NGN Focus Group : Main Achievements

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Chairman of FG NGN

Contents

1. Overview of ITU-T NGN
2. Overview of NGN Focus Group
3. Key Features of ITU-T NGN
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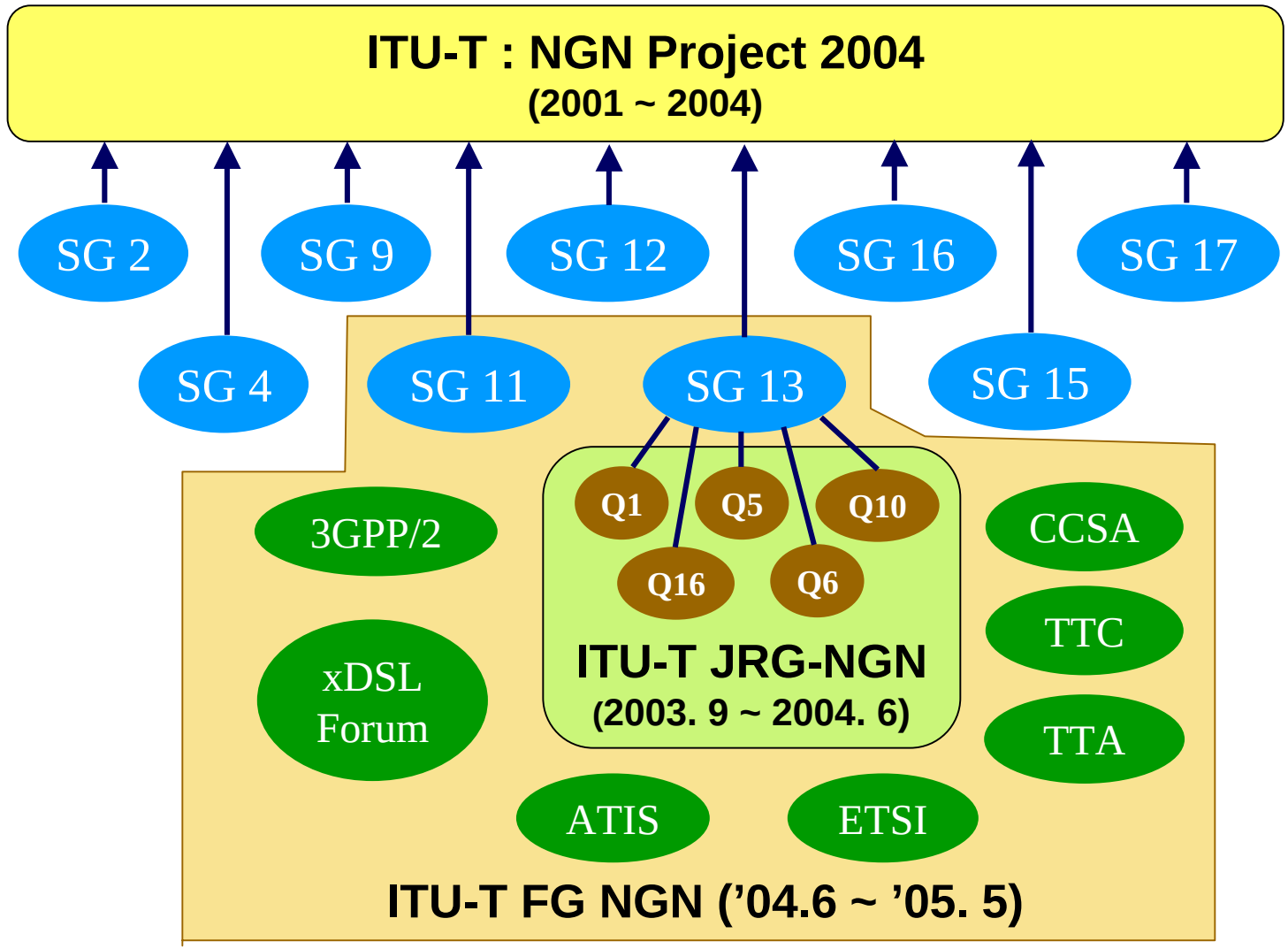
5. Key impacts of NGN Standards
6. Future Plan

NGN Standardization

ITU-T NGN WS (01 ~ 03)



NGN 2004 Project

- A new ITU Project on NGN : SG13, Nov. 2002
- Project description document has been prepared *(http://www.itu.int/ITU-T/studygroups/com13/ngn2004/index.html)*
- **Fundamental characteristics** for defining NGN
  1. **Packet-based transfer**
  2. **Separation** of control functions for bearer - call/session – service
  3. **Decoupling** of services and network, provision of open I/F
  4. Wide range of services (RT/ streaming/ non-RT/ multimedia)
  5. **BB capabilities** with e2e transparency, incl. AN utilization
  6. **Interworking** with legacy networks
  7. Generalized **mobility**
  8. Unfettered access from users to competing SPs and services

JRG on NGN

- ITU-T SG 13 launched JRG-NGN at 1st August 2003 : 3 Meetings
- Joint Special Rapporteur Group Activity within SG 13
- Focus on “Foundational Documentation of NGN” until June. 2004

Draft Recommendations in AAP

Y.NGN-Overview (Y.2001)	Overview of the NGN
Y.NGN-GRM (Y.2011)	General principles and general reference model for NGN

Deliverables for further study

Deliverables	Title
Y.NGN-GRQ	General requirements for NGN
Y.NGN- FRM	Functional requirements and architecture of the NGN
Y.NGN-CONV	Next Generation Networks – Convergence scenarios
Y.NGN-MOB	Mobility management requirements and architecture for NGN
Y.NGN-CMIP	Customer manageable IP network
Y.NGN-MIG	Migration of networks to NGN
Y.PSTN-NGN	PSTN migration to NGN

JRG on NGN

Deliverables on QoS for further study

Deliverables	Title
Y.NGN-QoS	General aspects of QoS and network performance in the NGN
Y.e2eqos.1	Requirements and framework for end-to-end QoS architecture for NGN
Y.e2eqos.2	An end-to-end QoS architecture based on centralized resource control for IP networks supporting NGN services
Y.123.qos	A QOS ARCHITECTURE FOR ETHERNET-BASED IP ACCESS NETWORK
Y.ipaqos	A QoS Framework for IP based access networks
Y.NGN-NHNperf	Network performance of hybrid networks in NGN

NGN Focus Group

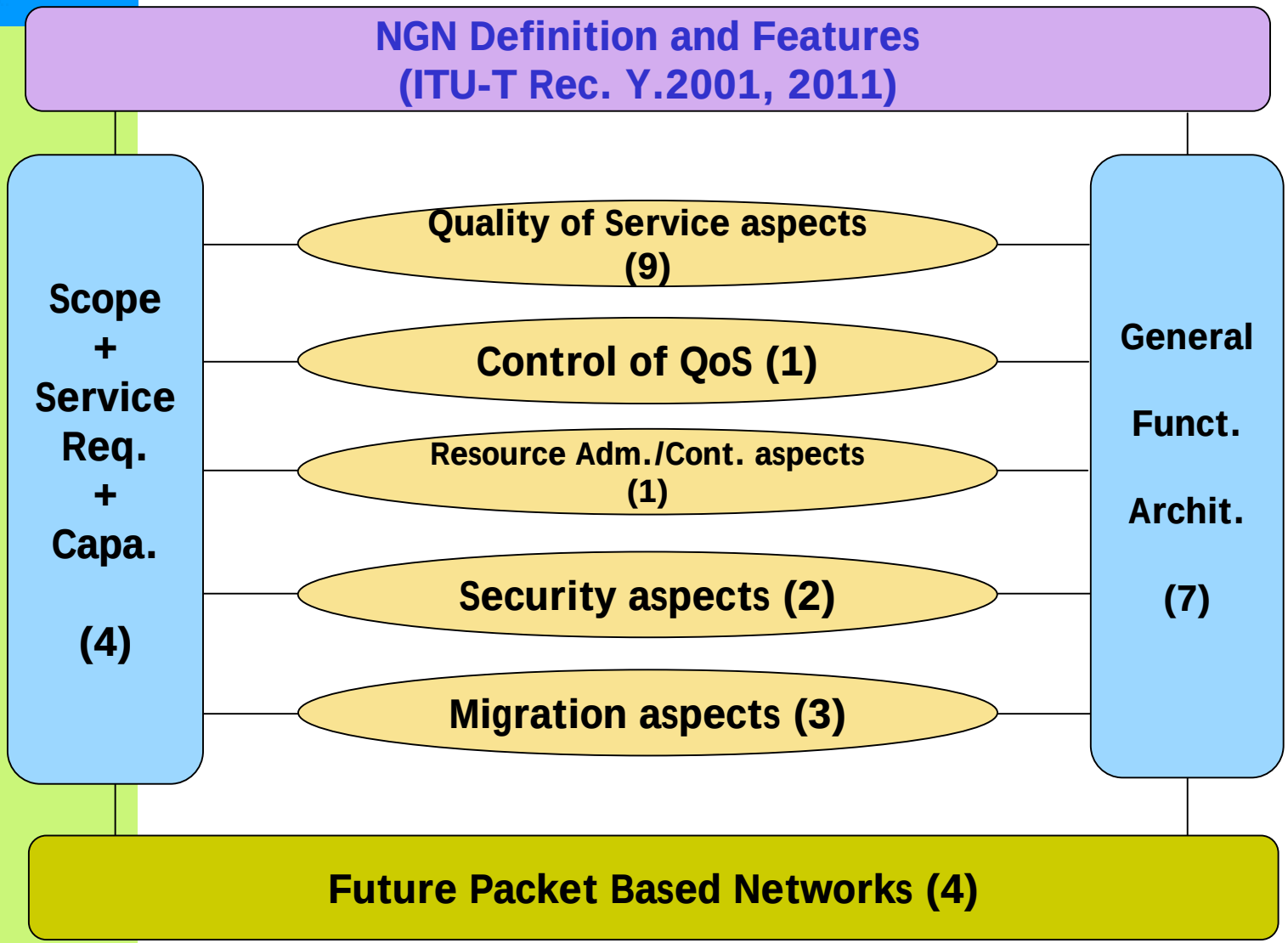
- ITU-T Director launched NGN Focus Group at June 2004
- Almost every two month meeting : 6, 7, 9, 11/2004 and 3, 5, 7, 9, 11/2005
- ITU-T SG13 (NGN SG) became parent group of FGNGN (WTSA 2004)
- Could be finished Release 1 and closed FGNGN end of 2005
- Results and Remaining works will be transferred to SGs by SG13

WG	Area	Deliverables
WG 1	SR (Service Requirements)	Development of scope, service requirements and capabilities according to Release Plan
WG 2	FAM (Functional Architecture, and Mobility)	Development of Functional Architecture in general and specific instance views including Mobility aspects
WG 3	QoS	Development of End-End QoS releated deliverables including network performance aspects
WG 4	CSC (Control & Signalling)	Development of control related standards support QoS include Resource Admission and Control aspects
WG 5	SeC (Security Capability)	Development of Security Framework under NGN environment
WG 6	Evol (Evolution)	Evolution of PSTN/ISDN into NGN
WG7	FPBN (Future Packet-based Bearer Network)	Identify problem states of current packet based network and development of Future Packet Network requirements

Statistics of NGN Focus Group

	Date/Place	Input Document	Participants
1st	June 04/Geneva	39	99
2nd	July 04/Geneva	66	66
3rd	September 04/Ottawa	141	121
4th	December 04/Geneva	125	123
5th	March 05/Jeju	174	144
6th	April 05/Geneva	142	144
	Total	**687**	**697**

FGNGN Deliverables : Total 31



FGNGN Deliverables : Total 31

(1) Release Independent Deliverables

WG	Deliverable Title	Current Draft	Target Date	Cat.	Stat	Target SG*
1	NGN release-independent requirements	(none)	4Q05	0/1/1	P	13
1	NGN general services and capabilities (release independent)	(none)	4Q05	0/1/1	P	13
2	Customer Manageable IP Network	FGNGN-OD-00149	2Q05	0/2/1	S	13
3	General aspects of QoS and network performance in NGN (TR-NGN.QoS)	FGNGN-OD-00129	3Q05	0/1/1	D	13/12
3	Network performance of non-homogeneous networks in NGN (TR-NGN.NHNperf.).	FGNGN-OD-00130	3Q05	0/1/1	D	13/12

FGNGN Deliverables : Total 31

(2) Release 1 Deliverables

WG	Deliverable Title	Current Draft	Target Date	Cat.	Stat	Target SG*
1	NGN Release 1 Scope	FGNGN-OD-00141	2Q05	1/1/1	S	13
1	NGN Release 1 requirements	FGNGN-OD-00142	3Q05	1/1/1	D	13
2	Requirements & Architecture for NGN (FRA)	FGNGN-OD-00146	3Q05	1/2/1	S	13
2	Functional Requirements for NGN Mobility (FRMOB)	FGNGN-OD-00147	3Q05	1/2/1	D	13 /19
2	IMS for Next Generation Networks (IFN)	FGNGN-OD-00148	2Q05	1/2/1	S	13
3	A QoS control architecture for Ethernet-based IP access networks (TR-123.qos)	Approved	Mar. 05	1/2/1	A	13
3	Multi Service Provider NNI for IP QoS (TR-msnniqos)	FGNGN-OD-00107	3Q05	1/2/1	D	13

FGNGN Deliverables : Total 31

(2) Release 1 Deliverables

WG	Deliverable Title	Current Draft	Target Date	Cat.	Stat	Target SG*
3	Requirements and framework for end-to-end QoS in NGN (TR-e2eqos.1)	FGNGN-OD-00127	4Q05	1/2/1	D	13
3	A QoS architecture for Ethernet networks (TR-enet)	FGNGN-OD-00131	4Q05	1/2/2	D	13
3	Resource and admission control functions(TR-racf)	FGNGN-OD-00128	3Q05	1/2/2	D	13
3	A QoS Framework for IP-based access networks (TR-ipaqos)	FGNGN-OD-00113	4Q05	1/2/1	D	13
3	Performance measurement and management for NGN (TR-pmm)	FGNGN-OD-00126	3Q05	1/2/1	D	12
3	Algorithms for Achieving End to End Performance Objectives (TR-apo)	FGNGN-OD-00135	4Q05	1/2/2	D	12
4	Signalling requirements for IP QoS TRQ.IP QoS.SIG.CS1	Q Series Supplement 51	Dec. 2004	1/2/2	A	11
5	Security Requirements for R1	FGNGN-OD-00132	1Q05	1/2/1	S	17
6	Evolution of Networks to NGN	FGNGN-OD-00138	3Q05	1/2/1	D	13
6	PSTN/ISDN evolution to NGN	FGNGN-OD-00139	3Q05	1/2/1	D	13
6	PSTN/ISDN emulation and simulation	FGNGN-OD-00140	3Q05	1/2/1	D	13

FGNGN Deliverables : Total 31

(3) Beyond Release 1 Deliverables

WG	Deliverable Title	Current Draft	Target Date	Cat.	Stat	Target SG*
2	Functional Requirement for Soft Router	FGNGN-OD-00145	**TBD**	2/2/1	D	13
2	Digital Multimedia Broadcast	FGNGN-OD-00144	**TBD**	2/2/1	P	13
2	Converged Services Framework	FGNGN-OD-00150	**TBD**	2/2/1	P	13
5	Guidelines for NGN Security	FGNGN-OD-00133	2Q 05	**TBD**	D	17
7	Problem Statement	FGNGN-OD-00158	Apr. 2005	2/1/1	A	13
7	Requirements	FGNGN-OD-00153	3Q05	2/1/1	S	13
7	High Level Architecture	FGNGN-OD-00154	4Q05	2/2/1	D	13
7	Candidate Technologies	**TBD**	4Q05	2	P	13

Definition of NGN

ITU-T

Rec.

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.**

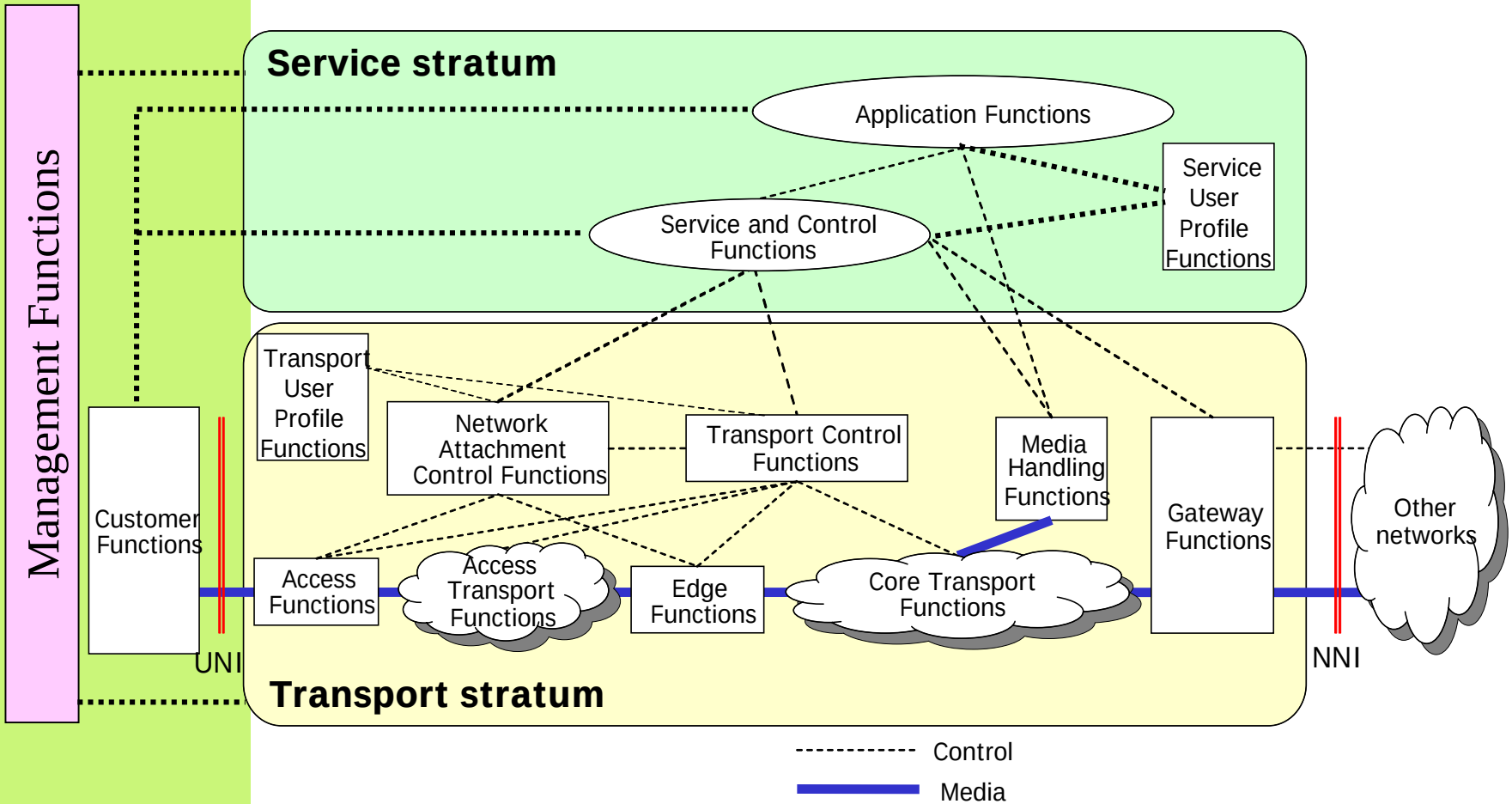
It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports **generalized mobility** which will allow consistent and ubiquitous provision of services to users.

Key Features of NGN

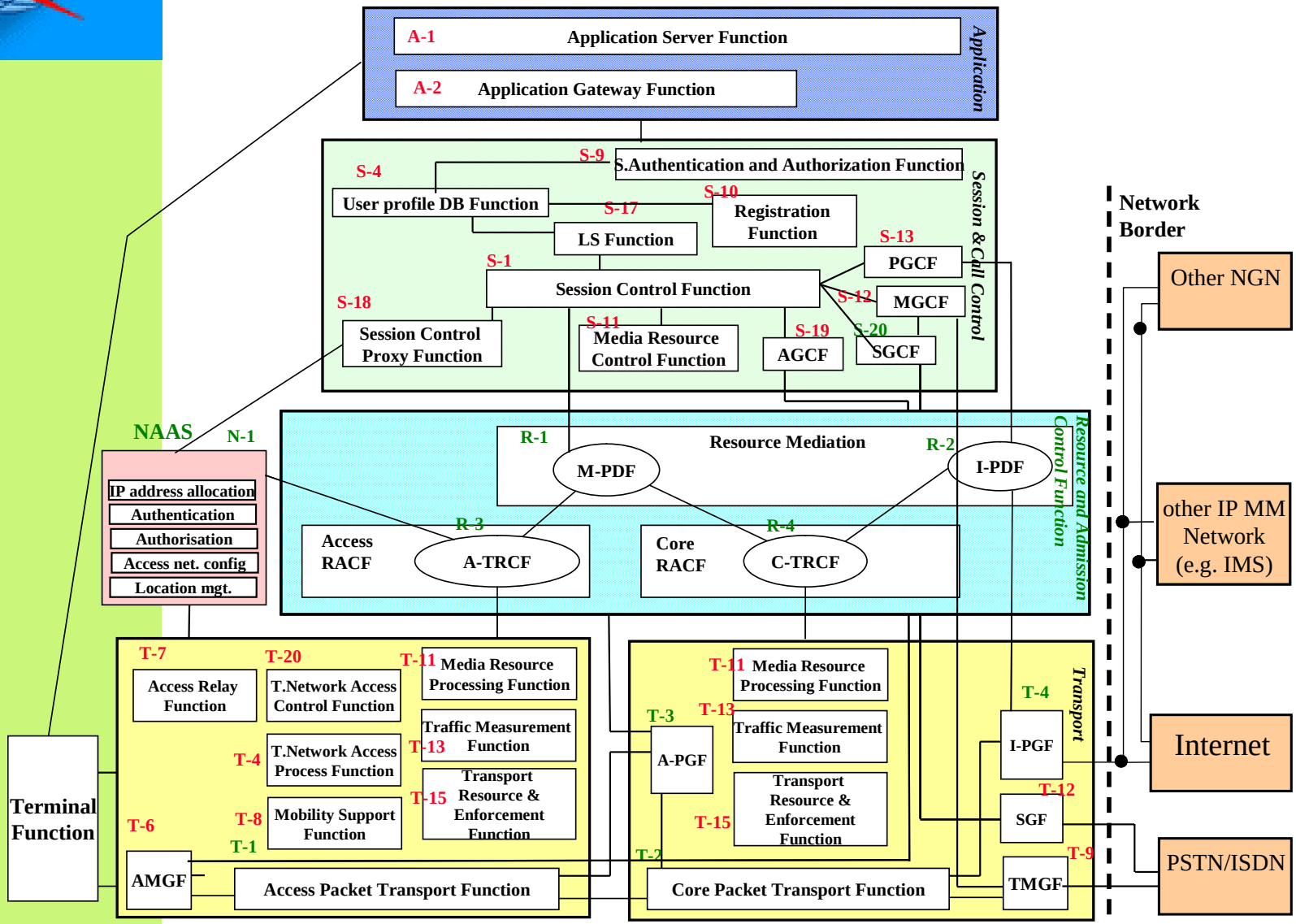
- Packet-based transfer;
- Separation of control functions among BC, call/session, and application/ service;
- Decoupling of service provision from transport;
- Support for a wide range of services based on service building blocks;
- Broadband capabilities with end-to-end QoS;
- Interworking with legacy networks via open interfaces;
- Generalized mobility;
- Unfettered access by users to different service providers;
- A variety of identification schemes;
- Unified service characteristics for the same service as perceived by the user;
- Converged services between fixed/mobile;
- Independence of service-related functions from underlying transport technologies;
- Support of multiple last mile technologies;
- Compliant with all regulatory requirements (e.g. emergency, privacy, lawful interception, etc.)

Overall NGN Architecture

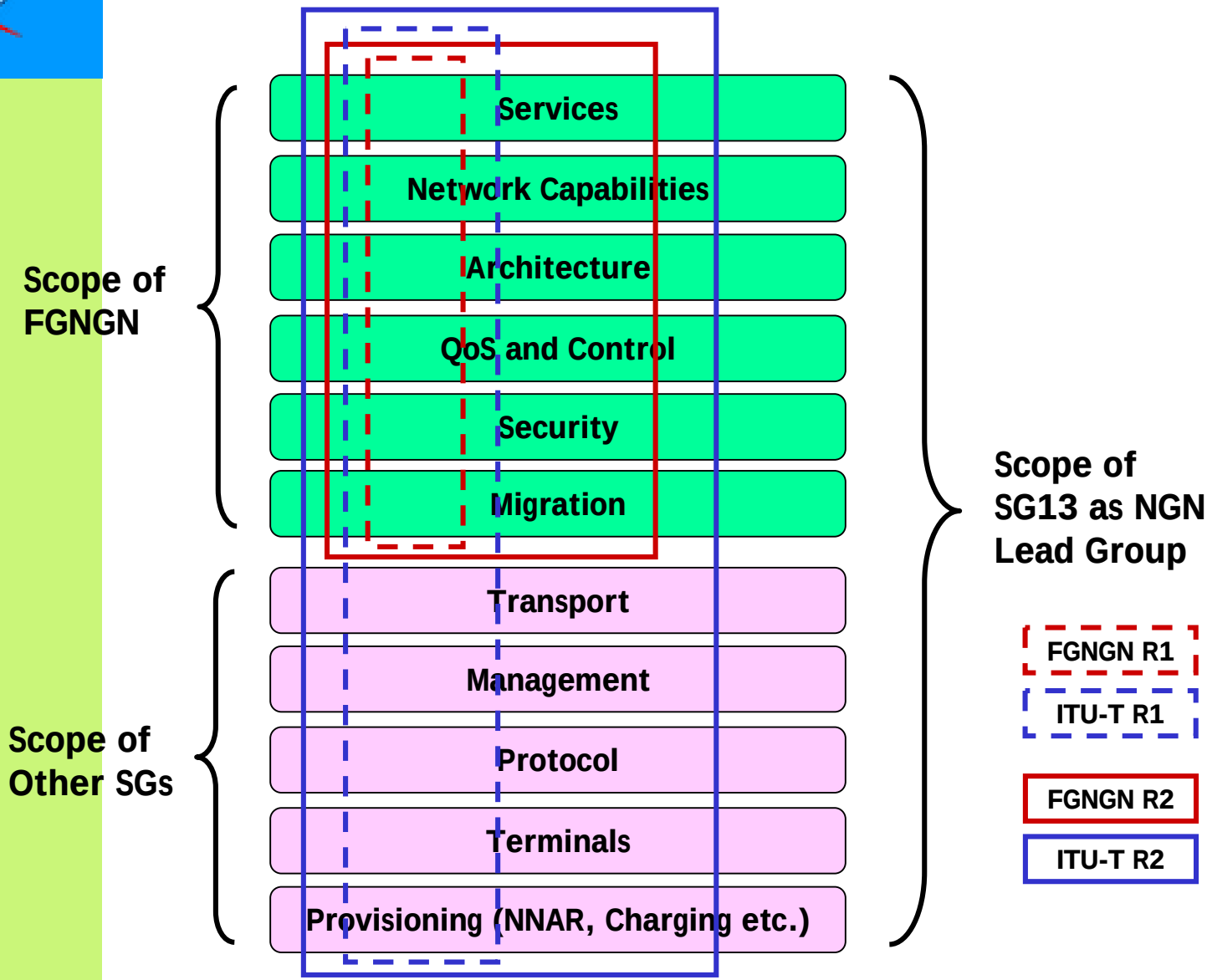
Overall NGN Architecture { **General Functional Architecture**; **Functional Architecture for specific instances (e.g. IMS based NGN)**



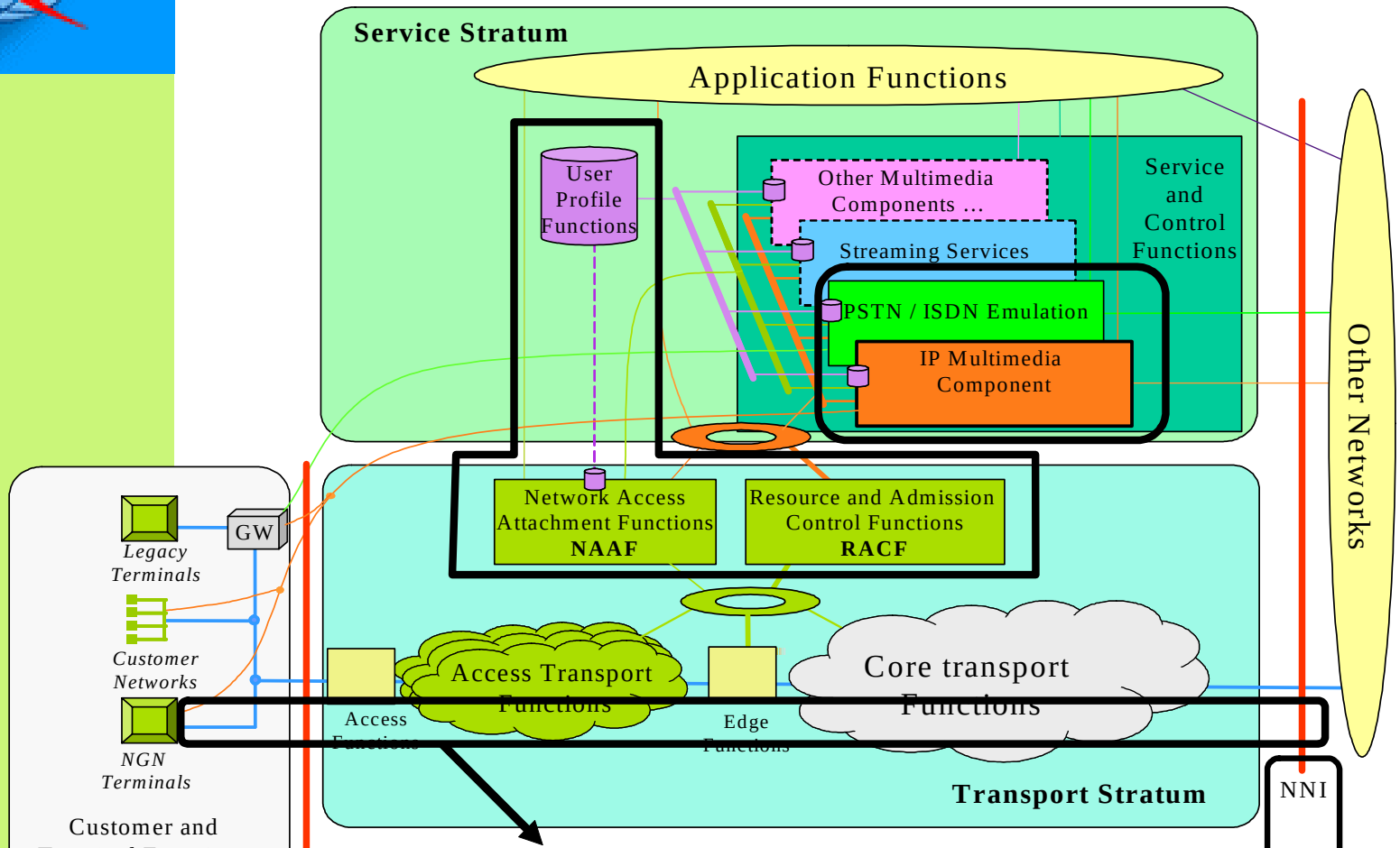
Functional Architecture Model



NGN Release between ITU-T and FGNGN



FGNGN Release 1 Coverage



FGNGN Release 1 Scope and Services

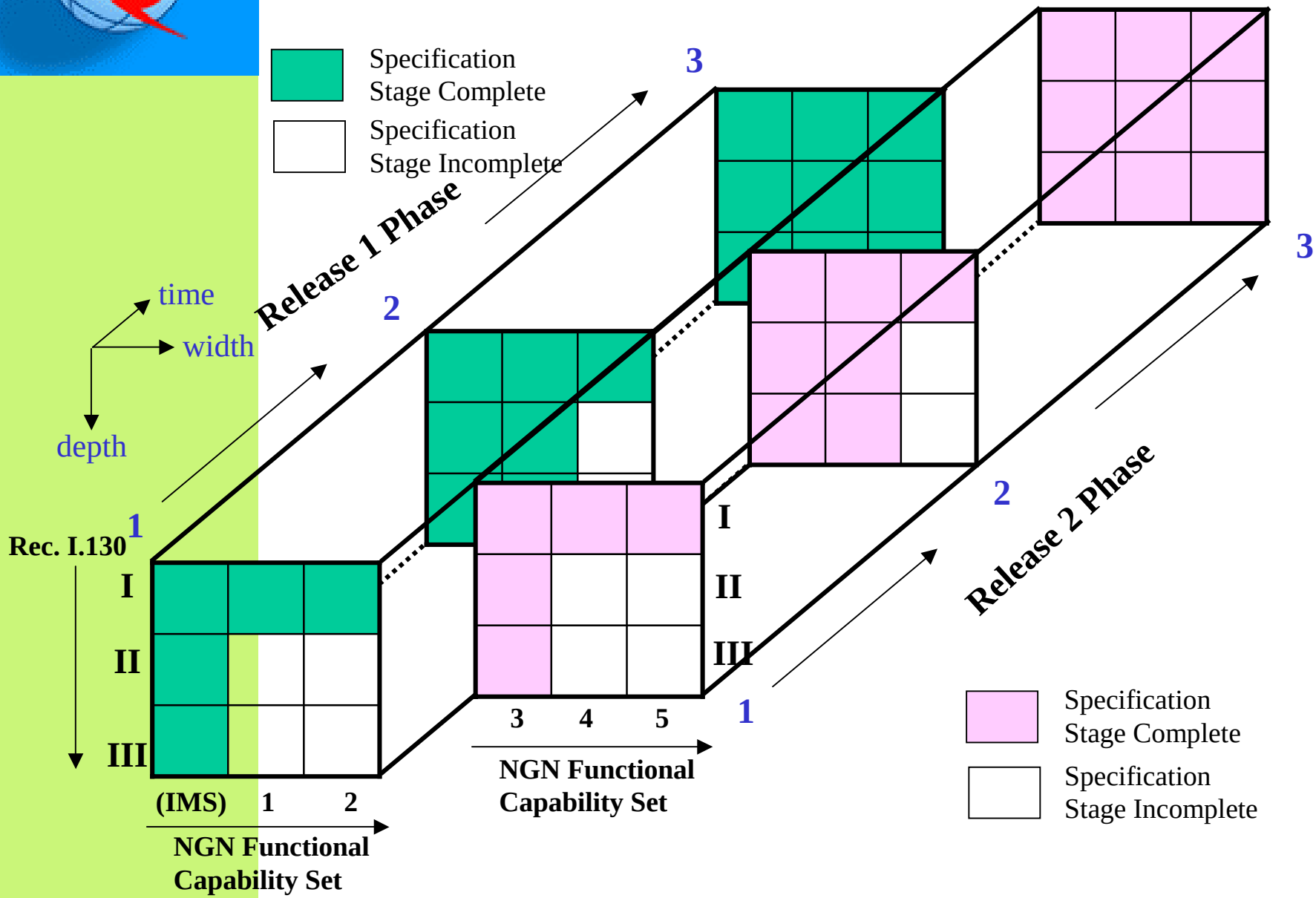
Service Types

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

Service Capabilities

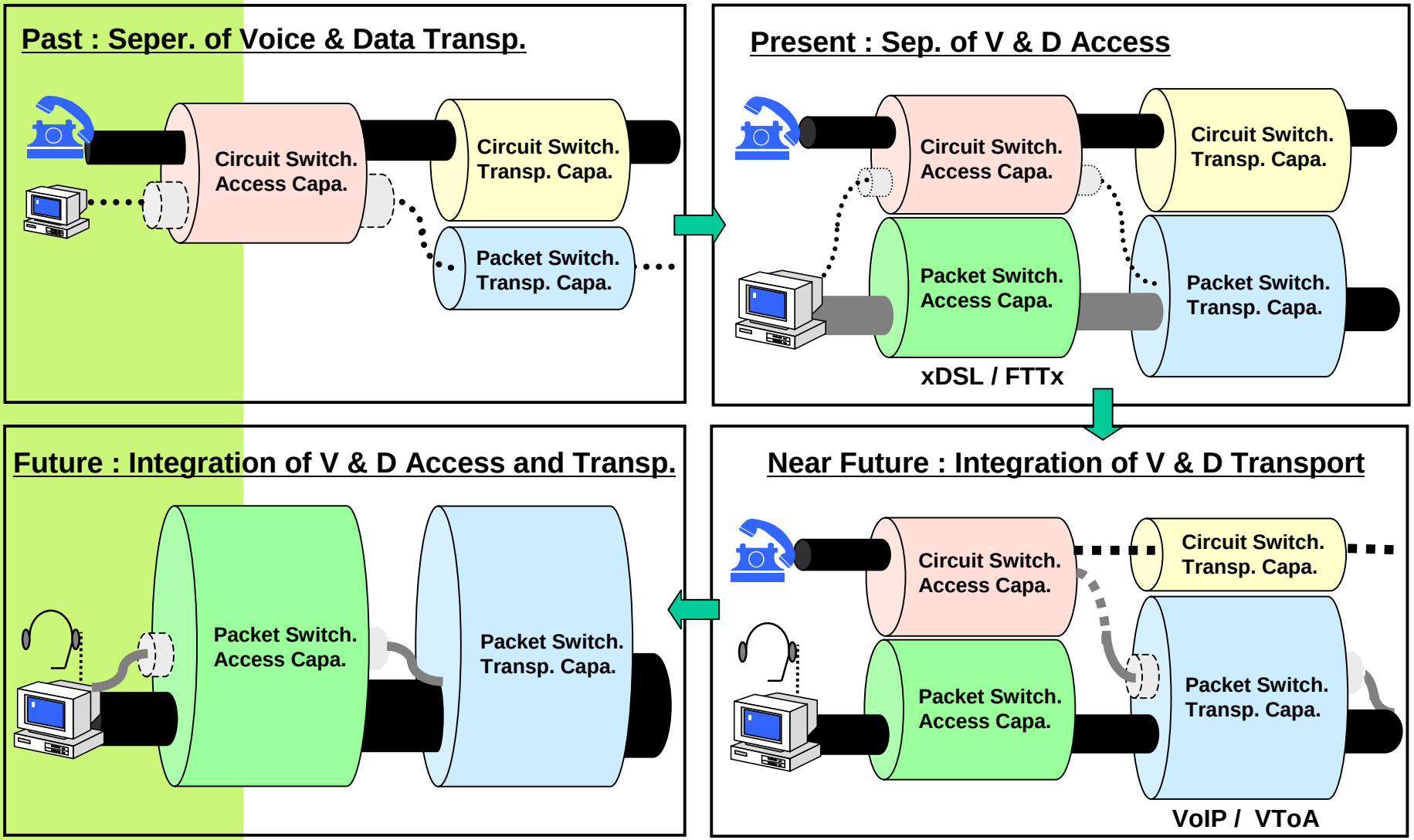
- Basic network capabilities
- Service support capabilities
  - Open Service Environment
  - Service Enablers
  - PSTN/ISDN Emulation support
- Public service support capabilities

NGN Release Processing Plan



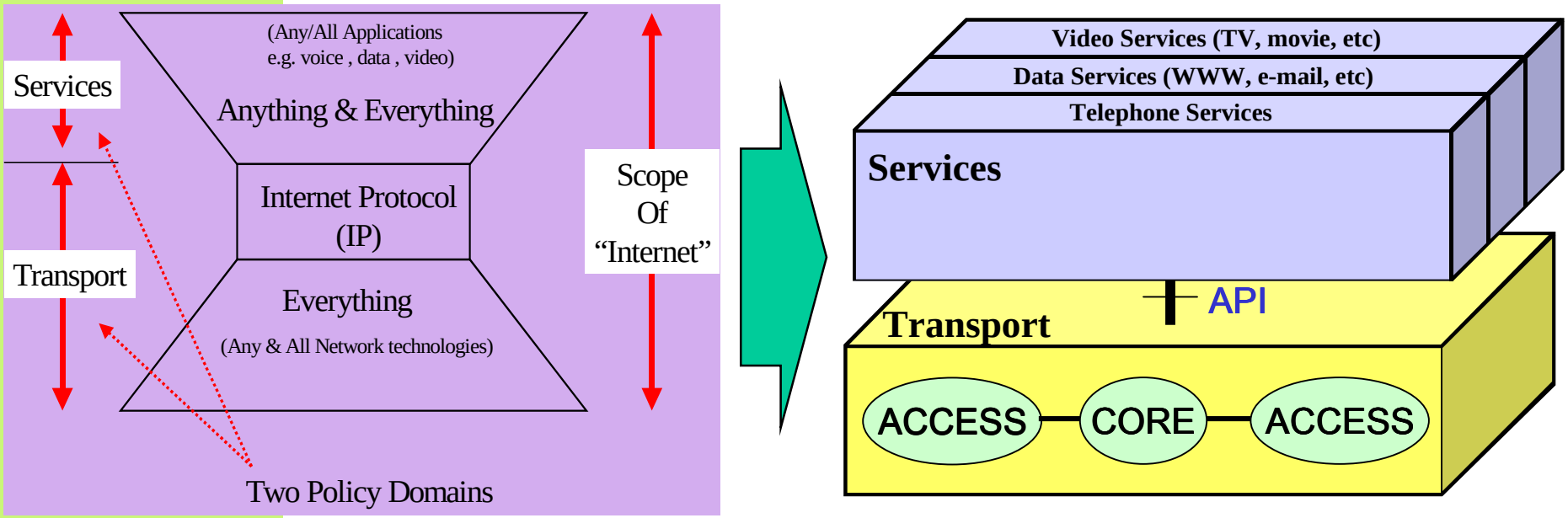
Packet based Environments

Expected Future Transition Trend : End-End Packets



Separation btw. Services and Transport

- Key Feature of IP : Anything over IP, IP over Everything
- Most of Services using IP as their connection platform
- Most of Networks supporting transport of IP packet
- IP plays a key role to separate Services with Transport



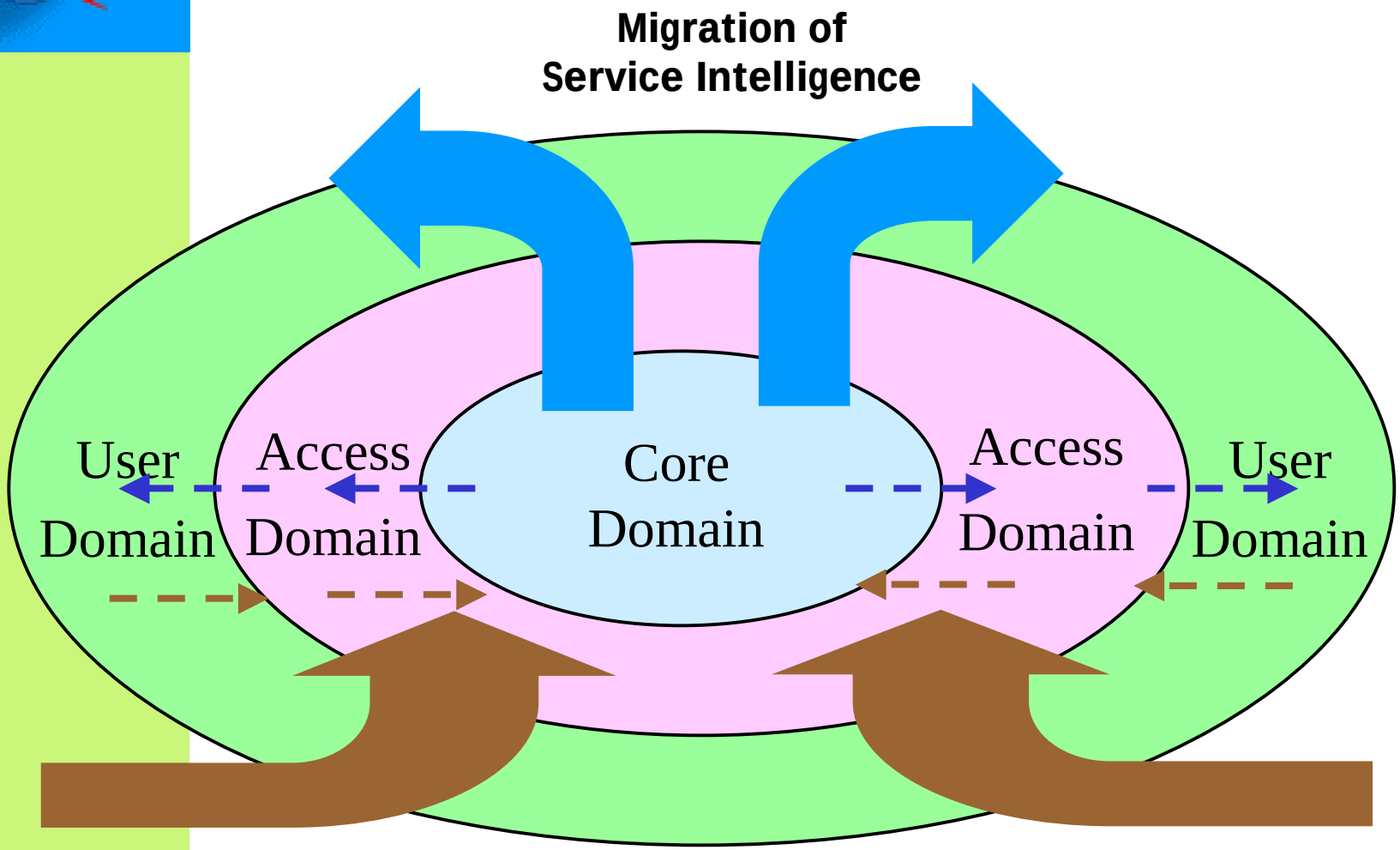
Change of Requirements (1)

Original Requirements	New Requirements
E2E transparency	Packet inspection/NATs
Peer-to-peer	NATs/Firewalls/servers
Connectionless	MPLS
Best Effort	Real-time demands Bandwidth demands
User back-off	QoS "guarantee"
Network empowerment	User Empowerment
No flow state	Flow state
Trust	Hackers everywhere
Static Addresses	DHCP, Mobility

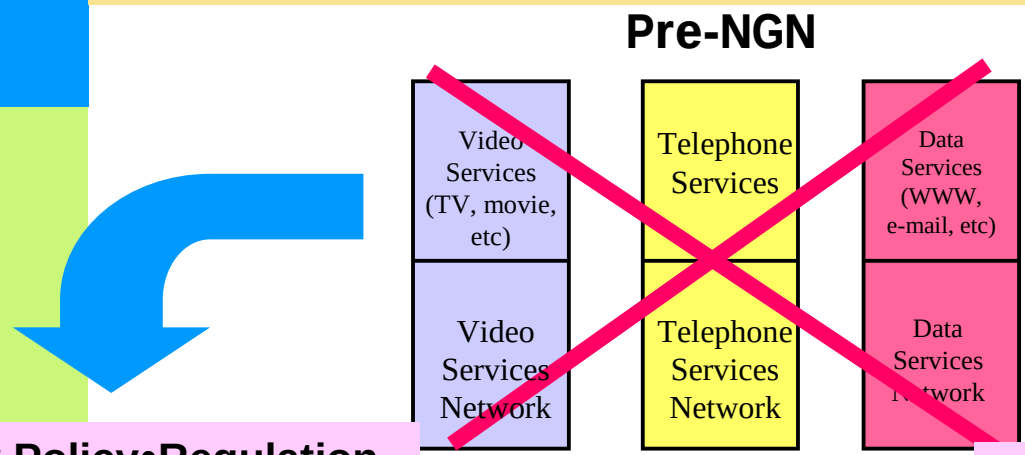
Change of Requirements (2)

Original Requirements	New Requirements
Fairness	QoS (implies deliberate unfairness)
Terminal-to-host, BE	Mass public residential services, multi-terminal multi-QoS
Flat network	Access & Core Domains
Layer Independence	Inter-layer coupling?
Simple protocol layering	Protocol maze
Research/Defense use	Commercialization, competition, consumer choice

Change of Environments (1)

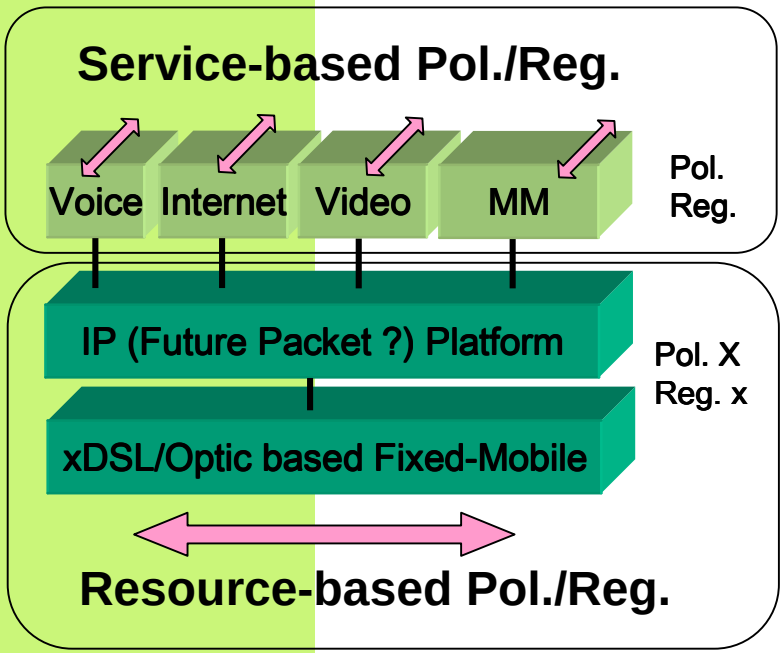


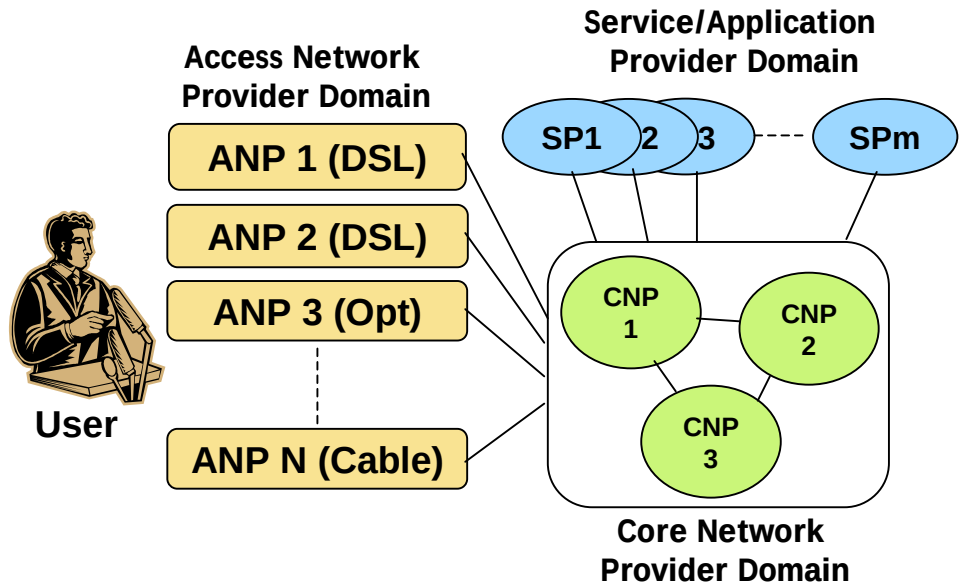
Change of Environments (2)



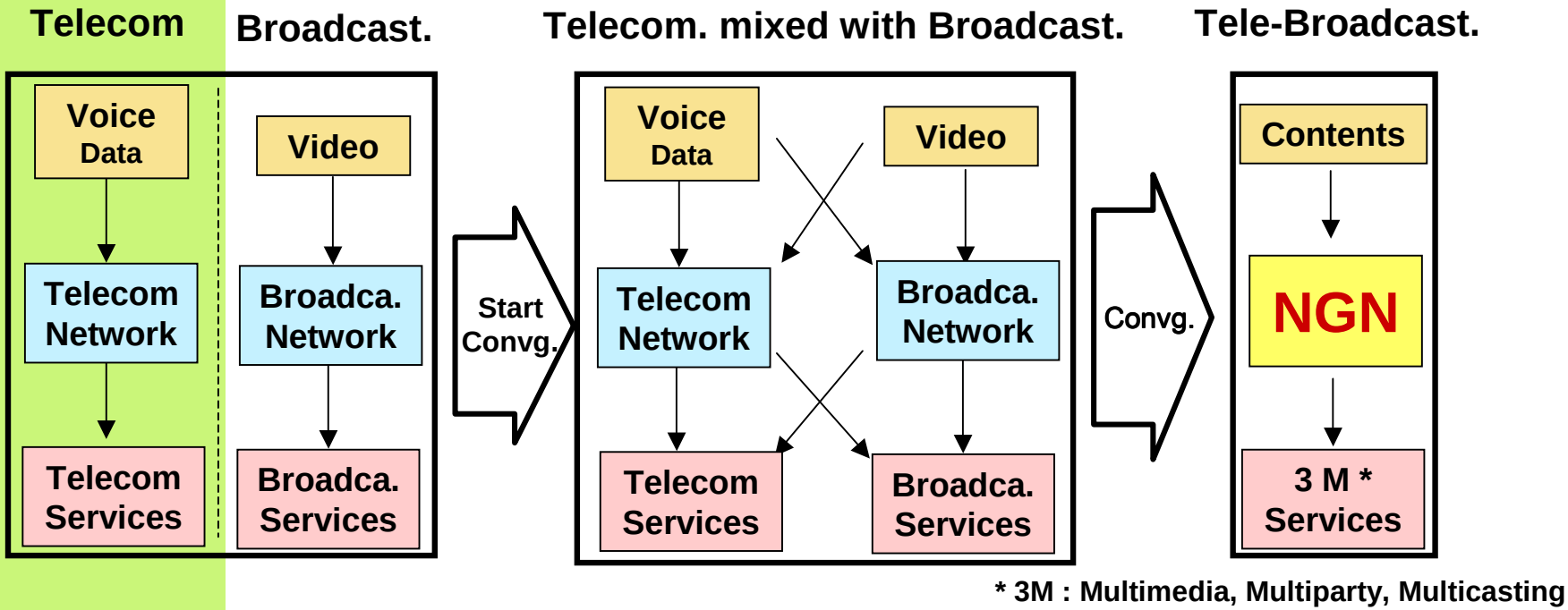
New Policy•Regulation Environment (Horizontal)

New Business Environment (Compositional)

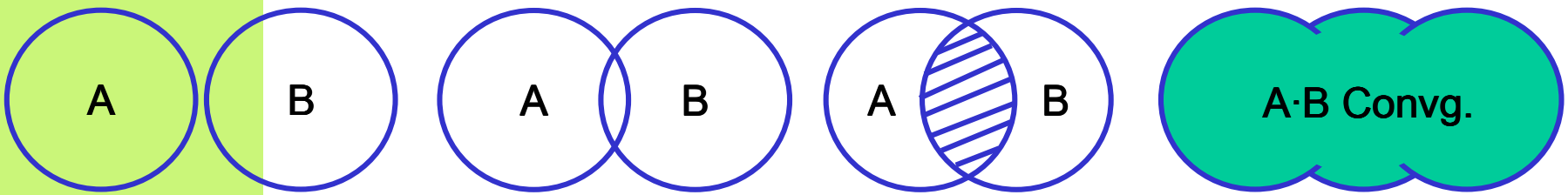




NGN triggering Convergence



* 3M : Multimedia, Multiparty, Multicasting



- Sep. Reg. Authority
- Stable Bus. Structure
- Stable Tech. Infras.

- Sep. defini. (each side)
- Exten. each Bus. area
- Exten. of Tech. capa.

- Comp. btw. Reg. Aut.
- Comp. btw. Bus. Play.
- Comp. btw. Tech. Inf.

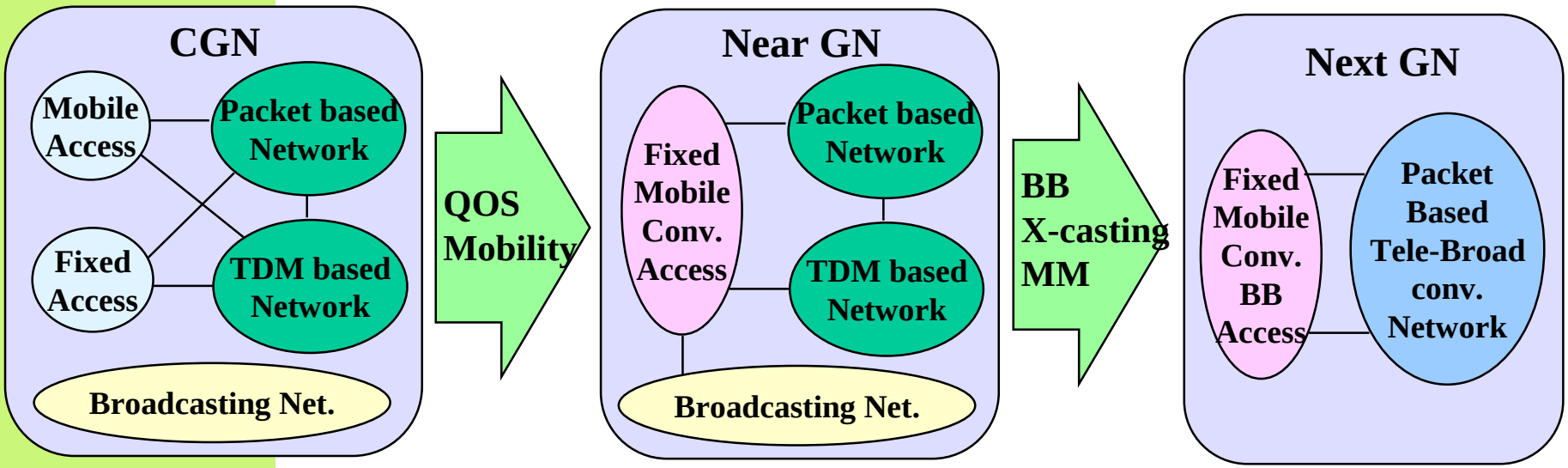
- Integ. Reg. Auth.
- Confirmed Bus. Area
- Stable Tech. Infras.

Future Issues

1) Architecture Point of view
   - Incorporation of fixed network requirements into IMS based architecture
   - Combination with Optic based Architecture
   - Develop Fixed-Mobile convergence model
2) Control and Protocol aspects
   - Identify and develop of protocols to meet NGN control mechanism
   - NGN signalling for NGN services or use/updates of SIP
   - Control capabilities to support billing and charging
3) QoS aspects
   - Interconnection requirements for supporting End-End QoS services
   - QoS parameter mappings among different standards
   - Extension of Session Control Protocols
4) Evolution and Interworking aspects
   - Evolution scenarios from CGN to NGN
   - Interworking requirements and specification for IWF
   - Identify protocols for interworking
5) Security aspects
   - SIP hop-by-hop (vs. end-to-end) security
   - Firewall traversal
   - Security management and controls

Standards for Near Generation, not Next

- NGN stands for Next Generation, but targeted for Near Generation
- NGN could be value added framework for all players : Users, Operators, Providers and Regulators etc.
- NGN could be evolved from Current Generation Network
- NGN could be basement for making convergence world (real Telecommunication World)
- NGN Standards could be Globalize rather than Localize boosting global village and shorten digital divide
- ITU-T could be centre of NGN standards



Plan for 2005

- 5th FG NGN : 14 ~ 22 March, Jeju-island Korea

  NGN Technical Workshop : 12 ~ 13 Korea
- 6th FG NGN : 26 April ~ 30 April, Geneva Swiss

  ITU-T and IETF Joint NGN Workshop 1 ~ 2 May, Geneva, Swiss
- 7th FG NGN : 27 June ~ 1 July (Beijing, China)
- 8th FG NGN : 29 August ~ 2 September, Geneva Swiss
- 9th FG NGN : 30 November ~ 6 December, Geneva Swiss (TBD)

Complete Release 1 transfer all scope to relevant SGs (SG11, 12, 13, 19)

NGN : Upgrading, Adding Value

Up-grading Current Infrastructure

Current Generation-Beach

Next Generation-Water Park

Adding Value

Thank you
for your attention !!!