



International Telecommunication Union

An introduction to NTT's NGN and new services in Japan

Naotaka MORITA

Vice Chairman of SG13, ITU-T
Senior Research Engineer, Supervisor
NTT Service Integration Labs.



- 1. The current status and future direction of Japan's telecommunications market**
2. The worldwide telecommunications market and standardization activities
3. NTT's plans for the deployment of its NGN
4. Future visions for the NGN



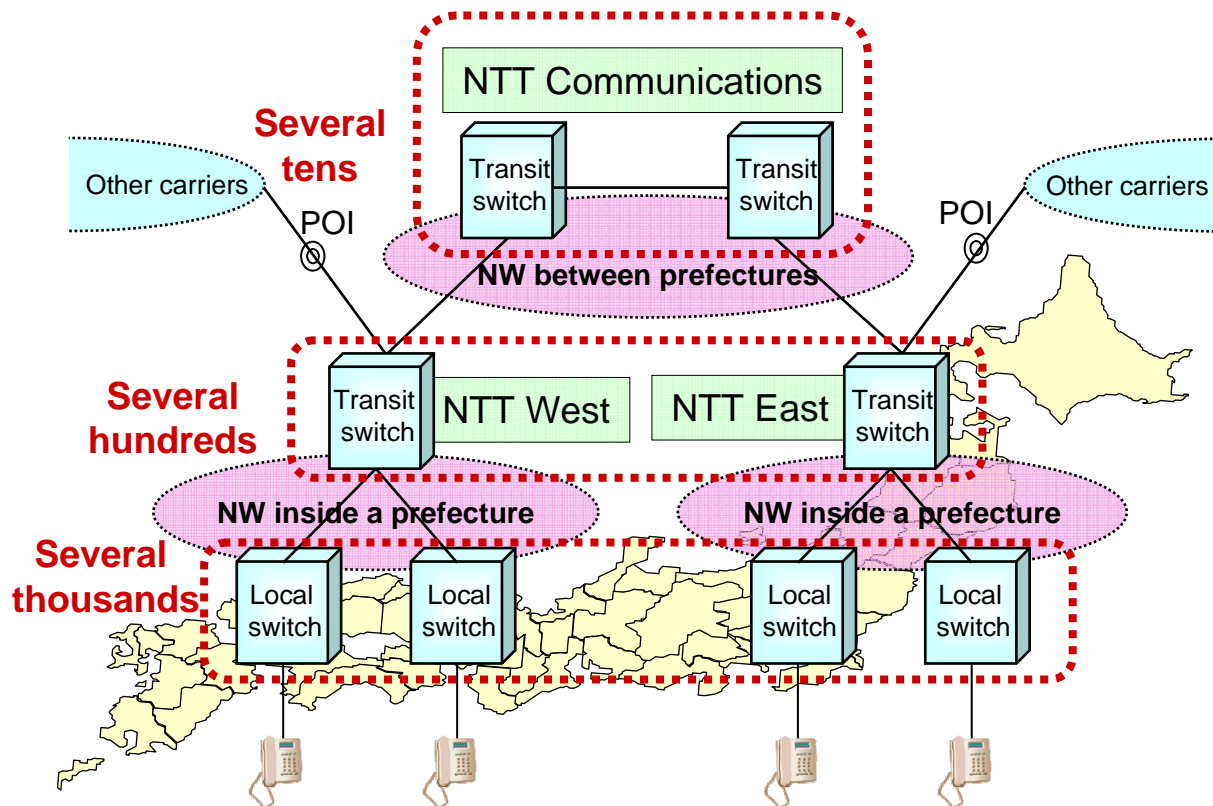
Japan today in 2005 (as of September 2005)

<i>ITEMS</i>	<i>NUMBER</i>	<i>NOTE</i>
Population	127.8 M	11/2005, 20% is older than 64.
Householders	50.4 M	03/2005
Fixed lines	59.6 M	03/2005
ISDN	8.0 M	10 M at peak in 2001
Mobile	91.8 M	03/2006, 79.8 M have internet access, 70% of total population
3G	48.3 M	70% growth last year
W-CDMA	26.5 M	DoCoMo & Vodafone
cdma2000	21.8 M	au
PHS	4.7 M	03/2006, 6.7 M at peak in 1997
Broadband	24.2 M	06/2006, 40% of householders
DSL	14.5 M	06/2006, Saturated !!
Optical	6.3 M	06/2006, 0.85 M increase in Q2 of 2006, 84% coverage in 2004
VoIP	8.3 M	OAB type has started.

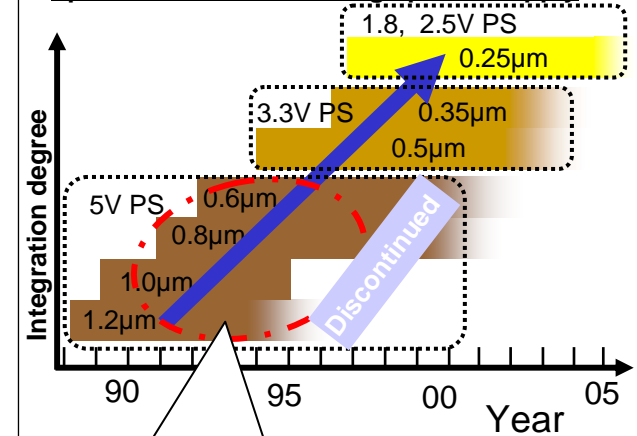


Measures taken to prolong the lifetime of NTT's PSTN facilities

- NTT's PSTN consists of several thousand switches.
- Although a then-state-of-art switching system (NS8000) was developed around 10 years ago, the rapid progress in technology since then has resulted in the discontinuation of production of some components used in the system. Currently, we are trying to prolong the lifetime of the switches by re-establishing sources for such components.



Migration to more highly integrated LSI that operates with lower voltage power supply



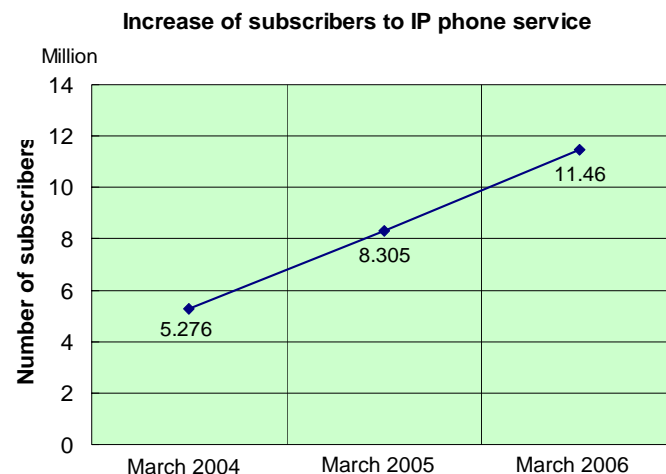
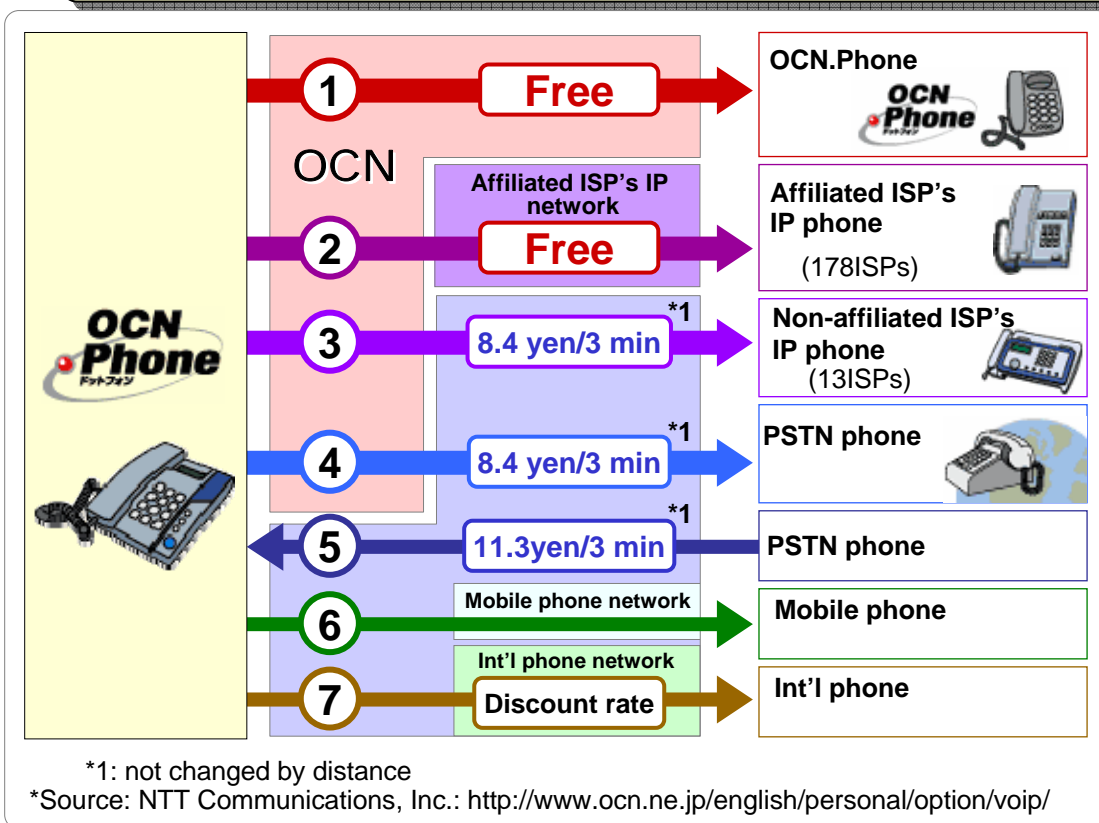
NS8000
(developed around 10 years ago)

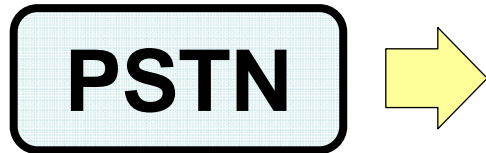




Maturing of IP telephony technology in Japan

- IP telephony is spreading from business users (IP-PBX). Low rates (or free between specific points) offered by ISPs have increased the number of IP phone users in Japan to more than 10 million.
- NTT already provides an IP phone service "Hikari Phone" using the ordinary telephone numbering plan.



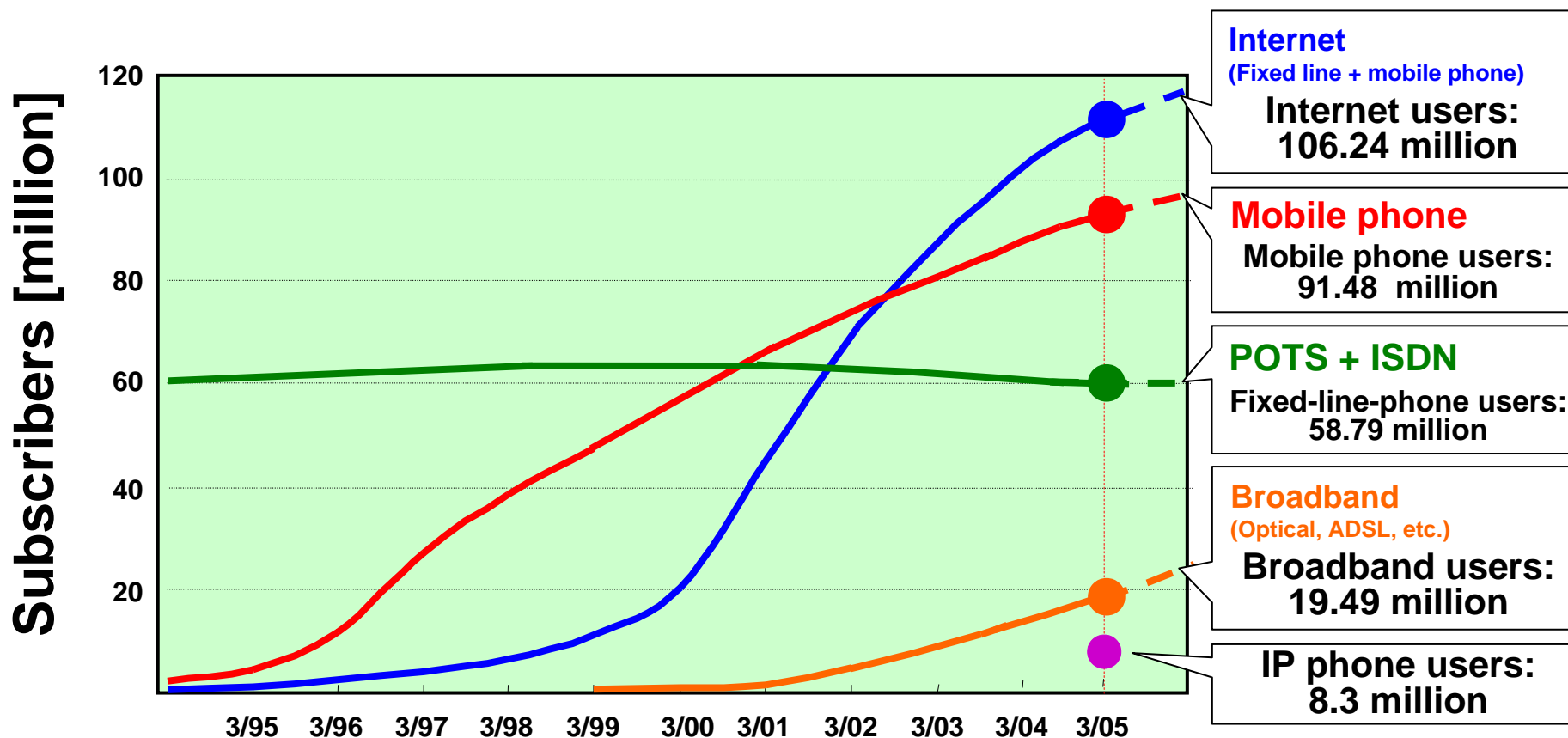


- **Time is ripe for an IP network to replace PSTN.**
- **Migration to the IP network will reduce both capital and operational expenditure.**



Paradigm shift of Japan's telecommunications market

- The number of mobile phone subscribers has far exceeded the number of subscribers to fixed-line telephony.
- The number of Internet users continues to increase.

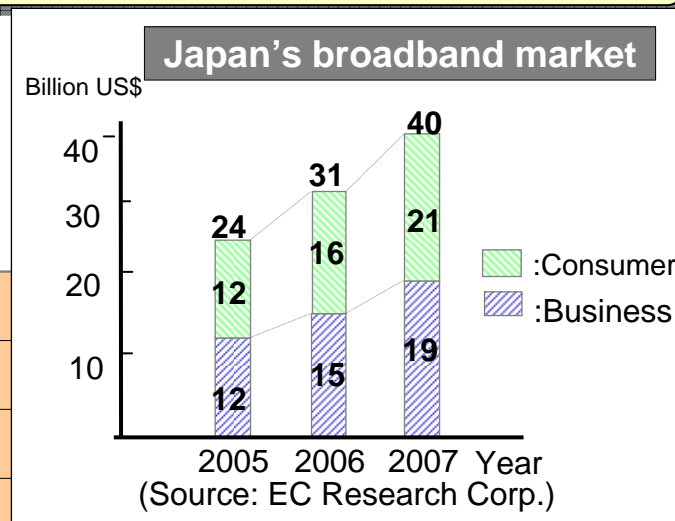
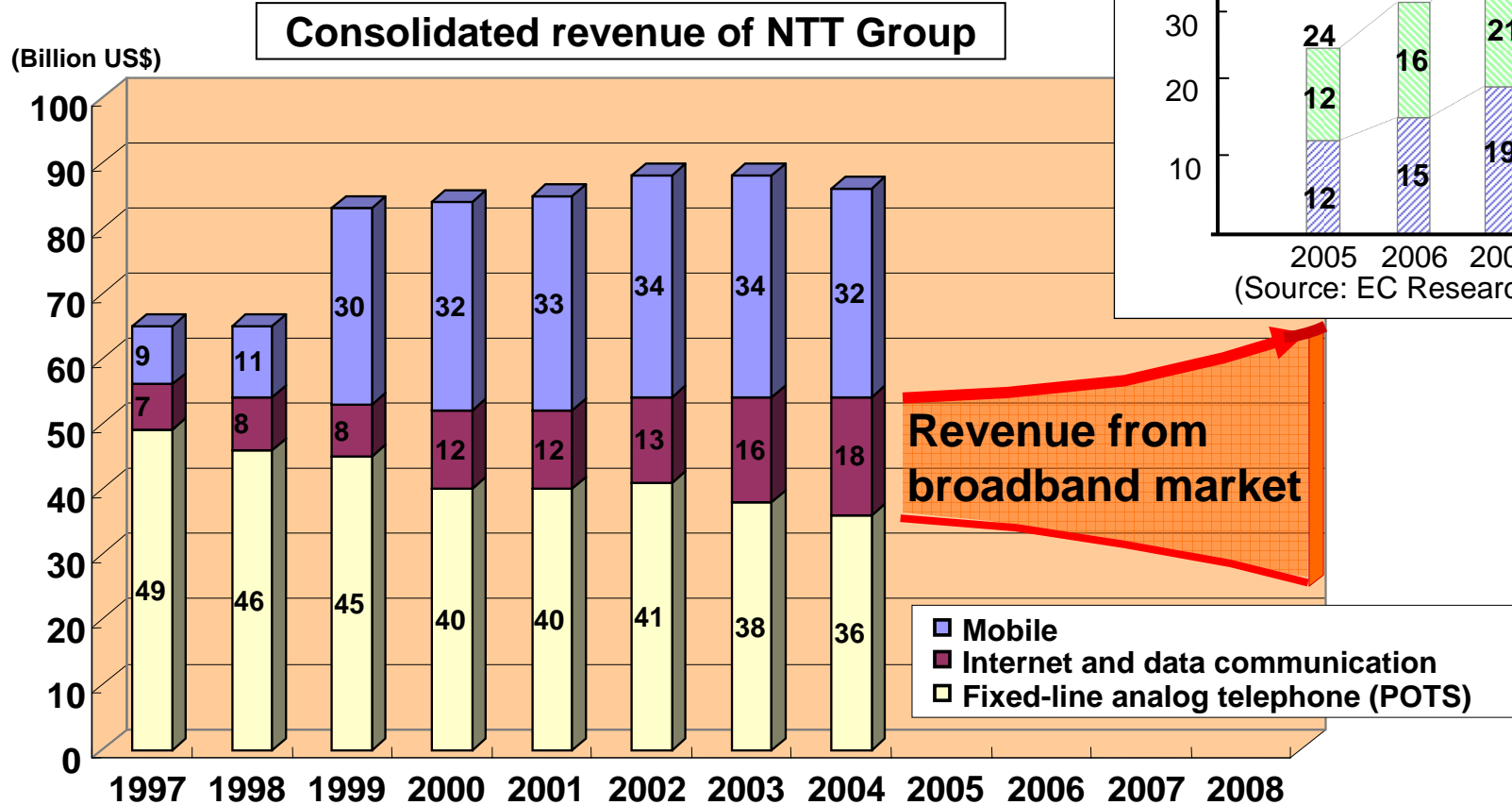


Sources: Ministry of Internal Affairs and Communications, Consortium for Promotion of Mobile Computing, InfoCom Research Inc., and others.



Shift of NTT Group's main revenue source to broadband services

- The revenue from broadband business has been picking up.
- It is necessary to grow broadband business into carriers' main revenue source.

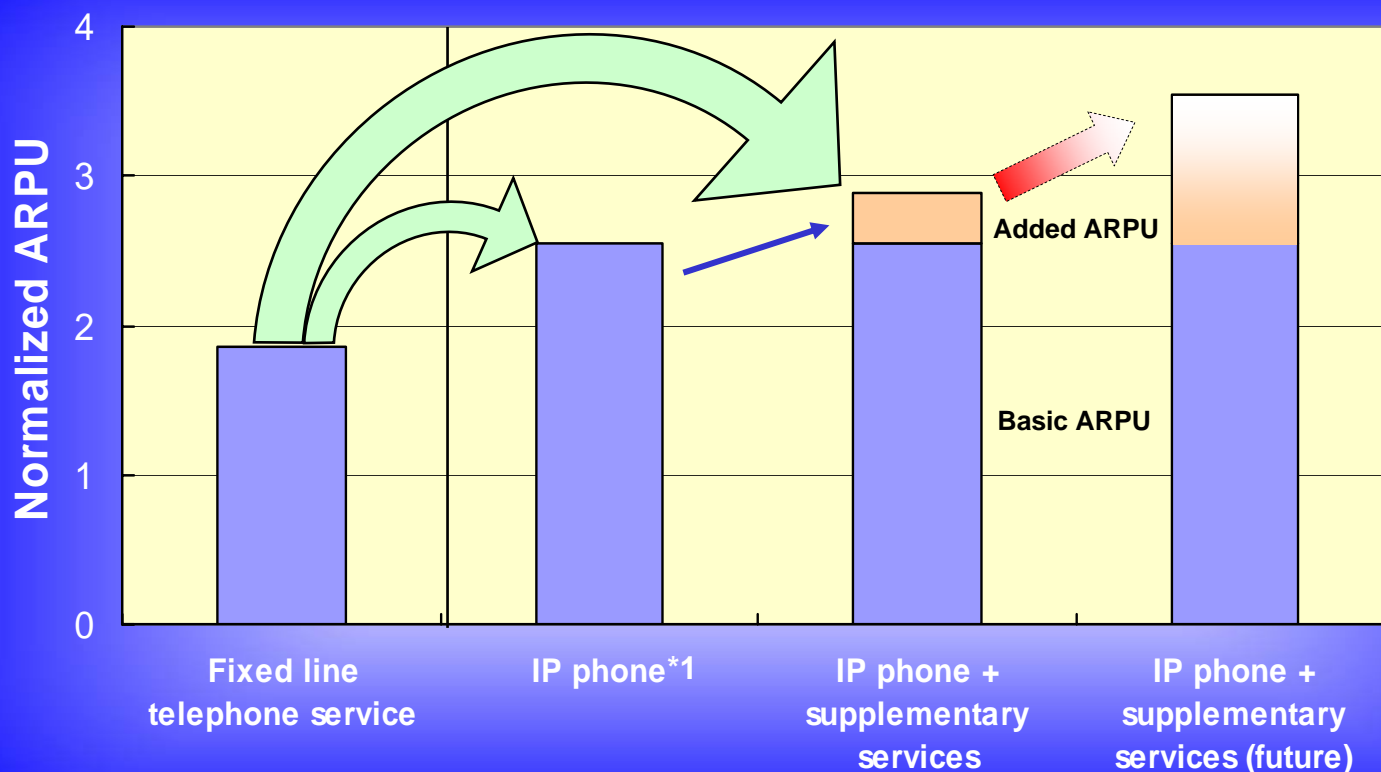


Revenue from broadband market



Increase in ARPU of broadband services

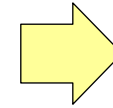
- There is a shift from low-price IP telephony, exploiting IP technology, to the provision of value-added services, such as video delivery and videophone, exploiting the availability of broadband access.
- The provision of value-added services is increasing ARPU.



*1: Broadband access charge (including ISP charge)



Revenue source of telecom carriers



Carriers need to shift their main revenue source from the telephony service to broadband services.



Promotion of optical access by u-Japan Strategy

The Japanese government's "u-Japan" Plan proposes the full development of broadband infrastructure by installing optical fiber networks nationwide.

1. 100% broadband network

The projected status of a 100% broadband network, through which broadband services are made available to all communities, is as follows:

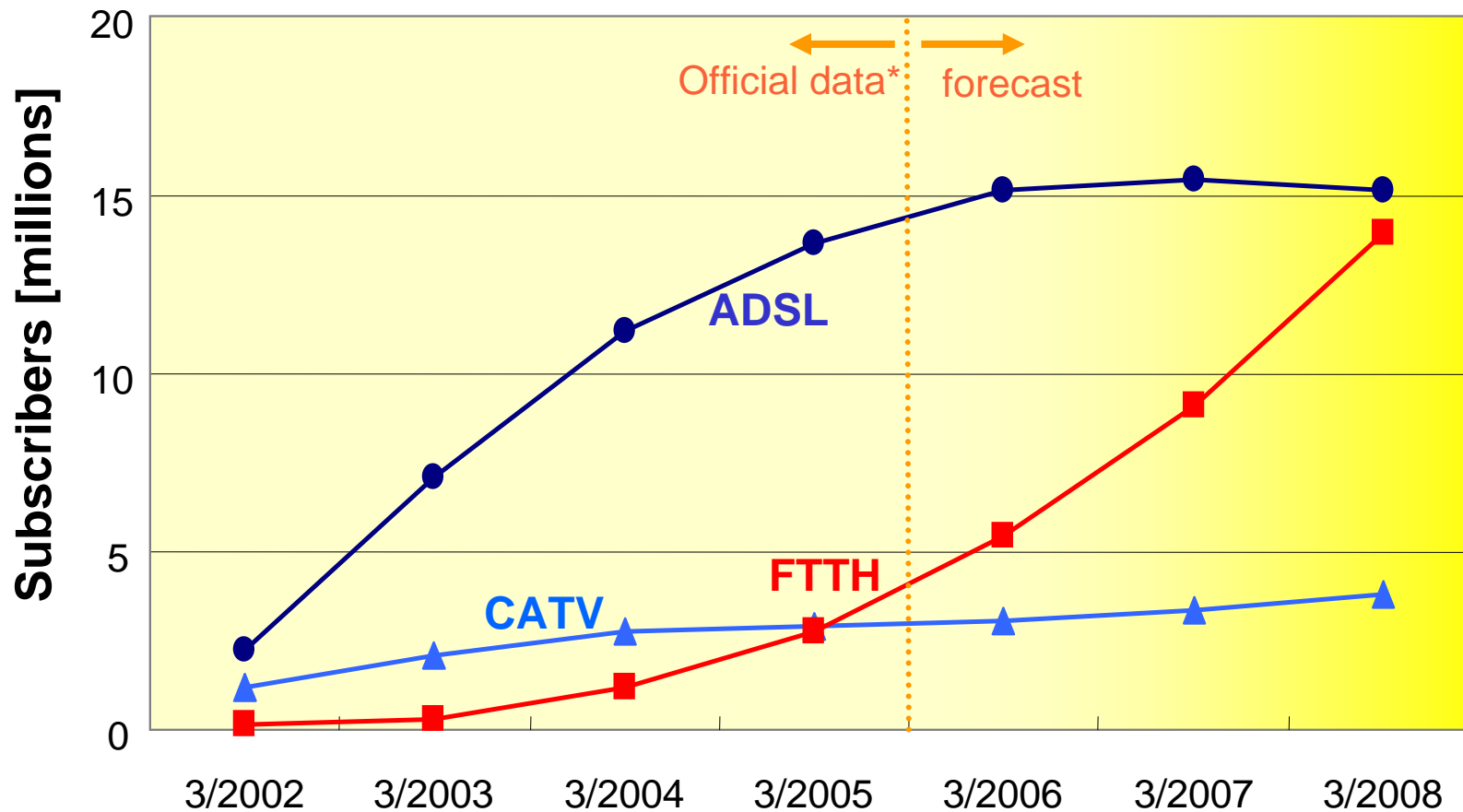
- (1) Overall, a variety of wireline and wireless technologies will be seamlessly linked.
- (2) In areas where cost-effective investment is difficult, broadband infrastructure will be built taking both investment efficiency and the needs of communities into account.
- (3) Of these varieties of broadband service, super-high-speed broadband access, mostly based on FTTH, will cover 90% of households nationwide.

Source: Proposed status of broadband networks in 2010 Proposed on Aug. 11, 2006



Dramatic increase in the number of FTTH subscribers in Japan

Optical access is being promoted so aggressively on the basis of the u-Japan Plan that the yearly increase in the number of FTTH subscribers has already exceeded that of ADSL subscribers. The number of ADSL subscribers will soon cease to grow and gradually begin to fall.

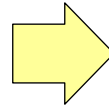


*Source: Ministry of Internal Affairs and Communications

ITU-T/ITU-D Workshop "Standardization and Development of Next Generation Networks"
Dar es Salaam, 3-5 October 2006



National policy of Japan

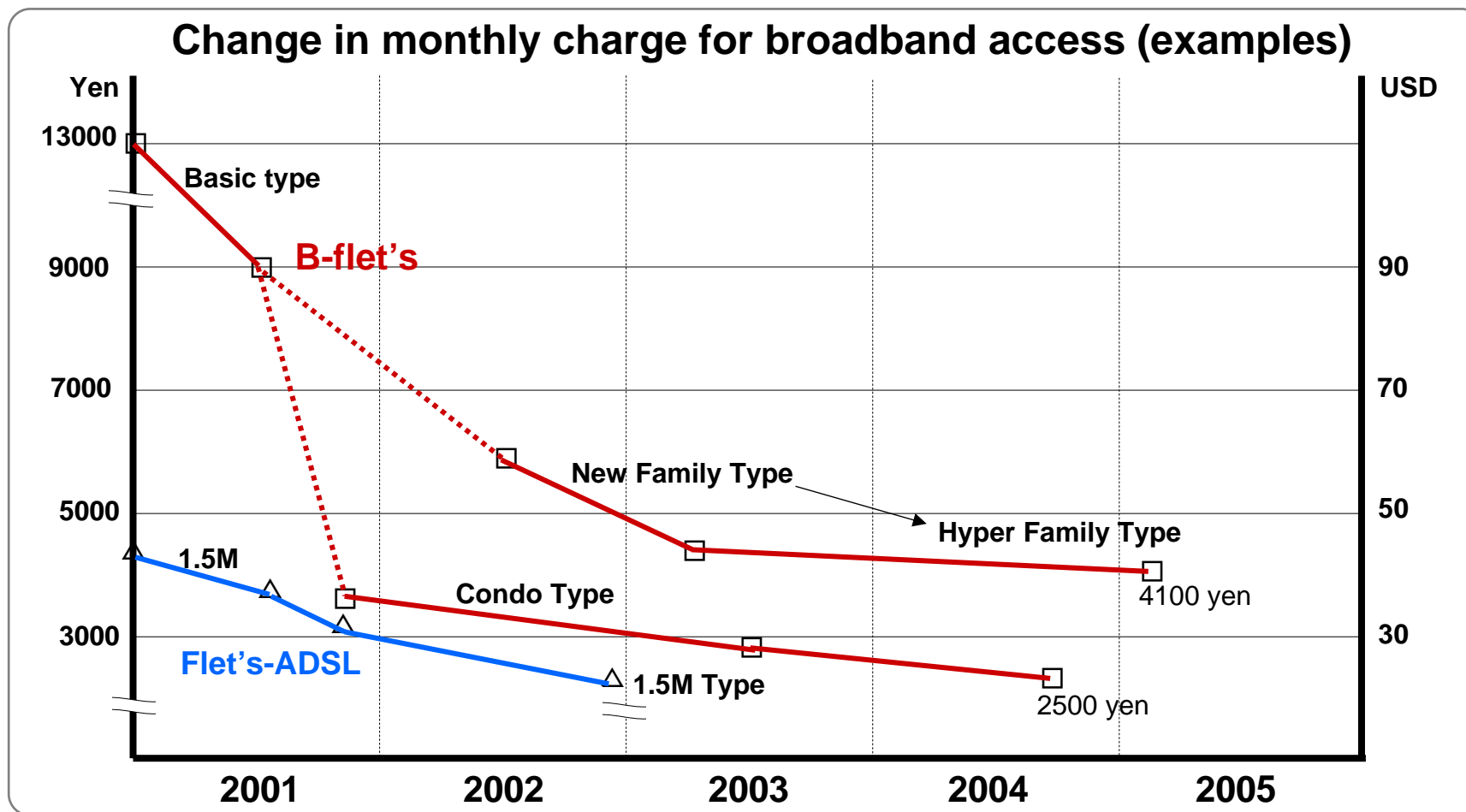


The spreading of optical access is a national policy. There are positive signs that optical access will indeed become widespread.



Rapid reduction in the charge for broadband access in Japan

- Competition has intensified into a price war, bringing down the charges for ADSL and even FTTH dramatically.
- This has resulted in a significant reduction in telecom traffic revenue.

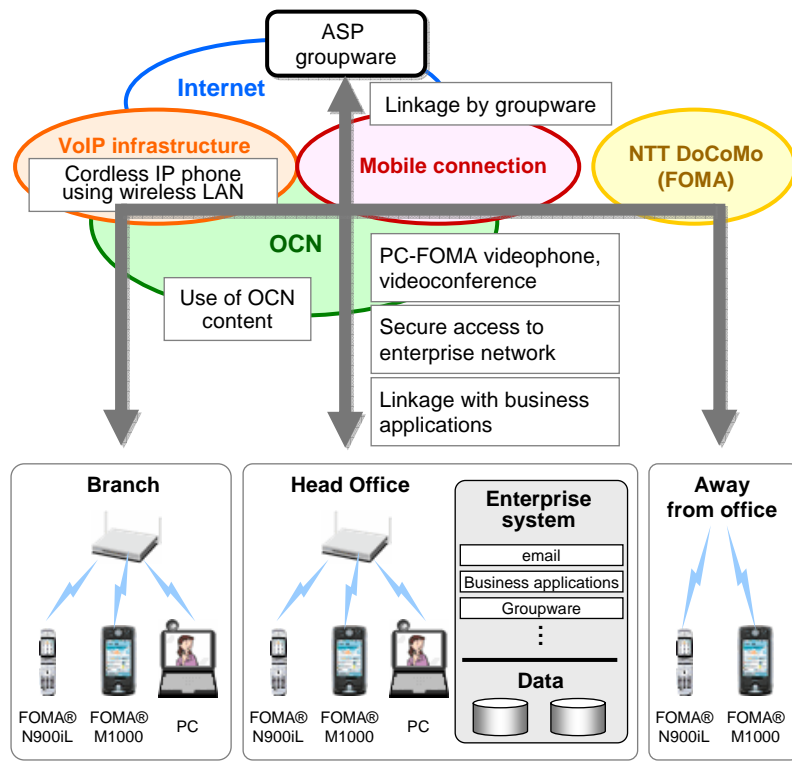




Creation of new business

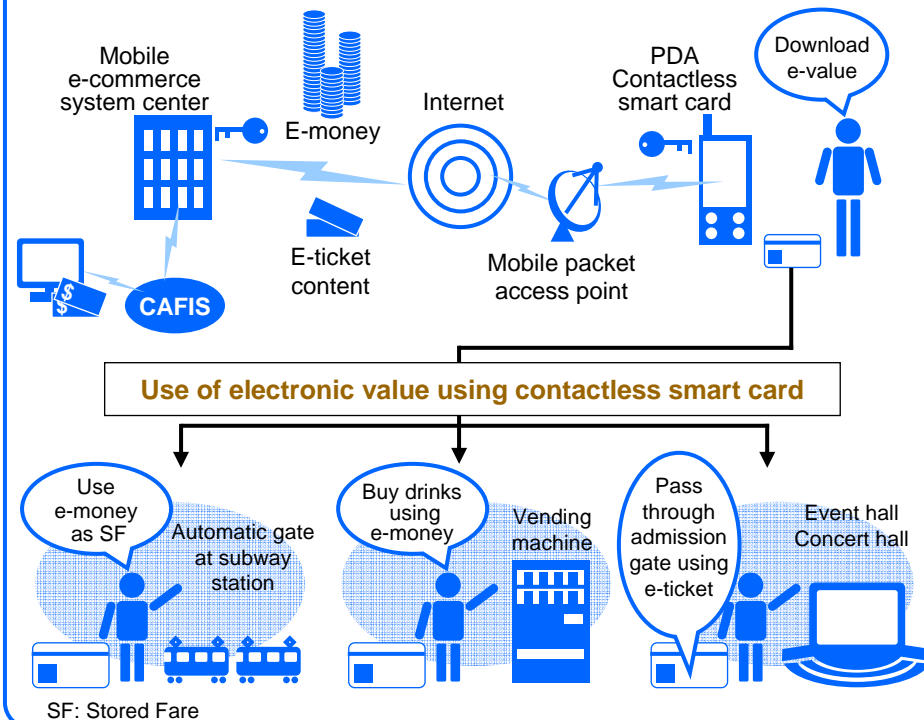
- NTT will not only increase traffic revenue but also seek to generate non-traffic revenue.
- NTT already attempts to create new businesses in collaboration with a variety of players outside the telecom industry.

Examples of FMC in service "OCN .Phone" service series using FOMA N900iL



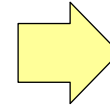
Examples of e-commerce in services Electronic money service using mobile terminals

Highly secure download of electronic value using mobile terminal





Status of competition in Japan

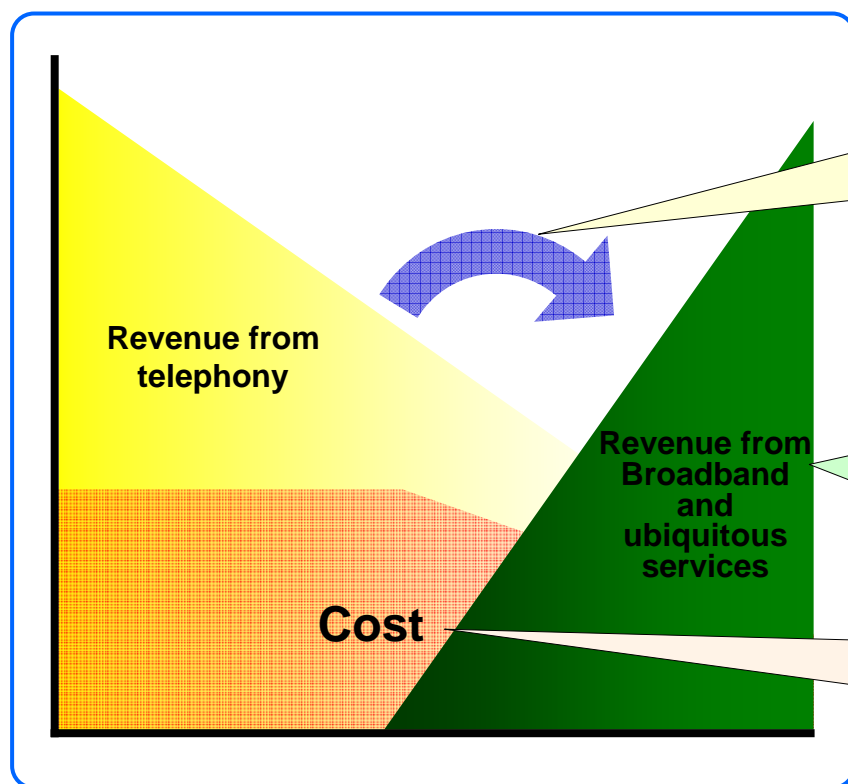


Competition has intensified into a price war, making it necessary to create new markets that will generate revenue.



NTT's actions to deal with the competition

It is urgent for NTT to increase profit by increasing revenue in addition to reducing capital and operational expenditure.



- Promote broadband & ubiquitous services like FMC and triple play
> **Revenue shift** from telephony

- Establish service delivery platform for new seamless businesses
> **Expand telecom market**

- Migrate telephone network to IP
> Reduce **capital and operational expenditure**



1. The current status and future direction of Japan's telecommunications market

2. The worldwide telecommunications market and standardization activities

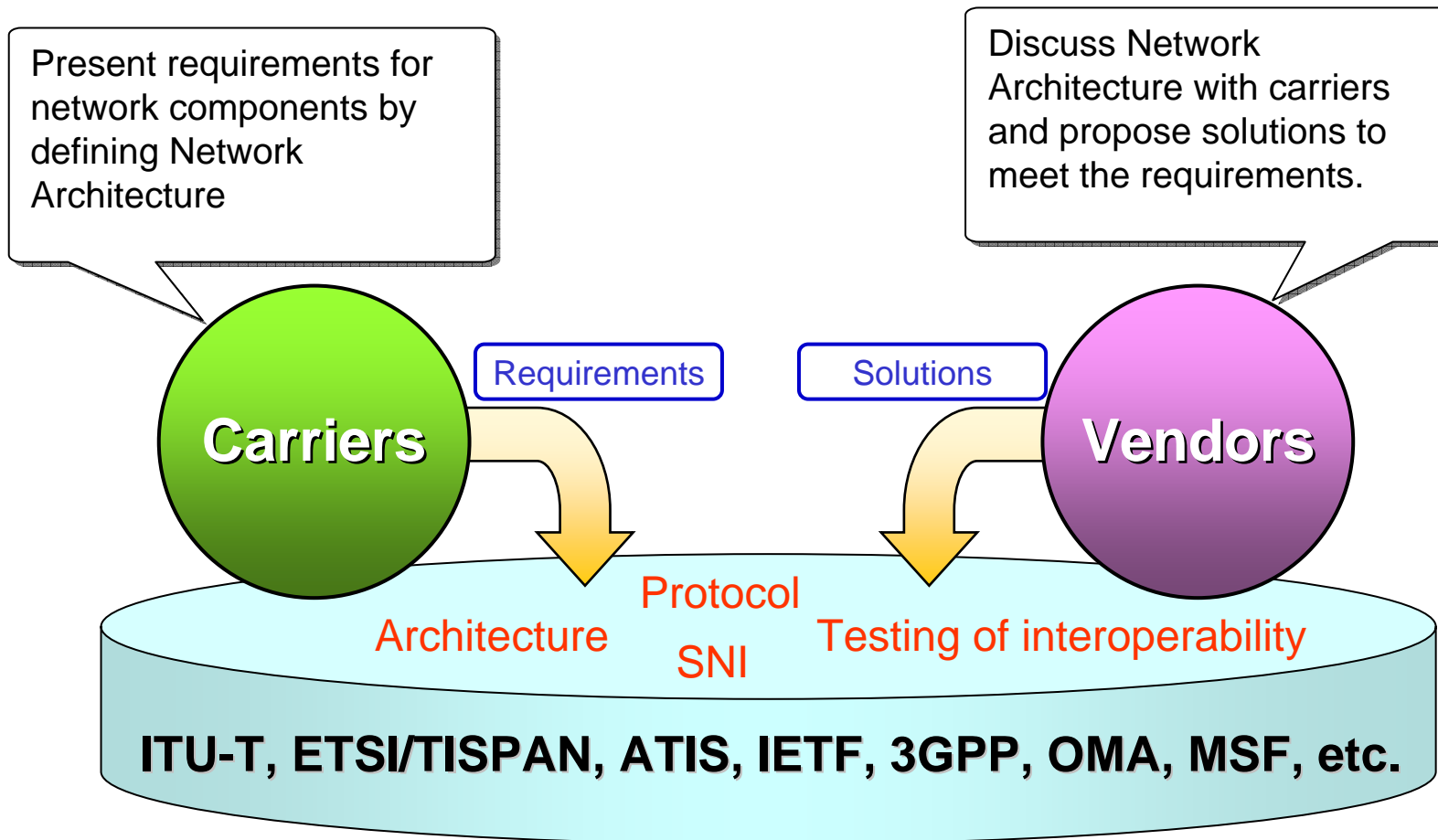
3. NTT's plans for the deployment of its NGN

4. Future visions for the NGN



Roles of carriers and vendors and their collaboration

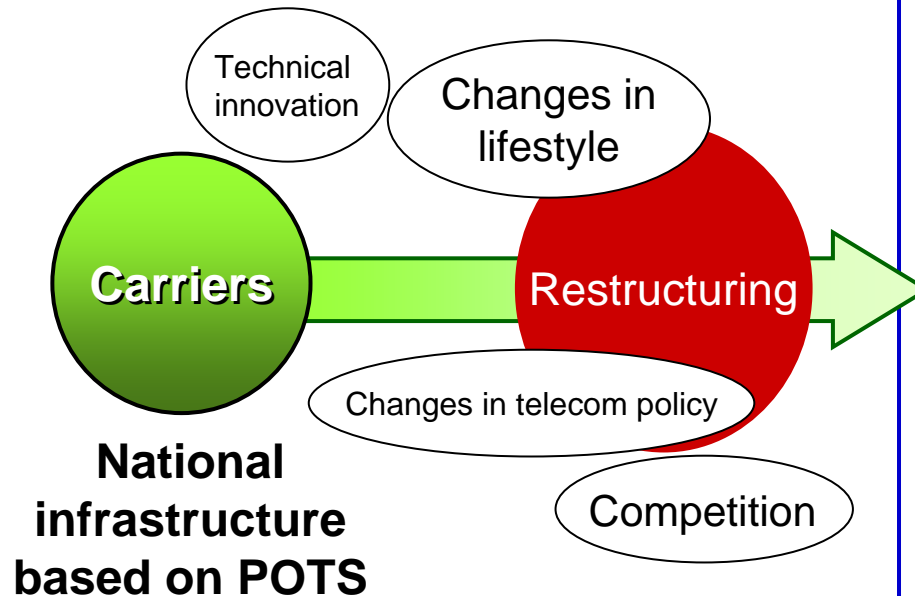
Technologies are being studied, with carriers presenting requirements and vendors proposing solutions. Standards organizations provide the fora for such discussions.





Future direction sought by all carriers

The external environment of carriers worldwide has changed from one where the telephone network was the main national infrastructure. All carriers are striving to face this challenge by restructuring and transforming themselves into carriers fit for the new age.



Be versatile as a service providing company

Provide FMC and triple play services:
to meet customer's demand,
extending mobile and Internet features.
FMC: Fixed-Mobile Convergence

Collaborate with other business areas:
e-commerce, banking, physical
distribution, home appliances, etc.

Reduce capital and operational expenditure:
by leveraging IP-technology to achieve
a competitive price

Save cost as a facility operating company

Telecom carriers should meet the requirements of **the new age by building the NGN**



1. The current status and future direction of Japan's telecommunications market
2. The worldwide telecommunications market and standardization activities

3. NTT's plans for the deployment of its NGN

4. Future visions for the NGN



Approach to NGN

Build **NGN** that is **of high quality, flexible and secure**

Develop and spread **broadband and ubiquitous services** that allow fixed-mobile convergence (**FMC**)

Open network that allows collaboration with other carriers and xSPs

Smooth migration from existing fixed-line to **IP** telephony, and from copper to **optical access**

Expand business opportunities by exploiting broadband and ubiquitous services

xSP: **Provide** new **business opportunities**

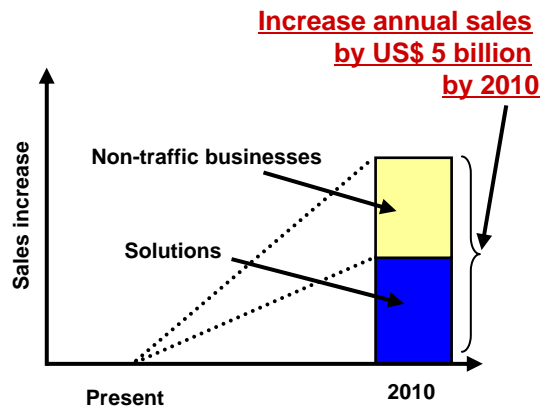
Strengthen competitive edge and financial base, and contribute to achievement of u-Japan



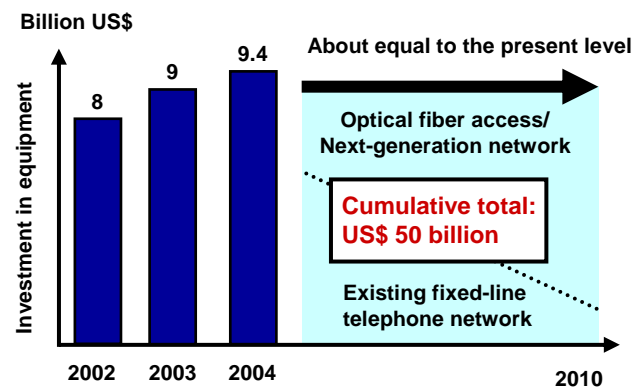
Major targets of NTT's NGN by 2010

- Migrate **30 million customers** to optical fiber access and next-generation network services
- Increase annual sales of solutions and non-traffic businesses by **US\$ 5 billion**
- Maintain the same level of equipment investment for fixed-line communications operations (cumulative total, 2006-2010: **US\$ 50 billion**)
- Reduce annual costs for PSTN operation by **US\$ 8 billion**.

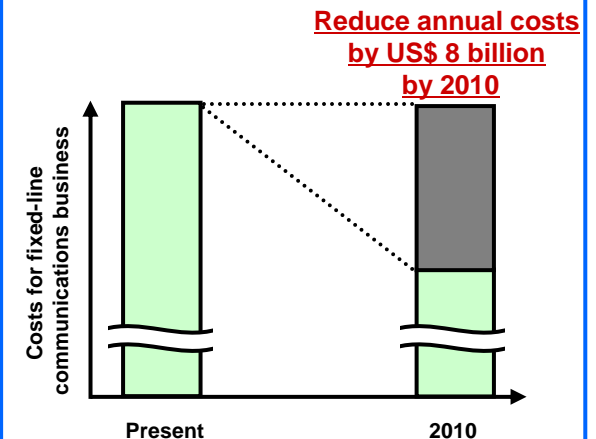
Sales of solutions and non-traffic businesses using the next-generation network



Equipment investment for fixed communications operations

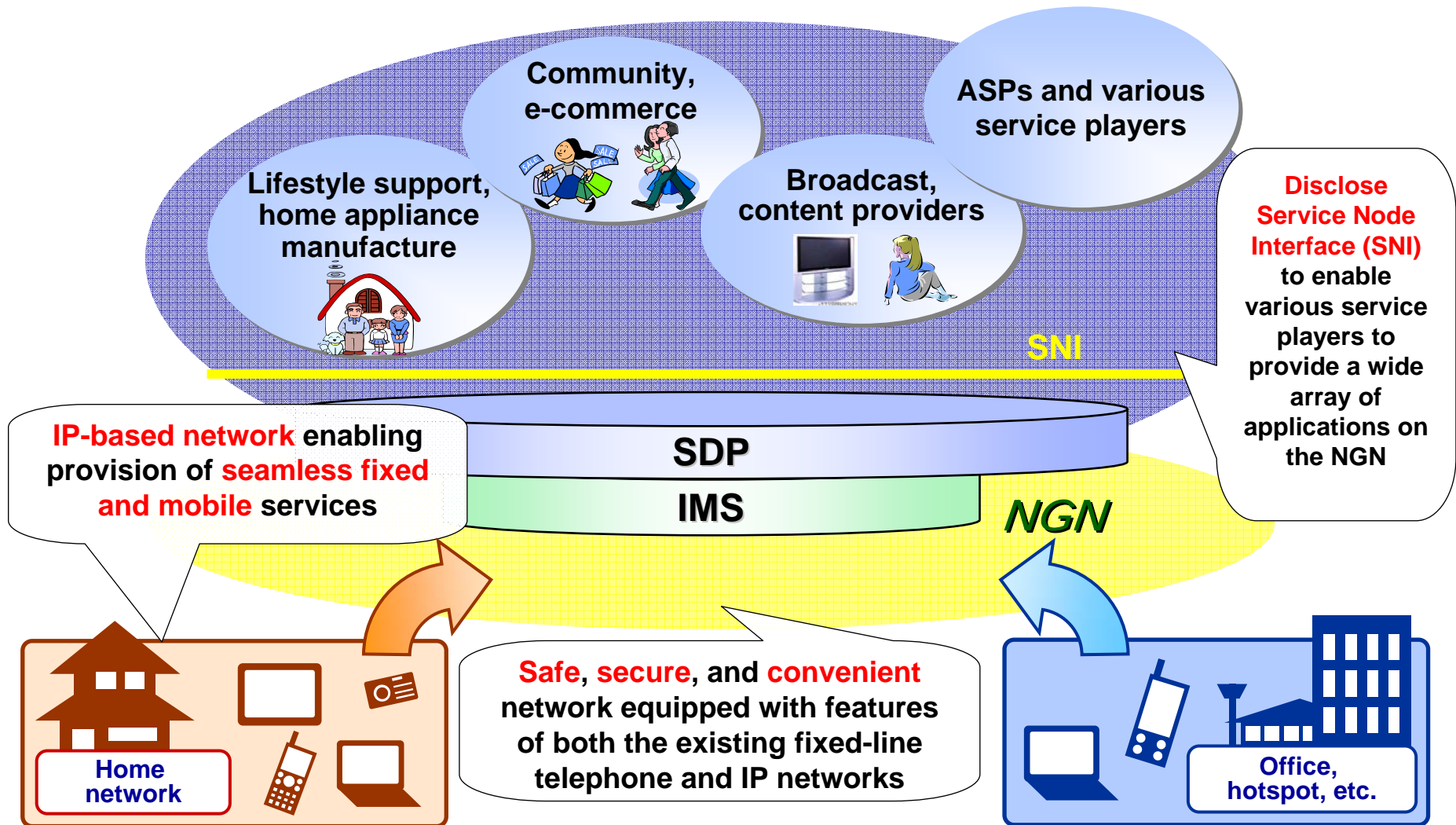


Costs for the fixed-line communications business





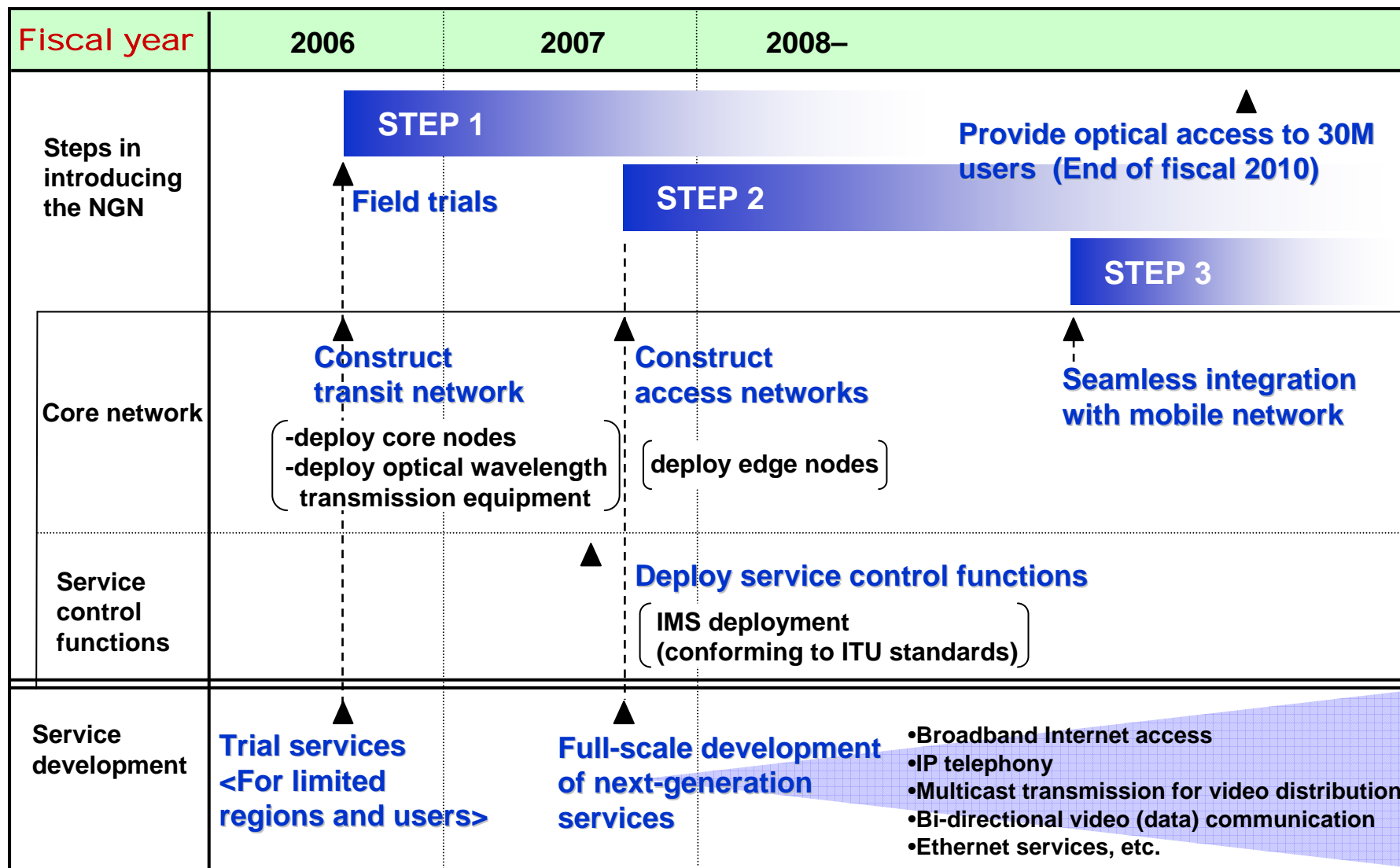
Basic concept of NTT's NGN



SDP: Service Delivery Platform
 IMS: IP Multimedia Subsystem



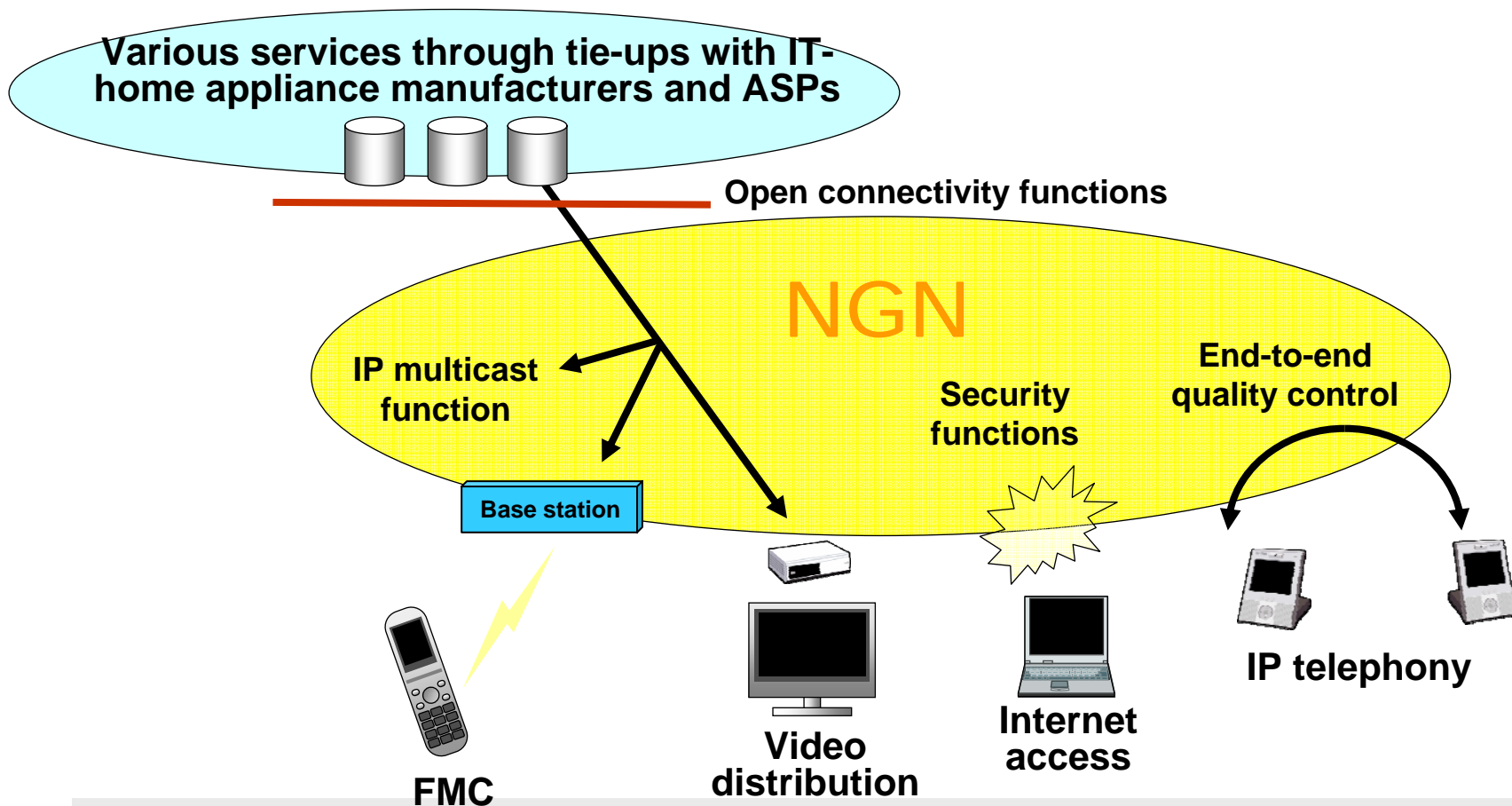
Roadmap to building NTT's NGN





Overview of Field Trials of NTT's NGN

- Trial period: One year from Dec. 2006
- Areas: Tokyo and its surroundings and Osaka





1. The current status and future direction of Japan's telecommunications market
2. The worldwide telecommunications market and standardization activities
3. NTT's plans for the deployment of its NGN

4. Future visions for the NGN



New activities for the NGN

Upgrade the fixed-line telephone network to an IP telephone network by applying the latest broadband IP technology

- Provide broadband and IP telephony services at attractive prices
- Reduce capital and operational expenditure

Deploy new broadband services

- Provide seamless services, such as triple play and FMC services
- Create non-traffic services

Create new markets by collaborating with various service players on the network

- Disclose Service Node Interfaces
- Provide the Service Delivery Platform, to promote collaboration.



Conclusion

As one of the first carriers in the world to implement an NGN, NTT will be happy to share with other countries our experiences and expertise of NGN trials and deployment.