Helping the World Communicate

ITU

International
Telecommunication
Union

Contents

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Telecommunication
Union

FOREWORDBY
THE SECRETARY-GENERAL
Yoshio Utsumi

In today's increasingly wired world, it is hard to imagine life without telecommunications. As a result of cooperative efforts between nations spanning more than a century, telecommunication networks now underpin almost every aspect of day-to-day life and are becoming increasingly important to the economic prosperity of all nations.

As the world's oldest international organization, ITU can take much of the credit for developing the vast, interconnected web of networks which have grown to become the planet's largest man-made artifact. Established in 1865 to manage the first international telegraph networks, the Union has worked tirelessly to ensure that the latest technological advances have been rapidly integrated into the telecommunication networks of countries all around the world.

Over more than 135 years, the Union's mandate has expanded to cover the invention of voice telephony, the development of radiocommunications, the launch of the first communications satellites, and, most recently, the technological convergence that heralds the dawn of a new, telecommunications-based information age.

With a membership which includes almost all the world's countries and over 650 private members from the telecommunication, broadcasting and information technology sectors, ITU can boast a long and highly successful track record in developing and managing our telecommunication resources. An international organization which is, at heart, a community of its members, today's ITU remains unsurpassed in its ability to combine an impartial, global perspective and cooperative approach with a solid technical foundation built on the expertise of hundreds of leading manufacturers, carriers and service providers.

Through the work of its study groups and its extensive programme of international and regional conferences and meetings, ITU provides a multilateral forum where governments and the private sector can meet to broker agreements in areas of mutual interest. Together, in an atmosphere of cooperation and constructive debate, ITU members forge the standards and policies which will help shape tomorrow's world.

The explosive growth of the telecommunication industry over the last two decades has increased the value of ITU membership manyfold. Through its unique, global network, the Union helps its members make the key business contacts essential to success in an increasingly competitive environment, and provides an unparalleled forum for forging alliances among an ever-widening range of players.

As the winds of change continue to sweep through our industry, transforming and reshaping the world around us, ITU's role in developing and managing essential communication resources, combined with its unique ability to bring the industry together in a spirit of partnership and cooperation, will be more important than ever before.

As it has successfully done many times in the past, ITU is committed to reviewing its procedures, its activities and its priorities to ensure it remains at the forefront of the industry it has nurtured, with the aim of serving the needs of its members even more effectively into the new millennium.

Yoshio Utsumi

●n 24 May 1844, Samuel Morse sent his first public message over a telegraph line between Washington and Baltimore, and through that simple act, ushered in the telecommunication age.

Barely ten years later, telegraphy was available as a service to the general public. In those days, however, telegraph lines did not cross national borders. Because each country used a different system, messages had to be transcribed, translated and handed over at frontiers, then re-transmitted over the telegraph network of the neighbouring country.

Given the slow and unwieldy nature of this system, many countries eventually decided to establish arrangements which would facilitate interconnection of their national networks. However, because such arrangements were managed by each country at a national level, setting up telegraph links often required a huge number of separate agreements. In the case of Prussia, for example, no less than fifteen agreements were required

for the link between the capital and the frontier localities bordering other German States. To simplify matters, countries began to develop bilateral or regional agreements, so that by 1864 there were several regional conventions in place.

The continuing rapid expansion of telegraph networks in a growing number of countries finally prompted 20 European States to meet to develop a framework agreement covering international interconnection. At the same time, the group decided on common rules to standardize equipment to facilitate international interconnection, adopted uniform operating instructions which would apply to all countries, and laid down common international tariff and accounting rules.

On 17 May 1865, after two and a half months of arduous negotiation, the first International Telegraph Convention was signed in Paris by the 20 founding members, and the *International Telegraph Union* (ITU) was established to facilitate subsequent amendments

to this initial agreement. Today, some 135 years later, the reasons which led to the establishment of ITU still apply, and the fundamental objectives of the organization remain basically unchanged.

A New Industry Evolves

Following the patenting of the telephone in 1876 and the subsequent expansion of telephony, the International Telegraph Union began, in 1885, to draw up international legislation governing telephony. With the invention in 1896 of wireless telegraphy – the first type of radiocommunication – and the utilization of this new technique for maritime and other purposes, it was decided to convene a preliminary radio conference in 1903 to study the question of international regulations for radiotelegraph communications. The first International Radiotelegraph Conference held in 1906 in Berlin signed the first International Radiotelegraph Convention, and the annex to this Convention contained the first regulations governing wireless telegraphy. These

regulations, which have since been expanded and revised by numerous radio conferences, are now known as the *Radio Regulations*.

The year 1920 saw the beginning of sound broadcasting at the improvised studios of the Marconi Company, and in 1927, the International Radio Consultative Committee (CCIR) was established at a conference held in Washington D.C. The International Telephone Consultative Committee (CCIF, set up in 1924), the International Telegraph Consultative Committee (CCIT, set up in 1925), and the CCIR were made responsible for coordinating the technical studies, tests and measurements being carried out in the various fields of telecommunications, as well as for drawing up international standards.

The 1927 International Radiotelegraph Conference also allocated frequency bands to the various radio services in existence at the time (fixed, maritime and aeronautical mobile, broadcasting, amateur and experimental), to ensure greater efficiency of operation in view of the increase in the number of radiocommunication services and the technical peculiarities of each service.

At the 1932 Madrid Conference, the Union decided to combine the *International Telegraph Convention* of 1865 and the *International Radiotelegraph Convention* of 1906 to form the *International Telecommunication Convention.* It was also decided to change the name of the Union to *International Telecommunication Union*. The new name, which came into effect on 1 January 1934, was chosen to properly reflect the full scope of the Union's responsibilities, which by this time covered all forms of wireline and wireless communication.

A Modern Approach

In 1947, after the Second World War, ITU held a conference in Atlantic City with the aim of developing and modernizing the organization. Under an agreement with the newly created United Nations, it became a UN specialized agency on 15 October 1947, and the headquarters of the organization were transferred in 1948 from Bern to Geneva. At the same time, the International Frequency Registration Board (IFRB) was established to coordinate the increasingly complicated task of managing the radio-frequency spectrum; the same year, the Table of Frequency Allocations, introduced in 1912, was declared mandatory.

In 1956, the CCIT and the CCIF were merged to form the International Telephone and Telegraph Consultative Committee (CCITT), in order to respond more effectively to the requirements generated by the development of these two types of communication.

The following year was marked by the launch of the first artificial satellite, Sputnik-1, and the beginning of the space age. In 1963, the first geostationary communications satellite (Syncom-1) was put into orbit following the suggestion, made by writer Arthur C. Clarke in 1945, that satellites could be used for the transmission of information.

In order to meet the challenges of new space communications systems, in 1959 CCIR set up a study group responsible for studying

ITUHISTORY

space radiocommunication. In addition, an Extraordinary Administrative Conference for space communications was held in 1963 in Geneva to allocate frequencies to the various space services. Subsequent conferences made further allocations and put in place regulations governing the use, by satellites, of the radio-frequency spectrum and associated orbital slots. In 1992, allocations were made for the first time to serve the needs of a new kind of space service using non-geostationary satellites, known as Global Mobile Personal Communications by Satellite (GMPCS). The same year, spectrum was identified for IMT-2000, the ITU-developed next-generation global standard for digital mobile telephony. Due for commercial implementation early in this new millennium, IMT-2000 will harmonize the incompatible mobile systems currently in use around the world while providing a technical foundation for new, high-speed wireless devices capable of handling voice, data and connection to online services such as the Internet.

The Developing Role of the Union

In 1989, the Plenipotentiary Conference held in Nice recognized the importance of placing technical assistance to developing countries on the same footing as its traditional activities of standardization and spectrum management. To this end, it established the Telecommunication Development Bureau (BDT) to step up efforts being made to improve communications in the developing regions of the world.

At the same time, against a background of increasing globalization and the gradual liberalization of world telecommunication markets, the Nice Plenipotentiary Conference initiated a re-evaluation of the Union's structures, operation, working methods and the resources allocated to enable it to achieve its objectives. The conference established a committee of experts whose task was to make recommendations on changes which would ensure that the Union continued to respond effectively to the needs of its members.

In 1992, a plenipotentiary conference, known as the Additional Plenipotentiary Conference, took place in Geneva and dramatically remodelled ITU, with the aim of giving it greater flexibility to adapt to today's increasingly complex, interactive and competitive environment.

As a result of the reorganization, the Union was streamlined into three Sectors, corresponding to its three main areas of activity – Telecommunication Standardization (ITU-T), Radiocommunication (ITU-R) and Telecommunication Development (ITU-D). The new system also introduced a regular cycle of conferences to help the Union rapidly respond to new technological advances.

Into the Next Millennium

The Kyoto Plenipotentiary Conference in 1994 adopted the first-ever strategic plan for ITU, which advocated a more client-oriented approach and a programme of activities centred around the changing roles, needs and functions of ITU members.

In addition, the Kyoto conference identified a need for a forum where members engage in broad, informal discussions on global telecommunication policies and strategies. It thus established the World Telecommunication Policy Forum (WTPF), an ad hoc meeting which encourages the free exchange of ideas and information on emerging policy issues arising from the changing telecommunication environment. The first WTPF was held in Geneva in 1996 on the theme of global mobile personal communications by satellite, the second in Geneva in 1998, on trade in telecommunication services, and the third in 2001, also in Geneva, on Internet Protocol (IP).

The Union's most recent plenipotentiary conference, held in Marrakesh from 23 September to 18 October 2002, endorsed the organization's Strategic Plan. In the period 2004-2007, the priority actions to be undertaken by the Union will seek to achieve the goals set out in the plan, which include bridging the international digital divide by facilitating development of fully interconnected and interoperable networks and services and taking a leading role in the preparations and follow-up of the World Summit on the Information Society. It also specifies that ITU develop tools, based on contributions from members, to safeguard the integrity and interoperability of networks.

The Conference also stressed the need for Internet Domain Names to reflect the geographical and functional nature of the Internet with an equitable balance of interests of all stakeholders. Recognizing that access to Internet should be available to all citizens on a non-discriminatory basis, the Conference resolved that the management of Internet Domain Names and addresses should be of concern to both governments and the private sector and requested ITU to take a significant role in the domain name debate. Given ITU's role in the development of IP standards and protocols for IP-based networks, the Conference called for greater partnerships with Internet standardization organizations, governments, private sector and for a greater outreach to developing countries.

ITU will continue to review and adjust its priorities and its working methods to ensure it remains relevant and responsive in the face of rapid changes in the global telecommunication environment. As the world becomes ever more reliant on telecommunication technologies for commerce, communication and access to information, ITU's role in standardizing emerging new systems and fostering common global policies will be more vital than ever before. ◎

Landmarks

1837	Invention of the electric telegraph
1865	17 May: Founding of the International Telegraph Union in **Paris** by 20 European countries with the adoption of first ITU Convention. First Telegraph Regulations put in place
1868	**Vienna** – First Telegraph Conference. Decision to establish the headquarters of the Union in Bern
1869	Publication of the *Telegraph Journal* begins. Renamed *Telecommunication Journal* in 1934, it is now published under the name *ITU News*
1876	Alexander Graham Bell patents his invention of the telephone
1885	**Berlin** – Telegraph Conference. First provisions for international telephone service
1895	First signals transmitted by radio-relay system
1902	First radio transmissions of the human voice
1906	**Berlin** – International Radiotelegraph Conference (Plenipotentiary). First Radiotelegraph Convention. Worldwide adoption of the SOS emergency distress signal. First trials of broadcasting (voice and music) using radiotelephony
1920	Birth of sound-broadcasting in the improvised studios of the Marconi company
1924	Creation of International Telephone Consultative Committee (CCIF)
1925	Creation of International Telegraph Consultative Committee (CCIT)
1927	**Washington** – Radiotelegraph Conference (Plenipotentiary). Creation of the International Radio Consultative Committee (CCIR)
1932	**Madrid** – Plenipotentiary Conference. Telegraph and Radiotelegraph Conventions are merged to form single International Telecommunication Convention. The organization changes its name from International Telegraph Union to International Telecommunication Union
1947	**Atlantic City** – Plenipotentiary Conference. Creation of the International Frequency Registration Board (IFRB). ITU becomes a specialized agency of the United Nations
1948	ITU headquarters transferred to Geneva
1952	**Buenos Aires** – Plenipotentiary Conference. ITU commences its programme of technical cooperation
1956	**Geneva** – CCIF and CCIT are merged to form CCITT (International Telegraph and Telephone Consultative Committee)
1957	Launch of Sputnik-1, the Earth's first artificial satellite
1959	For the first time, the *Radio Regulations* are entirely revised by the Geneva Administrative Radio Conference
1963	Launch of the world's first telecommunication satellite, Syncom-1, in geostationary orbit. Geneva first World Space Radiocommunication Conference
1965	**Montreux** – Plenipotentiary Conference. Centenary of the Union, culminating in a commemorative ceremony in Paris
1971	ITU launches its first world telecommunication exhibition and forum – TELECOM 71
1973	**Malaga-Torremolinos** – Plenipotentiary Conference
1982	**Nairobi** – Plenipotentiary Conference. The Independent Commission for Worldwide Telecommunications Development is established
1983	UN-declared World Communications Year with ITU as the lead agency
1985	ITU's first regional telecommunication exhibition in the Asia-Pacific region – Asia TELECOM 85

1986	ITU's first regional telecommunication exhibition in the Africa region – Africa Telecom 86
1987	**Geneva** – HF Broadcasting Conference. Revision of the use of high-frequency bands allocated to the broadcasting service and adoption of technical standards and procedures for single-sideband radio services
1988	ITU's first regional telecommunication exhibition in the Americas region – Americas Telecom 88
	Geneva – World Radio Conference on the use of geostationary-satellite orbit (ORB-88). Adoption of plan providing equitable rights of access to the geostationary-satellite orbit. Completion of a comprehensive world satellite direct broadcasting plan.
1989	**Nice** – Plenipotentiary Conference. Creation of the High Level Committee to carry out an in-depth review of the structure and functioning of the Union
1990	125th anniversary of ITU
1992	**Geneva** – Additional Plenipotentiary Conference adopts structural reforms following the recommendations of the High Level Committee. Creation of three Sectors (Radiocommunication, Telecommunication Standardization and Telecommunication Development) which integrate the functions carried out by the former IFRB, CCIR, CCITT and BDT
1993	**Helsinki** – First World Telecommunication Standardization Conference. First World Radio-communication Conference (WRC-93) and Assembly (RA-93), held in **Geneva**
1994	**Buenos Aires** – First World Telecommunication Development Conference
	Kyoto – Plenipotentiary Conference
1996	First World Telecommunication Policy Forum in **Geneva**, on Global Mobile Personal Communications by Satellite (GMPCS) systems. Adoption of the first international standard for universal international freephone numbers (UIFN)
1997	Establishment of the GMPCS MoU and adoption of the first set of arrangements for trans-border use of GMPCS terminals
	Adoption in **Geneva** of the First Memorandum of Understanding to restructure the Internet
	ITU's first interactive media exhibition and forum – Telecom Interactive 97
1998	**Minneapolis** – Plenipotentiary Conference introduces single category of Sector membership according wider rights and obligations to private sector members. Decision to hold a World Summit on the Information Society taken. First Emergency Telecommunications Convention adopted in **Tampere**, Finland
1999	ITU becomes founding member of the Protocol Supporting Organization of the Internet Corporation for Assigned Names and Numbers (ICANN PSO)
2000	**Istanbul** – Landmark decision on the approval of the radio interface specifications for third-generation mobile communications (IMT-2000) and on additional frequency bands for its worldwide operation. **Geneva** – First worldwide standard on digital sound broadcasting
2001	**Geneva** – First Universal Personal Telecommunication Number allocated, opening the way to global number portability. **New York** – The United Nations General Assembly endorses the organization of the World Summit on the Information Society
2002	**Marrakesh** – Plenipotentiary Conference
2003	ITU's first global index to rank some 180 economies on access indicators for the information society
	Holding of the first phase of the World Summit on the Information Society, the first Summit of this kind aimed to bring the tools of the information revolution to the service of global development

Purposes

Every time someone, somewhere, picks up a telephone and dials a number, answers a call on a mobile phone, sends a fax or receives an e-mail, takes a plane or a ship, listens to the radio, watches a favourite television programme or helps a small child master the latest radio-controlled toy, they benefit from the work of the International Telecommunication Union.

The Union was established last century as an impartial, international organization within which governments and the private sector could work together to coordinate the operation of telecommunication networks and services and advance the development of communications technology. Whilst the organization remains relatively unknown to the general public, ITU's work over more than one hundred years has helped create a global communications network which now integrates a huge range of technologies, yet remains one of the most reliable man-made systems ever developed.

As the use of telecommunication technology and radiocommunication-based systems spreads to encompass an ever-wider range of activities, the vital work carried out by ITU is taking on growing importance in the day-to-day lives of people all around the world.

The Union's standardization activities, which have already helped foster the growth of new technologies such as mobile telephony and the Internet, are now being put to use in defining the building blocks of the emerging global information infrastructure, and designing advanced multimedia systems which deftly handle a mix of voice, data, audio and video signals.

Meanwhile, ITU's continuing role in managing the radio-frequency spectrum ensures that radio-based systems like cellular phones and pagers, aircraft and maritime navigation systems, scientific research stations, satellite communication systems and radio and television broadcasting all continue to function smoothly and provide reliable wireless services to the world's inhabitants.

Finally, ITU's increasingly important role as a catalyst for forging development partnerships between government and private industry is helping bring about rapid improvements in telecommunication infrastructure in the world's under-developed economies.

Whether in telecommunication development, standards-setting or spectrum sharing, ITU's consensus-building approach helps governments and the telecommunication industry confront and deal with a broad range of issues which would be difficult to resolve bilaterally.

The result is real-life, workable agreements which benefit not only the telecommunication industry as a whole but, ultimately, telecommunication users everywhere.◎

Under the Constitution of the International Telecommunication Union, the purposes of ITU are:

- To maintain and extend international cooperation between all its Member States for the improvement and rational use of telecommunications of all kinds

- To promote and enhance participation of entities and organizations in the activities of the Union, and to foster fruitful cooperation and partnership between them and Member States for the fulfilment of the overall objectives embodied in the purposes of the Union

- To promote and offer technical assistance to developing countries in the field of telecommunications, and also to promote the mobilization of the material, human and financial resources needed to improve access to telecommunications services in such countries

- To promote the development of technical facilities and their most efficient operation, with a view to improving the efficiency of telecommunication services, increasing their usefulness and making them, so far as possible, generally available to the public

- To promote the extension of the benefits of new telecommunication technologies to all the world's inhabitants

- To promote the use of telecommunication services with the objective of facilitating peaceful relations

- To harmonize the actions of Member States and promote fruitful and constructive cooperation and partnership between Member States and Sector Members in the attainment of those ends

- To promote, at the international level, the adoption of a broader approach to the issues of telecommunications in the global information economy and society, by cooperating with other world and regional intergovernmental organizations and those non-governmental organizations concerned with telecommunications.

The International Telecommunication Union is unique among international organizations in that it was founded on the principle of co-operation between governments and the private sector. With a membership encompassing telecommunication policy-makers and regulators, network operators, equipment manufacturers, hardware and software developers, regional standards-making organizations and financing institutions, ITU's activities, policies and strategic direction are determined and shaped by the industry it serves.

An Evolving Role

The climate in which ITU operates today is very different from the one in which it was founded some 135 years ago. Over the past 20 years, telecommunications have grown from a tool that facilitated person-to-person communications to the foundation that underpins a huge number of human activities, from international trade and commerce to health and, increasingly, education. Fast, reliable telecommunication networks are now a vital ingredient in the trans-border delivery of services such as banking, transportation, tourism, online information and electronic home shopping.

At the same time, the Union's client base is also evolving, due to changes in the way telecommunication services are delivered and the convergence of the communication, computing and audio-visual entertainment industries. Liberalization and deregulation of the telecommunication sector in many countries have prompted traditional ITU members to look to ITU to provide new services which place greater emphasis on policy development and regulatory guidance.

In addition, a growing number of organizations working in fields such as computer software development, entertainment and broadcasting are finding value in ITU membership as their activities become increasingly focused around telecommunications-based services.

In this rapidly changing environment, ITU is changing too, reshaping itself to ensure it remains relevant to the evolving needs of its long-standing members, while recognizing and fulfilling the expectations of newer players.

Structure and Activities

The three Sectors of the Union – Radiocommunication (ITU-R), Telecommunication Standardization (ITU-T), and Telecommunication Development (ITU-D) – work today to build and shape tomorrow's networks and services. Their activities cover all aspects of telecommunication, from setting standards that facilitate seamless interworking of equipment and systems on a global basis to adopting operational procedures for the vast and growing array of wireless services and designing programmes to improve telecommunication infrastructure in the developing world. ITU's work has provided the essential background that has enabled telecommunications to grow into a USD 1 trillion industry worldwide.

Each of the three ITU Sectors works through conferences and meetings, where members negotiate the agreements which serve as the basis for the operation of global telecommunication services.

Study groups made up of experts drawn from leading telecommunication organizations worldwide carry out the technical work of the Union, preparing the detailed studies that lead to authoritative ITU Recommendations.

ITU-R draws up the technical characteristics of terrestrial and space-based wireless services and systems, and develops operational procedures. It also undertakes the important technical studies which serve as a basis for the regulatory decisions made at radiocommunication conferences.

In ITU-T, experts prepare the technical specifications for telecommunication systems, networks and services, including their operation, performance and maintenance. Their work also covers the tariff principles and accounting methods used to provide international service.

ITU-D experts focus their work on the preparation of recommendations, opinions, guidelines, handbooks, manuals and reports, which provide decision-makers in developing countries with 'best business practices' relating to a host of issues ranging from development strategies and policies to network management.

There are currently 22 study groups spanning the Union's three Sectors (7 in ITU-R, 13 in ITU-T, 2 in ITU-D), which together produce around 550 new or revised Recommendations every year. All ITU Recommendations are non-binding, voluntary agreements.

Each Sector also has its own Bureau which ensures the implementation of the Sector's work plan and coordinates activities on a day-to-day basis.

Special Events

In 1996 ITU initiated the World Telecommunication Policy Forum (WTPF), an informal international gathering convened on an ad hoc basis to harmonize telecommunication policies on issues which extend beyond the domain of any single country. The frequency of forums is determined by ITU's top policy-making body, the Plenipotentiary Conference, while the topic of each forum is determined by the Council, ITU's annual governing body.

ITU is also responsible for organizing ITU TELECOM events, the world's largest and most influential telecommunication exhibition and forum. ITU TELECOM WORLD is held every three years, with regional events held each year in the intervening years, covering Asia, Africa, the Americas and the Arab States on a rotating basis. Designed as a service to ITU members, TELECOM showcases the latest technologies and promotes in-depth discussion of key issues facing the industry through a comprehensive, wide-ranging forum programme. ◎

The last decade of the 20th century witnessed extraordinary growth in the use of wireless communications systems, from cellular and cordless phones and radio-based fleet management systems to radio and television broadcasting and next-generation Web-ready personal digital assistants. At the same time, radio has become a vital technology for a growing number of essential public services such as navigation and global positioning systems, environmental monitoring and even deep space research.

At the heart of this wireless world lies ITU's Radiocommunication Sector (ITU-R), which is charged with determining the technical characteristics and operational procedures for a huge and growing range of wireless services. The Sector also plays a vital role in the management of the radio-frequency spectrum, a finite natural resource which is increasingly in demand due to the rapid development of new radio-based services and the enormous popularity of mobile communications technologies.

In their role as global spectrum coordinator, the Member States of the Radiocommunication Sector develop and adopt the *Radio Regulations*, a voluminous set of rules which serve as a binding international treaty governing the use of the radio spectrum by some 40 different services around the world. The Sector also acts, through its Bureau, as a central registrar of international frequency use, recording and maintaining the Master International Frequency Register which currently includes around 1 265 000 terrestrial frequency assignments, 87 096 assignments servicing 590 satellite networks, and another 46 179 assignments related to 3 163 satellite earth stations.
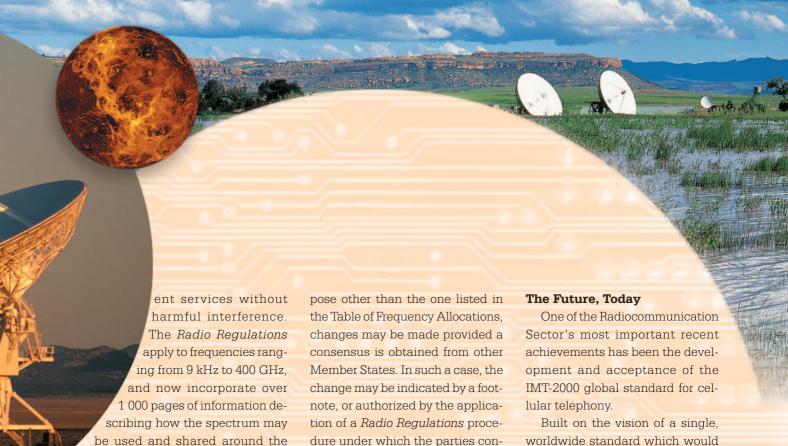
In addition, ITU-R is responsible for coordinating efforts to ensure that the communication, broadcasting and meteorological satellites in the world's increasingly crowded skies can co-exist without causing harmful interference to one another's services. In this role, the Union facilitates agreements between both operators and governments, and provides practical tools and services to help frequency spectrum managers carry out their day-to-day work.

The Radio Regulations

Since the global use and management of frequencies requires a high level of international cooperation, one of the principal tasks of ITU-R is to oversee and facilitate the complex inter-governmental negotiations needed to develop legally binding agreements between sovereign states. These agreements are embodied in the *Radio Regulations* and in regional plans adopted for broadcasting and mobile services.

The first set of *Radio Regulations* was put in place in 1906 at the Berlin International Radiotelegraph Conference, which adopted the first Radiotelegraph Convention. By 1947, the popularity of radio-based systems had reached such a point that the Table of Frequency Allocations, drawn up in 1912 to monitor the use of various parts of the radio-frequency spectrum, was made mandatory in order to provide operation of differ-

ent services without harmful interference. The *Radio Regulations* apply to frequencies ranging from 9 kHz to 400 GHz, and now incorporate over 1 000 pages of information describing how the spectrum may be used and shared around the globe. In an increasingly 'unwired' world, some 40 different radio services now compete for spectrum allocations to provide the bandwidth needed to extend services or support larger numbers of users.

Managing the Spectrum

The portion of the radio-frequency spectrum suitable for communications is divided into 'blocks', the size of which varies according to individual services and their requirements. These blocks are called 'frequency bands', and are allocated to services on an exclusive or shared basis. The full list of services and frequency bands allocated in different regions forms the Table of Frequency Allocations, which is itself part of the *Radio Regulations*.

Changes to the Table, and to the *Radio Regulations* themselves, can only be made by a world radiocommunication conference. Alterations are made on the basis of negotiations between national delegations, which work to reconcile demands for greater capacity and new services with the need to protect existing services. If a country or group of countries wishes a frequency band to be used for a pur-

pose other than the one listed in the Table of Frequency Allocations, changes may be made provided a consensus is obtained from other Member States. In such a case, the change may be indicated by a footnote, or authorized by the application of a *Radio Regulations* procedure under which the parties concerned must formally seek the agreement of any other nations affected by the change before any new use of the band can begin.

In addition to managing the Table of Frequency Allocations, world radiocommunication conferences may also adopt *assignment plans* or *allotment plans* for services where transmission and reception are not necessarily restricted to a particular country or territory. In the case of *assignment plans*, frequencies are allocated on the basis of requirements expressed by each country for each station within a given service, while in the case of *allotment plans*, each country is allotted frequencies to be used by a given service, which the national authorities then assign to the relevant stations within that service.

ITU-R prepares the technical groundwork which enables radiocommunication conferences to make sound decisions, developing regulatory procedures and examining technical issues, planning parameters and sharing criteria with other services in order to calculate the risk of harmful interference.

The Future, Today

One of the Radiocommunication Sector's most important recent achievements has been the development and acceptance of the IMT-2000 global standard for cellular telephony.

Built on the vision of a single, worldwide standard which would harmonize today's often incompatible regional cellular systems, IMT-2000 provides a global platform on which to build so-called 'third-generation' services – fast data access, unified messaging and broadband multimedia in the form of exciting new interactive services.

Work began on IMT-2000 back in 1985 under the auspices of ITU-R Study Group 8. Known initially as FPLMTS (future public land mobile telecommunication systems), the standard soon became International Mobile Telecommunications 2000, or IMT-2000, reflecting both the expected year of first implementation (the year 2000) and the

14

fact that the standard is based around a radio-frequency allocation in the 2000 MHz band.

Aside from offering global roaming capabilities, IMT-2000 is expected to spur the growth of new services such as mobile Internet and wireless data transmission through its ability to send and receive information at megabit data rates, a huge speed improvement on the rates supported by most of today's second-generation digital networks. In addition, dynamic resource control techniques built into the IMT-2000 standard should greatly improve the spectrum efficiency of third-generation systems and help lower operators' costs through increased network capacity.

The many years of cooperative work between ITU members, including equipment manufacturers,

network operators and service providers, culminated in the selection of the main features of the vital IMT-2000 radio interface by a meeting in Fortaleza, Brazil, in March 1999. While the meeting left the door open to multiple access technologies (CDMA, TDMA and others), the need to achieve as much commonality as possible in new 3G systems eventually led to the harmonization of the CDMA-based proposals.

If the industry deploys 3G networks and services on the basis of the IMT-2000 standard, subscribers to third-generation cellular systems will soon benefit from the seamless global roaming and anytime, anywhere access that have been cornerstones of ITU's IMT-2000 development activities since the mid-1980s.

IMT-2000 third-generation systems, now starting to be deployed, will in principle initially operate alongside existing second-generation systems, with multimode handsets providing users with transparent, reliable wireless communications across regions, across countries and across networks. ◎

The Telecommunication Standardization Sector (ITU-T) embodies ITU's oldest activity – developing internationally-agreed technical and operating standards (in ITU parlance, ITU-T Recommendations) and defining tariff and accounting principles for international telecommunication services. The work of ITU-T aims to foster seamless interconnection of the world's communication network and systems.

International standards for information and communication technologies (ICT) are growing in importance not only because of globalization but also because the ICT sector is one of the pillars in today's economy. Whether we exchange voice, data or video messages, communications cannot take place without standards linking the sender and the receiver such as SS7, E.164, JPEG, MPEG, H.323, TCP/IP, GSM, ADSL, etc. The telephone network, arguably one of the most complex projects ever undertaken, is based on a myriad of standards, and ITU's work was instrumental in its creation.

In the field of global information infrastructure, ITU-T is leading the way through standards development efforts aimed at defining the building blocks of a new broadband global infrastructure. The next-generation network (NGN) is a key area of study for ITU-T as operators around the world look to migrate to an IP-based infrastructure. The convergence between Internet protocol (IP), public switched telephone network (PSTN), digital subscriber line (DSL), cable television (CATV), wireless local area network (WLAN) and mobile technologies is a task that many believe is impossible without the development of global standards.

A Seamless Transition

International standards-setting activities represent a global collective effort amounting to several hundreds of millions of dollars every year. ITU-T makes a vital contribution to this process with an open, worldwide membership and a collaborative, impartial approach. Private sector and government members work together to identify areas for standardization and the best possible technical solutions which are quickly ratified as ITU-T Recommendations.

Essential to the smooth functioning of the world's fast-expanding communication networks, globally agreed, globally accepted standards allow all nations to benefit from access to leading-edge technologies and provide a basis for commercial application of technological advances on a global scale.

Through standardization efforts spanning more than 130 years, ITU has helped the global telecommunication industry grow to become the world's third-largest business sector with an annual value of over USD 1 trillion. Now, as an increasing number of operators re-orient their business plans to move to next-generation – all-IP – networks, ITU-T's work programme is adapting and expanding to encompass developments in these systems.

With a majority of its membership from the private sector, ITU-T understands the crucial balance

between rapid delivery and stability in standards development. The Sector has already made great progress in speeding up time-to-market of its Recommendations, and continues to work hard to ensure vital new standards are made available to the industry in the shortest possible time.

Setting the Standard

Throughout the course of every year, hundreds of experts gather at ITU meetings, contributing their time, know-how and expertise to the study groups which develop ITU-T Recommendations. ITU-T currently produces around 210 Recommendations each year – representing one new or updated standard for every working day.

Worldwide standards provide manufacturers with a solid basis on which to compete in the global marketplace, unhindered by technical barriers. Also, because global standards can translate into formi-

dable economies of scale and lower development and hardware costs, they mean lower prices to end users. Finally, global standards protect users from incompatibility problems between rival systems – a situation which could prove disastrous in a world increasingly reliant on information and communication technologies (ICT) to support economic activity and essential public services such as health care.

A Unique Forum

ITU-T Recommendations are technical specifications and operating parameters for equipment and systems covering every aspect of network operation, from numbering plans and accounting rates to the functioning of circuit-switched and packet-based voice and data networks.

An increasingly competitive market means technical specifications for new systems are often

hammered out between the world's key telecommunication players. In such an environment, ITU provides a unique multilateral forum which allows competing interests to meet in an atmosphere of constructive debate, providing a framework for companies to mediate their differences for the benefit of consumers.

Leading the Way

Recent years have seen growing concern over security in ICTs. ITU-T is increasingly active in this area. As well as authoring one of the most well known standards in the area, X.509, which is used for securing the connection between a browser and a server on the web and for providing digital signatures that enable e-commerce transactions to be conducted, ITU's work covers security from network attacks, theft or denial of service, theft of identity, eavesdropping, telebiometrics for authentication,

security for emergency telecommunications and telecommunication networks security requirements. Over 70 standards have been published by ITU in the security field.

Behind the success of the Internet are a number of other ITU-T standards. ASN.1 is a key part of the Simple Network Management Protocol (SNMP) that is used to manage the Internet's operation. And the X.500 "domain name system" is used extensively within today's IP-based networks in the form of object identifiers for object code modules for SNMP.

Thanks to the work of ITU-T study groups, web surfers around the world can access real-time video from remote servers through a host of ITU-T standards. H.264, the latest video compression algorithm, gives users unprecedented levels of quality. A raft of other standards help to create a better user experience – H.324 for low bit-rate multimedia, H.245 which specifies control protocols of multimedia communications and H.261, a source coding algorithm for video terminals, to name just a few.

H.323, which facilitates the delivery of voice, video and data over computer networks like the Internet, remains the most used standard for this job. The H.323 family of standards has been crucial in fostering the development of new voice-over-IP services (VoIP), winning widespread support from equipment vendors because it enables interoperability between products from different manufacturers.

A New Approach

Over the last decade, ITU-T has dramatically overhauled its standards-making, streamlining approval procedures and cutting development time by as much as 95 per cent. This means that an average standard, which took around four years to develop 10 years ago, can now be approved in as little as eight weeks for technical standards and nine months for Recommendations having policy or regulatory implications.

These productivity gains, brought about by the implementation of accelerated approval procedures, electronic processing and distribution of documents and more efficient office working methods, were effected to offer a better, faster service to members.

In an increasingly dynamic environment for telecommunication systems and services, ITU-T recognizes that its members rely on timely, stable standards which allow them to remain competitive yet protect their investment in manufacturing systems and costly research and development. ◎

Overview

DEVELOPMENTSECTOR

As we enter a new era based on the flow of digital information across high-speed global networks, telecommunications are rapidly growing from a service dominated by voice communications, to the fabric which underpins almost all economic activity.

Over the last decade, the electronic processing and exchange of information has come to dominate the world of business, making affordable and reliable access to telecommunication networks an essential element in the economic competitiveness of nations around the world. At the same time, the fast growth of online information resources like the Internet is creating a new world in which timely access to information is increasingly dependent on access to advanced telecommunication services.

For people living in the industrialized world, access to telecommunications is all too often taken for granted. Unfortunately, for the es-timated four billion people living in the world's developing countries, the situation is radically different. At the dawn of the new millennium, pockets of humankind still have no access to even simple telecommunication services – a fact which continues to have enormous social and economic ramifications for many countries.

A lack of reliable access to basic telecommunication services currently affects around two-thirds of ITU's 189 Member States. It is the vital task of ITU's Telecommunication Development Sector (ITU-D) to help redress this imbalance, promoting investment and fostering the expansion of telecommunication infrastructure in developing nations throughout the world.

Sustainable Benefits

Over recent years, it has become clear that achieving sustainable development and improved access to telecommunications requires the existence of a political and socio-economic framework conducive to business and investment.

For this reason, ITU's role in telecommunication development has shifted from that of a provider of technical assistance to an adviser on a wide range of issues relating to telecommunication sector reform.

The Istanbul Action Plan, a six-point framework for development

drawn up by the 2002 World Telecommunication Development Conference held in Istanbul, Turkey, serves as the broad outline for the work of the Sector. The plan targets the key issues which need to be addressed in order to make real and

rapid inroads in resolving the chronic difficulties which have held back telecommunication development in many of the world's poorer countries.

Sector activities include policy and regulatory advice, advice on the financing of telecommunications and on low-cost technology options, assistance in human resource management, and the development of initiatives targeting rural development and universal access. Throughout all these activities, ITU-D maintains a strong emphasis on brokering partnerships with the private sector, with a view to harnessing the commercial drive of industry to meet the needs of developing nations.

The Sector also produces a range of authoritative information resources which provide analysis of trends in the global telecommunication sector backed by official statistics from the world's leading source of telecommunication information. Examples include the *World Telecommunication Development Report* (WTDR), a flagship publication which provides a com-

prehensive overview of an industry in full transition, and the *Telecommunication Regulatory Survey*, an annual survey which monitors world telecommunication reform and serves as the basis of a regulatory database offering vital information for governments reforming their telecommunication sector.

Thinking Globally, Acting Locally

To effectively serve the needs of members around the world, the Sector maintains a strong regional presence via 11 offices located in Africa, the Arab States, the Americas, Asia and the Pacific as well as Europe and the CIS countries. It also holds regular world and regional conferences on telecommunication development which focus on results-oriented initiatives that target rapid, sustainable improvements in access to telecommunication services.

In addition, men and women from all regions of the world meet throughout the year within the framework of the Sector's two study groups to discuss key devel-

opment issues. As partners, they consider policies and devise innovative forms of cooperation with a view to achieving balanced telecommunication development. They also establish best business practice for the deployment, management and maintenance of networks and services. Special attention is paid to the needs and concerns of the UN-designated least developed countries.

Finally, the Sector serves as a forum for meetings of the Telecommunication Development Advisory Group (TDAG), which advises the

Partnerships for Development

With traditional sources of international development funding growing increasingly scarce, the future success of telecommunication development programmes will depend on partnerships between the public and private sectors and on close cooperation between a range of players, including government, regulators, operators, financial institutions, equipment manufacturers and service providers.

In this new environment, ITU-D is using its unique position as an organization having strong ties with both government and private industry to play a catalytic role in promoting strategic partnerships which offer win-win benefits. The Sector is also working hard to assist countries create an economic climate and regulatory framework attractive to private investment, and develop strategies and programmes which stimulate access to telecommunication services.

Through a special development initiative, surplus funds generated by ITU's highly successful ITU TELECOM events are now used as seed money to fund promising development projects in partnership with the private sector in areas such as electronic commerce, tele-education, telemedicine and the establishment of specialized telecommunication centres of excellence. ◎

Director of the Bureau on the formulation of strategies for the Development Sector and on the preparation and implementation of BDT's budget and operational plan.

The Power to Change

Whether used to improve agriculture and the distribution of food, education, health services, manufacturing or other activities such as electronic commerce, telecommunications now have a crucial role to play in the economies of all nations.

ITU-D understands that rapid action is needed to upgrade telecommunication networks in the developing world to bolster economic development and to bridge the gap with more advanced nations. But perhaps even more importantly, the Sector also recognizes that emerging new technologies like tele-education, electronic commerce and telemedicine can open up new possibilities for poorer nations, giving communities a chance to make dramatic improvements in their social infrastructure and allowing them to participate as equals in an emerging digital marketplace.

20

Conferences

THE UNION'S DECISION-MAKING FUNCTIONS

The decision-making functions of ITU are performed by Member States during conferences, assemblies, study groups or at the Council.

Plenipotentiary Conference

The supreme authority of the Union is the Plenipotentiary Conference, a meeting composed of delegations from the Union's Member States, held every four years to adopt the underlying policies of the organization and determine its structure and activities.

Plenipotentiary conferences determine the direction of the Union and its activities, and make decisions relating to the structure of the organization via a treaty called the *Constitution and Convention of the International Telecommunication Union*. The current Constitution and Convention date back to 1992, and were adopted by the Additional Plenipotentiary Conference held in Geneva that year.

They have since been amended by the Plenipotentiary Conferences of Kyoto (1994), Minneapolis (1998) and Marrakesh (2002).

In the period between plenipotentiary conferences, a yearly meeting of the ITU Council acts as the Union's governing body.

Under the ITU Constitution, the Plenipotentiary Conference:

- determines the general policies needed to fulfil the purposes of the Union
- considers reports by the Council on the Union's activities since the last plenipotentiary conference and on the policy and strategic planning of the Union
- establishes the basis for the budget of the Union and determines, in the light of decisions taken on the activities of the Union and on the recommended policy and strategic planning of the Union, financial limits until the next plenipotentiary conference
- establishes the total number of contributory units for the period up to the next plenipotentiary conference, on the basis of the classes of contribution announced by Member States
- elects the Member States which serve on the Council and determines the number of Council seats
- elects the Secretary-General, Deputy Secretary-General and the Directors of the three Bureaux
- elects the members of the Radio Regulations Board
- considers and adopts proposals for amendments to the *Constitution and Convention*
- concludes or revises agreements between the Union and other international organizations, and examines any provisional agreements with such organizations concluded by the Council
- examines and approves the accounts of the Union
- provides general directives on the staffing of the Union and, if necessary, fixes basic salaries, salary scales and the system of allowances and pensions for all officials of the Union
- amends the rules of procedure of conferences and other meetings, if required, and

• deals with any other telecommunication issues which require action. Exceptionally, in the interval between two ordinary plenipotentiary conferences, an extraordinary plenipotentiary conference may be convened with a restricted agenda.

ITU's 16th Plenipotentiary Conference was held in Marrakesh, Morocco, from 23 September to 18 October 2002.

World Radiocommunication Conference (WRC)

World radiocommunication conferences are international treaty-making conferences held under the auspices of ITU's Radiocommunication Sector. WRCs revise and update the *Radio Regulations,* which govern the use of the spectrum by a growing number of services worldwide.

ITU Council

The ITU Council was established in 1947 under the name Administrative Council, following a decision taken by the 1947 Plenipotentiary Conference in Atlantic City, New Jersey, United States.

It comprises a maximum of 25% of the total number of Member States, which are elected by the Plenipotentiary Conference with due regard to the need for equitable distribution of Council seats among the five world regions (Americas, Western Europe, Eastern Europe, Africa, Asia and Australasia). The current Council comprises 46 Member States.

The role of the Council is to consider, in the interval between plenipotentiary conferences, broad telecommunication policy issues to ensure that the Union'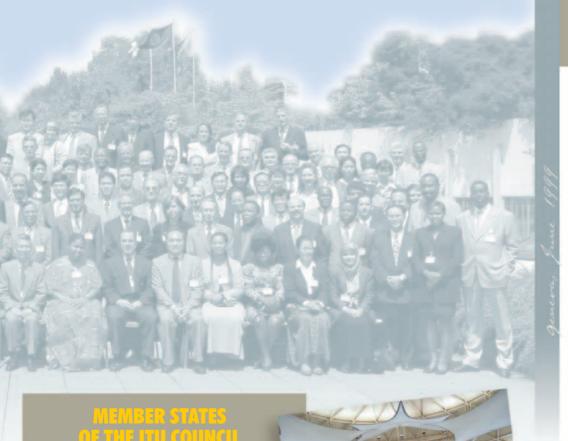s activities, policies and strategies fully respond to today's dynamic, rapidly changing telecommunication environment. It also prepares the ITU strategic plan.

In addition, the Council is responsible for ensuring the smooth day-to-day running of the Union, coordinating work programmes, approving budgets and controlling finances and expenditure.

Finally, the Council takes all steps to facilitate the implementation of the provisions of the *ITU Constitution*, the *ITU Convention*, the Administrative Regulations (*International Telecommunication Regulations* and *Radio Regulations*), the decisions of plenipotentiary conferences and, where appropriate, the decisions of other conferences and meetings of the Union.

Except in the case of vacancies, Member States of the Union elected to the Council hold office until the date on which a new Council is elected by a plenipotentiary conference. Each Member State appoints a representative to

MEMBER STATES OF THE ITU COUNCIL
2002-2006

Region A – Americas

Argentina	Mexico
Brazil	Suriname
Canada	United States
Cuba	Venezuela

Region B – Western Europe

France	Portugal
Germany	Spain
Italy	Switzerland
Norway	Turkey

Region C – Eastern Europe

Bulgaria	Romania
Czech Republic	Russia
Poland	

Region D – Africa

Algeria	Morocco
Burkina Faso	Nigeria
Cameroon	Senegal
Egypt	South Africa
Ghana	Tunisia
Kenya	Uganda
Mali	

Region E – Asia & Australasia

Australia	Korea (Rep. of)
China	Malaysia
India	Pakistan
Indonesia	Saudi Arabia
Iran (Islamic Rep. of)	Thailand
Japan	Viet Nam

tional treaty governing the provision and operation of public telecommunication services, as well as the underlying transport mechanisms used to provide them. The regulations provide a broad, basic framework for telecommunication administrations and operators in the provision of international telecommunication services.

Because of the rapid evolution of telecommunication technology, the International Telecommunication Regulations focus on broad general principles aimed at facilitating global interconnection and interoperability on the basis of mutual agreement between telecommunication carriers. Detailed technical specifications relating to the functioning and operation of equipment and systems are contained in ITU-T standards, which are continually updated on the basis of industry requirements. ◎

serve on the Council, who may be assisted by one or more advisers. Member States of the Council are eligible for re-election.

World Conference on International Telecommunications

World conferences on international telecommunications are held at the request of the Plenipotentiary Conference, and are empowered to revise the International Telecommunication Regulations, an interna-

RADIOCOMMUNICATIONSECTOR

Radiocommunication Conference

World radiocommunication conferences (WRC) are held every two to three years. It is the job of WRC to review, and, if necessary, revise the *Radio Regulations*, the international treaty governing the use of the radiofrequency spectrum and the geostationary-satellite and nongeostationary-satellite orbits. Revisions are made on the basis of an agenda determined by the ITU Council, which takes into account recommendations made by previous world radiocommunication conferences.

The general scope of the agenda of world radiocommunication conferences is established four to six years in advance, with the final agenda set by the ITU Council two years before the conference, with the concurrence of a majority of Member States.

Under the terms of the ITU Constitution, a WRC can:

- revise the *Radio Regulations* and any associated frequency assignment and allotment plans
- address any radiocommunication matter of worldwide character
- give instructions to the Radio Regulations Board and the Radiocommunication Bureau, and review their activities
- determine Questions for study by the Radiocommunication Assembly and the Sector's study groups in preparation for future radiocommunication conferences.

In addition, a WRC agenda may include any question deemed necessary by a plenipotentiary conference, and may be altered at the express request of at least one quarter of the Union's Member States, subject to the approval of the Coun-

cil. It may also be changed at the request of the Council itself. In all cases, any change to an agenda must be accepted by a majority of Member States.

In addition to world radiocommunication conferences, an ITU region or a group of countries may hold a regional radiocommunication conference, with a mandate to develop agreements concerning a particular radiocommunication service or frequency band.

However, such conferences cannot modify the *Radio Regulations*, unless approved by a WRC, and the *Final Acts* of the conference are only binding on those countries that are party to the agreement.

Radiocommunication Assembly

Radiocommunication assemblies (RA) are responsible for ap-

proving the programme of work for the ITU-R's study groups, for setting up the structures required to carry out this work, for making work assignments (including conference preparatory work and radiocommunication studies), and for determining the priority, urgency and time-frame for completion of studies.

Radiocommunication assemblies also approve some ITU-R Recommendations covering the technical specifications of systems and their operational requirements, and approve the technical studies which serve as the basis for the regulatory work of radiocommunication conferences. In addition, they identify suitable topics for the agenda of future WRCs.

Radiocommunication assemblies are normally convened every two to three years, and may be associated, in terms of timing and location, with radiocommunication conferences.

The Radio Regulations Board

The Radio Regulations Board (RRB) is a part-time body comprising 12 members (or 6% of the total number of ITU Member States, whichever is the greater) representing the world's five regions (Americas, Western Europe, Eastern Europe, Africa, Asia and Australasia).

It is the Board's job to approve the Rules of Procedure, which include technical criteria used by the Radiocommunication Bureau in the application of the *Radio Regulations*, to consider matters that could not be resolved by the application of the Radio Regulations or existing Rules of Procedure, to consider reports by the Bureau on investigation of cases of harmful interference, and to formulate recommendations for resolution of such interference. If agreement cannot be reached between an administration and the Board on a Rule of Procedure, the matter is submitted to a world radiocommunication conference for ruling.

The Radio Regulations Board also provides advice to radiocommunication conferences and radiocommunication assemblies, and may perform any additional duties relating to the assignment and utilization of frequencies and the use of the satellite orbits, if they fall within the competence of ITU-R.

The RRB members are elected by the Plenipotentiary Conference for a term of four years. The Chairman and Vice-Chairman of the Board are elected from among its members, and serve for a period of one year. At the end of that year, the Vice-Chairman succeeds the Chairman, and a new Vice-Chairman is elected.

The Board holds up to four meetings each year, with a quorum of two-thirds required before a meeting can take place. In principle, decisions are made by consensus, but if a consensus cannot be reached, the agreement of at least eight members is required for a decision to be adopted.

Since RRB members serve as custodians of an international public trust and not as representatives of their respective countries or regions, they are not authorized to form part of national delegations at radiocommunication conferences or assemblies where they participate as members of the Board. In the case of plenipotentiary conferences, where only the Chairman and Vice-Chairman are entitled to participate as representatives of the Board, the other Board members may join their national delegations.

ITU-R Study Groups

More than 1 500 specialists from telecommunication organizations and administrations around the world participate in the work of the Radiocommunication Sector's seven study groups. ITU-R study groups:

- develop ITU-R Recommendations on the technical characteristics of and operational procedures for radiocommunication services and systems
- draft the technical bases for radiocommunication conferences
- compile handbooks on spectrum management and emerging radiocommunication services and systems.

In addition, regulatory and procedural matters are overseen by a special committee, and studies of mutual interest to the Radiocommunication and Telecommunication Standardization Sectors are overseen by intersector coordination groups (ICG).

Finally, conference preparatory meetings (CPM) prepare a consolidated report on the technical, operational and regulatory/procedural bases for a WRC. The CPM consolidates the output from the study groups and the special committee, together with any new material submitted to it.

The Radiocommunication Advisory Group

Established by the 1993 Radiocommunication Assembly following a decision made by the Additional Plenipotentiary Conference in 1992, the Radiocommunication Advisory Group (RAG) provides advice to the Director of the Radiocommunication Bureau on the Sector's priorities, programmes and strategies. It also monitors progress in the implementation of the ITU-R work programme, provides guidelines for the work of study groups, and promotes cooperation with other organizations and ITU Sectors. Comprising representatives from the Union's Member States and Sector Members, as well as chairmen of ITU-R study groups, RAG meets once or twice a year. The Director reports annually to members of ITU-R and to the Council on the work carried out by the group.

The Radiocommunication Bureau

The Radiocommunication Bureau, or BR, is the executive arm of the Radiocommunication Sector, and is headed by an elected Director. The Director of BR acts as Executive Secretary to the Radio Regulations Board, and is responsible for the coordination of the work of the Sector.

On the basis of the experience gained in the day-to-day applica-

tion of the *Radio Regulations* the Director prepares, for consideration by the Member States and further approval by the Radio Regulations Board, new Rules of Procedure to cater for situations where problems could not be solved by the application of existing rules.

Should a finding by the Radiocommunication Bureau be challenged by an administration, it is the Director's responsibility to submit it, at the request of the administration, to the Radio Regulations Board for review.

The Director is also charged with the preparation of reports on the activities of the Radiocommunication Sector for presentation to world radiocommunication conferences, or, if a conference is not planned, a report which covers the two-year period since the previous report, which is submitted instead to the Council and, for information, to Member States and Sector Members.

In addition, the Director is responsible for preparing annually a rolling four-year operational plan for review by the Radiocommunication Advisory Group. The Director participates in an advisory capacity in radiocommunication conferences, radiocommunication assemblies and ITU-R study groups.

Other tasks entrusted to the Bureau include:

- providing administrative and technical support to radiocommunication conferences, radiocommunication assemblies and study groups, including working parties and task groups

- applying the provisions of the *Radio Regulations* and various regional agreements

- recording and registering frequency assignments and orbital characteristics of space services, and maintaining the Master International Frequency Register

- providing advice to Member States on the equitable, effective and economical use of the radio-frequency spectrum and satellite orbits, and investigating and assisting in resolving cases of harmful interference

- coordinating the preparation, editing and dispatch of circulars, documents and publications developed within the Sector

- providing technical information, holding seminars/workshops on national frequency management and radiocommunications, and working closely with the Telecommunication Development Bureau in assisting developing countries.

The Director of BR is assisted by a team of high-calibre engineers, computer specialists and managers who, together with administrative staff, make up the Radiocommunication Bureau.

28

World Telecommunication Standardization Assembly

World telecommunication standardization assemblies approve the work programme of ITU-T and determine the priorities, urgency and time-frame for completion of work relating to the preparation of standards. Assemblies also approve, modify or reject draft ITU-T Recommendations (*de facto* standards) and consider the reports of the study groups and the Telecommunication Standardization Advisory Group. In addition, they decide on the structure of study groups and on the allocation of Questions to be studied by each study group. To facilitate the participation of developing countries in the work of ITU-T study groups, the Assembly aims to identify and group together Questions of interest to developing countries.

A world telecommunication standardization assembly is held every four years. Additional assemblies may be held at the request of at least one quarter of ITU Member States, providing a majority of States agrees, through a proposal put to the ITU Council or on the recommendation of a previous assembly.

ITU-T Study Groups

The 13 study groups of ITU-T cover a huge range of topics relating to the smooth and efficient functioning of a growing range of telecommunication equipment and services. Topics covered include numbering systems, multimedia services and systems, network and service operation, tariff and accounting principles, telecommunication network management systems, signalling, transmission and transport systems, data networks, and new value-added services such as universal international freephone numbers.
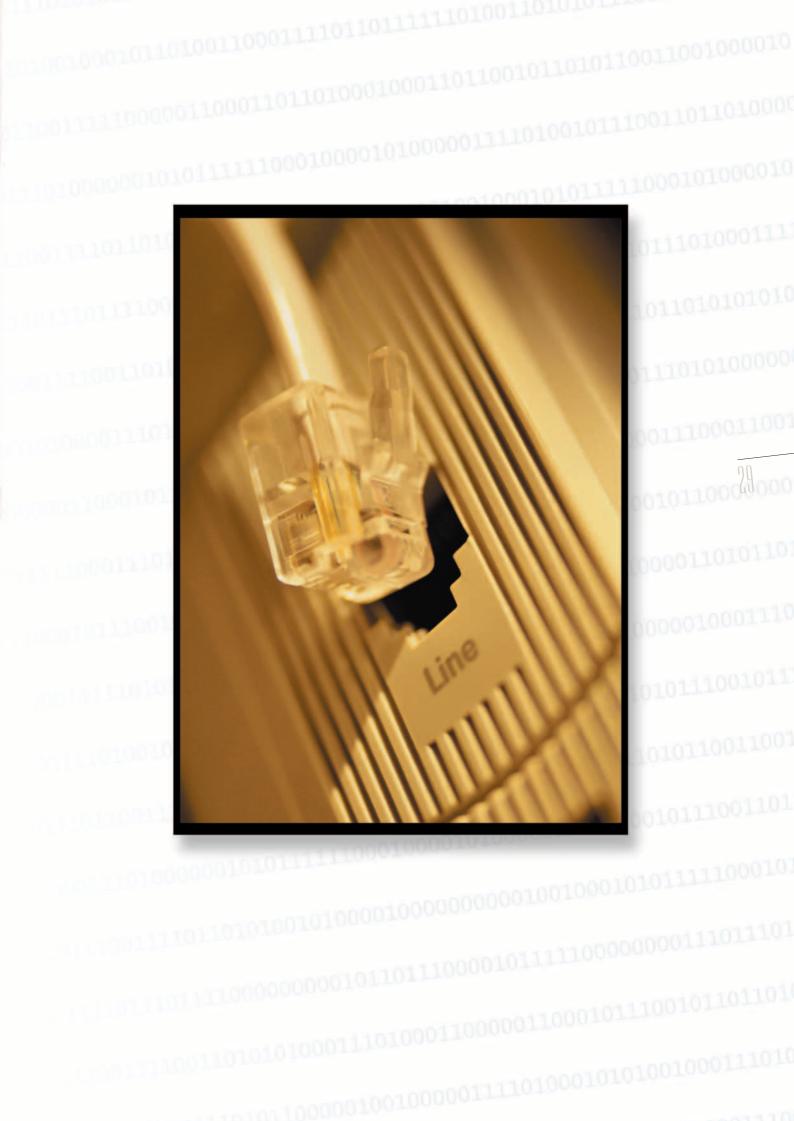
In addition, ITU-T is charged with coordinating the development of the systems and technologies which constitute the emerging global information infrastructure. Areas under study include optical networking, IP interworking and ground-breaking technologies related to new multimedia systems, including special protocols and signal processing systems, high-speed modems, digital subscriber line systems (xDSL), network aspects of mobility and new types of multimedia terminal.

In order to better focus on particular areas of difficulty, study groups create working parties to study specific subjects.

Lead Study Groups

When topics span the mandate of several study groups, work is coordinated by a lead study group whose role it is to facilitate the coordinated development of Recommendations, ensuring work proceeds smoothly with no overlap or omissions. Topics now being coordinated by lead study groups cover a wide range of issues from serv-

ice definition, numbering, routing and global mobility to telecommunication management networks, optical networking technologies, frame relay and IP interworking and related matters. They also include communication system security, intelligent networks, access network transport, languages, description techniques, global information infrastructures and multimedia services and systems.

Rapporteurs and Focus Groups

To make the most effective use of available resources, chairpersons of study groups and working parties (including joint working parties) delegate to rapporteurs the responsibility for the detailed study of individual Questions, small groups of related Questions, parts of Questions, terminology, and amendments to existing Recommendations.

Rapporteurs are authoritative experts in a specific field who propose new solutions and coordinate the activities of other experts. Review and approval of the work of rapporteurs resides with the study group or working party.

Focus groups provide a new, flexible structure to help address short-term needs and produce specifications and agreements. They can also be established to help accelerate the work of ITU-T study groups, at the request of a study group or of the Telecommunication Standardization Advisory Group. Focus groups are typically obliged to complete their work within nine to twelve months.

Tariff Groups

Within the framework of Study Group 3, regional tariff groups develop the methods and criteria used in setting accounting rates and collection charges. There are four regional tariff groups: the Tariff Group for Africa (TAF), the Tariff Group for Latin America (TAL), the tariff group for Asia and Oceania (TAS) and the Tariff Group for Europe and the Mediterranean Basin (TEUREM). Regional tariff groups meet on an ad hoc basis, providing the flexibility needed to meet the particular concerns of each region.

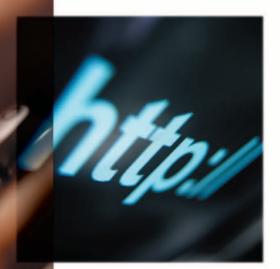### Intersector Coordination Groups

Because some topics require close coordination between the Radiocommunication and Telecommunication Standardization Sectors, intersector coordination groups (ICG) have been established. ICGs coordinate, plan and facilitate the work of various study groups across the two Sectors. At present, there is one ICG on satellite matters. ICGs are not empowered to develop standards, and work within a mandate clearly defined by a joint decision of the Radiocommunication and Telecommunication Standardization Advisory Groups.

Coordination with Other Organizations

Recognizing the importance of close coordination with other organizations engaged in standards-setting, ITU-T has put in place mechanisms to foster cooperation

30

based on a set of established criteria. In general, coordination efforts are established at study group level. In the case of groups associated with one or more Study Groups, the decision to pursue a cooperative development approach is taken by the lead study group. To avoid multiple requests to external standards-setting agencies and to facilitate evaluation by study groups, the Director of the Telecommunication Standardization Bureau (TSB) coordinates requests from ITU-T and makes a preliminary analysis of the responses received from external standards-making organizations.

In addition to a *communication process*, where exchange of information forms the primary channel of cooperation, more formal cooperative arrangements can be established. For example, in a case where two organizations are working in the same area but the prime responsibility falls to one of the two bodies, work can be carried out in the primary organization with the other organization participating, as appropriate, through a liaison arrangement. The result is published by the primary organization and is referenced, as needed, by the other organization. Where, for a given area of work, each organization plans to develop an international standard, mutual consensus is built through collaboration. In this situation, meetings are held at the

working level to develop a common text, which is then approved using the normal approval process of each organization.

The Telecommunication Standardization Advisory Group

The Telecommunication Standardization Advisory Group (TSAG) assists the Director of TSB by regularly reviewing the priorities, programmes and strategies of the Sector, providing guidelines for the work of the study groups, and working to foster inter-organization cooperation with other relevant standardization bodies, including industry forums and consortia. Comprising representatives from the ITU Member States and ITU-T Sector Members who participate on an equal footing, TSAG meets as often as necessary, but at least once a year.

The Telecommunication Standardization Bureau

The Telecommunication Standardization Bureau (TSB) is the executive arm of the Telecommunication Standardization Sector, and is headed by an elected Director.
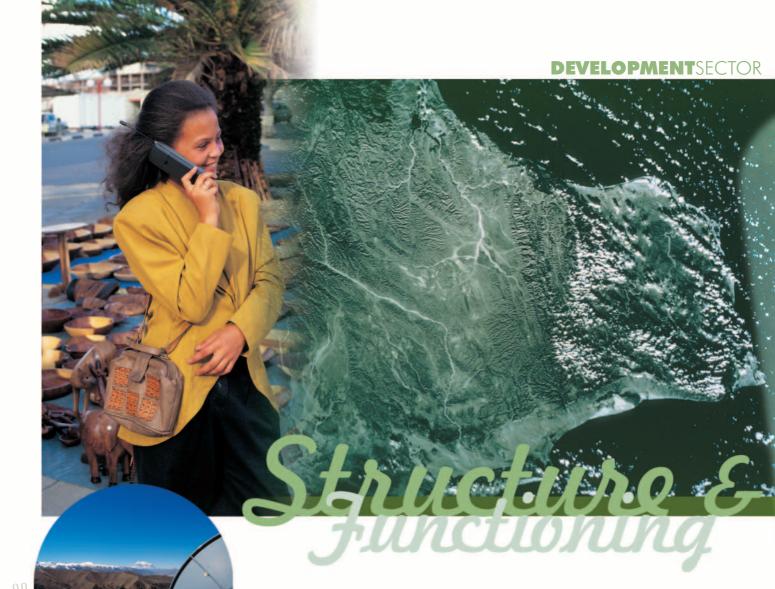
The Director of TSB is responsible for regularly updating the work programme of the Sector approved by world telecommunication standardization assemblies, in consultation with the chairmen of the ITU-T study groups and the Telecommunication Standardization Advisory Group.

The Director of TSB also prepares reports on the activities of the Telecommunication Standardization Sector for world telecommunication standardization assemblies, as well as an annual report on the Sector's activities, which is submitted to the Council. In addition, the Director manages the allocation of ITU-T's financial and human resources, and is responsible for preparing cost-based budget estimates covering the

work of the Sector, which are included in the total budget of the Union. The Director participates in an advisory capacity in the work of the World Telecommunication Standardization Assembly as well as in ITU-T study groups.

The tasks conferred on TSB include:

- organizing and coordinating the approval process of ITU-T Recommendations as well as their timely publication (print and online) and distribution to members
- assisting the work of the Sector and making all necessary preparations for assemblies and meetings of the Telecommunication Standardization Sector, in consultation with the General Secretariat
- processing information received from telecommunication administrations relating to provisions of the International Telecommunication Regulations or decisions of the World Telecommunication Standardization Assembly, and preparing that information for publication, if appropriate
- disseminating data from members needed to ensure efficient day-to-day operation of telecommunication services, such as international telephone routes, numbering changes, operational bulletins, statistical information and other notifications which keep administrations informed on matters of importance for the provision of domestic and international telecommunications
- managing and maintaining the databases of the Sector, and arranging, if appropriate, for their publication
- acting as registrar for value-added services such as universal international freephone numbers (UIFN), universal international premium rate numbers (UIPRN) and international shared cost numbers (ISCN)
- providing technical information and support to the Telecommunication Development Sector. ◎

Structure & Functioning

Telecommunication Development Conferences

World telecommunication development conferences (WTDC) are convened every four years with the purpose of reviewing the progress made in telecommunication in developing countries and to establish ICT development priorities, strategies and Action Plans for the future. Priority is accorded to the expansion and modernization of networks, the mobilization of resources and regulatory reform needed to boost telecommunication penetration and access in the world's poorer countries.

They also serve to promote international cooperation and partnerships which can sustain infrastructure and institutional strengthening in the developing countries. Regional preparatory meetings (RPMs) establish regional priorities in Africa, Americas, Arab States, Europe and CIS and Asia-Pacific regions as well as a roadmap to achieve regionally-defined goals.

The World Telecommunication Development Conference provides direction to the Telecommunication Development Bureau (BDT) and establishes mechanisms and work programmes for BDT in light of the high-level recognition of the digital divide created by the rapid and pervasive expansion of ICTs.

WTDC also establishes study groups to undertake studies on issues of relevance to developing countries, including development policies, financing, network planning, and introduction of new services, and is charged with examining the reports of such study groups.

The Istanbul Action Plan

The multi-pronged Istanbul Action Plan, adopted by the World

Telecommunication Development Conference held in Istanbul in 2002, has the elements needed to make it possible to fast-track ITU's objectives of bridging the Digital Divide.

Based on six programmes, the Plan seeks to empower all stakeholders in telecoms development to bring applications and services for the benefit of all. This is particularly important for the world's most deprived, whether it be through capacity and competency-building in regulatory matters, relevant technology and ICT solutions, human resource development, information sharing, mutually reinforcing financing schemes or greater awareness of the potential of ICTs. It also strives to reduce access costs to enable the greatest number of people possible to cross the Digital Divide.

While the six programmes of the Action Plan all converge towards that ultimate goal, a new programme on e-strategies specifically focuses on bringing applications to people that will improve their standards of living in a sustainable way and contribute towards poverty eradication. The e-strategies programme aims at improving the quality of life of those in low-income rural and underserved areas through community access, improved governance or better access to a wider range of socio-economic services such as e-education and e-health. The programme also seeks to integrate the development of the telecommunication infrastructure with the deployment of IP and value-added e-services.

ITU-D Study Groups

ITU-D manages two study groups: one in the area of strategy and policy and the other in development and management. These

groups serve as a forum for developing and developed countries and public and private sector organizations to meet, with the purpose of devising innovative solutions which address specific problem areas as identified by the World Telecommunication Development Conference.

The topics under study include universal access, establishment of independent regulatory bodies, regulatory impact of convergence of telecommunication, broadcasting, information technology and content sectors. They also focus on tariff policies, use of the Internet in developing countries and technology transfer and informatization.

In addition, telemedicine, rural applications, migrations from 2nd generation mobile networks to IMT-2000 and beyond, and interoperability and cost/benefit analyses of digital broadcasting systems are important areas of study.

Participation in ITU-D study groups is open to all ITU Member States and to all ITU-D Sector Members.

To encourage participation in the work of ITU-D study groups, a fellowship programme is available to representatives from eligible developing countries. The programme covers the cost of travel, accommodation and daily expenses for one representative from each eligible nation to attend study group meetings.

**The Telecommunication
Development Advisory Group**

The Telecommunication Devel-

opment Advisory Group (TDAG) advises the Director of BDT on the formulation of strategies for the Development Sector and on the preparation and implementation of BDT's budget and operational plan.

TDAG reviews priorities, programmes, operations, financial matters and strategies relating to the activities of the Sector. It also

reviews progress in the implementation of the Sector's work programme, provides guidelines for the work of study groups and proposes measures aimed at fostering cooperation and coordination with development and financial institutions.

TDAG is open to representatives of ITU Member States and Sector Members and to chairpersons and vice-chairpersons of study groups. In addition, the Director may invite representatives of bilateral cooperation and development aid agencies and multilateral development institutions to participate in TDAG meetings. TDAG generally meets twice a year.

**The Telecommunication
Development Bureau**

The Telecommunication Development Bureau (BDT) is the executive arm of the Telecommunication Development Sector, and is headed by an elected Director. Its duties and responsibilities cover a variety of functions ranging from programme supervision and technical advice to the collection, processing

and publication of information relevant to telecommunication development.

The BDT Director works in partnership with the Union's other Sectors to strengthen its catalytic role in telecommunication development, and participates in an advisory capacity in the work of world telecommunication development conferences and in the work of ITU-D study groups.

The Director is also required to submit a report on the activities of the Telecommunication Development Sector to world telecommunication development conferences, and to prepare a report on the Sector's activities for the Council.

34

Preparation of cost-based budget estimates covering the work of the Sector for inclusion in the total budget of the Union is also the responsibility of the Director.

The tasks conferred on BDT include:

• at the request of ITU members, initiating studies and offering advice on national and regional telecommunication problems, taking

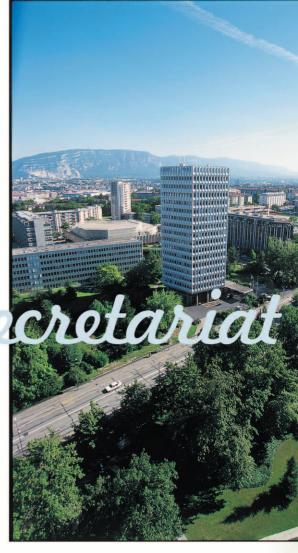into account economic factors when a comparison of technical alternatives is involved

• assembling and preparing for publication technical and administrative information which can help developing countries to improve their telecommunication networks

• promoting the activities and programmes of the United Nations which relate to telecommunication development

• coordinating the timely publication of ITU-D Recommendations, and distributing them to Member States and Sector Members

• managing and maintaining documents and databases of the

Sector, and arranging, as appropriate, for their publication.

Field Operations and Regional Presence

ITU's policy on regional presence is designed to enable the Union to work as closely as possible with its members and to tailor ITU activities to meet the ever-increasing and diverse needs of the

world's developing and least developed countries. ITU currently manages a network of eleven field offices. These include regional offices in Addis Ababa (for Africa), Brasilia (for Americas), Cairo (for the Arab States) and Bangkok (for Asia and Pacific) and a number of area offices in each of these regions. The Europe and CIS countries unit at ITU headquarters is currently acting as regional office for that region pending the opening of a new office in Moscow.

ITU field offices provide support for all Union activities, helping implement its strategic and policy objectives through direct, sustained contact with national

authorities, regional telecommunication organizations and other relevant bodies.

They also assist developing and least developed countries to meet their development goals. In addition to providing technical and logistical support to development activities, field offices fulfil the basic functions of the development sector as a specialized and executing agency, resource mobilizer and information centre.

ITU's regional presence serves also to assist the ITU General Secretariat, the Radiocommunication Bureau and the Telecommunication Standardization Bureau in fulfilling their missions by:

• promoting their work, representing them at regional and national events

• assisting them in organizing events of a regional character in their respective domain of activities or in joint activities with BDT

• representing ITU's elected officials at regional events

• expressing the visions and the needs of the countries in the different domains of activities and proposing actions for responding to their needs. ◎

The General Secretariat

The General Secretariat of ITU was established by the Vienna International Telegraph Conference of 1868 and was set up in Bern, Switzerland, in 1869. It has been known, successively, as the *Bureau international des administrations télégraphiques* (1909-1933); *Bureau de l'Union internationale des télécommunications* (1934-1947);

and the *General Secretariat of ITU* (since 1948).

The task of the General Secretariat is to manage the administrative and financial aspects of the Union's activities, including the provision of conference services, information services, long-range strategic planning, and corporate functions (communications, legal advice, finance, personnel and common services).

The General Secretariat's work in managing the Union's many meetings, regional and international assemblies and conferences covers organizational and logistical support, the provision of administrative services, documentation, and the provision of translation and interpretation services in the six working languages of the Union. In addition, its work involves providing legal advice, communication support and media relations services for these events.

Through an extensive document preparation and handling centre, the General Secretariat is also charged with the production and printing of documents and publications as well as with marketing, sales and dispatch of publications to customers worldwide.

In the area of strategic planning, policy development, external relations and corporate communication, the General Secretariat is involved in activities ranging from the preparation of papers and reports tracking changing trends in the global telecommunication environment, to the development of corporate communication policies and materials promoting the work of the Union.

The General Secretariat manages relations with the media, with the United Nations and with other international and regional organizations, and handles matters of protocol. In addition, it proposes improvements to working methods and identifies cost-saving measures through operations analyses.

The management of the finances of the Union is also the responsibility of the General Secretariat. Activities include advising and informing the membership and legislative bodies of the Union on financial and budgetary matters, preparation of the Union's draft budget, preparation of cost analysis, and financial reporting.

It is the responsibility of the General Secretariat to manage the Union's legal affairs, providing advice and legal opinions on a wide range of important documents including formal agreements and international treaties. It also has an important role to play in assisting the Secretary-General in his role as ITU's legal representative and depositary of treaties and other agreements concluded by ITU or under its auspices.

ITU's internal communications requirements are also handled by the General Secretariat, which provides an up-to-date information technology infrastructure, information exchange services, administrative software applications and software development environments.

Finally, the General Secretariat assists the Secretary-General in developing policies relating to personnel and human resources, providing essential advice on a wide range of matters including recruitment, staff training, counselling and post classification. ◎

ITU Telecom Events

A World of ITU Telecom Events

ITU Telecom World
ITU Telecom Americas
ITU Telecom Asia
ITU Telecom Africa
ITU Telecom Middle East & Arab States

In 1971, ITU launched a new service to its members – an exhibition of equipment designed to promote the benefits of telecommunications and demonstrate recent technological advances. Some thirty years after the first ITU Telecom event held in Geneva, the ITU Telecom exhibitions and forums have grown to become the largest and most important telecommunication events in the world, providing a global showcase for the latest technologies, news and views through a programme of regular world events, and regional events held on a rotating basis around the world.
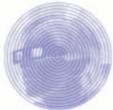
Today's ITU Telecom events serve as a privileged and unique meeting place for government leaders, senior executives from the world's leading operators, manufacturers, service providers and developers, telecommunication regulators, investors, the business community and the press.

ITU Telecom also remains an important element of ITU's continuing efforts to promote international telecommunications as a prime driver of global economic activity, in partnership with major players from the telecommunication and information technology industries.

Over the years, ITU Telecom has been responsible for showcasing many of the technological advances that we now take for granted – ISDN, satellite broadcasting systems, digital and optical switching systems, ATM, cellular telephony, and most recently IP telephony, the Internet, and third-generation mobile. Many of these new technologies have proved an enormous boon to developing countries, which can use them to tackle chronic problems that have long hindered network growth.

The ITU Telecom events also play an important role in the development process by bringing together representatives of leading players from the telecommunication industry and delegates from the highest level of government, which in turn fosters the creation of partnerships to boost telecommunication development in countries where it is most needed. In addition, surplus funds generated by the events are allocated to specific development projects overseen by ITU's Telecommunication Development Sector. ◎

ITU is the world's leading publisher of telecommunication technology, regulatory and standards information. Its 4 000 titles address the needs of the administrations and organizations which participate in the work of the Union, as well as a growing number of service providers, educational and research organizations and consulting groups.

The large output of traditional printed material is now balanced by an extensive programme of electronic publication and distribution, encompassing CD-ROMs and online services.

In addition, more than 100 000 web pages contain information on every aspect of ITU's structure, functioning, conferences and events, its strategic planning and the work of its numerous study groups, as well as useful statistics, study papers, media information and databases, including a terminology database with more than 60 000 telecommunication terms in English, French and Spanish. The ITU website boasts an average of over 1.5 million hits per month.

Through the ITU Electronic Bookshop **ITU BOOKSHOP**, members and the general public alike can order, pay for and download materials directly from the Bookshop website. As a special promotion, the Union is offering its customers three electronic standards per person at no charge.

It also manages a yearly online paid subscription service for major collections like telecommunication and radiocommunication standards, statistical data and operational information. Armed with a username and password, users can download publications on demand as they need them. All ITU members now receive a free online subscription to the standards of the sector of which they are a member.

Under a self-financing scheme, ITU publications are not distributed free of charge but are offered for sale at a price which covers their production costs. The exception to this rule is the *Catalogue of Publications*, published twice a year, and the *List of Recommendations* in Force for ITU-T and ITU-R, which are available on request at no cost from the ITU Sales Service. Both publications are also available on TIES and the ITU website at **itu.int/publications**. In addition, general information leaflets and brochures are provided free of charge, on request.

Most ITU publications are available in English, French and Spanish. Some are also published in Arabic, Chinese and Russian.

Member States which appear on the UN list of least developed countries are entitled to a discount of 80% on the cost of all ITU publications, in order to facilitate access to important data and promote information exchange between the Union and its members. University libraries also benefit from a reduc-
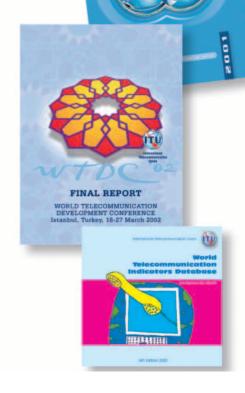
tion of 80% on the price of all electronic publications (CD-ROM or online versions only).

**Telecom Information
Exchange Services (TIES)**

The ITU Telecom Information Exchange Services (TIES) is a set of networked information services and resources for the global telecommunications community. Most of these services are available via the World Wide Web. One of the main goals of TIES is to help make ITU's activities, such as telecommunication standardization work, more efficient. Another goal is to make a wide range of information available to ITU's various constituencies. In general, ITU information is public with no need for prior registration. This includes corporate information such as ITU mission, general information on the organization, its structure, functioning, on activities and events or on current issues; it also includes press releases and an-

nual reports and provides access to ITU's news magazine online and to employment opportunities. ITU publications are also publicly available for online purchase, or by annual subscription.

Some information, such as working documents of Study Groups and contributions for treaty-making conferences may be accessed only by members. Referred to as "TIES registered users", this user group may access the Electronic Document Handling (EDH) services, including working documents and FTP "drop boxes" for the electronic submission of documents. TIES registered users have access to dial-up Internet Services (E-mail, FTP, the Web) to enhance their participation in ITU activities.

More information is available from the ITU TIES Helpdesk Service at **helpdesk@itu.int** or from the ITU TIES Web pages found at **itu.int/TIES/**. ◉

Finance and Staffing

ITU LEADERSHIP

Secretary-General
Yoshio Utsumi (Japan)

Deputy Secretary-General
Roberto Blois (Brazil)

Director, Radiocommunication Bureau
Valery Timofeev (Russia)

Director, Telecommunication Standardization Bureau
Houlin Zhao (China)

Director, Telecommunication Development Bureau
Hamadoun I. Touré (Mali)

FINANCE

The Union's main source of financing is the contributions of its Member States, which account for 66.1% of the overall budget. At each plenipotentiary conference, every member (States and Sector Members alike) selects its class of contribution. The amount of the contributory unit is determined when the budget is approved and the current value of one contributory unit for a Sector Member is set at 1/5 of that of a Member State. Sector Members contribute 13.3% of the overall budget. The scale of unit classes ranges from 1/16 of a unit to 40 units but any member may choose a number of contributory units over 40. Only Member States listed by the United Nations as least developed countries and those determined by the Council may select the 1/8 and 1/16 unit classes of contribution.

The other sources of financing include:

● income from cost recovery for services like the sale of publications, project execution, satellite notifications (17% of total funding)

● other income, such as withdrawals from the Reserve Account and income from interest (3.6% of total funding).

The Union operates on a biennial budget, that is, a budget approved by the Council every two years. The budget must remain within expenditure limits set by the Plenipotentiary Conference for two budgetary cycles.

For the years 2004-2005, the budget of the Union stands at CHF 328 872 000, with the contributory unit valued at CHF 315 000 for Member States and CHF 63 000 for Sector Members. In addition, the contributory unit for Associates has been fixed at CHF 10 500 for the ITU Radiocommunication Sector (ITU-R) and ITU Telecommunication Standardization Sector (ITU-T), CHF 3 937.50 for the ITU Telecommunication Development Sector (ITU-D) and CHF 1 968.75 for Associates from developing countries participating in the ITU-D sector.

In addition to 48 activities, the 2004-2005 budget covers the funding of centralized administrative and support services and is structured by Sector, activity and type of expenditure.

STAFFING

While not applying a quota system, ITU draws its staff from as wide a range of nationalities as possible, ensuring a broad representation and bringing together the different national perspectives and linguistic skills which are essential to a truly international organization.

ITU's specialist and managerial posts are advertised internationally to attract highly qualified staff in all disciplines.

At 31 December 2003 the number of ITU staff stood at 784, representing 81 nationalities both at Headquarters and in the field.

Expert Service

To improve access to telecommunications in the developing world, BDT manages an expert service which recruits, from the public and private sectors, specialists with high-level expertise. According to needs, missions may involve advisory services in the areas of legislation, restructuring, management and all other aspects of telecommunications, including new services such as distance learning, telemedicine, e-commerce and the Internet.

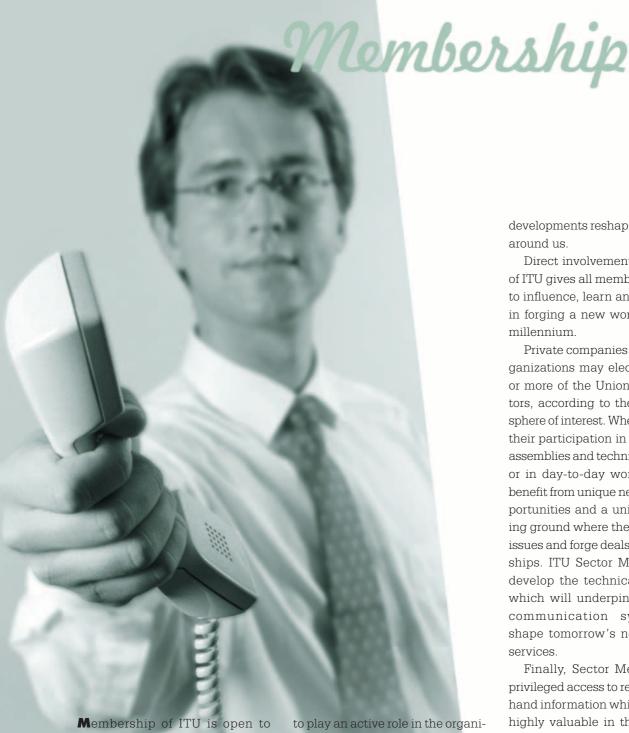Around 300 expert missions are carried out each year.

Internship Programme

The Union also runs a non-remunerated internship programme aimed at giving young undergraduate and graduate students an opportunity to improve their skills and gain experience in an international environment.

Candidates are selected on an ad hoc basis determined by the needs of various ITU departments.

Internships are possible throughout the year, and may last from one to six months. ◎

42

Membership

developments reshaping the world around us.

Direct involvement in the work of ITU gives all members a chance to influence, learn and play a part in forging a new world for a new millennium.

Private companies and other organizations may elect to join one or more of the Union's three Sectors, according to their particular sphere of interest. Whether through their participation in conferences, assemblies and technical meetings or in day-to-day work, members benefit from unique networking opportunities and a universal meeting ground where they can debate issues and forge deals and partnerships. ITU Sector Members also develop the technical standards which will underpin future telecommunication systems and shape tomorrow's networks and services.

Finally, Sector Members gain privileged access to restricted first-hand information which can prove highly valuable in their business planning.

Because of its unique role and track record in worldwide telecommunications, ITU provides the

Membership of ITU is open to governments, which may join the Union as Member States, as well as to private organizations like carriers, equipment manufacturers, funding bodies, research and development organizations and international and regional telecommunication organizations, which can join ITU as Sector Members.

With telecommunications taking on an ever-greater importance as the universal facilitator of global economic activity, membership of ITU gives governments and private organizations the opportunity to play an active role in the organization, which can boast more than 130 years' experience in building the world's communications networks.

For more information on membership, visit our website at itu.int/members or write to us at membership@itu.int

Through membership of the world's largest, most respected and most influential global telecommunication organization, government and industry alike can ensure their voice is heard, and make an important and valued contribution to the ideal forum for governments and the private sector to come together to set agendas and policy frameworks that will have tremendous impact on the future of global business. ◎

43

List of Members

AFGHANISTAN AFGHAN WIRELESS COMMUNICATION COMPANY **ALBANIA** **ALGERIA** ALGÉRIE TÉLÉCOM **ANDORRA** **ANGOLA** **ANTIGUA AND BARBUDA** **ARGENTINA** COMPAÑÍA DE RADIOCOMUNICACIONES MÓVILES • COOPERATIVA TELEFÓNICA LÓPEZ CAMELO (COTELCAM) • IMPSAT • TELEFÓNICA DE ARGENTINA **ARMENIA** ARMENTEL **AUSTRALIA** BANDSPEED • BOEING AUSTRALIA • SINGTEL OPTUS • TELSTRA **AUSTRIA** OESTERREICHISCHER RUNDFUNK (ORF) • TELEKOM AUSTRIA • UTA TELEKOM **AZERBAIJAN** AZEUROTEL **BAHAMAS** PUBLIC UTILITIES COMMISSION (PUC) **BAHRAIN** BATELCO • MTC VODAFONE BAHRAIN • TELECOMMUNICATIONS REGULATORY AUTHORITY (TRA) **BANGLADESH** **BARBADOS** **BELARUS** **BELGIUM** ALCATEL BELL • BELGACOM • SIEMENS • SPARNEX • TELINDUS **BELIZE** BELIZE TELECOMMUNICATIONS LIMITED (BTL) **BENIN** **BHUTAN** BHUTAN TELECOM **BOLIVIA** **BOSNIA AND HERZEGOVINA** BH TELECOM • TELEKOM SRPSKE **BOTSWANA** MASCOM WIRELESS BOTSWANA **BRAZIL** D&D INTERNATIONAL • EMBRATEL • INSTITUTO DE FORMAÇÃO EM TECNOLOGIA (IFT) • TELEMAR NORTE LESTE **BRUNEI DARUSSALAM** **BULGARIA** BULGARIAN TELECOMMUNICATIONS COMPANY (BTC) • COMMUNICATIONS REGULATION COMMISSION (CRC) **BURKINA FASO** **BURUNDI** **CAMBODIA** **CAMEROON** CAMEROON TELECOMMUNICATIONS (CAMTEL) **CANADA** ALCATEL CANADA • ALLSTREAM • BELL CANADA • CAP GEMINI ERNST & YOUNG • CATENA NETWORKS • INSTITUT INTERNATIONAL DES TÉLÉCOMMUNICATIONS (IIT) • NORTEL NETWORKS • ROGERS WIRELESS • SPECTROCAN • SR TELECOM • TELECOMMUNICATIONS EXECUTIVE MANAGEMENT INSTITUTE OF CANADA (TEMIC) • TELEGLOBE CANADA • TELESAT CANADA • ZARLINK SEMICONDUCTOR **CAPE VERDE** **CENTRAL AFRICAN REPUBLIC** **CHAD** SOCIÉTÉ DES TÉLÉCOMMUNICATIONS DU TCHAD (SOTEL TCHAD) • TCHAD MOBILE **CHILE** EMPRESA NACIONAL DE TELECOMUNICACIONES (ENTEL) • TELEFÓNICA CTC CHILE **CHINA** ALCATEL SHANGHAI BELL • ASIA SATELLITE TELECOMMUNICATIONS (ASIASAT) • CHINA MOBILE COMMUNICATIONS CORPORATION • CHINA NETWORK COMMUNICATION GROUP CORPORATION • CHINA TELECOMMUNICATIONS CORPORATION • CHINA UNITED TELECOMMUNICATIONS CORPORATION (CHINA UNICOM) • HUAWEI TECHNOLOGIES • HUTCHISON GLOBAL COMMUNICATIONS • MANDARIN COMMUNICATIONS • NEW WORLD TELECOM • PCCW • REACH NETWORKS HONG-KONG • WHARF T&T • ZTE CORPORATION **COLOMBIA** BELLSOUTH COLOMBIA • EMPRESA DE TELECOMUNICACIONES DE BOGOTÁ • EMPRESA NACIONAL DE TELECOMUNICACIONES (TELECOM) **COMOROS** **CONGO** **COSTA RICA** RADIOGRÁFICA COSTARRICENSE (RACSA) **CÔTE D'IVOIRE** CONSEIL DES TÉLÉCOMMUNICATIONS DE CÔTE D'IVOIRE (CTCI) • CÔTE D'IVOIRE TÉLÉCOM • LOTENY TELECOM **CROATIA** **CUBA** EMPRESA DE TELECOMUNICACIONES DE CUBA (ETECSA) • EMPRESA TELÉFONOS CELULARES DE CUBA (CUBACEL) **CYPRUS** **CZECH REPUBLIC** CESKÉ RADIOKOMUNIKACE • CESKY TELECOM **DEMOCRATIC REPUBLIC OF THE CONGO** **DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA** **DENMARK** GN GREAT NORTHERN TELEGRAPH COMPANY • ITEK • TDC **DJIBOUTI** **DOMINICA** **DOMINICAN REPUBLIC** VERIZON DOMINICANA **ECUADOR** **EGYPT** ALKAN COMMUNICATION • ARAB ACADEMY FOR SCIENCE, TECHNOLOGY AND MARITIME TRANSPORT • BARKOTEL COMMUNICATIONS • EGYPTIAN COMPANY FOR NETWORKS (EGYNET) • EGYPTIAN GERMAN TELECOMMUNICATION INDUSTRIES (EGTI) • LINKDÖTNET • NATIONAL TELECOMMUNICATION INSTITUTE (NTI) • SYSTEL • TE DATA • TELECOM EGYPT • TELECON CONSULTANTS • THE EGYPTIAN COMPANY FOR MOBILE SERVICES (MOBINIL) • THE EGYPTIAN SATELLITE COMPANY (NILESAT) • TRADE FAIRS INTERNATIONAL • VODAFONE EGYPT TELECOMMUNICATIONS **EL SALVADOR** **EQUATORIAL GUINEA** **ERITREA** **ESTONIA** **ETHIOPIA** **FIJI** **FINLAND** ELISA CORPORATION • FINNET ASSOCIATION • NOKIA CORPORATION • TELLABS OY • YLEISRADIO OY (YLE) **FRANCE** 9 TÉLÉCOM RÉSEAU • ALCATEL • BOUYGUES TELECOM • CEGETEL GROUPE • CORVIS FRANCE R&D • CRIL TELECOM SOFTWARE (CTS) • EADS ASTRIUM • EUTELSAT • FRANCE TÉLÉCOM • GROUPE CIRCET • HP CENTRE DE COMPÉTENCES • MITSUBISHI ELECTRIC • MOTOROLA • NETTEST • NORTEL NETWORKS EUROPE • OFFICE DES POSTES ET TÉLÉCOMMUNICATIONS DE NOUVELLE-CALÉDONIE (OPT) • OFFICE DES POSTES ET TÉLÉCOMMUNICATIONS DE POLYNÉSIE FRANÇAISE (OPT) • SAGEM • TÉLÉCOM DÉVELOPPEMENT • THALES COMMUNICATIONS • THOMSON MULTIMEDIA **GABON** **GAMBIA** **GEORGIA** **GERMANY** ACTERNA • ALCATEL SEL • ARCOR • DETECON CONSULTING • DEUTSCHE TELEKOM • DEUTSCHE WELLE • E-PLUS MOBILFUNK • EPCOS • FREENET CITYLINE • INFINEON TECHNOLOGIES • LS TELCOM • LUCENT TECHNOLOGIES • MARCONI COMMUNICATIONS • MOBILCOM MULTIMEDIA • NORDDEUTSCHER RUNDFUNK (NDR) • O2 GERMANY • PHILIPS RESEARCH LABORATORIES • ROBERT BOSCH • ROHDE & SCHWARZ • SCI-WORX • SIEMENS • TENOVIS • VODAFONE D2 • ZWEITES DEUTSCHES FERNSEHEN **GHANA** GHANA TELECOM • WESTERN TELESYSTEMS (WESTEL) **GREECE** EUNICE TELECOMMUNICATIONS • FEDERATION OF INFORMATION TECHNOLOGY & COMMUNICATIONS ENTERPRISES (SEPE) • HELLENIC TELECOMMUNICATIONS ORGANIZATION (OTE) **GRENADA** **GUATEMALA** **GUINEA** **GUINEA-BISSAU** **GUYANA** GUYANA TELEPHONE AND TELEGRAPH **HAITI** HAITEL **HONDURAS** **HUNGARY** ANTENNA HUNGARIA-HUNGARIAN RADIOCOMMUNICATIONS • MATÁV-HUNGARIAN TELECOMMUNICATIONS **ICELAND** **INDIA** BHARAT SANCHAR NIGAM • CELLULAR OPERATORS ASSOCIATION OF INDIA (COAI) • DATA ACCESS (INDIA) • MAHANAGAR TELEPHONE NIGAM • RELIANCE INFOCOMM • SASKEN COMMUNICATION TECHNOLOGIES • TELECOM DISPUTES SETTLEMENT & APPELLATE TRIBUNAL (TDSAT) • TELECOM REGULATORY AUTHORITY OF INDIA (TRAI) • TELECOMMUNICATIONS CONSULTANTS INDIA LIMITED (TCIL) **INDONESIA** PT ASIA CELLULAR SATELLITE (ACES) • PT INDOSAT • PT SATELIT PALAPA INDONESIA (SATELINDO) • PT TELEKOMUNIKASI INDONESIA (TELKOM) **IRAN (ISLAMIC REP. OF)** TELECOMMUNICATION COMPANY OF IRAN (TCI) **IRAQ** **IRELAND** **ISRAEL** ACTELIS NETWORKS • AUDIOCODES • BARAK ITC • BEZEQ • ECI TELECOM • INFINEON TECHNOLOGIES SAVAN • METALINK • RAD DATA COMMUNICATIONS • SPEDIANT SYSTEMS • TADIRAN ELECTRONIC SYSTEMS • TELRAD NETWORKS • TIOGA TECHNOLOGIES **ITALY** AETHRA • AEXIS TELECOM • ALCATEL ITALIA • EDISONTEL • ELSACOM • H3G • ITALTEL • MARCONI SELENIA COMMUNICATIONS • PIRELLI CAVI E SISTEMI TELECOM • POLO TECNOLOGICO DI STATO CARLO CATTANEO • RAI WAY • SIEMENS MOBILE COMMUNICATIONS • SIRTI • STMICROELECTRONICS • TELECOM ITALIA MOBILE (TIM) • TELECOM ITALIA • TELESPAZIO • VODAFONE OMNITEL • WIND TELECOMUNICAZIONI **JAMAICA** CABLE & WIRELESS JAMAICA • MOSSEL (JAMAICA) **JAPAN** BROADCASTING SATELLITE SYSTEM CORPORATION (B-SAT) • CABLE & WIRELESS IDC • CANON • COMMUNICATIONS AND INFORMATION NETWORK ASSOCIATION OF JAPAN (CIAJ) • COMMUNICATION LINE PRODUCTS ASSOCIATION OF JAPAN • COMMUNICATIONS RESEARCH LABORATORY (CRL) • CORNING INTERNATIONAL • FUJITSU • HITACHI • JAPAN AEROSPACE EXPLORATION AGENCY • JAPAN ELECTRONICS AND INFORMATION TECHNOLOGY INDUSTRIES ASSOCIATION (JEITA) • JAPAN RADIO AIR NAVIGATION SYSTEMS ASSOCIATION • JAPAN RADIO • JAPAN TELECOM • JAPAN TELECOMMUNICATIONS ENGINEERING AND CONSULTING SERVICE • JSAT CORPORATION • KDDI CORPORATION • MATSUSHITA ELECTRIC INDUSTRIAL • MITSUBISHI ELECTRIC CORPORATION • MOBILE BROADCASTING CORPORATION • NEC CORPORATION • NIPPON HOSO KYOKAI (NHK) • NIPPON INFORMATION TECHNOLOGY CONSULTING (NTC) • NIPPON MINKAN HOSO RENMEI • NIPPON TELEGRAPH AND TELEPHONE CORPORATION (NTT) • NIPPON TELEGRAPH AND TELEPHONE EAST CORPORATION (NTT EAST) • NIPPON TELEGRAPH AND TELEPHONE WEST CORPORATION (NTT WEST) • NOMURA RESEARCH INSTITUTE • NTT COMMUNICATIONS CORPORATION • NTT COMWARE CORPORATION • NTT DoCoMo • OKI ELECTRIC INDUSTRY • PANASONIC MOBILE COMMUNICATIONS • POWEREDCOM • RICOH • SHARP CORPORATION • SOFTBANK BB • SOFTFRONT • SONY • SPACE COMMUNICATIONS CORPORATION • SUMITOMO ELECTRIC INDUSTRIES • SUPPORT CENTER FOR ADVANCED TELECOMMUNICATIONS TECHNOLOGY RESEARCH, FOUNDATION • THE ITU ASSOCIATION OF JAPAN • TOKAI UNIVERSITY INSTITUTE OF MEDICAL SCIENCES • TOKYO ELECTRIC POWER COMPANY • TOSHIBA • VODAFONE K.K. **JORDAN** ARAB ADVISORS GROUP • ARAB KNOWLEDGE MANAGEMENT SOCIETY (AKMS) • JORDAN MOBILE TELEPHONE SERVICES (JMTS/Fastlink) • JORDAN TELECOM • MIDDLE EAST COMMUNICATIONS (MEC) • TALAL ABU-GHAZALEH & CO. INTERNATIONAL (TAGI) • VISION FOR TELECOM & CONSULTATION **KAZAKHSTAN** KAZAKHTELECOM (OJSC) **KENYA** KENCELL COMMUNICATIONS • SAFARICOM • TELKOM KENYA **KIRIBATI** **KOREA (REPUBLIC OF)** DATA COMMUNICATIONS CORPORATION OF KOREA (DACOM) • ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE (ETRI) • KOREA NETWORK INFORMATION CENTER (KRNIC) • KT CORPORATION • LG ELECTRONICS • LG TELECOM • SAMSUNG ELECTRONICS • SK TELECOM **KUWAIT** MOBILE TELECOMMUNICATIONS (K.S.C.) **KYRGYZSTAN** **LAO PEOPLE'S DEMOCRATIC REPUBLIC** **LATVIA** **LEBANON** AL-IKTISSAD WAL-AAMAL GROUP • ARABCOM-TXG • INVESTCOM HOLDING • PRE-PAID INTERNATIONAL SYSTEMS SAL (OFF-SHORE) • TELECOMMUNICATION INFORMATION TECHNOLOGY (TIT) **LESOTHO** TELE-COM LESOTHO **LIBERIA** **LIBYA** GENERAL POST AND TELECOMMUNICATION COMPANY • LIBYAN SATELLITE PROJECT (LIBSAT) **LIECHTENSTEIN** **LITHUANIA** **LUXEMBOURG** ENTREPRISE DES POSTES ET TÉLÉCOMMUNICATIONS (EPT) • SES ASTRA **MADAGASCAR** **MALAWI** **MALAYSIA** CAPE RANGE WIRELESS MALAYSIA • CELCOM (MALAYSIA) BERHAD • DIGI TELECOMMUNICATIONS • MAXIS INTERNATIONAL • TELEKOM MALAYSIA BERHAD • TIME DOTCOM BERHAD **MALDIVES** **MALI** **MALTA** MALTACOM **MARSHALL ISLANDS** **MAURITANIA** AGENCE DE PROMOTION DE L'ACCÈS UNIVERSEL AUX SERVICES (APAUS) • MATTEL **MAURITIUS** **MEXICO** MVS COMUNICACIONES • SATÉLITES MEXICANOS (SATMEX) • TELECOMUNICACIONES DE MÉXICO (TELECOMM) • TELÉFONOS DE MÉXICO (TELMEX) **MICRONESIA** **MOLDOVA** JSC 'MOLDTELECOM' **MONACO** **MONGOLIA** MOBICOM CORPORATION **MOROCCO** CKM HOLDING • ITISSALAT AL MAGHRIB (IAM) — MAROC TÉLÉCOM • UPLINE SECURITIES **MOZAMBIQUE** **MYANMAR** **NAMIBIA** **NAURU** **NEPAL** **NETHERLANDS** AGERE SYSTEMS NEDERLAND • DRAKA FIBRE TECHNOLOGY • NEW SKIES SATELLITES • PHILIPS CONSUMER ELECTRONICS • ROYAL KPN • SMITCOMS • UNITED TELECOMMUNICATION SERVICES (UTS) • VODAFONE-LIBERTEL **NEW ZEALAND** BROADCAST COMMUNICATIONS • TELECOM NEW ZEALAND **NICARAGUA** **NIGER** **NIGERIA** NIGERIAN TELECOMMUNICATIONS (NITEL) **NORWAY** NERA NETWORK • NORKRING • TANDBERG TELECOM • TELENOR **OMAN** OMAN TELECOMMUNICATIONS COMPANY (SAOC) • OMAN TELECOMMUNICATIONS REGULATORY AUTHORITY (TRA) **PAKISTAN** PAKISTAN TELECOMMUNICATION COMPANY LIMITED (PTCL) • SYSNET PAKISTAN **PANAMA** CABLE & WIRELESS PANAMÁ **PAPUA NEW GUINEA** **PARAGUAY** COMPAÑÍA PARAGUAYA DE COMUNICACIONES (COPACO) **PERU** INSTITUTO NACIONAL DE INVESTIGACIÓN Y CAPACITACIÓN DE TELECOMUNICACIONES

(INICTEL) • ORGANISMO SUPERVISOR DE INVERSIÓN PRIVADA EN TELECOMUNICACIONES (OSIPTEL) • TELEFÓNICA DEL PERÚ **PHILIPPINES** GLOBE TELECOM • PHILIPPINE GLOBAL COMMUNICATIONS (PHILCOM) • PHILIPPINE LONG DISTANCE TELEPHONE • SMART COMMUNICATIONS **POLAND** POLKOMTEL • TELEKOMUNIKACJA POLSKA **PORTUGAL** PT COMUNICAÇÕES **QATAR ROMANIA** LOGIC TELECOM • S.C. ROMTELECOM • TELEMOBIL • THE NATIONAL RADIOCOMMUNICATION COMPANY • TOPEX PUBLIC SWITCHING **RUSSIA** OJSC ROSTELECOM **RWANDA SAINT LUCIA SAMOA SAN MARINO SAO TOME AND PRINCIPE SAUDI ARABIA** ADVANCED TELECOM • SAUDI LOGISTICS AND ELECTRONICS COMPANY (SALEC) • SAUDI TELECOMMUNICATION COMPANY (S.T.C.) • ZAJOUL FOR ADVANCED COMMUNICATIONS TECHNOLOGY **SENEGAL** SOCIÉTÉ NATIONALE DES TÉLÉCOMMUNICATIONS DU SÉNÉGAL (SONATEL) **SERBIA AND MONTENEGRO** COMMUNITY OF YUGOSLAV PTT • YUGOSLAV RADIOTELEVISION **SEYCHELLES SIERRA LEONE SINGAPORE** SINGAPORE TELECOMMUNICATIONS (SINGTEL) • STARHUB **SLOVAKIA** SLOVAK TELECOM **SLOVENIA SOLOMON ISLANDS SOMALIA SOUTH AFRICA** CELL-C • MOBILE TELEPHONE NETWORKS • ORBICOM • SENTECH • TELKOM • TRANSTEL • VODACOM **SPAIN** ALCATEL ESPAÑA • HISPASAT • RADIOTELEVISIÓN ESPAÑOLA (RTVE) • RETEVISIÓN • SOCIEDAD ESTATAL 'CORREOS Y TELÉGRAFOS' • TELEFÓNICA • VODAFONE ESPAÑA **SRI LANKA** MTN NETWORKS • SRI LANKA TELECOM **ST VINCENT AND THE GRENADINES SUDAN** SUDAN TELECOM (SUDATEL) **SURINAME SWAZILAND SWEDEN** INFINEON TECHNOLOGIES WIRELESS SOLUTIONS SWEDEN • SONG NETWORKS HOLDING • SWEDISH SPACE CORPORATION • TELEFON AB – LM ERICSSON • TELELOGIC • TELIASONERA • TERACOM **SWITZERLAND** SWISSCOM • TDC SWITZERLAND • WISEKEY • YELLOW ACCESS **SYRIA** SPACETEL SYRIA **TAJIKISTAN TANZANIA** VODACOM TANZANIA **THAILAND THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA** AD 'MAKEDONSKI TELEKOMUNIKACII' **TOGO** CENTRE RÉGIONAL DE MAINTENANCE DES TÉLÉCOMMUNICATIONS DE LOMÉ (CMTL) • TOGO TELECOM **TONGA TRINIDAD AND TOBAGO TUNISIA** AGENCE NATIONALE DES FRÉQUENCES • AGENCE TUNISIENNE D'INTERNET (ATI) • CENTRE D'ÉTUDES ET DE RECHERCHES DES TÉLÉCOMMUNICATIONS (CERT) • TUNISIE TÉLÉCOM **TURKEY** KOC.NET TELECOMMUNICATIONS SERVICES • TELSIM MOBILE TELECOMMUNICATION SERVICES • TÜRK TELEKOMÜNIKASYON **TURKMENISTAN TUVALU UGANDA UKRAINE** JSC 'URKTELECOM' **UNITED ARAB EMIRATES UNITED KINGDOM** 3 • ADVA OPTICAL NETWORKING • AGILENT TECHNOLOGIES UK • BRITISH BROADCASTING CORPORATION (BBC) • BRITISH TELECOMMUNICATIONS PUBLIC (BT PLC) • CABLE & WIRELESS • CADENCE DESIGN FOUNDRY UK • FLAG TELECOM • HUGHES NETWORK SYSTEMS • ICO GLOBAL COMMUNICATIONS • INMARSAT • INTEC TELECOM SYSTEMS • LUCENT TECHNOLOGIES UK • MANSAT • MARCONI • MM02 • MOBILE SYSTEMS INTERNATIONAL • MOTOROLA • NOKIA UK • NORTEL NETWORKS (EUROPE) • ORANGE • PANAMSAT EUROPE • PANASONIC • PSYTECHNICS • SES SATELLITES (GIBRALTAR) • THALES RESEARCH AND TECHNOLOGY • THE BOEING COMPANY • VECTONE • VODAFONE GROUP SERVICES • VODAFONE • VT MERLIN COMMUNICATIONS **UNITED STATES** 3COM CORPORATION • 3M TELECOMMUNICATIONS • 8X8 • ADC TELECOMMUNICATIONS • ADTRAN • ADVANCED MICRO DEVICES (AMD) • AERONAUTICAL RADIO INC. (ARINC) • AGERE SYSTEMS • AGILENT TECHNOLOGIES • ALCATEL USA • ANALOG DEVICES CORPORATION • APPLIED MICRO CIRCUITS CORPORATION (AMCC) • ARRAYCOMM • ARRIS INTERNATIONAL • ASIA TELEMEDIA • ASTROLINK INTERNATIONAL • AT&T • AT&T WIRELESS SERVICES • AVAYA • AWARE • BECHTEL TELECOMMUNICATIONS • BELL SOUTH TELECOMMUNICATIONS • BROADCOM CORPORATION • BROOKTROUT TECHNOLOGY • BURR-BROWN CORPORATION • CABLE & WIRELESS USA • CABLE TELEVISION LABORATORIES • CALIENT NETWORKS • C.B.S. • CENTILLIUM COMMUNICATIONS • CEYBA • CIENA CORPORATION • CINGULAR WIRELESS • CISCO SYSTEMS • COMPASSROSE INTERNATIONAL • CONEXANT SYSTEMS • CONTINUOUS COMPUTING CORPORATION • COPPER MOUNTAIN NETWORKS • CORNING INCORPORATED • CORVIS CORPORATION • DITECH COMMUNICATIONS CORPORATION • ELECTRIPHY CORPORATION • ELLIPSO • ESS TECHNOLOGY • EZENIA! • FACILICOM INTERNATIONAL • FINAL ANALYSIS COMMUNICATIONS SERVICES • FUJITSU NETWORK COMMUNICATIONS • GENUITY • GLOBALSTAR • GLOBESPAN VIRATA • GTECH HOLDINGS CORPORATION • HEWLETT-PACKARD • HUGHES ELECTRONICS CORPORATION • IBM • ICODING TECHNOLOGY • IKANOS COMMUNICATIONS • INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE (ITRI) • INFINEON TECHNOLOGIES NORTH AMERICA • INTEL CORPORATION • INTELSAT • INTERDIGITAL COMMUNICATIONS CORPORATION • IRIDIUM SATELLITE • IRIS LABS • ITT INDUSTRIES • ITXC CORPORATION • KASSTECH • LOCKHEED MARTIN CORPORATION • LORAL SKYNET • LORAL SPACE & COMMUNICATIONS • LSI LOGIC CORPORATION • LUCENT TECHNOLOGIES • MICROSOFT CORPORATION • MINDSPEED TECHNOLOGIES • MOTOROLA • MULTILINK TECHNOLOGY CORPORATION • NATIONAL TELECOMMUNICATIONS COOPERATIVE ASSOCIATION (NTCA) • NAYNA NETWORKS • NEUSTAR • NEXT LEVEL COMMUNICATIONS • NMS COMMUNICATIONS CORPORATION • NOKIA • NORTEL NETWORKS (USA) • ORATION TECHNOLOGIES • PANAMSAT • PARADYNE CORPORATION • PAXONET COMMUNICATIONS • PCTEL • POLYCOM • PRIMETEC INTERNATIONAL • PULSECOM • QUALCOMM • QUINTUM TECHNOLOGIES • QWEST COMMUNICATIONS • RAYCHEM • RAYTHEON COMPANY • RFC HOLDINGS • SAMSUNG TELECOMMUNICATIONS • SBC COMMUNICATIONS • SKYBRIDGE • SONUS NETWORK • SOSINC COMMUNICATIONS • SPRINT CORPORATION • SPRINT PCS • STARTEC GLOBAL COMMUNICATIONS • SUN MICROSYSTEMS • SUNRISE TELECOM • SYMMETRICOM • SYSTEMWARE • TEKELEC • TEKTRONIX • TELCORDIA TECHNOLOGIES • TELECOMMUNICATION INDUSTRY ASSOCIATION (TIA) • TELECOMMUNICATIONS MANAGEMENT GROUP • TELEDESIC • TELLIUM • TERAYON • TEXAS INSTRUMENTS • THE AMERICAN GRADUATE SCHOOL OF INTERNATIONAL MANAGEMENT (THUNDERBIRD) • THE BOEING COMPANY • TRANSWITCH CORPORATION • TYCO TELECOMMUNICATIONS • UTSTARCOM • VERISIGN • VERIZON COMMUNICATION CORPORATION • VITESSE SEMICONDUCTOR CORPORATION • VTEL CORPORATION • WARNER BROTHERS • WARSUN INTERNATIONAL COMMUNICATIONS • WORLDCOM • WORLDSPACE CORPORATION • ZENITH ELECTRONICS **URUGUAY UZBEKISTAN VANUATU VATICAN VENEZUELA** COMPAÑÍA ANÓNIMA NACIONAL TELÉFONOS DE VENEZUELA (CANTV) • TELCEL **VIET NAM YEMEN ZAMBIA ZIMBABWE** BROADCASTING AUTHORITY OF ZIMBABWE (BAZ) • NETONE CELLULAR (PRIVATE) • POWERTEL COMMUNICATIONS (PVT) • TELEACCESS (ZIMBABWE) (PRIVATE) **ORGANIZATIONS** AFRICAN TELECOMMUNICATIONS UNION • AHCIET • ARAB BUSINESS FORUM FOR INFORMATION AND COMMUNICATION TECHNOLOGY (ABFICT) • ARAB SATELLITE COMMUNICATIONS ORGANIZATION (ARABSAT) • ARAB STATES BROADCASTING UNION • ASIA-PACIFIC BROADCASTING UNION (ABU) • ASIA-PACIFIC INSTITUTE FOR BROADCASTING DEVELOPMENT (AIBD) • ASIA-PACIFIC NETWORK INFORMATION CENTRE (APNIC) • ASIA-PACIFIC SATELLITE COMMUNICATIONS COUNCIL (APSCC) • ASIA-PACIFIC TELECOMMUNITY (APT) • ASSOCIATION OF ANDEAN COMMUNITY TELECOMMUNICATIONS ENTERPRISES (ASETA) • CARIBBEAN ASSOCIATION OF NATIONAL TELECOMMUNICATION ORGANIZATIONS (CANTO) • CARIBBEAN TELECOMMUNICATION UNION • COMMITTEE ON RADIO ASTRONOMY FREQUENCIES • COMMITTEE ON SPACE RESEARCH (COSPAR) • COMMONWEALTH TELECOMMUNICATIONS ORGANISATION (CTO) • COMMUNAUTÉ ÉCONOMIQUE ET MONÉTAIRE DE L'AFRIQUE CENTRALE (CEMAC) • CONFERENCE OF POSTAL AND TELECOMMUNICATIONS ADMINISTRATIONS OF CENTRAL AFRICA (COPTAC) • COOPERATION COUNCIL FOR THE ARAB STATES OF THE GULF (GCC) • DAISY CONSORTIUM • DIGITAL RADIO MONDIALE • EAST AFRICAN COMMUNITY (EAC) • EASTERN CARIBBEAN TELECOMMUNICATIONS AUTHORITY (ECTEL) • EUROPEAN BROADCASTING UNION (EBU) • EUROPEAN COMMISSION • EUROPEAN COMPETITIVE TELECOMMUNICATIONS ASSOCIATION (ECTA) • EUROPEAN CONFERENCE OF POSTAL AND TELECOMMUNICATIONS ADMINISTRATIONS • EUROPEAN ORGANISATION FOR THE EXPLOITATION OF METEOROLOGICAL SATELLITES (EUMETSAT) • EUROPEAN ORGANIZATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL) • EUROPEAN PATENT OFFICE (EPO) • EUROPEAN RADIOCOMMUNICATIONS OFFICE (ERO) • EUROPEAN SPACE AGENCY • EUROPEAN TELECOMMUNICATIONS NETWORK OPERATORS' ASSOCIATION (ETNO) • EUROPEAN TELECOMMUNICATIONS SATELLITE ORGANISATION (EUTELSAT IGO) • EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE (ETSI) • GLOBAL VSAT FORUM • GSM ASSOCIATION • GULFVISION • INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) • INTER-AMERICAN TELECOMMUNICATIONS COMMISSION (CITEL) • INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) • INTERNATIONAL AMATEUR RADIO UNION (IARU) • INTERNATIONAL ASSOCIATION OF BROADCASTING • INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND LIGHTHOUSE AUTHORITIES • INTERNATIONAL ASTRONAUTICAL FEDERATION • INTERNATIONAL ASTRONOMICAL UNION • INTERNATIONAL BUREAU OF WEIGHTS AND MEASURES • INTERNATIONAL COMMITTEE OF THE RED CROSS • INTERNATIONAL COUNCIL ON LARGE ELECTRIC SYSTEMS • INTERNATIONAL COUNCIL FOR SCIENCE • INTERNATIONAL ELECTROTECHNICAL COMMISSION • INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING (IFIP) • INTERNATIONAL INSTITUTE FOR COMMUNICATION AND DEVELOPMENT (IICD) • INTERNATIONAL MOBILE SATELLITE ORGANIZATION (IMSO) • INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) • INTERNATIONAL ORGANIZATION OF SPACE COMMUNICATIONS (INTERSPUTNIK) • INTERNATIONAL MARITIME RADIO ASSOCIATION (CIRM) • INTERNATIONAL SATELLITE SYSTEM FOR SEARCH AND RESCUE • INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE • INTERNATIONAL TELECOMMUNICATIONS SATELLITE ORGANIZATION (ITSO) • INTERNATIONAL TELECOMMUNICATIONS USERS GROUP (INTUG) • INTERNATIONAL TELETRAFFIC CONGRESS (ITC) • INTERNATIONAL UNION OF RADIO SCIENCE (URSI) • INTERNATIONAL UNION OF RAILWAYS • INTERNATIONAL WIRELESS TELECOMMUNICATIONS ASSOCIATION (IWTA) • INTERNET SOCIETY (ISOC) • LEAGUE OF ARAB STATES • NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS (NARUC) • NORTH AMERICAN BROADCASTERS ASSOCIATION (NABA) • ORGANIZACIÓN DE TELECOMUNICACIONES IBEROAMERICANAS (OTI) • PACIFIC ISLANDS FORUM SECRETARIAT • PACIFIC TELECOMMUNICATIONS COUNCIL (PTC) • REGIONAL AFRICAN SATELLITE COMMUNICATIONS ORGANIZATION (RASCOM) • REGIONAL COMMONWEALTH IN THE FIELD OF COMMUNICATIONS (RCC) • TELECOMMUNICATIONS REGIONAL TECHNICAL COMMISSION (COMTELCA) • SCIENTIFIC COMMITTEE ON FREQUENCY ALLOCATIONS FOR RADIO ASTRONOMY AND SPACE SCIENCE (IUCAF) • SITA • SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS (SMPTE) • SOUTHERN AFRICA TELECOMMUNICATIONS ASSOCIATION (SATA) • SOUTHERN AFRICA TRANSPORT AND COMMUNICATIONS COMMISSION • UMTS FORUM • UNION DES RADIODIFFUSIONS ET TÉLÉVISIONS NATIONALES D'AFRIQUE (URTNA) • UNION OF THE ELECTRICITY INDUSTRY (EURELECTRIC) • WORLD ASSOCIATION OF COMMUNITY RADIO BROADCASTERS (ARMAC) • WORLD BROADCASTING UNION (WBU-TC) • WORLD FORUM FOR DIGITAL AUDIO BROADCASTING (WORLDDAB) • WORLDTEL

The legal source of ITU bodies

Article 7 of the ITU Constitution sets forth the basic institutional structure of the Union. The main legal bodies of the Union are:

Plenipotentiary Conference

Legal source: Article 8 of the ITU Constitution and Article 1 of the ITU Convention.

Council

Legal source: Article 10 of the ITU Constitution and Article 4 of the ITU Convention.

General Secretariat

Legal source: Article 11 of the ITU Constitution and Article 5 of the ITU Convention.

World and Regional Radiocommunication Conferences

Legal source: Article 13 of the ITU Constitution and Article 7 and Article 9 of the ITU Convention.

Radiocommunication Assemblies

Legal source: Article 13 of the ITU Constitution and Article 8 of the ITU Convention.

Radio Regulations Board

Legal source: Article 14 of the ITU Constitution and Article 10 of the ITU Convention.

Radiocommunication Study Groups and Advisory Group

Legal source: Article 15 of the ITU Constitution and Articles 11 and 11A of the ITU Convention.

Radiocommunication Bureau

Legal source: Article 16 of the ITU Constitution and Article 12 of the ITU Convention.

World Telecommunication Standardization Assemblies

Legal source: Article 18 of the ITU Constitution and Article 13 of the ITU Convention.

Telecommunication Standardization Study Groups and Advisory Group

Legal source: Article 19 of the ITU Constitution and Articles 14 and 14A of the ITU Convention.

Telecommunication Standardization Bureau

Legal source: Article 20 of the ITU Constitution and Article 15 of the ITU Convention.

World and Regional Telecommunication Development Conferences

Legal source: Article 22 of the ITU Constitution and Article 16 of the ITU Convention.

Telecommunication Development Study Groups and Advisory Group

Legal source: Article 23 of the ITU Constitution and Article 17 and 17A of the ITU Convention.

Telecommunication Development Bureau

Legal source: Article 24 of the ITU Constitution and Article 18 of the ITU Convention.

World Conferences on International Telecommunications

Legal source: Article 25 of the ITU Constitution.

The legal framework of ITU comprises, in particular, the following legal instruments of the Union, which have treaty status. These instruments are:

- The *Constitution and Convention of the International Telecommunication Union* signed on 22 December 1992 (Geneva) and which entered into force on 1 July 1994. Since their adoption in 1992, the ITU Constitution and Convention have been amended by Plenipotentiary Conferences (Kyoto, 1994; Minneapolis, 1998 and Marrakesh, 2002). Those amendments entered into force on 1 January 1996, 1 January 2000 and 1 January 2004.

- The **Administrative Regulations** *(Radio Regulations and International Telecommunication Regulations)*, which complement the Constitution and the Convention.

The last revision of the *Radio Regulations* was signed on 4 July 2003 (Geneva), and the majority of the provisions will enter into force on 1 January 2005. The *International Telecommunication Regulations* were signed on 9 December 1988 (Melbourne), and entered into force on 1 July 1990.

Structure

Plenipotentiary Conferences

Council

World Conferences on International Telecommunications

World/Regional Radiocommunication Conferences

Radiocommunication Assemblies

Radio Regulations Board

Advisory Group

Study Groups

World Telecommunication Standardization Assemblies

Advisory Group

Study Groups

World/Regional Telecommunication Development Conferences

Advisory Group

Study Groups

General Secretariat

Secretary-General

Deputy Secretary-General

Director

Director

Director

Radiocommunication Bureau

Telecommunication Standardization Bureau

Telecommunication Development Bureau

Radiocommunication Sector

Telecommunication Standardization Sector

Telecommunication Development Sector

January – March 2004