

*Towards a SOA/WS enabled  
NGN Open Service Environment -  
ongoing developments in ITU-T SG13*

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## Outline

- o NGN services and capabilities in ITU-T
- o NGN Open service environment - ITU-T SG13
- o Collaboration with other SDOs and future items

## Capabilities for NGN Release 1 (Y.2201)

- o Transport connectivity
- o Communication modes
- o Media resource management
- o Codecs
- o Access Networks, network attachment
- o User networks
- o Interconnection, Interoperability and Interworking
- o Routing
- o QoS
- o Accounting and Charging
- o Numbering, naming, addressing
- o Identific., authentic., authoriz.
- o Security
- o Mobility management
- o OAM
- o Survivability
- o Management
- o **Service enablers**
- o **Open service environment**
- o Profile management
- o Policy management
- o PSTN/ISDN emulation and simulation
- o Public Interest Services support
- o Critical infrastructure protection
- o Non disclosure of info across NNI
- o Inter-provider exchange of user-related information
- o **Context awareness**
- o **Identity management**
- o **IPTV services support capabilities**
- o **Enterprise Networks support capabilities**
- o **IPv6 support capabilities**

## Towards an open service environment in NGN (NGN OSE)

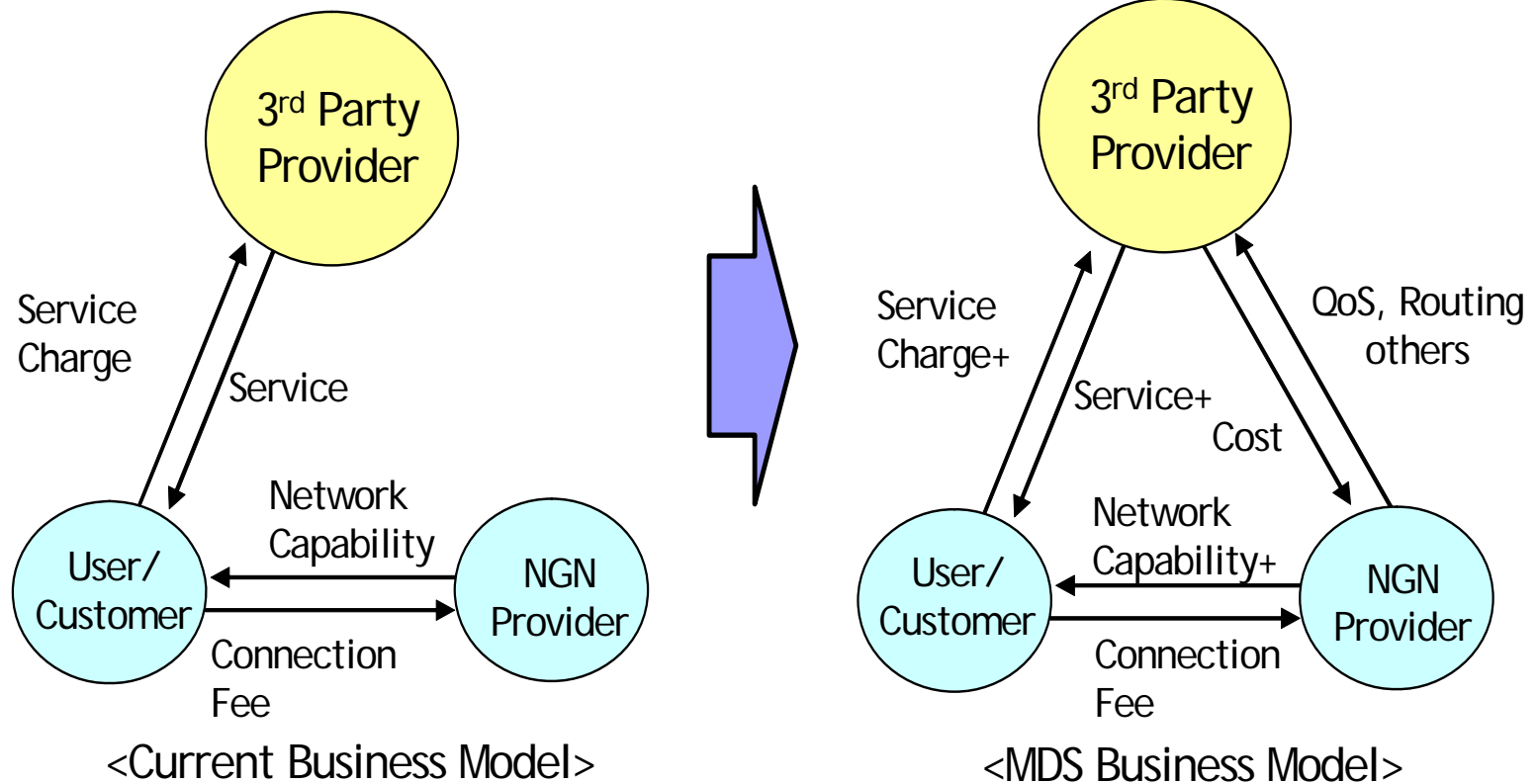
- o “Open service environment” for flexible and agile service creation, execution and management
  - Leveraging new capabilities enabled by 3G and Internet technologies
  - Exposure of capabilities via standard application network interfaces
  - Portability and re-usability of capabilities across networks
  - Flexible development of applications and capabilities by NGN Providers as well as by Application Providers
- o Types of service creation environments 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, ...)

**A service framework for implementation of value added services taking advantage of network capabilities**



## 3rd party scenarios and application interfaces: MDS (Managed Delivery Services) – Y.2212

- Managed Delivery Services can be offered by 3rd party providers to their customers enhancing their offer with usage of capabilities provided by NGN provider through ANI (Application Network Interface)



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

## Initial work items on SOA and WS topics in ITU-T SG13

- **Y.2234 : Open service environment capabilities for NGN (approved on 12 Sept 2008)**
- Y.2212 : Requirements of Managed Delivery Services (Jan 08)
- Y.2232 : NGN convergence service model and scenario using Web Services (Feb 08)
- Y.2235 : Converged web-browsing service scenarios in NGN (consented on 12 Sept 2008)
- From previous work in the OCAF Focus Group (Dec 06)
  - Y.2901/Y.2902 - Carrier grade open environment model/components

Other ongoing ITU-T activities are SOA/WS related, including in

- ITU-T SG4 (NGN management - M.3060)
- ITU-T SG17 (security aspects for SOA/WS)
- ITU-T SG16 (middleware aspects for IPTV)

## Service requirements for NGN OSE (1/2)

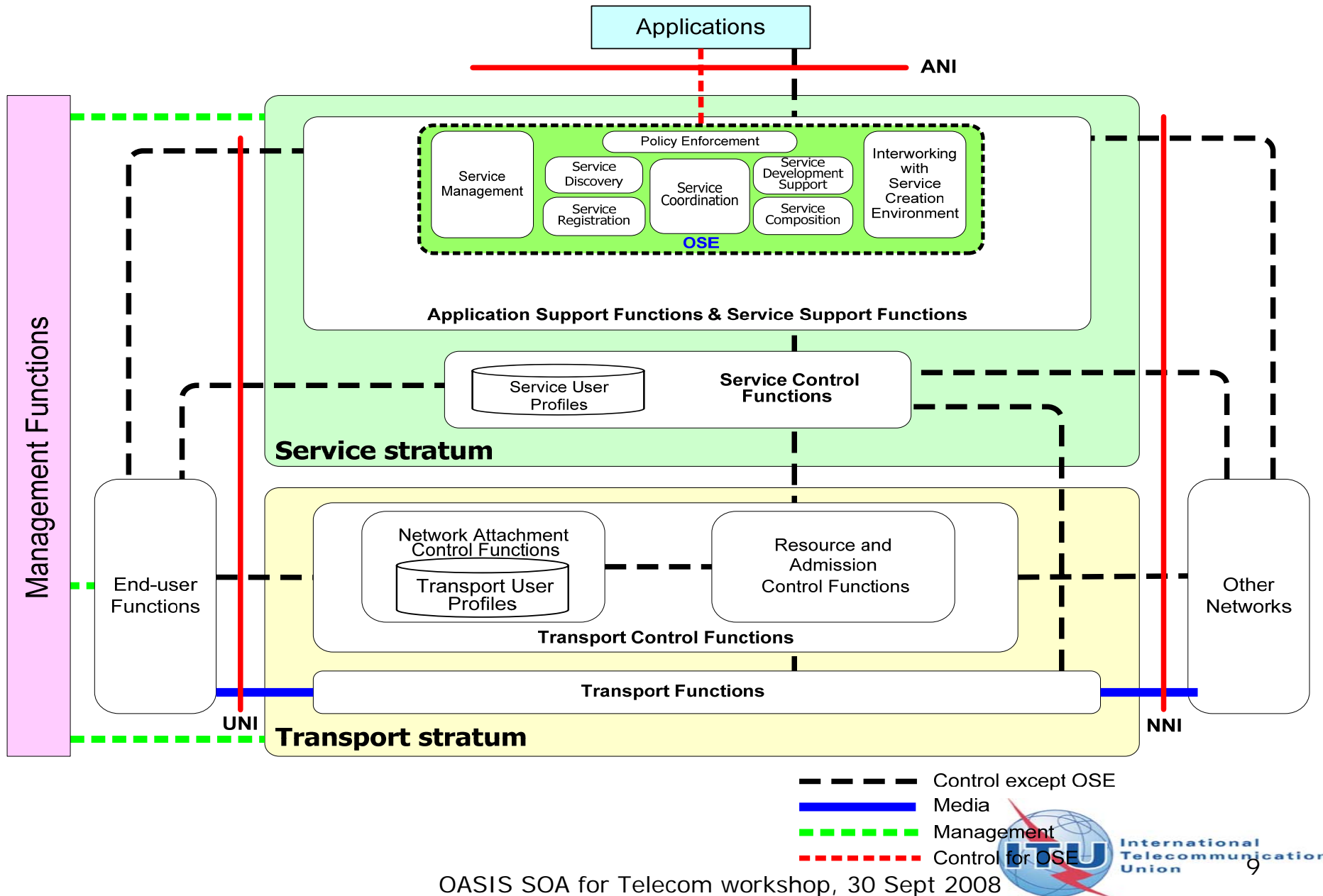
- o The open service environment is required to
  - provide standard APIs for application providers and developers, and potentially end users
  - provide service level interoperability underlying different networks, operating systems and programming languages
  - support service independence from NGN 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 capabilities for coordinating services among themselves and services with applications
  - provide the means to manage the registration of capabilities, services and applications

## Service requirements for NGN OSE (2/2)

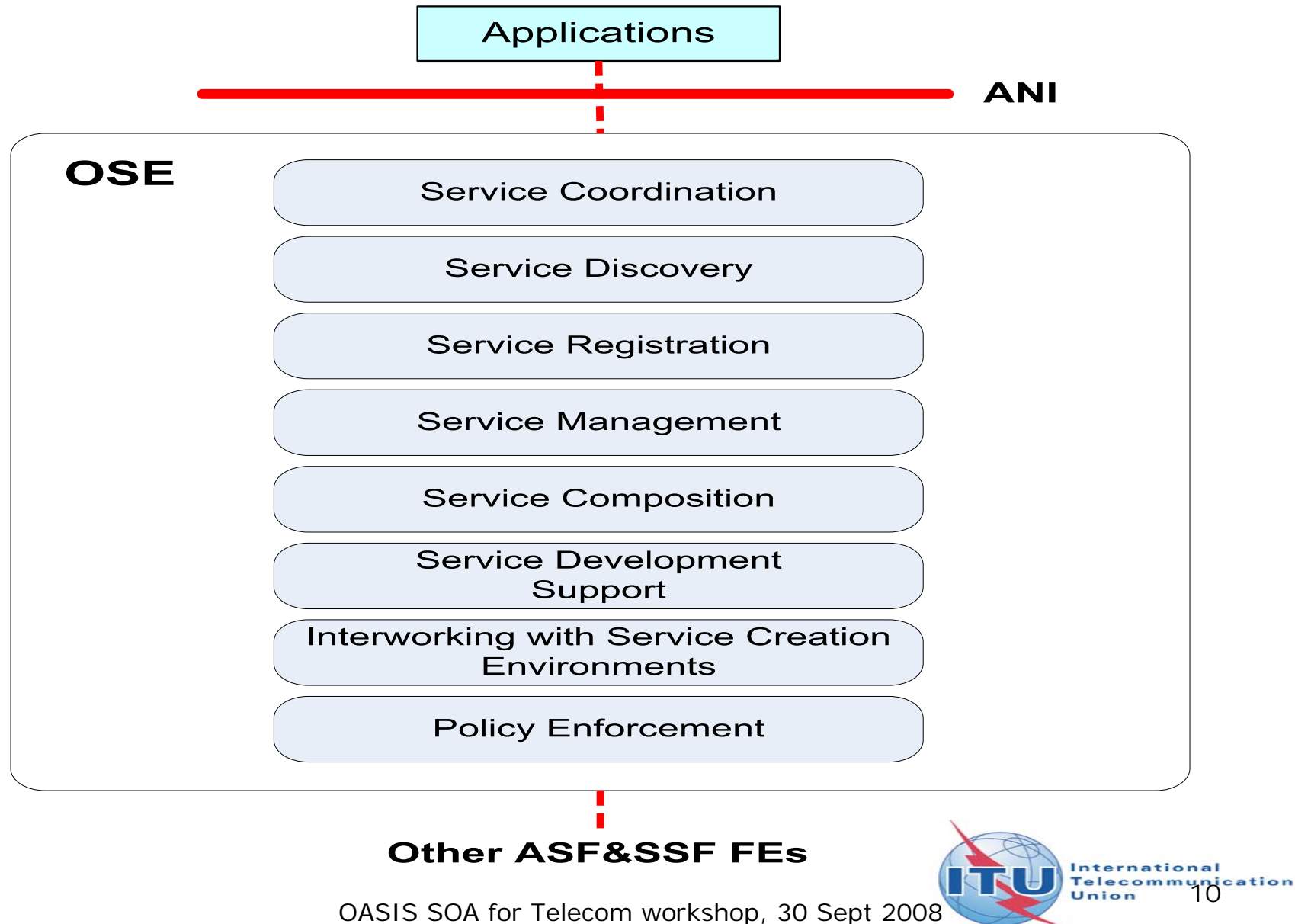
- o The open service environment is required to (con't)
  - support service discovery capabilities to allow users and devices to discover applications, services and other network information and resources of their interest
  - provide service management capabilities
  - provide service composition capabilities 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
  - provide secure access to open service environment capabilities satisfying the general NGN security requirements
  - support policy enforcement capability for resources protection and management, and service personalization



# NGN OSE functional positioning



# Functional components of the NGN OSE functional group



# Mapping of NGN OSE functional components into NGN ASF&SSF Functional Entities

**From Y.2234**

## [ITU-T Y.2012] ASF&SSF FEs

		[ITU-T Y.2012] ASF&SSF FEs				
		APL-GW-FE	APL-SCM-FE	AS-FE	SS-FE	New FE currently not identified
		serves as an interworking entity between the applications, and services and capabilities of the NGN (adapted from [ITU-T Y.2012])	manages interactions between multiple application services (or servers) [ITU-T Y.2012]	supports generic application server functions including hosting and executing services [ITU-T Y.2012]	provides access and interworking to a legacy IN SCP [ITU-T Y.2012]	
O S E	Service discovery	optional	not applicable	not applicable	not applicable	optional
	Service management	optional	not applicable	not applicable	not applicable	optional
	Service registration	optional	not applicable	not applicable	not applicable	optional
	Service coordination	not applicable	optional	not applicable	not applicable	optional
	Service composition	not applicable	optional	not applicable	not applicable	optional
	Service development support	optional	not applicable	not applicable	not applicable	optional
	Interworking with service creation environments	optional	not applicable	optional	optional	optional
	Policy enforcement	optional	optional	not applicable	not applicable	optional

## Relationship of ITU-T SG13 with other SDOs: collaboration has started

- o NGN OSE capabilities
  - Require the use of standard interfaces
  - Open the NGN capabilities to third parties
  - Provide a SOA enabled environment
  - Web Services as an implementation technology for NGN OSE
- o Many developments in other SDOs are (may be) relevant for ITU-T objectives
  - Parlay (OSA) -> OMA
  - OMA (OMA Service (Provider) Environment, enablers)
  - OASIS (SOA RM etc., Telecom Member Section)
  - TMF (SDF)
  - OMG, W3C, others (IEEE NGSON, OGF)
- o Collaboration started with other SDOs
  - Initial joint meetings, liaisons, analysis of other SDOs' documents
  - **Collaboration needs to continue and increase in intensity**

## Future SOA/WS topics within ITU-T SG13: an informal and non-exhaustive list (\*)

- o Application network interface requirements (APIs for carriers and enterprises)
  - Key APIs
  - Building on relevant business cases (IPTV, USN, etc.)
- o SOA framework for NGN
- o Standard requirements and SOA/WS enabled capabilities of service delivery platforms for NGN
- o SOA/WS enabled NGN (2.0) functional architecture and related service components (IMS, others)
- o Middleware aspects
  - Application-specific middleware requirements versus NGN OSE
- o Application scenarios
  - SOA based service composition and NGN OSE
  - 3rd party provider applications
  - Composition of NGN capabilities and Web 2.0/Internet capabilities
  - Composition of NGN services and legacy services

(\*) this list doesn't constitute an official SG13 item and, although based on discussions among active parties, only represents the author's current view of critical future study items

**Thank you for your  
attention**

**Questions ?**

# Backup slides

## OSE functional requirements (1/4)

- o Service Coordination is required to
  - Provide coordination of applications and services with capabilities
  - Provide the tracking of NGN capabilities or service components from various application providers, and the relationship between these capabilities or service components
  - Support the information on state change of capabilities or service components for applications and services
- o Service Discovery is required to
  - Provide service discovery for physically distributed NGN services
  - Support a variety of discovering criteria
  - Use user and device profile information for discovering proper service
  - Allow users to discover user-interest services, device-interest services and network information



## OSE functional requirements (2/4)

- Service Registration is required to
  - Provide service registration, including configuration, activation, publication and service deregistration
  - Provide a variety of service registration features (e.g. manual, autonomous) for NGN services
  - Support a variety of registration parameters, including mandatory and optional parameters
- Service Management requirements include
  - Provide monitoring function of registered services for availability, predicted response time
  - Provide managing function of QoS information about registered NGN services
  - Provide version management function to NGN services for interoperability
  - Provide notification service functions for updated services
  - Provide failure detection and recovering functions for unexpected failures

## OSE functional requirements (3/4)

- o Service Composition is required to
  - Provide composition language that describes interaction flow among NGN services
  - Support the composition of NGN services statically or dynamically
- o Service Development Support is required to
  - Support services re-use and allow for services interchangeability
  - Support mixing-and-matching of services by management of interfaces and consistent semantics of shared data/schema across these services
  - Support the full life cycle of components, including installation, configuration, administration, publishing, versioning, maintenance and removal
  - Support delivery-agnostic application design to allow applications to be implemented without requiring re-design for each development scenario
  - Support tracking of dependencies among services

## OSE functional requirements (4/4)

- Interworking with Service Creation Environments is required to
  - Support open service creation environment
  - Support IP multimedia subsystem (IMS)-based service creation environment
  - Support Intelligent network (IN)-based service creation environment
- Policy Enforcement is required to
  - Provide a description language to express various kinds of policy rules
  - Provide a policy execution framework to interpret and execute the policies
  - Protect services from unauthorized users' requests and manage requests based on the policy rules

# 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	<ul style="list-style-type: none"> <li>- UPMS,</li> <li>- BPMN,</li> <li>- BPDM</li> </ul> Existing Standards <ul style="list-style-type: none"> <li>- EDOC</li> </ul>	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 <ul style="list-style-type: none"> <li>- RAS</li> <li>- MOF</li> </ul>	

# 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			



## Some useful ITU-T links

- o ITU-T Home page

<http://www.itu.int/ITU-T/>

- o ITU-T Recommendations

<http://www.itu.int/ITU-T/publications/recs.html>

- o ITU-T Lighthouse

<http://www.itu.int/ITU-T/lighthouse/index.phtml>

- o ITU-T Workshops

<http://www.itu.int/ITU-T/worksem/index.html>