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Policy, regulation, cyberculture *et al.*

This issue focuses on ITU highlights at the tail-end of the summer. ITU Strategic Planning Workshops are doing a good job of bringing together recognized experts from around the world to discuss topical issues of concern to the telecommunications community. The fifth in a series of these workshops was held in September to discuss the licensing of third generation (3G) mobile systems and its implications for ITU Member States and Sector Members. This was the first ITU meeting to focus on the policy and regulatory aspects of 3G, known internationally as IMT-2000.

A possible new role for ITU was discussed that goes beyond the traditional areas of radio spectrum harmonization and technical standardization, covered by the present IMT-2000 project. Indeed, the Chairman's Report, which we will publish in the November issue, concludes that: "an important need will arise to assist Member States in the migration from 2G to 3G, for instance, in helping to design the procedures for awarding licences or in providing training programmes for regulators".

The report goes on to note that in the developing regions of the world, where national market potential is constrained by sparsely populated rural and remote areas or a low level of economic development, "there may be a role for ITU to help Member States coordinate the introduction of IMT-2000 on a regional basis. This may help manufacturers and operators to realize economies of scale and offer lower prices to consumers".

A Briefing Paper, along with country case studies covering Chile, China and the Hong Kong Special Administrative Region (SAR), Ghana, Japan, Sweden and Venezuela offer real-life examples of what is going on in the 3G arena. The meeting found this wealth of information extremely useful, especially to those currently involved in drafting national policies for future 3G licensing. In this issue, we have selected Japan to illustrate how it blazed the trail to IMT-2000, due to be launched commercially in that country on 1 October 2001.

On the regulatory front, ITU is conducting case studies on what constitutes effective regulation.There is no textbook for government policy-makers to quote, chapter and verse, in establishing an independent regulatory agency that will achieve their national goals. But as more and more ITU Member States search for models and best practices to serve as guideposts, these case studies could pay dividends. In this issue, we put the spotlight on Morocco, which hosted in September 2001 an ITU regional follow-up forum on telecommunication regulation.

Another important highlight was the agreement signed with Argentina on 24 September 2001 to host ITU Telecom Americas 2003. ITU looks forward to bringing together in Buenos Aires all the strategic players in the world of telecommunications, where visitors, exhibitors and speakers will have access to the technology and ideas that will shape the future for the Americas region.

And finally, a look at cyberculture. ITU in its efforts to bridge the digital divide supports the creation of electronic culture while protecting and conserving local cultures and values. In this regard, ITU organized a global conference in collaboration with Cable & Wireless and the United Kingdom Telecommunication Academy (UKTA) on the theme of "creating new leaders for e-culture". Read on!

The Editor

Japan's path to IMT-2000*

Blazing the trail

A number of questions were discussed at the ITU Strategic Planning Workshop (Geneva, 19-21 September 2001) on the theme of licensing third generation (3G) mobile systems. How should radio spectrum left unused after the first round of issuing 3G or IMT-2000 licences be dealt with? What factors should determine the organization of subsequent licensing rounds in order to assign the additional radio spectrum identified at the World Radiocommunication Conference (WRC-2000) for IMT-2000 applications, or the additional spectrum that will be needed between 2005 and 2010 to accommodate the anticipated increase in 3G traffic?

Should national and international roaming be part of a 3G licence condition or should this be left to market conditions? What further regulatory safeguards are needed to allow effective and affordable roaming?

Given the likelihood that existing incumbent carriers may gain control of licences to be granted, should one or more of those licences be reserved for new entrants? If yes, under what conditions? What role, if any, should ITU play with regard to the regulatory and economic issues raised by 3G mobile services? Is there a role for ITU in efforts to resolve 3G issues of an international nature, including interconnection disputes, roaming and global circulation of 3G terminals?

ITU conducted a number of country case studies and released a Briefing Paper for the workshop. Countries were selected for their level of telecommunications development, regional diversity, and recent 3G licensing activity. This article looks at Japan and how it has blazed the trail to be a front runner in 3G deployment, using an ITU standard.

Demand for IMT-2000

There are three main driving forces behind the introduction of IMT-2000 in Japan. The first is the growing demand for multimedia services. Now that Internet and narrowband ISDN have dominated fixed networks, the market is

* This article has been adapted from *3G Mobile Policy: The case of Japan*, which forms part of a series of telecommunication case studies produced under the ITU New Initiatives Programme. The case study was prepared by Lara Srivastava (lara.srivastava@itu.int), Project Manager, ITU New Initiatives Programme and directed by Ben Petrazzini (ben.petrazzini@itu.int), Telecommunication Policy Adviser in the Stategy and Policy Unit. Full texts of this and other case studies on 3G, covering Sweden, China, the Hong Kong Special Administrative Region (SAR), Chile, Venezuela and Ghana, can be found at www.itu.int/3g.

starting to demand similar capabilities in mobile environments. The phenomenal success of services such as *i-mode* (see box on page 6) points to the need for advanced mobile applications. The second force is the demand for international roaming. Despite being an island country, a huge number of Japanese people travel overseas for business and leisure, creating a large market for global services. The final and perhaps most important issue is the lack of frequency caused by the dramatically unexpected rise in the number of cellular subscribers. Existing second generation (2G) frequency bands (800 MHz and 1.5 GHz) appeared insufficient, and services using different frequency bands were, therefore, considered necessary. Responding to this need, the Japanese Government decided to work towards the deployment of IMT-2000 networks.

Japan's role in the international standardization process

ITU began its work on IMT-2000 standardization in the mid-1980s. In April 1993, Japan's *Association of Radio Industries and Businesses* (ARIB), a private standardization organization, established the country's IMT-2000 Study Committee. This committee was given the mandate to study the air-interface technologies for IMT-2000. It was made up of some 90 companies, including operators such as *NTT DoCoMo*, *KDDI* and *J-Phone* (see box), and manufacturers, notably *NEC* and *Fujitsu*. Members of that committee were responsible for proposing IMT-2000 systems. At the end of its studies, the committee concluded that wideband code division multiple access (W-CDMA) was the most suitable standard for Japan. W-CDMA was accepted by Japan's Telecommunication Technology Council (TTC) and proposed to ITU in June 1998. Both Japan and Europe recommended different variations of W-CDMA. On the other hand, the United States recommended standards based on cdma2000 and TDMA technologies.

For fear of creating another closed domestic system, such as the personal handyphone system (PHS) and the personal digital cellular (PDC) system, Japan opted to switch its core network to GSM technology.

Major players in Japan's mobile market

Three mobile phone operator groups currently offer 2G services in Japan: NTT DoCoMo, KDDI and J-Phone. All three are also entitled to offer 3G services in the future.

NTT DoCoMo was established in 1991 and has its origins in the NTT mobile phone department. The group has nine regional operators. NTT's subsidiary PHS operator, *NTT Personal*, unable to reach its target subscriber base merged with NTT DoCoMo in 1998. The DoCoMo Group offers PDC mobile phone (800 MHz and 1.5 GHz) and PHS services. In April 2001, NTT DoCoMo had a total of 36.6 million subscribers and aims to cover 97 per cent of the population by March 2004, with a projected subscriber base of 6 million. The investment required for such an effort is estimated at JPY 1.1 trillion (USD 9 billion).

NTT DoCoMo will be the first operator to launch 3G services in Japan under the brand name "FOMA" (freedom of mobile multimedia access), which is based on the ITU standard W-CDMA. The full-scale commercial launch of FOMA was initially scheduled for 30 May 2001 but was postponed to 1 October 2001. Meanwhile, NTT DoCoMo's introductory service that is to end on 30 September 2001 allowed a number of users to choose from three different types of handsets: standard type (FOMA N2001), visual type (FOMA P2101V) and data-card type (FOMA P2401).

KDDI and the "au" brand. Two fixed-line operators (DDI and KDD) and one mobile-phone operator (IDO) merged into KDDI in October 2000. At that time, IDO was offering its mobile-phone service in the Kanto and Tokai areas. DDI had a subsidiary mobile operators group known as *Cellular Phone Group*, which offered mobile services in seven other regions. With the exception of *Okinawa Cellular Phone* (in parts of the Kyushu area), the Cellular

Japan has taken a leap into the future of 3G mobile communication services. A number of selected users have been testing NTT DoCoMo's 3G introductory service, which ended on 30 September 2001. Branded FOMA (freedom of mobile multimedia access), this service will be launched commercially in Japan on 1 October 2001

Photo: NTT DoCoMo (ITU 010067)

Phone Group operators were merged into one operator known as *au*.

Today, KDDI offers its own mobile-phone service in the Kanto and Tokai regions while au offers service in other regions (except in the Okinawa Cellular Phone service area). Both companies, KDDI and au, have branded their mobile services as "au". There were 11.25 million au subscribers in April 2001.

The KDDI Group offers an array of mobile services using the PDC and PHS technology and the cdmaOne system. Concluding that it could not compete with NTT DoCoMo's own PDC technology, KDDI adopted the cdmaOne system in 1998, banking on its high quality voice service. As a result, about 70 per cent of KDDI subscribers now use the cdmaOne system.

The KDDI Group has other mobile-phone operators, for example the *Tu-ka Group*. Tu-ka launched its services in 1994 and was originally owned by *Nissan*, the second largest car manufacturer in Japan. But in 1998, Nissan sold its stock to DDI.

Mobile-phone operators of the KDDI Group (au and Tu-ka) offer an Internet connection service called *EZWeb*. In April 2001, there were 6.1 million au and 1.1 million Tu-ka EZWeb subscribers. KDDI plans to introduce 2.5G services in the autumn of 2001.

J-Phone was established in 1992 and launched its services in 1994. It is subsidised by *Japan Telecom*, one of the country's major fixed-line telecommunication operators. The group offers a 1.5 GHz mobile-phone service. It does not have a PHS operator. In April 2001, it had 10.2 million subscribers. Originally, this group consisted of nine regional operators. In 2000, operators in east Japan (Hokkaido, Tohoku, Kanto) were merged into J-*phone East Japan* and those in west Japan (Kyushu, Chugoku, Shikoku, Kansai, Hokuriku) were merged into *J-phone West Japan*. J-Phone's Internet connection service is called *J-Sky,* and had attracted some 6.7 million subscribers by April 2001. In March 2001, J-Phone announced that it would delay the launch of its 3G service by six months from December 2001 to June 2002.

The main stockholder of J-Phone is Vodafone, the largest mobile operator in the world. Vodafone announced its purchase of all BT owned J-Telecom and J-Phone stocks in May 2001. Since August 2001, Vodafone owns 45 per cent of J-Telecom stocks and 46 per cent of J-Phone stocks (J-Telecom owns the other 54 per cent). ■

Mobile Internet: Precursor to 3G?

Japan has introduced a wide array of mobile Internet services, and witnessed phenomenal growth in usage and subscribers. In May 2001, there were 68.4 million mobile subscribers in the country, of which 50 per cent were using some kind of Internet browsing service. Mobile Internet services are offered both on the PDC and PHS platforms.

The story of i-mode

Mobile browsing services began when NTT DoCoMo introduced its *i-mode* (information-mode) service in February 1999. Other mobile operators also began competitive Internet connection services in 1999, with KDDI launching *EZWeb* and J-Phone launching *J-Sky*.

An i-mode enabled phone allows users to access customized Internet content over a packet-based network. Web content for i-mode is developed using compact hypertext markup language (cHTML), a subset of hypertext markup language (HTML) coding which is used to create typical Web pages. These then become i-mode compatible websites. There is also the special company coding that enables the creation of icons representing concepts such as joy, sadness, hot spring baths, noodle shops, a particular train line (for example, the *Shinkansen*) and Japanese holidays. The i-mode system does not use the open source wireless application protocol (WAP) technology, but uses instead a special set of simplified HTML tags.

Subscribers to i-mode can download a range of items, including images of cartoon characters, weather reports, news and entertainment listings. However, the most popular services are still those that allow people to interact with each other. Users of i-mode can send e-mail to other i-mode users, other mobile-phone users with compatible handsets, as well as to personal computers (PC). Other transactional services include mobile banking and ticket reservations. The data is transmitted over a packet-based network at the transmission speed of 9.6 kbit/s, and billed on the basis of bits or packets transmitted.

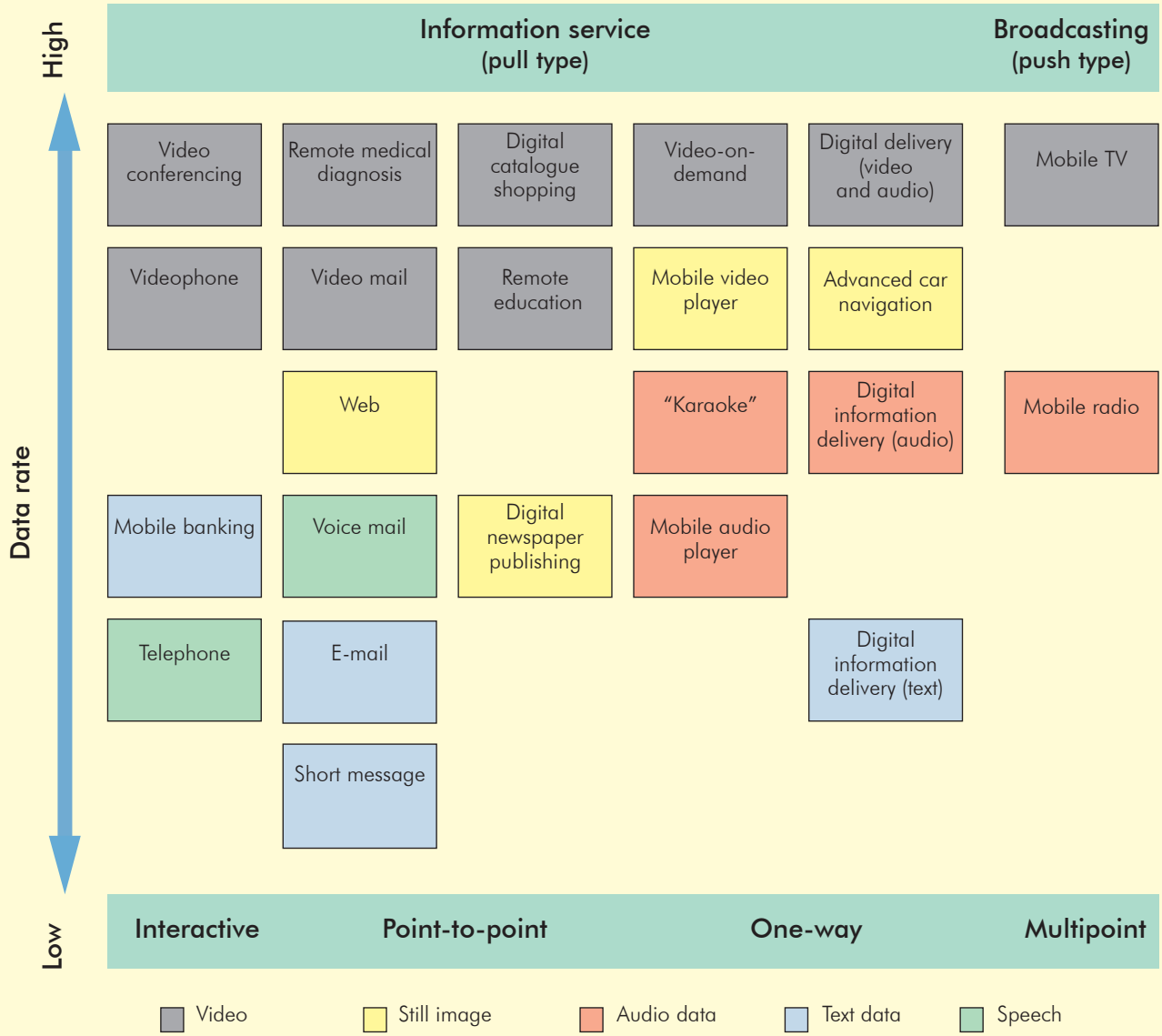
Users are charged a subscription fee of JPY 300 per month and are billed JPY 0.3 per packet (128 bytes). Some content providers charge an additional fee of JPY 200 to 300 per month. There are both "official" and "unofficial" i-mode sites In the case of official sites, there is a contractual arrangement between NTT DoCoMo and the content provider. Under this arrangement, NTT DoCoMo collects the content charge for the content provider and keeps a commission of 9 per cent. In the case of unofficial websites, users must pay the content provider directly. Currently, i-mode users have access to just under 1800 official content sites and over 40 000 unofficial sites.

By 10 September 2001, there were over 27 million i-mode mobile Internet subscribers. This represents over 60 per cent of NTT DoCoMo's total cellular subscriber base. Today's i-mode service is very popular among young users aged 18 to 30, the heaviest users being teenage girls and young women.

Some of the main reasons being advanced for the success of i-mode are the packet-switched data network and billing system, the use of compact HTML for viewing Web content, and the positioning of NTT DoCoMo as both an Internet service provider (ISP) and a mobile operator. This means that users receive only one bill for the service and need to register only once.

In an effort to extend their browser and Internet services, the incumbent operators *NTT East* and *NTT West* (the regional fixed-line operators) launched an Internet service for fixed-line users in June 2001. The new "L-mode" service will allow residential users to access unofficial i-mode content services via special fixed telephone sets equipped with display panels. The Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) gave its final approval for the service in April 2001, after ensuring that other ISPs will be allowed to carry data traffic between a user's local access point and NTT's Internet gateway.

Figure 1— Vision of future services and applications



source: Adapted from NTT DoCoMo.

The charge for this service is JPY 200 per month in addition to ISP charges. NTT hopes to attract 1.5 million subscribers in the first year of the service.

On 28 June 2001, NTT DoCoMo announced its new location-based service, known as *i-area*, for its i-mode handsets. To access the i-service, users simply go to the i-mode portal site and click "i-area" to view a large menu of information. Since i-mode base stations automatically recognize the handset's area code, users do not need to enter their location. Initially, information services will include weather forecasts, local guides to shops, restaurants and hotels, detailed searchable maps and 24-hour traffic updates. The service will not be subject to a subscription fee, although some content providers may levy fees on certain types of information. At the outset, i-area will not be provided for FOMA i-mode 3G handsets. ■

IMT-2000 is much more than a simple mobile phone! At last you can see the face of the person you are talking to, thanks to a videophone — a mobile communication service that uses real-time video

Photo: NTT DoCoMo (ITU 010068)

Major steps in IMT-2000 licensing policy

In Japan, mobile operators are subject to the *Telecommunication Business Law* and the *Radio Law*. There were a number of important stages in the policy-making process for IMT-2000, some of which are summarized in Table 1. When the Ministry of Posts and Telecommunications (MPT**) released its draft basic guidelines in July 1998 for introducing 3G mobile communication systems, it received 26 comments from 33 organizations, most of whom were mobile operators and manufacturers. On the whole, the respondents agreed with the substance of the basic guidelines. Among the highlights were the choice of standard, technical conditions and licensing.

Eighteen of the 33 respondents commented that the standard to be adopted by Japan should not be unique, as in the case of the second generation PDC standard. Four of the respondents expressed concern over excluding the cdma2000 system from the list of standards adopted. On the question of licensing, all the 20 respondents opposed the auction method. Twelve of them recommended comparative selection (also known as "beauty contest"), a method whereby a government invites applications that are rated according to some pre-set criteria. Licences are then allocated to those whom the government believes best meet the stated requirements. For example, in Sweden where this method was used, the initial criteria were that: sufficient capital must be available, technical plans must demonstrate reliability, access, speech quality and other service guarantees. Furthermore, business plans must be commercially feasible, and applicants must have suitable experience and expertise.

** With effect from 6 January 2001, the functions of MPT were redistributed to two bodies: the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) and the Postal Service Agency.

Technical conditions for 3G mobile services

The main elements of the report, which the Telecommunication Technology Council (TTC) submitted to MPT in September 1999 (see Table 1), are highlighted below. Typically, TTC reports provide the technical basis for ministerial regulation.

- The frequency band to be allocated to 3G should be the 2 GHz band identified by ITU for IMT-2000.
- Data transmission rates were to be 144 kbit/s for vehicular (in the interim) and 384 kbit/s for pedestrian and indoor services (also in the interim).
- Minimum bandwidth was to be 5 x 2 MHz.
- Allocation of frequency bands to operators was to be: 20 x 2 MHz for a 2 Mbit/s transmission rate. Minimum allocation was to be 5 x 2 MHz.

Table 1 — Major steps in the 3G licensing policy in Japan

July 1998	MPT released for public comment its draft basic guidelines for introducing third generation mobile communication systems (IMT-2000).
November 1998	MPT released the results of the public comments.
March 1999	ITU–R Task Group 8/1 (TG8/1) approved the draft key characteristics Recommendation for IMT-2000.
September 1999	MPT received a report of the Telecommunication Technology Council (TTC) on the "Technical conditions for radio equipment employing frequency division duplex (FDD) using code division multiple access (CDMA)". This report proposed a number of technical conditions for IMT-2000 radio equipment.
November 1999	TG8/1 and ITU–R Study Group 8 approved the draft radio interfaces Recommendation for IMT-2000.
December 1999	MPT released its report on the "Principles of radio station licences". Based on this report, and in order to ensure an adequate legislative framework for the smooth introduction of IMT-2000, the Minister of Posts and Telecommunications consulted with the Radio Regulatory Council (RRC) regarding amendments to ministerial ordinances under the Radio Law. The amended ministerial ordinances came into force in April 2000, authorizing the establishment of IMT-2000 radio stations.
February 2000	MPT released its draft "Policies for the introduction of IMT-2000 and licensing of 3G radio stations" and requested public comments on them. There were no serious objections to any of the policies proposed by the Ministry.
March 2000	Based on TTC's report, MPT revised the technical provisions of the Radio Equipment Regulations and ministerial ordinances and confirmed its licensing policies.
April–May 2000	Period within which operators were to apply for a licence.
June 2000	MPT licensed three operators (NTT DoCoMo, KDDI and J-Phone).

Source. ITU.

Global circulation of IMT-2000 terminals

In Japan, global circulation for visiting terminals is covered under the Radio Law according to which each radio station requires a licence to operate. Since a handset is defined as a "radio station", each handset in Japan requires a radio licence under the Radio Law. However, handsets can be covered by an operator's comprehensive or blanket licence such that all the operator's handsets in circulation are deemed to be licensed. The comprehensive licence is valid for a period of five years and for a limited number of handsets.

Photo: PhotoDisc (ITU 010567)

The Radio Law also covers the issue of foreign radio stations. To be granted entry to operate within Japan, foreign radio stations, including 3G stations, must comply with the technical standards set out in the Radio Law. However, the actual procedures for demonstrating such compliance are not yet in place and indeed have yet to be determined. Japan is apparently hoping for the possibility of a 3G MoU (similar to the GMPCS MoU), before determining which procedures need to be followed for foreign handsets.

In April 2001, a significant breakthrough was made when the European Union and Japan signed a mutual recognition agreement (MRA) for equipment standards on a limited range of products. However, the MRA only covers a few countries and does not address the issue of visiting terminals. Thus, considerable work remains to be done to enable 3G users to roam freely from country to country. ■

- Radio transmission standards to be adopted in Japan were: DS-CDMA (direct spread CDMA) and MC-CDMA (multi-carrier CDMA).
- In the PHS bands, stricter spurious emission restriction, antenna power limitation of mobile terminals (less than or equal to 250 mW) and appropriate guard-band setting were important requirements in order to avoid the effects from interference.

Other ITU recommended systems (CDMA/TDD and TDMA) were not included in the report. However, the report did state that if necessary, these systems would be considered in the future.

Final IMT-2000 policies

MPT finalized its policies for the introduction of IMT-2000 and radio station licensing after accepting comments from its public consultation in February 2000. There were no strong objections to any of the proposed policies. One of the concerns expressed related to the equitable treatment of DS-CDMA and MC-CDMA. MPT responded that since both systems are covered by regulation on wireless equipment, treatment would not be discriminatory. Another concern had to do with the lack of consideration given to international roaming. MPT responded that negotiations for roaming would only occur at a later date and that for this reason, it was not cited as a licensing condition. Japan's licensing policy does not oblige operators to roam between different systems because in MPT's view, this should be left to commercial negotiation between the parties.

The policies on the introduction of IMT-2000 were finalized in March 2000, and fixed the number of operators to three per region.

New as well as incumbent operators were eligible for these three licences, with the exception of fixed regional operators. Operators were required to cover 50 per cent of the population in the first five years. The policies favoured applicants with know-how of IMT-2000 technologies and systems.

- Appropriateness of establishing radio stations to provide services unique to IMT-2000.
- Contribution to the healthy development of IMT-2000 through efficient utilization of radio spectrum, nation-wide services and compatibility with international standards.

Mobile Internet users can enjoy a range of devices and services. They can download images of cartoon characters, weather forecasts, news, entertainment, as well as local guides to shops and restaurants

Photos: NTT DoCoMo

Licences could be granted on a regional or nation-wide basis. The policies endorsed the technical conditions outlined in the TTC report, thereby approving DS-CDMA (or W-CDMA) and MC-CDMA (cdma2000). Third generation mobile operators were to be chosen through a comparative selection process. The forty-day application period was to begin in April 2000. Service was to be launched sometime in 2001.

The policies on the licensing of 3G radio stations covered the comparative selection method. Furthermore, the criteria below were to be taken into account during the licensing process if the number of applicants exceeded three:

- Suitability of services and alignment with customer demand.
- Base station deployment plan and the feasibility of resizing.
- Use of the spectrum to avoid or reduce interference with existing stations, such as PHS.

The licensing process

MPT began accepting licence applications in April 2000 for a forty-day period. Only the three incumbent operators (the NTT DoCoMo Group, IDO and Cellular Group (KDDI) and the J-Phone Group) applied for the three available 3G licences in each region and submitted their business plans. The licensing procedure was the same as for other Type 1 operators — the three applicants were required to obtain permission under the Telecommunication Business Law and a licence under the Radio Law. On 30 June 2000, MPT allowed changes to their status under the Business Law and granted preliminary permits for their radio stations under the Radio Law. Upon construction of their networks, these operators were to be duly inspected and licensed by the Ministry.

Granting 3G licences in Japan was straightforward: the number of applicants (three) matched the number of licences. The policies

Table 2 — Results of the licensing process in Japan (June 2000)

Operators	NTT DoCoMo	J-Phone	KDDI
Modulation methods	DS-CDMA	DS-CDMA	MC-CDMA
Date on which operator applied for licence	3 April 2000	19 April 2000	12 May 2000
Service launch	**30 May 2001*** Kanto region (Tokyo) **1 December 2001** Tokai and Kansai** regions **1 April 2002** Hokkaido, Tohoku, Hokuriku, Chugoku, Shikoku and Kyushu regions	**1 December 2001*** Kanto, Tokai and Kansai ** regions **1 October 2002** Hokkaido, Tohoku, Hokuriku, Chugoku, Shikoku and Kyushu regions	**30 September 2002** Kanto, Tokai and Kansai** regions **31 March 2004** Hokkaido, Tohoku, Hokuriku, Chugoku, Shikoku and Kyushu regions

Source: Japan Information Network.

* Both NTT DoCoMo and J-Phone applied for an extension of the launch date. First, J-Phone announced that it would delay the commercial launch of its services by six months. Then, NTT DoCoMo, expected to be the first operator to launch 3G services in Japan, announced that it would postpone the commercial launch of its 3G FOMA (freedom of mobile multimedia access) service from May to 1 October 2001. Meanwhile, it has been running an introductory FOMA service in the Tokyo area from 30 May 2001 to 30 September 2001 in order to assess system performance and provide customer feedback ahead of the October launch.

** Kinki region is also known as Kansai.

Source: Adapted from MPHPT.

for comparative selection were therefore not invoked. Effectively, there was no contest. As long as the applications met the basic requirement, 3G licences were granted. Table 2 summarizes the final licensing decision issued by MPT in June 2000. Licensees are subject to conditions as set out in the relevant legislation and in their business plans as submitted to the Ministry.

The main reason behind the limitation on the number of licences was the shortage of frequencies. The regulator had a total of 60 MHz available for 3G services (uplink and downlink). This meant that in order to allocate a minimum of 2 x 20 MHz blocks of spectrum, only 3 licences could be awarded. In addition, since PHS operators were occupying the 1.9 GHz spectrum, there was significant concern regarding interference with the 2 GHz spectrum allocated by the ITU World Radiocommunication Conference for 3G services.

Status of mobile virtual network operators

A major limitation to the competitive landscape for 3G is the lack of additional radio spectrum for mobile services. The concept of a mobile virtual network operator (MVNO) offers the possibility of introducing new players who stimulate the development of innovative services, improved quality of service and price competition. Mobile operators in Europe, for instance, are considering the provision of network access to MVNOs through commercial negotiations or through regulatory measures.

An MVNO has been defined as an operator that offers mobile services but does not own its own radio frequency. In this respect, it can be a mobile service provider or a value-added service provider. It is to be noted that there are divergent views on how to define an MVNO, and this is one of the current challenges facing regulators, particularly in Europe.

In Japan, the June 2001 amendments to the Telecommunication Business Law introduce

A modified auction approach

Licensing in Hong Kong SAR through a "royalty-based" system

The Office of the Telecommunications Authority (OFTA) in Hong Kong has released the rules for the auctioning of four 3G licences in September 2001. OFTA has adopted a hybrid approach that requires bidders to pass a pre-qualification round prior to bidding for the licences. In order to reduce the upfront financial burden on operators, the framework adopted involves a "royalty-based" payment scheme.

Each licensee would pay a percentage of its network turnover, and would also be subject to a schedule of minimum payments. The initial reserve price would be 5 per cent of network turnover, with an annual minimum payment of HKD 50 million (USD 6.4 million) for the first five years, increasing annually thereafter (i.e., from year six) for the remaining term of the 15-year licence period. The identity of bidders would be kept hidden during the main bidding stage in order to minimize opportunities for collusion.

Notably, the auction rules include the condition that licensees must set aside at least 30 per cent of their network capacity for mobile virtual network operators (MVNO). This condition caused controversy when first announced because operators said that no more than 20 per cent of a licensee's network should be reserved in order to avoid a situation whereby an MVNO could obtain more overall capacity than a licence holder by aggregating capacity from different network owners. Another licence condition is that a 3G licence winner who is also a 2G operator must offer domestic roaming services to new entrants.

Source: Total Telecom, "HK operators to bid for 3G licences despite complaints", 19 July 2001. ■

the concept of wholesale telecommunication businesses in an effort to create more flexible networks. In other words, the new provisions allow Type I operators to offer their network infrastructure to other Type I and II operators on a wholesale basis. The only regulatory procedure required would be a notification to the Minister. This concept is applicable to the radio spectrum, as the legislation does not limit it to the fixed-line environment.

Given the large number of mobile data users, the focus in Japan has now shifted from increasing the uptake of mobile data to developing the multi-purpose and multi-functional handset

Photo: Nokia (ITU 010574)

In fact, the study group which was set up in July 2000 and which released its final report in June 2001 on "Business models for next generation mobile phones", refers to these amendments as creating incentives for the introduction of MVNOs in Japan. This report endorsed NTT DoCoMo's plans to open up its network to other Internet service providers by 2003. The report also mentions KDDI's plans to open its mobile EZWeb network on a case-by-case basis, albeit without confirming a date. J-Phone has yet to declare an open network strategy but is looking into the possibility. The report stresses the importance of open network access to the expansion and success of future mobile services. It argues that an open network policy will allow new players to enter the mobile browsing market and provide a basis for the development of MVNOs and alternative information providers.

However, the report does include the caveat that since the concept of MVNO is not clearly defined and can refer to various types of businesses, each individual MVNO case is to be examined carefully under the Business Law before determining the appropriate set of regulatory measures. Before these amendments came into force, the United Kingdom's Virgin Group had already announced its intention to enter the MVNO market in Japan in April 2001 (see box on page 18).

Conclusion

The first round of licensing 3G mobile services in Japan was a relatively simple matter. Although only the monopoly local fixed-line operators, *NTT East* and *NTT West*, were excluded from the process, the government received only three applications for the three available licences. These 3G licences were allocated to the country's three incumbent mobile operators (NTT DoCoMo, KDDI, and J-Phone), covering over 90 per cent of the mobile market. None of these operators had to pay up-front fees — they were only required to pay radio-usage fees in the region of USD 5 per subscriber per year. At every stage leading up to the granting of licences, the government emphasized the importance of transparency of the process and public consultation. PHS operators were financially constrained and the larger PDC operators had been merged into one of the three incumbents.

Like other regulatory authorities such as the *Office of the Telecommunications Authority* (OFTA) of the Hong Kong Special Administrative Region (SAR) and the United Kingdom's Office of Telecommunications (Oftel), MPHPT is concerned with enhancing competition in the 3G market after the licensing process. MPHPT has been exploring the possibility of allowing market entry to MVNOs, an idea which has been endorsed by the Ministry's study groups. In order to allow new players to flourish in the 3G arena, mobile operators have been encouraged to open up their platforms for mobile Internet access and content provision.

Given the large number of mobile data users, the focus in Japan has now shifted from increasing the uptake of mobile data to developing the multi-purpose and multi-functional handset. In the future, mobile operators will have to be more and more imaginative about the purpose of the mobile phone. In this regard, Japan appears to be ahead of most other countries. ■

What are MVNOs?*

The question of mobile virtual network operators (MVNO) is a fairly new one. For the first time, the benefits and pitfalls of regulating these emerging players were discussed at the international level within the scope of the ITU Strategic Planning Workshop on licensing 3G mobile (Geneva, 19 to 21 September 2001).

To date, there is no consensus on what constitutes an MVNO. Generally, an MVNO is defined as an operator that offers mobile services to end users but that does not have a governmental licence to use its own radio frequency. Instead, an MVNO has access to one, or in theory, perhaps more, of the radio elements of a mobile operator and is able to offer services to subscribers using such elements. These elements include the radio transmission link, its control functions and the mobility management functions that keep track of exactly where mobile handsets are located so that calls can be delivered to them.

Analysts such as Pyramid Research define an MVNO as a company that provides mobile voice and data services to end users through a subscription agreement, without having access to the spectrum. This definition goes on to state that through commercial agreements with licensed mobile network operators, an MVNO negotiates to buy excess capacity for re-sale to customers.

The Office of Telecommunications (Oftel), the United Kingdom's regulator, defines MVNOs to cover activities undertaken by organizations that offer mobile services but do not issue their own subscriber identity module (SIM) card. Figure 1 shows the interface between an MVNO and the telecommunications network.

From these definitions, MVNOs appear to vary in nature, depending on the extent to which they rely on the facilities of the host mobile network. So far, MVNOs that have obtained access to host networks have done so through commercial negotiation. For example, Virgin Mobile, which has a presence in a number of countries around the world (see box on page 18), since its launch in the United Kingdom in November 1999, has not established its own mobile switching centre and does not have its own mobile network code but is generally regarded by end users as a real operator and competes on a "carrier-like footing" with infrastructure-based operators.

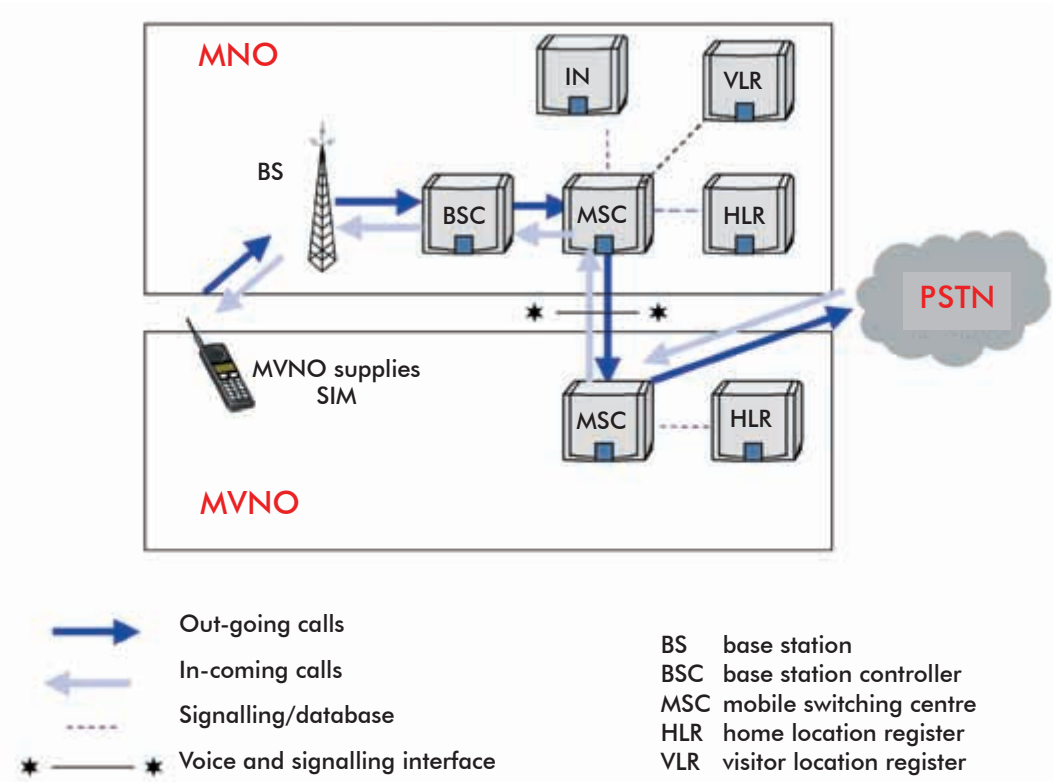
Some analysts argue that regulation should facilitate the operations of MVNOs since they offer consumers a wider choice of services and applications at lower prices, and thereby result in a more efficient use of the spectrum. Others argue that the mobile environment is sufficiently competitive, and that the advent of 3G operators will further increase competition and that regulatory intervention in support of MVNOs is unnecessary.

*This article is based on the "Licensing of third generation (3G) mobile: Briefing Paper" prepared by Patrick Xavier of the School of Business, Swinburne University of Technology, Melbourne, Australia (pxavier@swin.edu.au) ahead of the ITU Strategic Planning Workshop (Geneva,19–21 September 2001).

Current regulatory positions regarding MVNOs

The views of regulators towards MVNOs varies significantly at present. Regulators in many countries are still considering whether (and if so to what extent) regulatory intervention, including the

Figure 1 — An MVNO customer making and receiving calls



Source: Ovum.

regulation of access price and conditions is necessary.

There have been arguments both for and against MVNO regulation. Within the European Union (EU), directives on telecommunications regulation currently do not mandate MVNOs access to a licensed 3G operator's network.

Those in favour of regulation argue that the mobile network operators control the available radio spectrum, which is a bottleneck facility and an entry barrier for new mobile network operators. Also, mobile network operators are less likely to provide MVNO access unless it is a regulatory requirement. They maintain that regulation of the mobile market is failing, which is another reason why MVNO regulation maybe a good idea. Mobile operators have very high profit margins of 25 per cent, in some cases significantly over costs. Current regulation, as interpreted by some national regulatory authorities, already gives them the power to enforce an access obligation on existing operators.

Arguments against regulatory intervention are based on the fact that the benefits of MVNOs are as yet unproven, and that there is inadequate evidence that market failure has occurred. The mobile market is competitive by nature and therefore does not require regulation. There is no industry consensus that MVNO access is necessary, and the bleak possibility that MVNO's could even discourage investment in mobile networks (both 2G and 3G). Anti-regulatory intervention stances also argue that regulatory measures such as indirect access or 3G networks will improve the competitive situation.

Comparison with local loop unbundling

Those against mandating MVNO access to 3G networks argue that it is not the same as "local loop unbundling" in the fixed network. Several operators and regulators have begun to think about aligning MVNO access in the

mobile network to local loop unbundling in the fixed network. They point out that local loop unbundling was introduced to provide competition to the local and access markets so that the incumbent would not in the long term be the only operator (aside from cable operators) to control future broadband markets. They argue that MVNO access is a far more complex issue.

The extent of price competition resulting from the entry of MVNOs will depend on the terms and conditions with which MVNOs gain access to mobile networks. It is likely that regulatory intervention will be required in determining the prices, terms and conditions for the access by MVNOs to the networks of licensed operators since the early indications are that commercial negotiation will not be easy to conclude.

Oftel recently conducted a research to obtain an up-to-date assessment of the state of policy development on the MVNO concept in other European countries. Oftel found that, with a few exceptions, it is early days for European regulators. Issues surrounding the MVNO concept have not been discussed in any great detail, and hence most regulators are not yet in a position to provide categoric statements of policy. "The exceptions are the Norwegian, Danish and Swedish regulators — all three have formally ruled on disputes relevant to the MVNO concept in response to requests they have received from an organization called *Sense Communications* (a Norwegian based service provider)", according to Oftel's research. Sense had attempted to negotiate access to airtime from the existing operators that were reluctant to grant it, particularly as Sense wanted to use its own mobile network code and SIM card.

In the Hong Kong Special Administrative Region, the Office of the Telecommunications Authority (OFTA) has indicated that 3G networks should be opened up to MVNOs. In an analysis paper based on an industry-wide consultation, OFTA proposed a 3G licensing framework based on an "open network" requirement. Under this requirement, 3G service provision would be separated from network operation in order to enhance competition in services and provide customers with more choice and price packages. Successful bidders of 3G licences, planned for September 2001, will be required to make at least 30 per cent of their network capacity available to unaffiliated MVNOs and content and service providers. Furthermore, any successful bidder that currently operates a second-generation network must agree to offer domestic roaming service to all new entrants.

Pricing principles

There are a number of strategies that could be employed by an MVNO entering the 3G market. At one end are MVNOs that have made substantial investments in infrastructure and facilities for the provision of 3G services. Such MVNOs would require extensive interconnection with fixed and mobile networks and would depend on the mobile networks only for the minimum services that they would not be able to supply themselves because they do not have licences to use spectrum. These MVNOs would be likely to require the use of the radio elements of operators of 3G networks and such fixed parts of networks necessary to route calls between the radio elements of the licensed operator and a point of interconnection from which calls can be passed on to the MVNO's network.

At the other end are MVNOs that are primarily resellers of wholesale 3G network capacity. These MVNOs would have minimal investment in network infrastructure and would concentrate their activities and investments in marketing, customer service and billing. Licensed operators would be responsible for undertaking the verification operations and database functions required for the carriage of a call by an MVNO customer. This would include the transport and delivery of calls to a terminating network. Licensed operators would then need to pass on billing and service performance information to the MVNO that would package this information and bill the customer accordingly.

An MVNO's ability to offer effective and sustainable competition against 3G network providers will be severely limited if network providers, who effectively control near monopoly 'bottleneck' facilities, are in a position to charge monopoly prices for their services. Because network providers are vertically integrated into the competitive upstream or downstream markets for the provision of 3G services, they may also have incentives to restrict access to the

Virgin Mobile
An example of an MVNO

A typical example is Virgin Mobile which emerged as a 50:50 joint venture between the Virgin Group and One2One. Virgin buys airtime and network capacity from One2One on a wholesale basis, then packages and sells it to its target customer base. Unlike a pure reseller, Virgin assumes roles and responsibilities traditionally associated with a full network operator, including SIM card allocation. Virgin Mobile offers both traditional mobile voice and value-added services. A key factor in Virgin's success has been the integrated distribution and sales platform it has built: the call centre, the Web and numerous Virgin distribution outlets.

Virgin Mobile has over 675 000 customers in the United Kingdom filling about 8 per cent of One2One's network, and is seeking to expand its operations internationally. Since the UK launch, a number of operators from around the world have approached Virgin with a view to establishing joint ventures to operate in various markets. Virgin Mobile has already established a presence in the United States, Australia and Singapore and intends to be in all major European countries by year-end 2002.

facilities required by competitors through the imposition of prices which make it uneconomic for MVNOs to enter the market and effectively compete for 3G customers.

The pricing principles that apply to the provision of services to MVNOs should reflect the nature of an MVNO and the extent to which it is engaging in interconnection or pure resale of network capacity. MVNOs with extensive networks of their own that make only minimum use of the licensed operator's facilities are identical to other network service providers and should be entitled to interconnection on the same basis as that adopted for licensed operators.

It has been argued that such cost-based charging for access to a 3G operator's network by MVNOs would become less necessary as the market becomes more competitive. It has also been claimed that cost-based access charges for MVNOs could damage incentives to invest in infrastructure, particularly in the early stages of investment in 3G systems. These arguments should be assessed within the context of the overall objective of promoting and strengthening the competitive framework for mobile services, which is the prime rationale for allowing MVNOs to operate in the market in the first place.

3G mobile services resale, full network interconnection and full facilities-based competition are complementary rather than alternative market entry strategies. Market factors such as population density, customer type, timing of entry and penetration levels by new entrants will determine which strategy is used in different areas and at different stages of market development. Relying solely on full facilities-based competition to deliver competing 3G services may not provide 3G service competition to all end users given the costs involved in duplicating a full network throughout all areas of a country. As such, service-based competition through the resale of network capacity will be an important element of the overall state of competition in the 3G market.

Currently the EU obliges companies with a market share of over 50 per cent to open their networks to other users at a cost-plus-margin-based price and for the moment, only *KPN Mobile* is in this position. Other licensed operators with market shares of more than 35 per cent do not have to charge on a cost-plus-margin basis, so leasing from them could be more expensive.

Oftel takes the view that if MVNO services were to be offered, the logical principle for charging would be retail-minus. Retail-minus sets an interconnection price by looking at foregone costs and deducting these from the retail price. The costs foregone would be those associated with customer care, billing, provision of value-added services and transportation. The 3G Briefing Paper concludes that simple resale of 3G capacity can encourage entry of efficient service providers of retail 3G services. ■

Morocco
country case study*

Why case studies?

The reform of the information and communication technology (ICT) sector has fuelled major changes at the regulatory and institutional levels. One of the most striking changes has been the rise of the regulatory agency in the communications sector. There are now 106 telecommunication regulatory agencies in the world, and their number is expected to increase to at least 120 by year-end 2001.

It is one thing for countries to make a policy decision to create an independent regulatory agency, and quite another to empower the agency to act independently and effectively. Regulatory agencies are not created in vacuums. Inevitably, they are the products of political, social, legal and economic conditions that exist at fixed points in time in each country. Nor are these conditions static; regulatory approaches and policies change, and agencies change with them.

There is no textbook for government policy-makers to quote, chapter and verse, in establishing an independent regulatory agency that will achieve their national goals. The means by which each country creates, structures and implements its regulatory body is one of the most important factors in the success of its reform process. Increasingly, then, newly appointed and responsible regulators are searching for models and best practices as guideposts for their own actions.

As more and more Member States of the International Telecommunication Union (ITU) ask for references and models in regard to the independence, effectiveness and operation of regulatory agencies, the Sector Reform Unit of the Telecommunication Development Bureau (BDT) has decided to conduct five case studies in this area in 2001. Each of them investigates how the country selected has established its regulatory agency and assesses its effectiveness by reviewing its structure, its functions and powers, its financing and its degree of transparency, independence and fairness. This article deals with the first case study, which is Morocco.

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Why Morocco?

Morocco is a developing country with strong traditions and great economic and social contrasts. It has a population of over 29 million, more than half of whom are under the age of 20. Morocco has a modern Post Office and Telecommunications Act, a new Competition Act (which entered into force in July 2001) and a national strategy to make itself a player in the information and knowledge society. But it has not been an easy road.

In the space of three years, the national telecommunication regulatory agency, ANRT, had established its legitimacy, credibility and independence despite institutional and structural constraints. This photo shows a partial view of the ANRT Head Office in Rabat

(ITU 010074)

Morocco seemed entirely appropriate for a case study focusing on the first stage of the telecommunication reform process, in view of the success that the country has achieved in this area and the fact that a number of its practices and procedures can serve as a useful reference for others.

The sequence of events in the introduction of reforms in Morocco has undoubtedly played an important role in the success of this initial phase. First of all, a new law regulating the telecommunication sector was adopted, then a regulatory agency was set up, then certain segments of the market were opened up to competition and licences issued, and subsequently the traditional operator was partly privatized. In other words, Morocco made sure it had a proper legal and regulatory framework installed before opening up the market to competition.

In the space of three years, the national telecommunication regulatory agency (*Agence nationale de réglementation des telecommunications* — ANRT) has established its legitimacy, credibility and independence despite institutional and structural constraints. As soon as ANRT was set up, its first task was to put in place the procedure for awarding the second GSM licence, which was a success in terms of its transparency and openness and the results achieved.

The liberalization and partial privatization of telecommunications has had positive results in several areas. They included the sale of the second GSM licence for USD 1.1 billion and partial privatization of the traditional operator (*Maroc Télécom*) for USD 2.3 billion. These events were followed by a rapid increase in the number of mobile subscribers, from 116 000 in 1998 to nearly 3 million by the beginning of 2001, exceeding all public and private sector estimates made at the time when the second GSM licence was being awarded. Furthermore, the number of mobile subscribers surpassed that of fixed-line subscribers in 2000.

How did Morocco introduce these reforms?

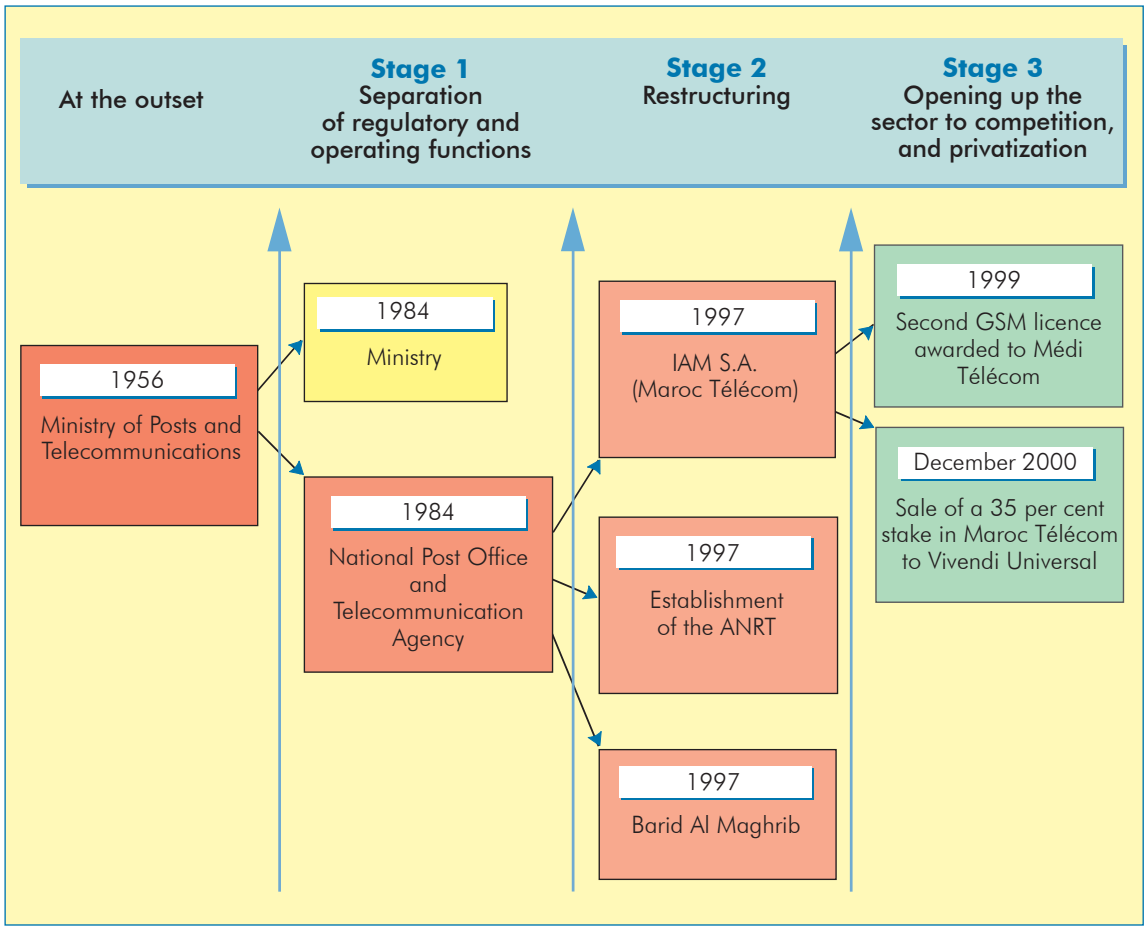
Implementation of the initial reforms in the telecommunication sector did not come without effort. The debate that began in 1984 finally reached a conclusion in 1996 with the adoption of Law 24-96 on telecommunications. Under the aegis of the late King Hassan II and senior State officials, this initial set of reforms was then able to see the light of day.

A sweeping restructuring of the sector has been carried out in three stages (see Figure 1). It essentially consisted in splitting the national post office and telecommunication agency (*Office national des postes et des télécommunications* (ONPT)), into two separate entities — a telecommunication entity called *Itissalat Al Maghrib S.A.* (Maroc Télécom) and a postal entity called *Barid Al Maghrib* (Postes Maroc) — and establishing an independent regulatory body, ANRT. Under this legislation, ANRT is now responsible for implementing telecommunication policy, administering the application of laws and regulations with respect to all those involved in the telecommunication sector and resolving disputes.

The reforms are currently moving ahead swiftly, and will extend to all sectors of public infrastructure (energy, postal services, transport, etc.). These reforms, including the establishment of a credible and independent regulatory agency, backed by the political will that has been evident in regard to their implementation and monitoring at the government level, have enabled Morocco to take its place on the international stage and gain a reputation as a stable country with clear rules and a high level of confidence. At the economic level, this has manifested itself in the form of major investments by foreign firms in Morocco's telecommunication market.

The results achieved so far have served to reassure anyone who at the outset might have been resistant to change and to the need to establish a telecommunication regulatory agency.

Figure 1 — Reforms and gradual deregulation in Morocco



Source: Adapted from ANRT.

Table 1 — Plans for liberalizing the telecommunication market, and outlook for the future

Liberalization plans	Timetable	Present situation (2001)	Outlook for the future
Radio networks involving shared resources	End of 2001	**Mobile telephony:** Duopoly (Maroc Télécom and Médi Télécom)	By 2003, all basic and value-added services provided through both mobile telephony and fixed telephony will be operating in a competitive market
Local and long-distance network	End of 2001		
Extension of the fixed network	End of 2001	**Fixed telephony:** Monopoly (Maroc Télécom)	
Local loop	2002		
International network and third GSM licence	2003		

Source: Adapted from ANRT.

Now that Morocco has successfully established a regulatory agency that is effective, credible and legitimate in discharging its technical regulatory functions, the country is about to embark on a critical stage in its development. In this second stage, ANRT will have to demonstrate its effectiveness and ability in regulating competition, as basic services are liberalized (see Table 1).

ANRT — How has it succeeded in establishing its credibility, legitimacy and independence?

An analysis of the effectiveness of ANRT (www.anrt.net.ma) in the field of communications, reviewing its organizational structure, its financing, its functions, mandates, powers and capacities from the standpoint of transparency, independence, fairness and receptivity is available at www.itu.int/itu-d/treg/. This case study provides Morocco's reply to all the following questions, which apply to any regulatory agency:

- What institutional (organizational) structure?
- What type of institution?
- What composition?
- What mode of operation?
- What mandates, functions, powers and responsibilities?
- What financing?
- How should a clear and transparent procedure for awarding licences be established?
- How should disputes regarding interconnection and unfair competition be settled?
- What procedure should be followed for recruitment and organization of work?
- What problems are to be expected?
- What is the best practice and what are the challenges? ■

***Morocco** will be host to the ITU Plenipotentiary Conference from 23 September to 18 October 2002.*

Dealing with cyberculture*

Photo: Avaya

"Creating new leaders for e-culture" was the theme of a recent global conference (20 to 24 August 2001) held at the Cable & Wireless Campus in Coventry (United Kingdom). ITU in its efforts to bridge the digital divide supports the creation of electronic culture while protecting and conserving local cultures and values. This global event was one such effort, bringing together as it did some 200 participants from 100 countries, four regional organizations, several non-governmental organizations (NGO) and UNAIDS. It was organized by the ITU Telecommunication Development Bureau's Human Resources Development Unit in collaboration with Cable & Wireless and the United Kingdom Telecommunication Academy (UKTA).

Participants discussed the many facets of e-culture: e-governance, e-commerce, e-learning, e-society and e-health. Above all, they sought to identify the critical issues in the migration to e-culture and to define the role of telecommunications and of the human resources development function in this process. They also focused on how to prepare managers of communications and senior executives for e-culture and on finding international or multilateral cooperation opportunities for the benefit of developing countries. The conference was chaired by David Mellor, President of the Cable & Wireless Virtual Academy. He was ably assisted by two Vice-Chairmen: Idrissa Touré, Director of the *Ecole Supérieure Multinationale*

* This article is based on a report from Barbara Wilson of the ITU's Human Resources Development Unit, who covered the global conference on "creating new leaders for e-culture" in Coventry for *ITU News*. The full report is available at www.itu.int/ITU-D/hrd.

Some 200 participants in the global conference on "creating new leaders for e-culture" join in a "family" photo at the Cable & Wireless campus in Coventry (United Kingdom). The Conference was organized by the ITU Telecommunication Development Bureau's Human Resources Development Unit in collaboration with Cable & Wireless and the United Kingdom Telecommunication Academy (UKTA)

(ITU 010077)

des Télécommunications (ESMT), one of the two regional African telecommunication training institutes which ITU is assisting to evolve into Centres of Excellence, and Héctor Rodríguez, Executive Secretary of the *Comisión Técnica Regional de Telecomunicaciones Centroamérica* (COMTELCA) — the technical commission for Central America with subcommittees for regulators and operators.

From the meeting, the challenges remain enormous but now is the time to truly prepare for that e-culture future. Louis Galea, Minister of Education of Malta, who gave the keynote address at the opening ceremony, remarked: "The sad fact is that the majority of the six billion people who inhabit our planet have been completely shut out of the digital revolution and the promises it holds. How can telecommunications be used to usher in e-culture, especially in those areas where the most basic of e's, electricity, is still missing?"

As part of its strategy to facilitate the integration of developing countries into the information society, ITU plans to hold discussions with a wide-range of high-level officials in developing countries. A key objective is to assist such officials establish national strategies that aim to create an e-culture that introduces the use of the Internet at all levels of the education system and increases electronic applications such as tele-education, telemedicine, teleworking and e-commerce to benefit all segments of their population.

Participants were primarily from the various branches of the communications sector (regulation, finance, management, law, human resource management and development). Both education and health sectors were represented.

All participants were directly concerned with the impact and consequences of the new communications environment on their communities and their organizations. Each day of the conference focused on a different aspect of e-culture.

e-governance

Information and communication technologies (ICT) have opened the door to new opportunities for governments and citizens alike to communicate with each other more easily and effectively. Many governments have created websites enabling the public to access information they need in their personal and professional lives. For example, in some countries, rural inhabitants can now file an online building permit application without having to travel days to the capital city; farmers can receive the most up-to-date vaccination alerts for their livestock; and consumers can check government vehicle safety reports before buying a new car. All of this is possible from public Internet access sites or Internet cafés. Of course, the ease with which official information now flows also poses new challenges, including protection of privacy and how to reach those who lack computer or language literacy. The discussion on e-governance revolved around:

- the types of interaction between government and the public that can be conducted over the Internet and how the public's privacy can be protected legally;
- the policies and strategies governments should adopt to ensure public participation in e-governance;
- the tools and resources that should be made available for e-governance;
- how ICT policy-makers can help non-computer oriented government leaders to understand the opportunities and challenges of e-governance;
- what ITU can do to promote e-governance.

e-services

The e-culture phenomenon is a result of the profound transformation in the ICT sector. For example, the cost of technology is falling, digital mobile technology and access to broadband networks and services are becoming more widely available, and the Internet protocol (IP) is emerging as the platform for delivering convergent services. These changes are introducing new challenges (as well as opportunities) as e-transactions are conducted across geographical boundaries increasing the need for an environment that encourages the use of technologies for trust and security. As leaders from all nations strive to be part of this digital revolution and as service providers seek new business models and technologies to deliver value-added e-services, it is evident that several factors contribute to the success of e-services deployment. Participants discussed:

- what needs to be done by countries to stimulate the development of the core infrastructure;

What is a socially just society?

An interesting definition of what constitutes a "socially just society" emerged from the conference. A socially just society was defined as one that:

- encompasses all social needs with a minimum of discrimination and inequalities;
- facilitates integration, promotes social development, and strives to reduce poverty;
- takes into account all aspects of real life and beliefs;
- promotes cultural change (able to adapt to technical changes easily);
- is accessible and affordable for everyone (universal access);
- is able to build broader communities;
- addresses community needs.

• how solutions and services can be built up to ensure security, trust and confidence in e-business transactions;

• the alliances and partnerships that are key to delivering successful e-services with the breaking down of barriers across the convergent industries of telecommunications, broadcasting and computing;

• the role ITU can play to enable the development of e-services within the framework of its activities to bridge the gap between developing and industrialized countries in new technologies and services.

e-learning

With the rapid and fundamental changes occurring in the telecommunication and education sectors, e-learning has a key role to play in coping with this reality. One of the greatest challenges facing most countries is how they can change and prepare themselves to introduce e-learning and so improve the effectiveness and efficiency of their learning systems. Participants discussed some of the fundamental questions that governments, educational institutions, management (including managers for human resources management and development) must address in order to achieve their objectives to improve learning and widen the scope of access.

Mr Galea told participants: "In the midst of this fast process of change, academic institutions are being urgently invited to assess whether their educational, training, and research programmes are in fact developing the right milieu for e-culture and e-governance to take route and flourish. The key to the success of such initiatives is in education, training, and innovation as much as it is in the raw deployment of technology. We are convinced that we can only and truly bridge the digital divide by going back to basics — ensure that absolutely no child lacks the basic literacy and ICT skills by the time one ends Primary School." By way of an example, in Malta, the government has embarked on a three-year project to provide a fast and efficient Internet connection in all schools in the country.

Photo: Avaya

"In the midst of this fast process of change, academic institutions are being urgently invited to assess whether their educational, training, and research programmes are in fact developing the right milieu for e-culture and e-governance to take route and flourish. The key to the success of such initiatives is in education, training, and innovation as much as it is in the raw deployment of technology. We are convinced that we can only and truly bridge the digital divide by going back to basics — ensure that absolutely no child lacks the basic literacy and ICT skills by the time one ends Primary School."

Louis Galea, Minister of Education of Malta in his keynote address to the global conference on "creating new leaders for e-culture"

e-society/e-health

The contribution of e-culture to the various needs of life is fundamental for the evolution towards a knowledge and information society. Such evolution should develop towards a more equitable society. Questions and issues of gender, social inequalities, lack of access, illiteracy, to name but a few, should be taken into account when defining an ICT policy and promoting e-culture, participants noted.

The knowledge and information society can and should be a more just society where the tools provided by e-culture are used to minimize the inequalities

found in society today. Health is without doubt one of the basic needs of each individual and of society.

In order to draw up recommendations on this theme, participants focused on:

- what is a socially just e-culture;
- the strategies that should be developed to promote the inclusion of women, youth and marginalized groups in e-culture;
- the role of telecentres in the introduction of e-culture in developing countries;
- the major challenges for developing e-health;
- the policies and strategies that should be adopted by national governments, health managers (ministries, universities, hospitals and NGOs) and education managers (ministries, universities, unions and schools);
- the role of the public and private sectors in the development of e-culture;
- the various sustainable funding mechanisms for e-culture development.

For some of the participants, e-society brings with it a new milieu of values, culture, behaviour, work patterns and organizational designs — with interactions within organizations and external to them changing beyond recognition. The real challenge is whether all people are ready to change the way they do things.

The final report of the global conference has been endorsed by a meeting of the Special Group on Human Resources Development within ITU's Telecommunication Development Sector (ITU–D). This meeting that took place right on the heels of the conference has requested that ITU organize conferences such as the Coventry global event every two years. The conclusions and recommendations of the conference, along with all related documents, are available at www.itu.int/ITU-D/hrd. ■

FINAL ACTS OF THE WORLD RADIOCOMMUNICATION CONFERENCE (GENEVA, 1997)

The Government of **France** has approved the above-mentioned Final Acts.

The instrument of approval was deposited with the Secretary-General on 6 August 2001.

CHANGES

C-Cube Microsystems, Inc., which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **LSI Logic Corporation.**

Laboratoires d'Electronique Philips (LEP), which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **Philips Recherche France.**

Telecom Systems Division/3M, which participates in the work of the Telecommunication Standardization Sector, has changed its name. The new denomination is **3M Telecommunications.**

NEW MEMBERS

Radiocommunication Sector

Hutchison 3G UK Ltd (Maidenhead, Berkshire, United Kingdom), *Japan Radio Air Navigation Systems Association (Tokyo)*, *MobilCom Multimedia GmbH (Büdelsdorf, Germany)* and *Tele Norte Leste Participações S.A. (TELEMAR) (Brasilia)* have been admitted to take part in the work of this Sector.

Telecommunication Standardization Sector

Hutchison 3G UK Ltd (Maidenhead, Berkshire, United Kingdom), *Pagoo, Inc. (Apex, NC)*, *Psytechnics Limited (Ipswich, United Kingdom)*, *Tele Norte Leste Participações S.A. (TELEMAR) (Brasilia)* and *Telecomunicações*

de São Paulo S.A. (TELESP) (São Paulo, Brazil) have been admitted to take part in the work of this Sector.

Telecommunication Development Sector

LOTENY TELECOM (Abidjan), *Tchad Mobile S.A. (N'Djamena)* and *Tele Norte Leste Participações S.A. (TELEMAR) (Brasilia)* have been admitted to take part in the work of this Sector.

NEW ASSOCIATES

Radiocommunication Sector

Mitsubishi Research Institute, Inc. (Tokyo) has been admitted to take part in the work of Study Group 1.

Telecommunication Standardization Sector

CENiX, Inc. (Irvine, CA) and *Optical Solutions, Inc. (Minneapolis, MN)* have been admitted to take part in the work of Study Group 15.

STRUCTURAL CHANGE

Republic of the Sudan

The *Ministry of Information and Communications* has been established following a ministerial reshuffle.

VACANCY NOTICES

Circular letters (via facsimile) which have been sent to all Member States and Sector Members of the Union announce the following vacancies:

- one post of **Head, Business Development and Marketing Division,** Grade P.5, to be filled in the General Secretariat, TELECOM Secretariat, as soon as possible for up to two years with possibility of extension (circular letter No. 136 of 7 August 2001; vacancy notice No. 31-2001 ITU; final date for submission of applications: 8 October 2001);
- one post of **Public Relations and Business Development Officer,** Grade P.3, to be filled in the General Secretariat, TELECOM Secretariat, as soon as possible for one year with possibility of extension (circular letter No. 135 of 3 August 2001; vacancy notice No. 32-2001 ITU; final date for submission of applications: 3 October 2001);
- one post of **Head of the Budget Division,** Grade P.5, to be filled in the General Secretariat, Finance Department, as soon as possible for up to two years with possibility of extension (circular letter No. 133 of 3 August 2001; vacancy notice No. 33-2001 ITU; final date for submission of applications: 3 October 2001);
- one post of **Head, Buildings and Technical Installations Service,** Grade P.3; to be filled in the General Secretariat, Common Services Department, as soon as possible for up to two years with possibility of extension (circular letter No. 134 of 3 August 2001; vacancy notice No. 34-2001 ITU; final date for submission of applications: 3 October 2001);
- one post of **Head, Forum Division,** Grade P.5, to be filled in the General Secretariat, TELECOM Secretariat, as soon as possible for up to two years with possibility of extension (circular letter No. 137 of 10 August 2001; vacancy notice No. 35-2001 ITU; final date for submission of applications: 10 October 2001).

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

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

PUBLICATIONS

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

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

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

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

Telecommunication Development Sector

Handbook on new technologies and new services
Fascicle 2: Digital networks and services
(2002, Report)
Separate editions in F, E, S
Article: 19165 CHF 144

Promotion of infrastructure and use of the Internet in developing countries
(2002, Final Report)
Separate editions in F, E, S
Article: 19148 CHF 38

Handbook on disaster communications
(2002, Final Report)
Separate editions in F, E, S
Article: 19154 CHF 98

Identify study group Questions in the ITU–T and ITU–R Sectors which are of particular interest to developing countries and systematically, by way of annual progress reports, inform them of the progress of work on the Questions to facilitate their contributions to the work on those Questions as well as, ultimately, to benefit from their outputs in a timely manner
(2002, Report)
Separate editions in F, E, S
Article: 19145 CHF 14

Radiocommunication Sector

ITU–R Recommendations, Volume 2000 — BS Series
Part 1: Broadcasting service (sound)
Separate editions in F, E, S
Article:19035 CHF 136

ITU–R Recommendations, Volume 2000 — BS Series
Part 2: Broadcasting service (sound)
Separate editions in F, E, S
Article: 19038 CHF 168

ITU–R Recommendations, Volume 2000 — BT Series
Part 2: Broadcasting service (television)
Separate editions in F, E, S
Article: 18980 CHF 168

ITU–R Recommendations, Volume 2000 — BT Series
Part 3: Broadcasting service (television)
Separate editions in F, E, S
Article: 18984 CHF 168

ITU–R Recommendations, Volume 2000 — F Series
Part 2: Fixed service — Frequency sharing aspects
Separate editions in F, E, S
Article: 19026 CHF 136

ITU–R Recommendations, Volume 2000 — F Series
Part 3: Fixed service — HF systems
Separate editions in F, E, S
Article: 19029 CHF 136

ITU–R Recommendations, Volume 2000 — P Series
Part 2: Radiowave propagation
Separate editions in F, E, S
Article: 18955 CHF 200

ITU–R Recommendations, Volume 2000 — RA Series
Radio astronomy
Separate editions in F, E, S
Article: 18996 CHF 47

ITU–R Recommendations, Volume 2000 — S Series
Part 1: Fixed-satellite service
Separate editions in F, E, S
Article: 18958 CHF 200

ITU–R Recommendations, Volume 2000 — S Series
Part 2: Fixed-satellite service
Separate editions in F, E, S
Article: 18961 CHF 168

ITU–R Recommendations, Volume 2000 — S Series
Part 3: Fixed-satellite service
Separate editions in F, E, S
Article: 18964 CHF 200

ITU–R Recommendations, Volume 2000 — SF Series
Frequency sharing and coordination between fixed-satellite and fixed service systems
Separate editions in F, E, S
Article: 19032 CHF 136

ITU–R Recommendations, Volume 2000 — SM Series
Part 1: Spectrum management
Separate editions in F, E, S
Article: 18946 CHF 136

ITU–R Recommendations, Volume 2000 — SNG Series
Satellite news gathering
Separate editions in F, E, S
Article: 18968 CHF 42

ITU–R Recommendations, Volume 2000 — TF Series
Time signals and frequency standards emissions
Separate editions in F, E, S
Article: 18971 CHF 76

continued

ITU–R Recommendations, Volume 2000 — F Series
Part 1A: Fixed service — Radio-relay and other systems
Separate editions in F, E, S
Article: 19020 CHF 220

ITU–R Recommendations, Volume 2000 — F Series
Part 1B: Fixed service — Local access systems
Separate editions in F, E, S
Article: 19023 CHF 109

Telecommunication Standardization Sector

ITU–T Recommendations on CD-ROM
(Single edition, June 2001)
Separate editions in F, E, S
Article: 17599 CHF 1200

World Telecommunication Standardization Assembly (WTSA) — The Orange Book: Book 1
(Montreal, 2000)
Separate editions in F, E, S
Article: 19674 CHF 55

World Telecommunication Standardization Assembly (WTSA) — The Orange Book: Book 2
(Montreal, 2000)
Separate editions in F, E, S
Article: 19675 CHF 124

ITU–T Recommendation D.000 (10/2000)
Terms and definitions for the Series-D Recommendations
Separate editions in F, E, S
Article: 19785 CHF 12

ITU–T Recommendation D.93 (04/2000)
Charging and accounting in the international land mobile telephone service (provided via cellular radio systems)
Separate editions in F, E, S
Article: 19974 CHF 17

ITU–T Recommendation D.140 (10/2000)
Accounting rate principles for international telephone services
Separate editions in F, E, S
Article: 20073 CHF 12

ITU–T Recommendation G.653 (10/2000)
Characteristics of a dispersion-shifted single-mode optical fibre cable
Separate editions in F, E, S
Article: 19857 CHF 12

ITU–T Recommendation G.654 (10/2000)
Characteristics of a cut-off shifted single-mode optical fibre cable
Separate editions in F, E, S
Article: 19825 CHF 17

ITU–T Recommendation G.655 (10/2000)
Characteristics of a non-zero dispersion shifted single-mode optical fibre cable
Separate editions in F, E, S
Article: 19958 CHF 17

ITU–T Recommendation G.805 (03/2000)
Generic functional architecture of transport networks
Separate editions in F, E, S
Article: 20094 CHF 29

ITU–T Recommendation G.827.1 (11/2000)
Availability performance objectives for end-to-end international constant bit-rate digital paths at or above the primary rate
Separate editions in F, E, S
Article: 19866 CHF 12

ITU–T Recommendation G.871/ Y.1301 (10/2000)
Framework of Optical Transport Network Recommendations
Separate editions in F, E, S
Article: 19928 CHF 12

ITU–T Recommendation G.972 (10/2000)
Definition of terms relevant to optical fibre submarine cable systems
Separate editions in F, E, S
Article: 19906 CHF 17

ITU–T Recommendation G.976 (10/2000)
Test methods applicable to optical fibre submarine cable systems
Separate editions in F, E, S
Article: 19925 CHF 22

ITU–T Recommendation H.324 Annex H (11/2000)
Mobile multilink operation
Separate editions in F, E, S
Article: 20070 CHF 12

ITU–T Recommendation I.356 (03/2000)
B-ISDN ATM layer cell transfer performance
Separate editions in F, E, S
Article: 19773 CHF 29

ITU–T Recommendation I.357 (11/2000)
B-ISDN semi-permanent connection availability
Separate editions in F, E, S
Article: 19909 CHF 12

ITU–T Recommendation I.371 (03/2000)
Traffic control and congestion control in B-ISDN
Separate editions in F, E, S
Article: 19872 CHF 49

ITU–T Recommendation I.731 (10/2000)
Types and general characteristics of ATM equipment
Separate editions in F, E, S
Article: 20012 CHF 22

ITU–T Recommendation I.732 (10/2000)
Functional characteristics of ATM equipment
Separate editions in F, E, S
Article: 20090 CHF 96

ITU–T Recommendation J.118 (05/2000)
Access systems for interactive services on SMATV/MATV networks
Separate editions in F, E, S
Article: 19977 CHF 22

ITU–T Recommendation J.120 (05/2000)
Distribution of sound and television programmes over the IP network
Separate editions in F, E, S
Article: 20002 CHF 67

ITU–T Recommendation J.142 (05/2000)
Methods for the measurement of parameters in the transmission of digital cable television signals
Separate editions in F, E, S
Article: 20034 CHF 22

ITU–T Recommendation J.151 (10/2000)
RF remodulator interface for digital television
Separate editions in F, E, S
Article: 19964 CHF 17

ITU–T Recommendation J.180 (05/2000)
User requirements for statistical multiplexing of several programmes on a transmission channel
Separate editions in F, E, S
Article: 19860 CHF 9

ITU–T Recommendation K.54 (10/2000)
Conducted immunity test method and level at fundamental power frequencies
Separate editions in F, E, S
Article: 19810 CHF 9

ITU–T Recommendation L.19 (10/2000)
Copper networks for new services and systems ISDN, HDSL, ADSL and UADSL
Separate editions in F, E, S
Article: 19869 CHF 12

ITU–T Recommendation L.44 (10/2000)
Electric power supply for equipment installed as outside plant
Separate editions in F, E, S
Article: 19661 CHF 22

ITU–T Recommendation L.45 (10/2000)
Minimizing the effect on the environment from the outside plant in telecommunication networks
Separate editions in F, E, S
Article: 19912 CHF 12

ITU–T Recommendation L.46 (10/2000)
Protection of telecommunication cables and plant from biological attack
Separate editions in F, E, S
Article: 19863 CHF 17

ITU–T Recommendation L.47 (10/2000)
Access facilities using hybrid fibre/copper networks
Separate editions in F, E, S
Article: 20006 CHF 17

ITU–T Recommendation O.1 (02/2000)
Scope and application of measurement equipment specifications covered in the O-series Recommendations
Separate editions in F, E, S
Article: 19819 CHF 17

ITU–T Recommendation P.501 (05/2000)
Test signals for use in telephonometry
Separate editions in F, E, S
Article: 19888 CHF 72

ITU–T Recommendation P.502 (05/2000)
Objective test methods for speech communication systems using complex test signals
Separate editions in F, E, S
Article: 20052 CHF 29

ITU–T Recommendation Q.65 (06/2000)
The unified functional methodology for the characterization of services and network capabilities
Separate editions in F, E, S
Article: 19764 CHF 29

ITU–T Recommendation Q.765.4 (06/2000)
Signalling system No. 7 — Application transport mechanism: Support of the generic addressing and transport protocol
Separate editions in F, E, S
Article: 19934 CHF 22

ITU–T Recommendation Q.765.5 (06/2000)
Signalling system No. 7 — Application transport mechanism: Bearer Independent Call Control (BICC)
Separate editions in F, E, S
Article: 20064 CHF 17

ITU–T Recommendation Q.821 (02/2000)
Stage 2 and Stage 3 description for the Q3 interface — Alarm Surveillance
Separate editions in F, E, S
Article: 20084 CHF 34

ITU–T Recommendation Q.826 (02/2000)
Stage 2 and Stage 3 Functional Specification of Call Routing Information Management on Operation System/Network Element (OS/NE) Interface
Separate editions in F, E, S
Article: 19915 CHF 55

ITU–T Recommendation Q.831.1 (02/2000)
Access Management for V5
Separate editions in F, E, S
Article: 19801 CHF 29

ITU–T Recommendation Q.860 (06/2000)
Integrated Services Digital Network (ISDN) and Broadband Integrated Services Digital Network (B-ISDN) Generic Addressing and Transport (GAT) Protocol
Separate editions in F, E, S
Article: 20009 CHF 17

continued

ITU–T Recommendation Q.1237 (06/2000)
Extensions to Intelligent Network Capability Set 3 in Support of B-ISDN
Separate editions in F, E, S
Article: 19918 CHF 39

ITU–T Recommendation Q.1531 (06/2000)
UPT security requirements for Service Set 1
Separate editions in F, E, S
Article: 19967 CHF 17

ITU–T Recommendation Q.1542 (06/2000)
UPT stage 2 for service set 1 on CS2 — Procedures for universal personal telecommunication functional modelling and information flows
Separate editions in F, E, S
Article: 20067 CHF 39

ITU–T Recommendation Q.1901 (06/2000)
Bearer independent call control protocol
Separate editions in F, E, S
Article: 19940 CHF 39

ITU–T Recommendation Q.2111 (12/1999)
Service specific connection oriented protocol in a multi-link and connectionless environment (SSCOPMCE)
Separate editions in F, E, S
Article: 20058 CHF 49

ITU–T Recommendation Q.2769.1 (06/2000)
Support of number portability information across B-ISUP
Separate editions in F, E, S
Article: 19822 CHF 12

ITU–T Recommendation V.8 (11/2000)
Procedures for starting sessions of data transmission over the public switched telephone network
Separate editions in F, E, S
Article: 19921 CHF 17

ITU–T Recommendation X.28 Amendment 1 (03/2000)
Extensions of PAD parameter settings and PAD service signals
Separate editions in F, E, S
Article: 19767 CHF 9

ITU–T Recommendation X.121 (10/2000)
International numbering plan for public data networks
Separate editions in F, E, S
Article: 19931 CHF 22

ITU–T Recommendation X.146 (10/2000)
Performance objectives and quality of service classes applicable to frame relay
Separate editions in F, E, S
Article: 19937 CHF 17

ITU–T Recommendation X.272 (03/2000)
Data compression and privacy over frame relay networks
Separate editions in F, E, S
Article: 19834 CHF 22

ITU–T Recommendation Y.1231 (11/2000)
IP Access Network Architecture
Separate editions in F, E, S
Article: 20061 CHF 17

ITU–T Recommendation Z.120 (11/1999)
Message sequence chart (MSC)
Separate editions in F, E, S
Article: 20087 CHF 55

2001

- 12–16 November (Johannesburg, South Africa) ITU Telecom Africa 2001 (Exhibition and Forum)
- 27–28 November (Geneva) 4th Annual Review Meeting of GMPCS-MoU Group
- 6–7 December (Geneva) ITU/WIPO Symposium on Multilingual Domain Names

2002

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

2003

- 25–28 February (Buenos Aires, Argentina) ITU Telecom Americas 2003 (Exhibition and Forum)
- 2–6 June (Caracas, Venezuela) Radiocommunication Assembly (RA)

• 9 June–4 July (Caracas, Venezuela)
World Radiocommunication Conference (WRC-03)

• 12–18 October (Geneva)
ITU TELECOM WORLD 2003 (Exhibition and Forum)

• December (Geneva)
World Summit on the Information Society (WSIS)

2001

Radiocommunication Sector

• 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 radiodetermination 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)

• 5–6 November (Geneva)
Study Group 8 (Mobile radiodetermination amateur and related satellite services)

• 5–13 November (Geneva)
Task Group 1/7 (Protection of passive service bands from unwanted emissions)

• 6–13 November (Geneva)
Working Party 1C (Monitoring spectrum)

• 7–13 November (York, United Kingdom)
Working Party 3K (Point-to-area propagation)

• 7–13 November (Geneva)
Working Party 1B (Spectrum management methodologies)

• 7–13 November (Geneva)
Working Party 1A (Spectrum engineering techniques)

• 14–15 November (Geneva)
Study Group 1 (Spectrum management)

• 19–23 November (Geneva)
Seminar on Terrestrial workshop

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

Telecommunication Standardization Sector

• 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 October (La Havana)
Seminar on tariffs

• 22–26 October (Dakar)
Study Group 12 (End-to-end transmission performance of networks and terminals) and its Working Parties

• 23–25 October (La Havana)
Regional Tariff Group for Latin America (GR TAL)

• 16 November (Geneva)
Working Party 3/16 (Media coding)

• 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 December (Hanoi)
Workshop on EMC, safety and EMF effects in telecommunications

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

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

2002

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

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

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

• 27 February–8 March (Geneva)
Study Group 17 (Data networks and telecommunication software) and its Working Parties

• 25–28 March (Geneva)
Workshop on IPCablecom and Mediacom 2004

• 8–19 April (Geneva)
Study Group 4 (Telecommunication management, including TMN) and its Working Parties

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

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

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

• 22–28 May (Ottawa)
Special Study Group (IMT-2000 and beyond)

• 3–7 June (Geneva)
Study Group 9 (Integrated broadband cable networks and television and sound transmission) and its Working Parties

• 10–14 June (Geneva)
Study Group 3 (Tariff and accounting principles including related telecommunication economic and policy issues) and its Working Parties

• 17–21 June (Geneva)
Telecommunication Standardization Advisory Group (TSAG)

• 9–13 September (Geneva)
Study Group 6 (Outside plant) and its Working Parties

• 7–11 October (Geneva)
Study Group 5 (Protection against electromagnetic environment effects) and its Working Parties

• 15–25 October (Geneva)
Study Group 16 (Multimedia services, systems and terminals) and its Working Parties

• 29 October–8 November (Geneva)
Study Group 13 (Multi-protocol and IP-based networks and their internetworking) and its Working Parties

• 11–22 November (Geneva)
Study Group 11 (Signalling requirements and protocols) and its Working Parties

• 20–29 November (Geneva)
Study Group 17 (Data networks and telecommunication software) and its Working Parties

• 26 November–6 December (Geneva)
Study Group 2 (Operational aspects of service provision, networks and performance) and its Working Parties

• 9–13 December (Geneva)
Study Group 3 (Tariff and accounting principles including related telecommunication economic and policy issues) and its Working Parties

2001

Telecommunication Development Sector

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

• 22–26 October (Seoul)
Asia and Pacific regional workshop on equal access of women in ICT

• 27–30 October (Damascus)
Annual regional meeting for telecommunication development in the Arab region

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

• 30 October–2 November (Sofia)
Workshop on corporate use of financial models for CEE countries

• 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

• 6–7 December (Geneva)
Development agencies collaboration meeting

• 10–12 December (Geneva)
Coordination meeting for the World Telecommunication Development Conference (WTDC-02)

2002

• 18–27 March (Istanbul, Turkey)
World Telecommunication Development Conference (WTDC-02)

2001

• 15–16 October (Barcelona, Spain)
Mobile content billing
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.ibctelecoms.com/contentbilling

• 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/

• 17–19 October (Barcelona, Spain)
UMTS Congress 2001
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.umtscongress.com

• 22–25 October (Madrid)
European VoIP Congress 2001
Tel.: +44 207 840 2700
Fax: +44 207 840 2701
E-mail: julie@access-conf.com
http://www.access-conf.com

• 29–30 October (London)
Global Mobile Executive Summit
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.ibctelecoms.com

• 6–8 November (Rome)
Submarine communications
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.submarinecomms.com

• 7–9 November (Rio de Janeiro)
Mobile Internet in Latin America — Examining the Latin American opportunities for mobile Internet
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.mobileinternetseries.com

• 13–15 November (Amsterdam)
Roaming and VHE — 6th Annual Global Mobile Roaming Conference towards full global interstandards and data roaming
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.ibctelecoms.com

• 14–16 November (Seoul)
Digital satellite broadcasting and broadband applications
Tel.: +82 2 508 4883-5
Fax: +82 2 568 8593
E-mail: inho_seo@apscc.or.kr
http://www.apscc.or.kr

• 19–22 November (Paris)
Billing & CRM 2001
Tel.: +44 207 423 4616
Fax: +44 207 423 4501
E-mail: enquiries@billing.co.uk
http://www.billing.co.uk

• 21–23 November (London)
3G financing
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.ibctelecoms.com/3Gfinancing

• 22–23 November (Cape Town)
GSM Africa
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.ibctelecoms.com/gsmafrica

• 22–23 November (Montpellier, France)
International Conference of IDATE 2001 — Time for broadband?
Debating the transformation in telecommunications, the Internet and media
Tel.: +33 4 6714 4456
Fax: +33 4 6714 4400
E-mail: s.monjo@idate.fr
http://www.idate.fr

• 4–5 December (Rio de Janeiro)
GSM America
Tel.: +44 1932 893 855
Fax: +44 207 636 1976
E-mail: cust.serv@informa.com
http://www.ibctelecoms.com/gsmamerica

• 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

2002

• 13–17 January (Honolulu, HI)
PTC 2002 — 24th Annual Conference on next generation communications: Making IT work
Tel.: +1 808 941 3789
Fax: +1 808 944 4874
E-mail: ptc2002@ptc.org
http://www.ptc.org

• 10–12 April (Luxembourg)
Telemedicine and Telecare International Trade Fair
Tel.: +32 2 269 8456
Fax: +32 2 269 7953
E-mail: lievens@ping.be
http://www.telemedicine.lu

• 21–23 April (Doha, Qatar)
ARABCOM 2002
Tel.: +961 5 450 212
Fax: +961 5 455 477
GSM: +961 321 4215
E-mail: ktayar@arabcom.com
http://www.arabcom.com

• 27–30 June (Wroclaw, Poland)
EMC 2002 — Sixteenth International Wroclaw Symposium and Exhibition on Electromagnetic Compatibility
E-mail: emc@il.wroc.pl
http://www.emc.wroc.pl

Argentina to host ITU TELECOM AMERICAS 2003

The fifth international telecommunications Exhibition and Forum for the Americas region, ITU TELECOM AMERICAS 2003, will be hosted by the Government of the Argentine Republic and held in Buenos Aires, from 25 to 28 February 2003, at La Rural.

A signing ceremony was held at the ITU headquarters in Geneva on 24 September 2001 with Norma Nascimbene de Dumont, Minister and Deputy Permanent Representative of the Republic of Argentina to the Office of the United Nations and other international organizations in Geneva, and Yoshio Utsumi, ITU Secretary-General.

Norma Nascimbene de Dumont and Yoshio Utsumi during the signing ceremony

Photo: A. de Ferron (ITU 010078)

Buenos Aires promises to be an excellent venue for the ITU TELECOM event, with a communications and transport infrastructure that reflects its importance as a business hub for the region, and its high-quality facilities and urban amenities. La Rural, with its exceptional location and facilities, will be the ideal venue for the most important telecommunications meeting in Latin America and the Caribbean in the year 2003.

The Exhibition at AMERICAS 2003 will feature the latest products and services from the broad telecommunications industry and will demonstrate the shape of things to come. The AMERICAS 2003 Forum will cover the whole breadth of the telecommunications field — but is likely to put the spotlight on the dual boom under way in the Americas region in mobile communications and in the uptake of the Internet.

Latin American countries, in fact, are experiencing the fastest Internet host growth rate in the world, with the number of hosts more than doubling year on year. As for mobile cellular, the number of subscribers in the region soared from just 3.5 million at the end of 1995 to over 60 million by the beginning of 2001. By year-end 2000 more people already had cellular telephones than fixed-line ones in a number of countries in the region, including Chile, El Salvador, Mexico, Paraguay and Venezuela.

The Forum at AMERICAS 2003 will also feature a Telecom Development Symposium and various combined sessions, along with the more traditional summits. The Telecom Development Symposium will bring two telecommunication specialists from each of the ITU's least developed and lowest income Member States in the region, on a fellowship, to discuss the principal factors that governments, regulatory bodies and operators need to bear in mind in order to be customer and business oriented, to improve services within their own countries and, in the case of operators, to survive in a liberalized market.

For further information on ITU TELECOM and the AMERICAS 2003 event, please contact: "Piers Letcher, Press and Public Relations Officer, ITU TELECOM (Tel.: +41 22 730 6602. Fax: +41 22 730 6444. E-mail:piers.letcher@itu.int) or visit www.itu.int/americas2003/exhibition and www.itu.int/americas2003/forum".