ITU-T NGN Activities

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NGN background

o NGN work in the ITU-T started in Study Group 13 mid 2003 and an NGN Joint Rapporteur Group was established in October 2003

o ITU-T Director launched the NGN Focus Group in June 2004 in response to a strong membership demand for NGN standards

o At the WTSA-04 the revised study group structure was agreed, Study Group 13 was given the task to lead the NGN work in the ITU-T and to be the parent study group for the NGN Focus Group

Activities of the NGN Focus Group

o The NGN Focus Group, led by Chae-Sub Lee, met almost every two months : 6, 7, 9, 11/2004 + 3, 5, 7, 9, 11/2005

o The NGN Focus Group, at end of 2005, handed over its results to Study Group 13 and other relevant study groups to continue the development of global NGN standards

o The NGN Focus Group deliverables are listed against the NGN work items in the supplementary slides 28 to 33 at the end of this presentation

Establishment of the NGN-GSI

o A major consideration in the planning of the ongoing work was the need to continue to have a visible focus for the NGN activities and to maintain as far as possible the co-location of the closely related NGN work performed under the umbrella of a coordinated work plan

Establishment of the NGN-GSI (cont)

o To ensure this, the ongoing work is being done by the Study Groups, meeting together as necessary, according to an NGN work plan being coordinated by Study Group 13 under the banner of the NGN Global Standards Initiative (NGN-GSI)

o A schedule of NGN-GSI activities has been developed which will ensure that the pace of the work meets the needs of the ITU-T members
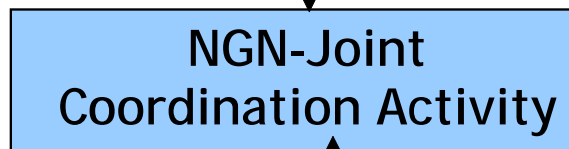
NGN-GSI Framework
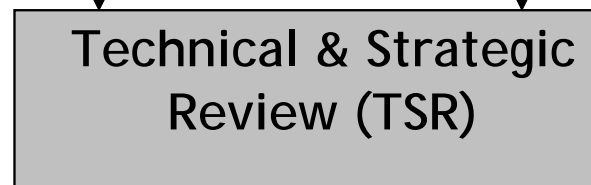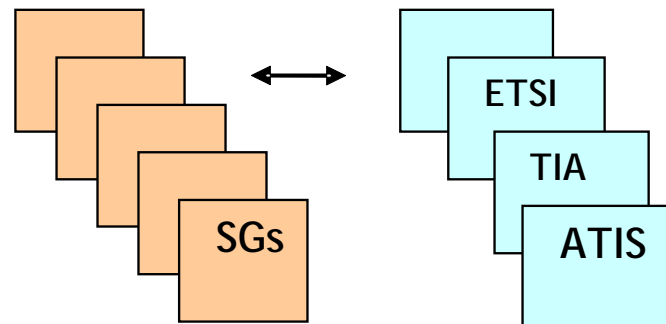
GSI: Umbrella over the NGN standardisation programme
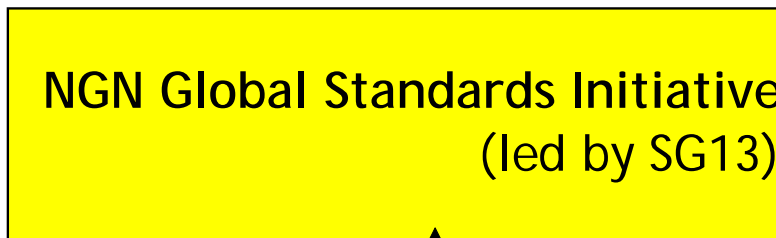
JCA: ITU-T, GSC PSO's and IETF managers: oversees coordination and planning of work

TSR: Review results, identify issues to JCA

Technical standardisation work

NGN Global Standards Initiative (led by SG13)

SG13 NGN project planning

NGN-Joint Coordination Activity

Technical & Strategic Review (TSR)

SGs

ETSI

TIA

ATIS

NGN-GSI Planning

o The following co-located NGN-GSI events have so far been scheduled:

- January 2006 Study Group and Rapporteur meetings (already held – see supplementary slides 26 and 27)

- April 2006 NGN Workshop followed by Rapporteur meetings

- July 2006 Study Group and Rapporteur meetings

NGN-GSI Planning (cont)

- October 2006 Rapporteur meetings
- January 2007 Rapporteur meetings
- April 2007 Study Group and Rapporteur meetings
- September 2007 Rapporteur meetings
- Planning beyond this to be arranged later depending on progress and need

NGN-GSI, Future of ITU-T NGN

NEXT GENERATION NETWORK

NGN-GSI

GLOBAL STANDARDS INITIATIVE
ITU-T

- Co-located Joint Activity : SG 11 + 13 + 19 and experts from 2 + 12 + 16 + 17
- Coverage includes
  - Release 2 Services and Capabilities
  - Functional Architectures and Requirements
  - Mobility Management and FMC
  - IPv6 application into NGN
  - End-End QoS
  - NGN Signalling with Resource Admission Control
  - Migration and Interworking aspects (inc. IWF)
  - NGN Security
  - Management and OAM
  - Home Networking
  - Networked aspects of Identification services
  - Others

NGN-GSI Topic Areas / Study Questions

NGN-GSI Topic	SG 13 Qs	SG 11 Qs	SG 19 Qs	Others
1. Project and scope				
2. Architecture				
3. Requirements, capabilities and scenarios				
4. QoS and NP				
5. Service control and protocols				
6. Management and OAM				
7. Security				
8. NNAR including ID				
9. Tariffing and accounting				
10. Interworking and evolution				

See supplementary slide 34

NGN Architecture Overview
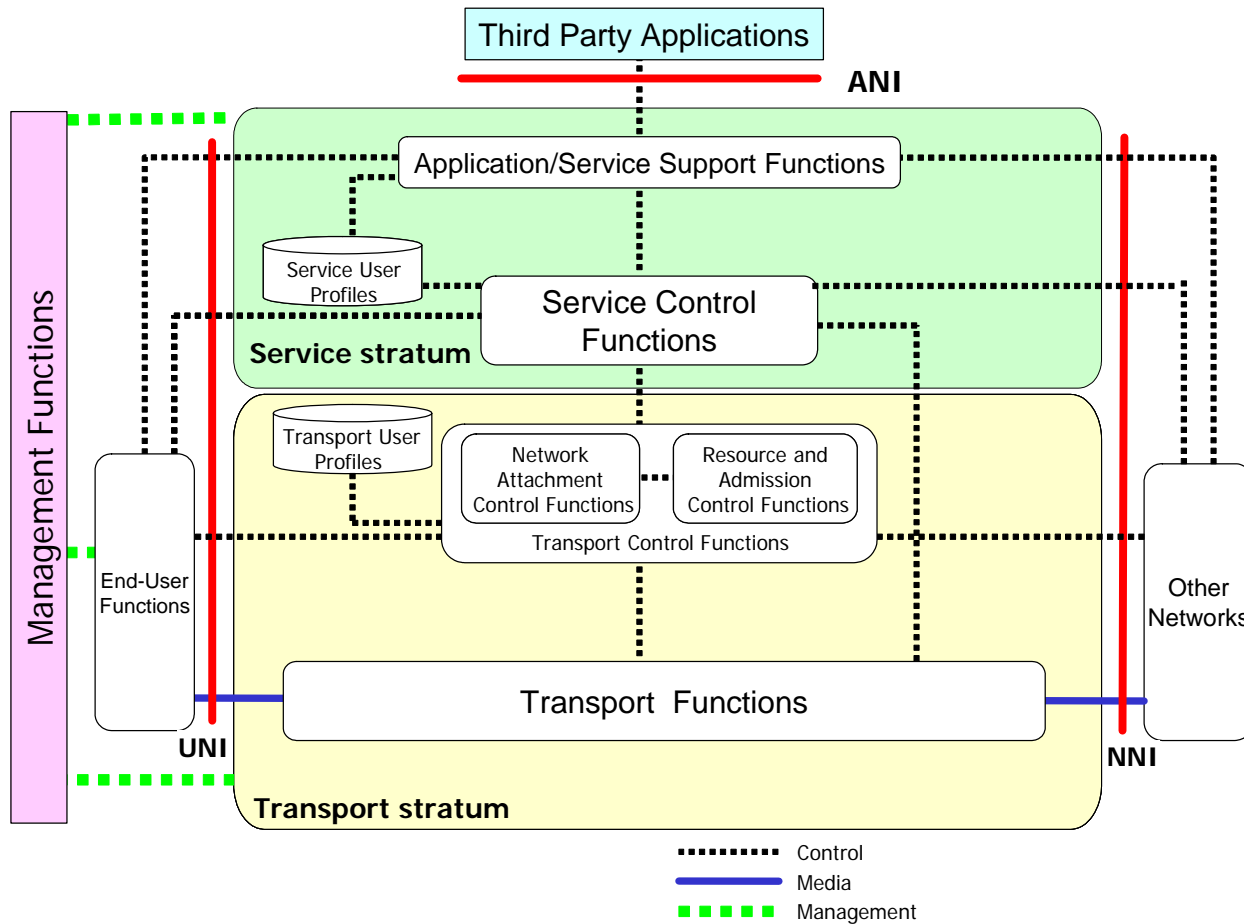
Scope of Release 1 of the ITU-T NGN

o An NGN Release 1 Scope document has been developed which provides an overview of some of the major components. The details including the interfaces between NGN and user functions, between NGN and network nodes, and between NGN and 3rd party application providers, are described in FGNGN-FRA (Y.NGN-FRA) – Functional Requirements and Architecture of the NGN.

Key Features of NGN Release 1
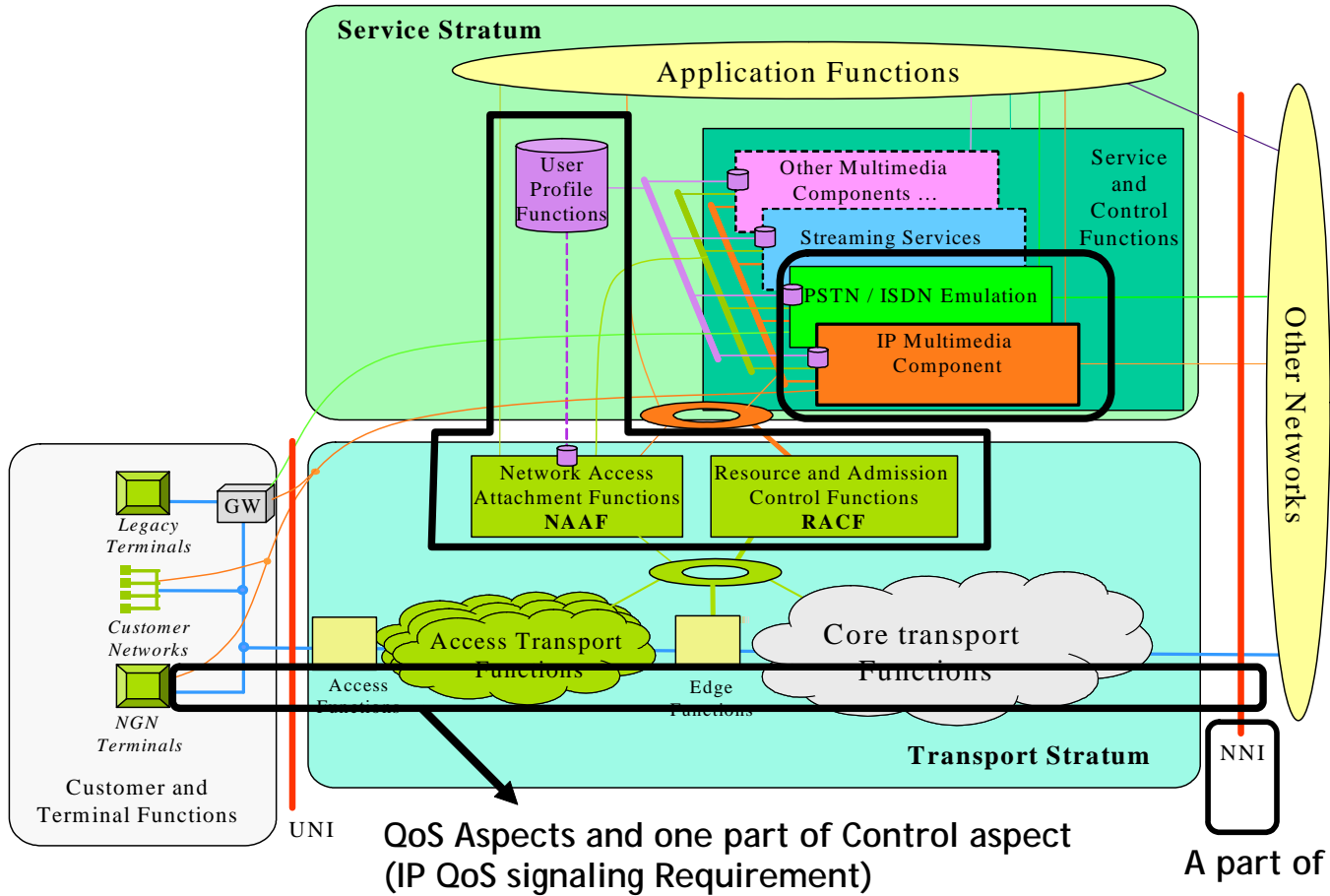
NGN Release 1 functions

o Transport functions

- Access transport functions
- Core transport functions
- Network attachment control functions
- Resource and admission control functions

o Network Node Interfaces

- NNIs between NGNs
- NNIs to non-NGNs

o User profile functions

o End user functions

NGN Release 1 service aspects

◆ **Service Types**

- **Multimedia services**
- **PSTN/ISDN Emulation services**
- **PSTN/ISDN Simulation services**
- **Internet access**
- **Other services (data etc.)**
- **Public service aspects (LI, ETS/TDR, etc.)**

◆ **Service Capabilities**

- **Basic capabilities**
- **Service support capabilities**

NGN Release 1 service capabilities

o Basic capabilities

- Connectivity capabilities
- Media resource management
- Access transport capabilities
- Interoperability and interworking
- Routing
- QoS-based resource and traffic management
- Accounting, charging and billing
- Numbering, naming and addressing aspects

Service capabilities (cont)

- Identification, authentication and authorisation
- Security and privacy
- Mobility management
- OAM
- Other basic capabilities of interest to network and service providers
- Management aspects

Service capabilities (cont)

o Service support capabilities

- Open service environment

- Profile management

- Policy management

- Service enablers

- PSTN/ISDN emulation support

- Other service support capabilities of interest to network and service providers

Release methodology

Name	Scope	Characteristics	Availability
Y.NGN-Rx Scope	Business roles use cases value of the release	Informative	to be approved prior to Rx documents
Y.NGN-Rx Req	Requirements for service capabilities network capabilities	Recommendation	to be approved prior to Rx documents
Y.NGN-Rx Term	Terminology (minimum set) used in the specific release	Recommendation	to be approved prior to Rx documents

Release methodology (cont)

Name	Scope	Characteristics	Availability
NGN database status	Project management database import and export	Informal, supplement to Y.NGN-Rx scope	Each SG meeting
Y.NGN-Rx	Description of release normative references, dependencies amongst recommendations and Informative texts	Recommendation	to be approved at completion of release

NGN Roadmap

Example of part of the roadmap under development

Category	Sub-category	Release 1					Post Release 1
		Items		Recommendation			
				Stage 1	Stage 2	Stage 3	
Environment	IP multimedia component	IP multimedia component		Reqs	FRA IFN 23.228 TIA-873		
	PSTN/ISDN emulation	PSTN/ISDN emulation service component		Reqs	PIEA		
	Service Framework	IN-based service	IN Apprication	Reqs	FRA	Q.1236	
			CAMEL	Reqs	FRA	Q.1200 22.708	
			Wireless IN	Reqs	FRA	TIA-711	

NGN Project management tool

o Study Group 13 together with the TSB is putting into place an interactive online project management database for NGN work items and deliverables. The NGN roadmap and GSI topic areas will be an input to the structuring of the functional view of the database

o The aim is that the database will indicate relevant work in hand and deliverables from the various standards organisations

NGN Project management tool (cont)

o This could lead to further harmonisation of objectives and timescales of NGN work in the various organisations and increased efficiency

o The objective will be that wherever suitable, direct referencing in ITU-T Recommendations of the deliverables of other standards bodies will be made, following a review of the referenced documents for appropriateness

NGN Project management tool (cont)

o The assistance of ATIS and other partner standards organisations in populating the NGN database, mapping out the technical and strategic direction of the ongoing global NGN standardisation work and defining the scope of future releases of the ITU-T NGN standards will be very welcome

Thank you for your attention

o The following slides contain some supplementary information on:

1. Highlights of January 2006 NGN-GSI event
2. The current NGN related work items underway in Study Group 13
3. NGN-GSI topic areas / study questions
4. NGN activities of some of the other involved study groups

o Further information on the NGN-GSI can be found at

http://www.itu.int/ITU-T/ngn/index.phtml

Supplementary information (1)
Highlights of January 2006 NGN-GSI event - Study Group 13 meeting

o 240 delegates attended representing 42 operators and vendors and 22 administrations

o 263 contributions

o Joint activities with Study Groups 11 and 19, participation of experts from Study Groups 12 and 16

o 17 draft NGN Recommendations targeted for completion at the July 2006 meeting

o 28 further draft NGN Recommendations progressed

Highlights of January 2006 NGN-GSI event - Study Group 11 and 19 meetings and WP 2/17

- o Study Groups 11 and 19 saw increased participation

- o Joint activities with Study Group 13 on mobility management, fixed / mobile convergence and signalling requirements

- o Work initiated in Study Group 11 on NGN Protocol Set 1

- o WP2/17 joint activities with Study Group 13 to progress NGN security Recommendations

Supplementary information (2)
NGN work items underway in Study Group 13

o The following tables shows the current NGN related work items underway in Study Group 13. Where applicable the NGN Focus Group (FGNGN) deliverable which relates is indicated.

o The work items with an asterisk are being developed jointly with Study Group 19 (Mobile telecommunication networks)

NGN work items underway in Study Group 13

Subject	Recommendation	Timing	FGNGN deliverable
NGN release 1 description	Y.NGN-R1	2006-07	
Supplement: NGN release 1 scope	NGN-R1 scope	2006-07	OD-00253
VPN service capabilities in NGN mobile environment	Yngn-vpn	TBD	
MPLS-based mobility and QoS capability for NGN services	Y.mpls-mob	TBD	
Requirements and framework allowing accounting, charging and billing capabilities in NGN	Y.ngn-account	2006-12	
NGN release 1 requirements	Y.NGN-R1-Reqts (Y.NGN-GRQ)	2006-07	OD-00252
NGN multicast service capabilities with MPLS-based QoS support	Y.NGN-mcast	TBD	
NGN multicast service framework	Y.ngn-mcastsf	TBD	
UPT service over NGN	Y.ngn-upt	TBD	
IMS-based real time conversational voice services	Y.ngn-rtconv	TBD	

Targeted for completion at July 2006 meeting

NGN work items underway in Study Group 13 (cont)

Subject	Recommendation	Timing	FGNGN deliverable
NGN service requirements for ID-based applications	Y.idserv-reqts	TBD	
Open service environment capabilities for NGN applications and user services	Y.ngn-openenv	TBD	
Mobility management requirements and architecture for NGN	Y.NGN-MOB (see Recs.MMR, MMF, LMF, and HMF)	Dis-continued	OD-00246r1
Converged services framework functional requirements and architecture	Y.CSF	TBD	OD-00248r1
IMS for Next Generation Networks	Y.IFN	2006-07	OD-00245r1
PSTN/ISDN emulation architecture	Y.PIEA	2006-07	OD-00247r1
Next Generation Networks – Emergency telecommunications – Technical issues	Y.NGN-ET-Tech	TBD	
Functional requirements and architecture of the NGN	Y.NGN-FRA	2006-07	OD-00244r2

NGN work items underway in Study Group 13 (cont)

Subject	Recommendation	Timing	FGNGN deliverable
A QoS control architecture for Ethernet-based IP access network	Y.123.qos	2006-12	OD-00106
Network performance of hybrid networks in NGN	Y.NGN-NHNperf	SG12 are handling	OD-00240
General aspects of QoS and network performance in NGN	Y.NGN.QoS	SG12 are handling	OD-00166
Performance measurement and management for NGN	Y.pmm	2006-07	OD-00239r1
Requirements and architecture for resource and admission control in NGN	Y.racf	2006-07	OD-00241
FMC architecture and framework	Y.FMCArc*	TBD	
FMC general requirements	Rec.FMCReq* (Y.FMCReq)	2007-2Q	
Generic framework of mobility management for systems beyond IMT-2000	Rec.MMF*	2007-2Q	
Mobility management requirements for systems beyond IMT-2000	Rec.MMR*	2006-07	

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NGN work items underway in Study Group 13 (cont)

Subject	Recommendation	Timing	FGNGN deliverable
Fixed-Mobile convergence with a common IMS session control domain	Rec.FMC-IMS*	2007-2Q	
FMC service scenario by using PSTN as the fixed access network for UMTS network	Rec.FMC-PAU*	2007-2Q	
Location mobility management framework	Rec.LMF*	2007-2Q	
Handover management framework	Rec.HMF*	2007-2Q	
General requirements for call server based PSDN/ISDN emulation	Y.csem	2006	
Network evolution to NGN	Y.nev	2007	OD-00257
PSDN/ISDN evolution to NGN	Y.piev	2006	OD-00258
PSTN/ISDN emulation and evolution	Y.emsim	2006	OD-00259
Web services based NGN convergence service scenario	Y.wsconv	2006	

NGN work items underway in Study Group 13 (cont)

Subject	Recommendation	Timing	FGNGN deliverable
NGN capability to support convergence terminals for multiple network and service provider environment	Y.ctmp	2006	
Framework of Ipv6 multi-homing for NGN	Y.ipv6multi	2006-07	
Service requirements and functional capabilities of Ipv6-based NGN	Y.ipv6req	2006-07	
Signaling requirements for QoS support in NGN using IPv6	Y.ipv6sig	2006-07	
NGN terminology for release 1	Y.NGN-R1-Term	2006-07	OD-00261
General requirements of future packet-base networks	Y.FPBN-req	2006-07	OD-00268
High level architecture of future packet based networks	Y.FPBN-arch	2006-07	OD-00269
NGN Security requirements	Y.NGN Security	2006-07	OD-00254 OD-00255
NGN Authentication	Y.NGN Authentication	2006-07	

Supplementary information (3)
NGN-GSI Topic areas / study questions

NGN-GSI topic area	SG 13	SG 11	SG 19	Others
1. Project and Scope	Q.1 (WP 1) Q.11 (WP 1)			
2. Architecture	Q.3 (WP 2:Overall) Q.6 (WP 2:FMC) Q.9 (WP 2:IPv6) Q.10 (WP 2:Satellite)	Q.1 (WP 1: Architectures)	Q.1 (Net. Arch.) Q.2 (Mobility) Q.5 (Converg.)	Q.29/16 (MM Mobility)
3. Requirements, capabilities and scenarios	Q.2 (WP 3) Q.8 (WP 3)			
4. QoS and NP	Q.4 (WP 4)	Q.5 (WP 2 :Resource)		SG 12
5. Service control and protocols		Q.3 (WP 2 :Session)		
6. Management and OAM			Q.2 (Mobility)	SG 4, NGNMFG
7. Security	Q.15 (WP 2)			SG 17 (WP 2)
8. NNAR inc. ID	Q.2 (WP 3)		Q.3 (IMT2000)	SG 2 (Q.1)
9. Tariffing and accounting	Q.2 (WP 3)			SG 3
10. Interworking and evolution	Q.7 (WP 3)			

Supplementary information (4)
NGN activities of some of the other involved study groups

The following slides provide an overview of the NGN related activities of ITU-T Study Groups 4, 11, 15, 16 and 19

ITU-T Study Group 4
Telecommunication Management

o Responsible for NGN interfaces to support FCAPS* management, including architecture, functional requirements, protocol-neutral and protocol-specific information models, and protocols

o Q8/4 is focal point for the management of NGN and also hybrid networks

o At request of the NGN Focus Group, established the NGN Management Focus Group in Sept 2004 to support NGN Release 1

*FCAPS - Fault, Configuration, Accounting, Performance, and Security

ITU-T Study Group 4
NGN Management Focus Group (NGNMFG)

o Based on collaboration with Study Group 4 partner SDOs, forums, and consortia (initially 8)

o Focused on the following FCAPS management interfaces:

- Network Element – Management System
- Management System – Management System
- Human – Machine

o Primary deliverable: NGN Management Specification Roadmap identifying relevant work from NGNMFG collaborators

(Further information on Study Group 4 activities can be found at http://www.itu.int/ITU-T/studygroups/com04/index.asp)

ITU-T Study Group 11
Signalling requirements and protocols

o Based on NGN Release 1 requirements defined by Study Group 13, as well as other 'beyond-Release 1' requirements that are considered independent from the viewpoint of protocols, a Protocol Set 1 architecture and requirements document is being developed by Study Group 11 under the leadership of Q 1/11. This will define the scope of Protocol Set 1, including a protocol architecture that provides a physical realization of the NGN and will illustrate the interfaces to which protocols are to be defined for the Protocol Set.

ITU-T Study Group 11 (cont)

o **ITU-T NGN-Protocol Set 1** will define protocols for the support of:

- Network to Network Interface (NNI) session control in Q 3/11

- User to network Interface (UNI) session control in Q 3/11

- Resource Control Interfaces in Q 5/11

- Network Attachment Interfaces in Q 7/11

o **Deliverables of NGN-Protocol Set 1** are targeted for completion by 4Q2006.

(Further information on Study Group 11 activities can be found at http://www.itu.int/ITU-T/studygroups/com11/index.asp)

ITU-T Study Group 15
Optical and other transport network infrastructures

o **Focal point** in ITU-T is for the development of standards on optical and other transport network infrastructures, systems, equipment, optical fibers, and the corresponding control plane technologies to enable the evolution toward intelligent transport networks. This encompasses the development of related standards for the customer premises, access, metropolitan and long haul sections of communication networks.

o **Lead SG** for:

- Access Network Transport (ANT)
- Optical Technology

ITU-T Study Group 15 (Cont)
Study Group Structure

o **WP 1/15   Optical and metallic access network**
  - Lead study activities on Access Network Transport standards
  - Access network related standards. (B/G-PON and xDSL)

o **WP 2/15   Optical transport network technology**
  - Optical transport network Layer 1 related standards.
    (Optical fibres & cables, terrestrial and submarine systems, interfaces, components & subsystems)

o **WP 3/15   Optical transport network structure**
  - Lead study activities on Optical Technology standards
  - Optical transport network structure related standards.
    (Network Architecture; network protection/restoration, interworking, synchronization; signal & frame structure, interfaces; network management; → SDH, ASON)

Rec.Y.2001 defines NGN as "A packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies, and in which service-related functions are independent from underlying transport-related technologies.

It enables unfettered access for users to networks and to competing service providers and/or services of their choice."

★ Broadband Access solutions to support NGN services

HomePNA, ADSL, VDSL, B-PON, G-PON

★ Transport networks to support Packet-based network.

MPLS, Ethernet networking, SDH, OTN, GFP

ITU-T Study Group 15 (Cont)
Public relations coordination

o **Standards collaboration**
- **ATIS**, IEC, IEEE, IETF, MEF, OIF, TMF
- SG4(TMN), SG6(Outside plant), SG13(NGN)

o **Interoperability** event
- 'B/G-PON Interoperability demonstration at SUPERCOMM 05' ; 7-9 June 2005, Chicago

o **Workshops**
- 'Opportunities and Challenges in Home Networking' ; 13-14 October 2005, Geneva
- 'NGN and its Transport Networks' ;
  20-21 April 2006, Kobe, Japan

ITU-T Study Group 15 (Cont)
NGN Workshop and NGN-GSI in Kobe, Japan

o Workshop on "**NGN and its Transport Networks**" will be organized by SG15 and SG13

o Venue: International Conference Center Kobe,

  Kobe, Japan

o **ITU-T Workshop website for online-registration**

  http://www.itu.int/ITU-T/worksem/ngn/200604/p-info.pdf

o Date: **April 20-21, 2006**

o Rapporteurs group meetings on NGN-GSI

o Rapporteurs group meetings on "Ether networking and MPLS", and "Transport Management and ASON"

  • Date: **April 22 -27, 2006**

神戸（**Kobe**）

ITU-T Study Group 16
Multimedia Terminals, Systems and Applications

o Mandate (2005-2008):
Studies related to MM service capabilities (including those supported by NGN):

- MM Terminals, systems (including network signal processing equipment, MCU, GWs, GKs, Modems and Facsimile)

- Protocols and signal processing (media coding)

o Lead Study Group on:

- MM Terminals, systems and applications

- Ubiquitous applications ("e-everything")

ITU-T Study Group 16 (cont)

o MM Service and Applications aspects of NGN are included in the relevant questions

o Specific MM in NGN activities (1/4):
- Q 11/16 Voiceband Modems and Protocols:
    — Support of legacy terminals and services (PSTN/ISDN)
- Q 21/16 MM Architecture and Q 22/16 MM Applications and Services (*):
    — MM Terminals: Project "H.325"on a 3rd Generation of MM System Protocols (Requirements)
    — MM Architecture
    — Multicast and streaming services (IPTV)
    — Home Networking (Architecture)

(*) Joint meeting with Q 2/13 and Q 3/13

ITU-T Study Group 16 (cont)

o Specific MM in NGN activities (2/4):
  - Q 23/16 Media coding(*):
    —Requirements for MM Convergence Codec in NGN:
      o Concept of "downloadable " codecs ("H.325")
      o QoS Aspects
      o Guidelines for the use of codecs in relation with applications
    —Latency in NGN:
      o Possible new class of services in Rec. Y.1541 with less latency
      o Standards to measure latency in video and audio systems
      o Possible guidelines to reduce latency in practical systems

   (*) Joint meeting with Q 2/13 and Q 8/13

ITU-T Study Group 16 (cont)

o Specific MM in NGN activities (3/4):

- Q 26/16: Accessibility to MM Systems and Services

  —Accessibility Checklist for standards work applied to MM in NGN

  —NGN Release 1 Requirements include accessibility (January 2006)

    o Real-time text in conversation
    o Full motion video
    o Services of importance for people with disabilities
    o Emergency calls with real-time text and video
    o Relay service connection for translation text <> speech or sign language<>speech

→ *For more information on accessibility studies in SG16, see workshop website:www.itu.int/ITU-T/worksem/ngn/200603/ under "Related Topics"*

ITU-T Study Group 16 (cont)

○ Specific MM in NGN activities (4/4):
- Q 29/16 Mobility for MM Systems and Services (*)
  — Requirements to deploy service mobility in "H.325"
  — Analysis of Service control variants (Home Centric & Visited Centric) and possible extension to cover both scenarios in NGN
  — Standardization of mobility related protocols on application layer ("H.325") not supported by NGN transport and service stratum
  — Deliverables:
    - ITU-T Technical notes on usage of H.510 protocol for the support of H.323 based MM Services within GPRS/IMT200 networks
    - 1st Draft Rec H.mmsm (Service Mobility for new MM Service Architecture)
- (*) Joint meeting with Q 6/13 and Q 2/19, Q 5/19

(Further information on Study Group 16 activities can be found at http://www.itu.int/ITU-T/studygroups/com16/index.asp)

ITU-T Study Group 19
Mobile telecommunication networks

o 4 closely related co-operating Questions:

- Q.2/19 Mobility management

- Q.5/19 Convergence of evolving IMT-2000 networks with evolving fixed networks

- Q.6/13 NGN mobility and fixed-mobile convergence

- Q.19/16 Mobility for Multimedia Systems and Services

ITU-T Study Group 19
Coordinated Joint Deliverables

o Rec.MMR: Mobility Management Requirements (Stage 1)

o Rec.MMF: Mobility Management Framework (Stage 2)

o Rec.LMF: Location Mobility Management Framework (Stage 2)

o Rec.HMF: Handover Management Framework (Stage 2)

o Rec.FMC Req: FMC general requirements from NGN point of view, identifying the fundamental characteristics, requirements and capabilities that a FMC should be able to support

o Rec.FMC PAU: FMC service scenario by using PSTN as the fixed Access network for UMTS network

o Rec.FMC IMS: Stage 2 of fixed mobile convergence with a common IMS session control domain

(Further information on Study Group 19 activities can be found at http://www.itu.int/ITU-T/studygroups/com19/index.asp)