



# ITU NEWS

No. 10 • DECEMBER 2001

INTERNATIONAL TELECOMMUNICATION UNION - ISSN 1019-4148 - www.itu.int/itu news



**Geneva  
2003**



**Tunis  
2005**

## WORLD SUMMIT ON THE INFORMATION SOCIETY

### One event, two cities



Cover design: Nicolas Stäuble (ITU).

ITU News: ISSN 1020-4148  
<http://www.itu.int/itunews/>  
10 issues per year

Managing Editor  
*Patricia Lusweti*  
Production Editor (English)  
*Patricia Lusweti*  
Proofreader (French)  
*Pierre Buschi*  
Proofreader (Spanish)  
*Beatriz Ayala-Martinez*  
Art Editor  
*Dominique de Ferron*

Printed by the Printing and Dispatch  
Division of the International Tele-  
communication Union  
Copyright: © ITU 2001

Material from this publication may  
be reproduced in full or in part, pro-  
vided that it is accompanied by the  
acknowledgement: *ITU News*.

Disclaimer: opinions expressed  
in this publication are those of  
the authors and do not engage  
ITU.

# C O N T E N T S

No. 10

DECEMBER 2001

- 2** END OF YEAR MESSAGE: Facing our future head-on
- 
- 4** WORLD SUMMIT ON THE INFORMATION SOCIETY:  
• Challenges and opportunities (p. 4)  
• Commitment (p. 5)  
• Who should participate? (p. 7)  
• Preparatory process (p. 9)  
• Japan contributes JPY 30 million towards Summit (p. 12)
- 
- 14** COOPERATION: ITU signs MoU with Spanish Ministry  
of Science and Technology
- 
- 17** IMT-2000: ITU reaches new milestones in Tokyo
- 
- 18** RADIO REGULATIONS BOARD:  
What is it? And what does it do?
- 
- 23** EFFECTIVE REGULATION: Brazil country case study
- 
- 29** DEVELOPMENT:  
• The Americas prepare for WTDC-02 (p. 29)  
• Trinidad and Tobago — On the road to an Intelligent  
Nation (p. 31)
- 
- 34** OFFICIAL ANNOUNCEMENTS
- 
- 35** PUBLICATIONS
- 
- 39** DIARY
- 

## READER SERVICES AND ADVERTISING INFORMATION

### EDITORIAL OFFICE

Tel.: +41 22 730 5234  
Fax: +41 22 730 5321  
E-mail: [itunews@itu.int](mailto:itunews@itu.int)  
Postal mail:  
International Telecommunication Union  
Place des Nations  
CH-1211 Geneva 20 (Switzerland)

### SUBSCRIPTIONS

Tel.: +41 22 730 6303  
Fax: +41 22 730 5939  
E-mail: [itunews@itu.int](mailto:itunews@itu.int)  
Postal mail:  
International Telecommunication Union  
Office T1201  
Place des Nations  
CH-1211 Geneva 20 (Switzerland)

### ADVERTISING INFORMATION

Editorial Calendar/Media Kit  
Tel.: +41 22 730 5234  
Fax: +41 22 730 5321  
E-mail: [patricia.lusweti@itu.int](mailto:patricia.lusweti@itu.int)

### ONLINE EDITION

<http://www.itu.int/itunews>

# Facing our future head-on

As the year 2001 draws to a close, the desire for peace and security is uppermost in the hearts and minds of millions. In September last year when I attended the UN Millennium Summit in New York, many Heads of State and Government expressed the view that information and communication technologies (ICT) represented the greatest opportunities and challenges that lay before their countries.

But then came the downturn in the Internet economy, reflected in the sharp fall in dot-com stock prices, followed by a general slowdown in the global economy as we entered the new millennium. To add to this gloom have been the horrific attacks on New York and Washington, making 2001 a particularly difficult year. Still, this gloom should not hobble the ICT revolution that is becoming more and more firmly entrenched in the very heart of our society. A revolution that is helping to build bridges of immense significance to our world community.

ITU as the leading player in telecommunications can be proud to be part of the ICT revolution. But our expectations for a bright future can only be met if we bridge the digital divide that exists within and between our nations. For true progress will be measured by our ability to provide all sectors of society with the skills and knowledge they need in this century. This is why the ITU governing body, the Council, decided in July that World Telecommunication Day 2002 (17 May) should be celebrated under the theme: "ICT for all: empowering people to cross the digital divide". This is also why we are preparing the World Summit on the Information Society.

Statistics from the *ITU World Telecommunication Indicators Database* (see Figures 1 and 2 on pages 7 and 8) make the dream of affordable universal access a realizable one, if we continue minding the gap. According to these indicators, the world population was about

6.095 billion in January this year. For the same period, there were 986 million telephone lines worldwide, of which 541 million were in high-income countries, 137 in upper-middle income, 109 in lower-middle income and 199 in low-income countries.

In the mobile arena, there were some 741 million mobile-phone users in total, of which 478 million were in high-income countries, 130 in upper-middle income, 35 in lower-middle income and 98 in low-income countries. Ten years ago there were just over 10 million mobile cellular telephone subscribers around the world. This figure has grown by more than 70 times. At current growth rates, we expect the number of mobile subscribers to overtake that of fixed telephones in the middle of this decade. This is already the case in some markets of both developed and developing countries.

The mobile phone is certainly becoming a way of life for many people. Mobile growth has been sparked by the introduction of second-generation networks such as GSM. The launch of third-generation networks, known internationally as IMT-2000, will add to the globalization of the mobile industry. In October, I was pleased to see government and the mobile communications industry reach new milestones in Tokyo. In particular, they agreed on a technical framework that will facilitate the global circulation of IMT-2000 terminals.

Turning to the Internet, almost every country in the world is connected, except for a few economies that had no connection as we entered the new century. Again, ITU indicators show that there were some 361 million Internet users at the beginning of the year. These users were spread out as follows: 267 million were in high-income countries, 47 in upper-middle income, 16 in lower-middle income and 31 in low-income countries.

In many developed markets, those who want to be online already are. However, in developing markets, affordability, awareness and relevance are still placing limits on Internet growth. Though developing markets are growing rapidly, the digital divide remains huge. The infrastructure is still not sufficient to allow the Internet to become commonplace. In addition, apart from the cost of buying a computer, a subscription for access is still beyond the means of a vast majority of those in developing countries. These costs must be brought down.

Mobile telephony, satellite communications, and the shift from analogue to digital technologies should not only mean convenience but also dramatically lower costs. Lower costs for building infrastructure. Lower running costs for operators and lower prices for subscribers.

I have just returned from ITU TELECOM AFRICA 2001, hosted in Johannesburg by the Government of the Republic of South Africa. The event was a resounding success. African leaders showed their commitment towards building a knowledge-based society through ICTs by creating the *e-Africa Commission*. ITU must be committed to being part of this new energy which aims to move the youth to the centre of the continent's ICT agenda.

There is a full programme lined up for 2002. From 18 to 27 March, we will hold the ITU World Telecommunication Development Conference (WTDC-02) in Istanbul, where the prime focus will certainly be on how we can help bridge the digital divide. From 22 April to 3 May, the Council will be busy putting final touches to its preparations for the Plenipotentiary Conference, to be held in Marrakesh from 23 September to 18 October 2002. We will also hold the first Preparatory Committee for the World Summit on the Information Society in Geneva from 1 to 5 July. Finally, our last big event of the year will be ITU



TELECOM ASIA 2002, to be held in Hong Kong (China) from 2 to 7 December. The event will be hosted by the Government of the People's Republic of China.

As we prepare for these and other equally important events in the areas of standardization, radiocommunication and development, let us continue to work together towards realizing the dream of digital opportunity.

Happy New Year!

**Yoshio Utsumi**

Secretary-General  
International Telecommunication Union

## Challenges and opportunities

**A** technological revolution is transforming society in a profound way. If harnessed and directed properly, information and communication technologies (ICT) have the potential to improve all aspects of our social, economic and cultural life. ICTs can serve as an engine for development in the 21st century, and as an effective instrument to help us achieve all the goals of the Millennium Declaration — the landmark document adopted by a record number of leaders when they met for the Millennium Summit to address the key challenges of our time.



Yet the majority of the world's population has yet to benefit from the new technology. That is why the Millennium Summit recog-

nized the key role of partnerships involving governments, bilateral and multilateral development agencies, the private sector and other stakeholders in putting ICTs in the service of development. That is why, a year before, at the opening ceremony of the ITU TELECOM 99 global event, I launched an appeal to governments and to the private sector to support the ITU initiative to convene a World Summit on the Information Society.

This global gathering will be a unique opportunity for all key players to develop a shared vision of ways to bridge the digital divide and create a truly global information society. It will be an opportunity to develop specific solutions and tools and adopt a realistic and viable plan of action. As I said in my report to the Millennium Summit, the digital divide can — and will — be bridged. The World Summit on the Information Society is a crucial step towards this end.

**Kofi A. Annan**  
United Nations Secretary-General

*The Summit is being organized by the United Nations system under the high patronage of UN Secretary-General, Kofi A. Annan, with the International Telecommunication Union taking the lead role in cooperation with other interested UN agencies, and will occur in two phases. The first phase will take place in Geneva from 10 to 12 December 2003 and the second in Tunis in 2005*



**T**he spread of information and communication technologies, especially the Internet, is revolutionizing whole aspects of social, cultural and economic life. ICTs are creating many new opportunities but, because of their uneven spread, they are also creating new challenges,

notably the emergence of "digital divides". The holding of the World Summit on the Information Society, in Geneva in 2003 and in Tunis in 2005, under ITU's leadership, provides a chance to develop solutions to these challenges, especially as they relate to Africa and the least developed countries. The Summit is expected to produce a shared vision among world leaders, the private sector and the NGO community on how to bring about sustainable development through ICTs.

**Yoshio Utsumi**  
ITU Secretary-General

## Commitment

First phase: Geneva, 10–12 December 2003

*Moritz Leuenberger*

*President of the Swiss Confederation*



The modern world is undergoing a fundamental transformation, moving rapidly towards the Information Society. This promises a fundamental change in many aspects of human existence. Man is a social creature, who has a fundamental right to participate in social life and this participation implies having access to the Internet. Each new technology contains chances and risks and it is our duty to increase these chances and minimize the risks. For the new communication technologies, the major danger is that their access would be reserved only to certain countries or circles, the others being separated from the Information

Society and its tremendous developmental potential. The aim of the World Summit is therefore to develop a common vision and understanding of the Information Society and to draw up a strategic plan of action for concerted development, primarily in order to reduce the digital divide. All countries, developing and developed, must work together to reach this goal. Switzerland, and in particular Geneva with its international opening, have always been involved, and will stay involved in bringing the benefits of the information technologies to everyone, and especially the developing countries. That is why Switzerland sees this Geneva 2003 Summit as an extraordinary opportunity to set up a framework of cooperation between governments, civil society and actors of economy. ■

## Second phase: Tunis 2005

*Zine El Abidine Ben Ali*

*President of the Republic of Tunisia*



Tunisia is proud to be hosting the World Summit on the Information Society in 2005, where the aim will be to bring the machinery of international cooperation to bear on reducing the digital divide, modern information and communication technologies being among the main tools for promoting just, comprehensive and sustainable development.

These technologies, the mastery and proper utilization of which depend primarily on human competencies and collective intelligence, provide, particularly to developing countries, an exceptional opportunity to advance by leaps and bounds towards meeting their peoples' aspirations for progress and stability.

However, in order to achieve these justifiably ambitious objectives, there has to be a proper balance between mastery of these technologies and their use in the interests of peoples and the preservation of their identity within an intercultural framework. The active participation of civil society and the private sector is thus essential.

Firm as it is in its determination to lay the foundations for the society of learning and intelligence, Tunisia is fully capable of making an active contribution to efforts aimed at assisting the developing countries not to be outstripped by technological progress and to strengthen their presence in the global communication sector. This is one of the most important and ambitious aims to which participants in the World Summit to be held in Tunis in 2005 will be devoting their full attention.

It is our ardent hope that each stage of the Summit will be crowned with success for the good of all humankind. ■

## Who should participate?

*The Summit aims to bring together Heads of State, executive heads of United Nations agencies and of other international organizations, industry leaders, non-governmental organizations, media representatives and civil society*

### Governments

All governments have a stake in the Information Society, whatever their level of national income or infrastructure facilities. Governments are a key to bringing the benefits of the Information Society to everyone through the development of national and global policies and frameworks to meet the challenges of the Information Society.

In their pursuit of the public interest, governments can raise awareness, facilitate access to information for the public, and they also can lay the foundation for all citizens to benefit from ICTs in terms of improved quality of life, social services and economic growth.

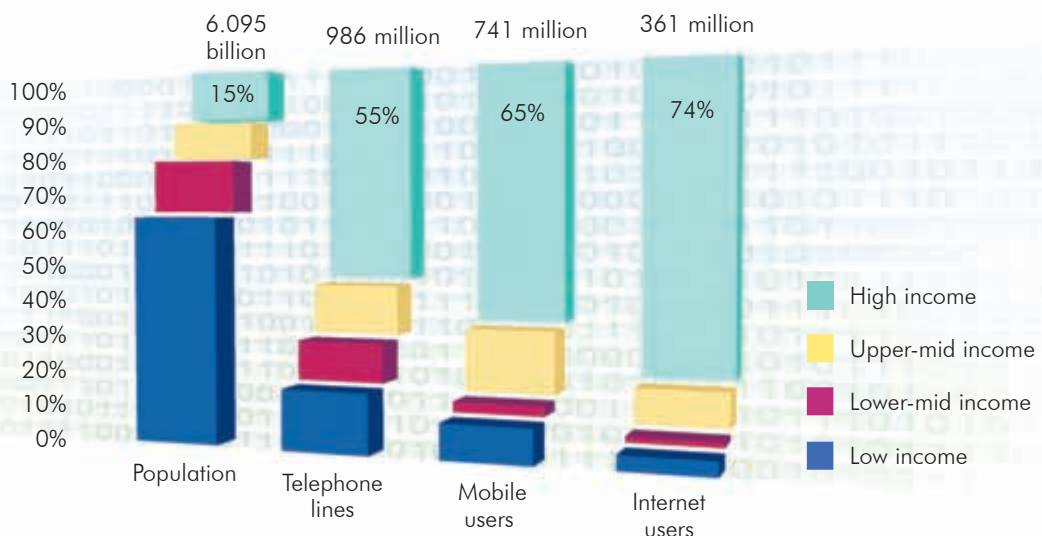
### United Nations family

The Summit offers a unique opportunity for the global community to reflect, discuss and give shape to our common destiny in an era when countries and peoples are interconnected as never before. The UN family of organizations serves as a catalyst for change by bringing together governments, as well as the private sector, international institutions and civil society in pursuit of common goals.

### Why ITU?

ITU is well placed to bring together all stakeholders. With its membership of 189 Member States and more than 650 Sector Members

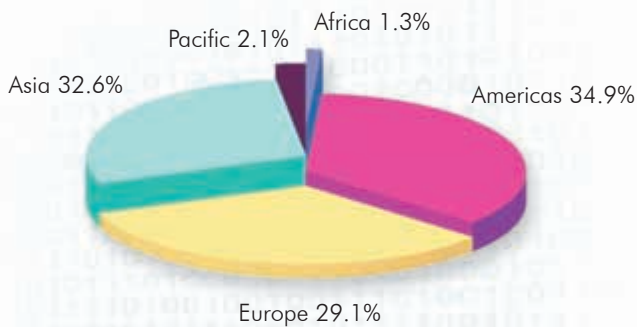
**Figure 1 – Digital divide = infrastructure divide**  
User distribution by income group (January 2001)



Source: ITU World Telecommunication Indicators Database

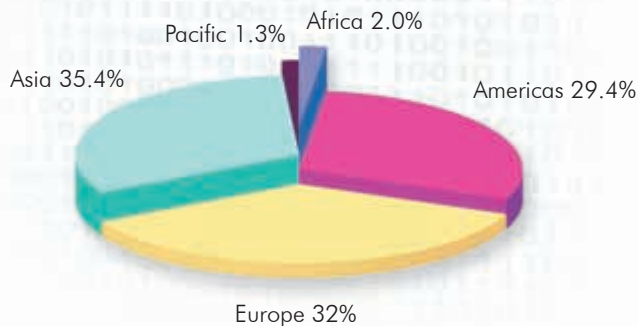


**Figure 2 – Regional distribution (January 2001)**



**Estimated Internet users (361 million)**

*By the time of the first phase of the Summit in 2003, there will be more than one billion users of fixed-line phones and more than half a billion Internet users*



**Fixed telephone lines (986 million)**

representing companies and organizations with an interest in telecommunications, ITU has a long tradition of working with the private sector. Its ability to bring together these representatives from competing companies and from governments of all ideological persuasions is perhaps the Union's greatest strength.

Further, ITU's broad membership base and the consensus approach taken by its study groups ensure that future developments benefit from a wealth of experience and creative ideas from representatives of leading entities in the field of telecommunications around the world. The establishment of a partnership between the private and public sectors has come to play an

increasingly important role for ITU in the implementation of telecommunication development activities designed to ensure that new technologies reach all parts of the world.

Clearly, then, taking an active role in the Information Society is crucial to the relevance of the UN system in general and to ITU in particular as it revamps itself to meet the ever-growing challenges of the fast-paced industry it serves.

**Private sector**

The private sector can play an active role, in conjunction with governments and civil society, by offering an economically viable model to achieve the development objectives on the world agenda.

The contribution of the private sector is instrumental in creating the material conditions for universal access to information and value-added ICT services. Its involvement in the Summit will help create a sound basis for economic development through stable and skilled new employment opportunities, and the creation of local industries dealing in assets, hardware, software, content and services. It will also aid in fostering new types of partnerships.

**Civil society and NGOs**

Civil society is playing an active role in identifying the social and cultural consequences of current trends and in drawing attention to the need to introduce democratic accountability on the strategic options taken at all levels. Its diversity and, often, hands-on approach to issues, make civil society a key player in the renewed international partnership called for by the UN Secretary-General.

This section is adapted from "World Summit on the Information Society", Geneva 2003, Tunis 2005"—Brochure prepared under the direction of M. Harbi.

## Preparatory process

### *High-Level Summit Organizing Committee holds first meeting*

**A**s preparations for the World Summit get in full swing, HLSOC\*, which stands for High-Level Summit Organizing Committee, will be another important acronym to remember. The purpose of this committee is to coordinate the efforts of the United Nations system in the preparation, organization and holding of the World Summit and it is composed of heads of UN agencies interested in the event.

At its first physical meeting, held at the United Nations headquarters in New York on 18 October 2001, HLSOC had a productive and useful exchange of views on a wide range of topics concerning the Summit. The meeting was chaired by Yoshio Utsumi, ITU Secretary-General and Chairman of HLSOC. It brought together representatives from FAO, ITU,

UNCTAD, UNESCO, UNITAR, WIPO, WMO, WTO and the United Nations Department of Economic and Social Affairs (UN-DESA).

Reporting on the latest developments in Summit preparations, Mr Utsumi highlighted the establishment of the Executive Secretariat\*\* at the ITU headquarters in Geneva. He also cited the support the United Nations Economic and Social Council (ECOSOC) had expressed for the Summit.

In the conclusions of ECOSOC 2001, a statement referring to the Summit says: "The United Nations' role in this effort is pivotal, including *inter alia* through partnerships with relevant stakeholders — [such as] the private sector and relevant international organizations — particularly in assisting developing countries in



*Three Preparatory Committees of the Summit are also planned. The first one will take place in Geneva from 1 to 5 July 2002*

Photo: Office du Tourisme de Genève (ITU 010100)

## \* What is HLSOC?

*HLSOC was established in 2000 by the UN Administrative Coordination Committee (ACC) — a forum that brings together annually executive heads of the UN system.*

### Composition

*HLSOC is composed of a Representative of the Secretary-General of the United Nations and executive heads of UN agencies that have expressed interest to help organize the Summit. They are listed below in alphabetical order.*

#### **FAO**

*Food and Agriculture Organization of the United Nations*

#### **IAEA**

*International Atomic Energy Agency*

#### **ICAO**

*International Civil Aviation Organization*

#### **ILO**

*International Labour Organization*

#### **IMO**

*International Maritime Organization*

#### **ITU**

*International Telecommunication Union*

#### **UNCTAD**

*United Nations Conference on Trade and Development*

#### **UNDP**

*United Nations Development Programme*

#### **UNEP**

*United Nations Environment Programme*

#### **UNESCO**

*United Nations Educational, Scientific and Cultural Organization*

#### **UNHCR**

*United Nations High Commissioner for Refugees*

#### **UNIDO**

*United Nations Industrial Development Organization*

#### **UPU**

*Universal Postal Union*

#### **WB**

*World Bank*

#### **WIPO**

*World Intellectual Property Organization*

#### **WMO**

*World Meteorological Organization*

#### **WTO**

*World Trade Organization*

*The Executive Director of the United Nations Institute for Training and Research (UNITAR) and the Executive Secretaries of the UN Regional Economic Commissions became members of HLSOC during the meeting in October 2001.*

### Mandate

- *Adopt the agenda for the World Summit and propose suggested outcomes.*
- *Monitor progress on preparation.*
- *Consider the reports of its Executive Secretariat.*
- *Report to ACC.*
- *Develop proposals to involve other interested parties in the preparatory process.*

maximizing the benefits they can secure from ICTs. In this context, the Council welcomes the forthcoming World Summit on the Information Society which is to be organized in two phases, the first one in Geneva in 2003 and the second one in Tunis in 2005.”

Heads of State, and thereby help to create momentum for efforts towards bridging the digital divide.

- The involvement of the private sector, and other interested entities, in all phases of the Summit and its preparations.



*Renovations made to the fifth floor of the Varembe building have turned it into an ultra-modern, elegant place for business and it serves as offices for the Summit Executive Secretariat*

HLSOC reviewed its terms of reference and decided to welcome the involvement of the UN Regional Economic Commissions and UNITAR in its work. Further, HLSOC has agreed to invite the two host countries to attend its meetings as observers.

Arthur Levin, Chief, a.i., Coordination, External Relations and Communication Units, introduced the Operation Plan for the Summit. The Plan was prepared by ITU staff and the Executive Secretariat, and was well-received for its completeness.

With respect to the preparatory process, HLSOC reached a number of conclusions which require:

- The Executive Secretariat of the Summit to make a list and keep track of relevant UN activities in the area of the Information Society, as a way of raising the awareness of UN agencies on the synergies and opportunities that this important world event presents.

- The Executive Secretariat to make an active effort to keep UN agencies informed of the Summit, so that they can contribute and provide input.

- The Summit to focus on a series of broad cross-cutting themes and issues to attract

### **\*\* Role of the Executive Secretariat**

- Prepare progress reports for HLSOC.
- Advise HLSOC on all aspects of Summit preparation.
- Define roles of all parties involved in Summit preparations.
- Develop a timetable for Summit preparations.
- Obtain sponsorship and funding.
- Create such committees and procedures as may be necessary.
- Plan and implement activities in the areas listed below:
  - budget and finance
  - arrangements with the host countries
  - relations with all partners
  - promotion and publicity
  - preparatory meetings
  - logistical arrangements
  - management of the Summit website
  - assist in the drafting of the Final Declaration and Plan of Action.

On the question of finances, HSLOC agreed that one way of maximizing resources will be for UN agencies to pool their efforts when organizing ICT-related meetings and to seek to align such meetings with the Summit preparatory process. This will be crucial as many agencies

at the meeting noted that they are already extensively involved in ICT projects. HSLOC further recognized the need to provide funding to assist developing countries to participate in the process.

### The Executive Secretariat is up and running

Renovations made to the fifth floor of the Varembe building (the oldest of ITU's three buildings) have turned it into an ultra-modern, elegant place for business and it serves as offices for the Summit Executive Secretariat. These offices have been furnished impeccably — courtesy of the Federal Office for Communications (OFCOM), the Swiss telecommunications regulator.

The Executive Secretariat is made up of staff from Member States, the UN agencies participating in HLSOC, the private sector, as well as NGOs and civil society. At the time of the HSLOC meeting, ITU had already received 14 commitments to detach experts to the Executive Secretariat.

### Next steps

HLSOC has agreed to hold one physical meeting per year and to conduct its work by e-mail in the interval between such meetings. Further, it has requested the UN Administrative Coordination Committee to place on the agenda of one of its meetings (either Fall 2002 or Spring 2003) the World Summit on the Information Society and issues related to this topic.

## Japan contributes JPY 30 million towards Summit

ITU is actively seeking partnerships for the Summit in what promises to be a massive undertaking. The Union is encouraging all its

Member States and Sector Members to commit themselves to the preparations of the Summit in order to make this event a success.



From left to right (seated): His Excellency Ambassador Koichi Haraguchi, Permanent Representative of Japan to the Office of the United Nations in Geneva and other international organization in Switzerland, announcing the news of the Japanese government's donation to Yoshio Utsumi, ITU Secretary-General; and (standing): Francine Lambert, Head, Corporate Communication, ITU; Ambassador Haraguchi; Mr Utsumi; and Arthur Levin, Chief, a.i., Coordination, External Relations and Communication Units, ITU

Photos: A. de Ferron (ITU 010094/ITU 010095)

Responding to this call, Japan made a contribution of JPY 15 million (USD 120 704) on 25 October 2001, and has pledged an additional 15 million in the coming months (USD 241 409 in total).

Announcing the news of the Japanese government's donation, His Excellency Ambassador Koichi Haraguchi, Permanent Representative of Japan to the Office of the United Nations in Geneva and other international organizations in Switzerland, said:

"We recognize that closing the digital divide is a vital issue in the international arena. In this sense, we believe that the World Summit on the Information Society, being prepared as a result of ITU initiatives, is a timely and significant task. Taking into account the importance of the Summit, we have decided to appropriate JPY 15 million to ITU from the budget of the Ministry of Public Management, Home Affairs, Posts and Telecommunications."

The Japanese Government's efforts to promote ICTs are not new. Examples include the "e-Japan Strategy", which aims to put the country at the forefront of ICTs. Also, in 2000, Japan played a leading role at the G8 Summit, which came up with the "Okinawa Charter on the Global Information Society". This Charter recognizes that ICTs represent one of the most potent forces in shaping the 21st century.


"ICTs are fast becoming a vital engine of growth for the world economy. They are also enabling many enterprising individuals, firms and communities, in all parts of the globe, to address economic and social changes with greater efficiency and imagination. Enormous opportunities are there to be seized and shared by all," states the Charter.

It is in the light of the revolutionary impact of ICTs on the way people live, learn and work and the way government interacts with civil society

that nations adopted the Okinawa Charter.

By the same token, Japan's contribution to the preparatory process of the Summit is a commitment to dealing with the growing problem of inequality of access to ICTs. In the words of Ambassador Haraguchi:

"It would be highly appreciated if our donation could stimulate positive support of various



**World Summit  
on the Information Society  
Geneva 2003 – Tunis 2005**

## How to contribute

- *Provide funding and support.*
- *Build a constructive network.*
- *Stimulate multi-actor cooperation.*
- *Submit substantive inputs.*
- *Organize meetings.*
- *Organize training sessions.*
- *Formulate operational proposals.*

*For further information, please contact: Arthur Levin, Chief, a.i., Coordination, External Relations and Communication Units. International Telecommunication Union. Place des Nations. CH-1211 Geneva 20 (Switzerland). Tel.: +41 22 730 6113. Fax: +41 22 730 5881. E-mail: [wsis@itu.int](mailto:wsis@itu.int). Web: [www.wsis.itu.int](http://www.wsis.itu.int)*

forms from countries or organizations. This Summit will be a precious guidance to the development of the Global Information Society of the 21st century. We are sure of the Summit's glorious success, and will do our best to ensure our continued support." ■

## ITU signs MoU with Spanish Ministry of Science and Technology

*This Memorandum of Understanding covers the establishment and implementation of a non-exclusive cooperation programme for the training of officials in telecommunication and information technologies*

Information Society ministers from 19 Ibero-American countries converged on Madrid for their first meeting to exchange views on how to harness the developmental

opportunities of information and communication technologies (ICT). Aware of the current disparity between the levels of economic, social, scientific and technological development of the different Ibero-American nations, the ministers were committed to defining actions to overcome those inequalities and the threat of a growing digital divide. The meeting (27 and 28 September 2001) was convened by the Spanish Ministry of Science and Technology.

*His Majesty King Juan Carlos I of Spain received heads of delegation at the Palacio de la Zarzuela on the occasion of the first Ibero-American meeting of ministers of the Information Society.*

*From left to right: His Majesty the King, Anna María Birulés i Bertrán, Spanish Minister of Science and Technology and Yoshio Utsumi, Secretary-General of the International Telecommunication Union, who had audience with the King*

During the meeting, Mr Utsumi and Ms Birulés i Bertrán signed an MoU which recognizes that telecommunications currently constitute one of the most significant growth sectors in the global economy and a key component of the economic, social, financial and cultural activities of ITU Member States. "Moreover, telecommunication and information technologies constitute and important



Photo: Dalcía (ITU 010096)



Photo: Dalda (ITU 010098)

***His Majesty King Juan Carlos I (in the centre) with heads of delegation***

engine for national development and regional integration, one of the fundamental vehicles for such development being the training of individuals employed in that field, particularly those responsible for sector regulatory and management tasks," states the MoU.

The purpose of the MoU is to record the broad terms on which the Ministry and ITU will cooperate and coordinate efforts to achieve effective and efficient implementation of joint projects relating to the training of officials in telecommunication and information technologies.

Among the countries represented at the meeting were Argentina, Brazil, Chile, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Portugal, Spain, Uruguay and Venezuela. Of these 19 countries, 15 were represented by ministers from the science and technology sector, with only the remaining 4 from the telecommunication sector. This is a significant shift which ITU must



Photo: M. Povedano (ITU 010097)

***Yoshio Utsumi and Anna María Birulés i Bertrán exchanging the signed MoU***

take into account to ensure its visibility in the region, particularly in its preparations for the World Summit on the Information Society. The meeting was also attended by the Director General of the European Commission's Directorate General for the Information Society and



the Administrator for Latin America at the Directorate General for the Information Society.

The ministers recognized the efforts, experiences, on-going initiatives and projects that are taking place over the network, fostered by governments, regional groups, companies, the academic community and social entities of the Ibero-American countries for the purpose of

increasing the use of the Internet and improving the quality of life of their citizens.

Mr Utsumi's presence was hailed as an important contribution to the success of the meeting, and to convincing the countries of Ibero-America that they may regard ITU as a key guarantor of their requirements, culture and language.

## MADRID DECLARATION

*In the final declaration which the ministers adopted to respond jointly to the challenges and opportunities of the information society, they agreed, among other things, to:*

- *Move towards the definition of a common strategy for establishing the information society in their countries as one of the measures being taken to reduce the digital divide, with enhanced cooperation within the framework of the Ibero-American Conference of Heads of State and Government.*
- *Propose that forums be held to analyse the experiences of member countries and to facilitate harmonization of the agendas for regional and national connectivity.*
- *Support the participation and initiatives of the various national and multinational content development groups within their countries, including all endeavours made with a view to promoting the presence of minorities in cyberspace.*
- *Urge the Ibero-American governments to take steps to reduce or remove barriers that obstruct access to computer equipment and systems used in education, health and other spheres which may contribute to the development of the information society.*
- *Contribute to the development of an Ibero-American community of citizens through social initiatives for universal access to new technologies such as telecentres, infocentres and other public access points.*
- *Encourage the creation of digital content in Spanish and Portuguese, first and foremost in the fields of science and technology, cultural arts and industries and the Ibero-American historical heritage, as well as digital libraries.*
- *Support the CIBEROAMERICA project and its action plan in order to move ahead in the construction of a virtual Ibero-American community that can contribute to strengthening and consolidating the institutional, economic, social and cultural Ibero-American space.*
- *Encourage the presentation of initiatives for incorporation of the new technologies in education and, in particular, the creation of an Ibero-American education portal to facilitate the exchange of experiences, projects and technical, scientific and cultural content and promote the establishment of networks of teachers and students and research centres.*
- *Promote the use of ICTs in small and medium-sized enterprises, thereby increasing their productivity and strengthening the strategic role they play in the economic development of their countries.*
- *Invite relevant international and regional organizations, including ITU, the Inter-American Development Bank (IDB), the World Intellectual Property Organization (WIPO), the World Bank, the Inter-American Telecommunication Commission (CITEL) and the European Commission, to step up their activities in support of development of the information society in Ibero-America, especially in those countries less advanced in this sphere, through specific cooperation programmes. ■*

## ITU reaches new milestones in Tokyo

**A**t a meeting of the International Telecommunication Union in Tokyo (10–16 October 2001), government and the mobile communications industry reached agreement on a technical framework for methods to support the unrestricted circulation of third-generation (3G) mobile terminals, known internationally as IMT-2000 terminals. The meeting was the 6th of the ITU Radiocommunication (ITU-R) Working Party 8F that deals with IMT-2000 matters.

This new agreement now sits within a new ITU Recommendation that provides the technical basis for the global circulation of IMT-2000 terminals and for avoiding harmful radio frequency interference. It brings to a successful conclusion the difficult negotiations that have been going on among regulatory authorities, wireless operators and manufacturers and makes global roaming a reality. Global circulation of terminals is the right of users to carry their personal terminals into a visited country, and the ability to use them wherever possible.

Responding to the vision of a data-centric world, the wireless industry in partnership with the standards development organizations (SDO) also approved the first revision to the set of terrestrial radio interface specifications for IMT-2000. "WP 8F builds upon the foundation specifications of IMT-2000 released in early 2000. Our work with industry and administrations around the world to evolve IMT-2000 is a continuing process focused on making sure that 3G is truly global, while maintaining relevance to local market needs," says Stephen Blust, Chairman of WP 8F.

"Once again, all the players in the international telecommunications field have illustrated their ability to find the optimum evolution paths to the new multimedia era", commented UMTS Forum Chairman Bernd Eylert. "One important obstacle to a successful launch of 3G systems and services has been cleared away."

Sam Samra, Senior Director for Technical Programs at CDG said: "The CDMA Development Group congratulates WP 8F for its efforts in approving the first revision to the set of terrestrial interface specifications for IMT-2000. It is important that the mobile wireless industry continues to ensure that standards and technology evolve to meet the needs of the market-place. This is certainly an important accomplishment."

ITU Secretary-General Yoshio Utsumi congratulated Japan and the Republic of Korea for their leading role in bringing to life the first IMT-2000 networks. "The huge sums of money that operators were prepared to invest in obtaining licences show the degree of confidence in the technology and the potential market demand," Mr Utsumi said.

The ITU-R meeting took place a few days after the inaugural launch on 1 October 2001 in the Tokyo area of *NTT DoCoMo* 3G commercial service branded FOMA (freedom of mobile multimedia access). FOMA is based on ITU IMT-2000 standards for W-CDMA. Over 250 delegates representing 32 countries from around the world experienced the excitement of one of the first commercial IMT-2000 systems, bringing home the message of data, multimedia, and the rich world of services that complement voice communications.

In his welcome address to the participants, NTT DoCoMo's Chief Executive, Keiji Tachikawa, said that the migration from second to third generation will revolutionize telecommunications putting the highest risk-taking on the those who are first to launch the new technology. "But the high confidence of NTT DoCoMo in wireless multimedia and its evolution is such that we are already in search for additional spectrum."

In October 2000, *SK Telecom* of the Republic of Korea had started a 3G commercial service, based on ITU IMT-2000 standards for cdma2000. ■

# The Radio Regulations Board

What is it?  
And what does it do?

*Interview  
with Pierre Abouardham  
Chairman, Radio Regulations Board*



**M**ore than ever, the radiocommunication industry has stories to tell. Radiocommunications are a fast-growing segment of the international telecommunications market. Industry estimates indicate that a record 46 geostationary satellites were ordered for the year 2000 alone. This represents a USD 5.3 billion investment expected to generate more than 20 billion in operating revenues over the fifteen-year lifetime of the satellites. Further, as new generations of fixed and mobile communication systems are defined and deployed, a savvy blend of innovative technology promises to offer new investment opportunities and value-added services to customers. With so much at stake, the ground rules in what has become a complex radiocommunication environment have to be clear at all times and for all players. But are they? Mr Abouardham explains the role of the Radio Regulations Board (RRB) — the “custodian of an international public trust”.

### ■ **What is the RRB and what are its role and functions?**

The Radio Regulations Board was created in 1992 as part of the new structure of the International Telecommunication Union, and replaced the old International Frequency Registration Board (IFRB), which operated on a full-time basis.

RRB's twelve members were elected by the Plenipotentiary Conference in Minneapolis in 1998, representing all five ITU regions: the Americas (Region A), Western Europe (Region B), Eastern Europe (Region C), Africa (Region D) and Asia and Australasia (Region E).

The Board operates on a part-time basis. Its main functions, as defined in the Constitution, the Convention and the Radio Regulations, are as follows:

- To perform its duties for the Union independently.
- To consider any matter that cannot be resolved through the application of the Rules of Procedure.
- To undertake special studies, if necessary, concerning the Rules of Procedure, the Radio Regulations or regional agreements.
- To perform any additional duties relating to frequency assignment and utilization.
- To make decisions arising from its review of a conclusion, of the findings of a special study or of any other decision by the Radiocommunication Bureau (BR).
- To make recommendations in cases of harmful interference.
- To participate, in an advisory capacity, in world radiocommunication conferences (WRC) and radiocommunication assemblies, and to participate in plenipotentiary conferences through attendance by the Chairman and Vice-Chairman as RRB representatives.
- To attend conferences and meetings of ITU's Sectors, in an advisory capacity — in other words, the conferences and meetings of the Radiocommunication Sector (ITU-R), the Telecommunication Standardization Sector (ITU-T) and the Telecommunication Development Sector (ITU-D).



Source: PhotoDisc (ITU 010101)

- If necessary, to submit certain matters to the Radiocommunication Assembly.
- To make internal arrangements as necessary to govern its own activities.
- And its foremost task: to approve Rules of Procedure in accordance with the Radio Regulations and the decisions of WRCs.

### ■ **What is the purpose of these Rules of Procedure that RRB approves and how does RRB deal with issues that cannot be resolved under those rules?**

The Rules of Procedure are used by BR and its Director in applying the Radio Regulations to register frequency assignments made by ITU Member States.

This means that, when the Radio Regulations are not very clear, or when they are subject to diverging interpretations, RRB must draft a Rule of Procedure to clarify the text and let administrations know exactly how BR is applying the Radio Regulations. This work is of critical importance to administrations, which can then refute the Board's interpretation. Indeed, the Rules of

Procedure are published and the administrations' comments are studied at the Board's meetings. As a rule, the Board's opinion is then accepted, but administrations always have the possibility of recourse to a WRC.

### ■ **Can you give us some recent examples of decisions by the Radiocommunication Bureau that the Board has had to review at the request of administrations? What were the commercial ramifications?**

One recent example had to do with a satellite operator which, following several changes in the Radio Regulations during the development period for a satellite system (seven to nine years), had brought it into service a couple of months after the regulatory deadline, with the result that BR had proceeded as required under the Radio Regulations — that is, it had deleted the satellite from the ITU register. In response to a request from the administration concerned, the Board decided to allow the operator in question a

period of time until a decision could be made by the next WRC, which had the supreme authority to resolve the conflict (thereby allowing the operator to be in conformity with its network). This is a clear indication of the commercial stakes associated with the Board's decisions, which, moreover, make decision-making a very delicate affair.

So far as conflicts between administrations are concerned, the Board endeavours to play the role of a conciliator by proposing compromises, which are usually accepted.

**■ How does RRB view the situation of rampant overfiling of satellite networks? What are the implications of overfiling for the industry and for ITU's ability to serve that industry effectively? What can RRB do within its mandate to stop, or at least discourage, this proliferation of "paper satellites"?**

This is a very delicate issue. So far as "paper satellites" are concerned, I do not think the Board can do much to discourage them. You have to understand that operators often need to provide for major changes to the planned network. However, the application of certain provisions in the Radio Regulations, such as the principle of administrative due diligence, combined with goodwill on the part of administrations, could no doubt go a long way towards resolving this problem, which is responsible in large measure for BR's backlog in the processing of satellite network filings.

**■ Tell us more about the principle of administrative due diligence.**

Under this procedure, information must be provided which only becomes available once a system has reached an advanced stage of development and is ready to be brought into service. The procedure requires that various items of information be made available so that the satellite system can be brought into service: the name

of the satellite network, the name of the operator, the name of the satellite, the name of the firm building each spacecraft, the date on which the contract was executed, the contractual "delivery window", the number of satellites purchased, the name of the supplier of the launch vehicle, the planned delivery or orbital launch window, and the name of the launch vehicle.

Because countries have usually asked that the regulatory period allowed for bringing satellites into service be extended right up to the latest date allowed under the Radio Regulations (counted from the initial date for bringing the satellite network into service), the consequences of the administrative due diligence procedure

will not be fully felt until the end of 2003. In other words, we shall perhaps still have to wait several years to see if this procedure will produce satisfactory results. In the interim, WRC-2000 concluded that remedial measures nevertheless needed to be taken to deal with the satellite processing backlog.

**■ Let us continue on the issue of eliminating the satellite processing backlog. Could you tell our readers about Council Resolution 1182 and what it seeks to achieve?**

We were already concerned about this problem, and over the course of several meetings had been discussing possible solutions with BR. We had agreed that there was a need for additional resources to be devoted to this area, but since we had not been given any specific responsibility in regard to the matter, we could not go any further than that. Thanks to Resolution 1182, which the Council adopted in June 2001 at its annual session, the Board has more room to act in this area, and so we immediately took up the issue once again. Indeed, according to the resolution, the Council recommended that RRB develop, as a matter of urgency, a set of Rules of Procedure, consistent with the Radio Regulations, intended to eliminate the



backlog in the processing of satellite network filings. At our most recent meeting, held in Geneva in September, we proposed new Rules of Procedure aimed at reducing if not eliminating the backlog. These Rules of Procedure have been circulated for comment by administrations, and we shall review them in conjunction with any comments received at our next meeting, to be held in Geneva from 3 to 7 December 2001.

**■ The Radio Regulations have been “simplified” over and over again. Yet, they seem to be made more complex at virtually every ITU World Radiocommunication Conference. How can RRB ever hope to reconcile the conflicting objectives between clarifying the application of these already complex regulatory texts and reducing their proliferation and complexity?**

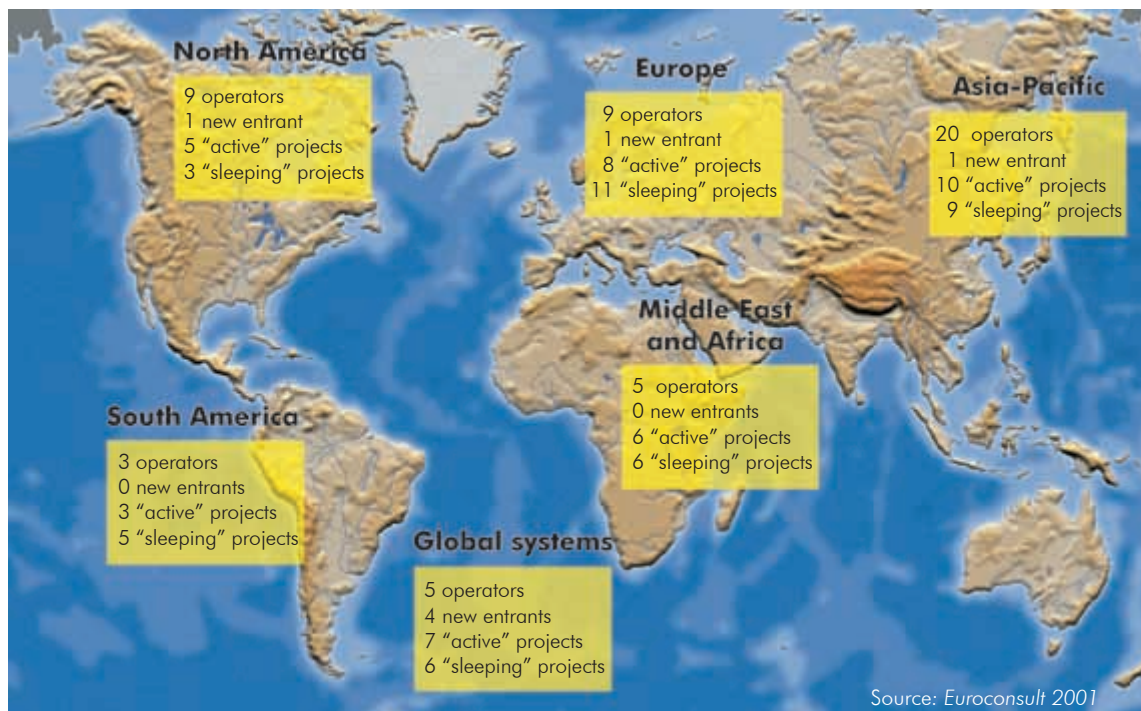
It is quite true that the Radio Regulations have become more and more complicated despite the work some years ago of the Voluntary Group of Experts. But this is to be expected be-

cause changes are made to the Radio Regulations at each WRC in order to make provision for new systems or new technologies, such as digital land systems, the development of non-geostationary satellites and, in recent times, the use of very high frequencies. Such changes are usually accommodated by adding some new articles or modifying others, and therein lies a key problem, for the Radio Regulations are so complex that it is virtually impossible during a WRC to review all the consequences of a change.

**■ What role does RRB play in ensuring equitable access to the satellite orbit?**

The Board focused its attention on this issue, particularly in the wake of Resolution 80 of WRC-97. That resolution asked the Board, as a matter of urgency, to develop the Rules of Procedure to be followed in applying No. S0.3 of the Radio Regulations which, following through on a provision enunciated in the ITU Constitution, sought to assure equitable access

**Regional distribution of satellite systems and projects, 2001**



Note: “Sleeping” projects refer to identified projects with no new initiative taken in the last 12 months. “Active” projects refer to new initiatives taken in the last 12 months.

to the geostationary-satellite orbit and the rational, efficient and economical use of the frequency spectrum, all with a view to minimizing what had been the rule up to that point of "first come, first served". We have devoted several meetings to the search for a solution. We prepared an initial report for WRC-2000, which took note of it and, by modifying Resolution 80, asked the Radio Regulations Board to carry out further studies based on our proposals. We are continuing our consideration of the issue, focusing in particular on the provision of greater technical support for developing countries and seeking a more flexible application of the Regulations.

**■ *The debate on ITU reform that has been going on in the Council since 1999 has also been concerned with RRB. For example, does the fact that RRB sits only part-time reduce its effectiveness vis-à-vis the old IFRB which sat full-time? Another issue discussed is whether the Board should be expanded from its current twelve members, or whether on the contrary it should be made smaller. Even the very need for a Radio Regulations Board has been called into question. What is the view of the Board itself on these and other reform issues that are to be considered at the Plenipotentiary Conference in Marrakesh in September and October of 2002?***

To us, this is a very important issue. ITU-R can be likened to a State which has a legislative branch — world radiocommunication conferences — an executive branch — the Radiocommunication Bureau — and a third branch — the Radio Regulations Board. This third branch, which is independent so as to counterbalance the executive branch, may not be a judiciary exactly, but it is nevertheless a body responsible for interpreting the rules and hearing any appeals by administrations with regard to decisions by BR.

If the Radio Regulations Board did not exist, in cases where a conflict arose between BR and an administration, the only possibility of appeal would be to a WRC — in other words, two to four years later, a delay that would have disastrous consequences for something like a

satellite network.

In Minneapolis, the Plenipotentiary Conference expanded RRB from nine members to twelve. That decision came about as a compromise between some administrations that wanted the Board to have fifteen members and others that wanted it to have nine. I do not see that there is a problem here because geographical representation is very well guaranteed now.

Considering the importance of the Board, the question is how to improve its effectiveness. The fact that it sits on a part-time basis only, something that was decided when it was created, is not necessarily to be questioned, but there is a need for RRB to have more time to devote to its meetings and to preparations for them. This could be done within the statutory provisions that now govern the Board, provided that the Board's budget, which forms part of BR's budget, were increased slightly, by an amount that in proportionate terms would be very small. That would make for greater efficiency by facilitating consultations amongst members during the preparatory work prior to meetings, and would allow more than four meetings to be held each year.

To increase the Board's effectiveness still further, it should also be made an official participant in ITU's various meetings, as this would enable it to make contributions at the various conferences.

**■ *What do you see as the most important tasks for RRB over the next nine months leading up to the Plenipotentiary Conference?***

I think that in the lead-up to the next Plenipotentiary Conference, and particularly to the next WRC in 2003, the Board's main tasks, in addition to its normal work on Rules of Procedure, will be the study pursuant to Council Resolution 1182, including proposals to reduce the backlog in the processing of satellite network filings, and the study pursuant to WRC Resolution 80, including proposals for equitable access to the frequency spectrum. There is also a need to work on getting provisions adopted, as I have already mentioned, that will increase the Board's efficiency. A report on the Board's work and its needs will no doubt be submitted to the Plenipotentiary Conference. ■

## TELECOMMUNICATION DEVELOPMENT IN SOUTH EAST ASIA

### MOVING AHEAD, DESPITE FINANCIAL CRISIS

The ten countries that make up the Association of South East Asian Nations (ASEAN) — Brunei Darussalam, Cambodia, Indonesia, Lao P.D.R., Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam — are home to 523 million inhabitants, 8.6 per cent of the world's population. Indonesia, with 212 million people, is the world's fourth most populous country and accounts for 41 per cent of ASEAN's population. ASEAN members range from some of the world's wealthiest nations to least developed countries (LDC). For example, in 2000, oil rich Brunei had a gross national income (GNI) per capita of USD 24 630 and city state Singapore 24 740, while Cambodia had USD 260 and Lao P.D.R. 290.

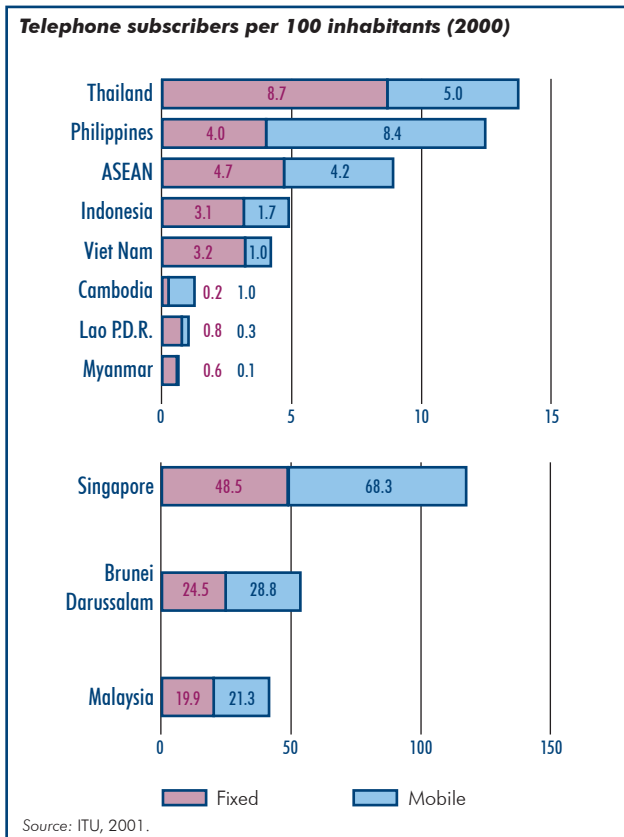
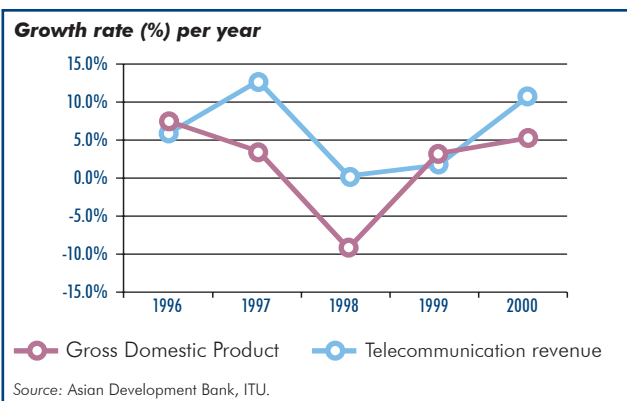
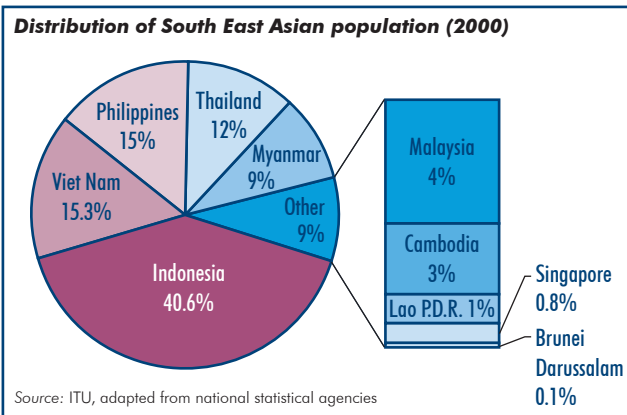
The Asian financial crisis began in July 1997 in Thailand and spread

to many of the other large ASEAN members. Economies contracted and exchange rates tumbled. The telecommunication sector was not immune. After growing at annual double-digit rates throughout the 1990s, telecommunication revenues hardly budged in 1998 and 1999. In the year 2000, telecommunication revenues finally revived to reach USD 13.3 billion in the region, up 10.6 per cent in real terms over the previous year.

Network development also slowed in the post-1997 period. In the first part of the 1990s, the South East Asia region had some of the fastest growing fixed telephone networks in the world. Annual growth averaged 19.5 per cent from 1991 to 1997 and the number of fixed telephone subscribers almost tripled from 6.7 to 19.5 million. Fixed telephone sub-

scriber growth dropped sharply after 1997, averaging just 8 per cent a year between 1997 and 2000. Nevertheless, the number of fixed telephone subscribers per 100 inhabitants in the region tripled between 1991 and 2000, rising from 1.5 to 4.8.

Mobile networks have weathered the financial crisis better. Between 1991 and 1997, cellular mobile subscribers grew on average by 63 per cent a year compared to 43 per cent a year following the financial crisis. There was a sharp rise in growth in 2000 at 75 per cent, the largest increase since 1995. The number of mobile subscribers per 100 inhabitants increased almost 50 times since 1991. It rose from 0.09 in 1991 (when there were still four ASEAN countries without a mobile network) to 4.2 in 2000, almost the level of fixed-line subscribers.



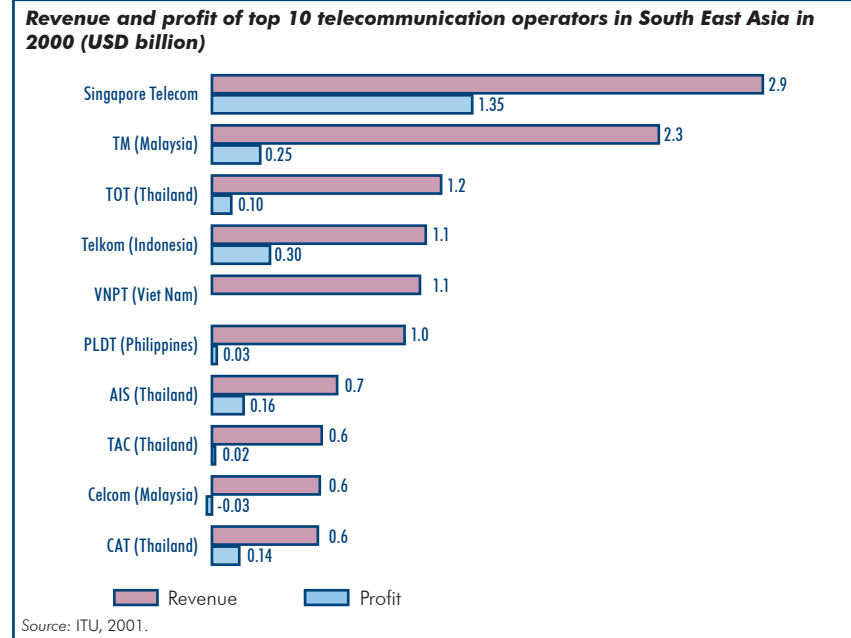


## INVESTMENT

Although telecommunication revenue in the South East Asia region is beginning to recover in the wake of the financial crisis, the same is not true for network investment. Capital expenditures for telecommunication equipment have plunged from USD 8.5 billion at the end of 1997 to 3.5 billion at the end of 2000.

The sharp fall in investment is ironic since most major operators remain profitable. Of South East Asia's top ten telecommunication operators — measured by revenue — only one lost money in 2000. The region's top ten operators had cumulative profits of USD 2.3 billion in 2000, representing 22 per cent of revenue. Normally, a significant portion of these earnings would have been ploughed back into network development. However, the regional financial crisis saw exchange rates drop sharply, driving up the cost of foreign debt. Many operators in the region have to pay significantly more in loans, diverting funding from infrastructure construction.

Another explanation for the drop in investment is that infrastructure is becoming less expensive. This is due to the fact that a major portion of investment in the region is going towards wireless networks, which are cheaper to build. Many South

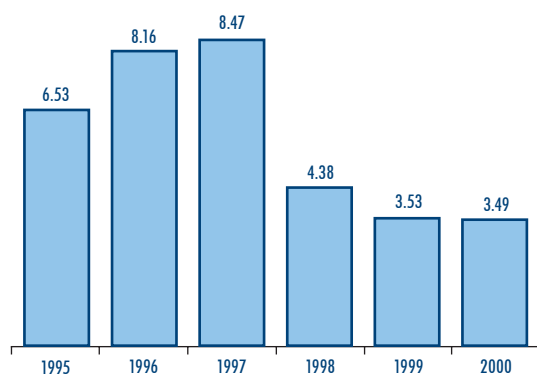


East nations are also switching to Internet Protocol (IP)-based networks that are less costly to install. For instance, operators in Malaysia, Thailand, Singapore and Viet Nam are using IP for long-distance calling.

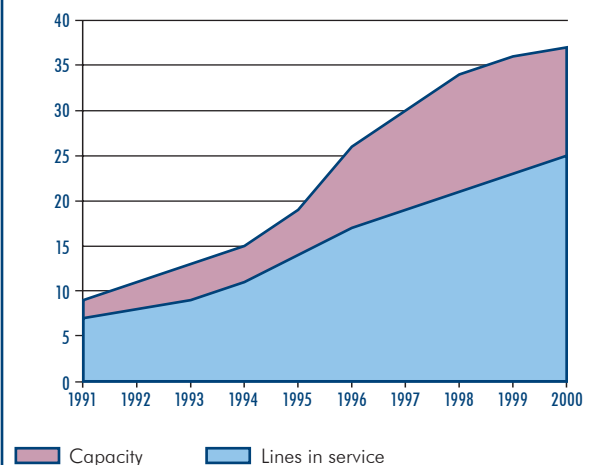
Reduced telecommunication investment is also a result of network development obligations imposed by governments and coming to an end in several large economies. In the Philippines, international service providers and mobile operators were

obligated to install 4.4 million lines between 1994 and 1999. In Thailand, two franchises were required to install 4.1 million lines between 1993 and 1997. Many of these lines are lying idle. In the Philippines, fixed telephone capacity utilization is one of the lowest in the world at 44 per cent. At the same time, there has been a shift towards wireless networks. As a result, capacity utilization of the region's fixed networks has dropped from 77 per cent in 1991 to 67 in 2000.

**Investment in telecommunication networks in South East Asia (USD billion)**



**Telephone capacity utilization in South East Asia (millions)**



## THE MOBILE BOOM

As elsewhere around the world, mobile cellular communications is booming in South East Asia. At the end of the year 2000, there were 22 million mobile subscribers in the region, up from just 3 million five years earlier. At the end of 2000, half of the ASEAN countries — Brunei Darussalam, Cambodia, Malaysia, Philippines and Singapore — had more mobile than fixed telephone subscribers. Thailand joined this group in 2001 and by year-end, there will be more mobile than fixed telephone subscribers in the region as a whole. Under the most conservative estimate — an annual growth rate of just over 10 per cent a year — there will be a minimum of 100 million mobile subscribers by the end of 2010 for a penetration of 16 per cent of the region's population.

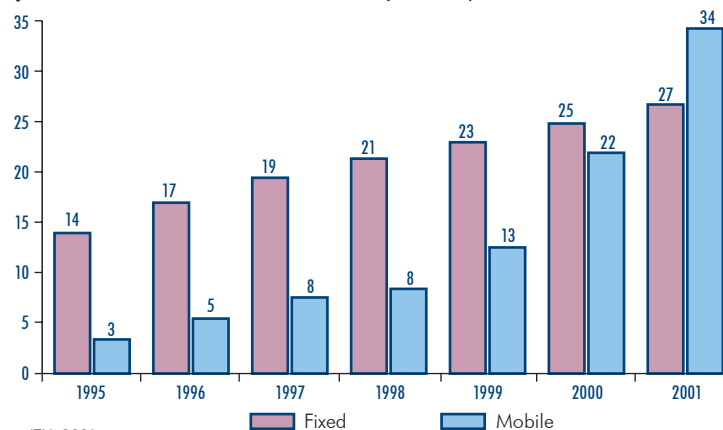
Mobile is a supplement to conventional fixed telephones in the region's wealthier nations such as Brunei and Singapore; and to a lesser extent in Malaysia. In Singapore, 51 per cent of households had a mobile phone in 1998 even though 98 per cent already had a fixed telephone. Mobiles are a substitute for voice communications in other countries such as Cambodia and the Philippines. In these two countries, a minority of households have a fixed telephone line and mobile phones outnumber fixed telephones. Both have had a greater number of nationwide mobile operators than other countries in the region.

Mobile Internet development in the region has been slow. One factor working in the region's favour is that all the countries have adopted the digital GSM standard. Common standards should help simplify the migration to 2.5 and to third generation (3G) mobile networks. Although most countries have introduced wireless application protocol (WAP) and several have introduced or are launching higher speed GPRS networks, take-up has been lukewarm.

This is due to consumer indifference. In some Indochina peninsula countries, there have been problems in adopting native languages to mobile phone text applications. So far, only Singapore has licensed 3G mobile operators. In the other countries, recent GSM licensing and the launch of 2.5 generation systems is likely to delay the introduction of 3G.

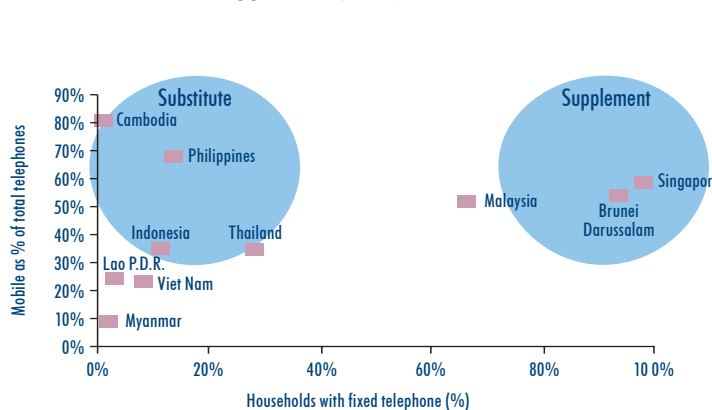
The Philippines has been at the forefront of short messaging services (SMS). In December 2000, Filipinos were sending almost 50 million text messages a day or around nine per subscriber. They are the world leader in per capita SMS usage, accounting for some 10 per cent of all worldwide SMS messages.

Telephone subscribers in South East Asia (millions)



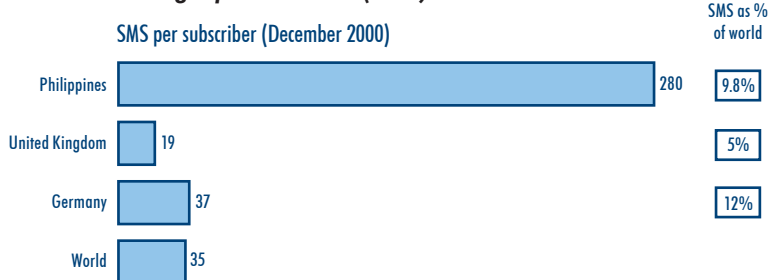
Source: ITU, 2001.

Mobile substitution and supplement (2000)



Source: ITU, 2001.

Mobile text messages per subscriber (2000)



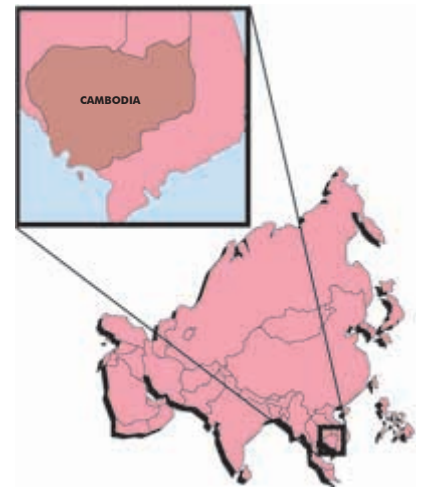
Source: ITU, adapted from Globe Telecom, PLDT and GSM Association.

## CAMBODIA COUNTRY PROFILE

The Kingdom of Cambodia is located in South East Asia in the south-western part of the Indochina Peninsula. Its national census in 1998 counted a population of 11.4 million. The majority of Cambodians live in rural areas, with only 16 per cent residing in urban areas. Some 55 per cent of the population is under 19.

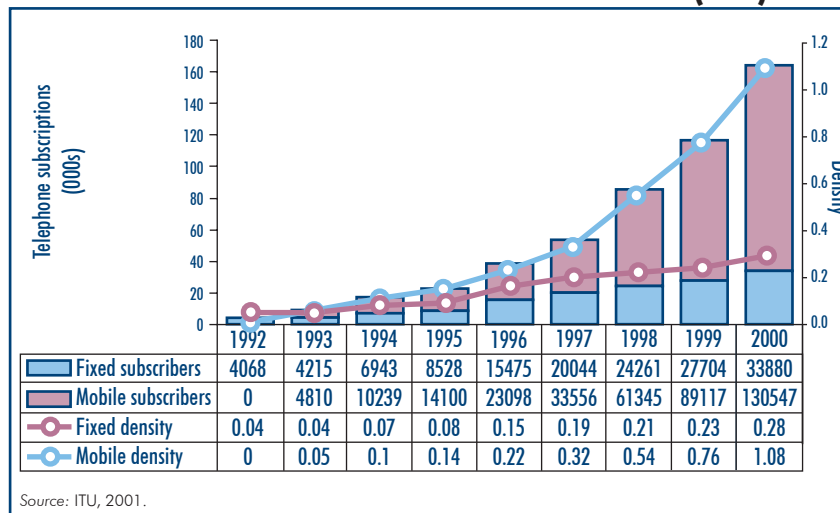
In 2000, Cambodia had a gross national income per capita of USD 260. It is officially classified by the United Nations as an LDC. Cambodia is a textbook example of wireless

Perhaps the biggest factor contributing to wireless success is that there just never were many fixed lines to begin with. Years of conflict destroyed most of the existing fixed network and prevented the construction of new lines. At the end of 1992, the year mobile cellular was introduced in Cambodia, there were only a little over 4000 fixed lines for a population of some 9.3 million. A year later, mobile had already surpassed fixed lines. Another factor contributing to mobile success was the government's



with denominations as low as USD 5, and used handsets available for USD 20, make mobile telecommunications much more accessible. Pre-paid service has also been attractive from the operator's perspective because it eliminates the risk of subscriber default. Another factor contributing to mobile growth is billing in US dollars (use of the US dollar is widespread in Cambodia), which reduces the investor's exchange-rate risk. These assurances have resulted in over USD 100 million being invested in Cambodia's mobile telecommunication sector. While wireless technology has helped Cambodia achieve a minimal level of communications,

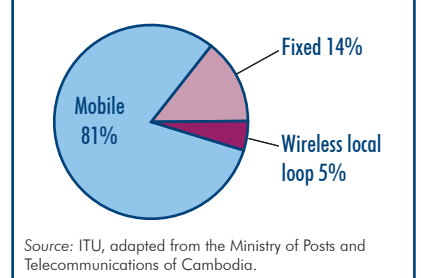
**FIXED AND MOBILE TELEPHONE SUBSCRIBERS IN CAMBODIA (000s)**



boosting telecommunication development. It was the first country in the world where mobile telephone subscribers overtook fixed ones back in 1993. Cambodia began the millennium with more than four out of five telephone subscribers using a wireless phone, the highest ratio in the world. Thanks to mobile, Cambodia's teledensity — telephone subscribers per 100 inhabitants — reached 1 in the year 2000, a significant achievement for an LDC. While mobile has contributed to the bulk of Cambodia's telecommunication progress over the last decade, wireless fixed lines have also helped and accounted for 5 per cent of all telephone subscribers at the beginning of 2001.

decision to liberalize the market early, allowing both foreign investment and competition. Today, *MobiTel*, a GSM mobile operator, is the largest telecommunication network operator in the country with almost 95 000 subscribers at the beginning of 2001. There are three digital and two analogue mobile operators, all with foreign investors. Two additional digital mobile licences have been awarded but have not yet started operating. Another success factor has been pre-paid access, with over 90 per cent of mobile subscribers opting for this service. Most Cambodians either could not afford or would not qualify for a subscription telecommunication service. Pre-paid cards

**Total distribution of telephone subscribers (161 427) in Cambodia in December 2000**



it has also created its fair share of problems. These include a confusing mix of government shareholdings and agreements, an interconnection maze and an over-reliance on mobile network service provision to the detriment of the fixed-line network; and therefore of the Internet. ■

For more information or comments on the UPDATE, please contact: ITU/BDT, Telecommunication Data and Statistics, Place des Nations, CH-1211 Geneva 20 (Switzerland). Tel.: +41 22 730 6090. Fax: +41 22 730 6449. E-mail: indicators@itu.int.

# Brazil

## country case study

*Brazil is the third in a series of five country case studies on regulatory independence and effectiveness to be presented in ITU News*



### Why Brazil?

Brazil is the fifth largest country in the world in terms of surface area, after Russia, China, Canada, and the United States. With a population close to 170 million, Brazil is ranked as the sixth most populous nation in the world. Brazil, the only Portuguese-speaking country in the Americas region, has by far the largest economy in Latin America with a GDP of USD 1089 billion in 2000.

In the latter half of the 20th century, Brazil took its place on the world stage as an important economic force globally, a regional leader politically and a coveted destination for foreign direct investment. Today, it is one of the most dominant emerging markets in the world.

Brazil was selected as one of five case studies for a number of compelling reasons. Above all was its ability to pass a comprehensive telecommunication law, establish a regulator, privatize its operators and introduce duopoly competition in a little over

two years. Its regulator, the *Agência Nacional de Telecomunicações* (ANATEL), has been praised by industry and other regulators around the globe as one of the most transparent and independent in the world.

### Sector reform

The Brazilian telecommunications model of today is built around three pillars: competition, universal service/access (known in the country as “universalization”) and quality. This model has its roots in two important developments: the passage of the 1996 Minimum Law that liberalized mobile services, and the adoption of the General Telecommunications Law of 1997 that called for the creation of the regulator (ANATEL) and established guidelines for the privatization of the monopoly telecommunications provider, *Telebrás*.

The Telecommunications Law effectively ended the State’s role in the provision of telecommunication services,

Contributed by Doreen Bogdan-Martin, Regulatory Officer, ITU/BDT

changing its role from supplier to regulator of services. Telebrás, which had been the monopoly provider of international, long-distance, and local services for 26 years, was broken up into twelve separate holding companies.

In 1998, the government sold off 100 per cent of its interests in Telebrás, generating USD 19 billion. Immediately following privatization, ANATEL worked diligently to establish a foundation for competition in several market areas. ANATEL divided the country into a series of operating regions. In the first 18 months after privatization, the regulator successfully introduced duopoly competition into every fixed-line and cellular operating region in the country. At present, all fixed-line operators have one competitor in the region in which they operate, in addition to two competing cellular companies. The market will be open to full competition by 2002 (see Figure 1).

On the mobile side, the government started auctions this year for the introduction of the *Personal Mobile Service*.

Prior to the creation of ANATEL, Brazil's Ministry of Communications (MINICOM) was the government body responsible for regulating all telecommunication services in the country. Upon its creation in the fourth quarter of 1997, ANATEL quickly assumed MINICOM's regulatory role (with the exception of broadcasting). ANATEL was created as an administratively independent agency with financial autonomy. This autonomy has

increased both regulatory responsiveness to the sector and investor confidence in the transparency and fairness of the regulatory process in Brazil.

Since privatization and the introduction of duopoly competition, the growth of the market has been spectacular. Teledensity has risen from



**Figure 1 — The five major steps towards liberalization of the Brazilian telecommunications sector**

Step one	Step two	Step three	Step four	Step five
Constitutional Amendment No. 8	Minimum Law	General Telecommunications Law	Privatization	Open market
15 August, 1995	9 July, 1996	16 July, 1997	July, 1998	1 January, 2002
Ended State monopoly but slowed Telebrás privatization process by requiring that a new telecommunications law be passed	Opened mobile cellular, satellite telecommunications signal transportation and value-added services (VAS) to the private sector	Detailed State's role in the telecommunications sector creating ANATEL in November 1997, and outlined general guidelines for all telecommunication services	"Managed competition" phase limiting the number of local and long-distance providers until 2002	Complete liberalization of the telecommunications market

Liberalization



13 in 1998 to almost 28 lines per 100 inhabitants by the end of 2000. The cost of service activation fees declined from USD 3546 in 1990 to 28 in 2000. Mobile cellular service grew 340 per cent from 1994 to 2000. Estimates indicate that by 2005, the country will boast 58 million fixed lines, and 58 million cellular subscribers (see Figure 2).

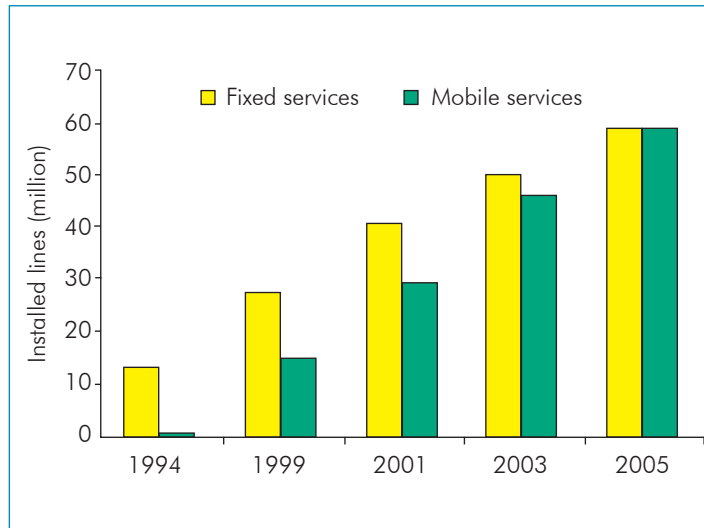
### ANATEL

Headquartered in Brasília, with 11 regional offices, ANATEL was created to be the regulator for the citizens, to look after the public interest, and to provide investors with confidence in the Brazilian market-place.

ANATEL is made up of two high bodies — the Board of Directors and the Advisory Council. The Board of Directors, the decision-making body, has five members called counsellors. The Advisory Council is an independent body that includes congressional, Executive Branch, consumer and operator participants, and provides advice to ANATEL on policy issues. Under the Board, the 1600 ANATEL employees are organized into “Superintendencies” or departments. ANATEL strives to keep a structure that is responsive to the changing telecommunications environment. In August 2000, Congress passed a law creating the “Fund for Universalization of Telecommunications Services” (FUST). One of the purposes of FUST is to channel the necessary resources to finance the purchase and implementation of telecommunications equipment in small communities and isolated regions. With operators required to begin contributing to the Fund from 2001 ANATEL had, by mid-2001, decided to create a “Superintendency for Universalization” (universal service). Further structural changes may be made in the future to respond to convergence.

Beginning its operations just a few months after the 1997 Telecommunication Law was passed, and anticipating privatization of Telebrás within one year, ANATEL was forced to prioritize its work. It managed to author and

**Figure 2 — Growth of installed access lines (fixed and mobile) 1994–2000. Estimates (2001–2005)**



Source: ANATEL.

enact regulations required to build a competitive market, oversee auctions for licences throughout the country, draft and approve new regulations governing interconnection, implement a new long-distance operator selection convention, and guide the cellular market through two years of explosive growth. ANATEL's early success, buffeted by the independence established by the 1997 Law, has resulted in a dramatic transformation of the Brazilian telecommunications competitive landscape.

Dialogue with the public is a top priority for ANATEL, and this is apparent in all its activities (see pages 26–27). Indeed, since its creation the regulator has remained committed to interacting with the public at large through a website ([www.anatel.gov.br](http://www.anatel.gov.br)), weekly press meetings, conferences, Citizen Rooms (facilities that operate in many state capitals where any interested party can initiate a legal proceeding or make an inquiry to the agency) and call centres that handle complaints at a toll free-number that is available round the clock.

ANATEL has been empowered to oversee most telecommunications regulatory functions including licensing, tariff approval, establishing technical standards and interconnection rates, type approval, frequency allocation, establishing licensing fees and ensuring service quality.

## Dialogue with the public — a top priority for ANATEL

*ANATEL* also uses institutional campaigns to promote interaction and awareness with the public. With an 85 per cent television penetration rate in Brazilian households, television has served as an effective mechanism. In 1999, the government unveiled a campaign called “Order and Progress in Brazilian Telecommunications”. The campaign was geared towards giving information to the public about the expansion and quality goals for telephony; to remind users of the obligations of operators and their right to demand compliance and to provide the public with statistics about increases in service expansion following privatization. The main media used for the campaign was television and print. The campaign consisted of a series of short commercials, with catchy images that would stick in the consumers’ minds, describing telecommunications developments in simple terms. The commercials focused on fixed, mobile, and pay phone service.

Each commercial ends with an expression familiar to all Brazilians “ordem e progresso” (order and progress) in Brazilian Telecommunications. This is the national motto and appears on Brazil’s flag.

This approach is not only very creative but also quite unique in the world of regulators. The way the campaign was designed will certainly result in a more informed consumer. In addition, the commercials serve to inform the public that there is a regulator, ANATEL, and that regulator is looking out for the interests of all Brazilian citizens. By contrast, in most countries, the average citizen may not even know if their own country has a regulatory authority, and if so what it is called. Moreover, it is



(ITU 01.0090)



*Joel Araújo Carneiro has a small business. He picks up newspapers, bottles, glasses, and provides cleaning services. To reach him, call his cell phone. The announcer talks about ending the monopoly, the increase in cellular phones, and the decrease in tariffs.*



*David Carlos is on his boat in a river in the Comunidade Ariau. Accessing the rest of the world, or linking up to the rest of the world, will take a long time by boat. In the next scene, he gets off his boat to make a phone call at the pay phone. His link with the rest of the world was much quicker. The commercial announces that with the privatization, the licensees are required to install a certain number of pay phones.*

*The third commercial shows Dona Cecilia looking at a Christmas card from her daughter last year, and then getting a phone call from her daughter this year to wish her a Merry Christmas on her fixed-line phone. The announcer talks about the cost of phone service in the monopoly era and how the price has decreased substantially just 24 months later. It also mentions the expansion and build-out obligations of the fixed-line operators.*

Source for photos: Publicis Norton.

unlikely that most persons not involved in telecommunication operations, policies or regulation would know that their operators have obligations, that a number of new lines will be installed, and that tariffs have decreased by a certain amount and will continue to decrease as a result of privatization and liberalization of the market. This approach of making the actions of the regulator known to the public, explaining past and present reforms and market developments, as well as the benefits for the consumer, will likely draw more citizens into ANATEL's activities. ■



## Universal service

In Brazil, universal service embodies the principle that everyone in society, no matter their location or socio-economic status, should have access to telecommunications. To ensure universal access and service, ANATEL encourages competitors in the telecommunications sector to provide services of acceptable quality at commercially reasonable rates to any physical or legal person demanding such services. Competitors are also encouraged to provide alternative forms of access to telecommunication services with lower rates in order to guarantee access for people that are not able to pay commercially reasonable rates.

*ANATEL faces the challenge of complete liberalization of the market in January 2002*

A two-pronged approach is used to achieve universal service goals. One is the implementation of the *Plano Geral de Metas para a Universalização* (PGMU) or “General Plan of Universalization Goals” drawn up by the Executive Branch in May 1998. PGMU establishes

specific universal service goals for companies providing fixed-telephone services under the public regime (i.e., the privatized Telebrás companies). The second approach is the use of FUST, which was created to finance universal service initiatives that complement those contained in the PGMU. Allocation priorities for use of the Fund are determined by the Ministry of Communications in consultation with other Ministries. The first priorities are to use the Fund for education (Internet in schools) and health care.

## Best practices

ANATEL has been able to build on the positive experiences of countries that underwent the sector reform process prior to Brazil, avoiding many of their pitfalls. ANATEL’s own experience has produced a number of best practices.

- Ensuring the continuity, stability and flexibility of ANATEL counsellors — through fixed five-year staggered terms.
- Recognizing that consumers are the regulator’s primary client and that obtaining consumer views is a top priority.
- Prioritizing important regulatory issues and focusing on core areas of the regulatory framework prior to privatization.

- Developing a strategy for advancing network development and universal service/access that is committed to bringing telecommunication services to all areas of Brazil.

- Ensuring transparency by conducting a public consultation for every regulatory decision taken.

- Adopting innovative procurement and outsourcing mechanisms, for example the system of reverse auctions that has resulted in a more efficient and transparent method of contracting goods and services. Outsourcing some of its functions during times of intense regulatory activity has also helped ANATEL keep up with a booming telecommunications market.

- Developing effective enforcement mechanisms. ANATEL has an elaborate enforcement system in place and expends almost half of its financial and human resources on monitoring and enforcement. This has encouraged licensees to meet their universalization and quality of service obligations. The regulator, in fact, develops an enforcement manual that dictates a consistent method of investigating and penalizing specific violations.

- Setting and obtaining high-quality goals for the agency itself, recognized when ANATEL became the first telecommunication regulatory agency in the world to receive an ISO-9001 certification.

- Making tariffs accessible to consumers by creating an innovative Web-based mechanism to enable them to obtain the best prices and tariffs by day, time and destination.

ANATEL, like all regulators, also faces serious challenges. A major challenge is on the personnel side — how to find, hire, and retain qualified staff. ANATEL also faces the challenge of complete liberalization of the market in January 2002. It will need to adapt its regulatory processes from those designed for managed competition to those created to foster open competition.

A more detailed description of best practices, future challenges facing ANATEL, as well as an analysis of its overall effectiveness and independence, is available on the ITU/BDT website at [www.itu.int/ITU-D/treg/Case\\_Studies/Index.html](http://www.itu.int/ITU-D/treg/Case_Studies/Index.html).

## The Americas prepare for WTDC-02

*Like elsewhere in the world, the issue of “connectivity” has become a theme of prime importance to the countries of the region*

“**D**espite the great potential of information and communication technologies (ICT) for global economic development, we all recognize that all countries and all regions of the world are not functioning at the same technological frequency. The growing digital divide is a matter of great concern to the United Nations, the International Telecommunication Union and the international community of nations,” remarked the Prime Minister of Trinidad and Tobago, Basdeo Panday.

Mr Panday was addressing the Americas Regional Preparatory Meeting in Port-of-Spain (15–18 October 2001) and urged participants to produce new options of narrowing the digital divide in the Americas region. This event was the last in a series of five regional meetings organized by the ITU Telecommunication Development Bureau (BDT) in the run-up to the World Telecommunication Development Conference (WTDC-02), scheduled to take place in Istanbul (Turkey) from 18 to 27 March 2002. The meeting

was designed to provide countries in the Americas region the opportunity to spell out their most urgent needs and priorities, which they wish to see the ITU Telecommunication Development Sector (ITU-D) take on board in the coming four years.

This preparatory meeting could not have come at a better time. The Summit of the Americas, held in Quebec City in April 2001 saw Heads of State and Government in attendance discuss ways to increase prosperity and foster social inclusiveness throughout the Americas.

“We are conscious of the disparities in cost and access to technology within and between our countries. Therefore, we agree that we must individually and collectively move towards expanding access to global knowledge and full integration into the knowledge society, particularly in developing countries, smaller economies, and among rural and disadvantaged groups.

The Summit proceedings yielded the “Connectivity Agenda for the Americas”.



*Some 99 participants from 28 countries attended the event, representing administrations, recognized operating agencies, and six regional and other international organizations*

*(ITU 010099)*

Against this backdrop, countries in the region expect WTDC-02 to take a series of decisions and measures that address the changing telecommunication environment. From the on-going discussions within the Inter-American Telecommunication Commission (CITEL), the theme of connectivity can be expected to form the cornerstone for a plan of action at WTDC-02 to guide the implementation of the region's Connectivity Agenda.

The opening session was also addressed by the Minister of Information and Communications Technology, Roodal Moonilal; the ITU Secretary-General, Yoshio Utsumi; the Director of BDT, Hamadoun I. Touré and the Permanent Secretary in the Ministry of Information and Communication Technology, Carol Clark.

Ms Clark was appointed Chairman of the meeting, along with five Vice-Chairmen, who led discussions on the following topics: network development and new technologies including IP telephony (Roy Humes, Jamaica); information and communication technologies and universal access (Edmundo Matarazzo, Brazil); finance and investment (Roxanne McElvane, United States); telecommunication policies and regulation (Alvin Lezama, Venezuela); and human resources management and development (Rodrigo Robles, Guatemala).

In the area of new technologies the meeting noted that CITEL has, through its Permanent Consultative Committee 1 (PCC.1), approved a resolution for WTDC-02 which sets forth a vision of voice over the Internet protocol (VoIP). The resolution reflects CITEL's desire to promote, within its 34 Member States, the use and development of IP technologies such as IP telephony. CITEL believes that prompt action will help minimize the effects of the global transition towards IP technologies.

Some 99 participants from 28 countries attended the event, representing administrations, recognized operating agencies, and six regional and other international organizations. Participants agreed on a set of priorities and recommendations which ITU-D will be expected to include in its four-year Action Plan. They also called for the strengthening of ITU's regional presence. All documents related to the meeting are available at [www.itu.int/ITU-D/ams/](http://www.itu.int/ITU-D/ams/)

## Snapshot of priorities and recommendations

### Network development and new technologies, including IP telephony

- Disseminate new technologies that could foster network development, for example, IP technology, xDSL, IMT-2000 and digital broadcasting.
- Undertake activities to assist countries to better understand new technologies and how to introduce them in their networks.
- Provide technical assistance to developing countries in their migration to IP-based networks.
- Create a formal "IP Telephony Task Force" based on the follow-up actions recommended by the World Telecommunication Policy Forum in March 2001.
- Promote the use of renewable energy sources and solar power.

### ICTs and universal access

- Assist countries in the drawing up of plans and sector strategies for ICTs.
- Revisit the definition of universal access taking account of ICTs.
- Incorporate, in the next Action Plan, efforts of the G8, Dot Force, UN ICT Task Force, OECD, civil society and the private sector.
- Continue with the development of multipurpose community telecentres in marginal urban, semi-rural and rural areas and find ways to ensure their widespread establishment.
- Promote opportunities for indigenous communities to use ICT in order to promote and preserve their culture.
- Define the critical points needed in drawing up an action plan for implementing the Regional Connectivity Agenda, taking into account the indispensable contribution of the private sector and other initiatives from organizations outside the telecommunication sector.

### Finance and investment

- Coordinate a programme for regional connectivity and cooperation between organizations.
- Continue to develop and refine cost models that form a basis for determining both domestic and international tariffs.

- Create a trust fund for universal service for the region.
- Develop a comprehensive database for countries in the region to identify areas in need of investment.
- Conduct pilot projects to promote telephone services and Internet connection, with private financing to install the networks, public Internet access booths and basic training so that people in rural areas can use these services.

### Telecommunication policies and regulation

- Continue with established mechanisms such as studies and reports, workshops, regulatory library, training, and technical assistance, bearing in mind that the majority of countries in the region are in the last stages of creating a regulatory authority.
- Update the *Blue Book on Telecommunication Policies for the Americas*.
- Work on specific projects with organizations such as CITELE, CARICOM, the Caribbean Telecommunication Union (CTU) and other bilateral, regional and international organizations.

- Draw up a report on the best practices used by the countries of the region in financing universal service/access.

### Human resources management and development

- Use information technologies for training activities, human resources management and development to complement traditional training methods.
- Promote continuous training for the administrations of the region primarily focusing on new technologies, costs, interconnection, spectrum management, business development, the Internet and IP networks.
- Strengthen the Centre of Excellence of the Americas region, as well as the Global Telecommunication University.
- Give higher priority to gender balance issues and target specific numbers of individuals to be trained for jobs in the telecommunication sector.

This article is based on a report from Michael Minges, Head, Telecommunication Data and Statistics Unit, who covered the Americas Regional Preparatory Meeting for *ITU News* from Port-of-Spain.

## Trinidad and Tobago

### On the road to an Intelligent Nation

Trinidad and Tobago, the southernmost part of the Caribbean island nations, is adopting information and communication technologies (ICT) as an important national development objective. According to a recent speech by the Prime Minister, a key objective for this twin-island country is the “*transformation of Trinidad and Tobago into a truly Intelligent Nation*.”<sup>1</sup> Steps in this direction in the year 2001 alone include the creation of a Ministry of Information and Communication Technology in January and the passage of a new Telecommunication Act in July.

So what are Trinidad and Tobago’s advantages when so many other countries also want to become ICT powerhouses? One is the multi-ethnic composition of this English-speaking nation with a population of 1.3 million, of which 40 per cent is of African descent, another 40 is of East Indian descent, 19 per cent is mixed and the remainder are descendents of Chinese, European and other nations. This mix generates dynamism and creativity. Trinidad and Tobago invented the calypso and the steel drum, and its vibrant music scene is highlighted during the annual Carnival.

It is also the birthplace of the 2001 winner of the Nobel Prize in Literature, V.S. Naipaul.

Another advantage is the economy. After a period in the doldrums during the 1980s — characterized by high unemployment, emigration and a decline in GDP per capita — the economy rebounded dramatically in the 1990s. The upswing is founded on exploitation of natural resources (oil and liquefied natural gas, as well as downstream petro-chemical derivatives such as ammonia and methanol), which account for one quarter of economic activity and 80 per cent of exports. This has put the economy on a steady growth path since 1994. GDP per capita has risen about 4 per cent a year and stood at USD 6186 in 2000. This economic growth has given the government an opportunity to devote more resources to education and skills training.<sup>2</sup>

One challenge the country faces is liberalization of the telecommunication sector. Like many other Caribbean countries, the telecommunication sector has been a *de facto* monopoly of Telecommunication Services of Trinidad and Tobago (TSTT). The company was formed from the merger of the domestic and international telecommunication companies in 1991. The government owns 51 per cent of the shares while Cable and Wireless of the United Kingdom, active in many Caribbean countries as a result of historical ties, owns the remainder. Government shares have been transferred to a holding company and a percentage sold to the public and traded on the local stock exchange. Some shares have also been set aside for TSTT employees. According to the Tourism and Industrial Development Corporation of Trinidad and Tobago, the country is “behind in Information Technology so de-monopolisation of the sector is critical”.<sup>3</sup>

Despite the monopoly, TSTT has been successful in bringing a fairly high level of telecommunication access to the nation. Household telephone penetration is estimated to be around 70 per cent, up from some 10 per cent at the time of independence in 1962. TSTT's cellular network has been converted to digital. Mobile telephony has grown immensely

over the last few years, due to the introduction of calling party pays and pre-paid cards. The network had 162 000 subscribers as of March 2001 for a penetration of 12.6 per cent.

Another reason for the rapid cellular growth is that TSTT is preparing for competition. A bid for an additional cellular operator was put out in 1999. More than ten companies submitted proposals. The award has been delayed by a legal challenge from a bidder whose proposal was rejected because it was not submitted in time. It now appears that the whole process will have to be restarted due to the emergence of newer technologies since the original tender. Indeed, even TSTT plans to launch a European standard digital GSM overlay network in order to provide mobile Internet services.

In other areas, the monopoly may be a hindrance to rapid ICT development. In addition to TSTT, there are five Internet service providers (ISP) in Trinidad and Tobago. They must go through TSTT for international connectivity. This has an impact on pricing, quality of service and innovation. Internet access charges of USD 50 for monthly flat-rate access is not particularly cheap and is twice the rate in the United States.

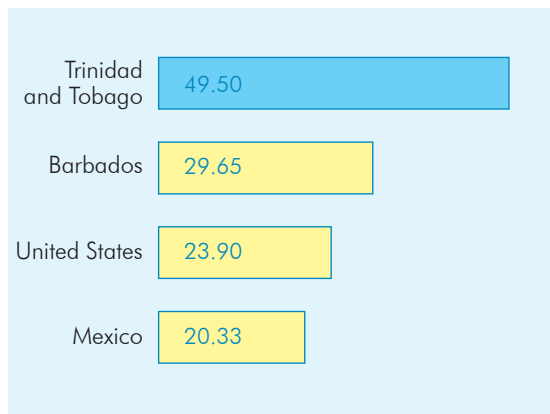
### Trinidad and Tobago ICT indicators

	1997	2001
Main telephone lines (000s) Per 100 inhabitants	220 17.3	305 23.4
Mobile subscribers (000s) Per 100 inhabitants	14 1.1	162 12.6
Total subscribers (000s) Per 100 people	224 18.4	467 36.0
Households with a fixed telephone	56%	70%
Number of PCs (000s) Per 100 people	35 2.8	80 6.2
Number of Internet users (000s) Per 100 people	5 0.4	100 7.7

Note: Years ending 31 March.

Source: ITU, TSTT, Ministry of ICT.

### Price for unlimited monthly Internet use in November 2001 (USD)



Source: ITU, adapted from ISP data.

The nation has also been slow to introduce fast Internet access through consumer broadband technologies such as digital subscriber lines (DSL) and cable modems.

Despite relatively high Internet charges, the number of subscribers has grown by over 1000 per cent over the last three years. There are an estimated 100 000 users for a penetration of 7.7 per cent of the population. According to one study, "Trinis"—as the locals call themselves—are uninhibited about using the Internet.<sup>4</sup> They readily adapt and integrate it into their life. One main use is to keep in touch with the large expatriate community. This ease of Internet absorption coupled with the use of English as the national language, are cultural traits that bode well for Trinidad and Tobago's ICT development.

For a developing nation, Trinidad and Tobago scores relatively high on the United Nations Development Programme (UNDP) Human Development Index (HDI). The country is ranked 49th out of 162 nations. It is the highest ranked *medium* human development country, just below the *high* human development group. Trinidad and Tobago does well in three of the four components of the HDI: life expectancy, GDP per capita and adult literacy. What brings its ranking down is a relatively low level of school enrolment.<sup>5</sup> The government recognizes that it must invest in education to develop the brainpower required for a knowledge-based economy. It has waived fees

for secondary education, and launched several other initiatives to boost tertiary enrolment to a target of 20 per cent within the next five years. It provides a subsidy of 50 per cent of tuition fees to all students who gain admittance to universities. In order to increase scientific and technical skills, the government has established the College of Science, Applied Arts and Technology and the Trinidad and Tobago Institute of Technology.

The recent government commitment to ICT, *if* it can be maintained, could boost Trinidad and Tobago into the information age. *If* the telecommunication sector can be opened, it should lead to lower prices and greater innovation. *If* schemes to boost higher education are successful, this can help create the needed brainpower to fuel an ICT explosion. These are big *ifs* but the nation must hope they materialize if it is to become a knowledge-based economy and a regional ICT leader. As the Prime Minister notes, if the country does not embrace technology it risks "*becoming irrelevant, or even obsolete.*"

---

Contributed by Michael Minges. Special thanks to Deoraj Ramnarine who provided insightful comments and data.

---

### Notes

<sup>1</sup> Prime Minister Basdeo Panday. Feature address, formal opening of the Americas Regional Preparatory Meeting of the International Telecommunication Union. Hilton Trinidad Conference Centre. October 16, 2001 ([www.ict.gov.tt/ict/resources/bpanday.htm](http://www.ict.gov.tt/ict/resources/bpanday.htm)).

<sup>2</sup> For an overview of the Trinidad and Tobago economy see: Michael de Costa. "Trinidad and Tobago faces the challenges of managing and energy-based economy." *IMF Survey*. August 13, 2001 ([www.imf.org/external/pubs/ft/survey/2001/081301.pdf](http://www.imf.org/external/pubs/ft/survey/2001/081301.pdf)).

<sup>3</sup> "Competitiveness comes calling on local industry." *TIDCO Times*. March–April 2001. ([www.tidco.co.tt/corporate/TIDCOTimes/MarchApril01/competitiveness1.html](http://www.tidco.co.tt/corporate/TIDCOTimes/MarchApril01/competitiveness1.html)).

<sup>4</sup> For a novel perspective on Internet use in Trinidad and Tobago see: Daniel Miller and Don Slater. *The Internet. An Ethnographic Approach*. June 2000 (<http://ethnonet.gold.ac.uk/summary.html>).

<sup>5</sup> For an insight into the challenges Trinidad and Tobago faces in primary and secondary education, see: *Trinidad and Tobago. Youth and Social Development: An Integrated Approach for Social Inclusion*. June 2000. World Bank.



### CONSTITUTION AND CONVENTION OF THE ITU (GENEVA, 1992), KYOTO, 1994 AND MINNEAPOLIS, 1998

The Government of the **Federal Republic of Germany** has ratified the above-mentioned Constitution and Convention.

The instrument of ratification was deposited with the Secretary-General on 19 September 2001.

The Government of the **Republic of Moldova** has ratified the above-mentioned Constitution and Convention.

The instrument of ratification was deposited with the Secretary-General on 26 September 2001.

### CHANGES

The *Telecommunications Administration Centre* of Finland has changed its name and is now called **Finnish Communications Regulatory Authority (FICORA)**.

The *Georgian National Post and Telecommunications Regulatory Commission* has changed its name and is now called **Georgian National Communications Commission (GNCC)**.

The *Ministry of Communication* of the Republic of Mali has changed its name and is now called **Ministry of State property, Housing Affairs and Communication**.

The *Ministry of Communication* of the Republic of the Niger has changed its name and is now called **Ministry of Transports and Communication**.

The *Ministry of Communications and Works* of Saint Vincent and the Grenadines has changed its name and is now called **Ministry of Telecommunications, Science, Technology and Industry**.

The *Telecommunications Administration* of the Republic of Slovenia has changed its name and is now called **Telecommunications and Broadcasting Agency of the Republic of Slovenia**.

The *Postal and Telecommunications Corporation* of the Republic of Zimbabwe has changed its name and is now called **Postal and**

### Telecommunications Regulatory Authority of Zimbabwe.

*AT&T*, which participates in the work of the Radiocommunication Sector, has changed its name. The new denomination is **AT&T Wireless Services**.

*Entidad Pública Empresarial "Correos y Telégrafos"*, which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **Sociedad Estatal "Correos y Telégrafos", S.A.**

*Fujitsu Europe Telecom R&D Center Ltd.*, which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **Fujitsu Networks Europe Limited**.

*Hewlett-Packard*, which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **Agilent Technologies**.

*Mitel Corporation*, which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **Mitel Networks**.

### NEW MEMBERS

#### Radiocommunication Sector

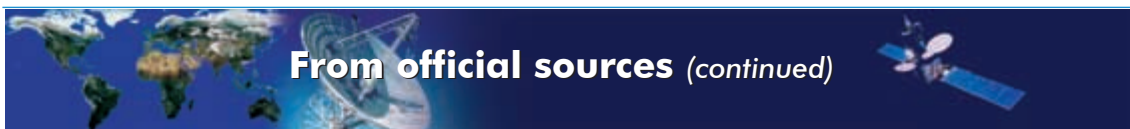
*Communications Research Laboratory (Tokyo)*, *PanAmSat Europe Limited (London)* and *Telekomunikacja Polska S.A. (Warsaw)* have been admitted to take part in the work of this Sector.

#### Telecommunication Standardization Sector

*Communications Research Laboratory (Tokyo)*, *Office des Postes et Télécommunications (OPT) (Noumea, New Caledonia, France)* and *Telekomunikacja Polska S.A. (Warsaw)* have been admitted to take part in the work of this Sector.

#### Telecommunication Development Sector

*Global VSAT Forum (St Albans, United Kingdom)* and *Iridium Satellite LLC (Arlington, VA)* have been admitted to take part in the work of this Sector.



From official sources (continued)

**NEW ASSOCIATES**

**Telecommunication Standardization Sector**

*JDS Uniphase Corporation (Eatontown, NJ), Mintera Optical Networks (Lowell, MA) and 2Wire, Inc. (San Jose, CA)* have been admitted to take part in the work of Study Group 15.

**STRUCTURAL CHANGES**

**Principality of Liechtenstein**

The *Amt für Kommunikation (Office for Communications)*, which was established on 1 January 1999 as the independent national regulatory authority for the telecommunication and broadcasting sectors, has since then been assuming gradually all competences in these two sectors. It has also been vested with all regulatory powers over the telecommunication and broadcasting market-place.

**Eastern Republic of Uruguay**

The entity, *Unidad Reguladora de Servicios de Comunicaciones (URSEC)*, has been established pursuant to Law 17.296 of 23 February 2001.

**Republic of Senegal**

The Ministry of Communication and Information Technologies has been abolished and

its responsibilities and prerogatives have now been transferred to the *Secrétariat général du Gouvernement (Secretariat General of the Government)*.

**VACANCY NOTICE**

A circular letter (via facsimile) which has been sent to all Member States and Sector Members of the Union announces the following vacancy:

- One post of **Radiocommunication Engineer, Grade P.4**, to be filled in the Radiocommunication Bureau, Terrestrial Services Department (TSD), as soon as possible for up to two years with possibility of extension (circular letter No. 145 of 25 October 2001; vacancy notice No. 41-2001 ITU; final date for submission of applications: 2 January 2002).

Detailed applications with ITU personal history form should be submitted to the General Secretariat of the ITU, Place des Nations, CH-1211 Geneva 20 (Switzerland), no later than the final dates mentioned above.

Vacancy notices and personal history forms are available on the ITU website://www.itu.int/employment/index.htm

**PUBLICATIONS**

The following letters indicate the languages in which documents are published:

- F for French
- E for English
- S for Spanish
- R for Russian
- C for Chinese
- A for Arabic

Prices (indicative only) are in Swiss francs (CHF).

A comprehensive list of all ITU publications can be obtained, free of charge, from the Sales and Marketing Service, Place des Nations, CH-1211 Geneva 20 (Switzerland). Fax: +41 22 730 5194.

**Telecommunication Development Sector**

**African Telecommunication Indicators (5th edition, 2001)**

Separate editions in F, E, S  
Article: 20500 CHF 38

**Trends in Economics and Finances**

**Volume I: Costs, tariffs and interconnection rates — Calculation Methodology — Application to case studies**  
Separate editions in F, E, S  
Article: 20539 CHF 50

**Radiocommunication Sector**

**ITU-R Recommendations on CD-ROM (2001-2 (September 2001))**

Separate editions in F, E, S  
Article: 18334 CHF 650

**ITU-R Recommendations, Volume 2000 — BT Series: Part 1**

Broadcasting service (television)  
Separate editions in F, E, S  
Article: 18977 CHF 136

**ITU-R Recommendations, Volume 2000 — ITU-R BS.705-1, ITU-R BS.1195 and ITU-R BS.1386**

HF transmitting and receiving antennas characteristics and diagrams — Transmitting antenna characteristics at VHF and UHF — LF and MF transmitting antennas characteristics and diagrams  
Separate editions in F, E, S  
Article: 19041 CHF 109



continued

**ITU-R Recommendations, Volume 2000 — M Series: Part 1**

Land mobile service excluding IMT-2000  
Separate editions in F, E, S  
Article: 18999 CHF 136

**ITU-R Recommendations, Volume 2000 — M Series: Part 2**

International Mobile Telecommunications-2000 (IMT-2000)  
Separate editions in F, E, S  
Article: 19002 CHF 252

**ITU-R Recommendations, Volume 2000 — M Series: Part 2, ITU-R M.1457**

Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)  
Separate editions in F, E, S  
Article: 19008 CHF 64

**ITU-R Recommendations, Volume 2000 — M Series: Part 3**

Maritime mobile service and aeronautical mobile service  
Separate editions in F, E, S  
Article: 19005 CHF 168

**ITU-R Recommendations, Volume 2000 — M Series: Part 4**

Radiodetermination service  
Separate editions in F, E, S  
Article: 19011 CHF 109

**ITU-R Recommendations, Volume 2000 — M Series: Part 5**

Mobile satellite services and radiodetermination satellite service  
Separate editions in F, E, S  
Article: 19014 CHF 168

**ITU-R Recommendations, Volume 2000 — M Series: Part 6**

Amateur service and amateur-satellite service  
Separate editions in F, E, S  
Article: 19017 CHF 30

**ITU-R Recommendations, Volume 2000 — P Series: Part 1**

Radiowave propagation  
Separate editions in F, E, S  
Article: 18952 CHF 168

**ITU-R Recommendations, Volume 2000 — SA Series**

Space applications and meteorology  
Separate editions in F, E, S  
Article: 18974 CHF 200

**ITU-R Recommendations, Volume 2000 — SM Series: Part 2**

Spectrum management  
Separate editions in F, E, S  
Article: 18949 CHF 168

**Telecommunication Standardization Sector****ITU-T Recommendations on CD-ROM (Single edition, September 2001)**

Separate editions in F, E, S  
Article: 17927 CHF 1200

**ITU-T Recommendation E.370 (02/2001)**

Service principles when public circuit-switched international telecommunication networks interwork with IP-based networks  
Separate editions in F, E, S  
Article: 20602 CHF 12

**ITU-T Recommendation G.650 (10/2000)**

Definition and test methods for the relevant parameters of single-mode fibres  
Separate editions in F, E, S  
Article: 20278 CHF 49

**ITU-T Recommendation G.691 (10/2000)**

Optical interfaces for single-channel STM-64, STM-256 and other SDH systems with optical amplifiers  
Separate editions in F, E, S  
Article: 20187 CHF 22

**ITU-T Recommendation G.806 (10/2000)**

Characteristics of Transport Equipment — Description Methodology and Generic Functionality  
Separate editions in F, E, S  
Article: 20199 CHF 34

**ITU-T Recommendation G.852.16 (01/2001)**

Enterprise viewpoint for pre-provisioned route discovery  
Separate editions in F, E, S  
Article: 20413 CHF 12

**ITU-T Recommendation G.853.16 (01/2001)**

Information viewpoint for pre-provisioned route discovery  
Separate editions in F, E, S  
Article: 20416 CHF 17

**ITU-T Recommendation G.854.16 (01/2001)**

Computational viewpoint for pre-provisioned route discovery  
Separate editions in F, E, S  
Article: 20473 CHF 17

**ITU-T Recommendation G.975 (10/2000)**

Forward error correction for submarine systems  
Separate editions in F, E, S  
Article: 20246 CHF 17

**ITU-T Recommendation G.983.2 (04/2000)**

ONT management and control interface specification for ATM PON  
Separate editions in F, E, S  
Article: 20155 CHF 55

**ITU-T Recommendation H.235 (11/2000)**

Security and encryption for H-Series (H.323 and other H.245-based) multimedia terminals  
Separate editions in F, E, S  
Article: 20612 CHF 39

**ITU-T Recommendation H.245 (07/2001)**

Control Protocol for multimedia communication  
Separate editions in F, E, S  
Article: 20482 CHF 124

**ITU-T Recommendation H.263 Annex U (11/2000)**

Enhanced reference picture selection mode  
Separate editions in F, E, S  
Article: 20590 CHF 22

**ITU-T Recommendation H.263 Annex V (11/2000)**

Data partitioned slice (DPS)  
Separate editions in F, E, S  
Article: 20158 CHF 12

**ITU-T Recommendation H.263 Annex W (11/2000)**

Additional supplemental enhancement information  
Separate editions in F, E, S  
Article: 20150 CHF 22

**ITU-T Recommendation H.450.9 (11/2000)**

Call Completion Supplementary Services for H.323  
Separate editions in F, E, S  
Article: 20267 CHF 29

**ITU-T Recommendation I.363.2 (11/2000)**

B-ISDN ATM Adaptation Layer specification: Type 2 AAL  
Separate editions in F, E, S  
Article: 20401 CHF 29

**ITU-T Recommendation I.366.2 (11/2000)**

AAL type 2 service specific convergence sublayer for narrow-band services  
Separate editions in F, E, S  
Article: 20196 CHF 49

**ITU-T Recommendation I.371.1 (11/2000)**

Guaranteed frame rate ATM transfer capability  
Separate editions in F, E, S  
Article: 20161 CHF 17

**ITU-T Recommendation I.381 (03/2001)**

ATM Adaptation Layer (AAL) performance  
Separate editions in F, E, S  
Article: 20625 CHF 17

**ITU-T Recommendation J.67 (03/2001)**

Test signals and measurement techniques for transmission circuits carrying MAC/packet signals  
Separate editions in F, E, S  
Article: 20609 CHF 17

**ITU-T Recommendation J.84 (03/2001)**

Distribution of digital multi-programme signals for television, sound and data services through SMATV networks  
Separate editions in F, E, S  
Article: 20593 CHF 17

**ITU-T Recommendation J.87 (03/2001)**

Use of hybrid cable television links for the secondary distribution of television into the user's premises  
Separate editions in F, E, S  
Article: 20425 CHF 12

**ITU-T Recommendation J.94 Amendment 1 (10/2000)**

Service information delivered out of band for digital cable television systems  
Separate editions in F, E, S  
Article: 20330 CHF 49

**ITU-T Recommendation J.94 Amendment 2 (03/2001)**

Additions to Annex C — Service information for digital multi-programme System C  
Separate editions in F, E, S  
Article: 20428 CHF 12

**ITU-T Recommendation J.116 (05/2000)**

Interaction channel for local multipoint distribution systems  
Separate editions in F, E, S  
Article: 20333 CHF 96

**ITU-T Recommendation J.161 (03/2001)**

Audio codec requirements for the provision of bidirectional audio service over cable television networks using cable modems  
Separate editions in F, E, S  
Article: 20557 CHF 12

**ITU-T Recommendation J.182 (03/2001)**

Parameter sets for analogue interface specifications for the interconnection of set-top-boxes and presentation devices in the home  
Separate editions in F, E, S  
Article: 20524 CHF 22

**ITU-T Recommendation J.183 (03/2001)**

Time division multiplexing of multiple MPEG-2 transport streams over cable television systems  
Separate editions in F, E, S  
Article: 20560 CHF 12

**ITU-T Recommendation K.21 (10/2000)**

Resistibility of telecommunication equipment installed in customer's premises to overvoltages and overcurrents  
Separate editions in F, E, S  
Article: 19854 CHF 17

**ITU-T Recommendation L.12 (05/2000)**

Optical fibre joints  
Separate editions in F, E, S  
Article: 19816 CHF 17

**ITU-T Recommendation L.40 (10/2000)**

Optical fibre outside plant maintenance support, monitoring and testing system  
Separate editions in F, E, S  
Article: 20339 CHF 22

**ITU-T Recommendation M.1301 (01/2001)**

General description and operational procedures for international SDH leased circuits  
Separate editions in F, E, S  
Article: 20437 CHF 17

**ITU-T Recommendation M.3100 Amendment 3 (01/2001)**

Definition of the management interface for a generic alarm reporting control (ARC) feature  
Separate editions in F, E, S  
Article: 20587 CHF 22

**ITU-T Recommendation M.3108.3 (01/2001)**

TMN management services for dedicated and reconfigurable circuits network: Information model for management of virtual private network service  
Separate editions in F, E, S  
Article: 20488 CHF 17

**ITU-T Recommendation M.3210.1 (01/2001)**

TMN management services for IMT-2000 security management  
Separate editions in F, E, S  
Article: 20392 CHF 17

**ITU-T Recommendation P.350 (03/2001)**

Handset dimensions — Formerly ITU-T P.35  
Separate editions in F, E, S  
Article: 20566 CHF 12

**ITU-T Recommendation P.501 (05/2000)**

Test signals for use in telephony  
Separate editions in F, E, S  
Article: 19888 CHF 72

**ITU-T Recommendation P.502 (05/2000)**

Objective test methods for speech communication systems using complex test signals  
Separate editions in F, E, S  
Article: 20052 CHF 29

**ITU-T Q series Recommendations Supplement 3 (05/1998)**

Number portability — Scope and capability set 1 architecture  
Separate editions in F, E, S  
Article: 15895 CHF 22

continued

**ITU-T Q series Recommendations  
Supplement 38 (05/2001)**

Technical report TRQ.2600 —  
BICC signalling transport  
requirements, capability set 1  
Separate editions in F, E, S  
Article: 20476 CHF 17

**ITU-T Recommendation Q.52  
(03/2001)**

Signaling between international  
switching centers and stand-  
alone echo control devices  
Separate editions in F, E, S  
Article: 20563 CHF 12

**ITU-T Recommendation Q.817  
(01/2001)**

TMN PKI — Digital certificates  
and certificate revocation lists  
profiles  
Separate editions in F, E, S  
Article: 20443 CHF 12

**ITU-T Recommendation Q.1238.3  
(06/2000)**

SCF-SRF interface  
Separate editions in F, E, S  
Article: 20315 CHF 89

**ITU-T Recommendation Q.1238.4  
(06/2000)**

SCF-SDF interface  
Separate editions in F, E, S  
Article: 20309 CHF 79

**ITU-T Recommendation Q.1238.5  
(06/2000)**

SDF-SDF interface  
Separate editions in F, E, S  
Article: 20295 CHF 84

**ITU-T Recommendation Q.2931B  
(12/2000)**

Broadband integrated services  
digital network (B-ISDN) —  
Digital subscriber signalling  
system No. 2 (DSS 2) — User-  
network interface (UNI) layer 3  
specification for basic call/  
connection control: Protocol  
implementation conformance  
statement (PICS) proforma  
English edition only  
Article: 20419 CHF 22

**ITU-T Recommendation Q.2931F  
(12/2000)**

Broadband integrated services  
digital network (B-ISDN) —  
Digital subscriber signalling  
system No. 2 (DSS 2) — User-  
network interface (UNI) layer 3  
specification for basic call/  
connection control: Abstract  
Test Suite (ATS) and partial  
Protocol Implementation eXtra  
Information for Testing (PIXIT)  
proforma for the network  
Separate editions in F, E, S  
Article: 20422 CHF 12

**ITU-T Recommendation Q.2962E  
(12/2000)**  
Digital subscriber signalling  
system No. 2 — Connection  
characteristics negotiation  
during call/connection establish-  
ment phase: Test Suite Structure  
and Test Purposes (TSS & TP) for  
the network  
English edition only  
Article: 20464 CHF 9

**ITU-T Recommendation Q.2965.1B  
(12/2000)**

Digital subscriber signalling  
system No. 2 — Support of  
Quality of Service classes:  
Protocol Implementation  
Conformance Statement (PICS)  
proforma  
Separate editions in F, E, S  
Article: 20527 CHF 17

**ITU-T Recommendation Q.2965.2B  
(12/2000)**

Digital subscriber signalling  
system No. 2 — Signalling of  
individual Quality of Service  
parameters: Protocol Implemen-  
tation Conformance Statement  
(PICS) proforma  
Separate editions in F, E, S  
Article: 20446 CHF 17

**ITU-T Recommendation V.18  
(11/2000)**

Operational and interworking  
requirements for DCEs operating  
in the text telephone mode  
Separate editions in F, E, S  
Article: 20233 CHF 34

**ITU-T Recommendation V.44  
(11/2000)**

Data compression procedures  
Separate editions in F, E, S  
Article: 20450 CHF 29

**ITU-T Recommendation V.59  
(11/2000)**

Managed objects for diagnostic  
information of public switched  
telephone network connected  
V-series modem DCEs  
Separate editions in F, E, S  
Article: 20410 CHF 34

**ITU-T Recommendation V.92  
(11/2000)**

Enhancements to Recommenda-  
tion V.90  
Separate editions in F, E, S  
Article: 20395 CHF 34

**ITU-T Recommendation X.42  
(03/2000)**

Procedures and methods  
for accessing a public data  
network from a DTE operating  
under control of a generalized  
polling protocol  
Separate editions in F, E, S  
Article: 20174 CHF 22

**ITU-T Recommendation X.144  
(10/2000)**

User information transfer  
performance parameters  
for data networks providing  
international frame relay  
PVC service  
Separate editions in F, E, S  
Article: 20236 CHF 22

**ITU-T Recommendation X.754  
(02/2000)**

Enhanced Event Control  
Function  
Separate editions in F, E, S  
Article: 20434 CHF 17

**ITU-T Recommendation X.770  
(01/2001)**

ODMA notification dispatch  
function  
Separate editions in F, E, S  
Article: 20479 CHF 22

**ITU-T Recommendation X.780  
(01/2001)**

TMN guidelines for defining  
CORBA managed objects  
Separate editions in F, E, S  
Article: 20494 CHF 39

**ITU-T Recommendation Y.140  
(11/2000)**

Global Information Infrastruc-  
ture (GII): Reference points for  
interconnection framework  
Separate editions in F, E, S  
Article: 20264 CHF 17

**ITU-T Recommendation Z.120  
(11/1999)**

Message sequence chart (MSC)  
Separate editions in F, E, S  
Article: 20087 CHF 55



## 2001

- 6–7 December (Geneva)  
ITU/WIPO Symposium on  
Multilingual Domain Names

## 2002

- 18–27 March (Istanbul, Turkey)  
World Telecommunication  
Development Conference  
(WTDC-02)
- 22 April–3 May (Geneva)  
Council 2002 (C-2002)
- 23 September–18 October  
(Marrakesh, Morocco)  
Plenipotentiary Conference  
(PP-02)
- 2–7 December (Hong Kong)  
ITU TELECOM ASIA 2002  
(Exhibition and Forum)

## 2003

- 25–28 February (Buenos  
Aires, Argentina)  
ITU TELECOM Americas 2003  
(Exhibition and Forum)
- 2–6 June (Caracas, Venezuela)  
Radiocommunication  
Assembly (RA)
- 9 June–4 July (Caracas,  
Venezuela)  
World Radiocommunication  
Conference (WRC-03)
- 12–18 October (Geneva)  
ITU TELECOM WORLD 2003  
(Exhibition and Forum)
- 10–12 December (Geneva)  
World Summit on the Informa-  
tion Society (WSIS)

## 2001

### Radiocommunication Sector

- 3–7 December (Geneva)  
Radio Regulations Board (RRB)

## 2002

- 16–18 January (Geneva)  
Task Group 6/8 (Preparation for  
RRC-2004)

- 4–8 February (Geneva)  
Joint Task Group 4–7–8  
(Sharing in the band 13.75 – 14  
GHz)

- 11–15 February (Geneva)  
Working Party 7B (Space radio  
systems)
- 11–15 February (Geneva)  
Working Party 7C (Earth explora-  
tion satellite systems and  
meteorological elements)
- 11–15 February (Geneva)  
Working Party 7D (Radio as-  
tronomy)

- 25 February–1 March (Geneva)  
Radiocommunication Advisory  
Group

- 4–6 March (Geneva)  
Satellite Backlog Action Group  
(SAT-BAG)

- 11–15 March (Geneva)  
Radio Regulations Board (RRB)

- 3–7 June (Geneva)  
Radio Regulations Board (RRB)

- 9–13 September (Geneva)  
Radio Regulations Board (RRB)

- 9–13 December (Geneva)  
Radio Regulations Board (RRB)

## 2001

### Telecommunication Standardization Sector

- 3–7 December (Geneva)  
Study Group 3 (Tariff and  
accounting principles including  
related telecommunication  
economic and policy issues) and  
its Working Parties

- 3–7 December (Geneva)  
Study Group 9 (Integrated  
broadband cable networks and  
television and sound transmis-  
sion) and its Working Parties

- 10 December (Hanoi)  
Workshop on EMC, safety and  
EMF effects in telecommunica-  
tions

- 10–14 December (Geneva)  
Study Group 6 (Outside plant) and  
its Working Parties

- 11–14 December (Hanoi)  
Study Group 5 (Protection against  
electromagnetic environment  
effects) and its Working Parties

## 2002

- 22 January–1 February (Ge-  
neva)  
Study Group 13 (Multi-protocol  
and IP-based networks and their  
internetworking) and its Working  
Parties

- 5–15 February (Geneva)  
Study Group 16 (Multimedia  
services, systems and terminals)  
and its Working Parties

- 18 February–1 March (Geneva)  
Study Group 11 (Signalling  
requirements and protocols) and  
its Working Parties

- 27 February–8 March (Geneva)  
Study Group 17 (Data networks  
and telecommunication soft-  
ware) and its Working Parties

- 12–15 March (Geneva)  
Workshop on IPCablecom and  
Mediacom 2004 — Interactivity  
in multimedia

- 8–19 April (Geneva)  
Study Group 4  
(Telecommunication manage-  
ment, including TMN) and its  
Working Parties

- 29 April–10 May (Geneva)  
Study Group 15 (Optical and  
other transport networks) and its  
Working Parties

- 7–17 May (Geneva)  
Study Group 2 (Operational  
aspects of service provision,  
networks and performance) and  
its Working Parties

- 20–24 May (Geneva)  
Study Group 12 (End-to-end  
transmission performance of  
networks and terminals) and its  
Working Parties



## ITU conferences (continued)

- 22–28 May (Ottawa)  
Special Study Group (IMT-2000 and beyond)
- 3–7 June (Geneva)  
Study Group 9 (Integrated broadband cable networks and television and sound transmission) and its Working Parties
- 10–14 June (Geneva)  
Study Group 3 (Tariff and accounting principles including related telecommunication economic and policy issues) and its Working Parties
- 17–21 June (Geneva)  
Telecommunication Standardization Advisory Group (TSAG)
- 9–13 September (Geneva)  
Study Group 6 (Outside plant) and its Working Parties
- 7–11 October (Geneva)  
Study Group 5 (Protection against electromagnetic environment effects) and its Working Parties
- 15–25 October (Geneva)  
Study Group 16 (Multimedia services, systems and terminals) and its Working Parties
- 29 October–8 November (Geneva)  
Study Group 13 (Multi-protocol and IP-based networks and their

internetworking) and its Working Parties

- 11–22 November (Geneva)  
Study Group 11 (Signalling requirements and protocols) and its Working Parties
- 20–29 November (Geneva)  
Study Group 17 (Data networks and telecommunication software) and its Working Parties
- 26 November–6 December (Geneva)  
Study Group 2 (Operational aspects of service provision, networks and performance) and its Working Parties
- 9–13 December (Geneva)  
Study Group 3 (Tariff and accounting principles including related telecommunication economic and policy issues) and its Working Parties

### 2001

#### Telecommunication Development Sector

- 19 November–7 December (Johannesburg, South Africa)  
Subregional co-sponsored CTO/ITU workshop on regulatory issues

- 3–5 December (Geneva)  
Second annual global symposium for regulators
- 11–14 December (Moscow)  
Workshop for CIS (in Russian): facing financial and social impact of liberalization

### 2002

- 14–15 January (Geneva)  
Coordination meeting for the World Telecommunication Development Conference (WTDC-02)
- 14–15 January (Geneva)  
Seventh meeting of the TDAG subgroup dealing with private sector issues, to prepare WTDC-02
- 16–18 January (Geneva)  
Seventh Telecommunication Development Advisory Group (TDAG)
- 21–22 January (Geneva)  
Development Agencies Collaboration Meeting
- 18–27 March (Istanbul, Turkey)  
World Telecommunication Development Conference (WTDC-02)

*This information was correct as of 19 November 2001.*



## Conferences external to ITU

### 2002

- 13–17 January (Honolulu, HI)  
PTC 2002 — 24th Annual Conference on next generation communications: Making IT work  
Tel.: +1 808 941 3789  
Fax: +1 808 944 4874  
E-mail: ptc2002@ptc.org  
http://www.ptc.org
- 10–12 April (Luxembourg)  
Telemedicine and Telecare International Trade Fair  
Tel.: +32 2 269 8456  
Fax: +32 2 269 7953  
E-mail: lievens@ping.be  
http://www.telemedicine.lu
- 21–23 April (Doha, Qatar)  
ARABCOM 2002  
Tel.: +961 5 450 212  
Fax: +961 5 455 477
- GSM: +961 321 4215  
E-mail: ktayar@arabcom.com  
http://www.arabcom.com
- 27–30 June (Wroclaw, Poland)  
EMC 2002 — Sixteenth International Wroclaw Symposium and Exhibition on Electromagnetic Compatibility  
E-mail: emc@il.wroc.pl  
http://www.emc.wroc.pl