



Key activities and major ITU-T outcomes on C&I

Pillar 1 and 2 of ITU C&I Programme

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 (Guadalajara, 2010) in four pillars:



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.

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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 delivery '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 >](#)

News

Related ITU Groups

Contacts

Press release: ICT products conforming to ITU standards listed in public database
Published Fri, 19 Dec 2014

ITU-T webpage launched with focus on measurements of Internet speed
Published Tue, 28 Oct 2014

Press Release: Test event finds mobile phones have poor hands-free performance
Published Fri, 13 Jun 2014

12-16 May: Leading car makers to test hands-free systems to ITU standards
Published Wed, 16 Apr 2014

[More >](#)
[Archives >](#)

QUICK LINKS

General information

- [ITU C&I related Resolutions](#)
- [ITU C&I Action plan](#)
- [List of activities on the implementation of the ITU C&I Action plan \(agreed by Council-13\)](#)
- [ITU Council C&I related documents](#)
- [Presentations and promotional materials](#)

ITU C&I Databases

- [Product Conformity Database *new* \(Application form\)](#)

ITU-T C&I Portal





PILLAR 1

CONFORMITY ASSESSMENT





Pillar 1 as defined in Resolution 177 (ITU PP-14)

- “Instructs the Director of the TSB:
 - to continue to carry out pilot projects for conformity to ITU-T Recommendations to increase the probability of interoperability
 - to enhance and improve standards-setting processes in order to improve interoperability through conformity”
- “Invited the Membership to populate the pilot conformity database with details of products tested to applicable ITU T recommendations”

ITU Product Conformity Database



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](#) [Mobile Phones](#)

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)



KEY OUTCOMES OF PILLAR 1 (1/3)



- **First entries in the Product Conformity Database**, 19 December 2014, www.itu.int/go/tcdb
- **Whitelist 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)
 - EPON (SG15)
- **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>

KEY OUTCOMES OF PILLAR 1 (2/3)



- Approved a Guideline **Testing laboratories recognition procedure**
- Established the **Conformity Assessment Steering Committee (ITU-T CASC)** to elaborate detailed procedures for the implementation of a test laboratory recognition procedure in ITU-T ([web page](#), [TD938](#))
- Conducted **Workshop on VoLTE/ViLTE interconnection** (web) and started a new work item **Q.30xx_VoLTE_Interconnection_FW "Framework of interconnection of VoLTE/ViLTE-based networks"**

KEY OUTCOMES OF PILLAR 1 (3/3)



- Updated **SIP-IMS conformity assessment** [web page](#)
- Updated **Benchmarking of IMS platform**. Work plan ([TD861](#), SG11)
- Consented ITU-T Q.3960 “**Framework of Internet speed measurements for the fixed and mobile networks**”
- Consented ITU-T Q.3905 “**Conformance test plan for Number Portability requirements defined by ITU-T Q.Suppl.4**”
- Consented ITU-T Q.4040 “**The framework and overview of Cloud Computing interoperability testing**”
- Started a new work item Q.39_FW_Test_ID_IoT “**The framework of testing of identification systems used in IoT**”
- Started a new work item on **C&I vocabulary** [Q.C&I VOC](#)



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

[ITU's testing laboratories recognition procedure](#)

[ITU-T CASC web page](#)





RATIONALE

Common practice of C&I programmes of SDOs and forums (such as IECEE, IEEE ICAP, BBF, MEF, Bluetooth, Wi-Fi Alliance, WiMAX Forum, etc.) shows that a recognition procedure of Testing Laboratories (TL) is the best way to ensure the credibility of their testing programme, i.e., that testing results are produced by a TL which is competent, behaves ethically and employs suitable quality assurance

TWO OPTIONS TO IMPLEMENT THE ITU-T TL'S RECOGNITION PROCEDURE



- to join the existing conformity assessment programs, by providing ITU-T's technical experts to perform relevant TL's assessment against ITU-T Recommendations
- based on experience gained from collaboration with existing schemes, ITU may, in future, consider the possibility of establishing an ITU-T TL self-recognition procedure, providing the assessment of ITU-T technical experts and assessment of the TL

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) has been appointed as Chairman of ITU-T CASC
- First meeting of the ITU-T CASC held on 3 December 2015 during ITU-T SG11 meeting (2-11 December 2015) ([web page](#))
- Next meeting of the ITU-T CASC is scheduled on 12 April 2016 (e-meeting)

ITU-T CASC WILL MANAGE THE ITU-T TL'S RECOGNITION PROCEDURE

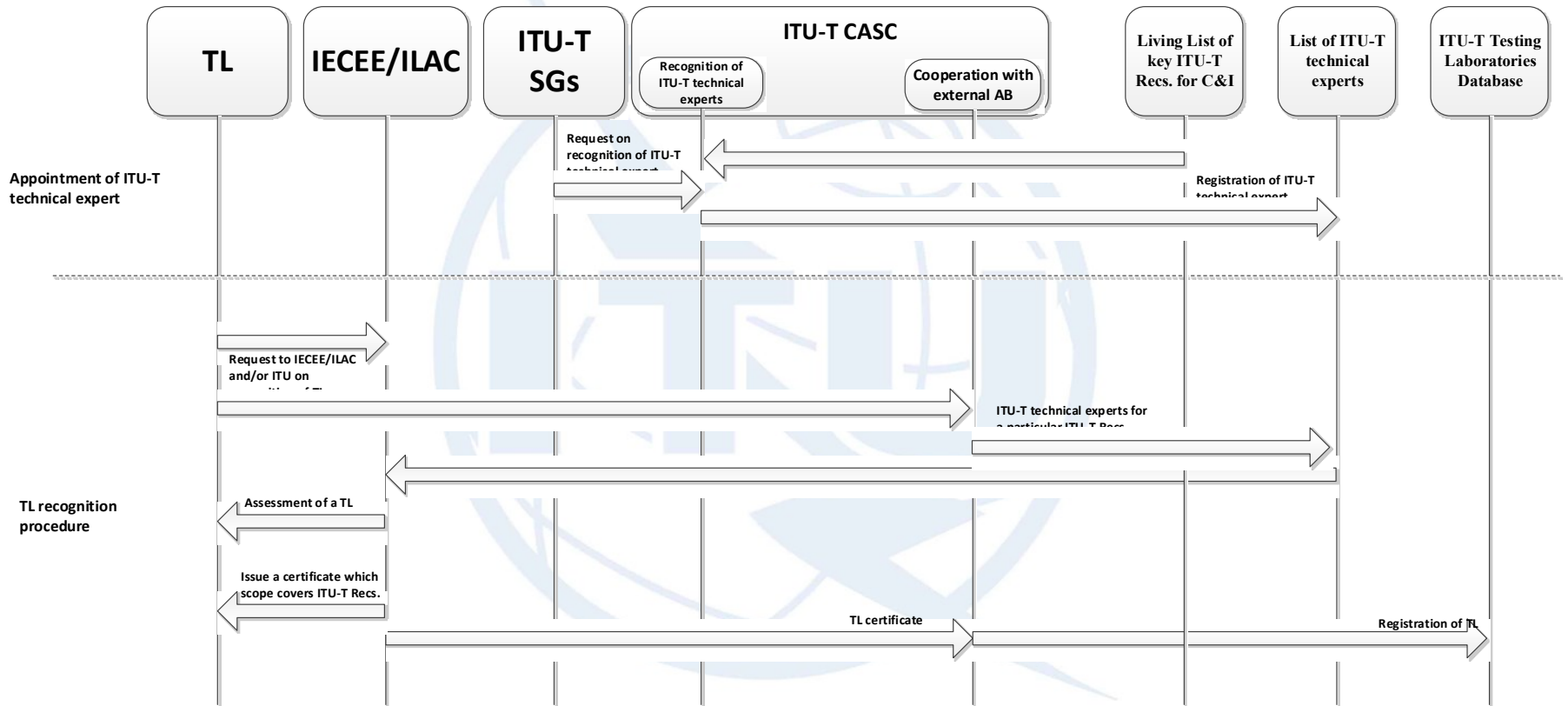


Main objectives of ITU-T CASC are:

- to provide the ITU-T view and position to the management organs of the established Conformity Assessment Systems and Schemes of the IEC and ILAC
- to set up criteria, rules and procedures for the appointment of ITU-T technical experts by working with established Conformity Assessment Systems and Schemes of IEC, in collaboration with ILAC aiming for a common testing and conformity assessment
- to process applications from candidate experts from ITU-T membership
- to appoint the ITU-T technical expert(s)
- to recognize TL with a scope of ITU-T Recommendation(s) which is assessed by IEC or by ILAC accreditation bodies and register it in the ITU recognized TL list



GENERAL WORKFLOW DIAGRAMS OF ITU-T CASC





Interconnection of VoLTE/ViLTE-based networks

Workshop [web page](#)

[Summary](#) of the Workshop

New work item ITU-T [Q.30xx](#)

The discussion will further continue at the next joint
Q11/11-ETSI TC INT meeting
(Sofia Antipolis, France, ETSI HQ, 21-24 March 2016)



NEW DRAFT ITU-T RECOMMENDATION

FRAMEWORK OF INTERCONNECTION OF VoLTE/ViLTE-BASED NETWORKS



- **General description of the interconnection** of the VoLTE-based networks
- **Network architecture** of interconnected VoLTE-based networks
- **Scenarios of e2e VoLTE/ViLTE communications** on domestic and international levels
- **Interconnection scenarios**
- **Requirements to signaling protocol** used on interconnection
- **Use cases** of the implementation VoLTE/ViLTE on the existing operators' networks

ONGOING ITU-T C&I PROJECTS



Measurements of Internet speed



[Web page](#)

SIP-IMS conformance testing



[Web page](#)

Compatibility of mobile phones and vehicle
hands-free terminals



[Web page](#)



SIP-IMS conformance testing

under Q11/11 “Protocols and networks test specifications;
frameworks and methodologies”

<http://www.itu.int/en/ITU-T/C-I/Pages/SIP/IMS.aspx>

BACKGROUND



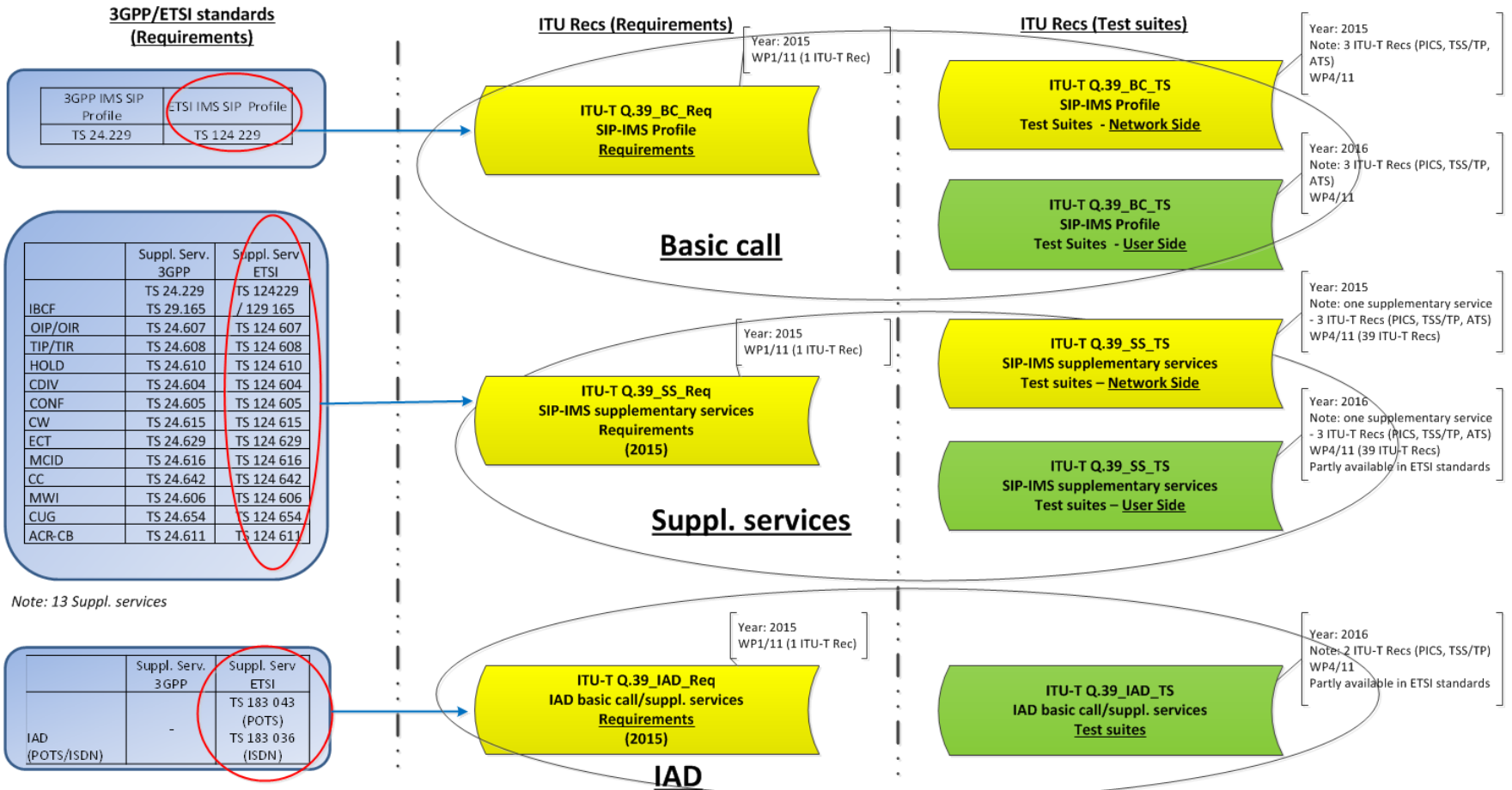
- International standards (such as ITU-T Recommendations) are the best tool to achieve interconnection between worldwide telecom operators
- **Most telecom operators have already implemented the IMS platform**, connecting their customer's Terminal Equipment (TE) through SIP-IMS protocol
- **Different implementation of SIP-IMS** profiles may result in additional operator's efforts (budgets) to adapt TE to the installed IMS platform
- **The roaming for VoLTE-based services among operators is not guaranteed** due to the different implementations/options of VoLTE, the lack of unified standardized interconnection requirements and signaling protocols

OBJECTIVES OF SIP-IMS STANDARDIZATION PLAN



- **Collect all standards on SIP-IMS profile** in ITU-T and amend it with missing standards (e.g. requirements, test specifications, use cases, etc.)
- **Establish a framework for the conformity assessment of SIP-IMS profile** which may be used by all fixed telecom operators in the world for testing equipment based on SIP-IMS profile
- **Support the conformity assessment of equipment against ITU-T Recommendations on SIP-IMS profile**
(Testing Laboratory and other interested parties are invited)
- **Create a list of TEs based on SIP-IMS profile** which comply with ITU-T Recommendations (e.g. signalling protocol, voice QoS/QoE)
- **Align and develop ITU-T Recommendations in collaboration with ETSI TC INT**

WORK PLAN ON SIP-IMS STANDARDIZATION



Legend

ETSI standard which will be endorsed by ITU-T

New ITU-T Rec. which should be developed

Current ETSI standard

Statistics

Endorsed ETSI standards – 54

New ITU-T Recs. – 44



INTERNET SPEED MEASUREMENT

under Q15/11 “Testing as a service (TAAS)”

<http://www.itu.int/en/ITU-T/C-I/Pages/IM/Internet-speed.aspx>

BACKGROUND



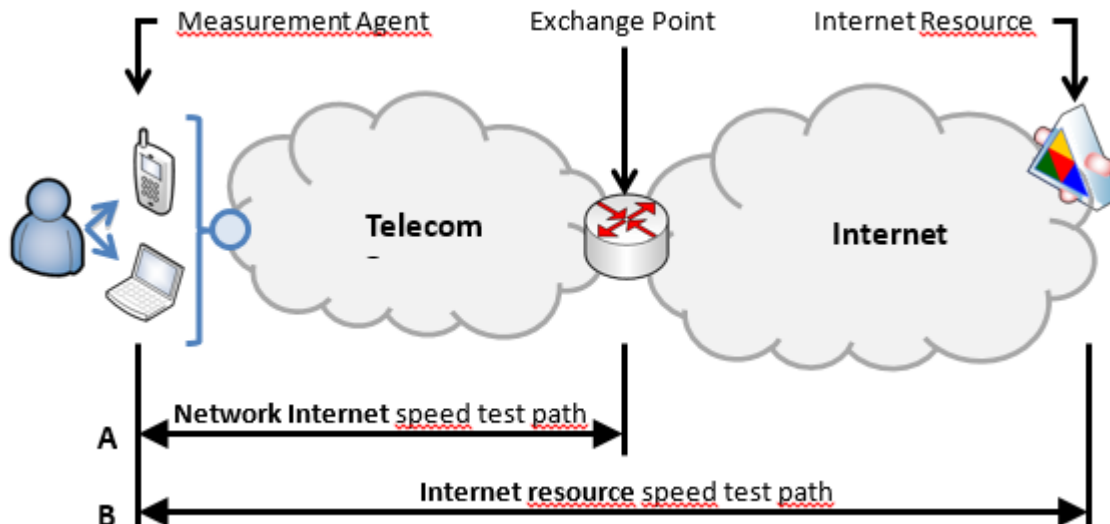
1. Framework of Internet speed measurement (consented, Dec.15)
2. Testing methodology which is based on two types of measurements:
 - Network Internet speed test path
 - Internet resource speed test path

Next meetings:
Joint ETSI TC INT and Q15/11
(Sofia Antipolis, France, ETSI HQ, 21-24 March 2016)

SG11 meeting
(27 June — 6 July 2016)

In progress:

Draft Recommendation ITU-T [Q.TM_Int_sp_test](#) "Testing methodologies of internet speed measurement system to be used on the fixed and mobile networks"





Conformance testing of the Mobile Number Portability

under Q11/11 “Protocols and networks test specifications;
frameworks and methodologies”



KEY OUTCOMES



REQUIREMENTS

- ✓ Q.suppl.4 “Number portability – Capability set 1 requirements for service provider portability (All call query and Onward routing)”

APPROVED TEST SPECIFICATION

- ✓ ITU-T Q.3905 “Conformance test plan for Number Portability requirements defined by ITU-T Q.Suppl.4”

PILOT PROJECT

- ✓ SG11 started pilot project which aims to perform testing of MNP implementation against ITU-T Recs.
(web page <http://itu.int/go/pilot-projects>)



ITU ACTIVITIES TO COMBAT COUNTERFEITING



- ITU-T PP-14 New Resolution on Combating counterfeit telecommunication/ICT devices which refers to the Resolution 177 (PP-14) on Conformity and Interoperability
- WTDC-14 Resolution 79 “The role of telecommunications/ICT in combating and dealing with counterfeit telecommunication/information and communication devices”
- **ITU held an event on combating counterfeit and substandard ICT devices ([17-18 November 2014](#))**
Note: In its conclusion, ITU was invited to contribute by “using standards and C&I programs as a means to combat counterfeit and substandard ICT devices”
- **ITU-T SG11 approved a “Technical Report on Counterfeit ICT Equipment”.** (Involvement of WTO, WCO, WIPO, MMF, GSMA etc.) [TD-574 R.2 \(GEN/11\)](#)



PILLAR 2

INTEROPERABILITY EVENTS



OBJECTIVES OF ITU INTEROP EVENTS



- **cross-connect** various manufacturers
- **evaluate of interoperability** of all participants on a peer basis
- check **end-to-end performance** at common “interfaces”
- to **validate different implementations of standard**, and feedback to standard-making

ITU INTEROP EVENTS



- **IPTV testing event** (Geneva, Switzerland, 14-15 October 2015)
- **3rd joint APT/ITU Conformance and Interoperability event**
(Bangkok, Thailand, 7-8 September 2015)
- **HATS Interoperability event on NGN supported by ITU and APT**
(Tokyo, Japan, 14-16 July 2015)
- **E-health testing and showcasing event**
(Geneva, ITU Headquarters, 10-12 February 2015)
- **2nd joint APT/ITU Conformance and Interoperability event**
(Bangkok, Thailand, 25-26 August 2014)
- **ITU test event** on Performance assessment of vehicle-mounted mobile phones in conjunction with Hands-free Terminals according to Recommendations ITU-T P.1100 and ITU-T P.1110 (Geneva, ITU Headquarters, 12-16 May 2014)

Future events

- **2nd ITU-T testing event on performance assessment of vehicle-mounted mobile phones in conjunction with hands-free terminals according to Recommendations ITU-T P.1100 and ITU-T P.1110** (Geneva, ITU Headquarters, 23-27 May 2016)



FIRST ITU TEST EVENT

PERFORMANCE ASSESSMENT OF MOBILE PHONES AS GATEWAYS TO CAR HANDS-FREE SYSTEMS

www.itu.int/go/test-event



BACKGROUND

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

FINDINGS

- ✓ an incorrect behavior of the mobile phone in the wireless connection to a vehicle's HFT
- ✓ an unacceptable quality of a voice-call inside the car and outside the car for the conversational partner

Only 30 % of phones passed the tests!

KEY OUTCOMES

- ✓ New [web portal](#) describing the existing issues
- ✓ Updated Recs. ITU-T P.1100/P.1110 with the new values of performance have been approved (December 14)
- ✓ Automotive industry appealed to ITU to publish a "whitelist" of mobile phones which meet the requirements, [web page](#)



Venue: ITU Headquarters

TL: HEAD Acoustics

Date: 12-16 May 2014

Participants: Mercedes-Benz, Volvo, Bosch, Toyota, Renault

Number of tests: 40 (30 phones)

[ITU press-release](#)

[Test report](#)



SECOND ITU TEST EVENT

PERFORMANCE ASSESSMENT OF MOBILE PHONES AS GATEWAYS TO CAR HANDS-FREE SYSTEMS



Date and venue: 23-27 May 2016,
Geneva ITU HQ

Goal: to update the 'whitelist' with
the mobile phones which work
properly with a vehicle's hands-free
telephone system

Terms and conditions, participation fee
are available on the event's [web page](#)





TSB contacts

Conformance: conformity@itu.int

Interoperability: interop@itu.int

JCA-CIT tsbjcacit@itu.int



For more information please contact:

Denis Andreev (TSB/ITU)

denis.andreev@itu.int





BACKUP SLIDES





ITU web sources related to C&I Programme

ITU C&I resources

C&I Portal - <http://www.itu.int/en/ITU-T/C-I/Pages/default.aspx>

JCA-CIT - <http://www.itu.int/en/ITU-T/jca/cit/Pages/default.aspx>

SG11 (lead group on testing) - <http://www.itu.int/en/ITU-T/studygroups/2013-2016/11/Pages/default.aspx>



Living lists on the ITU-T C&I Portal (1/3)



<http://itu.int/go/key-technologies>

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

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ITU-T SGs outputs:

Living List of key technologies to be tested on C&I (SG11 output, 25 February - 1 March 2013)

JCA-CIT updates (25 April 2013)

#	Title	Focal Point	Other SDOs	ITU-T SGs	References to SDOs docs	References to ITU-T Recs.
1	Network and equipment performance (Benchmarking)	Martin Brand Vice-chairman of SG11 (Austria) martin.brand@A1telekom.at Michael Mild Rapporteur of Q10/11 (Sweden) michael.mild@softwell.se	ETSI (INT; STQ; MTS)	SG11	ETSI (Requirements) DTR/STQ-207 (draft) ETSI (Test suites) ETSI TR 101 577 TS 186 025-1 TS 186 025-2 TS 186 025-3 TS 186 025-4 TS 186 008-1 TS 186 008-2 TS 186 008-3 TS 186 008-4	ITU (Requirements) Draft Q.39zz-1 ITU (Test suites) Q.3930 Q.3931.1 Q.3931.2 Q.3931.3 (draft) Q.3931.4 (draft) Q.3932.1 (draft) Q.3932.2 (draft) Q.3932.3 (draft) Q.3932.4 (draft)
2	QoS/QoE and NP	Martin Brand Vice-chairman of SG11 (Austria) martin.brand@A1telekom.at Eva Ibarrola (Spain) eva.ibarrola@ehu.es Minrui Shi (China)	ETSI	SG12 SG11	ETSI (Requirements) - - - TR 102 775 TS 101 563 TS 102 928 (draft) - -	ITU (Requirements) Q.3925 Y.1542 Y.1543 Y.1541 Y.1541 - Q.MSPQuality Q.NP-req



Living lists on the ITU-T C&I Portal (2/3)

<http://www.itu.int/go/pilot-projects>

List of Pilot projects for conformity assessment against ITU-T Recs

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#	Title	ITU-T Recs.	Focal Point	Interested Companies	Motivations	Short-term strategy
1	Conformance testing pilot project on "Network management interface related Recommendations (ITU-T M.3170 series)"	Recs. ITU-T M.3170 series (M.3170.0, M.3170.1, M.3170.2, M.3170.3)	WANG Zhili (WP2/2 chair)	<p>Network Operators</p> <ul style="list-style-type: none"> China Telecom Co., Ltd. China Southern Power Grid (China) <p>Vendors</p> <ul style="list-style-type: none"> FiberHome (China) ZTE (China) <p>Integrators</p> <ul style="list-style-type: none"> Beijing Metanet Technologies Co., Ltd. (China) <p>Testing Labs</p> <ul style="list-style-type: none"> Beijing Infotel Network Testing Laboratory (China) China Telecommunication Technology Labs (CTTL) <p>University</p> <ul style="list-style-type: none"> Beijing University of Posts and Telecommunications (BUPT, China) 	<p>Taking into account of the wide adoption and influence in industrial of this series of Recommendations, this Conformance testing project will promote products which are compliant to this series of Recommendations, help operators, vendors, and integrators to implement this series of ITU-T Recommendations and better facilitate the interconnection between EMS, NMS, and OSS for the MTNM interface.</p>	<p>First — gather interested vendors, operators, integrators and others who implement Recs. ITU-T M.3170 series to identify and harmonize their testing requirements.</p> <p>Second — select appropriate testing organization(s) that are competent to perform the conformance testing for the Recs. ITU-T M.3170 series against these testing requirements using agreed test suites.</p> <p>Third — testing organization(s) to test the products which are based on the Recs. ITU-T M.3170 series by agreed test suites (see 1st above).</p> <p>Fourth — populate the ITU-T product conformance database with testing results generated by selected testing organizations which performed testing, and produced conformance testing report in agreed format.</p>





Living lists on the ITU-T C&I Portal (3/3)

<http://itu.int/go/reference-table>

The reference table of standards are used for C&I assessment

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[The living list of technologies to be tested on C&I](#)

[List of Pilot projects for conformity assessment against ITU-T Recs](#)

[The reference table of standards are used for C&I assessment](#)

[SG11 Action plan on C&I](#)

[ITU-T meeting schedules on C&I activities](#)

Resolution 76 of WTSA-12 resolves that "conformance and interoperability testing requirements shall provide for verification of the parameters defined in the current and future ITU-T Recommendations as determined by the Study Groups developing the Recommendations, and for interoperability testing to ensure interoperability taking into account user needs and in consideration of the market demand, as appropriate".

The C&I Action Plan agreed by Council-12 requests "ITU-T study groups to identify further technologies for which there is a market demand for a conformity assessment programme and to identify whether test specifications are available and if not, to explore the provision of test specifications. If test specifications are available, they may be turned into e.g. ITU-T Recommendations or supplements".

Following the WTSA-12 and Council-12 decisions, SG11 established the SG11 Action plan for implementation of C&I Programme which will help to achieve the goals of Resolution 76 (WTSA-12) and will assist ITU-T SGs in their work concerning the development of ITU C&I Programme within their responsibilities. The Action plan also is aimed at helping developing countries in the implementation of their C&I plans in the regions.

The one of the most important part of the SG11 Action plan is a Reference Table showing list of ITU-T Recs and relevant parameters to be tested for conformity/interoperability and references to the applicable test suites (ITU/other SDOs). These information will be used for filling out the ITU conformity Database by results of conformity assessment against ITU Recs.

The Reference Table is maintained by TSB in accordance with information provided by all ITU-T SGs and JCA-CIT on the SG11 requests with the template is provided in Annex B of SG11 Action plan.

QUICK LINKS

- ▶ [C&I Portal home page](#)
- ▶ [ITU C&I databases](#)
- ▶ [Guidances and information on C&I](#)
- ▶ [JCA-CIT](#)
- ▶ [BDT C&I Activities](#)
- ▶ [ITU Promotional materials](#)
- ▶ [TSB Circular 98](#)
- ▶ [ITU-T SG11 \(lead group on testing\)](#)



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JCA-CIT

(STUDY PERIOD 2012-2016)



General statistic

- 7 meetings
- Next meeting 1 July 2016 (during SG11 meeting)

Key outcomes

- Discussed key ITU-T activities on C&I (G.8265.1, SIP-IMS profile, Internet speed measurements etc.)
- JCA-CIT decided to extend the list of ICT products to be tested on conformity (signalling protocols, interfaces, telecom services, benchmarking, QoS/QoE/NP) [Report, 25 April 13](#)
- Assisted SG11 to maintain living lists on C&I (key technologies, reference table, pilot projects)

