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A BROADBAND FUTURE
Reconciling opportunities
and uncertainties



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World Summit on the Information Society

Full steam ahead



Summer in Geneva this year marks a turning point in the preparations for the World Summit on the Information Society (WSIS). I am delighted to confirm that WSIS will be held in two phases, with Switzerland hosting the first phase in Geneva in December 2003 and Tunisia hosting the second phase in 2005. At its annual session in June 2001, the ITU Council adopted a resolution endorsing this approach and welcomed the invitations from the Governments of Switzerland and Tunisia to host WSIS. We must now set sail!

Looking around the world today, there is little doubt that we are in the midst of a rapid and fundamental transformation that is ushering in the much-talked about information society. This transformation is bringing with it huge challenges for governments, the private sector and civil society in all aspects of life: education, health, economy, trade, communications, and culture.

Where does ITU fit in? The last ITU Plenipotentiary Conference, held in Minneapolis in 1998, adopted Resolution 73 calling for the holding of WSIS. Indeed, this resolution affirms that ITU is the organization best able to seek appropriate ways for developing a telecommunication sector that is geared towards economic, social and cultural development. The resolution goes on to recognize the central role which telecommunications must play in the emergence of the information society: "the globalization of telecommunications must take account of a harmonious evolution in policies, regulations, networks and services in all Member States."

Clearly, the inherently global nature of knowledge-based societies makes it vital for international dialogue to take place and for worldwide approaches to be considered in order to bridge the "digital divide" — an expression commonly used to refer to the uneven pace of progress in access to information and communication technologies. The Summit will be organized under the high patronage of the United Nations Secretary-General, Kofi A. Annan, with ITU taking a leading role in its preparations, in cooperation with interested UN and other international agencies and the two host countries, as well as the private sector and civil society. The anticipated outcome of the Summit is a Declaration of Principles and a concrete Action Plan for achieving the goals of the information society.

Expectations are already running high. The Summit must offer a chance for all interested parties to work together to establish a blueprint for the evolution of the information society in a manner that benefits all citizens. In this regard, the Council has invited the High Level Summit Organizing Committee (HLSOC) to consider means by which UN Member and Observer States, civil society, the private sector, and non-governmental organizations can participate in the Summit process. HLSOC, which I have the honour to chair, was set up last year and consists of Executive Heads of United Nations agencies interested in participating in the WSIS process and a representative of the UN Secretary-General.

The Council also decided to set up a liaison committee to consider ITU's involvement and contributions to the substance of the WSIS process, especially development issues and international information security aspects. This committee is made up of the two host countries and interested Member States of the Council, and will be under the leadership of the Chairman of this year's session of the Council.

We are actively seeking partnerships in this massive undertaking. I encourage all our Member States and Sector Members to join us in committing themselves to the preparations for the Summit in order to make it a success.

Yoshio Utsumi

Secretary-General
International Telecommunication Union



Reconciling opportunities and uncertainties

The term “broadband” conjures up visions of opportunities for individuals, companies and nations. But what does it mean? And what are these opportunities? How can we manage its development and uptake to maximize the potential benefits? How soon can a broadband future be realized? Perhaps the main reason for the interest and uncertainty is that broadband issues cut across previously separate industries of telecommunications, broadcasting, and information technology (IT). Therefore, experts from each of these converging sectors know only part of the story and need to be brought together to get the synergies from combining their knowledge.

ITU’s recent workshop on the “Regulatory Implications of Broadband” brought experts together to canvas the range of issues, perspectives and expectations on this complex topical issue. The workshop (Geneva, 2–4 May 2001) was the fourth in a series to be organized by the Strategy and Policy Unit under the ITU New Initiatives Programme, and was chaired by Deborah Hurley of Harvard University (United States). Mohamed Sharil Tarmizi of the Malaysian Communications and Multimedia Commission gave the keynote address, followed by presentations. Nae-Chan Lee (Republic of Korea) spoke on broadband service operational issues; Damien Geradin, University of Liege (Belgium), covered regulatory issues of infrastructure; and Mark Naftel of Norton Rose highlighted the market implications of technological neutrality (www.itu.int/broadband).

Apart from the briefing paper that ITU had prepared for the workshop,

along with a paper on government strategies to encourage broadband, the discussion was also based on specially commissioned case studies covering Australia, Italy, Malaysia and South Africa. Experiences of other countries and regions, notably Canada, India, the Republic of Korea and the European Union were another important contribution. Don MacLean (Canada), former Head of the ITU Strategic Planning Unit, led a roundtable discussion on the possible future role of ITU in broadband.

Defining broadband

There is no internationally agreed definition of broadband. The term is a moving target, and generally refers to a capacity to transmit information electronically. It allows for transmission of large amounts of information for bandwidth-hungry technologies and applications such as full-motion video or CD-quality audio. These applications are available on narrowband networks, albeit with slow download times or low quality.

Twenty years ago, anything faster than basic rate integrated services digital network (ISDN), which offered speeds of up to 144 kbit/s, might have been considered broadband. Over the last five years, as broadband networks based on either digital subscriber line (DSL) or cable modem technology have slowly been deployed, speeds of around 250 kbit/s and upwards are generally regarded as broadband. Strictly speaking, according to ITU-T Recommendation I.113, broadband means transmission capacity that is *faster* than primary rate ISDN, at 1.5 or 2.0 Mbit/s. For the moment, these

This article is based on ITU’s recent Strategic Planning Workshop on the “Regulatory Implications of Broadband”. It is followed by a series of short “stories” selected from a “Briefing paper”, prepared by Lucy Firth and Tim Kelly, Chief of ITU’s Strategy and Policy Unit.

*Strategic Planning
Workshop on
the "Regulatory
Implications of
Broadband"*

(ITU 010047)

speeds are rarely offered in interactive services to individual users (though higher speeds may be available for downloading than for uplinking).

A recent study carried out by the Canadian National Broadband Task Force notes that national definitions range from as low as 200 kbit/s to as high as 30 Mbit/s among the 14 countries studied. As these speeds become commonplace, no doubt the definition will continue to evolve.

Such definitions focus on broadband as a technical issue rather than taking a service-oriented approach. The workshop itself agreed that it was not necessary to define broadband in technical terms in order to engage in meaningful and productive debate. An alternative approach to defining broadband would be to state a minimum level of functionality, rather than a minimum speed. A service-oriented approach would nominate a particular application or service as the benchmark. For instance, any network capable of carrying full-motion video would fit the popular image of a broadband network. A service-focus approach is consistent with the argument that governments should stop focusing on transmission rates and instead focus on the services that are needed or wanted in each area and then determine what technology is required for those services.

Broadband networks can be used for communication of all kinds, for example, voice, data, radio and television, and can take many forms such as fibre, copper, wireless and satellite. Thus, traditional regulatory definitions may be overtaken by technological convergence. Issues such as cross-media competition, access to networks, and technology-neutral regulation place broadband at the centre of divergent policy and regulatory debates. What role should policy-makers play in stimulating investment in broadband networks? Do converged networks require converged regulatory structures?



Deborah Hurley

Photo: A. de Ferron (ITU 010046)

Regulatory challenges

The development of broadband is a global challenge and no single country or region can claim to have all the answers. It was clear from the workshop discussions that the transition to broadband could well pose new challenges to regulators that may require a radically different approach to how they do their jobs:

- Although most developed country markets already have competition in services provision, competition at the level of network provision has been slower to materialize, especially in the local loop. There are signs that broadband networks, because of their high barriers to entry and ability to deliver multiple services via the same point of entry, may have a tendency towards monopoly provision, at least for residential consumers. Consequently, regulators may need to review whether existing market structures are capable of delivering the competitive benefits they are seeking, and what safeguards might be necessary.

- At least in the early stages of network roll-out, broadband is costly to provide, especially in low-density rural areas and on a nation-wide basis. Consequently, governments may find that policy objectives, such as balanced regional development, are thwarted. Traditional concepts of universal service may also need to be revisited in a broadband future.

- Telecommunication tariffs have traditionally been charged, in most countries, by the minute, by the mile and by the megabyte (i.e., according to usage). In a broadband world, with higher entry costs but minimal incremental costs, other types of tariff structures might be more appropriate, for instance to offer “always on” services. Where regulators have applied controls to retail and interconnection tariffs on the basis of per minute charges (e.g., price cap regulation), a new approach might be necessary.

- In most countries, broadcast services such as television and radio have traditionally been regulated in a different manner from switched services such as telephone or fax. Equally, within the telecommunications world, voice services have often been treated differently to data services. Broadband blurs these distinctions and is forcing a move towards converged regulatory structures. Malaysia is one country that has changed its regulatory framework in order to accommodate convergence.

Consensus and hot spots

The consensus reached by the workshop was surprising not only because the participants were such a disparate group, but also because the topics on which agreement was reached were unexpected. There was consensus that:

- content is extremely important to market development and to national policy objectives;
- competition is not the be-all and end-all regulatory framework as it may have been perceived in the 1990s — national development, and access and equity issues may dominate in future infrastructure debates, just as they did in the past;
- it is not necessary to have a converged regulator to deal with issues of convergence. In fact, there was almost no debate over the possible need for a converged regulator. The content, style and consistency of regulation are what matter — not whether they are achieved by a single regulator or several regulators acting in concert.

There was little, if any, consensus on technological neutrality.

Discussion of the broadband market must be made not only without a concrete definition, but also with no hard data as to what is driving

demand. It appears that the market for broadband to the home is driven by the demand for interactive games, Internet and interactive television. There is even less data on the drivers for commercial broadband connectivity, though Internet and e-commerce applications are undoubtedly important.

Residential demand for broadband is largely for services that already exist (for example, television, Web browsing and e-mail) that could now be quicker (faster response times), more reliable, more convenient, and possibly cheaper. But the search continues for a ‘killer’ broadband application — an application that most consumers feel that they must have and that they cannot have without broadband. The three candidates that are put forward most often are:

- High-speed Internet access (permitting, for instance, quick downloading of higher-quality video clips or MP3 audio files).
- Interactive digital television permitting delivery of multiple channels with convenient subscriber access control, and some measure of video-on-demand, or a near equivalent.
- Interactive video games (see *Waiting for broadband*, page 8).

It may be that these three potential killer applications are effectively the same: multimedia entertainment. In the United Kingdom, for instance, the otherwise delayed uptake of broadband is being led by the demand for digital television, with 28 per cent of consumers receiving this service in April 2000. In the Republic of Korea, by contrast, it appears to be high-speed Internet delivery by DSL that is driving the residential broadband market (see *The Republic of Korea’s success with ADSL* on page 13).

National objectives

A broadband future (perhaps in the guise of an information society) is seen as a national objective by many countries, such as Canada, Denmark, Japan, Malaysia and Sweden.

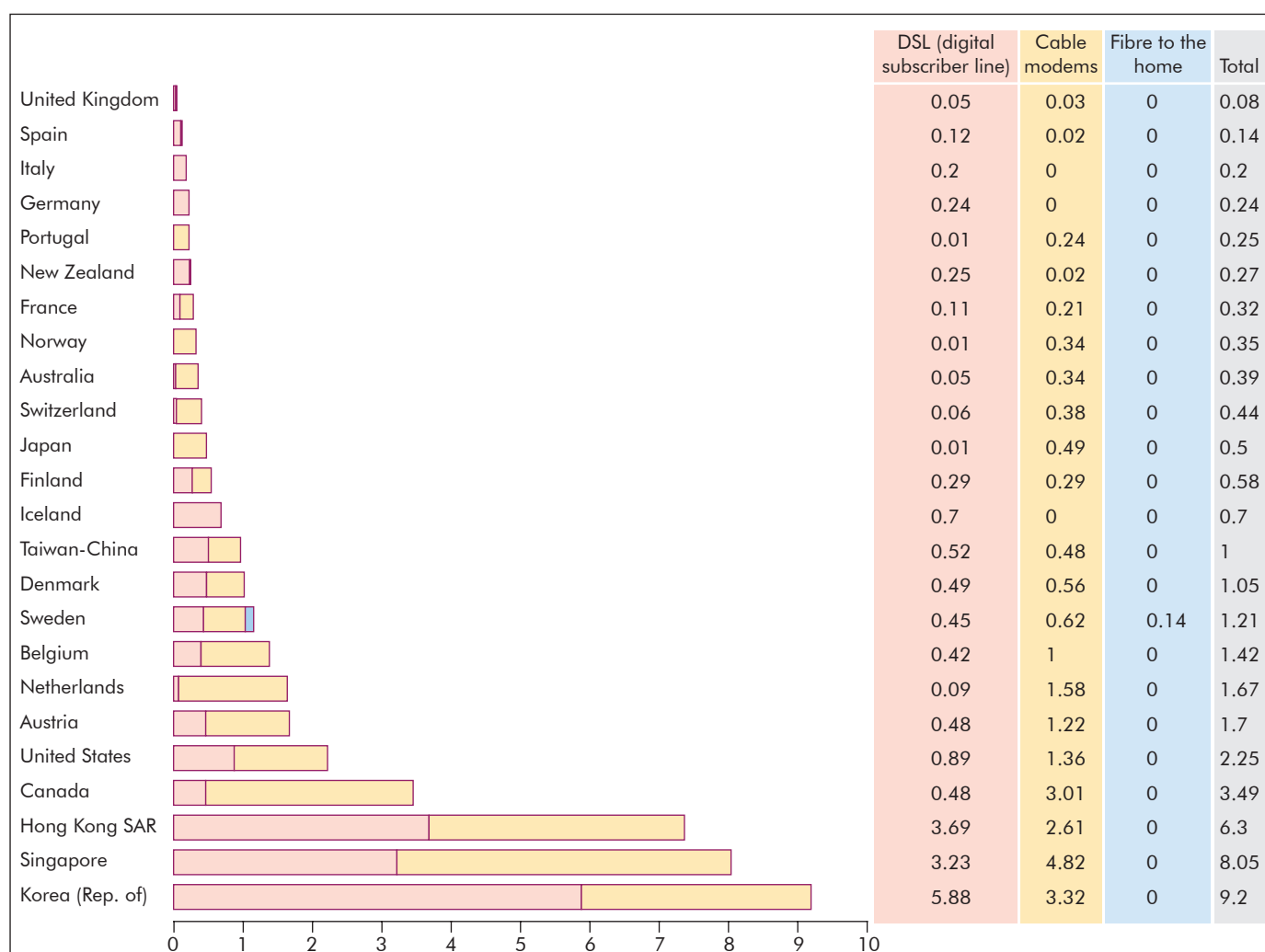
Some of the most pressing national objectives for broadband relate to content. Content in national languages is seen to be important to both maintaining a national identity, and becoming a knowledge economy (for example,

Malaysia, Singapore and South Africa). There seems to be concern that the Internet is used too much for entertainment rather than for serious pursuits of education, and on-line democracy (e-government). Other concerns indicate that the lack of quality content is stifling the growth of the industry. This camp argues that the benefits of broadband will emerge even if the driver of connectivity is access to entertainment (e.g., Australia and Italy). Denmark seems to have one foot in each camp by trying to grow the market for broadband through e-government initiatives.

A clear national vision should also prevent a downtown-centric approach in which wealthy areas of high-density use are catered for first.

What is preferred is an approach that identifies needs and focuses on satisfying them. The greatest needs for broadband connectivity may be to overcome the tyranny of distance (e.g., telehealth for remote communities — Australia and Canada) and the need for both space and high-tech applications (e.g., computer-aided design in heavy industry). Having said this, there was a lot of support at the workshop for the efforts of Malaysia, which has established a Multimedia Super Corridor with high bandwidth broadband connectivity to be a hotbed of broadband development. That corridor is part of an integrated national strategy rather than a simple downtown-centric approach to the issue (see *Malaysia's broadband future*, page 12).

Figure 1 – Broadband deployment, subscribers per 100 inhabitants (December 2000)



Source: ITU/OECD (2001).

Regulation to enhance broadband

There appears to be little understanding of what regulatory frameworks enhance the supply and uptake of broadband. While there are figures on the residential market penetration, and ITU collects data on national regulation, putting the two together to argue that a particular framework promotes broadband is a leap of faith few are prepared to make. The Republic of Korea leads the world with around one third of households connected to broadband (see Figure 1), either by cable modems or by asymmetric digital subscriber lines (ADSL). Both ADSL and cable modems are capable of supporting close to full-motion video that enables entertainment as well as information garnering and access to on-line democracy (e-government). The Korean success story can be largely explained by:

- Demand driven by a cultural predisposition to invest in education (for example, Internet for accessing information).
- Supply, facilitated by 90 per cent of households being within the range of ADSL (4 km).
- A competitive market-place in which many consumers can choose between ADSL or cable modems and in which many can also choose additional solutions, such as satellite or local area network (LAN) delivery of broadband.
- Affordability, enhanced by flat-rate tariffs.
- A centralised approach to developing the broadband market.

Canada also has a relatively centralised plan for broadband and a competitive market, but otherwise it has little in common with the Republic of Korea. The United States does not have a centralised plan and few consumers have a choice between broadband offerings. So, even at this general level, it remains difficult to see what determines a country's broadband success. Neither GDP per capita, nor level of industrialization, are good predictors (for example, Germany and the United Kingdom have a lower level of broadband penetration than Portugal).

Moreover, one of the most popular regulatory issues, that of unbundling the local loop, is not so clearly related to broadband success. The Republic of Korea has not yet unbundled, but other economies that are not doing nearly

so well have done so. Nor is there any clear link between unbundling and network investment. While it may be intuitively attractive to argue that allowing competitors to access the incumbent's local loop will deter investment in improved local loops, this does not seem to be the case for either the incumbent or new operators. Therefore, while it may be provocative to argue that unbundling the local loop may be tantamount to accepting that there will be no competition at the network level, to affirm so appears to be wrong.

Technological neutrality

While it might have been anticipated that, given the difference in perspectives over the issue of technological neutrality there would be heated debate, in practice the issues were more those of non-discriminatory regulatory treatment. For instance, some participants expressed concerns that requirements to unbundle the local loop were being applied to public telecommunication operators but not to cable TV operators. This leads to inconsistencies between markets. Similarly, it was observed that, among ITU Member States, provision of cable TV services by telephone operators is generally much more liberalized than provision of telephone services by cable TV operators.

Role of ITU?

Is there a possible role for ITU in helping to promote broadband networks? The main area for ongoing ITU work relevant to broadband is likely to be on standards development, especially in areas like multimedia services, quality of service and billing. ITU stewardship of scarce resources, such as spectrum or numbering plans is also highly relevant in this respect. In the Development Sector, advice to regulators on development of appropriate structures and the identification of future regulatory issues is likely to prove valuable. ITU can also play a valuable role in information sharing, especially among regulatory agencies. The main impact of broadband is likely to be convergence. Therefore, there may be a need to undertake in-depth analysis of the various forms and market implications of convergence in order to further shed light on the regulatory implications of broadband. ■

Waiting for broadband



While it may be true to say that, as yet, no single application has emerged that makes broadband a “must-have” service for consumers, there are many actual and potential applications for which broadband is a “must have” for suppliers. Indeed, because the arrival of broadband has been slower than was predicted by some, the commercial viability of the first-movers in these markets has been seriously challenged. Here are just three examples of the many applications that are “waiting for broadband”.

Video games. The latest games consoles, such as Sony’s *Playstation 2* or Microsoft’s X-box, come ready armed with Internet connections, DVD drives and high-powered graphic chips which make even top of the range personal computers seem slow. However, gamers are amongst the most demanding interactive users. For them, even the slightest delay between a signal being sent and a response being shown on screen is intolerable. So, while many video-game companies see the Internet as a way of earning new revenues, today’s narrowband networks just won’t cut it. A high-speed broadband connection could make the business models of companies such as SegaNet (www.sega.net) actually make sense. For gamers, a broadband connection opens up the chance of playing against friends and unknown rivals and also offers a chance to try out new games before purchasing them. For suppliers, the idea of pay-per-play, as well as monthly subscription income (SegaNet charges USD 21.95 per month) promise to provide a more even revenue stream than the

normal pre-Christmas rush for the latest software and consoles.

Short films. In an entertainment world that is dominated, on the one hand, by Hollywood blockbusters and on the other, by television, it is not easy for makers of short films to get airplay. Short films fit within the 30 seconds to 30 minutes category and may be animated or real-life. Many offer short visual jokes or spoofs of advertisements. While the Internet, as potentially the largest video-library in the world, provides an obvious outlet for short films, viewers with 56 kbit/s may still end up spending many minutes, if not hours, downloading the film of their choice. When it arrives, the picture might be small and the quality, for streaming media, poor. This turns off users, which turns off potential advertisers. Broadband promises to cut through the log-jam and is a godsend to companies like AtomFilms (www.atomfilms.com) which have been waiting patiently since 1998 for it to arrive. In the meantime, many of its competitors have gone bankrupt and AtomFilms itself has only survived by using the Internet as one of many distribution channels. But every new broadband subscriber increases its potential market.

Application service providers. The basic idea behind an application service provider (ASP) is that, instead of buying packaged software on a CD-ROM, subscribers would rent it and pay for it either on a “pay-as-you-go” or on a flat rate monthly fee basis. Similarly, instead of hosting your own website, you could outsource this mission-critical task. For the software

company, selling via an ASP offers a new marketing channel, allowing potential users to try out software without heavy up-front costs but without the possibility to make an illegal copy before returning it to the vendor. For the user, buying from an ASP means that you always have the very latest release of the software available and an online help facility when problems arise. Market leaders in the business include Usinternet-working (www.usi.net) and Loudcloud (www.loudcloud.com). But perhaps the big-

gest splash to date was made by Microsoft's announcement of its .Net strategy, which promises to change the way software is sold and used by making it available over the Internet from anywhere in the world. Like the other applications listed above, such a move from local to distributed-information storage depends crucially on being able to have equivalent access speeds over a wide-area network to those enjoyed over a local area network. Again, that sounds like a job for broadband. ■

What role for government in promoting network development?

There is a long history of direct government involvement in infrastructure projects. The origins of both the telegraph and the telephone networks are tied up with the State in most, though not all, countries. Governments also played an important early role in establishing satellite networks. Governments in Europe ensured that GSM was adopted as a regional standard for cellular mobile. The US government funded the development of the Internet during its early formative years. But times have changed. So, what is the proper role of government in a market characterized by open entry and competition? Should a government play a role in promoting broadband, even if it risks favouring one firm, or selecting one technology, over another? Equally, can a government afford not to intervene if its industrial competitors and trade partners choose to do so?

Because the history of competition in telecommunications is still so recent, and because the opportunity to build a new network comes along so rarely, there is no real precedent for addressing these questions. But there are cer-



Broadband networks can be used for communication of all kinds, for example, voice, data, radio and television, and can take many forms such as fibre, copper, wireless and satellite

Photo:
PhotoDisc
(ITU 010051)

No single "killer application" has yet emerged to drive broadband consumer demand. One candidate application often put forward is interactive digital television permitting delivery of multiple channels with convenient subscriber access control



Photo: PhotoDisc (ITU 010050)

tainly signs that governments are not willing to sit on the sidelines:

- In Europe, the European Commission took the unusual step, in December 2000, of issuing a 'Regulation' in order to force the pace of local loop unbundling.
- In the United States, government funds have been directed to creating a "next-generation Internet".
- In Singapore, the government has played a leading role in creating the "Singapore One" nationwide broadband network not only as a way of delivering its services to its citizens, but also as a way of establishing a lead for the city state in the global information economy.

At the regional and city level too, local government has sometimes taken on a more active role as a potential supplier of broadband services. In Stockholm, for instance, a company called *Stokab AB*, which is jointly owned by the City of Stockholm and the County Council, is building and operating a fibre-optic network, on an operator-neutral basis. It acts as a wholesaler, offering dark fibre to operators that provide services to business and residential customers. As of early 2001, it provided 3500 km of fibre-optic cable (with 400 000 km of individual fibres). The cities of Concord (Massachusetts), Lynchburg and Palo Alto in the United States have taken a similar approach. City and

regional development agencies have sometimes taken the initiative in creating science parks or other zones (see *Malaysia's broadband future*, page 12), which are ready-cabled for broadband access, in an attempt to attract high-tech investors. One advantage that city governments sometimes have is control of rights of way and access to homes and business, for instance via water or sewerage pipes that can be used for laying cable.

But the early signs are that broadband may not take off as quickly as might have been hoped or expected. Access technologies such as digital subscriber line (DSL) or cable modems, have been deployed only slowly, partly due to technical difficulties but also because the price was often prohibitive for consumers. Unbundling of the local loop has been delayed by regulatory and pricing disputes. No single "killer application" has yet emerged to drive broadband consumer demand. One of the applications that might have filled this role — free music on-demand delivered by services such as Napster — has been declared to infringe copyright.

The worst news of all for those promoting broadband is the fact that, since the dot.com stock market bubble burst in March 2000, an estimated USD 1 trillion has been wiped off the share values of firms in the technology, media and telecommunications sector. That precipitous decline has left venture capital firms, who might otherwise be expected to underwrite the investment in broadband networks, extremely wary of long-term investment. There are many competing demands on a public telecommunication operator's purse strings — bidding for third generation (3G) mobile licences, entering foreign markets, and diversifying through acquisitions — so that unless there is a strong competitive push to invest in broadband networks straight away, the temptation will be to wait until the economic climate looks better.

At the start of the new millennium, following a period of sustained economic expansion driven by information and communication technologies (ICT), the world is once again facing recession. In previous recessions, governments have sought to kick-start economic growth by infrastructural investment projects. Could they, would they, should they do so again? ■

Competition between media

AT&T, AOL and the FCC go head to head on the open access issue



Photo: PhotoDisc (ITU 010049)

The mergers of AT&T with Media One, and AOL with Time Warner have produced the two largest cable companies in the United States. Previously, as an Internet service provider (ISP), AOL together with more than 100 other ISPs, including Mindspring had established the openNet coalition to fight for access to cable television pipes. AT&T had fought against opening their assets to companies that did not contribute to the cost of installation. One of their main arguments was that the cost of upgrading to enable ISP access would be an excessive burden on them at an estimated cost of USD 120 billion. In an about face, AT&T-Media One announced an exclusive agreement for ISP services with Mindspring until the end of 2002. Proponents of open access welcomed this admission that, while technically challenging, sharing with ISP was viable. Meanwhile, AOL Time Warner has remained a member of openNET though it now favours commercial negotiation rather than regulation. In fact, it has entered

an exclusive access agreement with the ISP Road Runner.

The open access lobby continues to fight in local and state courts on the grounds that competition will be good for the industry and the consumer by promoting growth and interconnectivity. The counter argument is that the roll-out to date has been extensive, has directly benefited consumers by enabling the service, and has indirectly benefited the industry by promoting innovation. Without the roll-out, there would be no network, no services and no prospect of competition. AT&T has threatened that those cities that impose burdensome open access regulations will be the last to see broadband.

The FCC has been pleased by the agreements with Road Runner and with Mindspring, which they see as evidence that the nascent industry is opening up under market conditions. Further evidence of competitive service provision is that digital television services are available by satellite. Digital direct-to-home satellites are pulling ahead of digital cable television. The benefits include the element that coverage is instant across an entire region rather than rolled out on a neighbourhood by neighbourhood process. While both satellite and cable offer digital video services, interactive services are more prevalent among satellite. Therefore, while prospective entrants to the market are fearful that they will not have access in time to build the market in a way that suits their companies, the FCC has decided against intervention. ■

Malaysia's broadband future



Malaysia began preparing for a broadband future as early as 1994 when it established the National Information Technology Commission (NITC) and set about identifying possible barriers to an IT-led leapfrog towards developed-nation status. A major finding was that too many regulations (and too many regulators) did not suit the needs of industry. Subsequently, the Communications and Multimedia Commission (CMC) was established in 1999 under the Communications and Multimedia Act to regulate the activities of:

- Network facility providers, regardless of their transmission medium.
- Network service providers, regardless of the network technology.
- Application service providers, regardless of whether the service is voice, data, broadcast, video, radio, etc.
- Content applications service providers, regardless of transmission medium and application.

The CMC can therefore be regarded as a converged regulator with a technologically neutral stance.

However, there are legacy regulations that are not yet consistent with a totally converged environment. For instance, universal service obligations relate only to basic telephony, and the interconnectivity regime does not require local loop access to applications other than telephony. The main regulatory reform expected over the next two years is a complete review and modification of this legacy regulation.

Malaysia's obsession with all things to do with multimedia means that preparation for a broadband future has involved much more than changing the regulatory framework. The seed-bed is the Multimedia Super Corridor (MSC) with its totally planned 'Silicon Valley' environment, in a manicured tropical garden setting. The business hub of Cyberjaya (*jaya* is Malay

for prince) and the neighbouring new national administrative capital of Putrajaya have universal broadband connectivity, smart houses and the world's first multimedia university. At present, 40 of the top 50 "world class companies" that Malaysia sought to attract have a presence in the MSC.

At a national level, the government has established several programmes to kick start broadband use by individuals and companies, including:

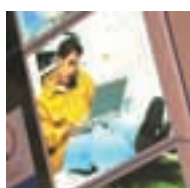
- **E-services:** bringing access to government services to individuals and companies.
- **E-labour market:** where the government acts as an agent bringing together workers and companies.
- **E-procurement:** where government agencies buy common requisites.
- **Smart schools:** targeting the one-third of the Malaysian population of school age.

These programmes are currently being piloted in the MSC. But, there are many barriers to overcome before a national roll-out of broadband-based services will succeed. While the broadband backbone is in place, connectivity to homes and small businesses is still via twisted copper wires that will not carry broadband capacity. With no history of cable television, cable modem access is an unlikely future. Therefore, with the incumbent's local loop not unbundled, companies seek wireless solutions for the last mile. These solutions are hampered by lack of spectrum allocation in ranges far enough away from 2.4 GHz to be robust in tropical weather.

In some states, 25 per cent of households do not have mains electricity, and 35 per cent of households do not have a telephone. Although there are some community telephone and Internet services, some citizen live as many as three days walk from the nearest telephone!

Source: ITU Malaysia country case study, available at www.itu.int/broadband. ■

The Republic of Korea's success with ADSL



Since the introduction of Internet services in 1994, the Republic of Korea has experienced an explosion in the size of the Internet service market that had grown to 19 million users (38 per cent of the population) by December 2000. This has been followed by a boom in broadband Internet access.

With fierce competition in the broadband Internet access market, the number of subscribers reached more than 4.6 million in February 2001 (one in every four households). Although broadband access via cable television networks came first, with the launch of a cable modem service by *Thrunet* in July 1998, it is asymmetric

digital subscriber line (ADSL) services that have taken off faster. By February 2001, the majority of broadband subscribers (almost 3 million) were using ADSL, with *Korea Telecom* supplying more than 70 per cent of the market. Next in popularity is broadband Internet via cable television networks (1.5 million subscribers).

Behind this successful uptake of broadband Internet, one of the fastest growth rates in the world, lies the Government's strong policy drive. This involved drawing up a long-term plan for broadband Internet infrastructure back in 1995, and implementing various information projects aimed at creating demand for ICT services



ITU TELECOM ASIA 2000 at the Hong Kong Convention and Exhibition Centre

Photo: A. de Ferron (ITU 004404)

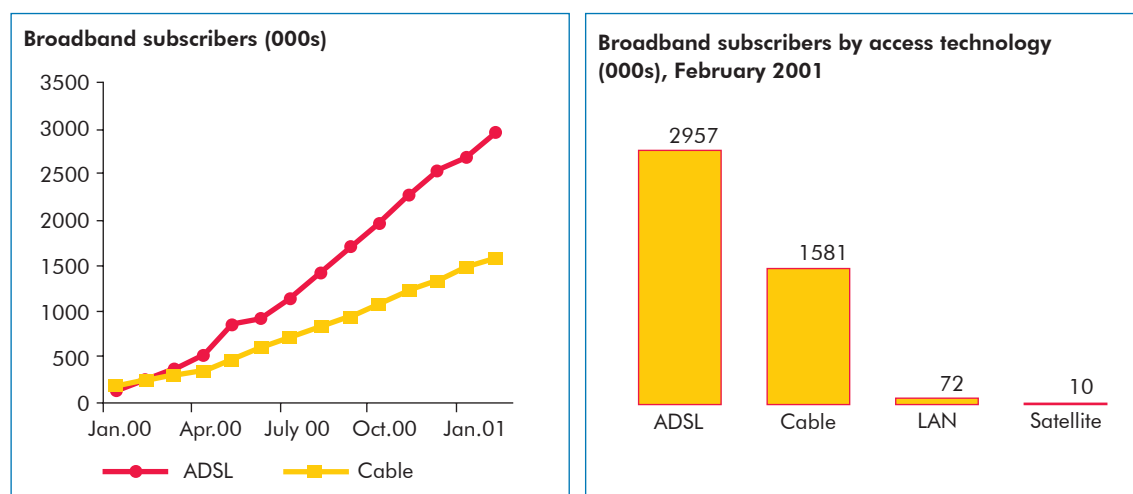
Here, thanks to its early start, Thrunet controls just over half the market but there are at least six companies offering services. Local area network Internet services to larger apartment complexes and satellite-based Internet services account for the rest of the broadband Internet subscribers.

The pattern of household residents in the Republic of Korea can explain, in part, the success of ADSL. More than 90 per cent of households live within 4 km of a local exchange. Most offices and half of the households, about 7.5 out of 15 million, are in apartment complexes. With short distances, not only is one of the main disadvantages of ADSL technology avoided, but also economies of scale are achieved in providing ADSL service using fibre cable.

service providers utilizing different access technologies. The explosive growth in subscribers is attributed to competition between multiple operators and services, which has had the effect of lowering prices even during the early phase of market development.

One application that has proved popular for broadband subscribers, perhaps surprisingly, is voice telephony. Although, telephone calls only require a fraction of the bandwidth offered by a broadband connection, the flat-rate pricing structure makes it a popular application when combined with a technology such as "Voice over DSL". Some Korean service providers, notably *Serome Technology* (Dialpad.com), offer domestic IP telephony free of charge, at least initially. The growth of broadband has

Broadband access in the Republic of Korea over time and by access technology



Source: Korean Ministry of Information and Communications.

Behind this successful uptake of broadband Internet, one of the fastest growth rates in the world (see Figure 1, page 6), lies the Government's strong policy drive. This involved drawing up a long-term plan for broadband Internet infrastructure back in 1995, and implementing various information projects aimed at creating demand for ICT services. For example, providing all primary and secondary schools with free Internet access. Moreover, competition in the broadband Internet access market spurred an aggressive tug-of-war among facility-based

coincided with a rapid expansion in the number of IP telephony subscribers, who numbered around 7.6 million in the country by year-end 2000 (see the ITU IP telephony country case study, available at www.itu.int/wtpf/casestudies/korea.pdf).

In order to further drive the growth in the broadband Internet access market, the government was scheduled to implement open access for ISPs and unbundling of the local loops of incumbent public telecommunication operators in early 2001. ■

The process of local loop unbundling in the UK



As DSL offers the greatest potential for broadband access in the near future for both small-and medium-sized enterprises (SME) and residential consumers,

BT's network is considered too valuable a resource to leave in monopoly control. The Office of Telecommunications (OfTel), the United Kingdom's regulator for the telecommunications industry, consequently decided to mandate that BT open its local loop to competitive service providers, even though BT itself was planning to introduce ADSL services. OfTel considered two options to achieve unbundling:

- BT would make local access lines available to other operators. This would give operators the flexibility to create their own access offerings choosing when and where to roll out, and the technology with which to upgrade the lines.
- Service providers and operators could access customers over BT's upgraded network. This enables access to a number of customers without the need for significant investment in infrastructure, but is less flexible than the first option.

On the balance of cost-benefit analyses, the first of these options was adopted. The operator purchasing the service would be able to install equipment in the local exchange (as BT makes space available) and on customer premises. There is to be no limit on the technology used to upgrade the loop other than the adherence to certain technical standards. Competitive operators should be able to offer services on or before 1 July 2001 under the following conditions:

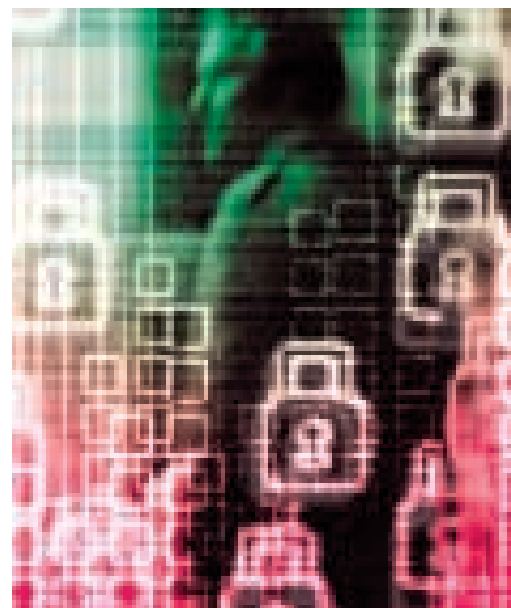
- Unbundled loops and collocation will be available to operators with interconnection rights and obligations.
- Loops are available at a cost-based price, allowing for reasonable profit.

By January 2001 it was apparent that the plans to unbundle the local loop were failing, despite BT's attempts to separate ownership and service delivery over the local loop, and even though BT announced that it would commence collocation in April 2001 rather than July, to enable competitors to establish broadband equipment in its local exchanges. When the first 25 of BT's exchanges were open to collocation bids, its rivals placed orders for only 14 of them.

The prices proposed by BT and the loss of investor confidence in the telecommunications sector apparently had a dissuasive effect.

In February 2001, the UK Government decided against spending GBP 1 billion (USD 1.43 billion) to upgrade telephone exchanges to make them compatible with DSL. It had been anticipated that the Government would pay for the upgrade of the exchanges in order to resuscitate the ailing plans for "broadband Britain", in the face of BT's delay in unbundling of the local loop. At issue is the question of who should

pay for the upgrade of the exchanges. The upgrade is needed because voice over DSL (VoDSL), as a digital signal occupies only part of the DSL channel and so must be treated before connection with the PSTN. ■



Access technologies such as digital subscriber line (DSL) or cable modems, have been deployed only slowly, partly due to technical difficulties but also because the price was often prohibitive for consumers

Photo: PhotoDisc (ITU 000081)

Ready for change?

Reform matters

After ten days of intensive debate under the chairmanship of Yuri Grin, Director-General at the International Department of Russia's Ministry for Communications and Informatization, the ITU Council reached important conclusions. Mr Grin took over the baton from Kathleen G. Heceta, Deputy Commissioner, National Telecommunications Commission (Philippines). This article looks at

report; and a contribution from the Chairman of the Radio Regulations Board on the report of the WGR. Between December 1999 and April 2001, WGR held four meetings under the chairmanship of Lyndall Shope-Mafole, Plenipotentiary Minister of Communications at the Embassy of South Africa in Paris. WGR came up with 40 recommendations, a number of which relate to the Union's future and call for amending its

"For ITU, the most important question and task is to determine the place it wishes to occupy and can occupy in the 21st century, and to map out the policies and procedure by which it will achieve the new position it seeks."

Yuri Grin
Chairman, Council
2001
(ITU 010054)



reform issues. Other Council decisions and conclusions will be reported in the next issue of *ITU News*.

Delivering on its promise made last year, the Council spent several days discussing reform matters. Specifically, the Council considered the report of its Working Group on ITU Reform (WGR), alongside other papers. These included the report of the Secretary-General and of the Directors of the Union's three Bureaux on the review and improvement of the management, functioning and structure of ITU; the report of the United Nations Joint Inspection Unit on management and administration in the ITU, together with the comments of the ITU Secretary-General on this



Joseph Richardson
(United States)
Vice-Chairman
Council 2001

Photos:
A. de Ferron
(ITU 010055)

Constitution and Convention. To this end, the Council passed a resolution establishing a group of experts, to be assisted by the ITU Legal Affairs Unit. Some recommendations represent incremental reforms and improvements to the Union's working practices and have been either approved by the Council and are to be implemented with immediate effect, or will be approved at its 2002 session. Other recommendations remain contentious and will be conveyed without further ado to the Plenipotentiary Conference (PP-02) to be held in Marrakesh (Morocco) from 23 September to 18 October 2002 (see pages 17–20 on how the various recommendations have been handled).



Recommendations on urgent reforms to be implemented with immediate effect

□ **SAT-BAG for Satellite Backlog Action Group.**

In the Radiocommunication Sector (ITU-R), the backlog in the processing of satellite network filings continues to cause concern, despite measures adopted so far to deal with it. This backlog is a symptom of different problems, including overfiling or “paper satellites” and the complexity of the current regulatory framework — the Radio Regulations. The Council recognizes that a coordinated rather than a piecemeal approach to treating the complex and related issues surrounding the backlog is a suitable way forward and has passed a resolution establishing its own working group, known as Satellite Backlog Action Group (SAT-BAG) to prepare and oversee a coordinated approach. This resolution also urges Member States to refrain from submitting to the Radiocommunication Bureau (BR) satellite networks that have little likelihood of being brought into use. Furthermore, it recommends that the Radio Regulations Board (RRB) develop, as a matter of urgency, a set of Rules of Procedure, consistent with the Radio Regulations, intended to eliminate the backlog. SAT-BAG will be chaired by Keith Wittingham (United Kingdom) and is to submit a progress report to the next World Radiocommunication Conference (WRC) in 2003. In addition, the Council agreed to increase resource allocation in the 2000–2001 and 2002–2003 budgets for immediate action to reduce the backlog. It further requests BR to make an appropriate reallocation of resources so as to meet the collective requirements of the African countries relating to the implementation of the RASCOM project, the first telecommunication satellites dedicated to Africa.

□ **Radio Regulations Board.** The Council confirms that the role and tasks of RRB, as an independent entity, should include taking unbiased decisions regarding BR’s findings and approving Rules of Procedure which the latter develops.

□ **Telecommunication Standardization Sector (ITU-T).**

Recognizing the need to improve awareness of ITU-T products and services, and the image of the Union in general, the Council instructs the Secretary-General and the Director of the Telecommunication Standardization Bureau (TSB) to define and implement a corresponding promotion strategy and to allocate appropriate resources in the budget for this purpose.

□ **Strengthening the financial base of the Union.**

The feasibility of replacing ITU’s current centralized financial management system with a system of budgets managed by the Sectors should be studied (including the implications of allocating a limited budget resource to the Sector advisory groups), with a view to identifying advantages and disadvantages. The secretariat is to carry out this study and submit its findings to the Council in 2002 for review.

□ **Human resources management.** The Council recognizes a certain lack of flexibility in the existing Staff Regulations and instructs the Secretary-General, in cooperation with the Directors of the Bureaux, with the full participation of the staff representatives, to prepare a comprehensive report for its session in 2002 on effective human resources management. This task could entail possible revisions of the Staff Regulations and measures to provide greater incentives for staff mobility and career development and to improve the geographical and gender representation in the professional and higher categories of the staff of the Union. The Council also decided to establish an ad hoc working group open to all its Member States, with the participation of the ITU management and staff representatives. This group will meet to examine the comprehensive report and transmit its conclusions to the 2002 session.

□ **Use of ITU official and working languages.** In order to reduce costs, electronic document handling systems, including machine

translation with subsequent post-editing, should be used more widely. The keyboard languages of the computers available to delegates at ITU headquarters should include all six official languages.

□ **Plenipotentiary Conference.** The Council considers that it would be helpful if its 2002 session identified issues of particular importance for the Plenipotentiary Conference on the basis of which delegations could start their preparations.

□ **The Council.** In order to provide for a smoother transition and continuity in chairing its sessions, the Council recommends the adoption of a *troika* system (in which the past, current and future chairmen work together). These three members (troika) would fulfil their role both during, and between Council sessions. The troika will not be a new body with any kind of power and competence but, rather, an informal group acting cooperatively to help new chairmen, thus facilitating the work of a future session—the Council decided to give it a try. On the basis of the experience gained, Council 2002 will discuss the troika scheme in greater depth and decide whether it is necessary and if so, the changes needed to formalize it. In another recommendation, the Council states that the timely distribution of documents for its sessions in six working languages should be addressed as a matter of utmost importance. The Council has further recommended the introduction of an information circular, specially designed for councillors, that would be sent to them at regular intervals of one month. This circular will outline the major activities and decisions that the ITU management is engaged in or considering.

□ **World Telecommunication Development Conference.** The WTDC should focus on higher-level policies and priorities and act as a forum for the discussion of specific themes of interest to all its membership and in particular, to developing countries. On the holding of the forthcoming WTDC, the Council passed a resolution welcoming the invitation of the Government of Turkey to host the event in Istanbul from 18 to 27 March 2002. It also approved a draft agenda focusing on the assessment of the implementation of WTDC-98 resolutions

and recommendations, general policy and strategy issues, operational and technical issues and a special session on bridging the digital divide.

□ **ITU regional presence.** The Council passed a resolution instructing the Coordination Committee (ITU's elected officials) to undertake a review of the functions of the regional offices and their financial and human resources. This review will focus on a number of objectives: identify functions that could be decentralized in order to expand and strengthen regional offices; ensure that regional meetings are organized in the different regions by the relevant ITU Sectors, and especially ITU-D; provide the regional offices with increased autonomy in terms of their ability to disseminate information, provide expert advice, and host meetings, workshops, or seminars; identify functions relating to the preparation and implementation of the budgets of the regional offices that may be delegated to them; ensure that the regions participate effectively in discussions on the future of the Union and on strategic issues concerning the telecommunication sector. The Secretary-General is to submit to the Council, at its 2002 session, an action plan setting out the measures to be undertaken in order to achieve these objectives.

Furthermore, when reviewing the issue of regional presence, the Council will give urgent consideration to the need to draw up and implement an action plan for consolidating the ITU regional representation and its relations with inter-governmental regional organizations.

□ **ITU TELECOM.** The Council recommends that TELECOM should be subject to full cost recovery. This is subject to review in 2002. The TELECOM surplus should be used to the benefit of all ITU members. No change would be needed to Resolution 11 (Rev. Minneapolis, 1998) governing this surplus, but some clarification is required as to what the term "significant part" used in the resolution means in terms of percentage. A report on the use of the TELECOM surplus should be made to the Council each year. TELECOM venues should be chosen by means of an open, transparent process, notes the recommendation. ■



Recommendations transmitted to the Group of Experts to prepare draft legal texts and resolutions for PP-02

□ **Mission and role of ITU-D.** In the light of on-going developments in the telecommunication environment, the mission and role of ITU-D should be strengthened to concentrate on the needs of Member States and Sector Members from the developing countries, and to provide a forum for policy-makers, regulators and Sector Members from these countries to meet among themselves, as well as with those from developed countries to share information, experience, and ideas on policy and regulatory matters with the aim of fostering development. — *All councillors expressed their support.*

□ **Project management groups** should replace study groups in ITU-D. — *Around four councillors expressed objections.*

□ **Telecommunication Development Advisory Group (TDAG).** The Constitution and Convention should be amended to allow a WTDC to assign specific matters within its competence to TDAG, indicating the action required on those matters. As a first step, WTDC-02 should consider assigning specific matters to TDAG, pending approval of this amendment by PP-02. — *One councillor objected.*

□ **Funds-in-trust.** Revenues generated by the Telecommunication Development Bureau (BDT) in implementing funds-in-trust and other similar projects should be maintained for development projects. In order to do so, the support-cost expenditure for these projects should be outside the limitation on expenditure of the Union. — *All councillors expressed their support.*

□ **Sector Member contributions** should go directly to the activities of their Sector. — *Around ten councillors expressed objections.*

□ **A rolling four-year financial and operational plan** should be produced by the Sectors and the General Secretariat immediately after PP-02 and could be reviewed by the Sec-

tor advisory groups, approved by the Council and linked with the Strategic Plan and the biennial budget-setting exercises. — *All councillors expressed their support.*

□ **Use of ITU official and working languages.** On the basis of an analysis of the first stages of the transition to full-scale use of the six official and working languages, a possible time-frame for such a transition could be 1 January 2005, pending a final decision at PP-02. — *One councillor proposed 2003 instead of 2005.*

□ **Plenipotentiary Conference.** The experience of WRCs should be emulated and a similar approach that encourages interregional consultative meetings should be adopted for plenipotentiary conferences. The recommendation goes on to suggest that PP-02 should pass a resolution on the importance of interregional consultative meetings, instructing the Secretary-General to organize such meetings. — *One councillor noted that interregional preparatory meetings should be held under the aegis of the ITU.*

□ **Deadline for presentation of candidates to elective posts.** The deadline for presenting candidates should be two weeks prior to the start of the conference. — *All councillors expressed their support.*

□ **Sector Members in the Council.** Representatives from Sector Members should be given observer status in the meetings of the Council and advisory groups should develop criteria for the selection of these representatives. It is further recommended that observers coming from Member States and Sector Members should be given the right to participate actively in the Council's Standing Committee on Finance, but without the right to vote. — *Around eight councillors expressed objections.* ■

Recommendations to be forwarded directly to PP-02 for further discussion

□ **Radio Regulations Board.** The role and tasks of RRB, as an independent entity, should include ensuring that the Rules of Procedure are developed in a transparent manner and approved without possible adverse effect on Member States. *(A number of councillors expressed objections.)* Another recommendation proposes a reduction in the number of RRB members, noting that such a reduction should be consistent with principles of efficiency and geographical distribution. *(A majority of councillors expressed objections.)* There is a further proposal that RRB should continue to function as a part-time board.

□ **Pilot Forum (ITU-T reform).** The much-debated proposal to establish a Pilot Forum for global standardization under the umbrella of ITU brought as much life in the discussion as it had at WGR itself. In essence, the WGR recommendation proposes that the Council should: request the Director of TSB to provide to PP-02 a report on the activities of TSAG in relation to a Pilot Forum; recommend to PP-02 to consider whether to implement in ITU-T a two-stage process for the final approval of technical Recommendations in which both Sector Members and Member States participate; recommend to PP-02 to consider whether a Forum should be established and, if so, how. *(Around 15 councillors expressed objections.)* The Council agreed that further work on this issue should continue within TSAG where good progress had already been made and that more work would be done at its session next year.

□ **Strengthening the financial base of the Union.** As a means of ensuring a timely response to unanticipated demand for services under cost recovery, while at the same time allowing the membership, through the Council, to maintain control over the expenditure and income in the budget, one of the following options should be proposed to PP-02: either the ceiling or limit on expenditure should be removed, while maintaining the limit on the value of the contributory unit or, if a ceiling on expenditure is still considered necessary, activities provided under cost recovery should be considered to be outside such a ceiling. — *Two councillors expressed objections.*

□ **Policy statements at plenipotentiary conferences.** The time allocated to policy statements should be standardized so as to minimize the

amount of time used for this purpose during the conference. To this end, it is suggested that policy statements should be made during the first week of the conference and should be as short as possible (five minutes). Policy statements that have not been made during the first week may only be made available in writing. All written policy statements should be made available on the website of the conference. — *All councillors expressed their support.*

□ **Election procedures and deadline for presentation of candidates.** There should be stable procedures for all elections. The idea is to adopt standing rules that would become a chapter of the General Rules of Procedures and would be referenced in the Constitution rather than developing and adopting new rules at each Plenipotentiary Conference. A fixed deadline for the presentation of candidates would also facilitate a more efficient use of the time of the conference. — *A special group led by Germany will make recommendations on election procedures.*

□ **Number of elected officials.** The feasibility of changing the current electoral systems and the number of elected officials should be studied with a view to identifying advantages and disadvantages, taking into account the intergovernmental nature of the Union, while maintaining the need for expertise and competence as well as the principle of equitable geographical representation and distribution among all regions of the world. — *Around ten councillors expressed objections.*

□ **World Telecommunication Policy Forum.** Clarification will be required to distinguish the role of WTPF from that of WTDC. — *The Council agreed to consider this recommendation in more detail at its 2002 session.*

□ **Secretary-General and Deputy Secretary-General.** Issues related to a possible reassessment of the tasks and roles, including responsibility, authority and accountability, of the elected officials of the Union are considered to be very complex and cannot be dealt with in isolation from the role of the Council and changes to the internal management. Such issues need further and deeper consideration at a later stage. It is further recommended that the role of all the elected officials should be clearly stated in the basic instruments of the Union. — *All councillors expressed their support.* ■

ITU TELECOM AFRICA 2001

The next ITU TELECOM event, AFRICA 2001, is around the corner. With the support of the Government of the Republic of South Africa, which is hosting the event in Johannesburg from 12 to 16 November, AFRICA 2001 is expected to be the one place this year where the continent's policy-makers, industry experts and innovators can meet and share with each other the progress they have made for the benefit of the world's people since the last regional show in 1998.

"We have made great advances since AFRICA TELECOM 98, with many millions of telephone lines having been installed across the continent. Millions of people have signed up for mobile cellular service. And hundreds of thousands of users are coming to the Internet for the first time", says Yoshio Utsumi, ITU Secretary-General, in a special brochure for ITU TELECOM AFRICA 2001.

"But access to any telecommunication services, let alone modern telecommunication services, is still far from universal in Africa. And that must remain the yardstick by which we, as an organization, as well as governments and politicians, should be measured", Mr Utsumi adds. Universal access to modern telecommunication services is not an unrealisable dream, the Secretary-General also notes, stating that "it is relatively easy to achieve this goal, given sufficient political will". AFRICA 2001, therefore, promises to be a launch pad for the rapid development of the continent's information and communication technology infrastructure.

It will focus on exciting opportunities of growth throughout Africa. "This unique event offers a real opportunity for us to bridge the digital divide and to bring modern communication services within reach of all of Africa's people", comments South African President, Thabo Mbeki. South Africa itself has made dramatic improvements in developing a modern telecommunications infrastructure. "In April 1994, when we achieved democracy, South Africa had about 3.5 million main telephone lines in operation and cellular telephony in the country was at its infancy. Just six years later, in the year 2000, we had 5.5 million main telephone lines and 5.3 million mobile subscribers. By the time AFRICA 2001 takes place, we expect there to be over ten million cellular subscribers," Mr Mbeki also notes.



Thabo Mbeki
President of the Republic
of south Africa

Photo: A de Ferron (ITU 980080)



Meet the future, and bridge the digital divide



Photo: J.-M. Micaud
(ITU 930064)

AFRICA 2001 continues the winning ITU TELECOM formula of combining an Exhibition and a Forum. The Exhibition will feature a comprehensive range of telecommunications-related products and services, while the associated Forum will focus on the latest telecommunication developments in the region and will provide a platform for telecommunication leaders to share their ideas on future trends and discuss appropriate strategies for develop-

ment. The Forum will also be enhanced by a TELECOM Development Symposium, and will feature, for the first time, a Youth Forum.

AFRICA 2001 is your opportunity to see the future shape of telecommunications on the continent and to network with leaders in the world of telecommunications as they work to bridge the digital divide.

The Gallagher Estate

AFRICA 2001 will be taking place at the Gallagher Estate, which is situated within easy reach of Johannesburg's northern suburbs, airports and major concentration of hotels. The Estate is set in a stunning 19-hectare park that highlights Africa's natural beauty and features modern exhibition halls, excellent forum facilities, secure on-site parking for up to 5000 vehicles and a number of attractive restaurants.



Photo: G. Girardet (ITU 960047)

Gallagher Estate's gross indoor exhibition space of 28 000 m² (representing around 18 000 m² net space), comprises five fully-serviced halls, all equipped with floor-ducted electricity, water and communications infrastructure. Easy access and streamlined visitor flow paths help maximize exhibitor exposure, while at the same time ensuring that events remain a pleasant experience for visitors and stand-holders alike.

The Forum

At the AFRICA 2001 Forum, government and industry leaders will share their vision of 21st century telecommunications for the region in a bid to help bridge the digital divide. It will be the chance of a lifetime for delegates to network with the telecommunication ministers of the region and the captains of the world's info-communication companies.

The Forum will encompass a "Policy and Development Summit" and an "Infrastructure and Applications Summit", running in parallel over five days, along with a series of special roundtables (see Forum Programme Overview on page 24).



(ITU 980076)

The Policy and Development Summit will focus on strategies for harmonizing and connecting Africa to the rest of the world via telecommunications. In particular, it will examine the key challenges for bridging the digital divide.

The Infrastructure Summit will focus on the different solutions for promoting interconnectivity between African

countries and, most importantly, access to and between rural areas.

The Youth Forum, for its part, will bring together smart, highly motivated young people selected on the basis of a competition which aims to broaden the talent pool of future leaders in the ICT field (see page 25). Winners of the competition will be awarded scholarships (fellowships) to attend AFRICA 2001 and participate in the Youth Forum.

Accommodation, visas and further information

Full information on accommodation, visas and the event itself can be found at the AFRICA 2001 website (www.itu.int/africa2001).

The Forum will also include a TELECOM Development Symposium (TDS) and a Youth Forum. The TELECOM Development Symposium will bring together 82 engineers and human resources specialists (middle managers) from Africa's lowest income and least developed countries (LIC and LDC) in order to visit the Exhibition and participate in a special three-day programme on issues of immediate importance to their specific countries.



Today's children are tomorrow's future

Photo: A de Ferron (ITU 980082)

Quick reference fact sheet for AFRICA 2001

Event: ITU TELECOM AFRICA 2001.

Venue: Gallagher Estate (Midrand) Johannesburg. **Dates:** 12–16 November 2001.

Organizer: International Telecommunication Union (ITU), Place des Nations, CH-1211 Geneva 20 Switzerland.
Tel.: +41 22 730 6161. Fax: +41 22 730 6444. Website (www.itu.int/itutelecom).

Host: Government of the Republic of South Africa.

Opening hours: Trade visitors: from Monday 12 to Friday 16 November 2001, 10h00 – 18h00.

Entrance

Pre-registration is free until 10 November 2001. On-site registration

Adult daily pass: ZAR 50. **Adult weekly pass:** ZAR 100.

Student daily pass: ZAR 20 (student ID required). **Student weekly pass:** ZAR 50 (student ID required)

Visitor registration: Register online from October 2001 at www.itu.int/africa2001.



Forum Programme Overview

(as at 18 June 2001)

Monday, 12	Tuesday, 13	Wednesday, 14	Thursday, 15	Friday, 16
09h30 – 12h30 Forum opening Defining the digital divide	09h30 – 12h30 POL+DEV.2 Market development	09h30 – 12h30 POL+DEV.4 Accessibility and opportunities	09h30 – 12h30 POL+DEV.6 Investment	09h30 – 11h00 POL + DEV Workshop 1 Ethics
	09h30 – 10h45 INF.3 From legacy to NGN: Services in focus	09h30 – 10h45 INF.7 E-commerce solutions for Africa	09h30 – 12h30 INF.11 and 12 Providing access for underserved communities	09h30 – 11h00 POL + DEV Workshop 2 Empowerment
	11h15 – 12h30 INF.4 From legacy to NGN: Protocols in focus	11h15 – 12h30 INF.8 Internet		09h30 – 11h00 POL + DEV Workshop 3 Emergency communications
	09h30 – 12h30 TDS.1 (Roundtable) Building effective regulators	09h30 – 12h30 TDS.2 (Roundtable) Development of Internet in Africa	09h30 – 12h30 TDS.3 (Roundtable) Competence development in the Africa Region	09h30 – 11h00 INF Workshop 1 Social issues
				11h30 – 12h30 Forum closing
14h00 – 17h00 POL+DEV.1 Challenges of the digital divide	14h00 – 17h00 POL+DEV.3 Transition	14h00 – 17h00 POL+DEV.5 e-Africa	14h00 – 17h00 POL+DEV.7 Strategic initiatives and solutions	
14h00 – 15h15 INF.1 Connecting Africa	14h00 – 15h15 INF.5 Evolution to 3G networks	14h00 – 15h15 INF.9 Sustainable solutions	14h00 – 15h15 INF.13 Telecentres for connecting Africa	
15h45 – 17h00 INF.2 Packet telephony voice over IP	15h45 – 17h00 INF.6 The 3G business opportunity	15h45 – 17h00 INF.10 ICT in rural access	15h45 – 17h00 INF.14 Broadband access in the last mile and the last metre	
14h30 – 17h30 YF.1 (Roundtable) Policy and Regulation	14h30 – 17h30 YF.2 (Roundtable) Technology	14h30 – 17h30 YF.3 (Roundtable) Finance	14h30 – 17h30 YF.4 Working group session	

POL + DEV Policy and Development Summit
INF Infrastructure Summit

YF Youth Forum
TDS TELECOM Development Symposium



Photo: A. de Ferron
(ITU 951017)

Youth Forum at ITU TELECOM AFRICA 2001

Progress report

Over the past few months, a great deal of work has been done in preparing for the first ever Youth Forum to be held by the International Telecommunication Union as part of its TELECOM events.

Selection of candidates for fellowship

ITU's invitation to its 53 Member States in Africa to nominate candidatures from young women and men of university age to participate in the Youth Forum received a huge response. Some 50 Member States, in coordination with their national universities, nominated candidatures as follows:

- 45 countries submitted four essays each;
- one country submitted three essays;
- two countries submitted two essays each;
- two countries submitted one essay each.

The Steering Committee, appointed by the ITU Secretary-General, evaluated a total of 186 essays during a preparatory meeting of the Youth Forum held in Geneva on 6 June 2001. A total of 96 fellowships have been awarded to 49 women and 47 men.

Candidates were selected on the basis of a competition which involved writing a short essay on information and communication technologies (ICT), with a focus on development opportunities and the role of the youth. The winning essays illustrate not just the standard of the contributions received, but also show how valuable the Youth Forum at Africa 2001 will be in bringing together students from all over the continent.

Philippe Jacques Codjo Lassou, Fellowship Award Winner from Benin, highlights the evolution of ICTs, stating that they "have reduced the world to a global village in which considerations of distance have become almost non-existent where information is concerned, with messages now being sent and received in a fraction of a second".

He adds that young people's role in this evolution is of prime importance. "The first contribution by young people to the development prospects of information and communication technologies is that of a radical change of awareness, whereby [the youth] will assume their responsibilities while bearing in mind the fact that the future depends on them. In order not to halt the process, young people must make greater commitment and become more involved in research, particularly in respect of new information and communication technologies, and establish methods for the conception and actual implementation of these technologies."

Another Fellowship Award Winner, Raho Hashi, from Somalia gives an account of how communications saved her life and the lives of members of her family. The following is an excerpt adapted from her essay.

Candidates were selected on the basis of a competition which involved writing a short essay on information and communication technologies, with a focus on development opportunities and the role of the youth



Photo: J.-M. Micaud (ITU 920087)

"A bombshell had been dropped right next to our school. We had to run for our lives. So, I put all my efforts into finding my younger brother. Fortunately, I found him hiding in his class. I grabbed him and ran towards home,

charge he accepted to try, and after repeated calls we found my mother. That was my rebirth! The third day, I went to town looking for my mother from one neighbourhood to another and we finally found them exhausted in a home very

different from one in which we lived three days ago.

As a result of the radio call that we made to find my mother and her two siblings, I have decided to become a telecom expert. Without that two-way radio, we would not have been able to find my family. Thanks Mr Alexander Graham Bell, father of modern telecommunications."

All of the winning essays from the 96 fellows will be published in conjunction with the AFRICA 2001 event in November.

Further news on the Youth Forum will be published in the next issue of *ITU News*.

Countries from which winners of the ITU Youth Forum Fellowship Award were selected

<i>Algeria</i>	<i>Libya</i>
<i>Angola</i>	<i>Madagascar</i>
<i>Benin</i>	<i>Malawi</i>
<i>Botswana</i>	<i>Mali</i>
<i>Burkina Faso</i>	<i>Mauritania</i>
<i>Burundi</i>	<i>Mauritius</i>
<i>Cameroon</i>	<i>Morocco</i>
<i>Cape Verde</i>	<i>Mozambique</i>
<i>Chad</i>	<i>Namibia</i>
<i>Comoros</i>	<i>Niger</i>
<i>Congo</i>	<i>Nigeria</i>
<i>Côte d'Ivoire</i>	<i>Rwanda</i>
<i>Democratic Republic of the Congo</i>	<i>Sao Tome and Principe</i>
<i>Djibouti</i>	<i>Senegal</i>
<i>Egypt</i>	<i>Seychelles</i>
<i>Equatorial Guinea</i>	<i>Sierra Leone</i>
<i>Eritrea</i>	<i>Somalia</i>
<i>Ethiopia</i>	<i>South Africa</i>
<i>Gabon</i>	<i>Sudan</i>
<i>Gambia</i>	<i>Swaziland</i>
<i>Ghana</i>	<i>Tanzania</i>
<i>Guinea</i>	<i>Togo</i>
<i>Guinea-Bissau</i>	<i>Tunisia</i>
<i>Kenya</i>	<i>Uganda</i>
<i>Lesotho</i>	<i>Zambia</i>

hoping to join my mother. But as my mother had fled from home to our school in search of us, we missed each other. My brother and I panicked. Fearing for our lives, we did not know where to go. In the end, we decided to run where other people were running.

A gentleman had been working on a two-way radiocommunication equipment. We asked him to help us make a radio call to Mogadishu so that we could ask for my mother and my two younger brothers and sisters. Without any



**ITU TELECOM
AFRICA2001**

Johannesburg
12-16 November



M E E T T H E F U T U R E

Africa prepares for WTDC-02

Yaoundé meeting calls for a greater ITU role in the region's telecommunications development

Africa's relative share of the world's fixed telephone and mobile networks has grown, although it is still low in relation to the size of the continent's population of more than 784 million. And while its share of worldwide Internet access points and users has fallen, its overall share of the PC market has increased markedly. To participants in the recent Africa Regional Preparatory Meeting (Yaoundé, 29–31 May 2001) for the World Telecommunication Development Conference scheduled to take place in Istanbul in March 2002, these trends are encouraging signs that Africa can bridge the digital divide quickly if it overcomes certain obstacles.

Issues raised during the discussions focused on finance and investment, policy and regulation, human resources management, universal access and least developed countries (LDC). A resounding call ran through all the debates: the ITU role in Africa's telecommunications development should be stepped up.

At a ministerial roundtable leading up to the Yaoundé Declaration (see box on pages 28–29), there was strong support for an enabling infrastructure without which extending access to the four corners of the continent would remain a distant dream. One priority that clearly emerged from the debates was the need to cut the cost of telecommunication services to bring it within the reach of all citizens and to formulate strategies that make it possible to

achieve this goal. A fund to improve universal access was cited as one possible path in that direction.

Several countries pointed out the yawning gap between urban and rural areas in terms of access to Internet and telephony. Among the problems which top the list of pressing issues for most participants is how to privatize telecommunications while ensuring quality of service and efficiency in international communications and, at the same time, finance public service.

Participants were clear that the purpose of regulation should be the promotion of abiding values such as universal service, development



of infrastructure, reduction of tariffs and proper monitoring of post-privatization effects. Many went on to emphasize the need to not only establish strong and efficient regulators, but also to find ways of improving regulatory independence from policy-makers and operators. In this regard, some stated that the operating costs for regulators should not be

One priority that clearly emerged from the debates was the need to cut the cost of telecommunication services to bring it within the reach of all of Africa's inhabitants

(ITU 010052)

funded from government budgets in order to ensure the autonomy of these regulators.

Initiatives, such as the African Centres of Excellence (CoE), where policy-makers and regulators are trained in the development of national sector priorities and regulations conducive to private sector investment, were recognized as



African ministers appealed to ITU to pay particular attention to the urgent development needs of their countries and to continue to implement activities and programmes that will make a concrete and tangible contribution to reducing the digital divide in Africa

Photo: PhotoDisc
(ITU 010053)

important steps in strengthening the efficiency of regulators in Africa. Wide support was expressed for the current African CoE to also become nodes of excellence for on-line learning. Other welcome initiatives included the Development Symposium for Regulators, which provides a forum for the exchange of regulatory experiences among regulators.

G-REX, a brand new ITU service for regulators (see article on page 37),

received strong support not only because it provides an on-going forum where policy-makers, regulators and operators can exchange views on issues of mutual interest and have immediate access to a wide range of regulatory expertise, but also because it makes it possible for the African voice to be heard internationally. In addition, the meeting felt that interaction and swapping of regulatory staff should be encouraged to further strengthen their skills in matters of interconnection, tariffs, monitoring of market changes and principles of competition and legislation for which a dire need exists.

YAOUNDE DECLARATION

We, African ministers responsible for telecommunications and information technologies, meeting in Yaoundé on 28 May 2001 within the framework of the Africa Regional Preparatory Meeting for the 2002 World Telecommunication Development Conference (WTDC-02), organized to identify and analyse obstacles to the development of telecommunications and information technologies in Africa and to identify strategies, priorities and other appropriate means of overcoming those obstacles,

Considering

— that digital technology and the development of high-capacity telecommunication media such as optical fibre and satellite systems have led to the advent of the global information infrastructure and to convergence between telecommunications, information technology and broadcasting;

— the relatively low level of development of the basic telecommunication infrastructure, telephone penetration and the use of new services derived from information technologies;

— that the digital divide is now widening the gap that already exists between developed and developing countries in terms of access to, and the use of, telecommunication services and services derived from information technologies;

— the role played by ITU in the development and harmonious use of telecommunication services and information technologies,

Reaffirming

the particular importance and central role of telecommunications and information technologies in political, economic, social and cultural development in the age of globalization and the information society,

Noting

the efforts deployed by African countries, despite a particularly difficult economic context, to stimulate the development of the telecommunication sector,

Further noting

— with satisfaction, ITU's initiatives and other initiatives, including the African Information Society Initiative (AISI) and African Connectivity;

— ITU's participation in, and contribution to, the meetings of "Dot Force" — a working group set up by the G8 Summit in Okinawa,

Declare

— that we welcome the actions undertaken on behalf of the Organization of African Unity (OAU) by South Africa, Algeria and Nigeria, particularly their fruitful participation in the Okinawa G8 Summit, and invite them to continue with such actions;

— that we undertake to devote more actions to the timely addressing of issues relating to telecommunications and to information and communication technologies, these being issues which we consider to be of prime concern;

— that bridging the digital divide must of necessity entail development of the telecommunication and sound and television broadcasting infrastructure, and that development partners must consider this parameter, in particular with respect to rural areas;

— that it is essential that African countries, given the importance of telecommu-

nications and information technologies in political, economic, social and cultural development, adopt innovative strategies and policies designed to stimulate development, particularly through reform of the telecommunication and information technology sector;

— that each African country should henceforth define a common, or at least coordinated, national policy and strategy for the development of telecommunications and information technologies that takes account of multimedia convergence (telecommunications, information technology and broadcasting),

Recommend

that African administrations take the necessary measures to stimulate the development of the private sector as well as measures to encourage private investment,

Appeal

— to ITU to pay particular attention to the urgent development needs of African countries and to continue to implement activities and programmes that will make a concrete and tangible contribution to reducing the digital divide in Africa;

— to ITU to assist African countries in developing their human resources and strengthening their capacities in the area of information technologies;

— to subregional economic integration institutions to work towards the harmonization of policies and regulations in the field of telecommunications and information technologies;

— to development partners, African regional institutions and international institutions to strengthen cooperation and coordination between all projects and initiatives with a view to ensuring the harmonious use of resources. ■

The Telecommunications Regulators Association of Southern Africa (TRASA) was cited as a model to be emulated in other regions of the continent. ITU was asked to step up its assistance by developing guidelines for use by regulators, providing experts, conducting country case studies, diffusing best practices and enhancing the current ITU regulatory database to allow the benchmarking of national experiences.

Finance and investment remain an overriding concern in the region. Indeed, several African countries called for direct assistance in creating a fiscal environment that provides incentives rather than one that penalizes the telecommunication sector

The discussion on infrastructure development highlighted the need for guidance to the countries in the region to adjust to changes resulting from emerging technologies, particularly for Internet protocol (IP) telephony and third generation (3G) mobile communications. They suggested a number of ways of doing this: appropriate training programmes based on

surveyed needs; supporting industrialization on the continent; and continuing to focus on the social benefits of telecommunications, for example, telemedicine. Besides fostering regional technical cooperation, there was a suggestion to promote national expertise more vigorously.

Finance and investment remain an overriding concern in the region, according to the participants. Indeed, several African countries called for direct assistance in setting costs, prices and interconnection charges, as well as in creating a fiscal environment that provides incentives rather than one that penalizes the telecommunication sector. Assistance is also needed in setting targets for the sector, in terms of a percentage of their GNP, and in preparing programmes to demonstrate to investors the long-term prospects of profitability. Countries called for guidelines and handbooks on cost structure and analysis and on tariffs to assist them in their negotiations with local and international operators, regulators and other decision-makers.

A number of participants felt that measures should be taken not only to facilitate partnerships with other countries of the region, but also to encourage local entrepreneurs so as to promote investment in the telecommunications sector. Cooperatives were seen as providing the key to development and local jobs in rural areas and in the poor neighbourhoods of large towns.

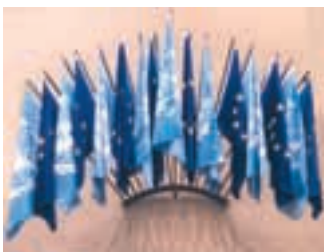
While the session on universal access and the development of information and communication technologies (ICT) noted that the disparities between developed and developing countries and between urban and rural areas within developing countries was still wide, it also acknowledged the progress made in the quest for universal access, defined as the provision of reliable and good-quality telecommunication media at an affordable cost for the user. To give a strong boost to universal service, participants asked that ITU provide quantifiable, measurable and time-bound objectives in order to achieve a defined rate of penetration of services within a given time-frame. ITU was further called upon to help African countries formulate convergent policies and strategies and create an environment conducive to meetings and forums to facilitate access to all possible sources of financing for universal access.

Africa's LDCs (34 of the 49 in the world today) were the subject of special attention in a working session that emerged with a draft recommendation suggesting measures to help them bridge the digital divide. There was wide support to promote the Internet Training Centre Initiative in LDCs.

"The World Telecommunications Development Conference is the last opportunity to make a realistic and concrete difference in Africa," said William Tallah, Chairman of the meeting, in his closing remarks. He emphasized the need for the Yaoundé meeting to urge the G8 countries at their Summit in Italy (Genoa, 20–22 July 2001) to take to heart the needs of the developing countries, particularly in Africa. "The Genoa Action Plan should be carried out by developing countries in the interest of developing countries, and ITU should play the leading role in implementing action plans in cooperation with international organizations," Mr Tallah also remarked. ■

Special Programme for LDCs

ITU contributes to the Third United Nations Conference on Least Developed Countries



The world's 49 least developed countries gathered in Brussels (14–20 May 2001) for the third United Nations Conference on LDCs amid very volatile weather oscillating from sunshine to rain and from rain to near-freezing temperatures. A comment passed by one longtime Brussels resident sums it up in these words: "In Brussels, one can experience seven seasons in a single day."

The UN General Assembly convened this conference at a time when most of the LDCs were calling on the international community to do more to rescue their cash-strapped economies and thus end their isolation from global trade and eradicate poverty. Facts on the ground justify this "mayday". In 1971, the international community identified 25 LDCs. But this number has since risen steadily, reaching 48 in 1994 and 49 in 2001 (see map). What is more worrying is that throughout these years, only one country (Botswana) succeeded in "graduating" from the LDC group, having achieved a high socio-economic development that also includes a booming telecommunication sector.

Hopefully, the Programme of Action (POA) which the Brussels Conference adopted on 20 May 2001 for the 2001–2010 decade will unlock the door to the *cornu copiae* or horn of plenty for the 630 million people in the LDCs who, according to the United Nations, live on less than a dollar a day. The POA is based on

international development targets, as well as on actions by LDCs themselves, accompanied by commensurate support measures from their development partners. At this conference, ITU presented a whole gamut of projects which it has initiated for the benefit of LDCs. The high dosage of telecommunication issues in the newly endorsed POA is a clear reflection of ITU's active role. Of significant importance is the incorporation into the POA of ITU's Special Programme for LDCs (see box on pages 33–34). This POA sets, as targets for telecommunications and information and communication technologies (ICT) for LDCs, an average teledensity of 5 main lines (ML) per 100 inhabitants and 10 Internet users per 100 inhabitants by the year 2010. A Special Session of the UN General Assembly is to be held in 2006 to conduct a comprehensive mid-term review of the POA.



The first United Nations Conference on LDCs was held in Paris in 1981 at the invitation of the French Government. The international community used the occasion to unanimously adopt a Special New Programme of Action (SNPA) for LDCs for the 1980s. This SNPA set out guidelines and international support measures for

The Brussels Conference set a new goal for LDCs calling for an average teledensity of 5 main lines per 100 inhabitants by the year 2010 (ITU 010048)



List of LDCs

Source: University of Texas

<i>Afghanistan</i>	<i>Democratic Republic of the Congo</i>	<i>Liberia</i>	<i>Senegal</i>
<i>Angola</i>	<i>Djibouti</i>	<i>Madagascar</i>	<i>Sierra Leone</i>
<i>Bangladesh</i>	<i>Equatorial Guinea</i>	<i>Malawi</i>	<i>Solomon</i>
<i>Benin</i>	<i>Eritrea</i>	<i>Maldives</i>	<i>Somalia</i>
<i>Bhutan</i>	<i>Ethiopia</i>	<i>Mali</i>	<i>Sudan</i>
<i>Burkina Faso</i>	<i>Gambia</i>	<i>Mauritania</i>	<i>Tanzania</i>
<i>Burundi</i>	<i>Guinea</i>	<i>Mozambique</i>	<i>Togo</i>
<i>Cambodia</i>	<i>Guinea-Bissau</i>	<i>Myanmar</i>	<i>Tuvalu</i>
<i>Cape Verde</i>	<i>Haiti</i>	<i>Nepal</i>	<i>Uganda</i>
<i>Central African Republic</i>	<i>Kiribati</i>	<i>Niger</i>	<i>Vanuatu</i>
<i>Chad</i>	<i>Lao P.D.R</i>	<i>Rwanda</i>	<i>Yemen</i>
<i>Comoros</i>	<i>Lesotho</i>	<i>Samoa</i>	<i>Zambia</i>
		<i>Sao Tome and Principe</i>	

domestic action by the LDCs themselves. The second United Nations Conference on LDCs was also held in Paris in September 1990. This time, the conference ended with the Paris Declaration and a Programme of Action for the 1990s. The main thread running through the two documents is the call to the international community to take urgent measures and effective action, based on the principle of shared respon-

sibility and strengthened partnership, to arrest and reverse the deteriorating socio-economic situation in the LDCs and so revitalize their growth and development.

Looking back, did the first two conferences achieve their intended goals? This is debatable! Most analysts refer to the period as “lost decades” as conditions in the LDCs are said to have actually worsened during that time.

ITU in the service of least developed countries

This box highlights ITU's set of "deliverables" or projects to be implemented to boost teledensities in LDCs in this first decade of the millennium.

Special Programme for LDCs

Objectives

- To reform the telecommunication sector of LDCs so as to introduce new structures, which are more conducive to faster and sustainable telecommunication development, with well-managed and modern networks.
- To increase the penetration of telecommunication services in these countries so as to achieve universal access to those services.

Priorities

- Introduction of new technologies.
- Sector reform and restructuring.
- Rural telecommunication development.
- Human resources development/management.
- Financing, tariffs and partnerships for increased local and foreign investment in the sector, as well as viability and affordability of the services.

Targets

- To achieve a country-wide average teledensity of 5 main lines (ML) per 100 inhabitants by the year 2010 and to meet fully the demand for telecommunication services in urban areas. This means virtually eliminating the waiting list for services by the year 2010, which translates into an average urban teledensity of 10 ML per 100 inhabitants.
- To achieve a rural teledensity above 2 ML per 10 000 inhabitants in 2010. This teledensity would not amount to easy access to telecommunication services, but would at least be a bold move in that direction.
- To achieve an average density of Internet users equivalent to that of other developing countries in 2010; this means at least 10 Internet users per 100 inhabitants.

The regular budget for this programme is CHF 1.1 million while extra budgetary funds are raised through pledges made at annual donor roundtables.

Assistance to countries in special need

Special assistance is also being extended to LDCs emerging from war such as Somalia, Rwanda, Burundi, Liberia and Sierra Leone. The assistance is provided for the strengthening of their policy and regulatory environment in the telecommunications sector and improvement of rural access to services by encouraging private investment in those areas. Based on a project document completed recently, ITU/BDT has managed to raise USD 150 000 from the United States Agency for International

Development (USAID) and the Federal Communications Commission (FCC). ITU is expected to co-finance projects in these countries through its TELECOM surplus funds. In the first year, a total of CHF 1.5 million will be disbursed for this programme. Thereafter, disbursements would be according to identified needs and specific projects in each country in special need.

Electronic Commerce for Developing Countries (EC-DC)

This initiative is funded through revenues generated by ITU TELECOM Exhibitions to address the challenges faced by LDCs and developing countries in the application of new technologies so that these countries can participate in electronic commerce. The objectives of the EC-DC project include:

- Infrastructure development.
- Capacity building and technology transfer.
- Electronic commerce policies.

With the participation of ITU partners, and primary funding from the public and private sectors in the host countries, there are currently more than 13 pilot projects being implemented in Africa, Asia, Latin America and the Arab States. The budget for the EC-DC project stands at CHF 1.2 million annually for 2001–2002 and thereafter according to the aggregate of individual LDC needs and coordination assistance.

Universal access initiatives

These include:

- Digital divide initiative.
- Universal access and rural development.
- Development of policy guidelines.

The programme, being cross-sectoral in nature, relies on extensive partnership links with international and national stakeholders, including the private sector for project funding and implementation. The budget for these initiatives is CHF 10 million annually for the first two years and thereafter, according to aggregate needs of the participating LDCs and coordination assistance.

Implementation of WTO Agreements involving telecommunication services

This activity is designed to help LDCs and developing countries to adapt to the new telecommunication environment by putting into place the appropriate financial strategies and policies, with emphasis on the activities below.

- Assistance to governments in dealing with the consequences of the reform of the international accounting and settlement system.
- Assistance to governments in cooperation with the World Trade Organization, the United Nations Conference on Trade and Development and the World Bank in the implementation of the WTO Agreement on Basic Telecommunication Services and help prepare for the next round of multilateral trade negotiations. The budget for this activity is CHF 0.3 million annually for the first three years, and revised thereafter according to needs.

In view of unprecedented changes taking place in the telecommunications environment, ITU has reserved the right to update, curtail or modify as necessary its proposed actions for LDCs during the decade. ■



ITU became involved in the work of least developed countries in the 1970s, and has since championed their cause by raising the world's awareness on the poor state of telecommunications in these countries and the need to channel resources to their telecommunication sector. ITU itself is determined to bring telecommunications to the peoples of the LDCs through its Special Programme



1. Group antennas near the village of Bijou (Haïti)

Photo: A. de Ferron (ITU 940010)

2. Dish antennas of the Intelsat earth station of Sagamarta (Nepal)

Photo: J.-M. Micaud (ITU 930049)

3. Passive repeater for microwave earth station (Lesotho)

Photo: A. de Ferron (ITU 950015)

4. Public telephone booths in front of Phnom Penh post office (Cambodia)

Photo: J.-M. Micaud (ITU 99081)

Besides, most developed nations, except the Nordic countries and the Netherlands, had not met their official development assistance (ODA) targets to the LDCs. What can be said with certainty, according to the Brussels Conference, is that more has to be done in translating words into action. The slogan should be: "Implementation for development ever and failure to act never!"

For its part, ITU became involved in the work of LDCs in the 1970s when the General Assembly approved the first list of these countries. At the first two conferences, ITU vigorously championed the cause of LDCs by raising the world's awareness on the poor state of telecommunications in these countries and the need to channel resources to their telecommunication sector.

This leitmotif was visible in ITU's publications and presentations at the Brussels Conference, where ITU was represented by the Deputy Secretary-General, Roberto Blois, and the Director of the Telecommunication Development Bureau, Hamadoun Touré, along with staff from the Special Unit for LDCs and the EC-DC project. Among these key publications was the *Telecommunications and Information and Communication Technologies in the Least Developed Countries (1989–1999)*. According to this report, 13 of the 49 LDCs have a main line density that is greater than 1, which is as good as, or in some cases better than, the average density in other low-income developing countries. This is quite evident in small countries where there is generally a close relationship between telecommunication development and the level of socio-economic development and a strong inverse correlation among the LDCs between the size of population and teledensity. The average teledensity in LDCs with a population below 4 million inhabitants is four times greater than that of those with a population above 4 million. Understandably, there are compelling reasons for this:

- It is generally easier to provide a telephone service to a small, clustered and urbanized population than to a large, dispersed rural population. Maintenance and planning is simplified since fewer telephone exchanges are needed and there is less overhead resulting from national long-distance telecommunications.

- Many of the smaller economies are islands with a significant tourist trade. Tourists make international calls, generating foreign exchange for the network operator that can be used for telecommunication equipment imports. Studies show a relationship between tourism and international telephone traffic.

- In a disproportionate number of cases, the telecommunication service among the smaller economies is provided by a foreign-owned service provider, which may have greater access to resources, especially investment, than a domestically owned operator.

This revelation is encouraging although some 20 LDCs still have very low teledensity of below 0.5 ML per 100 inhabitants, or 1 telephone for 200 people, which represents a very poor state of telecommunications development in these countries. When the cellular phone subscribers' density is added, the number of countries falling above the 1 per cent teledensity threshold increases to 14.

ITU is determined to fight to bring telecommunications to the peoples of LDCs. In recent years, there has been evidence of an upturn in telecommunication development in these countries. Rapid growth has been driven by sector reforms, which have been undertaken to varying degrees in many LDCs, and by the emergence of new technologies, which are more amenable to cost effective and rapid deployment.

ITU's immediate aim is to fight the digital divide at a global level; this not only means between the technological rich countries and the "have-nots", but also between the urban and rural areas of LDCs. The objective should be to enable the population of LDCs to enjoy easy access, or rather universal access to telecommunications and its related services. This goes a long way towards the upholding of the relevant provision of the Universal Declaration of Human Rights that calls for the eradication of barriers hindering access to ICTs by all in order that LDCs can leap-frog stages of development.

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G-REX: the new hot line for global dialogue

ITU links the growing community of ICT regulators

In just a few years, the number of countries that have established regulatory bodies for information and communication technologies (ICT) has risen dramatically, making a global dialogue for regulators imperative.

What is ITU doing to reach out to and engage the latest — and many would say principal — players in the ICT world? Providing new and enhanced products and services! Key among these is the newly launched Global Regulators' Exchange (G-REX), a hot line for sharing best practices and learning from each other.



Michael Powell (top right) and Mostafa Terrab (top left) responding to each other's launch message. Also in the picture is BDT Director, Hamadoun I. Touré, using G-REX.

According to the ITU World Regulatory Database, at least 102 Member States of the International Telecommunication Union have now created a regulatory body, up from a mere 12 in 1990.* These new regulatory bodies serve a vital role for the ICT sector. Their job is to facilitate competition, helping countries to meet their universal service and access goals.

Exchange (G-REX), a hot line for sharing best practices and learning from each other.

* This database is fed by responses to BDT's annual regulatory survey. Responses to this year's survey have just started coming in, and BDT expects this number to grow even higher in the near future.

All regulators and policy-makers from the 189 ITU Member States have been invited to register a focal point to participate in G-REX. There are currently 114 registered G-REX users from over 90 countries

G-REX was launched on 8 May 2001 in response to recommendations of the Development Symposium for Regulators (DSR) held in

Geneva last November. Organized by the Telecommunication Development Bureau (BDT), this watershed event provided the first opportunity for the world's regulators to meet and share their views and experiences (see *ITU News*, January-February 2001, pages 27–30). Participants were so pleased

with the event that they recommended a four-point action plan to continue this global regulators' dialogue. In a nutshell, the plan requires

- each regulatory body or policy-maker to identify a focal point responsible for coordinating the exchange of regulatory experiences with other regulators;
- ITU to provide an on-line forum for regulators and policy-makers to share their views and experiences;
- ITU to establish a hot line for regulators;
- ITU to hold annual global regulators' meetings. BDT will organize the second annual Global Regulators Symposium from 3 to 5 December 2001 in response to this recommendation.

G-REX comprises nine discussion groups on key regulatory issues and a regulator's hot line. Nine of the world's leading regulators are participating as moderators for these key discussions (see box).

How were the nine discussion themes selected? During DSR, a panel of regulators from 11 different countries were asked to identify their most pressing regulatory issues. Although the panel included regulators from countries as diverse as Botswana, India, Jordan, Peru, Singapore, Switzerland and the United States, their concerns were all very similar: interconnection, tools for effective regulation, regulatory independence, mobile services, convergence/new technologies, universal service/access, consumer-centred regulation, framework for

competition and frequency planning management. These nine issues were then developed as G-REX discussion themes.

All regulators and policy-makers from the 189 ITU Member States have been invited to register a focal point to participate in G-REX. Invitations were also sent to regional regulatory organizations. There are currently 114 registered G-REX users from over 90 countries.

These participants are well and truly using G-REX! Each moderator has been requested to post a launch message designed to spark a dialogue among the community of G-REX users. For example, the launch message of the Federal Communications Commission (FCC) Chairman, Michael Powell, had been read 240 times within the first month of it being launched. Other launch messages had been read between 90 and 160 times, each within the first month.

Of course, G-REX is a brand new service relying on a technology with which not all users may be familiar. So far, although most users appear to be *reading* the messages, most have demonstrated reserve in *contributing* to the global discussion. While the moderators are contributing to each other's discussions (see photo, page 37), only a handful of other users have joined in. BDT encourages all G-REX users to join the discussions. There is no reason to be shy! Regulators can contribute simply by posting a relevant document. And if language is a problem, G-REX is flexible. Participants are encouraged to use either English, French or Spanish. But if contributions are posted in other official and working languages of the Union, BDT will endeavour to have them translated. The success of the nine G-REX discussions hinges on the involvement of participants.

In contrast to the nine discussions, G-REX users are showing no hesitation in using the hot line, which provides a vehicle to send targeted requests on specific issues to their counterparts around the globe. The first two requests to hit the hot line were submitted in mid-May 2001 by the Telecom Regulatory Authority of India (TRAI). TRAI requested guidelines on quality of service and pricing information for international and domestic leased lines. Regulators and policy-makers from a diverse array of countries including Bhutan, the Czech

G-REX moderators sparking a global on-line dialogue



Peter Fischer

Deputy Director General,
Office fédéral de la communication —
OFCOM (Switzerland)

Theme:
"Interconnection"



Alvin Lezama

General Manager
of Universal Service,
Comisión Nacional de Telecomunicaciones —
CONATEL (Venezuela)

**Theme: "Universal
service/access"**



Anthony S. K. Wong

Director-General of the
Office of the Telecommu-
nications Authority —
OFTA (Hong Kong Special
Administrative Region)

**Theme: "Tools for
effective regulation"**



Cuthbert Lekaukau

Executive Chairman,
Botswana Telecommuni-
cations Authority (BTA)

**Theme: "Consumer-
centred regulation"**



Michael Powell

Chairman
of the Federal
Communications
Commission — FCC
(United States)

**Theme: "Regulatory
independence"**



Jorge Kunigami

Chairman of the
*Organismo Supervisor
de Inversión Privada en
Telecomunicaciones* —
OSIPTEL (Peru)

**Theme: "Framework
for competition"**



Mostafa Terrab

Director General
of the *Agence national
de réglementation des
télécommunications* —
ANRT (Morocco)

Theme:
"Mobile services"



Fatih Mehmet Yurdal

President and Chair-
man of the Board of the
Telecommunications
Authority of Turkey

Theme:
"Frequency planning
management"



Keng Thai Leong

Deputy Chief Executive
and Director-General
(Telecoms) of the
Infocomm Development
Authority of Singapore
(IDA)

**Theme: "Convergence/
new technologies"**

Republic and Kuwait have posted replies. It is hard to imagine that these countries would have been linked, sharing information and resources in the absence of G-REX.



"G-REX is going to be one of the most beneficial and effective means of communication between regulators. To be able to establish contact with other more experienced regulators and get their views on issues of common and current interest is something which we have always wished for and looked forward to."

**TRAI Chairman,
Maya Shanker Verma
(ITU 010040)**

looked forward to. By setting up G-REX, ITU/BDT has fulfilled this long felt need. I congratulate ITU/BDT on this initiative and wish G-REX a grand success in times to come."

BDT is also reaching out to other ITU units to use G-REX to share in-house expertise. The Strategy and Policy Unit, for example, has already provided extremely useful inputs in response to G-REX Hotline requests.

Initially, when G-REX users submit a request to the hot line, none of the other users can see it.

TRAI Chairman, Maya Shanker Verma, has been a strong motivator of G-REX Hotline use by the staff members in his agency. "Our experience with G-REX though, as of now brief, proves without any doubt that it is going to be one of the most beneficial and effective means of communication between regulators. To be able to establish contact with other more experienced regulators and get their views on issues of common and current interest is something which we have always wished for and

The hot line administrator from the BDT Sector Reform Unit then reviews the request. Users may specify whether they wish to keep their identity confidential or whether their request may be posted as submitted. BDT understands that regulators may sometimes face very pressing, but equally sensitive, issues that require greater levels of confidentiality. Users may also specify whether they seek information from a limited group of their global counterparts or from the entire community of regulatory bodies. For example, a Latin American regulator may wish to learn about tariff information only from its neighbouring countries. The hot line administrator then clears the request for posting on G-REX, taking into account any special instructions by the requesting user.

Information posted on G-REX that is not to be treated confidentially can be shared with a wider audience. BDT will transfer useful documents and comments posted on G-REX to the ITU Telecommunication Regulation website, TREG (www.itu.int/ITU-D-TREG/). TREG has become a leading regulatory resource for ITU Members, national regulatory authorities, regional regulatory organizations, the private sector, academics and international organizations. In this way, G-REX will help to augment the regulatory information and resource library established by ITU over the last four years.

G-REX is an experiment. On-line forums are one of the new ICT services whose growth today's regulators have been called upon to facilitate. In addition to offering a venue for regulators to exchange their views and experiences, G-REX offers regulators and policy-makers hands-on experience with ICT services. Although G-REX is brand new, it is an example of the traditional catalytic role the ITU plays so well, bringing together the key players of the ICT world — in this case, the growing global community of regulators. BDT is committed to giving G-REX its full support and is delighted to have received the backing of so many key regulators and policy-makers.

Any regulator or policy-maker that has not yet registered to use G-REX or who seeks additional information may contact Susan Schorr, Regulatory Officer, BDT Sector Reform Unit at +41 22 730 6139 or susan.schorr@itu.int. ■

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 the publications of the Union will be supplied, free of charge, from the ITU Sales and Marketing Service, Place des Nations, CH-1211 Geneva 20 (Switzerland). Fax: +41 22 730 5194.

Telecommunication Development Sector

Handbook on new technologies and new services

Fascicle 1: New technologies supporting new networks (2001 Edition)

Separate editions in F, E, S (CHF 116)

Handbook on disaster communications

(2001 Edition)

Separate editions in F, E, S (CHF 98)

Radiocommunication Sector

Land Mobile (including Wireless Access) Volume 1: Fixed Wireless Access

(2nd edition, 2001)

Separate editions in F, E, S (CHF 35)

Telecommunication Standardization Sector

ITU-T Recommendations on CD-ROM (Single edition, June 2001)

Separate editions in F, E, S (CHF 1200)

ITU-T Recommendation D.50 (10/2000)

International Internet connection
Separate editions in F, E, S (CHF 9)

ITU-T Recommendation D.600R (10/2000)

Cost methodology for the TAF Group applicable to the international automatic telephone service
Separate editions in F, E, S (CHF 17)

ITU-T Recommendation G.101 Appendix I (05/2000)

A computational model for guidance in transmission planning
Separate editions in F, E, S (CHF 9)

ITU-T Recommendation G.107 (05/2000)

The E-model, a computational model for use in transmission planning
Separate editions in F, E, S (CHF 17)

ITU-T Recommendation G.168 (04/2000)

Digital network echo cancellers
Separate editions in F, E, S (CHF 44)

ITU-T Recommendation G.652 (10/2000)

Characteristics of a single-mode optical fibre cable
Separate editions in F, E, S (CHF 17)

ITU-T Recommendation G.663 (04/2000)

Application related aspects of optical amplifier devices and sub-systems
Separate editions in F, E, S (CHF 22)

ITU-T Recommendation G.803 (03/2000)

Architecture of transport networks based on the synchronous digital hierarchy (SDH)
Separate editions in F, E, S (CHF 29)

ITU-T Recommendation G.823 (03/2000)

The control of jitter and wander within digital networks which are based on the 2048 kbit/s hierarchy
Separate editions in F, E, S (CHF 22)

ITU-T Recommendation G.827 (03/2000)

Availability parameters and objectives for path elements of international constant bit-rate digital paths at or above the primary rate
Separate editions in F, E, S (CHF 17)

ITU-T Recommendation G.831 (03/2000)

Management capabilities of transport networks based on the synchronous digital hierarchy (SDH)
Separate editions in F, E, S (CHF 12)

ITU-T Recommendation G.971 (04/2000)

General features of optical fibre submarine cable systems
Separate editions in F, E, S (CHF 17)

ITU-T Recommendation G.977 (04/2000)

Characteristics of optically amplified optical submarine cable systems
Separate editions in F, E, S (CHF 22)

ITU-T Recommendation H.245 (02/2000)

Control protocol for multimedia communication
Separate editions in F, E, S (CHF 96)

ITU-T Recommendation I.480 (03/2000)

1+1 protection switching for cell-based physical layer
Separate editions in F, E, S (CHF 12)

ITU-T Recommendation I.572 (03/2000)

VSAT interconnection with the PSTN
Separate editions in F, E, S (CHF 39)

ITU-T Recommendation J.53 (05/2000)

Sampling frequency to be used for the digital transmission of high-quality sound-programme signals
Separate editions in F, E, S (CHF 9)

ITU-T Recommendation J.90 (05/2000)

Electronic programme guides for delivery by digital cable television and similar methods
Separate editions in F, E, S (CHF 12)

ITU-T Recommendation J.143 (05/2000)

User requirements for objective perceptual video quality measurements in digital cable television
Separate editions in F, E, S (CHF 12)

ITU-T J series Recommendations Supplement 4 (09/1999)

Terminology for new services in television and sound-programme transmission
Separate editions in F, E, S (CHF 22)

ITU-T Recommendation L.39 (05/2000)

Investigation of the soil before using trenchless techniques
Separate editions in F, E, S (CHF 17)



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

The Government of **Japan** has accepted the Instruments amending the above-mentioned Constitution and Convention.

The instruments of acceptance were deposited with the Secretary-General on 22 May 2001.

FINAL ACTS OF WRC-95

The Government of the **Republic of Colombia** has ratified the above-mentioned Final Acts.

The instrument of ratification was deposited with the Secretary-General on 7 May 2001.

FINAL ACTS OF WRC-2000

The Government of the **Federal Republic of Germany** has approved the above-mentioned Final Acts.

The instrument of approval was deposited with the Secretary-General on 18 May 2001.

CHANGE

The *Ministry of Communications* of Oman has changed its name and is now called **Ministry of Transport and Communications**.

GIGA A/S, which participates in the work of the Standardization Sector, has changed its name. The new denomination is **GIGA ApS, an Intel Company**.

The *Groupement des industries de télécommunications et d'électronique professionnelle (GITEP)*, which participates in the work of the Standardization Sector, has changed its name. The new denomination is **Groupement des industries des technologies de l'information et de la communication (GITEP TICS)**.

Mannesmann Arcor AG & Co., which participates in the work of the Standardization Sector, has changed its name. The new denomination is **Arcor AG & Co.**

Marconi Communications S.p.A., which participates in the work of the Radiocommunication and Standardization Sectors, has changed its name. The new denomination is **Marconi Mobile S.p.A.**

Natural Microsystems Corporation, which participates in the work of the Standardization Sector, has changed its name. The new denomination is **NMS Communications Corporation**.

NEW MEMBERS

Development Sector

KDDI Corporation (Tokyo), *Koc.net Telecommunications Services Inc. (Istanbul, Turkey)*, *Pakistan Telecommunication Company Limited (Islamabad)* and *Telkom Kenya Limited (Nairobi)* have been admitted to take part in the work of this Sector.

Radiocommunication Sector

J-Phone Communications Co., Ltd. (Tokyo), *Pakistan Telecommunication Company Limited (Islamabad)* and *Telkom Kenya Limited (Nairobi)* have been admitted to take part in the work of this Sector.

Standardization Sector

AudioCodes Ltd. (Yehud, Israel), *Calix Networks (Petaluma, CA)*, *EPCOS AG (Berlin)*, *J-Phone Communications Co., Ltd. (Tokyo)*, *Pakistan Telecommunication Company Limited (Islamabad)* and *Telkom Kenya Limited (Nairobi)* have been admitted to take part in the work of this Sector.

NEW ASSOCIATE

Radiocommunication Sector

MCC Corporation (Tokyo) has been admitted to take part in the work of Study Group 8.

STRUCTURAL CHANGES

Bosnia and Herzegovina

As of 2 March 2001, the *Telecommunications Regulatory Agency (TRA)* and the *Independent Media Commission (IMC)* merged to become the *Communications Regulatory Agency (CRA)*. This body is the sole State-level regulator having jurisdiction over electronic broadcast media and telecommunications.

Burkina Faso

Establishment of the *Ministry of Posts and Telecommunications* as a result of a ministerial reshuffle which took place on 12 November 2000.



2001

- 12–16 November (Johannesburg, South Africa)
ITU TELECOM AFRICA 2001

2002

- 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

2003

- 12–18 October (Geneva)
ITU TELECOM WORLD 2003

2001

General Secretariat

- 12–16 November (Johannesburg, South Africa)
ITU TELECOM AFRICA 2001
- 27–28 November (Geneva)
4th Annual Review Meeting of GMPCS-MoU Group

Telecommunication Development Sector

- 20–24 August (Coventry, United Kingdom)
Global conference: Creating new leaders for e-culture
- 30–31 August (Caracas)
ITU–D Study Groups: Regional meeting for Americas countries
- 3–7 September (Caracas)
Fourth meeting of ITU–D Study Group 1
- 10–14 September (Caracas)
Fourth meeting of ITU–D Study Group 2
- 17–19 September (Rabat)
African regulatory forum
- 18–20 September (Bratislava)
Regional seminar on new trends in tariff policies
- 27 September (Salvador da Bahia, Brazil)
ITU/ITC workshop on teletraffic issues for developing countries

- 27–28 September (Geneva)
Fourth meeting of the Task Force on Gender Issues

- 1–2 October (Geneva)
Sixth meeting of TDAG Subgroup dealing with private sector issues

- 2–4 October (Warsaw)
Seminar on IMT-2000 for Central Eastern Europe

- 3–5 October (Geneva)
Sixth meeting of the Telecommunication Development Advisory Group (TDAG)

- 16–18 October (Port of Spain)
Americas regional preparatory meeting for WTDC-02

- 22–24 October (Egypt)
Arab Regional Regulatory Bodies Meeting

- 29 October–2 November (Santo Domingo)
Workshop on TAL for Central American countries: set-up, training, applications

- 5–7 November (Castries, Saint Lucia)
Caribbean seminar on financing/costing issues

- 5–7 November (Nairobi)
FES/ITU/URTNA symposium on new broadcasting technologies

- 19–23 November (Bangkok)
ITU/AIBD workshop on conversion of analogue to digital television

- 3–5 December (Geneva)
Second annual global symposium for regulators

Radiocommunication Sector

- 3–5 September (Geneva)
Radiocommunication Study Group Chairmen and Vice-Chairmen Meeting

- 10–14 September (Geneva)
Radio Regulations Board (RRB)

- 17–19 September (Geneva)
Task Group 6/7 (Planning parameters for digital broadcasting at frequencies below 30 MHz)

- 19–21 September (Geneva)
Working Party 6P (Broadcasting

systems, production, baseband signals)

- 19–28 September (Geneva)
Working Party 6E (Terrestrial emission)

- 19–28 September (Geneva)
Working Party 6S (Satellite broadcasting)

- 20–26 September (Geneva)
Working Party 6M (Interactivity and multimedia)

- 20–28 September (Geneva)
Working Party 6D (Digital coding)

- 24–28 September (Geneva)
Working Party 6R (Recording for broadcasting)

- 24–28 September (Mexico, D.F.)
Regional radiocommunication seminar

- 26–28 September (Geneva)
Working Party 6Q (Quality assessment)

- 27–28 September (Geneva)
Joint Rapporteurs Group 6S–9D (Sharing between FS and BSS (sound))

- 1–2 October (Geneva)
Study Group 6 (Broadcasting service)

- 1–8 October (Geneva)
Working Party 4B (Systems, performance, availability and maintenance)

- 1–8 October (Geneva)
Working Party 9A (Performance and availability, interference objectives and analysis, effects of propagation, and terminology)

- 1–9 October (Geneva)
Working Party 9B (Radio-frequency channel arrangements, radio system characteristics, interconnection, maintenance and various applications)

- 3–12 October (Geneva)
Working Party 4A (Efficient orbit/spectrum utilization)

- 8–10 October (Geneva)
Working Party 9C (Systems below 30 MHz (HF and others))

- 10–16 October (Tokyo)
Working Party 8F (IMT-2000 and systems beyond IMT-2000)

- 11–12 October (Geneva)
Study Group 9 (Fixed service)

- 15–16 October (Geneva)
Study Group 7 (Science services)
- 15–17 October (Geneva)
Study Group 4 (Fixed-satellite service)
- 15–23 October (Geneva)
Working Party 4–9S (Frequency sharing between the fixed-satellite service and the fixed service)
- 17–19 October (Geneva)
Working Party 7E (Inter-service sharing and compatibility)
- 22–26 October (Geneva)
Joint Rapporteurs Group 8A–9B (Wireless access)
- 22–30 October (Geneva)
Working Party 8A (Land mobile service excluding IMT-2000; amateur and amateur-satellite services)
- 23 October–2 November (Geneva)
Working Party 8D (All mobile satellite services and radio-determination satellite service)
- 24 October (Geneva)
Joint Study Groups 4 and 9 meeting
- 24 October–2 November (Geneva)
Working Party 8B (Maritime mobile service including Global Maritime Distress and Safety System (GMDSS); aeronautical mobile service and radiodetermination service)
- 1–7 November (Geneva)
Joint Task Group 1–6–8–9 (Multimedia applications)

- 5–7 November (Geneva)
Study Group 8 (Mobile radio-determination amateur and related satellite services)
- 5–9 November (Geneva)
Working Party 3K (Point-to-area propagation)
- 5–13 November (Geneva)
Working Party 1A (Spectrum engineering techniques)
- 5–13 November (Geneva)
Working Party 1B (Spectrum management methodologies)
- 5–13 November (Geneva)
Working Party 1C (Monitoring spectrum)
- 5–13 November (Geneva)
Task Group 1/7 (Protection of passive service bands from unwanted emissions)
- 14–16 November (Geneva)
Study Group 1 (Spectrum management)
- 19–23 November (Geneva)
Terrestrial workshop
- 3–7 December (Geneva)
Radio Regulations Board (RRB)

Telecommunication Standardization Sector

- 29 August–7 September (Bangalore, India)
Study Group 7 (Data networks and open system communications) and its Working Parties
- 4–14 September (Geneva)
Study Group 2 (Operational

aspects of service provision, networks and performance) and its Working Parties

- 6–14 September (Geneva)
Study Group 10 (Languages and general software aspects for telecommunication systems) and its Working Parties
- 15–26 October (Geneva)
Study Group 15 (Optical and other transport networks) and its Working Parties
- 18–19 October (Dakar)
Workshop on QoS and user-perceived transmission quality in evolving networks
- 22–26 October (Dakar)
Study Group 12 (End-to-end transmission performance of networks and terminals) and its Working Parties
- 26–30 November (Geneva)
Telecommunication Standardization Advisory Group (TSAG)
- 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 transmission) and its Working Parties
- 10–14 December (Geneva)
Study Group 6 (Outside plant) and its Working Parties



2001

- 24–28 September (Salvador, Bahia, Brazil)
ITC 17 — International Teletraffic Congress and Workshop for developing countries
E-mail: lars.engvall@ties.itu.int
<http://www.anatel.gov.br/itc17/>
- 1–4 October (Bordeaux, France)
ICIN 2001 — 7th International Conference on Intelligence in Next Generation Networks
Tel.: +33 5 5615 1151

- Fax: +33 5 5615 1160
E-mail: edin@adera.fr
<http://www.adera.fr/icin2001>
- 8–11 October (Brussels)
International CBO Seminar — Reliability engineering in advanced technology and industry
Tel.: +31 10 461 2805
Fax: +31 10 418 7380
 - 15–17 October (Newport, RI)
KMI — 24th Annual Newport Conference on Fiberoptics Markets
Tel.: +1 401 849 6771

- Fax: +1 401 847 5866
E-mail: info@kmicorp.com
<http://www.kmicorp.com/>
- 11–14 December (Bangalore, India)
IRSI-2001 — International Radar Symposium India
Tel.: +91 80 514 1666
Fax: +91 80 524 2860
E-mail: irsi@lrde.ernet.in
<http://www.irsi2001.com>

