SG11 supports HATS NGN interoperability event (July 2012, Tokyo)

July 2012

Kaoru Kenyoshi

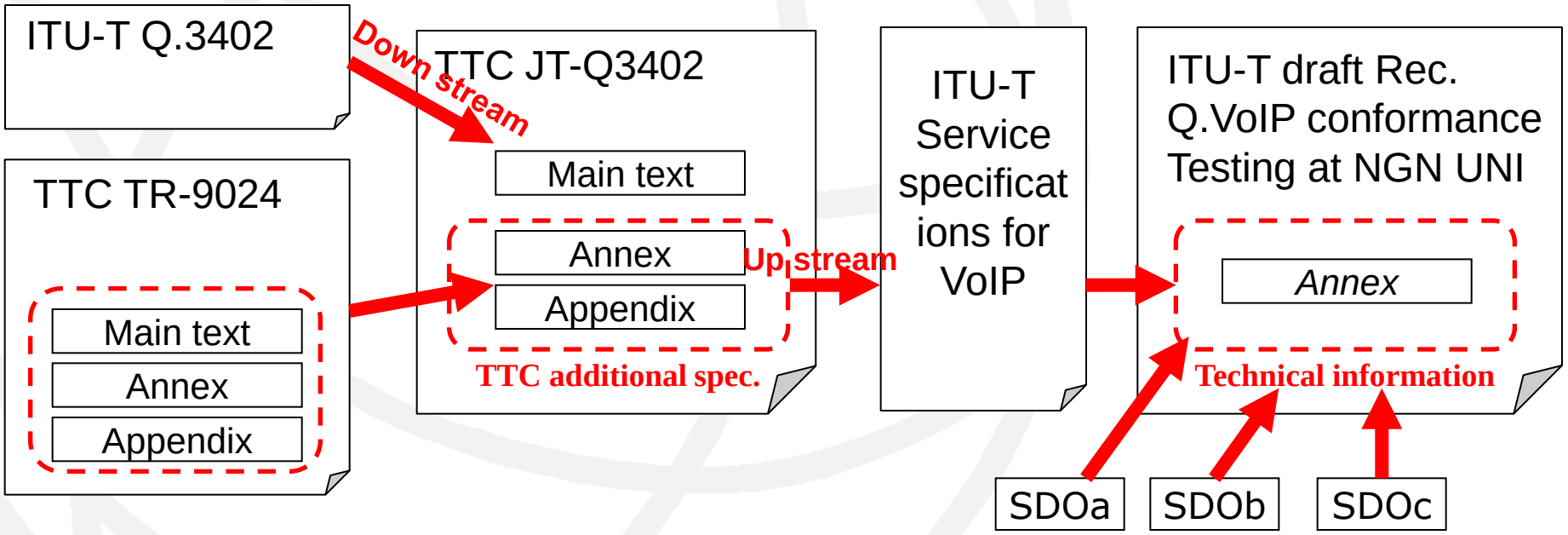
Kaoru.kenyoshi@emea.nec.com

ITU-T SG11 NGN 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.
- Q.3948 "Service testing framework for VoIP at NGN UNI" was approved in the May 2011 WP4/11 meeting and Q.3909 "The framework and overview on NGN interoperability and conformance testing" was approved in the Oct 2011 SG11 meeting.
- 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).

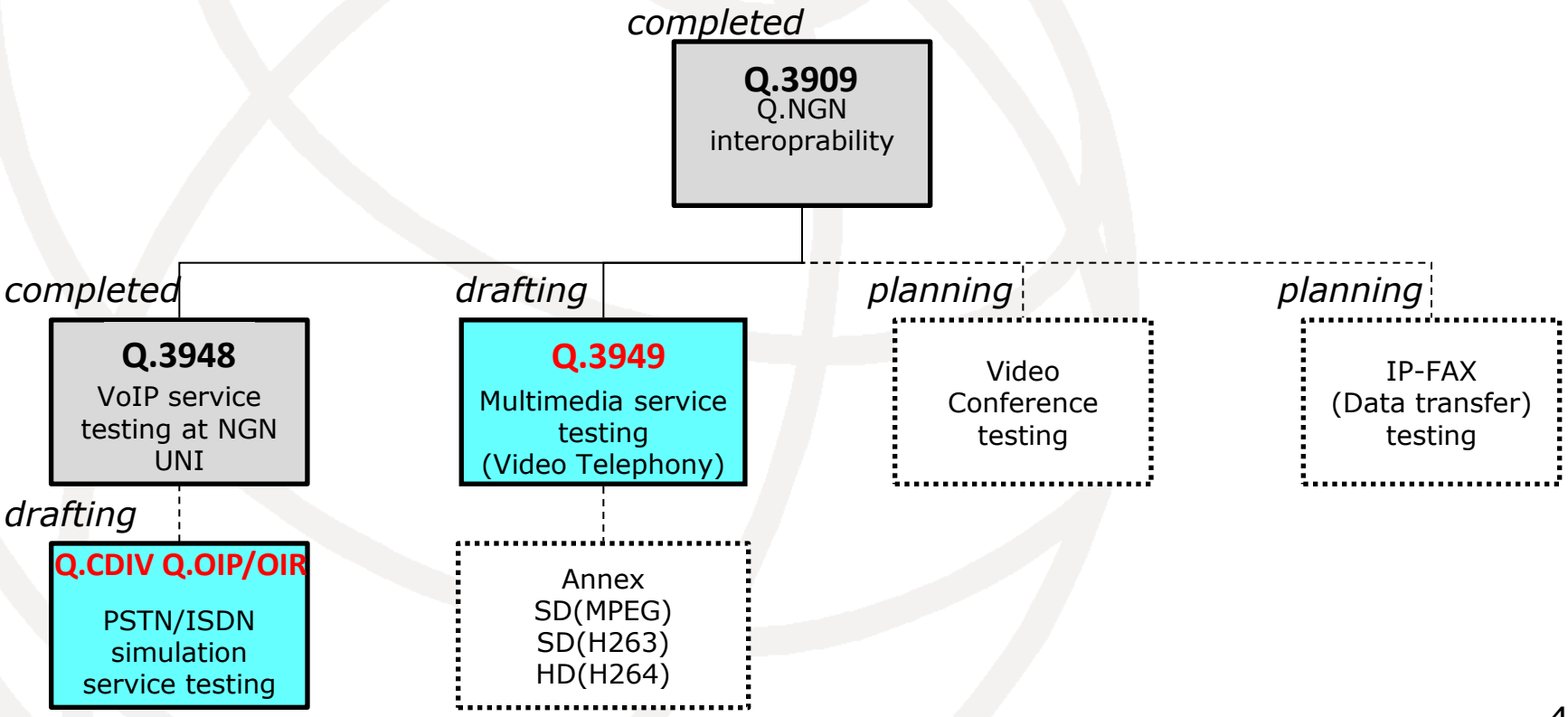
Proposal in accordance of Japan experience on VoIP service testing

- TTC developed Technical Reports to specify the detailed protocol specifications at NGN UNI and NNI for interoperability between Japanese operators.
- TTC developed TTC standards JT-Q3401 and JT-Q3402 which consist of the translation part of ITU-T Recommendations and TTC original specifications as Annex and Appendix.



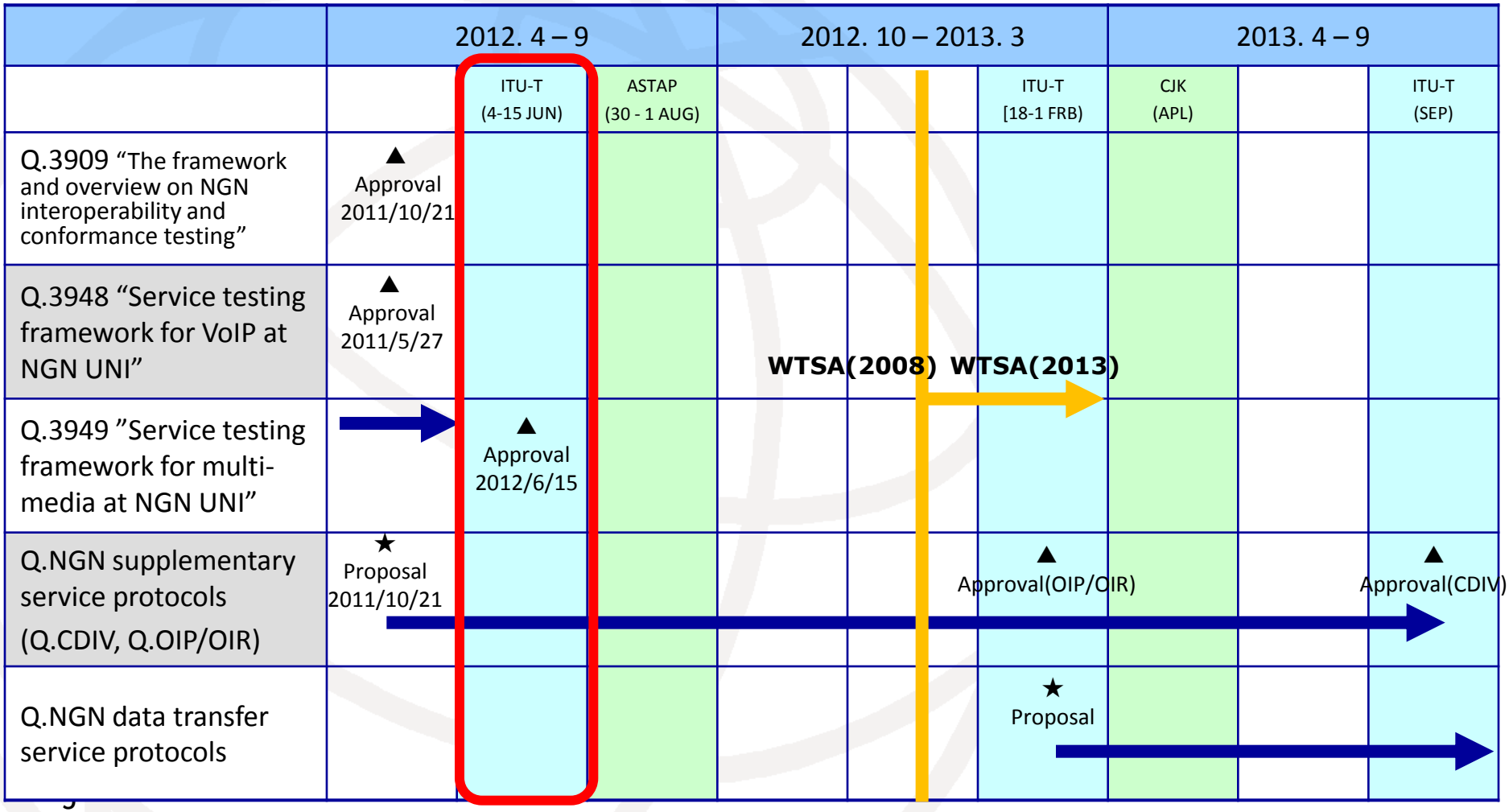
The structure of NGN interoperability testing in ITU-T SG11

- The Recommendations for the NGN conformance and interoperability testing are constructed with a single framework Rec. Q.3909 and a series of Recommendations which include detailed specifications for each service.



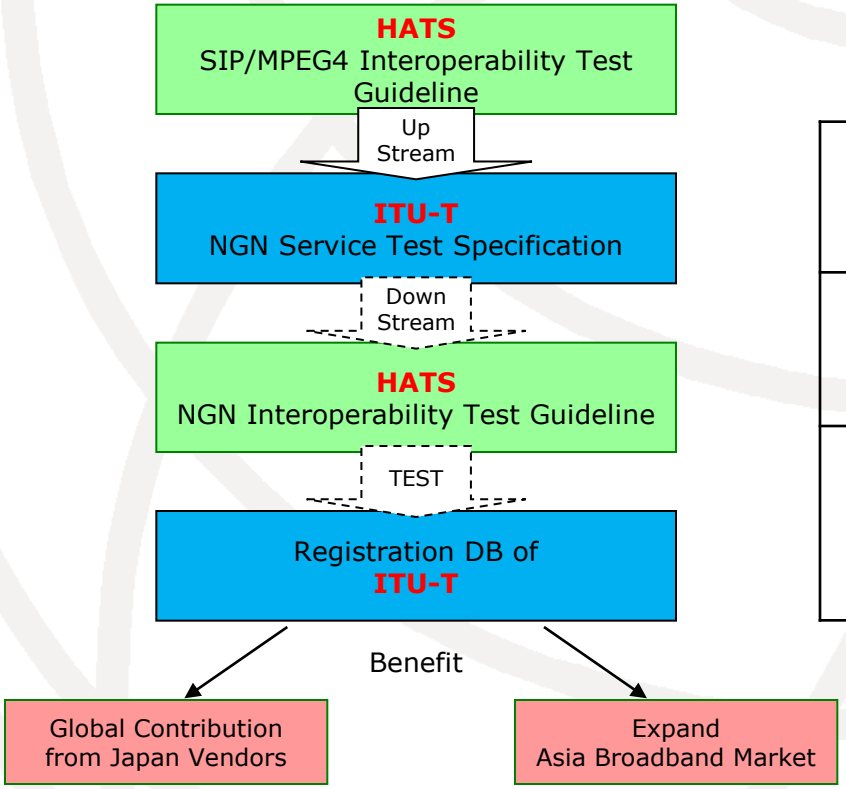
Highlight of Current Activities

Work plan of NGN interoperability



Standardization of Interoperability Test

HATS and TTC contribute to ITU-T Standardization of NGN Service Interoperability Test.



ITU-T Rec. vs HATS doc.

	ITU-T Recommendation	HATS document
NGN VoIP testing	Q.3948	NGN端末間相互接続試験実施要領(VoIP)
NGN Video Telephony	Draft Q.MMtesting	NGN端末間相互接続試験 実施要領(TV電話･TV会議)

Planning NGN interoperability event with ITU-T

- Discussion in ITU-T SG11 Feb. 2012 meeting
  - 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.
  - Two possible ways to hold events was proposed.
    - Alternative 1: ITU-T SG11 conducts interoperability events.
    - Alternative 2: Regional SDOs conduct interoperability events based on the ITU-T Recommendations.
- Meeting result
  - It was agreed to hold NGN interoperability event based on the ITU-T Rec. and alternative 2 “regional SDOs conduct events” was recognized more preferable.
  - SG11 will discuss the detailed NGN interoperability event plan in June 2012 meeting. And HATS will inform SG11 members of the next HATS event information.

NGN interoperability event

- Currently, ITU-T interoperability event has been working on mainly IPTV and ITU-T hosts events which were collocated ITU-T meeting. In order to respond to requests from developing countries of Res.76, it is necessary to enforce NGN interoperability event that expands targets of wide range of services and more.
- Interoperability events based on ITU-T Recommendations which are held by regional SDOs are pragmatic way to achieve the NGN interoperability. And it is easier to participate in the **global interoperability event** from developing countries and support the capacity building of them.
- The new collaboration framework can be energized by other regional/national SDOs and expand globally. This would be considered as a new challenge of ITU-T SG11 and regional SDO in order to create **a new collaboration framework** of them. This joint ITU-T & HATS event will be the first event for this challenge.

Appendix

ITU-T SG11
Signalling requirements, protocols and test specifications

Kaoru Kenyoshi
Vice Chairman of SG11

International Telecommunication Union

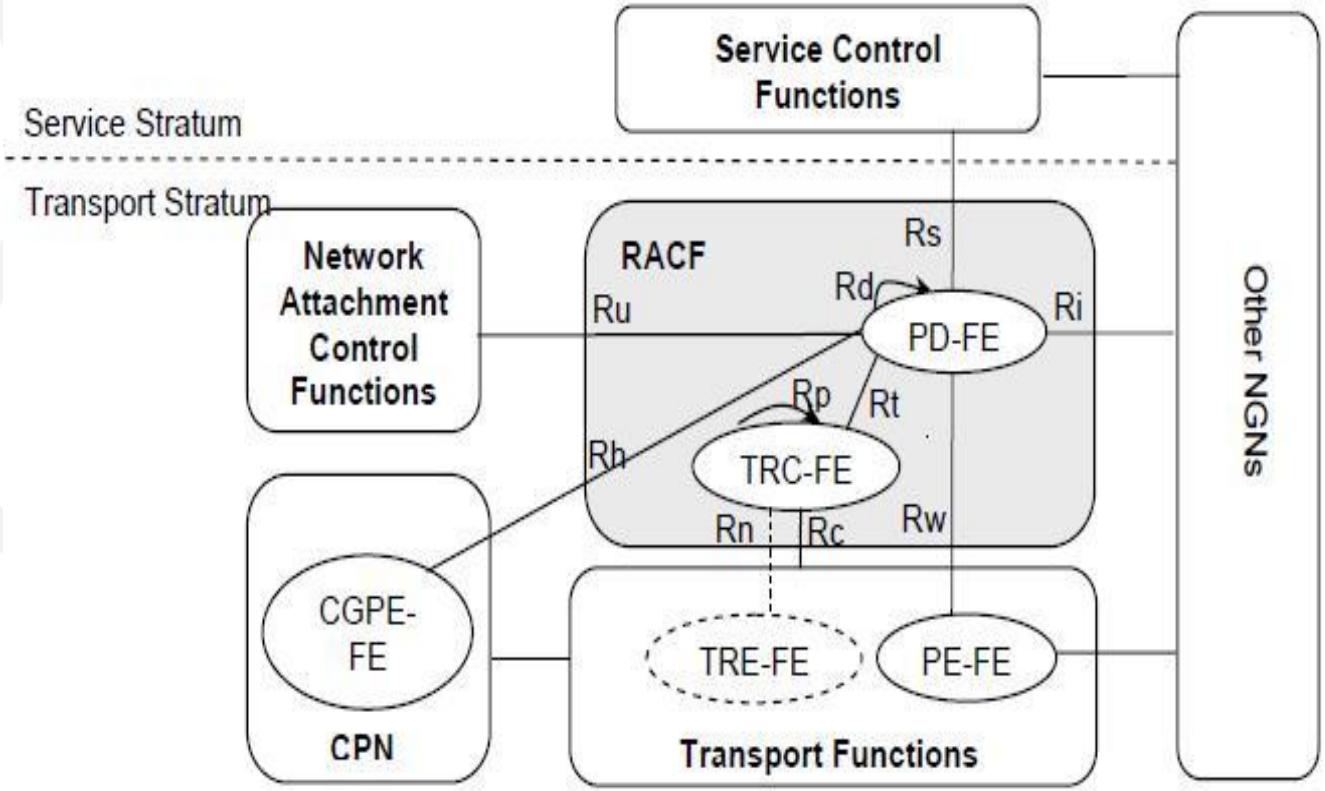
Responsibility

Responsible for studies relating to signalling requirements and protocols, including those for IP-based networks, NGN, mobility, some multimedia related signalling aspects, ad hoc networks (sensor networks, RFID, etc.), QoS, and internetwork signalling for ATM, N ISDN and PSTN networks. This also includes reference signalling architectures and test specifications for NGN and emerging networks (e.g., USN).

Highlight of Current Activities (1/5)

Resource control protocols for RACF (Q.33xx-series)

- Rs, Ri, Rd, Rp, Rt etc. interface



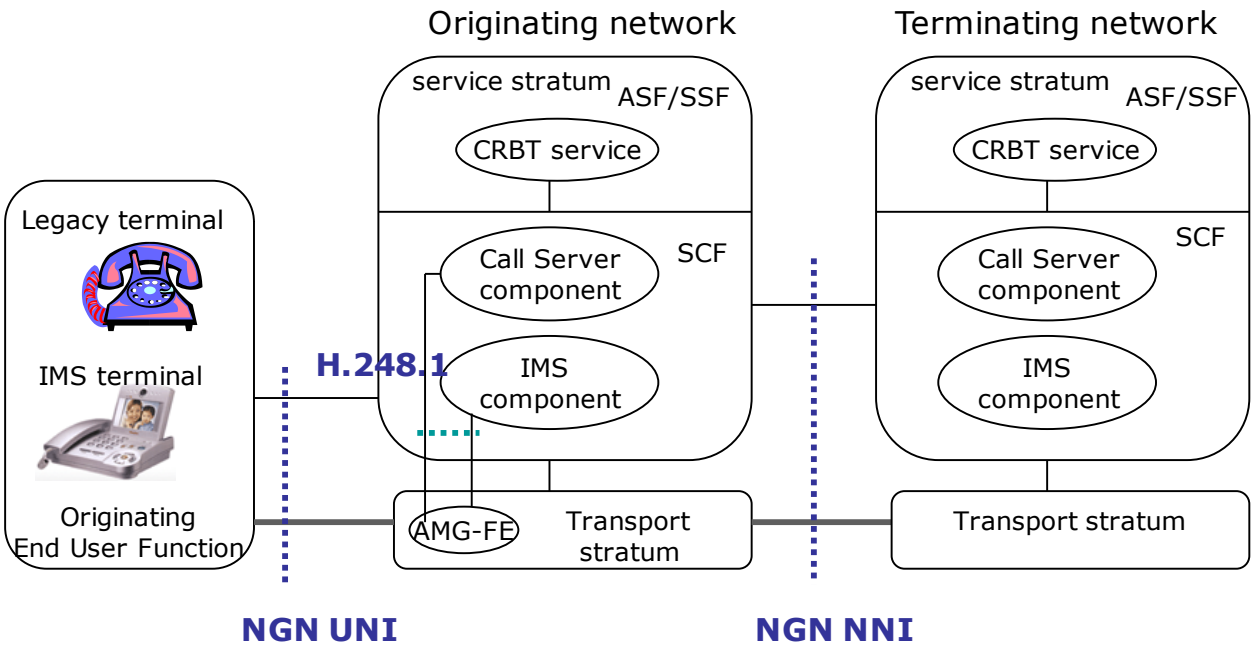
Generic resource and admission control functional architecture in NGN [ITU-T Y.2111]

Highlight of Current Activities (2/5)

Service and session control protocols

NGN supplementary services Q.36xx series

- CRBT, CRT, IP Centrex
- TS-IVR, WebMidCall, OIP/OIR, CDIV (work items)

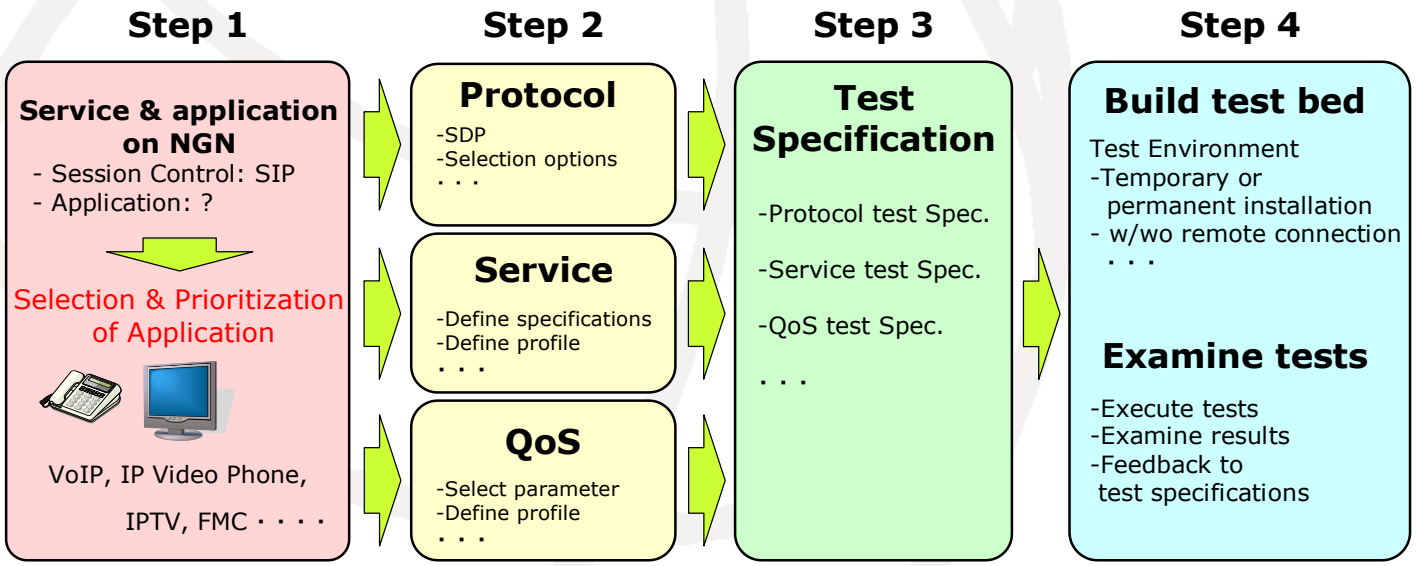


CRBT service functional architecture [ITU-T Q.3610]

Highlight of Current Activities (3/5)

Test Specifications Q.39xx series

- Level 1 NGN TM local testing
  - Functional testing, Load & stress testing, Conformance testing)
- Level 2 NUT testing
  - Functional testing, Interconnect testing, Service testing, End-to-end testing, QoS testing, Mobility & roaming testing



Typical NGN conformance and interoperability test specification process

Highlight of Current Activities (4/5)

multicast communication protocol X.6xx series

joint activity with ISO and IEC

- Relayed multicast protocol (Simplex and N-plex delivery model)
- Mobile multicast communications
- Enhanced Communications Transport Protocol

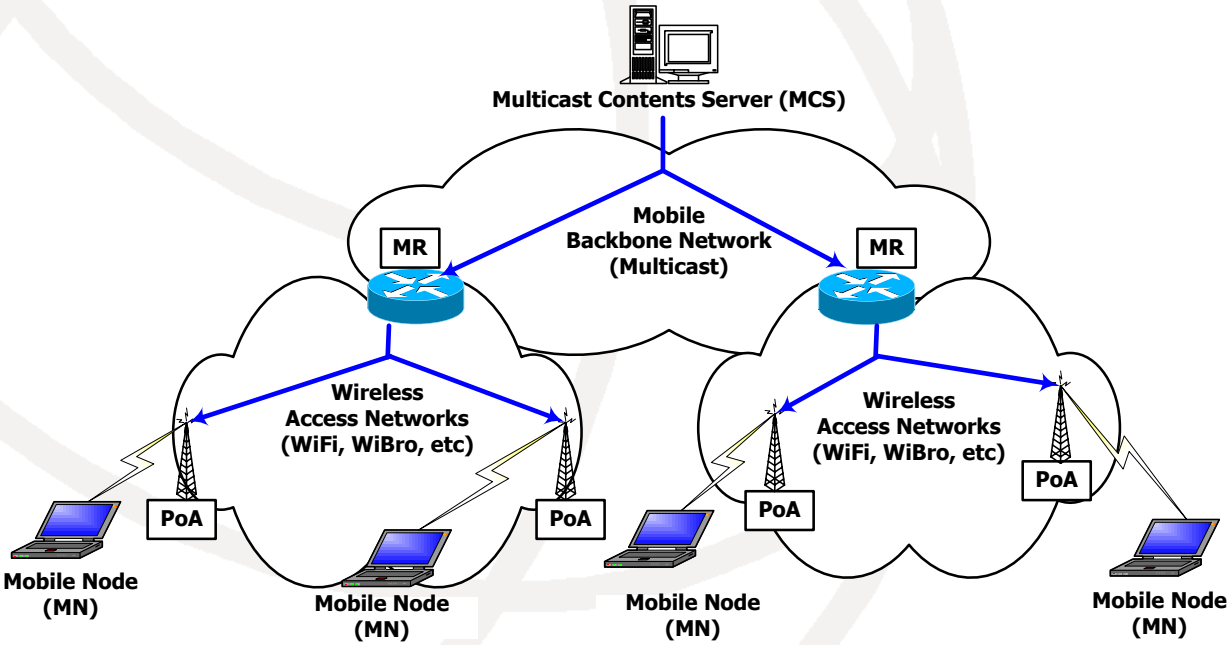


Figure 3 – Multicast data transport in MMC networks [ITU-T X.604]

Highlight of Current Activities (5/5)

- Development of a handbook for deployment of packet based networks
- Network Attachment Control Signalling Requirements and Protocols for NACF.
- Signalling requirements to support the emergency telecommunications service (ETS) in IP networks and protocol extensions for the support of IEPS communications

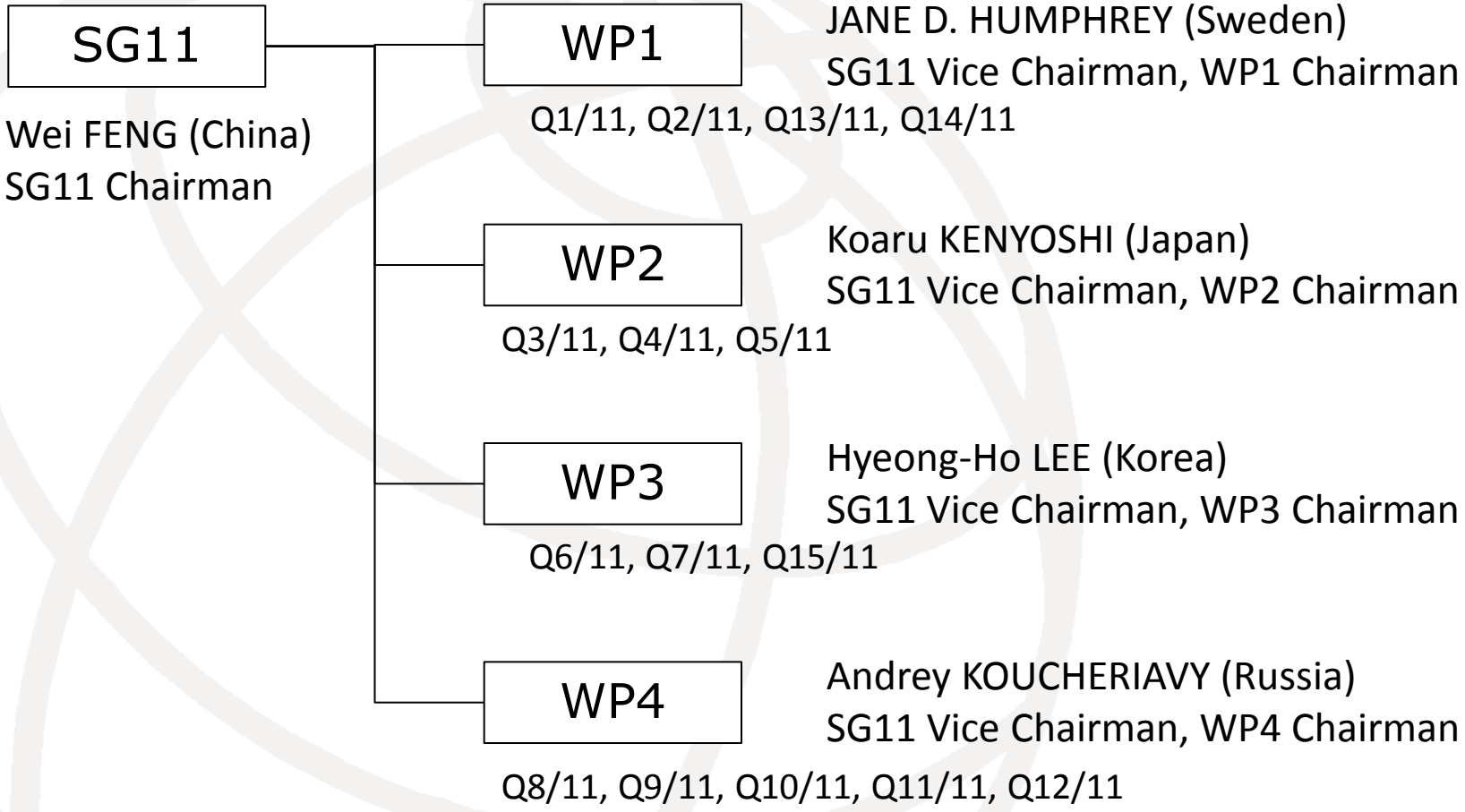
Conclusion

- SG11 produced various **NGN Protocols** for resource, session, service control and multicast communication etc.
- SG11 is the lead SG of **NGN test specifications.** These Recommendations intend to achieve NGN interoperability.
- SG11 will study protocols and test specifications for new service and new network e.g. IPv6, IoT, SUN, M2M, Cloud computing, Smart Grid etc.
- **SG11 would take the lead coordinating role in the harmonization of various protocol standards** based on the concept of consistent end-to-end interoperability.

Supplemental Slides

- SG11 Structure
- List of Questions
- List of Recommendations (approved since 2009)
- Acronym

Structure


SG11
Wei FENG (China)
SG11 Chairman
WP1
JANE D. HUMPHREY (Sweden)
SG11 Vice Chairman, WP1 Chairman
Q1/11, Q2/11, Q13/11, Q14/11
WP2
Koaru KENYOSHI (Japan)
SG11 Vice Chairman, WP2 Chairman
Q3/11, Q4/11, Q5/11
WP3
Hyeong-Ho LEE (Korea)
SG11 Vice Chairman, WP3 Chairman
Q6/11, Q7/11, Q15/11
WP4
Andrey KOUCHERIAVY (Russia)
SG11 Vice Chairman, WP4 Chairman
Q8/11, Q9/11, Q10/11, Q11/11, Q12/11

Lists of Questions

No.	Title
Q1/11	Network signalling and control functional architectures in emerging NGN environments
Q2/11	Application control and signalling requirements and protocols
Q3/11	Session control and signalling requirements and protocols
Q4/11	Bearer control and signalling requirements and protocols
Q5/11	Resource control and signalling requirements and protocols
Q6/11	Coordination of signalling requirements and protocol development
Q7/11	Signalling and control requirements and protocols supporting network attachment and identification in NGN environment
Q8/11	Protocol Test Specifications for NGN
Q9/11	Monitoring parameters for NGN protocols
Q10/11	Service test specification for NGN
Q11/11	QoS tests specification for NGN
Q12/11	NID and USN test specification
Q13/11	Coordination of work on Emergency Communications within an NGN environment
Q14/11	Security Coordination For NGN Protocols
Q15/11	End-to-end Multicast

Proposed lists of Questions for the next study period

No.	Title	
A/11	Signalling and protocol architectures in emerging telecommunication environments	Continuation of Q1/11
B/11	Signalling requirements and protocols for service and application in emerging telecommunication environments	Continuation of Q2/11 and Q3/11
C/11	Signalling requirements and protocols for Bearer and Resource control in emerging telecommunication environments	Continuation of Q4/11 and Q5/11
D/11	Guidelines for implementations of signalling requirements and protocols	Continuation of Q6/11
E/11	Signalling and control requirements and protocols for network attachment supporting multi-screen service, future networks, and M2M	Continuation of Q7/11
F/11	Protocols and Networks Test Specifications	Continuation of Q8/11
G/11	Monitoring parameters for protocols and emerging networks	Continuation of Q9/11
H/11	Service and networks benchmarking measurements	Continuation of Q10/11 and Q11/11
I/11	Internet of things test specifications	Continuation of Q12/11
J/11	Signalling Requirements and Protocol for Emergency Telecommunications	Continuation of Q13/11
K/11	Protocols supporting distributed, smart service networking and end-to-end multicast	Continuation of Q15/11
L/11	Protocol procedures relating to specific services over IPv6	Continuation of Q16/11
M/11	Protocol procedures relating to services provided by Broadband Network Gateways	New
N/11	Use cases and scenarios for interoperability testing of cloud computing	New
O/11	Testing as a service (TAAS)	New

Lists of Recommendations Q.33xx series (1/3)

No.	Title
Q.3300	Architectural framework for the Q.33xx series of Recommendations
Q.3301.1	Resource control protocol No. 1, version 2 – Protocol at the Rs interface between service control entities and the policy decision physical entity
Q.3302.1	Resource control protocol No. 2 (rcp2) - Protocol at the Rp interface between transport resource control physical entities
Q.3303.0	Resource control protocol No. 3 – Protocols at the Rw interface between a policy decision physical entity (PD-PE) and a policy enforcement physical entity (PE-PE): Overview
Q.3303.1	Resource control protocol No. 3 – Protocol at the interface between a Policy Decision Physical Entity (PD-PE) and a Policy Enforcement Physical Entity (PE-PE): COPS alternative
Q.3303.2	Resource control protocol No. 3 – Protocol at the interface between a Policy Decision Physical Entity (PD-PE) and a Policy Enforcement Physical Entity (PE-PE) (Rw interface): H.248 alternative
Q.3303.3	Resource control protocol No. 3 - Protocols at the Rw interface between a policy decision physical entity (PD-PE) and a policy enforcement physical entity (PE-PE): Diameter Profile version 2

Lists of Recommendations Q.33xx series (2/3)

No.	Title
Q.3304.1	Resource control protocol No. 4 (rcp4) - Protocols at the Rc interface between a transport resource control physical entity (TRC-PE) and a transport physical entity (T-PE): COPS alternative
Q.3304.2	Resource control protocol No. 4 (rcp4) – Protocols at the Rc interface between a transport resource control physical entity (TRC-PE) and a transport physical entity (T-PE): SNMP alternative
Q.3305.1	Resource control protocol No. 5 (rcp5) - Protocol at the interface between transport resource control physical entity and policy decision physical entity (Rt interface): Diameter-based
Q.3306.1	Protocol at the Rd interface between intra-domain Policy Decision Physical Entities (PD-PEs) (Rd interface)
Q.3307.1	Resource control protocol o.7 (rcp7) - Protocol at the interface between inter-domain Policy Decision Physical Entities (PD-PEs) (Ri interface)
Q.3309	QoS Coordination Protocol

Lists of Recommendations Q.33xx series (3/3)

No.	Title
Q.3311	Enhancement of resource and admission control protocols to use pre-congestion notification (PCN)
Q.3312	Use of the Access Node Control Protocol (ANCP) on the Rp interface
Q.3313	Signalling protocols and procedures relating to flow state aware QoS control in a bounded subnetwork of a next generation network
Q.3314	Requirements and protocol at the interface between mobile location management physical entity used as a proxy and the central instance of the mobile location management physical entity (M9 interface)
Q.3320	Architectural framework for the Q.332x series of Recommendations
Q.3321.1	Resource control protocol no. 1 (rcp1) version 2 Protocol at the interface between service control entities and the Policy Decision Physical Entity (PD-PE) (Rs interface)
Q.3322	Resource control protocol no.2 (rcp2)Protocol at the interface between Transport Resource Control Physical Entities (TRC-PEs) (Rp interface)
Q.3325	Resource control protocol no.5 (rcp5) - Protocol at the interface between transport resource control physical entity and policy decision physical entity (Rt interface): Diameter-based

Lists of Recommendations Q.36xx series

No.	Title
Q.3610	The signalling requirements and protocol profiles for CRBT services
Q.3611	Signalling requirements and protocol profile for NGN Customized multimedia Ring Tone (CBT) service
Q.3612	Signalling Requirements and Protocol Profiles for IP Centrex service
Q.3613	Signalling requirements for touch screen terminal-based IVR services

Lists of Recommendations Q.39xx series (1/2)

No.	Title
Q.3900	Methods of testing and model network architecture for NGN technical means testing as applied to public telecommunication networks
Q.3901	Testing topology for networks and services based on NGN technical means
Q.3902	Operational parameters to be monitored when implementing NGN technical means in public telecommunication networks
Q.3903	Formalized presentation of testing results
Q.3904	The scenarios, list and types of tests for TM local and NUT testing for IMS on the Model networks
Q.3906.1	The scenarios, list and types of tests for fixed Broadband NUT testing on the Model networks. Part I
Q.3909	The framework and overview of NGN conformance and interoperability testing
Q.3910	Monitoring parameters set for NGN protocols
Q.3911	Monitoring parameters set for voice services in NGN
Q.3925	The types of traffic flows which should be generated for voice, data and video on the Model network for testing QoS parameters

Lists of Recommendations Q.39xx series (2/2)

No.	Title
Q.3931.1	IMS/PES Performance Benchmark Part 1: Core concepts
Q.3931.2	IMS/PES Performance Benchmark Part 2: Subsystem configurations and benchmarks
Q.3941.1	Network Integration Testing between SIP and ISDN/PSTN network signalling protocols Part 1: Test Suite Structure and Test Purposes (TSS&TP) for SIP-ISDN
Q.3941.2	Network Integration Testing between SIP and ISDN/PSTN network signalling protocols Part 2: Abstract Test Suite (ATS) and partial protocol Implementation eXtra Information for Testing (PIXIT) proformas specification for SIP-ISDN
Q.3941.3	Network Integration Testing between SIP and ISDN/PSTN network signalling protocols Part 3: Test Suite Structure and Test Purposes (TSS&TP) for SIP-SIP
Q.3941.4	Network Integration Testing between SIP and ISDN/PSTN network signalling protocols Part 4: Abstract Test suite (ATS) and partical Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for SIP-SIP
Q.3948	Service testing framework for VoIP at NGN UNI
Q.3950	Testing and model network architecture for tag-based identification systems and functions

Lists of Recommendations X.6xx series (1/2)

No.	Title
X.601	Multi-peer communications framework
X.602	Information technology - Group management protocol
X.603	Information technology - Relayed multicast protocol: Framework
X.603.1	Information technology - Relayed multicast protocol: Specification for simplex group applications - Amendment 2: Revision of sub-control data and code-value
X.603.2	Information technology - Relayed multicast protocol: Specification for N-plex group applications
X.604	Mobile multicast communications - Framework
X.604.1	Mobile multicast communications - Protocol over native IP multicast network
X.604.2	Information technology - Mobile multicast communications: Protocol over overlay multicast networks
X.605	Information technology - Enhanced Communications Transport Service definition
X.606	Information technology - Enhanced Communications Transport Protocol: Specification of simplex multicast transport
X.606.1	Information technology - Enhanced Communications Transport Protocol: Specification of QoS management for simplex multicast transport

Lists of Recommendations X.6xx series (2/2)

No.	Title
X.607	Information technology – Enhanced communications transport protocol: Specification of duplex multicast transport
X.607.1	Information technology - Enhanced communications transport protocol: specification of qos management for duplex multicast transport
X.608	Information technology – Enhanced communications transport protocol: Specification of N-plex multicast transport
X.608.1	Information technology - Enhanced communications transport protocol: Specification of QoS management for N-plex multicast transport

Acronym

- RACF Resource Admission and Control Function
- PD Policy Decision
- TRC Transport Resource Control
- CRBT Customized Ring Back Tone
- CRT Customized Ring tone
- WebMidCall Web based Mid-call services
- TS-IVR Touch screen terminal based Interactive Voice Response
- OIP Originating ID Presentation
- OIR Originating ID Restriction
- CDIV Call Diversion
- TM Technical Means
- NUT Network Under Test
- ETS Emergency Telecommunications Service
- IEPS International Emergency Preference Scheme