Broadband Access - Policy and Regulatory Trends

ITU ASP COE Training
On
Broadband QoS-End User Perspective

27-30 October 2015
TOT Academy, Thailand
IMPROVING QUALITY OF LIFE..

SMART SOCIETY

- Universal Broadband
- Sensor Networks
- Education
- Investment
- Health
- Agriculture
- Governance
- Applications
- Policy & Regulation
- Capacity Building
- Transport
- Electricity
- Water
- Teleworking
- Measurements
- Privacy & Security
- Digital Inclusion
- Infrastructure Security
- Spectrum Management
- Standards, Conformity & Interoperability
- Green ICT & E-Waste
- Teleworking
Appropriate and timely ICT policy & regulatory framework is very important for to harness technology ........
Table 1: Estimates of the Global Market, 2012-2015 and 2020

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mobile cellular</strong></td>
<td>6.23 bn (ITU)</td>
<td>8.67 bn (ITU)</td>
<td>6.95 bn (ITU)</td>
<td>7.09 bn (ITU)</td>
<td>9.2 bn (E)</td>
</tr>
<tr>
<td><strong>subscriptions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unique mobile</strong></td>
<td>--/--</td>
<td>5.2 bn (MM)</td>
<td>3.65 bn (WambaSocial)</td>
<td>3.7 bn mid-2015 (GSMA)</td>
<td>4.9 bn (E)</td>
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<tr>
<td><strong>phone users</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LTE subscriptions</strong></td>
<td>--/--</td>
<td>200m (E)</td>
<td>500m (E)</td>
<td>2Q1 - 600m (E) Q4 - 1.37 bn (ABI Research, 2015)</td>
<td>3.7 bn (E); 2.5 bn (GSMA); 3.5 bn (AIE)</td>
</tr>
<tr>
<td><strong>Mobile broadband</strong></td>
<td>1.55 bn (ITU)</td>
<td>1.95 bn (ITU)</td>
<td>2.1 bn (E)</td>
<td>2.69 bn (ITU)</td>
<td>3.46 bn (ITU)</td>
</tr>
<tr>
<td><strong>subscriptions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.7 bn; 85% of all subscriptions (E)</td>
</tr>
<tr>
<td><strong>Fixed broadband</strong></td>
<td>603m (ITU)</td>
<td>710m (ITU)</td>
<td>748m (ITU)</td>
<td>794m (ITU)</td>
<td>--/--</td>
</tr>
<tr>
<td><strong>Internet users</strong></td>
<td>2.49 bn (ITU)</td>
<td>2.71 bn (ITU)</td>
<td>2.94bn (ITU)</td>
<td>3.17bn (ITU)</td>
<td>4 bn by 2020</td>
</tr>
<tr>
<td><strong>Facebook users</strong></td>
<td>1.06 bn MAU</td>
<td>1.23 bn MAU</td>
<td>1.393 bn MAU</td>
<td>1.44 bn MAU*</td>
<td>--/--</td>
</tr>
<tr>
<td></td>
<td>618 DAU (Facebook, Dec 2012)</td>
<td>757 DAU (Facebook, Dec 2013)</td>
<td>890m DAU (Dec 2014)</td>
<td>938 DAU* (Facebook)</td>
<td>--/--</td>
</tr>
<tr>
<td><strong>Smartphone</strong></td>
<td>1.3 bn (MM)</td>
<td>1.7 bn (MM)</td>
<td>2.1 bn (MM)</td>
<td>--/--</td>
<td>40% total mobile subscriptions (E); Equivalent to 70% world’s population (E)</td>
</tr>
<tr>
<td><strong>subscriptions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Smartphone stock</strong></td>
<td>--/--</td>
<td>--/--</td>
<td>1.8 bn (E)</td>
<td>2.7 bn (E) Q1/15 - 75% of mobile phones (E)</td>
<td>6.1 bn subscriptions (E); 70% world’s population (E)</td>
</tr>
<tr>
<td><strong>Handset shipments</strong></td>
<td>712.6m (IDC)</td>
<td>30% of all mobiles (MM)</td>
<td>--/--</td>
<td>1 bn (IDC);</td>
<td>--/--</td>
</tr>
<tr>
<td><strong>or sales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Note: For Facebook figures, MAU = monthly average users; DAU = daily average users. *Q1 2015 figures.
Mobile Broadband Network Deployment Trends

Figure 4: Comparing Global Subscriptions with Subscribers
Global totals of subscriptions and subscribers for mobile and fixed broadband (top); Total mobile SIMs per unique subscriber, end 2014 (bottom).

Source: Ericsson Mobility report, June 2015 (top), the Internet Society’s “Global Internet Report 2015”, based on GSMA (bottom).

CEE: Central & Eastern Europe
EMAP: Emerging Asia-Pacific
CALA: Central & Latin America
MENA: Middle East & North Africa
WE: Western Europe
SSA: Sub-Saharan Africa
DVAP: Developed Asia-Pacific
NAM: North America
- Globally 3.2 billion people are using the Internet by end 2015, of which 2 billion are from developing countries.
- For every Internet user in the developed world there are 2 in the developing world.
- However, 4 billion people from developing countries remain offline, representing 2/3 of the population residing in developing countries.
- Of the 940 million people living in the least developed countries (LDCs), only 89 million use the Internet, corresponding to a 9.5% penetration rate.

Source: ITU
15 years of ICT growth: what has been achieved?

- By end 2015, there are more than 7 billion mobile cellular subscriptions, corresponding to a penetration rate of 97%, up from 738 million in 2000.
- Between 2000-2015, global Internet penetration grew 7 fold from 6.5% to 43%.
- Mobile broadband is the most dynamic market segment; globally, mobile-broadband penetration reaches 47% in 2015, a value that increased 12 times since 2007.
- The proportion of households with Internet access at home increased from 18% in 2005 to 46% in 2015.
- The proportion of the population covered by a 2G mobile-cellular network grew from 58% in 2001 to 95% in 2015.

Source: ITU
By the end of 2014, Telegeography reports that 2G networks had been deployed in 200 countries, active 3G networks were commercially available in 192 countries and 4G networks had been deployed in 102 countries.

In July 2015, the Global mobile Suppliers Association (GSA) reported that 422 operators had launched commercial LTE systems in 143 countries, projecting 460 commercially launched LTE networks by end 2015.

*Sources: GSMA Intelligence, “Understanding 5G: Perspectives on future technological advancements in mobile”, December 2014
*+(top); The Internet Society’s “Global Internet Report 2015”, based on Telegeography (bottom).
3G mobile-broadband coverage is extending rapidly and into the rural areas

2011

- 3G population coverage, 45%

World population 7 billion

2015*

- 3G population coverage, 69%

World population 7.4 billion

2015*

- 3G urban population coverage, 89%

World urban population 4 billion

- 3G rural population coverage, 29%

World rural population 3.4 billion

Source: ITU.
Note: *Estimates.
ITU estimates that there will be 794 million fixed broadband subscriptions by end 2015, representing solid growth of 6% year-on-year, up from 748 million fixed broadband subscriptions at the end of 2014.

Sources: ITU (top); Point Topic (bottom).
Broadband now affordable in **111 countries**

with mobile-broadband less expensive than fixed-broadband plans

- In 2014, in 111 countries the price of a basic (fixed or mobile) broadband plan corresponds to less than 5% of average GNI per capita, thus meeting the Broadband Commission target.
- The global average price of a basic fixed-broadband plan (52 PPP$) is 1.7 times higher than the average price of a comparable mobile-broadband plan (30 PPP$).
- In developing countries, average monthly fixed-broadband prices (in PPP$) are 3 times higher than in developed countries; mobile-broadband prices are twice as expensive as in developed countries.

Source: ITU.
Note: 1 Either fixed broadband or mobile broadband. *Based on simple averages including data for 160 economies.*
Total bandwidth growing rapidly and has more than doubled over 3 years, but most growth is in developed countries; developing countries being left behind.

Source: ITU data
The regional breakdown shows half of total connectivity in Europe in 2014; strong growth in Asia-Pacific region from 2011-2014.

Source: ITU data
International Internet Broadband: Where are we?

Strong reductions in price of consumer fixed broadband packages

As a % of GNI p.c.

Source: ITU data
For every new person connecting to the Internet over the next five years, ten times as many devices will connect.

A multi-tier SSC ICT architecture from communication view (physical perspective)

Figure source: ITU-T Focus Group on Smart Sustainable Cities: Overview of smart sustainable cities infrastructure
The 4th Wave: We are about to enter the golden age of mobile

Revenue Growth Curves

Source: Operator’s Dilemma (Opportunity): The Fourth Wave

http://www.chetansharma.com
148 governments worldwide have adopted or are planning to adopt a national broadband policy or plan.
National Broadband Policy: Experiences from ITU

- Currently, six countries fully approved the National Broadband Policy at the highest level while the rest are close to finalizing their policy.

- All these policies set out clear vision, key objectives and principles as well as short to mid-term goals and detailed implementation action plans.

- Comprehensive action plans consist of a thorough list of issues (and responsible organizations and deadlines) including:
  - Broadband availability target
  - Reducing regulatory burdens
  - Review of licensing/spectrum management
  - Improving adoption, affordability
  - Universal Service Obligations
  - Sector-specific plans (e-government, e-health, e-education, e-agriculture, etc.)
  - Fostering innovation and local service/contents

<table>
<thead>
<tr>
<th>Status</th>
<th>Country</th>
<th>Broadband Availability Target</th>
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</thead>
<tbody>
<tr>
<td>Approved</td>
<td>Bhutan</td>
<td>80% of the population</td>
</tr>
<tr>
<td></td>
<td>Brunei D.</td>
<td>80% of the households by 2017</td>
</tr>
<tr>
<td></td>
<td>Fiji</td>
<td>50% of the population by 2016</td>
</tr>
<tr>
<td></td>
<td>Indonesia</td>
<td>75% of the population by 2017</td>
</tr>
<tr>
<td></td>
<td>Papua N.G.</td>
<td>50% of the population by 2018</td>
</tr>
<tr>
<td></td>
<td>Nepal</td>
<td>45% of the households by 2018</td>
</tr>
<tr>
<td>Under Review</td>
<td>Bangladesh</td>
<td>Not specified</td>
</tr>
<tr>
<td></td>
<td>Cambodia</td>
<td>90% of the population by 2018</td>
</tr>
<tr>
<td></td>
<td>Lao PDR</td>
<td>60% of the post offices as community access points by 2016</td>
</tr>
<tr>
<td></td>
<td>Pakistan</td>
<td>50% of the population by 2017</td>
</tr>
<tr>
<td>In draft</td>
<td>Philippines</td>
<td>Not specified</td>
</tr>
<tr>
<td></td>
<td>Marshall I.</td>
<td>Not specified</td>
</tr>
<tr>
<td></td>
<td>Myanmar</td>
<td>Not specified</td>
</tr>
<tr>
<td></td>
<td>Samoa</td>
<td>Not specified</td>
</tr>
<tr>
<td></td>
<td>Vanuatu</td>
<td>98% of the population by 2018</td>
</tr>
</tbody>
</table>
Universal Service Funds (USFs) and Broadband

Which Regulations Shaped the ICT Sector from 2006 to 2013?

Source: http://www.itu.int/tracker

# IMT 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>User density settings</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>1 340 MHz</td>
</tr>
<tr>
<td>Higher user density settings</td>
<td>540 MHz</td>
<td>1 420 MHz</td>
<td>1 960 MHz</td>
</tr>
</tbody>
</table>

*Source: Report ITU-R M.2290-0 (12/2013)*
Agreed Global Telecommunication/ICT Targets - 2020

**Goal 1 Growth:** Enable and foster access to and increased use of telecommunications/ICTs
- **55%** of households should have access to the Internet
- **60%** of individuals should be using the Internet
- **40%** Telecommunications/ICTs should be **40%** more affordable

**Goal 2 Inclusiveness – Bridge the digital divide and provide broadband for all**
- **50%** of households should have access to the Internet in the developing world; **15%** in the least developed countries
- **50%** of individuals should be using the Internet in the developing world; **20%** in the least developed countries
- **40%** affordability gap between developed and developing countries should be reduced by **40%**
- **5%** Broadband services should cost no more than **5%** of average monthly income in the developing countries
- Gender equality among Internet users should be reached
- Enabling environments ensuring accessible ICTs for persons with disabilities should be established in all countries
- 90% of the rural population should be covered by broadband services

**Goal 3 Sustainability – Manage challenges resulting from the telecommunication/ICT development**
- **40%** improvement in cybersecurity readiness
- **50%** reduction in volume of redundant e-waste
- **30%** decrease in Green House Gas emissions per device generated by the telecommunication/ICT sector

**Goal 4 Innovation and partnership – Lead, improve and adapt to the changing telecommunication/ICT environment**
- Telecommunication/ICT environment conducive to innovation
- Effective partnerships of stakeholders in telecommunication/ICT environment
A multi-tier SSC ICT architecture from communication view (physical perspective)

Figure source: ITU-T Focus Group on Smart Sustainable Cities: *Overview of smart sustainable cities infrastructure*

ITU Regional Office for Asia and the Pacific
Different Services, Different Requirements - Examples

PPDR services
- Constant availability
- Ubiquitous coverage – not just outdoors, but inside buildings (including large ferroconcrete structures such as shopping malls) and in tunnels (including subways).
- Regionally harmonised spectrum
- Differentiated priority classes
- Support for dynamic talkgroups
- Automatic identification with authentication
- Automatic location discovery and tracking
- The ability to maintain connectivity
- Fast call setup (<200ms) and immediate access on demand: the Push-to-talk (PTT) function and all-calls (internal broadcasts).
- Relay capabilities
- Support for Air-Ground-Air (AGA) communication when and where needed.
- Adequate quality of service
- The ability to roam onto commercial networks
- Interworking between various PPDR services, and increasingly, across borders.

Utility industry:
- Teleprotection – safeguarding infrastructure and isolating sections of the network during fault conditions whilst maintaining service in unaffected parts of the network.
- Data monitoring via SCADA (Supervisory, Control And Data Acquisition) systems.
- Automation – systems to autonomously restore service after an interruption or an unplanned situation.
- Security – systems to ensure the safety and security of plant.
- Voice services –
- Metering – collecting data from smart meters and communicating with them for various reasons, such as demand management and to implement tariff changes.
- Connectivity – telecommunication networks to interconnect the above services in a reliable and resilient manner under all conditions.
- Other operational requirements include:
  - Coverage of all populated areas with points of presence throughout the service territory
  - Costs must be low
  - Continuity of service is vital, and price stability
  - Utilities want network separation,

Intelligent Transport Services... and more
What type of network is required to deliver these services?

- Private networks
- Public networks

What preparations are required to make best use of commercial networks to deliver smart services (some of them such as Emergency Telecommunication, Utilities, Transportation critical in character)?

- Technical (e.g. coverage, resilience, quality, spectrum, interoperability)
- Commercial (e.g. availability, long term pricing, SLAs)
- Policy & Regulatory (e.g. critical services as priority, quality of service, long term tariffs, security, privacy, USO, infrastructure sharing, licensing)
Cross-sector e-strategies: Examples of ITU experiences

Implementing e-strategies requires some common requirements e.g. Cloud, Security, Privacy, Sensors, Big Data Analysis, Interoperability, Open Data, Applications Development, Digital Literacy etc.
Developing e-strategies example: E-Agriculture

The final outcome is a National Strategy on e-Agriculture comprising of three parts.

Ongoing assistances to Bhutan and Sri Lanka on development of e-Agriculture Strategy / Masterplan.
Example Estonia

Estonian information system

Source: https://www.ria.ee/public/x_tee/xRoadOverview.pdf/
Regulatory Mandate, 2013

Source: ITU World Telecommunication Regulatory Database
Maturity of Regulation

G4: Integrated regulation – led by economic and social policy

G3: Enabling investment, innovation and access – dual focus on stimulating competition in service and content delivery, and consumer protection

G2: Basic reform – partial liberalization and privatization across the layers

G1: Regulated public monopolies – command and control approach

Source: ITU.
SMART SUSTAINABLE CITIES

REGULATORY COLLABORATION

COLLABORATIVE NETWORK OF POLICY MAKERS & REGULATORS

MULTI UTILITY REGULATOR
COLLABORATION MECHANISMS

Integrated Policy
Legislation
Co-Regulation
Standardization (International / National)
MoU or Cooperation Agreement
Coordination Committee
Projects, Coordination on Case to Case basis
Innovative and smart regulatory approaches fostering equal treatment of market players without putting extra burden on operators and service providers.

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

The need to adapt the structure and institutional design of the regulator to develop future regulation.
QUALITY OF SERVICE
Quality of Service Regulatory Framework

License Regulation → KPI Measurement Techniques → Monitoring Survey → Enforcement

Periodical Review
Quality of Service Regulatory Framework

- Standards
e.g. ITU, ETSI, National Standards, Industry Standards, Other standardization bodies

- License condition
e.g. India, Pakistan

- Regulation
e.g. India, Malaysia, Pakistan, Singapore, Tanzania

- Industry guidelines
e.g. Australia

- Technical
e.g. Call drop, call success rate, connection speed, SMS quality

- Customer focused
e.g. Billing accuracy, fault

- Guideline
e.g. Measurement methods

- Technical
e.g. Network auditing, drive tests

- Customer survey
e.g. Network auditing, drive tests

- Guideline
e.g. Measurement methods

- Regulatory notice
e.g. Website, Press release, Directive

- Publication
e.g. Website, newspaper

- Penalty

- Dispute
Quality of Experience (QoE)

- QoE “The overall acceptability of an application or service, as perceived subjectively by the end user.”

- QoE has a dependency of end user perception as well as features of services, thus it could have quite different ways to specify the value. But it is clear QoE should be impacted from the QoS and NP even though end user perception is subjective.

**Figure 3 – Relationship among NP, QoS and QoE**

Committed to connecting the world

Measurements of Internet speed

YOU ARE HERE  HOME  >  ITU-T  >  ITU CONFORMITY AND INTEROPERABILITY

Background

The measurement of Internet speed becomes an important matter, when ICT players (e.g. operators, regulators, customers) try to assess whether it is compliant with the speed value indicated in relevant customer’s Service Level Agreement (SLA).

The Internet's access speed is normally advertised by fixed and mobile operators, however, in most cases customers do not have a global standardized mechanism to verify it.

Currently, the Internet provides various ways to assess the Internet speed. However, most of them measure the speed between customers and servers which are located outside of the operator’s network, therefore the measure cannot be compared with the value written in the customer’s SLA.

Actually, customers are mostly interested in the assessment of the access speed to a particular Internet service (e.g. movie on YouTube, TV on Google TV, web surfing, etc.), as this would allow them to compare the offers from various operators.

Taking all this into account, the development of a unified approach to measure the Internet speed would be advantageous. The establishment of such a framework would inspire greater consumer confidence in advertised speeds and ensure that accurate comparisons can be made between offerings from different operators.

This webpage provides all interested parties with ITU-T’s relevant activities on Internet speed measurements.

DESCRIPTION OF ISSUE

As the accessibility of Internet resources is important for customers, this resource contains a description of the common issues of the existing global Internet measurement systems which are not suitable for managing the customer’s SLA.

BEST PRACTICE

Some regions and countries have successfully launched their own approaches aiming to evaluate Internet access speed.

The Organization for Economic Co-operation and Development (OECD) generated a list of countries which

HOW TO PARTICIPATE

Experts who are interested in participating in these activities are invited to send contributions to Question 15 of ITU-T Study Group 11 and may subscribe here to the Q15/11 mailing list: ITU-TSG11@lola.itu.int
Quality of service standards setting, World

- **Percentage of responses**
- **Years:** 2005 to 2014

Legend:
- Blue: Sector Ministry
- Orange: Other Ministry or Government body
- Gray: Not regulated
- Red: Regulatory Authority
- Navy: If more than one entity or another body is involved in this function, please explain
<table>
<thead>
<tr>
<th>Services subject to quality of service monitoring *</th>
<th>Africa</th>
<th>Arab States</th>
<th>Asia &amp; Pacific</th>
<th>CIS</th>
<th>Europe</th>
<th>The Americas</th>
<th>Total</th>
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<tbody>
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<td>Fixed wireline</td>
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<td>9</td>
<td>20</td>
<td>3</td>
<td>32</td>
<td>25</td>
<td>113</td>
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<td>Fixed wireless</td>
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<td>14</td>
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<td>15</td>
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<td>Mobile</td>
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<td>14</td>
<td>22</td>
<td>3</td>
<td>24</td>
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<td>Dial-up internet access</td>
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<td>14</td>
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<tr>
<td>Broadband internet access</td>
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<td>18</td>
<td>3</td>
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<td>Leased lines</td>
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<td>Pay phones</td>
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<td>3</td>
<td>0</td>
<td>10</td>
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<td>18</td>
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<tr>
<td>Region size</td>
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<td>21</td>
<td>40</td>
<td>12</td>
<td>43</td>
<td>35</td>
<td>195</td>
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</tbody>
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Source: ITU World Telecommunication/ICT Regulatory Database

ITU ICT-Eye: [http://www.itu.int/icteye](http://www.itu.int/icteye)
<table>
<thead>
<tr>
<th>Region Size</th>
<th>Africa</th>
<th>Arab States</th>
<th>Asia &amp; Pacific</th>
<th>CIS</th>
<th>Europe</th>
<th>The Americas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of service monitoring required</td>
<td>Yes</td>
<td>37</td>
<td>14</td>
<td>28</td>
<td>6</td>
<td>37</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Operator/service providers subject to quality of service monitoring *</td>
<td>Incumbent</td>
<td>22</td>
<td>7</td>
<td>14</td>
<td>2</td>
<td>8</td>
<td>13</td>
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<td>Any operator with a network but not a service provider without a network (for example, a mobile virtual network operator or a calling card service provider)</td>
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<td>0</td>
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<td>Any operator or service provider</td>
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<td>17</td>
<td>3</td>
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* This indicator allows multiple choice per country/economy

Source: ITU World Telecommunication/ICT Regulatory Database

ITU ICT-Eye: [http://www.itu.int/icteye](http://www.itu.int/icteye)
It is commendable that authorities in a growing number of OECD countries are developing tools to fit their policy needs as well as providing greater information to all stakeholders. A list of official measurement projects can be found in the table below. A detailed version as of January 2014 is included in the full report.

### Speed tests: Official measurement projects in OECD area

**Last update: March 2015**

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*Note:
1. Measurement approaches are categorized as follows:
   - End-user Application Measurement (EAM): Daily use of an end-user’s computer or mobile phone is employed for measurement with an application or browser under the user’s control.
   - End-user Device Measurement (EDM): Tests are done by specific devices which are installed by end-users for measurement, but they are separated from the daily use of computers and mobile phones thus controlled remotely by the project.
   - Project Self Measurement (PSM): The project itself installs or allocates and controls a device or computer to do tests. Unless otherwise noted, measurements are done by some entity different from the measured ISPs, but it is done by the ISPs themselves with controlled methodology than the document calls it PSM-ISP for distinction.

2. Country notes are as follows.

OECD