International CQR Workshop 2006

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IP Telephony and Next Generation Network

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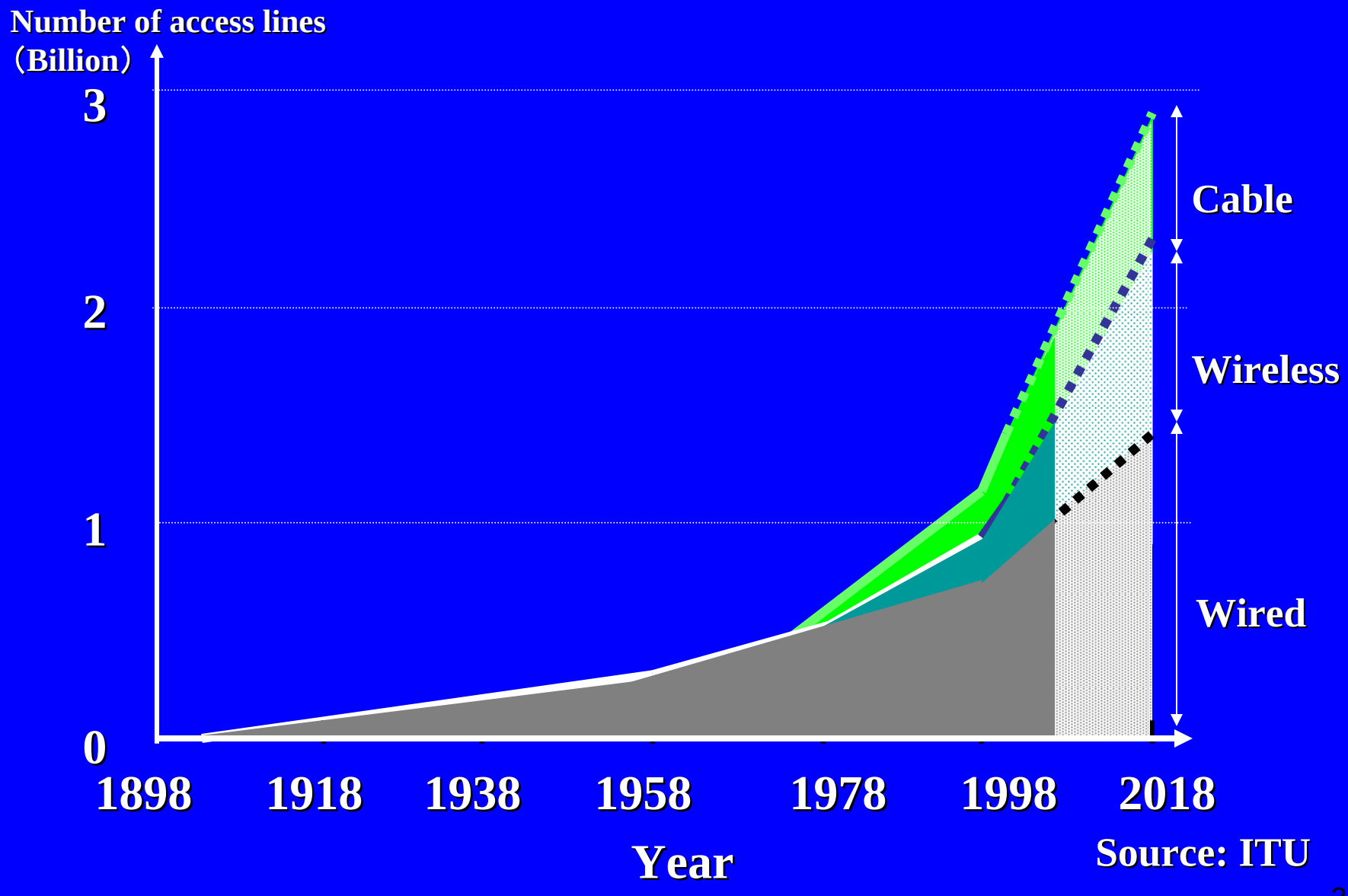
Where We Are Standing

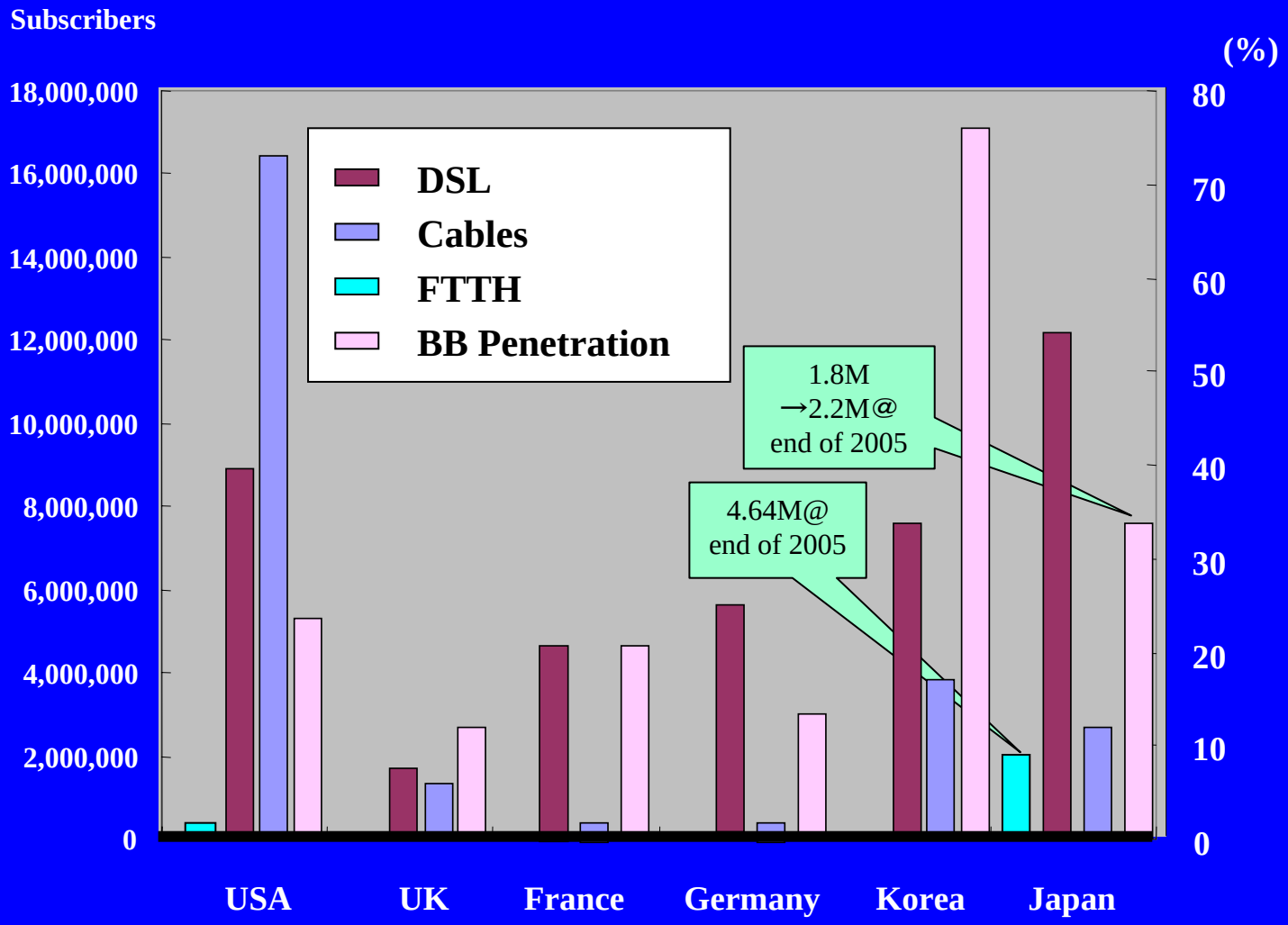
- **FTTH 265k 3.4M**
- **ADSL -22k 5.7M**
- **3G 1,448k 22.0M**
- **2G -963k 28.6M**

March 2006

Global Access Arrangements

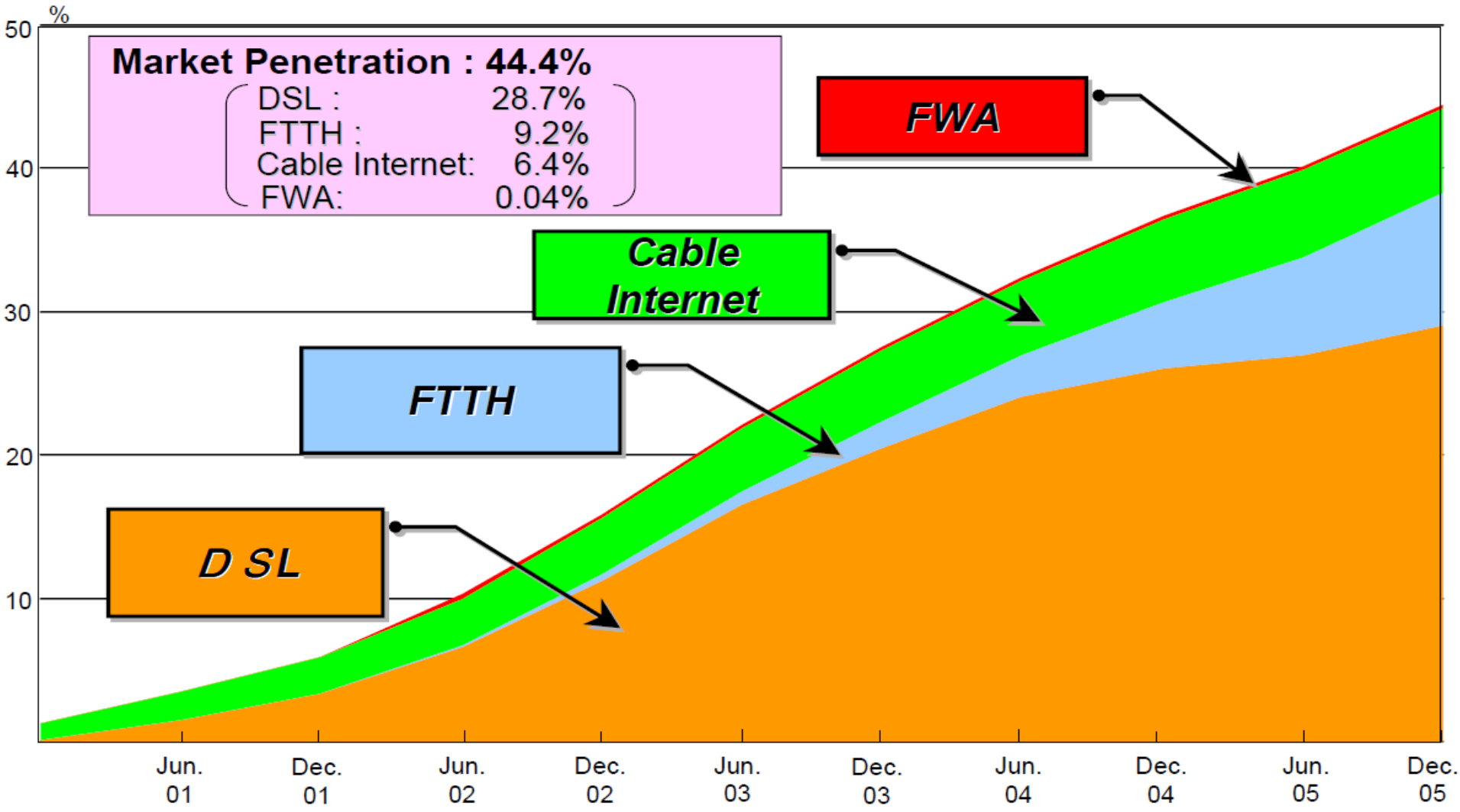


Global Broadband Penetration

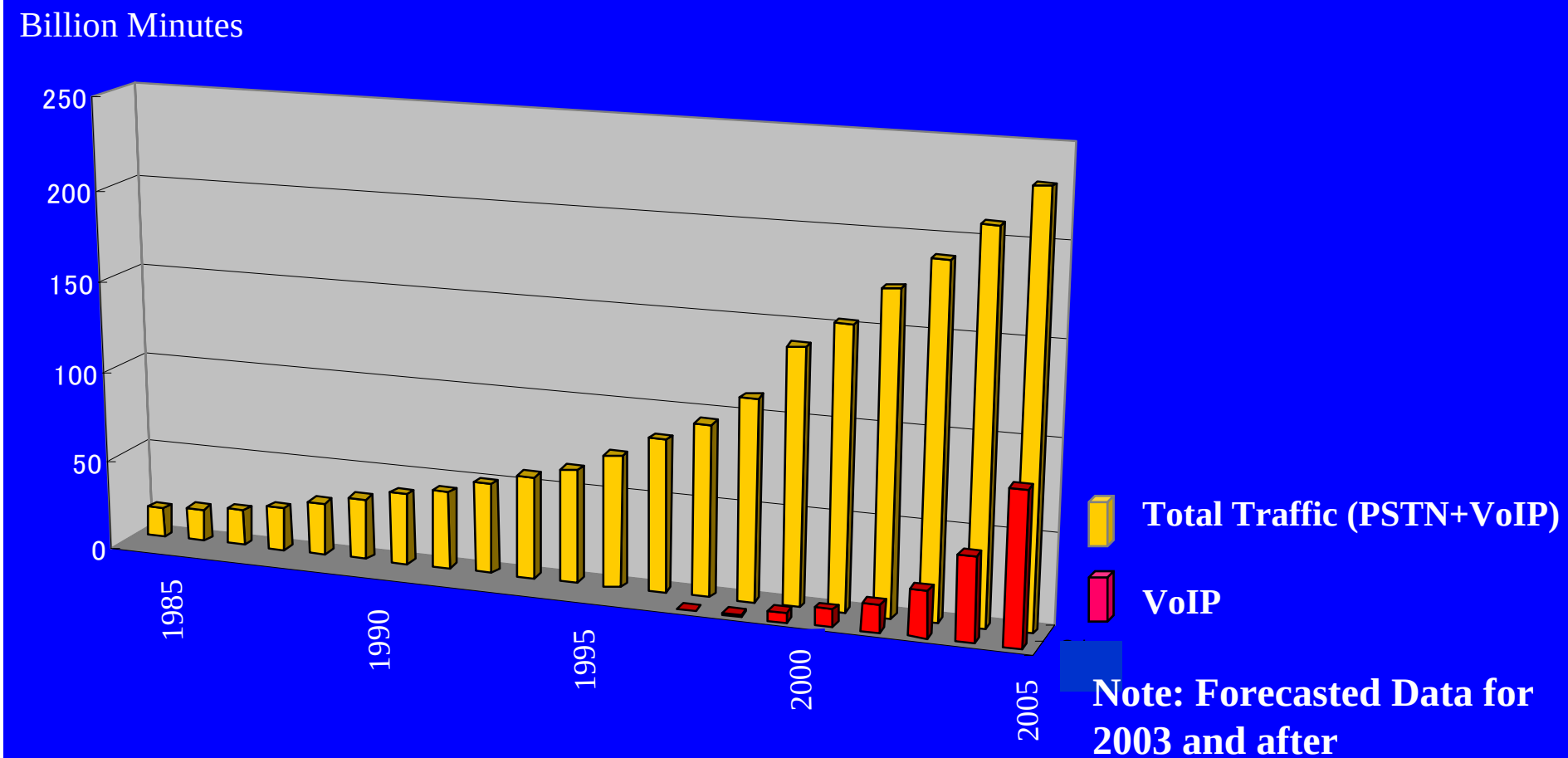


Source :Information & Communications in Japan 2005, InfoCom Research ,Inc.

Broadband in Japan



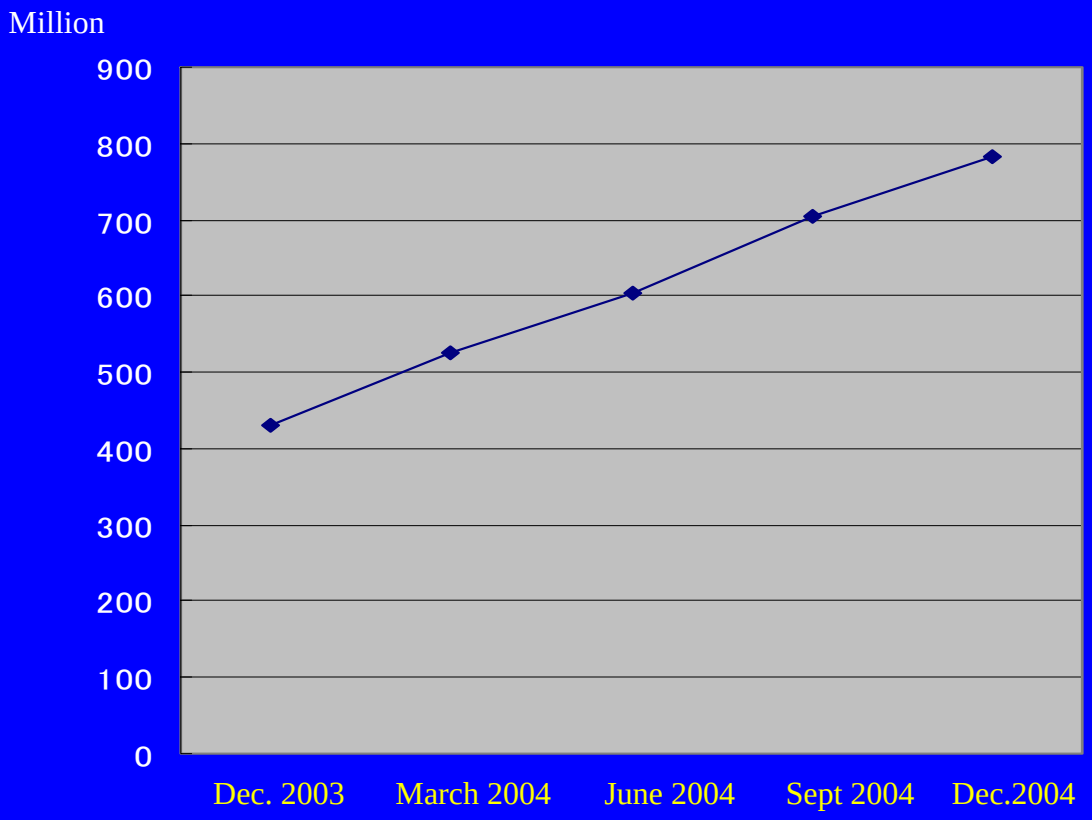
Global International Call Growth



source: http://www.dri.co.jp/auto/report/telegeo/telegeotg04.htm

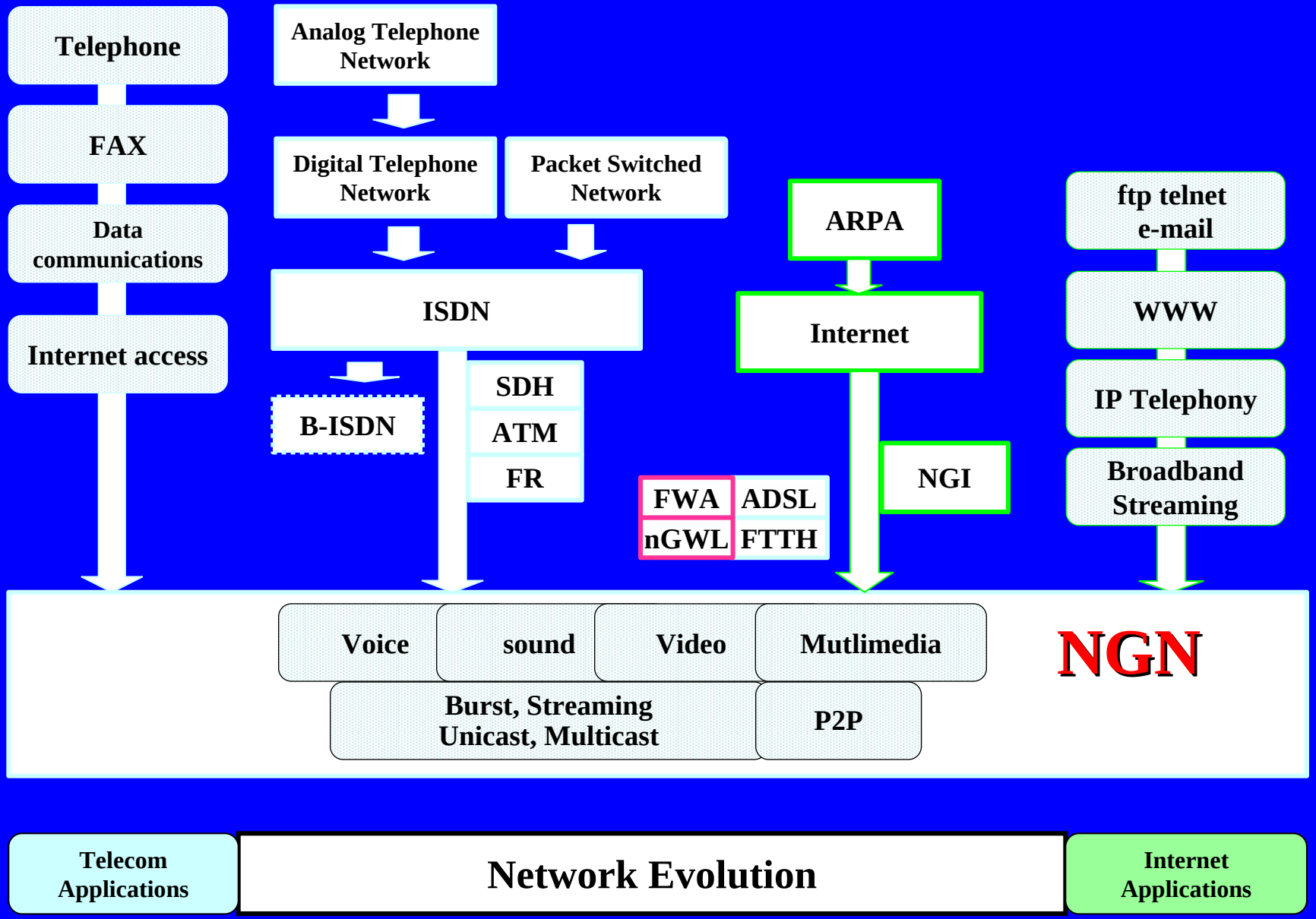
VoIP Penetration

- Japan：7.83 M(End of 2004[*1])
- USA： 1.10M [*2]
- Germany:0.11M, France:0.22M, UK: 50Th[*3]
- Skype： 29M, SkypeOut 1M[*4]



*1 MIC
*2 INFONETICS RESEARCH Press Release, 2/22 2005.
*3 http://www.itfacts.biz/index.php?id=P2589
*4 March 2005

Evolution in Networks and Applications



Definition & Features of NGN

Packet-based network

Use of multiple broadband, QoS-enabled transport technologies

Independency between service-related functions & transport technologies

Unfettered access to networks & to competing service providers/services

Generalized mobility allowing consistent and ubiquitous provision of services

Generalized Mobility → **Convergence btw. Fixed & Mobile**

Unrestricted Access → **Open Access I/F**

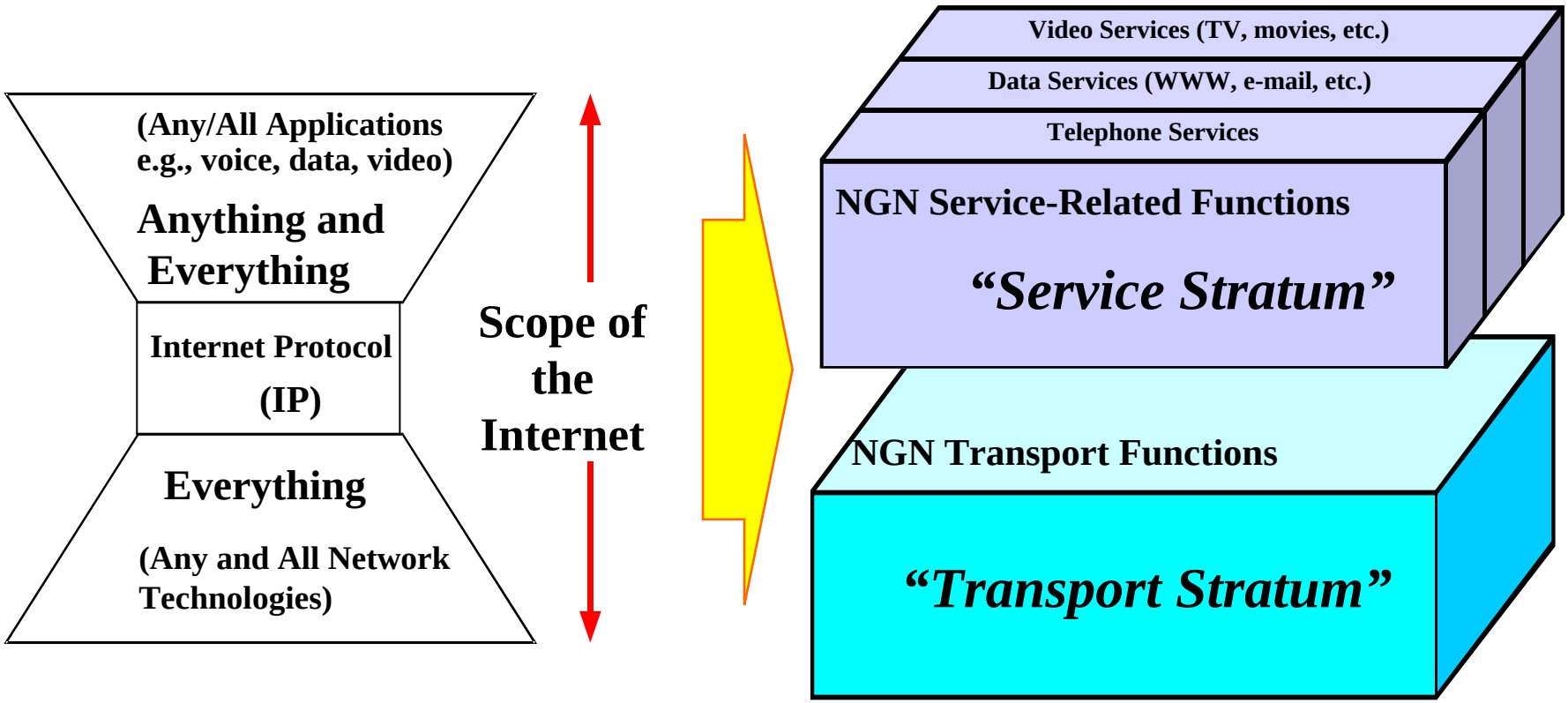
Separation Services with Transport → **Architecture and Open API**

QoS-enabled Transport → **Manageable Broadband**

Multiple-Broadband → **Manageable Broadband**

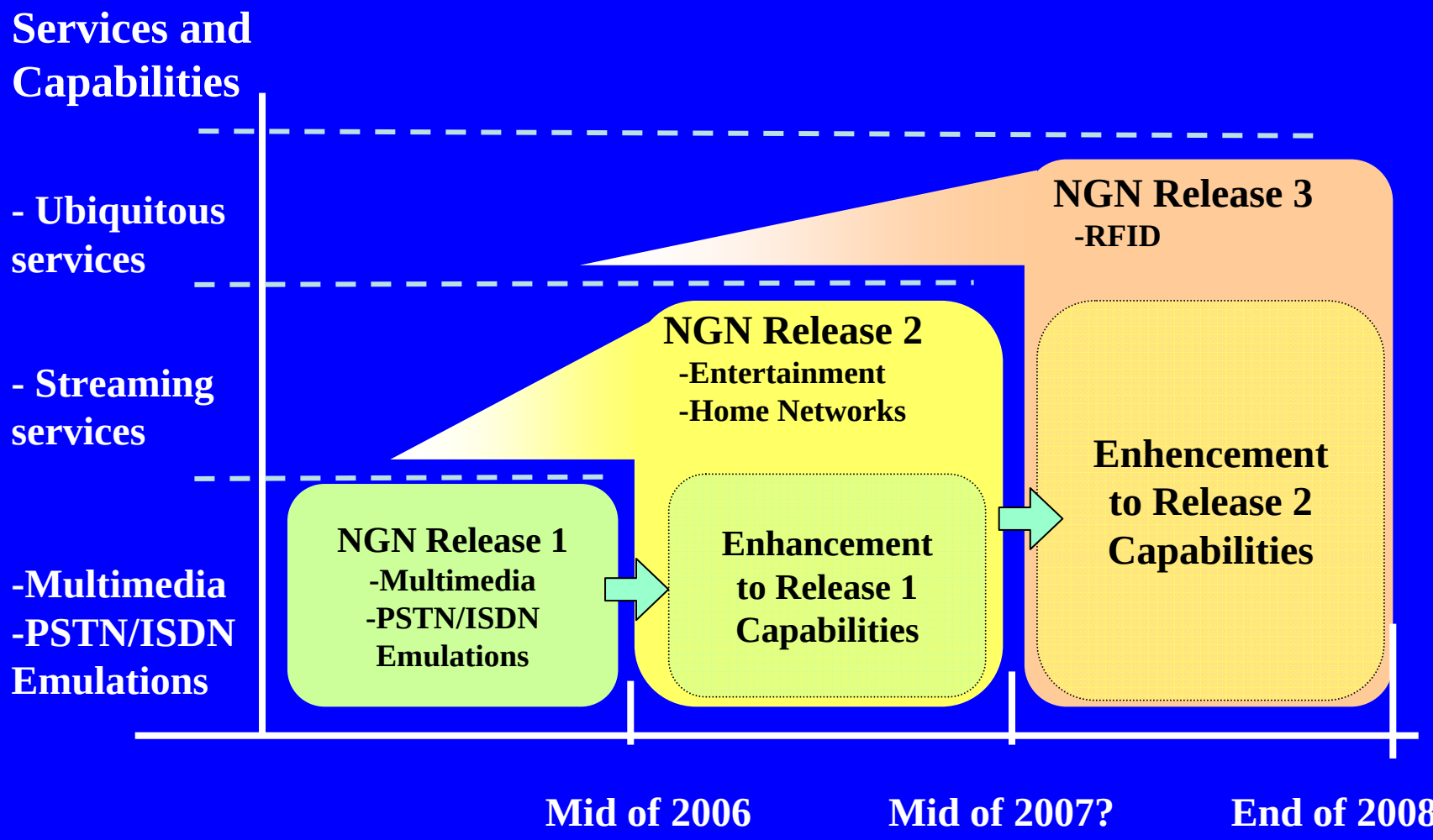
Source: Rec.Y.2001

Next Generation Networks (NGN)



Source: ITU-T Recommendation Y.2011 — *General principles and general reference model for next generation networks*

Release Approach for NGN



Network Operators' View

- **All IP Telephony Networks**

  Construction & Operation Cost Reduction
- **Broadband & Ubiquitous Services**

  Revenue Shft
- **FMC & Triple Service**

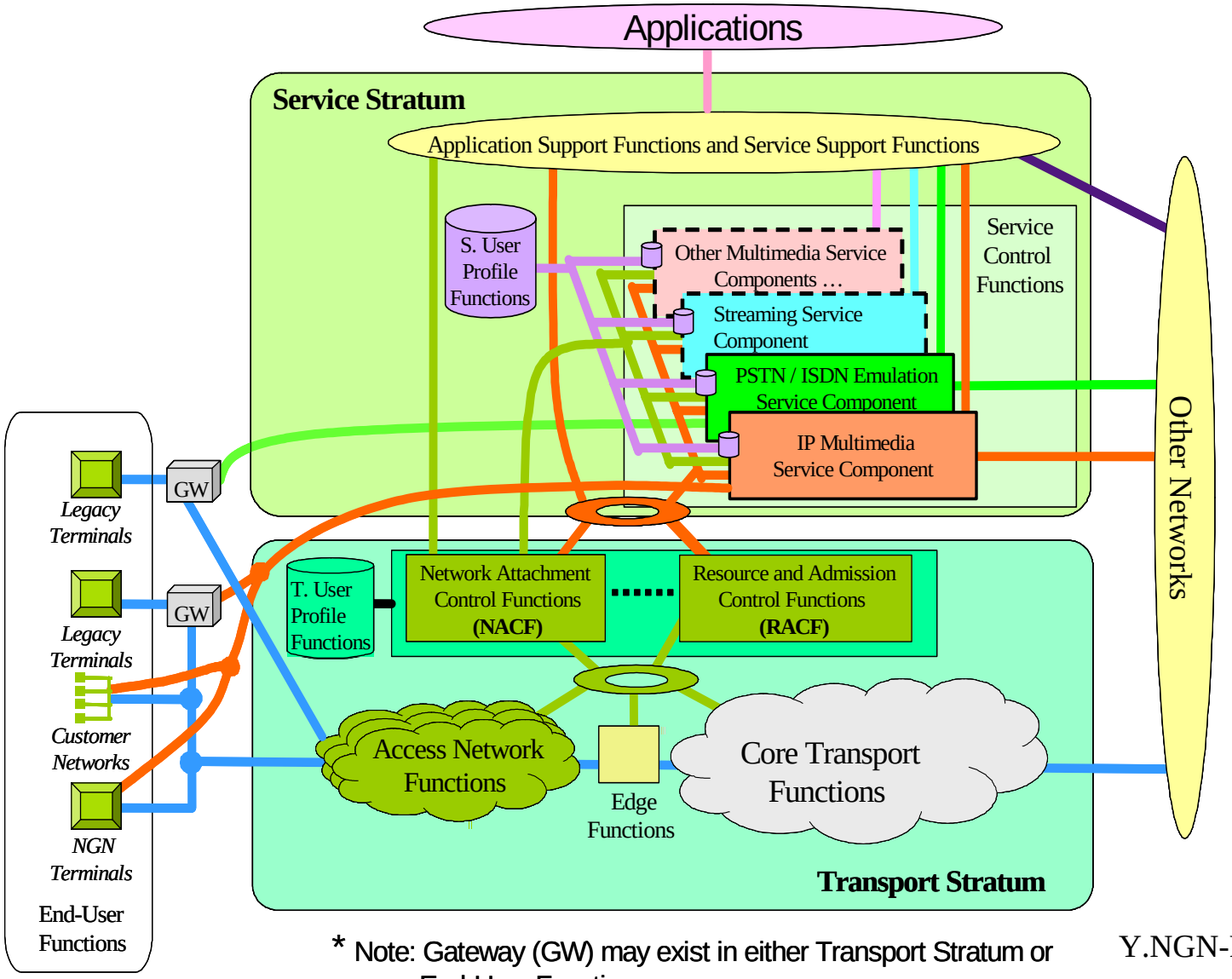
  Survival Leverage under Competition
- **New Business**

  Increase in ICT Market

Customers' View

- **Generalized Mobility**
  - **FMC Telephony anywhere any time**
  - **Enhanced Mobile Phone**
- **Triple Play: Telephony, Internet, Broadcast**
  - **Integrated services over TV, Telephony and PC**
- **Broadband & Ubiquitous**
  - **New applications, e.g., TV conference, Remote Diagnosis, Logistics management using RFID**

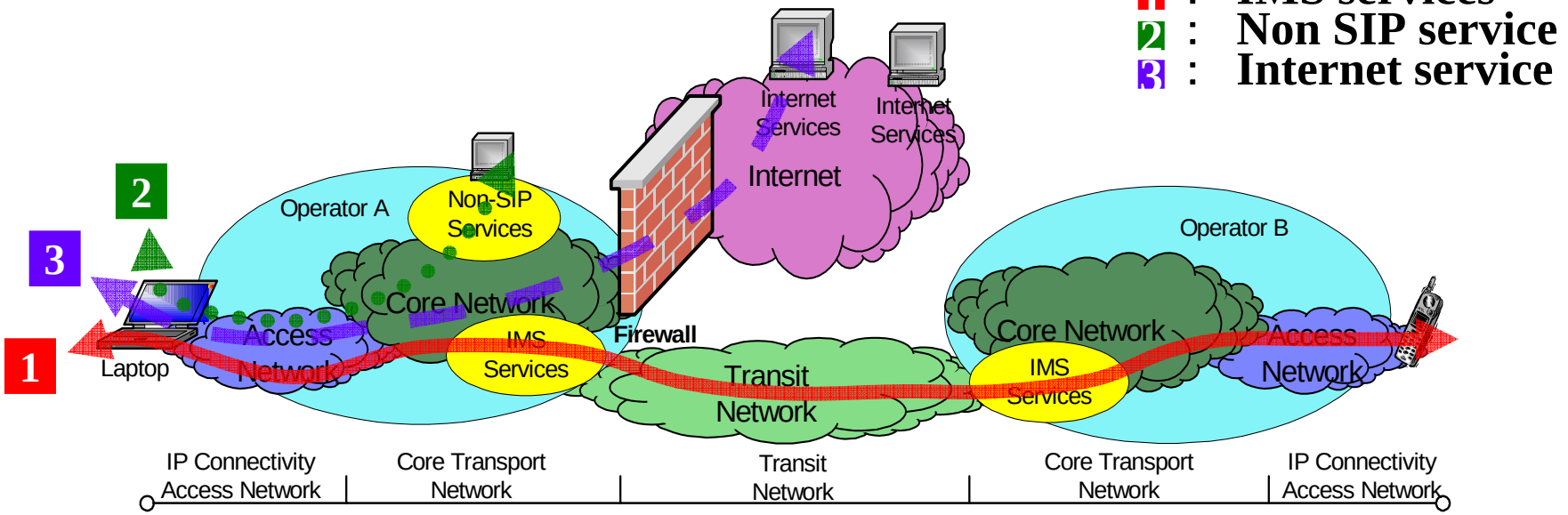
Transport and service configuration of the NGN



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

Y.NGN-FRA Figure 8 -

NGN example of service domains



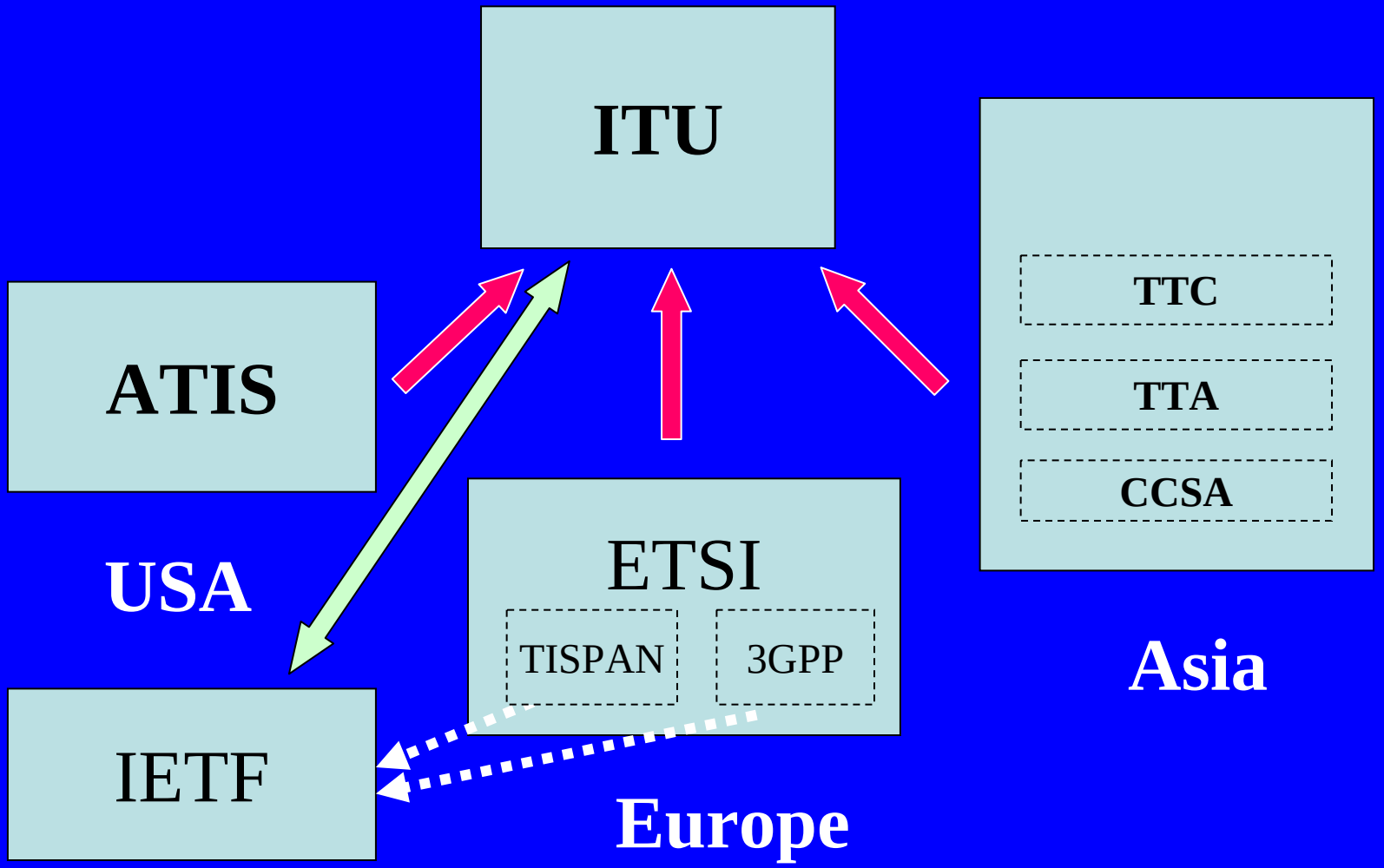
Y.NGN-FRA Appendix I Figure I.5:

IP-based network performance

Performance Parameter	Nature of Network Performance Objective	Class 0	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7
IPTD	Upper bound on the mean IPTD	100 ms	400 ms	100 ms	400 ms	1 s	U	100 ms	400 ms
IPDV	Upper bound on the 1-10^{-3} quantile of IPTD minus the minimum IPTD	50 ms	50 ms	U	U	U	U	50 ms	50 ms
IPLR	Upper bound on the packet loss probability	$1*10^{-3}$	$1*10^{-3}$	$1*10^{-3}$	$1*10^{-3}$	$1*10^{-3}$	U	$1*10^{-5}$	$1*10^{-5}$
IPER	Upper bound	$1*10^{-4}$					U	$1*10^{-6}$	$1*10^{-6}$

Source: Y.1541

NGN-related Standardization Organizations



Next Generation IP Network Promotion Forum

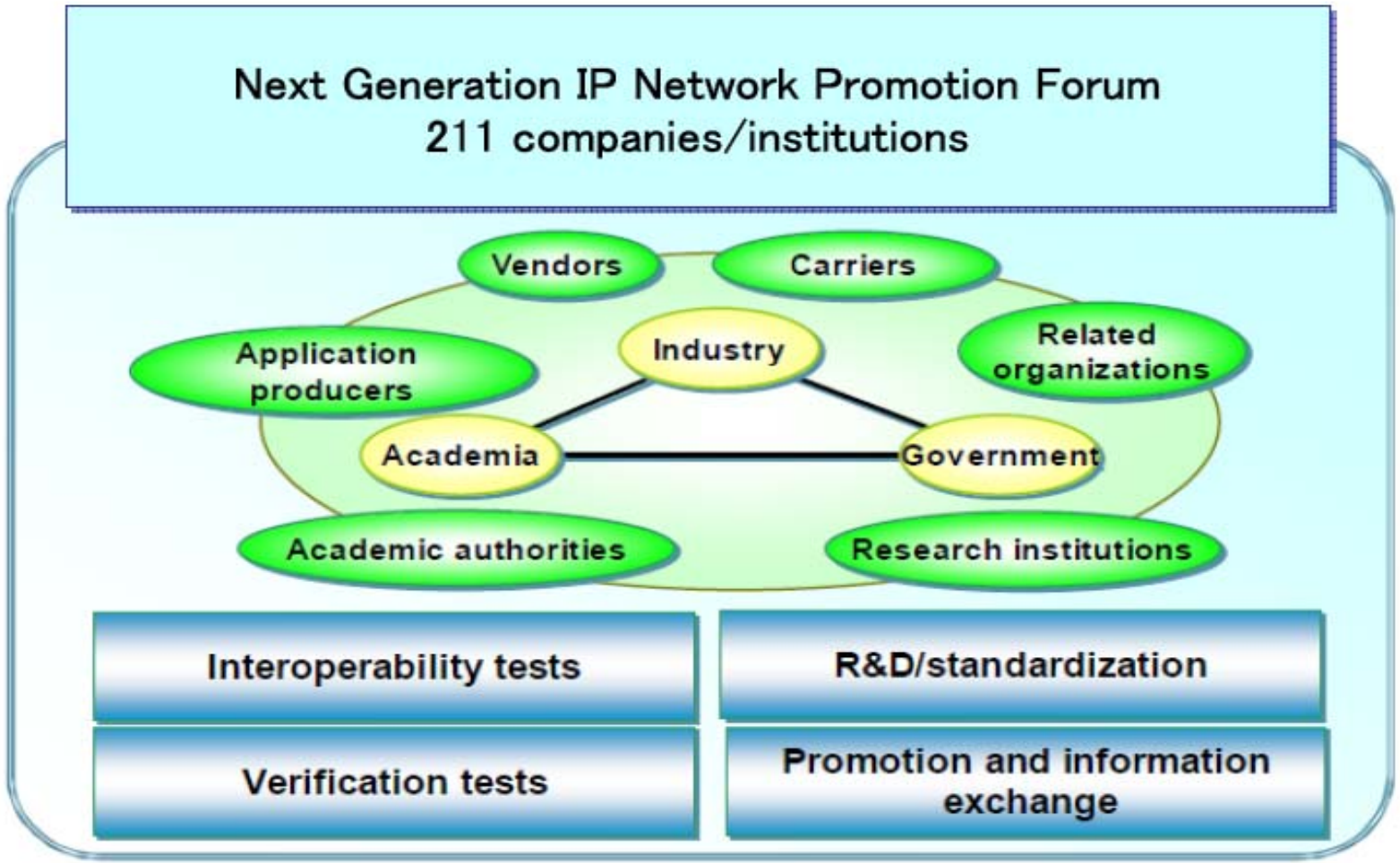
- Established on Dec. 16, 2005
- Based on a report from MIC Study Group on Next Generation IP Infrastructure
- To Promote evolution to IP-based Networks in Japan
- Under close cooperation among industries, government and academia

Next Generation IP Network Promotion Forum

- Membership: operators, vendors and academia
- Study technical standards for Next Generation IP Networks
- Verifies interoperability through experiments
- Promotes R&D and standardization

Objectives

- **Leading ICT by 2010**
- **through all IP-based networks**
- **maintaining security, reliability and interoperability**
- **providing safe and convenient services**


Next Generation IP Network Promotion Forum
211 companies/institutions
Vendors
Carriers
Application producers
Industry
Related organizations
Academia
Government
Academic authorities
Research institutions
Interoperability tests
R&D/standardization
Verification tests
Promotion and information exchange

Structure

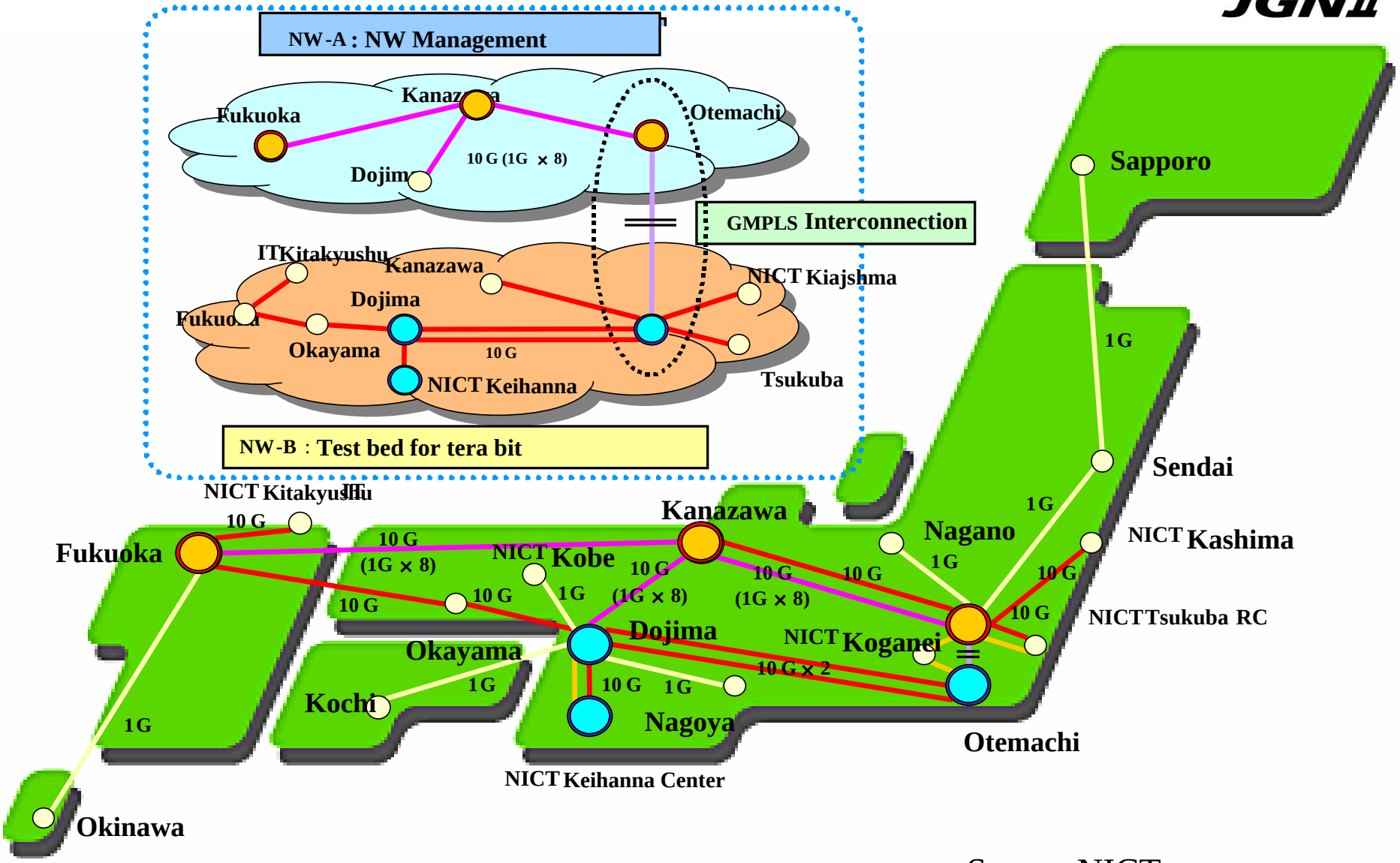
Next Generation IP Network Promotion Forum
Chair: Prof. Tadao Saito (University of Tokyo)

- **Technology Group**
  Chair: Prof. Shigeki Goto (Waseda University)
- **R&D and Standardization Group**
  Chair: Prof. Koichi Asatani (Kogakuin University)
- **Planning and Promotion Group**
  Chair: Dr. Yuichi Matsushima (NICT)

Issues

- Promotion of R&D and standardization for next generation networks
- Promotion of international cooperation

Nationwide Test Bed JGN II



Source:NICT

Thank you!