE.

Many thanks.

May God bless you!

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 96-E

ITU/BDT

EXTENSION OF THE ITU/CABLE & WIRELESS TRAINING SCHEME

The ITU's Telecommunication Development Bureau (BDT) and Cable & Wireless (C&W) today announced an extension of the above scheme to include a Lord Young Scholarship on the subject of telecommunication management.

It is proposed that during 1994, as a pilot project, a Management Workshop be held at the University of Bulawayo (Zimbabwe) to ascertain the priority needs of SADCC countries and to produce and test a viable process. In parallel with this, a Lord Young Scholarship will be awarded to enable an SADCC delegate to work with the expertise of the Management Faculty in the Cable & Wireless Training College in Coventry, England.

The outcome of the scholarship will be to instigate a process to establish an associate faculty within SADCC which will receive ongoing support from Cable & Wireless, plc. The ITU and C&W will also consider whether the results of this pilot project could prove beneficial for other regional groupings of Members of the ITU.

The original ITU/C&W training scheme, which was launched by the Secretary-General of the ITU, Dr. Pekka Tarjanne, and the Executive Chairman of Cable & Wireless, Lord Young, at Telecom '91, is also to run for a further year. Details can be obtained from Jaime Herrera, Chief of the Human Resources Division of the BDT.

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ITU

OVERVIEW BY BDT DIRECTOR

Excelencias,

Señoras y Señores,

Amigos y Colegas,

Muy buenas tardes. Es para mi un gran placer desearles la bienvenida a la primera Conferencia Mundial de Desarrollo de las Telecomunicaciones organizada por la BDT, la Oficina de Desarrollo de la Unión Internacional de Telecomunicaciones.

I would **particularly like to extend a warm welcome to the new small "m" members of the Development Sector**, which at the moment total 47, just one year after our membership campaign began. Your support is greatly appreciated and we are looking forward to a fruitful partnership.

The WTDC marks the conclusion of the first cycle of regional telecommunication development conferences held since the creation of the BDT by the Nice Plenipotentiary Conference in 1989. Since then five regional conferences have been held (for the African, European, Americas, Arab States, and Asia-Pacific regions) which highlighted:

- **telecommunication policies and strategies,**
- **financing,**
- **network harmonization and standardization,**
- **new technologies and their applications,**
- **and human resource development.**

These conferences have been **critical in identifying the needs and priorities of different regions and in focusing the work programme of the BDT**. Their dual role as fora for discussion of major development issues and as sources of advice and guidance to the BDT have made them a **key element for enhancing global partnership.**

The priority areas for telecommunications development identified by these conferences have all been addressed in a document before you at this Conference, the **proposed Buenos Aires Action Plan**. This Plan consists of seven programme areas and will be explained in greater detail on Wednesday.

As most of you know, a major landmark event towards institutionalizing the development activities of the Union came about in 1989 at the Nice Plenipotentiary Conference where it was decided to create the Telecommunication Development Bureau as the **body responsible for the ITU's development activities.**

Fully realizing that the newly emerging telecommunication policies and strategies as well as the evolution of the sectoral structure were the basis for moving towards new frontiers in terms of telecommunication networks, operational set-ups and customer/operator relationships, the coordinating role of the Union in this complex environment, carried out through the BDT, was recognized and supported by the international community.

Further, the Nice Conference appreciated that the new challenge for developing countries was to follow and take advantage of this evolutionary pattern, **with a view to reducing the "telecommunication gap" between developing and developed countries.** One of the ITU's main responsibilities is to offer developing countries a range of policy and structural options that will enhance the flow of resources for telecommunication development.

The Nice Conference, and the Geneva Additional Plenipotentiary Conference which was held in 1992 were turning points, as they equated the Development Sector with the Union's Radiocommunication and Telecommunication Standardization Sectors and integrated the functions of the ITU's Centre for Telecommunications Development (CTD) into the BDT's mandate.

These Conferences also emphasized that **the BDT should devote efforts to mobilizing international, regional and bilateral organizations and agencies, as well as the private sector, as partners for development.** This opens opportunities for new perspectives and a new impetus.

Another noteworthy event which was decided at the Geneva Conference was the creation of a Telecommunication Development Advisory Board (TDAB). I will have an opportunity later to introduce the Board and to talk of its initial productive activities.

The TDAB's activities and visions have been summarized in a report entitled "Partners in Development -Telecommunications - the First Link" which will be presented to you on Wednesday.

In the past decade, indeed even since the creation of the Development Sector, dramatic changes have occurred in the telecommunication sector. New technologies and services are revolutionizing the sector and many countries are **adapting their regulatory structures to facilitate the introduction of new equipment and services.** The World Telecommunication Development Report which will be presented to you in a few moments represents a comprehensive analysis of the success stories and shortcomings which have characterized telecommunications during the last few years and offers an analysis of the factors which have determined the present situation.

As the industry is changing, **we too in the BDT are trying to adapt our structure to meet the needs of our members.** However, while the creation of the BDT was one step forward in **`bridging the telecommunication development gap'** and while the WTDC will, as stipulated in Article 16 of the Geneva Convention, establish work programmes and guidelines for defining telecommunication development questions and the priorities of the Telecommunication Development Sector, it must be kept in mind that **development cannot happen in isolation. It requires the active participation of the whole international community.**

The BDT is placing the highest priority on forming **active partnerships directly with the private sector.** The goal of this partnership is to increase, through the **dynamism and synergy of alliance**, our capability of assisting developing countries to meet their telecommunication needs. On Wednesday you will hear a report on the role of the ITU in development - its past and its future.

We have the trust of the developing countries and the interest of the private sector in the Development Sector. Many of you here in Buenos Aires **are already members of this challenging sector** and during this Conference we expect the membership **to grow even more quickly**, thus adding to the impetus of fostering telecommunication development world-wide within the framework of the proposed Buenos Aires Action Plan.

One of the most strategic issues of the Buenos Aires Action Plan we are proposing is Integrated Rural Development, where telecommunications will go hand-in-hand with the other sectors such as Agriculture, Education, Health, Transportation, and Tourism, etc., to develop the rural areas, to develop the village. We expect therefore the development of new businesses in the rural areas, a better living standard for the village people, a more competitive environment for industries to grow and of course a tremendous market for the future telecommunications industry as the majority of the population of developing countries live in rural areas.

This is not possible without **exploring the best ways and means to work together with our partners**, and I refer particularly to our small "m" members, be they operating entities, manufacturers, or other development entities and agencies. I believe that such a symbiosis is of mutual benefit. By working hand-in-hand with the BDT in enhancing life quality through the benefits of telecommunication development, our members may also discover exciting opportunities.

I invite all those interested to be my guests at a meeting on Thursday morning at 8.00 to learn more about the benefits of partnership in the Development Sector and to join us in our **crusade for development**.

Thank you for your attention. I look forward to working with you to make this conference a truly **historic event for sustainable telecommunication development**.

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 98-E

AT&T Submarine Systems (U.S.A.)

A MORE FOCUSED APPROACH TO TELECOMMUNICATIONS INVESTMENT IN DEVELOPING COUNTRIES

by Mr. William B. Carter, President

During the last decade, an economic, organizational web has spread across the globe, joining developed and developing countries in a network that has both increased productivity and raised living standards in even some of the most remote regions. Often described as the global economy, this network was made possible by one essential ingredient: telecommunication connectivity.

Countries that have tapped into this economic lifeline have been able to increase their national wealth, while simultaneously improving the quality of life of their people. Although today the labels have changed, once again the world's nations are being divided into the haves and the have-nots: those which have plugged into the global telecommunications network and those which have not. The distinction is critical in the modem world economy.

Advances in telecommunications, computers and transportation have made it possible for Multinational Enterprises (MNE) to access resources and locate in remote corners of the world. In turn, these corporations bring with them capital to build production facilities that would, in many cases, be impossible to achieve using a country's often limited internal development resources.

One example of the power of telecommunications is the ease with which money can be transferred from one corner of the earth to another over the international telecommunications network. As MIT economist, Lester Thurow noted,

> "In the 1950's an Italian who wanted to move money into Switzerland had to fill her backpack with lira and walk across the Alps. Today, she can move her money on a PC. There is no such thing as governments stopping money from flowing around the world ... Transactions will simply move electronically to someplace on the globe where offending regulations are not in force."

Impediments to the flow of capital are becoming fewer and fewer as countries realize the rapid progress to be made by creating a favourable environment in which international business can flourish. Now, in fact, intercountry competition to attract these resources is fierce.

Around the world, countries are competing to export their profitable products. They are also advertising their goods -- the talent of the local workforce, promoting their national resources and providing governmental incentives for companies to locate production facilities and service centres within their boundaries.

Competition to attract corporations often involves one country trying to convince the world business community that it has the right ingredients - a large market, abundant resources, a talented labour pool - that will enable international trade to prosper within its boundaries. And the corporate hunt for these attributes goes unabated.

But natural resources are becoming secondary in relative value to the value manmade assets and capabilities can contribute to a product. International corporations have become more concerned with the extent to which locating in a particular country can help reduce transaction and production costs along the manufacturing chain than with the more traditional factors that determined whether a company would establish a foreign operation. The question multinational corporations are asking today is: will locating in a particular country afford them access to complementary resources and capabilities?

Statistics show the dramatic fall in the percentage of raw material and unskilled labour cost in the sales value of many products manufactured with global resources. Less than three percent of the cost of a semiconductor is for raw materials; the rest of the cost is attributed to knowledge-based tasks that can be performed anywhere in the world and transported electronically in a matter of seconds to any other location.

Increasingly, products manufactured in a global economy depend as much on knowledge-content as they do on raw materials, and through global telecommunications connectivity, the information-based tasks can be brought to the worker.

The social impacts of this change is enormous. In the past, workers would move to cities, residents of overcrowded and poverty stricken nations would emigrate to prosperous countries. Today, telecommunications connectivity enables much of the work to be distributed to the farthest and most remote reaches of the world.

As U.S. Labour Secretary Robert Reich has frequently noted in his efforts to educate the American public about the changing world markets, the emerging high-value economy does not depend on large-scale production. Moreover, fewer products today have a distinct nationality. Goods can be manufactured efficiently in many locations, then combined instantly with intellectual and financial capital originating from virtually anywhere in the world.

Examples of the process abound:

* High-tech ice hockey equipment is designed in Sweden, financed in Canada, assembled in Ohio and Denmark, with parts fabricated in Japan and distributed throughout North America and Europe.
* A microprocessor is designed in California, fabricated in South Korea and financed in America and Germany.
* A commercial airplane is designed in Seattle, Washington and Japan, assembled in Seattle with tail cones made in Canada, special tail sections from China and Italy, and engines from Britain.
* A space satellite designed in California, manufactured in France, and financed by Australians in launched by a rocket made in Russia.

Knowledge flows are rapidly replacing material flows in the production of goods. The end results are often international composites. Increasingly, what is traded between nations is less often finished products than specialized research, product design and detailing, marketing, advertising, consultation, financing and instruction. In other words, value-added ingredients that can be transported anywhere along the communication highway.

The need for tightly knit information linkages is obviously essential to successful, cross-border operations. A country not connected to the information highway has little chance of attracting the development dollars, jobs and other benefits an international corporation has to offer.

The benefits of international telecommunication connectivity are beyond dispute. But media capability and capacity and ubiquity are essential requirements of the multinational corporations.

Today fibre optic systems, whether terrestrial or undersea, are the only means of providing needed circuit capacity, the clarity, reliability and security they demand.

The popularity of fibre optic cables can be gauged by the extraordinary absorption rate of circuit capacity. The fill rates of undersea systems have far exceeded every prediction.

TAT-8 is a prime example. AT&T and its partners originally projected that the capacity of this first transatlantic fiber optic cable would be sufficient to handle traffic demands for ten years. However, the cable system was exhausted in less than a year and a half after it was put in the water in 1988.

Other systems are experiencing similar patterns. The United Kingdom-Belgium 5 system and United Kingdom-Denmark 4 will both be fully subscribed approximately four years ahead of projected rates.

The preference for fibre optic submarine cable systems over satellite communications and other forms of radio-wave transmissions is attributable to the clear advantages fiber optic systems offer, including:

* The increased usable bandwidth available which makes possible a wide range of applications, including interactive video, CAD/CAM and wide area networking - applications corporations are seeking to run their enterprises.
* Clear transmission quality, essential for multi-media and interactive imaging sessions.
* High availability with no environmental interferences.
* Security from eavesdropping and tampering, critical to multinational corporations operating in a highly competitive environment.

But this economic lifeline of undersea fibre optic networks does not go everywhere today. Indeed, it reaches only a small number of countries, decidedly advantaging those it connects.

At the end of 1993 undersea fibre optic cables connected only some 40 countries. Those connections were to primarily northern hemisphere, industrialized and developed countries. This differentiation of capabilities begins to enlarge the gap between developed and developing countries.

By the end of 1994 the number of countries connected by fibre optic capability will have grown to about 60 and by 1997 will reach 85. Although this growth rate is large, it is clear that it is exaggerating the technological gap between countries and stifles development.

International corporations, out of necessity, are looking for markets and resources which can easily fit into their operations. Political barriers are being removed from virtually every corner of the globe and new market possibilities are appearing daily. The only barrier is a lack of telecommunications connectivity. Unless a country is tapped into this undersea economic lifeline, the flow of available money will pass them by.

Examples of Far Eastern countries which have established this communication linkage are many. Last year, Thailand signed a contract to install a million new telephone lines. The programme will cost US$ 1.6 billion and take 5 years to complete. A separate contract has begun the installation of an additional two million lines in Bangkok, at a cost of US$ 3.4 billion.

These projects will greatly improve the internal communication system, but Thailand recognizes that this will not capture the essential connectivity to the international network. This infrastructure development will not in itself attract business. However, Thailand has a more focused investment that is connecting its internal system to the rest of the world. Thailand is involved in not one, but several fibre optic cable systems: Malaysia-Thailand, Thailand-Viet Nam-Hong Kong, the APCN system and the FLAG system. These countries understand the benefits of global cable connectivity, and that they must be a part of any cable in their region in order to remain competitive with their neighbours. These aggressive tactics have corporations lining up to explore areas of business potential in that country.

Evidence seems to suggest that total dedication to infrastructure improvements may not be the best approach to attracting international business investment. Until recently, supplying more power systems, extending internal communication systems, improving roads and transportation systems was thought to be the most effective method of attracting international trade. But developing countries have found that spreading scarce resources around a number of worthy domestic projects often only slightly dents the huge internal problem and, consequently, does not produce the desired effect of attracting money producing businesses.

Experience indicates that another approach - first establishing international connectivity - may make more sense. To attract international corporations, developing countries must first connect themselves to the global marketplace. Once an MNE can be assured that it can integrate a new operation into its global network, through telecommunication connectivity, the more likely it will be to bring its resources into the country. Developing countries can then focus internal investments in a manner that complements its new external revenue source.

New business enterprises can become a source of capital which, in turn, can be used to further infrastructure improvements. In this approach, those infrastructure improvements most likely to enhance the operation of existing businesses and most likely to attract additional commerce would be targeted. However, the initial step -- international connectivity -- is essential and must be achieved before corporations will commit their well-guarded resources into a country.

Until recently, developing countries were unwilling to investigate, let alone make a commitment to, submarine fibre optic cable connectivity because the cost of the system was thought to be well beyond their limited means. This assumption was based on reports of costs for the construction of huge, interregional systems which were usually financed by a consortium of carriers.

Today, alternatives are available to developing countries which do not require huge expenditures of funds. Developing countries have the option of tapping into existing networks which would provide them direct access to the global market through fairly short and relatively inexpensive "tails."

There are many examples of "tails" that could be used to funnel traffic to, or from, many countries to avoid deploying longer, more expensive transoceanic systems. Small unrepeatered systems emanating from a central hub could access a number of countries. Regional loops could accumulate traffic that would justify adding countries to a network where otherwise it would not make economic sense to land a cable. These "tails" or regional loops could gather traffic in a region and run to existing landings to meet transoceanic systems.

Other options exist. Cable suppliers, under certain circumstances, are willing to offer creative financing packages that will minimize or even eliminate up-front costs. Moreover, leasing, or pay-as-you-go arrangements, are entirely possible as are partnerships with multinational corporations.

There are many new variations on financing cable systems that not only represent attractive options, but also provide benefits to the landing parties in the form of training or experience. These "build, operate and transfer" scenarios offer extended payment plans, while bringing needed knowledge and experience to get the system up and going. Other financing options might be contracting service for the duration of the cable with corporations that would use it. This might facilitate payments for usage up-front to assist in construction costs.

Removing these barriers will allow countries to tap into the economic lifeline of communications and to substantially increase their national wealth. In providing the means by which large multinational firms can rapidly access the resources within a country's borders, and just as rapidly connect with the international market, developing countries will find themselves on the information highway to economic growth.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 99-E

Algeria

CONTRIBUTION AND PROPOSALS TO THE WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

1. INTRODUCTION

The Algerian Administration pins great hopes on the first World Telecommunication Development Conference (WTDC), which it sees as an excellent forum for coordination and discussion between all the partners directly or indirectly involved in telecommunication development.

There is a need to usher in a new age of cooperation within the world community in order to narrow the gap separating the developed countries from the rest of the world.

Algeria is resolutely committed to this new environment, and is putting forward realistic proposals which can be implemented through cooperation programmes.

This document, in which most of the points raised relate to the WTDC agenda, contains four parts:

- a brief description of the existing telecommunication network along with a few comments on its shortcomings;
- medium- and long-term development prospects, together with a financial evaluation;
- an outline of a few areas warranting particular attention;
- recommendations for the Conference.

2. TELECOMMUNICATIONS IN ALGERIA

2.1 Current situation

At 31 December 1993, the subscriber telephone network included just over 350 automatic exchanges for a total of 1,298,000 automatic subscriber units, 360,000 of them using digital technology.

These exchanges serve around 1,060,000 subscribers. There are still 55,000 manual units serving 33,000 subscribers.

At the same date, the total number of subscribers stood at 1,093,000, giving a telephone density of 3.9%. This figure is low in comparison with the country's level of social and economic development.

Maritime radiocommunication traffic is routed via a network built around eight VHF stations, three MF stations and one HF station.

2.2 Assessment of the current status of telecommunications in Algeria

The current status of the telecommunication network, as reflected by analysis of the main relevant indicators, could still be improved despite the remarkable efforts which have been deployed.

For instance, satisfied demand fell by 9 percentage points betwen 1980 and 1993, from 66% to 57%. This deterioration stems from the combined effect of two factors: the sharp rise in demand and the low rate of investment.

Telephone penetration, another significant indication of the level of development of the network, has only risen by 2 percentage points in three years, from 1.6 in 1980 to 3.9 in 1993.

Algeria's development policy is founded on the key principles of regional planning, with a view in particular to narrowing the gap betwen urban and rural areas.

Thus, telephone density does not in fact fully reflect the efforts made to develop the national network, on account of the magnitude of the "invisible" portion of the network - the basic infrastructure - set up throughout the vast expanse of the national territory.

The objectives set in development plans aim to secure equitable access to communication for the whole population.

The low telephone penetration rate is closely linked to the low volume of investment.

Investment in telecommunications has represented only a marginal proportion of GDP: 0.35% on average over the period 1985-1993, when the rate generally accepted as reasonable for growing networks is 1% or even 1.5%.

In addition, the amount of investment in constant dinars rose from 1.2 billion dinars in 1985 to only 2.2 billion dinars in 1993, i.e. real growth of 7.4% per year, which is negligible in comparison with the growth in demand (11% per year on average).

According to Huntley's Law, the cumulative shortfall in investment over that period amounts to over 25 billion dinars (approximately 1 billion US dollars); without that shortfall, telephone density would have attained 6.5% in 1993 instead of 3.9%.

As far as telecommunication industry is concerned, national industry manufactures only a small range of equipment which can only partially meet the requirements of the PTT administration.

The process of integration, which should be founded on the country's existing industrial infrastructure, has simply not occurred for lack of suppliers of intermediate products.

This has meant that there has been no indirect spin-off, since the missing component products, most of which use sophisticated technologies, have to be imported.

In a gloomy economic context, this situation has penalized both the emerging industry and the operating sector.

2.3 Rural telecommunications

The problems of providing service to rural areas exist in all countries and are proportional to density.

In countries with a high concentration in urban areas, the problems are probably less severe than in countries where a dispersed population is compounded by low telephone penetration and scarce financial resources.

The difficulties are further exacerbated by topographical and environmental conditions (desert, mountain, no road and power supply infrastructures).

New technology has done much to improve this situation, in particular thanks to modularity, reliability, remote surveillance, easy installation and low power consumption.

238 rural or semi-rural localities in 37 of the country's 48 "wilayas" (administrative areas) are connected to the telephone network by way of relatively reliable line concentrators.

More than 38,000 subscribers were connected in this way by mid-1993.

Other localities (some 300) are still connected to the network by wirepairs or single channel radio. More than 10,000 subscribers use these media, which are very unreliable in terms of traffic flow and service availability (frequent faults), despite a sustained maintenance effort.

The table below gives useful information concerning telephone penetration in rural and semi-rural areas:

TYPE OF CONNECTION	NUMBER OF LOCALITIES SERVED	NUMBER OF SUBSCRIBERS CONNECTED
1. Concentrators	238	38 180
2. Wire pair and single channel	269	10 723
3. Rural radio system	864	16 479 (*)
4. Analogue automatic exchange	68	21 948
5. Remote subscriber units (digital centres)	32	26 400
6. Manual switchboards	777	29 700
7. DOMSAT (domestic space telecommunication network)	32	1 000
TOTAL	2 280	144 430

(*) Including 10,000 connected via a manual switchboard.

Of the around 12.5 million inhabitants in rural areas, 144,430 have total or partial access to the telephone network, i.e. 1% of the rural population, which compares favourably with the rate recorded in countries with similar indicators.

Density runs at about 10 lines per 1,000 inhabitants, i.e. seven times less than the density in urban areas (7.33%).

Furthermore, 50,000 rural subscribers (42%) receive inadequate service (overhead lines, unreliable single channel radio, switchboards providing only sporadic service, ...), and the problem of rehabilitating their networks has to be tackled at a time when telephone penetration in rural areas, and even at the national level, has not yet reached an acceptable threshold.

Thus, around 50% of the total population actually have access to only 7% of the country's telephones.

The pressure of demand is very high (690,000 applications pending on 31 December 1993), which, at the current connection rate, implies a theoretical waiting time of more than eight years.

In order to relieve the pressure of demand, a network of more than 8,000 telephone booths has been established nationwide.

With a view to meeting the needs expressed by business subscribers, a packet-switched data transmission network was introduced in 1993, comprising a control, supervision and management centre, four main exchanges and 30 subscriber concentrators installed in the different economic and industrial poles throughout the country.

This network has a capacity of 1,600 direct access points, supplemented by indirect access points, through the switched telephone network and the telex network, thus enabling some 4,500 terminals to be connected.

As regards transmission, the network has a total length of 33,000 km bearing over 150,000 circuits, about half of which were in service at 30 June 1993.

The national transmission network comprises:

- 19,350 km of cables, including 2,100 of optical fibre;
- 14,000 km of radio-relay links of different capacities, many of them digital;
- a domestic satellite network established via the master station at Lakhdaria and 44 stations located in the main towns in the south.

At the international level, Algeria is connected to the Maghreb countries by coaxial and optical fibre cables and radio-relay links, to the northern Mediterranean countries by submarine cables (three to France, one to Spain and one to Italy), to the Arab countries via the ARABSAT satellite system and to the rest of the world via INTELSAT.

Thanks to this infrastructure, Algeria has automatic connections to 180 countries.

Finally, some 800 localities connected to the network through a manual switchboard do not have access to automatic service (29,700 subscribers).

2.4 Multi-service public call offices

A venture has been launched as part of the campaign to create jobs for young people and integrate the handicapped in working life.

Under this venture, multi-service public call offices (PCO) are being opened, run by people licensed by the telecommunication administration. These PCOs are equipped with basic telephones with charge meters or payphones provided by the administration, fax machines, etc. License-holders are required, inter alia, to recruit a specified number of young people according to the facilities available at the PCO and receipts from its operation, and to make sure that the equipment is properly maintained. It should be noted, in this connection, that public telephones installed in the street are frequently vandalized.

As far as their rights are concerned, the license-holders have an incentive to achieve good results, as they retain a substantial commission on income from telephone traffic generated by their PCO. It is interesting to note that the telephones and terminals installed in public call offices generate much more income than those installed in public phone booths in the street.

3. PROSPECTS FOR DEVELOPMENT OF THE TELECOMMUNICATION NETWORK

3.1 Aims and objectives

Algeria's telecommunication development policy will be implemented as part of a uniform global strategy through various equipment and modernization plans.

The guiding principles behind this development policy may be summarized as follows:

- bringing the level of equipment of the telecommunication network more in line with the country's social and economic development;
- achieving economic and financial returns and the requisite technological capability in industrial projects in the field of telecommunication;
- improving the organization of telecommunication services;
- mastering technology through an intense and dynamic policy of training and applied development research;

- strengthening regional and international cooperation in telecommunications and following a policy which will promote the establishment of a Maghreb telecommunication area.

The long-term development strategy will hinge on digitization of the telecommunication network and the gradual introduction of information technology.

The telecommunication development objectives aim to satisfy demand for various services (cf. table below):

TYPE OF SERVICE	1992	1997	2000	2005	2010	2015
Telephone	962,000	1,510,000	2,000,000	2,875,000	3,825,000	5,000,000
Telephone density	3.6%	5.00%	6.15%	7.9%	9.5%	11.3%
Telex	12,000	17,000	19,000	20,000	20,000	20,000
Data trans-mission	--	2,275	3,500	7,500	12,000	16,000
Facsimile	5,000	13,000	20,000	40,000	80,000	160,000
Mobile radio telephone	4,500	6,500	20,000	40,000	80,000	160,000
Public booths (payphones)	6,600	36,000	60,000	90,000	120,000	175,000
Payphone density per 10,000 inhabitants	2.6	12	18	25	30	40
Number of subscsribers in rural areas	120,000	180,000	290,000	295,000	310,000	360,000

3.2 Financing of the development programme

The cost of the development programme for the period 1993-2015 amounts to around 300 billion dinars (12 billion US dollars), a third of which is transferable. A breakdown is given below:

in billions of dinars
(1 US dollar = 23 dinars)

	1993-1997	1998-2000	2001-2005	2006-2010	2011-2015
Switching	15.8	13.4	24.1	26.0	24.4
Transmission	13.6	11.4	20.6	22.2	20.9
Urban networks	15.9	13.5	24.1	26.0	24.4
TOTAL	45.3	38.3	68.8	74.2	69.7

Any development programme should be in principle mainly self-financed.

3.2.1 Case of Algeria

Considerable funding is required, particularly for the first five years (1993-1997), since net self-financing capabilities will remain relatively low on account of:

- exchange rate losses due to succesive devaluations of the local currency (dinar);
- the reliance of the telecommunication economy on outside sources (imports account for 35% of the cost of the programme);
- the low level of investment in previous years.

The sector anticipates a gradual improvement in the cash flow situation for self-financing, but in order to reach that stage it will have to cope with a temporary shortage of resources (particularly in hard currency) while at the same time endeavouring to reduce the burden of servicing the debt, which is a major cause for concern, hence the need to find sources of financing offering favourable loan conditions.

The World Bank, which has already granted a loan to the Algerian Administration for development of its telecommunication network, particularly in rural areas, is the most appropriate source of funds.

3.2.2 General case

The IBRD, while instituting a new loan mechanism (structural adjustment), dictated by the donor countries and making the loan contigent on conditions which are not directly related to the project as was previously the case (conditionalities), is however making access to such sources of financing increasingly difficult.

This leaves commercial banks, suppliers and export loan or bilateral aid agencies, which have in fact become the main source of external funding (20% of total programme costs and 60% of costs in hard currency over the last 10 years).

The conditions attached to loans from commercial banks are stringent (high interest rate and short loan period). Such loans do however have the advantage of not being tied.

Soft loans are often tied to conditions (purchase agreement, associated sale, products with a high added value, ...) and are not compatible with the purchaser's desire to foster competition (better cost/benefit ratio).

Financing policy is all the more important in that it plays a major role in determining the level of tariffs, which are always a key policy matter in themselves.

It is recommended to reiterate the priority which telecommunications should be accorded within international financing agencies.

4. DISASTER PREVENTION AND RESCUE OPERATIONS

4.1 Disaster prevention

Radio data collection networks have been set up on river beds in order to warn of flooding and in areas characterized by high seismic activity in order to gather information on the movement of tectonic plates.

The data collected are routed by radio via stations powered by solar cells.

Unfortunately, the "water flow" network, although very efficient, is confined to a few rivers, for lack of the necessary financial resources to extend it more widely.

The "seismic" network serves primarily to locate earthquakes promptly and determine their strength, through 31 UHF stations established in 1989.

The third type of disaster which has just as serious consequences for the population is invasions of locusts originating in small pockets in West Africa. Intensive and generous international cooperation is required in order to eradicate this scourge, which afflicts many countries, in view of the danger which such invasions represent for the world community. Every means must be used, including telecommunication media (earth exploration, remote sensing, meteorology, rapid communications, etc.), to contribute to the struggle against such migrating locusts.

4.2 Rescue operations

Algeria's large surface area (nearly 2,400,000 km^2) gives rise to communication problems, in particular for people travelling in the southern regions.

It is thus necessary to take measures to safeguard life and property, both on land and at sea.

Decrees have been issued setting up inter-ministerial committees for sea and air search and rescue, which are now in place. The "telecommunication" component plays a key role in operational situations.

The severe earthquake at Chlef (7.5 on the Richter scale) revealed the importance of telecommunications in relief operations.

Similarly, many lives could have been saved if every vessel at sea and every vehicle travelling to the south of the country had been equipped with emergency position-indicating radio beacons.

5. GEARING LEGISLATION AND REGULATIONS TO THE NEW ECONOMIC AND TECHNOLOGICAL ENVIRONMENT

As far as regulation is concerned, the worldwide trend is towards gradual - or sometimes sudden - dismantling of the telecommunication monopoly hitherto held by the State, and transfer of the operating function to an exclusively commercial sector.

This transfer gives rise to the establishment of a structure geared to competition between network operators and between service providers.

Much thought has been given to this question in Algeria over a period of many years, with a view to developing a structure to cater for the new telecommunication environment since, despite the nature of its operations which involve offering services against remuneration, the PTT administration has no legal personality and hence no financial autonomy.

The new technologies introduced in the telecommunication network have exposed the difficulties which the sector is having in adapting to the evolution of the dynamic market, on account of the shortcomings of the monopoly system which prevent optimum operation of efficient networks.

As well as making the sector's accounts transparent, telecommunication legislation and regulation has to be reviewed so as to introduce structural adjustments to prompt liberalization of certain services offered to the user, in particular value-added services. This liberalization is taking place at a time when many legislative and regulatory texts are being issued which introduce economic reforms and aim to usher in a market economy.

Recourse to licensing is justified by the benefits which it produces in terms of rationalization of operation of the public telecommunication network and the marketing of services, and fits in with the general trend in the national and international economic and technological environment.

Revision of the Posts and Telecommunication Code thus becomes a necessity, and a natural step to be taken in the telecommunication sector in line with the new environment.

6. NATIONAL FREQUENCY MANAGEMENT

Radio media have been in use for many years now for telegraph and, later, telephone communications. A structure had therefore to be set up to manage frequencies at the national level within the sector. This structure has evolved as new technologies have been introduced and networks have been set up to meet public correspondence needs in the fixed and mobile services, the broadcasting service and so on.

In addition, arrangements have to be made to ensure that stations operate free of harmful interference, in particular from neighbouring countries, through coordination with the organizations concerned.

The wide range of requirements (mobile radiocommunications, rural radio telephony, satellite communications, ..) calls for dynamic management of the radio frequency spectrum. In addition to the specific services in ministerial departments and economic enterprises, there are two bodies responsible for national frequency management, one within the ministry responsible for telecommunications and the other an inter-ministerial unit chaired by the minister responsible for telecommunications. This unit provides a forum for coordination and discussion among users.

Naturally, the regulatory foundations on which these bodies base their work take due account of the provisions of the Radio Regulations annexed to the instruments of the International Telecommunication Union (ITU).

With the emergence of mobile-satellite service networks, new management tools will have to be introduced in order to safeguard the operation of terrestrial networks from the potential harmful effects of those services.

There is thus a need for rapid introduction of worldwide cooperation within the framwork of the activities of the ITU Telecommunication Development Sector.

7. HUMAN RESOURCES

The transition of the economic environment towards a market economy will call for the establishment of an employment market allowing dynamic management of human skills.

In other words, upgrading of human resources is a basic prerequisite in this new economic environment characterized by competition and the universal law of supply and demand. As these principles are also applicable to the human component, the utilization of human resources must also be based on the assessment of profiles, particularly for management staff, according to the exact market requirements.

An analysis must thus be made of work stations in all areas of skills (management, design, consultancy, ...) with a view to optimum utilization of human resources, from the executing to the decision-making levels.

Initially, of course, as we are unfamiliar with the mechanisms associated with the market economy, it will be necessary to call upon outside cooperation, on a bilateral or multilateral basis. The Union, which is rightly considered as a catalyst for telecommunication development, will be able to assist in the introduction of modern management tools.

8. RECOMMENDATIONS TO THE CONFERENCE

1. Recommendation to establish search and rescue committees

Taking into account the effectiveness of coordinated efforts between the sectors concerned (defence, PTT, transport, transport, civil defence, health, ...) in search and rescue operations to safeguard human life and property at sea and on land,

it is recommended:

- that inter-ministerial committees be set up for the search and rescue of ships at sea, aircraft and anyone in distress in an inhospitable environment;
- that an international assistance and cooperation system be introduced for the purposes of facilitating searches.

2. Recommendation of the establishment of strategic stocks of equipment for disaster relief operations

Taking into account the experience with rescues accumulated throughout the world as a result of natural disasters which, generally speaking, cause the destruction of local telecommunication infrastructures, and the progress made with telecommunication systems, particularly mobile-satellite apparatus,

it is recommended

that strategic stocks of telecommunication equipment be compiled with a view to meeting communication needs during relief operations.

These stocks might be compiled with the assistance of the Telecommunication Development Sector, through contributions from suppliers or financing agencies.

3. Recommendation on rural telecommunication development

In spite of the high cost of investment in telecommunications in rural areas as against urban areas and the small amount of operating income they generate, emphasis must be laid on the benefits of rural telecommunications:

- anchoring the population in rural areas and improving social and work conditions;
- striking a regional balance and providing a more widespread public service, a factor promoting economic development and social welfare;
- spin-off effects beneficial to other sectors (transport, trade, health, education,...).

It is therefore recommended

that telecommunication operators set targets for the development of telecommunication services in rural areas with the help of State subsidies or soft loans from equipment suppliers, in collaboration with their governement when extra investment costs are involved.

4. Recommendation on the establishment of multi-service public call offices

Taking into account

- the success of the establishment of multi-service public call offices and the relatively low investment costs which this has entailed;
- the potential to create a lot of jobs for the running of such public call offices,

it is recommended

that measures be taken to facilitate the establishment of multi-service public call offices, in particular in populated areas with a low telephone density, in order to meet the population's demand for telephone services.

World Telecommunication Development Conference
(Buenos Aires, 21-29 March 1994)

Document No. 100-E
List of documents (replaced by the *Final List of Documents* available as a separate pdf)

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 101-E

Republic of Latvia

MESSAGE OF H.E. MR. ANDRIS GUTMANIS, MINISTER OF TRANSPORT
(DELIVERED BY MR. GUNTIS BERZINS, DIRECTOR,
DEPARTMENT OF COMMUNICATIONS, MINISTRY OF TRANSPORT)

Mr. Chairman,
Secretary-General,
Distinguished Guests,

On behalf of the Minister of Transport in the Republic of Latvia, Mr. Gutmanis, may I join all the previous speakers in expressing thanks to the Argentine Administration and the Argentine people for their warm hospitality, as well as congratulate the ITU on the efficient organisation of this Conference.

It is indeed a pleasure to address this important forum, which will hopefully set the direction signs and the mileposts for the ITU's telecommunication development activities in this decade.

The Republic of Latvia is in the situation where 50 years ago, before the Second World War, it was ranked high among the countries in Europe in terms of telecommunication development. Unfortunately, the legacy of this war and the subsequent occupation of our country led to a situation where telecommunications was a political tool with the result that there was over the years significant underinvestment in telecommunications for the public benefit.

Having now regained independence, Latvia finds itself in the same situation as most other Central and Eastern European States. Namely, it is has had to struggle to find the resources to modernise its telecommunication network, to catch up with the regulatory developments in the rest of the world and to provide means whereby its experts can gain the knowledge which is necessary to plan, administer and operate telecommunications in today's world.

We have recently taken a major leap forward and commenced a 10-year modernisation programme of our whole network - international, trunk, urban and rural. This is being financed by the partial privatisation of our national operator, Lattelekom, through the sale of 49% equity, by public international tender, to a consortium comprising Cable and Wireless and Finnish Telecom.

However, it is our request to this landmark Conference that, in setting the directions for the ITU's telecommunication development activities for this decade, you also be responsive to the needs of all the countries in Central and Eastern Europe, such as Latvia, who are finding that it is imperative to their economies that they make a rapid entry to this new age of telecommunications.

If this Conference, and the subsequent actions which it sets in place do result in the States of Central and Eastern Europe, such as Latvia, achieving a reasonable standard of telecommunications for their people over the next decade, then we will indeed, be able to look back to this Conference as an historic landmark in the development of telecommunications in the world.

That, Ladies and Gentlemen, we believe is the challenge for this Conference.

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 102-E

Ghana

ADDRESS BY THE HON. MR. E. K. SALIA,
MINISTER OF TRANSPORT AND COMMUNICATIONS,
ON THE ROLE OF TELECOMMUNICATIONS IN THE DEVELOPMENT OF COUNTRIES
THE CASE OF GHANA

Mr. Chairman,
Your Excellencies,
Dear Guests,
Ladies and Gentlemen,

I bring you warm and fraternal greetings from the Government and People of Ghana.

I wish first of all to express my appreciation and to commend the initiative taken by the International Telecommunication Union (ITU) and the Government of Argentina for organizing this World Telecommunication Development Conference.

I sincerely hope that at the end of this Conference some insights will be found to solve the problems of providing telephones in developing countries.

My address, which of necessity has to be brief, will focus on the telecommunication situation in Ghana. It will be preceded by a brief geographical location of Ghana and I will highlight current policies and strategies for the development of telecommunications in Ghana with emphasis on the role the private sector is expected to play so that all concerned with telecommunication development will understand where Ghana is, where we want to be, so that they can help us on how to get to where we want to be.

As some of you are aware already, Ghana is one of the 16 countries of the Economic Community of West African States (ECOWAS). I am happy inform those of you who may be wondering about how to get to Ghana that Accra, the capital city of Ghana, can be easily reached after about a 6-hour flight from London.

The Republic of Ghana covers an area of 239.456 square km on the continent of Africa and is situated 5 degrees above the equator. Ghana is bordered on the north of Burkina Faso, on the east by Togo, on the west by la Côte d'Ivoire and on the south by the Atlantic Ocean. Its coastline stretches for about 550 km. The climate is tropical with two seasons, namely the dry season (October to April) and the rainy season (May to September). Ghana has a population of about 15 million people (1992) with an annual population growth rate of about 2.5%. More than two-thirds of the population live in the rural areas, defined as communities with less than 5.000

inhabitants. Of the remaining one-third of the national population who live in the urban communities, about 17% live in the 5 major towns.

As we are aware, there cannot be any meaningful development without effective and efficient telecommunications. As such, it has become increasingly necessary for governments to invest in high quality telecommunication services to serve as the backbone for economic development. In today's so called "information society", economic, social, cultural and political development activities are increasingly becoming more and more dependent on telecommunications, thanks to advances in digital technology which has made telecommunications affordable, efficient and effective.

In Ghana the need for efficient and reliable telecommunication services has been recognized. Like other developing countries we have a poor road infrastructure. Other transport facilities are in bad shape compounded by traffic congestion in the cities thereby making travelling by road not only tiring and time consuming but also very hazardous because of high accident rates leading to loss of lives and property. Telecommunication services are therefore very vital for our economic advancement. It has been recognized that by improving upon our telecommunication services we can reduce some of the shortcomings associated with vehicular movement and also increase the life span of most of our roads. Finally, the government has identified the important role that the sector can play in enhancing decentralization as grassroot participation is the main feature of our young democracy which began with the inauguration of the fourth republic on 7th January 1993.

Available facilities and requirements

The telecommunication services in the country are provided by the P&T Corporation, which is a transformation in 1974 of the original Civil Service Department of Posts and Telecommunications. Until the beginning of this year, the Corporation was charged with the responsibility of providing both postal and telecommunication services in the country. Currently, the Government has taken a bold policy initiative to separate the telecommunication and postal services. The telecommunication wing provides the following internal and external telecommunication services:

i) telephone services;
ii) telex services;
iii) telegraph services;
iv) telefax services; and
v) transmission of television and radio programmes for the state-owned broadcasting corporation, Ghana Broadcasting Corporation (GBC).

The private sector also provides some value-added services using the P&T network to supplement the services of the P&T Corporation. These include **data communication, mobile radio telephone (cellular) and paging services.**

As at the end of June 1993, a total of 48.413 direct exchange lines comprising 43.131 lines connected to automatic exchanges and 5.282 lines connected to manual exchanges had been connected to the national telephone network against an actual total demand of approximately 200.000 direct exchange lines. This puts the penetration rate at about 0.31 direct exchange lines per 100 population. Currently there are in all 216 direct circuits connected to the 330-line international telephone exchange which have been distributed as follows:

- Ghana-France - 12 circuits
- Ghana-Italy - 7 circuits
- Ghana-Kenya - 2 circuits
- Ghana-Netherlands - 4 circuits
- Ghana-UK - 108 circuits
- Ghana-USA - 60 circuits
- Ghana-Germany - 23 circuits

There are also 90 international terrestrial circuits to neighbouring countries distributed as follows:

- Ghana-Benin - 11 circuits
- Ghana-Burkina Faso - 11 circuits
- Ghana-La Côte d'Ivoire - 21 circuits
- Ghana-Nigeria - 32 circuits
- Ghana-Togo - 15 circuits

In addition, there are at present about 30 pay-phones installed for **IDD** only in the country.

Even though there have been significant improvements in the services as a result of recent development projects undertaken by the P&T Corporation in several parts of the country, the quality of service is still not satisfactory. For example, the call completion rate for incoming international telephone calls is about 34%. Plans are far advanced to install 500 more pay-phones throughout the country for both national and international services. This is one of the measures that are being implemented to provide more telephone services to meet the ever-rising un-met demand.

Even the completion of our on-going second telecommunication project (STP which I described earlier on) by the middle of 1995 will provide a total exchange capacity of only 79.000 against an estimated actual total demand of approximately 300.000 lines. This will give us a national telephone density of 0.49 per 100 population at the end of the project which is lower than the density of one telephone for 100 population set by ITU for Africa. However, our national aspirations are that by the year 2000 Ghana should have a telephone density of more than 2.5 per 100 population. This will mean that a gap of over 400.000 lines would have to be filled to give the targeted national telephone density.

Being mindful that new telephone installations create new opportunities for telephone usage, the Government expects that demand for direct exchange lines could reasonably be in the order of 1 million lines at the turn of the century instead of the current projected demand of about 500.000 lines. It is clear from the above that vigorous efforts have to be made to improve the telecommunications sector to keep pace with the socio-economic developments in the country. Translating these requirements into investment opportunities is very enormous. Meeting this demand will involve a projected total cost ranging from a minimum of US$ 450 million assuming a conservative growth of 300.000 lines at US$ 1.500 per line to as high as US$ 2 billion assuming a growth of 1 million lines at US$ 2.000 a line by the end of the century. It is our hope that the present gap will offer investment opportunities for those interested in participating in the telecommunication sector in Ghana.

How to meet our telecommunication needs

The intensive investment programmes undertaken by a number of developing countries to expand and upgrade their networks rapidly is common knowledge and Ghana must make a similar intensive effort to avoid being seriously disadvantaged in the international arena in the provision of telecommunication services within the country and to the outside world at the turn of the century.

Past and current experiences have shown that the government monopoly alone through the P&T Corporation, in providing telecommunication services in the country cannot satisfy national and international demand due to the heavy investment costs involved. The policy of Government on telecommunication "is to bring about further expansion of the telecommunications infrastructure and services into the rural and remote areas of the country where the average telephone density is at present very low".

This calls for reliance on the private sector. Currently, private sector participation is minimal and has concentrated on the provision of terminal equipment. With the government's determination now to liberalize the system, 6 private mobile (cellular) telephone operators have been licensed. It is expected that more private operators will invest in the provision of more value-added telecommunication services like paging and data transmission in the country.

To achieve our objectives, private sector participation has been considered essential for the provision of management skills, technology and finance in the provision of telecommunication services. In order to attract such private sector participation, the country is putting in place the necessary institutional, policy and regulatory framework to create an enabling environment for private sector investment in the telecommunication sector.

The telecommunications company will enter into joint-ventureship with a suitable and capable private sector strategic operator or service provider. It is expected that such a measure will create avenue for network expansion, improvement of service quality and improvement of human resources through the injection of much needed equity and borrowed funds (as opposed to bilateral tied grants and concessional loans), adoption of state-of-the-art technology and staff training. The modalities for such a venture still have to be worked out so that at the appropriate time tenders will be invited from major telecommunications infrastructure and service providers world-wide to participate. I sincerely hope that when that time comes, businessmen and women looking for investment opportunities in Ghana will not hesitate to participate in such a lucrative business venture.

In our view, the achievement of a greater degree of private sector participation in the telecommunications sector will depend on the creation of an enabling environment for the sector hence the setting up of the National Communications Authority (NCA) as an autonomous regulatory body. The Government is currently investigating in detail the various options for private sector participation in all aspects of the telecommunication business in order to select an appropriate option. In this regard, a study is being conducted to determine among others, the various options to be adopted by Ghana to license private sector operators to provide telecommunication services. The preparation of conditions, appropriate contracts and the fixing of appropriate fees/tariffs to be charged, all have to be determined. The Government is also desirous of availing itself of the various build, operate and transfer (BOT) schemes to be used as a development tool for the expansion of the country's telecommunication infrastructure.

For our strategy of private sector participation to succeed, it is necessary that we ensure effective network inter-connectivity among the various private operators. This can best be achieved by the operators signing inter-connection agreements with our national telecommunications company. This will ensure that a homogenous national telephone numbering system can be achieved. It will also ensure overall efficiency of telecommunication services in the country. With regard to international traffic from private operation, the policy for the time being is that all of them would pass through the post and telecommunication corporation's gateway to facilitate the control and monitoring of the individual traffic from private telecommunication operations.

Although we come from diverse telecommunications technological backgrounds, I suppose that we all share a common interest and objective of improving our telecommunications facilities and services. I therefore hope this Conference will provide the forum to share experiences on how new technologies can be applied for the benefit of not only my country Ghana but for the benefit of all others in a similar situation as us. Like telecommunication itself there is a need for interconnection among all countries of the world - developed and developing.

Mr. Chairman, Distinguished Delegates, Ladies and Gentlemen, I thank you for your attention.

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

BUENOS AIRES 1994

Document 103-E

STET (Italy)

LONG-HAUL AND INTERNATIONAL NETWORK MANAGEMENT SYSTEM

Study Proposal for the establishment of Integrated Long-haul and International Telecommunication Network Management Systems

Executive Summary

(Rome, March 1994)

1 Background

The need for efficient and modern technical and operative structures to manage the Telecommunication Network is of utmost importance in fast-growing countries.

One of the key priorities in the development and cooperation plans is the implementation of an International Telecommunication Network infrastructure to assure more efficient services.

Moreover, the establishment of proper management and organizational structures is deemed mandatory to achieve the optimal utilization of the available resources.

Therefore, in order to get an actual reference framework, the following areas should be investigated:

network configuration and infrastructures;

traffic relations analysis and forecast;

operating companies management process;

transnational information flow among operating companies.

According to the points listed before, it is imperative to define and design systems able to support, in the best way, the specific needs of the Operating Companies in the management of their own networks.

2 Objectives

The scope of the Proposal is to produce a study for the establishment of Integrated Long-haul and International Telecommunication Network Management System.

In particular, the objective is to design a system able to provide National Operating Companies with basic support in both Domestic long-haul and International network management.

The main goal of the Proposal is to find a solution able to enforce the capability to provide cost-efficiency to the Telecommunication Services and to obtain better resources performance and quality.

This will be achieved defining a **Network Reference Common Model** containing the complete description of the Telecommunication Network, concerning logical network image of links and relations between equipment, circuits and facilities.

The latter will also provide the basic platform common to all Management Systems for present and future needs.

The above will support and improve transnational cooperation among countries' National Operating Companies and other International Networks.

The Network Reference Common Model will also be investigated in order to provide the logical infrastructure to support the Network Management main functions:

Network Configuration Management;

Network Provisioning and work order management;

Network Administration and Management;

Long-term Network Planning;

Network Design.

The model will be developed according to International Standards as ITU-TS, ETSI and TMN Recommendations, allowing interoperability among Network Operators' Systems.

This can be achieved setting up a Working Group to evaluate and define requirements.

The Working Group will produce a Survey, regarding countries' telecommunication needs, in order to provide know-how and tools able to support strengthening of single Nations Operating Companies network management capabilities, taking also into account the experience gained in the Italian Operating Companies.

The main phases of the proposal are:

- to produce a **study** concerning the implementation of the **Network Reference Common Model**.

  *This will be achieved by means of a **survey** to assess the needs and identify the requirements of an Integrated Long-haul Network and International Telecommunication Management System;*

- to perform **Model Test and Validation** by means of an *in-field* test-bed;

- to **transfer technological and managerial know-how** about Integrated Long-haul and International Traffic Network management setting up working groups, with the participation of national operating companies' representatives and specific on-the-job training.

3 Benefits

Economic and social evolution of fast-growing countries calls for the availability of efficient and well-sized telecommunications infrastructures, tools and Services (i.e. Networks, Equipment, Management, Services provider capability, ...).

This Project is expected to produce benefits in both National and International telecommunication Services performance.

National Telecommunication Services Improvement

The project will provide the capability of disposal of an updated and complete model and description of the long-haul network in order to improve Network planning and provisioning.

The Network description, containing the logical network image of links between equipment, circuits and facilities, together with management procedures investigation, will lead to more efficient management processes and cost-effective service offering.

The definition of Network Management Support Systems will provide National operating companies, systems, tools and management procedures able to support the development and future evolutions in domestic long-haul and international traffic needs.

Experience and know-how transfer

This will be performed by means of National representatives' participation to the Working Group covering all the project development phases and activities.

Also the validation and test phase will lead to an high involving environment useful for training on the job of National Operating Companies' personnel.

4 Activities

In order to achieve the objectives the following main activities will be performed:

1) Survey of the existing organizational and technical structures of the Operating Company focused on Long-haul Network and International links.

   (Data gathering and local procedures investigation)

2) Definition of a Network Reference Common Model.

   (Data and procedures)

3) Production of the study, containing:

   Definition of the System requirements,

   Design of the System architecture *(Database, hardware and software)*,

   Definition of the functional specifications to carry out the test-bed for test and data model validation.

4) Testing and model validation.

Moreover, management information and data communication among Operating Companies will be best supported by implementing systems based on Open Systems architectures, multivendor hardware and software and Relational Databases.

The model will lead to a System design that could be easily customized through the development of appropriate modules; the above will be useful in order to satisfy the specific needs and requirements of specific Operating Companies.

Furthermore, the Network Reference Common Model could be further extended by incorporating additional functions/modules for:

Network Modelling and Control;

Network Maintenance;

Performance Monitoring;

Network Protection;

Traffic Monitoring and Analysis (Data and Procedures).

5 Timetable

The duration of the project will be: **12 months.**

The estimated time plan is the following:

		MONTHS											
	ACTIVITY	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	Survey												
2	Network Reference Model												
3	Study												
4	Testing and Model validation												

6 Final remarks

STET's know-how gained in Italian and Argentinian Operating Companies assures that this proposal is capable of providing, at low cost, tools and experience necessary to take strategic and technical decisions to plan, design and manage wide Telecommunication Network.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 104-E

Hungary

RESTRUCTURING THE HUNGARIAN TELECOMMUNICATIONS SECTOR: LIBERALIZATION AND PRIVATIZATION

1. INTRODUCTION

The critical situation in the Hungarian communication sector due to the burdensome legacy of the past forty years adversely affects social life and economic development. The main characteristics of the sector can be summarized by low penetration (9 main lines/100 inhabitants in 1990 which improved to 15 in 1993), poor service quality and outdated technology, the lack of mobile communication and unsatisfactory value-added services.

2. INSTITUTIONAL CHANGES

In 1989, as a first step of the structural reform, the regulatory and operational functions were separated and three state-owned service provider companies were formed:

- the Hungarian Telecommunications Co.
- the Hungarian Broadcasting Co. and
- the Hungarian Postal Enterprise.

Later all the three service provider companies were transformed into joint stock companies.

The Ministry of Transport, Communication and Water Management became the regulatory body with two authority bodies: the General Inspectorate for Post and Telecommunications and the Institute of Frequency Management. In 1993 the two inspectorates were merged and the General Inspectorate for Communications (GIC) was formed.

3. THE LEGISLATIVE BACKGROUND

In May 1990 when the government took office following the first democratic elections since 1945, the ministry faced the difficult and crucial task of working out a new legal framework; it promulgated the elaboration of a development project for a partially multiplayer service market in view of the huge amount of capital to be invested in the communication sector.

Other legislative items having an impact on the evolving domestic market, such as the regulation on privatization, concession, taxation, etc., had to be enacted and harmonized with international instruments as Hungary has signed the Association Agreement (the Europe Agreement) with the European Communities and its member states. The Agreement came into force in February 1994.

After a lengthy Parliamentary debate, the former Act on Hungarian Post (1964) was replaced by a package of three separate but coherent Acts on telecommunications and frequency management and the traditional postal service, all three of which entered into force in 1993. Notwithstanding their importance, only the major features of the Telecommunications Act (Act) is summarized briefly, as follows.

First, the Act defines four public telecommunication services which can be provided only under concession contracts (limited competition). The terms and conditions of the contracts are stipulated by the minister who also concludes the concession agreement with the winner of an open international tender.

The concession services are: public switched voice telephony, public mobile radio telephone services, nation-wide paging service and national and regional broadcasting of public radio and television programmes. The switched telephone service is further split into international, domestic and local services. The latter services can be provided in the 54 so-called primary areas so determined by the minister. The primary areas are geographically disjunctive covering the territory of the country. The concession tenders for any given primary area were issued in 1993 provided that a majority of the concerned municipalities so recommended.

All other telecommunication services are subject to competition without restrictions and the licence issued upon request provided that it meets normative conditions which are formulated in relevant decrees in a transparent manner.

Based on the Act, the government and the minister are authorized to issue decrees on certain crucial issues such as pricing, revenue sharing (with regard to local, domestic and international service providers), and interconnection of networks. Many tariff regimes were analysed in depth with the intention to harmonize the conflicting interests. The tariff decision favours a price cup regulation along with the production price index (PPI) instead of the retail price index.

4. MAJOR STEPS TO ATTRACT INVESTMENT

The above legislative framework was a prerequisite for the privatization and concession tender processes. It began in 1993 with the GSM concession tender when it was decided to grant two matching national concessions for mobile radio telephone services (including international roaming) in line with the GSM MoU in the 900 MHz frequency band. The winners -- the Westel 900 (a consortium of US West and HTC) and Pannon GSM consortium (formed by Telecom Denmark Ltd., Swedish Telecom international AB, Telecom of Finland, PTT Telecom Netherlands BV and three Hungarian companies) -- forming joint stock companies and registered under Hungarian law were granted concessions with equivalent conditions for a period of 15 years. They will compete in the Hungarian market, it having been stipulated in the concession contract that the minister will not grant similar concessions to any service provider for a period of ten years.

The second type of concession is for public switched telephone service and, by its nature, is more complex than the GSM. It involves a huge amount of investment to increase the penetration in forced pace and requires the assurance of a moderate return for the investor. To encourage the potential investors, the competition - even a duopoly type - has been excluded for the time being.

A summary of the main points leading to the decision can be summarized as follows. A national concession should be granted for international and domestic long-distance services; the national concession will also include local services in the primary areas where no demand has been indicated by the majority of municipalities (29 of 54), and independent local concession is to be granted in the remaining 25 primary areas. Should any reason render it impossible to grant the local concession following the evaluation of bids, the holder of the national concession is obliged to provide service in the given primary areas as is stipulated in the concession Agreement. In addition, the procedure for awarding the national concession should be undertaken concurrently with the partial privatization of the Hungarian Telecommunications Company (MATAV), the aim being to grant the national concession to the winner of the privatization tender for the minority stake in MATAV.

According to government policy, three main goals had to be pursued simultaneously:

i. raise considerably the capital of MATAV,

ii. sell a minimum of 30 % of the State-held equity to a strategic partner,

iii. conclude a concession contract with the MATAV in order to establish for the company the conditions required for the rapid development of services, especially in (fixed) voice telephony, thereby transforming Hungary into a regional telecommunications hub.

The political and economic stability of Hungary in its transition towards a market economy was appreciated by international financial institutions. In the framework of equity warehousing, a package of preference shares of HTC were issued to the European Bank for Reconstruction and Development as well as to the International Finance Corporation amounting to 9.9 percent of the company's total capital at the time.

The concession and sale tender was attractive to the telecommunication giants as four international consortia consisting of major national concession companies submitted indicative bids.

The Evaluation Committee found that the best offer had been made by a consortium called MagyarCom, consisting of the Deutsche Bundespost Telecom and Ameritech International; in agreement with the State holding company, the minister therefore signed the transaction documents on 22 December 1993. The concession has been granted for 25 years, with an 8-year exclusivity period, i.e. until 2002.

The national concession contract sets out the major development targets and quality of service requirements. The concession holder is obliged annually to increase the number of main lines by a minimum of 15.5 per cent during the first six years of the concession period. From 1997 onwards, the MATAV is required to meet 90 per cent of the demand within six months, while 98 per cent of the demand is to be met in 12 months. Non-compliance with these conditions will be seriously sanctioned. The rapid improvement of quality of service and the transformation of Hungary into an international telecommunications hub are the further main requirements of the concession contract.

The evaluation of the bids for local services in the primary areas was concluded in February 1994 with the following results. Bids were submitted for 23 primary areas; 14 bids were awarded to MATAV-independent companies; in four primary areas MATAV won with a foreign partner, and in the other five areas MATAV made the best offer and won. As far as foreign participation is concerned, American, French, Israeli, Swiss and Dutch companies were amongst the winners. Based on the concession contracts, the projected penetration will be around 35 main lines per 100 inhabitants at turn of the century

As to the last major tender, the minister determined to grant two matching concessions to provide nation-wide paging services, according to the ERMES specifications including international roaming.

It is for the international telecommunications community to appreciate our achievements. Nevertheless, Hungary is convinced that the right direction has been chosen as indicated by the successful - and unique in continental Europe - privatization of the national telecommunication company as well as by the rapid development perspectives of the services in a partially liberalized multiactor telecommunications market.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

BUENOS AIRES 1994

Document 105-E

Central African Republic

ADDRESS BY H.E. MR. JOSEPH VERMOND TCHENDO,
MINISTER OF COMMUNICATION, POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Excellencies,
Mr. Secretary-General of the ITU,
Ladies and Gentlemen,

Allow me to congratulate you, Mr. Chairman, on your election as Chairman of our conference. The practical results of this first World Telecommunication Development Conference will depend largely on your action and that of your office.

Mr. Chairman,

On behalf of my delegation and on my own behalf, I would like to thank the Argentine Government and people for agreeing to host this Conference.

I am very honoured to have this opportunity of talking about the efforts made by my country to develop the Central African telecommunication network.

At the time the Missing Link was published, the telecommunication network in the Central African Republic was in a state of advanced obsolescence. Some of the equipment was already worn beyond the possibility of maintenance, so that most of the installations needed to be renovated.

Over a period of ten years, projects costing altogether 15 billion CFA francs, or 25 million US dollars at the current rate, were carried out.

Despite the investments and despite the restructuring of the the telecommunication sector, the rate of penetration of telecommunication services is very low:

- telephone density of the order of 0.2%, well below the African average;
- average growth rate of main lines less than 5 per cent;
- little access of uban centres to automatic telephone service;
- exclusion of rural areas;
- low proportion of collection of telephone bills owing to economic difficulties.

Straight after his election, as soon as he had set up his government, His Excellency Mr. Ange Félix ATASSE, President of the Republic and Head of State, having noted these shortcomings in telecommunications and convinced that telecommunications are a factor of economic, social and cultural development, an indicator of national progress and a means of social integration, established new priorities, as follows:

- connection of rural areas;
- choice of more suitable technology;
- managerial training and motivation;
- introduction of an appropriate strategy to mobilize financial resources.

By the year 2005, these measures should achieve the following objectives:

- telephone density in towns and urban areas of the order 1.6%;
- one telephone every 12 km or per 65 km^2 in rural areas;
- access by provincial towns and isolated economic centres to new products such as data transmission, facsimile, etc.

Mr. Chairman,

The purpose of this conference is, I quote:

"To alert government policy makers, public and private sector decision-makers as well as user associations and the general public to the critical importance of telecommunication for economic progress, for political, social and cultural life and for regional and global cooperation, so as to ensure that telecommunication gets its rightful priority in development plans.

The outcomes of the conference should include a common vision of the future role of telecommunication translated into global goals and strategies and objectives for the Telecommunication Development Sector, as well as a concrete work programme for the next four-year cycle ... "

Mr. Chairman,

For my country, which is listed as one of the LDCs, the priorities and the resources required involve:

- connecting up rural areas where 70% of the population lives;
- obtaining the best technology for Africa in the area of energy and telecommunication equipment;
- having local industries in Africa to diminish operating costs;
- ensuring quality of service for urban areas;
- mobilizing financial and human resources;
- implementing a global investment strategy;
- local expertise.

The Central African Republic is determined to complete the programme which will be adopted by this conference. Owing to its difficulties, which are due to the circumstances aggravated by the recent devaluation of the CFA franc, it must, however, in order to implement this programme, appeal for the support of the international community, though not hold out its hand like a beggar.

This is why it would like to highlight the special programme for the Least Developed Countries which will be adopted. I believe this programme will be strengthened by concrete actions to be implemented with the help of bilateral, multilateral and international financial institutions, the specialized agencies of the United Nations, such as the International Telecommunication Union (ITU), the United Nations Development Programme (UNDP), and the United Nations Industrial Development Organization (UNIDO).

In conclusion, on behalf of the Central African Government, I should like to thank the General Secretariat of the ITU and the Telecommunication Development Bureau for inviting me to attend this conference,

Thank you very much.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 106-E

Lebanon

ARRANGEMENTS FOR PURSUING THE WORK OF THE SPECIAL AUTONOMOUS GROUPS (GAS) WITHIN THE BDT

I. Introduction

The purpose of this document is to retrace and review the work carried out by the GAS during previous study periods within the CCITT and formulate a proposal for pursuing future GAS activities within the BDT, in accordance with Recommendation No. 50 of the H.L.C. and Resolution No. 7 of the APP (Geneva, 1992).

II. Background

The special autonomous groups were set up at the CCITT Plenary Assembly in 1960, their terms of reference being to develop handbooks for the developing countries at the latter's request.

The handbooks proved to be highly appreciated and widely used by telecommunication officials in both the developed and the developing countries.

The GAS became increasingly successful as time went by and appreciation of their work was invariably expressed by every CCITT Plenary Assembly up to, and including, the last Assembly held in Helsinki in March 1993.

The handbooks were prepared and drafted by a number of volunteer experts from administrations, recognized private operating agencies, scientific and industrial organizations and other international organizations.

While taking due account of all the Union's activities (Recommendations of the CCIs, the IFRB and technical assistance), they covered a wide range of aspects: technical, planning, economic, operational, quality of service, tariffs, finance, administrative and human resources management, etc.

In addition, the validity of the handbooks was illustrated by case studies, on subjects ranging from the implementation of rural, trunk and national networks to that of regional and intercontinental networks.

Seminars were also organized to publicize and promote a better understanding of the handbooks.

During the study period brought to an end by the Helsinki Plenary Assembly in March 1993, the following three GAS completed handbooks, as follows:

1) GAS 7 - Rural telecommunications - chaired by Mr. Rudilosso (Italy).
2) GAS 9 - Economic and technical aspects of the transition from an analogue network to a digital network (global network) - chaired by Mr. M. Ghazal (Lebanon).
3) GAS 12 - Strategy for the introduction of new non-voice telecommunication services - chaired by Mr. J.-B. Pecresse (France).

Thanks to the contributions of several experts, the work of the special autonomous groups has led to the production of handbooks which may be used as a reference by administration officials in charge of the economic and technical aspects of telecommunication networks (e.g. switching, transmission, network, maintenance, power supply, planning, case studies, etc.)

The experts in question are specialists in various technical fields, thereby enabling the GAS to meet the specific requirements of Member countries, and in particular developing ones.

The expertise and experience of the GAS Chairmen and experts are available for the future work to be undertaken under the new BDT structure.

APP Resolution No. 7 (Geneva, 1992), entitled "Immediate Action by the Telecommunication Development Bureau", stipulates, in its preambular paragraph e), that the GAS activities are to be transferred from the CCIR and CCITT to the BDT in accordance with High Level Committee Recommendation 50 and resolves, in operative paragraph 1.4, to instruct the Director of the BDT to undertake a study with the Directors of the two other Bureaux and the senior Chairman responsible for coordinating the activities of the GAS groups (as appointed at the IXth CCITT Plenary Assembly, Melbourne, 1988) on the manner in which the GAS activities will be continued within the BDT and to prepare a report on the subject for consideration by the forthcoming World Telecommunication Development Conference (see Annex 1).

The participants at the World Telecommunication Standardization Conference (WTSC) held at Helsinki in 1993 expressed full appreciation and sincere congratulations for the efforts deployed by the Chairmen of the GAS throughout their existence and unreservedly endorsed the principle of pursuing the GAS work within the BDT (see Annex 2).

Similar endorsement was given at the Regional Development Conferences (Acalpulco, Cairo and Singapore), in particular in AS-RDC/93 Resolution No. 10 which recognizes the importance of the subjects covered in the GAS handbooks for the transfer of technology to the developing countries (preambular paragraph 7) and request the BDT:

1) to review, update and improve the handbooks formerly compiled by the GAS, also taking into account other relevant handbooks prepared by the various CCITT study groups;

2) to continue to develop new handbooks in the area of transfer of technology, in accordance with the decisions of the WTSC (Helsinki, March 1993) and APP Resolution No. 7 (Geneva, December 1992).

III. List of handbooks published by the various GAS

- ❑ **GAS 1** **National telephone networks for the automatic service. Parts A and B,** 1964, **Part C,** 1968, **Part D,** 1978
- ❑ **GAS 2** **Local network planning,** 1979
- ❑ **GAS 3** **General network planning,** 1983
- ❑ **GAS 3** **Economic and technical aspects of the choice of transmission systems,** 1986
- ❑ **GAS 3** **Methods for evaluating new digital interexchange transmission systems as a guide to national network planning,** 1988
- ❑ **GAS 4** **Primary sources of energy for the power supply of remote telecommunication systems,** 1985
- ❑ **GAS 5** **Economic studies at the national level in the field of telecommunications (1973-1976)**
- ❑ **GAS 5/1** **Economic studies at the national level in the field of telecommunications (1977-1980).** Market factors affecting telecommunication demand
- ❑ **GAS 5/2** **Economic studies at the national level in the field of telecommunications (1977-1980).** Methods used in long-term forecasting of domestic telecommunications demand and required resources (overall and by main sector).
- ❑ **GAS 5/3** **Economic studies at the national level in the field of telecommunications (1977-1980).** Conditions required for the establishment of a national industry for the manufacture of telecommunication equipment (especially switching equipment).
- ❑ **GAS 5/4** **Economic studies at the national level in the field of telecommunications (1977-1980).** Special aspects of telecommunications development in isolated and/or underprivileged areas of countries.
- ❑ **GAS 5/5** **Economic studies at the national level in the field of telecommunications (1977-1980).** Procedure for establishing a budget model for a telecommunication undertaking.
- ❑ **GAS 5/6** **Economic studies at the national level in the field of telecommunications (1981-1984).** Study of financial and accounting problems related to the effects of inflation on telecommunications authorities.
- ❑ **GAS 5/7** **Economic studies at the national level in the field of telecommunications (1981-1984).** Study of management information system for telecommunications authorities and appropriate application of the information technology.
- ❑ **GAS 5/8** **Economic studies at the national level in the field of telecommunications (1981-1984).** Optimum allocation and use of scarce resources in order to meet telecommunication needs in urban or rural areas of a country.

- ❑ **GAS 5/9** **Economic studies at the national level in the field of telecommunications (1981-1984).** Determination of the economic impact of new services on telecommunication undertakings.
- ❑ **GAS 5/10** **Economic studies at the national level in the field of telecommunications (1981-1984).** Preliminary assessment of the socio-economic implications of teleprocessing for national economies at different stages of development.
- ❑ **GAS 6** **Handbook on economic and technical aspects of the choice of telephone switching systems,** 1981
- ❑ **GAS 7** **Rural Telecommunications,** 1985
- ❑ **GAS 7** **Rural Telecommunications,** 1988
  - **Vol. I - Case studies on Rural Telecommunications**
  - **Vol. II - Training Handbook on Rural Telecommunications (first part)**
  - **Vol. III - Training Handbook on Rural Telecommunications (second part)**
  - **Vol. IV - Handbook on economics and financing of telecommunications project in developing countries**
  - **Vol. V - Particular topics on rural telecommunications**
- ❑ **GAS 7** **Rural Telecommunications,** 1993
  - **Vol. I - Radio Systems in Rural Areas**
  - **Vol. II - Switching, ISDN, Financial Aspects and Introduction of Optical Fibres in Rural Networks**
  - **Vol. III - Maintenance of Rural Networks**
  - **Vol. IV - Case studies of Rural Countries**
- ❑ **GAS 8** **Manual on the economic and technical impact of implementing a regional satellite network,** 1983
- ❑ **GAS 9** **Case study on an urban network,** 1984
- ❑ **GAS 9** **Economic and technical aspects of the transition from analogue to digital telecommunication networks,** 1992
- ❑ **GAS 9** **Handbook on Case studies on the progressive introduction of ISDN in a national network,** 1992
- ❑ **GAS 9** **Handbook on Case studies on the digitalization of regional networks,** 1992
- ❑ **GAS 9 A** **Case study on the economic and technical aspects of the transition of a complete analogue national network moving to a digital network,** 1988
- ❑ **GAS 9 B** **Case study on the economic and technical aspects of the transition of a mixed (analogue/digital) national network moving to a digital national network,** 1988

- ❑ **GAS 10** **Planning data and forecasting methods,** 1987
  - **Volume I**
  - **Volume II**

  Software programs and manual of GAS 10

  Two formats available:
  - high density (1 diskette)
  - normal density (3 diskettes)
- ❑ **GAS 11** **Strategy for the Introduction of a public data network in developing countries**
- ❑ **GAS 12** **Strategy for the Introduction of a new non-voice telecommunication services in developing countries,** 1993

IV. Proposals for future work

Reference should be made here to the report of the second coordination meeting of GAS Chairmen (Geneva, 6 November 1991) (see Annex 4), which sets out proposals for future work put forward by the final meetings of the special autonomous groups. On the basis of those proposals, it is suggested that work be pursued in the following areas:

1. Rural telecommunications

The work of this group should cover, in particular, power supplies for rural telecommunication systems; choice of different types of network; economic and tariff aspects; human resources; integration of rural networks with national and international networks; and case studies and evaluation seminars at the request of interested countries.

2. Optimum use of existing networks

The work of this group should cover network digitalization; the introduction of new services; intelligent networks; planning; architecture; local, national and international network aspects; human resources management; economic and tariff aspects; administrative management; and network maintenance.

The group's work could be illustrated by case studies and seminars at the request of interested countries.

In addition, a number of handbooks could be updated, improved and upgraded to take account of network digitalization and the introduction of advanced new technologies, either by creating a new group or entrusting the task to the two groups mentioned above.

Conclusion

Having regard to the texts referred to in this report, namely:

a) APP Resolution (Geneva, 1992);
b) report on current and future activities submitted to the WTSC (Helsinki, March 1993);
c) AS-RDC Resolution No. 10 (Singapore, 1993)

we have the honour to put forward the Resolution contained in Annex 5 for adoption.

RESOLUTION 7

Immediate Action by the Telecommunication Development Bureau (BDT)

The Additional Plenipotentiary Conference of the International Telecommunication Union (Geneva, 1992),

having adopted

a new structure for the Union based on the report of the High Level Committee and consisting of a Radiocommunication Sector, a Telecommunication Standardization Sector and a Telecommunication Development Sector,

considering

a) that the future of the Union will depend on the efficiency with which these three Sectors fulfil the duties assigned to them and that active participation by the greatest number of Members in the activities of these Sectors is a condition of their success;

b) that active participation by the developing countries in the activities of the Radiocommunication and Telecommunication Standardization Sectors requires human and financial resources disproportionate with their capabilities;

c) that many attempts were made, with limited success, to increase the participation of developing countries in the activities of the CCIR and of the CCITT;

d) that No. 224 of the Convention adopted assigns to the Director of the BDT the organization, with the assistance of the two other Sectors, of meetings intended to keep developing countries informed of the activities of these Sectors;

e) that the GAS activities were transferred from the CCIR and the CCITT to the BDT in accordance with High Level Committee recommendation 50;

f) that developing countries may provide an input to, and benefit from, the activities of the Radiocommunication and Telecommunication Standardization Sectors through close cooperation of the Bureaux of the three Sectors in organizing regular information meetings and in continuing the activities of the GAS groups,

considering further

that the programme of work of the BDT is to be adopted by the next World Development Conference and that this Conference will probably not be convened until 1994,

resolves to instruct

1. the Director of the BDT:

1.1 to set up in his Bureau, as soon as possible, a unit with the duty to start preparing, in consultation with the two other Bureaux, the details related to the planning and organization of the information meetings referred to in No. 224 of the Convention;

1.2 to search, with the assistance of the Directors of the Bureaux of the Radiocommunication and Telecommunication Standardization Sectors, for appropriate mechanisms to facilitate the involvement of developing countries in the activities of these Sectors;

1.3 to prepare for consideration by the forthcoming world development conference a consolidated programme of activities with respect to paragraphs 1.1 and 1.2 above;

1.4 to undertake a study with the Directors of the two other Bureaux and the senior Chairman responsible for coordinating the activities of the GAS groups (as appointed at the IXth CCITT Plenary Assembly, Melbourne, 1988), on the manner in which the GAS activities will be continued within the BDT and to prepare a report on this subject for consideration by the forthcoming world development conference.

2. the Directors of the Radiocommunication and Telecommunication Standardization Bureaux, in accordance with the provisions of Nos. 183 and 207 of the Convention, to cooperate with the Director of the BDT to provide support in relation to *resolves 1* above.

7. Recent activities of Special Autonomous Groups 7, 9 and 12 (DT/4)

7.1 Activities of GAS 7, 9 and 12

Presentation by Mr. Maurice-Habib Ghazal, Senior Chairman and Coordinator of the GAS, Chairman of GAS 9 (Global network).

The last CCITT Plenary Assembly, held at Melbourne in 1988, set up three Special Autonomous Groups (GAS 7, 9 and 12).

A special autonomous group consists of experts appointed by administrations, operating agencies and industrial or scientific organizations.

Since these persons are experts in various technical fields, the GAS are in a position to respond to the specific requirements of the Member countries, especially the developing countries.

The last CCITT Plenary Assembly set up the following three Special Autonomous Groups:

1) GAS 7 - Rural telecommunications, chaired by Mr. Rudilosso (Italy), who is in fact present at this Conference and will be able to provide a brief account of the activities of the past four years;
2) GAS 9 - Economic and technical aspects of transition from an analogue to a digital network - responsible for studying the case of a global network, chaired by Mr. M. Ghazal;
3) GAS 12 - Strategy for the introduction of new non-voice telecommunication services, chaired by Mr. J.B. Pecresse (France).

GAS 9 has produced two new handbooks, one on the progressive introduction of ISDN in a national network (based on the networks of Lebanon, Cyprus and Iran) and the other concerning regional networks such as EUROTELDEV and METELNET.

The case studies have been carried out in specific developing countries with networks at various stages of development. They have covered a broad range of subjects from market demand, introduction policy, network planning, operation and maintenance to financial and tariff aspects, not forgetting human resources.

GAS 7 has produced four new handbooks, as follows:

i) Radio systems in rural areas
ii) Switching, ISDN, financial aspects and the use of optical fibres in rural networks
iii) Maintenance of rural networks
iv) Rural case studies.

The GAS 12 handbook deals with non-telephone services. It analyses service demand and discusses the technical, economic, legal, socio-economic and commercial aspects together with features relating to operation, maintenance and training associated with the introduction of these new services.

Thanks to the inputs provided by a number of experts, the work of the special autonomous groups has led to the production of handbooks which may be used for reference purposes by administration officials responsible for the economic and technical aspects of telecommunication networks (e.g., switching, transmission, networking, maintenance, power supply, planning, case studies, etc.).

The skills and experience of the Chairman of the specialized autonomous groups and of their experts are available for future work to be undertaken within the new structure of the BDT.

For information purposes, attention may be drawn to the main points which were considered at the last coordination meeting of GAS Chairmen held in November 1991 at Geneva, in the presence of the Secretary-General, Mr. Pekka Tarjanne, the Director of the CCITT, Mr. Theodore Irmer and the representative of the BDT, Mr. Ahmed Laouyane.

The GAS 7 studies should be continued, at least in two important areas: power supply systems for rural telecommunication equipment, in order to take account of the latest technical innovations in this field; and broadcasting (radio and TV) in rural areas, since this is recognized as a stimulus to the development of telecommunications and their penetration in these areas.

GAS 9 intends to complete its terms of reference by studying the implementation of digitization in an intercontinental network.

Furthermore, GAS 9 proposes a new handbook on the construction of operational systems, which we regard as dealing with system architecture, management and maintenance.

Finally, it will be necessary to upgrade several of the handbooks, such as those of GAS 1, 2, 3, 4, 5, 6, 7, 8 and 9, in order to take into account the digitization of the network and the progressive introduction of new technologies and services.

In accordance with the decisions adopted by the Additional Plenipotentiary Conference (Geneva, 1992), future work on these activities has been entrusted to the BDT. (Resolutions PLEN/2 and PLEN/3)

7.2 Discussion

The floor congratulated Mr. Ghazal for the efforts he made during all the GAS activities and strongly supported the continuation of the work within the BDT.

Mr. A.Ph. Djiwatampu, Director of BDT said that he was ready to go on with the activities previously performed by the GAS.

Mr. Ghazal and all contributors to this activity are welcomed in BDT and the Director expects an increased participation of non-administration members.

The activity will be planified according to the programme of future development conferences.

Mr. MBaye drew the attention of the Committee on the need for developing countries to participate in meetings of the TSB and evoked the possibility for the BDT to create adequate resources.

AS-RDC/93 RESOLUTION No. 10

TRANSFER OF TECHNOLOGY

The Regional Telecommunication Development Conference for Asia and the Pacific, Singapore, 10-15 May 1993,

recalling

Chapter 3.2 of the Asia-Pacific Declaration on strategies for accelerating the growth of telecommunications concerning "Promoting transfer of technology", (Singapore Declaration, June 1992);

recognizing

1. that many countries would benefit from technology transfers in a wide range of fields, from basic telecommunication technology to new technology, such as the maintenance and operation of telecommunication networks, network management, ISDN technology and optical fiber technology;

2. that technology transfer in order to be effective must first be carefully assessed for its suitability with the existing telecommunication infrastructure;

3. that joint ventures can be effective means of transfer of technology;

4. that transfer of management know-how and tools is an essential part of transfer of technology;

5. that seminars and training conducted by various countries as well as by international and regional organizations have contributed to the transfer of technology, and hence to the development of telecommunication networks in the region;

6. that technology transfer among developing countries can be promoted further in addition to the transfer of technology from developed countries or through international organizations;

7. that the handbooks compiled by the GAS (Special Autonomous Groups) and APT have been an effective way of providing guidelines to transfer technology to developing countries;

8. that purchasing new equipment offers opportunities to include the transfer of the manufacturer's know-how in equipment procurement contracts;

9. that the providers of telecommunication equipment and services are important partners in ensuring the flow of technology to developing countries and that they are available to enter freely into such arrangements,

resolves

1. that developed countries consider transferring to developing countries, on a voluntary and/or a sound commercial basis, the necessary technology in the field of telecommunications, not only conventional technology but also new technologies and services;

2. that developing countries should cooperate with other developing countries by exchanging experts, organizing seminars and meetings, networking of telecommunication research institutions by means of e-mail, teleconferencing and computer conferencing facilities, etc.;

3. that recipient countries should systematically and fully utilize technology transfers in their countries,

requests the BDT, in cooperation with the APT and other concerned international, regional and subregional organizations

1. to continue to hold seminars or training in the field of telecommunications to raise the technological level in developing countries;

2. to promote the exchange of information among international organizations, donor countries and recipient countries on the transfer of technology, inter alia, by assisting them to set up cooperative networks between telecommunication research institutes in developing as well as developed countries;

3. to coordinate the submission of regional and subregional project proposals in this field and the mobilization of resources for these through the Asia-Pacific Coordination Mechanism described in AS-RDC/93 Resolutions Nos. 1 and 15,

further requests the BDT

1. to review, up-date and improve the handbooks formerly compiled by the GAS, also taking into account other relevant handbooks prepared by the various CCITT Study Groups;

2. to continue to develop new handbooks in the area of transfer of technology, in accordance with the decisions of the WTSC, Helsinki, March 1993, and with Resolution PLEN/3 (APP, Geneva, December 1992);

3. to ensure that these handbooks are disseminated to developing countries and that users are properly initiated in their use,

invites

1. countries in the Asia-Pacific region as well as international and regional organizations to attend the meeting on transfer of technology organized by APT in Bangkok 5-7 August 1993;

2. providers of telecommunication equipment and services to make available to their customers in developing countries the relevant new technologies and know-how on a voluntary basis and/or in accordance with sound commercial principles,

appeals to international organizations and donor countries

to assist the developing countries in the Asia-Pacific region in exploring ways and means of improving transfer of technology, including technical and financial assistance.

ANNEX 4

20/GAS9/FB

SOURCE: CCITT SECRETARIAT

TITLE: REPORT OF THE SECOND COORDINATION MEETING OF GAS CHAIRMEN (Geneva, 6 November 1991)

CONTENTS

1. General
2. Report on the work of GAS 7
3. Report on the work of GAS 9
4. Report on the work of GAS 12
5. The BDT and the GAS
6. Future work

1. General

1.1 The coordination meeting of the GAS Chairmen, convened by CCITT letter of 23 July 1991, took place at Geneva on 6 November 1991, under the chairmanship of Mr. M.H. Ghazal (Lebanon), Coordinator of GAS activities and Chairman of GAS 9.

1.2 Opening the meeting, Mr. Ghazal stressed the importance of the work accomplished by the special autonomous groups during the study period, as well as the results achieved during previous periods.

1.3 The Secretary-General of ITU, Mr. P. Tarjanne, welcomed participants and highlighted the results of the work of the High Level Committee (see Annex 1).

1.4 The Director of the CCITT, Mr. Th. Irmer, confirmed the CCITT's backing for the work of the special autonomous groups and assured them of the Secretariat's support in what was a transitional period.

1.5 The agenda set out in the letter convening the meeting was adopted.

2. Report on the work of GAS 7

2.1 Mr. C. Rudilosso (Italy), Chairman of GAS 7, described the work accomplished by GAS 7 over the various study periods.

2.2 Annex 2 gives a list of the handbooks published during the 1985-1988 period. Annex 3 lists GAS 7 seminars on rural telecommunications held during the same period.

2.3 Annex 4 indicates the dates and venues of GAS 7 meetings during that period.

2.4 A seminar on rural telecommunications had taken place at Athens (21-25 May 1990), devoted in particular to the training of participants from the Mediterranean basin (see Annex 5).

2.5 A list of working groups set up during the study period is given in Annex 6.

2.6 Annex 7 provides a list of handbooks prepared during the current study period.

2.7 A proposal for future work is formulated in section 6 of this report.

3. Report on the work of GAS 9

3.1 Special Autonomous Group 9 (Case study for a global network) had first been set up at the Plenary Assembly held at Geneva in 1980.

3.2 During the 1980-1984 study period, GAS 9 had drafted the following handbooks:

a) Economic and technical aspects of the transition from analogue to digital telecommunication networks, 1984.

b) Case study on a rural network, 1982.

c) Case study on an urban network, 1984.

3.3 During the 1985-1988 study period, GAS 9 had carried out case studies on the following types of national network:

3.3.1 a complete analogue national network moving to a digital network, 1988

3.3.2 a mixed (analogue/digital or analogue with digital exchanges) national network moving to a digital network, 1988.

3.4 The IXth Plenary Assembly had instructed GAS 9 to undertake the following studies:

1. make the case studies more comprehensive and complement them by new studies on the progressive introduction of the ISDN into part or the whole of a national network
2. implement a case study considering parameters and steps to be taken in the transition from analogue to digital networks for regional networking, using the necessary data collected by the Secretariat of the ITU.

The studies were to take into account, from a practical standpoint, planning, maintenance, management (technical and commercial operation), financial and tariff aspects as well as staff training.

3.5 In order to comply with those terms of reference, GAS 9 has established two working parties, as follows:

3.5.1 Working Party 1 (Progressive introduction of ISDN in a national network), chaired by Mr. M. Hoshi (NTT, Japan).

3.5.2 Working Party 2 (Regional networks), chaired by Mr. P.D. Lansard (France).

The various reviews conducted during the study period are summarized in the table below:

GROUPS	REPORTS	MEETINGS
GAS 9	R1	Geneva, 16-20 October 1989
WP 1	R2	Geneva, 24 January - 2 February 1990
WP 2	R3	Geneva, 24 January - 2 February 1990
WP 1	R4	Geneva, 5-9 June 1990
WP 2	R5	Geneva, 5-8 June 1990
GAS 9	R6	Geneva, 17-21 September 1990
WP 1 and WP 2	R7	Geneva, 16-18 January 1991
WP 1 and WP 2	R8	Geneva 22-26 April 1991

The final meeting of GAS 9 had just began in Geneva.

3.6 Working Party 1 would be completing its studies at that meeting and the handbook describing the progressive introduction of ISDN into a national network, edited by Working Party 3 (Editorial, chaired by Mr. J.B. Bobsin, ATT, United States), was to be published very shortly in three languages (English, French, Spanish).

3.7 With respect to the work of Working Party 2, all of the chapters of the EUROTELDEV case were almost ready, whereas the METELNET case, although well advanced, would require at least two meetings to complete.

3.8 It was hoped that as from 1992, either within the CCITT or the BDT, resources would be provided to enable the GAS to complete the work of Working Party 2, which was of vital importance for both the developed and the developing countries, who needed to be associated with the work in question.

3.9 For future work, see section 6 of this report.

4. Report on the work of GAS 12

4.1 Mr. J.B. Pecresse (France), Chairman of GAS 12 during the present study period (see Annex 8), highlighted the work of GAS 12, which had given an insight into the experience gained by some administrations in introducing new services.

4.2 Future work is discussed in section 6 of this report.

5. The BDT and the GAS

Mr. A. Laouyane (BDT) reviewed the relationship between BDT and the GAS as follows:

The history of the GAS is inextricably linked with that of ITU Technical Cooperation, as the means by which the Union has sought to ensure that the developing countries participate in and contribute to CCITT studies.

The results achieved by the various GAS are undeniably positive, and, on the whole, the handbooks they have produced are appreciated by users, including in some industralized countries. It would have been extremely instructive to carry out an opinion survey in order to highlight more clearly both the positive

aspects and the shortcomings of the GAS. For there are indeed certain shortcomings which we should not overlook:

1) limited interest shown by the industrialized countries, thereby making it difficult to secure the services of experts;
2) difficulties preventing the participation of experts from the developing countries;
3) provision of handbooks and training in their use;
4) utility limited to a short time, owing to rapid technological development.

In order to overcome some of these shortcomings, the idea was raised at one stage of calling upon specialists from the TCD's Group of Engineers. For instance, TCD specialists have contributed to the work of GAS 9, focusing inter alia on the preparation of volumes A and B relating to demand forecasting and network planning, on the basis of work accomplished in Thailand and Senegal.

One specialist has also provided assistance over the last 3-4 years as rapporteur of GAS 10, dealing with traffic demand and forecasting, and in the establishment of a database called BASITU, with the help of France Telecom.

Within GAS 12, the specialist has contributed to work on demand forecasting and market studies (Greenland).

TCD (BDT) experts also derived benefit from their participation, which served to enhance their skills and thereby the performance of their regular work (advice and technical assistance to the developing countries).

Nevertheless, this participation by the Group of Engineers has been on a fairly small scale, and the problem still remains to be solved.

The H.L.C., when studying the distribution of tasks between the three Sectors (Radiocommunication, Standardization, Development) concluded that the world development conferences should be able to set up study groups/working groups to replace the GAS. These would study questions of highest interest to the developing countries. They should be limited in number, in accordance with availability of resources, should have specific terms of reference and should be created for a limited period of time, along the lines of technical cooperation projects.

The study groups/working groups would be coordinated by the BDT, with assistance from the Radiocommunication and Standardization Sectors. Participants would include representatives of:

- member countries;
- RPOA;
- SIO;
- financial institutions;
- development organizations;

The H.L.C. discussed several examples of study topics, including:

- development policy and financing;
- network planning;
- operations and new services;
- development conference preparation and implementation.

The output of such groups could take the form of reports, handbooks, manuals and model policies.

It now remains to consider in more detail the budgetary aspects so as to overcome the identified shortcomings (items 1 to 4 above).

6. Future work

Mr. Ghazal confirmed the support of the GAS Chairmen for future work to be undertaken under the new structure of the BDT. In particular, the following items were highlighted:

6.1 GAS 7 studies should continue in the field of:

- power supplies for rural telecommunication systems (in order to take into account the latest technological innovations in this field);
- rural broadcasting (since it is recognized that broadcasting is a factor for telecommunication development and penetration in rural areas).

6.2 For future work, GAS 9 intends to fulfil its terms of reference by studying the case of digitization of an intercontinental network.

In addition, for our future work we propose the drafting of a handbook on "Building operations systems", which would be of crucial importance for all ITU Member countries. The handbook would consider architectural aspects of operationt and maintenance of systems, such as:

- interfaces to be provided by the operating and maintenance systems;
- relationships between different operating and maintenance systems;
- common basis for operating and maintenance systems;
- data and data bank for operation and maintenance;
- structure and centres for centralized operation and maintenance.

6.3 Finally, the Chairman of GAS 9 proposed that several handbooks be updated, improved and upgraded to take account of the digitization of telecommunication works and new advanced technologies.

Address by the Secretary-General of ITU to the Coordination Meeting of GAS Chairmen

Mr. Chairman
Mr. Director of the CCITT
My dear colleagues

On the occasion of this final coordination meeting which will be confirming the completion of your studies on schedule, I should like first of all to congratulate you and thank you most sincerely for all the efforts you have deployed, in particular over the last two years, in carrying out the work of GAS 7, 12 and 9.

My particular thanks go to the experts and their respective administrations who have been kind enough to make a generous contribution to this important task, thereby sharing their expertise with their colleagues, in particular those from the developing countries, in a spirit of genuine international technical cooperation.

The fact that successive Plenary Assemblies maintained the special autonomous groups in itself shows how much the developing countries appreciate the information provided in the handbooks which are issued on such important subjects as the economic aspects of the choice of transmission or switching system; the transition from analogue to digital; primary sources of energy; economic problems associated with telecommunication development; rural telecommunications; the economic and technical impact of regional satellite telecommunications, the gradual introduction of ISDN in national networks; and so on.

Nevertheless, experience shows that considerable efforts still need to be made to secure greater active participation of developing country specialists in the work of the GAS, from the point of view of choosing topics for study and using the development tools which the GAS handbooks constitute.

It is for this reason that the High Level Committee found it quite appropriate, with the obvious aim of distributing responsibilities more effectively among the ITU functional sectors and making optimum use of resources, to transfer the organization of GAS activities to the BDT, which, as you know, is responsible for organizing regional and world development conferences, where the activities of the regional and world plan committees will now be incorporated.

I hope that this transfer will be carried out with an eye on continuity and with the support and collaboration of the Standardization Sector.

Accordingly, I see today's meeting not as a final meeting but rather as a preparatory meeting for a new GAS era within the Union's new structure.

I should not like to conclude my address without paying a sincere tribute to the Chairmen of the Special Autonomous Groups, and in particular our colleague and friend Mr. Maurice GHAZAL, for the dynamic role he has played in this area for over a decade, despite the particularly difficult circumstances in which he has to discharge his national and international duties.

ANNEX 5

Draft Resolution WTDC/...

Continuation of the work of the Special Autonomous Groups (GAS)

The World Telecommunication Development Conference (Buenos Aires, 1994)

noting

a) Resolution 7 of the Additional Plenipotentiary Conference which stipulates "that the GAS activities were transferred from the CCIR and the CCITT to the BDT in accordance with High Level Committee Recommendation 50";

b) the need for the Union to continue ensuring the transfer of telecommunication technology and know-how to the developing countries,

recognizing

a) that, for the developing countries, problems relating to planning, improvement of networks, quality of service, management, operation and maintenance can only be solved with the input of knowledge and expertise from the international community;

b) that rapid technological development and structural and regulatory changes in the telecommunication sector exacerbate the problems encountered by the developing countries in the technical and management fields;

c) that the handbooks produced by the GAS have helped to disseminate knowledge in the technical, economic and management fields in telecommunications,

resolves

a) that GAS activities shall be pursued as a complement to and in close liaison with the work of the development study groups as part of the Development Sector's regular activities;

b) that the terms of reference and work programmes of the GAS should be drawn up by the BDT in consultation with the other ITU sectors;

c) that the necessary resources for this work should be allocated in the Union budget,

invites

the Member administrations of the Union and the members of the Development Sector to make available, for GAS activities, specialists in the various fields under study, at no cost to the ITU,

appeals to

- the Members of the Union
- the private sector
- development banks
- UNDP
- international and regional telecommunication organizations
- intergovernmental telecommunication organizations

to participate actively in and support GAS activities in favour of the developing countries.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 107-E

CITEL

ADDRESS BY MR. ROBERTO BLOIS MONTES DE SOUZA,
EXECUTIVE SECRETARY
OF THE INTER-AMERICAN TELECOMMUNICATIONS CONFERENCE

Ambassador João Clemente Baena Soares, Secretary-General of the Organization of American States, has asked me to transmit his best wishes to you, Dr. Pekka Tarjanne, to Mr. Oscar Gonzalez and his colleagues, who took on the great responsibility of organizing the first World Telecommunication Development Conference of the International Telecommunication Union, as well as to all those attending this meeting, together with his apologies for not being able to attend so important an event owing to a conflicting commitment.

There is no need to dwell on the importance of telecommunications in the world today, nor to expound on our conviction that the growth and modernization of telecommunications is a prerequisite for the social, economic and cultural development of nations. It was with this in mind that the General Assembly of the Organization of American States agreed, in Resolution 1224 adopted at its 9th Plenary meeting on 11 June 1993, to convert CITEL from a specialized conference into a technically autonomous entity within the Organization. In other words, the General Assembly, recognizing the great importance of telecommunications for the region, upgraded CITEL from a body meeting every four years to a permanent specialized commission of the OAS.

This transformation entails a number of basic changes ranging from the administrative autonomy and independence of the new organization in facing the new challenges of the future to a new conception of the factors involved in the process, including due recognition of the private sector, which will have to participate actively in the work of the permanent consultative committees of CITEL.

For the specific purpose of providing for the private sector's participation in its work, Article 24 of CITEL's statutes stipulates that recognized operating entities and scientific or industrial organizations may become "associate members" of a permanent consultative committee, subject to the approval of the Member State concerned.

It is important to recall that the Acapulco Declaration, adopted by the American Regional Telecommunication Development Conference, listed a number of goals to be attained by the countries and organizations concerned within the region.

CITEL contributed decisively to the achievement of those goals by providing, on several occasions, a forum for the discussion of the subjects in question.

Particularly worthy of mention are the efforts made with regard to national telecommunication policies and training of human resources, the results of which can be found in the "Blue Book" and the "White Book" respectively, drawn up jointly by the ITU, AHCIET and CITEL.

A number of working groups will be set up exclusively for the study of some of the more important issues, such as the development of rural telecommunications, the modernization of regional telecommunications and the integration of telecommunication networks. Mindful of the need to assess the impact of development on the efficiency of telecommunications in the American region CITEL, at its first Assembly held in February of this year in Montevideo, decided to establish a Working Group to ensure the strict follow-up of the action plan to be elaborated by this Conference.

Finally, I should like to join the Secretary-General in expressing the hope that the efforts made at this first World Telecommunication Development Conference will be crowned with success and that all of the expectations of the various countries with respect to this meeting will be fulfilled.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 108-E

Worldspace Corporation (United States of America)

SATELLITE RADIO BROADCASTING FOR THE DEVELOPING WORLD

Remarks by Mr. Noah Samara, Chairman and CEO

Thank you for the opportunity to present a novel concept our Company Worldspace is introducing for the developing world.

This concept, known within ITU circles as Satellite Sound Broadcasting, involves the delivery of radio broadcast services directly to listeners via a new generation of radios called Starman which Worldspace is in the process of developing with its industrial partners.

In the next three years Worldspace will invest over 500 million dollars to implement satellite radio for the developing world.

The market

Worldspace believes there is a market of over 3.5 billion people that are presently dissatisfied with the poor sound quality of shortwave or the coverage limitations of AM and FM terrestrial broadcast systems. Indeed, in areas such as most of sub-Saharan Africa, over 30% of the continent is presently not covered by any indigenous radio service. Lack or poor coverage of radio is not unique to Africa; one finds the same problem in other parts of the developing world.

Implementation

Worldspace will solve this market problem by introducing a new generation of satellites operating in the L-band frequency specifically allocated for satellite radio at WARC 92.

A necessary component of this new service will also be a new generation of low-cost radios. These radios will be developed initially by industrial concerns such as Motorola and mass produced by manufacturers in the developing worlds. Worldspace has registered the name Starman as the trade name for this new generation of radios.

Why via satellite

As all the distinguished participants of this conference very well know, satellites will offer a great advantage over terrestrial radio systems. Particularly because of the digital modulation used in the satellite radio service, the sound quality will be clean, clear and crisp; because the satellite is geostationary it will offer a much better line of sight and better coverage than terrestrial systems; because satellites will use the energies of the sun, the service will be much less costly; and, finally, because the service will use satellites it will deliver hundreds of new channels to the congested shortwave frequency bands.

The "Starman" technology

Worldspace's Satellite Radio Technology is fairly straightforward and can be explained simply: a radio broadcaster such as the voice of Zimbabwe or that of Papua New Guinea will be able to uplink its programs directly from its studio to the satellite; the satellite, which uses the power of the sun, will concentrate the received signals into narrow beams that are then received by the Starman radios. Special digital chips in the radios will demodulate the signal and expand the sound into its original form.

How it works

Worldspace will launch four satellites - 3 will be operational and 1 will serve as an in-orbit spare. These satellites will be launched in the next three years to cover the nations of the world for which this conference was convened. They will deliver essential, good quality radio programs carrying educational, informational and entertainment materials to the developing nations of the world. The Company anticipates a mix of programming to come from national, international, specialized broadcasters such as UN Radio as well as commercial or private sector broadcasters. Each broadcaster will be able to uplink directly from its own studios for a fraction of the cost of what broadcasters now pay to reach their target.

Worldspace coverage area

The three Worldspace satellites will cover Africa and Middle East, Asia, the Caribbean and Latin America. Each satellite will have three beams - and each beam will deliver 24 high quality channels. Each channel will cover a four million square mile area with high quality digital sound.

Thus in addition to national broadcasters which will now be able to uplink to the satellite and cover their entire territory with good quality radio, this technology will also enable important programming to reach the 3.5 billion people present in the Worldspace coverage area.

Specifically, organizations such as UNESCO and the World Health Organization can now deliver cultural and educational programs as well as important health advisories much more efficiently to hundreds of millions of people than is presently possible; the FAO can deliver multi-lingual advice on agriculture and animal husbandry directly to millions of farmers worldwide; universities can offer a University of the Air, High School Radio and other vocational types of education to millions of potential students which presently cannot be accommodated due to limitations of space at national levels.

I will not here belabor the various applications and implications of the service but will only stress that the service will be able to deliver all of what radio has traditionally provided - information, education, entertainment - plus very much more. While the socio-cultural and economic implications of the service might be difficult to quantity at this stage, one can be certain that a well-informed society is a pre-requisite to not only economic development, but economic take-off as well. Information is also the bedrock of positive change, both political and social.

Quality

Briefly I wanted to stress that each channel will cover a large swath of area (of over 4 million square miles) with high quality digital sound. The service will be reliable and much easier to use than shortwave radio.

Lower costs

Most importantly, the service will be much cheaper to use than terrestrial systems because it eliminates the three most costly aspects of terrestrial radio - power costs, maintenance costs and construction costs.

Satellite radio will enable broadcasters to cover their audience at a fraction of the cost of what they spend today. Of course the cost-benefit analysis is greater for information providers who presently use other means - including print and human field agents - to communicate their information to their audience. But the greatest beneficiaries of all will be the 3.5 billion listeners around the world who will now be able to access a lot more information, education and entertainment than was previously possible with existing broadcast systems.

Radios

A few words on the radios. Starman radios will literally cost *tens of dollars* to make and sell when the service is initially introduced. These prices are expected to go down quickly.

Equally important, particularly for rural applications, each radio will be solar power equipped to overcome the challenge of accessing electrical and battery supplies in the developing world.

Finally, the radios will also be able to receive data directly from the satellite, enhancing educational programming. Indeed, each radio will have an RS-232 port attached to it. This is the basic interface to computers, printers and fax machines. A given Starman radio can thus be attached to a printer to print out information or educational material which was used during a given broadcast or might need to be reviewed before the next broadcast. This capability will have many implications particularly for distance education such as high-school and correspondence universities of the air.

Radio distribution plan

The Company is planning to work with organizations like Motorola to simplify all the technologies needed to decode satellite radio signals into a single ASIC Chip. These chips can then be mass produced and easily slipped into multi-band radios built under various brand names all over the world today. The chips can also be integrated into stand-alone satellite radios. More importantly, however, these chips can easily be used to mass manufacture radios at local levels in the developing world. Given the fact that there are 2 billion radios worldwide today, such indigenous manufacturing will have staggering economic consequences for nations which decide to get into this industry for either national consumption or for export purposes.

Consumers worldwide, but particularly in the developing world, will be interested in the Starman radio because it will deliver to them dozens of high quality entertainment, educational and informational programming. Its ancillary data receiving capabilities will allow the Starman radio to be more than just a radio for a large segment of this under-served region of the world. In some respects, Starman radios will be universal receptors of information.

Concluding remarks

Some day, when the objectives of the original Arusha Declaration and Maitland Report that gave birth to this, our conference today, will become a reality; some day, when every tens of people have at least one phone to share; some day, when Starman Chipsets are integral to these phones as part and parcel of the future telecommunications network architecture, it will be easier on that day to more quickly bring the developing world into the multi-media revolution now knocking at the doors of our industry. Those many highways and byways, those information superhighways require, indeed presume, the universal existence of connectivity, at the very least, via radio. This technology will provide the first step in that direction, even if only in part.

There are also other multiplier effects of this technology that are of immediate interest to our own decade, the last decade, we hope for our many years of solitude. By bringing critical information *about* our world, *to* our world, *from* our world, this service will go a long way in creating more common frames of reference for the peoples of the world. And by letting the developing world hear itself speak and sing this service might edge us closer to cultural, economic and social integration at regional and ultimately global levels.

I recall a time, not very long ago, when NASA's shuttles had taken, I think, the only astronaut from the developing world. Upon his return, Prince Sultan Bin-Salman Al Saud was asked to recount his experience. He said:

> "The first day or so we all pointed to our countries. The third or fourth day we were pointing to our continents. By the fifth day, however, we were aware of only one earth."

Space, through distance, engenders perspective and harmony. It is our vision that the information, education and entertainment that will come down from these satellites will improve the quality of life and promote both peace and understanding among the peoples of the world.

Thank you for your kind attention.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 109-E

Malta

SPEECH BY THE HON. DR. FRANCIS ZAMMIT DIMECH,
MINISTER FOR TRANSPORT AND COMMUNICATIONS

Mr. President,
Mr. Secretary-General,
Dear Colleagues,
Distinguished Delegates,

If we were to take full responsibility for the effects of United States President Woodrow Wilson's declaration, made over 75 years ago, that "access to basic telecommunications services is a fundamental human right" then many of us would have to admit to having unknowingly, at one time or another, denied most, some or a few of our people of this fundamental human right!

With the International Telecommunication Union as our collective conscience however, the 1984 report of the Independent Commission for World Wide Telecommunications Development, which Dr. Pekka Tarjanne last January, at the 16th Annual Pacific Telecommunications Conference renamed as the "Maitland Report" in honour of Sir Donald Maitland, Chairman of the Commission, gave us the basic tools with which to provide such access. Above all, it made governments and development agencies very conscious of their responsibilities to give high priority to investment in telecommunications and pushed the ITU deeper into its role as catalyst to a viably accelerated change.

In Malta, the Government took the Maitland Report to heart and we were fortunate in finding the ITU giving steady and solid support to our dreams of regaining a central role by converting our island into a hub for transport, communications, as an international business activity, and as a centre for telecommunications studies.

The ITU Master Plan for Maltese Telecommunications fleshed out the bones of these dreams. Through very capable human resources, and with Government providing the capital and political will, these dreams turned into reality. By 1990, the first phase of the Plan was completed and two years later, implementation of the second phase led to the country's full digitization.

This state-of-the-art infrastructure is capable of handling the needs of Malta's telecommunications - developed economy of burgeoning international finance and trading, important sources of revenue and employment providing a qualitative change in the nature of the services sector of the economy.

By the early 90s, as a result of the Nice Plenipotentiary Conference of 1989, the rapid technology and socio-economic developments brought about a radical change in the environment of the telecommunications sector. Green Papers were prepared by the European and African regions. Parallel initiatives were taken in the Americas and the Asia/Pacific region.

In fact the five ITU-sponsored Regional Development Conferences held between 1990 and 1993 identified their real needs and formulated important recommendations. Malta responded to this change in environment by:

- liberalizing subscribers' terminal equipment;
- granting licences to private operators for the mobile cellular telephony, cable television and paging;
- drafting legislation for the setting up of an independent regulatory body eventually leading to the shedding of Telemalta's monopoly;
- establishing a cost-based tariff structure which reduced cross subsidization of services;
- establishing working relationships with various countries;
- contributing through the ITU towards telecommunications development in other countries.

Malta's future activities are incorporated in its Business Plan for the period up to 1996 covering major projects including a Malta-Italy high capacity submarine optic fibre cable, a satellite standard A earth station and a new international telephone exchange which will integrate signalling Number Seven to serve as a 'platform' for the eventual introduction of new and advanced services. The latest development in transmission technology (SDH) will also be introduced. Beyond 1996, Malta is planning to introduce more advanced facilities enhancing convergence of multi-media services.

The future

With the two documents from the World Telecommunication Advisory Committee and the Telecommunication Development Advisory Board "Visions of the Future" and "Partners in Development" ITU's strategies have been well laid emphasizing the establishing of "sustainable development" not only within the telecommunications sector but also within sectors to which telecommunications is a catalytic factor.

Technological change is a cause and consequence of social development which fostered rapid penetration and spread wide use of services. One of the latest technological developments is the Pan-European Digital Network of Integrated Services (Eurie 93) or the Information Superhighway of Europe which has already penetrated seventeen European countries while similar information highways are being established in the United States making possible synergic benefits through mutual cooperation between these regions. Malta is following closely these developments in order to link into the network at the appropriate time.

This World Conference will be approving a strategic framework to guide the activities of the wider ITU family in the field of development taking due consideration of the rapidly changing environment, limited resources and high customer expectations. The telecommunications sector is expected to continue growing into the future at a fast pace due to the heavy dependence of modern industry upon telecommunication intensive activities, the 'learning curve' effect, technological developments, declining cost and prices and deregulation.

Malta has been invited to contribute to this Conference as a model of the synergic benefits of close partnership between one country and the ITU. The brochure which has been distributed to Heads of Delegations briefly touches upon topics of progressive liberalization, strategic planning and partnership strategy. The liberalization process represents one of Government's plans for an open, competitive and technologically leading economy. This strategic planning is reflected in Malta's Business Plan which includes the setting up of cost and profit centres, new products and services, high emphasis on customer orientation supported by effective management development programmes. The regulatory changes will promote an open market for telecommunications services facilitating conversions, interconnection and network expansion. The long-standing Malta - ITU partnership has always been active and mutually beneficial. In its intention to continue its partnership at a high profile I wish to take this opportunity to announce Malta's invitation to host the next World Telecommunication Development Conference in 1998.

May I assure you that you will all be most welcome to share with us our experiences in the telecommunications sector. It will be a privilege and an honour for us to host such a Conference; a very important meeting point for developing further the future of telecommunications around the world and into the next century.

Thank you.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 110-E

Federal Republic of Nigeria

ADDRESS BY H.E. MR. ALHAJI MOHAMMED ABUBAKAR RIMI, MINISTER OF COMMUNICATIONS

Mr. Chairman,

Let me seize this opportunity to congratulate the organizers of this Conference which, I must confess, is timely, as it is expected to take far-reaching decisions on development strategies and provide guidelines for the telecommunication sector in the form of a global action programme for international cooperation in telecommunication policies, financing strategies, harmonization of networks, introduction of new services,etc.

It is common knowledge that the telecommunication sector has a close correlation with national, economic, social and political development and therefore in efforts to improve the standard of living of their citizens, our governments in the developing countries have been embarking upon extensive long-term investment in basic infrastructure projects. Indeed, most of our countries, after the colonial era, set about their early development programmes with very little attention or emphasis on telecommunications infrastructure as the vehicle of economic growth and development. This realization and the profound changes that have taken place in the political, technological and economic conditions of the world in the last few years have led to a significant growth in telecommunications infrastructures in the developing countries.

Against this background, therefore, the establishment of the BDT by the ITU is a welcome development, together with the subsequent establishment of the WTDC, whose objectives amongst others are:

i) to support the developing countries in order to increase their effective participation in the activities of the different sectors of the Union;

ii) training of human resources in the fields of planning, technical network management and the marketing of goods and services;

iii) implementation of a policy for the industrialization of the developing countries in conjunction with the relevant bilateral and multilateral agencies;

iv) mobilization of the resources necessary for the execution of the foregoing activities, particularly the financing of projects in development plans;

v) strengthening the Union's regional presence through the allocation of adequate resources to regional programmes and harmonization of headquarter activities with those of decentralized structures at the regional and area levels.

These objectives, I must confess, are laudable since they are geared towards bridging the existing gap between developed and developing countries in the telecommunication sector and I am confident that with the momentum gathered so far, these lofty objectives will be realized.

However, efforts in achieving these objectives will no doubt create challenges for developing countries who are preoccupied with the provision of basic telephone services. These challenges are so enormous that an additional one billion telephone lines will have to be added to achieve even half of the telephone density that Europe has today. Thus, while demand is very high, supply is extremely low. This situation contrasts sharply with most of the developed countries, which have high penetration and density of basic telephone services and staggering arrays of value-added network services.

In the case of Nigeria, the telecommunication policies which are fast reducing the world to a close neighbourhood are being fully embraced. Indeed, since 1955 Nigeria has had a telecommunication sector policy which has been reviewed and progressively updated over the years. The main thrust of the policy changes has been the commercialization and modernization of the sector. In 1985, Nigeria separated telecommunications from postal services and set up a separate agency known as Nigerian Telecommunications Limited (NITEL for short) for operating telecommunication services as a fully commercialized entity. The implementation of the commercialization programme in NITEL has made this vital and strategic economic institution more efficient, more effective, profitable and market-oriented to the extent that NITEL revenue targets and achievements for the year 1993, when compared against previous years prior to commercialization, show significant and impressive improvements.

Since December 1993, Nigeria has embarked on another massive expansion and modernization programme through loan facilities from the World Bank, Japanese loan scheme, ITT loan and the African Development Bank loan. In addition, internally generated revenue has been used judiciously for project implementation. Indeed, with a combination of the projects being financed under loan packages and internally generated revenue, the total expansion might yield over one million lines by the year 1997. In fact, the expansion fully integrates the needs of the rural communities in the plan programmes and presently NITEL has procured some rural-oriented systems for installation in local government headquarters and economic rural areas nationwide.

In accordance with the world trends in telecommunications development, Nigeria has embarked on the deregulation of the telecommunications sector through private sector participation in eight main areas of telecommunication service delivery such as: provision of cellular telephones, value-added services, cabling, public payphones, rural communications, installation of terminals or other equipment, etc. Indeed, the enabling law had been passed and the regulatory body called the Nigerian Communications Commission has already taken off since the last quarter of 1993 and is presently functional. The Commission has already issued various licenses to enable private operators and investors to take advantage of the deregulation of the sector.

The deregulation policy, now effectively operational in Nigeria, is an indication that the telecommunication sector is open for healthy competition. I must say that a lot has been done to ensure that the objectives of this policy are realized and the government is willing, more than ever before, to ensure that Nigeria moves forward for the better in the commercialization and privatization of the telecommunications industry.

Mr. Chairman, I decided to give a scenario of the present telecommunication sector in Nigeria in order to ensure the records are put in their proper perspectives. However, I wish to observe that most of the problems affecting the developing countries are also applicable to Nigeria. We still lack a manufacturing capability, there is inadequacy of funds and foreign exchange and, above all, the rapid rate of technological changes has also affected our systems. These problems are countless and well known to us, and as such I do not intend bore you with details.

In order to redress the situation I believe the BDT should be made to play a more vital and critical role. The issue of assistance to the developing nations should not just be in areas of consultancy or studies but in real projects identification and implementation. Indeed, in the case of the United Nations Transport and Communications Decade in Africa (UNTACDA II) programme is a case in point. This programme identified numerous telecommunication projects since the commencement of the decade, but due to lack of financial resources, implementation has been hampered. The objectives of the programme might therefore not be achieved.

I must emphasize that the most critical problem in the development of telecommunications, particularly in the African continent, is the lack of manufacturing base. Consequently, my appeal is that this particular issue should be addressed as it is a springboard of development. Indeed a solution to this problem will alleviate other problems such as inadequacy of foreign exchange, adaptation to technology and, above all, unemployment. The initial strategy might be the setting up equipment assembly in the underdeveloped zone before embarking on programmed equipment manufacturing. For rural communications to be achievable, the developing countries must be self-sufficient in the manufacture of rural telecommunications equipment.

Other areas of concern include manpower training as our skilled human resource base is inadequate. In this regard, it will be highly appreciated if assistance could be granted in training such as the immediate establishment of a telecommunications university or specialized institution in the developing countries. Nigeria presently has 32 universities and 2 specialized telecommunication institutions. These offer immediate possibility for the take off of such an establishment. Nigeria's geographical centrality and easy access by air, land and sea, together with a favourable cost of living, provide additional economic incentives in giving the country positive consideration to host a world telecommunications university.

Mr. Chairman, I am recommending very strongly that this Conference should adopt a special resolution geared towards the financing of research, development and manufacturing of telecommunications equipment and accessories in the less developed countries. The objective of such a fund is to bridge the wide technological gap between the developed and industrialized nations and the less developed nations in telecommunication infrastructures development. I therefore call on the BDT and the ITU to take urgent steps towards establishing a banking institution totally dedicated to financing telecommunications projects and completely devoid of the red tape of conventional banking institutions.

The present situation needs to be fully addressed and, in this regard, I am appealing that efforts should be made to ensure that the BDT is well financed in order to be able to meet its obligations towards the less fortunate countries which are riddled by debts and poverty. This appeal is fervently made to ensure that BDT becomes an active and practical organ relevant to the development needs of the developing nations.

In conclusion, Mr. Chairman, it is necessary to highlight the fact that telecommunications is one of the world's most important and dynamic industries. It has seen spectacular growth and will continue to be in the forefront of development. Thus the challenges and aspirations are numerous but with the collective will of both the developing and developed nations, rapid global improvements will be achieved and this is what we are all aspiring to see. Therefore, I am confident that both the ITU and the BDT will be at the forefront of this aspiration so that the world can become a better place through the provision of enhanced telecommunication services.

Mr. Chairman, Honourable Ministers, Respected Delegates, Distinguished Ladies and Gentlemen, I thank you very much for your kind attention.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 111-E

Federal Republic of Germany

MESSAGE OF DR. PAUL LAUFS, PARLIAMENTARY STATE SECRETARY, FEDERAL MINISTRY OF POSTS AND TELECOMMUNICATIONS

Excellencies,
Ladies and Gentlemen,

Ten years after the publication of the Maitland Commission Report - The Missing Link - the situation of telecommunications in the developing countries is once again the focus of world interest.

Most developing countries - and not just the newly-industrializing ones - are undergoing a period of reorientation in their economic policy in which market forces are being strengthened and the pressure for efficiency is growing. A special challenge is posed for every country by the growing importance of information technology, for it is this that will be one of the main factors determining competitiveness.

In recent times a trend of granting considerably higher status to telecommunications has been observed in the developing countries. Outside the posts and telecommunications administrations too, the realization that a well-functioning communications system is decisive for the economic, political and social development of an emerging country is slowly gaining ground. That is why we are justified in assuming that the countries requesting aid will in future give a more appropriate share to telecommunications than previously and will make applications to the donor community accordingly. Hence vital importance is attached to the basic attitude of the developed world towards development aid in the telecommunications sector.

Previous attempts to combat poverty directly have proved to be unsatisfactory. A market reduction in poverty can only be achieved by the interaction of changed production and social structures.

Development requires a political framework that allows the individual maximum economic and social participation and scope for action and that restrict state action to creating the order this requires.

We have taken account of all this in German development policy. An improvement in the general internal conditions for development in our partner countries is central to our cooperation.

That is why, in the telecommunications sector, we have particularly supported projects for improving rural provisions of telephones. This is where there is a notable shortfall.

For many donor countries, especially those with a significant telecommunications industry, and for international lenders, financing the upgrade of the telecommunications infrastructure is being given high priority.

But more attention will have to be paid to technical cooperation as an accompanying, long-term component or as a forerunner to larger investment projects, since the operation and maintenance of the networks place major technical and operational demands on the entity responsible for the network.

The worldwide need for investment in telecommunications is so great that an improvement in telephone provisioning in the developing countries cannot be brought about by development cooperation only. Well thought-out financing models must be drawn up and applied that ensure the participation of the private sector.

What tasks must the development sector of the ITU take over in the field of telecommunications as the executing agency under the UN development system?

Consultations should concentrate in future on policy for the Sectors and regulation. The right frameworks will be advantageous for the given location, an advantage which will have an impact on the willingness of the private sector and international financing organizations to involve themselves in setting up and upgrading the telecommunications infrastructure in a particular country.

The separation of state, regulatory responsibility on the one hand and entrepreneurial, operational tasks on the other favours the dismantling of bureaucratic obstacles and can stimulate competitiveness and efficiency in the telecommunications sector.

In the reform of telecommunications structures the experience of countries advanced in telecommunications and that of the reforming states undergoing change can help to facilitate the transition to increased competition. The know-how that exists around the world should be exploited to the full.

Another essential element is specific aid in mobilizing the resources required to upgrade the telecommunications networks and for technical cooperation. The ITU can help to bring the relevant parties together, but the ITU itself is not a financing organization.

The "new" ITU has adapted its structure to the needs of the times and has greatly changed the status of development cooperation.

The Telecommunication Development Bureau (BDT) is now an equal sector alongside the Standardization and Radiocommunication. The Telecommunication Development Advisory Board (TDAB) remit is to advise the ITU and its Members in setting priorities in the development sector and encourage participation by the private sector, i.e. the banks, manufacturers and operators.

The five Regional Telecommunication Development Conferences held since 1990 have led to concrete steps towards improving cooperation in individual regions.

I wish this first World Telecommunication Development Conference every success and thank you for your attention.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 112-E
29 March 1994
Original: English

PLENARY MEETING

ITU

REPORT BY THE BUDGET CONTROL COMMITTEE TO THE PLENARY MEETING

During the Conference, the Budget Control Committee held two meetings and considered the various items of its terms of reference.

In accordance with the relevant provisions of the Convention of the International Telecommunication Union (Geneva, 1992), the terms of reference of the Budget Control Committee are "to determine the organization and the facilities available to the delegates, to examine and approve the accounts for expenditure incurred throughout the duration of the Conference and to estimate the costs that may be entailed by the execution of the decisions taken by the Conference".

1. Agreement concluded between the Government of the Argentine Republic and the Secretary-General of the ITU

Pursuant to Resolution No. 83 (amended) of the ITU Council relating to the organization, financing and liquidation of the accounts of ITU conferences and meetings, the Argentine Government and the ITU Secretary-General concluded an agreement concerning the organization and financing of the World Telecommunication Development Conference.

The Budget Control Committee took note of the agreement concluded between the Argentine Government and the Secretary-General of the Union.

2. Organization and facilities available to delegates

The Budget Control Committee reviewed the organization of the Conference and the facilities made available to delegates. The Committee wishes to extend its sincere thanks to the Argentine Government for all the arrangements made to ensure the smooth running of the work of the Conference.

Particular mention should be made of the practical and financial arrangements made by the host Government to meet the increased needs of the first World Telecommunication Development Conference on account of the much greater than expected attendance and the fact that only few ITU staff were detached to Buenos Aires.

Furthermore, the Budget Control Committee was informed that the Argentine Republic had settled the balance of its special arrears account for the period 1987 to 1990, thus helping to improve the Union's financial situation.

3. Budget of the World Telecommunication Development Conference

The Budget Control Committee considered the budget of the Conference, included in the budget of the Telecommunication Development Bureau for 1994, as approved by the Council of the Union at its 1993 session. The budget of the conference is estimated at 2.050.000 Swiss francs comprising 650.000 Swiss francs for direct conference expenses and 1.400.000 Swiss francs for expenses related to the conference (See Annex 1)

4. Situation of the Conference as at 25 March 1994

Pursuant to the relevant provisions of the Convention of the International telecommunication Union (Geneva, 1992), the Budget Control Committee is required to submit a report to the Plenary Meeting showing as accurately as possible the estimated total expenditures of the conference.

Annex 2 to this document gives a statement of actual expenditures of the conference as at 25 March 1994. There is also an estimate of expenditures up to the end of the conference, to be charged to the budget of the Union or to the host Administration.

It emerges for the afore-mentioned statement that direct expenses of the conference to be charged to the ordinary budget amount to 750.000 Swiss Francs, i.e. around 100.000 Swiss francs more than budgeted. This overrun is attributed to staff expenses for an amount of 30.000 Swiss francs and documents production expenses and postage for an estimated amount of 70.000 Swiss francs.

With respect to other expenses related to the conference (Section 3 of this document), the provisional estimate of 1.400.000 Swiss francs would have to be reviewed in the light of post-conference work and the total volume of documentation ultimately processed by the Common Services of the General Secretariat of the Union.

5. Estimate of expenditure for implementation of the Conference's decisions

The Budget Control Committee discussed cost estimates for the implementation of the work programme of the Telecommunication Development Sector for the period 1995/1999 based on the Draft Buenos Aires Action Plan (DT/2(Rev.2)).

The Committee was of the opinion that it was not possible to indicate cost implications of the work programme of the Sector for the period 1995/1999 as no final decision has not yet been taken by the Conference.

6. Contributions of entities or organizations to the work of the Telecommunication Development Sector

The entities or organizations given in Annex 3 to this document contribute to the expenses of the Telecommunication Development Sector as a whole.

According to the 1994 budget approved by the Council, the value of the contributory unit for defraying the expenses of meetings of the Telecommunication Development Sector has been fixed at 63,840 Swiss francs in accordance with Nos. 479 and 480 of the (Convention, (Geneva, 1992).

The list in Annex 3, as at 25 March, shows that there are 47 members (entities or organizations) in the Telecommunication Development Sector contributing a total of 17 contributory units, thus producing income of 1 085 280 Swiss francs for the 1994 ordinary budget of the Union.

The Committee was gratified to note the significant number of new participants in the Telecommunication Development Sector under the new provisions of the Convention (Geneva, 1992). It hoped to see a large number of new members joining the Sector and a substantial increase in the number of contributory units chosen by the new members.

7. Contributions of entities or organizations non members of the Telecommunication Development Sector contributing to the expenses of the Conference

The entities or organizations which are not members of the Telecommunication Development Sector (Annex 4) contribute to the expenses of the World Telecommunication Development Conference in accordance with Nos. 478, 479 and 481 of the Convention (Geneva, 1992).

These contributions, representing a total of 4 units, amount to 22.400 Swiss francs and are considered as miscellaneous income in the ordinary budget.

8. The Plenary Meeting is requested to consider and approve this report, which, together with the observations of the Plenary Meeting, shall then be transmitted to the Secretary-General for submission to the Council at its next session scheduled for May 1994.

U. MOHR
Chairman of the
Budget Control Committee

Annexes: 4

ANNEX 1

	1994 Budget
	Swiss francs
Conference expenditure	
- Staff salaries and related expenses	380.000
- Travel (recruitment)	90.000
- Premises and equipment	180.000
Total Conference expenditure	650.000
Other related Conference expenditure	
- Estimated expenses for pre-Conference activities	300.000
- Estimated expenses for post-Conference activities	150.000
- Fellowships	350.000
- Common services	
Translation, typing, reproduction, dispatch	600.000
Total other related Conference expenditure	1.400.000
Total	2.050.000

ANNEX 2

Estimate of expenditure for the World Telecommunication Development Conference

Recapitulation	Budget value 1/1/93	Adjusted value 1/3/94	Actual expenditure 25/3/94	Committed and estimated expenditure	Total expenditure charged to reg. budget	Total expenditure charged to Host Administration
	- Swiss francs -					
Staff expenses						
Salaries and related expenses	380,000	383,100	-	410,000	410,000	-13,000
Travel (recruitment)	90,000	90,000	-	90,000	90,000	-87,000
Staff provided for the Conference	-	-				-16,000
Sub-total I	470,000	473,100	-	500,000	500,000	-116,000
Premises and equipment						
Premises, furniture, machines	20,000	20,000	-	20,000	20,000	1,537,000
Document production	60,000	60,000	23,800	86,200	110,000	-45,000
Supplies and office expenses	30,000	30,000	9,300	20,700	30,000	-
PTT	40,000	40,000	14,200	45,800	60,000	-
Technical installations	20,000	20,000	-	20,000	20,000	-
Sundry and unforeseen	10,000	10,000	600	9,400	10,000	-
Sub-total II	180,000	180,000	47,900	202,100	250,000	1,492,000
Travel costs away from Geneva						
Per diem	-					524,000
Travel expenses	-					598,000
Travel expenses for fellows	-					100,000
Transport costs for materials and equipment	-					143,000
Local transport costs	-					165,000
Sub-total III	-					1,530,000
Social activities, reception costs	-					369,000
TOTAL	650,000	653,100	47,900	702,100	750,000	3,275,000

ANNEX 3

List of participants in the work of the Telecommunication Development Sector

Position on 25 March 1994

	Number of contributory units
A. Recognized Operating Agencies and Scientific or Industrial Organizations	
Germany	
Deutsche Telepost Consulting GmbH (DETECON), Bonn	1/16
Argentina	
CADAS, Buenos Aires	1/16
Copitec, Buenos Aires	1/16
ERICSSON SACI, Buenos Aires	1/8
Telecom Argentina STET-France Telecom SA, Buenos Aires	1/16
Telefónica de Argentina, SA., Buenos Aires	1/16
Telintar, Buenos Aires	1/16
Australia	
Telstra Corporation Ltd., Sydney	1
Belgium	
Belgacom, Brussels	1/4
Canada	
SR Telecom Inc., St. Laurent	1/2
Korea (Republic of)	
Korea Telecom, Seoul	1/2
Denmark	
Tele Danmark A/S , Taastrup	1/2
Ecuador	
Empresa Estatal de Telecomunicaciones (EMETEL), Quito	1/2

	Number of contributory units
Spain	
Teléfonica de España, Madrid	1
United States of America	
American Telephone & Telegraph Co. (AT & T), Bedminster	1/4
ESL Incorporated, Sunnyvale	1/16
GTE SC/Telephone Operations, Irving	1/16
Iridium Inc., Washington	1/16
MCI Telecommunications Corporation, Mc. lean	1/16
Motorola, Washington	1/4
Panamsat, Greenwich	1/16
Telular International, Miami	1/16
Finland	
NOKIA Corporation , Espoo	1
France	
France Telecom, Montrouge	1
Société Française du Radiotéléphone (SFR), Paris	1/2
Société Télécommunications Radioélectriques et Téléphoniques (TRT), Paris	1/2
Thomson-CSF, Paris	1/16
Indonesia	
PT Telkom, Bandung	1/4
Israel	
Tadiran, Holon	1/16
Telrad, Lod	1/16
Italy	
Societá Finanziaria Telefonica (STET), Roma	1
SIP - Societá per l'Ezercizio delle Telecomunicazioni, Roma	1
Japan	
The New ITU Association of Japan, Tokyo	1/16
Mexico	
Telecomunicaciones de México, México	1/16
Norway	
Norwegian Telecom, Oslo	1/2
Portugal	
Telefonos da Lisboa e Porto - TLP, Lisboa	1/8

	Number of contributory units
Slovak Republic	
Slovak Telecommunications, Bratislava	1/16
Czech Republic	
SPT Telecom S.P., Praha	1/8
United Kingdom	
British Telecom International, London	1
Cable and Wireless Public Ltd. Co., London	1/2
Sweden	
Telefonaktiebolaget L.M.ERICSSON, Stockholm	1/16
TELIA AB, Farsta	1
Switzerland	
Admerco Corporation, Zurich	1/8
B. Other entities dealing with telecommunication matters	
Canada	
Telecommunications Executive Management Institute of Canada (TEMIC), Montreal	1/16
C. Regional and other international organizations	
European Communities (EC)	1
International Maritime Satellite Organization (INMARSAT)	1/4
International Telecommunications Satellite Organisation (INTELSAT)	1
	17

ANNEX 4

List of entities or organizations non members of the Telecommunication Development Sector contributing to the expenses of the Conference

Position on 25 March 1994

	Number of contributory unit
1. United Nations and its specialized agencies*	
Economic and Social Commission for Western Asia (ESCWA)	
International Civil Aviation Organization (ICAO)	
United Nations Development Progamme (UNDP)	
United Nations Educational, Scientific and Cultural Organization (UNESCO)	
World Health Organization (WHO)	
World Bank/International Finance Corporation (IFC)	
2. Regional telecommunications Organizations*	
Asia - Pacific telecommunity (APT)	
Caribbean Telecommunication Union (CTU)	
3. Intergovernmental organizations operating satellite systems	
4. Other international organizations	
Asia-pacific Broadcasting Union (ABU)*	
Hispano-American Association of Telecommunications Research and Study Centres (AHCIET)*	
Association of State Telecommunication Undertakings of the Andean Sub-Regional Agreement (ASETA)*	
Pacific Telecommunication Council (PTC)	1/16

* exempt from any contribution in accordance with Council Resolution No. 925

	Number of contributory units

5. Members of the Telecommunication Standardization Sector or of the Radiocommunication Sector, not yet members of the Telecommunication Development Sector

a) Recognized Operating Agencies and Scientific or Industrial Organizations

Germany	
Philips Kommunikations Industrie AG, Nürnberg	1/16
Canada	
Bell-Northern Research Ltd., Ottawa	1/4
Mitel Public Switching, Kanata	1/16
Spar Aerospace Limited, St. Anne-de-Bellevue	1/16
Teleglobe Canada Inc., Montreal	1/16
Telesat Canada, Gloucester	1/16
Chile	
Compania de Teléfonos de Chile, Santiago	1/16
United States of America	
Ameritech Services Inc., Schumburg	1/2
Ascom Time plex, Miami	1
Bell Atlantic International, Arlington	1/16
Bell South, Washington D.C.	1/16
Communications Satellite Corporation (COMSAT), Washington D.C.	1/16
Hughes Network Systems International, Germantown	1/16
Loral Aerospace Corp., Palo Alto	1/16
Nynex, White Plains	1/16
Sprint International Communications Corp., Reston	1/16
France	
ALCATEL, Paris	1/16
MET, Massy	1/16
Italy	
Fondazione Hugo Bordoni, Roma	1/16
Telespazio S.p.A., Roma	1/16
Japan	
Fujitsu Ltd., Kawasaki	1/16
Hitachi Ltd., Tokyo	1/16
Kokusai Denshin Denwa Company, Ltd. (KDD) , Tokyo	1/4
NEC Corporation, Tokyo	1/16
Nippon Telegraph and Telephone Corporation (NTT), Tokyo.	1/4
Oki Electronic Industry Co. Ltd., Tokyo	1/16

	Number of contributory units
Mexico	
Televisa S.A., México	1/16
Portugal	
Telecom Portugal, Lisboa	1/8
Singapore	
Singapore Telecom, Singapore	1/16

b) Regional and other International organizations

International Telecommunications Users Group (INTUG)	1/16
International Society for Aeronautical Telecommunications (SITA)	1/16
Total	4

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INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 113-E

ITU/SG

CLOSING STATEMENT BY DR. PEKKA TARJANNE,
SECRETARY-GENERAL OF THE ITU

Mr. Chairman,
Excellencies,
Distinguished Delegates,
Ladies and Gentlemen,
Dear Friends,

The first official World Telecommunication Development Conference is now coming to an end. It is too early to give an historical analysis of the importance of this conference for the development of global telecommunications. However, certain facts can already be stated.

First of all, our host country has produced a series of marvels of the kind not usually seen at ITU conferences.

- The political climax came on the inauguration day of the conference when President Menem set the right tone for our deliberations, and Vice-President Gore gave us his version of what I called the "International Information Infrastructure", or the "III" (in French, "infrastructure internationale de l'information"; in Spanish, "infraestructura internacional de la información").
- After the political climax came the cultural climax. At the Teatro Colon, we experienced a never-to-be-forgotten event with a setting and acoustics that are unique in the world.
- The social climax of the conference, of course, was Sunday's "asado criollo" at the Estancia Villamaria, a fabulous day with everything you could ask for - pampas, bulls, horses, mendoza, tango, sunshine and an atmosphere that was out of this world. I can only repeat what I said at the time - "Viva Argentina"!

With all of these outstanding events, was there any time left for telecommunications development? The answer is "yes". On this last day of the conference there has been a development climax; with the approval of the Buenos Aires Declaration, the Resolution on Telecommunication Development Policies and Strategies, and the Buenos Aires Action Plan.

I venture to state, and have the courage to claim that with these decisions the conference has written the name "Buenos Aires" with golden letters into the history of telecommunications development. The leaders of the world have a lofty declaration to digest and to remember when setting national goals and priorities. The Members and "members" of the ITU can be proud of the fact that they have paved the way for the information superhighway that will ultimately unite mankind and give everybody access to the world's riches of information and knowledge. And for the first time, the BDT has a solid and realistic work programme.

Mr. Chairman, we have many good traditions in the ITU. One is that after a successful conference, if the chairman has been efficient and shown creative leadership, he has been presented with the silver medal of our Union. Today we are witnessing such a happy moment, and I have the privilege to present to you, Mr. Chairman, this medal as a token of our deep gratitude and appreciation. On behalf of everyone, I wish all the best to you and to Argentinian telecommunications.

UNION INTERNATIONALE DES TELECOMMUNICATIONS

BUENOS AIRES 1994

CONFERENCE MONDIALE DE DEVELOPPEMENT DES TELECOMMUNICATIONS

(21-29 mars 1994)

Document 114-F

LISTE DE DOCUMENTS EXAMINES PAR LA PLENIERE
LIST OF DOCUMENTS CONSIDERED BY PLENARY
LISTA DE DOCUMENTOS EXAMINADOS POR LA PLENARIA

Document	Titre/Title/Título	Source/Origine/Orígen
PLEN/1*	Résolution - Programme spécial d'assistance en faveur des pays les moins avancés (PMA) *Resolution - Special programme of assistance for the Least Developed Countries (LDC)* Resolución - Programa especial de asistencia para los Países Menos Adelantados (PMA)	DT/14(Corr.2)
PLEN/2	Résolution - Etablissement des commissions d'études *Resolution - Establishment of Study Groups* Resolución - Establecimiento de Comisiones de Estudio	DT/4(Rev.1); DT/37(Rev.2)
PLEN/3	Résolution - Procédures devant être appliquées par les commissions d'études *Resolution - Procedures to be applied by Study Groups* Resolución - Procedimientos que deben aplicar las Comisiones de Estudio	DT/5 DT/37(Rev.2)
PLEN/4	Résolution - Série de questions soumises à l'examen des commissions d'études *Resolution - Set of questions to be considered by the Study Groups* Resolución - Conjunto de cuestiones que han de examinar las Comisiones de Estudio	DT/6(Rev.1); DT/37(Rev.1)
PLEN/5*	Résolution - Communications en cas de catastrophe *Resolution - Disaster communication* Resolución - Comunicaciones en situaciones de catastrofe	DT/12(Rev.2)
PLEN/6	Plan d'Action de Buenos Aires *The Buenos Aires Action Plan* Plan de Acción de Buenos Aires	DT/2(Rev.2)
PLEN/7	Résolution - Politiques et stratégies de télécommunication *Resolution - Telecommunication policies and strategies* Resolución - Políticas y estrategias de telecomunicación	DT/7(Rev.1)
PLEN/8	Déclaration de Buenos Aires sur le développement mondial des télécommunications pour le XIIe siècle *Buenos Aires Declaration on Global Telecommunication Development for the 21st century* Declaración de Buenos Aires sobre el desarrollo mundial de la telecomunicaciones de cara al siglo XXI	DT/50

* Distribué à Buenos Aires
Distributed in Buenos Aires
Distribuido a Buenos Aires

Document	Titre/Title/Título	Source/Origine/Orígen
PLEN/9	Résolution relative aux membres, aux règles et aux procédures de travail du Comité consultatif pour le développement des télécommunications *Resolution - Membership, Rules of Procedure and Working Methods of TDAB* Resolución. Condición de miembro, reglas de procedimiento y métodos de trabajo de la TDAB	DT/47
PLEN/10	Résolution - Choix du lieu des conférences régionales de développemnt des télécommunications *Resolution - Venue of the regional telecommunication development conferences* Resolución. Lugar de celebración de las conferencias regionales de desarrollo de las telecomunicaciones	DT/46
PLEN/11	Résolution - Accès non discriminatoire aux moyens et services modernes de télécommunication *Resolution - Non-discriminatory access to modern telecommunication facilities and services* Resolución. Acceso sin discriminación a los modernos equipos y servicios de telecomunicación	DT/48
PLEN/12	Recommandation - Application des télécommunications à la télésanté et à d'autres services sociaux *Recommendation - Application of telecommunications to telehealth and other social services* Recomendación. Aplicación de las telecomunicaciones a la telemedicina y otros servicios sociales	DT/39(Rév.1)
PLEN/13	Résolution - Partenariat pour le développement avec les organismes internationaux sóccupant d'enseignement *Resolution - Development partnerships with international educational agencies* Resolución - Asociación para el desarrollo con las organizaciones internacionales en materia de educación	DT/40(Rev.1)
PLEN/14	Résolution [ARS-1] *Resolution [ARS-1]* Resolución [ARS-1]	DT/10(Rév.1)
PLEN/15	Résolution - Coopération entre l'UIT/BDT et les organisations regionales *Resolution - Cooperation between ITU/BDT and Regional Telecommunications Organizations* Resolución. Cooperación entre la UIT/BDT y las organizaciones regionales	DT/51
PLEN/16	Résolution - Contribution des télécommunicaations à la protection de l'environnement *Resolution - Telecommunication Support for Environment Protection* Resolución - Contribución de las telecomunicaciones a la protección del medio ambiente	DT/16(Rév.1)



World Telecommunication Development Conference
(Buenos Aires, 21-29 March 1994)

Documents No. 115 to 140-E not available

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 141-E

People's Republic of Bangladesh

ADDRESS BY H.E. MR. ISLAM TARIQUL,
MINISTER OF POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Excellencies,
Distinguished Guests and Participants,
Ladies and Gentlemen,

I bring you warm and heartfelt greetings from the Government and people of Bangladesh. I wish to express my appreciation to the Government of Argentina for organizing this World Telecommunication Development Conference. I thank those who work tirelessly to make the Conference a success.

The Conference is considering a set of issues which are highly relevant to both developed and developing countries; in particular the issues of global goals and objectives for the next decade and the special programmes for the least developed countries (LDCs) are most appropriate.

In my view, the right of access to communications should at the global level be considered and recognized as a basic right.

This raises the question of investment strategies and mobilization of resources for telecommunications development worldwide, which is also one of the major issues that this Conference is expected to address.

A wide gap exists between the developed telecommunications countries and the underdeveloped ones. This gap is further compounded by skill levels and in-country capability to supply telecommunication goods and services which appear to correlate closely with development status. This widening North-South gap is, and continues to be, an issue of major concern which must be addressed with the seriousness that it deserves.

One of the ways to address this concern is to ensure foreign investment/assistance as well as technology without any strings. Concurrently, it is also imperative that concrete steps are taken to ensure local skills development, industry ownership and control to allow in-country wealth creation to the maximum appropriate degree.

At the same time, for the LDCs aspiring to sustainable economic and social development, it will be necessary to mobilize internal resources to supplement the resources needed for telecommunications development.

We in Bangladesh have initiated this process. In addition to the resources provided by multilateral and bilateral donors, we have encouraged private-sector and foreign investors to be partners in development. Steps have also been taken for the first time to support, to the maximum degree possible, investment in this sector from own resources.

Bangladesh will eagerly look forward to the special programmes for the LDCs in the Buenos Aires Action Plan which will help in reducing the increasing gap in terms of access to communications, skill development and technology transfer, and in improving the quality of life for the people of these countries.

I thank you all.

World Telecommunication Development Conference
(Buenos Aires, 21-29 March 1994)

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INTERNATIONAL TELECOMMUNICATION UNION

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WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 143-E

Republic of Benin

STATEMENT BY H.E. MR. MARIUS FRANCISCO,
MINISTER OF CULTURE AND COMMUNICATIONS

Mr. Chairman,
Excellencies,
Distinguished Delegates,

Allow me first of all, on behalf of the Government and People of the Republic of Benin, to thank the Argentine authorities most sincerely for the very warm welcome we received upon arrival in this beautiful country and for everything they have done to make our stay so pleasant.

I cannot pass up this opportunity of thanking and congratulating ITU for all the efforts it has deployed to make sure that this world meeting, the first World Telecommunication Development Conference, is a success.

The historical significance of this event, which will no doubt take pride of place in the annals of the ITU and of the whole world telecommunication development process, needs no underlining.

Chairman,

As this Conference opens, telecommunications worldwide display three characteristic features:

(1) Huge disparity between rich and poor countries

(2) Vertiginous development of telecommunication technology

(3) Difficulties in adjusting policies, particularly in the developing countries.

Eloquent proof of the above assertions may be found in the many different statistics which the BDT has provided in its various reports to this august assembly.

Of course, Benin, which is classed as one of the Least Developed Countries, is no exception to the general rule. At the end of 1993, for a population of some 4.5 million inhabitants, Benin only had 21,000 main lines (ML), i.e. a telephone density of 0.46 ML/100 inhabitants. As you can see, there is still a very long way to go before we achieve a level of telephone penetration and equipment capable of supporting sustained social and economic development. Yet even the present level has only been achieved by dint of a significant investment effort (around 75 million US dollars), under a relatively ambitious five-year programme (1990-1995) supported by six financial backers, to modernize and expand the network and improve management and develop human resources. This gives an idea of the magnitude of the tasks facing the government over the next five years, in its quest to raise telephone density to at least 1 ML/100 inhabitants by the year 2000.

Attainment of this goal hinges on prior implementation of a number of actions, some of which are already planned:

(1) Separation of posts and telecommunications and establishment of an entirely public operator owned by the State but under privatized management

(2) Gradual liberalization and dismantling of the monopoly in the telecommunication sector, encouraging the establishment of an appropriate national private sector and ensuring that the private sector as a whole plays an increasingly important role, within a framework currently being developed

(3) Exclusive responsibility of the State for the regulatory function.

Mr. Chairman,

The efforts being deployed in Benin may be mirrored in many other countries. Yet the problem of worldwide telecommunication development remains, since the telecommunication gap between rich countries and developing countries is still very wide. The global village or network of networks will only become a reality if all nations are truly aware of the problem and seek and find practical solutions taking account of the actual situation and specific characteristics of each country.

The solutions are not easy. They may be divided into several categories, of which the two most important in our opinion are the following:

(1) The strategic role of telecommunications in the development of nations must be expressly recognized and put into practice. This is not only a matter for States, but also for financial backers and all development partners, who must make telecommunications a priority among priorities. It is of course important to finance water projets for villages, rural development programmes with a view to securing self-sufficiency in food and primary health care distribution programmes. However, it is now an established fact that many apparently well thought out projects of this type have failed for the lack of one vital tool, telecommunications. It has been overlooked that telecommunications are always viable, either financially or economically, or both.

(2) ITU's work in the development of telecommunications must be strengthened, as the Union's main priority. This means:

- providing the BDT with the necessary resources (material, financial and human) to fulfil its noble mission. To this end, it is essential that the participation of the private sector, particularly from developed countries, in the work of the ITU Development Sector be encouraged and strengthened;

- promoting cooperation among developing countries in the transfer of skills. In many instances, a developing country expert is in a better position to understand the needs of another similar country more quickly, thereby increasing the efficiency of technical assistance;

- enhancing standardization work in order to avoid the proliferaiton of different standards which restricts developing countries' access to new technologies at reasonable costs.

Those, Mr. Chairman, are the few ideas which I wanted to bring to the attention of your august assembly on behalf of my country; Benin's piece in the challenging jigsaw puzzle of telecommunication development.

Thank you for your attention.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 144-E
21 March 1994
Original: English

Brunei Darussalam

STATEMENT BY H.E. MR. SULAIMAN DATO HAJI ZAKARIA,
MINISTER OF COMMUNICATIONS

Mr. Chairman,
Dr. Pekka Tarjanne, Secretary-General of the ITU,
Your Excellencies,
Ladies and Gentlemen,

At the outset, allow me to congratulate you on your election as Chairman of this Conference - the first World Telecommunication Development Conference. I would also like to take this opportunity, on behalf of my delegation, to thank our host, the Government and the People of Argentina for the very warm welcome and the excellent hospitality accorded to us since our arrival here in Buenos Aires.

It is a privilege for me to be given the opportunity to speak at this distinguished gathering - an important event in the calendar of the ITU. This meeting is held at the right time - a time of change - a time of challenge. The world has changed dramatically in the last couple of years - not in shape but in structure. The Cold war has ended and international politics has a new dimension - bringing with it a new vision - a global vision as a basis for the next stage of political restructure - a New World Order. In response to these changes, the Telecommunications Industry has gone through a process of radical change, monopolies have mostly been abandoned for privatization, liberalization and deregulation. New and advanced technologies have been introduced; the pace of change continues, bringing eventually the merging of broadcasting and telecommunications technology. The accent is on a market-oriented telecommunication business - moving towards the integration of technology, networks and services to create a global system of telecommunications. The developed world is gearing towards the realization of Information Super-highways. Global Telecommunications has shaped and will continue to shape human society. It has revolutionized the way business is done. Satellite and fibre optic links enable multinational companies to remain open to do business round the clock, around the world. The resultant efficiencies and competitive advantages will boost profits and productivity in more ways than we can count.

By the end of this decade, the realization of a Global Village may not seem remote. The possible launching of low-orbit satellites will enable even the remotest parts of the world to be reached. These are the New Wonders of the world. But what does all these mean to us, particularly to the two-thirds of the world population who still suffer from poor access to telecommunications? This is what this Conference is all about - to develop a global strategy for balanced telecommunications. This Conference is attended by key people in the industry, by policy makers, by planners and by developers. We are looking forward to the Buenos Aires Plan of Action which we hope will see us carry on to the next decade and beyond.

Whilst all these changes and innovation are taking place, regretfully many developing countries of the third world are still struggling to provide a basic telephone service to all its people. Whatever service is available, more often than not, the quality is usually poor and far from satisfactory. Thus, there is a marked disparity in the status of service provided in the developed as against the Least Developed Countries. While developed countries are well on the way to implementing their multimedia connections, most developing countries are still planning connections of basic telephone services to the home. Developed countries worry about connectivity for business in the urban areas - but the Least Developed Countries are still worried about providing basic services to the rural and sparsely populated areas.

Mr. Chairman, allow me to highlight some of the major constraints faced by some developing countries leading to the above-mentioned disparity:

1) low priority given to telecommunications infrastructure as against others;
2) the ever increasing and accelerated cost of equipment;
3) rapid technological advancement and evolution, thus tending to throw current equipment obsolete - which in turn will require very heavy re-investment to modernize;
4) lack of trained manpower to maintain these advanced and expensive technological equipment, and
5) insufficient attention is usually given to the importance of the quality of service provided.

The developing countries are finding it difficult to keep up with the rapid technological changes. They realize that telecommunications is acknowledged and accepted as a major component for economic development and social upliftment of a nation and its people. But there is very little they can do with the constraints they face - they have to balance their priorities. Here, the developed world have a role to play in providing appropriate assistance at an affordable cost. Transfer of technology are magic words, but more often than not, these words are abused and used as an excuse to dump outdated and near obsolete equipment. It is acknowledged that shortage of capital may no longer be the main obstacle as there are many willing partners in the private sectors, but the process is still painfully slow and fraught with problems. A developed communications network is indeed an organ of growth for a country but achieving it is not always that simple. The developed countries, rich with technical know-how should show more understanding and be more willing to provide assistance. This is where the ITU and the regional organizations such as the Asia-Pacific Telecommunity can play a role - bringing together the two worlds - so that the objective of creating the Global Village can be attained.

In this Conference, we note that the ITU has recalled the Maitland Commission Report entitled "The Missing Link" to be reviewed. Ten years have passed since the report was produced, but it is believed that the views, the findings and the recommendations are still applicable and relevant. This disparity between the developed and the Least Developed Countries will be there for sometime to come and this Conference should address this matter squarely and try to find ways and means to narrow down the gap.

Mr. Chairman, Brunei Darussalam is fortunate that it is endowed with sufficient resources, but nevertheless we share many problems faced by the less fortunate developing countries. In the past decade, our growth in telecommunication services has been quite remarkable. As of today, we have achieved a telephone penetration ratio of about 20 telephone lines per 100 population compared to 9 to 100 in 1984, and 12 to 100 in 1989. We have introduced mobile communications and a few other new services. To keep pace with our neighbours, we are committed to provide a fully digitalized communication network. But we have a small population of barely 260,000 people and therefore human resources is at a premium. We realize that a skilled, well-disciplined and technologically advanced workforce are a priority. We will continue to strive to provide modern telecommunication services to our people because we know that to survive in this highly competitive world we have to keep pace with development. However, the rural areas are sparsely populated and the terrain is hilly with dense jungle. Infrastructure costs to provide services to these areas are almost prohibitive, but we have set our priority towards continued development. We therefore welcome the introduction of new technologies such as the Wireless Local Loop which is of particular interest to us. It will provide a possible alternative to using cables which are prohibitively costly.

In conclusion, Mr. Chairman, allow me once again to offer my sincere thanks and appreciation to you and through you, to the Government and the People of Argentina for the excellent arrangements made for this Conference. I also wish to take this opportunity to thank the Secretary-General of the ITU and his hard-working staff whose dedication will ensure the smooth running of the Conference. I am sure that with the cooperation of all members, this Conference, which is the culmination of the four regional conferences will achieve its noble objectives,

Thank you.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 145-E

Republic of Colombia

STATEMENT BY H.E. MR. WILLIAM JARAMILLO GOMEZ,
MINISTER OF COMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General,
Excellencies,
Distinguished Delegates,

It is for me a great honour and a particular privilege to speak in my capacity as Minister of Communications of the Republic of Colombia at this important event which has brought together the leading lights in the worldwide development of telecommunications.

Before going any further, I would like to convey warmest greetings from the Government of Colombia to the Government and people of Argentina and to express gratitude for the generous hospitality with which we have been received in this splendid and forward-looking city of Buenos Aires, for which all Colombians feel such affection.

It is ten years now since the Independent Commission for Worldwide Telecommunication Development presented its dramatic conclusions concerning the development of the sector at the global level.

Today, however, despite the major efforts that have been made by governments, by the international community, and particularly by the International Telecommunication Union, the situation cannot be said to have changed in any fundamental way, since there continue to be unacceptable differences in the level of telecommunication development between industrialized and developing countries, and, within the latter, between major cities on the one hand and small towns and rural areas on the other.

In our view, however, and as was indicated by United States Vice-President Gore, the telecommunication horizon now looks more promising.

At that time, only the industrialized countries were clearly aware of the importance of telecommunications as a strategic sector and a driving force for the economic and social development of their peoples, and accorded it a high priority among their development plans.

All governments now recognize that telecommunications constitute a part of the basic social infrastructure and that the entry of their countries into the information era will depend mainly on consolidating that infrastructure and incorporating a high level of technology with the aim of facilitating the expansion of telecommunication and telephone services to a greater number of inhabitants, including the provision of specialized services to other economic sectors and the public at large.

This growing awareness of the importance of the sector has not been a spontaneous phenomenon, but the fruit of the common effort made within the framework of the International Telecommunication Union.

This is why, in the process of restructuring the Union, telecommunication development was accorded prime significance, the main objective being to make the telephone service available to all.

And this is also why the historic Nice Plenipotentiary Conference instituted regional and world telecommunication development conferences to serve as a forum for analysing and discussing the regional and global status of networks and services and, on the basis of those discussions, for setting specific objectives and formulating plans and programmes designed to further the development and modernization of the sector and to bring it into line with the demands that society will be making upon it in the year 2000.

This World Telecommunication Development Conference in Buenos Aires is not an isolated event, but rather the outcome of a long process which began in Harare in 1990 and thereafter continued in Prague, Acapulco, Cairo and finally Singapore, where in each case the different Regions had an opportunity to discuss the status of their telecommunication sectors and to formulate guidelines for their immediate development.

The results of these regional conferences will serve as the raw material for our discussions in Buenos Aires, and our conclusions will provide a solid basis for establishing worldwide telecommunication development goals and objectives for the year 2000 and for formulating strategies for the balanced development of the sector.

In this connection, the American Regional Conference provided significant inputs to the debate and has generated profound structural changes in the Region through the adoption - as was mentioned this morning by President Menem and Vice-President Gore - of a more modern approach to the sector.

On the basis of the Acapulco Declaration, the pivotal document of this regional conference, many American countries, Colombia included, stepped up their efforts to modernize the sector and revised their plans and policies to bring them into line with the commitments made in Acapulco.

Colombia is happy to present to this world forum a number of facts which serve to confirm the significant progress made in its telecommunication sector.

Two years ago, our telecommunication sector was still, owing to the nature of its regulatory framework, putting up strong resistance to change, and was still dogged by remnants of the traditional policy of providing services under a state monopoly to the exclusion of private sector participation or foreign development capital.

Since overcoming such resistance, the sector, now liberalized and open to competition and the flow of private capital both national and foreign, has been developing more rapidly. New and untried forms of association which were formerly prohibited, for example joint ventures, have favoured this great leap forward. Although it is still too early for the latest figures fully to reflect the results of these policies, I should nevertheless like to mention that in 1993 we installed 470 000 new telephone lines. This 14% increase is the greatest such leap to have occurred this century, as a result of which we now have an average of 11.4 telephone lines per 100 inhabitants, situating Colombia for the first time above the world average.

Furthermore, the plans and projects currently in hand make it a foregone conclusion that 1994 will be an exceptional year for telecommunications in our country, since the planned provision of over 800 000 new telephone lines will boost the growth rate to over 20% - a feat which has been made possible by the new wind that is now blowing through our telecommunication sector.

The coming year will also see the birth of Colombia's cellular mobile telephone service, with two networks, one operated entirely by private concerns and the other by mixed economy enterprises with a very high proportion of private capital, providing national coverage over three service areas.

Upon completion of the bidding stage, the Ministry of Communications granted licences to six firms. Particularly noteworthy factors in all of this are the high participation of national and foreign private capital in the operating companies and the emphasis on competition and tariff liberalization. This bidding process, moreover, enabled us to benefit from the sums paid by the operators for the right to use the spectrum, a limited common resource the exploitation of which formerly generated little in the way of real benefits for the Nation. In this case, the six operators will together have to pay, for a ten year licence, a total of one thousand two hundred and fifty million dollars ($US 1 250 000 000), together with 5% of their annual receipts. In this connection, I should point out that a high proportion of these resources will be invested in the provision or expansion of the service in those localities with the highest levels of unsatisfied basic requirements - that is, it will be invested for the good of the community.

I would like finally to refer to the Buenos Aires Action Plan.

For the Colombian Administration it is clear that this Conference must accord the highest priority to defining a global programme of action designed to narrow the gap which separates countries in terms of their level of development, and which also separates urban and rural areas within countries.

The decisions that we shall adopt must not be mere expressions of good will, but must serve as a binding political commitment on the part of governments to pursue specific programmes in their own countries within the framework of the objectives set out in the Plan.

In order for this to be possible, it is in our view essential that when setting those objectives attention be paid to resource availability, to the strengthening of existing sources and to potential new sources of financing.

A primary source of funds, and perhaps the most important in countries such as ours, is the telecommunication sector itself, which produces considerable volumes of income, mainly through the long distance telephone traffic generated by the major and capital cities and through the licensing rights associated, now and in the future, with new services involving new technologies.

Given that this is the sector's most significant income factor in the developing countries, we consider that this mechanism should be strengthened and taken into account in the Action Plan, to which end we present the following three proposals.

First, we propose that the document should contain a recommendation to the effect that governments should reinvest in the telecommunication sector all of the resources generated by it, and that those resources be used to modernize the infrastructure, expand basic service coverage and give rapid effect to special plans to extend the telephone service to low-income rural areas and urban sectors, at costs which are affordable by those living within these marginalized sectors.

Second, we propose that a recommendation be made to the ITU's Standardization Sector to the effect that any review of the international accounting regime should, when procedures for the sharing out of income are considered, be based on the principle of equitable distribution, and that, should such a review call for a modified distribution based on the cost factor, due account be taken of the study carried out by the ITU Secretary-General on the relative costs of providing and operating the international telephone service in industrialized and developing countries, and particularly of the fact that, on average, the total cost per telephone call minute is some 2.08 times higher in developing countries than in industrialized countries.

Finally, we would propose that certain practices and procedures, such as reversing the direction of international calls, be discussed with a view to being declared detrimental to the aims and objectives of telecommunication development and contrary to the correct use of telecommunication networks and services.

As regards the need for new sources of financing, I should like to acknowledge the significant contacts made in that connection by the Secretary-General and the Director of the Development Bureau with the multilateral organizations having an interest in the sector. Evidence of this is the presence at this Conference of the United Nations Secretary-General, Dr. Boutros-Ghali, and of the President of the World Bank, Mr. Lewis Preston, which demonstrates the interest of these organizations in continuing to support the worldwide development of the sector.

It is the Conference's task to instruct the Development Bureau to press ahead, on the basis of the objectives set out in the development programme established in Buenos Aires for the four-year period, with studies relating to the financing requirements of that programme, and to present the results to the World Bank, the United Nations and the relevant regional financing bodies, with a view to their undertaking to establish preferential and favourable credit lines for carrying out socially beneficial projects in the least developed countries and in marginalized areas in developing countries.

There are, of course, further comments I would like to make concerning other items of the agenda, but in view of the need to be brief, these will be made by our delegation in the course of the discussions.

I thank you, Mr. Chairman, for giving me the floor, and would like you to know that my Government has no doubt whatsoever as to the successful outcome of the Conference or as to the benefits to which its conclusions will give rise in the interests of a more balanced level of development of the telecommunication sector worldwide in accordance with the need for greater social justice and equity.

To summarize what was said this morning by those who inaugurated this Conference, I would like to conclude by emphasizing the fact that information is the vital ingredient in democracy and the prime instrument for the protection of basic human rights, and that modern telecommunications are the tool whereby those rights may be exercised to their fullest extent.

Thank you.

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WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 146-E

Republic of the Congo

STATEMENT BY H.E. MRS. ALBERTINE LIPOU MASSALA,
MINISTER OF COMMUNICATION, POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General of the ITU,
Honourable Heads of Delegations,
Distinguished Delegates,
Ladies and Gentlemen,

Allow me to convey the fraternal greetings of the Government and the President of the Republic of the Congo, Professor Pascal Lissouba.

I would also like to take this opportunity to express the deep gratitude both of myself and my delegation to the President, Government and people of Argentina for agreeing to host this historic meeting and for the very warm welcome extended to us.

I am already convinced that this Conference will allow us to look to the future of telecommunications with greater optimism and hope for everyone.

As far as my country is concerned, my presence here among you at this Conference testifies to the Congolese Government's interest not only in telecommunications but also in this Conference.

There is no need to recall the importance and place of telecommunications in bringing peoples closer together and especially in the economic, social and cultural development of our countries.

Mr. Chairman,
Ladies and Gentlemen,

At this time of grave economic crisis which is hitting every country in the world, particularly those developing countries which are heavily indebted and others, like the Congo, which have been shaken by the recent devaluation of the CFA franc, it is a time for reflection; for the important things always come in time to those who know how to wait and bring them to fruition.

It is also true that scientific and technological potential is not the same everywhere. There is thus a need to design ways of pooling our respective capacities through more effective international cooperation, in order to implement appropriate telecommunication development programmes of benefit to all.

Bearing in mind the growing role of telecommunications in a variety of human activities, mankind must mobilize its energies and acknowledge the real value of this key sector for its future.

It is with this in mind that the Republic of the Congo, faced with the technological needs of the future, has set about redefining the structure and nature of its telecommunication network in order to gear it to the demands of human culture in the 21st Century.

The Congo hopes that this effort will be supported by the international community which, most fortunately, is gathered together in this room. The conclusions of this meeting are eagerly awaited by my country with a view to improving its telecommunication network.

This will involve restructuring the current public posts and telecommunication operator, by separating posts and telecommunications before the end of the year. Following the separation, a semi-private company will be set up to operate telecommunications in the Congo. The target is to raise the operational capacity of the telecommunication sector to meet the requirements of growth.

On the threshold of the 21st Century, it is more than ever necessary decisively to reject passivity and improvization.

Two thirds of humanity remain excluded from the benefits of scientific and technological progress, of which telecommunications is one of the main beneficiary sectors. This gloomy picture, which emerges clearly from the conclusions of the first World Telecommunication Development Report presented yesterday, is a call to all of us, a challenge to the whole of mankind.

Mr. Chairman,
Mr. Secretary-General,
Ladies and Gentlemen,

I shall conclude my remarks by expressing two aspirations:

1) to witness growing solidarity between developed and developing countries in order to achieve real cooperation instead of everlasting assistance;
2) to see this Conference produce pertinent and realistic analyses, and constructive guidance which will direct our future action and enable our respective countries to take up challenges of the 21st Century.

I thank you for your kind attention.

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Document 147-E

Ecuador

STATEMENT BY MR. ADOLFO LOZA ARGUELLO,
SUPERINTENDENT OF COMMUNICATIONS

It is for me both an honour and a privilege to address the Plenary Meeting of this important Conference, which, at the generous invitation of the Government of our brother Nation, the Republic of Argentina, is being held in the magnificent city of Buenos Aires. It was but a few days ago that Ministers and senior officials from the telecommunication sphere of American countries, myself included, met in the city of Montevideo, Uruguay, at the first regular Assembly of the new Inter-American Telecommunications Conference, CITEL, which adopted key decisions for the effective progress of telecommunications on our continent. And now our ceaseless search for progress has led us to participate with faith and optimism in this the world's most prestigious telecommunications forum. The State of Ecuador has at every opportunity stood up for development as a universal and inalienable right, which is why we now call upon the governments of all countries, large or small, developed or developing, and on all members of the Sector, to join together in making every effort to implement the Action Plan that we will adopt in Buenos Aires.

Ecuador has traditionally been a producer and exporter of bananas, coffee, cacao and shrimps, and in recent decades has also been an oil exporter. At the present time it is opening up new areas of agricultural and industrial production and exportation, is preparing to take full advantage of its great tourism potential, and has an economy which is in the process of modernization and growth. In order for this to be possible, it has had to implement a series of structural, administrative and legal reforms with the aim of improving the living standard of its population through increasing productivity and opening its economy to foreign markets in an attempt to improve trade relations and achieve stability in its balance of trade. Within this context, Ecuador has accorded the highest priority to telecommunication development as an essential component of, and point of departure for, its production, distribution and marketing objectives at the national and international levels. It was in that connection that on 10 August 1992 a new special law on telecommunications came into force in Ecuador, introducing deep changes in the structure of the sector by separating the regulatory and monitoring side from the operating side of public services, by establishing the Superintendency for Telecommunications - the highest authority in which is the Superintendent, who is appointed by the National Congress and has the rank of Minister of State - as the governing body responsible for the regulation and monitoring of all the services, and by establishing the State Telecommunication Enterprise with administrative, economic, financial and operational autonomy to provide basic national and international services.

The Administration of Ecuador has sought to promote the efficient use of the radio spectrum for public and private services. The public cellular mobile telephony service, licences for which have been granted to two private companies with a view to their providing a service to the main industrial and commercial areas, is expanding rapidly. The most up-to-date satellite technologies are being used for the private networks, and the regulatory and standardization procedures for the licensing of medium- and low-capacity satellite networks are under way. The

State Telecommunication Enterprise has some 500 000 main telephone lines in service, giving a density of 5%. Under the plans for expanding the basic network, the objective is to achieve 1 100 000 main lines by the end of 1996, that is, a telephone density of around 9%. The state enterprise's network has digital exchanges with stored programme control, transmission system of up to 140 Mbits, CCITT No. 7 common channel signalling system, main line fibre-optic transmission and digital satellite service.

Given that any country's domestic policies play a key role in its growth process, it should be pointed out that Ecuador, like many other countries, has encountered major difficulties in developing and expanding its networks, particularly with regard to financing (which has been neither timely nor adequate), with important projects having been at a standstill for many years as a result of certain requirements imposed by credit institutions - requirements which in some cases have borne no relationship to the provision of telecommunication services.

It is therefore somewhat ironic to hear emotive speeches in favour of telecommunications development, when at the same time restrictions are placed on the ability to finance existing projects. All of us are weighed down by the spectre of foreign debt, which seriously hampers development and has a direct influence on the obtaining of credits for telecommunications. For these reasons, there is an urgent need to reconsider the financial policies of the international credit institutions and to work out practical and complementary solutions - for example, direct private investment - to ensure that capital flows from the developing to the developed countries do not exceed, as is currently the case, the volume of assistance to or investment in the developing countries.

Within the framework of its traditional policy of friendship and cooperation with all countries, Ecuador has accorded special attention to regional and subregional integration. To this end, interconnecting networks have been established among the countries of the Andean subregion, important projects such as the domestic satellite network and the bridging arrangement with INTELSAT are being carried out, and, on the basis of the work done by the Andean Committee of Telecommunication Authorities (CATEL), a decision under the Cartagena Agreement will shortly enter into force, establishing an Andean market for value-added telecommunication services. At the regional level, the Administration of Ecuador also supports the integration effort being made by the Inter-American Telecommunications Conference (CITEL), within the context of which special mention should be made of the regional programme for rural telecommunications and low-income groups, and the inter-American fibre-optic network project.

Mr. Secretary-General,

The International Telecommunication Union, which has been and will continue to be the focal point and guiding light for telecommunication development throughout the world, has been both a support and guide to the Administration of Ecuador. The Regional Office and its subregional offices have played an active role since their inception, and the decision should now be taken to set new objectives designed to further the joint activities of regional bodies.

Ecuador's position at this Conference is basically the same as that of every other country, namely to map out the way toward a world in which telecommunications are available to all. I am therefore confident that the Resolutions which we adopt here will serve to foster strategic planning and will be as great and as significant, Mr. President, as is your country within the context of the world's nations.

Thank you.

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Document 148-E

Republic of Equatorial Guinea

STATEMENT BY H.E. MR. ANTONIO FERNANDO NVE NGU,
MINISTER OF TRANSPORT, INFORMATION AND COMMUNICATIONS

Mr. Chairman,
Excellencies,
Honourable Heads of Delegations,
Ladies and Gentlemen,

It is a great honour for me to address this great assembly. On behalf of the people and of the Republic of Equatorial Guinea, and of my delegation, I should like first of all to express our sincere thanks to the fraternal Argentine people and to its Government, to which we are bound by considerable historic, cultural and linguistic ties, for their warm welcome. Our thanks also go to the General Secretariat of the International Telecommunication Union for having kindly invited us to attend this Conference.

Mr. Chairman, the Republic of Equatorial Guinea, which emerged as a sovereign state on 12 October 1968, adopted as one of the founding principles of its society the respect for the human person, for human dignity and liberty and other fundamental rights. The protection of the family lies at the root of the society of Equatorial Guinea, together with recognition of the equal rights for men and women, the protection of work through which man develops his personality as a creator of the nation's wealth for social well being, the promotion of the country's economic development, and the promotion of the social and cultural development of the country's citizens in order to instil in them the supreme values of the State. For the Government of the Republic of Equatorial Guinea, the development of telecommunications constitutes one of the basic factors for the consolidation of these fundamental principles of our society, enshrined in our Constitution. Furthermore, the Government of the Republic of Equatorial Guinea, believing in peace and friendship between nations, considers communications as a factor of unity between continents, peoples and governments, all aspects which we consider of the highest importance to ensure peace, concord and world development.

Alongside the considerable efforts made by the Government of the Republic of Equatorial Guinea in recent years and despite the generalized economic crisis which particularly affects the developing countries such as the Republic of Equatorial Guinea as a result of the constant deterioration in the international markets for our basic export products, the Government of Equatorial Guinea has been devoting substantial resources to modernizing and restructuring telecommunications. The recent creation of an independent organization, Guinea Ecuatorial de Correos y Telecomunicaciones (ECOTEL), the approval and ratification of telecommunication restructuring agreements with friendly countries and the investment planned in those agreements

provide clear evidence of the importance of telecommunications in the planned objectives of the Government of Equatorial Guinea for the sector in the years ahead.

In setting up ECOTEL, the Government is adopting appropriate development strategies to respond to the needs of users and of modern times, to enhance the quality of services by improving, adapting and applying better technologies. With the private sector's contribution to social capital, the aim is to make administrative and financial management independent, with a view to improving the efficiency and profitability of telecommunication services and ultimately to modernize the preparation, contracting and terms of employment of human resources.

The Republic of Equatorial Guinea, an African country of Bantu origin, the only Spanish-speaking country on the African continent, feels greatly strengthened and stimulated here today next to so many fraternal countries on this side of the Atlantic with which we feel strong bonds of brotherhood and solidarity. From that point of view, we in Equatorial Guinea believe that the International Telecommunication Union provides a suitable framework for cooperation between our countries in the telecommunication sector. Notwithstanding the positive contribution made by the Union to the Republic of Equatorial Guinea since 1979, we believe the Organization should take an even greater part in the development of telecommunications, taking into account the technological advances which have occurred in recent years. In conclusion, we would like to take this opportunity to congratulate the General Secretariat for their efficient organization of this Conference, to which we wish every success.

Thank you very much.

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Document 149-E

Republic of the Gambia

ADDRESS BY H.E. MR. MATHEW YAYA BALDEH,
MINISTER OF WORKS AND COMMUNICATIONS

Mr. Chairman,
Secretary-General of the ITU, Dr. Pekka Tarjanne,
Honourable Ministers and Heads of Delegations,
Members of the Diplomatic Corps,
Distinguished Delegates,
Ladies and Gentlemen,

Please allow me, Mr. Chairman, to take this opportunity to extend through you, fraternal greetings and congratulations from the President of the Republic of the Gambia, H.E. Sir Dawda Kairaba Jawara, to his dear friend and colleague, H.E. President Menem , Government and People of Argentina, in hosting this first World Telecommunication Development Conference in this beautiful coastal city of Buenos Aires. Since the arrival of my delegation a couple of days ago in advance of the Conference, we were overwhelmed by the cordial welcome and friendship accorded to us in Buenos Aires, which is renowned for its touristic attractions and artistic qualities. Already, we are feeling quite at home in this spectacular working environment at the Sheraton Hotel coupled with the hospitality of your people.

Mr. Chairman, distinguished delegates, ladies and gentlemen, the participation of African countries to this gathering in Buenos Aires is of great importance and substance because the Conference will review the work of the Regional Development Conferences and their follow-up activities, and establish a programme of work for the Telecommunication Development Bureau (BDT) for the period 1994-1998.

You would recall, Mr. Chairman, that the African Telecommunication Development Conference (ATDC) in Harare, 1990, created, within the framework of the BDT, a standing African Information and Telecommunication Policy Study Group (AITPSG), entrusting to it as a matter of urgency the task of elaborating a first draft of the regional telecommunication policy document to be known as the African Green Paper (ATDC-90/Resolution I).

These measures are coordinated international and multilateral strategies to mark the end of a period of several decades characterized by the existence of national state-run monopolies which generally frustrated and perpetuated underequipment in telecommunications and the poor performance of its network operators. This is largely due to over-stated investment and technical assistance policies and unaccountable commercial operation of the entities. One of the basic assumptions of the Green Paper is that African countries would benefit considerably if they were to jointly address the problems of telecommunication underdevelopment at the continental and sub-regional levels so as to promote to the greatest extent possible the integration of their

telecommunication networks and services, and hence their economics. These strategies will bring about positive changes, which have taken place elsewhere in the world, in transforming the African telecommunication sector to a highly commercial and profitable entity.

The holding in Abidjan, Côte d'Ivoire, from 17-21 January 1994, of a colloquium on "Telecom and economic prosperity: a strategy for Africa", and the organization of a roundtable on telecommunication investments and financing strategies held from 28 February to 2 March 1994 in my country, the Gambia, are important steps and strategies geared towards mobilizing international, multilateral, bilateral, continental and regional cooperation and assistance in the telecommunication sector modernization and development by key-players (private and public) in the macro-economic activities of Africa.

Mr. Chairman, the Abidjan and Banjul meetings have provoked divergence of views and methods as to the best approaches and options in bringing about harmonious restructuring, deregulation and liberalization of the telecommunication sector in Africa for greater enhanced annual growth and customer satisfaction through commercial operation and management autonomy. Today, despite various militating factors against judicious development of telecommunications in Africa, certain countries (Senegal, Cote d'Ivoire, Burkina Faso, Mali and Gambia, to name a few) have made right policy decisions and reforms in converting a state-run telecommunication corporation into a viable commercial and autonomous entity.

At this juncture, Mr. Chairman, the Gambia experience is worth mentioning because the Government's policy changes in the telecommunication sector in 1984 have today accorded GAMTEL (Gambia Telecommunications Company) as one of the best managed, highly profitable and efficient telecommunication entities in Africa. The Gambian model and that of other countries mentioned earlier, is indeed one out of several options in transforming subsidized monopolistic telecommunication corporation to an efficient self-financing commercial company.

In view of the emerging signs and readiness by many African Governments to restructure the communication sector for commercial operation, it is pertinent to rationalize their telecommunications market place before an attempt is made to privatize their telecommunications franchise. The general caution is "not to throw away the baby with the bath water".

My delegation wishes to underscore the fact that BDT must be strengthened as a key institution in mobilizing international, multilateral and bilateral confidence and cooperation in advancing telecommunication development in Africa and the rest of the continents in similar situation. The will should be fair play, transparency and interaction with local operators and expertise for the mutual benefit of all partners in the investment and financing process of transforming our respective communication entities to viable commercial and profitable companies which can compete with the balance sheet of any gold mine in Africa.

Mr. Chairman, distinguished delegates, ladies and gentlemen, I hope this Conference will come out with recommendations, resolutions and an action plan to address the very issues and obstacles that have continued to frustrate and militate against our coordinated and collective efforts in reducing the gap between low telephone density in the developing countries and that of the developed countries as reflected in the "Missing Link" report about some ten years ago.

Thank you for your kind attention.

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Italy

ADDRESS BY MR. EMANUELE COSTA, DIPLOMATIC COUNSELLOR TO THE MINISTER OF POSTS AND TELECOMMUNICATIONS

Mr. Chairman of the Conference,
Mr. Secretary-General of the ITU,
Distinguished Delegates,

This World Telecommunication Development Conference, is of particular interest for the Italian Government and Italian operators, and it is my pleasure to thank the Government of Argentina on behalf of the Minister for the cordiality with which we have been welcomed to this wonderful city of Buenos Aires, so dear to all Italians.

Over the first few days we have been pleased to note that several basic trends discussed here are fundamental to the current telecommunication restructuring process in Italy, namely:

- opening up the market to competition, particularly in the area of cellular telephony, where the market has already been opened to a second operator;
- separating regulatory and management tasks by means of a far-reaching reform of the Ministry of Posts and Telecommunications;
- privatizing the telecommunication sector with due regard for the requirements of the universal service;
- clearly defining relations between industry and the service operators.

The ultimate aim of this process is the establishment of a national operator, grouping together all the operators currently existing in Italy: SIP, ITALCABLE, IRITEL, TELESPAZIO and SIRM. It is to be completed at the end of the summer.

Thus, from a structural point of view Italy is preparing itself for the new information age, the challenge of which was brought to the Conference's attention by Vice-President Al Gore.

The progress achieved in recent years and the challenge posed by the development of digital technology will greatly change our lives, leaving us to face the problem of speeding up telecommunication development in the world.

It is true that, in all their complexity, telecommunications themselves constitute a booming industry which can generate jobs and prosperity. It is also clear that telecommunications constitute a motor for economic and social development, and that the benefits to be derived from the development of multimedia technologies will be put to good use, as soon as possible, throughout the world.

As a result of standards and norms adopted at the international level, it is now possible, through these common access platforms, to link together the entire population of the world. While the number of technical problems has definitely been reduced, economic constraints have prevented any significant reduction in the inequalities between industrialized countries and developing countries. Thus, we should begin now to consider the prospects for access by all countries to new types of telecommunication and to establish priorities.

We sincerely hope that the ITU's endeavours to promote development will be as successful as its activities in respect of both the establishment of worldwide standards and radiocommunications.

Italy has placed its arsenal of experience and technology at the disposal of the development process and has concluded several cooperation agreements with more than 30 developing countries in Africa, Asia, Eastern Europe and Latin America. Indeed, we are convinced that only through the uniform development of infrastructures and basic services will the use of specialized telecommunication functions and the resulting improvement in the quality of human life be possible.

To this end, Italy is committed to improving social services, such as the dissemination of culture, environment control and the dissemination of new services in the field of health care. In this area in particular, computer-linked telecommunications, are leading to the creation of telematic systems capable of increasing the efficiency of health services. Telemedicine may become a way of eliminating shortcomings in the organization of health services, especially in those countries where geographical realities and economic considerations do not allow the entire population to have access to such specialized services.

In Italy, telemedicine has been used for some years in almost all relevant branches. The use of terminal equipment and computerized medical equipment has resulted in the accumulation of valuable experience of a clinical and organizational nature. This wealth of methods, applied knowledge and know-how in the area of telemedicine is available to assist all countries interested in an integrated rural development policy. In Argentina, for example, where progress in the field of telecommunications has been marked by cooperation between the Italian holding company CET and Telefónica de Argentina, a diagnostic assistance and cardiology treatment network has been created, connecting several hospitals in different towns.

The creation of such networks appears to be a top priority for all developing countries, and for countries which, because of their size, cannot use traditional means to provide health care to the populations scattered extensively over remote areas.

The first World Telecommunication Development Conference, which I have the pleasure and honour of addressing today, will undoubtedly yield concrete results, provided that our joint efforts focus not only on bridging the North-South gap - which remains our strategic objective - but above all on taking advantage of the markets presented to us by new technologies in order to be able to meet, as soon as possible, such social needs as education, telemedicine and protection and control of the territory, inter alia through the use of satellite systems. We were therefore particularly interested in the observations made by the Director Generals of INTELSAT and INMARSAT regarding the development of the satellite sector.

In this spirit of cooperation, Italy wishes this Conference every success. Thank you.

INTERNATIONAL TELECOMMUNICATION UNION

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Document 151-E
21 March 1994
Original: English

Japan

STATEMENT BY MR. YOSHIO UTSUMI, DIRECTOR-GENERAL,
INTERNATIONAL AFFAIRS DEPARTMENT,
MINISTRY OF POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Excellencies,
Ladies and Gentlemen,

I am very honoured to have this opportunity to make a statement.

Telecommunications plays a vital role in economic and social development. The importance of telecommunications, however, is not widely recognized in society. This is one reason why its development has lagged behind in developing countries.

This low recognition is not a problem that is limited only to developing countries. For instance, in Japan, our national budget for telecommunications is only 0.5% of the total national budget.

Why isn't the importance of telecommunications more widely recognized in Japan? One reason may be due to the relative success in expanding its telecommunications network after World War II.

However, such an optimistic view of telecommunications might hinder the work of building up an infrastructure for tomorrow's society. In order to make the public aware of the importance of telecommunications, we in the telecommunications business have a mission to publicize that importance, even to the extent of being overbearing.

The Ministry of Posts and Telecommunications of Japan is now formulating a long-term plan to prepare for the advent of the future multimedia society. This plan calls for the construction of a fibre-optic network across the whole country by the year 2010, to pave the way for the information society of the 21st century.

In order to accomplish this plan, we are strengthening its appeal to society at large to try to raise the priority of telecommunications. For instance, an advanced network experiment now being conducted near Kyoto is a step in this direction. We hope that this experiment will focus people's attention on the needs to expand the network further.

Such being the situation even in Japan, in developing countries, which have other pressing priorities such as food, medicine or education, there must be a much greater need to emphasize telecommunications.

Past discussions about telecommunications development seem to have been restricted only to the telecommunications experts. In order to change people's awareness of telecommunications, the discussions must be widely extended to all the people.

Telecommunications are basic to the national development of all countries. Only by changing the way people perceive telecommunications, can you raise its priority to a higher level in national policy and obtain more funds for the development.

The ITU should formulate a clear vision and set ambitious goals, and appeal to everyone outside the organization to cooperate in accomplishing them. This, I believe, is the most important mission of the ITU. It is also an issue that should be thoroughly discussed at this first world development conference.

Finally, I would like to say a word about the ITU's next Plenipotentiary Conference to be held in Kyoto.

Telecommunications has entered the age of deregulation and competition. Under the changing environment, the ITU is becoming unable to meet the expectation of member administrations. The ITU needs to change. We cannot afford to bury our heads in the sand.

The structural reorganization adopted at the Additional Plenipotentiary Conference in Geneva is only a half step towards that change. The Kyoto Plenipotentiary Conference will determine whether or not the ITU will be able to discharge its role in the forthcoming decades.

In this connection, Japan has proposed the establishment of a Policy Conference in the ITU. This will serve as a forum for formulating policies for the provision of new telecommunication services such as satellite mobile telephone and transborder satellite television. The ITU should take the lead in fashioning a new framework for the implementation of new technologies for mankind.

Kyoto is one of the best known cities in Japan, famed for its beauty and as a centre of history and classical culture. This year the city is celebrating the 1 200th anniversary of its foundation as Japan's ancient capital. We would like to welcome as many delegates as possible.

Thank you very much for your attention.

INTERNATIONAL TELECOMMUNICATION UNION



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Hashemite Kingdom of Jordan

STATEMENT BY H.E. MR. SUHEIMAT TAREQ,
MINISTER OF POSTS AND TELECOMMUNICATIONS

Mr. Secretary-General of the ITU,
Honourable Ministers,
Distinguished Delegates and Guests,
Ladies and Gentlemen,

It gives me great pleasure to participate in this First World Telecommunication Development Conference and to share with such a distinguished audience our perception regarding the role of telecommunications in our national development and how we perceive the future of the telecommunication sector in Jordan.

First, allow me to say that many activities/events have been happening in the field of telecommunications worldwide since the publication, ten years ago, of the report of the Independent Commission for Worldwide Telecommunications Development - The Missing Link.

These events include various exhibitions, publications, the restructuring of our Union (the ITU) and the Regional Development Conferences preceding the present World Event under which we are gathering.

Second, may I dare say that the valuable outcome of such events is and should be very useful in enlightening the various possible routes for Governments to march in their endeavour to enhance telecommunications development.

Therefore, we, in Jordan, are participating in many of these events including the Arab States' Regional Development Conference, one of its outcomes was the Cairo Declaration. We take these events seriously and try to cultivate the benefits as much as possible.

We are drawing as well on the experience of other countries whenever and wherever possible to embark on the most suitable route for our local needs.

We have learnt that an orderly expansion of the national telecommunications network can only result from a well-formulated plan. Accordingly, a fifteen year master plan was prepared for the country of Jordan.

We, in Jordan, are totally convinced of the telecommunication pivotal role for our national development.

Hence, and in spite of, the austerity measures imposed due to economic hardships encountered as of 1988, my government has accorded telecommunications high priority and approved a National Telecommunication Development Programme for the period 1993-1997, to double the present exchange capacity by 1997. Invitations for bids were issued two weeks ago. Urban and rural areas will benefit from this programme. This programme is part of our master plan.

Realizing the changing environment affecting the telecom sector worldwide being: technology advancement and pricing and policy issues, my government has just, prior to my departure, approved and declared a new national policy to reform the sector. This reform will involve:

- a new legislation (Telecom. Act);
- separation of policy and regulatory matters from telecom. operations;
- the commercialization of the Jordan Telecommunication Corporation under our local Companies Law, initially, with involving the private sector in due time in the future;
- increasing liberalization, competition, and the participation of the private sector in non-conventional and conventional services and this has been embarked on with the awarding of the cellular telephone soon.

Ladies and Gentlemen,

my thanks go to the Government of Argentina and the Buenos Aires' authorities for their warm welcome, hospitality and organization.

Also my heartiest thanks go to those who work behind the scenes to make our conference a success.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 153-E
21 March 1994
Original: English

Republic of Korea

STATEMENT BY MR. JEONG-JAE IM,
DIRECTOR-GENERAL, MINISTRY OF COMMUNICATIONS

Excellencies,
Secretary-General, Dr. Tarjanne,
Director of the BDT, Mr. Djiwatampu,
Distinguished Delegates,
Ladies and Gentlemen,

On behalf of the Republic of Korea, I am deeply honoured to deliver the message to the first World Telecommunications Development Conference being held in this wonderful city, Buenos Aires.

Owing to the leadership of the Secretary-General and the Director of the BDT, the first WTDC is now opening the door to a new era for international cooperation focusing on telecommunications development and harmonization of all the Member countries in today's challenging telecommunications environment.

I hope that this Conference can be an impetus to actually bridge the gaps between the developing countries rather than another forum to just talk about the issues themselves.

To this end, the Republic of Korea is fully willing to support all the activities of the ITU, and the Telecommunications Development Sector in particular.

As the World Telecommunication Development Report briefly explained, Korea not only increased the teledensity from 12 to 36 in 1992, but also is under the large-scale restructuring of its infrastructure this year, focusing on further privatization, deregulation, competition and globalization.

As a result, foreign investments are welcome into Korean telecommunication markets, particularly mobile communications and value-added communications areas.

While pushing forward developing high technologies such as a digital mobile cellular system called CDMA, and establishing information super-highway, we have extended our cooperative relations through international arenas like the ITU as well as through various bilateral arrangements.

However, today's achievements in the field of telecommunications come from a variety of difficulties.

Thus, we would like to share our experiences learnt from the last two decades with you, not only through the forum like this WTDC but also offering training programmes to other developing countries.

Taking this opportunity, lastly, I would like to invite you all to the Universal Postal Union's Congress to be held between 22 August and 14 September 1994 in Seoul, prior to the ITU's Plenipotentiary Conference in Kyoto.

Looking forward to welcoming you to Seoul, I sincerely hope that this historic WTDC can achieve all the success.

Thank you for your kind attention.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

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Malaysia

STATEMENT BY H.E. MR. DATO' SERY S. SAMY VELLU,
MINISTER OF ENERGY, TELECOMMUNICATIONS AND POSTS

Mr. Chairman,
Honourable Ministers,
Distinguished Secretary-General,
Distinguished Delegates,
Ladies and Gentlemen,

First of all let me thank the ITU and its secretariat for having given me the opportunity to address this important first World Telecommunication Development Conference.

Mr. Chairman, allow me on behalf of my delegation to congratulate you on being elected the Chairman of the Conference, and hope that under your able leadership, this Conference will be able to achieve its objectives. I must also thank the host Government, Argentina, for the excellent reception and organization of this important Conference.

Mr. Chairman, yesterday we had the opportunity of listening to a very eloquent and beautiful speech by the Vice-President of the United States - Al Gore - who had appropriately emphasized the vital importance of nations having good telecommunication systems to meet the needs of modern living. I must say, I am highly impressed by the ideas that he proposed, in particular the urgent need of establishing a good information infrastructure of GII, aimed at creating an integrated worldwide communication network participated by all countries of the world. My delegation and I believe that United States Vice-President Gore's proposal is the way of the future, a novel idea, if carefully implemented, will bring about an even earlier realization of the global village, that would certainly benefit millions of people around the globe.

Ladies and Gentlemen, in the last couple of years, we have witnessed the ITU reviewing its organizational structure to specifically address the issue of poor telecommunications development in less developed economies around the world.

The BDT was set up by the ITU to spearhead this monumental task and this Conference is our first attempt to produce a comprehensive action plan for world telecommunications. While we congratulate the ITU and its BDT for undertaking this monumental effort, we are however looking forward for a more effective role of the ITU in handling world telecommunications issues.

Presently, the ITU only recommends its resolutions to be adopted and implemented by Member countries. Perhaps we must now look into how the ITU could work more effectively in developing, coordinating and harmonizing world telecommunication services, especially in the less developed economies.

For this purpose, Malaysia would like to see that the ITU should endeavour to find the most practical formulae in assisting developing nations to carry out:

1) reform and restructuring of the telecommunications sector;
2) development of telecommunications networks and services particularly in the rural areas;
3) improvement of the maintenance of the telecommunications networks services, especially in maintaining the quality of services at an acceptable level and at a minimum cost;
4) human resource development.

Malaysia would like to strongly recommend that the ITU seriously consider, support, assist and participate in the implementation of Resolutions and Recommendations of the Regional Telecommunication Development Conference for Asia and the Pacific (ASRDC), in particular AS-RDC/93 Resolutions No. 1 to 15, and AS-RDC/93 Recommendations No. 1 to 4, which address the above issues.

Ladies and Gentlemen, allow me to touch on the issues of unbalanced telecommunication development between developed and less developed nations. This disparity in development of the telecommunication services does not only exist between nations. More importantly, we are also witnessing that within nations we can still find rural areas without some basic telecommunications services. The market economic forces cannot address this unbalanced development effectively without socio-political policy intervention. The gap in telecommunications development between the developed and the less developed countries should be addressed by clear policy guidelines and action plans undertaken by the ITU. In this regard, I sincerely hope that in our attempt to develop the Buenos Aires action plan for global telecommunications infrastructures and services, we must not neglect to address this issue seriously, and if necessary even to undertake a paradigm shift in the approach to the subject.

Ladies and Gentlemen, we cannot help but notice that the role of developed countries is very critical in upgrading telecommunication services in both the developing, as well as the less developed countries. Mature economies are able to provide capital, technology, skilled manpower and equipment which are necessary for telecommunication development. In this regard, it is vital to look into all the factors in facilitating the flow of capital, manpower, technology and equipment from the developed countries to the developing countries.

An important factor in determining the flow of investment capital is the ability for developing countries to provide a conducive investment climate which includes liberalization of the telecommunications industry, flexible financial policy and fiscal incentives. The saturated telecommunications market of the developed countries will shift new investments to foreign overseas markets if there are adequate incentives provided. For this purpose, the Asia Pacific Economies appear to be the most exciting and dynamic region for investment, offering a great many opportunities for international collaboration in its growth and development, particularly for the telecommunication sector.

The Asia-Pacific market includes many of the fastest growing economies in the world. Growth rates of 6% and more are the rule rather than the exception. China alone in 1993 had a GDP growth rate of 13%. The region has more than 2 billion consumers, currently served by 130 million phone lines only. Much of the region's infrastructure is struggling under the strains imposed by rapid economic growth. These strains are now reaching such proportions that existing infrastructure, including telecommunications, will no longer be able to support continued growth. The development of the telecommunication network has been identified as a priority by many

governments of the region. The magnitude of the infrastructure investment is enormous. We are happy to note that many of the countries in Asia-Pacific are providing flexible financial policy and physical incentives. It is worth the efforts for other developing countries to emulate the approach of the Asia-Pacific nations in their attempt to modernize and upgrade the telecommunication sector.

Ladies and Gentlemen, the link between telecommunications and economic development is very well established and governments of every country recognize this correlation. However, it is the government with appropriate "political will" that holds a key role to enable effective mobilizations of various "resources" in bringing about real changes to telecommunications development. However, "political will" alone, may not be a sufficient condition for driving and pushing telecommunication development. We believe three other factors need to be satisfied namely, capital mobilization, technical expertise requirement and liberalization.

We have indicated that the magnitude of infrastructure investment in the developing countries is enormous. Of the infrastructure that does exist, one world bank estimate established that between 20% and 50% of the developing world's telecommunication equipment is not working through lack of funds for maintenance and upgrading. Domestic savings within the developing countries, though traditionally high in some countries is still not enough to fund development in the telecommunication sector. I hope that this Conference will address the issue of the need for creative means of financing telecommunication development that would free governments from added financial burdens.

The second issue for increasing telecommunications opportunities is the need for technical expertise, associated with the development of telecommunications infrastructure using new digital fibre-optics technologies. These new technologies will enable more rapid network growth. Other key areas of know-how contribution include new techniques in the management of complex operation and understanding of how to deliver and operate enhanced customer services, marketing and operation support systems. Malaysia would like to see foreign telecom partners not only concentrate on the "selling" of their telecommunications systems and equipment, they should be packaged to include training facilities and adequate provision for technology transfer.

Malaysia has embarked on reforming and restructuring the telecommunications sector since 1987. The participation of the private sector in transforming and developing the country's telecommunications infrastructure has reached a level where the necessary prerequisites have been emplaced. Digitalization programmes and "wiring" the entire country are very actively pursued. We are confident of leap-frogging into a fully developed telecommunications infrastructure by the year 2000. Many optical fibre cable construction projects are in the pipeline. In fact, trunk fibre networks have been laid criss-crossing the peninsular Malaysia and across the South China Sea, linking the eastern part of the country. With Malaysia's own satellite, MEASAT, scheduled for launching in 1995, it is within Malaysia's reach now to develop telecommunications "super-highway" for the nation's needs. The key to this developing trend is the effective liberalization efforts undertaken by the government, by allowing private participation in the telecommunication sector. Competition has been gradually introduced on many fronts, such as the local loop, as well as in the wireless and other value-added network services. The concept of telecommunications liberalization being essential to meeting demands for improved telecommunication services is well emphasized even by the World Bank. Liberalizing the telecommunication sector will therefore enhance the efficiency and productivity of the industry.

Mr. Chairman, Ladies and Gentlemen, in the pursuit to upgrade telecommunication facilities in each Member country, we are normally faced with technical and operational problems. Again citing Malaysian experience, we have to coordinate frequency allocation for the MEASAT orbital slot and other radiocommunication channels with neighbouring common border nations. Coordination with satellite networks affected by MEASAT is now in progress. Coordination of satellite networks is needed when the operation of one satellite causes disruption to the services offered by another satellite through interference. Altogether, there are ten administrations identified as needing coordination with the MEASAT networks. All of the administrations have made initial assessment of our parameters and have confirmed that coordination is needed with MEASAT networks.

Mr. Chairman, Ladies and Gentlemen, we propose that the ITU Rules and Regulations be revamped to assist in resolving these issues. We do hope that a new coordination mechanism be established to ensure smooth and speedier coordination processes among Member countries and telecommunication operators. We strongly urge that the ITU must have strong sanctions for non-compliance or disregard for the ITU Regulations.

Ladies and Gentlemen, the importance of the telecommunication sector has never been overlooked by nations around the world. Our gathering here today is another event reflecting the commitment of nations and operators working together to plan, coordinate, regulate, standardize and harmonize the world telecommunications development. It is through conferences like this that we have the opportunity to bring together all the key players in the industry. They include high-level government officials, international telecommunication organizations, multilateral and bilateral funding agencies, manufacturers and consultants. I have no doubt that with such a distinguished gathering, the deliberations of this Conference will lead to the further refinement of the goals, policies and strategies for future development of the telecommunication sector.

Mr. Chairman, I have followed with keen interest and deep admiration the changing features of the ITU ever since Dr. Tarjanne assumed the post of Secretary-General in 1989. May I take this opportunity to congratulate the Secretary-General on his excellent contribution to the work and activities of the ITU.

Mr. Chairman, may I also join other distinguished delegates in expressing our sincere thanks and gratitude to the President of Argentina for the importance he attaches to this First World Telecommunication Development Conference, and the support that his government and people have extended to make this Conference a success.

Thank you.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 155-E

Kingdom of Morocco

CONTRIBUTION BY H.E. MR. ABDESLAM AHIZOUNE,
MINISTER OF POSTS AND TELECOMMUNICATIONS

Ladies and Gentlemen,

In view of the large number of third-world countries to have joined the International Telecommunication Union after gaining independence, our Organization has established structures to help such countries to manage and to plan the further development of their telecommunication networks. While the ITU has been extremely successful in achieving these worthy objectives, more than 30 years later the international community cannot but note with regret the growing gap which divides those populations which are over-supplied with the very latest means of communication, and those which do not even possess the bare minimum. We cannot, therefore, talk about the right to communication without first considering the resources which will have to be mobilized and the time required to scale this gap down to more acceptable proportions.

After reconsidering their development policy in all areas of activity, an increasing number of countries have opted for a new economic system. This system, based on the market economy, the stimulation of private enterprise and competition, has found its way into the telecommunication sector. However it should be noted that the increasingly commercial nature of this sector often impedes the fulfilment of its functions as a public service. This is the chief reason why the Kingdom of Morocco has approached the restructuring of its telecommunication sector in a cautious manner, introducing reforms aimed at promoting autonomous financial and administrative management within the framework of a public establishment and adopting a bold equipment policy which has recently led to the sustained growth of the telephone network: 23% in 1991, 32% in 1992 and 26% in 1993.

As a result of this approach, Morocco has managed to increase the number of subscribers, from 240 000 in 1988 to 830 000 in 1993, by introducing various services such as data transmission and the mobile services, including the GSM system.

In the light of this success, next year will see the introduction of a second set of reforms aimed at separating the postal and telecommunication sectors, opening up new telecommunication services such as data transmission or mobile services to competition.

Ladies and Gentlemen,

In Morocco, as in other countries, telecommunication networks, in full expansion, are developing today in a constantly changing environment which encourages competition and alliances between major operators to the detriment of new networks, which are often fragile and unable to reap the full benefits of the GATT world negotiations. It is therefore of the utmost importance to help these countries maintain their position in the great international market of the future. Assistance from the ITU and GATT is therefore essential.

In a large number of countries, priority needs in the food, health and education sectors account for a significant proportion of national income, with the result that the telecommunication network remains in an embryonic state today, and the accumulated lag is more and more difficult to make up. Even if the resources are available in the telecommunication sector, the fact still remains that the authorities favour the creation of new networks to open up important remote areas of the country, to the detriment of the modern telecommunication means which are necessary for productive investments.

Thus, multilateral cooperation in these areas is becoming more necessary than ever. If such cooperation is inadequate today, it is because, notwithstanding the ITU's noble objectives and sustained efforts, the needs are far greater than the means available. Consequently, it is essential for our Organization to develop its capacity to adapt to the rapid development of technologies, so as to make the least developed countries aware, at the appropriate time, of the need to formulate a policy aimed at extricating their telecommunication sectors from the vicious circle of competition with other social sectors.

Ladies and Gentlemen,

This Conference provides the perfect opportunity, once the goals have been set, to determine a new course for ITU activity, favouring the more efficient use of the modest means at its disposal. We have identified three main areas for technical cooperation and assistance, namely:

1. Development of a training system ensuring the efficient transfer of knowledge to developing countries in order to improve their ability to choose from a wide range of constantly changing technologies and their understanding of the techniques involved in operation, management and planning in response to the new environment.
2. Development of means enabling the least developed countries to define the structure of their telecommunication sector in accordance with their resources, and to encourage the private sector in developed countries to enter into experimental partnerships with the least developed countries in order to build a telecommunication network which, once they have reached the critical self-financing stage, can meet the needs of the public and the national economies.
3. Efforts to facilitate the search for multilateral and bilateral financing on favourable terms, since the financial viability of the sector will remain uncertain until the basic infrastructure has reached a certain level and rural telecommunications no longer require heavy financing.

I hope that you will give attention to these three areas.

INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

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21 March 1994
Original: English

Papua New Guinea

STATEMENT BY MR. LINSAY LAILAI,
SECRETARY, POST AND TELECOMMUNICATIONS CORPORATION

Mr. Chairman,
Mr. Secretary-General,
Your Excellencies,
Distinguished Delegates,
Ladies and Gentlemen,

May I begin by expressing my congratulations to you for your election to the chairmanship of this Conference and may I add my appreciation for the generous hospitality shown to my delegation by the Administration and the people of Argentina.

I would also like to express our thanks to the ITU and the BDT for organizing this first World Telecommunications Development Conference.

My delegation has travelled from the other side of the globe to participate in this very important Conference because we believe that telecommunication is vital to socio-economic development. It is indeed the missing link that has to be made to bridge the gap between developed and developing countries.

During May of last year, our Minister for Information and Communication, the Honourable Martin Thompson, pledged Papua New Guinea's support to this Conference in Singapore at the Regional Development Conference. I reaffirm the Government's and the people of Papua New Guinea's commitment to this World Telecommunication Development Conference in Buenos Aires.

Papua New Guinea is a state comprising of several hundred islands with four million people who are Melanesian and speak over 700 different languages and with cultures as old as the land itself.

The system of government is based on the Westminster system with democratic representation across ethnic and geographical boundaries.

Like many developing countries we have both urban and rural populations, but 85% of the people are rural dwellers.

The Papua New Guinea Post and Telecommunication Corporation, the only carrier, is being planned and developed on the principle that the people have the right to be dynamically involved in the process of their own development and should have the opportunity to participate in communication processes at all levels.

My country believes that all people have the right to have access to information and communication. They shall have the means to participate as both initiators and recipients of communication.

We continue to be dependent on global trends in communication technology. Our own telecommunication system is presently undergoing a process of modernization to keep up with advances in technology.

Mr. Chairman,

with the end of the Cold War and the rapid approach of the year 2000, the world has entered a period of unprecedented change. Developments in technology, international economics and the greater and more direct involvement of the United Nations in world affairs, require all participants in international relations to take on a broader view of all issues.

Papua New Guinea is no exception as no country can afford to be an island.

In a period of globalization in communication, production and trade, as well as international law, people, businesses and governments throughout the world have to think, plan and act on a global basis.

My country recognizes the importance of satellite communications and the developments in technology in this field. The application of satellite technology in countries like Papua New Guinea is necessary in view of the difficult geographical terrain coupled with land tenure problems.

Although there have been proposals to launch our own satellite, we recognize that it is a very expensive business, consequently Papua New Guinea has pursued a partnership arrangement to share costs and develop a regional network.

Mr. Chairman,

information technology embraces the application of science and engineering for the enhancement of human performance.

In a wide range of activities, information technology facilitates the acquisition, transfer, processing, assimilation and utilization of information.

With this in mind and also mindful of the trends in global telecommunication developments, we have set our goals and objectives up to the year 2000 for digitalization of our network both in switching and transmission.

Telecommunications infrastructure is a priority requirement for development. In some countries like my own, the development of infrastructures like roads, transport and agriculture will precipitate the growth of telecommunications.

In comparison with most other developing countries, Papua New Guinea still has a long way to go in developing her communications infrastructure. Development of land mobile telecommunications is slow because of a limited road network.

Free movement of people between different provinces of the country will increase demand for telecommunication services while the operation of multinational companies in the mineral and resource development sectors is likely to place emphasis on packet switched data networks.

Mr. Chairman,

the rugged geographical features in my country serve to emphasize the need for efficient disaster and rescue services. The projected global, maritime, distress and safety system is a concept we fully support.

With advances in communications technology we recognize the increased demands on the radio-frequency spectrum and the need for effective and efficient national radio-frequency spectrum management. We believe that a prerequisite for good frequency management is an equitable and defensible spectrum pricing policy. Consequently, Papua New Guinea initiated the proposal which led to a draft Resolution from the Asia-Pacific Regional Development Conference calling for a study on spectrum pricing. Although several countries supported this draft Resolution it appears to have been omitted from the draft Buenos Aires Action Plan. We would wish to see this Conference include this much-needed study which would benefit the developed as well as developing countries, either as a separate task or as a part of the Study Group Question on Management of the radio-frequency spectrum

Mr. Chairman,

our commitment towards the ITU stems from our conviction that this Union exists for the improvement of telecommunications in a truly global sense.

Papua New Guinea supports the notion of technology transfer among developing countries for the benefit of our global community.

Telecommunications is one of the most profitable businesses worldwide. To improve services deregulation and competition is becoming regular. We are considering these policies. The Post and Telecommunication Corporation, being the sole provider of telecommunication services in Papua New Guinea, is currently optimizing its financial resources and investment strategies while seeking to reduce cost.

Employment of expatriate staff and consultants will be reduced in favour of experts from international organizations such as the ITU, Intelsat and CTO.

It is noted that most developing countries in our region have been utilizing ITU technical assistance and experts, i.e. in telecommunications restructuring and development. Apart from possible financial benefits the use of organizations such as the ITU, we believe, will facilitate advantages such as technology transfer.

In the development of telecommunications we face both the challenge and the opportunity of working in a spirit of international cooperation with like-minded partners under the umbrella of the ITU.

Papua New Guinea is stretching the limits of its resources and human capacity to emulate and constantly strive for the best in telecommunications as in other fields of human endeavour recognizing that working together there is little we cannot do.

I thank you for this opportunity to speak and I look forward to a very successful Conference.

Thank you.

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INTERNATIONAL TELECOMMUNICATION UNION

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(21-29 March 1994)

Document 157-E

Russian Federation

STATEMENT BY H.E. MR. ALEKSANDR E. KRUPNOV,
FIRST DEPUTY MINISTER OF POSTS AND TELECOMMUNICATIONS

Goals of the first World Telecommunication Development Conference in the light of the problems of telecommunication development worldwide

Mr. Chairman,
Mr. Secretary-General,
Ladies and Gentlemen,

Allow me, on behalf of the Telecommunication Administration, the Minister of Posts and Telecommunications and the Government of the Russian Federation, to convey our greetings to the first World Telecommunication Development Conference, and to express our gratitude to the Telecommunication Administration of Argentina for the excellent organization of the Conference and its endeavours to overcome the fundamental problems associated with telecommunication development.

The first World Telecommunication Development Conference, which follows the first World Telecommunication Standardization Conference held in Helsinki in March 1993 and the World Radiocommunication Conference in November 1993, is the culmination of a series of ITU events set in motion by the decisions taken at the ITU Additional Plenipotentiary Conference in 1992.

However, the first World Telecommunication Development Conference is much more than just the inaugural event of one of the Union's Sectors. It heralds the beginning of a new era, an era in which we will move towards the solution of a global problem - to achieve a balanced distribution of advanced telecommunication technology worldwide.

Nowadays, the provision of technical assistance in the field of telecommunications to individual countries or groups of countries is not the only item on the agenda; we have to tackle the global problem of worldwide telecommunication development, using modern telecommunication technology and having regard to the rapidly changing telecommunication environment. This is essential if we are to achieve one of the Union's most important goals: to extend the benefits of new telecommunication technologies to all of the earth's inhabitants.

The ITU's standard-setting, technical and regulatory activity and, no less importantly, its organizational work with administrations and operators must be geared to serving that goal.

In this connection, the work of the Telecommunication Development Sector takes on special significance. As well as the Telecommunication Development Bureau's traditional technical cooperation and assistance activities, one of the main tasks that lie ahead is to address issues relating to the harmonization of telecommunication networks worldwide, bearing in mind that technical cooperation and assistance problems have to be solved within the framework of - and as one of the main elements of - the broader problem of harmonization of telecommunication development.

Thus, in defining a strategic work programme for the Telecommunication Development Sector and procedures governing participation in its work, we must identify the key issues affecting the legal and technical basis for world telecommunications, since we stand today on the threshold of a new era for telecommunications worldwide.

In our view, these key issues include:

1. Ensuring unrestricted access to new telecommunication technologies for all countries without exception. This can be achieved through the regulation of unrestricted access to modern telecommunication facilities and services.

In our opinion, there should be no restrictions on the use of modern telecommunication facilities and services, since such restrictions constitute an obstacle to the fulfilment of the ITU's goals of promoting harmonious development and most efficient use of telecommunication services worldwide.

In turn, the right to unrestricted access to modern telecommunication facilities and services allows a systematic approach to such strategic telecommunication development problems as:

- attracting investment in telecommunication development;
- allocation and mobilization of developed countries' resources for the development of telecommunications.

It would therefore be wise to consider drafting a position paper on the right to unrestricted access to telecommunication facilities and services as a prerequisite condition for effective telecommunication development. The paper would incorporate all the provisions governing ITU's activities aimed at securing equal access to modern technologies in the field of telecommunications for all countries participating in the work of the Union.

In our opinion, such a paper would be one of the important elements of the strategic tasks constituting the "Buenos Aires Action Plan".

However, given the fact that this problem is of the utmost importance for the work of the ITU as a whole, the Conference's position should also be brought before the Kyoto Plenipotentiary Conference for consideration and decision.

We have submitted proposals for an appropriate draft Resolution to that effect. In the same vein as the "spirit of Melbourne" and the "realism of Helsinki", it would be appropriate for the paper to be called "the Buenos Aires Initiative".

2. Readjusting tariff regulations, since tariff aspects have a significant impact on the rational use of international telecommunication networks, economic returns on them and their development potential.

We believe that, in formulating a position on tariff matters, it is necessary to accommodate the national interest of telecommunication administrations, which have different specific characteristics, with a unified approach to addressing strategic tasks for the development of telecommunications worldwide.

In our view this matter should be addressed by the Conference, and will provide an opportunity to draw up proposals for ensuring legitimate revenues from activities in the field of telecommunications while at the same time protecting the interests of telecommunication service users.

3. Modelling the Telecommunication Development Sector's work on the structure and working methods of the Radiocommunication and Standardization Sectors, while taking due account of the specific characteristics of the Development Sector's activities.

Accordingly, it would be appropriate for the Conference to adopt a document setting out the rules of procedure and working methods of the ITU-D.

Proposals on this subject are put forward in the document which our Administration has submitted to the Conference.

Document DT/5 prepared by the support group may also serve as a useful basis for drawing up such a document.

It would seem, however, that any such document should cover aspects relating to management of the work of study groups; responsibility for examining the Questions forming the study programme and for the preparation of Recommendations and handbooks; and the status of study group and working party Chairmen. Amendments therefore need to be made to Document DT/5.

4. Identifying the best possible mechanism to enable the Telecommunication Development Sector to study the impact of social and economic factors on the technical and operational aspects of the establishment of radiocommunication systems and networks.

In this connection, particular attention should be drawn to:

- harmonization of sound and television broadcasting programme distribution networks in developing countries;

and also

- implementation of the basic automated radio spectrum management system in administrations of developing countries.

As you know, ITU has come to refer in its daily work to the concept of "regional presence". To use ITU terminology, therefore, we might say that our gathering here is an example of just such a "presence". We are here, where it matters, and a job lies ahead:

- to help lay the foundations for a new global telecommunication era, and, in the more immediate future:
- to draft documents which, in conjunction with the decisions of the Helsinki World Telecommunication Standardization Conference and the Geneva World Radiocommunication Conference, will constitute a basis for the work of the Kyoto Plenipotentiary Conference, whose task it is to put the final touches to the reorganization of the Union's structure and working methods.

Mr. Chairman, I could not conclude my statement without referring to two great Latin American writers: Jorge Luis Borges (Argentina) and Gabriel Garcia Marquez (Colombia).

As we leave Buenos Aires after the Conference, we should not resemble the hero in the story by Jorge Luis Borges "The Garden of Parting Ways", full of regret that the time imparted to us was not put to good use, and pinning all our hopes on future lives and generations.

On the contrary, we should make our contribution to the development of worldwide telecommunications here and now, in order to depart in the knowledge that our work at the Conference has brought about changes and improvements and that a new era in global telecommunications is approaching. We will then be able to say, to paraphrase "One Hundred Years of Solitude" by Gabriel Garcia Marquez, that: "It is no longer Wednesday in Macondo, a new day is dawning".

Thank you, Mr. Chairman.

INTERNATIONAL TELECOMMUNICATION UNION

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WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 158-E

Spain

STATEMENT BY MRS. ELENA SALGADO MENDEZ,
SECRETARY GENERAL OF COMMUNICATIONS,
GENERAL SECRETARIAT OF COMMUNICATIONS

Good-day,

I should like in the first place to thank the Government and people of Argentina for their hospitality, thanks to which it has been possible to hold this World Telecommunications Development Conference.

In the second place, I should like to thank the International Telecommunication Union and its General Secretariat for this opportunity to take the floor to report briefly on some of the aspects of telecommunication development in Spain, to make a sincere offer of cooperation for the implementation of the Action Plan which will emerge from this Conference, and lastly to provide some food for thought for our discussions in the days ahead.

Spain is now part of the group of developed countries; it is a full member of the European Union, and over the last 15 years has undergone an economic and social transformation which has given it an important place in the world economy. In this transformation, communications in general, and more particularly telecommunications, have played a significant role in three basic respects:

- firstly, because they have made our companies more competitive. In increasingly internationalized markets, with global horizons, the speed of transmission of information has become vital;
- secondly, because it has improved the standard of living of all our citizens;
- thirdly, because communications in general, and telecommunications in particular, have been a tool of social and territorial unity, thanks to which the regional inequalities have been either eliminated or at least greatly diminished in my country.

And it is on this point that our practical experience tends to be similar to the current and future experiences of many of the countries represented here.

With a telephone penetration of 35 lines per hundred inhabitants, and with 85% of households equipped with telephones, there are still in Spain small population centres which do not have access to a telephone line. Why? The very uneven distribution of population and geographical difficulties have given rise to line installation costs which made access to the service prohibitive in economic terms.

As a solution, a plan has been initiated for the extension of rural telephony with cellular access, which will use radio technology to achieve real universal service in Spain by the end of 1996. Under the terms of this plan, 25% of which will be financed from regional budgets and 75% provided by our main operator, Telefónica de España, all Spanish citizens, wherever they reside, will have access to the telephone service under the same conditions of connection time and cost.

I mentioned earlier that telecommunications increase the productivity of companies. The fabric of companies in Spain, as in many other countries, is made up to a great extent of small and medium sized companies, with relatively few large ones. In more concrete terms, 70% of the companies in Spain employ less than 20 people. These companies and these workers are sometimes unaware of how they can obtain all the advantages of the modern telecommunication systems which are available.

Public and private resources must therefore be employed to train the staff of these small and medium sized companies. In Spain, we have made use of funds provided by the European Union, supplemented by our own funds, drawn from the state budget, to carry out training programmes which have benefited tens of thousands of people. These activities use modern technologies with remote interactive teaching by satellite, and teaching material has been developed in Spanish for repeated use.

I have mentioned some of the experience Spain has undergone in the area of telecommunication development, and more concretely some examples of the actions undertaken in order to bring the benefits of modern telecommunication systems within the reach of everyone, that is all citizens, whatever their economic condition or place of residence, and to any company, whatever its size or sector of activity.

I might add, even from a strictly economic point of view, that however advanced the telecommunication systems used by the major companies may be, unless the citizens are provided with modern, reliable and easily available public services, ensuring satisfactory communications among the population, the development generated will rest on a fragile base, which may be suitable for export-oriented economic activities, but which will not really improve modern domestic markets.

This is why the guarantee of universal public service must be given a dynamic interpretation and once the penetration levels for an acceptable telephone service have been achieved, an effort will need to be made to improve the quality of services and to incorporate the basic elements of other more advanced services.

I should like here and now on behalf of my country make you an offer of cooperation on various fronts:

- by giving you the benefit of our experience in the use of cellular telephony to complete the extension of the telephone service, particularly in rural areas of low population density;
- by offering our cooperation with the training of staff in small and medium-sized companies for a better use of telecommunication technologies and services. In practical terms, Spanish companies have been taking an active part, since its foundation in 1982, in the Hispano-American Association of Telecommunications Research and Study Centres;
- thirdly, and quite naturally, by taking an active part in all activities resulting from the Buenos Aires Action Plan; lastly, in the field of government cooperation, by making full use of the capacities of the HISPASAT satellite system, whose coverage area includes a good proportion of Western Europe as well as all Spanish-speaking America, from New York to Tierra del Fuego.

With the two satellites making up the system, a real communications bridge has been established between the countries of the Ibero-American community. Transmissions have already been started for the Ibero-American Educational Television Service, in which over 200 educational and cultural institutions in 20 countries have been taking an active part, with more than 500 centres receiving the signal. The contents cover a variety of subjects, such as health, the environment, teacher training and post-graduate courses.

In June this year, we shall start broadcasting on a new television channel, HISPAVISION, which will offer a variety of programmes with a unifying intention, in the spirit of the declaration of the summit of Heads of State and Government, which was held in Guadelajara (Mexico) in 1991, where it was agreed, if I may quote: "to promote the use of satellite communication systems in order to further the integration and globalization of links between Ibero-American countries".

I would like to mention another type of participation in the development of telecommunications, namely the involvement of Spanish companies in the privatization of Ibero-American telecommunications, which has been backed by Spanish capital in six countries.

This last point leads me directly to suggest a few subjects for discussion.

One of the problems related to telecommunication development is finance. There is no doubt that the less advanced countries can and must use the most modern technologies, of lower unit cost, without having to go through the process of replacing obsolete techniques and equipment. However, despite some cost reductions resulting from technological advances, it is still true that developing the telecommunication infrastructures of a country requires huge investments, for which in many cases the domestic resources are insufficient. Such being the case, the intake of foreign capital is an unavoidable necessity, requiring appropriate policies.

Undoubtedly, the expectations of growth and profitability of telecommunication activities constitute the prime attraction for investments from abroad. There should, however, also be a stable and clearly established framework. It is not so much a question of introducing special measures, which would be conducive to a circumstantial intake of resources, but rather of creating an atmosphere of security and stability for investors, by strengthening telecommunication operators, either on an exclusive or a competitive basis, but in any case as a permanent feature in the country.

Furthermore, this regulatory task is not in our view, or at least in my view, the only task for which the public authorities are responsible. They have an obligation, or at least such is our opinion, to promote telecommunication development in such a way that it will in practical terms ensure the right of all to information and to communication.

When this conference was inaugurated, the Vice-President of the United States mentioned a Spanish poet, Antonio Machado, who said that by going you advance. Today, in response, I should like to mention not a North American poet, but the words of Al Gore himself who, when publicly presenting the information super-highways, said that these capacities and these technologies cannot and must not divide citizens into the have's and have not's of information access.

In other words, private investment but with public initiative, an understanding of telecommunications, not only as an instrument for democracy, but also for solidarity. For that purpose, promoting the development of telecommunications, avoiding any duality and making sure that it serves the objectives of social and territorial cohesion. I would like to say finally, using an expression of Minister Jose Borel, who advocated for the development of telecommunications a combination of private investment, as large a market as possible and the action of the public sector, as appropriate. Thank you very much.

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INTERNATIONAL TELECOMMUNICATION UNION

WTDC
BUENOS AIRES 1994

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 159-E
21 March 1994
Original: English

Republic of Suriname

STATEMENT BY H.E. MR. JOHAN ADOLF DEFARES,
MINISTER OF TRANSPORT, COMMUNICATIONS & TOURISM

Honourable Mr. Secretary-General of the ITU,
Deputy Secretary-General,
Mr. Chairman of the Conference,
Distinguished Delegates and others present at this most important event,

It is for me, a great privilege and honour to address you on behalf of the Government of Suriname, at this most important event.

The Government of the Republic of Suriname is aware of the fact that the role of "Telecommunications for Sustainable Development" has been underestimated so far. The ITU should therefore be congratulated on the promotion of this theme. We believe that sustainable development requires good governance, accountability, human resource development, effective environmental management, appropriate health care and education as well as adequate community involvement, particularly in the rural areas.

The impact of telecommunications in a sustainable development process would instigate socio-economic development and help bring about processes of diversification of the economy of the less developed countries. To this end productive possibilities could be identified and explored, which will open up new areas in the economy, especially in the rural areas and the interior, the Amazon rain forest of Suriname.

Inspired by the Acapulco Declaration of March 1992, Suriname has progressed significantly in terms of telecommunication modernization and expansion. Between 1989 and 1993 Suriname has increased its telephone density from 7.5% to 13.1% and we believe that by the end of this year we will reach a penetration of 16%. With the appropriate technical assistance and cooperation of the ITU we are applying modern telecommunications technology such as the further digitization of our networks, the introduction of fibre optics in the telecommunication infrastructure of the urban areas, as well as the expansion of cellular telephony, a contribution is made to our efforts to reach a telephone density of more than 20% by the year 2000. This means almost doubling the present telephone density, which will require large investments in terms of infrastructure and human resources. This is especially true for the expansion of the public telecommunications network to rural areas and the interior. Because of the dispersed nature of the rural population of most developing countries, telecommunications can be and is an essential tool for integrating the rural areas in the macro socio-economic life of these countries. In Suriname the following options are being considered for the further development of telecommunications in these rural areas and the Amazon rain forest of Suriname: satellite transmission, HF transmission, cellular and microwave.

The year 1993 was the year of the Indigenous People and arising from that we are presently being advised by an ITU Consultant regarding the feasibility to provide the interior of Suriname with appropriate telecommunication services. This year 1994 is also proclaimed by the United Nations as the International year of the Family and this is being taken into account in our efforts to benefit the remote tribal communities of our country. After making a feasibility study we will have to approach relevant financing institutions to support us in this endeavour to help integrate the rural population into the socio-economic life of the country. At the same time, while we are rapidly approaching the 21st century, in doing so we increase the telephone density of one more ITU Member.

We are convinced that in the course of this week we will have the opportunity to exchange information on, among other important issues, the financing of rural telecommunications.

Finally, I take this opportunity to express thanks, on behalf of my Government, to the ITU for inviting us, and to the Government of Argentina for hosting this most essential conference.

I am confident that we will have a constructive and successful conference, which will result in a feasible and moreover a very practical Action Plan.

Thank you.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 160-E

United Republic of Tanzania

STATEMENT BY H.E. MR. NALAILA KIULA,
MINISTER OF WORKS, COMMUNICATIONS AND TRANSPORT

Mr. Chairman,
Your Excellencies,
Honourable Ministers,
Distinguished Delegates,
Ladies and Gentlemen,

Today, the global acceptance of telecommunications as an essential infrastructure for economic growth and development is a result of various recommendations adopted during previous ITU gatherings. In pursuance of the shared development objectives, the Government of the United Republic of Tanzania has taken various measures and strategies to implement such decisions particularly from the report of the Independent Commission for World-Wide Telecommunications Development ("The Missing Link", 1984), the Arusha World Telecommunications Development Conference (AWTDC, 1985), the second United Nations Transport and Communications Decade for Africa (UNCTDA), and the African Telecommunication Development Conference (ATDC, Harare, 1990), among others.

THE SITUATION OF TELECOMMUNICATIONS DEVELOPMENT IN TANZANIA

During the Arusha World Telecommunications Development Conference in 1985, the telecommunication sector in Tanzania consisted of a parastatal corporation under the Ministry of Works, Transport and Communications. Both access and usage of the service were among the lowest in the world, as reflected by a country-wide telephone density of only 0.22 telephones per 100 population. The situation was a bit better in urban areas where, in the largest city of Dar-es-Salaam, the density was 1.72 and 0.91 for the other urban areas.

The state of the telecommunication network in Tanzania, as is in most of the LDCs, is still generally poor compared to developed countries. Although the network in Tanzania is still small, and in poor condition due to faulty equipment, cables and congestion, some progress has been made since the publication of the Missing Link Report in 1984. Installed exchange capacity up to 1993 increased by about 56,000 lines (80%) from 69,000 to 125,000 lines, while connections grew from about 44,000 to 85,000 (93%). But due to population growth and economic/social demands as well as low investments growth in the telecommunication sector, the number of waiters more than doubled (from 47,000 to 102,000) during the same period resulting in the above achievements making only a minimal overall increase of telephone density per 100 population from 0.22 to 0.37

by 1993. This falls far short of the growth required to achieve the Missing Link target of 1 telephone per 100 population by the year 2000.

To speed up and improve the telecommunication sector in Tanzania the government last year restructured the sector under the 1993 Parliamentary Acts which, among other things, aimed at:

- limiting the government role to setting sector policy on telecommunication;

- establishing a government-independent regulatory body to regulate operator(s) and administer government sector policy;

- separating postal and telecommunication operations by establishing two separate institutions. This has resulted in the establishment of a commercial State-owned telecommunications operating company.

The government, after advice from an inter-institutional committee of experts, has now laid down objectives for developing this sector in a Policy Statement which aims to ensure that:

- service is provided to as many people as is economically and socially justified in both urban and rural areas;

- resources available to the sector are maximized through private sector involvement, particularly in the non-basic services;

- tariff policies are liberalized over time in appropriate market segments.

ON RECOMMENDATIONS ADOPTED BY THE ITU FOR DEVELOPING THE TELECOMMUNICATION SECTOR

Whereas both LDCs and developed countries appear to be striving to bridge the gap between them, it is a fact that this gap continues to grow.

A quick glance at the World Telecommunication Development Report shows the particularly unique situation of Africa, especially south of the Sahara:

- Ten years ago, the Maitland Commission convinced us that telecommunications, a critically important sector, should be given the highest priority, and in return, our partners in development, namely the industrialized countries, will provide resources. Today nothing significant has come out of that initiative. Resources to Africa, south of the Sahara in particular, have drastically fallen.

- In 1989, we created the Telecommunication Development Bureau (BDT) on an equal footing with the other sectors of the ITU. The Bureau has two functions:

  - First, the function of a specialized agency to help us on policy matters, on norms of manpower development, on adaptation of appropriate technologies, etc. This function was essentially the hows and whys for telecommunications development.

  - Second, the function of an executing agency: We wanted the BDT to come out to the field in order to mobilize resources and help us effectively to implement viable projects.

Tanzania would wish to state that the BDT's performance in this regard is well below our expectation and our hope. This, however, has no reflection on the ITU Secretariat. We are

conscious that the Secretary-General, the Director of the BDT and the staff have done their best within the means and resources they were given. But you will all agree with me that the impact of the BDT has not been earth-shaking. We therefore call upon full recognition of the role of this instrument and its potentiality to assist LDCs accelerate development of the telecommunication sector. We need to see the impact now.

TANZANIA'S EXPERIENCE

Tanzania's experience in trying to bridge the gap has been mixed. On the one hand, not much development has been achieved in some areas in relation to other LDCs, notably in the implementation of recommendations from the Arusha World Telecommunications Development Conference and the United Nations Transport and Communications Decade. This is demonstrated by the small improvement of the overall telephone penetration.

Some achievements have however been attained in implementing recommendations from the Harare African Telecommunication Development Conference. Tanzania has been able to make reasonable progress in this respect due to its commitment to commercialize this sector in recognition of its crucial role as a catalyst in fostering economic/social development in other sectors. Tanzania accords high priority to the commercialization and establishment of a conducive regulatory and operating environment for this sector because it strongly believes that if the sector is commercialized, and a positive regulatory machinery installed, its efficiency in service provision would attract more financial resources both from private and traditional donors as well as generate internal resources which would in turn be invested for other network expansion.

In order to make progress in implementing recommendations from the Missing Link and the UN Transport and Communications Decade, Tanzania, basing itself on its experience wishes to make the following proposals:

Sector restructuring and commercialization should first be implemented in order to create a conducive environment which would give the telecommunication sector an opportunity to fully exploit its potential for the benefit of other sectors such as health, education, tourism, and other infrastructure largely for rural populations.

Privatization should be introduced where feasible and preferably after successful commercialization to accelerate development of the sector. Care must be taken to avoid use of obsolete technologies and non-standardized equipment from developed countries on account of lower prices.

ON HUMAN RESOURCES DEVELOPMENT

We realize the importance of developing the human resources in the operational and maintenance of telecommunication facilities, an industry in which the rate of technological change is very fast. Unfortunately resources for training are inadequate, and the priority accorded to training and human resources development is low.

Very often, technically qualified staff are moved to managerial positions without adequate managerial experience and training. The problems of misallocation, inadequate training and low motivation must be addressed further. In this respect the Government of Tanzania has given the dominant operating company autonomy to set its own human resources and remuneration policies. Likewise, a reasonable proportion of the Telecommunications Restructuring Programme funds have been set aside for Institutional Development. It is believed that this move to strengthen the drive towards commercialization and raising efficiency in the dominant operating company would contribute towards an efficient, cost-effective, high productivity and profitable public licensee.

Mr. Chairman,

Let me conclude by reiterating the need to put into reality the concept of the New World Information and Communications Order. This need is now even more pronounced in order to realize the global village through telecommunication linkages which would foster closer economic and cultural cooperation as well as promoting global peace and understanding. All of us here have an important role to play in realizing this. It is possible to make great strides as we enter the 21st Century. Let us work together to achieve this goal.

Mr. Chairman,
Your Excellencies,
Honourable Ministers,
Distinguished Delegates,
Ladies and Gentlemen,

One fundamental question to the 1994 World Telecommunication Development Conference is: "What role and responsibility does the International Community have to Global Telecommunications Development?" It is necessary to pose this question now in view of the fact that one part of the world, Africa south of the Sahara is completely marginalized, and has in fact gone backwards when the rest of the world, including some developing countries, have progressed. I believe this forum will provide concrete proposals to support telecommunications development for this region and recognize that the plilght of the region is the plight of mankind. On the basis of solidarity, global interdependence and long-term mutual interest, I am alerting this forum that unless collective action is taken, the global network will be non-existent for another decade. Let us leave Buenos Aires with a good World Telecommunication Development Conference Action Plan.

I thank you and wish the first World Telecommunication Development Conference success.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 161-E

Republic of Uganda

STATEMENT BY MR. WILSON OTONYO WANYAMA,
PERMANENT SECRETARY, MINISTRY OF WORKS, TRANSPORT AND COMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General,
Honourable Ministers,
Distinguished Delegates,
Ladies and Gentlemen,

I humbly accepted the floor on behalf of my Minister to convey to you and through you to the Government, the President, and the people of Argentina, fraternal and happy felicitations from the people of the Republic of Uganda. And to thank you and through you, the Government, the President and the people of Argentina for the warm hospitality and reception accorded to my delegation since the time of our arrival in this beautiful city of Buenos Aires. I also thank the Government of Argentina for hosting this first World Telecommunications Development Conference in such a conducive atmosphere which has enabled us to carry out our work in a business-like manner and your able chairmanship to enable us to carry out our work in a business-like manner and able chairmanship, which has enabled us to mix hard work and pleasure. The concert demonstrated the love your President and members of the Argentina Government have for visitors.

My delegation has listened to your country's pride in the development of telecommunications in your great country. We have also listened with interest to other distinguished delegates. We have greatly benefited from all these experiences. We look to this first World Telecommunication Development Conference with hope. Yes, hope, because telecommunications is a conveyor belt for social and economic development. It impacts all aspects of human endeavour, it promotes national integration, national security, agricultural production, industrial production, marketing strategy, just to mention but a few. The strategy to achieve Health for All by the year 2000 will depend heavily on efficient and universally accessible telecommunications. In Uganda telecommunications is already playing a useful role in health services. Medical personnel are able to use satellite communications to share with their counterparts all over the world medical and other health related information. The satellite code-named "Healthnet" links the Uganda medical personnel with their counterparts in the northern hemisphere. The second satellite code-named "Satellite" does the same function north to south. These two satellites collect and distribute information on the health condition for analysis by Ugandan medical personnel and their counterparts elsewhere.

The telecommunications sector in Uganda is currently undergoing a transformation from analogue to digital working. The network itself comprises of a standard A earth satellite station, and an EIOB digital switch for the international traffic; and a number of digital and electromechanical exchanges inter-linked by microwave, UHF and VHF radio links for local traffic. While the network performance is generally of an acceptable standard, the level of telephone penetration is still very low, about 0.19 mainly due to various constraints.

I am glad to report, Mr. Chairman, that we have already addressed this issue by replacing the dilapidated cable and line plant in the major cities of Uganda and we hope by the turn of the century that we will have achieved the targeted average figure of 0.4 for the Sub-Saharan Africa. Efforts have been taken to extend services to the rural areas through both public and private HF-systems.

Through its restructuring programme of the economy, the Uganda Government has now allowed the telecommunication sector to be privatized and investors are cordially invited. It has also liberalized the operation of other value-added services like the paging and cellular telephone systems and the sale of terminal equipment. Steps are already underway to separate the postal from telecommunications and to set up a regulatory body for policy formulation and control of the sector.

Our goal therefore is to develop our telecommunication sector to be one of the major information avenues to the inevitable global information infrastructure. The present total exchange capacity is about 30 000 lines with a Master Plan targeting at providing 140 000 exchange lines by the year 2010.

In addition to expanding the sector through privatization, we focus our developmental strategies on modernizing and expanding the rural telecommunication network, outside plant network for various exchange areas, digitalization of the existing earth satellite station, and establishment of an effective Management Information System (MIS) to enable us to participate in the global information infrastructure efficiently.

For the successful realization of the information globalization, my delegation feels that we should not rush to the bandwagon without setting a firm foundation. In this regard, there is a need to first strengthen the regional telecommunications infrastructures which will be the essential cornerstones. I would like to mention that we on the African continent have some chance to develop the existing regional bodies such as PANAFTEL, RASCOM, SADACC, etc. before we can effectively jump onto these giant information avenues.

I thank you all for listening to me.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 162-E

Socialist Republic of Viet Nam

CONTRIBUTION BY MR. MAI LIEM TRUC,
DEPUTY SECRETARY-GENERAL, DEPARTMENT OF POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General of the ITU,
Distinguished Delegates,
Ladies and Gentlemen,

It is a great honour for me to have the opportunity to speak at this important audience of the first World Telecommunication Development Conference.

Since the World Telecommunication Year 1983 and the "Missing Link", the world has witnessed a tremendous development of the telecommunication sector. Telecommunication is an important driving force for the development of the economy of each country and of the world.

The rapid development of Viet Nam's economy has made the establishment of a modern and efficient telecommunication infrastructure an urgent necessity. I fully agree with the virtuous cycle describing the interrelationships between technology, globalization, restructuring and development, as analized in the World Telecommunication Development Report of the BDT.

The technological progress has enabled Viet Nam to quickly transiting from a 100% analogue telecommunication network in 1988 to a 90% digital network by 1993. All transmission and switching equipment being installed in Viet Nam since a few years are digital systems, like digital radio systems, optical fibre cables, satellite earth stations and digital telephone, telex and packet switching systems.

The technological progress and the digitalization have made Viet Nam possible to introduce new and advanced services like facsimile, data communication, packet switching services, videoconferencing, radiopaging and GSM cellular mobile telephone services.

We can assume now that the technological gap between the telecommunication networks of Viet Nam, a developing country, and those of developed countries has been narrowed virtually.

The globalization of the telecommunication sector is an important factor for the development of the telecommunication infrastructure in Viet Nam. The foreign direct investments in the network operation as well as in the joint-venture for local manufacturing of telecommunication equipment have contributed to the rapid development of the telecommunication sector in Viet Nam. The close cooperation with foreign telecommunication administrations and operating agencies has

enabled Viet Nam to increase its international telephone traffic from 2 million minutes in 1987 up to 83 million minutes in 1993, and hence generated a rapid increase of revenue, most of this revenue being reinvested in the network development. The ITU, through the BDT, the Asia-Pacific Telecommunity and foreign telecommunication administrations and companies have helped Viet Nam in training a good staff for the operation and development of a modern telecommunication network.

For more rapid development and efficient management of the telecommunication networks and services, the Government of Viet Nam has been restructuring the telecommunication sector. We have separated the operating function from the policy-making and regulatory functions. The Government has been mobilizing investment from domestic and foreign companies and institutions for the network development and manufacturing of telecommunication equipment in Viet Nam. The Government also facilitates competition in both service provision and equipment supply.

Mr. Chairman,
Distinguished Participants,

Since the last few years, the telecommunication sector of Viet Nam has been upgraded virtually. However, we are still far from meeting the great demand of the customers. The telephone density in Viet Nam is about 0.4 line per 100 inhabitants. It is a clear gap of telephone penetration in Viet Nam and many other countries. The Department General of Posts and Telecommunications of Viet Nam has worked out an accelerating development programme for the telecommunication sector with the target that, from now on, an average number of 300.000 telephone line units will be installed per year, so that a telephone penetration of 3 lines per 100 inhabitants will be achieved by the year 2000. The fulfilling of this accelerating development plan of the telecommunication sector will actively contribute to the rapid economic and social development of Viet Nam.

Mr. Chairman,

In conclusion, I would like to take this opportunity to thank the ITU, the BDT, the APT and all telecommunication administrations for their support and cooperation with the telecommunication administration and operating agencies of Viet Nam.

I particularly thank the Government of the Argentine Republic for hosting this important conference.

I wish our conference a great success.

Thank you for your kind attention.

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(21-29 March 1994)

Document 163-E

Republic of Zambia

STATEMENT BY H.E. MR. WILLIAM J. HARRINGTON,
MINISTER OF COMMUNICATIONS AND TRANSPORT

Mr. Chairman,
Mr. Secretary-General,
Ladies and Gentlemen,

Permit me, Mr. Chairman, first of all to congratulate the ITU for organizing this first conference on telecommunication development. At the same time, I, on behalf of the Zambian delegation and on my own behalf, wish to thank the Government of the Republic of Argentina for hosting such an important conference and for the very warm hospitality extended to my delegation and myself.

Mr. Chairman, the importance of telecommunications in development cannot be overemphasized. I agree with the speakers who spoke before me that without efficient telecommunications there can be no meaningful development.

The Canadian paper refers to the chicken and egg situation. Instead of debating on such a situation, it would be best to regard telecommunications as an integral part of development.

Mr. Chairman, the development of telecommunications in the last few years has been phenomenal, surpassing the imaginations of the greatest thinkers and technologists in this area.

This development in telecommunications is having a great impact on our lives, be it in the rural areas or urban environment. Indeed, this development should permeate all areas of our countries.

In Zambia, rural telecommunications can be misleading in that large numbers of people in rural areas are commercial farmers requiring highly sophisticated telecommunication facilities such as fax, telex and other data transmissions. They want to know the current foreign exchange rate, they want to know the current meat price, etc.

Our economic problems are common with our neighbours. Zambia is landlocked, sharing borders with Zimbabwe, Malawi, Botswana, Namibia, Angola, Zaire, Tanzania and Mozambique. The country has an area of 752.600 square kilometres with a population of just over 8 million.

The new MMD Government under Mr. Fredrick Chiluba has set in motion a policy of the liberalization of the economy. It has decided to shed off parastatals so as to leave business, including telecommunications, in the hands of the private sector. It is the belief of our Government that business is better handled in private hands.

Even though Government accorded telecommunications high priority, it has not been possible to provide a complete and highly reliable network because there are other priorities and demands on Government coffers, such as education and health.

Mr. Chairman, let me briefly refer to our Zambian network, There are 94 telephone exchanges of which 90 are automatic and 4 are manual. Of these, 23 are digital, handling some 62.000 subscriber lines while 67 analogue systems handle 47.850 lines.

Communications, both postal and telecommunications, have been handled by the Posts and Telecommunications Corporation which was first established in 1975. The PTC, as we generally call it, has provided two international exchanges located in Lusaka, our capital city.

We agree with the views expressed by the speakers during the inauguration of this Conference that telecommunications can no longer be controlled by regulation. It has become competitive. We agree that the more autonomous the regulatory authority, the better it would be.

Initially, for us in Zambia, we have decided to separate the postal service from the telecommunication sector. Only last week our Parliament passed a bill to create two entities - a postal services corporation and a telecommunications services corporation. The idea is to make telecommunications commercialized as quickly as possible. We are also opening up telecommunications to all who may want to invest in the sector. The country is vast, the scope unlimited. Those who may wish to invest in Zambia are most welcome.

Mr. Chairman, with this address to the first World Telecommunication Development Conference, I wish to thank you most sincerely for affording me the rare opportunity to do so.

I thank you.

INTERNATIONAL TELECOMMUNICATION UNION

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WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 164-E

Republic of Zimbabwe

STATEMENT BY H.E. MR. DAVID KARIMANZIRA,
MINISTER OF INFORMATION, POSTS AND TELECOMMUNICATIONS

Mr. Chairman,
Mr. Secretary-General of the ITU,
Mr. Deputy Secretary-General of the ITU,
Mr. Director of the BDT,
Excellencies,
Distinguished Delegates,
Ladies and Gentlemen,

My delegation is at home in Argentina, not only on account of the excellent welcome, hospitality and conference facilities at our disposal, but also because of the close similarity of our two countries in their abundance of sunshine or good climate in general and plenty of beef. We are therefore honoured to have been invited to participate in this historic, first World Telecommunication Development Conference among all the eminent people, notably His Excellency, the President of the Republic of Argentina and the Vice-President of the United States.

It is in this atmosphere of hope for the future development of global telecommunications that I wish to make my own modest contribution.

The report of the Independent Commission for Worldwide Telecommunications Development, "The Missing Link" in 1984 put forward an objective of bringing all mankind within easy reach of a telephone by the early part of the next century. This objective is still valid, more so as telecommunications become more and more entrenched as the key factor and precondition for social and economic development. In endeavouring to achieve this objective the developing countries have faced and still face enormous barriers.

Zimbabwe is in sub-Saharan Africa, and it is this region that has the least developed telecommunications infrastructures. The situation and problems faced by Zimbabwe in endeavouring to develop a robust, high quality telecommunications service may be, to a certain extent, unique. But a great number of the problems may well apply to most developing countries. I therefore present the situation in Zimbabwe in an attempt to typify the issues of telecommunications development in a developing country.

When Zimbabwe attained its independence in 1980, it inherited an old analogue network which was hardly catering for the greater portion of the population. The challenge, therefore, for the early part of the 1980s decade was to extend coverage to hitherto neglected rural and high density, low income urban areas. This objective was to a certain extent achieved despite the economic hardships caused by recurrent drought, world recession and political instability in the subregion. Manual rural exchanges were converted to automatic working and new ones added. Zimbabwe installed its first earth satellite station and digital international exchange in 1984.

In the late 1980s, the objective was to modernize the network by replacing obsolete equipment in urban areas with new digital equipment and expanding the urban network. A top down approach was adopted which initially concentrated on digitalizing the secondary trunk exchanges and the corresponding trunk transmission routes. Currently all the five major secondary exchanges are digital and emphasis is shifting to primary centres and local exchanges.

Zimbabwe has a population of approximately 10.5 million inhabitants with a per capita income of around $US 600. The current telephone density is 1.26 main lines per 100 inhabitants. The waiting list stands at about 100 000 applicants which represents an enormous supply deficit considering that the figure could be higher due to suppressed demand. The main reason for the supply deficit is the rapid upsurge in demand soon after independence in 1980. This upsurge in demand could not be fully met since the Zimbabwe PTC was concentrating scarce resources on building the international and national trunk capacity, and expansion of rural services. Massive network expansion projects are now under way to reduce the backlog.

Projects envisaged up to 1999 will bring the switching capacity to above 330 000 lines, 66% of which will be digital. Corresponding projects involve digitalization of the trunk and local junction networks using digital microwave and optical fibre. Telephone density will improve from the current 1.26 per 100 inhabitants to 1.9 and the number of public call offices will increase from 1 675 to 5 400.

Efforts to improve the quality of service have yielded modest success so far. Overall call completion rates have improved from 30% before digitalization to about 50% currently. Strategies to improve this figure to above 70% are being pursued. The speed of fault clearance has improved from 50% to 77% within 48 hours. This figure is set to improve to better than 80% within the current five year plan. The average number of faults per line per year is expected to improve from 2.4 to less than 1.

Services such as mobile telephony will be introduced initially to cater for the top-end business market segment. But as unit costs of development are envisaged to drop, this service will expand more rapidly into residential and rural market segments to complement the fixed network in achieving the universal service goal and to give our citizens variety of service.

In the rural areas we will continue to use a combination of locally designed party line systems and multi access radio systems to increase rural penetration.

A second earth satellite station facing the Indian Ocean region will be commissioned by the end of 1994 to complement the existing station facing the Atlantic Ocean region.

The packet switching data network and telex network are currently working well and are geared for expansion. As the business market segment's requirements are getting sophisticated a host of new services will be introduced to cater for this segment.

In short, Zimbabwe can be said to be on course in pursuing the "Missing Link" objective of bringing all mankind within easy reach of a telephone by the early part of the next century and this still remains the priority. However, Zimbabwe as other countries in the African region faces enormous barriers which have to be overcome if the universal service goal is truly to be achieved.

One of the areas befuddling the developing world is the change in regulatory framework in the developed countries brought about by the need to promote competition and pressures from regional economic groupings to open up trade. Competition is used as a vehicle for growth in the developed countries whose markets for basic services have reached maturity. In these countries growth can only be achieved in new services and value added services. However, competition in developed countries has been introduced through cautious regulatory changes.

In Zimbabwe, for example, telecommunications is operated by a state owned postal and telecommunications organization with the exclusive privilege of running the public services. The regulatory framework needs to change in line with the changing environment. Zimbabwe has adopted its Economic Reform Programme which includes parastatal reform in a bid to privatize certain state owned parastatals in sectors which lend themselves well to privatization and competition. Other strategic sector parastatals will be reformed into efficient commercially oriented entities. The Zimbabwe Posts and Telecommunications Corporation is one such entity marked for commercialization.

The resulting regulatory framework from the study is meant to increase private sector participation in mobilizing resources required for telecommunications development. The case for private sector participation is well understood by the Zimbabwe Government and all efforts are being made to encourage private sector participation.

Value-added services especially in the field of data communications may in the future no longer be the purview of the monopoly. This is a fair option in that value added services stimulate traffic growth on the basic infrastructure, thereby increasing revenues required for infrastructure building.

On regional cooperation and bilateral financing, it is one of the recommendations of the "Missing Link" document to set up regional telecommunications industries. This ought to be pursued vigorously as a lot of potential exists for regional economies of scale and for exports further abroad. Research and Development collaboration is the key determinant in building a successful regional manufacturing base.

The activities of the BDT and regional telecommunications agencies, regional economic cooperation bodies and regional development banks are most important in the search for solutions as they have the organizational capabilities of fostering cooperation in the transfer of technology, multi-country joint-venture arrangements for local manufacture, setting regional technical standards, and arranging for finances.

In conclusion, it is ten years since the document "Missing Link" was published. The link is still missing. As we approach the 21st century provision of telecommunications is playing a greater role in economic and social development.

By the time we are in the 21st century telecommunications will be the major economic driver. Those countries with adequate telecommunications will strengthen their economic positions and those with inadequate services will fall further behind. In other words, the gap will widen. Yet the simple basic issues that have to be addressed in order to close the gap are well elaborated in the "Missing Link" document. These issues are, *inter alia*:

- governments of developing countries must put telecommunications sector development high up on the public policy agenda and create an enabling environment in order to mobilize more resources than hitherto towards telecommunications infrastructure development, i.e. investment strategies are subordinate to political will;
- there must be recognition by all concerned that there is no standard model for sector reform that can be prescribed for all developing countries but that for each country the proposed reforms must be viable taking into consideration the political, social, legal, economic and technical environments prevailing in each country;
- in pursuing the universal service goal there must be clear definitions of the commercial and social roles of the public operators;

- industrialized countries must assist in the development in terms of bilateral funding arrangements and transfer of technology;
- regional cooperation among developing countries together with strategic alliances with industrialized countries must be instituted in order to develop low cost solutions for developing countries' mainly rural population through local manufacture and R and D.

Indeed, if these basic issues are put in the forefront the closer we will get to achieving a truly universal service to benefit all mankind. We totally agree with the Honourable Vice-President of the United States that there is no beaten path in telecoms but we have all to be pathfinders along the way. This is where the coordinating role of the BDT will become even more critical. Let's all agree to be pathfinders.

Thank you.

INTERNATIONAL TELECOMMUNICATION UNION



WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 165-E

UNESCO

ADDRESS BY MR. HENRIKAS YUSHKIAVITSHUS, ASSISTANT DIRECTOR-GENERAL FOR COMMUNICATION, INFORMATION AND INFORMATICS

Excellencies,
Mr. Chairman,
Mr. Secretary-General of the International Telecommunication Union,
Distinguished Delegates,
Ladies and Gentlemen,

I have the honour to represent the Director General of UNESCO, Mr. Federico Mayor, who asked me to transmit to you his sincere wishes for all success in the work of this first World Telecommunication Development Conference which holds a very great interest for our organization in view of our common interests and objectives.

Today's information and communication society is no longer the concern of engineers and media specialists alone. Capacity for access to information, and therefore to knowledge, is becoming one of the principal factors in sustainable development, in resolving environmental problems, and in the emergence of a culture of peace. It is necessary that all can participate fully in the exchange of information and that none be considered as merely passive observers.

I support here the preoccupation which has been expressed for many years by the Secretary-General of the ITU, concerning the right of access to communications.

In the new world of networks which is being woven around our planet, the convergence of telecommunication, informatics and audiovisual technologies represents a major challenge and promise, but we must also be aware that the cultural and political dimensions of this phenomenon are as important as the economic and commercial ones. The struggles which are presently taking place, the new alliances which are forming among large multi-national companies and which are defining the telecommunication and information landscape of tomorrow, are often than not being fought in the cultural field.

These trends bring to the forefront the two following questions: Who will benefit from the technological revolution? and What price is society willing to pay to develop the use of the promised new communication services?

I would like to emphasize that the development of an economy based on information and rapid dissemination of knowledge depends strongly on the education, science, culture and media sectors as users, creators and disseminators of technological innovation. These sectors represent an immense potential telecommunication market which is often poorly perceived. It is this promise that has led us to undertake a joint study with the ITU on the utilization of telecommunications in UNESCO's fields of competence.

You can take note of this study entitled: "The right to communicate - at what price?" which is distributed as an information document under reference Doc. 4. The study analyzes the present situation concerning access to telematic services from the double view-point of the users and the operators. It outlines solutions which can already be applied, be they political, commercial or technological in nature, and attempts, above all, to promote a veritable partnership between service providers and the sectors of public concern through a number of strategic recommendations and concrete proposals for action, which should find their full place in the Buenos Aires Action Plan.

UNESCO supports the creation of informatic networks in different parts of the world to serve education, culture, science and information.

One year ago, UNESCO launched the project "Memory of the World" whose objective was to preserve the collections in world libraries and archives and to provide better access to them using new technology.

Vice-President Al Gore of the United States of America urged this Conference to include in its agenda the commitment to create a Global Digital Library. This means that the necessity for the utilization of communication technology for education, science and culture is now in the minds and on the agenda of state leaders.

Competition between different computer-multimedia networks will not only make service available at affordable prices to all, but will prevent monopolization of access to knowledge and technology which is crucially important to the democratization process, because limitation of communication is limitation of intellectual freedom. As Vice-President Al Gore said: "Each link we create strengthens the bonds of liberty and democracy around the world". Those who really want to support market economy and democracy development in post communist countries have to support their wishes, which were expressed by Russian and other delegations, to develop modern national and international communication systems.

ITU and UNESCO have for many years shared the same concern - to strengthen the communication capabilities, especially in the developing countries, as an indispensable support for a wider and more balanced circulation of information without any restriction on freedom of expression; and as an essential instrument in the promotion of scientific and technological innovation and the universal dissemination of knowledge.

We share, in fact, the same ideal, and I am firmly convinced that together we can ensure that the new and powerful communication tools and networks can contribute to the strengthening of international understanding, and to social, economic and cultural development of all peoples. I am very pleased that the cooperation agreement which links our organizations can be one of the instruments for future progress.

Muchas gracias.

INTERNATIONAL TELECOMMUNICATION UNION

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(21-29 March 1994)

Document 166-E

Malta

CLOSING SPEECH BY MR. ANTHONY DE BONO,
GENERAL MANAGER, TELEMALTA CORPORATION

The time has come to bid farewell to the beautiful city of Buenos Aires. We have had the opportunity to walk its wide avenues and admire the excellence of its commercial establishments which reflect the prosperity of the people of the country. We have visited the large and well kept parks which contribute to the quality of life in the country and the beautiful and historic buildings and monuments which are evidence of Argentina's great and advanced culture. The tango show and the gaucho fiesta gave us a sampling of Argentina's folklore.

From the moment we landed in Argentina we were pampered by a people who are renowned for their hospitality. The presence of His Excellency the President of Argentina and the U.S. Vice-President Mr. Al Gore honoured us at the opening session of our Conference and His Excellency President Menem's most gracious hosting to a memorable and exquisite performance of the Romeo and Juliet at the World renowned Colón Opera House manifested the strong sense of Argentina's commitment to harmonious telecommunications development.

The Argentina organizers of the Conference have certainly done a great job. In particular I wish to mention my dear friend Dr. Gabrielli whom I had the honour to assist as Vice-Chairman of the Support Group and Coordination Committee of the Conference in Geneva. Dr. Gabrielli has shown great professionality and dedication which was a prime factor leading to the success of this Conference.

The sagacity of giving the ITU a new focus on the matters concerning strategic development and deregulation as well as the establishment of the Telecommunication Development Sector which is a major pillar for the organization has been proven. This combination of novel approaches will, through the outputs of this Conference and the Kyoto Plenipotentiary, provide a most effective springboard for the global development of telecommunications in the coming years.

The thanks and congratulations which I am conveying are not a formality but an expression of heartfelt gratitude towards all contributors to the outstanding success of this Conference. These include:

- the Secretary-General of communications of Argentina, Dr. Oscar Gonzalez, who, with the able assistance of Mr. Laouyane, Mr. Escofet and Mr. Ernberg, guided the Conference admirably well,

- the National Telecommunications of Argentina and all the respective staff,

- the Secretary-General of the ITU, Dr. Pekka Tarjanne, the Director of the BDT, Mr. Djiwatampu and all ITU staff, officers of the Conference and contributors. Special mention goes to Mr. Jose Escudero, head of the Conference support facilities, whose inimitable style captured everyone's admiration. The interpreters' contribution is likewise laudable.

Having prepared a well-thought Action Plan, we must, like audacious Gauchos, spring into fast and decisive action during the coming four years so that when we meet again for the next conference we will be proud of having made a significant contribution to harmonious global telecommunications development.

With this vision for the future and as already announced, it pleases my Government enormously to be able to host the next World Conference in 1998. While those of you who only know Malta statistically may wonder if you all fit in without falling off the edge of our tiny island, those who have sampled our hospitality know that the welcome accorded to our visitors more than makes up for our physical size. It is time for Adieu and in four years time it will be time for Welcome. Many of you hopefully will visit us in between. I know of quite a few who will... for our welcome is so much faster than our farewell, a characteristic which parallels Shakespeare's comparison of time in the lines which he speaks through Ulysses in Troilus and Cressida:

"For time is like a fashionable host that slightly shakes his parting guest by the hand and with his arms outstretched as he would fly, grasps in the comer: welcome ever smiles and farewell goes out sighing."

Thank you all dear friends and colleagues. I join other speakers in wishing you a safe journey back to your homeland where you can continue to pursue the ideals of our noble organization, the International Telecommunication Union.

See you all in Malta in 1998.

Muchas gracias.

INTERNATIONAL TELECOMMUNICATION UNION

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

(21-29 March 1994)

Document 167-E

Italy

HEALTH CARE AND TELECOMMUNICATIONS

1. Background

In developed countries Information Technology and Telecommunications are considered as useful tools to improve the efficiency in health care. In fact due to the large amount of information exchange among different sources needed for diagnostic or treatment purposes, the most advanced telematic systems are becoming part of the health field picture.

On the other hand, in the Developing Countries, Telemedicine should represent an instrument to face organizational and structural deficiency in health care especially where morphological and geographical obstacles do not allow an easy access to health services by the entire population.

Through the widespread use of Telemedicine services, a sanitary access distributed all over the territory could be created as a solution to the principal epidemiological problems concerning, for instance, pediatrics, infective diseases and cardiology, in accordance with the priorities suggested from WHO and established by local Governments.

Medical science and telecommunications should join forces to support least developed areas even in the absence of full equipped hospitals. As an example, paramedic staff in remote areas can offer a complete medical assistance, if connected in real-time to specialized centres by telecommunication networks.

The WHO has stressed that "Health for All" is the ultimate goal to reach by the end of the millennium. Telemedicine is not only an added value, but an essential technology for attaining this goal in most regions of the world having low density of health care resources (both human and technological).

The implementation of Telemedicine services in Developing Countries could supply both emergency and routine medical care for patients who are permanently or only temporarily located in unfavourable locations.

In addition to the access to basic health service of the entire population, important aims of telemedicine are:

1) The integration, through telecommunications, of medical and health care facilities, facilitating the procedures required for supplying medical aid.

2) The reduction of patient mobility by means of the widespread dissemination of medical care without the proliferation of costly specialist facilities, in terms of both personnel and equipment.

3) The creation of a coherent infrastructure for health care information, with full commitment from a clinical and administrative view point.

2. The telecommunication network & telemedecine

Telemedicine applications require availability and flexibility of the telecommunications network, in order to guarantee complete and efficient services. On the other hand the health care systems have to be adapted to the characteristics of the Public Switched Telephone Network.

In addition, it is worth noticing that the Telecommunications networks would represent a common platform not only for Health Care, but also for other essential social services, such as teledidactics, environment control, etc. thus increasing the efficiency of the Public Sector and improving the life quality of Developing Countries.

With particular reference to rural and sparsely populated areas, the only possible developing pattern will certainly relay upon TLC service availability and their application for social purposes: this corresponds to the concept of integrated rural development.

In addition, Telemedicine should use the international interconnection of the telecommunication networks in order to provide standard services on a regional basis and to promote international cooperation also in the medical field.

3. Criteria for pilot projects

3.1 Project profiles

In the study described in the present document different situations have been identified which could be considered as typical of developing countries where different levels of health care and telecommunication infrastructures and geographical realities are encountered.

A first application is envisaged in Argentina where a telecardiology service among the Italian hospitals located in some important towns already exists and could be extended also to some remote areas of the country as shown in Section 4.

Another example is represented by a Country where many large communities separated by geographical barriers (such as in a country with many islands) do not enjoy of efficient health care but are connected by reasonably efficient telecommunications networks.

In the above cases Telemedicine could be used in order to improve the performance of the existing services, in particular by means of implementing adequate connections among existing structures and developing new forms of cooperation with foreign expertise.

Besides those cases that imply an expansion or a more rational utilization of the network, there are Countries where Telecommunications infrastructures cannot be immediately developed and the medical system is not completely adequate. In this case the solution is the integration of the existing fixed facilities with mobile facilities. Hospital Cars are mobile health care units equipped with all the necessary telemedical transmitting equipment, linked to monitoring centres by means of

telephone, radio and, if necessary, satellites connections. Hospital Cars can be used for epidemiological surveying or equipped for specific clinic operations.

The needed personnel could be comprehensive of experts and consultants as well as local specialists and paramedics acting as national counterpart and awarded incentives taking into account the extra workload due to the project extension.

In addition fellowships would be required in order to train the above-mentioned personnel in the telemedicine equipment usage.

3.2 Main roles

The projects proposed here, because of their multidisciplinary nature, should involve a multiparty cooperation among relevant international organizations like ITU, WHO, etc. as well as governmental and private bodies, including in this last category also telecommunication industries and financial institutions.

The following is a preliminary suggestion of possible task subdivision.

I/DT18/1

The **ITU** should play an important role at the coordination level indicating strategies, goals and priorities.

The **ITU** on the basis of the results of the pilot stage, should encourage the extension of pilot projects to larger geographical areas.

The **ITU** should foster the adoption of global standards for equipment and systems including network interfaces, transmission protocols, supervision of service access.

Governments of participating Countries, in cooperation with local health care organizations should encourage the introduction of TLC services applied to the different social spheres, as privileged access to the services offered by the Public Sector, promoting investments in TLC field and stimulating its development, with legislative and regulatory interventions.
Governments should also help in identifying and mobilizing human and financial resources.

TLC operators should develop the implementation of Telemedicine network structure, overcoming organizational obstacles and operating as a system integrator.
The telecom operator is probably the right actor to play a leading role in stimulating and promoting the effective realization of the project.

Finally, industries as well as hardware and software distributors should be involved in Telemedicine equipment supply, training activities, etc.

4. Project profile No.1

Country: Argentina
Title: "Health Care in Southern Provinces"
Duration: 12 months
Expected starting date: beginning '95

4.1 Project description

Background

The Health Care organizational structure of Argentina reflects the federal framework of the country and is therefore divided into a central, provincial and local level.

In Argentina the density is approximately 5 beds per 1,000 inhabitants. Even though figures relating to doctors and paramedical staff are high, they are mainly concentrated in urban areas and the same can be said about hospital equipped with highly sophisticated equipment (CAT = Computerized Axial Tomography, Cobal Units, etc.).

Some of these hospitals are already interconnected via a Telemedicine network for cardiology connecting Buenos Aires, Mendoza, Rosario and Cordoba: therefore, the Central Structure of Buenos Aires could be enhanced through a Telemedicine system providing applications in other additional specializations (nephrology, neurology, radiology, etc.); furthermore, this service should then be extended to the peripheral areas by setting up new units in isolated and remote zones as well as in rural centers where the health care system is insufficient such as the Andean Villages, Patagonia and Tierra del Fuego.

An important contribution to the project may be given by international health organizations such as WHO and Panamerican Health Organization as well as by local organizations such as "Fundación de Informática Medica" which have already supported other initiatives aimed at the introduction of new information technologies in Argentina.

Technical requirements

The suggested pilot project should be based on a Telemedicine network divided into three specialization levels and composed of 1 central unit, 3 provincial units, and 15 peripheral health assistance locations for each province, totalling 49 units.

Total costs for Telemedicine equipment are 350,000 $ whereas human resources needed, in addition to experts and consultants, for the above-mentioned units are 10 specialists and 20 paramedics, all part-time workers.

4.2 Work plan

	LIST OF ACTIVITIES	MAN/MONTHS
I	Selection of areas/units participating in the project	2 m/m
II	Analysis of existing facilities (medical, telecommunications, staff ...)	2 m/m
III	Definition of applications and selection of relevant equipment	4 m/m
IV	Provision and installation of equipment and training	4 m/m
V	Field trial, data collection for statistical purposes, evaluations	4 m/m

4.3 Project Budget

	year 199x		year 199x+1	
	man/months	**US$**	**man/months**	**US$**
Experts Consultants	8	96.000	8	96.000
Fellowships	4	20.000	-	--
Equipment		200.000		150.000
Miscellanea:				
- Incentives				350.000
- TLC Cost				40.000
- Travel and transport		40.000		40.000
SUB TOTAL		356.000		676.000
GRAND TOTAL				1.032.000

5. Project profile No. 2

Country: To be defined
Title: "Telemedicine solution in a multi-island Country"
Duration: 12 months
Expected starting date: beginning '95

5.1 Project description

Background

The development of a pilot project for a country which is characterized by a geographic structure of an insular-type and whose goal is to optimize the use of existing sanitary facilities must be geared to the improvement of ordinary health care and emergency management.

Technical requirements

The Telemedicine network structure should provide one monitoring center to be located in a major island already equipped with efficient sanitary facilities and be connected to 5 minor islands totally covering a population of 250,000 - 500,000 inhabitants for health care requirements and with equipment for various clinical applications as: cardiology, nephrology (teledialysis), neurology (teleEEC), clinical pathologies (transmitting and receiving equipment for laboratory analysis results), radiology (teleconsulting).

For this type of structure, costs referring to Telemedicine equipment are approximately 750,000 $, and human resources requirements, in addition to experts and consultants, are estimated to be 20 (part-time) specialists and 30 (part-time) paramedics.

5.2 Work plan

	LIST OF ACTIVITIES	MAN/MONTHS
I	Selection of areas/units participating in the project	2 m/m
II	Analysis of existing facilities (medical, telecommunications, staff ...)	2 m/m
III	Definition of applications and selection of relevant equipment	4 m/m
IV	Provision and installation of equipment and training	6 m/m
V	Field trial, data collection for statistical purposes, evaluations	4 m/m

5.3 Project Budget

	year 199x		year 199x+1	
	man/months	US$	man/months	US$
Experts Consultants	8	96.000	10	120.000
Fellowships	5	25.000	--	--
Equipment		500.000		250.000
Miscellanea:				
- Incentives				600.000
- TLC Cost				40.000
- Travel		30.000		30.000
- Transport				20.000
SUB TOTAL		651.000		1.060.000
GRAND TOTAL				1.711.000

6. Project profile No. 3

Country: To be defined
Title: "Implementation of mobile Telemedicine System in Least Developed Countries (LDC)"
Duration: 18 months
Expected starting date: beginning of '95

6.1 Project description

Background

The project is to address specific basic conditions (insufficient health care structures, poor telecommunications infrastructures, long distances, hygienic-sanitary conditions calling for an immediate solution) for which Telemedicine solutions are basically and mainly focused on the use of satellite or radio (HF, VHF, etc.) transmission facilities for the connection of mobile hospital structures to a specialistic Receiving Center.

This project should provide a connection with a foreign hospital structure for Teleconsulting requirements as well as for both clinical and organizational specialistic assistance needs.

Technical requirements

- A *Specialistic Receiving Center*, located in an already existing hospital facility to be equipped with the following receiving equipment: one cardiotelephone (in a Coronary Department or similar); Teleconsulting equipment (in Radiology Department and First Aid); TeleEEG location (neurology); Tele Dialysis equipment (Dialysis Room).

- The Project foresees the employment of at least *3 Hospital Cars*, each having transmitting equipment to intercommunicate with the Receiving Center.

The mobile hospital can interface with Telecommunications networks such as the fixed telephone network, the cellular mobile network and the Satellite systems.

The cost of each mobile hospital is approximately 300,000 $ plus the costs relating to the equipment for the fixed structures and human resources requirements, in addition to experts and consultants, are 6 specialists and 6 paramedics, all full-time workers.

6.2 Work plan

	LIST OF ACTIVITIES	MAN/MONTHS
I	Analysis of the existing medical infrastructure and its eligibility for hosting the project as a Base unit	1 m/m (tech.) 1 m/m (medic.)
II	Identification of the foreign center acting as a medical support unit for the project	1 m/m (medic.)
III	Training of local staff	8 m/m
IV	Transportation and installation of equipment and medical training	4 m/m
V	Field trial, data collection evaluation	3 m/m

6.3 Project Budget

	year 199x		year 199x+1	
	man/months	**US$**	**man/months**	**US$**
Experts Consultants	13	156.000	5	60.000
Fellowships	8	40.000	-	--
Equipment Hospital Cars		80.000 300.000		600.000
Miscellanea: - Incentives - TLC Cost - Travel - Transport		 50.000		 360.000 240.000 100.000 30.000 20.000
SUB TOTAL		626.000		1.410.000
GRAND TOTAL				2.036.000



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