



## **5<sup>th</sup> Global Symposium for Regulators (Geneva, 2004)**

*Licensing in an era of convergence*

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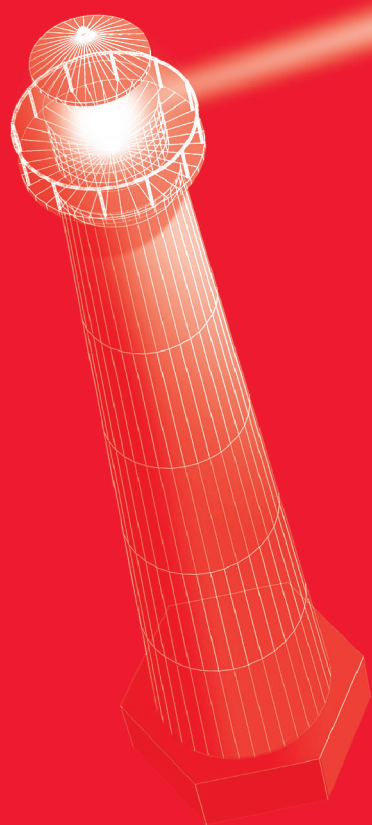
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LICENSING  
IN AN ERA OF  
LIBERALIZATION  
AND CONVERGENCE  
CASE STUDY  
CANADA  
2004





# **Licensing in an era of liberalization and convergence**

Case study: Canada

2004

**Licensing for information and communication  
services and underlying facilities in  
the era of convergence**

by Caroline J. Simard

This case study was conducted by Caroline J. Simard, ITU Global Regulators' Exchange (G-REX) Advisor.

This study is intended to be useful not only to the regulatory authorities and the corresponding arms of government but also to everyone concerned with the telecommunication market.

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The views expressed in this paper are those of the author, and do not necessarily reflect the views of ITU, its members or the Canadian government.

This is one of a series of case studies on licensing in the era of liberalization and convergence undertaken by ITU. Further information can be found on the website at <<http://www.itu.int/ITU-D/treg>>

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## Abbreviations

APLDS	alternate provider of long-distance service
BITI	basic international telecommunication incumbent
CLEC	competitive local exchange carrier
CRTC	Canadian Radio-television and Telecommunications Commission
CTSR	Canadian Telecommunications Services Revenues
CWTA	Canadian Wireless Telecommunications Association
DBS	direct broadcast service
DSL	digital subscriber line
FWA	fixed wireless access
GMPCS	global mobile personal communications system
GPRS	general packet radio service
HCA	high-cost area
ICS	information and communication services

ICT	information and communication technologies
ILEC	incumbent local exchange carrier
IP	Internet protocol
ISDN	Integrated Services Digital Network
ISP	Internet service provider
ITU	International Telecommunication Union
IXC	inter-exchange carrier
LEC	local exchange carrier
MDS	multipoint distribution system
NAS	network access service
OECD	Organisation for Economic Co-operation and Development
PCS	personal communication services
PSTN	public switched telephone network
SMS	short message service
VoIP	voice over Internet protocol
WCS	wireless communication service
WSP	wireless service provider
WTO	World Trade Organization
WWW	world wide web



## **ABSTRACT**

The pro-competitive regulatory environment of the Canadian telecommunication industry is such that in many cases it is possible to provide information and communication services, and operate the underlying facilities, without any requirement to obtain a licence. In Canada, mandatory licensing applies to three categories of telecommunication services: (1) international telecommunications services, with licences issued by Canada's independent regulator, the Canadian Radio-television and Telecommunications Commission (CRTC); (2) radiocommunication services, the licences for which are issued by the Ministry of Industry, Industry Canada; and (3) international submarine cable operation, likewise licensed by Industry Canada. The CRTC is also responsible for ensuring that service providers comply with regulations, including registration and approval of rates (unless the CRTC has exercised regulatory forbearance); the contribution regime for the universal access fund; and Canadian ownership and control rules. Separately, a more restrictive licensing regime is in place for the broadcasting services.

The present report describes Canada's licensing framework, which governs information and communication services and the underlying facilities at a time of convergence, and attempts to highlight Canadian best practice in this domain.

## A) Introductory remarks

In this section, we intend to briefly describe how the Canadian telecommunication industry took shape and how the regulatory framework evolved, in order to provide a better understanding of the context in which Canada's licensing regime for the provision of information and communication services and the operation of the underlying facilities is operating. The focus of the study is primarily on telecommunication services.

### 1 How the Canadian telecommunication industry took shape

The privatization of telecommunication companies in Canada dates back to the early days of privately-owned telegraph lines<sup>1</sup>, and has continued to our day.<sup>2</sup> Operating in a mixed monopoly, rather than a public monopoly, as in most countries, public and private-sector organizations were subject to shared federal-provincial jurisdiction until 1989. In that year the Supreme Court ruled that federal jurisdiction applied to the telephone companies that made up the Stentor alliance<sup>3</sup>; in 1994, federal jurisdiction was extended to local and intraprovincial services, with interconnection to interprovincial services, something that previously had been governed by the legislation and regulations of the individual provinces.<sup>4</sup> In the absence of a Canada-wide monopoly, the nine major regional telephone companies had formed the Stentor alliance, which lasted until 1998; its goals were interconnection between their networks, sharing of telephone traffic and revenues, and domestic and international call routing. Small independent telephone companies were also formed to provide telephone service in small communities.

Today, the telecommunication industry is made up of a variety of telecommunication service providers, which may be grouped in the following categories:

- a) incumbent carriers,
- b) major incumbent carriers,
- c) incumbent out-of-territory service providers,
- d) small incumbent carriers,
- e) competitive service providers,
- f) facilities-based competitive service providers,
- g) resellers,
- h) resale-based Internet service providers,
- i) payphone service providers,
- j) cable providers, and
- k) utility telcos.

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<sup>1</sup> B.A. Testard de Montigny, *Histoire du droit canadien*, Montreal, 1869, page 281.

<sup>2</sup> In Canada, with the exception of SaskTel, the incumbent telecommunication operators are all privately-owned. See *The Saskatchewan Telecommunications Act*, R.S.S. 1978, c. 34. Publicly-owned enterprises also existed previously in Alberta and Manitoba.

<sup>3</sup> Officially founded at the start of the 1990s, the origins of Stentor go back to the 1930s and the TransCanada Telephone System (TCTS) which became Telecom Canada in the 1980s.

<sup>4</sup> See *Alberta government telephones c. Canada* (Canadian Radio-television and Telecommunications Commission) [1989] 2 R.C.S. 225. See also *Téléphone Guèvremont c. Québec* (Régie des télécommunications) [1994] 1 R.C.S. 878.

The different types of telecommunication service providers are described in the table below, adapted from a 2003 report to Canada's Governor in Council entitled "Status of Competition in Canadian Telecommunications Markets: Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services"<sup>5</sup>.

**Table 1 – Major market participants**

**a) Incumbent carriers**

The incumbents now provide not only retail services, but also a range of wholesale services to competitors under terms and conditions mandated by the CRTC. These wholesale services include long distance switching and aggregation services, local transit and transport services, co-location and unbundled local loops. Incumbent carriers also provide a range of other services to retail customers and retail competitors such as Digital Network Access and Centrex services. The large incumbent carriers are competing against one another by providing telecommunications services outside of their traditional home serving territories. These services include data and IP services targeted at business customers, wireless services, business local exchange services, international telecommunication services, satellite transmission capacity, and associated land segment services (uplink and downlink).

**b) Major incumbent carriers**

The most important of the major incumbent carriers are Aliant Telecom, Bell Canada, MTS, SaskTel, TELUS, Teleglobe and Telesat Canada. The others are Northwestel, which provides services in the Yukon, the Northwest Territories, Nunavut and parts of British Columbia, and Télébec and TELUS Québec, which provide services in Quebec.

**c) Incumbent out-of-territory service providers**

There are three active players in this category: (i) Bell Canada and MTS through Bell West, (ii) TELUS, and (iii) SaskTel through Navigata.

**d) Small incumbent carriers**

There are 39 small incumbent telephone companies in Canada. With the exception of municipally-owned Prince Rupert City Telephones (CityTel) in British Columbia, these carriers are dispersed throughout the provinces of Ontario and Quebec. Small incumbent carriers are municipally owned or independently owned, either privately or publicly. Most serve mainly rural areas. Overall, small incumbent carriers serve less than 2% of the total population of Canada.

Given their limited serving areas, small incumbent carriers typically do not provide facilities-based long distance services. However, they do provide a range of local voice, data, Internet and wireless services. One exception is O.N.Telcom.

**e) Competitive service providers**

Competitive service providers in the Canadian telecommunications market provide telecommunications services on a facilities or resale basis, as well as on a combined facilities/resale (or hybrid) basis.

**f) Facilities-based competitive service providers**

Facilities-based competitive service providers are those competitive service providers that own physical transmission facilities. This includes companies such as Allstream, Call-Net, Microcell, 360networks services ltd/360networks Canada Ltd and FCI Broadband.

<sup>5</sup> Status of Competition in Canadian Telecommunications Markets: Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services. Report to the Governor in Council, Ottawa, November 2003, Annex 4, available online from <<http://www.crtc.gc.ca/frn/publications/reports/PolicyMonitoring/2003/gic2003.pdf>> (updated 11 June 2004).

**Table 1 – Major market participants (*end*)**

**g) Resellers**

Resellers provide business customers with local, long distance and other services on a resale basis, and they provide residential customers with long distance and Internet access services. They include Primus Telecommunications Canada Inc., Distributel Communications Limited and YAK Communications (Canada) Inc.

**h) Resale-based Internet service providers (ISPs)**

While incumbent carriers and cable companies account for the majority of the Internet access market, there are also hundreds of other independent ISPs operating across the country today. These companies provide business and residential customers with Internet access services, as well as web hosting, e-commerce and other services. Most independent ISPs provide service on a local basis, although some service providers, such as AOL Canada, provide service on a national basis.

**i) Payphone service providers**

Numerous providers have registered as Competitive Pay Telephone Service Providers (CPTSPs), with the intent of providing competitive alternatives to the incumbent carriers. The vast majority of these new entrants are either inactive or very small.

**j) Cable providers**

The largest cable providers provide a diverse range of services which, in addition to cable modem service, include a variety of other wireless and wireline telecommunications services. EastLink is the only Canadian cable provider to provide cable telephony services to date.

**k) Utility telcos**

Historically, many utility companies (e.g. in the electricity, energy, gas or other utility businesses) have managed their own telecommunications facilities to meet internal service requirements for administrative data, voice and power system protection and operation. They own facilities that include microwave radio, fibre-optic cable, power line carrier and mobile radio systems, although microwave radio systems have been or are in the process of being replaced by fibre-optic systems..

Source: CRTC.

**Information about the Canadian telecommunication industry is also available from the following sources.**

For a description of Canadian telecommunication incumbents, see “Incumbent Telecommunications Carriers by Main Operating Territory, 2002”<sup>6</sup> (Figure 1).

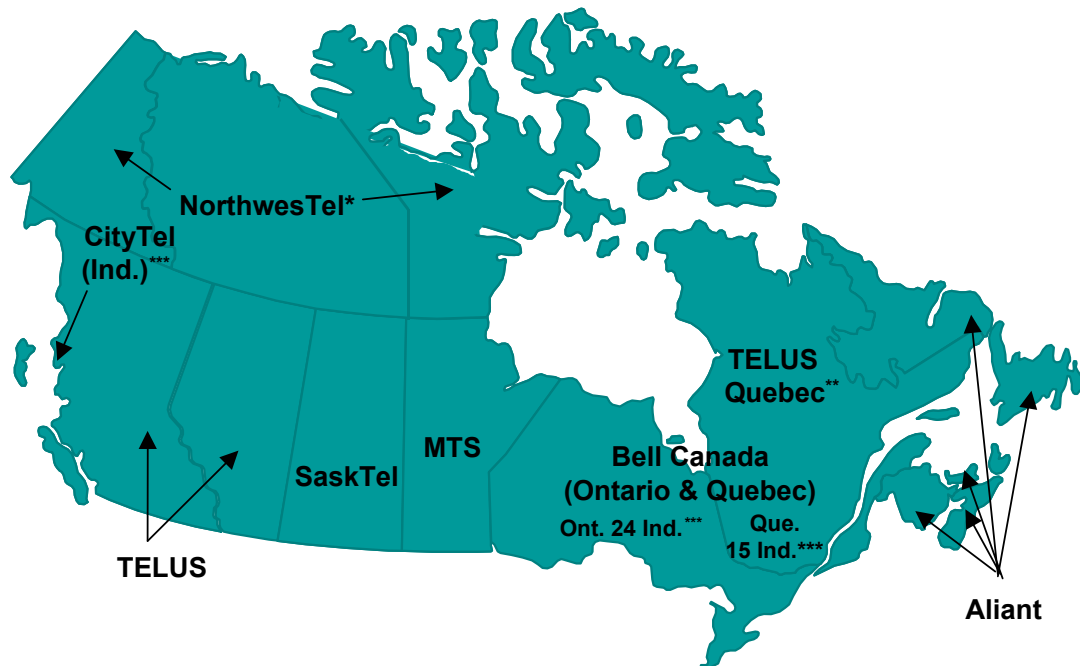
For an overview of the Canadian telecommunication industry, see “Telecommunications Service Industry Key Players”<sup>7</sup> (Figure 2).

<sup>6</sup> Industry Canada, Telecommunications Service in Canada: An Industry Overview. Figure 2-7 on page 2-9, available online from the Industry Canada site at <http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/sf06283e.html> (updated 12 May 2004)

<sup>7</sup> Ibid., Figure 2-2, p. 2-3.

Figure 1

Incumbent telecommunication carriers by main operating territory, 2003



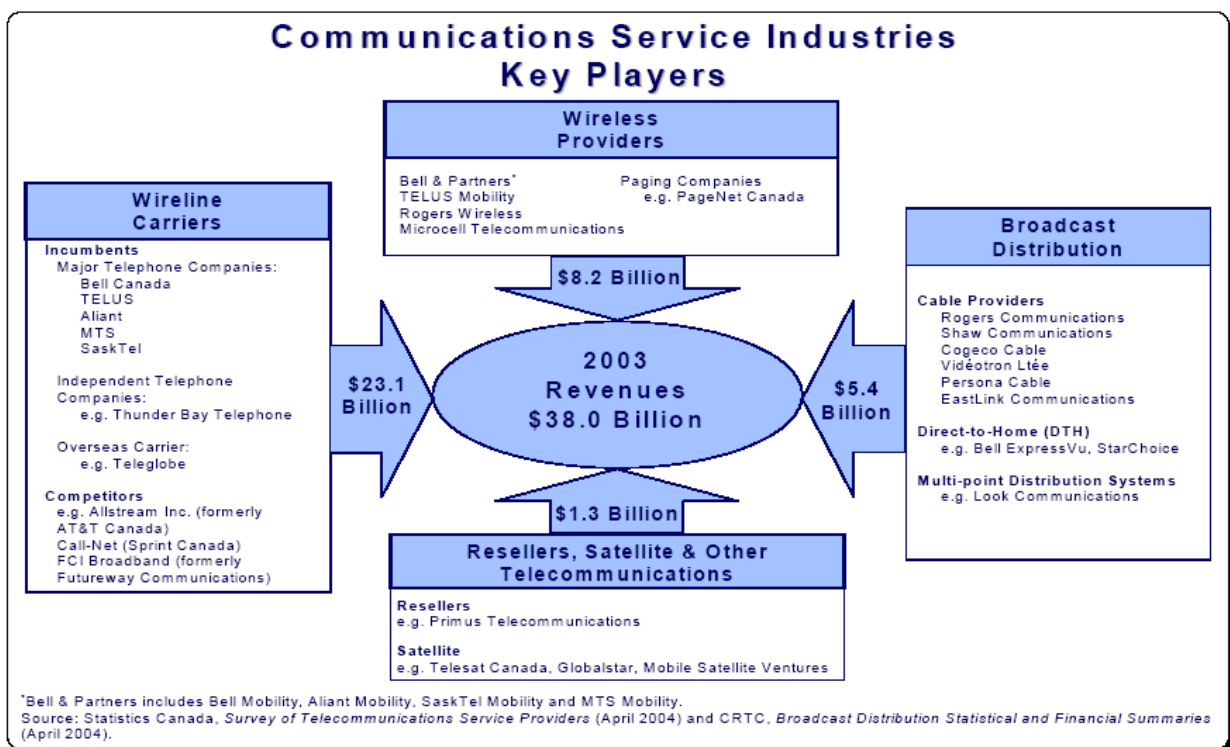
\* Provides local telephone service in the Yukon, Northwest Territories, Northern British Columbia and Nunavut.

\*\* Provides local telephone service in municipalities around Quebec, Lower St. Lawrence, Gaspésie and North Shore regions of Quebec.

\*\*\* Ind. = Independent telephone companies.

Source: Industry Canada (January 2004), *Telecommunications Service in Canada: An Industry Overview*, Figure 3.1-1. <<http://strategis.ic.gc.ca/TelecomServicesOverview>>

Figure 2



For a description of national mobile services coverage (digital and analogue) and the penetration of providers of mobile services, see *Status of Competition in Canadian Telecommunications Markets: Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, a report to the Governor in Council, Ottawa, November 2003, pp. 75-76 (available online from <http://www.crtc.gc.ca/frn/publications/reports/PolicyMonitoring/2003/gic2003.pdf>), last updated 11 June 2004

Additional information is available from the Industry Canada website, in Appendix B (“Selected Listing of Canadian Telecommunications Providers”) found at <http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/sf08119e.html> (updated 17 August 2004).

## **2 Emergence of a Canadian industry of converging information and communication technologies**

Technological innovation and market penetration are driving the growth of the information and communication technologies industry in Canada. Thus, with 51 per cent of Canadian households connected to the Internet, the proportion of households with high-speed Internet access actually exceeded those with dial-up access (28 per cent versus 24.<sup>8</sup>) The market for Internet access services continues to boom, with the highest rate of revenue growth in the industry (27 per cent).<sup>9</sup> Deployment of the broadband infrastructure continued apace, and 85 per cent of Canadians now have high-speed Internet access available in their communities.<sup>10</sup>

### **(a) Industry convergence**

At a time of converging technologies, it is interesting to observe a different form of convergence, shown by the retail revenue statistics of the ISP market: in 2002, 41 per cent of industry revenues were generated by incumbent telephone operators, 35 per cent by incumbent cable operators, and 23 per cent by other service providers. One half of the total figure was accounted for by four major ISPs.<sup>11</sup> Industry convergence is coming into its own as cable operators prepare to enter the telephony market with voice over Internet Protocol (VoIP).<sup>12</sup>

To understand convergence, it may be instructive to examine the activities of BCE, one of the main players in the Canadian industry. Concentrated within this company are information and communication services that include wireline and wireless services, broadcasting, publishing and Internet services. For more detailed information about the activities of BCE, see the report by Industry Canada at <http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/sf07005e.html>, with Figure 4.6 (“BCE Organizational Chart”) giving an overview of the broad range of activities in which the company is engaged.

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<sup>8</sup> CRTC, Report to the Governor in Council, p. ii.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.

<sup>12</sup> Industry Canada, op. cit., pp. 3-16 and 3-17.

**(b) Technological breakthroughs in the era of convergence**

Among the recent technological innovations that have helped Canadian industry sustain its momentum in the development of information and communication services and technologies, attention is drawn to two in particular: (i) mobile telephony and (ii) basic programming services.

**(i) Cellular telephony and personal communications services**

Growth on the mobile services market, in terms of revenues and subscriber numbers, remained strong in 2002, although it was less pronounced than it has been in recent years.<sup>13</sup> Growth in revenues from data transmission via mobile services is a sign of the increasing popularity of this service, with an increase of 48 per cent since 2001.<sup>14</sup> This can also be seen in four promising innovations, as identified by Industry Canada:

- **2.5G Technology:** Mobile Internet access continues to be a nascent industry in Canada. However, mobile Internet usage may prove to be an increasingly important method of accessing the Internet with the arrival of 2.5G technology. 2.5G technology was recently introduced by the national wireless service providers. In late 2001 and early 2002, Microcell and Rogers AT&T Wireless began to offer enhanced data services employing general packet radio services (GPRS) in limited urban areas. GPRS supports flexible data transmission rates typically between 20 Kbps and 40 Kbps, as well as continuous connection to a network. With its digital GPRS network, AT&T offers integrated wireless voice and high-speed packet data services to 93 per cent of the Canadian population. Over the same period, Bell Mobility and TELUS Mobility began to commercially introduce 2.5G CDMA (1XRTT) technology in major centers around Canada. This technology now operates at speeds up to 86 Kbps, with the potential for speeds up to 144 Kbps in the future.<sup>15</sup> Additionally, regional wireless operators Aliant Mobility, Sasktel Mobility and MTS Mobility all launched their respective 1XRTT networks by the end of 2002.<sup>16</sup>
- **Short Message Service (SMS):** In November 2001, Canada's four national wireless carriers joined forces to offer SMS across all networks, a move that was the first of its kind in North America.<sup>17</sup> Furthermore, in January 2003, cross-border inter-carrier text messaging services were introduced, allowing consumers to exchange text messages between the United States and Canada. The Canadian Wireless Telecommunications Association (CWTA) reports that approximately 32 million mobile-to-mobile text messages were sent in Canada in September 2003, up from approximately 16 million in September 2002.<sup>18</sup>

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<sup>13</sup> CRTC, op. cit., pp. 73-74.

<sup>14</sup> Ibid, p. 70

<sup>15</sup> Industry Canada, op. cit. Note that on page 2-18 Industry Canada reports that "this technology [i.e. 1XRTT] now operates at speeds up to 86 Kbps, with the potential for speeds up to 144 kbps in the future", while further, on page 3-27, it states: "These technologies [i.e. 2.5G CDMA (1XRTT)] are expected to operate between speeds of 30 and 55 kbps".

<sup>16</sup> Ibid., pp. 2-19, 2-20 and 3-27.

<sup>17</sup> Showwei, C., "Cell phones to speak as one: four wireless firms [Bell Mobility, TELUS Mobility, Rogers Wireless Inc., Microcell Connexions] team up to offer text messaging services across all networks", *The Globe & Mail*, 7 November 2001, page B3, cited in Industry Canada, op. cit., p. 2-21.

<sup>18</sup> Industry Canada, op. cit., p. 2-21.

- **Wireless phone and digital camera:** In October 2002, three companies brought this type of service onto the Canadian market. Rogers AT&T Wireless offered a wireless phone that doubles as a digital camera. MTS introduced a service called Mobile eMail, which allows its mobile customers to have access to their office e-mail and other corporate information through a digital, web-enabled mobile phone. Aliant Mobility brought out VoiceNet, a voice e-mail recognition service. A few months later, TELUS Mobility announced an agreement with Research in Motion (RIM) to offer RIM's Blackberry wireless platform. Industry Canada, reporting on this service, writes:

Launched in the first half of 2003 on TELUS' 1X wireless data network, the Blackberry includes wireless e-mail, phone capability, text messaging, and organizer applications. During the same period, Bell Mobility and Microcell introduced, respectively, an integrated wireless device combining the features of a wireless phone, personal digital assistant (PDA), MP3 player and Internet browser, and a wireless tool combining a PDA, a wireless phone and a digital camera into one device.<sup>19</sup>

(ii) **Basic programming services**

In addition to cable, direct-to-home (DTH) broadcasting and multipoint distribution systems (MDS), basic programming services may benefit from a number of other recent innovations:

- **Broadcasting services based on two new technologies: Asynchronous Digital Subscriber Line (ADSL) and Very-high data-rate Digital Subscriber Line (VDSL), in conjunction with their existing copper infrastructure:**

In the fall of 2002, SaskTel launched "Max", an ADSL-based digital television service in Saskatchewan, reporting about 10 000 subscribers one year later. In late 2002, MTS also launched a digital television service in Winnipeg using VDSL technology. By the early 2004, MTS had 10 000 MTS TV customers. Likewise, Bell Canada is currently deploying VDSL technology to provide its Bell ExpressVu television service to multiple dwelling units in the greater Toronto area to overcome the limitations of DTH satellite service in this market.<sup>20</sup>

- **Television distribution via Digital Subscriber Line (DSL) networks:** Currently in its infancy, this service, offered by several incumbent telecommunications service providers, captures less than 1 per cent of the Canadian television distribution market.<sup>21</sup>

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<sup>19</sup> Ibid.

<sup>20</sup> Ibid., pp. 3-18 and 3-19.

<sup>21</sup> Ibid., p. 3-15



## B) The Canadian regulatory framework for telecommunications

### 1 Regulatory competence

In Canada, the Telecommunications Act<sup>22</sup>, which came into effect on 25 October 1993, consolidated and updated laws governing Canadian telecommunications.<sup>23</sup> The legislation brought amendments to the Radiocommunication Act<sup>24</sup>, and to the special acts relating to Bell Canada, BC Tel, Teleglobe Canada and Telesat Canada, and abrogated others. The CRTC is an independent federal agency with quasi-judicial status, responsible for the regulation and supervision of telecommunications and broadcasting services in Canada since 1976. Its institutional structure and powers are outlined in the CRTC Act<sup>25</sup>, the Broadcasting Act and the Telecommunications Act. Industry Canada has responsibility for telecommunications policy and international submarine cable licensing under the Telecommunications Act, as well as responsibility for spectrum policy and management under the Radiocommunication Act.

The Telecommunications Act brought a revision of the Canadian regulatory framework for more competition in the telecommunication industry. Thus, articles 7(f), 34 and 35 of the Act set the CRTC the dual objective of (a) promoting market forces for telecommunication companies, and (b) refraining from regulation in markets where there is sufficient competition to protect consumer interests. At the same time, anticompetitive practices are kept in check by the *Competition Act*<sup>26</sup>. The Competition Bureau and the CRTC have a common mission: to maintain market competition while providing adequate protection for the public interest.<sup>27</sup>

#### (a) Promoting competition

The Canadian market started to open up to competition in 1979, beginning with the market for data and private lines<sup>28</sup>. There followed the market for terminal equipment in 1982, the wireless market in 1984, and the long distance resale market in 1987. On 12 June 1992 the CRTC authorized the opening of the public long distance market to competition<sup>29</sup>. In 1993 the objectives of Canadian telecommunication policy, including the promotion of competition, were entrenched in Article 7 of the Telecommunications Act as follows.

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<sup>22</sup> Telecommunications Act, S.C. 1993, c. 38.

<sup>23</sup> In Canada, broadcasting is governed by the Broadcasting Act R.S., c. B-9.01. The cable industry was included with broadcasting for the purposes of the Broadcasting Act, on the theory that broadcasting companies fell within the federal jurisdiction. Under the Broadcasting Act, cable companies are licensed as undertakings for the reception of broadcasting.

<sup>24</sup> Radiocommunication Act, R.S., 1985, c. R-2.

<sup>25</sup> Canadian Radio-television and Telecommunications Commission Act, R.S. 1985, c. C-22.

<sup>26</sup> Competition Act, R.S. 1985, c. C-34.

<sup>27</sup> Competition Bureau, "CRTC/Competition Bureau Interface", Industry Canada, available online at <<http://competition.ic.gc.ca/epic/Internet/incb-bc.nsf/en/ct01544e.html>> (updated 21 November 2003).

<sup>28</sup> CRTC Report to the Governor in Council, op. cit., Annex 1.

<sup>29</sup> Telecom Decision CRTC 92-12 ("Competition in the provision of public long distance voice telephone services and related resale and sharing issues"), Ottawa, 12 June 1992.

It is hereby affirmed that telecommunications performs an essential role in the maintenance of Canada's identity and sovereignty and that the Canadian telecommunications policy has as its objectives:

- a) to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions;
- b) to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada;
- c) to enhance the efficiency and competitiveness, at the national and international levels, of Canadian telecommunications;
- d) to promote the ownership and control of Canadian carriers by Canadians;
- e) to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada;
- f) to foster increased reliance on market forces for the provision of telecommunications services and to ensure that regulation, where required, is efficient and effective;
- g) to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services;
- h) to respond to the economic and social requirements of users of telecommunications services; and
- i) to contribute to the protection of the privacy of persons.

In Telecom Decision CRTC 94-19 ("Review of Regulatory Framework")<sup>30</sup>, the CRTC set forth a new regulatory framework that placed greater reliance on market forces, established safeguards to protect against abuses of market power, encouraged the provision of innovative new services and established an alternative to rate base/rate of return regulation.

Through the licensing of Personal Communication Service (PCS) spectrum in 1995 under the Radiocommunication Act, two more competitors were allowed to enter the mobile cellular telephone market and begin to offer services. In 1997, the CRTC announced the regulatory framework for competition in local telephone services, as well as price cap regulation<sup>31</sup>. The principal requirement for the incumbent local exchange carriers (ILECs) under this framework concerned unbundling, to permit interconnection between all of the local and long distance ILECs and wireless operators. The new system also included the introduction of portable contributions<sup>32</sup>. Under this scheme, every local exchange carrier (LEC) providing a service to a subsidized subscriber should have access to the subsidy source.<sup>33</sup> The

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<sup>30</sup> Telecom Decision CRTC 94-19 ("Review of Regulatory Framework"), Ottawa, 16 September 1994.

<sup>31</sup> Telecom Decision CRTC 97-8 ("Local competition"), Ottawa, 1 May 1997. Telecom Decision CRTC 97-9 ("Price cap regulation and related issues"), Ottawa, 1 May 1997.

<sup>32</sup> In Decision 97-8, note 31 above, the CRTC uses the term "portable contribution", but "portable subsidy" would have been more accurate.

<sup>33</sup> Telecom Decision CRTC 97-8 ("Local competition"), § 173.

CRTC explains that “providing access to subsidy sources will substantially reduce barriers to entry by CLECs into high cost areas, thereby ensuring that the benefits of competition are made available as widely as possible”.<sup>34</sup>

In 1998, the CRTC liberalized the public pay telephone service market.<sup>35</sup> Also in 1998, the CRTC opened the facilities-based international telecommunications market to competition and established a new regulatory framework for all international services. Furthermore, Canada has made spectrum available for wireless broadband in a number of frequency bands. Thus, in order to accommodate the increased demand for high-speed local access, Industry Canada in June 1998, announced that it would be making available new wireless broadband spectrum at 24 GHz and 38 GHz. This spectrum is aligned with that in the United States.<sup>36</sup> Finally, Telesat Canada’s monopoly on satellite telecommunications carriage was ended on 1 March 2000.<sup>37</sup>

## (b) Forbearance

Article 34 of the Telecommunications Act describes four scenarios for the CRTC’s power to refrain from regulation:

- 1) The CRTC **may** make a determination to refrain, in whole or in part and conditionally or unconditionally, from the exercise of any power or the performance of any duty under sections 24, 25, 27, 29 and 31 in relation to a telecommunications service or class of services provided by a Canadian carrier, where the Commission finds as a question of fact that to refrain would be consistent with the Canadian telecommunications policy objectives. The sections mentioned in this passage can be simply summarized.<sup>38</sup>
- 2) Furthermore, where it finds as a question of fact that a telecommunications service or class of services provided by a Canadian carrier is or will be subject to competition sufficient to protect the interests of users, the Commission **shall** make a

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<sup>34</sup> Ibid.

<sup>35</sup> Telecom Decision CRTC 98-8 (“Local Pay Telephone Competition”), Ottawa, 30 June 1998, by which the CRTC announced the introduction of competitive local payphone service.

<sup>36</sup> Industry Canada, op. cit., p. 6-10.

<sup>37</sup> Telecom Decision CRTC 99-6 (“Telesat Canada – Transitional Regulatory Framework and Forbearance for Fixed Satellite Services”), Ottawa, 25 May 1999.

<sup>38</sup> (a) Section 24: The offering and provision of any telecommunications service by a Canadian carrier are subject to any conditions imposed by the Commission or included in a tariff approved by the Commission.

(b) Section 25: No Canadian carrier shall provide a telecommunications service except in accordance with a tariff filed with and approved by the Commission that specifies the rate or the maximum or minimum rate, or both, to be charged for the service.

(c) Section 27: Every rate charged by a Canadian carrier for a telecommunications service shall be just and reasonable, and no Canadian carrier shall, in relation to the provision of a telecommunications service or the charging of a rate for it, unjustly discriminate or give an undue or unreasonable preference... toward any person...

(d) Section 29: No Canadian carrier shall, without the prior approval of the Commission, give effect to any agreement or arrangement, whether oral or written, with another telecommunications common carrier respecting (a) the interchange of telecommunications...; (b) the management or operation of their telecommunication facilities; or (c) the apportionment of rates or revenues between the carriers.

(e) Section 31: No limitation of a Canadian carrier’s liability in respect of a telecommunications service is effective unless it has been authorized or prescribed by the Commission. From Telecom Decision CRTC 95-19 (“Forbearance – Services provided by non-dominant Canadian carriers”), Ottawa, 8 September 1995.

determination to refrain, to the extent that it considers appropriate, conditionally or unconditionally, from the exercise of any power or the performance of any duty under sections 24, 25, 27, 29 and 31 in relation to the service or class of services.

3) The CRTC **shall not** make a determination to refrain in relation to a telecommunications service or class of services if the Commission finds as a question of fact that to refrain would be likely to impair unduly the establishment or continuance of a competitive market for that service or class of services.

4) The Commission **shall** declare that sections 24, 25, 27, 29 and 31 do not apply to a Canadian carrier to the extent that those sections are inconsistent with a determination of the Commission under this section.

The CRTC has made use of its power to refrain on several occasions. The principal decisions are listed below:

**Table 2 – Summary of Canadian telecommunications markets subject to CRTC forbearance rulings<sup>39</sup>**

Market	Year	Details
Terminal equipment	1994	Sales and rental of terminal equipment.
Wireless	1994	Cellular, personal communications services, mobile radio and paging except in the case of incumbent in-house mobile service providers. Forbearance extended to incumbent mobile operations, starting in 1998, once competitive safeguards had been implemented.
Satellite services	1994	Telesat's digital video compression services initially; further services offered by Telesat, such as sale/lease of earth stations and RF channels, in subsequent years.
Services provided by non-dominant carriers	1995	Services, such as long distance, data, Internet and private line, provided by non-dominant competitive carriers.
Data and private line	1997	High-speed/DDS inter-exchange private line services provided by the incumbent telephone companies on a route-specific basis.
Internet services	1997	Incumbent telephone companies' retail Internet services in 1997 and those of cable providers in 1998.
Long distance	1998	Toll and toll free services.
International services	1998	Initially excluded Telelobe; however, certain international services provided by Telelobe later forborne as well.

Source: CRTC.

<sup>39</sup> CRTC, Report to the Governor in Council, op. cit., Appendix 2.

## C) Licensing and other administrative formalities

In Canada, unlike other countries, the telecommunication regulatory system did not grow around a licensing framework for telecommunication services and operation of telecommunication equipment. In general, most telecommunication operators are able to start providing telecommunication services 30 days after registering with the CRTC, as long as the technical and regulatory conditions are fulfilled and public interest priorities and objectives are met.

### 1 CRTC Registration and reporting requirements

In principle, operators must deal with the CRTC, at least for the purpose of fulfilling their obligation to contribute to the universal access fund that is used to subsidize residential local telephone use in rural and remote areas. Thus, with few exceptions, telecommunication operators with revenues of 10 million dollars or more have an obligation to contribute and, therefore, fulfil the associated administrative formalities.<sup>40</sup> The exceptions are for certain Internet and paging services.<sup>41</sup>

The requirement to comply with the rules on foreign ownership must also be emphasized.<sup>42</sup> Resellers, who do not have their own transmission facilities, are not considered as Canadian companies and are therefore exempt from the restrictions on foreign ownership.

A partial examination of the Canadian regulatory framework has allowed us to draw up a list of the main registration and reporting requirements for different types of service providers (see Table 4, “CRTC Registration and reporting requirements”). At the time of printing, the information on the CRTC website was not complete, but a comprehensive update was apparently to be conducted within a matter of weeks.<sup>43</sup> Lists of telecommunication companies registered with the CRTC in accordance with the various decisions promulgated by the Commission may be consulted at <http://www.crtc.gc.ca/eng/lists.htm>.

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<sup>40</sup> Decision CRTC 2000-745 (“Changes to the contribution regime”), Ottawa, 30 November 2000, § 88. The operators in question are: incumbent local exchange carriers (ILECs), alternative providers of long distance services (APLDSs), competitive local exchange carriers (CLECs), resellers, wireless service providers (WSPs), incumbent international license holders, satellite service providers, IPSs (in cases where telecommunication service is included), payphone service providers, leased-line and data service providers, and leased-line providers. Their contributions are based on Canadian telecommunications services revenues (CTSR), with certain deductions. See CRTC, “Reporting instructions” at <http://www.crtc.gc.ca/PartVII/eng/8638/CRTC/CCMRep.htm>.

<sup>41</sup> Ibid, § 91.

<sup>42</sup> “Foreign investment in facilities-based telecommunications service suppliers is permitted up to a cumulative total of 46.7% of voting shares, based on 20% direct investment and 33% indirect investment. Such suppliers must be controlled in fact by Canadians.” This restriction on foreign ownership does not apply to the following types of service: international submarine cable, mobile satellite systems, fixed satellites, resale of telecommunication services. It should be noted that the government of Canada has announced that these restrictions may be reviewed. See Industry Canada, Foreign Investment Restrictions Applicable to Telecommunications, Ottawa, Ministry of Supply and Services, Canada, 2002.

<sup>43</sup> CRTC Telecom Circular 2003-1 (“Telecommunications industry data collection: updating of CRTC registration lists, telecommunications fees, Canadian contribution mechanism fund administration, international licences and monitoring of the Canadian telecommunications industry”), Ottawa, 11 December 2003.

## 2 Mandatory licences

A licence is required for (a) the provision of international telecommunication services, (b) the construction and operation of an international submarine cable, and (c) the provision of radiocommunication services.

Additional information may be found in Table 5: “Services subject to licensing in Canada”, and Table 6: “Canada’s licensing regime for the provision of information and communication services and the operation of underlying facilities”.

### (a) International telecommunication services

The CRTC awards two types of licences for the provision of international telecommunication services: class A licences issued to firms that own and operate telecommunication facilities, and class B licences that provide services to and from Canada but do not operate their own facilities.<sup>44</sup> These two categories of companies can arrange for international traffic routing, and are therefore in a position to enter into arrangements with foreign carriers that could have anti-competitive effects in the Canadian market. To forestall such anti-competitive effects, licensees are required to provide information on affiliate companies that offer basic telecommunication services and a list of all agreements with foreign telecommunication operators.<sup>45</sup> The differences between the two classes may be summarized as follows:

The key distinction between the two classes is the ability of the telecommunications service provider to determine the routing of international telecommunications traffic. This is because providers capable of routing traffic could strike direct agreements with foreign carriers that harm competition in the Canadian market. Thus the division is not between telecommunications common carriers and resellers, as in the rest of the Telecommunications Act. Instead, Class A licensees include switch-based resellers as well as common carriers. Class B licensees include service providers who only resell switched services of other service providers, or who subcontract all of their international traffic to another service provider in Canada for termination in another country. The primary regulatory concern for such providers would be anti-competitive exploitation of a relationship with a Canadian service provider. [*Notes have been omitted*]<sup>46</sup>

Under the previous regime of contributions, the distinction between class A and class B served to distinguish between those licensees who were liable to pay a contribution to the universality fund (class A), and those who were not (class B). Under the new system, both classes are liable for contributions. However, only class A licensees are required to keep a record of traffic minutes.

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<sup>44</sup> CRTC Telecom Decision 98-17 (“Regulatory Regime for the Provision of International Telecommunications Services”), Ottawa, 1 October 1998, § 351.

<sup>45</sup> Ibid., § 338.

<sup>46</sup> S. Handa, *Communications Law in Canada*, Markham, Ont., Butterworth, 2000, no. 4.22.

As of 31 December 2003, the CRTC had issued 258 licenses for the provision of international telecommunications services.<sup>47</sup> Industry Canada depicts the increasing effectiveness of the transmission infrastructure thanks to technological progress, and states that the trend is to reduce international telecommunication rates gradually. Industry Canada further observes that, although competition has allowed for lower international calling rates, it has come at the expense of the profitability of several companies, notably 360networks and Teleglobe.<sup>48</sup> Despite the decline in revenues in 2001, the steady increase in the level of international telecommunications traffic continued. Furthermore, outgoing traffic to the U.S. continued to exceed incoming traffic originating from the U.S. for a second straight year as the gap between the two widened in 2001.<sup>49</sup>

**(b) Construction and operation of submarine cables**

Two types of international submarine cable licences are issued by Industry Canada: a “terminating licence” for cables that interconnect with Canadian networks, and “through licence” for cables which do not interconnect in Canada.<sup>50</sup> Applications for a licence must include documentation to substantiate compliance with the Canadian Environmental Assessment Act.<sup>51</sup> In addition, international submarine cable licences may have such additional conditions imposed as the minister considers to be compatible with the objectives of Canada’s telecommunication policy.<sup>52</sup>

Until quite recently, three companies were licensed to operate the six cable landings in Canada. The number of landings has since been reduced to four, as TAT-9 and TPC-4, the Nova Scotia and British Columbia cables belonging Teleglobe Inc., have been taken out of service.<sup>53</sup>

**(c) Provision of radiocommunication services**

Industry Canada issues the following types of licences: radio licences, spectrum licences, broadcasting certificate, radio operator certificates and technical acceptance certificates<sup>54</sup>. It is a term of a radio licence that the holder of the licence may install, operate or possess radio apparatus at a fixed station, mobile station or space station to perform any of the following services, as authorized by the radio licence, namely: aeronautical service, amateur radio service, public information service, developmental service, fixed service, intersatellite service, land mobile service, maritime service, and radiodetermination service.<sup>55</sup>

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<sup>47</sup> Industry Canada, op. cit. p. 2-26.

<sup>48</sup> Ibid., p. 2-27

<sup>49</sup> Ibid.

<sup>50</sup> *International Submarine Cable Licences Regulations*, SOR/98-488, 1 October 1998, article 2.

<sup>51</sup> Canadian Environmental Assessment Act, S.C. 1992, c. 37.

<sup>52</sup> Telecommunications Act, § 19(2).

<sup>53</sup> Industry Canada, op. cit., p. 6-12. TAT-9 was taken out of service in December 2003 and TPC-4 in July 2004.

<sup>54</sup> Radiocommunication Act, Article 5.

<sup>55</sup> Radiocommunication Regulations, SOR/96-484, 5 November 1996, Article 3.



Under Article 4 of the Radiocommunication Regulations, “it is a term of a radio licence that the holder of the radio licence shall restrict the activities of the station to those radiocommunication services that are specified in the licence”.<sup>56</sup> In addition, spectrum licences authorize “the utilization of specified radio frequencies within a defined geographic area”, and set out “terms and conditions as to the services that may be provided by the holder thereof”.<sup>57</sup>

In Canada, there are two categories of wireless mobile service: (1) those that are connected to the public switched telephone network (cellular services, PCS, satellite-based), and (2) other wireless services.<sup>58</sup> Cellular services of the first generation, 1G, rely on analogue technology, while those of the second generation, 2G (such as personal communications services, PCS), are based on digital technology. Canada’s numerous wireless operators for the most part offer 2G services. A directory of those operators can be consulted on the website of the Canadian Wireless Telecommunications Association (CWTA) at <<http://www.cwta.ca/members/all.php>>.

For broadband wireless services, the allocated frequency bands are as follows:

- **2 500 MHz band:** Currently licensed for Multipoint Distribution System (MDS) broadcasting and for wireless Internet Multipoint Communication System (MCS) services).
- **3 500 MHz band:** The Department initiated public consultation in 2001 on opening the band for Fixed Wireless Access and Wireless Communications Services currently operating in the 2 300 MHz range. The Department indicated that up to 200 MHz for FWA and 30 MHz for WCS could be opened in the 3 500 MHz band.<sup>59</sup>

Theoretically, an operator could offer a wireless telecommunication service on a national scale, under the service tier-based allocation system that is discussed in the following section (“Licence allocation mechanisms”). Currently, the broadest coverage is at the provincial tier; a national-tier license has not been allocated to date. The procedures governing such licensing, and the time required, can vary considerably depending on the licensing method, as shown in Table 6 (“Canada’s licensing regime for the provision of information and communication services and the operation of underlying facilities”).

There are two eligibility principles for the provision of wireless services:

Under the first eligibility principle, a company that currently provides telecommunication services can be restricted from holding certain wireless licences if:

- that company has market power in the supply of one or more telecommunication services in the region to be licensed;
  - a new entrant is likely to use the licence to provide services in competition with that company’s existing services;

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<sup>56</sup> Ibid., art. 4.

<sup>57</sup> Radiocommunication Act, Article 5(1)a(i.1).

<sup>58</sup> Telecom Decision CRTC 96-14 (“Regulation of mobile wireless telecommunications services”), Ottawa, 23 December 1996.

<sup>59</sup> Industry Canada, op. cit., p. 6-8.



- the anti-competitive effects of the acquisition of that licence are not outweighed by the potential economies of scope arising from the integration of the spectrum in question into that company's existing network.<sup>60</sup>

With regard to the second eligibility principle, the OECD explains that

[Limits] on the amount of spectrum that any single licensee is allowed to acquire may be required when multiple licenses for the use of spectrum in a given geographic area are to be granted and these can be used to provide closely substitutable services. Spectrum aggregation limits may be imposed if an entity that acquires a significant amount of spectrum would not face effective competition from providers of service that use infrastructure other than the spectrum being licensed. In addition, spectrum limitations may be imposed if the anticompetitive effects arising from the acquisition of a significant amount of spectrum by a single bidder would not be offset by lower costs or higher valued services resulting from holding this amount of spectrum.<sup>61</sup>

**Further information about Canadian policy is available under the following URLs:**

Spectrum management and telecommunications:

<[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf01841e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf01841e.html)>

Radio systems policies: <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf06120e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf06120e.html)>

Spectrum utilization policies: <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf06121e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf06121e.html)>

Related spectrum/licensing documents:

<[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf05502e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf05502e.html)>

Spectrum advisory bulletins: <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf06123e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf06123e.html)>

It may be of interest to note that Canada has started to rely on ICTs for licence administration. In 2002 Industry Canada introduced the notion of a “virtual radio licence”<sup>62</sup>, essentially a computerized system to take the place of the old paper-based radio licensing procedure. The Internet site of Industry Canada, “Spectrum Direct”<sup>63</sup>, has become the online service centre for spectrum management, in which organizations that have a web profile can submit licence applications and review their account data online.

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<sup>60</sup> OECD, *Regulatory reform in the telecommunications industry*, Paris, OECD, 2002, pp. 17-18.

<sup>61</sup> Ibid, pp. 18-19. See also Industry Canada, *Framework for Spectrum Auctions in Canada*, Principle 1: Restricting Participation and Principle 2: Spectrum Aggregation Limits.

<sup>62</sup> See <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/vwapi/faq-e.PDF/\\$FILE/faq-e.PDF](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/vwapi/faq-e.PDF/$FILE/faq-e.PDF)>.

<sup>63</sup> See <<http://sd.ic.gc.ca/engdoc/main.jsp>>.

To conclude, spectrum management for Canada entails the conclusion of international agreements, in particular with the United States and Mexico, concerning the provision of mobile and fixed-satellite services, radio and broadcasting.<sup>64</sup> It will also be influenced, inevitably, by the fact that in June 2002 Industry Canada published a revised spectrum policy framework for Canada, in which the minister argued for public discussion leading to the application of a new framework, thoroughly revised in the light of, notably, multi-service delivery convergence.<sup>65</sup>

## **D) Licence allocation mechanisms**

Industry Canada allocates the spectrum with a view to advancing public policy objectives, preventing harmful interference and enforcing international obligations.

### **1 The first-come, first-served principle and the competitive licensing process**

In general, Canada has had a policy of allocating spectrum on a “first-come, first-served” basis in those markets where there are sufficient spectrum resources. However, as the choice of licence allocation mechanism is left to the Minister of Industry, Industry Canada may suspend the first-come, first-served (FCFS) system in favour of competitive licensing.<sup>66</sup> For competitive licensing, which includes spectrum auctions and comparative review processes, four tiers of service areas have been established, described as follows:

Tier 1 is a single national service area. Tier 2 consists of 8 provincial and 6 large regional service areas in Ontario and Quebec. Tier 3 contains 59 smaller regional service areas. Tier 4 comprises 172 localized service areas. A fifth tier has been developed to accommodate the transition of non-auctioned cellular and personal communications services (PCS) licences from apparatus-based licences to spectrum licences.<sup>67</sup>

The “Framework for Spectrum Auctions in Canada” lists those instances in which auctions are not used: (1) broadcasting licences, (2) priority users, and (3) satellite services.<sup>68</sup>

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<sup>64</sup> See “International Agreements” at <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf06101e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf06101e.html)>, “Terrestrial Radiocommunication Agreements and Arrangements” at <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf01361e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf01361e.html)>, and “Terrestrial Broadcasting Agreements and Arrangements” at <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf01396e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf01396e.html)>.

<sup>65</sup> Industry Canada, A Spectrum Policy Framework for Canada (2002 revision), June 2002, p. 20.

<sup>66</sup> Industry Canada, Guidelines on the licensing process and spectrum release plan (2001 edition), PR-020, December 2001, pp. 4-5.

<sup>67</sup> Industry Canada, Spectrum Management and Telecommunications, Service Areas for Competitive Licensing, at the Industry Canada website at <[http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h\\_sf01627e.html](http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/h_sf01627e.html)> (most recent revision 16 April 2004).

<sup>68</sup> Industry Canada, Framework for Spectrum Auctions in Canada, October 2001 (2nd edition), pp. 3-4.

Multiple-round auctions are held, with a simultaneous tender process which remains open until acceptable offers are received for a licence. Several rounds are held. The results of each round are announced to the bidders before the next round is held. Bidding is conducted via Internet, using the latest PKI encryption techniques and digital signatures to protect bid integrity.<sup>69</sup>

## 2 Examples of licensing by means of spectrum auctions

In “Telecommunications Service in Canada: An Industry Overview”, Industry Canada describes two examples of spectrum auctions<sup>70</sup>, for the 24 GHz and 38 GHz bands, and for the 2 GHz band respectively.

### a) 24 GHz and 38 GHz:

In June of 1998, Industry Canada announced that it would be making available, across the country, new wireless broadband spectrum at 24 GHz and 38 GHz to accommodate the increased demand for high-speed local access infrastructure. This spectrum is aligned with that in the United States [...] In November of 1999, Industry Canada held an auction for the 1 200 MHz of spectrum in the 24 GHz and 38 GHz frequency range. The auction, the first ever held in Canada, was conducted... over the Internet [...] A total of 256 licences were awarded to 12 companies. The winning companies bid a total of more than \$171 million.

### b) 2 GHz:

In January 2001, the Department held its second auction, ... for additional PCS spectrum in the 2 GHz range. [All] were eligible to apply to participate in the PCS auction. This auction provided opportunities for existing companies to obtain additional spectrum and created opportunities for new entrants with viable business plans. The availability of this spectrum enables the enhancement of existing PCS systems, provides for the introduction of new third generation-like services and stimulates innovation in the dynamic wireless environment. The PCS auction ended February 1, 2001 following 51 rounds of bidding over 14 days. Fifty-two out of a total of 62 licenses were auctioned. The auction winners bid a total of \$1.5 billion.

**Table 3 – PCS Auction Winners (5)**

Bidder	Bids (\$ millions)
Bell Mobilité Inc.	720.5
Rogers Wireless Inc.	393.5
TELUS Communications Inc.	356.0
W2N Inc.	11.4
Thunder Bay Telephone Ltd	0.6

Source: Industry Canada.

<sup>69</sup> For a description of this type of bidding, see H. Intven, Telecommunications Regulation Handbook, Geneva, InfoDev, 2000, p. 2-15.

<sup>70</sup> Industry Canada, op. cit., p. 6-10.

More recently, licences were granted for the 2 300 MHz and 3 500 MHz bands.

**c) 2 300 MHz and 3 500 MHz:**

Hearings were held from 9 to 16 February 2004 for a potential total of 392 licences. Awards were made to twenty-two companies for bids totalling \$11.2 million, making them eligible for a licence upon final payment settlement. This auction was intended to boost the expansion and improvement of access and broadband wireless services across Canada, in rural and urban regions alike.<sup>71</sup>

In “Telecommunications Service in Canada: An Industry Overview”, Industry Canada writes<sup>72</sup>:

Other wireless broadband spectrum suitable for high capacity point-to-multipoint has also been made available. [...] [The licence] was recently returned to the Department; however, plans to re-assign this spectrum have not yet been developed. The Department is currently undertaking a comprehensive review of the use of spectrum in the 3 to 30 GHz range. As a result of this review, additional spectrum could be designated for wireless broadband access. The Department has a strategic plan for releasing new spectrum. The plan can be found in Radio Systems Policy 020, *Guidelines on the Licensing Process and Spectrum Release Plan* (RP-020), available at <http://strategis.ic.gc.ca/SSG/sf01853e.html> on the Spectrum Management and Telecommunications website.

**E) The regulatory challenges posed by the convergence of information and communication technologies**

In the context of convergence, one of the broad underlying principles of the Canadian regulatory framework is the absence of impact on technology.<sup>73</sup> Some examples are cited below.

**1 Applying the principle of technology neutrality**

At the outset, the CRTC allowed all Canadian competitors to become CLECs, regardless of transmission technology used and whether the services offered were fixed or mobile, on condition that they accepted the regulatory obligations established in Decision 97-8.<sup>74</sup>

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<sup>71</sup> Industry Canada, “Auction of the 2300 MHz and 3500 MHz Frequency Bands”. See Industry Canada site: <http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/sf05472e.html> (updated 28 May 2004).

<sup>72</sup> Industry Canada, op. cit., p. 6-8

<sup>73</sup> The principle of technology neutrality was established by the CRTC in Telecom Decision CRTC 94-19 (“Review of regulatory framework”), 16 September 1994, and was renewed recently in its Telecom Public Notice CRTC 2004-2 (“Regulatory framework for voice communication services using Internet Protocol”), Ottawa, 7 April 2004, § 11.

<sup>74</sup> Telecom Decision CRTC 97-8.

In addition, the policy statement on convergence<sup>75</sup> played an important role by creating a framework for competition between telecom carriers and cable TV companies in their core markets. The CRTC began permitting telephone companies to apply for broadcasting distribution licences and cable companies to register with the CRTC as CLECs to provide local telephone service.

## **2 Voice over Internet Protocol communication services**

In line with the principle of technology neutrality, the CRTC is currently (2004) tending towards making Voice over Internet Protocol (VoIP) subject to the existing regulatory framework.<sup>76</sup> The CRTC makes a basic distinction between VoIP services, which handle traffic to and from the PSTN, and P2P services, with universal fund contributions being levelled only on certain specific types of VoIP service.<sup>77</sup> It follows that the regulatory requirements imposed on VoIP service providers would depend on the class of the service provider (e.g., ILEC, CLEC, non-dominant Canadian carrier, mobile wireless service provider, local service reseller) and the type of service being offered.<sup>78</sup>

## **3 Webcasting**

In its “Exemption order for new media broadcasting undertakings”, the CRTC exempted from regulation, without terms or conditions, all new media broadcasting undertakings that operate in whole or in part in Canada. New media broadcasting undertakings are those undertakings that provide broadcasting services delivered and accessed over the Internet. As a result, new media broadcasting undertakings are not subject to licensing by the CRTC. The Commission also emphasized that the exemption order does not apply to the licensed broadcasting activities (e.g. over-the-air radio and television broadcasting) of a company that also operates a new media broadcasting undertaking. This regulation in no way modifies the regulatory obligations that apply to licensees.<sup>79</sup>

More information about the position of the CRTC on this question may be found in Broadcasting Public Notice CRTC 1999-84 / Telecom Public Notice CRTC 99-14 (“Report on new media”), 17 May 1999<sup>80</sup>, as well Public Notice 1999-118 concerning the meaning given to the expression “accessed and delivered” to describe the class of exempt undertakings.<sup>81</sup>

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<sup>75</sup> Industry Canada, Convergence Policy Statement, available online at the Industry Canada website: <<http://strategis.ic.gc.ca/epic/Internet/insmt-gst.nsf/en/sf05265e.html>>.

<sup>76</sup> Telecom Public Notice CRTC 2004-2.

<sup>77</sup> Ibid., § 29.

<sup>78</sup> Ibid., § 23.

<sup>79</sup> Public Notice CRTC 1999-197 (“Exemption order for new media broadcasting undertakings”), Ottawa, 17 December 1999. It will be interesting to see if the CRTC revises this order after five years, in late 2004 or early 2005.

<sup>80</sup> Broadcasting Public Notice CRTC 1999-84 / Telecom Public Notice CRTC 99-14 (“Report on new media”), Ottawa, 17 May 1999.

<sup>81</sup> Public Notice CRTC 1999-118 (“Call for comments on a proposed exemption order for new media broadcasting undertakings”), Ottawa, 19 July 1999.

Before concluding, it may be useful to recall the Canadian experience with broadcasting service retransmission by Internet. The first such experience was that of iCraveTV, which came to a halt in the face of intellectual property litigation brought by Canadian and US authorities. Subsequently, another company, JumpTV, conducted a similar exercise, but restricted its offer to Canadian customers only, and complied with Canadian intellectual property regulations applicable to retransmitters. Subsequently the company withdrew its offer, citing excessive delays. Against this background, the government of Canada amended the Copyright Act in December 2002 to prevent Internet retransmitters from benefiting from the same compulsory licence regime as satellite broadcast retransmitters and cable distribution operators. Instead, they will have to negotiate royalties with copyright holders prior to obtaining broadcast authorization.<sup>82</sup>

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<sup>82</sup> An Act to amend the Copyright Act, Bill C-11, assented to 12 December 2002, available at the website of the Parliament of Canada <[http://www.parl.gc.ca/37/2/parlbus/chambus/house/bills/government/C-11/C-11\\_4/C-11\\_cover-E.html](http://www.parl.gc.ca/37/2/parlbus/chambus/house/bills/government/C-11/C-11_4/C-11_cover-E.html)>.

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Table 4 – CRTC Registration and reporting requirements

Type of telecommunication service provider	Obligations	Comments
<b>Competitive local exchange carrier (CLEC)<sup>1)</sup></b> A CLEC provides local residential or commercial services in competition with the telephone companies that provided the service prior to the introduction of competition in local service.	<ul style="list-style-type: none"> <li>✓ CRTC registration and compliance with administrative requirements (e.g. provide a map of the proposed service area, meet a set of consumer safeguards, technical interoperability and interconnection requirements, etc.<sup>2)</sup>.</li> <li>✓ Canadian ownership and control requirements.</li> <li>✓ Subject to universal fund contributions.</li> <li>✓ Full CLEC obligations are listed at <a href="http://www.crtc.gc.ca/frn/public/2003/8180/CRTC/clecobl.htm">http://www.crtc.gc.ca/frn/public/2003/8180/CRTC/clecobl.htm</a>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Forbearance exercised with respect to end-user tariffs, including resellers<sup>3)</sup>.</li> <li>✓ A list of CLECs is available at <a href="http://www.crtc.gc.ca/eng/public/iplists/clec.htm">http://www.crtc.gc.ca/eng/public/iplists/clec.htm</a>.</li> </ul>
<b>Non-dominant carriers<sup>4)</sup></b> A non-dominant carrier is a service provider other than an incumbent local exchange carriers (ILEC), providing services that fall under Telecom Decision CRTC 95-19 of 8 September 1995 (“Forbearance – services provided by non-dominant Canadian carriers”).	<ul style="list-style-type: none"> <li>✓ CRTC registration, indicating categories of service, and providing certain other items of information<sup>5)</sup>.</li> <li>✓ Canadian ownership and control requirements.</li> <li>✓ Subject to universal fund contributions.</li> <li>✓ Other obligations: Participate in numbering planning, provide points of interconnection and so on<sup>6)</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Dominant</b> telecommunication operators must file their tariffs with the CRTC.</li> <li>✓ A list of <b>non-dominant</b> carriers is available at <a href="http://www.crtc.gc.ca/frn/public/iplists/non-dom.htm">http://www.crtc.gc.ca/frn/public/iplists/non-dom.htm</a>.</li> </ul>
<b>Telecommunication service resellers and high-speed retail Internet service resellers<sup>7)</sup></b> A reseller of telecommunications services is a service provider or a company engaged in the subsequent sale or lease on a commercial basis, with or without adding value, of a telecommunications service provided by a Canadian carrier on a wholesale basis. [A] reseller of High Speed Retail Internet Service means a service provider engaged in the resale of retail Internet Services. Cable carriers are cable distribution undertakings that also provide telecommunications services using the same facilities that they use to provide cable service.	<ul style="list-style-type: none"> <li>✓ Resellers of long-distance services : (a) must register with the CRTC prior to offering their services, and (b) are subject to universal fund contributions.</li> <li>✓ Additionally subject to licensing obligations if they provide international telecommunications services<sup>8)</sup>.</li> <li>✓ High-speed retail Internet service resellers: only those ISPs which also provide telecommunication services are subject to universal fund contributions<sup>9)</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ No obligations for Canadian ownership and control, as this category explicitly includes only Canadian Carriers.</li> <li>✓ Local service resellers: no registration<sup>10)</sup>.</li> <li>✓ A list of telecommunication service resellers is available at: <a href="http://www.crtc.gc.ca/eng/public/iplists/reseller.htm">http://www.crtc.gc.ca/eng/public/iplists/reseller.htm</a>.</li> <li>✓ A list of high-speed retail Internet service resellers is available at: <a href="http://www.crtc.gc.ca/eng/public/iplists/Internet.htm">http://www.crtc.gc.ca/eng/public/iplists/Internet.htm</a>.</li> </ul>
<b>Basic international telecommunications service licensees</b> A Basic International Telecommunications Services (BITS) licensee offers telecommunication services on an international level.	<ul style="list-style-type: none"> <li>✓ CRTC registration<sup>11)</sup>.</li> <li>✓ Mandatory class A or B<sup>12)</sup> licence with associated administrative requirements such as full disclosure of (1) affiliates; (2) all agreements or arrangements that the applicant has entered into with any foreign telecommunications service provider(s) for the purposes of (a) interconnection, (b) exchange, or (c) termination of Canadian originating or terminating basic international telecommunications traffic; (3) ownership, or rental from a separate provider, of facilities used in (a) transporting basic telecommunications service traffic between Canada and another country or (b) operating telecommunication systems to convert (i) minutes of basic international circuit-switched traffic originating in Canada into non-circuit switched traffic, or (ii) non-circuit switched traffic originating outside Canada into basic minutes terminating in Canada<sup>13)</sup>.</li> <li>✓ Subject to universal service fund contributions.</li> <li>✓ Canadian ownership and control requirements.</li> <li>✓ Full BITS obligations are listed at: <a href="http://www.crtc.gc.ca/eng/public/8190.htm">http://www.crtc.gc.ca/eng/public/8190.htm</a>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Class A list: <a href="http://www.crtc.gc.ca/eng/public/iplists/class-a.htm">http://www.crtc.gc.ca/eng/public/iplists/class-a.htm</a>.</li> <li>✓ Class B list: <a href="http://www.crtc.gc.ca/eng/public/iplists/class-b.htm">http://www.crtc.gc.ca/eng/public/iplists/class-b.htm</a>.</li> </ul>

Table 4 – CRTC Registration and reporting requirements (*end*)

Type of telecommunication service provider	Obligations	Comments
<b>Competitive payphone service providers<sup>14)</sup></b> A Competitive Pay Telephone Service Provider (CPTSP) is a company other than an Incumbent Local Exchange Carrier (ILEC) that provides pay telephones at customer locations.	<ul style="list-style-type: none"> <li>✓ CRTC registration; administrative requirements such as providing the name of the carrier supplying the access lines, providing the CRTC with maps showing areas where the service is to be provided and making them available for public consultation in their business offices, providing details on the manner of dealing with customer complaints, incorporating consumer rights protection in its contracts with other CLECs and ILECs (including access to emergency services, access for hearing-impaired and physically handicapped persons, clear operating instructions and cost information, limitations on the functionality, complaint submission, compliance with CRTC regulations on customer privacy<sup>15)</sup>.</li> <li>✓ Subject to universal fund contributions.</li> <li>✓ Canadian ownership and control requirements.</li> <li>✓ Full CPTSP obligations are listed at: <a href="http://www.crtc.gc.ca/frn/public/8180-9.htm">http://www.crtc.gc.ca/frn/public/8180-9.htm</a>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ An ILEC is only required to register as a CPTSP if it provides pay telephones outside of the territory in which it formerly operated as a monopoly<sup>16)</sup>.</li> <li>✓ ILECs and resellers alike can be CPTSPs<sup>17)</sup>.</li> <li>✓ A list of CPTSPs is available at: <a href="http://www.crtc.gc.ca/eng/public/iplists/cptsp.htm">http://www.crtc.gc.ca/eng/public/iplists/cptsp.htm</a>.</li> </ul>
<b>Wireless service providers (WSPs)</b>	<ul style="list-style-type: none"> <li>✓ No registration required unless they choose CLEC qualification<sup>18)</sup>.</li> <li>✓ No obligation to register with the CRTC, except in the case of wireless services offered by dominant companies. Exceptions:                             <ol style="list-style-type: none"> <li>1) Those connected to the public switched telephone network must comply with confidentiality requirements.</li> <li>2) Bell Canada and Rogers Cantel had to submit their agreements with telephone company affiliates and comply with other obligations, including the prohibition of exchange of confidential customer information and of cross-subsidies<sup>19)</sup>.</li> </ol> </li> <li>✓ Submit a list of their subsidiaries, affiliates and related companies<sup>20)</sup>.</li> <li>✓ Subject to licensing requirements under the <i>Radiocommunication Act</i>.</li> <li>✓ Subject to universal service fund contributions<sup>21)</sup>.</li> <li>✓ Canadian ownership and control requirements.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The fees charged by the fixed operators to the cellular operators for using their network are regulated.</li> </ul>
<b>Internet service providers (ISPs)</b>	<ul style="list-style-type: none"> <li>✓ The prices charged by the incumbent telephone and cable companies to ISPs to access their infrastructure are subject to CRTC approval<sup>22)</sup>.</li> <li>✓ Contribution : two categories, one subject to universal fund contributions and the other exempt<sup>23)</sup>.</li> <li>✓ Registration required for those which qualify as resellers<sup>24)</sup>.</li> <li>✓ Internet service providers which provide high-speed digital services (DSL) via wire-based lines must register. Companies wishing to become digital subscriber line service providers are required to inform the CRTC of their intention to do so and submit the name of the carrier supplying the unbundled local loop and collocation. As DSL service providers they cannot use these loops to provide voice services unless they undertake to become CLECs. Entrants to the long distance market need to register with the CRTC<sup>25)</sup>.</li> <li>✓ DSL providers may not enter the local switched telephony market<sup>26)</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ No entry procedures, registration process or obligations.</li> <li>✓ The tariffs charged by ISPs to end customers are not subject to regulation.</li> </ul>
<b>Sharing group<sup>27)</sup></b> A Sharing Group is a group of persons or companies who share telecommunications services such as a company sharing the same lines or network of lines, as in the case of a Centrex system.	<ul style="list-style-type: none"> <li>✓ CRTC registration.</li> </ul>	<ul style="list-style-type: none"> <li>✓ A list of sharing groups is available at: <a href="http://www.crtc.gc.ca/eng/public/iplists/shgroup.htm">http://www.crtc.gc.ca/eng/public/iplists/shgroup.htm</a>.</li> </ul>

Notes relative to Table 4:

- <sup>1)</sup> See the CRTC fact sheet at <[http://www.crtc.gc.ca/eng/info\\_sht/t1014.htm](http://www.crtc.gc.ca/eng/info_sht/t1014.htm)>.
- <sup>2)</sup> CRTC, Telecom Decision CRTC 97-8 (“Local competition”), Ottawa, 1 May 1997, § 279 and § 295. See also Telecom Decision CRTC 98-8 (“Local pay telephone competition”), Ottawa, 30 June 1998, sections II-D and II-E.
- <sup>3)</sup> Ibid., § 258, 272, 273, 274.
- <sup>4)</sup> See the CRTC fact sheet at <[http://www.crtc.gc.ca/eng/info\\_sht/t1016.htm](http://www.crtc.gc.ca/eng/info_sht/t1016.htm)>.
- <sup>5)</sup> Telecom Decision CRTC 95-19 (“Forbearance – services provided by non-dominant Canadian carriers”), 8 September 1995.
- <sup>6)</sup> OECD, Regulatory reform in the telecommunications industry, Paris, OECD, 2002, p. 21.
- <sup>7)</sup> See the CRTC fact sheet at <[http://www.crtc.gc.ca/eng/info\\_sht/t1017.htm](http://www.crtc.gc.ca/eng/info_sht/t1017.htm)>.
- <sup>8)</sup> Handa, S., Communications Law in Canada, no. 4.30.
- <sup>9)</sup> Decision CRTC 2000-745 (“Changes to the contribution regime”), Ottawa, 30 November 2000, § 88.
- <sup>10)</sup> Handa, S., op. cit., no 4.30.
- <sup>11)</sup> Telecom Decision CRTC 98-17 (“Regulatory regime for the provision of international telecommunications services”), Ottawa, 1 October 1998.
- <sup>12)</sup> Telecommunications Act, L.C. 1993, c. 38, art. 16.1 (2).
- <sup>13)</sup> Telecom Decision CRTC 98-17.
- <sup>14)</sup> See the fact sheet at <[http://www.crtc.gc.ca/eng/info\\_sht/t1015.htm](http://www.crtc.gc.ca/eng/info_sht/t1015.htm)>.
- <sup>15)</sup> Telecom Decision CRTC 98-8, Part II-B.
- <sup>16)</sup> Ibid. See also the fact sheet at <[http://www.crtc.gc.ca/frn/INFO\\_SHT/t1015.htm](http://www.crtc.gc.ca/frn/INFO_SHT/t1015.htm)>.
- <sup>17)</sup> Telecom Decision CRTC 98-8, see in particular Part III-C. See also Handa, S., op. cit., no 4.33.
- <sup>18)</sup> Handa, S., op. cit., no. 4.35.
- <sup>19)</sup> Ibid. See also Telecom Decision CRTC 96-14 (“Regulation of Mobile Wireless Telecommunication Services”), Ottawa, 23 December 1996; Telecom Decision CRTC 87-13 (“Cellular radio – adequacy of structural safeguards”), 23 September 1987; and Telecom Decision CRTC 92-13 (“Rogers Cantel Inc. v. Bell Canada – marketing of cellular service”), 29 June 1992.
- <sup>20)</sup> Decision CRTC 2000-745 (“Changes to the contribution regime”), Ottawa, 30 November 2000, § 128.
- <sup>21)</sup> Telecom Order CRTC 97-590, 1 May 1997.
- <sup>22)</sup> OECD, op. cit., pp. 37-38.
- <sup>23)</sup> Additional information is available in Telecom Order CRTC 98-929, 17 September 1998, § § 15-23, 30-33 and 23.
- <sup>24)</sup> CRTC, Telecom Order CRTC 96-1471, 17 December 1996. See also Telecom Order CRTC 97-590, § 82.
- <sup>25)</sup> OECD, op. cit., pp. 16-17.
- <sup>26)</sup> Order CRTC 2000-983 (“Digital subscriber line service providers’ access approved for unbundled loops and co-location”), 27 October 2000, § § 26-9, 41.
- <sup>27)</sup> See the fact sheet at <[http://www.crtc.gc.ca/eng/info\\_sht/t1018.htm](http://www.crtc.gc.ca/eng/info_sht/t1018.htm)>.

**Table 5 – Services subject to licensing in Canada**

Services subject to licensing	Services not subject to licensing
International basic telecommunications services	Domestic wireline telecommunications services
Domestic and international satellite and wireless telecommunications services (does not include Wi-Fi).	

Source: Industry Canada.

**Table 6 – Canada’s licensing regime for the provision of information and communication services and the operation of underlying facilities**

Licence type	Scope of licence	Licence terms	Authority
<b>Radio licence</b>	Install, operate or possess radio apparatus to perform any of the following services at a fixed station, mobile station or space station: i) aeronautical service, ii) amateur radio service, iii) public information service, iv) developmental service, v) fixed service, vi) intersatellite service, vii) land mobile service, viii) maritime service, and ix) radiodetermination service <sup>1)</sup> .	<ul style="list-style-type: none"> <li>◆ <b>Scope:</b> It is a term of a radio licence that the holder of the radio licence shall restrict the activities of the station to those radiocommunication services referred to in paragraph 3(a) of the Radiocommunication Regulations that are specified in the licence<sup>2)</sup>.</li> <li>◆ <b>Ban on discrimination:</b> It is a term of a radio licence that the holder of the radio licence who is a radiocommunication service provider shall provide its radiocommunication services without unjust discrimination<sup>3)</sup>.</li> <li>◆ <b>Eligibility</b><sup>4)</sup> (Restriction on foreign ownership).</li> <li>◆ <b>Minister’s discretion.</b></li> <li>◆ <b>Transfer and assignment:</b> Requires ministerial authorization<sup>5)</sup>.</li> <li>◆ <b>Radio licence fees:</b> Various<sup>6)</sup>.</li> <li>◆ <b>Conditions of licence.</b> Example: Mobile operators are required, as part of their licence obligations, to invest 2% of adjusted gross revenues in research and development.</li> </ul>	Industry Canada
<b>Spectrum licence</b> Authorizations available for assignment in an auction	Use specified radio frequencies within a defined geographic area <sup>7)</sup> .	<ul style="list-style-type: none"> <li>◆ <b>Term:</b> Generally valid for ten years from the date of licence issuance<sup>8)</sup>.</li> <li>◆ <b>Renewal:</b> As a rule, there is a high expectation of renewal for a further ten-year term. A public consultation regarding the renewal of the licence will commence no later than two years prior to the end of the licence term if the Department foresees the possibility that it will not renew this licence or if renewal fees are contemplated<sup>9)</sup>.</li> <li>◆ <b>Modifications:</b> The minister has the power to amend the terms and conditions of licences, in exceptional cases and following due consultation<sup>10)</sup>.</li> <li>◆ <b>Reallocation of licences:</b> In exceptional circumstances<sup>11)</sup>.</li> <li>◆ <b>Utilization:</b> Market forces must determine who will gain access to spectrum as well as how it will be used (flexibility in determining the services they will offer and the technologies they will employ)<sup>12)</sup>.</li> <li>◆ <b>Service areas:</b> Following service area tiers<sup>13)</sup>.</li> <li>◆ <b>Transfer and divisibility:</b> In whole or in part, in both the bandwidth and geographic dimensions to a qualified recipient (larger than a single spectrum grid cell)<sup>14)</sup>.</li> <li>◆ <b>Eligibility:</b> <ul style="list-style-type: none"> <li>i) radiocommunication users or radiocommunication service providers (art. 9(1) RR);</li> <li>ii) radiocommunication carriers (art. 10 RR).</li> </ul> Minister to be informed of any changes. </li> <li>◆ <b>Technical requirements</b><sup>15)</sup>.</li> <li>◆ <b>Obligations under the sharing and coordination arrangements between Canada and the United States</b><sup>16)</sup>.</li> <li>◆ <b>Conditions for implementation of service or roll-out conditions:</b> May be imposed<sup>17)</sup>.</li> </ul>	Industry Canada
<b>Broadcasting certificate</b>	No person shall, except under and in accordance with a radio authorization, install, operate or possess radio apparatus, other than: a) radio apparatus exempted by or under regulations made under paragraph 6(1)(m) of the Radiocommunication Act, b) radio apparatus that is capable only of the reception of broadcasting and that is not a distribution undertaking <sup>18)</sup> .		Industry Canada

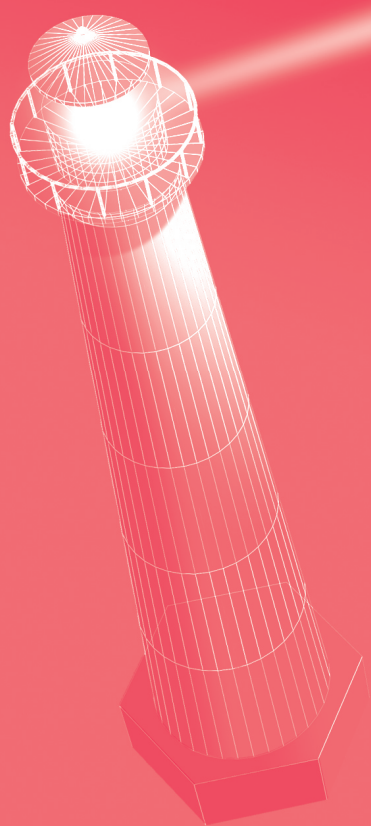
**Table 6 – Canada’s licensing regime for the provision of information and communication services and the operation of underlying facilities (*end*)**

Licence type	Scope of licence	Licence terms	Authority
<b>Radio operator certificate</b>		<ul style="list-style-type: none"> <li>◆ <b>Eligibility:</b> The following persons are eligible to be issued a radio operator certificate:                             <ul style="list-style-type: none"> <li>a) an individual who has passed the examinations set by the Minister in respect of the radio operator certificate being applied for;</li> <li>b) an individual who has met reissuance requirements or the requirements for the issuance of an equivalent certificate, set out in section 28 of the Radiocommunication Regulations; or</li> <li>c) an individual who is a citizen of a country other than Canada if                                     <ul style="list-style-type: none"> <li>i) the individual is the holder of an authorization that is issued by the responsible administration of that country and that corresponds with the applicable radio operator certificate set out in subsection 26(1) of the Radiocommunication Regulations, and</li> <li>ii) a reciprocal arrangement that establishes correspondence between radio operator certificates is in effect between the responsible administrations of Canada and that country<sup>19)</sup>.</li> </ul> </li> </ul> </li> </ul>	Industry Canada
<b>Technical acceptance certificate</b>		<ul style="list-style-type: none"> <li>◆ To certify technical acceptance and compliance with applicable standards<sup>20)</sup>.</li> </ul>	Industry Canada
<b>International submarine cable licence</b>	Two types: Terminating licence Through licence	<ul style="list-style-type: none"> <li>◆ <b>Term:</b> Ten years<sup>21)</sup>.</li> <li>◆ <b>Renewal or modification:</b> Upon licensee request<sup>22)</sup>.</li> <li>◆ <b>Transfer:</b> Subject to ministerial consent<sup>23)</sup>.</li> <li>◆ <b>Suspension and revocation:</b> if the Minister believes on reasonable grounds that the licensee has ceased to be eligible under the regulations or has contravened the Telecommunications Act, the regulations or any condition of the licence after giving notice in writing of the reasons for the suspension or revocation and a reasonable opportunity to make representations to the Commission<sup>24)</sup>.</li> <li>◆ <b>Environmental compliance:</b> An application for a licence must include documentation indicating compliance with the requirements set out in the Canadian Environmental Assessment Act (CEAA)<sup>25)</sup>.</li> <li>◆ <b>Other conditions:</b> An international submarine cable licence may contain such conditions as the Minister considers are consistent with the Canadian telecommunications policy objectives<sup>26)</sup>.</li> </ul>	Industry Canada
<b>International telecommunications service licence</b>	Class A Class B	<ul style="list-style-type: none"> <li>◆ <b>Term:</b> 10 years<sup>27)</sup>. Licences were issued initially for five years<sup>28)</sup>.</li> <li>◆ <b>Renewal:</b> On application by the licensee<sup>29)</sup>.</li> <li>◆ <b>Modification:</b> Possible<sup>30)</sup>.</li> <li>◆ <b>Transfer:</b> With CRTC consent<sup>31)</sup>.</li> <li>◆ <b>Suspension or revocation of licence:</b> if the Minister believes on reasonable grounds that the licensee has ceased to be eligible under the regulations or has contravened the Telecommunications Act, the regulations or any condition of the licence after giving notice in writing of the reasons for the suspension or revocation and a reasonable opportunity to make representations to the Commission<sup>32)</sup>.</li> <li>◆ <b>Competition:</b> <ul style="list-style-type: none"> <li>i) Prohibition of engaging in anti-competitive conduct<sup>33)</sup>,</li> <li>ii) Obligation to furnish and maintain an up-to-date list of all agreements or arrangements entered into with any foreign telecommunications service providers<sup>34)</sup>,</li> <li>iii) Provide any other information needed<sup>35)</sup>.</li> </ul> </li> <li>◆ <b>Minutes of traffic:</b> Class A licensees must retain quarterly international traffic minute data until the CRTC has determined the requirements in the framework of <u>Public Notice CRTC 2000-175</u> (“Monitoring the Canadian telecommunications industry”) of 15 December 2000<sup>36)</sup>.</li> </ul>	CRTC

*Notes relative to Table 6:*

- 1) Art. 5 of the Radiocommunication Act, R.S.C., 1985, c. R-2 and art. 3 of Radiocommunication Regulations, DORS/96-484, 5 November 1996.
- 2) Radiocommunication Regulations, art. 4.
- 3) Ibid., art. 5.
- 4) Ibid., art. 9, 10 and 10.1 of the Radiocommunication Regulations.
- 5) Ibid., art. 11.
- 6) Ibid., art. 55 ff. and Annex III.
- 7) Ibid., art. 5.
- 8) Industry Canada, Framework for Spectrum Auctions in Canada, 2nd edition, October 2001, pp. 6-9.
- 9) Ibid.
- 10) Radiocommunication Act, art. 5 (1)b).
- 11) Radiocommunication Regulations, art. 40.
- 12) Industry Canada, op. cit. 8.
- 13) Ibid.
- 14) Ibid.
- 15) Ibid.
- 16) Ibid.
- 17) Ibid.
- 18) Radiocommunication Act, art. 4 and Radiocommunication Regulations, art. 17.
- 19) Radiocommunication Regulations, art. 26 ff.
- 20) Ibid., art. 19 ff.
- 21) Telecommunications Act, S.C. 1993, c. 38, art. 19 (3) and International Submarine Cable Licences Regulations, DORS/98-488, 1 October 1998, art. 4(1)(f).
- 22) Telecommunications Act, art. 19(4).
- 23) Ibid., art. 19(4).
- 24) Ibid., art. 20(1) (2).
- 25) International Submarine Cable Licences Regulations, art. 4(1)(e).
- 26) Telecommunications Act, art. 19 (2).
- 27) Ibid., art. 16.3 (4).
- 28) Telecom Decision CRTC 98-17 (“Regulatory regime for the provision of international telecommunications services”), Ottawa, 1 October 1998, paragraph 367.
- 29) Telecommunications Act, art. 16.3 (5).
- 30) Ibid., art. 16.3 (3).
- 31) Ibid., art. 16.3 (6).
- 32) Ibid., art. 16.4 (1) (2).
- 33) Telecom Decision CRTC 98-17, paragraph 316.
- 34) Ibid., paragraph 338.
- 35) Ibid., paragraph 340.
- 36) Order CRTC 2001-4 (“Changes to reporting requirements of class A licensees”), 11 January 2001, paragraph 7.





LICENSING  
IN AN ERA OF  
LIBERALIZATION  
AND CONVERGENCE  
CASE STUDY  
THE REPUBLIC OF  
LITHUANIA  
2004



International  
Telecommunication  
Union





# **Licensing in an era of liberalization and convergence**

Case study:  
the Republic of Lithuania

2004

This case study was conducted by Eric Lie and Nancy Sundberg.

The field study enabled us to meet and interview the regulatory agency, government and industry representatives. This study is intended to be useful not only to the regulatory authorities and the corresponding arms of government but also to everyone concerned with the telecommunication market.

The authors wish to express their sincere appreciation to the Ministry of Transport and Communications and wish particularly to thank Mr Vytautas Krasauskas, Head of the Post and Telecommunication Division, for his invaluable assistance, as well as everyone in the public and private sectors alike that gave us their time. Without their support, a report such as this could not have been prepared.

The views expressed in this paper are those of the authors and do not necessarily reflect the views of ITU, its members or the Lithuanian Government.

This is one of a series of case studies on licensing in the era of liberalization and convergence undertaken by ITU. Further information can be found on the web site at <http://www.itu.int/ITU-D/treg>

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## 1 Introduction

This case study forms part of a series on licensing in the era of liberalization and convergence. Conducted by the Regulatory Reform Unit (RRU) of the Telecommunication Development Bureau (BDT) of the International Telecommunication Union (ITU), this series of case studies aims to respond to a growing demand from the ITU Membership for best-practice guidelines on this crucial policy and regulatory aspect that could be of assistance to regulators who are considering a shift from a monopoly or limited competition environment to a fully liberalized one. The case study will also form part of the 6th edition of the ITU publication “Trends in Telecommunication Reform 2004 – Licensing in an Era of Convergence” and will be showcased at the 5th annual Global Symposium for Regulators (Geneva, 8-10 December 2004).

The Republic of Lithuania was selected because of the rapid transformation of its telecommunication sector from a monopoly market to a fully liberalized ICT environment. Taking place over a two-year period, this major transformation of the Lithuanian telecommunication sector reflects not only the policy and regulatory changes that are sweeping through Europe now but also those that are transforming telecommunications markets worldwide. From a licensing perspective, Lithuania was also one of the first countries in the European Union (EU) to have moved to a liberal licensing regime based on general authorizations, following its implementation of the EU’s 2002 Authorization Directive.

This case study will look at Lithuania’s transition from a regulatory regime based on the monopoly provision of telecommunications services to one that is based on open competition and a liberal licensing regime. In the process, it will examine Lithuania’s new legal framework, focusing particularly on its licensing procedures, and highlight the benefits and challenges of such an approach.

### 1.1 Country background

Located along the Baltic Sea, Lithuania was one of ten European countries that recently joined the European Union on 1st May 2004.

It has a population of approximately 3.44 million (2003) spread over a landmass of 65,300 square kilometres. In 2003, Lithuania had a GDP of EUR 16.142 billion.

In the middle of 2004, the number of fixed lines<sup>1</sup> amounted to 821,900 while mobile subscribers totalled 2,746,200. The number of mobile subscribers surpassed the number of fixed line users by end of 2002.



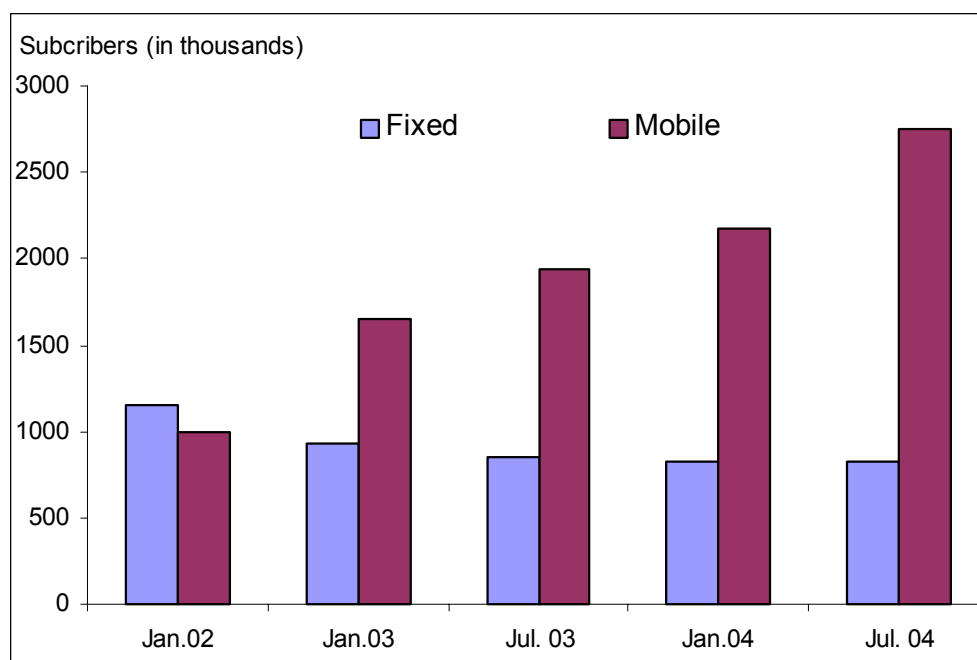
Source: United Nations, New York.

Fixed-line teledensity is at 24 subscribers per hundred population, while mobile teledensity is at 80 subscribers per hundred population.

## 2 The Lithuanian telecommunication sector

This section provides an overview of the principal institutions overseeing the telecommunication sector and reports on the major market players.

**Figure 1 – Main lines and mobile subscribers in Lithuania, 2002 – 2004**



Source: Communications Regulatory Authority, Lithuania

### 2.1 Key institutions

The principal institutions involved in telecommunications policy and regulation are the Ministry of Transport and Communications and the Communications Regulatory Authority (RRT). Related institutions also include the Information Society Development Committee (responsible for the co-ordinating the Information Technology policy), the Lithuanian Radio and Television Commission (responsible for broadcasting regulation), and the Competition Council (responsible for the implementation of general competition laws).

#### 2.1.1 Lietuvos Respublikos susisiekimo ministerija

The Lithuanian Ministry of Transport and Communications (the Ministry) is in charge of defining and implementing the policy of the Government of the Republic of Lithuania in the field of telecommunications development. It also coordinates the development of State investment programs in telecommunications as well as analyses and coordinates information technology and telecommunications projects that have been developed by state undertakings and institutions. Its main tasks are the development of a fair and transparent legal environment, in compliance with EU requirements, that would foster competition between the providers of telecommunications services, and the promotion of equal access to telecommunications services by the population.

While overall ICT development goals fall under the purview of the Ministry of Interior, a broadband strategy is currently being prepared by the Ministry of Transport and Communications. Recently, the Ministry has also been involved in the development of policies relating to the deployment of third-generation mobile networks (3G).

Prior to the introduction of the 2002 Law on Telecommunications, the Ministry was also involved in the licensing of certain telecommunications networks and services. Most of these functions were transferred to the RRT in 2001, following its establishment.

### **2.1.2 Ryšių reguliavimo tarnyba (RRT)**

The Communications Regulatory Authority (RRT) was constituted as an independent state institution from the old State Radio Frequency Service. It began its activities on 1 May 2001. The Director of the RRT is appointed directly by the President of the Republic of Lithuania for a five-year term, along with its seven-member council. The RRT is financed from administrative charges through the national State budget.

While all drafts of legal acts to be adopted by the Government, including the Regulations (by-laws) of the RRT, are required to be submitted to the Minister of Transport and Communications for comments and approval, regulatory decisions of the RRT can only be challenged by the Court. A clear separation of powers between the Ministry and the RRT is also encapsulated in the 2004 Law on Electronic Communications (which replaced the 2002 Law on Telecommunications).

Following the entry into force of the 2002 Law on Telecommunications, the RRT was assigned wide-ranging responsibilities (see Box 1). No major change to these responsibilities was introduced with the 2004 Law on Electronic Communications.

It was also given full authority over licensing activities, including the granting of licences for scarce resources such as spectrum and numbers. Licensing policy pursuant to the 2002 Law was developed entirely by RRT. In line with the 2002 EU regulatory framework on electronic communications, further discretionary powers were granted to the RRT under the 2004 Law on Electronic Communications, particularly in the determination of entities having Significant Market Power (SMP).

It is important to note that, according to the 1999 general competition law, the Competition Council is also responsible for matters involving competition policy. Although the Council is not empowered to act pursuant to the 2004 Law on Electronic Communications, overlaps may occur under the newly established 2004 Law, which merges *ex post* competition law principles and *ex ante* regulations<sup>2</sup>. As a result, greater cooperation between the Council and the RRT is envisaged.

## **2.2 Selected operators and service providers**

The liberalization on 1 January 2003 of the public fixed-line telephony market resulted in a boost to the telecommunications sector. Revenues generated that year by public fixed and mobile telephony, leased lines and Internet access services totalled USD 0.5 billion (up from USD 0.4 billion in 2002). Up until 31 December 2002, the Lithuanian telecommunications sector was characterized by the monopoly of partially state-owned Lietuvos Telekomas in the provision of public fixed telephony services. Only certain value-added services, such as data and Internet access, leased lines and fixed and mobile satellite services were open to competition. Provision of mobile cellular services started in 1995. The first mobile operator, OMNITEL launched its mobile services during the course of 1995, followed by Bitė GSM at the end of 1995 and Tele2, in 1998.

Since 1 January 2003 and up to the middle of 2004, 25 notifications for the provision of public mobile services were received by the RRT, of which four service providers and the three network operators (Omnitel, Bitė GSM, Tele2) are currently providing services. Thirty-eight notifications for the provision of public fixed telephone services and/or networks were also received, of which 19 have started operations.



**Box 1: Main Functions of the Communications Regulatory Authority (RRT)**

As defined in the 2002 Law on Telecommunications, the RRT has been tasked to:

- 1) Draft and approve the terms and conditions for engaging in telecommunications activities;
- 2) Monitor compliance with the terms and conditions of telecommunications activities;
- 4) Draft and approve obligatory requirements for equipment and devices, terminal equipment, the connection of terminal equipment to the public telecommunications network and the interconnection of telecommunications networks;
- 5) Draft and approve regulations for the construction, use and protection of telecommunications networks and minimum quality requirements for public telecommunications services, as well as regulations establishing the procedure for a joint use by telecommunications operators and telecommunications service providers of conduits, cable ducts, collectors, towers, masts and other facilities;
- 6) Draft and approve general terms and conditions of agreements on the interconnection of telecommunications networks and the procedure for the resolution of disputes between telecommunications operators and telecommunications service providers concerning the interconnection of telecommunications networks;
- 7) Draft and approve radio communication development plans and legal acts regulating radio communication;
- 8) Draft and submit for Government approval the National Radio Frequency Allocation Table and carry out its implementation within the limits of its competence, together with the Lithuanian Radio and Television Commission (...)
- 10) Draft and approve lists and procedures of telecommunications activities, the commencement and termination whereof shall be notified by an undertaking to the Communications Regulatory Authority, as well as the requirements for the form and content of such notification;
- 11) Draft and approve the National Telephone Numbering Plan, legal acts setting forth the procedure for the implementation of the Plan and the procedure for the allocation and usage of telephone numbers, as well as control and monitor their implementation;
- 12) Draft and approve regulations for the provision of telecommunications services;
- 13) Draft and approve conditions for access provision and standard conditions for operators' offers concerning access;
- 14) Examine disputes between telecommunications operators concerning the interconnection of telecommunications networks and a joint use of conduits, cable ducts, collectors, towers, masts and other facilities, access, as well as disputes between telecommunications service providers and users, within the limits of its competence and to the extent provided for by this Law, protect the rights and legitimate interests of the consumers, approve the procedure for the settlement of disputes between telecommunications service providers and users, including consumers;
- 15) Draft and submit to the Government or the authority designated by it for its approval proposals concerning the implementation of the strategy of telecommunications development and state policy in the telecommunications sector;
- 16) Draft and submit to the Government or the authority designated by it for approval proposals concerning the establishment of a price cap for universal services;
- 17) Draft and submit to the Government or the authority designated by it for its approval the scope and quality requirements of universal services, the procedure, terms and conditions for the provision of these services, the procedure for and cases of imposing obligations on telecommunications service providers to provide universal services;
- 24) In accordance with the provisions of this Law, monitor competition in the telecommunications sector, approve and carry out the market research procedure, carry out analysis and define relevant markets, determine the market share of undertakings and their position on the relevant market, determine which undertakings enjoy significant market power and their obligations (...)

*Source: Lithuanian Telecommunications Law 2002.*

Although new operators and service providers have entered the market since full competition was introduced, the market players with the largest market shares continue to be those who had led the market under the old regime (see Table 1).

**Table 1: Major market operators**

	FIXED	MOBILE		
Name	<b>Lietuvos telekomas</b>	<b>Omnitel</b>	<b>Bitė GSM</b>	<b>Tele2</b>
Group	TeliaSonera	TeliaSonera	TDC	Tele2
Subscribers	<b>822 000 (98%)</b>	<b>1 053 000</b>	<b>507 000</b>	<b>592 000</b>
Market share	<b>96%</b>	<b>56%</b>	<b>25%</b>	<b>17%</b>
Penetration	<b>24%</b>	<b>63%</b>		

Source: Telecommunications Market Liberalisation, presentation made by Mr. Feliksas Dobrovolskis, Deputy Director, Telecommunications Department, Lithuanian Communications Regulatory Authority, at the Round Table, Telecommunications Market: Competition, Investments and Regulatory Issues, Minsk, 25 May, 2004. Data is as of 1st April 2004.

### 2.2.1 Lietuvos Telekomas

Lietuvos Telekomas (LT), the fixed line incumbent, still holds more than 90 per cent of market share in the provision of public fixed line telephone services. Originally government-owned, it was re-organized into a public company in 1997 and in 1998, a 60 per cent stake in the company was sold to Amber Teleholding A/S, a fully-owned subsidiary of TeliaSonera. In 2000, a further 30 per cent stake in the company was sold in an initial public offering. The government released its golden share in May 2003.

LT provides local, long-distance and international telephony, as well as VoIP services, through its subsidiary Voicecom. LT also provides various data services, including Internet services and is active in call-centre and IT consulting markets.

### 2.2.2 Omnitel

Omnitel, a GSM 900/1800 operator, is currently the leading public mobile service operator in Lithuania. It is 100 per cent owned by Amber Mobile Teleholding A/S (full ownership since August 2004, when TeliaSonera acquired the remaining 10% shares of OMNITEL). Although the company was established in 1991, it only launched its GSM 900 network in 1995. In 1998, it was awarded one of three GSM 1800 licences and launched these services in 1999. In June 2001, Omnitel launched GPRS services. The company is also a leading<sup>3</sup> provider of Internet and data services, offering dial-up, wireless, leased line and DSL services.

### 2.2.3 Bitė GSM

Bitė GSM is fully owned by Tele Denmark (TDC). Its GSM 900 services were launched in 1995. It was also awarded a GSM 1800 licence in 1998 and launched these services the year after. In October 2001, it launched GPRS services.

### 2.2.4 Tele2

A predecessor of Tele2, Levi&Kuto was established in 1993. In 2000, the company's name was changed to Tele2, an affiliate of the Swedish company Tele2, following a transfer of ownership from AS Levicom Cellular to Tele2. Its predecessor was awarded a GSM 1800 licence in 1998 and entered the market in 1999 (DCS only). Tele2 was granted a GSM 900 licence end of 2000 and started providing services in 2001.

### 2.2.5 Eurocom

Eurocom started providing fixed and mobile services to a closed user group in 2001. It is part of the Virtual Private (VP) Market retail group. It was the first company to reach a wholesale agreement with LT to provide voice services. It started offering public fixed line telephone services on 1 January 2003 and mobile services through the Bitė GSM network on 1 July 2003. It has approximately 18,000 mobile subscribers.

## 3 Telecommunications policy and regulation

Lithuania's legislative and regulatory regime has undergone significant changes within a short period of time. In addition to the promulgation of a wide range of regulations, two major laws on telecommunications were also passed within a period of only two years (see Table 2).

**Table 2: Selected telecommunications legislation and regulations, 2002 to 2004**

2004	Law (Nr. IX-2135) on Electronic Communications (entry into force on 1 May 2004)
2003	Order No. 12 of the Director of the Communications Regulatory Authority on the Approval of the List of Radio Frequencies/Channels where the Number of Authorisations for the Use of Radio Frequencies/Channels is Limited
2003	Government Resolution No. 174 on the Approval of the National Frequency Allocation Table
2003	Order No.1-V27 of the Director of the Communications Regulatory Authority on the Approval of the List of Frequencies/Channels which may be Used without an Individual Authorisation
2002	Order of No. 201 the Director of the Communications Regulatory Authority on the Approval of the Rules of an Auction to Grant the Right to Use Radio Frequencies/Channels and Telephone Numbers
2002	Order No.198 of the Director of the Communications Regulatory Authority on the Approval of Procedure for Assignment and Use of Telephone Numbers
2002	Obligatory Requirements for Interconnection of Telecommunications Networks and General Terms and Conditions for Agreements on Interconnection of Telecommunications Networks
2002	Order No. 117 of the Director of the Communications Regulatory Authority on the Approval of Part II of the Regulations for the Provision of Telecommunications Services "Regulations for the Provision of Public Mobile Telephone Services
2002	Law No. IX-1053 on Telecommunications (entered into force on 1 January 2003)
2002	Order No. 158 of the Director of the Communications Regulatory Authority on the Approval of the List of Markets in which Obligation to Provide Access is Applied to Undertakings Having Significant Market Power
2002	Order No. 176 of the Director of the Communications Regulatory Authority on the Approval of General Terms and Conditions for Engaging in Telecommunications Activities.
2002	Order No. 182 of the Director of the Communications Regulatory Authority on the Approval of the Conditions for Publishing the Public Offer for Unbundled Access to the Local Loop and Related Facilities and Standard Conditions of the Offer
2002	Order No. 183 of the Director of the Communications Regulatory Authority on Conditions for Provision of Access and Standard Conditions of Operators Offers for Access
2002	Order No. 188 of the Director of the Communications Regulatory Authority on the Procedure for Ensuring the Subscriber's Right to Use Telephone Services Provided by any Provider of Public Telephone Services
2002	Order No. 192 of the Director of the Communications Regulatory Authority on the Approval of the Procedure for the Settlement of Disputes Between Telecommunications Service Providers and Users, Including Consumers
2002	Order No. 193 of the Director of the Communications Regulatory Authority on the Approval of Rules for Provision of Leased Lines Services

**Table 2: Selected telecommunications legislation and regulations, 2002 to 2004 (*cont.*)**

2002	Order No. 194 of the Director of the Communications Regulatory Authority on the Approval of Cost Allocation Rules and Requirements Related to Cost Accounting
2002	Order No. 195 of the Director of the Communications Regulatory Authority on the Approval of the Rules of Market Analysis
2002	Order No. 196 of the Director of the Communications Regulatory Authority on the Approval of the National Telephone Numbering Plan
2002	Order No. 197 of the Director of the Communications Regulatory Authority on the Approval of Rules on Interconnection of Telecommunications Networks
2002	Order No. 199 of the Director of the Communications Regulatory Authority on the Approval of the Rules of Assignment and Use of Radio Frequencies/Channels

*Source:* RRT.

*Note:* The above-mentioned legal acts, adopted in 2002, entered into force on 1 January 2003.

### 3.1 Transition and transposition

This rapid transformation of Lithuania's telecommunications policy and regulatory environment over the past few years can be characterized as a transition toward greater market liberalization through the transposition of EU directives into national laws.

Prior to 1 January 2003, operators of public networks and providers of public telecommunication services (except data, leased lines, VSAT and Internet services) required individual licences granted by the sector Ministry for a 10-year period. This changed on 1 January 2003, when the telecommunications law of 5 July 2002 came into force. Designed in accordance with the 1998 EU Directives, it also incorporated some of the provisions from the 2002 new EU Regulatory Framework. More importantly, the introduction of the 2002 Law on Telecommunications marked the end of the monopoly enjoyed by Lietuvos Telekomas, opening up the telecommunications market to full competition.

Less than one year after the 2002 Law came into effect, preparations for the drafting of a new law started. The 2004 Law on Electronic Communications came into effect on 1 May 2004. Its key objective was to transpose the 2002 set of EU Directives on the New Regulatory Framework for Electronic Communications and Associated Services into national legislation.

#### 3.1.1 EU cooperation

The transposition of the EU directives into the national legislative framework was largely facilitated by a process of information gathering, awareness raising and self-empowering by the regulatory authority and the sector Ministry. The process of transposing EU directives into Lithuanian national law also involved extensive cooperation among a number of parties. Meetings between the sector Ministry, the RRT and EU officials were commonplace, as were meetings with other EU accession countries, particularly Latvia and Estonia, as well as with the EU Member States (in the context of the Independent Regulators Group). Technical assistance for the transposition process also came in the form of the PHARE project with a German consultancy company. More importantly, familiarity with the Directives was gained through the direct participation of the Ministry and the RRT in the process leading to the drafting and adoption of the EU directives. This generally involved active participation in preparatory committees, monitoring of stakeholder inputs and exchanges with other member states and related institutions.

#### 3.1.2 Public consultation

Domestically, the RRT and the sector Ministry held extensive consultations with national operators during the preparation of the laws. Under the coordination of the RRT and the sector Ministry, working groups were created for the drafting of both laws. A representative from the Infobalt Association, an industry association that groups together major players in the ICT sector (including the fixed-line

incumbent and the three mobile operators), participated in the drafting groups. Aside from input through Infobalt, Lithuania's major telecommunications operators also worked with the European Competitive Telecommunications Association (ECTA) who submitted opinion documents and comments on the proposed legislation. As a whole, the level of involvement of the telecommunications industry was high. To a certain extent, this benefited from the presence of major foreign investors in the Lithuanian telecommunications sector, who possessed significant experience and familiarity with the regulatory regimes in other European countries and abroad.

In general, the drafting of the telecommunications legislative framework was done through wide and extended consultations between all interested parties, through a step-by-step smooth approach. All documents and related discussions regarding the drafting of the laws were made public. In addition, similar information regarding the drafting of secondary legislation pursuant to these laws was also made available on RRT's website for reference and comments.

While the industry representatives who participated remarked that not all changes they sought were reflected, they nevertheless expressed satisfaction with the consultation process. It should be noted, however, that this level of satisfaction was not shared by all segments of the telecommunications industry. In particular, smaller new market entrants who were not members of Infobalt expressed a desire to be more involved in the consultation process. In early 2004, a group of new operators launched their own industry association, the Association of Enterprises Providing Telecommunication Services, and presented this new organization to the RRT as the main contact point for consultations on legislation and regulation.

### **3.1.3 Implementation**

While the process of transposing the New Regulatory Framework into national legislation went smoothly, the implementation of the legislation and its corresponding regulations following only a short gestation period raised some concern among industry. To allay concerns, the introduction of the 2002 Law was followed by a transition period of two months, where feedback of previously licenced operators was sought as to whether their operations were constrained or compromised by the new provisions. Under the Law, the RRT was also given the prerogative to grant a nine-month stay in the application of the provisions of the new law. Two operators, Lietuvos Telekomas and Omnitel, sought a stay from the RRT in the implementation of certain obligations under the 2002 Law. They asked for the non-application of certain provisions that included SMP obligations, universal service obligations and general consumer protection obligations. The RRT denied the application and Lietuvos Telekomas appealed its decision unsuccessfully.

In a separate proceeding, the RRT designated Lietuvos Telekomas, Omnitel and Bitè GSM as having SMP. Both Omnitel and Bitè GSM's appeals against this decision were successful. The ensuing dispute between the RRT and the two mobile operators over the SMP matter was brought to the attention of the high court that eventually, based on a procedural matter, ruled in favour of the operators. The entire issue was ultimately rendered moot following the introduction of the 2004 Law that replaced the quantitative 25 per cent market share trigger with a qualitative general competition law approach for the determination of SMP.

The implementation of the 2004 Law, on the other hand, did not envisage any transition period. During accession negotiations with the EU, the decision taken was to fully transpose the EU regulatory framework into national law as of the date of Lithuania's accession to the EU. Nevertheless, despite the short timeframe, industry stakeholders have generally regarded the latest process of transposition and implementation as a success.

## **3.2 The new legislative framework**

### **3.2.1 The 2002 Law on Telecommunications**

The introduction of the 2002 Law on Telecommunications marked an important watershed in the regulation of telecommunications in Lithuania. New regulations on licensing, significant market power,



access to telecommunications infrastructure and consumer protection, among others, were developed pursuant to the 2002 Law.

Despite the introduction of a wide range of changes, particular concern was drawn to the issue of the determination of SMP and the obligations that entailed. The RRT designated three SMP operators – LT, Omnitel and Bitè GSM – the day after the 2002 Law came into force, based largely on the statutory presumption of SMP where market share exceeds 25 per cent. LT was designated as having SMP in the market for public fixed telecommunications services and networks, the market for leased line services and the national interconnection market while Omnitel and Bitè GSM were designated as having SMP in the market for public mobile telecommunications services and networks. Omnitel was also designated as having SMP in the national interconnection market. The designation of Omnitel and Bitè as having SMP was overturned by the High Court after six months in the case of Omnitel and after a year in the case of Bitè GSM. Currently, the RRT is preparing to conduct new market analysis based on the approach introduced under the 2004 Law. At present, only LT is designated as having SMP.

Additional obligations are imposed on SMP operators. These are mostly related to issues of access and interconnection and anti-competitive behaviour (see Table 3). While the list of obligations appears onerous, it is nevertheless important to note that the introduction of SMP regulation has been accompanied by deregulation in other areas. In the pre-2002 law regime, access and interconnection conditions were regulated more extensively among network providers. With the introduction of the 2002 Law, only SMP operators are now subject to such extensive regulations. As a result, non-SMP network operators have little incentive to offer wholesale services at prices that would attract new service providers into the market. Currently, wholesale prices in the mobile segment are said to be priced at retail prices or above. This has prompted some new service providers to seek greater regulatory intervention in this area.

### **3.2.2 The 2004 Law on Electronic Communications**

As its expressed objective, the 2004 Law on Electronic Communications is aimed at regulating the operation of electronic communications of the Republic of Lithuania, in conformity with the requirements of up-to-date legal acts regulating the operation of EU electronic communications. To this end, it regulates matters pertaining to electronic communication services and networks and their related means and services. Its scope also includes the use of electronic communication resources, the use of radio equipment and terminal equipment and the transmission of broadcasting services. Broadcasting content regulation, however, falls under the preview of separate legislation.

In comparison with the 2002 Law, the 2004 regulation scope is significantly broader. For example, new provisions were introduced to reinforce consumer and data protection, while provisions related to the determination of SMP were brought in line with the latest EU competition law principles. Despite extensive new provisions, however, the changes introduced by the 2004 Law have been perceived by industry as relatively minor, compared to those introduced by the 2002 Law. Some concerns remain, however, as to the RRT's impending application of the new provisions dealing with the determination of SMP.

In compliance with the 2002 EU New Regulatory Framework, the 2004 Law also provides explicitly for technological neutrality, which was not as extensively dealt with in the 2002 Law. In effect, this means that any implementation of the law cannot discriminate or encourage the use of particular technologies related to electronic communications networks and services.<sup>4</sup>

Currently, under Government Decree No 699 of 2003 on the Approval Rules of Universal Service Provision and Determination of Rates of Universal Services Tariffs, LT continues to be subject to Universal Service Provision obligations.

**Table 3: Obligations imposed on LT as an operator with SMP in the public fixed telephone network and services, leased lines, national network interconnection markets and local loop**

Article of the Law on Telecommunications	Paragraph of the Article	Obligation
11	9	Undertakings enjoying significant market power on the market of the provision of public telecommunications networks services and/or public telecommunications services may provide cable television network services only through a separate legal entity.
12		Obligation of transparency (within the scope established by the Communications Regulatory Authority).
13		Obligation of non-discrimination.
14		Obligation of accounting separation.
15		Obligation to provide access and network interconnection at cost-oriented prices.
16		Obligation of access provision.
21	3	Prices of providers of public fixed telephone services and operators of public fixed telephone network with significant market power must be cost-oriented, including reasonable return on investments.
	4	A telecommunications operator or a telecommunications service provider with significant market power shall be prohibited to use cross-subsidies for services, which are offered on a competitive basis.
	6	Tariffs for telecommunications services offered by undertakings with significant market power must be established in a manner that would ensure freedom of choice for telecommunications service users from different services or service elements that are or may be provided individually, and that the tariffs are unbundled.
	7	The tariffs established by telecommunications operators and service providers with significant market power shall be non-discriminating and shall be applied equally with respect to all telecommunications service users of the same category.
22	1	Operators of public telecommunications networks and leased lines and/or service providers with significant market power must meet the request of other telecommunications operators to interconnect public telecommunications networks under the conditions prescribed by the Law and the Communications Regulatory Authority.
	2	An undertaking with significant market power in the relevant market shall use the information received only for the purposes it had been provided for and may not transfer it to his partners, subsidiaries or other undertakings to which such information might give competitive advantage.
	4	Interconnection of telecommunications networks may not be refused by an undertaking with significant market power, if the request is reasonable and technically feasible.
	6	Agreements on interconnection of telecommunications networks where at least one party is a telecommunications operator with significant market power shall be registered at the Communications Regulatory Authority. The agreement must lay down all technical and financial conditions.

**Table 3: Obligations imposed on LT as an operator with SMP in the public fixed telephone network and services, leased lines, national network interconnection markets and local loop (cont.)**

	8	Operators with significant market power in the relevant market must, under the conditions established by the Communications Regulatory Authority, publish the schedules and terms and conditions for interconnecting with their networks.
24	8	The Communications Regulatory Authority shall have the right to obligate an undertaking with significant market power in the market providing a specific service to unbundle the cost of the provision of this service, in accordance with the cost allocation regulations established by the Communications Regulatory Authority for the purpose of cost accounting and related requirements including the requirements for undertaking an independent audit.
	10	Operators of fixed public telephone networks and providers of fixed public telephone services having significant market power, shall ensure, in the manner prescribed by the Communications Regulatory Authority, and at their expense, the right of their subscriber to use telephone services provided by any provider of fixed public telephone services. Other operators of fixed public telephone networks and providers of public telephone services having significant market power must ensure the right of their subscriber to use telephone services provided by any public telephone services provider from 1 January 2004.
26	1	A designated local loop operator must provide, on transparent and non-discriminatory grounds, unbundled access to a local loop for the users of a local loop who have submitted such a request.
	2	Following the decision by the Communications Regulatory Authority to designate the operator of a local loop said operator, within the prescribed time period and under the terms and conditions established by the Communications Regulatory Authority, must make a public offer for partly unbundled access to a local loop and related facilities and regularly update its offers, taking into account technological and market changes.
	4	A request for unbundled access to the local loop and related facilities must be granted or a justified refusal to provide access submitted within 2 months of receiving the request. The designated local loop operator may refuse to grant requests for unbundled access to the local loop either on reasonable grounds or in view of the need to ensure network integrity.
	5	The prices set by a local loop operator for the provision of the access specified in paragraphs 1 and 2 of this Article and related facilities shall be cost-oriented, including reasonable return on investment.
28	2	The regulations approved by RRT shall establish the procedure for publishing and providing information about leased lines, their technical characteristics, tariffs, terms and conditions of their provision and use and conditions for the connection of terminal equipment, as well as the minimum scope and quality requirements of leased line services, which on the territory of the Republic of Lithuania shall be provided by a leased line provider with significant market power.
	3	The leased line service provider with significant power in the relevant market shall provide leased line services for the prices that are cost-oriented, including reasonable return on investment.

Source: RRT annual report 2003.





## 4 Licensing framework

### 4.1 General authorization

Preceding the general authorization regime introduced by the 2002 Law, the 1998 Law on Telecommunications demanded certain services from telecommunication providers in order to issue a licence. However, a number of services such as data transmission did not require a licence to operate. In such cases, complicated licensing procedures were replaced with a system of notification and automatic regulatory approval, combined with the issue of individual permissions.

The introduction of the 2002 Law liberalized the licensing framework by abandoning the requirement for individual licences. In its place, a general authorization regime was introduced. Under the new regime an undertaking is permitted to engage in telecommunications activity without any procedural formality. Notification is only required for the provision of certain listed services (see Section 4.1.1 below), while the assignment and use of such scarce resources as spectrum and numbers remain subject to the granting of permission on an individual basis (individual licensing). As stated in the order implementing the general authorization regime, the conditions governing market entry are based on principles of technological neutrality, functional equivalency, assurance of efficient competition, the least necessary regulation, benefits to the users and principles of transparency and non-discrimination<sup>5</sup>. No limit has been placed on the number of telecommunications providers in the market.

#### 4.1.1 Notification

The General Conditions of Engagement in Telecommunications Activities, contained in Order No. 176 of the Director of the Communications Regulatory Authority, provides a list of activities that are subject to notification (see Box 2). All other activities can be provided freely without any information requirements from the RRT. Only Internet access service providers are required to periodically submit reports on their activities to the RRT.

##### **Box 2: Telecom activities requiring notification**

Paragraph 5 of Order No. 176 specifies that an undertaking is required to notify the RRT on the commencement and ending of an activity listed in its subparagraphs. These activities include:

- The provision of public telephone network and/or public fixed telephone services;
- The provision of the public mobile telephone network, that is, of the public mobile radio communication network fully or partially used to provide public mobile telephone services, and/or the provision of public mobile telephone services; and
- The provision of leased lines services.

*Source: RRT Order No. 176 On The Approval Of General Terms And Conditions For Engaging In Telecommunications Activities.*

In the event it is not clear whether a telecommunications activity falls under one of the categories in the list specified in subparagraph 5, an undertaking has the right to submit a written request to the RRT for clarification. Under the Order, the RRT is required to provide an explanation within 30 days of receipt of the request.

In practice, however, whenever in doubt undertakings intending to engage in telecommunications activities have tended to notify the RRT instead of seeking clarification largely because notification procedures are relatively cheap and easy to complete. For example, certain undertakings providing data and Internet access services have notified the RRT of the commencement of the activity of public fixed telephony services, as the possibility of using these services to provide public fixed telephone services over VoIP remains open.

To notify the commencement of telecommunication activities, an undertaking is required to complete and submit a standard notification form which is available on the RRT's website as Annex 1 to Order No. 176 (full text of Order 176 is available in Appendix 1). The completed form is then signed by an authorized person and sealed and certified by a company. In case the activity is provided by a group of persons, the form must be accompanied by a set of documents as specified in the Order.<sup>6</sup>

Upon submission of the form to the regulator, the undertaking can start offering its services at once. Although the 2002 Law provided for a 28-day delay between the time of submission and the start of operations, this provision was abandoned in the 2004 Law. The Regulator has seven days to confirm receipt of the notification and, if required, to request additional information.

Formal refusals or decisions to reject notifications have not been taken by the RRT to date. Legally, the possibility of taking such a decision is not foreseen in the legislation. Nevertheless, to date, the RRT has requested undertakings in six cases to correct and supplement the information provided in the notifications. The notifications were not registered by the RRT until the corrections and supplements were received. In five out of the six cases, the undertakings supplied the requested additional information and only one case is still pending. Among these six cases, the main defects identified by the RRT in the notifications included:

- The failure to submit a copy of the enterprise registration certificate;
- The absence of a document confirming the authorization of natural person to sign a notification;
- The absence of document confirming payment of charge for the examining of notification; and
- The absence of a description of the network and/or services that will be provided.

By mid-2004, 38 operators and service providers (in addition to the incumbent who was considered as having submitted a notification) have submitted notifications to engage in the provision of public fixed telephone networks and services. Around half of these undertakings have commenced operations. Twenty-five (in addition to the three mobile operators who were considered as having submitted a notification) have also submitted notifications for the provisions of public mobile services. Among these, seven are actually in operation – three operate their own networks and four provide services through the network of provider Bitė GSM.

It is important to note that notifications are valid for an indefinite period. The notification ends only when the operator or service provider notifies the RRT, prior to terminating its telecommunication activity. This is done through the submission of a different notification form, available as Annex 2 to Order 176.

#### **4.1.2 Spectrum and numbering**

The 2002 Law allowed the RRT several options when granting frequencies and numbers. These include a direct grant to the applicant on request or by auction or tender (beauty contest) in cases where demand for the particular resource is high. These provisions were carried on to the new 2004 Law.

Procedurally, when an operator requests the RRT for a limited resource (as in case of radio frequencies) or for a resource of exceptional economic value (as in case of telephone numbers) the RRT is required by law to inform other potentially interested parties of this request through a public announcement. If no other parties express any interest in that frequency or number range or if the resource is unlimited or is not of exceptional economic value, it is granted to the requesting party. If more than one party is interested, the regulator is allowed to decide on the mechanism (either auction or tender) that will be used to award the spectrum or numbers. Decisions are communicated to the applicants and published by the RRT.

Although the 2002 Law provides the RRT with the discretion to choose the most suitable form of competitive selection for radio frequencies, it has been expressed by operators that they favour some indication or guidelines as to which method (auction or tender) the RRT would use in what situations. At

present, operators are unable to appeal against the RRT's choice of assignment method. In the case of competitive selection for telephone numbers, the RRT can only use auction procedures, as indicated in Order 198.

The 2004 Law also gives a right to the RRT to take into account any commitments made by parties in the course of a tender or auction of radio frequencies<sup>7</sup> as well as telephone numbers<sup>8</sup>. The conditions of a tender can include non-technical criteria linked to the provision of services using those frequencies. Undertakings present their commitments and the RRT selects the winner after taking into account those commitments offered.

The use of certain radio frequencies does not require a licence or authorization in cases where the legal acts of the RRT regulating the general terms and conditions for engaging in telecommunication activities set forth the right to use certain radio frequencies/telephone numbers without a separate authorization. Licence-exempt bands specified by the RRT include those set aside for the use of RLAN devices.

Spectrum licences are generally granted for a limited duration set by the RRT. Numbering permits are unlimited in time.

The issue of spectrum licensing for third-generation mobile services (3G) is currently still under study by the Ministry and the RRT, following a deferment requested by mobile operators in 2002. Omnitel, however, has been granted a temporary licence for 3G testing.

#### 4.1.3 Licence fees

Fees payable under Lithuania's licensing framework are minimal. Operators and service providers only pay a USD 76 administrative fee upon submission of their notification. No annual fees are levied for the provision of telecommunications networks or services.

With regard to spectrum fees, a one-time fee is levied based on expenditures related to the analysis of the request made for that spectrum. Annual spectrum fees are levied based on the RRT's expenditures related to spectrum monitoring and enforcement.

**Table 4: Selected numbering fees, 2004**

	<u>Administrative one-time charges**</u>	<u>Administrative annual charges**</u>
Geographic	383 Lt. (132 USD)*	0.17 Lt. (0.05 USD)
Mobile	383 Lt. (132 USD)*	0.17 Lt. (0.05 USD)
Freephone	383 Lt. (132 USD)*	17 Lt. (5.8 USD)
Shared cost	383 Lt. (132 USD)*	17 Lt. (5.8 USD)
Premium rate	383 Lt. (132 USD)*	17 Lt. (5.8 USD)
Personal	383 Lt. (132 USD)*	0.35 Lt. (0.12 USD)
Corporate	383 Lt. (132 USD)*	0.35 Lt. (0.12 USD)
Internet	383 Lt. (132 USD)*	17 Lt. (5.8 USD)

Note: \* Up to 1500 Lt. (517 USD) per application

\*\* Charges per number

Source: Lithuanian Response to the 2004 ITU/BDT annual telecommunication regulatory survey.

For numbering, administrative charges are imposed on each number on assignment along with an annual fee. Numbering fees are required to be based on the administrative costs incurred by the regulator.

Fees collected from the winning bid in an auction or tender for spectrum or numbers are paid into the State budget.<sup>9</sup>

#### 4.1.4 Requirements and obligations

Pursuant to Order No. 176, providers of telecommunications networks and services requiring notification (as specified in subparagraph 5) as well as those providing Internet access services are required to submit a report to the RRT four times a year. The report should include information on the number of subscribers, the number of lines, tariffs and prices, traffic volume, etc. (see Appendix 2). This information is analyzed and aggregated by the RRT and is made publicly available.

Obligations that were previously contained in individual licences granted under the previous licensing regime were subsumed under general obligations contained under regulations that applied to all operators and service providers in the market. Specific obligations that were included in the individual licences, such as infrastructure roll-out obligations, were largely met before the entry into force of the 2002 Law and did not require transposition into the new regime. However, those obligations (including roll-out) that were linked to the use of radio frequencies were considered also to be a part of the rights granted to use those frequencies.

As discussed under section 3.2.1, only LT is currently subject to SMP obligations (See Table 3 for the list of obligations imposed on LT).

#### 4.2 The migration to the general authorization regime

When the 2002 Law came into effect on 1 January 2003, licence holders and operators having submitted notifications in the previous regime had to be migrated to the new general authorization regime. To a large extent, this migration was done automatically through provisions in Order No. 176 (see Box 3). Only undertakings providing leased line services were required to resubmit a notification.

##### **Box: 3: Migrating to the new regime**

Under Article 2 of Order No. 176, it states:

“2.3 the undertakings, which, prior to coming into force of this Order, were issued authorisations and licences to engage in the activities corresponding to the activities specified in Subparagraph 5 of the General Terms and Conditions for Engaging in Telecommunications Activities approved by this Order, do not have to submit a notification about the commencement of the telecommunications activity, with the exception of the undertakings providing leased lines services;

2.4. The undertakings, which, prior to coming into force of this Order, were issued authorisations to engage in data transmission activities and provide leased lines services, must submit a notification about the provision of leased lines services in the procedure specified in this Order by 1 February 2003. Such undertakings shall be considered as undertakings lawfully providing leased lines services”.

*Source: extract from Order 176, 2002.*

With the entry into force of the 2002 Law, the provisions granting monopoly included in the licence held by the incumbent LT expired. Following the expiry date, LT had the possibility, for two months, to submit a request to prolong certain provisions of licences not transposed into the legislation for a period up to nine month provided certain conditions were met. LT submitted a request, however it was rejected by the RRT. LT appealed but was unsuccessful.

With regard to spectrum, however, the 2002 Law introduced more radical changes. Frequency rights were no longer included in the operating licences of mobile operators. The provision of telecommunications services was subsumed under the general authorization regime while frequency rights were assigned separately. Non-technical conditions such as roll-out conditions that were previously contained in individual licences accompanying frequency assignments have been considered to be a part of the permission to use radio frequencies.

Nevertheless, some difficulties have emerged with regard to this issue. Discussions are currently ongoing between the RRT and a mobile operator as to the legitimacy of the inclusion of certain conditions regarding retail pricing in the Fixed-Wireless-Access frequency licence it was awarded.

Currently, rights to frequencies granted before the 2002 Law came into force remain valid for their original term. It is interesting to note that the initial GSM 900 licences granted to some mobile operators are set to expire in 2007. Consultations regarding the conditions for renewal will be held soon by the RRT.

Public consultations are launched whenever new frequencies are to be issued or when changes to secondary legislation governing spectrum use or individual rights of use are proposed.

The migration to the new licensing regime has been viewed as a smooth one by the operators affected. To a large extent, no significant resistance was shown because the new regime was regarded as one that was simpler and more straightforward. In addition, no additional fees were necessary and no new constraints were imposed on the range of activities operators could engage in. It is also important to take into account that under the pre-2002 Law regime, high licence fees were not levied for the assignment of scarce resources or for the right to provide telecommunications networks and services. As such questions of possible compensation for the termination of old licences did not arise. It should however be noted that the licences were not terminated – the same activity simply continued under the new framework.

## **5 Conclusion**

In drawing conclusions from the experience of Lithuania in licensing, it is important to bear in mind that the current regulatory framework for the large part has only been in place since 1 January 2003. The regulator, itself has only been operational since May 2001. Nevertheless, the general sentiment regarding the introduction and maintenance of the general authorization regime for licensing has been good. To a large extent, providers have seen it as a progressive move through its reduction of bureaucratic barriers and delays. The process of notification is generally regarded as straightforward and easy to satisfy.

By consolidating obligations in secondary legislation, the new regime is also seen as an effort to improve regulatory certainty and transparency on the part of the RRT.

The low administrative fees levied on providers under the regime have also benefited consumer tariffs. In the opinion of some mobile operators, the low spectrum fees they pay contribute directly to the fact that mobile retail prices in Lithuania are amongst the most competitive in Europe.

Stakeholders in the new regime have also lauded the degree of public consultation that took place before the adoption of the new legal framework. Nevertheless, it was noted that consultations should attempt to involve all segments of the telecommunications sector, particularly new entrants and smaller players, and also allow sufficient time for a considered response.

In terms of challenges, the impending licensing of 3G spectrums presents itself as an immediate concern to the Ministry and the RRT. Mobile operators have stressed those high reserve prices for auctions could be detrimental for the long-term development of infrastructure and services.

On a broader level, the introduction of the 2004 Law presents a range of challenges to the regulator that go beyond licensing. The 2004 Law has given the RRT extensive powers and a large amount of discretion in applying them. While the introduction of the 2002 Law was followed by a certain amount of litigation (five) against regulatory decisions, particularly over the issue of SMP, it remains to be seen what industry reaction to the RRT's regulatory decisions pursuant to the 2004 Law will prove to be like.

While more emphasis is given to the market players to develop in accordance with competitive rules and market-oriented approaches, it remains to be seen what will be the level of secondary legislation required to allow for new players to enter the market and be viable with operators battling to avoid SMP obligations and to avoid established network operators protecting *de facto* their market and networks. Therefore, market analysis and clear definition of SMP operators is essential and interconnection or

termination charges obligations are critical not only to ensure a competitive environment but also for investment in the market. It is clearly recognized that the issues surrounding SMP will remain a key challenge for the regulator and the new regime. Extensive consultations by the RRT with the European Commission and industry stakeholders on this matter are ongoing.

The RRT faces an ongoing challenge in the form of ensuring that the market develops in accordance with the principles of fair competition. A consistent effort will have to be made to find the correct level of regulation necessary to ensure a level playing field and the absence of barriers to entry. An annual comprehensive review of market development is undertaken by the RRT to ensure that a balance is maintained and that the regime also does not act as a burden on telecommunications growth.

It is finally important to note that while the RRT has taken on the heaviest burden in terms of decision-making under the new regime, it does not act in a vacuum. There is a general need to ensure that all other related decision-making bodies, from the Ministry to the Courts, possess the same level of competency and familiarity with regard to both the new liberalized and converged telecommunications environment and its new legal framework.

## **Endnotes**

- 1 Main lines and ISDN channels.
- 2 See Chapter 26, Lithuania, Dr Jaunius Gumbis and Marius Jakutavicius, Lideika, Petrauskas, Valiunas ir Partneriai, Getting the Deal through – Telecoms, *Global Competition Review*, London, United Kingdom, May 2004.
- 3 The largest operator of Internet and data services is LT (also partially-owned by the TeliaSonera group) and OMNITEL is the second (in terms of revenues). Therefore, the largest share in these markets is enjoyed by the TeliaSonera group.
- 4 As clarified in the Lithuanian response to the 2004 ITU/BDT annual regulatory survey.
- 5 General Provisions, article 1, Order 176, 2002.
- 6 Annex 1 to Order 176, article 9.
- 7 Art. 58.2.7 of the Law on Electronic Communications (implementing Point 7, Part B of the Annex to the EU Authorization directive).
- 8 Art. 58.3.8 of the Law on Electronic Communications (implementing Point 8, Part C of the Annex to the EU Authorization directive).
- 9 The Law on Electronic Communications, Article 51.12.



## Appendix I\*

*Translation from Lithuanian*

**DIRECTOR  
COMMUNICATIONS REGULATORY AUTHORITY  
UNDER THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA**

**ORDER NO. 176**

**ON THE APPROVAL OF GENERAL TERMS AND CONDITIONS FOR ENGAGING IN  
TELECOMMUNICATIONS ACTIVITIES**

12 December 2002  
Vilnius

In accordance with Subparagraph 1 of Article 8, Paragraphs 2, 3, 4, 8 and 10 of Article 17 of the Republic of Lithuania Law on Telecommunications (Official Gazette *Valstybės žinios* No. 56-1548, 1998; No. 75-3215, 2002), Paragraph 3 of Article 3 of the Republic of Lithuania Law Amending the Law on Telecommunications (Official Gazette *Valstybės žinios* No. 75-3215, 2002) and taking into consideration Directive 97/13/EC of the European Parliament and of the Council of 10 April 1997 on a common framework for general authorisations and individual licences in the field of telecommunications services:

1. I a p p r o v e the General Terms and Conditions for Engaging in Telecommunications Activities (attached).

2. I e s t a b l i s h that:

2.1. paragraph 1 of this Order shall come into force on 1 January 2003;

2.2. the right to engage in telecommunications activities shall be granted to the undertakings, which submitted a notification about the commencement of the telecommunications activity prior to the date specified in Subparagraph 2.1 of this Order, in the procedure established by the Law, however, not earlier than the date specified in Subparagraph 2.1 of this Order;

2.3. the undertakings, which, prior to coming into force of this Order, were issued authorisations and licences to engage in the activities corresponding to the activities specified in Subparagraph 5 of the General Terms and Conditions for Engaging in Telecommunications Activities approved by this Order, do not have to submit a notification about the commencement of the telecommunications activity, with the exception of the undertakings providing leased lines services;

2.4. the undertakings, which, prior to coming into force of this Order, were issued authorisations to engage in data transmission activities and provide leased lines services, must submit a notification about the provision of leased lines services in the procedure specified in this Order by 1 February 2003. Such undertakings shall be considered as undertakings lawfully providing leased lines services.

3. I hereby order that this Order be published in the Official Gazette *Valstybės žinios*.

Director  
Barakauskas

Tomas

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\* Available at: [http://www.rrt.lt/get\\_file.php?file=RDovTmV3UIJUL3JydC9tL21fZmlsZXMvd2ZpbGVzL2dyYWJiZWRFZmlsZV8zVFJCTi5kb2M7MjAwMjEyMTJfb3JkZXIxNzYuZG9jOzs=](http://www.rrt.lt/get_file.php?file=RDovTmV3UIJUL3JydC9tL21fZmlsZXMvd2ZpbGVzL2dyYWJiZWRFZmlsZV8zVFJCTi5kb2M7MjAwMjEyMTJfb3JkZXIxNzYuZG9jOzs=)



APPROVED

by Order No. 176

of the Director of the Communications  
Regulatory Authority under the  
Government of the Republic of Lithuania  
of 12 December 2002

## **GENERAL TERMS AND CONDITIONS FOR ENGAGING IN TELECOMMUNICATIONS ACTIVITIES**

### **I. GENERAL PROVISIONS**

1. By means of the Terms and Conditions (hereinafter referred to as the Conditions) for Engaging in Telecommunications Activities it is sought to establish conditions, taking into consideration principles of technological neutrality, functional equivalency, assurance of efficient competition, the least necessary regulation, benefit to the users and principles of transparency and non-discrimination.

2. The Conditions have been prepared pursuant to the Republic of Lithuania Law on Telecommunications (Official Gazette *Valstybės žinios* No. 56-1548, 1998; No. 75-3215, 2002), taking into consideration Directive 97/13/EC of the European Parliament and of the Council of 10 April 1997 on a common framework for general authorisations and individual licences in the field of telecommunications services.

3. The Conditions shall apply to the undertakings, which engage or intend to engage in telecommunications activities.

4. The definitions given in the Law on Telecommunications of the Republic of Lithuania shall apply, where relevant to these Conditions

### **II. THE PROCEDURE FOR SUBMITTING A NOTIFICATION ABOUT THE BEGINNING OF THE ACTIVITIES**

5. A list of telecommunications activities (hereinafter referred to as the List) about the commencement and end of which an undertaking must notify the Communications Regulatory Authority according to the procedure set in the Conditions is as follows:

5.1. provision of public telephone network and/or public fixed telephone services;

5.2. provision of the public mobile telephone network, that is, of the public mobile radio communication network fully or partially used to provide public mobile telephone services, and/or the provision of public mobile telephone services;

5.3. provision of leased lines services.

6. An undertaking, in complying with the requirements set forth in legal acts, shall have the right to engage in the telecommunications activity, which is not entered on the List specified in Subparagraph 5 of the Conditions, without a separate advance notification of the Communications Regulatory Authority about the telecommunications activity in which it intends to engage. In the event it is not clear whether the telecommunications activity is attributed to the List specified in Subparagraph 5 of these Conditions, the undertaking shall have the right to submit a written request to the Communications Regulatory Authority for an

explanation, which shall be provided within 30 days from the day of receipt of the request at the Communications Regulatory Authority.

7. An undertaking, wishing to engage in the telecommunications activity entered on the List specified in Subparagraph 5 of these Conditions, must apply to the Communications Regulatory Authority by submitting a filled in notification about the commencement of the telecommunications activity (hereinafter referred to as the Notification), specified in Annex 1 to these Conditions, at least 28 days prior to the beginning of the telecommunications activity. The notification must be certified by the signature of the person authorised by the undertaking and the seal of the undertaking (in the event the undertaking is a group of enterprises (an association, merger, consortium, etc.) the notification shall be certified by the enterprise authorised by all the enterprises or a controlling enterprise.

8. The notification may contain one or several telecommunications activities from the List specified in Subparagraph 5, in which the undertaking intends to engage.

9. The undertaking must submit the following documents together with the notification:

9.1. a copy of the registration certificate of the undertaking, certified by the signature of the person authorised by the undertaking and the seal of the undertaking (in the event the undertaking is a group of enterprises (an association, merger, consortium, etc.), a copy of the registration certificate must be submitted by each enterprise within the structure of the group);

9.2. documents certifying the status of the enterprises constituting the group (if the notification is submitted by a group of enterprises (an association, merger, consortium, etc.);

9.3. the document certifying the authorisation to sign the notification;

9.4. documents certifying payment of the charge of the established amount for the investigation of the notification.

10. The Communications Regulatory Authority, upon receipt of the notification of the undertaking, shall, not later than within 7 days after receipt of the notification at the Communications Regulatory Authority, issue to that undertaking a confirmation of receipt of its notification specifying whether the notification has been submitted adequately or shall request to make the notification more accurate or supplement it so that it should comply with the requirements laid down in Subparagraphs 7-9 of these Conditions.

11. The notification shall be considered as adequate if all its points have been filled in correctly and all the documents specified in Subparagraph 9 of these Conditions have been submitted.

12. The Communications Regulatory Authority shall enter the undertaking on the list of telecommunications services providers and operators within 28 days from the day of receipt of the adequate notification at the Communications Regulatory Authority.

13. In the event an improperly prepared notification has been submitted, the payment for investigating it shall not be returned to the undertaking.

14. The undertakings, which comply with the requirements laid down in the Conditions, shall have the right to receive the confirmation from the Communications Regulatory Authority

that they have the right to engage in the telecommunications activity. The confirmation shall be issued not later than within 7 days from the day of receipt of the request of the undertaking to issue such a confirmation. In submitting a request to issue the confirmation, the undertaking must submit documents confirming payment of the charge of the established amount for issuance of the confirmation.

15. The confirmation specified in Subparagraphs 10 and 14 of these Conditions shall additionally specify under what conditions the telecommunications operator or the provider of telecommunications services, acting in accordance with the requirements laid down in legal acts, shall have the right to install facilities, negotiate network interconnection and/or gain access or interconnect telecommunications networks.

16. The Communications Regulatory Authority shall provide information to the persons on whether a specific undertaking has submitted a notification about the telecommunications activity. The Communications Regulatory Authority shall announce a list of providers of telecommunications services and telecommunications operators, which have the right to engage in the telecommunications activities specified in Subparagraph 5 of these Conditions on its website, and once a year it shall publish the list in the supplement *Informaciniai pranešimai* (*Information Supplement*) of *Valstybės žinios* (*Official Gazette*).

### **III. MAIN CONDITIONS FOR THE TELECOMMUNICATIONS ACTIVITIES BEING CARRIED OUT**

17. An undertaking, in providing the telecommunications network and/or telecommunications services, must comply with the requirements laid down in legal acts regulating the telecommunications activities.

18. An undertaking, which intends to engage or which engages in the telecommunications activity in carrying out of which telephone numbers and/or radio frequencies/channels are used, shall have the right:

18.1. in the cases established by legal acts to use radio frequencies/channels without a separate authorisation;

18.2. in the procedure established by legal acts to apply to the Communications Regulatory Authority concerning the use of telephone numbers and/or radio frequencies/channels;

18.3. to take part in a tender or an auction, if telephone numbers or radio frequencies/channels are assigned by tender or by auction in the manner prescribed by legal acts.

19. The undertakings, which are engaged in telecommunications activities or designated in legal acts as having significant market power in the relevant market or obligated to provide the universal services, must fulfil the obligations established in the Law on Telecommunications of the Republic of Lithuania and other legal acts regulating the telecommunications activities.

20. An undertaking, prior to terminating the telecommunications activity, entered on the List specified in Subparagraph 5 of these Conditions, must submit a notification to the

Communications Regulatory Authority about the end of the telecommunications activity specified in Annex 2 to these Conditions. The notification must be submitted at least 28 days prior to the termination of the telecommunications activity.

#### **IV. THE PROCEDURE FOR SUBMITTING ACTIVITY REPORTS OF TELECOMMUNICATIONS OPERATORS AND PROVIDERS OF TELECOMMUNICATIONS SERVICES**

21. The undertakings, which engage in a telecommunications activity entered on the List specified in Subparagraph 5 of these Conditions, as well as undertakings providing Internet access services, that is, data transmission services, which enable the user of telecommunications services to make use of Internet network services, must regularly, every 6 months, submit to the Communications Regulatory Authority information specified in Subparagraph 23 of the Conditions about the telecommunications activity being carried out (undertakings providing Internet access services shall only submit information specified in Subparagraph 23.1 of these Conditions):

21.1. data of the first half of the year (1 January – 30 June) shall be submitted by 1 September;

21.2. data of the second half of the year (1 July – 31 December) shall be submitted by 1 March.

22. If, after carrying out an inspection, an audit of the activity of the telecommunications operator and/or the provider of telecommunications services, or under other conditions it turns out that information provided to the Communications Regulatory Authority in the manner prescribed in Subparagraph 21 of these Conditions fails to comply with the actual data, telecommunications operators and providers of telecommunications services must, within 14 calendar days from the day of disclosing such non-compliance, or within the term specified by the Communications Regulatory Authority, submit more accurate information and data to the Communications Regulatory Authority. Such submission by itself does not relieve the undertaking of the liability for the provision of incorrect information.

23. Telecommunications operators and providers of telecommunications services must, within the terms specified in Subparagraph 21 of these Conditions, submit to the Communications Regulatory Authority the following information:

23.1. filled in relevant parts of the form of the report provided in Annex 3 to these Conditions depending on the telecommunications activities carried out;

23.2. a list of actually provided telecommunications services (within half a year);

23.3. evolution of tariffs of telecommunications services (within half a year);

23.4. the area of coverage of the provided telecommunications networks and/or services at the end of the period.

24. The data being provided must be certified by the signature of the person authorised by the telecommunications operator and/or the provider of telecommunications services (the document confirming the authorisation must be submitted to the Communications Regulatory Authority) and the seal of the undertaking (if the undertaking is a group of enterprises (an association, merger, consortium, etc.), information must be provided by each enterprise within the structure of the group).

25. Under reasoned written instruction from the Communications Regulatory Authority the telecommunications operators and/or providers of telecommunications services must within the term established by the Communications Regulatory Authority submit information or data related to the telecommunications activities being carried out and necessary for clearly defined statistical purposes, as well as for carrying out the market analysis and other objectives and functions of the Communications Regulatory Authority.

26. Aggregated information about individual telecommunications markets, as well as data about the number of subscribers, revenues and volume of telecommunications or call traffic of the telecommunications operators and/or service providers cannot be considered as confidential.

27. The Communications Regulatory Authority shall analyse, process, consolidate and publish (in publications, on the Internet website, reports, etc. of the Communications Regulatory Authority) aggregated information about the activities of telecommunications operators and providers of telecommunications services.

28. Specific information of the telecommunications operator and/or the provider of telecommunications services may be published unless, in providing information about the telecommunications activity that was carried out, it is specified that it is not to be made public or if information is not regarded as confidential according to the Law on Telecommunications of the Republic of Lithuania and other legal acts.

## **V. FINAL PROVISIONS**

29. Actions and omission of the Communications Regulatory Authority related to application and implementation of these Conditions may be appealed against in the manner prescribed by the Laws of the Republic of Lithuania.

30. For non-observance of these Conditions the undertakings shall be liable in the procedure established by laws.

Annex 1  
to General Conditions for Engaging  
in Telecommunications Activities

\_\_\_\_\_  
(name of the undertaking<sup>1</sup>)

\_\_\_\_\_  
(code, postal address, tel., fax numbers, e-mail, Internet address<sup>1</sup>)

To the Communications Regulatory Authority

**NOTIFICATION  
ABOUT THE COMMENCEMENT OF TELECOMMUNICATIONS ACTIVITY**

\_\_\_\_\_  
(date) No. \_\_\_\_\_

<b>1. Provision of telecommunications networks</b>	<input type="checkbox"/> Provision of public fixed telephone network local (in the geographical numbering area) <input type="checkbox"/> covering more than one numbering area <input type="checkbox"/> national <input type="checkbox"/> <input type="checkbox"/> Provision of public mobile telephone network local (on the territory of an administrative unit) <input type="checkbox"/> national <input type="checkbox"/>
<b>2. Provision of services</b>	<input type="checkbox"/> Provision of public fixed telephone services local telephone communication <input type="checkbox"/> long-distance national telephone communication <input type="checkbox"/> international telephone communication <input type="checkbox"/> <input type="checkbox"/> Provision of public mobile telephone services <input type="checkbox"/> Provision of leased lines services
<b>3. Beginning of telecommunications activity</b>	
<b>4. Territory on which it is intended to engage in telecommunications activities</b>	

<b>5. Description of telecommunications networks and/or telecommunications services intended to be provided<sup>2</sup></b>	
<b>6. Data about the contact person</b>	Name, surname _____ position _____ telephone _____ fax _____ e-mail address _____
	<p><b>ATTACHED:</b></p> <p>1. A copy of the registration certificate of the undertaking<sup>1</sup>, _____ pages;</p> <p>2. Documents confirming payment of the charge of the established amount for investigation of the notification, _____ pages;</p> <p>3. The document confirming the authorisation to sign the notification, _____ pages;</p> <p>4. Documents confirming the status of enterprises constituting the group (if the notification is submitted by a group of enterprises (an association, merger, consortium, etc.), _____ pages.</p>

\_\_\_\_\_  
(position)

Seal

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(name, surname)

<sup>1</sup> – if the undertaking is a group of enterprises (an association, merger, consortium, etc.) the data specified, as well as a copy of the registration certificate, must be provided by each enterprise within the structure of the group.

<sup>2</sup> –specifying for each submitted telecommunications activity the following: whether the network will be established, whether the network of another operator will be used, what technology will be used, a list of telecommunications activities intended to be provided and their brief description, etc.. This can be submitted in the form of a separate annex.

Annex 2  
to General Conditions for Engaging in  
Telecommunications Activities

\_\_\_\_\_  
(name of the undertaking<sup>1</sup>)

\_\_\_\_\_  
(code, postal address, tel., fax., e-mail address<sup>1</sup>)

To the Communications Regulatory Authority

**NOTIFICATION  
ABOUT THE END OF TELECOMMUNICATIONS ACTIVITY**

\_\_\_\_\_ No. \_\_\_\_\_  
(date)

<b>1. Terminated telecommunications activity</b>	
<b>2. Date of the end of telecommunications activity</b>	
<b>3. Data about the contact person</b>	name, surname _____ position _____ telephone _____ fax _____ e-mail address _____
	<b>ATTACHED:</b>  1. Document confirming the authorisation to sign the notification <sup>2</sup> , _____ pages.

\_\_\_\_\_  
(position)

Seal

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(name, surname)

<sup>1</sup> – if the undertaking is a group of enterprises (an association, merger, consortium, etc.) the data specified must be provided by each enterprise within the structure of the group.

<sup>2</sup> – must be submitted if it is signed by the authorised person and the authorisation was not submitted earlier.



Annex 3  
to General Conditions for Engaging  
in Telecommunications Activities

\_\_\_\_\_  
(name of the enterprise or another entity)

\_\_\_\_\_  
(code, postal address, tel., fax, e-mail address, Internet address)

To the Communications Regulatory Authority

**REPORT**  
**ON TELECOMMUNICATIONS ACTIVITIES CARRIED OUT DURING \_\_\_\_ HALF-**  
**YEAR OF \_\_\_\_**

\_\_\_\_ No. \_\_\_\_  
(date)

Indicator	Values
<b>I. Activity of the provision of public fixed telephone network and/or services</b>	
1. <b>Number of main lines<sup>1</sup></b> , in units, <b>total</b> :	
of which - to customers, units.	
- to other users of services, units.	
3. <b>(Built-in) capacity of digital automatic exchanges<sup>1</sup></b> , units.	
4. <b>Number of lines connected to digital automatic exchanges<sup>1</sup></b> , units, <b>as well as the relative share</b> , in per cent <sup>1</sup> (of the total number of lines within a specific category):	
of which - to customers	
- to other users of services	
in towns	
5. <b>Number of payphones<sup>1</sup></b> , units, <b>total</b> :	
of which in towns, units	
in other residential areas, units.	
6. <b>Number of disconnected telephones</b> , units, <b>total</b> :	
of which - due to non-payment, units	
- at the subscriber's request, units	
7. <b>Volumes of calls when calls are initiated in the network</b> , million minutes:	
of which: - local calls (the call is terminated in one's own network), million minutes.	
- long distance national calls (the call is terminated in one's own network), million minutes.	
- international calls, million minutes.	
- to other fixed telephone networks	
- to mobile radio communication networks	
8. <b>Volumes of calls when calls are terminated in the network</b> (million minutes):	
- from other fixed telephone networks	
- from mobile radio communication networks	
- from networks abroad	
9. <b>Number of users of services making use of operator (carrier) selection service, total</b> , units	
- of which those who use pre-selection, units	

## Licensing in an era of liberalization and convergence – Case study: Lithuania

10. Number of telecommunications operators and/or service providers whose services can be chosen by means of pre-selection or call-by-call selection, total, units		
- of which by means of pre-selection, units		
11. Number of ISDN lines <sup>1</sup> , units, total:		
of which: - ISDN BRA, units		
- ISDN PRA, units		
12. Revenues from the provision of the public fixed telephone network and/or services (thousand Litas, excluding VAT)		
<b>II. The provision of the public mobile telephone network and/or services</b>		
1. Total number of mobile telephone subscribers <sup>1</sup> , units		
among which: - customers, units.		
- other service users, units		
2. The number of active mobile telephone subscribers <sup>1,2</sup>		
3. The number of subscribers who make use of the pre-paid service <sup>1</sup> , units		
4. The number of subscribers who make use of the data transmission service provided by the mobile telephone network (GPRS and the like) <sup>1</sup> , units		
5. The number of messages sent, million units		
6. Volumes of calls when calls are initiated in the network, million minutes.		
of which: - national calls (the call is terminated in the network), million minutes.		
- international calls		
- to other mobile telephone networks		
- to fixed telephone networks		
7. Volumes of calls when calls are terminated in the network, in millions.		
- fixed networks		
- other mobile networks		
- from international networks		
8. Revenues from the provision of public mobile telephone network and/or services (thousand Litas, excluding VAT)		
<b>III. The provision of the leased lines services</b>		
1. Number of leased lines <sup>1</sup> , total units:		
- the part of the primary leased lines <sup>4</sup> , units		
- the part of the secondary leased lines <sup>5</sup> , units		
2. Number of analogue leased lines <sup>1</sup> , units		
of which: - up to 4 km, units.		
- 4 km and more than 4 km, units.		
3. Number of digital leased lines <sup>1</sup> , units		
of which: - up to 2 Mb/s, units		
- 2 Mb/s and more than 2 Mb/s, units		
4. Revenues from the provision of leased lines services (in thousand Litas, excluding VAT)		
<b>IV. Provision of the Internet access services</b>		
	Consumers	Economic entities
1. Total number of subscribers of the Internet services <sup>1</sup> , units		
of which: - via switched lines		
- via wireless lines		
- via mobile radio communication network		
-		
2. Number of xDSL connections, units		

<b>3. Territory where the Internet access services are provided<sup>1</sup></b>	
<b>4. Revenues from the provision of the Internet access services</b> (in thousand Lit, excluding VAT)	
<b>V. Investment</b>	
<b>1. Investment into telecommunications network infrastructure</b> , in thousand Lit	

<b>Data about the contact person</b>	name, surname _____ position _____ telephone _____ fax _____ e-mail address _____
--------------------------------------	---

\_\_\_\_\_  
 (position)  
 Seal

\_\_\_\_\_  
 (signature)

\_\_\_\_\_  
 (name, surname)

<sup>1</sup> – the indicator is specified as of 31 December or 30 June, respectively. Other indicators are for a six-month period.

<sup>2</sup> – **active subscriber** (active SIM card) shall be considered the subscriber who, within the last three months performed in some way a telecommunications event irrespective of the fact whether the subscriber is a pre-paid service subscriber or a subscriber who pays according to the bills provided; a telecommunications event shall be considered a call, an answer to a call, sending a message, sending data traffic (including GPRS), or any other service provided (payment of the subscription fee, payment of the pre-paid charge for calls by acquiring a pre-paid card, etc.)

<sup>3</sup> – other types of the lines must also be indicated, if such types are used (cables, etc.).

<sup>4</sup> – **primary leased line** shall be the leased line, which is provided using one's own resources or the leased line of the provider of the foreign leased line services without national intermediaries; the dividing line is the state border of the Republic of Lithuania.

<sup>5</sup> – **secondary leased line** shall be the leased line, which an undertaking of the Republic of Lithuania provides to any user of services by making use of the resources of another undertaking of the Republic of Lithuania.

Appendix II\*\*

**For information only** as this Order was replaced by **Order No. 1V-15**, from **2004-02-11** (not available in English at the time of publishing), which introduces the requirement for reports every quarter and a more detailed Internet subscribers list with connection speed.

*Translation from Lithuanian*

**DIRECTOR  
COMMUNICATIONS REGULATORY AUTHORITY  
UNDER THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA**

**ORDER NO. 1V-95**

**ON AMENDING ORDER NO. 176 OF THE DIRECTOR OF COMMUNICATIONS  
REGULATORY AUTHORITY OF 12 DECEMBER 2002 “ON THE APPROVAL OF GENERAL  
TERMS AND CONDITIONS FOR ENGAGING IN TELECOMMUNICATIONS ACTIVITIES”**

26 August 2003  
Vilnius

In accordance with paragraph 6 of Article 6 and paragraph 5 of Article 21 of the Republic of Lithuania Law on Telecommunications (Official Gazette *Valstybės žinios* No. 56-1548, 1998; No. 75-3215, 2002):

1. I a m e n d subparagraph 23.3 of the General Terms and Conditions for Engaging in Telecommunications Activities approved by Order No. 176 of the Director of the Communications Regulatory Authority of 12 December 2002 “On the Approval of General Terms and Conditions for Engaging in Telecommunications Activities” (Official Gazette *Valstybės žinios* No. 120-5465, 2002) and set it forth to be read as follows:

“23.3. tariffs and prices, including all the taxes, of telecommunications services provided (hereinafter referred to as Prices), which were valid as of 30 June or 31 December of a corresponding half year;”

2. I s u p p l e m e n t the specified Conditions with subparagraphs 23<sup>1</sup> – 23<sup>2</sup>:

“23<sup>1</sup>. Upon commencing to provide new public telecommunications services or having changed the Prices of the public telecommunications services being provided, telecommunications operators and providers of services, which engage in the activities specified in subparagraph 5 of these Conditions, must, within 10 days from the day of commencing the provision of new public telecommunications services or the day of changing their Prices, notify in writing the Communications Regulatory Authority thereof specifying the changed Prices.

23<sup>2</sup>. Information about the Prices of public telecommunications services provided by telecommunications operators and providers of services must be publish by telecommunications operators and providers of services at customers’ servicing centres at the place accessible to any user of telecommunications services, and on the internet website of telecommunications operators and providers of services (if there is any). The Prices announced to the users of telecommunications services must be specified clearly and exactly.”

3. I a m e n d Annex 3 to the specified Conditions “Report on Telecommunications Activities Carried out during \_\_\_\_\_ half year of \_\_\_\_\_” and set it forth in the new wording (attached).

4. I e s t a b l i s h that telecommunications operators and providers of services, in accordance with subparagraph 21 of these Conditions, in providing information to the Communications Regulatory Authority about the telecommunications activities carried out for the first half year of 2003, must prepare reports in accordance with the new wording of Annex 3 specified in subparagraph 3 of this Order, and those telecommunications operators and providers of services who prepared and submitted reports for the first half year of 2003 prior to entering into force of this Order, must submit the reports adjusted in accordance with the new wording of Annex 3 approved by subparagraph 3 of this Order by 1 October 2003,.

5. I hereby order that this Order be published in the Official Gazette *Valstybės žinios*.

Director

Tomas Barakauskas

\*\* Available at: ([http://www.rtt.lt/get\\_file.php?file=RDovTmV3UIJUL3JydC9tL21fZmlsZXMvd2ZpbGVzL2dyYWJiZWRFZmlsZV9lVUJLNi5kb2M7MjAwM19vcmlleA5NS5kb2M7Ow](http://www.rtt.lt/get_file.php?file=RDovTmV3UIJUL3JydC9tL21fZmlsZXMvd2ZpbGVzL2dyYWJiZWRFZmlsZV9lVUJLNi5kb2M7MjAwM19vcmlleA5NS5kb2M7Ow))

APPROVED

by Order No. 1V-95 of the Director of the Communications Regulatory Authority under the Government of the Republic of Lithuania of 26 August 2003

-

\_\_\_\_\_  
(name of the economic entity)

\_\_\_\_\_  
(code, postal address, tel., fax, e-mail address, Internet address)

To the Communications Regulatory Authority

**REPORT**  
**ON TELECOMMUNICATIONS ACTIVITIES CARRIED OUT DURING \_\_\_\_ HALF- YEAR OF \_\_\_\_**

\_\_\_\_ No. \_\_\_\_

(date)

Indicator	Values
<b>I. Activity of the provision of public fixed telephone network and/or services</b>	
1. <b>Number of main lines</b> <sup>1,2</sup> , in units, <b>total</b> :	
of which: - to customers	
- to other users of services	
- in cities	
2. <b>Total number of subscribers</b> <sup>1,2</sup> , in units:	
Of which: - consumers <sup>3</sup>	
- users of other services <sup>4</sup>	
3. <b>Capacity of digital automatic exchanges</b> <sup>1</sup> ( <b>Built-in capacity – the number of lines possible to be connected to digital automatic exchanges</b> <sup>1</sup> , units.	
4. <b>Number of lines connected to digital automatic exchanges</b> , units <sup>1</sup> (within a specific category):	
Of which - to customers <sup>3</sup>	
- other users of services <sup>4</sup>	
- in cities	
5. <b>Number of pay phones</b> <sup>1</sup> , <b>total</b> , units:	
Of which - in cities	
- in other residential areas	
6. <b>Number of disconnected telephones</b> , <b>total</b> , units,	
of which: - due to non-payment,	
- at the subscriber's request	

## Licensing in an era of liberalization and convergence – Case study: Lithuania

<b>7. Volumes of calls where calls are initiated in one's own network, total<sup>5</sup>, min.:</b>	
of which: - services over short telephone numbers (excluding 10XX), when calls are terminated in own network	
- local calls (volume of calls when calls are terminated in own network within a geographical numbering area)	
- long-distance calls (volume of calls when calls are terminated in own network in other areas of geographical numbering terminated in one's own network in other geographical numbering areas)	
- international calls (calls terminated in the networks of foreign operators)	
- to other public fixed telephone networks of the Republic of Lithuania	
- to public mobile telephone networks of the Republic of Lithuania	
<b>8. Volumes of calls where calls are terminated in one's own network, total, min.:</b>	
of which: - calls initiated in other public fixed telephone networks of the Republic of Lithuania	
- calls initiated in public telephone networks of the Republic of Lithuania	
- calls initiated in the networks of operators of foreign countries	
<b>9. The number of users of services who make use of the public telephone service operator (carrier) (hereinafter referred to as the provider) selection service, total, units (who made use of these services at least once within the past three months)</b>	
- of which those who used the service of the provider pre-selection, units	
<b>10. The number of providers whose services can be chosen by means of pre- selection or call-by-call selection, total, units (number of providers with whom contracts on the provision of the services of the provider selection have been concluded)</b>	
- of which by means of pre-selection,	
<b>11. The number of lines of the integrated services digital network (hereinafter referred to as – ISDN)<sup>1</sup>, total, units; (specify the number of lines rather than that of channels)</b>	
of which: - ISDN BRA (128 kbit/s basic speed line, which is the equivalent of two 64 kbit/s speed channels)	
- ISDN PRA (2 Mbit/s primary speed line, which is the equivalent of thirty 64 kbit/s speed channels)	
<b>12. Revenues from the provision of the public fixed telephone network and/or services, in Litas (excluding VAT). (This point does not cover revenues earned from the telecommunications networks interconnection activity).</b>	
<b>13. Revenues from the telecommunications networks interconnection activity, in Litas (excluding VAT)</b>	
of which: - revenues from termination of calls, which were initiated in other networks, in own network	
- revenues from forwarding calls through own networks (transit)	
<b>II. Revenues from the provision of the public fixed telephone network and/or services</b>	
<b>14. Total number of mobile telephone subscribers<sup>1,6</sup>, units:</b>	
of which: - users <sup>3</sup> , including all subscribers who make use of the prepaid service	
- other users of services <sup>4</sup>	
<b>15. The number of active mobile telephone subscribers<sup>1,7</sup></b>	
of which: - users <sup>3</sup> , including all subscribers who make use of the prepaid service	
- other users of services <sup>4</sup>	
<b>16. The number of active mobile telephone subscribers who make use of the prepaid service<sup>1,8</sup>, units.</b>	

<b>17. The number of subscribers who make use of the data transmission service provided by the mobile telephone network<sup>1,9</sup>, units</b>	
- of which who make use of package data transmission radio networks (hereinafter referred to as GPRS)	
<b>18. The number of messages sent (hereinafter referred to as SMS)<sup>10</sup>, units.</b>	
<b>19. The number of illustrated messages sent, (hereinafter referred to as MMS)<sup>10</sup>, units.</b>	
<b>20. Volumes of calls when calls are initiated in one's own network, total<sup>11</sup>, min.:</b>	
of which: - calls in own network (calls are terminated in one's own network)	
- to other public mobile telephone networks of the Republic of Lithuania	
- to public fixed telephone networks of the Republic of Lithuania	
- international calls	
<b>21. Volumes of calls when calls are terminated in own network, total, min.:</b>	
of which: - from public fixed telephone networks of the Republic of Lithuania	
- from other public mobile telephone networks of the Republic of Lithuania	
- from networks of foreign countries	
<b>22. Volumes of calls of the subscribers who make use of roaming services, min.:</b>	
of which:- volumes of calls when calls are initiated by the subscribers who have left for foreign countries	
- volumes of calls when calls are received by the subscribers who have left for foreign countries	
<b>23. Volumes of calls of the subscribers of providers of foreign public mobile telephone services, who have arrived in the Republic of Lithuania and who make use of roaming services,, min.:</b>	
of which: - volumes of calls when calls are initiated by the subscribers of foreign public mobile telephone services, who have arrived in the Republic of Lithuania	
- volumes of calls when calls are received by the subscribers of providers of foreign public mobile telephone services who have arrived in the Republic of Lithuania	
<b>24. Revenues from the provision of the public fixed telephone network and/or services, in Litas (excluding VAT). (This point does not cover revenues earned from the telecommunications networks interconnection activity).</b>	
<b>25. Revenues from the telecommunications networks interconnection activity, in Litas (excluding VAT)</b>	
Of which: - revenues from termination of calls, which were initiated in other networks, in one' own network	
- revenues from forwarding calls through own networks (transit)	
<b>III. The provision of the leased lines services</b>	
	Local leased lines <sup>14</sup> National leased lines <sup>15</sup>
<b>1. The number of leased lines provided to others<sup>1</sup>, total, units:</b>	
- the number of the primary leased lines <sup>12</sup> , units	
- the number of the secondary leased lines <sup>13</sup> , units	
<b>2. The number of analogue leased lines provided to others<sup>1</sup>, units</b>	
of which: - up to 4 km (inclusive)	
- more than 4 km	
<b>3. The number of digital leased lines provided to others<sup>1</sup>, units</b>	
Of which - up tp 2 Mb/s	
- more than 2 Mb/s, units	

<b>4. Revenues from the provision of leased lines services<sup>16</sup></b> in Litas, (excluding VAT) (This point does not cover revenues earned from the telecommunications networks interconnection activity).		
<b>30. Revenues from the leased lines used for telecommunications networks interconnection</b> , in Litas (excluding VAT)		
<b>IV. Provision of the Internet access services</b>		
	Consumers <sup>3</sup>	Other users of services <sup>4</sup>
<b>31. Total number of subscribers of the Internet services<sup>1</sup></b> , units		
of which: - the number of subscribers who connected to the Internet via switched lines at least once in three months)		
- the number of subscribers who connected to the Internet via wireless lines at least once in three months		
- the number of subscribers who connected to the Internet via the mobile radio communication network at least once in three months		
(in separate lines specify other than indicated means of connecting to the Internet and the number of subscribers, if any.)		
<b>32. The number of digital subscriber lines (of high speed up to 2 Mbit/s) (hereinafter referred to as xDSL) used for access to the Internet</b> , units		
<b>33. Revenues from the provision of the Internet access services<sup>17</sup></b> , in Litas (excluding VAT)		
<b>34. Territory where the Internet access services are provided<sup>1</sup></b>		
<b>V. Investments<sup>18</sup></b>		
<b>35. Investment into telecommunications network infrastructure</b> , in Litas		

<b>Data about the contact person</b>	name, surname _____ position _____
	telephone _____ fax _____
	e-mail address _____

\_\_\_\_\_  
(position)

Seal

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(name, surname)



<sup>1</sup> – the indicator is specified as of 30 June or 31 December, respectively. Other indicators are for a six-month period;

<sup>2</sup> – **main lines** shall mean telephone lines connecting terminal equipment of the subscriber with the public switched network, and having a separate joint in the telephone station (including used xDSL, excluding ISDN lines and pay phones);

<sup>3</sup> – **consumer** shall mean a natural person to whom public telecommunications services are provided to satisfy individual, family and everyday needs that are not related to business or profession;

<sup>4</sup> – **other users of services** shall mean enterprises, institutions, organisations or other legal and natural persons, which engage in economic activities and the like, excluding customers;

<sup>5</sup> – information in accordance with subparagraph 7 of the Report shall be filled out in all cases where public fixed telephone services when connecting the communications terminal equipment (for example, a telephone apparatus, the departmental station of the enterprise) to the telecommunications termination point, which is in a fixed space independently of the type of technology used for connecting the telecommunications termination point (wire or radio relay line, wireless access, etc.);

<sup>6</sup> – the number of activated subscriber identification cards (hereinafter referred to as SIM) by means of which it is possible to make a call or to which a call may be made, is presented;

<sup>7</sup> – **active subscriber** (active SIM card) shall be considered the subscriber who, within the last three months performed in some way a telecommunications event irrespective of the fact whether the subscriber is the pre-paid subscriber or the subscriber who pays according to the bills provided; a telecommunications event shall be considered a call, an answer to a call, sending a message, sending data traffic (including GPRS), or any other service provided (payment of the subscription fee, payment of the pre-paid charge for calls by acquiring a pre-paid card, etc.);

<sup>8</sup> – the number of active pre-paid subscribers (active SIM cards), that is, the number of the subscribers, which carried out a communications event in any way within the past three months, is specified;

<sup>9</sup> – the number of SIM cards, the users of which make use of data communication services (GPRS, high speed – HSCSD, mobile cellular communications (GSM) data transmission 9,6 kbit/s – CSD) as of 30 June and 31 December, respectively, is presented (in the event where the service is provided automatically, upon becoming a subscriber, or the service is provided without a subscription fee, the number of subscribers who made use of these services within the past three months is presented); it is not necessary to include data about the subscribers, which make use of SMS or MMS message services;

<sup>10</sup> – only SMS or MMS messages sent are specified (excluding SMS or MMS messages of an advertising or any other nature sent by SMS or MMS);

<sup>11</sup> – in providing information about the volumes of calls data about all calls where a subscriber of a public mobile telephone networks makes a call shall be included (as well as data about volumes of calls where the subscriber make a call wishing to listen to a voice post or customer servicing agencies);

<sup>12</sup> – **primary leased line** shall be the leased line, which is provided using one's own resources or the leased line of the provider of the foreign leased line services without national intermediaries; the dividing line is the state border of the Republic of Lithuania.;

<sup>13</sup> – **secondary leased line** shall be the leased line, which an undertaking of the Republic of Lithuania provides to any user of services by making use of the resources of another undertaking of the Republic of Lithuania.;

<sup>14</sup> – **local leased line** shall be the leased line where its termination points are within the same administrative unit of the Republic of Lithuania. The administrative unit shall be a municipal territory as it is defined in the Republic of Lithuania Law on Territorial Administrative Units and their Borders (Official Gazette No. 60-1183, 1994) and in the legal acts related to it;

<sup>15</sup> – **national leased line** shall be the leased line where its termination points are in different administrative units of the Republic of Lithuania;

<sup>16</sup> – revenues shall cover the revenues of activating the service (installation, registration, etc.) as well as revenues from the subscription (monthly) fee for the leased lines services independently of their type (digital, analogue), technologies, the type of lease services (wholesale, retail), the purpose and the nature of use (international, national, local; intended for voice telephony, image or data transmission, etc.);

<sup>17</sup> – revenue from activating the service (installation, registration), from fees for connection time, transmission of information flows, the subscription (monthly) fee and other revenues received for the provision of the Internet access services;

<sup>18</sup> – shall be filled in by all telecommunications operators or providers of services, which are engaged in the activities specified in separate parts of the Report on telecommunications activities carried out.

APPENDIX III:

*Translation from Lithuanian*

**DIRECTOR  
COMMUNICATIONS REGULATORY AUTHORITY  
UNDER THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA**

**ORDER NO. 1V-52**

**ON AMENDING ORDER NO. 176 OF THE DIRECTOR OF COMMUNICATIONS  
REGULATORY AUTHORITY OF 12 DECEMBER 2002 “ON THE APPROVAL OF  
GENERAL TERMS AND CONDITIONS FOR ENGAGING IN  
TELECOMMUNICATIONS ACTIVITIES”**

10 April 2003  
Vilnius

In accordance with subparagraph 10 of paragraph 2 of Article 19 and paragraph 7 of Article 24 of the Republic of Lithuania Law on Telecommunications (Official Gazette *Valstybės žinios* No. 56-1548, 1998; No. 75-3215, 2002):

1. I amend General Terms and Conditions for Engaging in Telecommunications Activities approved by Order No. 176 of the Director of the Communications Regulatory Authority of 12 December 2002 “On the Approval of General Terms and Conditions for Engaging in Telecommunications Activities” (Official Gazette *Valstybės žinios* No. 120-5465, 2002);

1. 1. I set forth subparagraph 4 to be read as follows:

“4. Definitions used for the purpose of these Conditions:

**Location of installing the terminal equipment** means information defining the location of the termination point of the network to which this terminal equipment is connected, including the address of installing the termination point of the network, the number of the base station, the cell number and the installation location.

**Number of the terminal equipment** means the sequence of digits and its symbolic equivalent (including the telephone number, the IMEI (international mobile equipment identifier), IMSI (international mobile subscriber identifier), the IP (the Internet protocol) number, the electronic mail address) identifying the terminal equipment or the termination point of the network to which this terminal equipment is connected so that information could be unambiguously directed to that terminal equipment or a corresponding termination point of the network.

Other definitions given in the Law on Telecommunications of the Republic of Lithuania shall apply, where relevant, to these Conditions.”

1.2. I supplement the Conditions with the following new Chapter III:

**“III<sup>1</sup>. RULES FOR THE PROVISION OF INFORMATION  
ABOUT THE NUMBER OF THE TERMINAL EQUIPMENT,  
LOCATION OF ITS INSTALLATION AND TO WHOM IT BELONGS**

20<sup>1</sup>. Telecommunication operators and providers of services must provide the Communications Regulatory Authority with the existing and former information, however, not earlier than information for the past six months, about the terminal equipment number, the location of its installation and to who it belongs for the purpose of resolving disputes between providers and users of telecommunications services, radio monitoring, supervising the use of the technical regulations of radio devices and telecommunications terminal equipment, as well as radio frequencies (channels) within 30 days from the day of submitting a request for the provision of such information, unless otherwise has been specified in the request.

20<sup>2</sup>. Telecommunications operators and providers of services must provide existing and former information, however, not earlier information than for the past six months, about the number of the terminal equipment, the location of its installation and to who it belongs without delay, however, not later than within one day from the day of submitting a request for providing such information, unless otherwise has been specified in the request or the institution that has submitted the request consents to a longer term, to the below specified institutions of maintaining public order so that they could carry out the tasks they are entrusted with in the procedure established by legal acts:

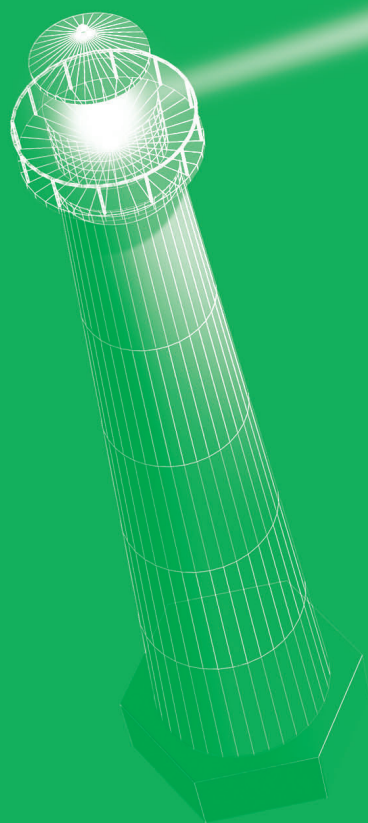
- 20<sup>2</sup>.1. To the Second Investigation Department under the Ministry of National Defence;
- 20<sup>2</sup>.2. To the Financial Crime Investigation Service under the Ministry of the Interior;
- 20<sup>2</sup>.3. To the Customs Office authorised by the Customs Department under the Ministry of Finance;
- 20<sup>2</sup>.4. To the Police Department under the Ministry of the Interior;
- 20<sup>2</sup>.5. To the divisions of special investigations service of the Republic of Lithuania;
- 20<sup>2</sup>.6. To the VIP Protection Department under the Ministry of the Interior;
- 20<sup>2</sup>.7. To the State Security Department;
- 20<sup>2</sup>.8. To the State Border Guard Service under the Ministry of the Interior;
- 20<sup>2</sup>.9. To the Prosecutor's Office, including the officials of its territorial divisions.

20<sup>3</sup>. Telecommunications operators and providers of services must provide information specified in subparagraphs 20<sup>1</sup> and 20<sup>2</sup> of these Conditions in the form required by the Communications Regulatory Authority and the institutions indicated in subparagraph 20<sup>2</sup> of these Conditions, and in the event the form of the provision of information is not specified in the request, to provide it in the form in which the request is submitted.”

2. I hereby order that this Order be published in the Official Gazette *Valstybės žinios*.

Director

Tomas Barakauskas



LICENSING  
IN AN ERA OF  
LIBERALIZATION  
AND CONVERGENCE  
CASE STUDY  
MEXICO  
2004





# **Licensing in an era of liberalization and convergence**

Case study: Mexico

2004

**Licensing practices of information and  
communication technology services in Mexico**

by Carlos Gómez

This case study was conducted by Carlos Gómez, ITU Global Regulators' Exchange (G-REX) Advisor. This study is intended to be useful not only to the regulatory authorities and the corresponding arms of government but also to everyone concerned with the telecommunication market.

The author wishes to express his sincere appreciation to Clara Luz Álvarez González de Castilla, Commissioner, Comisión Federal de Telecomunicaciones (COFETEL), Mexico, for her invaluable assistance in the preparation of this report.

The views expressed in this paper are those of the author and do not necessarily reflect the views of ITU, its members or the Mexican Government.

This is one of a series of case studies on licensing in an era of liberalization and convergence undertaken by ITU. Further information can be found on the website at <http://www.itu.int/ITU-D/treg>

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## 1 Overview of Current Licensing Regime

The current licensing scheme for the provision of information and communication technology (ICT) services in Mexico is based on concessions and permits. The scheme is formally devised in the Federal Telecommunications Law (FTL) of 1995, which also established the sector regulatory framework and liberalized the market. The Government started issuing concessions for local and long distance services in 1996, when the exclusivity period granted to TELMEX, the incumbent operator, expired. For cellular service, the Government introduced limited competition in 1990; it divided the country into nine regions – each comprising two or three major urban localities – and issued one concession per region to each of the two cellular operators. Later on, in the period 1996-1998, the Government auctioned additional frequency bands and issued concessions for fixed and mobile wireless telephone services. Currently, the Federal Telecommunications Commission (COFETEL) is auctioning additional frequency bands for PCS, trunking and the 77° West satellite orbit.

### 1.1 Concessions and Permits

In Mexico, a concession title is a licence given by the Government to the holder that grants the right to exploit national resources and operate services, subject to certain terms and conditions. A concession is required to install, operate or exploit public telecommunication networks, to use or exploit radio frequencies, to exploit geo-stationary satellite orbits and orbital positions, and to exploit the transmission and reception of foreign satellite signals. Concessions for the use or exploitation of radio frequencies, and for exploitation of satellite communications are awarded by public auctions, whereas concessions for public telecommunication networks are issued upon request and are valid only for the services specified in the concession title.

A concession is not required for resellers that do not own transmission facilities but wish to offer telecommunication services by using the network capacity of a concession holder. In this case, the reseller must obtain a permit from the Secretariat of Communications and Transport (SCT). Similarly, the installation and operation of earth transmission stations requires a permit although, according to the law, a waiver can be issued if technical norms are followed<sup>1</sup>. The SCT has not yet issued permits to resale other services, only for payphones.

Value-added services, including Internet access, are defined as those transmitted using a public telecommunication network with effect on the format, content, code, protocol and storage of information. To provide them, only a registration with the SCT is required. On the other hand, installing or operating private telecommunication networks does not require a concession, permit or registration, unless radio frequencies are used.

The SCT has authority over all concessions and permits and reviews the application process. However, it is COFETEL, the regulatory authority, who receives the applications. COFETEL is not embodied in the FTL and was created by presidential decree in 1996. In 2002, the National Congress proposed a new FTL that would give COFETEL, *inter alia*, complete control over permits and registrations.

There are no limits to the number of concessions or permits. However, only Mexican nationals can obtain them and foreign ownership is restricted to 49 per cent, except in the case of cellular mobile telephone service, where full ownership is permitted.

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<sup>1</sup> Installation or operation of ground reception stations does not require a permit.

## **1.2 Duration**

Concession titles specify the services that the concession holder is authorized to provide to the public, its term, rights and obligations. Concessions for public telecommunication networks may be issued for a term of up to 30 years and concessions for the use of radio frequencies for a term of up to 20 years. The law does not determine the duration of permits. In the past, the SCT has issued permits for the installation and exploitation of payphones for a term of 20 years, but since 2001, the term has been four years. Upon expiration, all concession and permit holders must reapply for a renewal.

## **1.3 Fees and Guarantees**

There are no fees charged on concessions for wireline public telecommunication networks. The applicant is only required to submit a guarantee to ensure compliance with the concession obligations. Guarantees have to be submitted at the time the concession is issued and must be updated annually according to the National Consumer Price Index (INPC). The amount varies depending on the number of local service areas where the concession holder may provide the authorized services, and of the service itself. In 2004, the guarantee for a national concession for wireline, wireless or long distance telephone service was 14 million MXN (USD 1.2 million); the guarantee for an interstate concession for cable television was 4.9 million MXN (USD 430,000).

## **1.4 Application Process**

The application process for a concession or a permit is identical. The law requires the SCT to resolve applications for permits in 90 days, for public telecommunications in 120 days, and for radio frequencies in 180 days. However, an incomplete application could delay the process for up to a year. Applicants for a concession need to submit complete documentation that includes: technical specifications, such as description of the equipment and technical standards; commitments in terms of local service areas that will be served; investment to be made; quality standards; and a comprehensive business plan that contains financing and marketing programmes, revenue forecasts and details of employment and training programmes.

# **2 Licensing Reforms to Address Convergence**

The regulatory framework in Mexico has not yet been fully adapted to accommodate technological convergence. The concession scheme remains segmented and treats separately services such as broadcasting<sup>2</sup>, data and telephony. Moreover, operators have not yet been authorized to provide a full range of ICT services.

The Government has explicitly recognized the need to adapt the regulatory framework to make it compatible with the convergence of telecommunications, broadcasting and informatics. In its Communications Sector Program for 2001-2006 (CSP), the SCT plans to update the FTL to make it compatible with the new regulatory and technological environment. Among other actions, it intends to review the concession procedures to simplify them and increase its transparency, and to start issuing permits to resellers of voice and data services.

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<sup>2</sup> The Broadcasting Act (Ley Federal de Radio y Televisión) was enacted in 1960.

## 2.1 Proposed Reforms

In August 2002, Congress produced a draft FTL that had among its main objectives to facilitate ICT convergence. The following are some of the measures proposed in the draft:

- Adopting the principle of technology neutrality
- Requiring interconnection for all public telecommunication networks, including cable, in a non-discriminatory and transparent manner
- Adopting simplified procedures for obtaining new concessions for public telecommunication networks and for adding or substituting services originally authorized to concession holders
- Granting COFETEL the right to issue permits and manage registrations for value-added services
- Granting operators an automatic authorization should COFETEL not issue a permit within a defined time period
- Empowering COFETEL and eliminating the functional ambiguities with SCT.

The draft legislation also proposed the introduction of market dominance analysis and related regulations, maintenance of the 49 per cent limit on foreign investment, and issuance of regulations by COFETEL on access to essential network elements on an unbundled basis. The draft legislation was met with opposition from various interest groups and legislators, and has not been passed by Congress. Negotiations for a new regulatory framework have not moved forward.

## 2.2 Recent Regulations

The SCT and COFETEL have adopted several agreements and regulations to address the phenomenon of technological convergence. In the last quarter of 2003, the SCT amended the concession titles of cable and MMDS<sup>3</sup> network carriers, allowing them to provide Internet access services (bidirectional data transmission). The main cable operators were already providing Internet services through a temporary permit. The 2003 amendment, however, did not include satellite television network operators.

The SCT recently published a draft amendment for cable service concession titles that will permit them to transport telephone calls over their networks. The SCT also plans to amend the cable service concession titles that will permit them to provide voice services directly to consumers. It has issued temporary permits to some companies to conduct trials for the service. TELMEX has likewise expressed its interest in providing television services over its telephone network.

In June 2004, COFETEL issued a new regulation for international long distance service and other cross-border telecommunication services. The main feature in regard to convergence is that it explicitly promotes technology neutrality and opens the way for the use of Voice over Internet Protocol (VoIP) in international communications. VoIP is currently being analysed by COFETEL. The June 2004 regulation also simplifies the procedures for obtaining international long distance concessions, eliminates the proportional return and settlement rate scheme, allows each concession holder to negotiate its own tariffs with foreign counterparts, and authorizes operators to install their own interconnection ports.

In July 2004, the SCT adopted standard A/53 from the Advanced Television Systems Committee (ATSC) for the transmission of digital television. At the same time, it established the transition policy and timeline for broadcasters to move from analog towards a high-definition digital network. The policy contemplates the utilization of digital television to offer telecommunication services such as Internet access.

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<sup>3</sup> Multi-channel Multipoint Distribution Service (MMDS), also known as wireless cable, is a broadcasting and communications service that operates in the ultra high frequency (UHF) segment of the radio spectrum.

## **2.3 Technology Neutrality**

Technology neutrality was considered in the latest draft of the proposed Telecommunication Act (TA) and in recent regulations. The new rules for international long distance issued by COFETEL state the need to have a regulatory framework that is technology neutral in order to facilitate the convergence of networks and promote the use of new technologies.

In its CSP, the SCT did not include an explicit policy to promote technology neutrality but did mention the need to encourage technological innovation. It plans to establish concession obligations in terms of technological modernization to ensure that the ICT infrastructure is based on advanced technologies.

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**LICENSING IN THE ERA OF LIBERALIZATION  
AND CONVERGENCE**

**THE CASE STUDY OF THE FEDERAL REPUBLIC  
OF NIGERIA**

**INTERNATIONAL TELECOMMUNICATION UNION**

The Case study was conducted by Simon Moshiro.

During the field study the author was able to meet and interview the Nigerian Communication Commission, Ministry of Communications, industry and consumer representatives. It is hoped that, this study will be useful not only to regulatory authorities but also to others concerned with the telecommunications market.

The author wishes to sincerely thank the Nigerian Communications Commission and in particular Mr. Bashir A. Idris for his invaluable assistance. The author wishes to thank those in the public and private sector who gave him their valuable time.

The views expressed in this report are those of the author and do not necessary reflect the views of the ITU or its members or the Nigerian Government.

# 1 Introduction

## 1.1 Purpose of the study

This case study forms part of a series on licensing in the era of liberalization and convergence. Conducted by the Regulatory Reform Unit (RRU) of the Telecommunications Development Bureau (BDT) of the International Telecommunication Union (ITU), this series of case studies aims to respond to a growing demand from the ITU Membership for best practices guidelines on this crucial policy and regulatory aspect that could be of assistance to regulators who are considering a shift from a monopoly or limited competition environment to a fully liberalized one. The case study will also form part of the 6th edition of the ITU publication of “Trends in Telecommunication Reform 2004 – Licensing in an Era of Convergence” and will be showcased at the 5th annual Global Symposium for Regulators (Geneva, 8-10 December 2004).

The Federal Republic of Nigeria was selected because of its rapid development of the telecommunication sector through the implementation of private sector participation policy including innovative approaches. This transformation has raised the telephone profile of Nigeria from a teledensity of 0.34 in 1998 to 3.25 in 2003. This reflects not only the policy changes that are taking place in African countries but also in telecommunication markets world-wide. Nigeria is one of the African countries that have adopted a clear policy for the development of the telecommunication sector, supported with a flexible regulatory framework.

This case study report looks at Nigeria’s progress from a monopolistic telecommunication market towards a fully liberalized market. The report will particularly examine Nigeria’s policy and regulatory framework and its implementation via imaginative licensing approaches. It will also highlight benefits and challenges.

## 1.2 Country background.

Situated in West Africa, Nigeria is a member of the Economic Organization of West African Countries, ECOWAS.

It has a landmass of 923,800 square kilometers and an estimated population of 132,800 million. The country is endowed with natural resources and it is leading in Africa in exportation of oil. Its GDP was US\$ 49,160 million in 2003.



At the end of 2003 there were 724,790 fixed telephone subscribers and 3,149,000 mobile subscribers. This compares with 438,619 telephone lines and 20,000 mobile subscribers at the end of 1998.



## **2 Development objectives and structure**

This section summarizes Nigeria's telecommunication development objectives stated in the National Telecommunications Policy. It also looks at the industry structure adopted for the implementation of the Policy.

### **2.1 Policy objectives and strategies**

The transformation of the telecommunications sector in Nigeria started with the establishment of the Nigerian Communications Commission (NCC) by the Communications Act, of 1992. The Act gave the Commission a broad mandate for economic regulation of the telecommunications sector.

After its inauguration in July 1993, the Commission set about implementing liberalization. It issued a number of licences for telecommunications services including a licence for the provision of fixed telephony services by a private operator in each of the 36 states. However, by 1998 the fixed public network had a capacity of 700,000 lines, and 400,000 connected subscribers only. The only mobile cellular telephone network, provided by the Nigerian Mobile Telecommunication Company Ltd (NITEL), had a capacity of 210,000 lines with 26,500 connected lines. The government found this performance of the sector unacceptable and moved to correct it by developing a policy which was formulated in 1998, adopted and published in mid 2000.

The overriding objective of the National Telecommunication Policy is to achieve the modernization and rapid expansion of the telecommunications network and services in order to:-

- Enhance national economic and social development and integrate Nigeria internally and into the global telecommunications environment.
- Make telecommunication services efficient, affordable, reliable and available to all.

The policy set short-term and medium term network development objectives and strategies. For example, to achieve and exceed the minimum teledensity of 1 telephone to 100 inhabitants recommended by ITU, within three years, and to promote widespread access to advanced communications technologies and services, including the Internet and related facilities.

Strategies include the promotion of competition to meet growing demand through the liberalization of the telecommunication market and providing a new regulatory environment that is sufficiently flexible to take into account new technological development and the international trend towards convergence.

Also, the National Telecommunication Policy defines the structure for achieving the objectives, with particular emphasis on the independence and impartiality of the Nigerian Communications Commission. The Policy provides guidelines on key regulatory issues like licensing, interconnection, allocation of scarce resources, tariff regulation and universal access and service. Legislation is being adopted progressively to give effect to the Policy, where necessary. In 1998 the Communications Act was amended to strengthen the role and powers of the Commission. In 2003 a new and more comprehensive Communication Act was passed to implement the strategies set out in the National Telecommunications Policy.

### **3 Industry structure**

#### **3.1 Policy and Regulatory Institutions**

In line with the National Telecom Policy, a well defined policy and regulatory structure has been put in place. The structure comprises the Ministry of Communications, the National Frequency Management (NFM) Council and the Nigerian Communications Commission.

##### **3.1.1 Responsibilities of the Minister**

The Minister is responsible for formulation, determination and monitoring of policy and international treaties and representation of the country in international organizations and fora. The law requires the Minister to indicate general policy direction to the Commission while ensuring the protection of its independence.

**Box 1: Minister's relationship with the Commission**

Section 25 of the Communications Act, 2003:

(1) Subject to subsection (2) of this section, the Minister shall, in writing, from time to time notify the Commission of and express his views on the general policy direction of the Federal Government in respect of the communications sector.

(2) In the execution of his functions and relationship with the Commission, the Minister shall at all times ensure that the independence of the Commission, in regard to the discharge of its functions and operations under this Act, is protected and not compromised in any manner whatsoever.

##### **3.1.2 The functions of the National Frequency Management (NFM) Council:**

The functions of the Council are:

- a) assist and advise the Minister on the representation of Nigeria and at international and regional spectrum allocation bodies;
- b) assist and advise the Minister on the preparation and negotiation of bilateral and multi-lateral spectrum allocation treaties;
- c) assist and advise the Minister on the preparation, negotiation and adoption of spectrum coordination agreements that are applicable to cross-border spectrum uses;
- d) in consultation and conjunction with the Commission, prepare, update and publish on a regular basis a national frequency allocation table;
- e) carry out bulk allocation of spectrum to statutory bodies that are authorized by enabling laws to allocate spectrum to end-users; and
- f) receive and collate returns and statistics on spectrum allocation to from the statutory bodies and coordinate their respective activities.

### 3.1.3 The Nigeria Communications Commission

The Communications Act, 2003 has vested a wide range of functions and powers in the Commission.

#### Box 2: The functions of the Commission

The functions of the Commission listed in the Communications Act 2003 include:-

- a) the facilitation of investments in and entry into the Nigerian market for provision and supply of communications services, equipment and facilities;
- b) the protection and promotion of the interests of consumers;
- c) the promotion of fair competition in the communications industry;
- d) granting and renewing communications licenses;
- e) the development and monitoring of performance;
- f) making and enforcement of regulations;
- g) management and administration of frequency spectrum for the communications sector and assisting the National Frequency Management (NFM) Council in developing a national frequency plan;
- h) development, management and administration of a national numbering plan and electronic addresses plan;
- i) proposing, adopting, publishing and enforcing technical specifications and standards for the importation and use of communications equipment;
- j) the formulation and management of Nigeria's inputs into the setting of international technical standards for communications services and equipment;
- k) carrying out type approval tests on communications equipment and issuing certificates therefor;
- l) encouraging and promoting infrastructure sharing amongst licensees and providing regulatory guidelines thereon;
- m) examining and resolving complaints and disputes;
- n) preparation and implementation of programmes and plans that promote and ensure the development of the communications industry;
- o) designing, managing and implementing Universal Access strategy and programme
- p) advising the Minister on the formulation of the general policies for the communications industry and generally on matters relating to the communications industry;
- q) implementation of the Government's general policies on communications industry
- r) generally advising and assisting communications industry stakeholders and practitioners with a view to the development of the industry and attaining the objectives of this Act and its subsidiary legislation;
- s) representation of Nigeria at proceedings of international organizations and fora on matters relating to regulation of communications and matters ancillary and connected thereto; and
- t) general responsibility for economic and technical regulation of the communications industry.

### 3.2 Operators and Service Providers: Overall market Status.

The Nigerian Communication Commission adopted a phased approach to the liberalization of the telecommunications sector, via different licence mechanisms and schemes. The targets and guidelines set out in the National Telecommunication Policy inspired the Commission in its operations. Table 1, Figure 1 and Figure 2 below depict the effect of regulatory action taken during 1998 to 2003 on service growth.

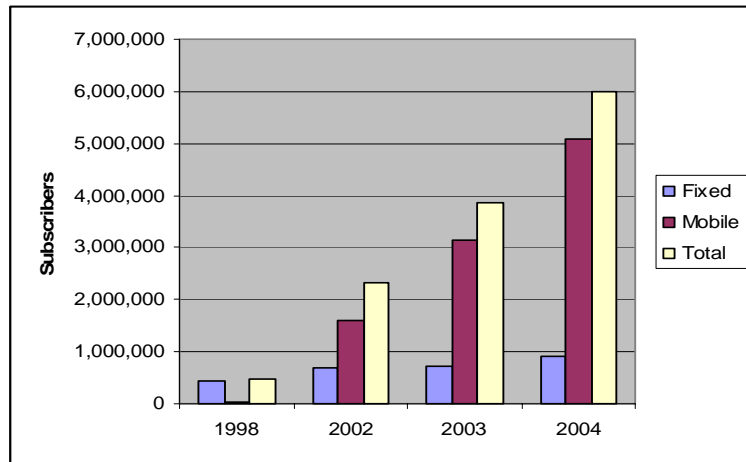
Table 1: Number of Fixed and Mobile Lines 1998 – 2004

	1998	2002	2003	Aug. 2004
Fixed Telephone Lines	438,619	702,000	724,790	900,000
Mobile Lines	20,000	1,607,931	3,149,000	5,100,000
Total	458,619	1,309,931	3,873,790	6,000,000

Source: Adopted from NCC, ITU

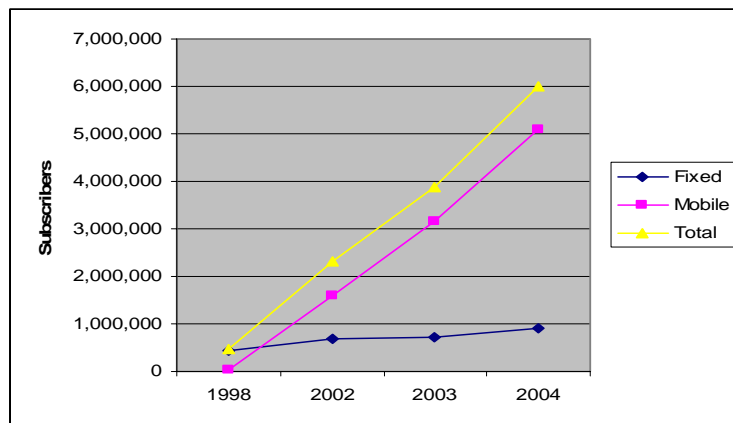
NB: Figures for 2004 are estimated

Figure 1: Fixed and Mobile Subscribers growth



Source: Adopted from NCC, ITU NB: Figures for 2004 are estimated.

Figure 2: Fixed & Mobile subscribers growth



Source: Adopted from NCC, ITU NB: Figures for 2004 are estimated

### 3.2.1 Fixed Telephony

The Nigeria Communications Commission started with the liberalization process initially with the fixed telephony market. In 1996 onwards the Commission licensed private owned telecommunications operators (PTOs) to compete with the state-owned monopoly operator, NITEL, in providing fixed telephone services. However, by December 2001, the newly licensed PTOs had been able to add only 146,500 subscribers to the fixed telephone network. This represented 18.9%<sup>1</sup> market share, compared with NITEL's 81.1% share. The reasons for the unimpressive performance of the PTOs are varied. Among them are lack of access to transmission infrastructure and capital. Most of the licensees are small and medium enterprises. Also, the selection process did not guarantee that the firms that were given licences could meet the required roll out of services.

<sup>1</sup> Source; NCC

The formulation of the National Telecommunication Policy in 1998 and its adoption and publication in mid 2000 along with specific targets for improving telephone penetration set the stage for major licensing decisions by NCC. After a process that started in 2000 the Commission licensed a Second National Carrier, Globacom in 2002. To extend service more evenly throughout the country NCC also issued licences for Fixed Wireless Access (FWA) operations on a state-by state basis; but a company could be issued with licences to operate in several states. NITEL was issued a new licence with conditions comparable to Globacom including roll-out obligations. The fixed telephony market status in service provision as at 2003 is depicted in Table 2.

Table 2. NITEL and PTO Fixed lines.

	1998	2002	2003
NITEL	434,119	555,056	556,590
PTO's	4,500	146,944	168,200
Total	438,619	702,000	724,790

Source: NCC, ITU

### 3.2.2 Mobile Telephony

The monopoly service operator, NITEL, pioneered the provision of cellular mobile telephony services using analogue technology. But by 2000 there were less than 26,500 lines connections out of a capacity of around 210,000 lines. To meet and exceed the short term and long-term targets set by the National Telecommunication Policy the Commission, initiated in year 2000, a process that led to the licensing of three GSM operators in July 2001: Econet Wireless Communications Limited, MTN Limited and M-Tel Limited, NITEL's subsidiary. The fourth GSM mobile operator, Globacom, was licensed in September 2002. The licensing of the GSM mobile operators changed the Nigerian telephone market profoundly. Within less than a year there were 1.6 million subscribers, exceeding the three year target of 1.2 million subscribers set in the National Telecommunications Policy. In 2003 mobile subscribers surpassed fixed telephone subscribers. These results revealed the pent up demand and the high potential of the Nigerian market. The operators are aggressively expanding their operations to increase market shares.

### 3.2.3 Benefits and Challenges

This extensive liberalization of the telecommunications sector has benefited the country. The contribution of the sector to GDP was US\$ 1.23 million in 2002, the second highest after oil and gas.

Total penetration increased from 0.38 per 100 inhabitants in 2001 to 4.5<sup>2</sup> for 100 inhabitants by August 2004. While prices for local fixed calls have been going up due to rebalancing, NITEL's rates, which were heavily subsidized, competition has been driving down the retail tariffs for mobile services. When MTN started operations in 2002 it charged 20,000 Naira (US\$ 198.41) for a prepaid mobile line, but by the end of August 2004 the rate was about 5,000 Naira (US\$ 39.68). Globacom's rate for a prepaid mobile line was 4,000 Naira (US\$ 31.75) at the end of August 2004<sup>3</sup>

- The multiplicity of operators in the sector also posed a number of challenges. The lack of adequate telecommunications infrastructure has been a significant constraint to the new entrants

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<sup>2</sup> ITU (The Study)

- The monopoly operator NITEL, has not been able to meet its duty of providing adequate infrastructure. The GSM operators have to install their own infrastructure, diverting investment that could be devoted to rolling out services.

The PTOs experienced difficulties in interconnecting with NITEL's network, particularly before NITEL was subjected to oversight by the NCC. With the intervention of a new management at NITEL, there has been considerable improvement in interconnection matters not only with the network of NITEL but with all networks.

The Fixed Telephony and FWA licences allow limited mobility, within sites. Technologies being used by the PTOs and FWA operators enable them to extend mobility beyond authorized limits. The GSM operators have concerns that the PTOs go beyond the allowed limits to encroach on the limited competition reserved for the GSM mobile operations. The major operators claim that some PTOs carry third-party traffic (refile) on their networks, which they are not authorized to do although the PTOs deny doing so.

When the GSM operators started rolling out the quality of service was poor, with many calls dropping out. The situation has since improved but requires continuous monitoring.

All these issues require the attention of the regulator. The operators and consumers commend NCC for the effective way it has presided over the liberalization of the sector and handled some of these issues. But they expect more from the Commission in terms of effectiveness particularly in the area of enforcement and compliance. The Commission is increasing its capacity in this and other fields of its regulatory mandate.

## **4. Enabling legislation**

### **4.1 Situation before 2003**

Clear legislation is a prerequisite for a credible regulatory framework. It gives stability to policy and, consequently, certainty. The Telegraphy Act 1990 provides for the operation of telecommunications services mainly by the monopoly operator, NITEL and for the management of the radio frequency spectrum.

The passing of the Communications Act in 1992 marked the beginning of the evolution of the enabling regulatory environment for private sector participation in the telecommunications sector in Nigeria. It is this Act, as amended in 1995 and 1998, which established the Nigerian Communication Commission and gave it a general mandate for the economic regulation of the sector. The Commission used this broad authority to establish licences and licence conditions relating to, among others, interconnection, tariffs, access to facilities and consumer protection. The Commission has also been developing guidelines on these issues.

### **4.2 Communications Act 2003**

The adoption of the National Telecommunications Policy in mid 2000, paved the way for the passing of a new legislation. The Communications Act, 2003 became effective in July 2003. Like the Policy, the new Act addresses regulatory issues comprehensively. The statement on the objectives of the Act, (Box 2) gives an idea of the range of matters with which it deals.

The regulatory issues on which the Act touches include licensing, general competition principles, investigations and appeals. Others are dispute resolution, interconnection, and access to facilities, universal service, spectrum management, numbering and technical standards.

Finally, there are transitional provisions relating to the protection of existing rights and modification of licences to conform to the Act.

### **4.3 Regulatory intervention and Deregulation**

In general, the Communications Act sets the stage for extensive intervention that may be necessary during the transition to full liberalization. At the same time, the Act gives the Commission the discretion to effect further deregulation consistent with open competition without the necessity of adopting new legislation.

Below are examples of provisions authorizing regulatory interventions coupled with the possibility of lessening the extent of ex-ante regulation.

#### **4.3.1 Licence Requirement**

The Act makes the possession of a licence mandatory, for the operation of a telecommunication system or service. But the Commission is empowered to issue individual and class licences or to make regulations exempting categories of services from licensing altogether<sup>4</sup>. The Commission has deregulated a number of services<sup>5</sup>. A liberal use of this measure would further reduce barriers to entry, and accelerate the achievement to full liberalization.

#### **4.3.2 General Competition Practices**

The Act gives the Commission exclusive competence to deal with all competition issues relating to the communications market under the country's laws and regulations<sup>6</sup>. The Act authorizes the Commission to publish guidelines and regulations on anti-competitive behavior including determining dominant operators. These powers enable the Commission to regulate a fully liberalized market, unhindered by the conflicts that often accompany the sharing of responsibilities in this area in some jurisdictions.

The Commission has not yet declared the licensees that are dominant operators. But it has set the parameters and criteria for doing so in guidelines on interconnection published in 2003<sup>7</sup>. Under the guidelines a licensee having 50% market share is automatically considered a dominant operator. A licensee with 30% market share is presumed to be a dominant operator until it proves the contrary. Under the guidelines, NITEL qualifies as a dominant operator in the fixed telephone market<sup>8</sup>. In the GSM mobile market, MTN, Vee Networks (formerly Econet Wireless Communications Ltd) and Globalcom are rolling out their networks aggressively and it is difficult to tell at this time which of them will meet the criterion for dominant operator.

#### **4.3.3 Interconnection**

Interconnection between network services or facilities is mandatory under the Act. The Act declares that the terms and conditions of interconnection agreements are primarily to be agreed upon among operators. The Commission is empowered to intervene and make binding determinations at the request of either or both parties to interconnection negotiations or where the parties fail to agree; or on the Commission's initiative in the public interest<sup>9</sup>.

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<sup>4</sup> Sections 31 and 32 Communications Act, 2003

<sup>5</sup> See Section 5.2.2 of this report

<sup>6</sup> Section 90 Communications Act, 2003

<sup>7</sup> Paragraph 4, Guidelines on Interconnection of Telecommunications Networks, 2003

<sup>8</sup> See Table 2

<sup>9</sup> Sections 96 and 97 Communications Act, 2003

The Act also authorizes the Commission to publish guidelines and regulations addressing the matters relating to interconnection, such as time frames and procedures for negotiations; level of service, rate methodologies; provision of facilities and sharing of technical information.

Interconnection is a crucial issue for operators and a challenging one for regulators. An interconnection determination issued by the Commission in December 2003 is a case in point<sup>10</sup>.

In this determination the Commission fixed the following termination rates:

- 11.52 Naira (9 US cents) for cellular mobile services and
- 5.52 Naira (4 US cents) for fixed telephone networks. Refer to tables 3 & 4 below.

Table 3: Determination of Interconnection rates: parameters and rates for Mobile Operators		
Parameters	Starting	Adopted
Amortization of capital investment per subscriber (recovery of 350 US over 10 years using capital recovery formula)	95.06 US\$	105 US\$
O&M at 30% of value capital investment	105 US\$	105 US\$
Average cost per subscriber	200.06 US\$	210.00 US\$
Average cost per minute of Calling before common cost	11.1 US cent	11.67 US cent
Average cost per minute of Calling after adding common cost of 10%	12.83 US cent	12.83 US cent
Cost per minute of terminating incoming call (71% if 12.2 & 12.83	8.7 US cent 11.0 Naira	9.11 US cent 11.52 Naira

Source: NCC, Interconnection Rate Determination, 200 3

Table 4: Interconnection rates: Parameters and Rates for Fixed Network Operators		
Parameters	Starting	Revised/ Adopted
Amortization of capital investment per subscriber (recovery of 812.50 US over 10 years using capital recovery formula)	220.68 US\$	105 US\$
O&M at 15 & 20% of value capital investment	121.88 US\$	162.50US\$
Average cost per subscriber (sum of figures in first two lines)	342.55 US\$	390.07 US\$
Average cost per minute of Calling before common cost	5.3 US cent	6.5 US cent
Average cost per minute of Calling after adding common cost of 10%	5.8 US cent	7.15 US cent
Cost of interconnection: L,S,& D tandems L,S & D tandems	1.9, 3.0 & 5.6 cents 2.4, 3.8, 7.1, Naira	2.29, 3.65 & 6.87 US cents 2.95, 4.71 & 8.87 Naira
Average	3.17 US cents 4 Naira	4.38 US cents 5.52 Naira

Source: NCC, Interconnection Rate Determination, 200 3

<sup>10</sup> Interconnection Rate Determination, December 2003



The operators participated in a workshop in which a report prepared by a consultant appointed by the Commission, was discussed. They also provided written input on the report, which was used by the Commission as a basis for arriving at the rates. Some of the operators raised concerns on some of the parameters that the consultants used. The Commission was able to take into considerations some of their concerns but not all. However, all the operators that participated appeared to have agreed with the revised rates that were proposed and later adopted by the Commission in the determination. But MTN has challenged the determination in court.

The GSM operators, including MTN, had a termination rate of 18 Naira for their networks which had been set by the Commission earlier. This has been reduced to 11.52 Naira under the general determination.

One of the concerns raised by the GSM operators during the consultative process was the non-inclusion of the US\$ 285 million one-off spectrum fee they paid when they were licensed. The Commission said this was a sunk cost and could not be taken into account in a rate determination based on forward looking long run average incremental cost (FL/RAIC) standard. However, the Commission indicated that the US\$ 285 million could be recovered from retail tariffs, during the 15-year licence period.

The mobile operators also queried the bottom-up cost estimation method that the Communication Consultants proposed and were subsequently adopted by the Commission. In this approach, the physical networks of the operators were simulated on a computer. The mobile operators preferred the bottom-down estimation model which uses information from the accounting records of the relevant operator and adjusted to the required FL-L RAIC standard. The Commission said it was unable to use this model because of lack of reliable accounting records in Nigeria in 2003, when it dealt the issue. One operator had claimed it had the required records, but the Commission observed that it was unable to verify their accuracy. It advised the operators to install systems that would ensure the availability of the required information in the near future.

MTN asked the court to delay the implementation of the determination until the judicial proceedings are concluded. The court ruled in favour of the Commission, that implementation should continue. But it indicated that MTN could recover damages from the Commission if its appeal is upheld.

This court matter not only highlights, the challenges that regulators can face in the execution of their responsibilities but also the concerns of investors in recouping their investments, especially where they pay large sums of money in licence fees.

#### **4.3.4 Consumer Protection**

The Act requires operators to meet minimum standards of quality set by the Commission and to adopt codes on handling consumer issues. The Act enjoins the Commission to establish procedures or guidelines on handling of consumer complaints, to institute alternative dispute resolution procedures and to designate an industry body to serve as a consumer forum.<sup>11</sup> The Commission has established a “Parliament” consisting of operators, consumers and NCC itself. The forum meets monthly. In the tripartite meetings which are facilitated by NCC participants exchange views and answer questions on different aspects of service provision. The meetings reach consensus on actions to be taken by relevant parties and reports on implementation are provided at subsequent sessions. NCC has also published an Alternative Consumer Dispute Resolution Scheme.

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<sup>11</sup> Sections 104-106 Communications Act, 2003

Both operators and consumers have lauded the Commission's facilitation of good relations between them. However, the consumers appear to be very well organized and determined to take action on their own to achieve their ends.

On 19<sup>th</sup> September 2003 consumers boycotted the use of mobile services for 24 hours in protest against quality and high tariffs and forced the operators to adopt per second billing instead of per-minute billing. This action effectively reduced tariffs by 25%, according to a representative of the Telecommunications Consumers Association.

#### **4.3.5 Tariff Regulation**

The Act makes the regulation of tariffs by the Commission mandatory for services or facilities provided under individual licences. This applies even to markets like cellular mobile in which there is sufficient competition at present. But the Commission could deregulate this area using its discretion under the Act to move a service from the category of individual licence to class licence.

#### **4.3.6 Universal Service**

Since its creation the Nigerian Communications Commission has, through various licensing approaches sought to ensure the availability of services throughout Nigeria. In addition to licensing private-owned telecommunications operators (PTOs) and Fixed Wireless Access (FWA) operators, the two national carriers, NITEL and Globacom are required to achieve installation of 1% of their lines in rural areas by the 5<sup>th</sup> year of their licences (from 2002).

The Communications Act 2003 has addressed universal service provision in a more structured and comprehensive manner. It places on the Commission the responsibility of designing and determining a system that will promote widespread availability and usage of network services and application services in the country by encouraging the installation of network facilities and the provision of services to institutions, in unserved and underserved area as well as for underserved groups within a community. The Act authorizes the Commission to make regulations for the implementation of universal service provision, and to define "institutions" "unserved" and "underserved" areas, and "underserved groups" within a community. A Universal Service Provision (USP) Fund established under the Act with its own Board of Directors will supervise and give policy directions on the implementation of the Fund. The members of the USF Board are appointed by the President. They comprise the sector Minister, members of the Commission, representatives of the Ministry of Finance and of the National Planning Commission as well as persons of professional standing from the private sector<sup>12</sup>.

The USP Fund will be funded from parliamentary appropriations, a portion of the annual fees that the Commission receives from licences and aid. The Act prescribes a separate and transparent administration of the Fund, including management by fund managers.

The Commission has determined, based on a study, that the crucial requirement for successful implementation of universal access and service provision in Nigeria is the installation of an extensive transmission backbone. The Commission is implementing a pilot project that will enable the design of such a backbone.

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<sup>12</sup> Sections 112 -116 Communications Act, 2003

## **5 Licensing regime**

### **5.1 Purpose**

Licensing is a tool for achieving the objectives of the National Telecommunications Policy. The National Telecommunications Policy envisages full liberalization as the ultimate strategy for achieving the country's telecommunications development objectives. In the past decade, and in particular, the last three years, encouraging results in infrastructure and service provision have been achieved through liberalization. But with concerns from operators and other stakeholders about lack of adequate transmission infrastructure, quality of service and indiscipline on the part of some operators, there is need for time for consolidation. The licence regime that the Communications Act, 2003 prescribes takes this need into account, while being flexible enough to enable the Commission to deregulate progressively as the country moves towards a fully liberalized telecommunications market. The Act provides the required flexibility by making licensing mandatory while allowing the Commission to adopt a simple authorization procedure through issuing class licences or to exempt categories of services from licensing or authorization altogether.<sup>13</sup>.

### **5.2 Licence Terms and Conditions**

Prior to 2003, the Commission issued licences with extensive conditions and guidelines on interconnection, tariffs, anti-competitive conduct and other relevant regulatory and operational issues, depending on the nature of service and type of licence. The duration of operating licences ranges from five years for a class licence like for Internet service provision to 20 years for a national carrier licence. Renewal is almost automatic, provided that an operator has fulfilled the conditions of the previous licence period. Over time, the Commission has been issuing guidelines and regulations separately setting out general conditions for the operation of telecommunications services. It is understood that, in the future some of the conditions that appear in guidelines and regulations will be cross-referred instead of being reproduced extensively in licences.

#### **5.2.1 Individual Licences, Coverage, Service Neutrality, Technology Neutrality and Convergence**

Although legislation empowers the Commission to issue class licences for the operation and provision of network services and facilities, up till now the Commission has used individual licences for most licence facilities and network services. This approach has been adopted during the transitional period when regulatory guidance is necessary in order to develop infrastructure in an orderly fashion. Individual licences are issued after evaluating applicants while, with class licences, all that an operator or service provider needs is to register with the Commission before commencing operations. In its effort to achieve the objectives set in the National Telecommunications Policy the Commission has adopted a combination of licensing approaches over time. The strategy entailed the combination of geopolitical, service, and technology considerations. In Table 5 is a list of some of the individual licences that were active in August 2004.

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<sup>13</sup> Section 31

Table 5: Individual/major licences active in August 2004				
Type	Area of operation	Service	Technology	Number
National Carrier	Whole country and International	Fixed voice, Data	Any	2
National Long Distance Carrier	Whole Country	Fixed voice ,Data	Any	2
Private Fixed Operator	National & Regional (a collection of contiguous states)	Fixed voice, Limited mobility	Radio, cable,	17
Fixed Wireless Access Operator	One state new licence Several licence for company	Fixed voice, Data Limited mobility	Wireless technologies	23
Fixed Local Exchange Operator	In local government area	Fixed voice, Data, Video	Radio, cable	24
GSM Land Mobile Operator	Whole country	Cellular mobile	GSM digital mobile	4

a) National Carrier Licences

A Nation Carrier, as the term suggests, covers the whole country. The licence authorizes the provision of fixed telecommunications voice, and data, facilities, network and services within Nigeria and to destinations outside using any technology. There are only two national carriers, the former monopoly operator, NITEL and Globacom which was licensed in September 2002. In addition to roll-out and universal service obligations the licences stipulate conditions that are similar to those that would be imposed on dominant operators, although NCC is yet to declare dominant operators. The conditions include interconnection, co-location and facilities sharing obligations as well as prohibition against anti-competitive behavior.

b) National Long Distance Carrier Licence.

This licence authorizes the provision of fixed telecommunication facilities and network services within the whole of Nigeria. Service and technology requirements are similar to those in national carrier licences.

c) Private Telephone Operator (PTO) Licence

This was the category of licence that was issued first in 1996 to provide fixed telephone services in one or a defined combination of contiguous states (region) of the 36 states using radio and cable. There are 17 such operators. Like the national carriers, PTOs may provide fixed voice services using radio and cable although many are using mostly wireless technology.

d) Fixed Wireless Access Licences

These licences have been issued from 2002, in another bid to extend services to geopolitical zones and rural areas using the latest wireless technologies. Use of wireless technology is mandatory. These licences are issued on a state-by-state basis, but one company may be licensed to operate in several states. Significant impact of these licences with regard to service provision is yet to be experienced.

e) Local Exchange Licence

This licence has been issued from 2003 for the provision of telecommunications services, voice, data and video using radio and cable within the administrative jurisdiction of a local government for example city, municipality, town or district council in a state. Any modern transmission facility has a video capability. But this licence specifically mentions and authorizes the provision of video network services. There are 23 active licences. It is too early for these licences to have shown impact on service provision.

f) GSM Mobile Licences

Three GSM mobile Licences were issued in 2001 to MTN Limited, Econet Wireless Limited and M-Tel (NITEL's subsidiary). A fourth licence was issued to Globacom along with the second national carrier licence in September 2002.

This licence authorizes the operation and provision of a "National Second Generation Digital Mobile Radio telephony service in the 900 and 1800MHz bands". It is service and technology specific to an extent. The licence permits the operator to install its own transmission network, as well as to lease transmission capacity from NITEL or any other authorized long distance or multi access operators and service providers to international destinations.

GSM mobile licences have transformed the telecommunications market in Nigeria. The mobile operators' roll-out targets were each 100,000 lines within 12 months of launching operations, 750,000 lines within 36 months and 1,200,000 within 60 months. Each of the operators exceeded its first target within a few months of launching service. By mid 2004 less than 2.5 years from first launch the four operators had, a total of over 5 million subscribers. This figure is estimated to more than triple within the next three years. This would suggest that there is room for more operators in the cellular mobile market. The potential appears enormous but the limitation is spectrum. It is understood that there is spectrum for one more GSM operator. The existing operators who paid US\$ 285 each million for their licences would understandably want more time in which to recoup this and other components of their investment. One operator in another market segment thinks that development objectives would be better achieved through distributing the remaining spectrum to existing GSM mobile operators given the infrastructure constraints alluded to elsewhere in this report. This view warrants consideration during the periodic sector performance reviews and consultations carried out by the Commission.

g) International Gateway Licence

This licence authorizes the construction and operation of transmission and connectivity facilities for example earth satellite station, cable, VSAT, exchange or node for carrying international traffic for an operator's own use and /or for carrying third-party traffic. A national carrier licence or public mobile licence authorizes the provision of services to destinations outside the country but does not confer a right to construct and operate such facilities. A separate licence is required for that purpose. Alternatively, an international services operator has to use the facilities of another operator who is licensed to construct and operate an international gateway.

## 5.2.2 Licences for Deregulated Services

Licences are issued for applications services and some network services which are currently authorized under individual or class licences. These include:-

- Sales and Installation of Terminal Equipment (Mobile Cellular Phones, Satellite Communication and Switching Equipment)
- Public Payphone Services.
- Internet Services.
- Prepaid Calling Card Services.
- Community Telephony with Exchanges.
- Paging Services.
- Trunk and 2-Way Radio Network services.
- Fixed Telephony Services, employing Cable and Radio.
- Satellite Network Services (e.g. Domestic VSAT networks).
- Repairs & Maintenance of Telecommunications Facilities.
- Cabling Services.
- Tele-Centers/Cyber Cafes.
- Non-commercial/User Operated Radio Networks.

A total of 425 licences have been issued to Internet Service Providers as at August 2004. This indicates that the market for applications services is huge.

The licence contains standard terms published on the NCC website. All that an operator or service provider needs to do is to register with the Commission and pay the required fee. Further liberalization of the telecommunications services lies in greater use of this type of licence.

### **5.3 Licence Process**

The Communications Act 2003 gives the Commission discretion to determine the procedure for awarding individual licences which may include auction, public tender invitation, competitive bidding or non-competitive selection process. Also, the Act requires the Commission to be guided by the principles of transparency; fairness and non-discrimination, effective use and management of radio frequencies; and the need to promote fair competition and investment.<sup>14</sup>

### **5.4 Operating Licence Fees and Levies**

Fees for operating licences differ according to the type of licence (individual or class) and the size of operation. For example, a licence for an Internet Service Provision (ISP) is 500,000 Naira (US\$ 4,000 at 126 N = 1 US\$). At the high end is the US\$ 285 million that GSM mobile operators paid for their licences. An annual levy of 2.5 of gross revenue (less interconnection and similar charges, where applicable) is payable to the Commission by all licence holders, even class licence holders. This is substantial, but it should be kept in mind that a portion of the proceeds will go to the Universal Service Provision (USP) Fund. The rationale for the fee and levies is, therefore, to meet the costs of regulation and a part of universal access and service provision.

### **5.5 Spectrum Management Policy and Pricing**

#### **5.5.1 Regulated Services**

The Commission has the responsibility, under the Communications Act, 2003 to develop a National Frequency Plan on behalf of the National Frequency Management Council and administer the spectrum for the telecommunications sector. The frequency spectrum is considered a national resource and a source of revenue for government. All the fees for spectrum licensing and assignment go to the national treasury. When the Ministry of Communications administered the spectrum, pricing was based on number of subscribers. This methodology did not encourage efficient use of the spectrum.

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<sup>14</sup> Sections 33, 39 and 41 Communications Act, 2003

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The licence contains standard terms published on the NCC website. All that an operator or service provider needs to do is to register with the Commission and pay the required fee. Further liberalization of the telecommunications services lies in greater use of this type of licence.

When the Commission took over the responsibility of administering the spectrum it adopted a policy based on a combination of market or economic value and the promotion of achievement of the policy objectives of even national development and universal access and service. In order to achieve these objectives the price of spectrum for commercial use is determined through competitive methods like auction, beauty contest or other methodology that the Commission considers appropriate.

The guiding principle is that the method employed should ensure that frequencies are allocated to those that will make the most efficient use of it. The success of the GSM mobile licences awarded in 2001 and the fixed wireless access licences in 2002, both through auctions, have proved the appropriateness of this approach. The US\$ 285 million that the GSM mobile operators paid appeared overly high to some observers. There were concerns whether this would not impact consumer prices unduly or the ability of the licensees to roll out their networks, given the experience with 3G licences in Europe. First, it is worth noting that it was not the intention of the Government or the Commission to realize such a high price. The reserve price was US\$ 100 million. Instead, the investors, who at the time may not even have known the full potential of the market, pushed the price up to that level. Second, thanks to the enormous demand, and competition, the fears about negative impact of the licence fee on consumer prices has not been born out. However, as indicated in section 3.2.3 above there has been a drastic reduction in ended-user prices for mobile services.

There are elements of the Nigerian spectrum assignment policy and process that may be useful to note. Among these are:-

- For the purpose of frequency licensing, the country has been divided into licensing areas, which correspond to the 36 states and the Federal Capital Territory
- Frequency licences for wireless local loop services are issued on the basis of the above licensing areas

Spectrum fees vary from state to state in accordance with market potentials and level of economic activities. For this purpose, the 37 licensing areas of the federation have been categorized into five tiers, with 'tier 1' being the most expensive, and in descending order. See table 6 below

Table 6: Frequency Licence Areas	
Tier 1	Lagos
Tier 2	Rivers, FCT-Abuja, Delta, Kano, Kaduna,
Tier 3	Ogun, Edo, Oyo, Anambra, Abia
Tier 4	Enugu, Akwa Ibom, Benue, Ondo, Bayelsa, Plateau, Cross Rivers, Imo, Osun, Niger, Kwara, Kogi, Borno, Bauchi,
Tier 5	Nassarawa, Gombe, Ebonyi, Adamawa, Ekiti, Jigawa, Katsina, Kebbi, Sokoto, Taraba, Yobe, Zamfara

Source: NCC

- The Commission encourages long-term licences, for security of tenure and efficient planning. The standard term is five years, but deviations can be considered on case-by-case basis.

- Spectrum bands, which have possibility of being shared among large number of users, are assigned under class licences. These encompass microwave frequencies, DECT frequencies and point-to-point VHF/UHF radio channels.
- All microwave frequency licences are renewed annually and are not licensed on state basis<sup>15</sup>.

### **5.5.2 Deregulation of “special” spectrum bands**

To encourage the use of broadband for last mile access and final distribution to end-users the Commission has deregulated the 2.4 GHz ISM band for commercial purposes. The main objective is to promote rapid expansion of services and in particular to increase use of Internet services, using WiFi technologies.

As 2.4 GHz is a shared band, the Commission has issued a guideline<sup>16</sup> to ensure interference free operation by all users of the band and guaranteed grade of services to subscribers. Providers of commercial services using frequencies in this band are required to obtain an ISP licence. The guideline is in the Annex to this report.

## **5.6 Voice over Internet Protocol (VoIP) and other Convergence Issues**

Currently, VoIP is not licensed. Internet Service Provision and Internet Exchange licences authorise the provision of data services. Some of the major licences, for instance national carrier licences, are technology and service neutral and presumably permit the provision of voice services using IP technology. But other network services, for example, Fixed Telephony and FWA licences specifically prescribe radio, cable and/or wireless technologies. The Nigerian market is highly liberalised already. There would appear to be no compelling reason to restrict the provision VoIP as this would enhance the realization of the country’s declared objective of universal service and accessibility. The Commission has been consulting stakeholders on this issue. Formalizing VoIP through specific authorization could be another area of trend setting action by the Commission in the near future.

## **6 Transitional and Legacy Issues**

Whenever there are changes in policy there are transitional and legacy issues that have impact on existing and new operations. The law usually protects the accrued rights of operators, but not indirect consequences, such as loss of market share. So far the changes that have taken place in the Nigerian telecommunication sector have had positive impact on existing operators. Competition has provided incentive for improvement and growth. There also have been opportunities for existing operators to earn revenue through termination of traffic on new operators’ networks. On the other hand, the lack of adequate infrastructure that is supposed to be provided by existing dominant operators like NITEL has been a constraint to new entrants. The increased number of operators has resulted in increased radio frequency interference.

The communications Act 2003 preserves the rights of existing licensees. It authorises the Commission to modify old licences to align them with the provisions and objectives of the Act,<sup>17</sup> Any such modification would be without significant negative impact on the operator concerned.

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<sup>15</sup> NCC: Presentation on New Spectrum Fees and Pricing Strategy to Telecommunications Operators, December 2002

<sup>16</sup> Interference Guidelines

<sup>17</sup> Section 156 Communications Act.



## 7 Consultation

The communications Act 2003 gives the Nigerian Communications Commission extensive powers on rule making and decisions of a general nature affecting operators and consumers. The areas involved are making regulations and issuing declarations, guidelines and determinations as well as designing frequency and communications industry development plans. Associated with these powers is a requirement on the Commission to consult with stakeholders. Even before the passing of the Act the Commission consulted extensively with operators, not only on the matters on which legislation requires it to consult them, but on other issues as well.

For example, the Commission consults operators on its Strategic Management Plans (SMPs). The Commission has invited operators through a survey to give their views on its performance of its responsibilities. The operators commend the Commission for this openness but some of them think that there is always room for improvement. The Commission makes extensive use of its website in carrying out consultations and disseminating information

## 8 Conclusion

The implementation of reforms has transformed Nigeria's telecommunications market from one of the less developed in Africa to a vibrant telecommunications market. The key enablers are a clear policy and a flexible regulatory framework that permit the Nigerian Communications Commission (NCC) to employ innovative licensing approaches. The strategies adopted by the NCC, in particular the simultaneous licensing of three GSM mobile operators in 2001 through a competitive and transparent process, not only attracted big investments; but they ensured a beneficial level of competition.

Mobile services have been substituting for fixed telephony in Nigeria like elsewhere in Africa. Continued efforts by the NCC to encourage the development of the fixed telephone market, is an acknowledgment of the contribution that fixed telephony can make to the achievement of communications development goals, because of its versatility in applications services.

In a dynamic and huge market like that of Nigeria a rapid transformation to full liberalisation is desirable. The Regulator has been using its discretion under the law to deregulate a number of services, particularly applications services, but also a few network services. Once the problem of lack of an adequate transmission backbone and enforcement are addressed, new entrants for the provision of all last mile network services could be encouraged through the class licence authorisation procedures instead of individual licences.

Competition, a large market and the vigilance of consumers are driving retail tariffs down. Although legislation gives the Regulator extensive powers over tariffs regulation, the current level of competition allows a shift from specific approval of tariffs of non-dominant operators to issuing guidelines and monitoring. This light touch approach would apply to other regulatory areas as well, as liberalisation progresses.

The lack of telecommunications infrastructure is a common observation among operators. The two national carriers, NITEL and Globacom, are taking action within their respective capabilities to discharge their licence obligation of providing infrastructure to other operators. But it will require the concerted effort of the Commission and operators to design and implement a backbone transmission infrastructure that will satisfy the needs of the country.

The former monopoly operator, NITEL and its mobile subsidiary, MTEL are yet to be privatised. Although privatisation is a good strategy, the experience of Nigeria shows that liberalising without first privatising state-owned telecommunications enterprises, can be effective in achieving development goals if appropriate licence approaches are used.

The liberalisation of a large telecommunication market has many challenges. The capacity and professional ability of the Regulator are necessary for regulatory credibility. The Nigerian Commission has met these requirements through intensive effort in building internal capacity and outsourcing of tasks. Stakeholders are satisfied about the professional manner in which the Commission has presided over the development of the telecommunications sector. However, while acknowledging that the Commission is among the best regulators in Africa, some operators would like to see it reach the level of performance of the best regulators in developed countries.

There were concerns over indiscipline among some operators resulting from the multi-operator environment now in place. This is a challenge that the NCC is addressing by strengthening its enforcement and compliance functions

Technology and service neutrality are laudable ideals but flexibility during the transition to full liberalisation can be useful. The judicious use of this flexibility in Nigeria is helping in ensuring the extension of services to unserved and underserved areas.

Finally, the experience of Nigeria underlines the accepted principle that to be successful telecommunications sector development strategies need to be tailored to a country's conditions.

**Nigerian Communications Commission**

**REGULATORY GUIDELINES FOR THE USE OF 2.4 GHz ISM BAND FOR  
COMMERCIAL TELECOM SERVICES**

**Introduction**

The use of broadband for last mile access or for final distribution to end users will open up new possibilities and enable a wider range of enriched services to be provided to subscribers. It will also allow home-based users to have access to a variety of IP-based services thereby enhancing universal service objectives. Wireless Fidelity technology will ensure the attainment of the above objectives quickly and at an affordable cost to all categories of users. The Nigerian Communications Commission is hereby providing guidelines for the approved Commercial use of the ISM frequencies in Nigeria employing the Wi-Fi technology in order to ensure rapid expansion of services and accelerated increase in Internet penetration.

**Purpose of Regulation**

The main objectives of this set of guidelines is to ensure interference-free operation by all users of the band and to ensure that a guaranteed grade of service is available to the subscribers through established quality of service benchmarks, and consumer code of practice.

**1. OPERATIONAL GUIDELINES**

- (a) Access to the spectrum will be on shared basis. There will be no exclusive assignment to any individual or organizations, whether for private, public or commercial use.
- (b) All users, both private and commercial service providers will be guided by the same technical specifications and operational restrictions, with respect to Wi-Fi hotspots deployment
- (c) All equipment to be deployed must be type approved by the Commission prior to importation and deployment in compliance with Section 132 of NCA 2003. Existing ISM band operators who wish to adapt their present equipment for Wi-Fi deployment must seek approval from the Commission.
- (d) All sites in which commercial Wi-Fi hotspots are to be provided must be registered with the Commission.
- (e) ISM band will be permitted for both indoor and outdoor use.
- (f) Wide area deployment will not be allowed on the ISM bands, coverage or transmission distance from a single hotspot must be within the distance stipulated in the technical specification. Transmit power, antenna height and gain must be selected in order to keep emission within stipulated distances.

**2. LICENSING CONDITIONS**

- 2.1** All Wi-Fi Hotspots must be registered and authorised by the Commission. Such authorization shall be renewable annually.
- 2.2** All commercial Wi-Fi Hotspot operators shall possess an ISP Licence.

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<sup>18</sup> Source:NCC

- 2.3 Tariffs of operators must be displayed within the operator's premises and registered with the Commission.
- 2.4 A reliable customer billing system must be installed.
- 2.5 All equipment to be deployed must be type approved by the Commission.
- 2.6 Each Hotspot shall maintain a log book for its day to day transactions. The log book shall be produced for inspection on demand by any accredited representative of the Commission.
- 2.7 All customer premises equipment supplied by the operator must conform to the items listed in the section **TECHNICAL SPECIFICATIONS**.

### 3. **TECHNICAL SPECIFICATIONS**

#### 3.1 **Basic Specifications: IEEE802.11b (Industry open standard)**

- (a) Operating Frequency: 2.4 GHz (2,400-2,483 MHz)
- (b) Maximum Data Rate: 11/54 MBps
- (c) Multiple Access Method: Spread Spectrum/OFDM
- (d) Digital Modulation Scheme: CCK, BPSK, QAM, etc.
- (e) Maximum Coverage Distance: 200 meters indoor/outdoor
- (f) Media Access Protocol: Collision Avoidance Technique
- (g) Wi-Fi deployments must be IEEE 802.11a, b, and g, and newer versions must be backward compatible with 802.11b and g.

#### 3.2 **Operational Features:**

##### **Transmitter parameter limits**

Transmitter Power Limits (EIRP) 1w

The peak power spectral density should not exceed 17dB in any 1MHz

- (i) Equipments using FHSS modulation < -10 dBW (100 MW) per 100 KHz EIRP
- (ii) Other types of modulation < -20 dBW (10 MW) per MHz EIRP.

#### 3.3 **Automatic Transmit Power Control (ATPC)**

ATPC feature should be declared with the ranges and the related tolerances and subject to tests.

#### 3.4 **Dynamic Frequency Selection/Adaptive Frequency Hopping Technique**

The equipment should have the capability for dynamic frequency selection from the range of hopping frequencies. The number of hopping channels should not be less than 75. Occupancy on any frequency should not be more than 0.4s in any 30s period

#### 3.5 **Bandwidth and Carrier Separation**

Carrier frequencies must be separated by at least 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

Maximum bandwidth must not exceed 1 MHz.

#### 3.6 **Modulation**

The Modulation type shall be wideband digital modulation system, using spread spectrum techniques to transmit and receive.

#### 3.7 **Adaptive Frequency Hopping/Adaptive Dynamic Polling**

All systems must be capable of Adaptive Frequency Hopping/Adaptive Dynamic Polling to enable dynamic allocation of hopping channels.

FHSS modulation  
 Number of channels > 75  
 Channel separation = separated by channel bandwidth as measured at 20 dB below peak power  
 Dwell time per channel < 0.4 seconds  
 DSSS and other forms of modulation

### 3.8 Spectrum Mask

- (i) (fH) = the frequency furthest above the frequency of maximum power where the output power drops below the level of -80 dBm/Hz e.i.r.p. spectral power density (-30 dBm if measured in a 100KHz bandwidth)
- (ii) (fL) = the frequency furthest below the frequency of maximum power where the output power drops below the equivalent level to -80 dBm/Hz e.i.r.p. spectral power density (-30 dBm if measured in a 100KHz bandwidth)

### 3.9 Spurious emissions

The spurious emissions of the transmitter shall not exceed the values in tables 1 and 2 in the indicated bands.

Frequency range	Limit when operating	Limit when in standby
30 MHz – 1 GHz	- 36 dBm	- 57 dBm
Above 1 GHz – 12.57 GHz	- 30 dBm	- 47 dBm

**Table 2: Transmitter limits for wideband spurious emissions**

Frequency range	Limit when operating	Limit when in standby
30 MHz – 1 GHz	-80 dBm/Hz	- 107 dBm/Hz
Above 1 GHz – 12.75GHz	- 80 dBm/Hz	- 90 dBm/Hz

### 3.10 Unwanted emissions

Emission outside the Band should be less than -27dB.

### 3.11 Coverage Diameter

The Distance for outdoor/indoor use should not exceed 200 m.

### 3.12 Media Access Protocol

This shall be based on Collision Avoidance Technique. Duty cycle should be listen before talk.

### 3.13 Data Rate

The data rate should be adjustable to a maximum of 11 Mbps for the case of IEEE802.11b and a maximum of 54 Mbps for IEEE802.11a/g. Automatic Data Rate Selection: variable from 1 – 54 Mbits/sec in steps of 1 – 6 MBps.

### 3.14 Frequency stability

The frequency stability shall be better than 10ppm.

## 4 QUALITY OF SERVICE

### 4.1 Interference

No interference shall be caused to any systems operating in any of the primary allocations in the band (e.g. FSS and Radiolocation)

#### **4.2 Availability of Connection**

The Service provider is to guarantee 95% availability of its service to its subscribers.

#### **4.3 Security**

The provider should take adequate measure to protect the data traffic to uphold the subscriber's right to privacy, as entrenched in the constitution of the Federal Republic of Nigeria. Minimum Standard specified by Wired Equivalent Privacy (WEP) /WPA benchmarks must be met.

#### **4.4 After-sale Support and Maintenance**

There shall be adequate support system to the subscriber in terms of repairs of equipment, upgrade facilities and other service failure reports on mutually acceptable terms and conditions.

#### **4.5 Service Agreement**

The Service Agreement between the provider and subscriber shall be subject to approval by the Commission.

#### **4.6 Bit Error Rate**

BER objective:  $10^{-5}$  Max.

#### **4.7 Hotpots**

The number of permissible hotspots in any given area will take cognizance of acceptable quality of service, and the interference factor.

### **5 TYPE APPROVAL**

5.1 All equipment must be type-approved by the Commission before commissioning.

5.2 Manufacturers can type approve equipment on behalf of the vendors.

5.3 Where necessary the vendor may be required to make a presentation to the Commission on the service to be provided with the equipment.

5.4 The time frame for the type approval will be a maximum of 4 months after application.

### **6. BACKHAUL FREQUENCIES**

For the purpose of connecting Wi-Fi hotspots to the nearest switch/router for onward connection to the internet or other global/national networks, the under-listed point-to-point backhaul methods will be permitted.

#### **6.1 Exclusive (FWA) Backhaul Frequency**

FWA licensees or other operators with frequency licences consisting of multiple channels/slots are free to reserve one of the slots for Point-to-Point backhaul links. This can be used to backhaul their Wi-Fi hotspot traffic or to service ISPs and cyber-café's. The rest of the slots can then be used for Point-to-Multipoint broadcast channels.

#### **6.2 Microwave Backhaul Frequencies**

Operators requiring secured high-capacity backhaul links are free to apply for additional microwave link frequency licence under the same conditions applicable to telephone network backhaul in the 15 GHz band.

**6.3     Satellite Backhaul**

Operators with existing domestic satellite licences can use satellite backhaul to concentrate Wi-Fi hotspot traffic.

**6.4     Leased Backhaul Links**

Operators, private individuals or organizations can lease bandwidth from Long Distance Operators or from domestic satellite providers for the purpose of linking their hotspot to internet access points or for concentrating hotspot traffic.

**7.     APPLICABLE INDUSTRY STANDARDS**

The above specifications are broadly based on ITU recommendations, IEEE standards and Wireless Internet Compatibility Alliance (WECA) guidelines.

Dated 12<sup>th</sup> of May, 2004.

ENGR E. C. A. NDUKWE *FNSE, FNIM, OFR*  
*Executive Vice Chairman/CEO*  
Nigerian Communications Commission

**LICENSING IN THE ERA OF LIBERALIZATION AND  
CONVERGENCE**

**THE CASE STUDY OF  
THE REPUBLIC OF TANZANIA**

**INTERNATIONAL TELECOMMUNICATION UNION**



The Case study was conducted by Simon Moshiro.

During the field study the author met and interviewed the Tanzania Communications Regulatory Authority, Ministry of Communications and Transport and some industry representatives. It is hoped that this study will be useful not only to regulatory authorities but also those concerned with the communications market.

The author wishes to sincerely thank the Tanzania Communications Regulatory Authority and in particular Mr. Goodluck Olemedeye and Mr. S. Gundula for their invaluable assistance. The author wishes to thank everyone in the public and private sector who gave him their valuable time.

The views expressed in this report are those of the author and do not necessary reflect the views of the ITU or its members or the Tanzanian Government.

# 1 Introduction

## 1.1 Purpose of the study

This case study forms part of a series on licensing in the era of liberalization and convergence. Conducted by the Regulatory Reform Unit (RRU) of the Telecommunications Development Bureau (BDT) of the International Telecommunication Union (ITU), this series of case studies aims to respond to a growing demand from the ITU Membership for best practices guidelines on this crucial policy and regulatory aspect that could be of assistance to regulators who are considering a shift from a monopoly or limited competition environment to a fully liberalized one. The case study will also form part of the 6<sup>th</sup> edition of the ITU publication of “Trends in Telecommunication Reform 2004 – Licensing in an Era of Convergence” and will be showcased at the 5<sup>th</sup> annual Global Symposium for Regulators (Geneva, 8-10 December 2004).

Tanzania was chosen because it is one of the countries in Africa that started implementing private sector participation sector policies, in particular liberalization, through different licensing approaches. Recently Tanzania adopted a policy and regulatory framework that specially addresses convergence.

Situated in East Africa, bounded by the Indian Ocean and the Great African lakes, Tanzania is a member of the East African Community comprising of Kenya, Uganda and Tanzania. It has a landmass of 937,762 square kilometers and an estimated population of 35.31 million. Its GDP was US\$ 9,957.42 million in 2002.



At the end of August 2004 there were 141, 835 fixed telephone subscribers plus 100,000 unsubscribed fixed telephone lines and about 1.600,000 cellular mobile subscribers. This compares with 121,769 main telephone lines and 37,940 cellular mobile lines at the end of 1998.

## 2 Development objectives and structure

This section summarizes Tanzania’s telecommunication development objectives appearing in policy statements.

## **2.1 Policies**

### **2.1.1 National Telecommunication Policy 1997**

The overriding aim of the policy is to ensure accelerated development of an efficient telecommunications network that can provide an info-communication network for the provision of information and communication infrastructure and universal access to telecommunication services by all sectors of the national economy and segments of the population. The NTP has two main specific objectives. One, to ensure the provision of adequate, sustainable and efficient telecommunications services in all the sectors of the economy. Two, to put in place a reliable telecommunications infrastructure and ensure service inter-connectivity nationally and with other countries. The NTP set the optimization of the contribution of info-communications sector to national economic development as the overall target. The specific target is to raise teledensity from the then 0.34 to 6 telephones per 100 persons by 2020.

The NTP identified competition as the main strategy for achieving the targets. To facilitate competition, the government will divest its share in the state-owned operator, TTCL, gradually. As part of the liberalization programme, the NTP divided the telecommunications market into six segments. Customer equipment provision and wiring were already fully liberalized. Local long distance and international services would continue to be provided by licensed operators and be interconnected through the public switched telephone network (PSTN). Limited exclusivity would be allowed to the then existing basic service providers, TTCL and ZANTEL. Radio paging, data communications and value-added services would remain liberalized and continue to be provided by licensed operators.

In order to expand access to services, the NTP encouraged resale of services by the operators and provided for the establishment of a Telecommunications Development Fund.

### **2.1.2 National Information and Communications Technologies (ICT) Policy**

Subsequent to the publication of the National Telecommunication Policy 1997, the Government adopted a national Development Vision 2025. The vision envisages a national imbued with high quality livelihood, peace, as well educated and learning society and a strong and competitive economy capable of producing sustainable growth and shared benefits. In 2003, the government adopted the National ICT Policy which will contribute to the realization of the aspirations of the Development Vision 2025. The broad objectives of the ICT policy are to:-

- 1) Provide a national framework that will enable ICT to contribute towards achieving national development goals; and
- 2) Transform Tanzania into a knowledge-based society through the application of ICT.
- 3) Provide a national framework to accommodate the convergence of information, communication and technology including media<sup>1</sup>.

The Policy articulates 10 main areas of focus in harnessing ICT towards development. Those that are of direct relevance to the theme of this study are ICT infrastructure, ICT industry, regulatory framework, and universal access.

#### **a) ICT Infrastructure:**

The national ICT policy notes that public switched network is over 95% digital paving the way for provision of new services enabled by ICT. But the confinement of the coverage of the network infrastructure to urban areas and the lack of suitable telecommunications and other infrastructure in the rural areas remain the basic

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<sup>1</sup> National Information and Communications Technologies (ICT) Policy, 2003 p.14

impediments to the provision of new ICT services. The lack of inexpensive and high capacity connections to the global internet is a further hindrance to harnessing ICT opportunities. Therefore, the National ICT Policy sets the objectives for infrastructure development, namely to:

- i) encourage the regulator to investigate and respond to the challenges of convergence and newly emerging technologies in collaboration with the general public and stakeholders
- ii) The strategies for achieving those objectives include the development of reliable state of the art ICT infrastructure, with adequate capacity, high speed and country wide coverage; encouraging public and private partnership to mobilize funding for ICT development and ensuring that all installed ICT infrastructure is utilized effectively.

b) Legal and Regulatory Framework

The relevant policy objective of the National ICT Policy under this heading is to establish an enabling legal framework, legislative and regulatory, that is consistent with the national constitution, regional and global best practices. Specific actions include review of existing laws and regulations and adjust them or enact new ones that take into account the convergence of the telecommunications, broadcasting and information system.

c) Universal access

The national ICT Policy notes the existing digital divide within the country and the fragmented initiatives that try to address it. It therefore places specific emphasis on Universal Access. Among the objectives of the national ICT Policy for this area are to provide the population with universal access to ICT; to provide special incentives to investors to deliver broadband connectivity hitherto deprived and isolated populations in the country. The strategies include operationalising the Rural Communications Development Fund; offering special incentives to investors for provision of services in rural areas; supporting the construction of rural telecentres and involving local government authorities in utilization and promotion. Others are encouraging and facilitating the optimal use of existing capacity and infrastructure in order to facilitate affordable access nationally and especially in rural and disadvantaged communities.

d) Institutional Regulatory Framework

The National ICT Policy notes the existence of several institutions charged with ICT regulatory matters, including the former Tanzania Communications Commission, the Tanzania Broadcasting Commission, and the Tanzania Competition Commission. The policy emphasizes coordination policy monitoring and the regulatory functions to ensure rational and speedy enhancement of ICT. The Policy envisages continued regulation in ICT hardware and software production, operations, service provision and consumption.

Reference is still made to the National Telecommunication Policy but for most practical purposes it has been superseded by the National ICT Policy.

### **3. Information Communications Sector Structure**

#### **3.1 Ministerial and Regulatory Institutions**

In the old institutional framework, the communications sector and broadcasting sectors were each supervised by regulators, each reporting to the relevant Minister. Under the new institutional set-up, there has been a merger at the regulatory level, with separate but closely coordinated ministerial oversight. The Tanzania Communications Regulatory Authority (TCRA) Act, 2003 gives legislative effect to the institutional aspects of the ICT Policy.

At present the Union Minister of Communications and Transport has overall responsibility for policy and TCRA on some issues which are not sector-specific, with a requirement to consult with the relevant sector ministers in identified areas including the appointment of Board members of TCRA. The Act assigns responsibility to relevant sector ministers on sector-specific matters. Below is a summary of the ministerial and regulatory oversight arrangement under the converged institutional framework.

### **3.1.1 Functions of Minister responsible for TCRA**

The main functions are:

- Overall responsibility for ICT policy
- Gives to TCRA specific directions or general directions on specific issues relating to the effective performance of its functions but not relating to the discharge of the regulatory functions<sup>2</sup>. This enables the Minister to give guidance to the Authority without intervening in its day-to day regulatory work. Such directions have to be in writing and published in the Government Gazette.
- Appoints members of the TCRA Board in consultation with the relevant sector minister (s)
- Presents the TCRA annual report to parliament

### **3.1.2 Functions of sector Minister responsible for Broadcasting and Content**

- The Minister is responsible for broadcasting policy
- Establishes and appoints the Content Committee.
- Gives directions of a general or specific nature to the Content Committee.

### **3.1.3 Functions of the Tanzania Communications Regulatory Authority (TCRA)**

The Governing body of TCRA is a Board consisting of a Chairman and a Vice-Chairman appointed by the President, four other members appointed by the Minister in consultation with relevant sector Ministers; and a Director General appointed by the Minister. All members except the Director General are non-executive. The Authority has a wide range of responsibilities and powers.

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<sup>2</sup> TCRA Act, 2003 Section 6 (4)

### **Box 1: Responsibilities and Functions of TCRA**

Duties: To enhance the welfare of Tanzania society by-

- (a) promoting effective competition and economic efficiency;
- (b) protecting the interest of consumers;
- (c) protecting the financial viability of efficient suppliers;
- (d) promoting the availability of regulated services to all consumers including low income, rural and disadvantaged consumers;
- (e) enhancing public knowledge, awareness and understanding of the regulated sectors
- (f) taking into account the need to protect and preserve the environment.

Functions include :

- (a) to perform the functions conferred on the Authority by sector legislation;
- (b) subject to sector legislation –
  - (i) to issue, renew and cancel licences;
  - (ii) to establish standards for regulated goods and regulated services;
  - (iii) to establish standards for the terms and conditions of supply of the regulated goods and services;
  - (iv) to regulate rates and charges;
  - (v) to make rules for carrying out the purposes and provisions of this Act and the sector legislation;
- (c) to monitor the performance of the regulated sectors including in relation to -
  - (i) levels of investment;
  - (ii) Availability, quality and standards of services;
  - (iii) the cost of services;
  - (iv) the efficiency of production and distribution of services, and
  - (v) other matters relevant to the Authority;
- (d) to facilitate the resolution of complaints and disputes;
- (e) to take over and continue carrying out the functions formerly of the Tanzania Communications Commission and Tanzania Broadcasting Commission.

The Act requires the authority to consult the Minister and the relevant sector Minister before rewarding a licence that has an exclusivity period or universal service obligations or one that has a term of five or more years<sup>3</sup>. This is a new requirement.

#### **3.1.4 Functions of Content Committee**

The TCRA Act 2003 requires the Minister responsible for broadcasting and content matters to establish a Content Committee. The Committee advises the sector Minister on broadcasting policy. It monitors and regulates broadcast content. It handles complaints from consumers and operators and monitors broadcasting ethics and compliance. Although established by the sector Minister, the Committee functions like any other committee of the Authority. Therefore, the Act authorizes the Authority to assign some of its functions to the Committee, except those responsibilities that the authority is not allowed to delegate. The Authority cannot, for example delegate its responsibility to grant, renew or cancel a license; make a rule to fix the method for calculating rates and charges<sup>4</sup>. So, although the Content Committee reports directly to the sector Minister in providing advice on policy and some issues relating to monitoring performance, the TCRA retains responsibility for major substantive matters.

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<sup>3</sup> Section 6 (3) of the Act

<sup>4</sup> Section 21 (3) of the TCRA Act

### **3.1.4 Appeals**

According to the TCRA Act a party that is dissatisfied with a decision of the TCRA may appeal to the Fair Competition Tribunal established and the Fair Competition Act 2003. An appeal may be on grounds of non-observance of procedure that materially affects the outcome of the proceedings, misapplication of the law or on factual evidence<sup>5</sup>. This is an improvement on the Tanzania Communications Act which permitted appeals on procedural grounds or wrong application of the law only.

## **3.2 Present Industry Structure**

The Tanzania Communications Act, 1993 which governs licensing and most regulatory matters relating to telecommunications services permits the issuing of unified licenses. But the National Telecommunications Policy (NTP) 1997 broke the market into segments including fixed voice, mobile and valued added services. Owing to this segmentation together with the exclusivity given to TTCL and the general trend, the Tanzania Communications Commission (TCC) adopted a vertical integration approach to licensing. The result of the strategy has been the issuing of licenses for vertically integrated market segments including fixed voice, cellular mobile, data, paging and satellite services. This section highlights the major operators of fixed voice and cellular mobile services.

### **3.2.1 Fixed Telephony Service Operators**

#### **a) Tanzania Telecommunications Company Limited (TTCL)**

TTCL is the historical monopoly telecommunications service provider. Under the liberalization that started in 1994, TTCL continued as the exclusive fixed telephone operator on mainland Tanzania and part of a duopoly on the Island of Zanzibar, which is an autonomous part of Tanzania. TTCL was privatized in 2001, through the sale of 35% equity to a consortium consisting of MSI International and Detcon of Germany<sup>6</sup>. The Government retained 65% of the equity. The former TCC issued a new license to the privatized TTCL, with roll-out commitments that had been made by the consortium through the privatization bid. This included the connection of 800,100 additional subscriber lines to the then existing 150,000 lines within a four-year exclusivity period. Also, the consortium had committed itself to installing 2 public payphones for every 3,000 inhabitants in any area with more than 3,000 persons, amounting to 23,000 payphones over the four year exclusivity period. The use of IP technology in expanding the network is another condition in the licence of TTCL.

If TTCL were able to meet these targets it would fundamentally alter the fixed telephony market. By the end of February, 2004, the third year of its exclusivity, TTCL had been able to install only 80,000 subscriber lines and 2,200 payphones. The reasons that TTCL has advanced for this inability to meet expansion obligations include declining revenues and protection by a formula which made the number of additional lines to be installed in a quarter proportional to the number of lines installed in the previous quarter and to the revenue earned per line. TCRA thinks TTCL has abused the formula and insists on the payment of fines it has imposed. The reasons for TTCL's shortfall in performance can only become clear in the future. What matters now is the steps that will be taken to expand fixed voice services after four year exclusivity period in February 2004.

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<sup>5</sup> Section 42 (1) and 42 (2), TCRA Act, 2003.

<sup>6</sup> Detecon pulled out of the consortium early in the implementation of privatization agreement.

TTCL says it has a capacity of 100, 000 subscriber lines that have not been taken up. Some of these lines may be in areas where there are no persons able or willing to subscribe, particularly given the rapid expansion of cellular mobile services which are more flexible and user-friendly to the low-income population. This excess capacity raises the fundamental question whether the roll-out figures were based on a realistic assessment of the market at the time and what would have happened if TTCL had installed the required capacity. Another thing to consider is that people now increasingly want high speed fixed lines for dial-up Internet services. The speed of current telephone lines in most of Tanzania is slow and not suitable for dial services. It for this reason that the TCC stipulated the use of IP technology, a condition that TTCL has just started to implement.

b) Zanzibar Telecommunications Limited (ZANTEL)

ZANTEL was licensed in 1995 to provide fixed telephony services cellular mobile services on the Island of Zanzibar in competition with TTCL. ZANTEL is owned by a consortium of foreign and local investors in partnership with the Zanzibar Government, which holds 10% shareholding in the company. Since it came into the sector as a new entrant to compete with TTCL it has no roll-out obligations

### **3.2.2 Cellular Mobile Operators**

The first cellular mobile operator, Millcom Tanzania Limited (operating as Mobitel) was licensed by the Tanzania Posts and Telecommunications Corporation, in 1993 before the Tanzania Communications Commission (TCC) was established. The TCC adopted a duopoly strategy for cellular mobile services initially. The country was divided into four zones. Two mobile operators were licensed for each zone and some took licenses for more than one zone. However, the arrangement did not work. The operators concentrated their efforts in the coastal zone, which included the commercial city of Dar es salaam and Zanzibar, as the other appeared not commercially viable at the time. The TCC quickly adapted to the situation and adopted national cellular mobile licenses.

Up to 1998 there were two cellular mobile operators, in Tanzania mainland, i.e. Mobitel and Tritel, and ZANTEL in Zanzibar. Until then there were only 37, 940 cellular mobile subscribers. Inspired by the objectives and targets set by the National Telecommunications Policy 1997, TCC licensed two more mobile operators, Vodacom (T) ltd in 2000 and Celtel (T) Limited in 2001 respectively. As will be seen from Table 1 and Figure 1 below, it is the entrance of these two operators that accelerated the growth of the telecommunications market in Tanzania. Apart from having larger market shares than the others (refer to table 2 and Figure 3) the increased competition from Vodacom and Celtel pushed the two incumbents, Mobitel and ZANTEL, to roll out their networks faster than before in order to raise their subscriber bases.

### **3.2.3 Broadcasting Market Structure**

As a result of liberalization of the broadcasting market in 1993, there are now 30 licensed radio stations, 15 television stations, 17 low power television stations and 17 cable television stations. During the post-monopoly period licenses were based on broadcast activity, for example, radio, television, cable television and dealing in broadcast apparatus. The Information and Broadcasting Policy, 2003 divides broadcasting into two major branches- public broadcasting and commercial broadcasting services.

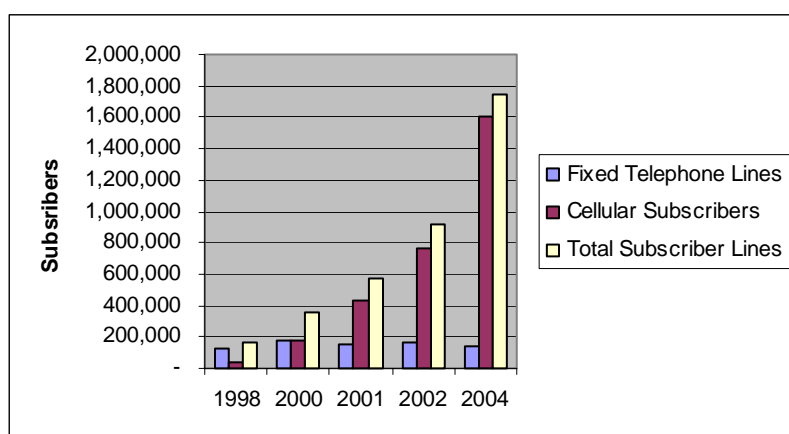


Table 1: Telephone Growth 1998 – 2004 (August)

Indicator	1998	2000	2001	2002	2004
Population (in millions)	30.84	32.65	33.596	34.44	35.00
a) Fixed Telephone subscribers operations (TTCL) <sup>7</sup> - fixed lines per 100	121,769	173,591	148,464	161,590	141,835
b) Mobile subscribers lines	0.39	0.53	0.44	0.47	0.4
Cellular subscriber per 100 persons	37,940	180,200	426,964	760,000	1,600,000
Total telephone and cellular mobile lines	0.12	0.55	1.27	2.21	4.53
Total telephone lines per 100 persons	159,709	353,791	575,428	921,590	1,741,835
	0.51	1.08	1.71	2.68	4.93

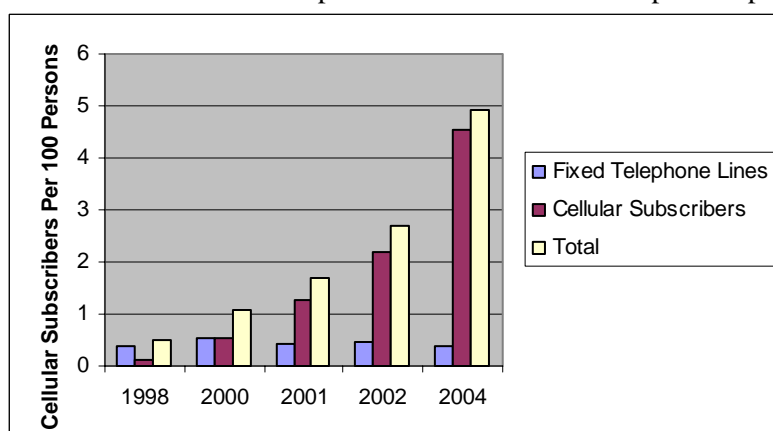
Source: Adapted from ITU and TCRA

Figure 1: Growth of Fixed Telephone & Mobile subscribers lines.



Source: ITU - TCRA

Figure 2: Growth of Fixed Telephone & Mobile Subscribers per 100 persons



Source: ITU - TCRA

<sup>7</sup> Large fluctuations in numbers due to disconnections of no-active subscribers and periodic clean up of records of disconnected customers

Table 2: Market shares by Active Telephone Subscribers

Operator	Number of Subscribers (31 <sup>st</sup> August 2004)	Market Share
TTCL	141,835	8.5
ZANTEL	70,847	4.3
MIC (T) Ltd.	276,755	16.6
Vodacom (T) Ltd	816,169	49.0
Celtel Ltd	360,977	21.6
Total	1,666,583	100.00

Source: TCRA (Interconnection Determination No.1 of 2004)

Figure 3: Market Shares of Operators

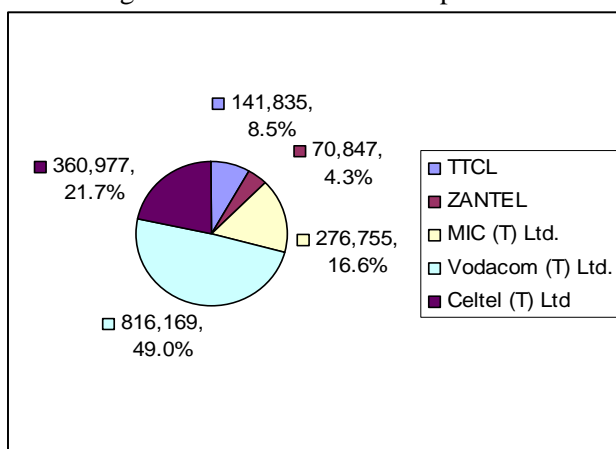


Figure 3 Source: Data from TCRA

## 4 Regulatory Framework

### 4.1 Legislation

As indicated in section 2 of this report, the Tanzania Communications Regulatory Authority (TCRA) Act, 2003, set up the converged institutional regulatory framework. The Act touches on a few basic issues concerning regulation. The detailed regulatory regime is set out in the Tanzania Communications Act, 1993 and the Tanzania Broadcasting Commission Act, 1993. The Competition Act 2002 deals with general competition issues information and communications matters. Having established a converged institutional framework the Government is working on a single piece legislation that will consolidate and update the existing sector legislation to facilitate application of the law in the converged environment. Reference will be made to the relevant legislation in this report as appropriate. This section of the report looks at competition and interconnection issues.

### 4.2 Fair Competition

One of the responsibilities of the former Tanzania Communications Commission was to promote and maintain effective competition in the provision of telecommunications services<sup>8</sup>.

<sup>8</sup> Section 5(i) (b) (k) and 5(2) (d) Tanzania Communications Act, 1993.

Guided by the telecommunications Policy, 1997 TCC introduced a multi-operator environment particularly in the cellular mobile market through licensing. The ensuing competition issues have been handled through the regulation of interconnection rates. More in section 4.3 below.

The TCRA Act, 2003 set parameters within which TCRA should handle competition policy issues and its relationship with fair competition institutions. The Act authorizes the TCRA to deal with all competition issues that arise in the discharge of its responsibilities; to carry out investigations on such issues and to make recommendations to the fair Competition Commission or any other relevant authority. Findings and recommendations may include contravention of the Fair Competition Act, actual or potential competition in markets regulated by TCRA or additional costs in the market likely to be detrimental to the public.<sup>9</sup>

### 4.3 Interconnection and Tariff Regulation

The Tanzania Communications Act, 1993 does not address interconnection issues directly. It does so indirectly by authorizing the regulator to promote competition, to ensure that services are provided efficiently, in accordance with recognized standards and at rates consistent with efficiency and financial viability; and to regulate tariffs with a view to preventing unfair business practices among operators.<sup>10</sup> The (TCC) regulated interconnection issues using these provisions and regulations made under the Act.<sup>11</sup> The Tanzania Communications Regulatory Authority (TCRA) Act, 2003 requires the Authority to carry out reviews of rates of charges and provides guidelines for doing so. The guidelines include taking into account costs, promoting competitive rates to attract the market and relevant benchmark markets for prices, costs and return on investments. Others guidelines are financial implications of determinations by the TCRA, consumer and investor interests, return on investments in the regulated sector and any other relevant factors.<sup>12</sup>

In Tanzania cellular mobile retail tariffs are not regulated directly. They are regulated indirectly through interconnection charges. Considering that the cellular mobile market accounts for about 90% of the entire telecommunications market such regulation is essential. In the substantially liberalized telecommunications market interconnection disputes are bound to occur. In early 2002 disputes between the fixed and mobile operators reached new levels. Some mobile operators were reluctant to interconnect with the then newly-licensed Celtel (T) Limited. There were also problems between the fixed operator TTCL and mobile operators on agreeing on interconnection terms. After a rate determination process, the TCC set an interim termination rate of 17.5 US cents per minute for fixed to mobile and mobile to mobile traffic, from a previous rate of 25 US cents. Following a detailed study that was carried out in 2003, and a public inquiry in September, 2004 TCRA set the interconnection rates shown Table 3.

Table 3: Interconnection Rates in US cents.

	1 <sup>st</sup> October 2004	1 <sup>st</sup> March 2005	1 <sup>st</sup> January 2006	1 <sup>st</sup> January 2007
Mobile Termination	10.0	8.9	7.9	6.9
<u>Fixed Termination</u>				
a) Single Tandem	3.9	3.8	3.6	3.5
b) Double Tandem	5.5	5.3	5.0	4.8

Source: TCRA (Interconnection Determination No... of 2004

<sup>9</sup> Section 19(2) TCRA Act, 2003.

<sup>10</sup> Tanzania Communications Act, 1993, Section 5(1)(b), (c) (k) and (w)

<sup>11</sup> Tanzania Interconnection Regulations, 2003 and Tariff Regulations.

<sup>12</sup> Section 16(2) TCRA Act, 2003.

In making the above determination the TCRA considered all the requirements of the law mentioned above. TCRA adopted the Long Range Incremental Cost (LRIC) rate calculation methodology which was used by the Consultant, Analysis UK, as being the appropriate methodology because it reflects modern equivalent costs of networks; it is forward looking and encourages economic efficiency and new entrants into the market. TCRA noted that all the operators except Vodacom Tanzania had confirmed the Consultant had taken into account all their costs for provision of service and agreed with the proposed interconnection rates. Vodacom had claimed high network roll-out costs which the Inquiry found were associated with the use of a turkey foreign contractor while operators who used local contractors had less network roll-out costs. TCRA found that it would have been unacceptable to use interconnection charges to compensate for inefficient investments.

TCRA concurred with the findings of the Inquiry Panel. The lower interconnection rates would lead to a decrease in retail tariffs; expand the market and subscriber base as a result of increased competition. The Panel had rejected arguments by Vodacom (the de facto dominant operator) that the reduction of interconnection rates would result in high retail tariffs and hinder network expansion.

TCRA considered other rate determination methodologies including bench marking. It noted that bench marking was not suitable because it is subjective and presupposes that countries or operators compared have identical economic and operating environment. TCRA observed that The Consultant had examined interconnection rates from Botswana, Burkina Faso, Gabon, Malawi, Uganda and Zambia. TCRA noted the rates from these countries were lower than those set out in its current determination.

## **5 Licensing Regime**

### **5.1 New Arrangement**

The existing licensing arrangement for electronic communication services is technology based. Telecommunications infrastructure and services are vertically integrated and licensed separately from broadcasting facilities and services which are also vertically integrated. The very limited electronic communications infrastructure and low service penetration referred to in the preceding sections indicate a need for requires a paradigm shift in regulation, in order to optimize the benefits that accrue from the convergence of broadcasting, computing and telecommunications technologies. This shift started at the institutional level with the merger of the communications and broadcasting commissions that resulted in the establishment of TCRA and closer coordination at the level of relevant ministries. The next step, now underway, is the enactment of new electronic communications and postal communications legislation to replace the existing separate communications and broadcasting Acts. Also ongoing is the articulation of a licensing regime by TCRA that will be technology neutral and horizontally integrated in response to the convergence of technology. The aim of the new licensing arrangement is four-fold. One, to enable the utilization of capacity that exists in other sectors and the installation of additional capacity that may be required. Two, to accelerate the sustainable development of a National Communication Infrastructure with adequate bandwidth capacity to meet the short, medium and long term knowledge needs of the country and neighbours. Three, to stimulate service provision through increased liberalization of the telecommunications sub-sector; the broadcasting is fully liberalized already. Four, to ensure universal access to electronic services and applications private partnerships.

The Government and TCRA are taking the exclusivity of TTCL in February 2005 as an important turning point in this transformation.

The Minister has directed TCRA to license existing operators to operate in previously restricted market segments, as well as new operators, immediately upon the expiry of the exclusivity given to TTCL. As part of the preparations TCRA is working on a new licensing regime based on activities rather than on technologies. There will be separate licenses for infrastructure and for services. Owing to political and cultural sensitivity content will be regulated separately. Finally the regime takes into account splitting of markets along the lines indicated in Table 3.

#### **5.1.1. Classes of Licence**

In the present regime services, including internet provision are licensed individually. Radio frequencies are assigned under a general authorization via regulations. In the proposed regime all applications services and support facility-based services will be provided under class licenses. Initially all other facilities based services and network services will be licensed individually. Services that will require individual licenses are core services. Therefore the licenses will confer specific rights and impose obligations e.g. universal access provision and tariffs for such will be controlled. Services that will be authorized under a class license are non-basic services like Internet services, payphones, and value added services. These services will be required to adhere to minimum conditions, mainly of an operational nature. The Regulator has discretion to determine conditions of licences including modifying the conditions. The Communications Act 1993 provides for compensation where modification of terms and conditions of a licence affects an operator adversely. This requirement will be retained in the proposed legislation.

#### **5.1.2 Market Structure**

The existing market structure comprises basic telephone service i.e. local, national long distance and international; radio mobile services; and value added services (including data). The proposed licence regime envisages the split of markets along the lines outlined below and summarized in the Annex to this report.<sup>13</sup>

##### a) Network facility-based service provision

Network facility-based service provision will be a carrier of carriers' market segment. Network facilities will be provided under three (3) clusters of licenses as follows:-

- (i) A carrier facility licence will authorize the construction and provision of carriage facility for transmission such as earth satellite, VSAT, submarine cable, and fiber optic cable and microwave links.

The licensing of transmission facilities will enable the harnessing of excess capacity of companies/organizations which currently own communications facilities for their operations, e.g. railways, gas and electricity companies as well as the military. Some people have raised concern over this proposal. They argue that licensing facilities which were built with public funds or are otherwise heavily subsidized and owned by companies whose core business is not electronic communications, would distort the market to the detriment of communications operators. The Government has been urged to find a way of using this idle capacity without upsetting the market.

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<sup>13</sup> Source TCRA. Presentation by Mr. John A. Mpalika to stakeholder workshop held on 29<sup>th</sup> October 2004 in Dar es Salaam.

Another dimension of this issue is what appears to be an understanding among stakeholders that the government and public entities should assume the responsibility for building a national ICT backbone with adequate bandwidth capacity and geographic coverage for the needs of all sectors and ICT service providers

(ii) Switching/Connectivity Facility Licence

A switching connectivity licence authorizes the construction and provision of connectivity facilities such as exchanges, nodes, servers and routes.

(iii) Support Facility Licence

A support facility-based provision licence authorizes the construction and provision of support or non-core facilities like towers and ducts. The licensing of such facilities aims to solve the environmental problem arising from the proliferation of towers and other support structures especially in urban areas.

b) Network Services

Network services will be provided under a set of two clusters of licences, of fixed and cellular mobile services. The licence for fixed services will authorize the operation of networks and provision of voice and data services. Fixed markets will also be split geographically into international, national, regional and district segments. There will be only one type of licence for operating and providing cellular mobile services nation-wide.

c) Network Applications Services

These will be mainly retail services. They include all valued added services like Internet, payphones, e-applications, Internet telephony, tracking services, mobile virtual network services and trunked radio services and value added services. They will be provided under general authorization.

d) Content Service Provision

Although the Information and Broadcasting Policy, 2003 categorizes broadcasting into two major branches, public and commercial services, in the proposed licence regime content licences will be based on activity, geographical segmentation and community factors. The TCRA considers this approach to be more conducive to universal access to services. Content services will be provided under six (6) clusters of licenses. These are terrestrial television broadcasting, free to air terrestrial sound broadcasting, free to air terrestrial television and terrestrial television subscription broadcasting. Others are cable television; satellite television subscription broadcasting and satellite free sound broadcasting.

### **5.1.3 Liberalization/Competition**

After the expiry of the exclusivity of TTCL in February, 2005 the level of competition in the electronic communications market will be increased. Existing operators will be free to compete in all markets and segments. Domestic markets will be open to competition in all services and areas. The licensing of new GSM 900 cellular mobile operators and 3G frequencies will depend on the availability spectrum resources. International gateways will be licensed on the basis of conditions that will be determined by TCRA. TCRA will invite and process applications so that the new licensing regime will implemented as soon as possible after the expiry of the exclusivity.

#### **5.1.4 Migration to New Regime**

Existing operators will be given a period of one year to migrate to the new regime. They will have an option to continue operating on the existing terms and conditions until expiry of the old licences.

### **5.2 Licence Process**

The existing sector legislation gives the regulator discretion to decide on the appropriate procedure for licensing new entrants. The current licence regulations were made under the sector legislation. They are equally flexible on procedures. They enable the regulator to issue licenses on tender invitation or on submission of an application by a prospective service provider. The TCRA Act introduced a new dimension. It requires the TCRA to conduct an inquiry before issuing, renewing or canceling an individual licence<sup>14</sup>. The proposed Electronic and Postal Communication Act retains this procedure, except that it requires TCRA to publish detailed regulations on the licensing procedures including registration forms for class licenses. The renewal of individual licenses under the proposed Act will be dependent on the fulfillment of licence and statutory obligations as well as continued financial viability.

### **5.3 License Fees**

The TCRA has wide discretion under the existing legislation to determine license fees. There have been concerns by some of the operators on the fees that the former Tanzania Communications Commission set using this discretion. Provisions in the proposed new legislation, stipulates strict parameters and criteria for setting fees. For example, license application fees should be no more than necessary to process the filing of an application. License grant fees are confined to the costs of granting the application. TCRA will be required to issue rules for determining annual fees payable by a licensee. These must be limited to the cost of monitoring the compliance of the licensee with license conditions.

These requirements are intended to ensure transparency in the determination of fees. This is an improvement on the current situation. The determination of fees using the new system is bound to be elaborate and complex and, therefore, quite demanding on the Regulator. The proposed legislative stipulates a similar procedure for determining fees for spectrum and electronic number assignments. An exception is where TCRA considers that an individual spectrum license ought to be under a restricted procedure. In such circumstances the proposed legislation requires the TCRA to publish in advance objective criteria for that purpose. A reasonable interpretation of these provisions would permit the use of auctions although this procedure has never been used in Tanzania.

## **6. Universal Access**

To date the Regulator has implemented universal access provision through license obligations that it has imposed on TTCL as indicated in Section 3.2.1 above. In accordance the National Telecommunication Policy 1997 and the National ICT Policy, in future a. Telecommunication Development Fund will be the main instrument for the implementation of universal access. In the planned legislation it is proposed to establish the Fund as a Universal Access/Service Fund that will cover electronic and postal communications.

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<sup>14</sup> TCRA Act, 2003 Section 18 (2)

The Fund will be under the supervision of TCRA. According to proposal a levy on electronic communications and postal operators based on relevant criteria will be among the sources of funds for the Fund. The organization, management and operation of the fund will be articulated in a regulation to be issued by the Minister after consultation with TCRA.

## **7 Consultation**

### **7.1 General**

The TCRA Act 2003 requires TCRA to consult the public and stakeholders in the ICT sector on a wide range of issues. Public inquiries are the predominant form of public consultations. For instance, TCRA must hold public inquiries before issuing or renewing a license with an exclusivity period or universal service obligation; or regulating any rates.<sup>15</sup>

TCRA has to hold a public inquiry when the Minister directs it to do so. The Minister issued such a direction in September 2004. TCRA had made a determination on interconnection charges through a process that had been started by the former Tanzania Communications Commission. TCRA completed the process and published the determination without holding an inquiry. Vodacom Tanzania Limited raised an objection on the non-fulfillment of this procedural requirement. The Minister intervened by ordering TCRA to hold the inquiry that led to the Determination on Interconnection charges referred to earlier in this report. The result remained the same. But the technical requirements had been fulfilled and Vodacom had another opportunity to argue its case on a substantive issue regarding costs although unsuccessfully.

The TCRA Act requires TCRA to establish annually a programme for consultation with consumers and industry aimed at enhancing effectiveness in the performance of its functions.<sup>16</sup> These provisions underline the importance that the policy makers place on transparency and involvement of the public in regulatory decision-making. They also highlight the high standard that the law has set for the Regulator in these matters. That these requirements are a challenge to the Regulator is apparent from the above-mentioned event where TCRA had to repeat an interconnection rate determination process to correct a procedural defect.

### **7.2 Consumer Consultative Council**

The TCRA Act has established a forum called the TCRA Consumer Consultative Council. The Council consists of between seven and ten members representing the interests of the private sector and consumers. The members are appointed by the Minister from a list of nominees recommended by members of the business community or an organization recognized as representing private sector interests. The Act requires the Minister to consult widely before making the appointments. The functions of the Council encompass representing the interests of consumers through submissions to and consultations with TCRA, the Minister and sector Ministers; receiving and disseminating information and views of consumers on communications goods and services. Additionally, the Council is required to consult with industry, the Government and other consumer groups. Allocations by parliament, contributions from TCRA and donations are among the sources of funds for the Council.

With the trend towards full competition in the Tanzania electronic communications market, the Council will be an important vehicle for assisting the regulator in looking after the interests not only of consumers but of the suppliers as well. The Council is less than a year since it was set up. It is too early to have had significant impact.

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<sup>15</sup> Note: Section 18(2) of the TCRA Act 2003.

<sup>16</sup> Note: Section 22, TCRA Act, 2003.



However, in accordance with the TCRA Act, the Council made a nomination to the Minister for appointment to the TCRA Board of Directors. The Council is an active participant in the stakeholders meetings, and other public consultations process of TCRA.

## **8 Conclusion**

Private sector participation in telecommunications development has worked reasonably well and shows enormous promise. Competition especially in data and cellular mobile services has produced better measurable results than privatization of TTCL. Privatization has not been such failure as some people think. One of the objectives of the Government in privatizing was to reduce its participation in the sector in order to encourage competition; this is being realized gradually.

While the National Telecommunication Policy, 1997 lay emphasis on increasing access to basic services, the overarching aim of the National ICT Policy is access to broadband services applications to drive development in all social and economic sectors given the current low availability of ICT infrastructure and services. A paradigm shift in promoting telecommunications development and ICT applications is necessary. A number of steps in this direction, including the merger previous communications and broadcasting regulators into a converged electronics and postal services, regulator have been taken. Others for example, the adoption of a converged legislation and regulations, and preparations by the TCRA to increase competition through an innovative licensing approach are ongoing.

The current legal and regulatory framework provides greater transparency, and stakeholder participation in regulatory policy and rule-making as well as greater accountability for the regulator's actions than the previous one. It also gives the Minister for TCRA and other communications sector Ministers greater say in regulatory policy in line with the National ICT Policy, which requires the Government to closely monitor the implementation in order to obtain timely feedback and to make adjustments to strategies where necessary. But it increases the risks of eroding regulatory independence and delays in regulatory decision-making. In October 2004 stakeholders endorsed a recommendation that a provision be included in the proposed legislation that the views of the Ministers in response to consultation by the TCRA on licensing matters and on rules should not be binding. If this proposal is adopted it will reduce such risks.

The new institutional, policy and regulatory framework poses a number of challenges to all major actors in the ICT sector. Owing to the cross-cutting nature of ICT, coordination at ministerial level and between the TCRA and relevant ministries is complex, with potential for conflict. The challenge is to minimize conflict and to it well it occurs to avoid adverse effects on the achievements of the set objectives. There are areas under the National ICT Policy, for example universal service/access, in which the Government must define strategies and targets to enable the TCRA to act effectively. Delays in articulating such strategies will further affect operationalization of the Universal Access Fund which was first contemplated in 1997.

The proposed licensing regime, which takes into account convergence but splits markets not only geographically but also along service lines, will encourage the entrance of operators and service providers into niche markets. There is a need to keep the regime flexible to enable the TCRA. make timely adjustments planned the arrangements does not work as intended. There will not be such flexibility if a proposal to reflect the split of markets in into facilities, network services and applications services in the planned legislation is not couched properly.

Although it is not specifically stated in the proposed legislation the understanding is that a company may be issued licences for carrying out operations and services in several market segments. This approach will enhance the exploitation of convergence of technologies by promoting the convergence of services. A unified licence would be ideal for a company which wishes to operator in a number of market segments, as it would minimize the costs and logistical implications of obtaining multiple licences. If provisions in the proposed legislation which limit licence fees to the regulatory costs of specific licence activities are adopted they will go a long way in addressing the issue of multiple licences.

The proposed license regime resembles those recently adopted by Malaysia and Mauritius. Both countries are among developing countries that are at an advanced stage of liberalizing their telecommunications markets and addressing convergence. The similarity in licensing approaches reflects the ongoing sharing of experience among ITU members

The enhanced transparency required of the regulator is couched in mandatory terms rather than in a permissive manner, which would give flexibility to the Regulator to build up the required skills and capacity progressively. This is a great challenge to the regulator. TCRA is addressing the challenge through a recruitment drive to fill staff positions in a converged internal organization structure as well as intensive training programmes. The TCRA also needs to ensure institutional stability, credibility and ability to secure the retention of competent staff in which it will have invested heavily.

The existing operators will be under great competitive pressure as the level of competition is likely to increase rapidly after the expiry of the exclusivity as the old operators are allowed to compete in all market segments and new operators are licensed.

If all the stakeholders discharge their respective roles well, the prospects for the achievement of the aspirations and the ambitious objectives of the National ICT Policy are high.

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<b>Annex Tanzania's Proposed Electronic Communication Services Licences</b>			
Facilities-based Service Provision Licence <sup>17</sup>	Network Service Provision Licence <sup>18</sup>	Network Application Service Provision Licence <sup>19</sup>	Content Application Service Provision Licence <sup>20</sup>
1. International Carrier - Facilities include Earth Satellite; VSAT; Submarine Cable	1. International Fixed Service Provider - PSTN; Data	1. Internet Service Provider (Data, Internet Services)	1. International Subscription TV Satellite BC <sup>21</sup>
2. National Carrier - Facilities include: Microwave links; Cable; Fiber Optic	2. National Fixed Service Provider - PSTN; Data	2. Pay Phone Operator	2. International Free Sound Satellite BC
3. Regional Carrier - Facilities include: Microwave links; Cable; Fiber Optic	3. Regional Fixed Service Provider - PSTN; Data	3. Internet Telephone (VoIP) Service Provider	3. International Terrestrial Free TV BC without POP <sup>22</sup>
4. District Carrier - Facilities include: Microwave links; Cable; Fiber Optic	4. District Fixed Service Provider - PSTN; Data	4. Trunked Radio Service Provider	4. International Terrestrial Free Sound BC without POP
5. International Connectivity Provider - Facilities include Exchange; Node; Server	5. National Mobile Service Provider – Cellular Mobile	5. Mobile Virtual Network Service Provider	5. International Terrestrial Subscription TV BC
6. National Connectivity Provider - Facilities include: Exchange; Nodes; Access facilities		6. E-applications Service Provider	6. International Terrestrial Subscription Sound BC
7. Regional Connectivity Provider - Facilities include: Exchange; Nodes; Access facilities		7. Directory Service Provider	7. National Terrestrial Free TV BC
8. District Connectivity Provider - Facilities include Exchange; Nodes; Access facilities		8. Radio Frequency License	8. National Terrestrial Subscription TV BC

<sup>17</sup> Individual licences except for Nos. 9, 10 and 11

<sup>18</sup> All licences to be issued individually, initially

<sup>19</sup> Authorization under class licence or regulations

<sup>20</sup> All licences to be issued individually, initially

<sup>21</sup> BC: Broadcasting

<sup>22</sup> POP: Point of Presence

9. National Support Provider - Facilities include: Towers; Ducts		9. Tracking Service Provider	9. National Subscription Satellite TV BC
10. Regional Support Based Facility Provider - Towers; Ducts		10. Non-Commercial Internet Service Provider	10. National Free Sound Satellite BC without POP
11. District Support Provider - Facilities include: Towers; Ducts			11. National Terrestrial Free Sound BC
			12. Regional Terrestrial Free TV BC
			13. Regional Terrestrial Free Sound BC
			14. Regional Terrestrial Subscription TV BC
			15. Regional Terrestrial Subscription Sound TV BC
			16. District Terrestrial Free TV BC
			17. District Terrestrial Free Sound BC
			18. District Terrestrial Subscription TV BC
			19. District Terrestrial Subscription Sound BC
			20. National Cable TV BC
			21. Regional Cable TV BC
			22. District Cable TV BC

**LICENSING IN THE ERA OF LIBERALIZATION AND  
CONVERGENCE**

**THE CASE STUDY OF  
THE REPUBLIC OF UGANDA**

**INTERNATIONAL TELECOMMUNICATION UNION**

The Case study was conducted by Simon Moshiro.

During the field study the author met and interviewed the Ugandan Communication Commission, Ministry of Works, Housing and Communications, industry and consumer representatives. This study will be useful not only to regulatory authorities but also to every one concerned with the telecommunications market.

The author wishes to sincerely thank the Ugandan Communications Commission and in particular Mr. Patrick Mwesigwa for his invaluable assistance. The author wishes to thank everyone in the public and private sector who gave him their valuable time.

The views expressed in this report are those of the author and do not necessary reflect the views of the ITU or its members or the Ugandan Government.

# 1 Introduction

## 1.1 Purpose of the study

This case study forms part of a series on licensing in the era of liberalization and convergence. Conducted by the Regulatory Reform Unit (RRU) of the Telecommunications Development Bureau (BDT) of the International Telecommunication Union (ITU), this series of case studies aims to respond to a growing demand from the ITU Membership for best practices guidelines on this crucial policy and regulatory aspect that could be of assistance to regulators who are considering a shift from a monopoly or limited competition environment to a fully liberalized one. The case study will also form part of the 6<sup>th</sup> edition of the ITU publication of “Trends in Telecommunication Reform 2004 – Licensing in an Era of Convergence” and will be showcased at the 5<sup>th</sup> annual Global Symposium for Regulators (Geneva, 8-10 December 2004).

Uganda was selected because of its rapid development in the telecommunication sector through the implementation of a private sector participation policy including innovative licensing approaches in promoting access to telecommunications in rural areas. This transformation has seen Uganda’s telephone service provision expand from 68,000 to over 840,000 customers from 1998 to 2003, thus increasing penetration rates from 0.24 to 3.5 total telephone subscribers per hundred inhabitants over the same period. This reflects not only the policy changes that are taking place in African countries but also in telecommunication markets world-wide. Uganda is one of the many African countries that have adopted a clear policy, including a specific rural telecommunications policy, for the development of the telecommunication sector.

This case study report looks at Uganda’s progress from a monopolistic telecommunication market towards a substantially liberalized market. The report will particularly examine Uganda’s policy and regulatory framework and its implementation through flexible licensing approaches. It will also highlight benefits and challenges.

### Country background

Situated in East Africa, Uganda is a member of the East African Community comprising of Kenya, Uganda and Tanzania.

It has a landmass of 241,038 square kilometers and an estimated population of 25.6 million. The country is endowed with rich natural resources and Africa in the exportation of tin and cobalt. Its GDP was US\$ 6,220.8 million in 2002<sup>1</sup>.



At the end of 2003 there were 65,793 fixed telephone lines and 843,356 mobile subscribers. This compares with 57,366 telephone lines and 12,500 mobile lines at the end of 1998<sup>2</sup>.

<sup>1</sup> Source: ITU (African Telecommunication Indicators, 2004)

<sup>2</sup> Source: UCC

## **2 Development objectives and structure**

This section summarizes Uganda's telecommunication development objectives appearing in policy statements and legislation. It also looks at the industry structure adopted for the implementation of these policies.

### **2.1 Policy objectives and strategies**

The transformation of the telecommunications sector in Uganda started with economic reforms that began in 1987, following nearly two decades of civil war and political instability. In line with the private sector participation strategies, the first mobile operator, Celtel (U) Limited, which was also privately owned, was licensed in 1993 to supplement the services of the then state-owned monopoly operator, Uganda Posts and Telecommunications Corporation (UPTC). But it was the telecommunications sector reforms initiated in 1996 that effectively changed the telecommunications landscape.

The sector minister published the Telecommunications Policy in 1996. The overarching objective of the policy was to increase the level of telecommunications service penetration and availability at affordable prices. Specific objectives included increasing tele-density from 0.26 to 2 lines per 100 persons within a 5-year period and the introduction of additional services; increasing quality and meeting un-satisfied customer demand. The other objectives included increasing geographical coverage and ensuring access to telecommunications services in rural areas. The policy statement also defined an implementation strategy. The strategy entailed the privatization of the incumbent monopoly operator, Uganda Telecom Limited (UTL); the establishment of an enabling regulatory framework and the introduction of competition. As part of the regulatory framework the Uganda Communications Act was passed in 1997 and the Uganda Communications Commission (UCC) was established in 1998.

The policy and the Act mandated UCC to promote access to communications in rural areas and to set up a fund for that purpose.

In 2001 UCC issued a Rural Communications Development Policy. The thrust of the policy was to expand access to telecommunications infrastructure and services to rural communities.

In November 2003 Uganda also adopted a National Information and Communications Technologies (ICT) Policy. The policy deals with information and electronic communications in a holistic manner. Currently, implementation is in a very early stage and most of the issues that are currently dealt with already fall within the scope of the 1996 Telecommunications Policy, the Rural Communications Development Policy and associated legislation.

## **3 Industry structure**

### **3.1 Policy and Regulatory Institutions**

In line with the 1996 Telecommunications Policy, a well defined policy and regulatory structure has been put in place. The structure comprises the Ministry of Works, Housing and Communications and the Ugandan Communications Commission.

#### **3.1.1 Responsibilities of the Minister**

The Minister is responsible for the formulation, determination and monitoring of policy; the negotiation of international treaties and the representation of the country in international organizations and fora. The Minister grants major licences.



### 3.1.2 The Communications Commission

UCC is responsible for the regulatory oversight of the communications sector. It may be noted that UCC is responsible for the regulation of both telecommunications and postal services. The functions of UCC relating to telecommunications are summarized in Box 1

**Box 1: The functions of UCC** (summarized from section 4 of the Uganda Communications Act, 1997)

- (a) to monitor, inspect, licence and regulate communications services;
- (b) to allocate and licence the use of radio frequency spectrum;
- (c) to make recommendations to the Minister in relation to the issuance of major licences under this Act;
- (d) to supervise and enforce the conditions of those licences;
- (e) to establish a tariff system to protect consumers from excessive tariff increases and avoid unfair tariff competition;
- (f) to set national communications standards;
- (g) to ensure compliance with national and international communications standards;
- (h) to receive and investigate complaints relating to communications services and to take necessary action upon them;
- (i) to promote the interests of consumers and operators as regards the quality of communications services and equipment;
- (j) to promote research into the development and use of new communications techniques;
- (l) to improve communications services generally and to ensure equitable distribution of services throughout the country;
- (m) to construct facilities for the provisions of services regulated by UCC;
- (n) to promote competition, including the protection of operations from acts and practices of other operators that are damaging to competition, and to facilitate the entry into markets of new and modern systems and services;
- (o) to regulate interconnection and access systems between operators and users of telecommunications services;
- (p) to comply with policy guidelines on sector policy given by the Minister, in accordance with section 12 of this Act;
- (q) to advise the Government on communications policies and legislative measures in respect of the Provision and operation of communication services;
- (r) to represent Uganda's communications sector at national and international fora and organizations relating to its functions and to coordinate the participation of any interested groups;
- (s) to represent the Government at international conferences and other organizations in the field of communications services to which Uganda is a member;
- (t) to collaborate with educational institutions in order to promote specialized education in the field of communications;
- (u) to establish, manage and operate a communications services training centre.

## 3.2 Operators and Service Providers

Uganda adopted limited competition initially as the key strategy for achieving its telecommunications policy objectives. Licensing was the instrument that was used in putting in place an appropriate market structure. Services are provided by three major operators and several minor operators. Two of the major operators and some of the minor operators were licensed before UCC was established. But regulatory oversight of the market by UCC ensured the benefits of competition.

### **3.2.1 Major Operators**

#### **(a) Uganda Telecom Limited (UTL)**

The Uganda Telecom Limited (UTL) is the First National Operator. It was incorporated in 1998 upon the restructuring of its predecessor, the Uganda Posts and Telecommunications Corporation, which was the monopoly provider of posts and telecommunications services. UTL was privatized in 2000. A consortium, UCOM, consisting of Telecel Limited of Switzerland, Detecon of Germany and Orascom of Egypt acquired 51% of UTL's shareholding, while the Uganda Government retained 49%. Subsequently, Orascom sold its shares to Telecel.

UTL operated under statutory authorization until June 2000 when it was issued a licence. The licence authorizes UTL to provide all telecommunications services. The licence requires UTL to add 100,000 subscriber lines including 3000 payphones to its network within five years. At the end of August 2004 UTL had 65,000 fixed line subscribers and 250,000 mobile subscribers<sup>3</sup>.

#### **(b) MTN (U) Limited**

MTN (U) Limited, a wholly private-owned company, was licensed in 1998 as the Second National Operator. Its licence authorizes the provision of all telecommunications services. Its roll-out obligation is 89,600 lines including 2,000 payphones within five years. The licence was issued by the sector ministry, before UCC was established. When UCC came on the scene it specified that the 89,600 lines roll-out obligation referred to fixed telephony. Eventually UCC was persuaded to accept the interpretation that the figure applied to voice telephony regardless of mode of delivery. This compromise took into account the increasingly acceptable notion of cellular mobile telephony services substituting for fixed telephony, especially in Africa. Furthermore, MTN argued that technological advances make it possible for cellular mobile technologies to provide the same services as fixed telephone technologies, for example data. Also, because of their flexibility mobile services serve more people than fixed access.

MTN has installed 15,000 fixed lines using fixed wireless, optical fibre, traditional copper and fixed cellular terminals (FCT). They are intended primarily for dial-up Internet services. The mobile subscriber base of MTN was 600,000 in August 2004<sup>4</sup>.

#### **(c) Celtel (U) Limited**

Celtel (U) Limited, a private-owned company, is currently the only operator with a licence that limits its activities to the provision of cellular mobile telephone services only. It was the first company that was licensed to provide cellular mobile services in the country. Licensed in 1993, it started operations in 1995. UCC re-issued the licence in 2001.

### **3.4 Network growth and service penetration**

Telecommunications services have been expanded all over the country since 1998. Then coverage was concentrated in cities and major towns. Now all the country's 56 districts have a point of presence for the delivery of telecommunications services. More than 520 of the 931 sub-counties have a point of presence.

Mobile lines have increased from 12,500 in 1998 to 872,704 in 2004. Fixed lines have increased from 57,366 lines in 1998 to 67,234 in 2004. Total teledensity (fixed and mobile) is estimated at 3.5 and fixed line teledensity is 0.27. (See Table 1 and Figures 1 and 2)

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<sup>3</sup> Source: UTL

<sup>4</sup> Source: MTN (U) Limited

Table 1 Telephone service provision 1998- 2004. Source: UCC

Years	1998	1999	2000	2001	2002	2003	2004
Fixed Lines	57,366	57,239	61,678	56,149	57,239	65,793	67,234
Mobile Lines	12,500	72,602	188,568	236,034	494,095	777,563	872,704
Total fixed & mobile	69,866	129,841	250,246	292,183	551,334	843,356	939,938

Figure 1: Telephone service provision 1998- 2004: Source UCC

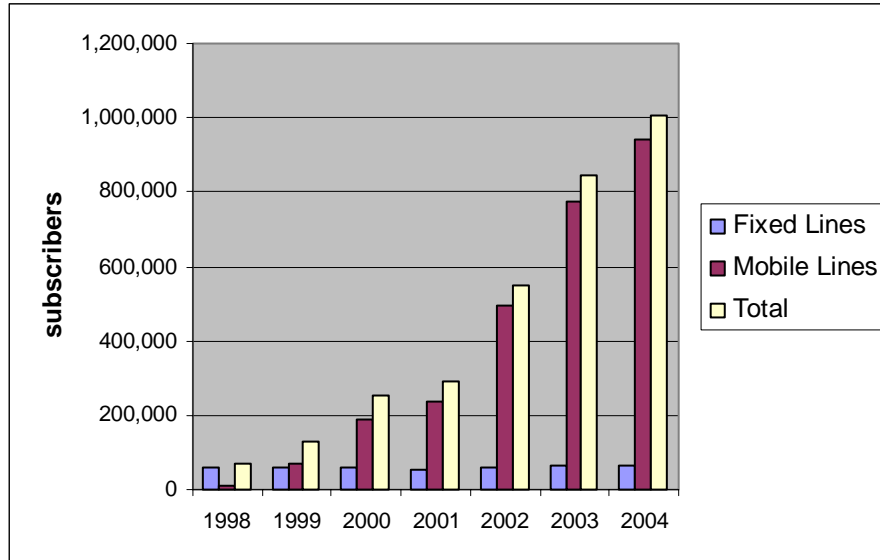
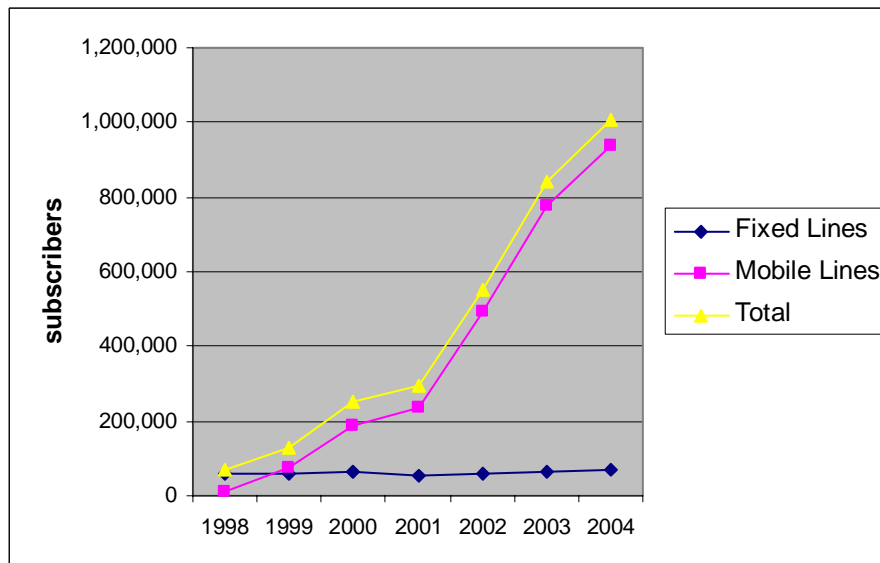


Figure 2: Telephone service provision 1998-2004 Source: UCC



In general, lower tariffs for end-users are among the most important benefits of competition (see Figures 3 and 4). Like other countries, Uganda has experienced a decline in rates for international calls over the fixed line network. This trend has also been experienced in East Africa and the Common Market for Eastern and Southern African (COMESA) countries.

Figure 3: Movement of Fixed Tariffs in Uganda: Source: UCC

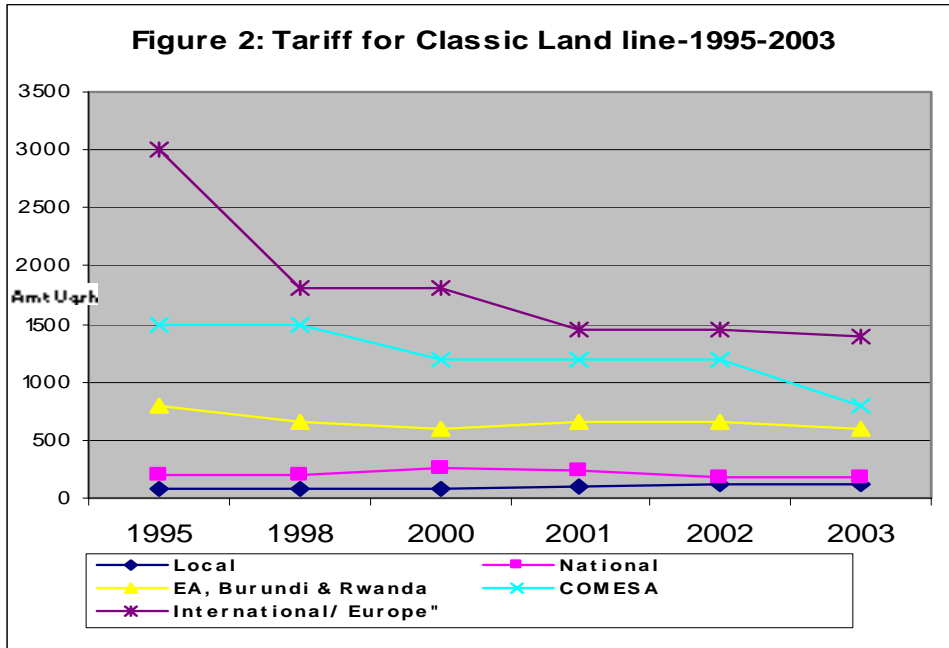
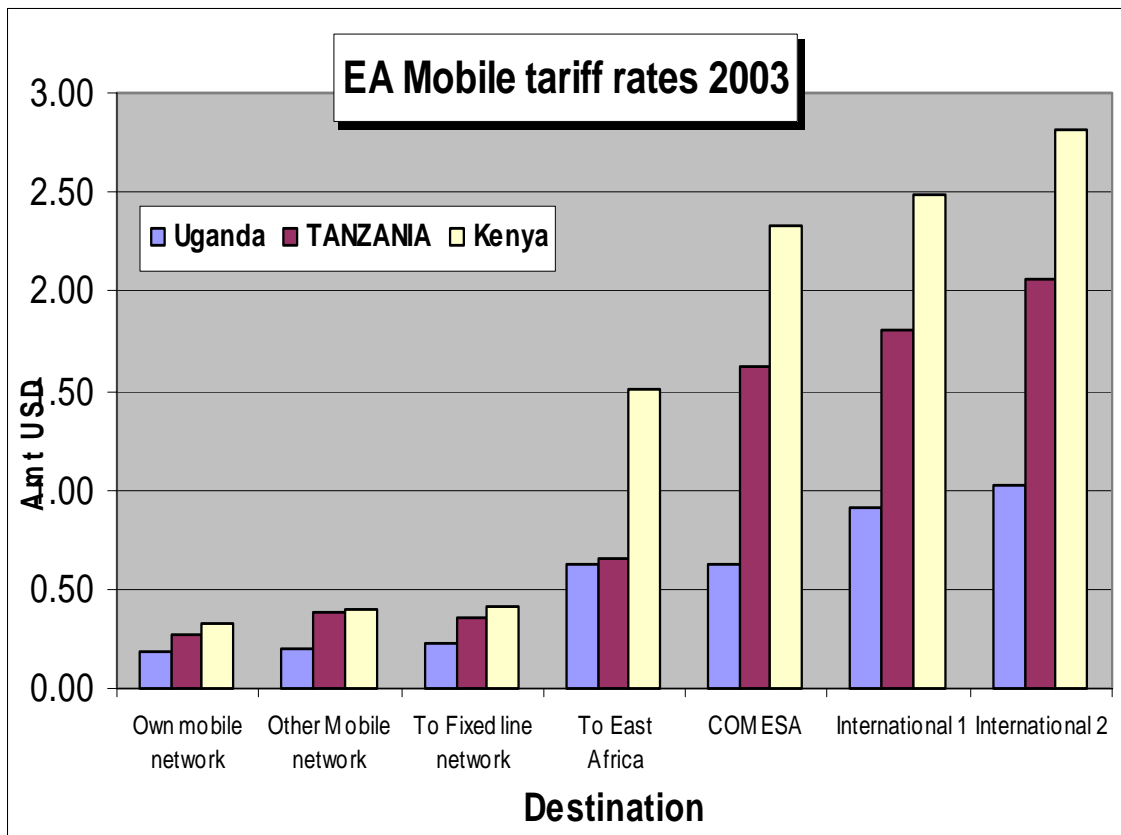


Figure 4: East Africa mobile tariffs rate 2003. Source: UCC



## 4.1 Legislation

The key elements of a regulatory regime are an enabling legislation, regulatory institutions and regulatory instruments that a regulatory institution use in exercising their mandates. The functions of the regulator, UCC, have been summarized in Box 1 above.

The Communications Act 1997 is the central piece of legislation that gives legal effect to the Telecommunications Policy 1996. The Act deals with both the postal and telecommunications sectors. For the purpose of this report, reference is made only to the telecommunication sector whenever it is practical to effect such a separation. This section looks at the enabling provisions of the legislation and some of the key areas of regulatory intervention it deals with.

The Act covers a wide range of policy and regulatory issues on the development of the telecommunication sector. The objectives of the Act are reproduced in Box 2.

### Box 2: Objectives of the Communications Act 1997

#### Section 3

The objectives of this act are to develop a modern communications sector and infrastructure by:-

- (a) enhancing national coverage of communications services and products, with emphasis on provision of communications services;
- (b) expanding the existing variety of communications services available in Uganda to include modern and innovative postal and telecommunications services;
- (c) reducing Government direct role as an operator in the sector;
- (d) encouraging the participation of private investors in the development of the sector;
- (e) introducing, encouraging and enabling competition in the sector through regulation and licensing competitive operators to achieve rapid network expansion, standardization as well as operation of competitively priced, quality services; and
- (f) minimizing all direct and indirect subsidies paid by Government to the communications sector and for communications services;
- (g) establishing and administering a fund for rural communications development.

## 4.2 Regulatory and related institutions

The functions of the Communications Commission (UCC) have been summarized in Box 1 above. The role of the Minister in policy making as well as in issuing major licences has been alluded to above. In addition to these institutions, the Act establishes a Tribunal constituting of a Judge and two other members appointed by the country's President on the recommendation of the Judicial Service Commission. The Tribunal has jurisdiction to decide appeals from decisions of the Minister and UCC and to adjudicate on all matters pertaining to the communications sector. The only exception is criminal cases. The Tribunal is yet to be operationalised.

## 4.3 Licensing Regime

**4.3.1** A licence is necessary for the operation of telecommunications facilities and the provision of services. There are two categories of licences. A major licence may authorize the provision of one or a combination of the following services: local, long distance or international telephone services; trunk capacity resale; rural telecommunications; cellular or mobile services. A minor licence authorizes the provision of other services such as store and forward messaging

services; paging services and private telecommunications services. The Act allows UCC to establish classes of licences and, by regulations, to exempt services from licensing.

The Minister grants major licences, on the recommendation of UCC. UCC grants the minor licences. However, UCC determines the terms and conditions for all licences. In practice, UCC initiates the licensing process and submits recommendations to the Minister. After approval by the Minister the licence documents are signed by both the Minister and UCC. The close ministerial involvement in the implementation of liberalization was necessary during the initial stages of the reform process. But the sector has now been substantially liberalized and strategies for achieving telecommunications policy objectives well defined and tested. There would appear to be no need for continued ministerial involvement in the purely regulatory activity of licensing especially if Uganda steps up its liberalization process. Policy guidelines by the Minister to UCC on licensing and related issues would be sufficient. Nevertheless, the current practice has not raised any significant problems.

#### **4.3.2 Major Licences**

Some of the operators were in the market before the licence regime envisaged by the Act was in place. But judicious oversight by UCC and the licensing of new operators and service providers ensured order and efficiency in service provision. The types of major licences that have been issued are summarized below.

a) National Telecom Operator

Holders of this type of licence are allowed to provide the full range of telecommunication services. The licence has only been issued to two companies, the partially privatised Uganda Telecom Limited (UTL) and MTN (U) Ltd.

An exclusivity period was granted to these two operators as an incentive to attract investment. This provision limits competition in basic telephony, cellular telecommunications services and satellite services to these operators and other existing service providers for a period of five years expiring on 25<sup>th</sup> July 2005. In addition to the roll-out obligations mentioned earlier, the licences contain service quality and other requirements.

b) Cellular Telecommunications Service Provider

The initial licence was issued in 1993 to Celtel (U) Limited. The company remains the only holder of this licence. UCC noted that although cellular mobile service was common to the two national operators and Celtel their conditions for operating were not uniform. This licence was reviewed in 2001 to bring it in line with the provisions of the Act to ensure fair competition. Roll-out obligations and other important conditions that had been omitted from the initial licence were included.

c) Third Party Network Service Providers.

These provide private voice and data services for businesses and organizations. The issuance of these licences has been suspended for the exclusivity period granted to the National Telecom Operators. At present there are 3 providers who were licensed before the commencement of the exclusivity period. They are International Telecom Limited, Afsat Communications (U) Limited and Pan African Communications Network (U) Limited. Their licences authorize them to provide service in Uganda and to destinations beyond Uganda. The existing licensees continue to enjoy their rights, to the extent that they do not unduly encroach on the rights of the operators who have exclusivity. This one of the challenges that faced UCC, to assist in reaching compromises acceptable to all the operators concerned.

d) Data gateways

This is the licence issued to Internet Access Providers (ISPs) who prefer to have their own gateways. However, due to the exclusivity period restrictions, the licensing of independent international data gateways has been suspended. Therefore, the ISPs who were licensed before the exclusivity period that had no gateways and those who were licensed during the exclusivity period are required to establish links to the international backbone through licensed providers.

e) Rural Communications Licence

This is a new licence intended for the implementation of the Rural Communications Development Policy. Refer to section 5 below.

### **4.3.3 Minor Licences**

a) Internet Access Service Licence.

This is the licence issued to Internet Access Providers (ISPs). One of the challenges that UCC encountered has been ensuring fair competition between ISPs and the national operators who provide the same service. Such efforts have resulted in the introduction of flat rate dial-up access available country wide to all customers of different ISPs using the networks of the national operators.

Dial-up Internet access services have faced significant competition from wireless access especially among corporate and business clients. UCC currently authorises ISPs to use the 2.4GHz band for commercial service provision. However, disputes have often occurred over the use of amplifiers by some of the ISPs, which have caused problems to others. To foster the use of Internet services UCC has allowed the ISPs freedom of choice of technology to access their clients within the terms of the exclusivity period.

An Internet exchange point (IXP) has been established in the country to improve bandwidth utilization; encourage local Internet applications and reduce the costs of accessing the Internet. To support the IXP UCC has developed guidelines for its operation and waived licence fees.

b) Other Service Providers

Service providers in the category include the public pay communications services. These are essentially resale operators providing payphone, fax bureaux and cyber café services. These operate on different scales with some having only one phone or a computer while others having as many as twenty computers and/or several phone lines. Growth in this type of service provision has been phenomenal due to the low level of capital required to start up and the high demand for the services countrywide. Originally, UCC licensed these services but later they were deregulated and exempted from paying fees. However, UCC mandates operational guidelines to these service providers.

## **4.4 Economic Regulation**

Ensuring fair competition, network interconnection and tariff regulation are essential for the achievement of telecommunication policy objectives. This section looks at these aspects in the context of legislation and practice

#### **4.4.1 Fair Competition**

There is no general competition law in Uganda. The Communications Act acts as the basic law on competition for the sector for the time being. The Act enjoins UCC to promote, develop and enforce fair competition and ensure the equality of treatment among all operators and service providers. It makes the standard prohibitions regarding abuse of dominant position, agreements or concerted conduct that restricts or distorts competition and anti-competitive mergers or acquisitions. The Act specifically prohibits cross-ownership between the two national operators, or their affiliates. The Act gives UCC the usual flexibility to permit anti-competitive conduct if it is indispensable to the achievement of the telecommunication development objectives and does not lead to a substantial reduction in competition.<sup>5</sup>

As part of the implementation of the requirements of the Act, clauses prohibiting the abuse of dominant position and unfair cross-subsidies have been included in the licences of major operators. Unbundling requirements for equipment and services for basic telephone service have been included in the licences of the two national operators. Also stated in those licences is a clause requiring equal or identical treatment between the rates, terms and conditions for national operators own resale services to its affiliates and those that it offers to other telecommunications operators and service providers

UCC is empowered to investigate in a transparent manner, and on its own initiative, acts of anti-competitive conduct. It is allowed to make appropriate orders including the imposition of a fine of up to 10% of an operator's annual turnover. UCC has also published competition regulations.

Nevertheless, there have been concerns by Internet Access Providers (ISP) about anti-competitive behavior by the two national operators who also provide Internet access and services. The concerns centre on cross-subsidization by the two operators and resale prices to the ISPs which are priced at the same rates as dial-up rates to end-user customers. UCC is currently dealing with these issues. However, it will take time for UCC to establish the mechanisms and the necessary capacity for promoting and monitoring fair competition.

#### **4.4.2 Interconnection**

The Communications Act requires telecommunications operators to enter into interconnection agreements. Primarily, such agreements are negotiated between the interested parties, but they must be submitted to UCC for approval. The Act authorises UCC to arbitrate between the parties to facilitate agreement and to impose agreements or terms and conditions where the parties fail to agree. Additionally, the Act requires UCC to issue minimum guidelines to operators for negotiating interconnection agreements<sup>6</sup>. UCC has a prepared model interconnection agreement for this purpose. For the national operators the model agreement is attached to their licences and it serves as a default agreement. The model provides a starting point. Crucial and contentious terms and conditions like charges and technical requirements still have to be agreed upon between the parties or determined by the Commission.

The only major disagreement on some of the interconnection issues has been between UTL and Celtel (U) Limited and UCC is still handling the problem. They have been unable to agree on interconnection charges. Interconnection problems between the two operators pre-date the establishment of UCC. The intervention of UCC helped settlement of longstanding termination dues payments between them.

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<sup>5</sup> : Sections 57-59, Communications Act, 1997.

<sup>6</sup> Section 63



### 4.4.3 Tariff Regulation

The Communications Act contemplates two approaches to regulating prices for telecommunications services. They are competition and regulatory intervention. The Act requires UCC to establish a system to protect consumers from excessive tariff increases and avoid unfair tariff competition among operators and service providers<sup>7</sup>

In services where there is sufficient competition, for example cellular mobile and trunk capacity resale, UCC does not regulate tariffs although they are part of services that enjoy exclusivity. Also services that are authorized under class licences, like public payphone, Internet and value added services, are not regulated. However, cellular mobile service operators are required to file their rates with UCC and to publish them.

Services provided on an exclusive basis, namely, installation and connection charges; monthly and exchange line rental local calls, national and long distance as well as international fixed telephone calls are regulated. These services are provided by the national telecommunications operators. Regulation is through price cap formulas, issued by UCC, based on three baskets.

Box 3: Telephone services Price Cap Baskets

Basket	Basket Composition
<b>Basket 1:</b>  Local Service and Domestic Long Distance Service	Basket 1 includes the following services:  Telephone service installation and connection charges (non-recurring) Exchange line rental charge (recurring) Local Calling unit charges (used-based) Domestic long distance switched voice and data services (usage-based)
<b>Basket 2:</b>  International Long Distance Services – East Africa and COMESA*	Basket 2 includes the following long distance services for countries in the East African and COMESA groupings:  International long distance switched voice data services (usage-based) This basket applies to all international long distance calls to countries in the East African and COMESA groupings regardless of the technology or medium used to originate the call, including traditional telephony, wireless telephony, and public telephony
<b>Basket 3:</b>  International Long Distance Services to All Other Destinations	Basket 3 includes the following international long distance services for All Other Destinations:  International long distance switched voice data services (usage-based)

Source: UCC

\* Common Market for Eastern and Southern Africa

This rate regulation mechanism will be reviewed after July, 2005 when the exclusivity period ends.

<sup>7</sup> Section 5 (f) of the Communications Act, 1997

It would appear that UCC has to intervene, if necessary informally, even where services have been deregulated, in order to protect service providers from unfair competition among themselves. For example, a major problem that has been encountered to date revolves around the management of tariff rate competition among public payphone/fax bureaux and cyber cafes. The numerous bureaux that operate on different scales and which have different modes of accessing network services result in varying costs of providing services. As a result, some are driven by competition to charge tariffs below cost. The mandate of UCC to regulate tariffs appears to extend to this situation although UCC believes that fair competition will take care of such problems and that its intervention through tariff regulation is not necessary.

Balancing the interests of consumers and of operators or service providers is often a challenge. One of the national operators proposed an increase in tariffs for basic service to take into account costs that included advertising and other promotional items. UCC was not convinced by the operator's arguments. Consumers on their part have concerns about operator rates. For example, an operator recently changed its billing system for their cellular mobile service. A representative of the consumers claimed that under the new billing system customers are charged on the basis of a 45-second minute instead of a 60-second minute. Although the service is unregulated UCC will have to find a way of intervening to fulfill its duty to protect customers.

#### **4.5 Radio spectrum Licensing and Management**

To ensure orderly development and efficient spectrum use, the UCC is the sole body that has the responsibility and duty under the Communications Act to plan, administer and monitor the use of the radio frequency spectrum. UCC issues licences for all radio communication services and stations, except for the national security forces and other state services.

The introduction of limited competition, changes in technology and full liberalization of the broadcasting sector presents challenges in the management of frequency spectrum. As a matter of priority, UCC has designed a national frequency allocation plan and put in place a monitoring system. UCC is progressively working on spectrum management policies that are responsive to the needs of an ever changing market.

Frequencies are allocated in accordance with the plan depending on the needs of operators and other users, on a pre-determined fees scheme. Operating licences for broadcasting services are issued by the Broadcasting Council. Broadcasting operators apply to UCC after obtaining an operating licence from the Broadcasting Council. Similarly, UCC issues operating licences and spectrum assignments for telecommunications services separately. The licensing process for telecommunications and broadcasting services are coordinated to ensure that an entity who is issued an operating licence does not face problems in implementation due to the lack of appropriate frequencies.

All spectrum assignment fees are paid to UCC and form part of its funds. The Broadcasting Council, however, is not given a share of the spectrum assignment fees. As a result, the broadcasting sector has concerns that high fees are charged for broadcasting operating licences in order to fund the operation of the Broadcasting Council. The issue of the broadcasters having to deal with two organizations could be addressed through the establishment of a converged regulator.

UCC used to license the 2.4 GHz Special Wireless Spectrum for commercial use. It was used mainly by ISPs for providing wireless access to their customers. In order to encourage the use of WiFi technology to promote the use of Internet services in rural and other under-served areas UCC has deregulated the use of this spectrum for the commercial provision of services

## 4.6 Licence Fees

Licence fees are the main source of funds for the activities of the Communications Commission including the financing of Rural Communications Development Fund (RCDF) projects.

### a) Major licences

Payments for major licences comprise an initial fee, an annual fee and spectrum licence fees. The initial fee depends on the size of the operation and number of services included in the licence. For example, the initial fee that UTL paid for its national operator licence was US \$200,000. But Celtel (U) Limited, paid US\$ 50,000 for its new cellular mobile licence. All major operators pay an annual fee of 1% of gross revenue which goes to the Rural Communications Development Fund. The Communications Commission Act, 1997 provides for a levy of up to 2.5% of the annual gross revenue but the Minister decided to set it at 1% after negotiations with the operators.

### b) Minor Licences

A modest annual fee and a processing charge are payable for this type of licence depending on the nature of service. For example, the fee for Internet Access Service (ISP) is US \$2,000. The annual fee for an Internet Access Service and international data gateway is US\$ 4,000. A processing fee of US \$340 is also payable for most minor licences. Other services including payphone/fax bureaux and Internet cafes which previously attracted US \$500 in annual fees and US \$340 in administrative fees are now exempt from licensing and annual fees.

### c) Spectrum Fees

The amount payable as spectrum fees depends on the type of service, the power of apparatus, bandwidth and other parameters. Annual fees range from US\$ 2,000 for mobile trunked radio and VSAT (single user) to US\$ 10,000 for a satellite earth station. For the last mentioned facility, a registration fee of US\$ 15,000 is payable. Processing and type approval are also charged for each licence.

The fees are reasonable. They are at a level that allows operators and service providers to provide their intended services at affordable prices. As can be seen from Figure 4 above, tariffs in Uganda are lower than in any of the other two East African countries (Kenya and Tanzania) and COMESA countries.

UCC reviews these fees periodically to align them with market conditions. For example, in deregulating the 2.4 GHz spectrum UCC has also waived the annual licence fee of US\$ 2,000. On the other hand UCC has raised the annual fees for bigger facilities but has still kept them within reasonable market levels. Nevertheless, some of the bigger operators find the new annual fees of US\$ 300 per base station to be overly high. Moreover, some of them claim that the more they use the more they pay for spectrum bandwidth. They have sought incentives, like volume discounts. This is another challenge facing the regulator; balancing the need for fund raising for regulatory oversight and the promotion of universal access on one side and the interests of investors on the other side.

For further information on licence fees refer to Annex A.

#### 4.7 Licence Process and Conditions

UCC has wide discretion under the Communications Act to decide on the appropriate licensing process. Major licences are usually issued via tender. After evaluating the tenders UCC makes a recommendation to the Sector Minister for approval. UCC has adopted a reverse auction procedure for the issuance of rural communication licences, which fall under the major licence classification. This is discussed in section 5 below.

UCC awards minor licences through a tender or on first-come -first-served basis depending on the nature of service to be provided. Services that have been exempted from individual licensing, for example Internet access or payphone service provision are authorized under a class licence. UCC has the discretion under the Act to stipulate licence conditions. The areas where conditions may be stipulated have been listed in the Fourth Schedule to the Act. Refer to Box 4.

##### Box 4: Guidelines on Licensing Conditions: Fourth Schedule, Communications Act, 1997

A licence issued under Part IV of this Act may include the following conditions:-

- (a) the payment of sums of money calculated as a proportion of the rate of the annual turn over of the operator's licensed system or otherwise;
- (b) the payment by the operator a contribution toward any loss incurred by another operator(s) as a result of such other operator(s) obligation imposed on the operator(s) by UCC regarding the provision of uneconomic service in pursuance of the objectives of the Act;
- (c) the provision of services to disadvantaged persons;
- (d) interconnection of an operator's telecommunications system with any other system and permitting the connection of telecommunications apparatus to an operator's system;
- (e) prohibiting an operator from giving undue preference to or from exercising undue discrimination against any particular person or class of persons (including any operator);
- (f) furnishing UCC with such documents, accounts, returns or such other information as UCC may require for the performance of its functions under this Act;
- (g) requiring an operator to publish in such manner as may be specified in the licence a notice stating the charges and other terms and conditions that are to be applicable to facilities and services provided;
- (h) provision of service on priority service to the government or specified organizations;
- (i) requiring an operator to ensure that an adequate and satisfactory information system including billing tariff, directory information and directory enquiry services are provided to customers.
- (j) conditions specifying the criteria for setting tariffs;
- (k) requiring an operator to comply with such technical standards or requirements including service performance standards as may be specified in the licence;
- (l) any other conditions as UCC may consider appropriate or expedient

The Act requires operators to submit a report annually to UCC indicating how they have fulfilled the conditions of their licences.

The renewal of major licences is dependent on the good performance of the licence. The licensee gives UCC 12 months notice of its intention to renew the licence. This period allows sufficient time for the publication of a notice to the public, the hearing of any objections, an evaluation of the performance of the licensee by UCC and approval by the minister.

#### 4.8 Service & Technology Neutrality and Convergence

The Communications Act does not prescribe any technology in the provision of services by a licensee. As indicated elsewhere in this report, the Act allows the provision of all

telecommunications services under a single licence for National Telecom Operators. The only exception is broadcasting services for which operating licences are issued by the Broadcasting Council. The licences of the two national operators refer to the use of some technologies, for example cable, microwave, radio and satellite transmissions, but in a way that shows that the list is not meant to be exhaustive. Therefore this should not cause any problem as a liberal interpretation will accommodate new technologies. It would nevertheless be tidier to avoid mention of specific technologies in future licences.

Due to the exclusivity for fixed voices services given to UTL and MTN (U) Ltd, UCC cannot authorize the provision of VoIP by other operators except by the independent operators that are licensed to provide services in rural areas not covered by the two national operators. The removal of restrictions on the use of this cost-effective technology immediately upon the expiry of the exclusivity in July 2005 would enhance the achievement of the telecommunications development objectives.

#### **4.9 Legacy Issues**

There are some legacy issues that have been alluded to earlier in this report. This section highlights some of the areas that might be of interest. Because of the worldwide trend in the telecommunications sector toward private sector development Uganda, among other African countries, found it necessary to start opening up the sector before having a regulatory framework in place. The mobile operator, Celtel (U) Limited and data service providers were licensed in 1993 by the then incumbent operator, the Postal and Telecommunications Corporation. The Communications Commission Act became effective only in September 1997. The Act had envisaged the incorporation and privatization of Uganda Telecom Limited before the licensing of a second National Operator. But the privatization process did not progress as planned. The Government licensed the Second National Operator, MTN (U) Limited in April 1998. UCC started operating in August 1998 and UTL was privatized in 2000. UTL had, until then, been operating under statutory authorization. It was issued a licence as the First National Operator in June 2000. Although the two national operators enjoyed a large measure of *de facto* exclusivity earlier, the five-year exclusivity period officially started on 25<sup>th</sup> July 2000. All these events affected the actors in the field in different ways.

UCC had to supervise existing operators under licences that were not issued by a professional regulator, except for the licence to UTL. Even then, UTL's licence had to take into account some of its statutory rights. For instance, the Communications Act authorized UTL to retain its radio frequencies with the provision that UCC was allowed the possibility of modifying the assignments if it became necessary.

The Second National Operator was licensed to compete with the incumbent, the former Posts and Telecommunications Corporation (UPTC). Although threatened by the introduction of competition, the management could not object to the entry of the new competitor who was licensed by the Government. The Government then was also the sole owner of the incumbent. The incumbent was obliged to provide interconnection and trunk capacity to its competitor.

Celtel (U) Limited and ISPs who had installed data gateways, were allowed to continue carrying their own traffic but could no longer carry third-party traffic, until the expiry of the exclusivity period. This is a matter of concern to them as it impacts negatively on their businesses. But Celtel, benefited from the privatization of UTL. A new management at UTL and the intervention of UCC enabled Celtel to be paid a long-standing debt for termination charges owed by UTL and its predecessors.

The Act also provided for an orderly transfer of staff from UPTC to UTL. Because of that, UTL continues to carry more staff than perhaps they would have wished to.

## **5 Implementation of Rural Access**

### **5.1 Rural Communication Development Policy Objectives**

One of the objectives of UCC is to promote rural access through a Rural Communications Development Fund (RCDF). The licences issued to the two national telecommunications operators require them to install a payphone at each County Headquarters. In addition, the Uganda Communications Commission (UCC) has licensed payphone and Internet service providers. After some experience in supervising the sector UCC realized that universal access obligations and competition alone would not achieve the telecommunication policy objectives of expanding access to rural areas. A major rural access initiative was needed.

A UCC/IDRC Rural Communication Development study showed that 200 sub-counties would not have coverage by 2002 due to low population density and remoteness. Based on this study UCC developed a Rural Communications Development Policy. The study and policy covered telecommunications services but this section deals principally with the telecommunications services aspects. The objectives of the policy are to:

- a) Achieve universal access to basic telecommunications, which is defined as making voice telephony available in all 926 rural sub-counties and to achieve one public access telephone per 5,000 inhabitants by the year 2005 at the sub-county level.
- b) Promote Internet and ICT use in Uganda.
- c) Ensure effective utilization of the resources of the RCDF to leverage investment for rural communications development as a viable business

In order to achieve the universal access objective, UCC first requested the two licensed national operators, UTL and MTN Uganda, to declare sub-counties in which they would be able to achieve the target level by mid-2002. Their declarations showed that their services would not reach each of the 154 sub-counties. In accordance with the provisions of their licences, the declarations of the national operators amounted to giving up their right of exclusivity in those sub-counties.

### **5.2 Management, Administration and Source of Funds of the Rural Communication Development Fund (RCDF)**

In accordance with its statutory mandate, UCC has set up an RCDF Board to oversee the management of the RCDF. The Board is composed of members drawn from the UCC Commissioners, the public and private sectors. It is responsible to the Commission. The major sources of funds of the RCDF include UCC budgetary allocations from the 1% levy on the gross revenues of the operators, donations and grants from development partners and Government inputs. RCDF funds are disbursed in the form of non commercial grants for the provision of basic communications and Internet Services in rural areas. Disbursement for access projects are by tender or direct disbursement depending on the size of an individual project or project “package”. Funds for pilot projects and small individual projects or “packages” are disbursed directly. The main criteria for the consideration of direct disbursements are a business plan demonstrating financial profitability and / or self sustainability after the start-up contribution.

### **5.3 Licensing of Rural Communications Operators**

UCC decided to offer the 154 sub-counties that were left ‘unprotected’ by the national operators for competitive entry.

In addition, UCC is offering subsidies towards the net cost of providing services to meet the universal access target in the 154 sub-counties. The subsidies are being offered through a “reverse auction”, in which UCC will establish specific subsidy caps and will award a RCDF Service Agreement and Licence to the bidder(s) requiring the least subsidy within the specified cap level and whose bid(s) has been determined to be substantially responsive to the bid requirements.

The 154 sub-counties have been packaged as three separate geographical licence areas (the “Universal Access Regions”). The Universal Access Regions combine sub-counties expected to require minimal subsidies together with some of the most remote sub-counties which are expected to be operationally challenging and which are expected to carry higher subsidy requirements. The Universal Access Regions offer contiguous territory to the extent possible.

### **5.4 Licence Terms, Conditions and Additional Incentives**

Winning bidders will have the right to offer Universal Access services and private voice and data services in all sub-counties within the Universal Access Region they win but not on exclusive basis. Although the Universal Access Regions were without service in July 2002, UCC assessed that at least half of the sub-counties they contain now have some network signal presence through one or more of the two national operators and/or by the third (cellular) operator.

Therefore UCC advised potential bidders to assess for themselves the existing infrastructure, the competitive opportunity, as well as the potential for leasing or sharing backbone and existing station facilities to reach each Universal Access Region. UCC undertook to encourage existing operators to share their sites, buildings, masts, etc. on commercially negotiated terms with the winning bidder(s) wherever possible. Universal access licensees may provide universal access services (basic telephony) and private voice and data services over network facilities that are owned and operated by them or provided in whole or in part on a resale basis (i.e. over networks of other telecommunications operators).

Winning bidders, other than the two existing national operators, will be offered a 10 year, non-exclusive licence to provide voice and data services in all of the sub-counties in the Universal Access Region(s) they win, renewable for an additional 10 years. Where a winning bidder is an existing operator, the current licence will be amended to take into account the conditions of the rural access service provision requirements.

Interconnection arrangements will be negotiated with the incumbent major network and cellular operators in the usual manner with UCC intervening to impose an interconnection agreement if the operators fail to agree or if UCC determines that such agreement will promote fair competition.

The imposition of asymmetrical interconnection termination charge for calls terminating in public access phones in the 154 sub-counties is under consideration by UCC. Also under this arrangement, a “Calling Party Pays” tariff increase for calls to designated public access phones in the 154 sub-counties would be permitted to enable the originating operator to cover the cost of the higher interconnection rate.

If the winning licensee is a new entrant, it will not be given an international gateway licence during the exclusivity period of the two national operators but it will be able to apply or compete for a full national telecommunications licence, including international gateway, upon expiry of the exclusivity period.

The technical and operational requirements in licences will be technologically neutral. The winning bidders will be allocated the necessary spectrum or numbering resources.

The UCC has established universal access services in regions in Uganda that are unlikely to be commercially viable in the long run in the event that the operator provides only the minimum level of public access telephones required by the universal access target. Therefore the UCC has made it a requirement that all offers must include the capability to meet a specified level of private demand in all sub-counties, in addition to public access telephones, within three years from the date of Service Agreement signature.

## **6 Next Steps after Exclusivity Period**

As stated earlier in this report the five-year exclusivity period that the two national telecommunication operators enjoy ends in July 2005. Their licences state explicitly that the exclusivity period will not be extended. What is not so clear is what will happen immediately after July 2005. UCC is carrying out an assessment that will assist in determining the market's direction in the post-exclusivity period. The options include opening the sector to full competition or to increase the level of liberalization without completely opening the market immediately.

Opinions differ on which approach is most appropriate for Uganda. There are people who think that the Ugandan telecommunications market is too small to accommodate additional major operators immediately. One of the major operators observed that the small players in the market resort to illegal acts like providing services that are not authorised by their licences. The operator added that opening the sector to greater competition, could lead to price wars. Nevertheless, existing minor operators, for example the ISPs, who already have data gateways would like to be authorised to provide the full range of telecommunications services, including VoIP, upon the expiry of the exclusivity period. But some of them are concerned that, as there had been no indication yet on the direction, nine months to the end of exclusivity period, the period might be extended by default. All these point to an increased challenge for UCC. It is under pressure to complete the sector performance assessment and to make a statement, either on its own behalf or through the Minister, on the direction of liberalisation after the exclusivity period.

Freeing up the market more would enhance the advancement of the objectives of the policies currently in place. In particular, allowing existing licensees of data gateways to provide leased circuit services would assist Internet service provision which is said to be hampered by a lack of capacity and bandwidth.

Fortunately, the law is flexible enough. It will accommodate further liberalisation and deregulation by UCC without the necessity of immediate amendment. But the changes that are needed to fully accommodate convergence will require modification of the legislation.

## **7 Consultations**

The Communications Act does not specifically require UCC to conduct public consultations. It gives UCC the discretion to conduct inquiries. It makes inquiries by UCC mandatory only when ordered by the Minister. The UCC, however, frequently consults the public as whole or



interested parties on particular issues. Consultations are carried out informally, such as through seminars or workshops or they may be formal, such as through public hearings or the publication of notices calling for written comments. UCC provides information to the public on request, usually free of charge if no significant costs are involved. In addition, UCC makes extensive use of its website in disseminating information.

## **8 Conclusion**

Uganda's strategy of private sector participation in developing the telecommunications sector has been largely successful. The adoption of clear policies and an appropriate regulatory framework at an early stage in the reform process are among the key factors contributing to this success. The other instrumental element is a flexible and innovative licensing approach in implementing limited competition and liberalization.

Flexibility was displayed in the licensing the Second National Operator, MTN (U) Limited, in April 1998, before the privatisation of UTL. This was after the Government realised that the privatisation process was not proceeding at the pace that had been planned. Significant subscriber growth started after the second national operator began operations. However, the correct choice of investor is an important factor as well, for there are countries that have taken a similar approach without equally positive results.

The privatisation of UTL in 2000 and its licensing with roll-out obligations further reinforced the success of strategy. The ensuring result has been that UTL is a truly major operator alongside MTN (U) Limited even in the cellular mobile market which UTL entered in 2000, two years after MTN.

At a current teledensity of about 3.5, the target penetration of 2 telephones per 100 persons by 2005 under the Telecommunication Policy 1996 has been surpassed. However, at the time when this target was adopted the full growth potential of cellular mobile services had not been widely foreseen. The policy must have envisaged fixed telephony contributing a big part to the realization of the target. Given the now proven possibilities of cellular mobile technology it would be advisable to review the target in order to set a more challenging one.

As well as being among the pioneers in Africa in licensing a Second National Operator and in privatising the incumbent operator, Uganda is one of the first African countries with a well thought-out rural access policy that is at an advanced stage of implementation. The combination of roll-out obligations in the licences of the major operators and the ongoing innovative licensing of independent rural communications operators, guarantee the achievement of the objectives of the Rural Communications Development Policy

All stakeholders have contributed to these results, including the Government in setting the policy and direction and the entrepreneurship of the investors in improving services rapidly. The dedication, professionalism and integrity of UCC in supervising the implementation of the policies have been crucial. This is acknowledged by all stakeholders.

The experience of Uganda so far shows that, when implemented through an appropriate licensing approach and supplemented with suitable universal access mechanisms, liberalization is a key strategy for achieving telecommunications development objectives. Increasing the level of competition and deregulation after the expiry of the exclusivity period will further enhance the achievement of policy objectives, including those in the recently adopted ICT Policy.

Alongside the achievements referred to above, there have been a number of challenges, some of which have already been mentioned. Like other regulators in Africa, the UCC started supervising a competitive market with little experience in regulation. With increased liberalisation and rapid changes in technology, capacity building will continue to be a challenge especially in the area of enforcement and compliance.

The concerns being raised about the way forward after the exclusivity period is an indication that the improvements in services are fuelling demand not only for further improvement but also for information on policy, regulatory and operational matters. As public awareness is important, the current challenge, given circumstances, is for policy makers and the regulator to ensure adequate information on a timely basis.

**Requirements for applications for telecommunications services licensed/authorized by Uganda Communications Commission (UCC)**

<i>No.</i>	<i>Type of service</i>	<i>Application requirements</i>	<i>Licence fees</i>
1.	Internet Access Service	a. Company Profile (to include certified photocopies of the Certificate of Registration or Incorporation of the company).	<b>No. 1</b> Application processing fee US\$340.00. Annual licence fees US\$2,000.00. <b>(NB. Being reviewed)</b>
2.	2.4 GHz Wireless Spread Spectrum	b. Business Plan (to include service description and objectives).	<b>No. 3</b> Application processing fee US\$340.00. Annual licence fees exempted.
3.	Internet Access and International Data Gateway	c. Technical applications (to include service technology, interfacing, equipment interface arrangements with licensed Telecom service provider in Uganda, network configuration, quality standards).	<b>No. 4</b> Application processing fees US\$340.00. Annual licence fees US\$4,000.00.
4.	Paging Services	a. Company Profile (to include certified photocopies of the Certificate of Registration or Incorporation of the company). b. Business Plan (to include service description objectives). c. Technical applications (to include services Technology, network configuration, equipment specification, quality standards, frequency plan and the network implementation schedule).	Application processing fee US\$51.00.  Annual Licence fees US\$300.00.  Frequency fee per transmitter per frequency: US\$30.00 for VHF
5.	Mobile Trunked Radio (MTR)	a. Company Profile (to include certified photocopies of the Certificate of Registration or Incorporation of the company). b. Business Plan (to include service description and objectives). c. Engineering brief to include MTR System configuration whose format shall give details on:  i. Equipment Technical Specifications giving the number of Radio Base Stations (RBS) and their locations. ii. Frequency Plan in view of frequency Re-use. MTR network implementation	Application processing fee US\$340.00.  Annual licence fee US\$2,000.00.  Annual frequency fee per transmitter per frequency: US\$30.00 for VHF US\$340.00 for UHF

		network implementation schedule.	
6.	Customer Services and Internal Block Wiring	<ul style="list-style-type: none"> <li>a. Company Profile (to include certified photocopies of the Certificate of Registration or Incorporation of the company).</li> <li>b. Business Plan (to include service description objectives, source of funding, article of association and memorandum of association).</li> <li>c. Technical applications (to include manpower and experience)</li> </ul>	<p>Application processing fee US\$170.00.</p> <p>Annual Licence Fees US\$1,000.00.</p>
7.	Use of VSAT (Single user)	<ul style="list-style-type: none"> <li>a. Company Profile (to include certified photocopies of the Certificate of Registration or Incorporation).</li> <li>b. Technical applications (to include equipment specifications and location, service technology and satellite capacity provider)</li> </ul>	<p>Annual licence fees US\$2,000.00.</p> <p>Registration fee US\$ 200.00 (payable once).</p> <p>Type approval fee US\$ 20.00 (payable once).</p>
8.	Satellite Earth Station (Multi-user)	<ul style="list-style-type: none"> <li>a. Company Profile (to include certified photocopies of the Certificate of Registration or Incorporation of the company).</li> <li>b. Technical applications (to include equipment specifications and location, service technology and interfacing, equipment interface arrangements with licensed Telecom service provider in Uganda, quality standards and satellite capacity provider)</li> </ul>	<p>Annual licence fees US\$10,000.00</p> <p>Registration fee US\$15,000.00 (payable once)</p> <p>Type approval fee US\$ 20.00 (payable once)</p>

Source: NCC, ITU

## **Brazil Mini-Case Study 2003**

Brazil's SCM Licensing Service Category:  
A Step Toward Convergence

This mini-case study was conducted by Gustavo Tamayo of JOSE LLOREDA CAMACHO & CO., Bogota, Colombia with the active participation of the country collaborator Mr. José Gonçalves Neto of the Agencia Nacional de Telecomunicaciones (ANATEL). The views expressed in this paper are those of the author and do not necessarily reflect the views of ITU, its members or the Government of Brazil.

The author wishes to express his sincere appreciation to Mr. José Leite Pereira-Filho from ANATEL and to Raphael de Cunto from Pinheiro Neto Advogados and Alberto Orleans e Braga and Gabriella G.L. de Salvio from Xavier, Bernardes, Braganca, Sociedad de Advogados, and Susan Schorr of the ITU Regulatory Reform Unit for their support in the preparation of this mini-case study.

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## Brazil's SCM Licensing Service Category: A Step Toward Convergence

This case study examines Brazil's experiences in establishing a new licensing category for the provision of multimedia services.

### 1. General Background

Brazil is the fifth largest country in the world with a population of about 173.8 million, a GDP of approximately USD 508.5 billion and a GDP per capita of USD 2,959.<sup>1</sup> Until the end of 2001, Brazil was the largest Latin American economy and eighth largest economy in the world. In 2002, Brazil became Latin America's second-largest economy after Mexico, and its ranking in the world economy fell to eleventh place. Nonetheless, having the largest population of Latin America and the second-largest population in the western hemisphere, Brazil is one of the most important emerging markets in the world. Although Brazil's history of privatization and liberalization of its telecommunication sector is recent, it has earned a reputation for effective sector reform.<sup>2</sup>

Since 1998, as a result of privatization and the introduction of competition, Brazil's telecommunications market has grown at a rapid pace. The fixed telephony teledensity rate increased from 10.66 in 1997 to 22.32 in 2002. Likewise, mobile telephony subscribers increased from 4,550,000 in 1997 to 34,881,000 in 2002.<sup>3</sup> This outstanding performance came as a result of the new Telecommunications Law of 1997 and the auction of monopoly incumbent operator Telebras in 1998, which generated USD 19 billion of investment from foreign and local investors.

Until 2002, Brazil was divided into a series of operating regions. By the means of the General Concessions Plan of April 1998 Brazil was divided into three different local fixed line regions, one area for long distance services and eight regions for mobile services. In the case of fixed line services, there was one "public" operator, the privatized former incumbent operator or public switched telecommunications network (PSTN) operator, and a "mirror" private operator in each of the three regions. Operators were allowed to provide services only within their respective authorization or concession area. Competition has now increased since the Agência Nacional de Telecomunicações (ANATEL), Brazil's regulatory agency, subsequently authorized local telephony operators to provide new telecommunications services other than those indicated in their concession contracts. These additional services include international long distance, local telephony service throughout the country, and wireless telephone services<sup>4</sup>.

Brazil's licensing regime uses a series of service categories to authorize the provision of communications services. The main three service categories are fixed line telephony, including PSTN, wireless and Pay TV. In addition, Brazil initially established about 15 other service categories,<sup>5</sup> mainly value-added services, when the nation's telecommunications sector was first liberalized. In 2001, these 15 disparate service categories were united into a single category for licensing, SCM (Serviços de Comunicação Multimídia). SCM, used to provide a variety of multimedia communications services, primarily to private corporate networks or the

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<sup>1</sup> ITU World Telecommunication Indicators Database (see <http://www.itu.int/itu-d/ict/statistics/>). Population data for 2002; GDP data for 2001.

<sup>2</sup> Source: Latin American IT Business Risk and Rewards in Financing With America's Neighbors, by Rafael Castillo-Triana; available at <http://www.thealtagroup.com/pdfs/LatinAmericarewardsandrisk.pdf>, p. 10.

<sup>3</sup> ITU World Telecommunication Indicators Database (see <http://www.itu.int/itu-d/ict/statistics/>)

<sup>4</sup> In April, 2002, Telesp was granted a long-distance license; in August 2002 Embratel was able to obtain a license to operate local telephone services throughout Brazil; and Telenorteleste Participações TNL received authorization to launch new services and expand outside of its operating area. Following ANATEL's authorization, TNL launched wireless telephone services in June 2002. In July 2002, TNL launched international and domestic long distance and data transmission service nationwide.

<sup>5</sup> The SCM replaced, among others, the so-called network and circuit services, telecommunication transport network services, packaged commuted network services and circuit commuted network services, which were cataloged as "specialized limited services".

customers of Internet Service Providers, is the subject of this mini case study. While Brazil has yet to adopt a completely technology-neutral approach to licensing, its initial experience may be of interest to other countries that wish to transform their segmented licensing regimes.

## **2. Regulatory Background**

The Telecommunications Law of 1997<sup>6</sup>, which changed the role of the State from telecommunications service provider to sector regulator and policy maker was the main legal instrument through which Brazil's telecommunication sector was privatized and opened to competition. A comprehensive description of Brazil's telecommunications privatization and liberalization process can be found in ITU Effective Regulation Case Study: Brazil 2001 (available at <http://www.itu.int/ITU-D/treg/>.)<sup>7</sup>

## **3. Convergence**

Technologically, convergence refers to the merger of packet switching technology with telephony signaling and call-processing intelligence, which allows carriers to provide a new range of information and communication technology (ICT) services. "As networks become digitized and broadband capacity is established, telecommunication broadcast services can be provided over the enhanced information infrastructure and on the Internet"<sup>8</sup>.

ANATEL began addressing the convergence phenomenon in 2001, when, with the assistance of ITU, the agency studied the impact of technological developments in the telecommunications sector, including broadcast and information technology<sup>9</sup>. The only precedent in regulating convergence in Brazil at the time was Resolution 190 of 1999, the purpose of which was to facilitate interconnection between mass communication service infrastructure, such as cable, satellite and Multichannel Multipoint Distribution Service (MMDS) networks<sup>10</sup> and valued added infrastructure, mainly Internet infrastructure. Resolution 190 was intended "to allow the use of that infrastructure (cable, TV, satellite TV and MMDS) by any (operator) for the provision of Value Added Services (VAS) like Internet Access"<sup>11</sup>. The Resolution generated an increase in the number of cable modems users in Brazil from 88,000 in 2001 to 131,000 in 2002, representing 19% of the total broadband users in Brazil<sup>12</sup>. In 2002 there were approximately 690,000 broadband subscribers. By June 2003, Brazil had 780,000 broadband subscribers.<sup>13</sup> Resolution 190 was also designed to promote free-market competition between Internet Service Providers by permitting the use of cable TV infrastructure without having to invest in a new network.

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<sup>6</sup> Other regulatory milestones include: (i) the issuance of Constitutional Amendment No. 8 "which authorized the entry of private, domestic, and foreign investment into the telecommunications sector"; (ii) The minimum law, which "required only specific market segments to be open to competition, namely mobile cellular, satellite telecommunications signal transportation, and value added services".

<sup>7</sup> ITU Effective Regulation-Case Study: Brazil 2001, Doreen Bodgan-Martin and Mindel De La Torre available at <http://www.itu.int/ITU-D/treg/>.

<sup>8</sup> Anders Henten, Rohan Samarajiva and William H. Melody, Designing Next Generation Telecom Regulation: ICT Convergence or Multisector Utility?, January 2003, p. vii. Available at <http://www.regulateonline.org/2002/dp/dp0206.htm>

<sup>9</sup> See Section 3.5 of ITU Effective Regulation Case Study: Brazil 2001, p. 10.

<sup>10</sup> Multichannel Multipoint Distribution Service (MMDS) is a broadcasting and communications service that operates in the ultra high frequency (VHF) portion of the radio spectrum between 2.1 and 2.7 GHz. MMDS is also known as wireless cable. It was conceived as a substitute for conventional cable television. However, it also has applications in telephone, fax and data communications.

<sup>11</sup> Speech by Dr. José Leite Pereira Filho, member of ANATEL Board, "The Broadband and Digital Broadcasting Conference", American Chamber of Commerce – Sao Paulo, 23 April 2003, p. 10.

<sup>12</sup> Idem.

<sup>13</sup> Brazil-Key statistics, Telecom Market and Regulatory Overview - Telecom and Information Highways-.doc6/11/2003



#### 4. Multimedia Communications Services

After a thorough analysis and public consultation, ANATEL issued Resolution No. 272 on 9 August 2001, regulating Multimedia Communication Services. Multimedia Communication Services, or *Serviços de Comunicação Multimídia* in Portuguese, are referred to in this report by their Portuguese acronym, SCM. SCM was devised and regulated by ANATEL to accommodate the growing need for convergence of telecommunication services and to adapt to new technologies provided in an increasingly globalized telecommunication market.

##### *Services Covered by SCM*

According to Resolution 272/01, SCM covers audio, video, data, voice (corporate voice) and other sound, image, text and related signals, conveyed, sent and received through fixed telecommunication networks rendered by the private sector in the collective interest<sup>14</sup>, on a domestic or international basis and in any format, to subscribers within a certain service area<sup>15</sup>. While SCM license operators can provide certain services to the public at large, including individuals, in practice the license is used mostly to provide services to private corporate networks. As is explained below, this is because Brazil maintains restrictions on the provision of fixed line voice and Pay TV services to the public at large.

Some of the most important applications provided through the SCM authorization include “broadband access to Internet, data communications, audio and video, telemedicine and tele-education”<sup>16</sup>. The SCM service category ended the requirement for operators to seek multiple authorizations depending upon the transmission means used<sup>17</sup>.

Additionally, Regulation 272/2001 allows SCM providers to access the Public Switched Telecommunications Network (PSTN), so that calls may be freely made from the PSTN to SCM users and vice-versa. Calls, however, must originate or terminate with an SCM user; an SCM operator is not permitted to transit calls between two PSTN customers.<sup>18</sup> The main reason this restriction was included in the SCM regulation was because the PSTN operators were granted exclusivity rights for public fixed telephone service either by law and/or in their concession agreements. Moreover, these operators had incurred substantial investments in the privatization process and, unlike SCM operators, were subject to major network build-out obligations. In addition, the fixed line “mirror” operators had paid substantial license fees.<sup>19</sup> Thus, ANATEL concluded that it would not be fair to allow a third party SCM operator who had not incurred such costs to compete with the fixed line operators for public fixed telephone services. The SCM authorization does, however, permit operators to provide “corporate voice” telephony services via private networks.

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<sup>14</sup> The Telecommunications Law introduced two new service classifications. Collective Interest Services are those services that must be rendered by the service provider to any interested party, without any kind of discrimination. Restrictive Interest Services are services to be used by the provider itself or rendered to a specific group of users chosen by the service provider.

<sup>15</sup> Article 67 of Resolution 272/2001.

<sup>16</sup> Presentation of Dr. Jose Leite Pereira Filho, Member of the Board of ANATEL, to ITU-T Seminar, Multimedia in the 21st Century, Porto Segura, Brazil, 4 June 2001, p. 9 available at <http://www.itu.int/ITU-T/worksem/multimedia/program.html>.

<sup>17</sup> The SCM license replaced, among others, the so-called network and circuit services, telecommunication transport network services, packaged commuted network services and circuit commuted network services, which were cataloged as “specialized limited services”. As of August 9, 2001 ANATEL decided not to issue any further “specialized limited services” license. The operators who had these types of licenses are now required to request the adaptation “*adaptação*” of their former specialized limited services into SCM licenses, which requires a payment of 9.000 “reals” equivalent approximately to US\$3,000.

<sup>18</sup> This prohibition had been contemplated by ANATEL even before it issued the SCM rules. As noted in ITU Effective Regulation Case Study: Brazil 2001 (available at <http://www.itu.int/ITU-D/treg/>), “the current view [i.e., in 2001] is that the fixed multimedia service would not be allowed to provide public fixed telephone service . . .”

<sup>19</sup> According to Brazil-Key statistics, Telecom Market and Regulatory Overview- Telecom and Information Highways-.doc6/11/2003, the privatization process payments amounted to US\$12.1 billion and the license fees paid by mirror companies amounted to US\$128 million.

There were initial doubts as to whether SCM operators would be allowed to provide pay TV services, such as those provided to cable TV subscribers. Article 67 of Resolution 272/2001 could be construed as enabling “SCM operators to transmit audio and video signals of either (1) certain events, or (2) on the basis of a contractual relationship, or (3) in the form of pay per view”<sup>20</sup>. National broadcasters challenged article 67 before the courts, arguing that it violated their exclusive right to broadcast to the public. The Court of Appeals rejected this argument and upheld Article 67<sup>21</sup>. ANATEL further clarified the court decision in its Letter (or “Sumula”) 06 of 24 January 2002, specifying that SCM licenses do not authorize holders to provide: (i) public fixed telephone service; (ii) free live TV and radio broadcasting; and (iii) paid TV.

In addition, SCM operators must also comply with the obligations set forth in their respective Terms of Authorization that specify the conditions under which SCM operators are able to transmit video, voice and data, in order to differentiate SCM from existing Paid TV Operators. SCM may be used for videoconferences, educational television and transmission of signals between producers and TV Broadcasters but not for pay-per-view exhibitions. The SCM regulations, however, do not limit the transmission means used by SCM operators<sup>22</sup>.

### *License Requirements*

There are no limits to the number of SCM licenses that ANATEL may issue. In fact, by December 2003, 151 different companies had obtained an SCM license<sup>23</sup>. The fee for the license is 9,000 Brazilian reais, equivalent to approximately USD 3,000. If the SCM provider uses radio frequencies to render the service, it must pay an additional fee for the use of those frequencies established under Resolution 68 of 1998<sup>24</sup>.

### *Terms and Conditions of the License*

The SCM license is granted for an indefinite term, and is not subject to any bidding process, such as a beauty contest. The interested party is required only to submit an application and if certain minimum requirements are met, the license is granted<sup>25</sup>. The SCM licenses are granted on a non-exclusive basis and the licensees are obliged to comply with telecommunications regulations applicable to all telecommunication operators. The licenses provide for the rendering of the services to subscribers throughout Brazil and internationally.

### *The SCM License: A First Step Towards A Technology-Neutral License*

Regulation is often slow to adapt to technological developments such as convergence, especially the integration of telecommunication and broadcast media regulations. While Brazil has taken initial steps to enable the convergence of telecommunications, IT and broadcast, in particular on private corporate networks, it has not yet developed a regulatory framework to enable full convergence between public fixed line telephone, cellular and Pay TV operators. This is due in part to the fact that Brazilian broadcast laws

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<sup>20</sup> Designing Next Generation Telecom Reform. Annex to Draft Report, Country Summaries, [www.regulateonline.org](http://www.regulateonline.org)

<sup>21</sup> Idem.

<sup>22</sup> The following transmission means among others may be used for SCM: Frequency bands: 2.5 GHz, 3.5 GHz, 10.5 GHz and 24 GHz to 31 GHz; MMDS Network; DTH Network; Cable TV Network; XDSL Technology.

<sup>23</sup> See ANATEL’s web page at <http://www.ANATEL.gov.br>.

<sup>24</sup> Resolution 68 of 1998 establishes the terms and conditions for the payment for the use of radio frequencies. The system is based on bandwidth usage and other considerations. Also, according to radio frequency rules (Resolution 259 of April 2000), the following frequencies are reserved for fixed local telephony and to SCM: 3.450 MHz to 3.500 MHz; 3.550 MHz to 3.600 MHz; 10.15 GHz to 10.30 GHz; 10.50 GHz to 10.65 GHz; 25.35 GHz to 28.35 GHz; 29.10 GHz to 29.25 GHz and 31.00 GHz and 31.30 GHz.

<sup>25</sup> Requirements are posted on ANATEL’s web page and refer to: (i) information regarding the applicant, including declarations of their partners that they do not participate in other companies rendering the same service; (ii) documents attesting to the technical qualification of the company requesting the license; (iii) a declaration of financial solvency; and (iv) evidence on being current on its tax obligations. [http://www.anatel.gov.br/index.asp?link=/Comunicacao\\_Multimedia/scm/documentacao.htm?Cod=1947](http://www.anatel.gov.br/index.asp?link=/Comunicacao_Multimedia/scm/documentacao.htm?Cod=1947)

have not yet been liberalized in the same manner as the nation's telecommunications laws.<sup>26</sup> Like SCM operators, public fixed line and wireless telecommunications operators, for example, are currently prohibited from providing Pay TV services.

ANATEL is aware of the benefits of a simple and neutral multimedia licensing system. Nevertheless, the rights granted to the incumbent operators in Brazil through their service contracts constitute a legal obstacle to the creation of a single technology neutral license under which all types of services could be offered. Therefore, the regulations establishing the SCM service category mark a first step by ANATEL towards a technology neutral license.

The SCM license has also simplified Brazil's licensing scheme, combining some 15 service categories into one license so that operators wishing to offer a variety of services need seek only one single authorization (see note 16). SCM license holders have highlighted the advantages of SCM. One operator announced that its SCM license, which replaced a previous specialized limited services license, would enable it to offer transmission capacity, as well as to send and receive multimedia content to subscribers throughout Brazil and internationally. Another operator, which has been granted a license to provide SCM for an indefinite term on a non-exclusive basis, announced that it plans to use its SCM license to provide corporate network services, intranet, extranet, Internet access, web server hosting, e-mail, and videoconferences, among other services.

The SCM regime is also a step towards a technologically neutral license to the extent that the service rules are independent from the transmission means and the frequency spectrum used by the SCM operator. Furthermore, any operator may apply for an SCM license. Thus each of the four PSTN operators have obtained SCM licenses and may now offer a wider range of services in addition to public fixed telephony, including broadband access to Internet, data communications, audio and video (except free live TV broadcasting and paid TV). As a matter of practice, moreover, each of the four PSTN operators also provides wireless services.

A key lesson from Brazil's experience is the need to grant telecommunications licenses in a manner that facilitates their adaptation to technological developments. Although ANATEL concluded that it could not move to a completely technologically neutral licensing approach, it was able to introduce SCM regulations as a transitional mechanism. The SCM regime has enabled Brazilian operators to provide additional services that were previously not available and to allow new operators to compete, at least partially, with the incumbent operators.

Nevertheless, the SCM rules have demonstrated the legal restraints that prevent the issuance of rules responsive to convergence and to the fostering of the information society. Perhaps Brazil may find it easier, now that these non-technological restrictions have been disclosed, to introduce a technology neutral license that may better respond to technological changes and thus provide consumer with a greater variety of services at affordable prices.

Certainly, as this case study was being finalized, ANATEL was conducting a public consultation on a new licensing service category, Serviços de Comunicação Digital (SCD), which may both be an additional step toward a more technologically neutral licensing approach and a means of promoting broadband Internet access in Latin America's largest nation.

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<sup>26</sup> For example, foreign ownership of broadcast companies is still limited by the Federal Constitution; in addition, broadcasting activities are regulated by the Ministry of Communications and not ANATEL. Convergence in the broadcasting industry is therefore still being debated.

# **Colombia Mini-Case Study 2003**

Implementing Capacity-Based Interconnection  
Charges To Promote Affordable Internet Access

This mini-case study was conducted by Gustavo Tamayo of JOSE LLOREDA CAMACHO & CO., Bogota, Colombia. The views expressed in this report are those of the author and do not necessarily reflect the views of ITU, its members or the Government of Colombia.

The author wishes to express his sincere appreciation to Susan Schorr of the ITU Regulatory Reform Unit, the Telecommunications Regulatory Commission of Colombia (CRT) and Mr. Jaime Casasbuenas for their support in the preparation of this mini-case study.

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## **The Telecom Vs. Telefónica de Pereira Case:**

### **Implementing Capacity-Based Interconnection Charges To Promote Affordable Internet Access**

This case study describes how Colombia introduced a capacity-based interconnection charge regime in an effort to promote greater competition among Internet Service Providers (ISPs) to foster more affordable Internet access by end users. Replacing a time-based interconnection charge mechanism with a capacity-based approach may enable countries to promote greater Internet take-up by end users. The Colombia approach attempts to balance the needs of potential Internet users with the needs of local operators for interconnection revenue. Colombia's capacity-based interconnection regime further aims to reduce long-distance and mobile interconnection charges.

#### **1. General Background**

Located in the Northern region of South America, Colombia has a population of over 43 million and a gross domestic product (GDP) of about USD 81.1 billion. In 2002, it had over 7.7 million fixed lines in service, for a fixed line teledensity rate of about 17.9 and approximately 4.6 million mobile subscribers, for a mobile cellular penetration rate of 10.6. The personal computer ownership rate in 2002 was 4.93 per 100 inhabitants, and Internet user density was about 4.62 per 100 inhabitants<sup>1</sup>.

Additional information regarding the telecommunications sector in Colombia is included in Annex 1.

#### **2. Sector Overview and Regulatory Background**

There are 32 local telephone companies operating in Colombia, many of which were initially established as private companies providing local telephone services. Today, however, many of these local companies have become public concerns, owned by their respective municipalities and cities. As a result, the participation of private capital in local telephone companies today is very small. This trend, however, is changing. The city of Bogotá, for example, has initiated a public stock offering for its local operator.

Telefónica de Pereira (TDP), owned by the city of Pereira, is one of 32 local operators in Colombia. Colombia Telecommunications (Telecom) is a government-owned long distance operator. Telecom was the sole long distance operator for fifty years. Today Telecom competes with two other long distance operators, Orbitel and 007 World ETB<sup>2</sup>.

For many years, the local operators and Telecom shared long distance calls revenues in an arbitrary manner, without taking into account the actual use of their respective interconnected networks. Local operators received a substantial portion of the revenues generated by high international call tariffs, allowing them to charge very low tariffs for local telephony service. Indeed their tariffs were subsidized by international revenues and were set below the real costs and efficient performance of the service. Resolution 087 of 1997<sup>3</sup> expressly abolished such cross subsidy practices.

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<sup>1</sup> ITU World Telecommunication Indicators Database (see <http://www.itu.int/itu-d/ict/statistics>). CRT Indicators from [www.crt.gov.co/paginas/interinas/infsector](http://www.crt.gov.co/paginas/interinas/infsector) and "The Global Information Technology report 2001-2002: Readiness for the Networked World: Country Profiles-184. Colin McClay with Jorge Aramburo.

<sup>2</sup> Orbitel is 50% owned by the City of Medellín and 50% by local Colombian investors, Grupo Santo Domingo and Grupo Sarmiento. 007 World ETB is owned by the City of Bogotá and by private investors who hold a minority share.

<sup>3</sup> Resolution 87 of 1997 abolished the cross subsidy scheme created by former Decree 1593 of 1976. Decree 1593 regulated the relationship among the local telephone companies and the long distance operator until 1997.

In 1994, the Congress issued Law 142, granting CRT the authority to establish rules for the use of telecommunications networks and to develop the formulas necessary to calculate access charges. Law 142 also stipulates that tariffs to end-users should be based on efficient costs plus a reasonable profit<sup>4</sup>.

In order to comply with its legal mandate to terminate cross-subsidy practices and to rebalance local and long distance tariffs, CRT issued a series of regulations<sup>5</sup> including the Unified Interconnection Regime, known in Colombia as RUDI<sup>6</sup>, the Spanish acronym for “Régimen Unificado de Interconexión”<sup>7</sup>. CRT defined access or interconnection charges as mandatory payments made by long distance or cellular operators to local operators for their use of the accessed network. Colombian regulations use the terms “interconnection charges” and “access charges” interchangeably. Network use may be measured in terms of time units, for example, minutes, or in any other appropriate manner, for example, capacity, such as the availability of an E-1 line<sup>8</sup>. In other words, the term “access charges” refers exclusively to the use of the accessed network and does not include those services categorized as “additional services.” Additional services include traffic registration and measurement, consumer claim management, failures and error correction and installation services.

### **3. Convergence and The Unified Interconnection Regime - RUDI**

Today, multiple services can be offered over a single network. In 2000 CRT addressed convergence by issuing the Unified Interconnection Regime “RUDI”. RUDI includes a clear set of obligations and principles that apply to all telecommunications operators and service providers, as well as special obligations that apply only to selected operators.<sup>9</sup> While the RUDI regime provides for as little intervention as possible from CRT, it also enables the regulator to facilitate interconnection negotiations and stimulate convergence and the efficient use of existing infrastructure. One of the main tools RUDI adopted is the option of capacity-based interconnection charges, under which the operator that interconnects with another operator pays a flat monthly charge. The price is calculated based on the premise that the operator providing interconnection for the service shall recover its costs of operation, maintenance of the network, plus a reasonable profit, independently of the volume of traffic. The operator that purchases capacity assumes the risks associated with traffic fluctuations. CRT also set per-minute charging alternatives, meaning that operators requesting access have the choice between per-minute and capacity-based rates.

CRT’s capacity-based approach to interconnection is unique in Latin America. It responds to a need for efficient and economic access charges that result in lower tariffs for the consumer.

CRT established the interconnection tariff at prices that permit local companies to continue operating in a more efficient way. The idea was to prevent local operators from continuing to charge excessive interconnection tariffs to finance other operations, usually in response to political requests from their

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<sup>4</sup> Law 142 applies to public utilities including water, sewage, trash collection, electric power, natural gas, fixed public telephony and rural mobile cellular telephony.

<sup>5</sup> Resolution 23 of 1995 established the per minute access charge that long distance operators pay local operators, replacing the previous revenue sharing arrangement. Resolution 23 further adopted the access charge mechanism called the Index of Tariff Updating, explained in further detail in Annex 2. This Index replaced existing interconnection agreements made between local and cellular operators, between long distance and cellular operators and between local operators. Resolution 23 further set the framework for intervention by CRT, defining the legal, technical, operative and economic conditions by which CRT may impose mandatory interconnection. Resolution 055 of 1996 introduced the concept of efficient costs as a requisite in establishing end user tariffs. Resolution 087 of 1997 reiterated that tariffs to end-users should be directed to efficient costs. Decree 1130 of 1999 granted CRT the authority “to issue all the regulations of general and particular character in the matters related to the interconnection regime, competition rules and those inherent to the resolution of conflicts between operators”.

<sup>6</sup> Annex 3 describes the principles and obligations set forth in RUDI.

<sup>7</sup> RUDI was adopted into Colombian regulations through Article 1.1, Resolution 469 of 2002.

<sup>8</sup> An E-1 line carries signals at 2 Mbps (32 channels at 64Kbps, with 2 channels reserved for signaling and controlling). A T1 line carries signals at 1.544 Mbps (24 channels at 64Kbps). E-1 and T1 lines may be interconnected for international use.

<sup>9</sup> A summary of RUDI obligations and principles is available in Annex 3.

Colombian city and municipality owners. In other words, the interconnection or access tariffs set by CRT focus on the operational costs of the local companies and not on political considerations<sup>10</sup>.

CRT assigned local operators to one of three categories based on each company's size, traffic and level of income from interconnection fees. CRT then applied a different access charge tariff to each category, as described in Annex 4. The first category includes local operators whose financial situation is less dependant on interconnection charges; the second includes operators who depend on interconnection charges to some extent, and the third category includes operators that depend heavily on interconnection charges. CRT set interconnection tariffs for each of the years between 2002 and 2005, decreasing the tariffs by approximately 10% each year.

TDP falls into the second category. The monthly interconnection tariff for this category was set at COP 11,540,000 (approximately USD 4,615)<sup>11</sup> and it is scheduled to decrease to COP 9,350,000 by 2005 (approximately USD 1,245)<sup>12</sup>. CRT is expected to review these tariffs in 2005. Although operators may request CRT to review the tariffs before 2005, should they be found unfair, the regulator has not yet found it necessary to do so. CRT has also set a capacity based interconnection tariff for cellular operators, including personal communication systems PCS<sup>13</sup>, that applies only to communications initiated from the long distance carriers' network or from another cellular operator and terminated on a cellular terminal device. In the case of fixed local to mobile network traffic, the cellular operators are paid at their full tariff and thus are not subject to interconnection tariff regulations.

#### **4. The Telecom and Telefónica de Pereira (TDP) Conflict. Implementation of Capacity Based Interconnection Rates.**

**The Conflict:** Under the RUDI regime, the operator requesting interconnection or the operator who had previously requested it under the former legislation, (usually a long distance operator<sup>14</sup>), has the right to choose between the traffic-based tariff or the capacity-based tariff. At the beginning of 2002, Telecom requested Telefónica de Pereira "TDP" to amend its interconnection agreement and adopt capacity-based charges. After the parties failed to reach agreement, TDP requested CRT to intervene on 8 March 2002. TDP alleged that Telecom's decision to adopt capacity-based charges would cause serious damage to its financial situation since it would have to modify its interconnection infrastructure to adapt to Telecom's requirements. In fact, the previous interconnection agreement between Telecom and TDP required 90 E-1 lines, but Telecom argued that only 36 E-1s were necessary. TDP also alleged that the payments for access charges made by Telecom to TDP would be reduced substantially under the new regime. This dispute marked the

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<sup>10</sup> CRT set the interconnection tariff after reviewing a variety of reference materials, including the value of the investment in an E1 line, equivalent to USD 8,000 amortized over a five-year term in accordance with the actual interconnection agreements already executed by local companies. Likewise, CRT used decisions of the national regulatory authority of Spain, the "Comisión del Mercado de las Telecomunicaciones de España CMT", as a reference in the final stages of preparing the regulation. The CMT introduced interconnection capacity based charges in CMT Resolution Sobre la Modificación de la Oferta de Interconexión de Referencia de Telefónica de España, S.A., dated 9 August 2001, and fixed the tariff at COP 4,055,000, approximately USD 1,500. This decision may be found at <http://www.cmt.es/cmt/document/decisiones/2001/RE-01-08-09-22.pdf>. This decision was further modified on 10 July 2003 in response to a request from Telefónica. The main changes to the earlier decision include (i) a more flexible parameter for calculating the minimum capacity unit; (ii) clarification of certain routing criteria to simplify Internet interconnection; and (iii) a decision that interconnection charges in the event of traffic overflow will be determined on a per-minute bases. <http://www.cmt.es/cmt/document/decisiones/2003/RE-03-07-10-00.pdf>

<sup>11</sup> At the exchange rate of USD 1= COP 2,750.

<sup>12</sup> At the exchange rate of USD 1= COP 2,750.

<sup>13</sup> PCS: Abbreviation for Personal Communications Service, a set of capabilities that allow terminal mobility, personal mobility, and service profile management. The flexibility offered by PCS can supplement existing telecommunications services, such as cellular radio. Under Colombian law PCS has the same prerogatives as cellular companies and competes with them on an equal basis.

<sup>14</sup> Annex 5 documents traffic volume trends and shows greater traffic flow from long distance to local operators.



first conflict to arise after the introduction of the capacity-based tariff regime in which CRT's intervention was requested.

**CRT Resolves the Conflict:** In May 2002, CRT called the parties to mediation, but no agreement was reached. CRT therefore issued an administrative act setting the procedures to be followed to resolve the conflict. CRT appointed an expert<sup>15</sup> who based his recommendation on traffic measurements, interconnection safety factors, and capacity usage. CRT followed the expert's recommendation and published in Resolution 541 of 19 September 2002 its decision requiring TDP to proceed with the interconnection of 47 E-1 capacity links, 11 E-1s more than Telecom had requested. TDP was ordered to increase its capacity within three days following the date the decision became enforceable. In addition, CRT fixed the monthly price to be paid for each E-1 to COP 11,540,000 (approximately USD 4,150) payable retroactively including all the time elapsed since Telecom's request for CRT intervention was filed on 17 April 2002. The decision was appealed<sup>16</sup> by TDP and CRT affirmed its final decision in December 2002.

This decision has had an important impact since it laid the foundation for subsequent dispute resolution and sent a clear message to the telecommunication sector on how CRT is likely to handle and solve future interconnection disputes.

**The future:** It is expected that this decision will promote more efficient network usage by local telephony companies as well as operators requesting interconnection. In addition, since the biggest local operators are also Internet Service Providers (ISPs), the reduction in access charges will most likely force local operators to seek other means to increase their revenues and thus compete more aggressively with other ISPs operating in Colombia. The decision is expected to encourage local operators to try to increase their traffic in ICT market segments such as data communications and the Internet.

Although consumers have already benefited from substantially reduced rates for Internet access due to Colombia's flat-rate Internet access tariff system,<sup>17</sup> it is expected that capacity based interconnection charges will lower end-user prices even further. Since ISPs now pay lower interconnection charges they may, in turn, reduce the tariffs they charge consumers. Unfortunately, the full effect of capacity based interconnection rates on Internet costs for end users is still to be realized since implementation has been slowed by local operators' challenges to the interconnection regulations, as explained below.

The capacity based interconnection charges have also promoted lower long distance and mobile interconnection costs. Thus, it is also expected that the reduction in interconnection charges will result in lower end-user tariffs for voice services. This is particularly important for data customers where packaged information and flat tariffs are required. Likewise, capacity-based interconnection charges will most certainly provide for greater competition in the local market, an increase in Internet penetration figures, and will secure efficient and non-discriminatory entrance of PCS services<sup>18</sup>.

Local telephone operators have challenged CRT's decisions arguing that the regime could only be applied to new interconnection agreements, and not to interconnection agreements already in effect at the time RUDI was issued. If the courts were to accept these arguments, the implementation of capacity based interconnection costs would be delayed but not reversed. While it may be difficult for local telephone

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<sup>15</sup> The expert appointed by CRT was registered on CRT's list of experts. To be registered, experts must have experience in network design, an electronic engineering degree and substantial regulatory experience. All of the experts presently registered are from Colombia.

<sup>16</sup> A reconsideration petition was filed with the CRT by Telefonica de Perira.

<sup>17</sup> CRT introduced the flat fee system in Colombia through Resolution 307 of 2002. Under this system the fees to access the Internet are lower than normal telephone fees: USD 7.15 for the first 90 hours per month. Customers are charged at the substantially higher regular telephone rate for more than 90 hours of monthly Internet access

<sup>18</sup> PCS Service began in Colombia in November 2002.

companies to accept a reduction of income from access charges, the general public also has a strong interest in lower tariffs and increased Internet access<sup>19</sup>.

## **5. Conclusions and Recommendations**

There are several conclusions and recommendations that may be learned from Colombia's experience with capacity-based interconnection. First, capacity based interconnection charges may be a useful mechanism to lower interconnection charges where it is virtually impossible to establish cost-based charges or where incumbent local operators are unwilling to cooperate to enable regulators to determine cost-based interconnection charges. Second, lowering interconnection charges without further intervention by a regulator may prove insufficient to reduce end-user rates. It will likely be necessary for regulators to verify that lower interconnection rates actually result in lower consumer tariffs. Third, regulators should consider conducting a careful analysis of the economic impact on local operators of migrating to capacity-based interconnection charges prior to implementation. This will enable affected operators to respond to the new market conditions and technical requirements so that service levels are not compromised. Fourth, regulators can expect and more importantly prepare to confront legal challenges from local operators. Finally, as established in Section 6.1.5 of the Inter-American Telecommunication Commission Guidelines and Practices for Interconnection Regulation<sup>20</sup>, capacity based interconnection charges optimize the existing transmission infrastructure and promote lower and more flexible tariff schemes that could benefit long distance, mobile and Internet end users, increasing competition levels in the telecommunication industry.

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<sup>19</sup> Telefónica de Pereira and other local telephony operators have challenged CRT's decisions with respect to capacity based interconnection. The Administrative Courts have not yet issued any decision. The time frame for a decision to be rendered is a maximum of two years.

<sup>20</sup> CITEL III Meeting of the Permanent Consultative Committee I: Telecommunication Standardization OEA/Ser.L/XVII.4.1 CCP.I.TEL/doc.312/03, September 24 2003, Original: in Spanish. [www.citel.oas.org/ccp1-tel.asp](http://www.citel.oas.org/ccp1-tel.asp)

## ANNEX 1

### BASIC STATISTICS ON THE COLOMBIAN TELECOMMUNICATIONS SECTOR

#### Sector Income Evolution

Income (COPBillion)	2000	2001	2002
Local Telephony <sup>1</sup>	1.396	3.553	3.802
Long Distance	1.408	1.584	1.519
Cell-Phone Telephony	826	1.072	1.585
Valued Added Service	283	371	415
Other	1.418	1.916	2.088
<b>Total</b>	<b>5,331</b>	<b>8,496</b>	<b>9,409</b>

<sup>1</sup> Includes local extend, rural mobile telephony, access charges

#### Local Telephony. Largest Companies/2002

Company	Working Networks	%	Income	Net Profits
ETB	2.033.972	27%	1.310.446	253.792
TELECOM <sup>1</sup>	1.646.431	22%	1.530.422	<b>-677.618</b>
EPM GROUP	1.622.944	22%	1.126.548	184.412
TELEASOCIADAS	1.008.412	13%	416.522	59.350
EMCALI	507.004	7%	269.374	27.811
OTHER	703.237	9%	255.994	13.202
<b>Total</b>	<b>7.522.000</b>		<b>4,909,306</b>	<b>-139,051</b>

<sup>1</sup> Projected based on information from SSPD – June. Evolution of the Income and net profits in Col\$ million

#### Evolution of the indicators of Local Telephony

	2001	2002 py
Return over Patrimony (Roe)	6,44%	2,13%
<b>Net Margin</b>	9,27%	3,38%
Operational Margin	-1,33%	-3,46%

Profitability including Telecom

National Long Distance Traffic	2000	2001	2002
Telecom	2.828	173	2.150
Orbitel	514	582	768
007 Mundo	272	386	466
<b>Total</b>	<b>3.614</b>	<b>1.141</b>	<b>3.384</b>
International Long Distance Traffic	2000	2001	2002
Telecom	209	173	132
Orbitel	71	100	121
007 Mundo	62	80	102
<b>Total</b>	<b>342</b>	<b>353</b>	<b>355</b>

In Million Minutes

Mobile Telephony. ARPU Evolution	2001	2002
East Bellsouth	0,4	0,45
Comcel	0,3	0,3
West Bellsouth	0,5	0,5
Occel	0,2	0,3
Bellsouth Costa	0,4	0,5
Celcaribe	0,3	0,37
<b>Total Country</b>	<b>0,3</b>	<b>0,34</b>

COPMillion. ARPU: Average revenue per Working networks (million)

Mobile Telephony		2001	2002
East Bellsouth		0,6	0,7
Comcel		1,2	1,8
West Bellsouth		0,4	0,5
Occel		0,7	1,1
Bellsouth Costa		0,2	0,3
Celcaribe		0,2	0,2
<b>Total Country</b>		<b>3,3</b>	<b>4,6</b>

Source: CRT. Sector Report 2002 ([http://www.crt.gov.co/documentos/biblioteca/informe\\_semestral.pdf](http://www.crt.gov.co/documentos/biblioteca/informe_semestral.pdf))

## **ANNEX 2**

### **HOW THE TARIFF UPDATING INDEX (IAT) WORKS**

<http://www.crt.gov.co/paginas/normatividad/resoluciones1995.htm#fin1>

CRT has defined the IAT in order to update the interconnection charges for the monthly use of local, extended local and rural mobile networks. The index is formed by elements that generically reflect the cost structure of an average telecommunications operator in Colombia. The ingredients are as follows:

- Employees' Minimum Salary Index (ISS). This element is incorporated into the IAT to reflect the local labor component, and contains variations in salary levels in Colombia. It has a relative weight equivalent to 33% of the total index.
- Producer Price Index (IPP). This component measures the variation in the cost of local inputs acquired by operators. It has a relative weight equivalent to 29% of the total index.
- Average peso duties on telecommunications imports (USD). This component attempts to measure materials, goods and services required by the industry from other countries. There are two elements involved: the average import duty for telecommunications goods and the peso/dollar exchange rate. It has a relative weight equivalent to 38% of the total index.

Access charges are updated when there is a variation of at least 3% in any of the indicators used in the IAT formula. A summary of the original interconnection charges in Colombian pesos is:

Interconnection	Date	Amount
Local cellular	Oct 1993	24/minute
Local – long distance	Mar 1997	30/minute
Local-Extended local	Sep 1996	10/pulse <sup>21</sup>

In December 2000 the IAT formula was applied and interconnection charges rose to the following charges in Colombian pesos:

Interconnection	Date	Amount
Cellular-local	Dec 2000	67.20/min
Long-distance – local	Dec 2000	51.15/min
Local – Extended local	Dec 2000	17.05/pulse

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<sup>21</sup> The pulse is the unit of measurement for charging and billing local telephony, and is approximately 3 minutes.

## **ANNEX 3**

### **RUDI PRINCIPLES AND OBLIGATIONS<sup>22</sup>**

<http://www.crt.gov.co/documentos/normatividad/resoluciones/00000575.pdf>

Type A General Principles and Obligations for all telecommunications operators.

- Right to interconnection. Applications should be made to suit traffic needs and characteristics of the services to be rendered.
- Duty to allow interconnection. Operators must provide interconnection directly or otherwise without imposing any requirements other than those in the regulations.
- Direct negotiation. The operators have the right – and a matching obligation – to work on access contracts in good faith and by direct negotiation, only calling on CRT to intervene if no agreement is reached.
- Indirect interconnection. This is the right to route traffic of other operators to the network of the interconnected operator without contravening the regulations for each service, and subject to certain rules.
- Non-discrimination (neutrality). The principle is satisfied by applying equal access for equal charges.
- Remuneration. The operators' right to receive reasonable consideration for the use of its infrastructure.
- The right to free negotiation of access costs, use and interconnection of networks. If no agreement is reached the operator making the request will bear the costs required to reach the interconnection points of the interconnecting operator.
- Separation of costs by elements of the network. The costs for effecting interconnection will be suitably unbundled so that the requesting operator does not have to pay for elements he does not need.
- Interconnection points. Interconnection will be provided at any point of the network where it is economical and technically feasible to do so, and requesting operators may not be required to connect at a larger number of points than necessary to guarantee the quality of the service.
- Additional services and provision of essential installations. Operators must negotiate for these services and for the installation of the equipment required for interconnection. Prices should be based on cost plus a reasonable profit.
- General technical aspects. Nine technical aspects are defined, including the establishment of alternative routes, minimum lag times and indicators of completed communications.
- Signaling. Operators are free to negotiate the adoption of the signaling standard that best suits them.
- Provision of necessary information. Operators entitled to interconnection must receive effective and prompt access to technical and commercial relevant information.
- Information on traffic for proposing and maintaining interconnection. Operators will keep available, and will circulate among each other, information on traffic estimates in order to dimension their interconnection; this must be reviewed every six months and be included in the interconnection contract.
- Use of information and public knowledge of the contracts, confidentiality clauses and the handling of public information.
- Information for CRT. All operators must provide CRT with the technical, operational and economic information related to their networks at the request of CRT and for CRT's purposes.
- Other: network indicators, signaling for international interconnections, minimum signaling conditions, transmission, compliance with international commitments, traffic routing restrictions.

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<sup>22</sup> Not an official translation, adapted by author from the main headings of RUDI principles and obligations.

B-Type Obligations, for PSTN, Mobile Cellular and PCS operator when interconnecting with each other:

- Absolute obligation to interconnect with networks of:
  - PSTN with local PSTN
  - Local and Extended Local with Extended Local
  - Long-distance with Extended Local
  - Rural Mobile with other telecommunications networks
  - Rural Mobile using satellite solutions
  - Mobile Cellular and PCS with PSTN networks
  - Mobile Cellular with PCS networks
  - Special rules for Long-distance interconnection
  - Access to PSTN by operators of telecommunications services using trunking access systems
  - New PSTN operators with the PSTN, Mobile Cellular and PCS operators
- Characteristics of interconnection nodes
- Availability of capacity to provide the interconnection
- Interconnection orders may be temporarily postponed by CRT for up to one year in the event that CRT considers that an operator does not have the technical or financial means to permit interconnection with a third party who has requested such interconnection and if CRT has ordered interconnection within a determined period.
- Basic offer of interconnection. Operators must make their offers available and update them for consultation by anyone. The offer must be registered with CRT before 1 November each year and be published and updated on the web page of each operator.
- Availability of essential installations. “Essential installations” for interconnection are defined as follows:
  1. Switching
  2. Signaling
  3. Transmission between nodes
  4. User Assistance services
  5. Operational support systems
  6. Civil infrastructure
  7. Billing, distribution and collection
  8. Automatic roaming between mobile network operators
  9. Physical space and additional services necessary to install equipment required for interconnection. CRT may include or exclude, on a case-by-case basis, the list of installations considered essential.
- Signaling for PSTN, mobile cellular and PCS networks
- Parameters of signaling quality
- Routing
- Availability of overflow
- Routing of PSTN international traffic
- Synchronization
- Distribution of degradation
- Transmission

- User information
- Numerical information of users and telephone directory service
- Access charges to telephony networks:
  - Charges between local PSTNs
  - Special cases for local PSTN service
  - Special cases for towns with the same numbering
  - Access and use charges for extended local networks
  - Access and use charges for the Rural Mobile networks by PSTN and mobile telephony operators
  - Access and use charges for calls from public telephones
  - Access charges between PCS and Mobile Cellular networks.

C-Type obligations applicable to operators in a dominant position in relations to any other operator:

- Determination of the existence of the dominant position for interconnection purposes. Analysis of the relevant market(s) that are or might be affected by the interconnection or service analyzed.
- Segregation. Any operator with a dominant position may be obliged to offer separately the element(s) of its network or services that give it that position, as determined by CRT.
- Access charges for network operators with a dominant position in the market.

D-Type obligations, To be satisfied by all operators and by persons who own, hold, possess or on any title exercise rights over an item which can be considered an essential installation to allow them to make use of it, as determined by CRT.

- Access to essential installations
- Charges for access to items considered to be essential installations

## **ANNEX 4**

### **TABLE OF ACCESS CHARGES AND OPERATOR GROUPS**

#### **Art. 4.2.2.19, Res. 463/2001**

“ACCESS CHARGES FOR TELEPHONY NETWORKS: As of 1 January 2002 telephony operators will offer at least the following two options of access charges to operators requesting interconnection:

		Option 1: Per minute interconnection tariff <sup>d</sup>			
	Group of companies	January 1/02	January 1/03	January 1/04	January 1/05
1. PSTN LOCAL NETWORKS <sup>2</sup>	ONE	49.35	43.26	37.16	31.07
	TWO	50.98	46.50	42.03	37.56
	THREE	53.59	51.73	49.87	48.01
2.	Cellular Networks <sup>3</sup>	66.92	97.49	142.02	206.90

- (1) Expressed in constant pesos of 30 June 2001 (constant pesos means that the numbers after June 30, 2001 are adjusted to prevent inflation distortion). The updating of constant pesos to current pesos will be effected as directed by Section 4.3.8. This corresponds to the value of access charges that Local PSTNs receive from operators of other services when the latter use the former's networks for incoming and outgoing traffic.
- (2) Annex 008 defines the local PSTN operators that form each of the Groups mentioned here. The values in this option correspond to remuneration per minute. All fractions are rounded up to the next full minute.
- (3) Access charges may not be collected at the same time as airtime. This applies to incoming calls for the International Long-Distance PSTN service and any other determined in regulations.

		Option 2: Maximum interconnection capacity charges <sup>1</sup>			
	Group of companies	January 1/02	January 1/03	January 1/04	January 1/05
1. PSTN LOCAL NETWORKS <sup>2</sup>	ONE	11,230.000	9,920.000	8,760.000	7,740.000
	TWO	11,540.000	10,760.000	10,030.000	9,350.000
	THREE	11,960.000	11,960.000	11,960.000	11,960.000
2.	Cellular Networks <sup>3</sup>	14,700.000	22,180.000	33,480.000	50,520.000

- (1) Expressed in constant pesos of 30 June 2001. The updating of constant pesos to current pesos will be effected as directed by Section 4.3.8. The values in this option suppose a monthly rental of 2,048 kbps/month E-1 or equivalent links. Operators may agree different values depending on bandwidth required. For the purposes of blocking at interconnection points, operators will observe 1%.
- (2) Annex 008 defines the local PSTN operators that form each of the Groups mentioned here.
- (3) Access charges may not be collected at the same time as airtime. This applies to incoming calls for the International Long-Distance PSTN service and any other determined in regulations.



**PARAGRAPH 1:** When the interconnection is not effected directly at the switching nodes in the upper part of the hierarchy of the local PSTN operator, the interconnecting operator will be entitled to receive payment for carrying traffic to other points at the same level at which the interconnection is to be made. Access charges shown here include local dispersion and domestic dispersion for mobile cellular and PCS services.

**PARAGRAPH 2:** Operators may set differential access charges in Option 1, taking account of peak traffic hours on their networks, provided that they can show that the weighting corresponds to the value provided in this Article.

**PARAGRAPH 3:** The interconnecting operator may insist on a minimum term of contract for the option of access charges by capacity, which may only be that required to recover the investment in the adaptations for the interconnection. If there should be a dispute on this, the interconnecting operator will immediately supply the interconnection at the prices shown in the table for the option of capacity access charges until the parties reach an agreement or CRT has settled the dispute. If the interconnection is over-dimensioned, the operators may request CRT to settle the differences that may arise from a future return of links. For this purpose the interconnecting operator may insist on the maintenance of the links required to comply with a minimum quality level of 1% blocking, even for peak traffic hours”.

### **CLASSIFICATION OF LOCAL PSTN OPERATORS FOR THE PURPOSES OF CALCULATING ACCESS CHARGES**

**(Annex 8 of Resolution 463/2002)**

<b>Company</b>	<b>Group</b>
EPM	1
ETB	1
EDT B/quilla	2
Emcali	2
Emtelsa	2
Metrotel	2
Telebucaramanga	2
Telecartagena	2
Telfonica de Pereira	2
Edatel	3
E T Girardot	3
Emtel popayan	3
Telebuenaventura	2
Telearmenia	3

<b>Company</b>	<b>Group</b>
Telecalarca	3
Telecaqueta	3
Telecom	3
Telehuila	3
Telemaicao	3
Telenariño	3
Teleobando	3
Telepalmira	3
Telesantamarta	3
Telesantarosa	3
Teletolima	3
Teletulua	3
Teleupar	3

The Local PSTN operators that do not appear on this list should apply as a maximum use/capacity access charge, corresponding to the local PSTN that operates in the same market as they do”.

## **ANNEX 5**

### **International Long Distance Traffic** (millions of minutes)

<b>Year</b>	<b>Incoming</b>	<b>Outgoing</b>	<b>Ratio</b>
1994	285	97	2.9
1995	344	121	2.8
1996	378	124	3.0
1997	362	154	2.4
1998	398	175	2.3
1999	438	211	2.1
2000	482	342	1.4
2001	530	363	1.5
2002	583	355	1.6

- Source: Telecom - Division of International Relations. Calculations by the National Planning Department
- Source: CRT. 2002 Telecommunications Sector Report
- Simulated . There are no CRT statistics. An annual 10% income traffic increase was stimulated

# **Venezuela Mini-Case Study 2003**

Short Message Service "Convergence"  
Interconnection in Venezuela

This mini-case study was conducted by Gustavo Tamayo of JOSE LLOREDA CAMACHO & CO., Bogota, Colombia with the active participation of country collaborators Jesús Rivera, Irene Torres, Ludmila Rodríguez and Edén Altuve from Venezuela's National Telecommunications Commission CONATEL. The views expressed in this paper are those of the author and do not necessarily reflect the views of ITU, its members or the Government of Venezuela.

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# Short Message Service Interconnection in Venezuela

## I. Introduction

Located in the Northeastern region of South America, Venezuela's population in 2002 was about 25.2 million with a GDP of approximately USD 126.2 billion. Revenues produced by the oil industry give Venezuela one of the highest per capita incomes in Latin America. Nevertheless, the year 2002 marked a difficult economic, social and political situation in Venezuela. Despite these difficulties, the telecommunications sector registered growth, comprising 3.56% of the nation's consolidated GDP.

Telecommunications is the second major industry in Venezuela, after the oil industry. By the end of 2002, Venezuela had 2,841,800 fixed telephony subscribers, for a fixed line penetration rate of 11.27. Public telephones reached 105,039 terminals, including those located in public Access Centers, for a public telephone penetration rate of 0.42 per 100 inhabitants. The country numbers about 6,463,600 mobile cellular subscribers, an approximate mobile cellular penetration rate of 25.64 per 100 inhabitants, one of the highest in Latin America. Indeed, Venezuela was among the first countries in the world in which the total number of mobile cellular subscribers exceeded the number of fixed line customers<sup>1</sup>.

Venezuela's telecommunications regulatory agency, CONATEL, was first established in 1991. Since its creation, CONATEL has played an important role in the telecommunications sector and has promoted the sector's growth.

Sector reform in Venezuela began a decade ago with the privatization of CANTV, the government local and long distance telephony provider. Sector reform expanded, more recently, by allowing free competition throughout the sector.

On 24 November 2000, the "Reglamento de Apertura" or Opening Regulations were issued, establishing the principles and rules for the promotion of competition, based on transparency, equal access among operators (including, when necessary, asymmetric regulations placing heavier burdens on those with market power) multiple operators, freedom of choice by customers, and service quality.

Venezuela has licensed a number of different service providers<sup>2</sup> which offer a wide range of services, including local, national and international fixed telephony, trunking, Internet and mobile cellular telephony operators, which provide Short Message Service (SMS). Enhanced message services (EMS) and more recently multimedia messaging services (MMS) are also available to consumers in Venezuela.<sup>3</sup>

The Venezuelan Telecommunications Law is based upon the fundamental principle of competition. Since interconnection enables the effective entrance into the market of new operators and services, the Venezuelan Telecommunications Law treats interconnection as a key measure necessary for the market's development and an essential tool for the maintenance of a competitive environment. In fact, under the Venezuelan Telecommunications Law, interconnection between telecommunication operators is mandatory.

The terms and conditions of interconnection agreements are initially left to the parties to agree. CONATEL is not authorized to intervene unless and until the parties have failed to reach an agreement within sixty days, counted from the date on which one party requests interconnection from another party.

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<sup>1</sup> See ITU World Telecommunication Indicators Database (see <http://www.itu.int/itu-d/ict/statistics>) and CONATEL Indicators from <http://www.conatel.gov.ve/ns/index.htm>

<sup>2</sup> A complete list of the Telecommunications operators in Venezuela may be consulted at: [www.conatel.gov.ve](http://www.conatel.gov.ve), under the heading "operadores".

<sup>3</sup> See Annex B for description of EMS and MMS services. Also, for specific EMS and MMS services provided by Venezuelan operators see: [www.telcel.net.ve](http://www.telcel.net.ve), [www.movilnet.com.ve](http://www.movilnet.com.ve) and [www.digitel.com.ve](http://www.digitel.com.ve).

The Venezuelan Telecommunications Law limits the role of the government to verify: a) that the interconnection requested is provided and b) to establish, where necessary, the general, technical and economic interconnection terms and conditions which will apply in the absence of an agreement between operators.

When requested to intervene, CONATEL sets interconnection terms and conditions within 30 days following a hearing in which both parties participate. The deadline for CONATEL's decision may be extended by another 30 days.

To promote competition, the Venezuelan Telecommunications Law mandates that interconnection negotiations between operators must be carried out based on the following principles: neutrality, good faith, non discrimination, equality of access, adequate quality of service and cost-oriented interconnection charges that include a reasonable rate of return for operators. CONATEL has issued a series of interconnection rulings based on these principles. (See Annex A to this report)

## **II. Short Message Service**

Short Message Service (SMS) enables mobile cellular subscribers to send and receive alphanumeric messages from their handsets. SMS messages may be no longer than 160 alphanumeric characters. SMS messages may also originate from other devices or networks such as personal computers (PCs), personal digital assistants (PDAs) or websites. Like electronic mail, this service enables users of mobile devices to exchange short text messages with other users, including those of different operators, whether locally, nationally and internationally.

SMS or "text messages" (described more fully in Annex B) have revolutionized the telecommunications market. Today, mobile cellular users around the world consider text messages to be an essential communications mechanism. The service responds to consumers' combined need for access to information and mobility.

Mobile subscribers in Venezuela are no exception to such global trends. Since mobile terminal equipment normally includes voice and data capacity, SMS services in Venezuela are considered an essential tool for communication among users and a necessary component of mobile cellular service. In addition, this technological evolution has opened the way for third generation mobile services (3G) that enable the convergence of voice, data and video. In fact, the three biggest mobile operators in Venezuela, Movilnet, Telcel and Digitel, have already built their respective 3G mobile services networks and are presently rendering 3G services. Digitel, which had earlier begun using GPRS<sup>4</sup>, offers multimedia message service (MMS), as well as mobile Internet access and e-mail, among other 3G services. Although these services are not yet widely used, it is expected that with the eventual lowering of handset prices, 3G applications such as MMS will become as common as SMS are today.

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<sup>4</sup> GPRS: "Short for General Packet Radio Service, a 2.5-G standard frequently adopted by GSM operators as a migration step towards 3-G (WCDMA) for wireless communications which runs at speeds up to 115 kilobits per second, compared with current GSM (Global System for Mobile Communications) systems' 9.6 kilobits. GPRS, which supports a wide range of bandwidths, is an efficient use of limited bandwidth and is particularly suited for sending and receiving small bursts of data, such as e-mail and Web browsing, as well as large volumes of data." See [www.webopedia.com](http://www.webopedia.com) and also ITU Internet Reports, Internet for a Mobile Generation, 2002.

### III. The Movilnet and Digitel Case

On 15 February 2002, CONATEL ordered Telecomunicaciones MOVILNET, C.A. (“Movilnet”) and Corporación DIGITEL, C.A. (“Digitel”) to interconnect their SMS platforms.

The following summarizes their general, technical and economical conditions:

- Movilnet C.A, which obtained a license to operate a cellular network in 1992, transported over 120 million SMS per month in 2002, charging users USD 0.025 per message.
- Digitel C.A., which obtained a Rural Telecommunication Services license in 1998, transported over 100 million SMS per month in 2002, charging users USD 0.05 per message.
- On 24 May 2001 Movilnet and Digitel entered into an agreement by which both parties would establish the terms and conditions for the connection of their SMS platforms within 180 days, if technically feasible. Due to their failure to reach a complete agreement (they were able only to agree to use the Short Message Peer to Peer<sup>5</sup> protocol), CONATEL initiated administrative proceedings to develop the terms and conditions for the interconnection of their respective SMS platforms.
- Each party presented its respective arguments to CONATEL. Digitel alleged that technical limitations in its network prevented the immediate interconnection with Movilnet’s network. More specifically, Digitel’s invoicing platform was not capable of applying different tariffs to the same service. Thus it was not possible to establish one tariff for SMS traffic terminating on the Digitel network and a different tariff for SMS traffic terminating on the Movilnet network. Transport of Call Detail Registers between the switches and Digitel’s billing platform was another area of concern as was the limited bandwidth capacity and the impact on the air interfaces.
- Similarly, Digitel argued it was temporarily unable to generate Mobile Terminated (MT) Call Detail Registers (CDRs) necessary to maintain the records to settle invoices between the two platforms.<sup>6</sup> Likewise, Digitel argued that SMS was not covered by the Venezuela interconnection rules and thus CONATEL had no authority to intervene.
- After a thorough study of the facts CONATEL decided that because SMS is an essential telecommunications service it falls under the Venezuela interconnection rules applicable to all telecommunication services. CONATEL therefore ordered the parties to effectively interconnect their respective SMS platforms.
- The interconnection terms were established taking into consideration the technical work that had to be carried out by the parties enabling them to transmit short message services under optimum quality conditions. The alleged technical obstacles were resolved by installing the necessary interconnection facilities.
- The parties had also been unable to reach agreement on economic terms. Moreover, the parties failed to provide CONATEL any information with respect to their respective cost structures. While CONATEL considered conducting a benchmarking study as it has done in the case of fixed-mobile interconnection,<sup>7</sup> it was unable to collect sufficient benchmarking data to determine access and use costs for the parties.

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<sup>5</sup> SMPP, or Short Message Peer to Peer, is a messaging protocol for the integration of applications with wireless mobile network messaging systems. With SMPP an application developer can send data to mobile devices or to other applications over the SMSC (Short Message Service Centre).

<sup>6</sup> It would appear that Digitel lacked the financial means necessary to make the investments required to interconnect the two SMS platforms. Source: EL UNIVERSAL, January 11, 2002, as cited by the specialized magazine “Venezuela Innovadora” [www.venezuelainnovadora.gov.ve](http://www.venezuelainnovadora.gov.ve).

<sup>7</sup> Benchmarking is mandatory under the Venezuelan interconnection rules for fixed to mobile interconnection. It is not mandatory in the case of SMS interconnection.

- CONATEL, did find, however, that the “bill and keep” system was applied to SMS traffic in some European countries.<sup>8</sup> The “bill and keep” system would eliminate any requirement for Movilnet and Digitel to pay each other for terminating messages on each other’s network. Pursuant to CONATEL’S decision, the parties were required, within three months of implementing the interconnection of their two platforms, to notify CONATEL in writing if they would continue to use bill and keep or if they agreed to adopt a different structure.
- Under this temporary measure, the parties were subsequently required to determine the volume of traffic between the two platforms, and to estimate the volume of messages managed by each platform, and the respective cost of the volume of messages generated.
- In compliance with the CONATEL decision, Digitel and Movilnet interconnected their respective SMS platforms applying the “bill and keep” system, until November 30, 2002 when Movilnet and Digitel entered into an interconnection agreement that replaced CONATEL’s interconnection order. Under the new contract the parties agreed to charge each other USD 0.01 per message. As of the time this report was published, CONATEL had not been notified of any changes to this new arrangement.<sup>9</sup>

### *SMS Interconnection in Latin America*

Short Message Service interconnection is a novel regulatory issue. CONATEL is the first Latin American regulatory body to order the interconnection of SMS platforms. More recently, Mexico’s *Comisión Federal de Telecomunicaciones (COFETEL)* has also ordered the interconnection of SMS platforms between Telcel (with 22 million subscribers) and Iusacel (with 1.5 million subscribers.) Rather than imposing a “bill and keep” system, COFETEL established an interconnection charge of Mexican Peso 0.12 per message, approximately USD 0.01. In Peru, SMS operators were able to reach agreement without regulatory intervention; in Chile the regulator acted as a facilitator. The need for regulatory intervention may simply be a question of the volume of SMS traffic flowing between operators. Where the volume of traffic is relevantly balanced, operators have sufficient incentive to cooperate.

### *A Message “Explosion”*

CONATEL’s SMS interconnection decision has resulted in a significant upsurge in the volume of SMS traffic in Venezuela, benefiting users of all mobile networks. By May 2003, only a few months after CONATEL ordered the two mobile operators to interconnect their SMS platforms, Movilnet’s SMS volume had jumped from 120 million to 500 million outgoing messages per month. Although the increase was also due to better price arrangements, the interconnection with Digitel undoubtedly played a determining role in this message “explosion.” Likewise, Digitel’s SMS traffic increased from 100 million messages per month in October 2002 to 115 million in May 2003. In turn Telcel, the third mobile operator saw its SMS traffic double after it agreed to interconnect its SMS platform with the other operators.<sup>10</sup>

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<sup>8</sup> The “bill and keep” approach entails levying no charges on interconnecting carriers at all. Each carrier “bills” its own customers for outgoing traffic that it “sends” to the other network, and “keeps” all the revenue that results. The bill and keep model assumes that if there were interconnection payments, they would roughly cancel each other out, resulting in no real net gain or loss for either carrier. Further, by forgoing payments, carriers avoid the administrative burden of billing one another for exchanged traffic. The model works best if the traffic flows from one network to another are roughly in balance. Otherwise, one carrier will be under-compensated for the costs of traffic that it receives from the other. To ensure that there is such a balance requires measuring and recording traffic and costs on an on-going basis.

<sup>9</sup> This new agreement may be consulted at CONATEL’s webpage: [www.conatel.gov.ve/adenda/informativa/2002](http://www.conatel.gov.ve/adenda/informativa/2002).

<sup>10</sup> Source: The specialized magazine, La Red, article “Portada June 2003” By Veronica Diaz Hung. Obtained from: [www.lared.com.ve](http://www.lared.com.ve)



#### **IV. Lessons for Regulators**

The interconnection orders issued by CONATEL related to public telecommunications networks established general, technical and economical conditions to be applied to resolve disagreements among operators. CONATEL's SMS interconnection decision built on these earlier decisions to ensure that mobile cellular subscribers in Venezuela can exchange text messages among themselves.

There are several lessons to learn from this case. First, provided that the applicable interconnection rules are drafted in such a manner that they enunciate general interconnection principles rather than specific case details, such rules can serve as a useful tool to address issues raised by new technologies. In this case, CONATEL applied the general principles laid out in its interconnection rules to require a reluctant operator to interconnect its SMS platform.

Second, "bill and keep" is an option that can be used, at least in the short term, to expedite interconnection arrangements to ensure that consumers' ability to send SMS messages to subscribers of competitive network operators is not delayed even in the absence of cost calculations, traffic measurements or benchmarking exercises. Requiring SMS platforms to interconnect under a "bill and keep" system may also give reluctant operators the incentive to reach cost-based agreements on a more timely basis.

Third, although there are presently no interconnection issues regarding third generation mobile services in Venezuela, these are very likely to develop given that the service has been recently introduced. Venezuela may again decide to refer to decisions taken by regulators with experience implementing 3G interconnection when these issues arise, just as it did in the case of SMS interconnection. It is for this reason that it is important for regulators to share their experiences. The ITU has an important role to play in fostering an exchange of regulatory experiences among the world's regulators, including through the publication of case studies such as this one, the Global Symposium for Regulators and the Global Regulators Exchange (G-REX), the password protected website for regulators.<sup>11</sup>

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<sup>11</sup> G-REX houses the Regulators' Hotline where regulators and policy makers can pose questions on their pressing regulatory concerns and receive answers from their colleagues around the world. G-REX welcome contributions in English, French and Spanish. Any regulator or policy maker interested in registering for G-REX is invited to do so at <http://www.itu.int/ITU-D/grex/register/asp>.

## **ANNEX 1**

CONATEL's interconnection orders may be downloaded from its website at: <http://www.CONATEL.gov.ve/ns/interconexion.htm>. The first interconnection case was brought to CONATEL after basic telephony services opened to competition in 2001.

The following is a selected list of the interconnection disputes CONATEL has resolved:

1. TELCEL C.A. is a mobile cellular operator that was the first operator qualified to provide basic telephony services in Venezuela. When TELCEL and CANTV were unable to reach an interconnection agreement within the legally required timeframe, CONATEL proceeded to issue an interconnection order.
2. Interconnection orders were issued with respect to TELCEL, C.A. and other mobile cellular operators, including Telecommunications Movilnet, C.A. and Infonet, Redes de Información, C.A..
3. At the end of 2001, mobile cellular operator Cooperación Digitel, C.A. and Veninfotel Comunicaciones (Vitcom), C.A. failed to reach agreement on a variety of interconnection issues. CONATEL subsequently issued an order for the interconnection of their networks.

## **ANNEX 2**

### **SMS, EMS and MMS Explained**

Short Message Service (SMS) is a two-way simple text service for sending short (160) characters) alphanumeric messages to mobile phones. SMS can be used for both “point-to-point” as well as cell-broadcast modes. The service is not unlike e-mail as it involves the asynchronous delivery of text messages, with the difference that messages are delivered directly to a mobile handset and can thus be received by the user anywhere and at anytime. Once a message is sent, it is stored at the SMS message center until it is successfully delivered or “forwarded.” This is known as a “store and forward” process.

Once a message is sent, it is received by a Short Message Service Center (SMSC), which must then send it to the appropriate mobile device. The SMSC sends an SMS Request to the home location register (HLR) to find the roaming customer. Once the HLR receives the request, it responds to the SMSC with the subscriber's status, reporting whether it is inactive or active and where the subscriber is roaming. If the response is "inactive", the SMSC will hold the message for a period of time. When the subscriber accesses his device, the HLR sends an SMS Notification to the SMSC, and the SMSC attempts delivery. The SMSC transfers the message in a Short Message Delivery Point-to-Point format to the serving system. The system pages the device, and, if it responds, the message will be delivered. The SMSC receives verification that the message was received by the end user, categorizes the message as "sent" and does not attempt to send it again.

As it is charged for according to the number of characters, however, SMS is not suitable for lengthy communications—a 640 character message costing four times as much as a 160-character one. SMS can originate either on a mobile phone or through a Web-based SMS service. Already, a number of instant messaging (IM) providers have introduced services whereby Internet users can send and receive SMS.

The phenomenal growth of SMS was predominantly user-driven, rather than the result of any targeted marketing efforts. In fact, operators hardly expected this simple technology to become a popular service and a significant revenue booster. Once the potential of SMS became clear, however, companies began exploiting the broadcast mode and offering a wide array of billable information services. These services include local and international news, stock updates, weather forecasts, banking information and travel information.

As the phenomenal success of SMS seems to indicate, person-to-person messaging will most likely continue to drive mobile data revenues for some time. Correspondingly, the adoption of EMS (enhanced messaging service) and MMS (multimedia messaging service), in combination with the increased use of prepaid services, are likely to become crucial drivers of the mobile Internet.

EMS is similar to SMS in terms of the store-and-forward process, but also includes additional features, such as the transmission of a combination of simple melodies, pictures, sounds, animations, and modified text as an integrated message. The combination of several short messages together will be a key technical feature of EMS.

MMS, based on a new global standard, will provide more sophisticated messaging than EMS and SMS, allowing users to send and receive messages with formatted text, graphics, audio and video clips. MMS will require new network infrastructure as well as MMS-enabled handsets. Unlike SMS and most EMS, MMS are not limited to 160-characters per message.

Source: ITU Internet Reports, Internet for a Mobile Generation, September 2002 and [http://isp.webopedia.com/TERM/S/short\\_message\\_service.html](http://isp.webopedia.com/TERM/S/short_message_service.html)

# Licensing Practices of Information and Communication Technology Services in Mexico

## 1. Overview of Current Licensing Regime

The current licensing scheme for the provision of information and communication technology (ICT) services in Mexico is based on concessions and permits. The scheme is formally devised in the Federal Telecommunications Law (FTL) of 1995, which also established the sector regulatory framework and liberalized the market. The Government started issuing concessions for local and long distance services in 1996, when the exclusivity period granted to TELMEX, the incumbent operator, expired. For cellular service, the Government introduced limited competition in 1990; it divided the country in nine regions—each comprising two or three major urban localities, and issued one concession per region to each of the two cellular operators. Later on, in the period 1996-1998, the Government auctioned additional frequency bands and issued concessions for fixed and mobile wireless telephone services. Currently, the Federal Telecommunications Commission (COFETEL) is auctioning additional frequency bands for PCS, trunking and the 77°West satellite orbit.

### 1.1 Concessions and Permits

In Mexico, a concession title is a license given by the Government to the holder that grants the right to exploit national resources and operate services, subject to certain terms and conditions. A concession is required to install, operate or exploit public telecommunications networks, to use or exploit radio frequencies, to exploit geostationary satellite orbits and orbital positions, and to exploit the transmission and reception of foreign satellite signals. Concessions for the use or exploitation of radio frequencies, and for exploitation of satellite communications are awarded by public auctions, whereas concessions for public telecommunications networks are issued upon request and are valid only for the services specified in the concession title.

A concession is not required for resellers that do not own transmission facilities but wish to offer telecommunications services by using the network capacity of a concession holder. In this case, the reseller must obtain a permit from the Secretariat of Communications and Transport (SCT). Similarly, the installation and operation of earth transmission stations requires a permit, although according to the law, a waiver can be issued if technical norms are followed<sup>1</sup>. The SCT has not yet issued permits to resale other services, only for payphones.

Value-added services, including Internet access, are defined as those transmitted using a public telecommunications network with effect on the format, content, code, protocol and storage of information. To provide them, only a registration with the SCT is required. On the other hand, installing or operating private telecommunications networks does not require a concession, permit or registration, unless radio frequencies are used.

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<sup>1</sup> Installation or operation of ground reception stations does not require a permit.

The SCT has authority over all concessions and permits and reviews the application process. However, it is COFETEL, the regulatory authority, who receives the applications. COFETEL is not embodied in the FTL and was created by presidential decree in 1996. In 2002, the National Congress proposed a new FTL that would give COFETEL, *inter alia*, complete control over permits and registrations.

There are no limits to the number of concessions or permits. However only Mexican nationals can obtain them and foreign ownership is restricted to 49 percent, except in the case of cellular mobile telephone service, where full ownership is permitted.

### **1.2 Duration**

Concession titles specify the services that the concession holder is authorized to provide to the public, its term, rights, and obligations. Concessions for public telecommunications networks may be issued for a term of up to 30 years and concessions for the use of radio frequencies for a term of up to 20 years. The law does not determine the duration of permits. In the past, the SCT has issued permits for the installation and exploitation of payphones for a term of 20 years, but since 2001, the term has been four years. Upon expiration, all concession and permit holders must reapply for a renewal.

### **1.3 Fees and Guarantees**

There are no fees charged on concessions for wireline public telecommunications networks. The applicant is only required to submit a guarantee to ensure compliance with the concession obligations. Guarantees have to be submitted at the time the concession is issued and must be updated annually according to the National Consumer Price Index (INPC). The amount varies depending on the number of local service areas where the concession holder may provide the authorized services, and of the service itself. In 2004, the guarantee for a national concession for wireline, wireless or long distance telephone service was 14 million pesos (US\$ 1.2 million); the guarantee for an interstate concession for cable television was 4.9 million pesos (US\$ 430,000).

### **1.4 Application Process**

The application process for a concession or a permit is identical. The law requires the SCT to resolve applications for permits in 90 days, for public telecommunications in 120 days, and for radio frequencies in 180 days. However, an incomplete application could delay the process for up to a year. Applicants for a concession need to submit complete documentation that includes: technical specifications, such as description of the equipment and technical standards; commitments in terms of local service areas that will be served; investment to be made; quality standards; and a comprehensive business plan that contains financing and marketing programs, revenue forecasts and details of employment and training programs.

## **2. Licensing Reforms to Address Convergence**

The regulatory framework in Mexico has not yet been fully adapted to accommodate technological convergence. The concession scheme remains segmented and treats

separately services such as broadcasting<sup>2</sup>, data, and telephony. Moreover, operators have not yet been authorized to provide a full range of ICT services.

The Government has explicitly recognized the need to adapt the regulatory framework to make it compatible with the convergence of telecommunications, broadcasting and informatics. In its Communications Sector Program for 2001-2006 (CSP), the SCT plans to update the FTL to make it compatible with the new regulatory and technological environment. Among other actions, it intends to review the concession procedures to simplify them and increase its transparency, and to start issuing permits to resellers of voice and data services.

## **2.1 Proposed Reforms**

In August 2002, Congress produced a draft FTL that had among its main objectives to facilitate ICT convergence. The following are some of the measures proposed in the draft:

- Adopting the principle of technology neutrality
- Requiring interconnection for all public telecommunication networks, including cable, in a non-discriminatory and transparent manner
- Adopting simplified procedures for obtaining new concessions for public telecommunication networks and for adding or substituting services originally authorized to concession holders
- Granting COFETEL the right to issue permits and manage registrations for value-added services
- Granting operators an automatic authorization should COFETEL not issue a permit within a defined time period
- Empowering COFETEL and eliminating the functional ambiguities with SCT

The draft legislation also proposed the introduction of market dominance analysis and related regulations, maintenance of the 49 percent limit on foreign investment, and issuance of regulations by COFETEL on access to essential network elements on an unbundled basis. The draft legislation was met with opposition from various interest groups and legislators and has not been passed by Congress. Negotiations for a new regulatory framework have not moved forward.

## **2.2 Recent Regulations**

The SCT and COFETEL have adopted several agreements and regulations to address the phenomenon of technological convergence. In the last quarter of 2003, the SCT amended the concession titles of cable and MMDS<sup>3</sup> network carriers, allowing them to provide Internet access services (bidirectional data transmission). The main cable operators were

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<sup>2</sup> The Broadcasting Act (Ley Federal de Radio y Televisión) was enacted in 1960.

<sup>3</sup> Multi-channel Multipoint Distribution Service (MMDS) also known as wireless cable, is a broadcasting and communications service that operates in the ultra high frequency (VHF) segment of the radio spectrum

already providing Internet services through a temporary permit. The 2003 amendment, however, did not include satellite television network operators.

The SCT recently published a draft amendment for cable service concession titles that will permit them to transport telephone calls over their networks. The SCT also plans to amend the cable service concession titles that will permit them to provide voice services directly to consumers. It has issued temporary permits to some companies to conduct trials for the service. TELMEX has likewise expressed its interest in providing television services over its telephone network.

In June 2004, COFETEL issued a new regulation for international long distance service and other cross-border telecommunication services. The main feature in regards to convergence is that it explicitly promotes technology neutrality and opens the way for the use of Voice over Internet Protocol (VoIP) in international communications. VoIP is currently being analysed by COFETEL. The June 2004 regulation also simplifies the procedures for obtaining international long distance concessions, eliminates the proportional return and settlement rate scheme, allows each concession holder to negotiate its own tariffs with foreign counterparts, and authorizes operators to install their own interconnection ports.

In July 2004, the SCT adopted standard A/53 from Advanced Television Systems Committee (ATSC) for the transmission of digital television. At the same time, it established the transition policy and timeline for broadcasters to move from analog towards a high-definition digital network. The policy contemplates the utilization of digital television to offer telecommunications services such as Internet access.

### **2.3 Technology neutrality**

Technology neutrality was considered in the latest draft of the proposed TA and in recent regulations. The new rules for international long distance issued by COFETEL, state the need to have a regulatory framework that is technology neutral in order to facilitate the convergence of networks and promote the use of new technologies.

In its CSP, the SCT did not include an explicit policy to promote technology neutrality but did mention the need to encourage technological innovation. It plans to establish concession obligations in terms of technological modernization to assure that the ICT infrastructure is based on advanced technologies.



INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION  
DEVELOPMENT BUREAU**

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RAPPORTEUR'S GROUP MEETING ON QUESTION 18/1 - GENEVA, 9 – 10 MARCH 2005

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Question 18/1: Domestic enforcement of laws, rules and regulations on telecommunications by national telecommunication regulatory authorities

### **STUDY GROUP 1**

SOURCE: ITU-R STUDY GROUP 1

TITLE: LIAISON STATEMENT TO ITU-D STUDY GROUP 1

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Source: ITU-R Doc. 1/56

## **Working Party 1B**

### **Liaison Statement From ITU-R Study Group 1 To ITU-D Study Group 1**

#### **1 Introduction**

ITU-R Study Group 1 met in Geneva (Switzerland) in October 2004 and welcomed the invitation to comment on the draft ITU-D reports on Question ITU-D 17/1 “Satellite regulation in developing countries” and Question ITU-D 18/1 “Domestic enforcement of laws, rules and regulations on telecommunications by national telecommunication regulatory authorities”. The review was undertaken on those parts of the reports dealing with spectrum management issues, i.e. within the scope and competence of ITU-R Study Group 1, in particular studies related to Question 223/1: “Guidance on the regulatory framework for national spectrum management”. After adoption by ITU-D, ITU-R Study Group 1 may be able to use some information in the reports as future reference material, where appropriate.

#### **2 Subjects of particular interest for ITU-R**

ITU-R Study Group 1 notes that the reports have been developed from analyses of country examples obtained either by a survey or other means. It was decided inappropriate to comment on these examples or any conclusions drawn.

#### **3. Specific comments**

##### **3.1 Question ITU-R 17/1 “Satellite regulation in developing countries**

There are some references to the technical aspects of spectrum management and use of the Radio Regulations. In general these appear correct. Otherwise, it is noted in the Conclusions section of this report (Section 5) that “This Report is linked closely to market access opportunities” and is therefore outside the scope of ITU-R SG 1.

##### **3.2 Question ITU-R 18/1: Domestic enforcement of laws, rules and regulations on telecommunications by national telecommunication regulatory authorities**

This report deals with overall telecommunication regulation. The references to spectrum regulation are mostly descriptions of specific country or regional regulatory practices. ITU-R SG 1 did not consider it appropriate to comment on these.



## FORUM ON TELECOMMUNICATION REGULATION IN AFRICA

### "LICENSING IN THE ERA OF CONVERGENCE"

Kampala (UGANDA), 3-5 November, 2004



## FINAL COMMUNIQUE

The fifth Forum on Telecommunication Regulation in Africa was held in Kampala, Uganda, from 3 to 5 of November, 2004.

The Forum was officially opened by Honorable John Nasasira, Minister of Works, Housing and Communications of Uganda, who in his opening speech welcomed all participants to Kampala, wished them a pleasant stay in Uganda, and commended the work done by the Regulators in Africa.

Preceding the Minister's opening speech, Dr. A. M. S. Katahoire, Chairman of the Uganda Communications Commission (UCC), Mr. Akossi Akossi, Secretary General, ATU, and Mr. Hamadoun Touré, Director, BDT/ITU delivered their respective keynote addresses.

Uganda was elected Chairman of the Forum, with Ghana as Vice Chairman and Mozambique as Rapporteur.

The Forum heard and discussed reports and presentations submitted by regulators, representatives of ministries, operators, Regional and International Organizations and ITU consultants, focusing specifically on the following topics:

- ❖ **Licensing in the era of convergence**
- ❖ **Impact of Convergence on Existing Infrastructure**
- ❖ **Technology Neutral Licensing**
- ❖ **Pricing of Spectrum in the era of convergence**
- ❖ **Regulatory implications**
- ❖ **ENUM in a convergent environment**
- ❖ **Country report on regulatory activities**
- ❖ **Regional and International cooperation**

During the debates, which took place over the three days, the Forum put particular emphasis on the need of aligning the political, legal, policy, and regulatory and administrative issues of the ICT in order to address the sector to accommodate the converged environment.

Issues regarding licensing, frequency management, regulatory and telecom infrastructure in the continent were emphasized during the discussions. The following observations and recommendations were agreed upon.

1. The forum noted the rapid pace at which telecommunications technology is moving towards convergence and the need to adapt the legal, institutional, policy and regulatory frameworks globally to accommodate such developments. The forum noted further that the transition towards unified or convergent licensing should be properly analyzed, taking into account the real situation of a country, as there is no single regulatory solution to address convergence.

**Recommendation 1:** Countries should develop legal, institutional, policy and regulatory frameworks suitable for convergent environment, and requested ITU to provide assistance to countries during this transition.

2. The forum discussed the speed at which the telecommunication technology was moving towards convergence and the need to upgrade networks to match the change. The forum noted that developing countries were likely to experience difficulty in meeting the financial resources needed to upgrade the networks.

**Recommendation 2:** Countries should consider enhancing the level field of competition, efficient regulatory institutions, and transparent legal and policy frameworks so as to attract investors in the sector.

3. With regard to capacity and the readiness of regulatory bodies to properly handle the paradigm shift, the forum noted that there was need to build regulatory capacity to handle the challenges of convergence.

**Recommendation 3:** The Forum requests the ITU to assist countries in enhancing this capacity through publications, consulting mechanism like GREX, and provision of training.

4. The forum discussed the issue of an appropriate regulatory framework to accommodate convergence and noted that the most appropriate regulatory framework, in the convergent environment was technology and service neutrality.

**Recommendation 4:** Countries should consider adopting technology and services neutrality as the most appropriate regulatory framework, in the convergent environment.

5. The forum discussed at length the utilization and pricing of spectrum in the era of convergence and noted that spectrum should be properly attributed and managed by a relevant authority to promote convergence giving due consideration to Africa's plan to develop rural communication through wireless technology.

**Recommendation 5:** The pricing of spectrum should be reasonable in order to encourage investment, and that malpractices such as holding of frequencies should be addressed through antitrust or competition laws. ITU was requested to provide assistance to regulatory bodies to enhance their frequency management and monitoring skills.

6. With regard to the perceived dependence of regulators on revenues from licenses to support their operations, the forum noted the likely effects of reduced revenues as a result of issuance of a single license.

**Recommendation 6:** The rights and obligations of market players should be provided for in the unified licenses such that this paradigm shift does not affect the regulator.

7. The forum commended the harmonization initiatives, taken by regional regulatory associations, related to licensing and regulation.

**Recommendation 7:** The regional regulatory associations should be supported in their effort to increase their capacity in formulating regional licenses.

8. The forum discussed the establishment of the African regulatory association and recognized the critical need to have a regional mechanism to provide input to the policy making process at the continental level. The forum further noted that such mechanism should be simple, flexible and not create new financial burden on the regulators.

**Recommendation 8:** The Chairman of the Forum in consultation with ITU and ATU should undertake a study on establishing the African Regulatory Association and report at the next session of the forum.

9. The forum also discussed the issue of technology and content, which involves telecommunications, Internet and Broadcasting.

**Recommendation 9:** The separation of the technology and content to create a favorable environment for technology convergence and the establishment of common regulatory authority for Telecommunications and Broadcasting.

10. With regard to joint Business and Government issues such as emergency access, law enforcement, disability access and numbering, the forum noted that the business model of convergence in Africa was in the infant stage and commended the good relation that prevails between the private and public sector.

**Recommendation 10:** Both the private sector and Government should play their part in executing their responsibility in enhancing the relationship.

11. The forum commended the participation of the African Union Commission in the forum and welcomed the initiative of the Commission of exploring the possibility of establishing an International African Region Telephone Code. The forum expressed the willingness of African Regulators to be associated with this initiative.

**Recommendation 11:** The African Union Commission should liaise with ATU and keep informed the regulators that are the relevant bodies responsible for managing the numbering plan in their countries.

12. The forum congratulated the ITU regional office for its good work and in particular for the publication of the Annual Report 2003.

**Recommendation 12:** In the future the annual report should be distributed in hard copies to the Regulators.

13. The forum considered the issue of improving the organization of future forums in terms of its duration in view of the tight schedules of the participants.

**Recommendation 13:** The Public and Private Sector Partnership Forum (PPPF) should be held in one day and the Forum on Telecommunication Regulation in Africa (FTRA) for two days, a total duration of 3 days. The Forum requested the Chairman to consult with ITU in identifying the best way of organizing these two events to be held back to back.

14. The forum requested the ITU to continue consultation with member countries in order to identify the venue date and theme for the next forum.

15. The forum agreed that the host country for the next forum becomes the 2<sup>nd</sup> vice chair to constitute the troika comprising the current chair, the outgoing chairperson and the new host country.
16. The forum further agreed that the date of the next meeting be in the month of April or May in order to have sufficient time to submit the outcome of the forum to the Global Symposium of Regulators.

Date: 5<sup>th</sup> November, 2004  
Kampala, Uganda



# FORUM SUR LA REGULATION DES TELECOMMUNICATIONS EN AFRIQUE

## "L'OCTROI DES LICENCES A L'ERE DE LA CONVERGENCE"

Kampala (OUGANDA), 3-5 Novembre 2004



### COMMUNIQUE FINAL

Le cinquième Forum sur la régulation des télécommunications en Afrique s'est tenu à Kampala, en Ouganda, du 3 au 5 novembre 2004.

Le Forum a été officiellement ouvert par l'Honorable John Nasasira, Ministre des Travaux, de l'Habitat et des Communications de l'Ouganda qui, dans son discours d'ouverture, a souhaité la bienvenue à Kampala aux participants et leur a souhaité bon séjour en Ouganda, tout en se félicitant de l'œuvre accompli par les régulateurs en Afrique.

Avant le discours d'ouverture du Ministre, Messieurs A. M. S. Katahoire, président du Uganda Communications Commission (UCC), Akossi Akossi, Secrétaire général de l'UAT et Hamadoun Touré, Directeur du BDT de l'UIT ont tour à tour prononcé leurs discours liminaires.

L'Ouganda a été élu comme président du Forum, le Ghana vice-président et le Mozambique rapporteur.

Les participants ont suivi et examiné les rapports et les exposés présentés par les régulateurs, les représentants des ministères, les opérateurs, les organisations régionales et internationales et les consultants de l'UIT, qui portaient spécifiquement sur les points suivants :

- **Octroi des licences à l'ère de la convergence**
- **Impact de la convergence sur les infrastructures existantes**
- **Octroi des licences technologiquement neutre et des licences unifiées**
- **Tarification du spectre à l'ère de la convergence**
- **Implications en matière de régulation**
- **L'ENUM dans un environnement de convergence**
- **Rapport des pays sur les activités en matière de régulation**
- **Coopération régionale et internationale**

Au cours des travaux qui ont eu lieu pendant les trois jours, les participants au Forum ont mis un accent particulier sur la nécessité de revoir les questions politiques, juridiques, administratives, d'orientation et de régulation des TIC, afin que le secteur puisse s'adapter au contexte de la convergence.

Les débats ont beaucoup porté sur les questions se rapportant à l'octroi des licences, à la gestion des fréquences, aux infrastructures et à la régulation des télécommunications sur le continent. Le résumé des conclusions des débats se présente ainsi qu'il suit.

1. Les participants ont noté la rapidité avec laquelle les technologies des télécommunications évoluent vers la convergence et la nécessité d'adapter les cadres juridiques, institutionnels, politiques et réglementaires au niveau mondial pour s'adapter à ces faits nouveaux. Les participants ont par ailleurs fait remarquer que la transition vers l'octroi de licences unifiées ou convergentes devrait être convenablement analysé en tenant compte de la situation réelle des pays, dans la mesure où il n'existe pas de solution unique en termes de réglementation de la convergence.

**Recommandation 1:** Les pays devraient mettre en place des cadres juridiques, institutionnels, politiques et réglementaires appropriés dans un contexte de convergence. L'UIT devrait apporter le soutien nécessaire aux pays pendant cette transition.

2. Les participants ont examiné la rapidité avec laquelle la technologie des télécommunications évolue vers la convergence et la nécessité de moderniser les réseaux pour s'adapter à ce changement. Ils ont noté que les pays en développement auront probablement des difficultés à trouver les ressources financières requises pour mettre leurs réseaux à niveau.

**Recommandation 2 :** Les pays devraient envisager de promouvoir de bonnes conditions de concurrence, des organismes de régulation efficaces et des cadres juridiques et politiques transparents en vue d'attirer les investisseurs dans le secteur.

3. S'agissant de la capacité et de l'aptitude des organismes de régulation à réagir de manière appropriée au changement de conception, les participants ont noté qu'il était nécessaire de renforcer les capacités en régulation pour relever les défis de la convergence.

**Recommandation 3 :** Les participants ont demandé à l'UIT d'assister les pays dans le renforcement des capacités par le biais de publications, de mécanismes de consultation tels que le GREX, et de la formation.

4. Les participants au Forum ont examiné la question du cadre de régulation approprié pour intégrer la convergence et ont noté que le cadre le plus convenable dans un contexte de convergence est celui de la neutralité de la technologie et des services.

**Recommandation 4 :** Les pays devraient penser à adopter la neutralité de la technologie et des services comme cadre le plus approprié dans un contexte de convergence.

5. Les participants ont longuement discuté de l'utilisation et de la détermination des prix du spectre à l'ère de la convergence et ont noté que l'attribution du spectre devrait s'effectuer convenablement et sa gestion confiée à un organisme compétent, afin de promouvoir la convergence tout en tenant compte du plan de l'Afrique de développer la communication au niveau rural par la technologie sans fil.

**Recommandation 5 :** La détermination des prix du spectre devrait être raisonnable afin d'encourager les investisseurs, et les pratiques néfastes telles que l'accumulation des fréquences devraient être combattues par des lois antitrust ou les lois portant sur la concurrence. L'UIT a été invitée à fournir assistance aux organismes de régulation afin d'améliorer leurs capacités de gestion et de contrôle des fréquences.

6. S'agissant de la dépendance apparente des régulateurs sur les recettes tirées des licences pour soutenir leur fonctionnement, les participants ont noté l'incidence probable de l'octroi d'une licence unifiée sur les revenus dans le sens de la réduction.

**Recommandation 6 :** Les droits et obligations des acteurs en présence sur le marché devraient être prévus dans les licences uniformes afin que le changement d'approche n'ait pas d'effet sur les régulateurs.

7. Les participants se sont félicités des initiatives d'harmonisation prises par les organisations régionales de régulateurs dans le domaine de la concession de licences et de la régulation.

**Recommandation 7 :** Les associations régionales de régulation devraient être soutenues dans leurs efforts de renforcement de leurs capacités dans la préparation de licences régionales.

8. Les participants au Forum ont discuté de la création de l'Association africaine des régulateurs et ont reconnu l'impérieuse nécessité de disposer d'un mécanisme régional pouvant apporter la contribution requise dans le processus de prise de décision au niveau continental. Ils ont noté que ce mécanisme devrait être simple, souple et ne pas constituer un fardeau financier supplémentaire pour les régulateurs.

**Recommandation 8 :** Le président du Forum est invité, en consultation avec l'UIT et l'UAT, à effectuer une étude sur la création de l'Association africaine des régulateurs et à présenter un rapport sur la question lors de la prochaine session du Forum.

9. Les participants ont également examiné la question de la technologie et du contenu, qui englobe les télécommunications, Internet et la radiodiffusion.

**Recommandation 9 :** Il conviendrait de séparer la technologie du contenu afin de créer un environnement favorable à la convergence technologique et à la mise en place d'un mécanisme commun de régulation pour les télécommunications et la radiodiffusion.

10. S'agissant des questions communes aux entreprises et aux pouvoirs publics telles que les services d'urgence, l'application des lois, l'accès pour handicapés et le plan de numérotation, les participants ont noté que le modèle de gestion de la convergence en Afrique était à ses balbutiements et se sont félicités des bonnes relations qui existent entre les secteurs privé et public.

**Recommandation 10:** Les secteurs privé et public devraient jouer le rôle qui leur revient dans le renforcement de ces relations.

11. Les participants se sont félicités de la participation de la Commission de l'Union africaine au Forum et ont favorablement accueilli l'initiative de la Commission d'examiner la possibilité de créer un Code téléphonique international pour la Région africaine. Ils ont exprimé la volonté des régulateurs africains à être associés à cette initiative.

**Recommandation 11:** La Commission de l'Union africaine est invitée à entrer en liaison avec l'UAT et à tenir informés les organismes de régulation qui sont les entités responsables de la gestion du plan de numérotation dans leurs pays respectifs.

12. Les participants ont félicité le Bureau régional de l'UIT pour la qualité du travail effectué et en particulier pour la publication du Rapport annuel 2003.

**Recommandation 12:** Dans l'avenir, le rapport annuel devrait être distribué aux régulateurs sous forme imprimée.

13. Les participants au Forum ont discuté de l'amélioration de l'organisation des forums à venir en termes de durée, en raison du programme chargé des participants.

**Recommandation 13:** Le Forum sur le partenariat entre les secteurs public et privé devrait durer un jour et le Forum sur la régulation des télécommunications deux jours, soit au total trois jours. Les participants ont invité le Président à consulter l'UIT pour trouver la meilleure manière d'organiser ces deux événements de manière simultanée.



14. Les participants ont demandé à l'UIT de poursuivre les consultations avec les pays membres pour déterminer le lieu, la date et le thème du prochain forum.
15. Les participants ont convenu que le pays hôte du prochain forum devienne 2<sup>ème</sup> vice-président pour constituer la troïka comprenant le président en exercice, le président sortant et le futur pays hôte.
16. Les participants ont également convenu que la date de la prochaine réunion soit fixée au mois d'avril ou de mai afin qu'il y ait suffisamment de temps pour soumettre les conclusions du Forum au Colloque mondial des régulateurs.

Fait à Kampala, Ouganda, le 5 novembre 2004.

**Via Africa:**

**Creating local and regional IXPs to save money  
and bandwidth**

*work-in-progress, for discussion purposes*

**DRAFT DISCUSSION PAPER PREPARED FOR IDRC  
AND ITU FOR THE 5<sup>th</sup> ANNUAL GLOBAL  
SYMPOSIUM FOR REGULATORS**

**Comments on this discussion paper are welcome and should be  
sent by 30 December 2004 to :**

**[GSR2004@itu.int](mailto:GSR2004@itu.int)**



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IDRC is a Canadian public corporation that works in close collaboration with researchers from the developing world in their search for the means to build more equitable and more prosperous societies. IDRC was one of the first development agencies to embrace ICTs as a key means to foster development and alleviate poverty.

ITU is an international organization within the United Nations System where governments and the private sector coordinate global telecom networks and services. The missions of the BDT include assisting developing countries in the field of information and communication technologies (ICTs), promoting the benefits of ICTs to all the world's inhabitants and promoting and participating in actions that contribute towards narrowing the digital divide, which encompasses ITU's dual responsibility as a United Nations specialized agency and an executing agency for implementing projects under the United Nations development system or other funding arrangements.

The author would like to thank the following for their contribution to the development of this discussion paper: Sunday Folayan, Paul Hamilton, Badru Ntege, Andrew McLaughlin, Bill Woodcock and others too numerous to mention. A particular thanks to Brian Longwe and William Stucke, fellow team members on the IDRC study whose help has been invaluable. Finally thanks to those who have supported its publication including Steve Song and Laurent Elder of IDRC and Jean-Yves Besnier, Desire Karyabwite and Susan Schorr of the ITU BDT.

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## Introduction

This discussion paper addresses two issues of direct relevance to most developing countries: the high cost of bandwidth, one of the factors inhibiting the growth of Internet usage in these countries; and one of the reasons for this high cost, the need to use international bandwidth to exchange data at a local and national level.

In June 2003 the Canadian agency International Development Research Centre (IDRC) commissioned a piece of work titled “Regional Peering Points – Creating a proof of concept hub”. The work had two main objectives:

1. To create a proof of concept regional peering point that can act as a demonstration of what might be possible.
2. To identify an outline vision of the best ways of handling continental Internet traffic.

Following the discussions described in section 3, the ITU invited those involved to speak at a session of Telecom Africa in Cairo in May 2004. The idea of this jointly published booklet came out of discussions held after that session. In the meantime, IDRC<sup>1</sup> commissioned a second implementation phase for the work, which is now drawing to its conclusion.

The ITU's commitment to encouraging the formation of IXPs comes from its Kigali Declaration<sup>2</sup> which recommended that the organization address this issue through a symposium and “recommend additional initiatives that reduce dependencies on non-regional services and international connectivity. Examples of such initiatives include encouraging the development of local content and services (e.g. local free e-mail services)”.

This Declaration's intent is echoed in the draft WSIS Plan of Action that calls for those involved in the process to “optimise connectivity among major information networks by encouraging the creation and development of regional ICT backbones and Internet Exchange Points, to reduce interconnection costs and broaden network access.”<sup>3</sup>

This booklet has three sections that seek to look at how national and regional IXPs might be created, particularly in the African context but it also draws on lessons from elsewhere: -

**Section One** looks at the African policy context out of which IXPs came and outlines the practical reasons for implementing them on the continent.

**Section Two** describes how national IXPs have been set up and deals with both the people and technology issues that have to be addressed. It also identifies ways in which the regulatory framework can be made more favourable to encourage their successful operation.

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<sup>1</sup> <http://www.idrc.ca>

<sup>2</sup> Issued at its IP Symposium for Africa (7-9 July 2003) – see appendix A1

<sup>3</sup> See section C2, point J in the draft Plan of Action – See appendix A1

**Section Three** looks at the next logical step: how it might be possible to connect national IXPs so that data can flow between countries without needing to leave the continent. It summarizes: the discussions to date about the best approach to this task; the option chosen by AfrISPA; and what needs to happen to make it a reality.

The appendices of the booklet contain a list of useful documents and references (A1). Where possible, we have sought to avoid footnotes therefore most of the supporting material can be found in this section. It also contains a summary list of Internet Exchanges worldwide and a reference point for a fuller list.

## 1. Benefits of establishing national and regional IXPs

*“At the moment, developing countries wishing to connect to the global Internet backbone must pay for the full costs of the international leased line to the country providing the hub. More than 90 per cent of international IP connectivity passes through North America. Once a leased line is established, traffic passes in both directions, benefiting the customers in the hub country as well as the developing country, though the costs are primarily borne by the latter. These higher costs are passed on to customers [in developing countries]. On the Internet, the net cash flow is from the developing South to the developed North.”*

*Yoshio Utsumi, Secretary-General of the ITU<sup>4</sup>*

### 1.1 Context

There are currently ten national IXPs in Africa: Democratic Republic of Congo (DRC), Egypt, Kenya, Mozambique, Nigeria (Ibadan), Rwanda, South Africa, Tanzania, Uganda and Zimbabwe. AfrISPA has played a key role in setting up these exchanges with support from a variety of public and private partners including the British aid ministry, DfID and Cisco. There are currently no IXPs in francophone West Africa. However, a number of other African countries are already holding preparatory discussions. If there is a sufficiently high level of traffic to be exchanged at a local level then an IXP represents a rational solution.

So how did this growth in African IXPs come about? In October 2002, the African association of ISPs, AfrISPA, published an influential policy paper called the Halfway Proposition. This highlighted the high cost of international bandwidth as one of the causes of high prices for African Internet users.

As its authors observed:” When an end user in Kenya sends an e-mail to a correspondent in the USA it is the Kenyan ISP who is bearing the cost of the international connectivity from Kenya to the USA. Conversely when an American end user sends an e-mail to Kenya, it is still the Kenyan ISP who is bearing the cost of the international connectivity, and ultimately the Kenyan end user who bears the brunt by paying higher subscriptions”.

Worse still, when an African Internet user sends a message to a friend in the same city or a nearby country, that data travels all the way to London or New York before going back to that city or the nearby country. It has been estimated that this use of international bandwidth for national or regional data costs Africa in the order of US\$400 million a year. This situation has its parallel in telephony where it may be easier to route a call via Europe or the United States to a neighbouring country than to do so directly.

Whereas voice transactions are made on the basis of each side involved paying for a half circuit, Internet transactions are based on a full circuit. These differences have been the subject of some debate in ITU-T Study Group 3.

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<sup>4</sup> [www.itu.int/itudoc/telecom/afr2004/86020\\_ww9.doc](http://www.itu.int/itudoc/telecom/afr2004/86020_ww9.doc)

The Internet Backbone Providers in the developed world respond that they do not charge developing country ISPs any more than their other customers. They believe that the majority of international costs are incurred for a number of reasons including: poor telecoms infrastructure at a regional and national level, fewer peering points than elsewhere and a genuine lack of competition in many developing countries.

In short, if Africa had a greater ability to exchange traffic locally at a national level and regionally within the continent, it would not be paying for expensive international bandwidth to make this happen. Likewise, if it had more outgoing traffic and some regional carriers, these would be able to peer with their international equivalents and lower the costs of international bandwidth. (See box, What is peering) Continental interconnection within Africa would enable the African ISPs to aggregate intra-African traffic and negotiate better transit prices from the global backbone providers<sup>5</sup>.

#### **What is peering?**

A relationship between two or more small- or medium-sized ISPs in which the ISPs create a direct link between each other and agree to forward each other's packets directly across this link instead of using the standard Internet backbone. For example, suppose a client of ISP X wants to access a web site hosted by ISP Y. If X and Y have a peering relationship, the HTTP packets will travel directly between the two ISPs. In general, this results in faster access since there are fewer hops. And for the ISPs, it's more economical because they don't need to pay fees to a third-party Network Service Provider (NSP).

Peering can also involve more than two ISPs, in which case all traffic destined for any of the ISPs is first routed to a central exchange, called a peering point, and then forwarded to the final destination. In a regional area, some ISPs exchange local peering arrangements instead of or in addition to peering with a backbone ISP. In some cases, peering charges include transit charges, or the actual line access charge to the larger network.

(sources: Webopedia, Whatis.com)

Whilst it is possible that the method of Internet charging might be changed, it runs against the grain of how liberalised markets work, and against the tradition which has fostered the enormously rapid growth of the Internet, and would therefore be very difficult to implement and to police. As the authors of the Halfway Proposition acknowledged, a more pragmatic approach would be needed to generate practical results. They argued that national and regional Internet Exchange Points (IXPs) would dramatically lower the amount of national and inter-continental traffic that needed to leave the continent.

At a national level, the argument worked well because most ISPs were based in capital cities and could interconnect themselves relatively easily. However there remained the practical obstacle of how intra-continental

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<sup>5</sup> New Strategy for Regional Interconnection in Africa, Andrew McLaughlin, XDev - Extreme Development, 24 October 2003 (<http://cyber.law.harvard.edu/xdev/000046.html>)



traffic might be exchanged. It would be considerably less easy to exchange traffic between countries for a number of reasons.

In the absence of widespread fibre infrastructure between countries, this inter-country traffic would have to travel by satellite and to date, all the major satellite operators are run by developed world countries. It would also not be easy to create inter-country connections due to unresolved regulatory issues. To tackle these problems, the Halfway Proposition authors suggested two possible options.

The first of these was to set up a Pan-African Virtual Internet Exchange (PAVIX) as a separate “for profit” organisation whose sole aim would be to link IXPs across the continent. Or alternatively to encourage the emergence of regional carriers who would establish interconnection agreements with ISPs in countries that have IXPs and then sell transit traffic to ISPs from different countries. These two options formed the starting point of the IDRC study and the outcomes of that study are described in Section 3 below.

There are a number of advantages to creating IXPs that include: cost savings, increased access speeds and reduced latency and the revenue opportunities of local content and services. These are described in the three sections that follow.

## **1.2 Cost savings**

The underlying rationale for national IXPs producing cost savings is best illustrated by comparing the costs of local and international bandwidth:

*Table 1: Local versus international bandwidth comparisons*

Bandwidth	International	Local
64K	\$1687	\$190
128K	\$2386	\$274
256K	\$3375	\$378
512K	\$4773	\$535
1 MB	\$6750	\$757

(source: Telkom Kenya Bandwidth Tariffs December 2001)

Before the Kenyan IXP (KIXP) was established, international connectivity charges were nine times their equivalent local costs. Although there were many market factors involved, within a very short time of the establishment of KIXP international bandwidth rates in Kenya were reduced. However exchanging local traffic through KIXP remains considerably cheaper than doing the same using international bandwidth.

Aubin Kashoba, President of DRC’s ISPA-DRC said that: “The use of the Internet as a medium of exchange and the transfer of knowledge posed several problems. The current time and costs of international bandwidth was

a serious handicap. The existence of a local IXP in the DRC contributes considerably to the lowering of these costs”.

The local traffic flowing through national IXPs as a proportion of overall traffic varies from country to country. In broad terms, the more developed a country's (Internet) economy, the greater the proportion of traffic that will remain at a local level. For example most estimates of local traffic in South Africa going via the Johannesburg exchange (JINX) are around 50 per cent of total traffic. Whereas in Kenya, the proportion of local traffic is between 25-30 per cent. Based on these figures, it is not hard to see that substantial cost-savings can be made with local IXPs.

The rationale for reduced costs using a regional IXP can again best be illustrated by comparing bandwidth costs over different distances:

*Table 2: Comparative rates over different distances*

Local (single city)	US\$60 per month per 64 kbps
National (long distance)	US\$300 per month per 64 kbps
International (equivalent distance)	US\$1000 per month per 64 kbps

(source: William Stucke)

In the example given above (based on South African rates from 2003) there is the same clear cost differential between local and international traffic: the cost of transporting local traffic is 17 times lower than international traffic.

But also interestingly the cost of bandwidth over considerable distances nationally is about a third of its international equivalent. In this instance the international rate might cover linking two countries that were the same distance apart as those cities linked using national bandwidth.

Here the argument is more complex than for the local versus international cost savings as several factors affect the question. For most African countries, the international gateway that would be used to carry data to other African countries remains in the hands of a monopoly. As a result, there is no competition on rates and therefore prices remain artificially high. This is currently beginning to change as many countries revise their competition frameworks as exclusivities granted to incumbents come to an end.

Also in practical terms (with the exception of the SADC region) there are very few inter-country links and only a minority of African countries are linked by fibre, which can be significantly cheaper than its satellite equivalent. Where fibre does exist as in the case of SAT-3 it is in the hands of the same (largely) monopoly incumbent telcos and as a result prices seem to be higher from some countries than they might otherwise be in a more competitive environment.

It is technically not difficult to connect up the different local IXPs (see section 3 below). So for example, with these connections in place, Mozambique's Internet users could both e-mail and access the web in say South Africa

without the traffic this generates leaving the continent, thus saving one of Africa's poorer countries much needed hard currency.

### **1.3 Improved access speeds and reduced latency**

One of the difficulties that comes with using international bandwidth for exchanging local traffic is that it slows down the exchange of traffic and makes the use of bandwidth-heavy applications practically impossible. The distances involved create a noticeable delay similar in nature to the delay often experienced on international phone calls.

Latency is the time it takes for a message to traverse the system from the sender to the intended point of delivery. Therefore in practical terms, the delay may be caused by a number of related factors. In being transferred internationally, the message may make several "hops". In computer networking, a hop represents one portion of the path between source and destination. When communicating over the Internet, for example, data passes through a number of intermediate devices (like routers) rather than flowing directly over a single wire. Each such device causes data to "hop" between one point-to-point network connection and another.

Delays are due to three causes: the time taken to process each packet by each router; the time taken for the packet to queue for entry into the cable connecting to the next hop (a function of how congested the connection is); and the physical transmission time from one end to the other of each connection (This is much higher for satellite than for fibre). The more "hops" the greater the delay. The more congested a connection, the greater the delay – sometimes by orders of magnitude more. Obviously a message sent via a local IXP to a local destination will need far fewer hops than one sent via London or New York.

Speed of transfer is also affected by throughput. If the message is transferred via satellite and there is a great deal of traffic being transferred at the same time, the rate of transfer will slow down. And as a result the message will travel significantly less fast to its destination.

Latency measures these delays in milliseconds and this might sound like an almost unnoticeable delay but the amounts add up and can considerably slow down the effective operation of things. For example, a local data transfer (perhaps an e-mail) from one side of Kinshasa to another over a satellite link may incur an average latency of 200-900 milliseconds per packet, where the message transfer involves at least seven packets even for the smallest message. By contrast, the same message transferred locally over a copper, wireless or fibre optic link will only incur an average latency of between 5-20 milliseconds. This is of no great significance for email, which isn't time dependent. However, for web browsing, e-commerce, or especially for "real time" protocols, like Instant Messaging, IRC, audio and video streaming, and VoIP, it becomes highly significant.

Practical performance tests show that latency using IXPs may not perform as well as this theoretical average but they still achieve considerable improvements over international transfer. For example, with 10 ISPs connected KIXP achieves 30-60 milliseconds on an uncongested link.

Obviously the participating ISPs have to ensure there is sufficient capacity to provide an uncongested link. In the early days of KIXP one rather conservative ISP decided that it would only require a 64k circuit to handle likely traffic and within two hours there was so much traffic that it became congested. But once traffic levels have been established over time, the chances of there being a congested link are much less.

The improvements in access speeds and latency open up the possibility of a range of applications that might not otherwise be possible if the local data transfer had to travel internationally. For example, in Kenya Kiss FM launched a streaming radio service and in Uganda one of the largest types of traffic traversing UIXP is Web2SMS which allows any Internet user to send SMS for free from a web browser to mobile subscribers within Uganda.

#### **1.4 Creating revenue opportunities through local content and services**

With better access speeds and lower latency, a range of new economic opportunities open up at the local level. Whereas previously it made little or no sense to host web sites locally, it becomes possible to do this without an organisation incurring penalties in performance. Because of this there is likely to be a steady increase in the number of local domain names and locally hosted sites

A whole range of services become possible that previously would have been impossibly slow. These might include:

- Streaming Video/Audio
- Video-conferencing
- Telemedicine
- E-Commerce
- E-Learning
- E-Governance
- E-Banking

In the case of Kenya an entirely Internet-based company called MyJobsEye (<http://www.myjobseye.com>) was established with KIXP as a major factor in the business plan. Within a few months of going live, traffic to this website constituted approximately 40 per cent of it's hosting ISPs local traffic. By this time the company had a record number of 16,000 CVs and 7,000 jobs submitted online.

What there is as yet no local solution for is the high level of use of Hotmail and Yahoo addresses by local cyber-café users with all the associated bandwidth requirements for downloading user mail from outside the country of origin. Maybe in time these domains might offer regional mirror sites but it

may simply be that the operators of these web-clients do not see the need for these as they do not exist on other continents.

In summary a strong, local Internet sector has the potential to create higher-paying jobs with increased skill levels. Domestic traffic exchange favours domestic content authoring and publishing.

## 2. How to create a national IXP

*"I would like to see IXPs (regional and national) happen yesterday".  
Ernest Ndukwe, Chief Executive, Nigerian Communications Commission*

IXPs are the keystone of the entire Internet economy: they interconnect different parts of the Internet and they allow different ISPs to connect with each other, creating in effect a centralised clearinghouse. Routing traffic the long way round is not an efficient way to use the network and thus the IXP mantra "keep local traffic local" developed. (For a definition see the box, What is an Internet Exchange Point (IXP)?).

### **What is an Internet Exchange Point (IXP)?**

The term *network access point* (NAP) can also be used to refer to IXPs. A typical NAP or IXP consists of one or more cabinets that contain routing equipment belonging to the participants, plus a central switch to which all of the routers are connected. Each network operator installs a connection to the IXP and exchanges traffic with other networks through the central switch. Redundant equipment is installed in case of a failure.

### **2.1 People engineering vs. technology issues**

National IXPs are created by competing ISPs coming together to do something that is in their mutual self-interest: lower costs for local traffic. Working with competitors is never easy at the best of times but in Africa's fiercely competitive Internet sector, it is doubly difficult. The major issue is one of trust. You need to be able to work with your competitors and in some countries this level of trust has not yet been established. Getting IXPs off the ground is 10 per cent technical work and "90 per cent socio-political engineering."<sup>6</sup>

It is particularly important to get ("written") regulatory support for IXPs. In Kenya, those setting up the IXP understood that they had reached an agreement with the regulator to launch an IXP. The regulator, however, closed the IXP for a short period of time after it was launched. After these initial misunderstandings the IXP was given written approval by the regulator. Regulators have also acted affirmatively to launch IXPs. The Ugandan Communication Commission (UCC) was able to play a helpful role in bringing the different ISPs together as it was perceived as a neutral arbiter.

The issue of mutual distrust makes it important that IXPs are set up in such a way that its financial transactions and governance are completely transparent.

"IXP management is a delicate and fragile thing that only works if configured around the naked self-interest of the ISPs that it serves. IXPs survive and

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<sup>6</sup> Description used in a presentation by AfrISPA General Manager Brian Longwe at the First Southern African Internet Forum, September 2002.

succeed only where every ISP member can be absolutely certain that its financial contributions are paying only for its fair share of the costs, and are not effectively subsidizing its competitors. That counsels in favour of transparent self-management by the member ISPs, and against any role for the government”<sup>7</sup>.

Almost all of the current generation of IXPs are run by the local ISP association for the country concerned or by a separate organisation set up specifically to manage the IXP. For example, KIXP is run by the local industry association, the Telecommunication Service Providers of Kenya (TESPOK). But TESPOK is talking about setting up a separate organisation. Appendix A3 of this Discussion Paper contains the draft constitution and suggested charging structure of this new independent body that will run KIXP. The IXP that will be set up in Ghana will start life as a separate body from the local ISPA although there will obviously be an overlap in membership.

*Table 3: Traffic flow through African IXPs*

IXP	Established	No of ISPs	Traffic volume
Johannesburg JINX	December 1996	15	45 Mbps
Nairobi KIXP	February 2002	13	6 Mbps
Maputo MOZIX	July 2002	7	4 Mbps
Kinshasa PdX	November 2002	4	1 Mbps
Cairo CR-IX	December 2002	9	
Ibadan IBIX	March 2003	2	200 kbps
Kampala UIXP	July 2003	5	
Dar es Salaam TIX	January 2004	10	1 Mbps
Mbabane SZIX	June 2004	3	128 kbps
Kigali	July 2004	6	400 kbps

(source: Packet Clearing House)

In addition there is an IXP in Zimbabwe.

## 2.2 Technical set-up

The technical set-up for Internet exchange points is comparatively simple. At its core are Ethernet switches and routers that direct the traffic from one ISP to another. There may be one of each, or a pair of each for redundancy.

In the case of KIXP it was based on the Layer Two Route Reflector Model (L2 RR). The L2 RR IXP uses one or two routers as dedicated route reflectors. BGP<sup>8</sup> has a scaling feature that allows a router to reflect the route advertisements from one BGP router to other BGP routers peering with the

<sup>7</sup> New Strategy for Regional Interconnection in Africa, Andrew McLaughlin, XDev - Extreme Development, 24 October 2003 (<http://cyber.law.harvard.edu/xdev/000046.html>)

<sup>8</sup> Short for Border Gateway Protocol, an exterior gateway routing protocol that enables groups of routers (called autonomous systems) to share routing information so that efficient, loop-free routes can be established. BGP is commonly used within and between Internet Service Providers (ISPs). The protocol is defined in RFC 1771.

reflector. This allows members of the L2 RR IXP to peer with the route reflector while exchanging traffic with each other's routers. Thus, each ISP has a router at the IXP, which peers with only one other router, the Route Reflector. The ISP's router advertises all the routes that that ISP carries to the IXP route reflector, and receives from the route reflector the sum of all routes advertised by all ISPs peering at the IXP. All ISPs then end up effectively peering directly with each other ("multilateral peering"), without having to set up individual peering sessions or agreements with every other ISP ("bilateral peering"). It's simple and efficient, and the maintenance costs are very low.

In this way, smaller routers can hence be used on the L2 RR IXP, reducing the cost of entry for the IXP. This model has been successfully used at the Hong Kong Internet Exchange (HKIX) and has proved to be a cost effective, reliable means of ensuring stable BGP peering.

Bi-Lateral peering agreements are difficult to implement on a L2 RR IXP. Hence, a multilateral agreement is required. For new IXPs, this is a benefit; eliminating one of the contentious issues with ISP interconnections on IXPs.

Initial capital support is sometimes provided for the purchase of the equipment. In the case of the DRC whose IXP was launched in May 2003, it was enabled by the acquisition of routers and a switch from the Internet NGO National Start-Up Resource Centre (NSRC). In other cases Cisco donated the equipment to start the IXP.

A similar pattern has been used in parts of Europe. For example, the Foundation for Knowledge and Competence Development (KK Foundation) supported the establishment of the national exchange point in Stockholm by making a grant of 5,000,000 Swedish Kronors available to SUNET to cover some of the costs for the establishment of the exchange point and the TU-Foundation. But today it is self-funding through fees paid by ISPs connecting to the exchange.

### **2.3 Housing the IXP on neutral ground**

Because of the potential for mistrust amongst, and competitive advantage between, the participating parties, it is particularly important that the IXP is located somewhere that is seen as "neutral". However in reality where that neutral ground is found depends on a number of factors, including: the context and maturity of the industry, geographical convenience, financial support from third parties and agreement on what neutral means to the different parties involved.

Location is often an important element in being able to demonstrate the wider neutrality of the project. In one country seeking to set up an IXP, a company offered space to the IXP but as it was also an ISP it was perceived as insufficiently neutral. Eventually a location was found in a Government ICT training facility that had no associations with any of the ISPs involved. In Uganda the regulator offered space on its premises to house the IXP.



In the case of Kenya, the university was one of the first options considered, but frequent student riots which cause a lot of property damage eliminated it as a candidate. A number of offers came from certain ISPs, but these were all turned down because they were clearly not neutral and raised a lot of suspicion from other ISPs.

The regulator CCK was willing to offer space but its geographical location (5 km outside the central business district) was inappropriate because it would have meant greater expense to put up backhaul links for the various members. Ultimately KIXP ended up leasing office space in the city centre in a conveniently located building. Over its three years existence it has attracted a number of companies who have wanted to be close to KIXP.

South Africa's JINX started life in the equivalent of a broom closet on the 9th floor of 158 Jan Smuts Avenue. The same building also housed one of the country's larger ISPs, Internet Solutions. When it became clear that the IXP was being heavily used, indeed was critical to the operation of the Internet in South Africa, the South African ISPA (which ran the facility) tendered for someone to run it. The bidding was won by IS Solutions and it has remained in the same building, although it was long ago moved into a purpose-built room with access control, security cameras and redundant air conditioning. It is now hosted in a partition in IS's Hosting Facility, which is of world class standard.

It is worth noting that the trigger for the tendering process was demands by some of the larger ISPs for higher levels of redundancy, which added significantly to the cost of operating JINX. The "last straw" was the simultaneous failure of two of the three air conditioners.

It is very important to ensure that the cost of operating an IXP is kept as low as possible, otherwise there will inevitably be charges that one ISP is subsidising others, which can lead to the collapse of the IXP if not managed.

## **2.4 Costs of setting up and operating a national IXP**

Given the level of savings that IXPs can achieve, they are extremely cheap to set up and run. Typical initial capital set-up costs for an IXP are as follows:

2 x Ethernet Switch (24 x 100 mbps @ \$500)	\$1000
2 x Cisco 1760 Dual Ethernet routers @ \$1500	\$3000
Related Ethernet cabling, trunking & cabinets	\$1000
Power back-up (batteries and inverter)	\$1500

Total: \$6500

Note: The above is based on the Layer Two Route-Reflector Model.

Obviously ISPs have to provide their own backhaul link and a router to plug into the IXP in order to deliver and receive local traffic. Ideally participating ISPs should own and/or operate their infrastructure to the exchange. In this

way the cost of participating is kept close to nothing at this level. In countries where the regulations do not allow ISPs to own their own backhaul link, they will be forced to lease this capacity from licensed operators.

In other countries where there is a more flexible competitive regulatory framework (for example, Uganda), ISPs can build their own infrastructure and some have laid fibre connections direct to the IXP. In other cases, the ISPs have leased fibre capacity from non-incumbent operators. In the case of Uganda, the second network operator (SNO) MTN has leased some of its fibre capacity to those who could not afford to lay their own connection.

In most cases the IXP will charge for shelf space or not charge at all. In Kenya it is a fixed fee of US\$185 per month. But this will probably change when the new independent body takes over the running of KIXP. It will probably charge a rackspace-based fee depending on how much space the participating member takes up with its equipment.

In the case of JINX in South Africa, the initial charging model was based on what was known as an “equivalent line fee” to those participating ISPs in the building where it was based in order to not disadvantage those outside the building who had to lease a line from Telkom SA to connect. Eventually the operation of the IXP was tendered and both bidders (IS Solutions and UUNet) offered to host and meet all the minimum requirements at no charge. Ultimately IS Solutions came out on top by a narrow margin and was awarded the contract.

## **2.5 Obstacles to implementing IXPs**

There are a number of obstacles that anyone wishing to set up a national IXP will need to negotiate. Some are substantive, whilst others are not and are generally raised by those wishing to protect the *status quo*. These obstacles can be summarised as follows:

- *Working with the incumbent:* In countries where international services have not been opened to competition, incumbent operators may perceive IXPs as a threat to their business. The perceived threat is the loss of international traffic that will be routed locally. In these cases (for example Kenya) the incumbent telco has often fought a bitter battle to prevent the setting up of an IXP. But in most cases (and especially where there is some element of competition) the incumbent telcos have not opposed the setting up of the IXP and in some cases (where they operate an ISP) have actually participated in the setting up of the IXP.
- *Insufficient trust:* As has already been pointed out in Section 2.1, the most significant obstacle to setting up an IXP is getting enough trust between the parties to work together. Often the “techies” in the participating companies will be happy to work together but the owners or managers are more suspicious of the implications.

- *Working with incumbent ISPs:* In some countries where the incumbent telco also has an ISP, these difficulties of trust can be particularly hard to overcome. In some cases like Senegal, the incumbent not only has its own ISP but also controls the largest share of the market. Smaller ISPs are likely to be concerned about co-operation on such an unequal basis.
- *National security:* In the case of Kenya, the incumbent telco raised the spectre of the national security implications of the IXP. However, after understanding the overriding positive implications of a national IXP, the Kenyan security services reviewed the plans and said that they were happy to see it go ahead.
- *Difficult/Unsustainable Models:* Like any other network, an IXP can be very simple or very complex. A complex model reduces the chances of sustainability and could possibly even severely lower the level of participation from local ISPs and potential members. In the case of Ghana, a model which required the IXP to build a communications network which would be used by connecting members and needed licensed wireless frequencies, investment in wireless infrastructure and choice of a location convenient for wireless transmission all led to a very contentious local debate. This was further complicated by the involvement of external “experts” who pushed the model. At the time of going to press there is still no IXP in Ghana, despite the commencement of the process in early 2004.

## 2.6 Lessons from outside of Africa

There are currently over 264 active Internet exchange points globally (source: Packet Clearing House, July 2004). Forty per cent of these are in the US and Canada (99 and 5 respectively), 35 per cent in Europe (93), 17 per cent in Asia (45), and 4 per cent in each of Latin America (12) and Africa/Arab States (10). Of a further 27 that are known to be planned, fifteen are in the US, five in Europe, five in Asia, one in Ghana and one in the United Arab Emirates.

Varying commercial and technical forces have driven the creation of IXPs in different countries. Of the twelve exchanges in Latin America and the Caribbean, for example, different approaches have been taken to create each, under quite different circumstances. In Chile, the intervention of the regulator helped to facilitate the creation of the facility (source: *IDRC/Atlantic Consulting*<sup>9</sup>). In Brazil, four IXPs have been created chiefly to allow ISPs in the main cities to interconnect Internet traffic between themselves, in some cases driven by universities and academic networks, in others by private companies. In Peru and Colombia IXPs have been established in order to save on the high costs of international bandwidth. This situation is

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<sup>9</sup> ‘Desarrollo des NAPS in Sudamérica’, prepared for IDRC/ Institute for Connectivity in the Americas by Olga Cavalli, Jorge Crom, and Alejandro Kijak of Atlantic Consulting.  
<http://www.icamericas.net>

especially pronounced in Paraguay where an IXP is being established that does not have direct access to submarine cable; with the cost of international bandwidth increased by satellite prices there is an economic imperative to create a national IXP.

<i>Table 4: Internet Exchange Points in Latin America and the Caribbean</i>			
Country	City	Name	
Argentina	Buenos Aires	NAP CABASE	NAP CABASE
	Buenos Aires	Optiglobe Internet Exchange – Latin America	OptIX-LA
Brazil	São Paulo	PTT-ANSP/FAPESP	PTT-ANSP/FAPESP
	São Paulo	Optiglobe Internet Exchange – Latin America	OptIX-LA
	Porto Alegre	Rio Grande do Sul Internet Exchange	RSIX
	Rio De Janeiro	Optiglobe Internet Exchange – Latin America	OptIX-LA
Colombia	Bogotá	NAP-Colombia	NAP-Colombia
Chile	Santiago		
Cuba	Havana	NAP de Cuba	NAP de Cuba
Nicaragua	Managua	Nicaraguan Internet Exchange	NicIX
Peru	Lima	NAP Perú	NAP Perú
Panama	Panama		
United States	Miami	NAP of the Americas	NOTA
Source: Packet Clearing House <a href="http://www.pch.net">http://www.pch.net</a>			

Meetings have been held regarding the establishment of a regional Network Access Point (NAP) in Latin America since 2001, but to date no truly neutral facility has come into existence. Several private initiatives have been developed that can be seen as an embryonic regional Internet exchange point (RXP), including the “NAP of the Americas”. Owned and operated by Terremark Worldwide Inc, the ‘NAP of the Americas’ is a Tier-1 facility located in Miami (US), São Paulo (Brazil) and Madrid (Spain) (<http://www.napoftheamericas.com>). Among the main proponents of regional IXPs have been those ISPs that are active across a number of countries and therefore have interest in intra-regional traffic flows.

However, *IDRC/ Atlantic Consulting* identifies at least two key obstacles to establishing a regional NAP in Latin America. The first is that studies have shown that just 10 per cent of Internet traffic generated in Latin America has a destination in another country within the region. A second has been a dramatic drop in the cost of international bandwidth to the US, from US\$1,200 per MB per month in 2000 to US\$400 per month in 2003. This has somewhat eroded the economic imperative for the creation of a regional exchange for many operators, but the economic case for southernmost Latin American countries or inland countries without access to submarine fibre is still strong.

Within Europe, there are two large IXPs in Amsterdam and London (United Kingdom) and, AMS-IX and LINX, which have 162 and 199 participants respectively. In addition, there are another eight exchanges with a traffic volume exceeding 2 Gbps and many smaller exchanges (Source: Packet Clearing House). As far back as May 2001, the European Internet Exchange Association (Euro-IX) was established to co-ordinate technical standards across the region, develop common procedures, and share and publish statistics. Currently some 33 IXPs in 21 different European countries are affiliated members of Euro-IX, roughly one third of all the operational Internet exchange facilities. Most European exchange points are 'mutual' organisations, owned equally by all the organisations that connect their networks ('peer') there.

In Asia, a number of attempts have also been made to establish a regional exchange. At a national level, IXPs have been established since 1996 in a number of the more developed countries across the region. The largest IXPs are in Seoul (Korea), Tokyo (Japan), Hong Kong, Perth (Australia), Singapore and Wellington (New Zealand). But a number are also appearing in developing countries such as Cambodia, Mongolia and Nepal.

A degree of consensus has been reached on the creation of an RXP facility, but the concept of a regional exchange has foundered so far in Asia on a number of conflicts. To some extent these mirror the contending political and commercial relationships between ISPs, carriers and regulators that exist in establishing an IXP within a country, except that they are magnified onto a regional basis to bring in political factors as well. Essentially, the proposed RXP models fall into one of two categories: either (i) adapt a large established IXP in a given city which is well served by infrastructure and has a conducive regulatory environment, or (ii) create a new facility based on experimental IP networks. The ITU Centre of Excellence in Thailand has played a leading role in working with parties and conducting research into the feasibility of RXPs.

One of the key problems was that providers were unable to reach a consensus as to which country or city should host the exchange. For example, Telstra (Australia) did make a proposal but has since abandoned it, for example, although both Shanghai and Hong Kong have also lobbied hard to become the regional hub. A number of IXPs have branded themselves in a regional fashion (e.g. "Asia-Pacific Internet Exchange, APIX" in Shanghai, China or the "Asia Regional Internet Exchange – Network Access Point, ARIX-NAP in Jakarta, Indonesia). Kilnam Chon, KAIST (Korea) Chair of the Asia Pacific Advanced Network (APAN) describes the need for such a facility and notes that 'some of the national Internet exchanges could function as regional Internet exchanges. Candidate locations would include Tokyo, Seoul, Beijing, Hong Kong and Singapore. The one in Tokyo is coming close to such a neutral regional Internet exchange'.

A second problem has been establishing the policy framework under which an RXP could be set up and operated. There is considerable variance in national legislation between the contending locations. And a third problem is

that capacity to and from countries within Asia is either scarce or much more expensive than routes to the US. This means that accessing the RXP is less attractive to other Asian ISPs than the *status quo* of accessing a top-tier US Internet backbone provider (IBP). The emergence of regional carriers and regional networks is seen as key to altering the economics of a centrally located hub.

## **2.7 Future African IXP development at a national and local level**

AfriSPA has plans to help with the setting up of an equivalent number of national IXPs over the next 2-3 years. Its second “African IXP Roadmap” will be launched in December 2004 and will have a specific emphasis on encouraging the setting up of IXPs in francophone countries. The next wave of IXPs is likely to include the (much delayed) Ghanaian IXP and a Zambian IXP.

Elsewhere in the world, IXPs have been set up in larger regional cities outside of the capital including: Zurich, Geneva, Hong Kong, Lyon, Manchester, Tampere and many US regional cities (see appendix A2). There are a number of reasons why this has occurred but probably the most significant of these is traffic-related. If there is a sufficiently high level of traffic to be exchanged at a local level then an IXP represents a rational solution.

There have been two examples of African IXPs operating in regional cities; one in Cape Town and the other in Ibadan. The Cape Town XP closed for a mixture of reasons including ISP peering policies and insufficient traffic. One of the larger ISPs was not keen on peering with smaller ISPs without charging for it. Also the larger ISPs found it easier to make private arrangements with other ISPs.

The IXP in Ibadan is perhaps more of a pointer to the future. Nigeria is a potentially large market and may well support more than one IXP, particularly in Abuja.

But beyond exchanging traffic within cities and between cities, the next logical step is to connect up local and national IXPs with their counterparts in other countries. In this way one can rework the industry to ensure that regional traffic stays regional.

### **3. Connecting up national IXPs to create a regional IXP in Africa**

Moving from the national to the regional level posed a number of significant challenges for those who wanted to see IXPs connected across country borders.

#### **3.1 Finding an appropriate model**

AfriSPA's Halfway Proposition policy paper identified two possible approaches to create regional links between IXPs: something called the Pan-African Virtual Exchange (PAVIX) and the use of regional carriers.

The Pan-Africa Virtual Internet Exchange (PAVIX) approach was the idea of creating a mesh of point-to-point interconnected African IXPs. Under this scheme, the Mozambique IXP (MOZIX) would have a point-to-point link to the Johannesburg IXP (JINX) and a similar link to the Kenyan IXP (UIXP) and another one to the Tanzanian IXP (TIXP). On this basis, participating ISPs would be able to negotiate direct peering with ISPs at other Internet exchanges. Eventually all IXPs in Africa would be interconnected, allowing all regional traffic to be exchanged through peering or transit agreements.

There were a number of practical problems with this approach. Some of the countries connected had monopoly international gateway providers, including until recently Kenya and South Africa. This would make direct point-to-point links in those countries very difficult. A more significant issue was whether there was enough traffic for participating ISPs to justify the cost of the links required where in all cases traffic would go by satellite. If an ISP were asked to pay for the cost of the link and was not using it or hardly using it, this would be hard to justify in commercial terms. Also ISPs would be tied into using a single link when the price of connectivity from another carrier might be cheaper.

The second of the two approaches was to encourage regional carriers to provide a service to individual ISPs in different countries through the IXPs and indeed to those countries that might not yet be connected by IXP. The regional carriers would sell regional transit to African ISPs at a lower cost than global satellite and backbone providers. If the regional carriers could provide regional transit at even a slightly lower price than the international equivalent then the proposition would begin to look attractive. Also some of the practical difficulties around regulation disappeared if the carriers in question had the relevant licences in each of the countries to be served or were able to negotiate partnerships with others who held the licences.

This approach drew strength from the fact that regional carriers are a much more important part of the Internet sector in the American, European, and Asian Internet markets. If such a development could be encouraged in Africa, then these carriers would also be able to peer effectively with international backbone providers.

### **3.2 The launch of AfrISPA's Request for Service**

During a workshop held in Johannesburg during iWeek in September 2003, South Africa, between IXP operators, ISPs, telecommunications regulators and a number of others it was established that the most desirable solution to the problem of regional inter-connection was to attract the services of companies that could offer individual ISPs a transit service between IXPs in Africa.

It was agreed that a Request for Service would be issued by AfrISPA who stated: "With this RFS, we intend to obtain innovative and cost effective proposals that meet the requirements of the African Internet community. Since this is a new opportunity opening up in Africa's communications sector, it will provide the successful party (or parties) entry into a market that has huge suppressed demand with plenty of growth potential".

The RFS asked operators to provide: an overview of the proposed solution; a summary of costs; prices for the service against assumptions for different traffic levels; commercial terms and conditions; detailed service descriptions; solutions for subsequent scalability; and technology support. Three carriers submitted proposals and AfrISPA has selected two of them to provide the service described to individual ISPs. An announcement will be made shortly after this booklet goes to press.

### **3.3 Scale of traffic**

The key to whether regional carriers become a significant part of the African Internet sector will be the level of traffic that needs to be carried between different countries. AfrISPA has been managing a separate project (also funded by IDRC) to research traffic levels and it had been hoped that the results would be available ahead of issuing the RFS. However they are expected to be available in the first quarter of 2005 and the aims and purposes of the project are described below.

In the absence of detailed data of this sort, it is worth summarising what is known, as this will give some indication of the likely scale of regional traffic. Global Internet Geography 2005 identifies South Africa as having 5.9 per cent of its Internet bandwidth going to other countries in Africa. This represents 52 Mbps out of a total of 881.5 Mbps, which gives some inkling of the likely scale of inter-regional traffic that would justify this level of bandwidth capacity.

Also the experience from Latin America described in Section 2.6 above shows that an average of 10 per cent of Internet traffic generated in Latin America has a destination in another country within the region.

As the "export platform" for the sub-Saharan part of the continent and its largest Internet market, South Africa's figure is likely to be one of the highest in the range. Other countries may well have percentages that range from 1-5 per cent of overall traffic. However it is clear from other parts of the



developed world that growing economic integration brings with it the need for greater levels of communication between countries. Therefore the growth level of this traffic will be tied to the speed with which economic integration takes place across the continent.

AfriSPA's African IXP Research Project<sup>10</sup> aims to:

- Research and measure the impact of African Internet Exchange Points on domestic and international routing economics.
- Model and investigate African Internet traffic exchange and routing data.
- Collect and archive this data.
- Encourage local and regional traffic exchange by quantifying the benefits of regional interconnection.

Equipment has been deployed at the following exchanges: KIXP, Kenya; TIX, Tanzania; UIXP, Uganda; and MozIX, Mozambique.

A Collector Server will be deployed at each IXP and managed by the AfriSPA research group. The Collector Servers act as Netflow collectors. They will also serve looking-glass information and graph traffic volume through the collectors and the IXP's Ethernet switch. Participating Networks will export their traffic flow data in Netflow version 5 format to Collector Servers. This project will result in the production of 5 quarterly country reports and one African Internet Traffic Geometry Report.

### **3.4 The key role of regional carriers, fibre infrastructure and future developments**

As can be seen throughout this Discussion Paper, the idea of keeping regional traffic within the continent will only be a practical reality if the price of doing so is cheaper than sending it internationally to achieve the same result. This has to be the fundamental business case for achieving this objective whatever other political considerations may apply.

Therefore it is important that all stakeholders – whether Government, regulators or the private sector – work together to achieve this goal. (The section that follows details a number of practical action points for regulators.) A number of developments need to fall into place if Africa is to take its place fully in the international Internet business.

It needs to have a number of competitive regional carriers whose role is both to exchange traffic between countries and to aggregate international traffic that can then be peered with their equivalents on other continents.

Understandably given their relatively recent appearance, African regulators have tended to concentrate on the national environment. The next stage is to look at how together they can encourage a number of regional

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<sup>10</sup> The Project's Website is: <http://research.afrispa.org/>

developments including the emergence of regional carriers. The regional licensing template under discussion within the sub-regional regulatory body TRASA provides one approach to this task.

The cost of inter-connecting countries will not begin to fall below a certain level until more countries are connected by fibre and there is open competition for fibre provision.<sup>11</sup> Where there is sufficient traffic to justify it, fibre is undoubtedly cheaper than satellite, although the latter will remain the best way of reaching Africa's widely scattered populations.

Governments and regulators can encourage private sector investment in fibre inter-connections if they are prepared to offer licences to non-traditional providers (utility and railway companies). Obviously this may compete with an existing incumbent and this is an issue that will need to be addressed.

There are two sets of concrete discussions about improving inter-connectivity between countries currently under way. Egypt's two IXPs are talking to several North African countries about enabling sub-regional North African traffic to stay within the continent and Egypt is positioning itself as a regional hub for North Africa and other Arab States.

The sub-regional regulatory body for East Africa – the East African Postal and Telecommunications Organisation (EARPTO) – has a working group looking at how best to address linking Kenya, Tanzania and Uganda. These discussions encompass: regulatory issues, facilitating the improvement of the network between these countries and the best ways to connect the IXPs in the three East African countries.

There also are a number of planned fibre and satellite projects which if implemented should improve connectivity between different African countries, most notably the EASSy<sup>12</sup> and Comtel fibre projects and the pan-African satellite project Rascom.

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<sup>11</sup> African ICT infrastructure investment options, Balancing Act for DFID, 2004

<sup>12</sup> East African Submarine Cable System.

#### **4. Regulatory issues to be addressed**

Regulators can do a number of different things to encourage the setting up of IXPs. Below is a checklist of areas where they can help provide a facilitating environment: -

- If invited, regulators can play a helpful role as neutral arbiter in the setting up of national IXPs: the Uganda Communications Commission and the Malaysia Communications and Multimedia Commission have both played this role.
- For regional IXPs, regulators can help clear the regulatory obstacles that exist at a sub-regional level working through their regional organisations. The EARPTO working party on East African links offer one approach to overcoming potential obstacles.
- For the most cost-effective connections to be made regionally between IXPs it is important that there is competition at the level of the international gateway. The opening up of VSAT use is particularly important. The recent competition framework announcements in Kenya and South Africa have opened the way for this to happen.
- Where there is no competition on either data carriage or the international gateway, it is important that the regulator makes it a central priority to lower the cost of leased lines and the cost of purchasing bandwidth through the monopoly international gateway.
- At some point in the future, setting up an IXP may require the co-location of equipment in an incumbent telco's "plant". Regulators need to ensure that this access is freely given.
- IXPs may need to obtain agreement from the regulator to start operations but it is not appropriate for them to be licensed. Since the aim is to provide a piece of "common carriage" infrastructure the purpose of which is not to make profit but to save countries hard currency, it is important that it should have no additional financial burdens imposed on it.

Regulators and Governments can both create the conditions in which IXPs and RXPs can flourish and pay-off at a national level will be lower hard currency requirements.

## Appendices

### A1. Background documents and references

Example of an Internet exchange point: Lyonix: <http://www.lyonix.net/> (Il y a aussi un explication sur les noeuds d'échange en français.)

Global Internet Geography 2005, Telegeography, 2004:  
<http://www.telegeography.com>

The Halfway Proposition, AfrISPA, 2002 (<http://www.afrispa.org/Initiatives.htm>)

ICT Policy Handbook, APC, 2003  
(<http://www.apc.org/english/rights/handbook/index.shtml>)

Internet Traffic Exchange: Developments and Policy, Working Party on  
Telecommunication and Information Services Policies, OECD, 1998  
[www.oecd.org/document/63/0,2340,en\\_2649\\_37441\\_1894655\\_119808\\_1\\_1\\_37441,00.html](http://www.oecd.org/document/63/0,2340,en_2649_37441_1894655_119808_1_1_37441,00.html)

The Internet Exchange Points Directory, TeleGeography Resource  
(<http://www.telegeography.com/products/ix/index.php>) The directory covers more than 150 Internet exchanges in 53 countries. Use of the Internet Exchange Points Directory is free, but users must register.

Kigali Declaration, ITU, July 2003 (<http://www.itu.int/ITU-D/e-strategy/internet/Seminars/Rwanda/Info-en.html>)

New Strategy for Regional Interconnection in Africa, Andrew McLaughlin, XDev -  
Extreme Development, 24 October 2003  
(<http://cyber.law.harvard.edu/xdev/000046.html>)

RFS issued by AfrISPA (<http://www.afrispa.org/documents/AfricanInternet-RXP-RFS.pdf>)

WSIS Draft Plan of Action, December 2003  
(<http://www.google.com/search?q=WSIS+action+plan&ie=UTF-8&oe=UTF-8>)

## **A2. List of Internet Exchanges worldwide**

### **A2.1 North America**

Canada - The Edmonton Internet eXchange (EIX)  
Canada - Montreal Internet eXchange (QIX/RISQ)  
Canada - The Toronto Internet eXchange (TORIX)  
Canada - The Vancouver Internet eXchange (BCIX)  
US - The New Mexico Internet eXchange (NMIX)  
US - The Anchorage Metropolitan Access Point (AMAP)  
US - The Austin Metro Access Point  
US - The Baltimore NAP (ABSnet)  
US - The Boston Internet eXchange MXP  
US - The Chicago NAP  
US - The Columbus Internet eXchange (CMH-IX)  
US - The Dallas MAE  
US - The Denver Internet eXchange (DIX)  
US - The Mountain Area eXchange (MAX)  
US - The Oregon Internet eXchange (OIX)  
US - The Hawaii Internet eXchange (HIX)  
US - The Houston NAP  
US - The Indianapolis Internet eXchange (IndyX)  
US - The Los Angeles International Internet eXchange (LAIIX)  
US - The Los Angeles 6IIX eXchange points for IPv6  
US - The Los Angeles MAE  
US - The New York International Internet eXchange (NYIIX)  
US - NY6IX  
US - The Palo Alto Internet eXchange (PAIX)  
US - The Philadelphia Internet Exchange (PhIIX)  
US - The Pittsburgh Internet Exchange (PITX)  
US - The San Antonio Metro Access Point (PhIIX)  
US - The San Jose MAE Ames (NASA)  
US - The San Jose MAE West  
US - The Seattle Internet Exchange (SIX)  
US - The Washington DC MAE-East  
US - The Washington DC Neutral NAP  
US - The Vermont Internet eXchange (VIX)  
US - The Virginia MAE (MAE Dulles)

### **A2.2 Western Europe**

Austria - The Vienna Internet eXchange (VIX)  
Belgium - Belnet (BNIX)  
Cyprus - The Cyprus Internet eXchange (CyIX)  
Denmark - Danish Internet eXchange (DIX) Lyngby  
Finland - Finnish Commercial Internet eXchange (FCIX) Helsinki  
Finland - The Tampere Region EXchange (TREX) Tampere  
France - Paris Internet eXchange (PARIX)  
France - French Global Internet eXchange (SFINX)  
Germany - The Deutsche Central Internet eXchange (DE-CIX) Frankfurt  
Greece - The Athens Internet eXchange (AIX)

Ireland - The Internet Neutral eXchange (INEX)  
Italy - The Milan Internet eXchange (MIX)  
Italy - NAP Nautilus (CASPUR)  
Luxembourg - The Luxembourg Internet eXchange (LIX)  
Netherlands - The Amsterdam Internet eXchange (AMS-IX)  
Norway - Norwegian Internet eXchange (NIX)  
Portugal - The Portuguese Internet eXchange (PIX)  
Scotland - Scottish Internet Exchange (ScotIX)  
Spain - El Punto Neutral Espanol (ESPANIX)  
Sweden - The Netnod Internet eXchange (D-GIX)  
Switzerland - The Swiss Internet eXchange (SIX)  
Switzerland - Geneva Cern (CIXP)  
Switzerland - Zürich Telehouse Internet Exchange (TIX)  
United Kingdom - The London Internet eXchange (LINX)  
United Kingdom - London Internet Providers EXchange (LIPEX)  
United Kingdom - Manchester Network Access Point (MaNAP)  
United Kingdom - London Network Access Point (LoNAP)

### **A2.3 Eastern Europe**

Bulgaria - The Sofia Internet eXchange (SIX - GoCIS)  
Czech Rep. - Neutral Internet eXchange (NIX) Prague  
Latvia - The Global Internet eXchange (GIX) LatNet  
Romania - The Bucharest Internet eXchange (BUHIX)  
Slovakia - The Slovak Internet eXchange (SIX)  
Ukraine - The Central Ukrainian Internet exchange  
Russia - The Russian Institute for Russian Networks

### **A2.4 Africa**

Democratic Republic of the Congo (PdX)  
Eqypt – CR-IX  
Kenya – Kenya Internet eXchange Point (KIXP)  
Mozambique – MOZambique Internet eXchange (MozIX)  
Nigeria – IBadan Internet eXchange (IBIX)  
Rwanda - Kigali  
South Africa - Johannesburg Internet eXchange (JINX)  
Swaziland – SwaZiland Internet eXchange (SZIX)  
Tanzania – Tanzania Internet eXchange (TIX)  
Uganda – Uganda Internet eXchange Point (UIXP)

### **A2.5 Asia**

Australia - AusBONE (Sydney,Melbourne,Brisbane,Adelaide)  
China \_ The Hong Kong Internet eXchange (HKIX)  
Indonesia - The Indonesia Internet eXchange (iIX)  
Japan - The Japanese Internet eXchange (JPIX)  
Malaysia - The Kuala Lumpar Internet eXchange (KLIX)  
New Zealand - The New Zealand Internet eXchange (NZIX)  
Pakistan - Pakistan National Access Point (PNAP)  
Philippines - The Philippines Internet eXchange (PHIX)

Saudi Arabia - The Internet Services Unit (KACST-ISU)  
Singapore - SingTel IX  
South Korea - The Korean Internet eXchange (KINX)  
Taiwan - The Taiwan Internet eXchange (TWIX-HiNET)  
Thailand - The Thailand Internet eXchange (THIX) Bangkok  
Thailand - ThaiSarn Public Internet eXchange (PIE)  
UAE - The Emirates Internet exchange

## **A2.6 South America**

Brazil - An Academic Network at Sao Paulo (PTT-ANSP)  
Chile - Chile National Access Point  
Colombia - Internet Nap  
Panama - Senacty

List taken from Colosource (<http://www.colosource.com/ix.asp>)

### **A3. Proposed KIXP Constitution and charges**

#### **BOARD RECOMMENDATIONS:**

1. The KIXP is legally constituted as a Limited Liability Company in Kenya. The current shareholding and directors need to be verified. It currently has the following members:

1. Access Kenya
2. Inter-Connect Limited
3. ISP Kenya
4. Kenyaweb
5. Mitsuminet
6. NairobiNet
7. Skyweb
8. SwiftGlobal
9. UUNET
10. Wananchi Online

11. KENIC

The 10 companies excluding KENIC are assumed to have paid their Ksh150,000/= Membership contribution and we propose each member receives one share of KIXP Limited

2. Each Share shall carry one vote and the Company shall have pre-emptive rights on the share.

3. The Company have seven (7) Board Members elected by the shareholders and shall elect the Chairman, Vice Chairman and Secretary.

4. The Board of Directors shall appoint a General Manager who can be from outside the board but will sit on the board but cannot vote

5. The GM will be responsible for presenting a business plan for the board's approval

6. Board members shall attempt to govern the IX in accordance with technical and policy best-practices generally accepted within the global community of IX operators as represented by AfIX-TF, APOPS, Euro-IX, and similar associations.

7. From time to time, the Management of KIXP may recommend certain charges to the Technical and Operational policies of the IX to the Members. Such recommendations may only be implemented with the approval of a majority vote by the Members.

#### **OPERATIONAL RECOMMENDATIONS:**

8. General KIXP technical and operational policies shall be made publicly available on the KIXP web site. (MoU)



9. The KIXP shall impose no restriction upon the types of organisation or individual who may become members and connect to the exchange.
10. The KIXP shall impose no restrictions upon the internal technical, business, or operational policies of its members.
11. The KIXP shall make no policy and establish no restrictions upon the bilateral or multilateral relationships or transactions which the members may form between each other, so long as the KIXP corporation shall not be involved.
12. Members must provide 24x7 operational contact details for the use of KIXP staff and other Members. The personnel available by this means must understand the requirements of this Memorandum of Understanding.
13. Members shall be required to sign a copy of the KIXP policies document, indicating that they understand and agree to abide by its policies, before any resources shall be allocated to them.
14. The primary means of communication with other Members will be via email.
15. Members must provide an email address in which requests for peering should be sent.
16. Members have a duty of confidentiality to the other KIXP Members in KIXP affairs.
17. Members must not refer their customers, or any agent of their customers, directly to KIXP member's support staff. All queries must be directed through the KIXP technical staff.
18. Members must not carry out any illegal activities through KIXP.
19. Members must ensure that all contact information held by KIXP in connection with their Membership is correct and up to date.
20. Members shall be required to provide and maintain current technical contact information, which shall be publicly posted on the KIXP web site. This information shall include at a minimum an internationally-dialable voice phone number, a NOC email role account, the IP address assigned to the member at the exchange, and the member's Autonomous System Number if they have one.
21. Members shall subscribe to a KIXP email list, operated by the KIXP board.
22. Members may only connect equipment that is owned and operated by that Member to KIXP. Members may not connect equipment to KIXP on behalf of third parties.
23. Members must only use IP addresses on the interface(s) of their router(s) connected to the KIXP allocated to them by the KIXP.

24. Members may only present a single MAC address to any individual KIXP port that is allocated to them.

25. It is preferred that each member have their own Autonomous System number, members without an ASN allocation will be assigned an ASN from private ASN space by the KIXP Staff. Any member who has previously been connected to the KIXP using private ASN and then later acquires their own full ASN must notify the KIXP Staff as soon as possible in order to incorporate this development into the BGP peering at KIXP.

26. Peering between Members' routers across KIXP will be via BGP-4.

27. Members shall not generate unnecessary route flap, or advertise unnecessarily specific routes in peering sessions with other Members across KIXP.

28. Members may not advertise routes with a next-hop other than that of their own routers without the prior written permission of the advertised party, the advertisee.

29. Members may not forward traffic across KIXP unless either the traffic follows a route advertised in a peering session at KIXP or where prior written permission of the Member to whom the traffic is forwarded has been given.

30. Members must, on all interfaces connected to the KIXP, disable: Proxy ARP, ICMP redirects, CDP, IRDP, Directed broadcasts, IEEE802 Spanning Tree, Interior routing protocol broadcasts, and all other MAC layer broadcasts except ARP.

31. Members must, on all interfaces connected to KIXP, disable any duplex, speed, or other link parameter auto-sensing. Full Duplex or Half Duplex Only, Fixed.

32. Members shall not announce ("leak") prefixes including some or all of the KIXP peering LAN to other networks without explicit permission of KIXP.

33. Members must set net masks on all interfaces connected to KIXP to include the entire KIXP peering LAN.

34. Any equipment and/or cabling installed by a Member at KIXP must be clearly labelled as belonging to the Member.

35. Members will not touch equipment and/or cabling owned by other Members and installed at KIXP or in the room containing the KIXP without the explicit permission of the Member who owns the equipment.

36. Members will not install 'sniffers' to monitor traffic passing through KIXP, except through their own ports. KIXP may monitor any port but will keep any information gathered confidential, except where required by law or where a violation of this Memorandum of Understanding has been determined by the KIXP Board.

37. Members will not circulate correspondence on confidential KIXP mailing lists to non-members.

38. Members must ensure that their usage of KIXP is not detrimental to the usage of the KIXP by other Members.

39. Members may not directly connect customers who are not KIXP members via circuits to their router housed in any KIXP rack.

40. Members should not routinely use the KIXP for carrying traffic between their own routers.

41. Members will be required to install routers that support the full BGP-4 standard.

42. The technical committee will set up certain monitoring features on the server at the KIXP. Certain KIXP members will be asked to have their NOCs monitor these features such that any problems can be referred to KIXP technical support personnel as quickly as possible.

#### PRICING RECOMMENDATIONS:

43. The following are the proposed Charges for new customers

- |                          |              |
|--------------------------|--------------|
| 1. SET-UP / INSTALLATION | Ksh 20,000/- |
| 2. MONTHLY               | Ksh 10,000/- |