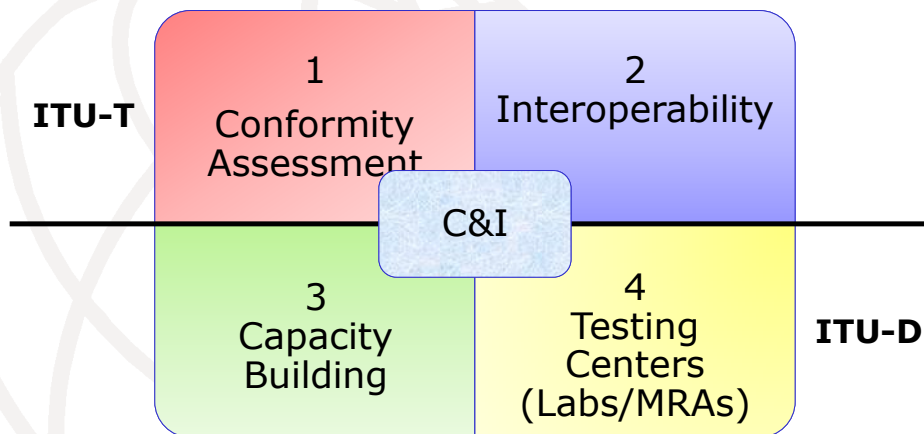**Conformance and Interoperability (C&I) for AFR Region; Type Approval Testing for Mobile Terminals, Homologation Procedures & Market Surveillance**

(Tunis, 14-18 Dec. 2015)

ITU-T C&I Pillars 1 and 2;
Key Activities and Major Outcomes

ISAAC BOATENG
ITU-T SG11 Vice-Chairman

Structure of ITU C&I Programme

ITU-T

1 Conformity Assessment	2 Interoperability

C&I

3 Capacity Building	4 Testing Centers (Labs/MRAs)

ITU-D

Issues

Lack of necessary standards and/or standard enforcement leads to:

- poor interconnection and interoperability
- damage reputation of company
- damaged reputation of new service/technology
- jeopardized competition by dominant market player
- vendor locked telecom operators
- redundant testing is a burden to both vendors and operators
- trade barrier for vendors to access new market
- ......

Why ITU C&I Programme

- **ITU-T's Mission**
  - Develop interoperable, non-discriminatory and demand-driven international standards for International telecommunication
- **Conformity to ITU Recommendations will**
  - Enable telecom operators, vendors, end users, and regulators worldwide to have confidence that products sourced in global market meet international telecommunication requirements
  - Improve interconnection and interoperability
  - Reduce trade barrier and improve transparency to market access
  - Increased choice from multiple manufacturers/service providers
  - Help telecom operators to reduce time of new service provision
  - Help vendors to save cost on repetitive testing/certification for same product, thus reduce time to market

ITU C&I Mandate

- **PP Resolution 177:** (PP-10, PP-14) "Conformance and interoperability"

- **WTDC Resolution 47:** (WTDC-10, WTDC-14)

  "Enhancement of knowledge and effective application of ITU Recommendations in developing countries, including conformance and interoperability testing of systems manufactured on the basis of ITU Recommendations"

- **WTSA Resolution 76:** (WTSA-08, WTSA-12)

  "Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU mark programme"

- **RA Resolution 62:** (RA-12)

  "Studies related to testing for conformance with ITU-R Recommendations and interoperability of radiocommunication equipment and systems"

- **ITU Council Decisions:** (2009, 2010, 2011, 2012, 2013, 2014, 2015)

**ITU Training Course on Conformity and Interoperability for AFR Region
14–18 December 2015 (Tunis, Tunisia)**

ITU-T C&I Portal

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

**ITU Training Course on Conformity and Interoperability for AFR Region
14–18 December 2015 (Tunis, Tunisia)**

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"**

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ITU Product Conformity Database

ITU Training Course on Conformity and Interoperability for AFR Region
14–18 December 2015 (Tunis, Tunisia)

PILLAR 1 KEY OUTCOMES (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)

- A **living list of ITU-T Recommendations** on key technologies suitable for C&I testing http://itu.int/go/key-technologies

- A **reference table of ITU-T Recs and corresponding test specification** under C&I testing http://itu.int/go/reference-table

ITU Training Course on Conformity and Interoperability for AFR Region
14–18 December 2015 (Tunis, Tunisia)

PILLAR 1 KEY OUTCOMES (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. Introduction to the ITU-T CASC (TD938)

- **1st ITU-T CASC** meeting held on 3 December 2015

- ITU-T 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"**

PILLAR 1 KEY OUTCOMES (3/3)

- **SIP-IMS conformity assessment** web page
- **Benchmarking of IMS platform. Work plan** (TD861, SG11)
- Approved **ITU-T Q.3960 "Framework of Internet speed measurements for the fixed and mobile networks"**
- 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"**
- 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

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**

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GENERAL WORKFLOW DIAGRAMS OF ITU-T CASC
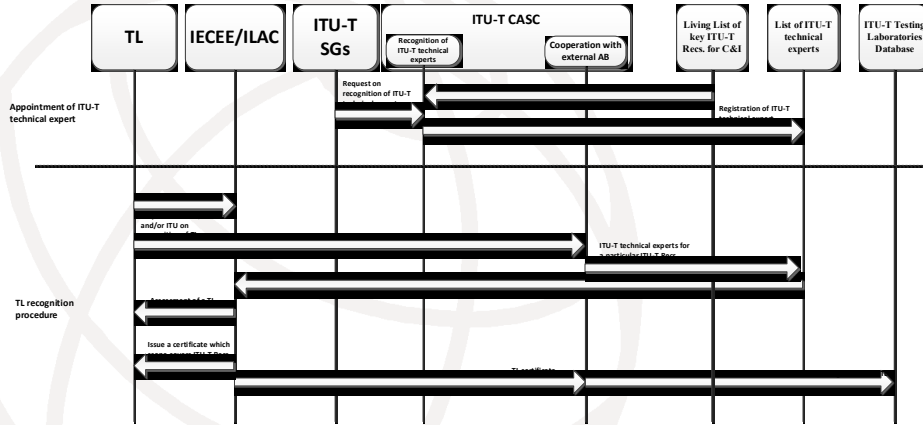
Interconnection of VoLTE/ViLTE-based networks

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, March 2016)

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 projects related to C&I

Measurements of Internet speed

Web page

SIP-IMS conformance testing

Web page

Compatibility of mobile phones and vehicle hands-free terminals

Web page

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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 protocols 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

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, 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"*

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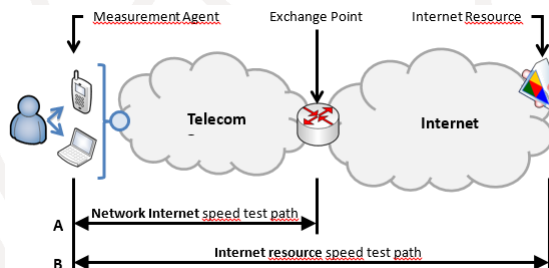
Conformance testing of the Mobile Number Portability
under Q11/11 "Protocols and networks test specifications; frameworks and methodologies"

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 planned:**
  - 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, the date is TBD)*

ITU Test Event
Performance assessment of mobile phones in conjunction with vehicle's HFT in accordance with Recs. ITU-T P.1100/P.1110
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

ITU Training Course on Conformity and Interoperability for AFR Region
14–18 December 2015 (Tunis, Tunisia)

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TSB contacts

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

JCA-CIT tsbjcacit@itu.int

For more information please contact:
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14–18 December 2015 (Tunis, Tunisia)

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ADDITIONAL SLIDES

ITU Training Course on Conformity and Interoperability for AFR Region
14–18 December 2015 (Tunis, Tunisia)

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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

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14–18 December 2015 (Tunis, Tunisia)

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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

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

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	ETSI (INT; STQ; MTS)	SG11	**ETSI (Requirements)** DTR/STQ-207 (draft)	**ITU (Requirements)** Draft Q.39zz-1
		Michael Mild Rapporteur of Q10/11 (Sweden) michael.mild@softwell.se			**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 (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

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

#	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)	**Network Operators** • China Telecom Co., Ltd. • China Southern Power Grid (China) **Vendors** • FiberHome (China) • ZTE (China) **Integrators** • Beijing Metarnet Technologies Co., Ltd. (China) **Testing Labs** • Beijing Infotel Network Testing Laboratory (China) • China Telecommunication Technology Labs (CTTL) **University** • Beijing University of Posts and Telecommunications (BUPT, China)	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.	**First** — gather interested vendors, operators, integrators and others who implement Recs. ITU-T M.3170 series to identify and harmonize their testing requirements. **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. **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). **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.

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

YOU ARE HERE   HOME   » ITU-T   » ITU CONFORMITY AND INTEROPERABILITY   SHARE

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)

FOLLOW US

JCA-CIT
(Study period 2012-2016)

General statistic
- 7 meetings
- Next meeting July 2016 (during SG11 meeting, date TBC)

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)