“Where lines crossed national borders, messages had to be stopped and translated into the particular system of the next jurisdiction. To simplify matters, regional agreements began to be forged, and in Europe, representatives of 20 States gathered in Paris at an International Telegraph Conference to find ways to overcome barriers and make services more efficient. They would create a framework to standardize telegraphy equipment, set uniform operating instructions, and lay down common international tariff and accounting rules.”
ITU C&I Programme

Key activities and main ITU outcomes which are related to the implementation of ITU C&I Programme (Pillar 1 and 2)
The Business Plan for the ITU C&I Programme in 4 “Pillars”

The Standardization Sector side
- Pillar 1: Conformity Assessment
- Pillar 2: Interoperability Events

The Development Sector side
- Pillar 3: Capacity building
- Pillar 4: Establishment of test centres and C&I programmes in developing countries
Authority for Action: ITU’s highest decision making bodies

**Resolution 76:** ITU World Telecommunication Standardization Assembly (WTSA-12)

**Resolution 47:** ITU World Telecommunication Development Conference (WTDC-14)

**Resolution 177:** ITU Plenipotentiary Conference (PP-10)

**Resolution 62:** Radiocommunication Assembly 2012

WTSA-12 designated the ITU-T Study Group 11 as a lead group on test specifications, conformance and interoperability testing which coordinates ITU-T activities related to the ITU C&I programme across all SGs and review the recommendations in the Conformance and Interoperability Business Plan for the long term implementation of the C&I programme.
• ITU-T to run a pilot of the conformity assessment programme for key technologies

• ITU-T study groups to identify further technologies (*ITU-T Recommendations*) for C&I

• ITU Secretariat invite labs/forums/consortia/SDOs to join the C&I Programme

• ITU Secretariat to consult study groups towards identifying and suggesting topics for future events

• ITU-T Study Groups to develop system roadmaps, identify and define the interfaces across which interoperability is needed

• ITU-T Study Groups should identify or develop use cases, application profiles and test plans to use for interoperability testing for Recommendations
The key outcomes related to Pillar 1&2 as of June 2014 (1/2)

- ITU-T SG11 developed a **living list of key technologies** suitable for C&I [http://itu.int/go/key-technologies]
- ITU-T SG11 launched the **list of pilot projects** of conformity assessment [http://www.itu.int/go/pilot-projects]
- ITU-T SG11 maintains the **C&I reference table of ITU-T Recs.** [http://itu.int/go/reference-table]
- ITU-T SG11 established the new work item **Q.TL-rec-pro “Testing Laboratories recognition procedure”** (Nov. 13)
- ITU-T SG11 established the **CG on collaboration between ITU and TL** (Nov. 13)
- ITU secretariat cooperated with the relevant SDOs (ISO, IECEE, DCMAS, ILAC, IAF, etc.)
The key outcomes related to Pillar 1&2 as of June 2014 (2/2)

✓ ITU conducted test events (e.g. from 2013 to 2014):
  ✓ Conformance & Interoperability event of IMS UNI, IPTV (Bangkok, Sept. 13)
  ✓ Continua Health Alliance Interoperability event on e-health (Geneva, Oct. 13)
  ✓ Performance assessment of mobile phones in conjunction with HFT in a car against Recs. ITU-T P.1100/P.1110 (May. 14)
  ✓ Interoperability of IMS-NNI, IoT (Aug. 14) (planned)

✓ ITU-T SG11 established the new work item Q.Int_speed_test “Unified methodology of Internet speed quality measurement usable by end-users on the fixed and mobile networks”

✓ There are available some new test specifications for IMS-NNI, benchmarking, NGN-UNI, etc.

✓ JCA-CIT extended the list of conformity assessment approaches
ITU C&I Programme. Key activities and main ITU outcomes which are related to the implementation of ITU C&I Programme (Pillar 1 and 2)

ITU-T C&I Portal

http://www.itu.int/en/ITU-T/C-I/Pages/default.aspx
ITU C&I Programme. Key activities and main ITU outcomes which are related to the implementation of ITU C&I Programme (Pillar 1 and 2)

SG11 Action plan
Principles of SG11 cooperation among other SGs

Key ITU-T Recs. suitable for C&I

Pilot projects which are based on key ITU-T Recs. suitable for C&I

Reference table of all ITU-T Recs. and relevant test suites

SG11 WP4/11

SGs
The list of key Technologies for C&I (1/2)

The living list of Recommendations and related specifications within key technologies suitable for C&I testing

ITU-T SG11 output document:
TD 371 (GEN/11) (9-16 July 2014)

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Focal Point</th>
<th>Other SDOs</th>
<th>ITU-T SGs</th>
<th>References to SDOs docs</th>
<th>References to ITU-T Recs.</th>
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<tr>
<td>1</td>
<td>NGN Functionality</td>
<td>Martin Brand</td>
<td>ETSI</td>
<td>SG11</td>
<td>ETSI (Requirements)</td>
<td>ITU (Requirements)</td>
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<td>ETSI (Test suites)</td>
<td>ITU (Test suites)</td>
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<td>ETSI/3GPP</td>
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<td>ETSI (Requirements)</td>
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<td>interfaces</td>
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</table>

ITU C&I Programme: Key activities and main ITU outcomes which are related to the implementation of ITU C&I Programme (Pillar 1 and 2)
### The list of key Technologies for C&I (2/2)

[http://itu.int/go/key-technologies](http://itu.int/go/key-technologies)

<table>
<thead>
<tr>
<th>Technology Area</th>
<th>Requirements/Standards</th>
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</thead>
<tbody>
<tr>
<td><strong>QoS/QOE/NP</strong></td>
<td>Req: Q.3925, Y.1541, Y.1542, Y.1543, draft Q.MSPQuality, Q.NP-req; TS:Q.QMS, Q.3930, Q.3931.1, Q.3931.2</td>
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<tr>
<td><strong>NGN Functionality</strong></td>
<td>Req: Y.2201, Y.2012; TS: Q.3909; TS: Q.3900; Q.3901</td>
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<tr>
<td><strong>Functions of broadband network as a part of NGN</strong></td>
<td>Req: Y.2012; TS: Q.3906.1</td>
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<td><strong>IMS architecture, signaling protocols, interfaces</strong></td>
<td>Req: Y.2012; TS: Q.3904</td>
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<td><strong>IMS basic call – Protocol conformance testing</strong></td>
<td>Req: Draft Q.39xx-1; TS: Q.3904</td>
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<tr>
<td><strong>IMS supplementary services. Protocol specifications</strong></td>
<td>Req: -; TS: Q.3943.1/2/4, Q.3942.1</td>
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<tr>
<td><strong>IMS interconnection</strong></td>
<td>Req: Q.3401; TS: -</td>
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<tr>
<td><strong>Interoperability testing</strong></td>
<td>Req: - ; TS: Q.3940, Q.3941.1-4</td>
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<tr>
<td><strong>NGN monitoring system</strong></td>
<td>Req: Q.3902, Q.3910, Q.3911, Q.3912; TS: -</td>
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<tr>
<td><strong>Interworking of signaling protocols of NGN</strong></td>
<td>Req: Q.1912.5, Q.3401, Q.3402; TS: Q.1912.5 B-F</td>
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<td><strong>RFID</strong></td>
<td>Req: - ; TS: Q.3950</td>
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<td><strong>Internet speed access</strong></td>
<td>Req: - ; TS: Q.InSpMs</td>
</tr>
<tr>
<td><strong>Internet Access as perceived by user</strong></td>
<td>Req: G.1000; TS: -</td>
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</tbody>
</table>
C&I Guidelines

Establishing Conformity and Interoperability Regimes – Basic Guidelines

Guidelines for developing countries on Establishing Conformity assessment Test Labs in Different Regions

Guidelines for the development, implementation and management of mutual recognition arrangements/agreements (MRAs) on conformity assessment

Feasibility Study for the establishment of a Conformity Testing Centre
Establishing Conformity and Interoperability Regimes

Basic Guidelines
Content

1. Introduction
2. Definitions
3. Development and review of regulatory framework and roadmap for the establishment of C&I regimes
4. Definition and publication of ICT reference standards
5. Accreditation, recognition and acceptance of laboratories and qualified professional
Conformity – different perspectives

- Service providers and operators specify standards and specifications for equipment and systems which they employ to provide services to their customers.

- National regulators mandate regulations, standards and specifications for equipment and systems which are deployed and used in their territories.

- Users of the equipment and systems along with the service providers and national regulators require evidence and proof that the equipment and systems conform to the appropriate standards and specifications and to the extent that they interoperate with each other as specified.

- The process used to obtain the evidence and proof is called conformity assessment – the demonstration that specified requirements relating to a product, process, system, person or body are fulfilled.
Conformance of ICT equipment and systems to standards and homologation process

- National Rules
  - A
  - B
  - C, ..

- Regional Rules
  - X
  - Y
  - Z, ..

- International Rules
  - Interoperab.
  - EMC
  - Etc.

Evaluation (conformance assessment)

ICT - Global market (users)
Conformity Assessment Regimes
ITU/IEC 17000 Series
- Conformity Assessment -

- 17000:2004– Vocabulary and general principles
- 17001:2005– Impartiality – Principles and requirements
- 17002:2004– Confidentiality – Principles and requirements
- 17003:2004– Complaints and appeals – Principles and requirements
- 17005:2008– Use of Management systems – Principles and requirements
- 17007:2009– Guidelines for drafting normative documents suitable for use for conformity assessment
- 17011:2004– Requirements for accreditation bodies accrediting conformity assessment bodies
- 17020:2012– Requirements for the operation of various types of bodies performing inspection
- 17021:2011– Requirements for bodies providing audit and certification of management systems
- 17024:2012– General requirements for bodies operating certification of persons
- 17025:2005– General requirements for the competence of testing and calibration laboratories
- 17030:2003– General requirements for third-party marks of conformity
- 17040:2005– General requirements for peer assessment of conformity assessment bodies and accreditation bodies
- 17043:2005– General requirements for proficiency testing
- 17050-1:2007– Supplier’s declaration of conformity – Part 1: General requirements
- 17065:2012– Requirements for bodies certifying products, processes and services
- 17067:2013– Fundamentals of product certification and guidelines for product certification schemes
## Requirements for accreditation bodies – ISO/IEC 17011

<table>
<thead>
<tr>
<th>Requirements for Testing/ calibration</th>
<th>Requirements for inspection bodies</th>
<th>Requirements for certification bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing and calibration laboratories</td>
<td>ISO/IEC 17020</td>
<td>Management systems</td>
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<tr>
<td>ISO/IEC 17025</td>
<td></td>
<td>ISO/IEC 17021</td>
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<tr>
<td>Proficiency testing</td>
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<td>ISO/IEC 17021 Part 2</td>
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<td>ISO/IEC 17043</td>
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<td>ISO/IEC 17021 Part 3</td>
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<td>Parts 4 and 5 in preparation</td>
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<td>Products</td>
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<td>ISO/IEC 17024</td>
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<td>ISO/IEC 17065</td>
</tr>
</tbody>
</table>

*ISO/IEC 17022 Audit reports*
Definitions (1)

- **Applicant** - is the manufacturer or representative interested in selling the product in the concerned market (country/region).

- **Certification** - is the type approval process in which a Certification Body states, through the Certificate of Conformity, that a product fulfills the specified requirements.

- **Certificate of Conformity** - is a statement of conformity issued by a Certification Body.

- **Declaration of Conformity** - is a statement of conformity issued by a 1st party (vendor) or a 2nd party (buyer, e.g. telecom operator).
Definitions (2)

- Conformity Assessment – demonstration that specified requirements related to a product, process, system, person or bode are fulfilled.
- Homologation - official act issued by the Regulatory Authority that empowers the applicant to sell the ICT product in the concerned market.
- First party - supplier of a product (vendor).
- Second party - the purchaser of a product (telecom operator).
- Third party - a person or body that is independent of the organization that provides the product, and of the user interested in the product.

1st - vendor 2nd - buyer 3rd - independent
Supplier Declaration of Conformity (SDoC) is the conformity assessment scheme used for low risk and mature products.

Upon meeting a set of conditions, a supplier can self-declare that the equipment conforms to the appropriate requirements.

There are four different schemes of SDoC (next slide)
Supplier Declaration of Conformity (SDoC)

**SDoC I**
- testing of the equipment to be performed by an ISO/IEC 17025 compliant testing laboratory that is recognized by the regulator;
- test reports have to be kept for a prescribed period;
- supplier has to register the declaration with the regulator

**SDoC II**
- testing of the equipment to be performed by an ISO/IEC 17025 compliant testing laboratory that is recognized by the regulator;
- test reports have to be kept for a prescribed period;
- supplier does not have to register the declaration with the regulator

**SDoC III**
- testing of the equipment to be performed by a testing laboratory;
- test reports have to be kept for a prescribed period;
- supplier has to register the declaration with the regulator.

**SDoC IV**
- testing of the equipment to be performed by a testing laboratory;
- test reports have to be kept for a prescribed period.
Regulatory framework and roadmap for the establishment of conformity and interoperability regimes

- A telecommunication act reflects the policy of the sovereign state in question and can include a clear statement of the underlying policy. This statement would cover such elements as:
  - reliable and affordable telecommunication services of high quality;
  - highlighted role of telecommunications to enhance efficiency and competitiveness;
  - efficient and effective regulation where required;
  - responsiveness to the economic and social requirements of users of telecommunication services;
  - international telecommunication services and licenses;

- Telecommunication apparatus and administration:
  - application to apparatus subject to regulation;
  - government powers and exercise of powers;
  - certification and marking;
  - appeals and evidence;
  - regulations including fees and mandatory requirements.

- Investigation and enforcement:
  - administrative and monetary penalties;
  - inspection and market surveillance;
  - civil liability
Conformance Assessment Procedures

Procedures for establishing a conformance assessment regime may include the following procedures:

A. Query for new products to be homologated
B. Issuing and/or validating a Certificate of Conformity
C. Issue of the Homologation (or acceptance)
D. Import procedures for testing proposals
E. Reference Standards for conformity assessment
F. Recognized Laboratories and Test Reports
G. Marking
H. Monitoring, Enforcement, and Sanctions and Post-Market Surveillance
Regulatory Aspects – Conformance assessment procedures

Example of interactions that may exist among the entities participating in a conformity assessment process that uses certification mechanism:

1. Applicant queries Certification Body.
2. Certification Body requests Samples from Laboratory.
3. Laboratory provides Test Report and Documentation + Certificate of Conformity to Certification Body.

Market
Another example of interactions that may exist among the entities participating in the conformity assessment process.
Conformance Assessment Procedures

Fees

- Assessment and reassessment fee
- Technical expertise fee
- Listing fees
- Registration fees
- Payment of fees
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

- Sub-category of equipment has specific mandatory technical specifications as part of the regulatory requirements which must be met in order to be deployed in the marketplace

- These standards are developed primarily in accordance with decisions made and ratified in the International Telecommunication Union (ITU), International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) combined with regional, national and industry standards requirements and are therefore a complex and very complete set of requirements which are vitally important to an interference free and safe environment for ICT products:
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

A number of regional standards bodies serving specific regional policies, regulations and requirements are heavily engaged in development and promulgation of the product standards and include the European Telecommunications Standards Institute, USA Telecommunications Industry Association, and various important forums and consortia such as 3GPP.
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

The process to arrive at many of these equipment standards and specifications, especially in the radiocommunication equipment side stems primarily from basic work of the ITU membership at the World Radiocommunication Conferences (WRCs) where decisions are made regarding what services are to be defined in specific frequency bands.

This in turn guides national and regional decisions on determining their frequency band plans for various services including broadcast and other radiocommunication services and usage. Following this, frequency band plan guides are developed for national and regional frequency allocations, known as standard radio system plans.
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

The next table gives and example examples of international standards, regional standards and forum and consortia standards used by some countries...
<table>
<thead>
<tr>
<th>Category</th>
<th>Product</th>
<th>Standard</th>
<th>Technical Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User equipment</strong></td>
<td>Mobile</td>
<td>3GPP</td>
<td>Power; frequency stability, frequency in-band emission.</td>
</tr>
<tr>
<td></td>
<td>Fiix Telephone</td>
<td>CEI</td>
<td>Power; frequency stability, frequency in-band emission.</td>
</tr>
<tr>
<td></td>
<td>PABX</td>
<td>• Rec. UIT-T G.711.</td>
<td>Protocols</td>
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<td>• Rec. UIT-T Q.921.</td>
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</tr>
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<td>Charge and power adapter</td>
<td>Rec. UIT-T L.1000</td>
<td>Power, energy efficiency, eco-environment specifications</td>
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<td>Personal area communication</td>
<td>Allocation of national frequencies</td>
<td>Gain, transmission power, bandwidth, frequency stability.</td>
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<tr>
<td></td>
<td>Residential optical unit</td>
<td>UIT-T G.984</td>
<td>Power; frequency stability, frequency in-band emission, SAR limits.</td>
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<td>UTP cable</td>
<td>ISO/CEI 11801</td>
<td>Return Loss, FEXT, NEXT, bandwidth</td>
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<tr>
<td><strong>RTTE</strong></td>
<td>Mobile - Broadband base station</td>
<td>ETSI</td>
<td>Gain, transmission power, bandwidth.</td>
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<td>Antenna</td>
<td>ETSI</td>
<td>Radiation Diagram, Gain, VSWR.</td>
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<td>Broadcast transmitter</td>
<td>ETSI</td>
<td>Gain, transmission power, frequency width.</td>
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<td>Rec. UIT-T G.707</td>
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<td>Network switches and routers.</td>
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<td>Cables</td>
<td>ISO/CEI 11801</td>
<td>Return Loss, FEXT, NEXT, bandwidth</td>
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<td>IPVT</td>
<td>Rec. UIT-T</td>
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<td><strong>Electromagnetic Compatibility</strong></td>
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<td>Rec. UIT-T K.48</td>
<td>Radiated spurious emission, conducted spurious emission, resistibility</td>
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<td><strong>Safety</strong></td>
<td>All equipment</td>
<td>Rec. UIT-T K.21</td>
<td>Electrical chock protection, fire protection, overcurrent protection</td>
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</table>
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

Another example of how these kinds of standards are structured in a particular Member State (in this case Canada)

**Broadcasting equipment standards**
- Broadcasting Equipment Technical Standards (BETS)
- Broadcasting Specifications and Standards (BTS & BS)
- Broadcasting Certificate Exempt Radio Apparatus List

**Radio equipment standards**
- Radio Standards Specifications (RSS)
- Category I Equipment Standards List (user’s terminals)
- Category II Equipment Standards List (operator’s terminals)
- License-exempt Radio Apparatus Standards List
- Regulatory Standards Notice
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

Electromagnetic compatibility standards

The following series of standards are largely adopted or adapted from the CISPR (International Special Committee on Radio Interferences) and ITU standards, covering testing procedures such as radiated emissions, conducted emissions, immunity and resistibility.
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

Terminal equipment: Technical specifications/standards list

In some countries the standard provides technical requirements for:

- connection of terminal equipment to public networks
- hearing aid compatibility with handsets.
- compliance specifications for terminal equipment, terminal systems and network protection devices
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

Specific absorption rate (SAR)

Specialized measurement systems have been developed to permit determination of the SAR value of a given product or system in order to assess compliance with the definitions of limits set by different SDOs (e.g. IRCNIRP)
Consideration of WTO rules on TBT

The World Trade Organization (WTO) is the international organization whose primary purpose is to open trade for the benefit of all.

The WTO Agreement on Technical Barriers to Trade (TBT) tries to ensure that regulations, standards, testing and certification procedures do not create unnecessary obstacles, while also providing members with the right to implement measures to achieve legitimate policy objectives, such as the protection of human health and safety, or the environment.

The principles of the TBT agreement are as follows:

1. Avoidance of unnecessary obstacles to trade;
2. Non-discrimination and national treatment;
3. Harmonization;
4. Equivalence of technical regulations;
5. Mutual recognition of conformity assessment procedures; and
6. Transparency.
List of ICT equipment requiring conformity assessment

Examples:

<table>
<thead>
<tr>
<th>Types of Equipments</th>
<th>Equipment that must meet technical standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Radio apparatus</strong>: A device or combination of devices intended for, or capable of being used for, radiocommunication</td>
<td>Broadcasting transmitters</td>
</tr>
<tr>
<td><strong>Interference-causing equipment</strong>: Any device, machinery or equipment, other than radio apparatus, that can cause interference to radiocommunication</td>
<td>Portable radio transmitters</td>
</tr>
<tr>
<td><strong>Radio-sensitive equipment</strong>: Any device, machinery or equipment, other than radio apparatus, that can be adversely affected by radiocommunication emissions</td>
<td>Digital scanner receivers</td>
</tr>
<tr>
<td></td>
<td>Remote car alarms and starters</td>
</tr>
<tr>
<td></td>
<td>Garage door openers</td>
</tr>
<tr>
<td></td>
<td>Wireless computer links</td>
</tr>
<tr>
<td></td>
<td>Cellular phones</td>
</tr>
<tr>
<td></td>
<td>Cordless phones</td>
</tr>
<tr>
<td></td>
<td>Fax machines</td>
</tr>
<tr>
<td></td>
<td>GSM telephones</td>
</tr>
<tr>
<td></td>
<td>Mobile radios</td>
</tr>
<tr>
<td></td>
<td>Modems</td>
</tr>
<tr>
<td></td>
<td>Wireless remote devices</td>
</tr>
<tr>
<td></td>
<td>PABXs (including small business systems and key systems)</td>
</tr>
<tr>
<td></td>
<td>Pagers</td>
</tr>
<tr>
<td></td>
<td>Radio receivers</td>
</tr>
<tr>
<td></td>
<td>Radio transmitters</td>
</tr>
<tr>
<td></td>
<td>Telephone instruments</td>
</tr>
<tr>
<td></td>
<td>Telex equipment</td>
</tr>
<tr>
<td></td>
<td>Other equipment emitting a radio signal</td>
</tr>
<tr>
<td></td>
<td>Any customer premises equipment to be attached to any part of a licensed telecommunication network</td>
</tr>
</tbody>
</table>
Definition and publication of ICT reference standards for conformity assessment of ICT equipment

Other References:

- Table of ITU-T Recommendations and relevant parameters to be tested: http://www.itu.int/md/T13-SG11-131107-TD-GEN-0300/en
- ITU-R Recommendations (link)
- USA: FCC Testing (link)
- Brazil: Technical requirements for user’s terminals: www.anatel.gov.br
- Mauritius: ICT Authority is the national regulator for the ICT sector and Postal Services: http://www.icta.mu/telecommunications/std_list.htm
4. Accreditation, recognition and acceptance of laboratories and qualified professional

4.1 Designation/recognition of accreditation and certification bodies, and testing laboratories
- Appointment and peer assessment of accreditation bodies
- Designation/recognition of certification bodies
- Designation/recognition of testing laboratories

4.2 Recommendations on policies and strategies for developing conformity assessment testing laboratories compliant with international standards
- Legal status/legal entity
- Financial policy
- Management structure
- Personnel
- Training system
- Premises
- Equipment

4.3 Recommendations on how to become accredited by international accreditation bodies (ILAC, IAF, APLAC, IECEE, etc.) in the relevant ICT scope
In production... (2014)

Establishing Conformity and Interoperability Regimes

Complete Guidelines
Revision of a Conformance Assessment Regime (Case study)

Review of a Conformance Assessment Regimes. Some necessities of improvement:

- Self-Declaration of Conformity acceptance;
- Accountability of vendor’s local representatives (manufacturer’s representative);
- Adapting existing equipment to new conformity assessment rules, standards, and procedures;
- Revision of the Application Form to ensure, among other, product origin verification;
- Renewal of certificates (procedures and fees);
- Review of the fee structure.
Revision of a Conformance Assessment Regime (Case study)

Type Approval Division and Certification Body Structures
Revision of a Conformance Assessment Regime (Case study)

Example of a check-list from a conformity assessment report

(next slide...)
**Product:** Digital TV – DVB T2 – set-top box  
**Manufacturer/Model:** FutureTV /123456-7  
**Standart:** MNS 6401 : 2013

<table>
<thead>
<tr>
<th>Item 5.1 (EMC requirements)</th>
<th>Table 1. Spurious emission limits</th>
<th>Observation: Test Report n. XXX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

| Item 5.2 (Electric power) | Electric power: input: 230 V +/- 10% / 50 Hz +/-  
Output : 12 V dc | Observation: Test Report n. YYY |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 5.3</th>
<th>Identification requirements</th>
<th>Observation: photo of the product indicating the logo and label.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 5.4</th>
<th>Safety requirements (according to IEC 60065)</th>
<th>Observation: Test Report n. ZZZ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*Observation: protection from electric shock; protection from fire hazard; protection from excessive heating</td>
<td>√</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 5.5</th>
<th>Accessories</th>
<th>Assessment result: C- conformance; NC- non conformance; NA- not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 5.6</th>
<th>Power plug: BS 6500;</th>
<th>Observation: applicant’s declaration.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 5.7</th>
<th>Ram memory requirement &gt;= 64 MB; flash disk &gt;= 8 MB; processor clock (cpu) &gt;= 300 MHz</th>
<th>Observation: applicant’s declaration.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 5.8</th>
<th>Ability to update software</th>
<th>Observation: applicant’s declaration.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  NC  NA</td>
<td>√</td>
</tr>
</tbody>
</table>

Note: C – conformance; NC – non conformance; NA – not applicable.
## Roadmap for implementation (Case Study)

<table>
<thead>
<tr>
<th>Acción</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1Q</td>
<td>2Q</td>
</tr>
<tr>
<td>Normalización</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMC</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Seguridad</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>SAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV Digital</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Radio (limites de emisión, compliance check; spectrum regulation)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Protocolos de interoperabilidad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mecanismos de Evaluación da Conformidad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-list for Type Approval</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Disegño de Tasas</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Responsables pela homologación</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Asistencia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asistencia de la Ult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normas de la UIT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type Approval Res. review</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Creación de capacidad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedimientos de Homologación (Type Approval, Standards, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominios C&amp;I (EMC, mobile, NGN, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Guidelines for the development, implementation and management of mutual recognition arrangements/agreements (MRAs) on conformity assessment
2. Guidelines for MRAs

These guidelines aim at promoting the understanding and establishment of MRA, known as efficient tools to promote regional integration.

Through the share and efficient use of Conformance and Interoperability (C&I) infrastructures – as laboratories, accreditation bodies and regulatory practices – technical requirements can be harmonized and the transit of ICT goods and services can be facilitated, increasing trade and regional development.
Guidelines for MRAs (cont.)

Topics:
- Benefits
- Types of MRA
- Attributes
- Development
- Implementation
- Management
- Consultation and Training
- Stakeholders
- Procedures for contesting the competence of conformity assessment bodies
- A typical MRA operation
- Recommendation
A Mutual Recognition Agreement is a formal legal commitment between parties for recognition of conformity assessment results for telecommunication equipment. It deals with regulatory requirements and it is referred to in the text as “regulatory MRA”. Often such agreements are made bilaterally, regionally or multilaterally between two or more governments.

A Mutual Recognition Arrangement is a voluntary arrangement between parties for recognition of conformity assessment results for telecommunication equipment. It deals with nonregulatory requirements and it is referred to in the text as “non-regulatory MRA”. An example of a mutual recognition arrangement is amongst accreditation bodies to mutually recognize the conformity assessment results from accredited conformity assessment bodies.
Guidelines for MRAs (cont.)

- **Mutual**
  - Reciprocated Bilateral Multilateral

- **Recognition**
  - Conformity assessment results
  - Conformity assessment bodies
  - Technical requirements

- **Agreement Arrangement**
  - Regulatory Non-Regulatory
MRA Benefits

For manufacturers:

- an opportunity to test and certify products one time to the requirements of multiple markets and ship products without further conformity assessment;
- increase certification efficiency for products exported to foreign markets, thus increasing export opportunities for small and medium-sized enterprises (SMEs); and
- decreasing time-to-market for companies manufacturing telecommunication equipment with shorter and shorter product life cycles, thus maximizing export opportunities and allowing for rapid reinvestment in research and development for next-generation technologies.

For conformity assessment bodies:

- Allowing conformity assessment bodies (CABs) to increase the value of their service by offering their clients a substantially wider portfolio, including testing and certifying products for multiple markets.
MRA Benefits (Cont.)

For regulators:
• reduction of regulatory resources required to certify terminal attachment and radio equipment;
• an opportunity to reallocate a portion of these former certification costs to other areas;
• a potential stepping stone towards further harmonizing of technical requirements and of regional and national conformity assessment systems; and
• access to a pool of knowledge about the latest global trends and experiences regarding conformity assessment and regulatory systems.

For consumers:
• increasing consumer access to the widest variety of available technology;
• faster access to equipment at a lower cost; and
• speeding the development of telecommunication and Internet infrastructure.
Guidelines Highlights

Attributes of an MRA

2.1 Designation
2.2 Accreditation
2.3 Recognition
2.4 Retaining designation or recognition
2.5 Suspension or withdrawal of designation or recognition
2.6 Dispute resolution
Guidelines Highlights

3. Development of an MRA

3.1 Framework for MRAs
3.2 Coverage and Scope
3.3 Identification of parties to the MRA
3.4 Obligations under an MRA
3.5 Duration and disestablishment of a MRA
3.6 Examples of some MRAs on conformity assessment
4 Implementation of an MRA

4.1 Conformity Assessment
4.2 Pre-implementation preparation
4.3 Confidence building and start-up
4.4 Identification of scope – technical requirements and phases
4.5 Identification of contacts
4.6 Information exchange
4.7 Nomination of designating authorities
4.8 Identification of MRA host and repository of signatories
4.9 Nomination of regulatory authorities
4.10 Identification of accreditation bodies
4.11 Notification of conformity assessment bodies
4.12 Recognition of conformity assessment bodies
4.13 Formation of a joint committee
4.14 Monitor and surveillance programmes
4.15 Experience from implementation of existing MRAs
4.4 Identification of scope – technical requirements and phases

Parties can choose to implement the phases of the MRA one at a time or both together. Typically the parties will implement Phase 1 and after gaining experience and confidence with the Phase 1 procedure, they will then proceed to implement the Phase 2 procedure.
Guidelines Highlights

5 Management of an MRA

5.1 Joint committee

5.2 Update and surveillance of accreditation bodies and conformance assessment bodies (CABs)

5.3 Management of data

5.4 Record of notifications and changes

5.5 Termination and withdrawal from an MRA
3. Guidelines for developing countries on Establishing Conformity assessment Test Labs in Different Regions

Guidelines [here](#)
Guidelines for Developing Countries for Establishing Test Labs in Different Regions


- **Status** in the regions and needs
- **Funding and Training Sources**
- **Criteria** to establish Accreditation and Conformity Assessment Bodies - *International Telecommunications Testing Centres (ITTCs)*
- Economics and **Cost Implications** for ITTCs
- **Roadmap** for ITTC rollout
Steps to Establish an ISO 17025 Compliant Test Lab

- Management requirements and systems
- Lab requirements, test methods and procedures, audits, equipment handling, technical competence
- Document control, calibration records and staff records
- Handling of test reports and calibration certificates
- Service to customers and handling of complaints
Funding and Training Sources

- UNIDO, major Banks in each region, specialized funding agencies for telecoms projects and others

- Requirements to access funds vary from low interest loans, to grants, seed funding and cost underwriting

- Repository of international telecom training organizations

- Costs of training may vary from just travel to and from location, to government and supplier subsidized training, to private for-profit fully costed training.
4. Feasibility Study for the establishment of a Conformity Testing Centre
Feasibility Study for the establishment of a Conformity Testing Centre

The feasibility study will addresses:

I. Implementation;
II. Functional Model of Type Approval Institution;
III. Sustainability of operations;
IV. Pricing policies;
V. Proposal of the Organization Scheme;
VI. Technical requirements for Type Approval Laboratories;
VII. Staff requirements;
VIII. Project Implementation Recommendations; and
IX. Investment costs estimation (summary).
Feasibility Study for the establishment of a Conformity Testing Centre

Typical Organization Chart of a Testing Lab:
Feasibility Study for the establishment of a Conformity Testing Centre (cont.)

Testing laboratory infrastructures:

<table>
<thead>
<tr>
<th>Area of competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Absorption Rate lab</td>
</tr>
<tr>
<td>User experience lab</td>
</tr>
<tr>
<td>Broadband access lab</td>
</tr>
<tr>
<td>Mobile value added services lab</td>
</tr>
<tr>
<td>Electrical safety &amp; protection lab</td>
</tr>
<tr>
<td>Electroacoustic lab</td>
</tr>
<tr>
<td>Electromagnetic compatibility lab</td>
</tr>
<tr>
<td>Radio &amp; Signalling lab</td>
</tr>
<tr>
<td>Powering efficiency lab</td>
</tr>
<tr>
<td>Quality of material lab</td>
</tr>
<tr>
<td>Personal area network lab</td>
</tr>
<tr>
<td>Fixed Test plant</td>
</tr>
<tr>
<td>Mobile Test plant</td>
</tr>
</tbody>
</table>
Overview 1

Broadband access laboratory (BBA):

- The scope of the broadband access laboratory is to evaluate all different equipment and functionalities used in next generation access networks, ranging from the physical layer to networking aspects.

- In particular xDSL transmission performances and optical parameters are tested for copper and fiber solution in relation to the different architectural choices (FTTx).
EMC: Typical set-up for table top equipment for radiated immunity tests
<table>
<thead>
<tr>
<th>Laboratorios</th>
<th>Activity</th>
<th>m²</th>
<th>Location Rent 1 000 EUR/year</th>
<th>Utility 1 000 EUR/year</th>
<th>Instrument Asset 1 000 EUR</th>
<th>Number of staff</th>
<th>Instrument Opex 1 000 EUR/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAR</td>
<td>Specific absorption rate lab</td>
<td>150</td>
<td>19</td>
<td>28</td>
<td>800</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>USX</td>
<td>User experience lab</td>
<td>130</td>
<td>17</td>
<td>24</td>
<td>100</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>BBA</td>
<td>Broadband access lab</td>
<td>300</td>
<td>39</td>
<td>56</td>
<td>1.400</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>VAS</td>
<td>Mobile value added services lab</td>
<td>40</td>
<td>5</td>
<td>7</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>EPS</td>
<td>Electrical safety and protection lab</td>
<td>80</td>
<td>10</td>
<td>15</td>
<td>1.200</td>
<td>4</td>
<td>25</td>
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<tr>
<td>ELA</td>
<td>Electroacoustic lab</td>
<td>250</td>
<td>32</td>
<td>46</td>
<td>800</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EMC</td>
<td>Electromagnetic compatibility lab</td>
<td>300</td>
<td>39</td>
<td>56</td>
<td>1.600</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>RSL</td>
<td>Radio and signalling lab</td>
<td>250</td>
<td>32</td>
<td>46</td>
<td>2.000</td>
<td>12</td>
<td>10</td>
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<td>PWR</td>
<td>Powering consumption lab</td>
<td>80</td>
<td>10</td>
<td>15</td>
<td>200</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>QML</td>
<td>Quality of material lab</td>
<td>250</td>
<td>32</td>
<td>46</td>
<td>1.300</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>WIF</td>
<td>Personal area network lab</td>
<td>170</td>
<td>22</td>
<td>31</td>
<td>500</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>TPF</td>
<td>Fixed test plant</td>
<td>900</td>
<td>117</td>
<td>167</td>
<td>3 000</td>
<td>33</td>
<td>120</td>
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<td>TPM</td>
<td>Mobile test plant</td>
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<td>324</td>
<td>463</td>
<td>3 000</td>
<td>55</td>
<td>300</td>
</tr>
<tr>
<td>management</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cross activities (*)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>5 400</td>
<td>700</td>
<td>1 000</td>
<td>15 900</td>
<td>180</td>
<td>520</td>
</tr>
</tbody>
</table>

(*) Cross activities: Project office, ICT management, quality, secretariat
Thank you

C&I Portal

Contact: Riccardo Passerini
Telecommunication Development Bureau, ITU