Trends in Telecommunication Regulation

ACMA ITU
International Training Program
23-25 July, Sydney, Australia

Ashish Narayan
International Telecommunication Union
Specialized Agencies of the United Nations

A specialized agency of the UN with focus on Telecommunication / ICTs

Founded in 1865
ITU: A brief overview

ITU-D: ITU’s Development Sector fosters international cooperation and solidarity in the delivery of technical assistance and in the creation, development and improvement of telecommunication/ICT equipment and networks in developing countries.

ITU-R: ITU’s Radio-communication Sector globally manages radio-frequency spectrum and satellite orbits that ensure safety of life on land, at sea and in the skies.

ITU-T: ITU’s Telecommunication Standardization Sector enables global communications by ensuring that countries’ ICT networks and devices are speaking the same language.

193 Member States
567 Sector Members
159 Associates
60 Academia

Headquartered in Geneva,
4 Regional Offices
7 Area Offices.
Presentation Overview

- ICT – the integrating thread
- Universal Access to Broadband – Trends
- ICT embedded society and cross-sectoral collaboration
ICT – the integration thread
A day in the [digital] world

1994
- 1.5m people start using mobile for the 1st time
- 5-10h use of multiple screens

2014
- 3000 petabytes of IP traffic
- 1/2b photos uploaded
- 22 months of video on the internet per second
- 1b+ people on social media
- 183b emails sent

Digital revolution: are we ready? | Mario Maniewicz, Chief, Infrastructure, Enabling environment and ICT applications, ITU/BDD
History of the future

One to many to any: ICTs from happy few to the masses

- Mainframe (1 computer, many people)
- PC (1 person, 1 computer)
- Digital native computing (1 person, many screens)
- Internet of everything

Volumes, B


- Internet born
- www
- Social Media
- Connected car
- Internet of things
- Mass wearables
- Cognitive computing
- Artificial intelligence
Growing digital

Digital haves vs. have-nots, 2014 %

Growth in internet usage

- Traditional IP traffic
- Cloud IP traffic
- Social media active users
- Internet users
- Fixed broadband
- Mobile broadband subs

Billions, users

IP traffic, exabytes/month

The sky is the limit

**Enablers**
- Cloud
- Big data
- Mobile
- Social Media
- Online payments

**Inhibitors**
- Privacy
- Data protection
- New monopolies

**Digital Transformation**
- Compete
- Innovate
- Integrate

**New Value Propositions**
- Simplification
- Diversification
- Immersion

- Agility
- Scalability
- Digital skills
- Lock-in

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*Digital revolution: are we ready? | Mario Maniewicz, Chief, Infrastructure, Enabling environment and ICT applications, ITU/BDT*
A selfie of the ICT sector today
Who’s got the power?

- More affordable
- More services and content
- Mobile
- Smarter devices
- Higher speeds
- New usage patterns
- Doing more online
- Multiple screens
- More time spent online
- Direct demand for new services
6 shades of regulation

Who regulates?
ICT / competition
/data protection
/regulator

Who to regulate?
Telcos, netcos, OTT

What?
Pricing, QoS,
spectrum

How?
Light touch, self-
& co-regulation,
ADR

Where?
At the national,
regional,
international level

When?
Ex ante vs ex post

Policy & regulation
Digital futures

Agility, Creativity

Global flows

Trust

Openness & Sharing
50 per cent of the world’s population was covered by a 3G network in 2013.

The migration to Long-Term Evolution (LTE) technology seems to be happening much faster than did the earlier migration from 2G to 3G networks.

According to the GSM Association (GSMA), commercial LTE networks were operating in 88 countries in 2013, up from 14 in just three years. Another organization, the Global mobile Suppliers Association (GSA), puts that number at 101 countries.
**Figure 1.9: Market liberalization highlights, 2013**

- **Level of competition in ICT markets, 2013**
  - Full competition
  - Partial competition
  - Monopoly

- **Foreign ownership in the ICT sector, 2013**
  - No ownership allowed: 7%
  - Minority ownership: 13%
  - Controlling interest: 2%
  - Majority ownership: 15%
  - No restriction: 63%

*Source: ITU, www.itu.int/icteye*
Fixed-broadband subscriptions per 100 inhabitants, by speed, early 2013......
National Broadband Plans and Policies......

Asia-Pacific Broadband Plans – ITU activities

Broadband Policies adopted at highest level: Fiji, Cambodia, Brunei

Broadband policy support for Vietnam, Samoa, Nepal, Myanmar, Bhutan, Bangladesh, Cambodia, Nepal, PNG, Indonesia, Pakistan, Lao PDR, Vanuatu, Marshall Islands, Brunei, Philippines
Growing network......

Note: Data collection for this map is a work in progress.
Source: ITU, Telegeography, www.itu.int/itu-d/tn-d-map-public/
Growing network......

Figure 1.4: Fibre and microwave routes in selected regions, 2013

Note: The charts do not include data for Europe and North America. Data for these remaining regions will be available at the end of 2014.

Source: ITU.
SMART SUSTAINABLE CITIES

IMPROVING QUALITY OF LIFE...
Regulatory Trends
Licensing framework

Figure 1.8: Licensing frameworks for ICT services, 2013

Regulating fixed line services

Figure 1.6: Regulating fixed lines

Legend:  
LLU = Local Loop Unbundling  
RIO = Reference Interconnection Offer  
QoS = Quality of Service  
USO = Universal Service Obligations

Note: * estimates.  
Regulating mobile services

Figure 1.7: Incentive regulation and growth in mobile services

Note: *estimates.
# Summary of Universal Service / Access Trends

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<th>Definition of universal service/access exists</th>
<th>Africa</th>
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* This indicator allows multiple choice per country/economy

Source: ITU World Telecommunication/ICT Regulatory Database
Summary of key regulatory trends – retail price control

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<th>Africa</th>
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Region size: 

- Africa: 44
- Arab States: 21
- Asia & Pacific: 40
- CIS: 12
- Europe: 43
- The Americas: 35
- Total: 195

* This indicator allows multiple choice per country/economy
Year: 2013 or latest available data.

Source: ITU World Tariff Policies Database

ITU ICT-Eye: [http://www.itu.int/icteye](http://www.itu.int/icteye)
Summary of key regulatory trends – wholesale price control

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Region size

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Year: 2013 or latest available data.

Source: ITU World Tariff Policies Database

ITU ICT-Eye: [http://www.itu.int/icteye](http://www.itu.int/icteye)
What are the goals of the broadband plans?

- Build nationwide broadband infrastructure
- Connect per cent of households with broadband
- Promote the adoption of broadband services and applications
- Promote the provision of public services using broadband, such as
- Promote the provision of broadband services to specific populations
- Others

Source: ITU Telecommunication/ICT Regulatory Database
How are broadband plans being funded?

- Dedicated broadband development fund
- Universal service fund
- Government grants of other direct financial subsidies
- Public-private partnerships (PPPs)
- Other, please specify

Source: ITU Telecommunication/ICT Regulatory Database
Operational USO Funds

Percentage of responses based on the number of countries:
- Africa: 50/44
- Arab States: 63/21
- Asia & Pacific: 42/40
- CIS: 75/12
- Europe: 60/43
- The Americas: 34/35
- World: 55/195

Operators/service providers required to contribute to USF

Percentage of responses based on the number of countries:
- Africa: 31/44
- Arab States: 10/21
- Asia & Pacific: 19/40
- CIS: 4/12
- Europe: 20/43
- The Americas: 26/35
- World: 110/195

Source: ITU
Options to manage mobile demand

Source: Report ITU-R M.2243 (00/2011)
## Wireless broadband spectrum estimates

<table>
<thead>
<tr>
<th>Country</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>At least 1200 MHz by 2015</td>
</tr>
<tr>
<td>Australia</td>
<td>At least 950 MHz by 2015 and 1100 MHz by 2020</td>
</tr>
<tr>
<td>India</td>
<td>Additional 500 MHz for IMT Service by 2020*</td>
</tr>
<tr>
<td>Japan</td>
<td>1500 MHz by 2020</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>988 MHz</td>
</tr>
<tr>
<td>United States</td>
<td>Additional 500 MHz</td>
</tr>
</tbody>
</table>

*Source: Report ITU-R M.2243 (00/2011)  
* NTP 2012

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**Figure 16:** Country suggest allocation targets for wireless spectrum until 2020

Source: [ITU](http://www.itu.int/ITU-D/tech/broadband_networks/WirelessBDMasterPlans_ASP/Masterplan%20guidelines%20EV%20BAT1.pdf)

---
## Wireless broadband spectrum estimates

<table>
<thead>
<tr>
<th>RATG 1: Pre-IMT, IMT-2000 and its enhancements</th>
<th>RATG 2: IMT-Advanced (new mobile access and new nomadic/local area access)</th>
<th>RATG 3: Existing radio LANs and their enhancements</th>
<th>RATG 4: Digital mobile broadcasting systems and their enhancements</th>
</tr>
</thead>
</table>

### Total spectrum requirements for both RATG 1 and RATG 2 in the year 2020

<table>
<thead>
<tr>
<th></th>
<th>Total spectrum requirements for RATG 1</th>
<th>Total spectrum requirements for RATG 2</th>
<th>Total spectrum requirements RATGs 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower user density settings</td>
<td>440 MHz</td>
<td>900 MHz</td>
<td>1340 MHz</td>
</tr>
<tr>
<td>Higher user density settings</td>
<td>540 MHz</td>
<td>1420 MHz</td>
<td>1960 MHz</td>
</tr>
</tbody>
</table>

*Source: Report ITU-R M.2290-0 (12/2013)*
Means to control dominance

- Wholesale price controls
- Accounting separation
- Non-discrimination rules
- Ex-post competition law

Functional Separation
- Virtual Separation
- Equivalence of Input
- Monitoring & effective enforcement

Legal Separation
Structural Separation
Regulation 4.0

4th Generation Regulator

- Convergence Networks Services
- Competition
- Net neutrality
- Institutional efficiencies
- Licensing Authorizations
- Interconnection
- Universal Access to broadband internet
- Consumer protection Inappropriate content, unwanted communications, privacy
- Spectrum Management
- Balanced Regulation & Co/self regulation
- Co-operation International, Regional
- Consultation Collaboration
Regulation 4.0 - GSR 13 Best Practices

1. Innovative and smart regulatory approaches fostering equal treatment of market players without putting extra burden on operators and service providers.

2. The evolving role of the regulator: the regulator as a partner for development and social inclusion.

3. The need to adapt the structure and institutional design of the regulator to develop future regulation.
Broadband, Millennium Development Goals, WSIS
ICT embedded society and cross-sectoral collaboration
Policy & Regulation

Need for cross-sector collaboration

ICT SECTOR REGULATORY RESPONSIBILITY - Who regulates what?
**Collaboration Mechanisms**

- Emergency
- Education
- Health
- Electricity
- Governance
- Transport, Trade, Logistics
- Water
- Teleworking
- Infrastructure Security
- Integrated Policy
- Legislation
- Co-Regulation
- Standardization (International / National)
- MoU or Cooperation Agreement
- Coordination Committee
- Projects, Coordination on Case to Case basis
SMART SUSTAINABLE CITIES

REGULATORY COLLABORATION

COLLABORATIVE NETWORK OF REGULATORS

MULTI UTILITY REGULATOR

Electricity
Water
Transport
Telecom
Others
<table>
<thead>
<tr>
<th>Country</th>
<th>Agreement/Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>MoU signed between Bank of Tanzania (BoT) and Tanzania Communication Regulatory Authority (TCRA).</td>
</tr>
<tr>
<td>India</td>
<td>Statutory guidelines for operationalizing M-Banking issued by the Reserve bank of India (RBI) for banks and Regulations by the Telecom Regulatory Authority of India (TRAI) on QoS, Tariffs for service providers.</td>
</tr>
<tr>
<td>Pakistan</td>
<td>MoU between Pakistan Telecommunication Authority (PTA) and State Bank of Pakistan (SBP)</td>
</tr>
<tr>
<td>Australia</td>
<td>Legislation separates powers between Australian Consumers and Competition Commission (ACCC) and Australian Communications and Media Authority (ACMA). Chairman of ACCC and ACMA are Associate Members in ACMA and ACCC respectively.</td>
</tr>
<tr>
<td>Mauritius</td>
<td>MoU Signed between Competition Commission (CCM) and ICT Authority (ICTA)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Agreement on procedures between Office of Fair Trade (OFT) and Office of Communications (OFCOM).</td>
</tr>
<tr>
<td>Egypt</td>
<td>Green ICT Strategy implemented through a MoU between Ministry of Communications &amp; IT (MCIT) and Ministry of Environmental Affairs (MEA)</td>
</tr>
<tr>
<td>Singapore</td>
<td>E2PO is a multi-agency committee led by the National Environment Agency (NEA) and the Energy Market Authority (EMA) and comprises the Economic Development Board (EDB), Land Transport Authority (LTA), Building and Construction Authority (BCA), Housing and Development Board (HDB), Infocomm Authority of Singapore (IDA), Agency for Science, technology and Research (A*STAR), Urban Redevelopment Authority (URA), Jurong Town Corporation (JTC) and National Research Foundation (NRF). The Ministry of the Environment and Water Resources (MEWR) and Ministry of Trade and Industry (MTI) are also represented in the committee.</td>
</tr>
<tr>
<td>Country</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Singapore</td>
<td><strong>Joint project</strong> on Tele-health by Ministry of Health and Infocomm Development Authority (IDA)</td>
</tr>
<tr>
<td>United States</td>
<td>Joint Statement and <strong>MoU</strong> between Federal Communications Commission (FCC) and Food and Drug Administration (FDA) on broadband and wireless enabled medical devices</td>
</tr>
<tr>
<td>UAE</td>
<td>Environment Agency - Abu Dhabi (EAD) and the Telecommunications Regulatory Authority (TRA) have signed a Memorandum of Understanding (MoU) to promote cooperation and partnership in the field of technology and information security,</td>
</tr>
<tr>
<td>Egypt</td>
<td>Green ICT Strategy implemented through a <strong>MoU</strong> between Ministry of Communications &amp; IT (MCIT) and Ministry of Environmental Affairs (MEA)</td>
</tr>
<tr>
<td>Singapore</td>
<td>Infocomm@SeaPort programme is a collaboration between the Infocomm Development Authority of Singapore (IDA) and the Maritime and Port Authority of Singapore (MPA). e-freight is a <strong>joint programme</strong> between IDA and Civil Aviation Authority of Singapore seeking to enhance competitiveness and increase productivity in the air cargo logistics sector through infocomm.</td>
</tr>
</tbody>
</table>

**UK Regulators’ Network (UKRN)** is an initiative of the UK economic regulators: CAA, FCA, Ofcom Ofgem, ORR, Ofwat, UR. Monitor and the Water Industry Commission for Scotland (WICS) are also participating as observers.