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**ITU-D Regional Development Forum  
for the Arab Region:  
“NGN and Broadband, Opportunities and Challenges”**

**ITU-T Standardization on NGN  
and Future Networks (FN)**

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## **Overview**

- NGN
- ITU-T NGN Milestones
- ITU-T SG 13
- FG-Future Networks
- ITU-T SG 11
- NGN-Global Standards Initiative (GSI)
- Future Actions



## NGN : The Transformed Network



- Always on
- Anytime, anywhere and in any form
- Voice and multimedia
- Self service, intuitive
- Simple for the end user
- Secure, trusted and reliable

 International  
Telecommunication  
Union

Committed to connecting the world

## NGN - ITU-T Definition (Y.2001)

### Next Generation Network (NGN):

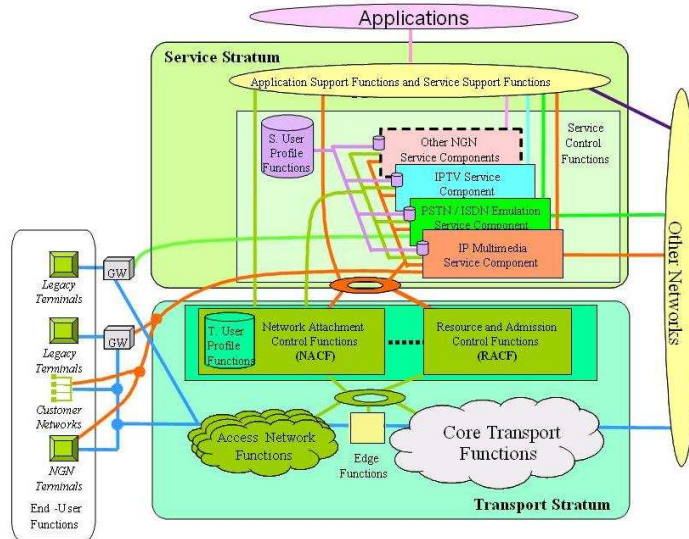
“A **packet-based** network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.”

- No restricted scope if use any types of Packet
- No limited time line whenever use any Packet

 International  
Telecommunication  
Union

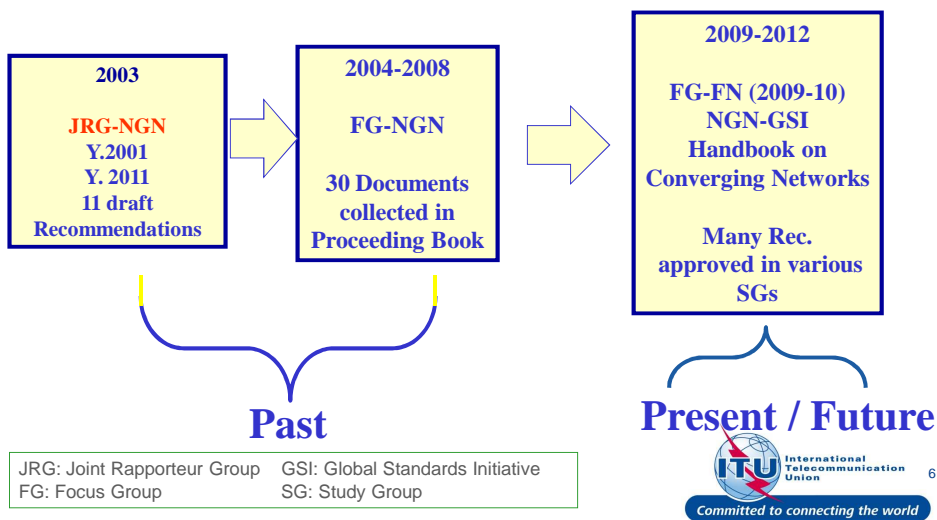
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## ITU NGN Architecture



\* Note: Gateway (GW) may exist in either Transport Stratum or End User Functions.

## ITU-T NGN Milestones



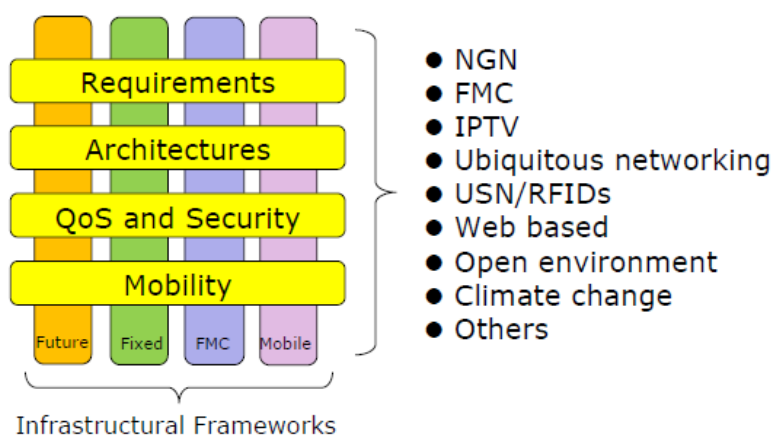
## ITU-T Study Group 13

### Future Networks including Mobile and NGN

- Study Group 13 leads ITU's work on standards for next generation networks (NGN)
- Recent work by SG 13 includes a standard (ITU-T Recommendation) to provide interworking between two dominant technologies in next generation networks (NGN), Ethernet and MPLS (multiprotocol label switching).
- SG 13 has also done much work in the field of VPN in particular on standards that will allow VPNs to work over all kinds of networks - optical, MPLS, IP etc.



## Structure of ITU-T Study Group 13



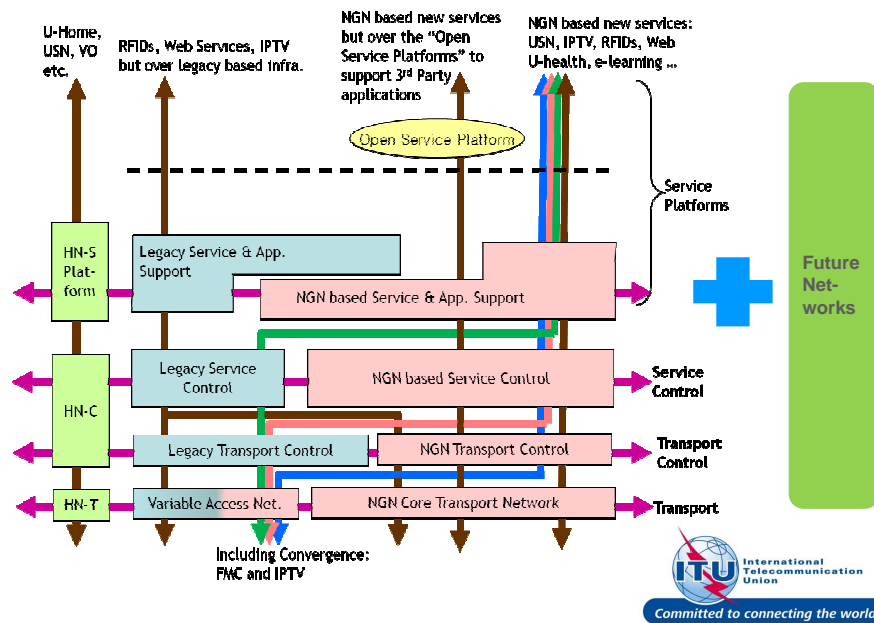
## ITU-T Study Group 13 – List of Questions (2009-2012)

Q 1/13	Coordination and planning
Q 2/13	Network Terminology
Q 3/13	Requirements and implementation scenarios for emerging services and capabilities in an evolving NGN
Q 4/13	Requirements and frameworks for QoS enablement in NGN
Q 5/13	Principles and functional architecture for NGN (including ubiquitous networking)
Q 7/13	Impact of IPv6 to an NGN
Q 9/13	Mechanisms supporting multi-connections for multiple access technologies
Q 10/13	Identification of evolving IMT-2000 systems and beyond
Q 12/13	Evolution towards integrated multi-service networks and interworking
Q 13/13	Step-by-step migration to NGN networks
Q 14/13	Service scenarios and deployment models of NGN
Q 15/13	Applying IMS and IMT in developing country mobile telecom networks

## ITU-T Study Group 13 – List of Questions (2009-2012)

Q 16/13	Security and Identity Management
Q 17/13	Packet forwarding and deep packet inspection for multiple services in packet-based networks and NGN environment
Q 19/13	Distributed Service Networking (DSN)
Q 20/13	Public Data Networks
Q 21/13	Future networks
Q 22/13	Mobility Management and Fixed Mobile Convergence
Q 23/13	Cloud Computing

## Study directions of SG 13



## Services Supported

- 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

## ITU –T NGN Recommendations

Next Generation Networks	Y.2000-Y.2999
Frameworks and functional architecture models	Y.2000-Y.2099
Quality of Service and performance	Y.2100-Y.2199
Service aspects: Service capabilities and service architecture	Y.2200-Y.2249
Service aspects: Interoperability of services & networks in NGN	Y.2250-Y.2299
Numbering, naming and addressing	Y.2300-Y.2399
Network management	Y.2400-Y.2499
Network control architectures and protocols	Y.2500-Y.2599
Future networks	Y.2600-Y.2699
Security	Y.2700-Y.2799
Generalized mobility	Y.2800-Y.2899
Carrier grade open environment	Y.2900-Y.2999



## Focus Group on Future Networks (FG-FN)

- The objective of the Focus Group is to document results that would be helpful for developing Recommendations for Future Networks.
- 5 Main Deliverables
  - Vision : design goals and promising technologies
  - Terminology
  - Framework of Network virtualization,
  - Identification process in Future Networks
  - Overview of energy saving of networks
- Vision document : Finalised in December 2010
- Other documents to be stable by end of 2010
- Deliverables will be transferred to SG 13 Q.21 in Jan. 2011



## ITU-T SG 11 Role and Mandate

- 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.
- It also includes **reference signalling architectures and test specifications for NGN** and emerging networks (e.g., USN).
- SG 11 has **three lead study group responsibilities** on **signalling and protocols**, on **intelligent networks** and on **test specifications**.



## ITU-T SG 11 Main Results on NGN

- SG 11 has completed NGN Protocol Set 1 which constitute a fundamental basis for initial implementations of NGN release 1:
  - Signalling architecture for the NGN Service Control Plane (Q.3030)
  - Organisation of NGN Service User Data (Q.Sup.56)
  - Signalling requirements to support the emergency telecommunications service (ETS) in IP networks
  - NGN NNI and UNI signalling profiles (Q.3401 and Q.3402)
  - Interface control protocols for RACF (Q.3300-series)
  - NGN testing for the support of the compatibility of NGN technical equipment and services (Q.3900, Q.3901 and Q.3902)





## ITU-T SG 11 : Main Results For NGN

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- Work completed in cooperation with ITU-D for development of a handbook for deployment of packet based networks (2009)
- **Network Attachment : Control Signalling Requirements and Protocols.**
  - EAP-based security signaling protocol architecture (Q.3201)  
Note – EAP: Extensible Authentication Protocol
  - Authentication protocols for interworking among 3GPP, WiMax and WLAN in NGN (Q.3202.1)



## ITU-T SG 11 : Future Work on NGN

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- Address various additional features and consider initiating work in the scope of an NGN Protocol Set 2 (e.g., IMS, IPTV, WiMAX, RFID).
- Session control requiring further work on SIP-based profiles to improve interoperability at UNI and at NNI, as well as for supporting more services and applications
- Handbook on Testing (Q 6/11)



## ITU-T SG 11 : Future Work on NGN

- NGN network attachment and identification for support of a wider range of access technologies and mobility management requirements.
- Study on:
  - Monitoring parameters for NGN protocols
  - Service test specification for NGN
  - QoS tests specification for NGN
  - USN and RFID test specification
  - Coordination of work on Emergency Communications within an NGN environment
  - Security Coordination For NGN Protocols
- Consider, in collaboration with ISO/IEC JTC 1/SC 6 standards for end-to-end multicast



## ITU NGN-GSI

- Encompasses all NGN work across ITU-T Study Groups
- Co-located Rapporteur/SG Meetings
  - ITU-T SG 9 + 11 + 12 + 13 + 16 + 17
- Objectives
  - Address the market needs for NGN standards
  - Produce global standards for NGN
  - Further strengthen the ITU-T's leading role amongst the groups in NGN standard work
  - Keep visibility of the work spread between different technical groups in ITU-T



## ITU NGN-GSI

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- Coverage
  - Services and Capabilities for NGN
  - Functional Architectures and Requirements
  - Mobility Management and FMC
  - IPv6 application into NGN
  - End-End QoS
  - NGN Signaling with Resource Admission Control
  - Migration and Interworking aspects (inc. IWF)
  - NGN Security
  - Home Networking
  - Networked aspects of Identification services
- Next Meeting : 17 – 28 Jan 2011, Geneva
- Please contribute to the work!



## Future Actions

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- Continue remaining issues: NGN to become more stable with enriched capabilities
- More active efforts using NGN capabilities for support of convergences: ITS (Intelligent Transport Systems) and others
- ITU-T SG13 seeks "the beyond of NGN"
  - Future Networks
  - Ubiquitous Networking
  - Internet of Things
  - Others



## Useful Links

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1. SG 13 web page  
<http://www.itu.int/ITU-T/studygroups/com13/index.asp>
2. NGN GSI web page  
<http://www.itu.int/en/ITU-T/gsi/ngn/Pages/default.aspx>
3. Focus Group on Future Networks Web page  
<http://www.itu.int/en/ITU-T/focusgroups/fn/Pages/Default.aspx>
4. Handbook of Converging Networks  
<http://www.itu.int/publ/T-HDB-IMPL.07-2010/en>
5. NGN Project management tool web page  
<http://www.itu.int/ngnproject/>



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**Thank you**

