3rd SG13 Regional Workshop for Africa on "ITU-T Standardization Challenges for Developing Countries Working for a Connected Africa"
(Livingstone, Zambia, 23-24 February 2015)

ITU-T SG11
Signalling requirements, protocols and test specifications

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Outline

- Responsibility
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- Highlights of Current Activities
- SDN signalling and protocols
- M2M service layer
- Conformance & Interoperability
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- Q11/11 Q.TL-rec-pro “Testing Laboratories recognition procedure”
- Q14/11 Cloud interoperability testing
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Responsibility

Responsible for studies relating to signalling requirements and protocols, including those for IP-based network technologies, NGN, M2M, IoT, FNs, Cloud Computing, mobility, some multimedia related signalling aspects, ad hoc networks (sensor networks, RFID, etc.), QoS, and internetwork signalling for legacy networks ATM, N-ISDN and PSTN networks. In addition, studies relating to reference signalling architectures and test specifications for NGN and emerging network technologies (e.g., IoT etc)

- Lead study group on **signalling and protocols**
- Lead study group on **M2M signalling and protocols**
- Lead study group on **test specifications, conformance and interoperability testing**

WP Structure

SG11

Wei FENG (China)
SG11 Chairman

Signalling requirements and protocol for emerging networks

WP1

WP 1 Chairman: Xiaojie Zhu (China Telecom),

Q1/11, Q2/11, Q3/11

Software-Defined Networking (SDN) and resource control

WP2

WP 2 Co-Chairman: Kaoru Kenyoshi (NEC)
WP 2 Co-Chairman: Ting [Tina] Zou [Tsou] (Huawei)

Q4/11, Q5/11, Q6/11

Attachment and service networking, including IoT and M2M

WP3

WP 3 Chairman: Shin-Gak Kang (ETRI)
WP 3 Vice-chair: Isaac Boateng (NCA, Ghana)

Q7/11, Q8/11, Q9/11

Conformance and Interoperability (C&I) testing

WP4

WP 4 Chairman: Martin Brand (A1 Telekom Austria AG)
WP 4 Vice-chair: Dmitri Tarasov (Russian Federation)

Q10/11, Q11/11, Q12/11, Q13/11, Q14/11, Q15/11

List of Questions

QUESTIONS	TITLE
Q1/11	Signalling and protocol architectures in emerging telecommunication environments
Q2/11	Signalling requirements and protocols for service and application in emerging telecommunication environments
Q3/11	Signalling Requirements and Protocol for Emergency Telecommunications
Q4/11	Signalling requirements and protocols for Bearer and Resource control in emerging telecommunication environments
Q5/11	Protocol procedures relating to services provided by Broadband Network Gateways
Q6/11	Protocol procedures relating to specific services over IPv6
Q7/11	Signalling and control requirements and protocols for network attachment supporting multi-screen service, future networks, and M2M
Q8/11	Guidelines for implementations of signalling requirements and protocols
Q9/11	Protocols supporting distributed, smart service networking and end-to-end multicast
Q10/11	Service and networks benchmarking measurements
Q11/11	Protocols and Networks Test Specifications
Q12/11	Internet of things test specifications
Q13/11	Monitoring parameters for protocols and emerging networks
Q14/11	Cloud interoperability testing
Q15/11	Testing as a service (TAAS)

SDN signalling & protocol

- SG11 is developing Q.Supplement-SDN which defines signalling architecture, interfaces and protocols. This document is going to be approved in April 2015.

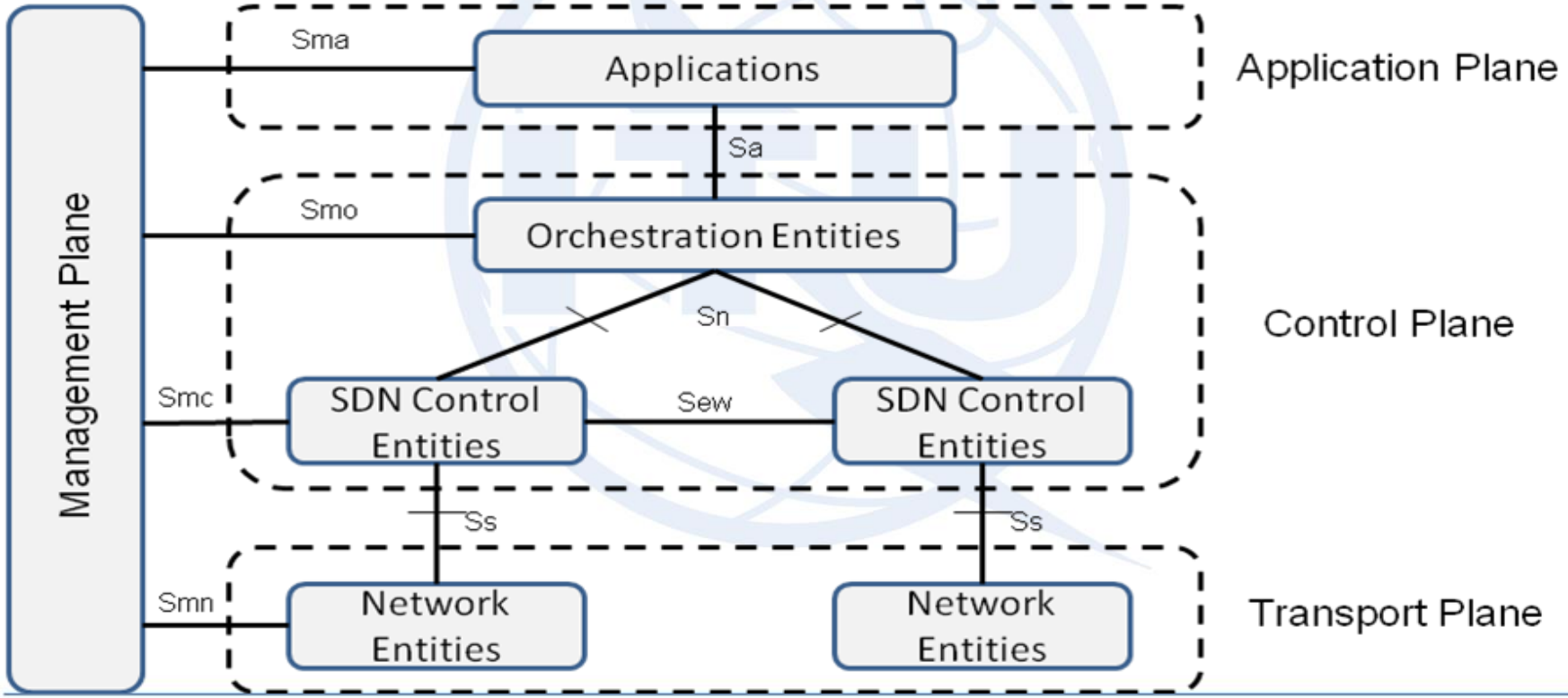


Figure 8-1 – The signalling model of SDN framework

M2M Service Layer

- SG11 is the parent SG of Focus Group M2M Service Layer which concluded in December 2013. This focus group studied e-health collaborating with WHO and developed five deliverables.
- These deliverables were transferred to SG11, SG13 and SG16.
- **SG11 continue to study of M2M and e-health based on them.**

	Working group	Leadership
WG1	Use cases and service models	M. Morrow (Cisco) R. Istepanian (Kingston University) M. Berrebi (eDevice)
WG2	Requirements and architectural framework of the M2M Service Layer	M. Carugi (ZTE) H.J. Kim (ETRI)
WG3	API and protocols	Guodong Xue (Huawei Technology) Hideo Himeno (NEC Corporation) Ali Amer (Saudi Telecom Company)

Deliverables	TITLE
D0.1	M2M standardization activities and gap analysis: e-health
D0.2	M2M enabled ecosystems: e-health
D1.1	M2M use cases: e-health
D2.1	M2M service layer: requirements and architectural framework
D3.1	M2M service layer: APIs and protocols guideline

Conformance & Interoperability Current status

- In WTSA08, Resolution 76 “Studies related to conformance and interoperability testing, assistance to developing countries was approved which instructs all Study Groups to take actions to improve NGN interoperability.
- Since 2006, SG11 has developed Recommendations Q.3900 series for test specification. Currently 28 recommendations has been published. Study on developing test specifications was accelerated by Resolution 76 and continuing in this study period.
- SG11 Action plan on implementation of C&I Program (TD-70/GEN11) was approved in SG11 meeting (February 2013) and LSs was sent to requests to all ITU-T SGs on developing test requirements for their current/future Recommendations.
- Interoperability events based on the ITU-T Q.3900 series were proposed to be held by regional SDOs in order to help the capacities building in developing countries. The principle of this proposal was agreed in the previous SG11 meeting (February 2012 Geneva), and endorsed by TSB (May 2012).

SG11 Action plan on implementation of C&I Program

The scope of this SG11 Action plan is to assist ITU-T SGs in their work concerning the ITU C&I Programme and is addressed to help developing countries to implement the conformity / interoperability assessment in the Region taking into account international approaches, best practices and requirements.

- Pillar 1: Conformity Assessment
- Pillar 2: Interoperability event
- Pillar 3: Capacity building
- Pillar 4: Assistance in the establishment of test centres and C&I programmes in developing countries

ITU-T Recommendation Q.3900 Testing for Next Generation Networks

- **Protocol test specification**
  - Q.3900, Q.3901, Q.3902, Q.3903, Q.3904, Q.3906
- **Service interoperability test specification**
  - Q.3909, Q.3945 , Q.3948 , Q.3949
- **Monitoring parameters**
  - Q.3910, Q.3911, Q.3912
- **QoS and benchmark test specification**
  - Q.3925, Q.3930, Q.3931.1, Q.3931.2
- **Conformance test specification**
  - Q.3940, Q.3941.1, Q.3941.2, Q.3941.3, Q.3941.4, Q.3942.1, Q.3943.1, Q.3943.2, Q.3943.3 , Q.3946.2

Q8/11 TR-Counterfeiting

Res177 was approved in PP10 to combat counterfeiting products. Ukraine submitted several contributions and initiated discussion in the SG11 Uganda meeting (November 2013). Q8/11 has taken a lead of this discussion and TR-Counterfeiting was published in November 2014.

- **The impacts of counterfeit and substandard ICT equipment and components**
  - Counterfeit and Substandard ICT Equipment Examples(Mobile Phones, Accessories and Components for ICT Products, Two-way Radios, Digital Cameras, Personal Computers & Tablets, Electronic Children's Toys)
- **Intellectual Property Rights Conventions**
  - WIPO, WTO TRIPS
- **IPR enforcement**
  - WIPO, WTO for TRIPS, UNODC, WCO, EU, G8 Heiligendamm Process
  - Interpol, UNECE, National Initiatives (France, UK, Kenya)
- **Industry anti-counterfeiting forums**
  - ICC, IACC, MMF, AscdiNatd, AGMA, BEAMA, UKEA, ACG, UNIFAB, iNEMI
- **Measures to combat counterfeit and substandard equipment**
  - Abuse of Identifiers and Type Approval Logos, IMEI, Unique identifiers, AIDC, Barcodes, RFID, Secure printing and hologram labels, Supply chain management, Testing, Databases, Market surveillance
- **Standards organizations**
- **Guidelines for combating counterfeiting**

ITU event ”Combating Counterfeit and Substandard ICT Devices”

- Date: 17th -18th November 2014
- Venue: ITU H.Q. Geneva
- 112 participants and 20 presentations from
  - ITU member countries (Ukraine, Ghana, UAE, Brazil, UK, China etc.)
  - International Organizations (WIPO, EC, WTO, OECD, WCO etc.)
  - Interested Organization (CNRI, MMF, GSMA, IFPMA etc.)
- The objectives of this ITU event are therefore threefold: (1) to discuss the global scope and impact of counterfeiting and substandard ICT products, (2) to highlight the various stakeholders’ common concerns, challenges, best practices and opportunities, and (3) to examine the possible role of ITU as part of the global strategy and solution to curtail counterfeiting and substandard ICT products and to assist its members in addressing their concerns regarding such products
- https://www.itu.int/en/ITU-T/C-I/Pages/WSHP_counterfeit.aspx

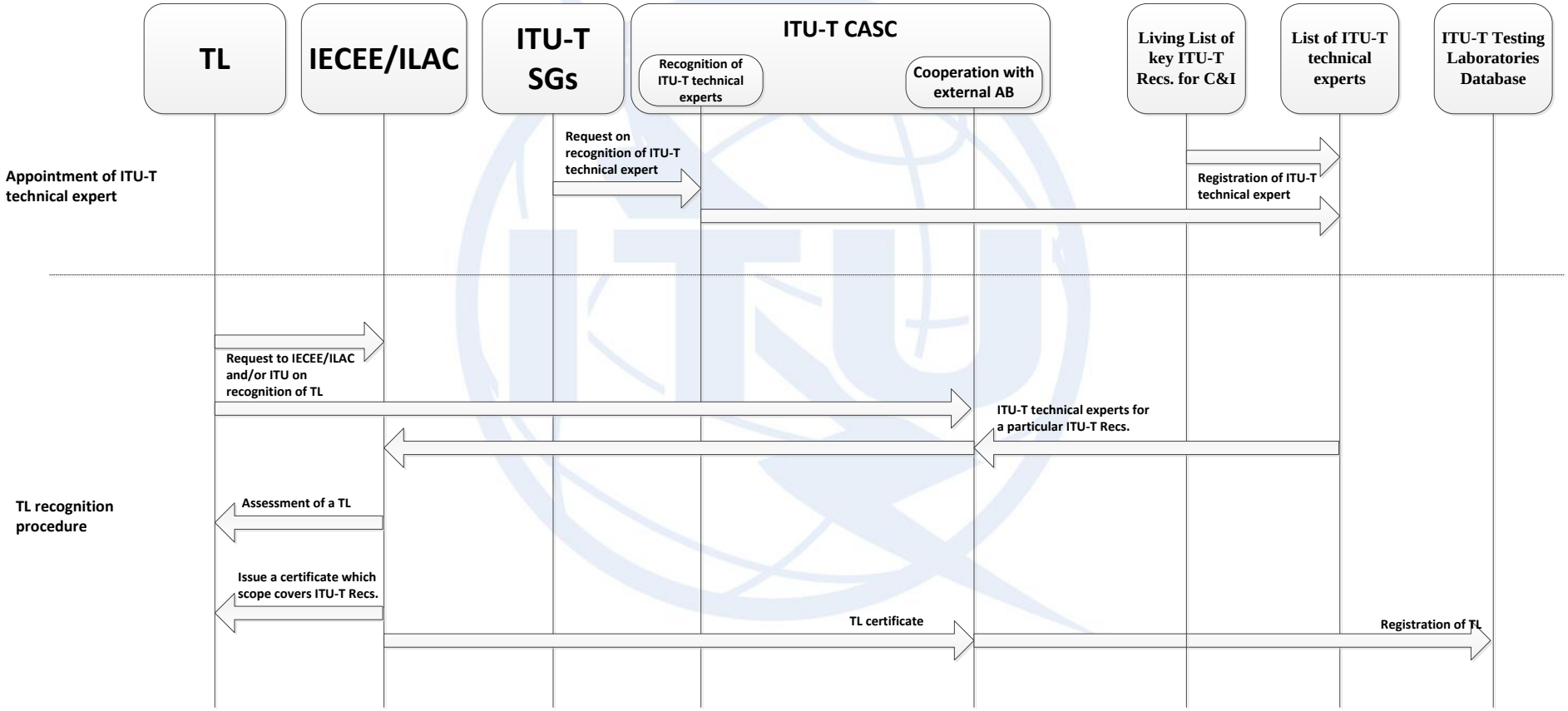
Q11/11 Q.TL-rec-pro
"Testing Laboratories recognition procedure"

- Russia proposed new work item ***ITU recognition procedure of testing laboratories with competence in ITU-T*** in the WP4 meeting (November 2013). It was agreed that:
  - A new work item was created and opened Q.TL-rec-pro
  - A Correspondence Group (CG) on *"collaboration between ITU-T and testing laboratories for ITU C&I programme"* was established.
  - Mr Isaac Boateng (National Communications Authority, Ghana and SG11 Vice-chairman) has been appointed as the Convener of this CG.
- The CG was closed in July 2014. A report was presented [TD 475 Rev.2 (GEN/11)] to SG11 which agreed to:
  - transfer the work of the CG to Question 11/11
  - a new baseline text for the work item [Q.TL-rec-pro "Testing Laboratories recognition procedure"] as contained in TD 474 (GEN/11).
  - Appoint Isaac Boateng (Ghana) as Associate Rapporteur for Q11/11, with responsibility to continue the discussion on "Testing Laboratories recognition procedure"

Q.TL-rec-pro Terms and Procedures

- **Testing laboratory (TL)** is a laboratory that performs tests.
- **Recognized TL** is a testing laboratory which passed successfully the recognition procedures.
- **Candidate TL** is a testing laboratory applied for a recognition.
- **CASC** is the Conformity Assessment Steering Committee managing the recognition procedures of TLs.
- **Recognition procedures**
  1. The Candidate TL shall submit to the ITU-T CASC a signed application.
  2. ITU-T CASC will collect information provided by TL and forward the set of documents to the relevant committee of IECEE and ILAC for further action.
  3. Based on the decisions of IECEE and ILAC, ITU-T CASC will recognize a TL.
  4. Upon recognition, CASC will issue a confirmation letter to the candidate and the TL will be added to the list of recognized testing laboratories.

Workflow diagrams of ITU-T CASC



Q14/11 Cloud interoperability testing

- **Question**: Study items to be considered include, but are not limited to:
  - Which reference points could be used for testing on interconnections between clouds?
  - Which signalling protocols could be tested by interconnection between clouds?
  - What kind of "cloud computing" services could be tested on interoperability?
  - What are the requirements of the cloud computing platform for compatibility of the provided services?
  - What are the measurement equipment requirements for service interoperability testing (testing schemes)?
  - What functions of "cloud computing" could be tested for compatibility with the provided services?
  - What type of recommendations could be provided for "cloud computing" applications based on the service interoperability testing results?
- **Tasks**: Tasks include, but are not limited to:
  - determine the set of the "cloud computing" services which could be tested for service compatibility;
  - develop the "cloud computing" service interoperability test specifications;
  - develop the testing scheme for "cloud computing" services interoperability testing;
  - develop the recommendations for "cloud computing" applications for their compatibility in cloud environment.

Q.Supp.65: Cloud computing interoperability activities

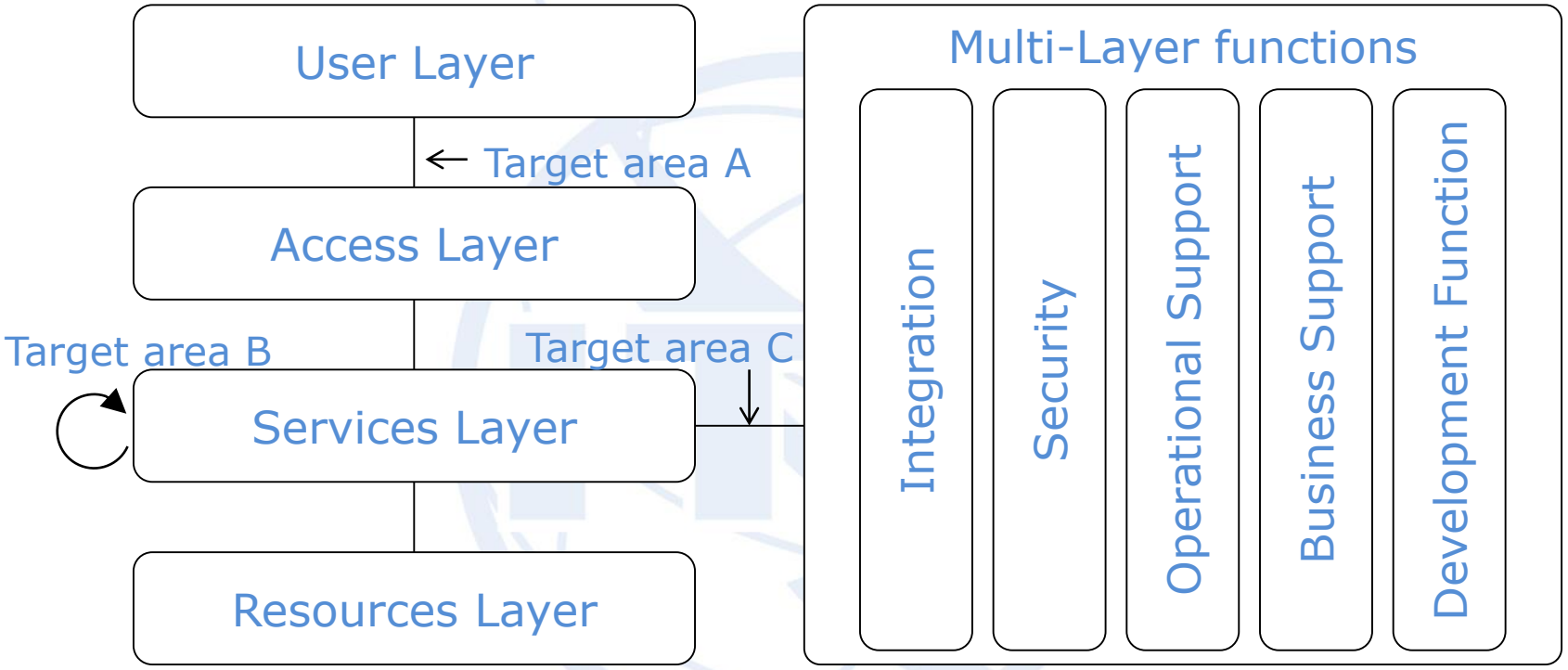
- Scope
  - Q.Supp.65 describes information of cloud computing interoperability activities of existing SDOs and the groups, forums, open source and analysis among activities of SDOs and the potential cloud computing interoperability testing areas.
- Existing SDOs
  - DMTF, ETSI, GICTF, IEEE, IETF, ISO/IEC JTC1, ITU-T, NIST, OASIS, ODCA, OGF, SNIA, TM Forum
  - 3CPP, Cloud Plugfest, CSMIC, OCC, OCEAN, SPEC, OpenStack
- Potential interoperability testing areas

(*)CSC (Cloud Service Customer), CSP (Cloud Service Provider)

Capability type / Target areas	**Infrastructure capabilities type**	**Platform capabilities type**	**Application capabilities type**
Target area A:CSC – CSP			
Target area B:CSP – CSP			
Target area C: CSP – management IF			
Target area D: CSP – legacy network			

Q14/11 will develop test specifications between each target area and capabilities type.

3 target area of Q.Supp.65



- Infrastructure capabilities type (IaaS)
- Platform capabilities type (PaaS)
- Application capabilities type (SaaS)

Conclusion

- SG11 studies **protocols for new service and new network** e.g. NGN enhance, IoT, M2M, Cloud computing, IPv6 etc.
- SG11 is the lead SG of **test specifications and conformance and interoperability testing.**
- **SG11 takes the lead coordinating role in the harmonization of various protocol standards** based on the concept of consistent end-to-end interoperability.
- **SG11 supports implementation and deployment of new service and new network** in the developing countries.
- **ITU-T supports regional conformance and interoperability event** which is organized by each countries/regions.

Annex

Report of the 2nd APT/ITU Conformance and Interoperability event

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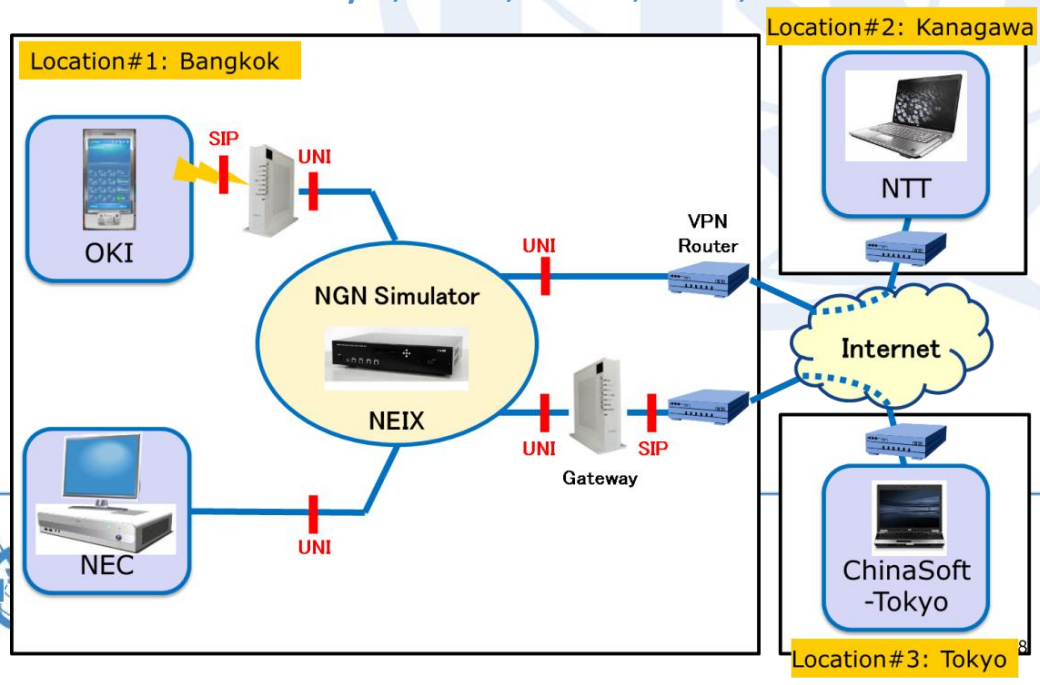
2nd APT/ITU C&I event

The purpose of this event was to promote activities to deepen the understanding of C&I throughout countries in the Asia-Pacific region, and to improve the capabilities of each APT member nation and resolve their problems.

- The 2nd APT/ITU C&I event was held at the Imperial Queen's Park Hotel in Bangkok :
  - Workshop (AM & PM on 26th August)
  - Interoperability testing (25th AM August)
    - a) NGN E2E Service (VoIP, Video conference)
    - b) IPTV(including IPTV-MAFR (Multimedia Application Framework))
  - Showcasing (from 25th PM to 27th August)
    - a) NGN E2E Service (VoIP, Video conference)
    - b) IPTV(including IPTV-MAFR (Multimedia Application Framework))
    - c) M2M/IoT/e-health
    - d) Speech to Speech Translation
    - e) FTTH (GPON and GEPON)
- Participants
  - Testing and Showcasing: 7 companies (NTT, NEC, OKI, Mitsubishi, NEIX, China-soft-Tokyo, TOT)
  - Presentations in the workshop: 17 (NTT, VNPT, NEC, OKI, Mitsubishi, A1-Austria, ITU-T TSB, etc.)
  - Visitors and audience : 154 (25 countries)

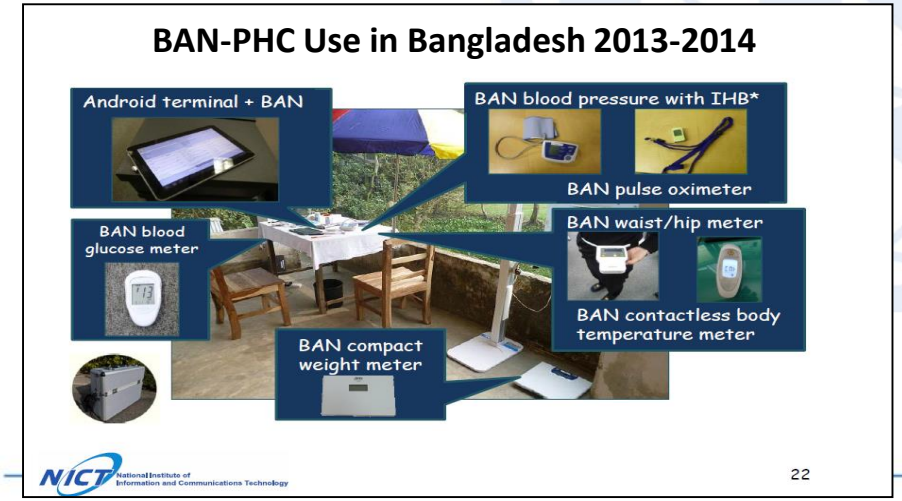
NGN End to End Service Interoperability Testing and Showcasing

- Service interoperability testing
  - Based on ITU-T Q.3948 (VoIP service)
  - Based on ITU-T Q.3949 (Multimedia service)
  - Based on ITU-T H.264 (HD: 720p) (New)
- Interoperability testing from Remote Environment via Internet
- Participating organizations
  - China-soft-Tokyo, NEC, NEIX, NTT, OKI



BAN portable Health Clinic Showcasing

- BAN Portable Health Clinic (BAN-PHC) provided by NICT is Health check-up and telemedicine on sites, such as factories in urban areas and villages in rural areas. It provides that continuous use in areas where power supply is unstable, easy to use interfaces to users, such as paramedics, easy network maintenance and ease of carrying.



Workshop

- Presentations
  - Session 1: Presentations from APT member (CATR, NTT, VNPT, Thailand)
  - Session 2: Presentations from exhibitors (NEC, Oki, NICT)
  - Session 3: Presentations from SDOs (ITU C&I, SG11, SG13, SG16)
  - Session 4: Panel discussion

- Panel discussions and propositions
  - The 3rd C&I event is going to be held in 2015.
  - ASTAP should continue to discuss C&I on the topics such as NGN, IPTV, M2M/IoT and emerging services.
  - Study on NGN-3GPP IMS interoperability based on the input from WP4/11 and operators
  - Study on e-health solution referring to BAN-PHC business model
  - etc..