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World Conference on International Telecommunications 2012 — An overview

From Melbourne to Dubai

■ **Why the International Telecommunication Regulations matter**

The World Conference on International Telecommunications 2012 (WCIT-12), to be held in Dubai from 3 to 14 December 2012, will review the International Telecommunication Regulations (ITRs) — a treaty that is the basis of today's connected world. The ITRs underpin how we communicate with each other by phone or computer, with voice, video or data, and across the globe. They were agreed in 1988 at the World Administrative Telegraph and Telephone Conference in Melbourne, Australia, and came into force in 1990.

The ITRs set out principles for ensuring that networks can connect with each other smoothly, and that international services will be offered in a fair and efficient manner. They comprise ten articles dealing with such matters as cooperation among national administrations, giving priority to emergency telecommunications, and charging for traffic exchanged between carriers in different countries. The ITRs

Full texts of the "Background Briefs" from which these highlights are excerpted and adapted are available at http://www.itu.int/en/wcit-12/Pages/WCIT-backgroundbriefs.aspx

laid the foundation for privatization, competition and deregulation that created the conditions for growth in information and communication technologies (ICT), including the Internet, that we see today.

But the environment has changed dramatically since 1988. Back then, the three pillars underpinning telecommunications were time, distance, and location. These have all become less important in terms of global services today. Governments have re-evaluated their policies and much of the sector has been privatized and liberalized.

There is increasing use of networks and applications based on the Internet protocol (IP), and there are security concerns. Technological convergence has blurred the distinction between voice and data traffic, and even inexpensive mobile phones are sophisticated computers. Data volumes are rising and some believe that there is insufficient growth in the infrastructure needed to carry them.

How is new infrastructure to be expanded to cope with booming demand (especially in developing countries), and who should pay for its expansion and its use?

The preparatory process for WCIT-12 was led by a working group of the ITU Council open to the Union's 193 Member States and the more than 550 Members of ITU's three Sectors — Radiocommunication, Telecommunication Standardization, and Telecommunication Development. Input has also been welcomed from the more than 200 Associates and academic institutions involved in ITU's activities, as well as many other entities that have participated in the series of information sessions and regional preparatory meetings held around the globe in 2012.

Most of the proposed changes or additions to the ITRs can be summarized under the following headings: Fundamental right of access to communications; security in the use of ICT; protection of critical national resources; international frameworks; charging and accounting, including taxation; interconnection and interoperability; quality of service; and convergence.

International mobile roaming — what to do about "bill shock"

When the ITRs were agreed in 1988, mobile phones were a rarity, and devices such as mobile tablet computers were just a dream. Now, though, we live in a world of mobile connectivity that uses the Internet as well as traditional networks, and sends videos alongside voice. The question is, can we also achieve something closer to a borderless world when it comes to the management and pricing of that connectivity? In other words, will we be able to "roam" on our mobiles from country to country, simply, easily and without experiencing "bill shock"? International cooperation is needed to achieve effective solutions to these challenges and make bill shock a thing of the past.

Proposals on international mobile roaming include adding provisions to the regulations to ensure transparency of end-user prices for international mobile services, and that users receive full information promptly whenever they cross a border. It has been suggested that transparency could lead to greater competition, with potential benefits for consumers. Another proposed provision would ensure that prices are based on either the actual costs for the service provider, or on prices charged in the user's home country, or on those charged to customers in the visited country.

In the short term, some proposals could reduce the profits of mobile operators. They gain much revenue from roaming services, which can be used not only to keep them in business, but also to expand infrastructure to meet vastly growing demand. However, while bill shock exists, people may decide to leave their phones at home when travelling abroad. Some believe that business opportunities could be expanded with the measures that have been suggested. Data roaming in particular is a booming market, and is likely to become even larger as cloud services take hold.

The division between fixed and mobile services is growing blurred, just as voice and data services tend now to be carried on a single platform. Lower prices for international mobile calls, as for fixed-line calls, would reflect these changes. And if lower prices lead to more use of

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roaming services, higher overall revenues might result that would also encourage investment in the communication networks and applications that are, nowadays, central to social and economic progress.

Convergence

When the ITRs were agreed, there was a clear distinction between different services (phone, video and so on), as well as the means of delivering them. You only ever received voice calls or faxes down the telephone line. Computers mostly had their own networks, and broadcasting was another separate world. Since then, the convergence of technologies, and the appearance of new ones, has changed the landscape dramatically — and the ITRs might need to be changed to reflect this.

There is no single definition of convergence. However, a key innovation is the transformation from circuit-based telecommunication networks to packet-based ones using IP: so-called next-generation networks (NGN). The "vertical" structure of independent networks is evolving into a "horizontal" structure based on IP that can deliver many kinds of content through a single platform. This has profound implications for the market, regulators, and ultimately the expansion of communications to people everywhere.

The global boom in mobile phone and mobile broadband subscriptions is driving development and reform. Consumers around the world have moved far beyond viewing their handheld devices as just phones on which they speak to other people.

Proposals concerning convergence are being put forward. Some relate simply to updating the language of the regulations. Other proposals seek to make substantive changes to accommodate convergence, and refer to the need to incorporate "technology neutrality" into the ITRs; that is, dealing evenhandedly with different technologies that offer similar services.

Interconnection and interoperability

The principles set forth in the ITRs (notably in Article 1.3) have achieved much greater global significance as communication technologies have evolved to become more complex, capable and integrated into so many aspects of social and business life.

One of these fundamental principles is that of "interconnection and interoperability" — ensuring that telecommunication systems and equipment in different countries can connect and work with each other.

But new equipment and systems are appearing every day. Because of the ever-changing technological and operational environment, ensuring interoperability is a never-ending task.

Promoting interoperability is one of ITU's strategic goals. And there is consensus among the ITU membership that interoperability is of prime importance — but how to make it happen is not always clear, given today's complex mix of de jure, de facto and proprietary technical standards for systems and equipment. Even when two networks are connected, it does not guarantee that every device or service will be able to run smoothly on both.

Numerous players are involved in determining interoperability, with differing needs and agendas. Specific capabilities need to be identified in particular players, as well as potential areas for collaboration among the many interests — public and commercial — that are involved. WCIT-12 could be where that collaboration is strengthened, perhaps by simply updating the current language of the regulations.

Protecting critical national infrastructure

Each nation has critical resources. As well as basics such as energy and food reserves, these include the infrastructure on which a society depends — ranging from power lines to water supplies and transport links. Among these resources are communication systems. And with the increasing reliance on IP-based networks in all sections of an economy, there have been national efforts to include a new term, "critical information infrastructure," in many national legislations.

ITU's Constitution and Convention acknowledge the right of a member country to protect its telecommunications and related infrastructure, while taking into consideration the implications of the country's actions upon the global system.

The current ITRs do not explicitly refer to protection of critical resources or information infrastructure, but they do cover the concept. In particular, Article 9 states that "technical harm" should be avoided to the operation of the telecommunication facilities of other countries.

Various proposals have been made to modify or increase the scope of such provisions in the ITRs — for example to include avoidance of "financial harm" — when reviewing the treaty at WCIT-12. And proposed provisions on preventing the misuse of numbering resources could also be considered part of protecting critical infrastructure.

Security

Public use of the Internet was in its infancy in 1988, and the ITRs compiled in that year did not contain explicit provisions on security. But they did include (in Article 9) a reference to avoiding "technical harm", added in response to one of the first pieces of malware, the Morris worm, that was circulating at the time. In the decades since then, network security has grown enormously in importance and will be considered as the ITRs are reviewed. There are proposals to add or amend articles in the treaty to include security-related elements, including measures against spam.

The number and sophistication of cyber-attacks are increasing, at the same time as our dependence grows on the Internet and other networks for critical services and information. According to the security company McAfee, 2011 saw the largest ever number of discovered threats. There are said to be at least 70 million different pieces of malware in circulation worldwide, and smartphones have become a vehicle for their dissemination. Analysts report that at least 70 per cent of e-mails are spam.

Meanwhile, smart power grids, cloud computing, industrial automation networks, intelligent transport systems, e-government and electronic banking — to name just a few new types of infrastructure — are becoming interconnected. Failure in one can affect others. Alongside

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greater convenience and efficiency lies greater vulnerability to cyber-attack.

Telecommunication origin identification

Through the telecommunication origin identification (TOI) system, it is possible to authenticate who has access to a service, find the caller's location, or trace malicious calls. The system allows "callback" services to be provided, and calls to be logged for accounting purposes. TOI technology is also important in providing emergency services. However, the system is hampered, not only by criminals wanting to hide their traces, but also when information on a message's origin is suppressed for commercial reasons.

It has been proposed that a provision should be added to the ITRs to ensure that operators show the number of who is calling. An ITU technical standard (ITU–T E.157) provides general principles for revealing callers' numbers and their origins.

Some service providers might misuse phone numbers to inflate their revenues. In one common form of misuse, known as "short stopping", calls that terminate within the caller's own country are routed through a high-cost destination abroad. This inflates costs for consumers. Operators trying to block this practice may interfere with legitimate access to phone numbers in the foreign country. Some types of misuse are not currently illegal in all countries, and the ITRs might be amended to change that.

Accounting rates

Under the traditional system that was prevalent when the current ITRs were negotiated in 1988, when telephone traffic was exchanged between carriers in different countries, a phone operator that sent more traffic than it received had to make "settlement payments" to the receiving company. These payments were calculated bilaterally with a formula called an "accounting rate," which is established according to principles set out in the ITRs, complemented by ITU standards (Recommendations).

Accounting rates are still used in some parts of the world, but they are no longer widely used, and most traffic today is billed on the basis of bilateral commercial agreements that fall under the "special

arrangements" provision (Article 9 of the ITRs).

Indeed, advances in technology have led more and more traffic to bypass the traditional system by using the Internet (through VoIP services), or by taking the cheapest route for an international call — not necessarily the most direct one. How to reform the accounting system to reflect these changes has been studied at ITU since 1991, involving industry players alongside representatives of more than 80 countries. Various proposals on accounting matters have been gathered for WCIT-12 to consider. These range from leaving the current provisions unchanged, to adapting them to give greater weight to ITU Recommendations, to replacing the current detailed provisions with general principles related to those agreed at the World Trade Organization, to deleting the current provisions on the grounds that they are no longer appropriate in a world of liberalized telecommunications.

Taxation

Governments need tax revenues in order to provide public services and infrastructure — but who and what should be taxed, and how much? Telecommunications has often been seen as a healthy sector that can tapped; however, its central role in supporting economic growth means that taking too much in tax could have negative effects on the wider environment. The evidence suggests that the more a society has access to ICT, the more it flourishes.

Many administrations are beginning to share this view and are reducing or eliminating taxes on equipment (such as handsets) or prices for services, influencing how many people can connect and make full use of what is offered. In other countries, however, taxes are being imposed anew.

Tax authorities, regulators and operators need to work together and decide what levels of tax would be most productive. They could also look at whether, in addition, targeted incentives could be used to stimulate the provision of more advanced services, such as broadband.

Regarding international services, WCIT-12 will review Article 6, which mentions tax, and decide whether it should be altered. A related topic is double taxation: the liability of telecommunication operators to pay tax in more than one country on the same asset or service because they are involved in cross-border business and investment. These operators might also find themselves trying to obey conflicting rules and definitions of different tax authorities.

The proposals on this topic for the ITRs include revising the current text to clarify that it is intended to prevent double taxation, or to revise it in order to limit certain types of tax, especially on incoming international traffic. Other views range from leaving the current text unchanged to deleting it entirely.

Energy efficiency

Proposals have been made to add provisions to the ITRs saying that countries should cooperate to encourage operators and the ICT industry to adopt measures that lessen the use of energy and natural resources by ICT networks, and reduce waste produced by the sector. These measures would include adopting best practices and international standards for energy efficient equipment and networks.

One proposal lists as examples for cooperation best practice on take-back schemes, recycling management facilities and disclosure (for example, the responsibility of a manufacturer to mark the origin of its material), as well as (eco-) labelling schemes.

All industrial sectors — and communities — need to move towards sustainable production and consumption. By recognizing how ICT can support this progress, WCIT-12 could make a forward-looking contribution to worldwide efforts to face this major challenge of our time.

Quality of service and "net neutrality"

Traffic management has always been in use, in particular to give preference to emergency communications. But there is concern about certain approaches that affect the quality of service provided to consumers. For example, particular types or sources of traffic might be favoured above others.

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Agreements might be struck between Internet service providers (ISPs) and companies that offer applications or content, so that better quality of service (QoS) is given to their transmissions over a particular network, leaving other customers with less. Then there are the so-called "over-the-top" (OTT) services that run through the networks "on top" of the basic provision of Internet access. Operators might seek to charge for reserving a percentage of capacity for these services — which is then not available for general access to the Internet.

These developments could make it more difficult, or slower, for users to access certain websites or online services. So should operators of IP networks aim to generate revenues by offering higher QoS at a higher price, even if this has an impact on the average customer?

There are proposals to revise the ITRs in order to respond to these changes in technology and the marketplace. In particular, it has been proposed to replace "minimum quality of service" in Article 4.3 with "satisfactory quality of service", while administrations should ensure that there is transparency in this area so consumers know exactly what they are getting. At present, ordinary users of the Internet might not know whether their connections are slow because of traffic congestion, or because of intentional techniques employed by an operator or ISP.

Making ICT accessible to people with disabilities

It is estimated that more than one billion people — around 15 per cent of the world's total — are living with some type of disability, physical or cognitive. A high percentage live in developing countries, while the number of elderly people is rapidly rising in populations elsewhere. To achieve a truly inclusive information society, everyone must be able to use ICT with confidence. This means that improving the "accessibility" of ICT must be high on the agenda for providers of services and equipment.

It has been proposed that a new article covering this challenge should be added to the ITRs. The new provision would encourage national governments to provide global telecommunication and

ICT services based on technical standards that ensure accessibility.

Communications as a human right

Several regional and international treaties define freedom of expression as a human right. Access to communication services is not identified as a specific human right by itself, but the treaties cover many dimensions of communication, including the media, access to information, and the influence of ICT. Legitimate restrictions on communication are also defined in some treaties. Provisions on all these aspects are contained in the International Covenant on Civil and Political Rights, in particular in its Article 19. That Covenant was adopted by the United Nations General Assembly in 1966 and is part of the Universal Declaration of Human Rights.

On ICT in particular, a comment on the Covenant by the United Nations Human Rights Committee in 2011 says that signatories "should take account of the extent to which developments in information and communication technologies, such as Internet and mobile based electronic information dissemination systems, have substantially changed communication practices around the world. There is now a global network for exchanging ideas and opinions that does not necessarily rely on the traditional mass media intermediaries. States parties should take all necessary steps to foster the independence of these new media and to ensure access of individuals thereto."

The ITRs contain provisions regarding the right to communicate. In particular, Article 3.4 states that "subject to national law, any user, by having access to the international network established by an administration (or recognized private operating agency), has the right to send traffic. A satisfactory quality of service should be maintained to the greatest extent practicable."

The right of the public to access international telecommunication services is also recognized in ITU's Constitution, which prevails over the ITRs in case of discrepancy. The provisions of Articles 33 and 34 of the ITU Constitution are consistent with those of Article 19 of the UN Covenant. Thus the ITRs cannot restrict freedom of communication beyond what is provided in Article 19 of the UN Covenant.

The time has come to pave the way for the online broadband world of tomorrow

The right to communicate has been central to ITU's mission since its foundation in 1865. Many feel that the time has now come to build on the success of the existing ITR treaty and pave the way for a fully inclusive information and networked society over the next decade: one that ensures that the entire world's people can gain equitable and affordable access, not only to traditional phone services, but also to the online broadband world of tomorrow.