



IMPLEMENTATION OF ITU C&I PROGRAMME



Denis ANDREEV
Advisor, Study Group 11





ITU Conformity and Interoperability Portal

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Overview

Conformity with international standards such as ITU Recommendations is one of the core principles underlying the global interoperability of ICT networks, devices and services.

The ITU Conformity and Interoperability (C&I) programme was initiated at the request of ITU's membership to enhance the conformity and interoperability of ICT products implementing ITU Recommendations or part thereof, solicit feedback to improve the quality of ITU Recommendations, and reduce the digital divide and the Standardization Gap by assisting developing countries with human resource and infrastructure capacity building.

The ITU C&I Programme is organized in accordance with the ITU Plenipotentiary Conference [Resolution 177](#) in four pillars (since Guadalajara, 2010):



PILLAR 1. CONFORMITY ASSESSMENT

Conformity assessment is the process used to demonstrate that a product, service or system conform to specified requirements and commonly used by many standard development organizations (SDOs). By promoting conformity assessment relevant to ITU-T Recommendations and showcasing product conform to ITU-T Recommendations, Pillar 1 of the ITU C&I Programme aims to ensure the strategic goal of the ITU Telecommunication Standardization Sector (ITU-T) to develop interoperable, non-discriminatory and demand-driven international standards for International telecommunication.

[More >](#)

PILLAR 2. INTEROPERABILITY EVENTS

Although conformity assessment increases the probability of interoperability, interoperability can only be guaranteed through practical tests of interconnected equipment and services from different vendors. Self-funding "interoperability events" are run by many SDOs to verify their standards and facilitate their members' to deliver 'standardized' product timely to market. Under Pillar 2, ITU-TSB organizes interoperability testing and showcasing events upon request of ITU-T membership as an integral step of standard-making process.

[More >](#)

PILLAR 3. CAPACITY BUILDING

ITU is implementing human resources capacity building in the regions on conformity, interoperability and testing and will also be organized in cooperation with other relevant regional and international organizations to clarify fundamental aspects as accreditation, certification, mutual recognition agreements and to explore the possibility to establish test centers in developing countries.

[More >](#)

PILLAR 4. ASSISTANCE IN THE ESTABLISHMENT OF TEST CENTRES AND C&I PROGRAMMES IN DEVELOPING COUNTRIES

This activity is intended to facilitate the establishment of regional or sub regional conformity and interoperability test centers and to encourage Mutual Recognition Agreements/Arrangements as appropriate. Guidelines have been prepared by the BDT in this aim and will provide basic elements to establish a strategy to establish test centers, including technical, human and instrumental resources, international standards and financial issues.

[More >](#)

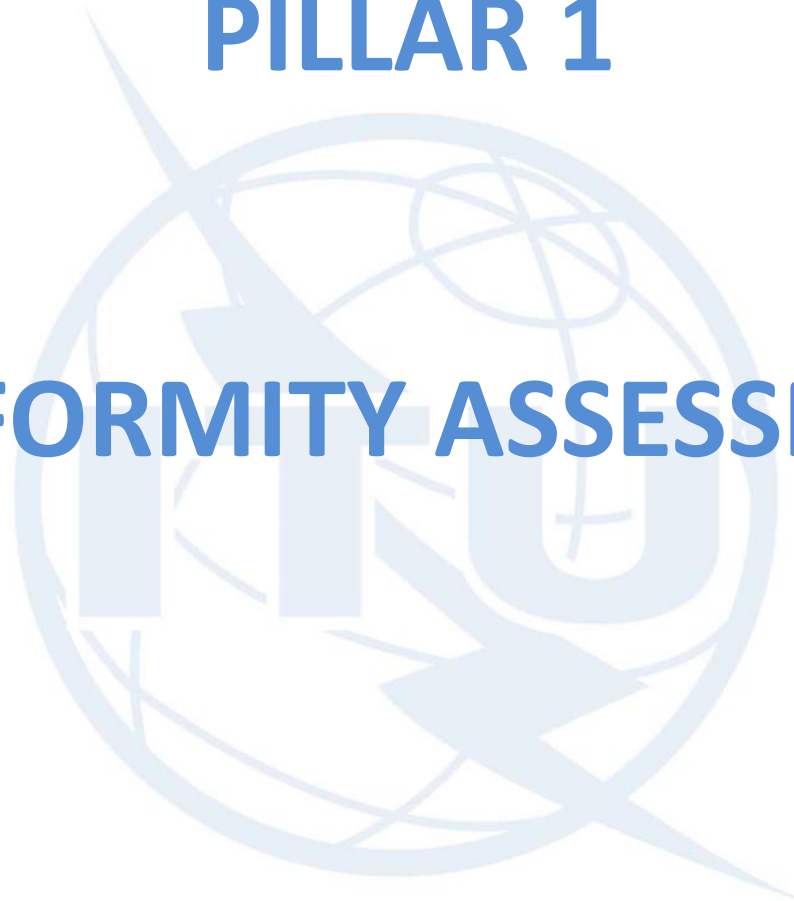
- [Resolution 177 \(PP-14\)](#)
- [Resolution 76 \(WTSA-16\)](#)
- [Resolution 47 \(WTDC-17\)](#)
- [Resolution 62-1 \(RA-15\)](#)





PILLAR 1

CONFORMITY ASSESSMENT



ITU-T KEY ACHIEVEMENTS (1/3)



- **First entries in the Product Conformity Database**, 19 December 2014, www.itu.int/go/tcdb
- **List of mobile phones** which meet the requirements of P.1100/P.1110
- **Pilot projects** of conformity assessment against ITU-T Recs <http://itu.int/go/pilot-projects>
 - M.3170-series (SG2)
 - Mobile Number Portability (SG11) - completed
 - EPON (SG15)
 - IPTV (SG16)
- **Living list of ITU-T Recommendations on key technologies** suitable for C&I testing <http://itu.int/go/key-technologies>
- **Reference table of ITU-T Recs and corresponding test specification under C&I testing** <http://itu.int/go/reference-table>



ITU Product Conformity Database



<http://www.itu.int/go/tcdb>

Product Conformity Database

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DISCLAIMER: This database is not certified to be either accurate or complete, but only reflects the information that has been communicated to the ITU secretariat. The ITU secretariat has not verified the veracity or accuracy of such information, nor the relevance of the products to ITU Recommendations

E-Health Devices

Product	Company	Model Number	Conformity to ITU-T Recommendation
Austonio Application for Android	Intel	Asus Memo Pad 8	ITU-T H.810 (2013-12)
Digital Thermometer	A & D Medical	UT-201BLE	ITU-T H.810 (2013-12)
Digital Blood Pressure Monitor	A & D Medical	UA-651BLE as Type A	ITU-T H.810 (2013-12)
Energy Smart Blood pressure monitor	IDT	BPU321 (as Type A)	ITU-T H.810 (2013-12)
Accu-Chek Active GB	Roche	GB revision 2	ITU-T H.810 (2013-12)
NTT Docomo - Mobile phone HDP manager platform, Android mobile phone	Fujitsu Limited	F-04G	ITU-T H.810 (2013-12)
Manager Platform for Android	Sharp	SHARP Manager Platform	ITU-T H.810 (2013-12)
Precision Health Scale	A & D Medical	UC-352BLE	ITU-T H.810 (2013-12)
A&D Digital Weighing Scale (with Body Composition Analyzer)	A & D Medical	UC-411PBT-C as Type D, AD-6209PBT-C, UC-355PBT-Ci, UC-351PBT-Ci and UC-325PBT-Ci as Type U.	ITU-T H.810 (2013-12)
Bosch Blood Pressure Monitor	Robert Bosch Healthcare GmbH	BP5000 BT	ITU-T H.810 (2013-12)
SHARP HDP Manager Platform for Android (XN-DLBT40)	Sharp	XN-DLBT40 (SH-01F) as Type D, SHL23, 302SH, SH-01F DRAGON QUEST, DM016SH and SH-02F, 303SH, SHT22 and SHL24 as Type U.	ITU-T H.810 (2013-12)



ITU-T KEY ACHIEVEMENTS (2/3)



- Finalized the requirements and relevant test specifications for SIP-IMS ([web](#))
- Finalized the [work plan](#) on benchmarking of IMS platform
- **Approved Recommendation [ITU-T Q.3920](#) “Terms and definitions for conformance and interoperability”**
- Conducted **Workshop on VoLTE/ViLTE interconnection** ([web](#))
- Approved new ITU-T Q.3640 “**Framework of interconnection of VoLTE/ViLTE-based networks**” and relevant test specifications Q.3953
- Approved new Rec. ITU-T Q.3952 “**The architecture and facilities of Model network for IoT testing**”
- Approved ITU-T Q.3905 “**Conformance test plan for Number Portability requirements defined by ITU-T Q.Suppl.4**”
- Approved ITU-T Q.4040 “**The framework and overview of Cloud Computing interoperability testing**”



ITU-T KEY ACHIEVEMENTS (3/3)



- New Recommendation **ITU-T Q.3960 “Framework for Internet related performance measurements”**
- SG16 started a new **pilot project of conformity assessment against ITU-T H.700-series IPTV**
- SG16 has established an **IPTV testing team** for conformity testing of IPTV
- The IPTV testing team and Keio University conducted successful **conformance testing on ITU-T H.721** at the January 2017 meeting of SG16
- **Collaboration agreement** between **ITU-T SG11** and **ETSI TC INT** is in force since December 2015



Collaboration with ETSI TC INT



Collaboration agreement between ITU-T SG11 and ETSI TC INT is in force since December 2015 ([TD913-GEN/11](#))

Topics for collaboration:

- SIP-IMS conformity testing ([web](#))
- Internet related performance measurements ([web](#))
- Framework of an interconnection among VoLTE/ViLTE-based networks
- Requirements and test specifications for signalling protocol “DIAMETER” to be used in the IMS-based network for VoLTE/ViLTE interconnection

Joint meetings: 1 (Sept. 2015, Vienna); 2 (March 2016, Sofia Antipolis; June 2016, Geneva)

Outcomes:

- finalized the SIP-IMS Work plan (Rel.10)
- ITU-T SG11 approved Rec. ITU-T [Q.3960](#) “*Framework of Internet related performance measurements*” (July 2016)
- The testing method of e2e bitrate is under development now (draft ITU-T Q.3961)
NOTE: ETSI incorporates the Q.3960 and Q.3961 into one standard
- Started work item on VoLTE/ViLTE interconnection framework ([Q.30xx](#))





ITU-T Conformity Assessment Steering Committee (ITU-T CASC)

[ITU testing laboratories recognition procedure](#)

ITU-T CASC [web page](#)

Next meeting: **20 July 2018** (during SG11 meeting)



BACKGROUND



- The Conformity Assessment Steering Committee (**ITU-T CASC**) was **established in April 2015** by ITU-T SG11 to elaborate detailed procedures for the implementation of a test laboratory recognition procedure in ITU-T
- The ITU-T CASC works in accordance with the **ITU-T SG11 Guideline “Testing laboratories recognition procedure”** which describes the procedure for recognition of Testing Laboratories that have competence for testing against ITU-T Recommendations
- **Mr Isaac BOATENG** (SG11 Vice-chairman, Ghana) is appointed as **Chairman of ITU-T CASC**
- **There were five meetings of the ITU-T CASC** (last meeting in Nov.17)
- According to the request received from ITU members, ITU-T CASC established a list of ITU-T Recommendations (e.g. **ITU-T P.1140, ITU-T P.1100, ITU-T P.1110 and K.116**) which may become subjects of the **future joint certification schemes**
- In February 2017, SG11 approved a Guideline on **“ITU-T CASC procedure to appoint ITU-T technical experts”**

More information is available on the [web page](#)





CASC ACHIEVEMENTS

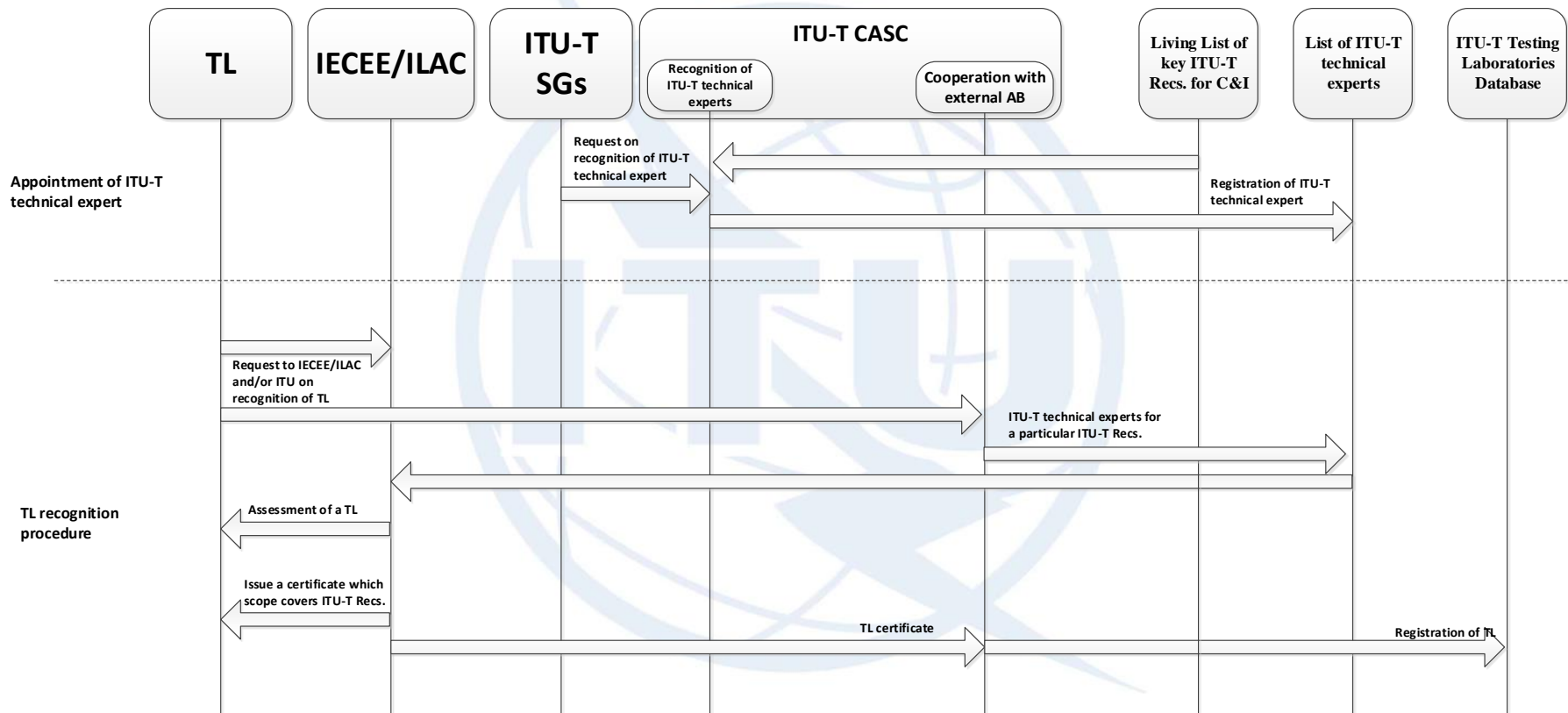
- A new guideline defines the **ITU-T Conformity Assessment Steering Committee (CASC) procedure to appoint ITU-T technical experts**
- ITU-T CASC continues to collaborate with existing Conformity Assessment Systems and Schemes such as IEC and ILAC
- IEC Certification Management Committee (CMC) set up IECEE TF “ITU Requirements” which finalized draft **Operational Document (OD) “ICT Laboratory Recognition Procedure on ITU-T Recommendations”**. It will become a dedicated testing laboratory recognition procedure, established by IECEE
- ITU-T CASC is currently developing guidelines to detail **collaboration mechanisms with accreditation bodies** such as IECEE
- ITU-T CASC established a **list of ITU-T Recommendations - subjects for future joint certification schemes** (e.g. ITU-T P.1140, ITU-T P.1100, ITU-T P.1110 and K.116)





General workflow diagrams of ITU-T CASC*

(* [Testing Laboratories recognition procedure](#), 2015)



CASC Guidelines



<https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/CASC.aspx>

International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Guideline

(29 April 2015)

Testing Laboratories recognition procedure

ITU-T



International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Guideline

(15 February 2017)

**ITU-T CASC procedure to appoint ITU-T
technical experts**

ITU-T





PILLAR 2

INTEROPERABILITY EVENTS



ITU INTEROP EVENTS



CONDUCTED EVENTS

- **Fourth ITU test event on compatibility of mobile phones and vehicle's hands-free terminals***
(Busan, Korea, 25-28 September 2017, during ITU Telecom World)
- **ITU test event on IPTV**
(Geneva, 17 January 2017)
- **Third ITU test event on compatibility of mobile phones and vehicle's hands-free terminals***
(Bangkok, Thailand, 15-16 November 2016, during ITU Telecom World)
- **IPTV test event**
(Geneva, 14 September 2016)

* 10 March 2017, ITU-T conducted a Roundtable between phone and car industries to discuss to discuss possible approaches to address found issues at the relevant test events

Full list of test events is available [here](#)

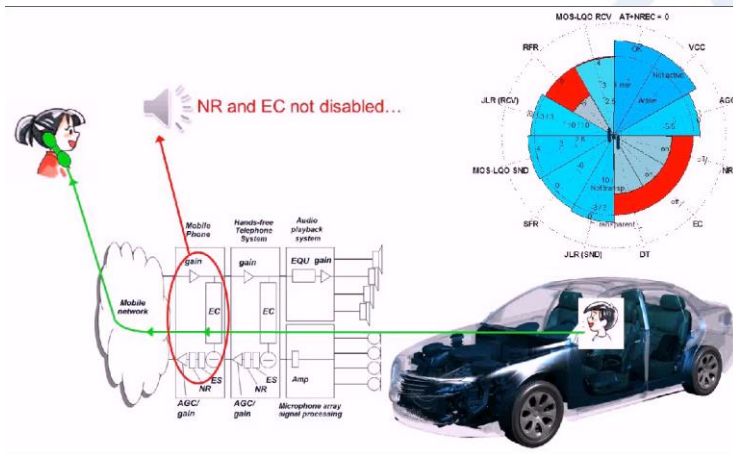




COMPATIBILITY OF MOBILE PHONES AND VEHICLE HANDS-FREE TERMINALS

BACKGROUND

Many mobile phones do not work properly with car's HFT's system and thereby significantly degrading the speech quality of the complete system



Video 1, [YouTube](#) (2016)

Video 2, [YouTube](#) (2017)

LIST OF ITU TEST EVENTS

[May 2014](#); [May 2016](#); [November 2016](#)

[Roundtable](#) (10 March 2017); [September 2017](#)

LIST OF BEST PERFORMERS

GENERAL STATISTIC

- 58 mobile phones (state-of-art devices)
- 89 tests (55 Narrowband and 34 Wideband)
- **30 % mobile phones comply** with the requirements ITU-T P.1100&P.1110 (1st event)
- **22% mobile phones comply** with the requirements ITU-T P.1100&P.1110 (2nd event)





PILLARS 3 & 4

Capacity Building and Assistance



Pillar 3 – Capacity Building



ITU Trainings on Conformity and Interoperability

- MoUs signed with Testing Centers in the Regions to promote human capacity building in real testing laboratories
- Objectives: Enhance knowledge; increase awareness; promote experience-sharing, present practical learning on standards, regulations, real lab experience and accreditation procedures
- Lectures on C&I Regimes (e.g. Regulatory framework, market surveillance); and C&I Testing Domains (e.g. mobile, EMC, broadband, and NGN)



Conformity and Interoperability Training for the African Region

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Conformity and Interoperability Training for the African Region - "Regulatory framework and practical EMC tests including creation of basic lab facilities"
Tunis (Tunisia), 30 April-4 May 2018

DOCUMENTS AND REFERENCES

[Invitation letter: English - French](#)
[Draft Agenda](#)
[Registration form](#)
[Fellowship request form](#)
[Information note: English - French](#)
[Training Material & Presentations](#)
[References: C&I Guidelines](#)

CONTACTS

- Ms Chali Tumelo: chali.tumelo@itu.int
- Mr Vladimir Daigele: vladimir.daigele@itu.int

Next Training =>

ITU C&I Guidelines



Establishing Conformity and Interoperability Regimes – Basic Guidelines (2014) and Complete Guidelines (2015)

These Guidelines address challenges faced by developing countries as they plan and review their own C&I regimes. Aspects covered by this publication include, inter alia, conformity assessment procedures; legislation to promote an orderly equipment marketplace; surveillance; coordination across regulatory agencies; and relevant international standards.

Guidelines for developing countries on Establishing Conformity assessment Test Labs in Different Regions (2012)

This set of guidelines is the first publication on C&I, its valuable content includes information concerning: The process required for building testing labs; A site analysis (e.g. existing testing labs, know-how); Collaboration mechanisms; Best practices; Reference standards and ITU Recommendations

Guidelines for the Development, Implementation and Management of Mutual Recognition Arrangements/Agreements on Conformity Assessment (2013)

These guidelines promote the understanding and establishment of Mutual Recognition Agreements (MRAs) on conformity assessment that are intended to promote efficiency and resource sharing as well as to streamline the flow of products among participating Parties such as ITU Member States and private sector organizations, such as testing laboratories

Feasibility Study for the establishment of a Conformance Testing Centre (2013)

This feasibility study describes environments, procedures and methodologies to be adopted to establish, manage and maintain a testing center covering different kinds of conformance and interoperability testing areas

Two New Guidelines under Preparation – IoT Labs and Virtual Labs

http://itu.int/go/CI_Guidelines





C&I Regional Assessment Studies

Introduction

- C&I Assessment Studies looks for promoting the establishment of Harmonized C&I Programmes
- Improve **regional integration**
- Stimulating common standards
- Sharing of C&I infrastructure

Activities and Goals

- Assessment of C&I infrastructure in regions/sub-regions/countries are being assessed
- Close collaboration with regional experts
- Setup of a robust framework (base on international procedures – ITU, ISO, IAF, ILAC, etc.)
- Search of innovative tools to be applied on the field

Maghreb (2015/2016)



The Caribbean - CTU (2014-2016-2017)



EAC Countries (2015)



COMTECA (2015/2016)



South America ((2017)



SADC Region (2014/2015)





Coming C&I Activities on Training and Assistance - 2018

Assessment Studies

- Follow-up Regional C&I Assessment
- Events:
 - C&I Workshop and IoT development for youth, Trinidad and Tobago: 25-29/June
 - MRA expert meeting for South America (t.b.c.)

Direct country assistance

- Revision of national C&I procedures
- specific training on demand

Training on C&I

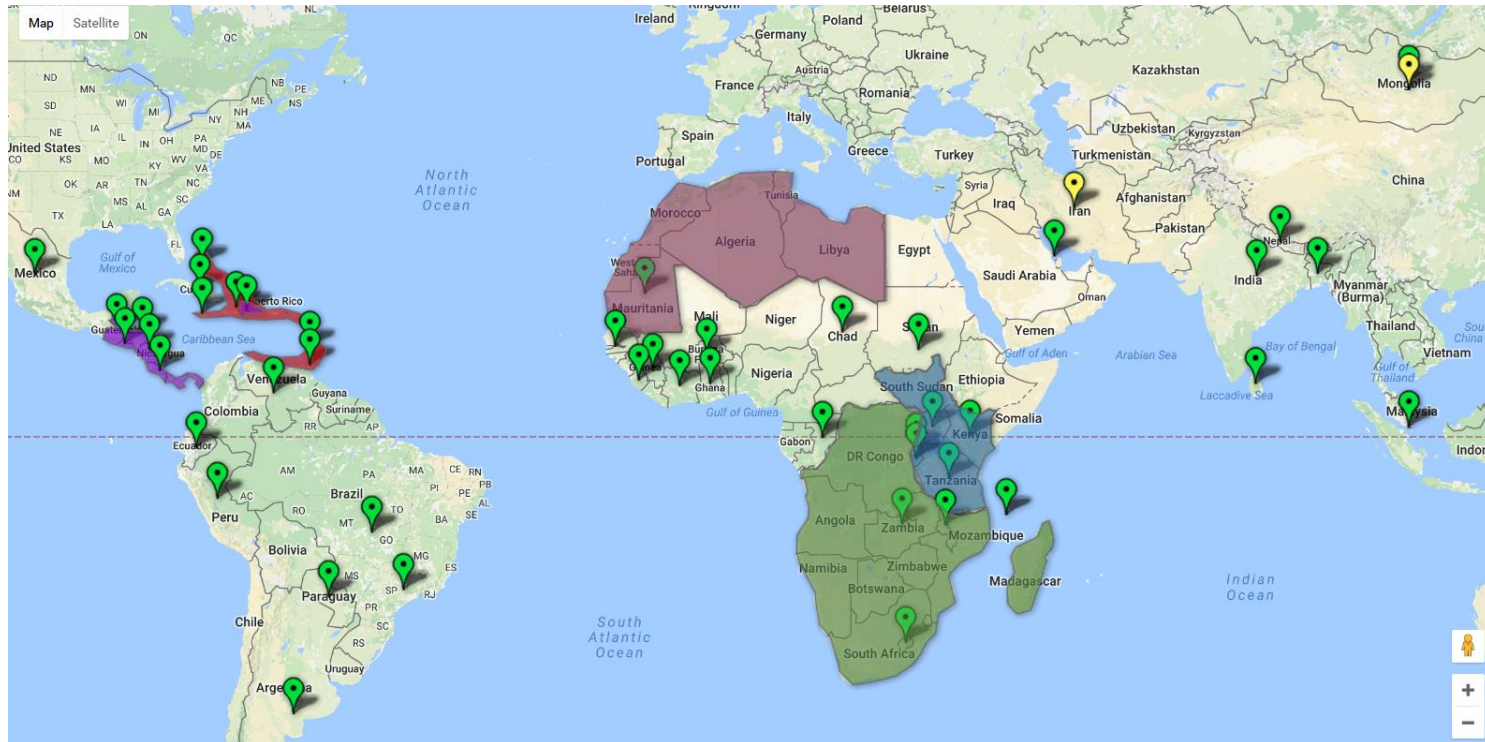
- AFR, Tunis 30/04 – 4/5 / 2018;
- AMS, t.b.d.
- ASP, 23/04-20/05, Center of Excellence

https://itu.int/go/CI_Events





C&I Activities Summary



- Training provided in real testing facilities through the collaboration with laboratory partners within the C&I Programme
- 5 Regions have received ITU C&I Assessment Studies
- Assistance provided to countries on demand
- More than 50 Case Studies/Country Reports are available through the ITU C&I Portal





WTSA-16 DECISIONS RELATED TO C&I



Rev. Resolution 76 (WTSA-16) (1/3)



“Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU Mark programme”

resolves

...

that ITU-T, in collaboration with the other Sectors as appropriate, shall develop a programme to:

iii) **develop and improve the mutual recognition of C&I testing results, mechanisms and data analysis techniques between different regional testing centres;**

that a set of methodologies and procedures should be developed for **remote testing using virtual laboratories**

that ITU, being a world standardization body, can address the impediments to harmonization and growth of worldwide telecommunications, promote the visibility of ITU standards (ensure interoperability): **by means of having an ITU testing mark regime**, taking into account the technical and legal implications, if any, and/or any revenue-generating possibilities, taking into consideration recognizing j),



Rev. Resolution 76 (WTSA-16) (2/3)



“Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU Mark programme”

instructs the Director of the Telecommunication Standardization Bureau

...

- 3 considering resolves 7, to accelerate the implementation of Pillar 1, so as to ensure gradual and smooth accomplishment of the other three pillars and the **possible implementation of the ITU Mark**
- 4 in cooperation with the Director of BDT, to implement an ITU C&I programme for possible introduction of a **database identifying products' conformance and origin**
- 5 to publish an **annual plan of C&I activities** which could attract more members' participation
- 6 to facilitate the **development and implementation of an ITU-T C&I test laboratory recognition procedure**



Rev. Resolution 76 (WTSA-16) (3/3)



“Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU Mark programme”

instructs the Study Groups

...

to submit to CASC a list of ITU T Recommendations which could be candidates for the **joint IEC/ITU certification scheme**, taking into account market needs

instructs the ITU-T Conformity Assessment Steering Committee

...

to study and **define a procedure to recognize testing laboratories that are competent to test according to ITU-T Recommendations**, in collaboration with existing certification schemes such as that of IEC



WTSA-16 decisions related to C&I (1/4)



Resolution 2 of WTSA-16

“ITU Telecommunication Standardization Sector study group responsibility and mandates”

LEADERSHIP OF SG11

“Study Group 11 is a lead study group on establishing test specifications, conformance and interoperability testing **for all types of networks, technologies and services** that are the subject of study and standardization by all ITU-T study groups”

MANDATE OF SG11

- ...
- “In addition, Study Group 11 will study a way to implement a **testing laboratory recognition procedure in ITU-T** through the work of the ITU-T Conformity Assessment Steering Committee (CASC)”
- ...





WTSA-16 decisions related to C&I (2/4)

Resolution 93 of WTSA-16

“Interconnection of 4G, IMT-2020 networks and beyond”

Instructs the study groups

- 1 to identify as soon as possible future ITU T Recommendations that need to be developed associated with the **interconnection of 4G, 5G/IMT-2020 networks and beyond**;
- 2 to cooperate, as appropriate, with interested stakeholders and alliances in order to optimize studies on this particular subject,

Resolves

that ITU-T Recommendations to address network architectures, roaming principles, numbering issues, charging and security mechanisms as well as **interoperability and conformance testing for interconnection of 4G, IMT-2020 networks and beyond** shall be progressed as quickly as possible



WTSA-16 decisions related to C&I (3/4)



ToR of Q9/11 “Service and networks benchmark testing, remote testing including Internet related performance measurements”

(Continuation of Question 10/11 and 15/11) ([Doc88](#) of WTSA-16)

QUESTIONS

...

What test suites for standardized network parameters, **including those defined in the framework of Internet related performance measurements**, need to be developed?

NOTE – ITU-T Q.3960 (Framework of Internet-related performance measurement) was approved on 6 July 2016

TASKS

- specify **how to test the standardized network parameters, such as e2e bit rate, within the fixed and mobile operator’s networks**
- specify **how to test the standardized network parameters, such as e2e bit rate beyond the fixed and mobile operator’s network** (that is between users of the operator’s network and a particular Internet resource)

NOTE – The network performance QoS/QoE, including the networks and services KPIs, parameters and requirements, are defined by ITU T SG12 and related SDOs

More information is available at the [web page](#)



WTSA-16 decisions related to C&I (4/4)



Resolution 96 of WTSA-16

“ITU Telecommunication Standardization Sector studies for combating counterfeit telecommunication/information communication technology devices”

instructs the Director of the Telecommunication Standardization Bureau, in close collaboration with the Director of the Telecommunication Development Bureau

- 5 to assist Member States in taking the necessary actions to apply **relevant ITU-T Recommendations for combating counterfeit and tampered telecommunication/ICT devices, including the use of conformity assessment systems**

instructs ITU-T Study Group 11, in collaboration with other study groups concerned

...

- 4 to develop **methods of assessing and verifying identifiers** used for purposes of combating counterfeit production
- 7 **to identify a list of technologies/products, used for testing conformance with ITU-T Recommendations, in order to help in efforts to combat counterfeit ICT production**





Contacts

Denis ANDREEV

Advisor, Study Group 11
Coordinator of ITU Conformance and
Interoperability Programme (C&I), TSB
Email: denis.andreev@itu.int

Conformance: conformity@itu.int
Interoperability: interop@itu.int

