JOINT ITU-T SG13 - IEEE NGSON WORKSHOP ON OVERLAY NETWORKING

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Towards an open service platform in NGN: initial ITU-T SG13 activities

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International Telecommunication Union

Outline

- ITU-T SG13 in [2009-2012] study period
- NGN services and capabilities
- Initial SG13 activities towards an Open Service Platform in NGN
- Collaboration with other SDOs

Mission and Mandates of new SG 13

Leading Study Group roles of ITU-T SG13

SG13 was a NGN group

WTSA 2004

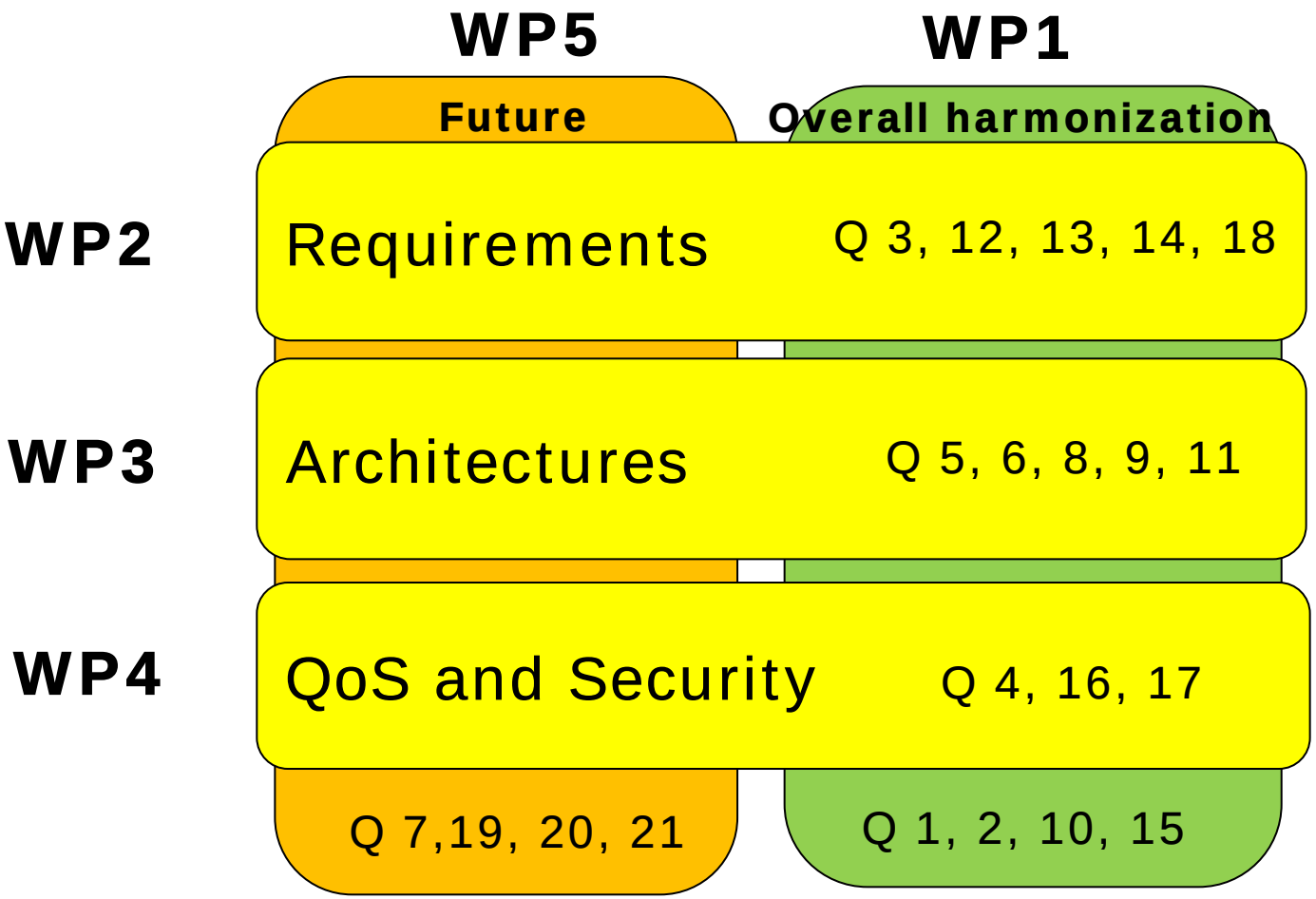
- **Lead study group for NGN and Satellite**

SG13 covers 'Future networks including mobile and NGN'

WTSA 2008

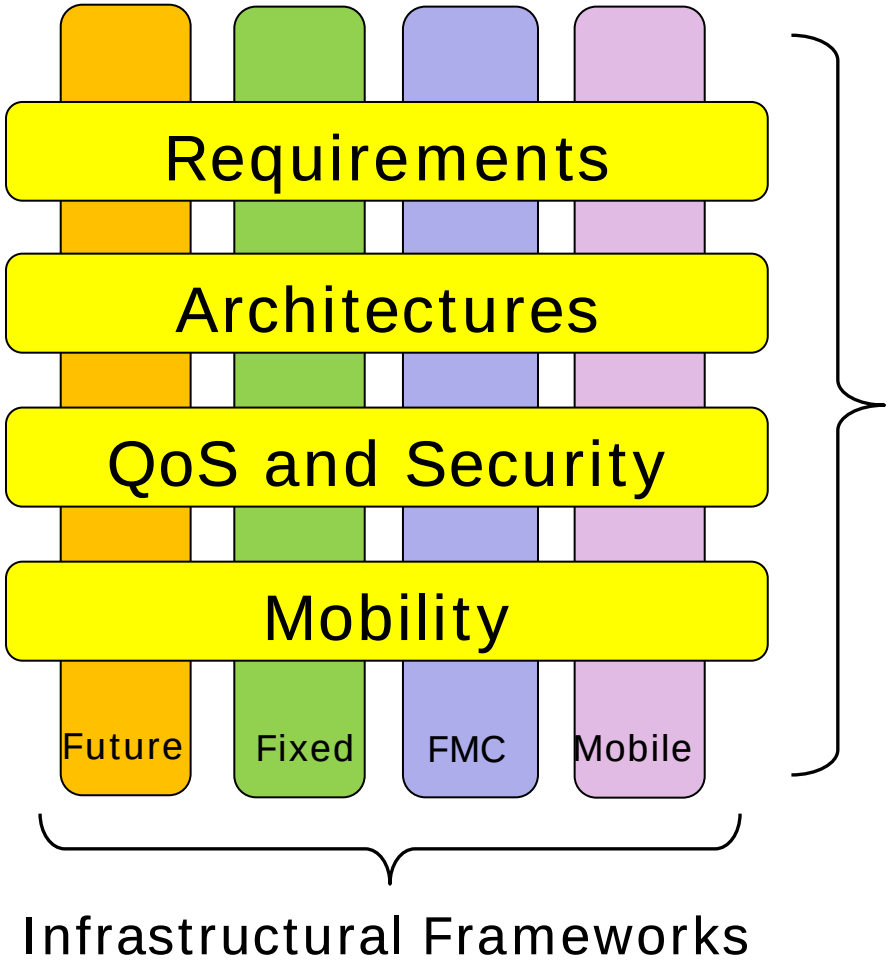
- **Lead study group for Future Networks and NGN**
- **Lead study group on Mobility Management and Fixed-Mobile Convergence**

Configuration of SG13 Questions



Further details in Backup slides

High level view of SG13 study scopes



- NGN
- IPTV
- Ubiquitous Networking
- USN/RFIDs
- Web based
- Open Environment
- Climate Change
- Others

Next Generation Services

- From today's networks
  - Services are typically "vertically integrated"
  - Services require specific infrastructure components for their delivery
- to NGN : flexible service creation and provisioning
  - Horizontal Convergence: services are no more vertically integrated
  - **Network functions are componentised**
  - New paradigm: **standard "capabilities" as service enabling toolkit**
- Key objectives in ITU-T NGN service standardisation
  - Not just a new voice network
  - *"Service level equal or better than in circuit-switched networks"*
  - **Services specified in terms of required "capabilities"**
  - Service definitions not an objective like in legacy world
    - **Public Interest Services are a special case**

Service Shift as consequence of NGN service vs transport stratum separation

NGN Release 1 service objectives (Y.2000-series Sup.1 "NGN Rel.1 scope")

Services expected to be supported in NGN Release 1

- PSTN/ISDN Emulation services
- PSTN/ISDN Simulation services
- Multimedia services
- Data communication services (including VPNs)
- Public Interest Services
- NGN is not intended to preclude access to the Internet

It's a Provider decision which services will be actually deployed

ITU-T NGN-GSI currently working on NGN Release 2

- Service scenarios, service and functional requirements and capabilities, architecture extensions, mechanisms and protocols
- High level Rel.2 Requirements planned for approval in Q2(-Q3) 2009
- Rel.1 activity still ongoing (mainly on protocols)

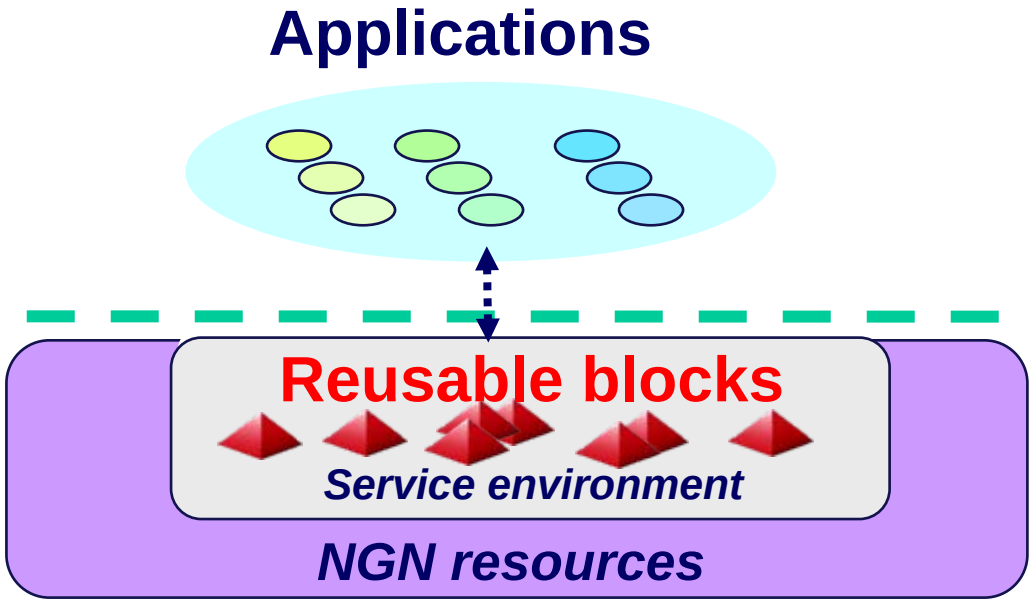
NGN Release 2 service objectives (Y.2000-series Sup.7 "NGN Rel.2 scope")

Services expected to be supported in NGN Release 2

- **IPTV services**
- **Managed delivery services**
- **NID related services**
  - Services using tag-based identification
  - Ubiquitous Sensor Network services
- **Additional multimedia services**
  - Visual surveillance services
  - Multimedia communication centre services
- **Enterprise services** (NGN support of services for enterprises)
  - Virtual Leased Line, Business Trunking, Hosted services
- **Home network services (support of services in home network environments)**

The concept of "Capabilities" as re-usable building blocks for applications / services

Generic concept of ANI (Application Network Interface)



- A reusable set of Capabilities
  - Objective to reduce service development costs
- Towards an **NGN Open Service Environment** for flexible and agile service creation, execution and management
  - **Service platform concept**
  - "Rapid change" is key for satisfying changing customer needs
  - New business opportunities

Capabilities for NGN Release 1 (Y.2201) and Release 2

- Transport connectivity
- Communication modes
- Multicast
- Media resource management
- Codecs
- Access Networks, network attachment
- User networks
- Interconnection, Interoperability and Interworking
- Numbering, naming, addressing
- Identific., authentic., authoriz.
- Security
- Routing
- QoS
- OAM and Survivability
- Accounting and Charging
- Management

NGN Rel. 2 capabilities

- Mobility handling
- Service enablers
- Open service environment
- Profile management
- Policy management
- PSTN/ISDN emulation and simulation
- Public Interest Services support
- Critical infrastructure protection
- Non disclosure of info across NNI
- Inter-provider exchange of user-related information
- Context awareness
- Identity management
- Content management
- IPTV services support capabilities
- Enterprise Networks support capabilities
- IPV6 support capabilities

Service enablers (as named in Y.2201)

Capabilities providing features for specific or advanced services, and/or enabling access to, and/or handling of, specific information provided by these capabilities

Main Standards Development Organisations sources for service enablers: 3GPP (IMS) and Open Mobile Alliance

- Group management
- Personal information management
- Message handling
- Presence
- Location management
- Push
- Device management
- Session handling
- Web-based application support
- Data synchronization

Drivers for advanced application scenarios

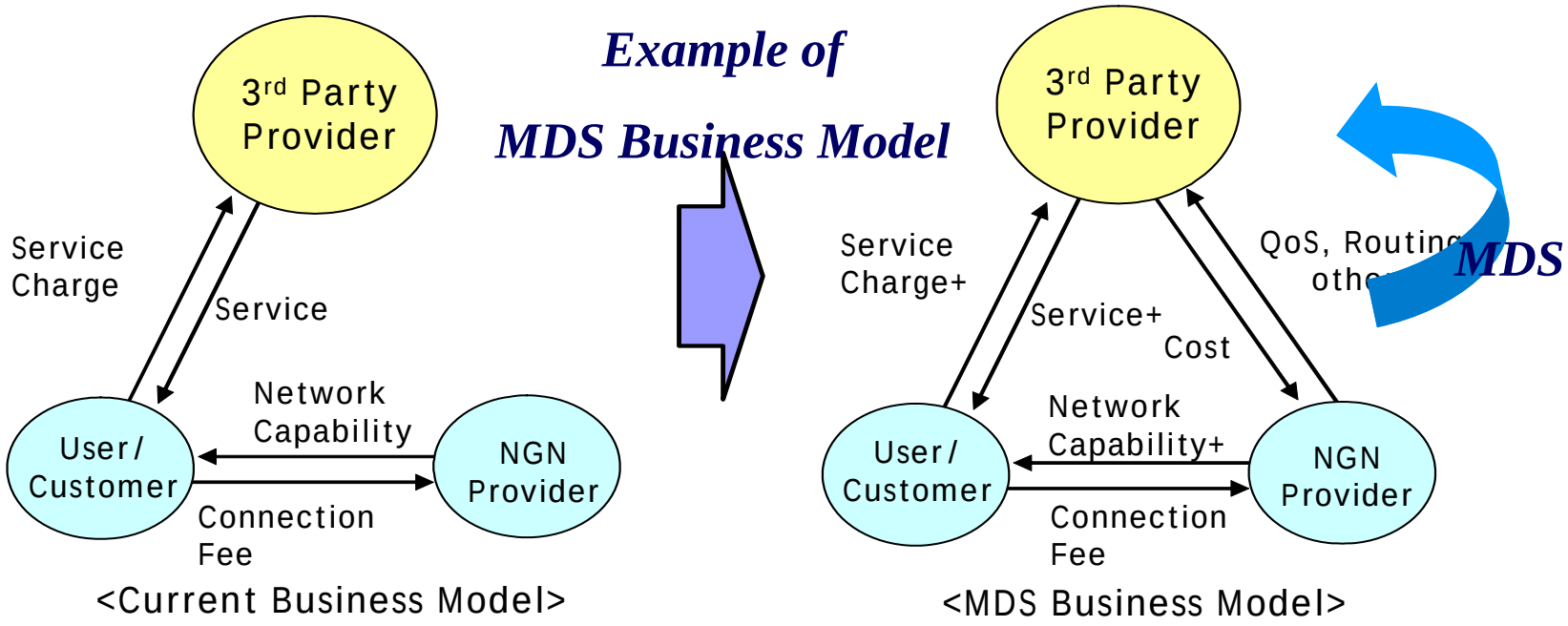
Towards an open service environment in NGN (NGN OSE)

- "Open service environment" for flexible and agile service creation, execution and management
  - Leveraging new capabilities enabled by technologies of different worlds (Internet/Web 2.0, IT, Broadcasting, Mobile Networks etc.)
  - Exposure of capabilities via standard application network interfaces
  - Portability and re-usability of capabilities across networks (e.g. from Web to NGN and from NGN to Web)
  - Flexible development of applications and capabilities by NGN Providers as well as by Application Providers
- 3 types of service creation environments were recommended to be supported in NGN Release 1:
  - IN-based service creation environment (INAP, CAMEL, WIN, …)
  - IMS-based service creation environment
  - Open service creation environment (OSA/Parlay, OMA, …)

Framework for value added applications leveraging network capabilities (COMMUNICATIONS-ENABLED APPLICATIONS)

New business models: the 3rd party scenarios of Managed Delivery Services (MDS) – Y.2212

- NGN dynamic features and comprehensive service delivery control capabilities are made available **via MDS** by the NGN Provider through ANI to 3rd Party Providers and their customers
- 3rd Party Providers can offer enhanced services to their customers



A win-win situation for both 3rd Party Provider and NGN Provider

Approaches to open the NGN service environment

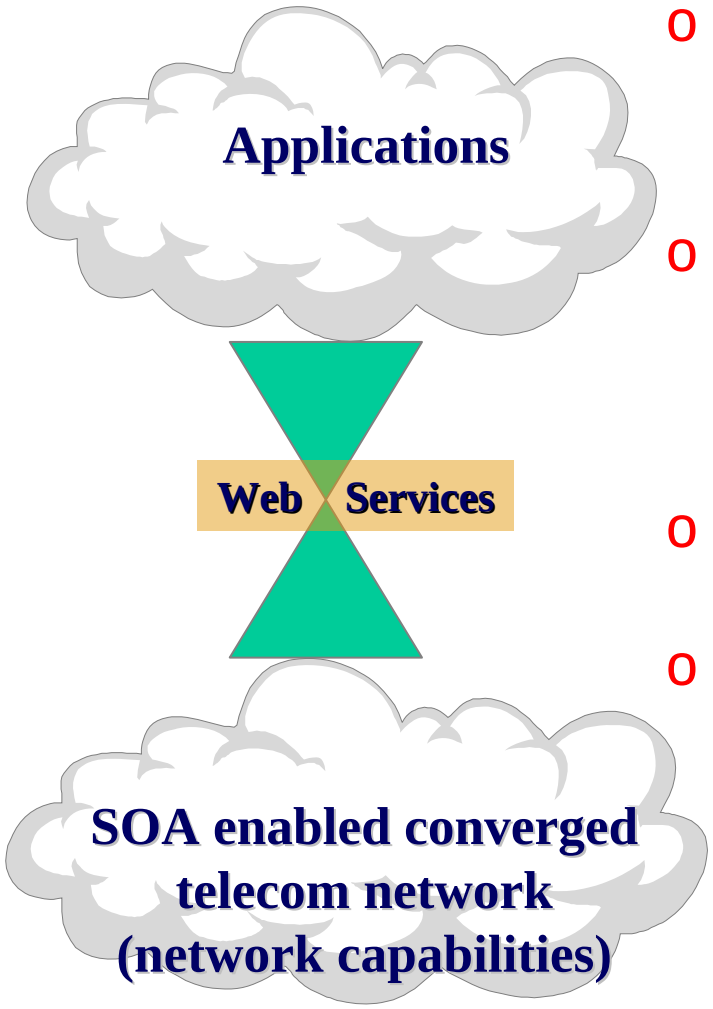
- How to open
  - Adopting a Service Oriented Architectures (SOA) framework from the IT world and enhance it as appropriate -> **Telecom SOA**
  - Using **Web Services (WS)** as implementation tool set of the Telecom SOA framework
    - other tools (e.g. REST) are not excluded

- What to open (expose)
  - Applications <-> Network capabilities (NGN)

Telecom APIs

  - Network capabilities <-> Network capabilities

Telecom SOA and Enhanced Web Services



- A SOA framework is attractive
  - Cross-platform
  - Highly reusable
- Most SOA implementations identify Web Services as the means for realizing a SOA
- **But new requirements have to supported for a Telecom SOA**
- **And WS enhancements are required**

  e.g.
  - Carrier grade reliability and performance
  - Service traceability
  - WS standards convergence

Initial work items on NGN open service environment, SOA and Web Services in ITU-T SG13

- **Y.2234: Open service environment capabilities for NGN (Sept 2008)**
  - Y.OSE-arch (OSE functional architecture for NGN) launched in Jan 09
- Y.2212: Requirements of Managed Delivery Services (Jan 2008)
- Y.2232: NGN convergence service model and scenario using Web Services (Feb 2008)
- Y.2235: Converged web-browsing service scenarios in NGN (Dec 2008)
- Docs based on previous work in OCAF Focus Group (Dec 06)
  - Y.2901/Y.2902 - Carrier grade open environment model/components

Other past/ongoing relevant SOA/WS related activities in ITU-T:

- ITU-T SG4 (NGN management - M.3060)
- ITU-T SG9 (delivery platform reqts for TV and interactive services)
- ITU-T SG16 (middleware aspects for IPTV and USN)
- ITU-T SG17 (security aspects for SOA/WS)

Y.2234 - NGN OSE

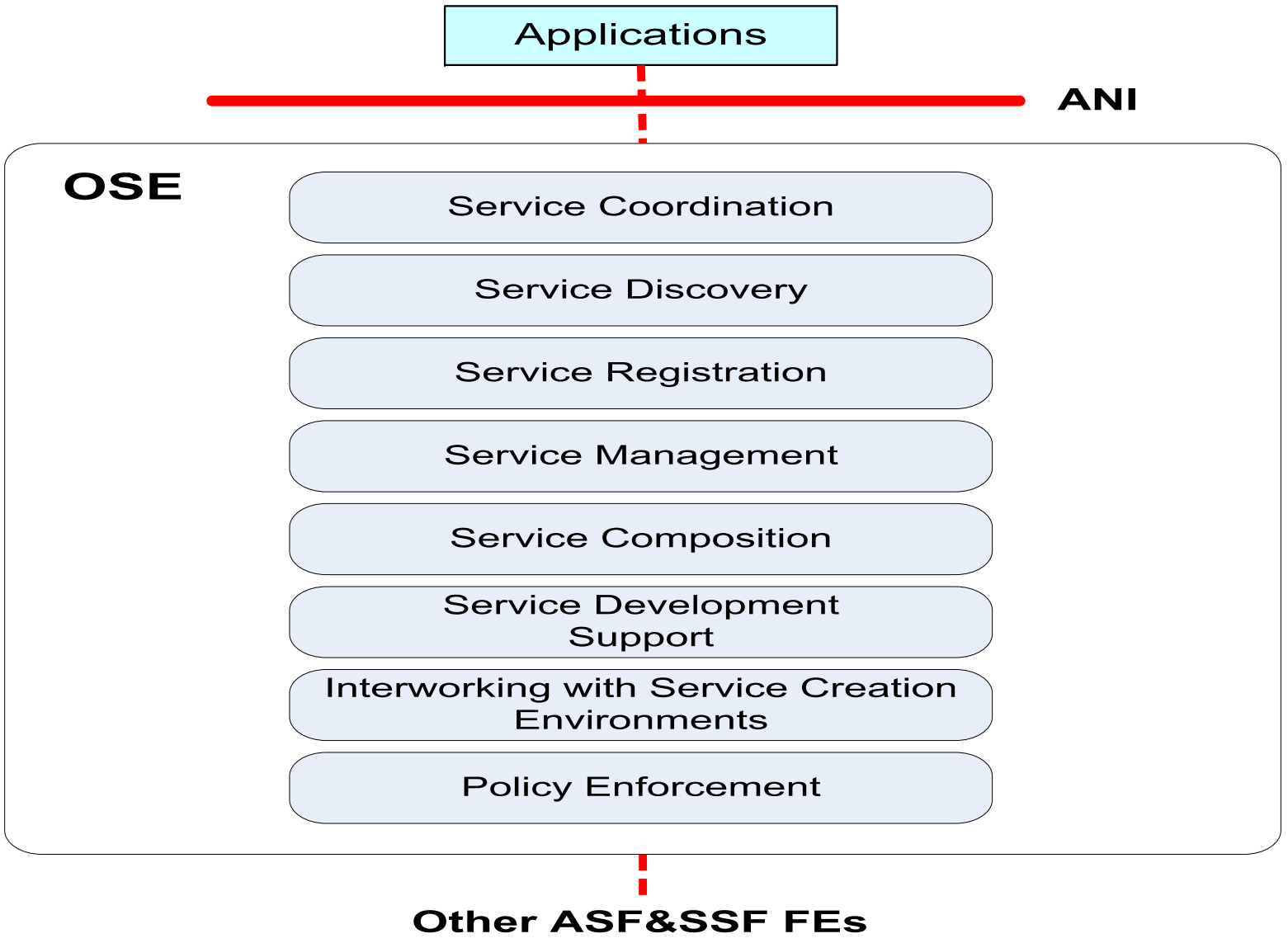
- NGN OSE
  - Require the use of standard interfaces
  - Open the capabilities of the NGN to third parties
  - Provide a SOA enabled environment
  - May be implemented via Web Services technologies

- NGN OSE is required to
  - provide standard APIs for application providers and developers, and potentially end users
  - provide service level interoperability underlying different networks, operating systems and programming languages
  - support service independence from NGN providers and manufacturers
  - support location, network and protocol transparency
  - support OSE capabilities based on NGN providers' capabilities [OSE capabilities based on application providers' capabilities are not supported in this version]
  - provide secure access to open service environment capabilities satisfying the general NGN security requirements

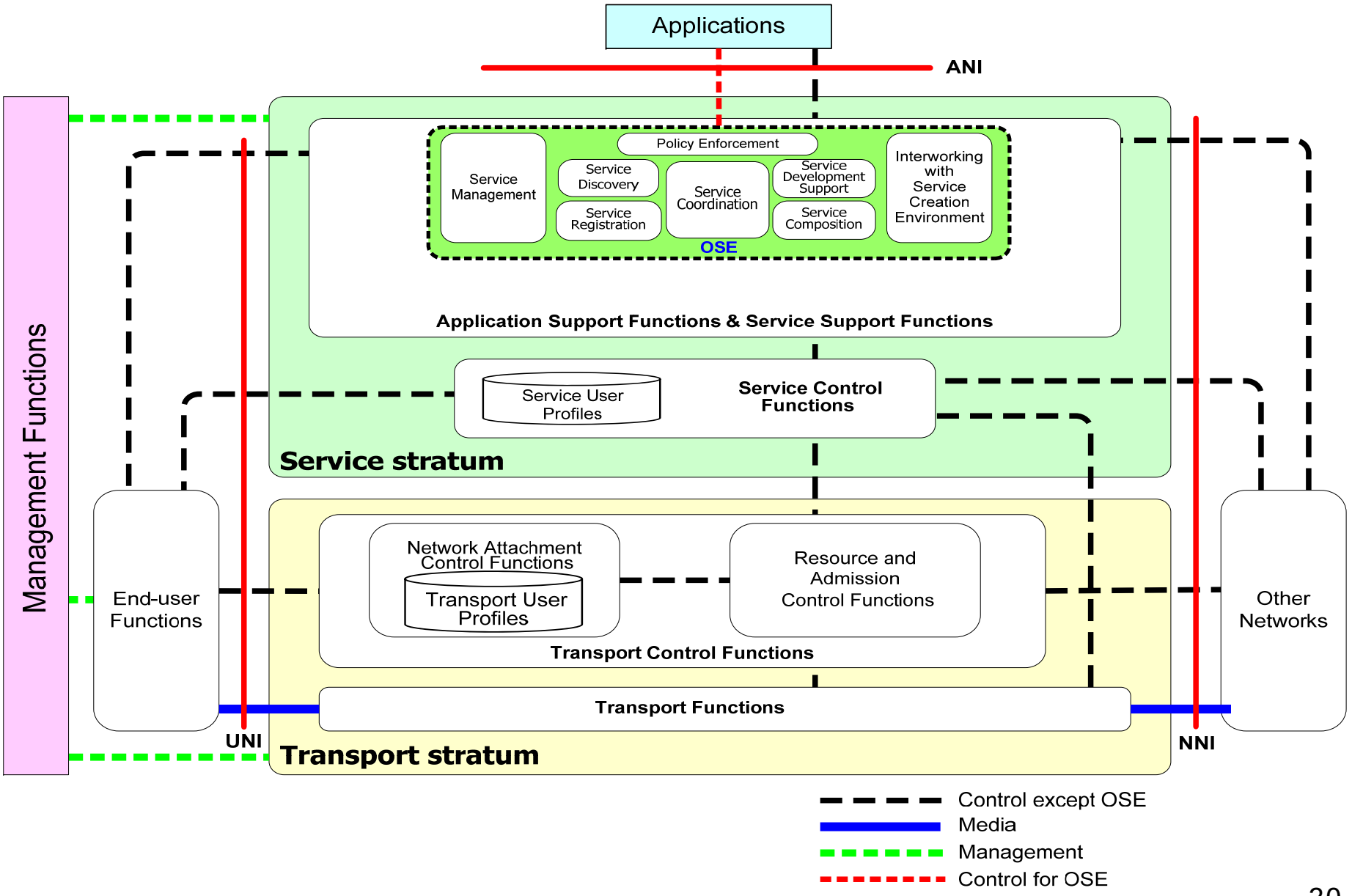
NGN OSE capabilities

- The open service environment is required to (con't)
  - provide capabilities for **coordinating** services among themselves and services with applications
  - provide the means to manage the **registration** of capabilities, services and applications
  - support **service discovery** capabilities to allow users and devices to discover applications, services and other network information and resources of their interest
  - provide **service management** capabilities
  - provide **service composition** capabilities to flexibly compose services and capabilities
  - offer an efficient **development support** environment which supports application construction, trialing, deployment, removal
  - allow **interworking with service creation environments**
  - support **policy enforcement** capability for resources protection and management, and service personalization

Components of the NGN OSE functional group



NGN OSE functional positioning



Current and future ITU-T SG13 activities

- Numerous contributions in this domain have been addressed to SG13 Questions in this May meeting, including
  - Proposal to initiate the study of NGN to support Converged Services
  - Proposal on studying requirements for NGN to support Converged Service Network (CSN)
  - Proposal on studying framework to support Converged Service Network in NGN
  - Proposal of new draft Recommendation “Capabilities and requirements of an open NGN service delivery platform (NGN-SDP)”
  - Proposal of draft recommendation on “Service overlay network model and scenarios in NGN”
  - Proposal for a new work item on NGN-Web convergence for integrated multi-service networks
- New work items/drafts in this domain are now under discussion for possible launch in this May meeting
- Within the context of an overall SG13 work plan (under development), a work plan in this domain is planned with support and coordination among multiple Questions

Collaboration of ITU-T SG13 with other SDOs

- Many developments in other SDOs are (may be) relevant for ITU-T NGN standardization objectives
  - OMA (OMA Service (Provider) Environment, enablers)
  - Parlay Group (Parlay-X WS/API work, now in OMA)
  - TeleManagement Forum (Service Delivery Framework)
  - OASIS (Telecom Member Section activity, others)
  - IEEE NGSON
  - others (ATIS SON, GSMA etc.)
- Collaboration with other SDOs already initiated with SG13
  - OMA, OASIS, TMF
  - (New born) NGSON met Q.2/13 in 2007
  - Mainly exchange of information (joint sessions, liaisons)
  - Deeper exchanges happened with OMA (docs exchange, Y.2234)
  - **Plan to continue and strengthen collaboration with other SDOs**
    - **In parallel with increasing activities of SG13 in this domain**

Conclusion

- Towards an open service platform in NGN
- SOA and WS will enable new business revenues within the converged environment
  - but bring new challenges to standards development
- ITU-T SG13 has started work in this direction
  - NGN OSE and other developments
- Numerous SDOs, Forums, and Consortia are involved in this space
  - standards convergence, harmonization are essential
  - ITU-T collaboration with other SDOs has started and is expected to increase in the future

Thank you for your attention

Questions ?

ITU-T SG 13 Questions [2009-2012] - 1

Question Number	Question title	Status
1/13	Coordination and planning	Continuation of Q.1/13
2/13	Network terminology	Continuation of Q.11/13
3/13	Requirements and implementation scenarios for emerging services and capabilities in an evolving NGN	Continuation of Q.2/13
4/13	Requirements and frameworks for QoS enablement in the NGN	Continuation of Q.4/13
5/13	Principles and functional architecture for NGN (including ubiquitous networking)	Continuation of Q.3/13
6/13	Mobile telecom network architecture for NGN	Continuation of Q.1/19
7/13	Impact of IPv6 to an NGN	Continuation of Q.9/13
8/13	Mobility management	Continuation of Q.6/13 and Q.2/19
9/13	MM mechanisms supporting multi-connections for multiple access technologies	New (from SG19)
10/13	Identification of evolving IMT-2000 systems and beyond	Continuation of Q.3/19
11/13	Convergence of existing and evolving IMT and fixed networks	Continuation of Q.6/13 and Q.5/19

ITU-T SG 13 Questions [2009-2012] - 2

Question Number	Question title	Status
12/13	Evolution towards integrated multi-service networks and interworking	Continuation of Qs.7 and Q.12/13
13/13	Step-by-step migration to NGN networks	Continuation of Q.4/19
14/13	Service scenarios and deployment models of NGN	Continuation of Q.8/13
15/13	Applying IMS and IMT in Developing Country mobile telecom networks	New (from SG19)
16/13	Security and identity management	Continuation of Q.15/13
17/13	Packet forwarding and deep packet inspection for multiple services in packet-based networks and NGN environment	Continuation of Q.14/13
18/13	Requirements and framework for enabling COTS components in an open environment	Continuation of Q.16/13
19/13	Distributed services networking (DSN)	New (from SG13)
20/13	Public data networks	Continuation of Q.13/13
21/13	Future networks	New (from SG13)

Y.2234 Appendix: relevant developments in other SDOs [1/5]

NGN capabilities	OSA/Parlay	OMA	OASIS	W3C	OMG	TMF
Service Coordination		PEEM (Policy Evaluation, Enforcement and Management), OSPE (OMA Service Provider Environment)	WS-Coordination WS-Business Activity WS-Atomic Transaction	Web Services Policy – Framework Web Services Policy – Attachment Web Services Policy Namespace Web Services Policy XML Schema	Current effort: - UPMS (SOA extension of UML) - BPDM Existing Standards: - UML - EDOC: component architecture - Distributed Object Computing	TMF053 series: NGOSS Technology Neutral Architecture (TNA) GB921 series: eTOM, business process framework GB922 series: SID, shared information architecture NGOSS Contract Metamodel (Work In Progress)
Service Discovery	Discovery of framework and network service capability features	OWSER (UDDI), OMA's DPE, OMA's GPM	Universal Description, Discovery and Integration (UDDI) ebXML Registry Information Model (RIM) ebXML Registry Services and Protocols (RS)	Web Services Description Language (WSDL)	Current effort: - UPMS (SOA extension of UML) - BPDM Existing Standards: - RAS : Reusable Asset Specifications - RAS Description: Metamodel for describing and managing reusable assets	

Y.2234 Appendix: relevant developments in other SDOs [2/5]

NGN capabilities	OSA/Parlay	OMA	OASIS	W3C	OMG	TMF
Service Management	Registering of network service capability features, Integrity Management	OSPE (OMA Service Provider Environment)	Management Using Web Services (WSDM-MUWS) Management Of Web Services (WSDM-MOWS) WS-Notification WS-Brokered Notification	Service Modeling Language WS-Eventing	BPRI: Business Process Run time Interface Description: looking at runtime system, monitoring and measuring its and evaluating these measurements against what the expectations RAS: to publish the services	Service Delivery Framework (Work In Progress) a framework that supports and integrates all functions required for the lifecycle of a service delivered to Customer, across all stakeholders in a Service Provider environment. SDF unifies under a logical view service design, creation/composition, deployment, activation, provisioning, sale and campaign management, execution, operations, charging, billing and revenue management, retirement, monitoring and trouble resolution etc.
Service Composition		PEEM((Policy Evaluation, Enforcement and Management)	Business Process Execution Language for Web Services	Web Services Choreography Description Language	UPMS, BPMN, BPDM	

Y.2234 Appendix: relevant developments in other SDOs [3/5]

NGN capabilities	OSA/Parlay	OMA	OASIS	W3C	OMG	TMF
Service Development Support		XDM, OSPE (OMA Service Provider Environment)		Service Modeling Language	- UPMS, - BPMN, - BPDM Existing Standards - EDOC	TMF053 series: NGOSS Technology Neutral Architecture (TNA) GB921 series: eTOM, business process framework GB922 series: SID, shared information architecture GB942 Contract Guidelines and Principles NGOSS Contract Metamodel MTNM/MTOSI, OSS/J (TIP)
Service Registration		OSPE (OMA Service Provider Environment)	ebXML Registry Information Model (RIM) ebXML Registry Services and Protocols (RS) Universal Description, Discovery and Integration (UDDI)		Existing Standards - RAS - MOF	

Y.2234 Appendix: relevant developments in other SDOs [4/5]

NGN capabilities	OSA/Parlay	OMA	OASIS	W3C	OMG	TMF
Interworking with Service Creation Environments						
Policy Enforcement	Policy Management SCF	PEEM((Policy Evaluation, Enforcement and Management)	Service Component Architecture (SCA) Policy Framework Privacy policy profile of XACML	Web Services Policy - Framework Web Services Policy - Attachment Web Services Policy Namespace Web Services Policy XML Schema Web Services Policy - Primer Web Services Policy - Guidelines for Policy Assertion Authors		SID Policy Framework

Y.2234 Appendix: relevant developments in other SDOs [5/5]

NGN capabilities	OSA/Parlay	OMA	OASIS	W3C	OMG	TMF
Security	Authentication, Authorization	SEC_CF (Security Common Function)	WS-Security WS-Security: SOAP Message Security WS-Security: Username Token Profile WS-Security: SAML Token Profile WS-Security: X.509 Certificate Token Profile WS-Federation			