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"Report of IPv6 Transition Field Trial" --Towards a Ubiquitous Network Society--

In order to realize a ubiquitous network society where everything and everyone will be interconnected by enabling a smooth transition of the entire Internet infrastructures from IPv4 to IPv6, MIC carried out model verification experiments including verification of effectiveness of IPv6 in various application environments and reliability of the IPv4-IPv6 transition models. MIC releases the report of IPv6 Transition Field Trial to the public.

Background

IPv6, which is the next-generation specification, is a set of key technologies for realizing a ubiquitous network society where everything and everyone will be interconnected.

When comparing IPv6 with the current IPv4, the number of addresses will dramatically increase (IPv6 is 128bits and IPv4 is 32bits), and strengthened security (e.g. the encrypted telecommunication called IP Sec as standard equipments), and the simplification of various settings (e.g. automatic address settings by connecting devices with networks) will be realized. In more concrete terms, through the use of IPv6, advanced and diversified services will become available in the fields of home security, education, nursing care, transport, etc.

As realization of a smooth transition of the current Internet infrastructures from IPv4 to IPv6 is an imminent issue, "e-Japan Strategy," set "the transition to IPv6 compliant Internet platforms" as a concrete policy target.

MIC efforts

Since FY2003, MIC has been implementing three-year-periods verification experiments by linking a model network for enabling the environment which allows users such as local public entities, corporate users and residential users to use IPv6 easily.

With respect to field trials carried out in FY2005, MIC accelerated penetration of IPv6 through experimenting with the models for building various IPv6 ubiquitous network systems in local communities in addition to the implementation of technical verifications on network operations related to IPv6.

In addition, in order to encourage the transition to IPv6, MIC has been widely releasing the results of verification experiments domesti-

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cally and internationally. For further information on verification results by FY2004, please refer to the following URL:

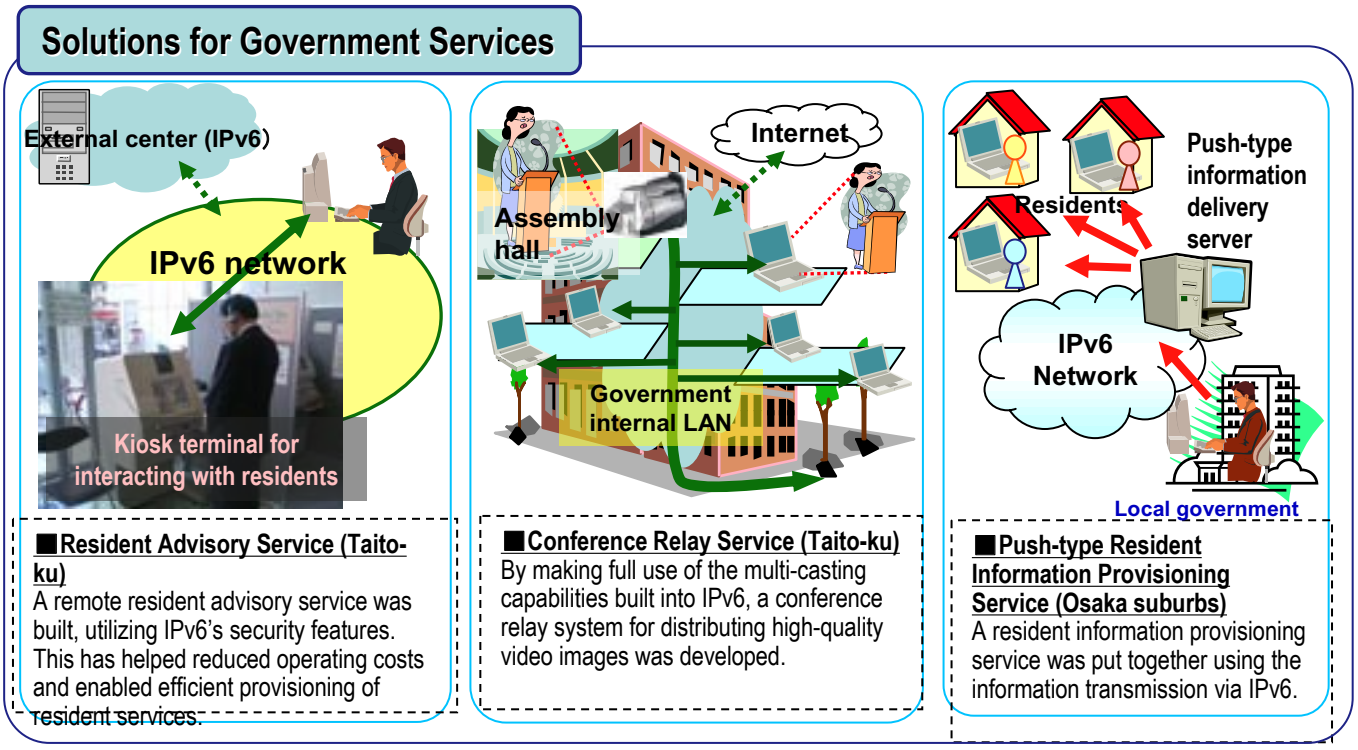
http://www.v6trans.jp/jp/ (Japanese)
http://www.v6trans.jp/en/ (English)

MIC will pursue the development of IP infrastructure for realizing the ubiquitous network society where everything and everyone will become interconnected.

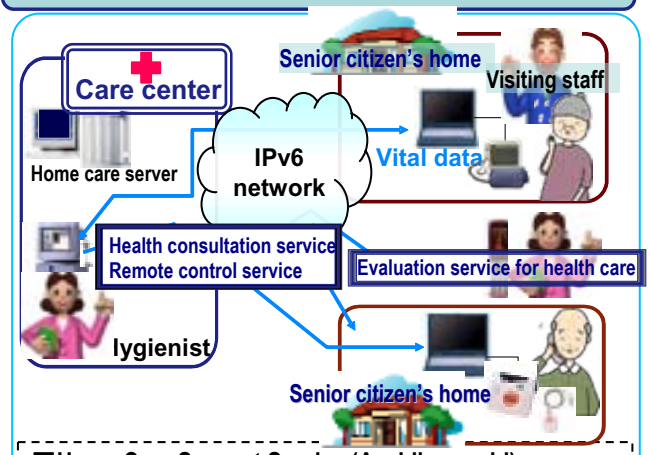
Overview of Fiscal 2005 IPv6 Deployment Field Trials

With the cooperation of local governments throughout Japan, we performed demonstration trials in a wide range of areas to assess the benefits of IPv6 in real-world applications.

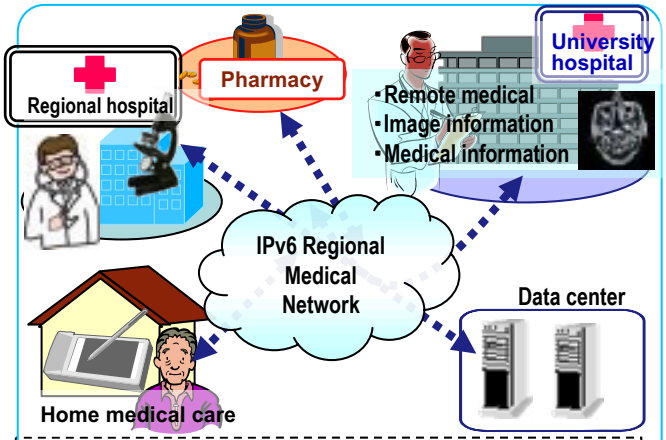
While the trials were designed to resolve IPv6 technical issues, we also evaluated benefits in six major areas: government services, health and public welfare, education, crime and disaster prevention, tourism, the environment, and facility management — overviews of which are provided below. More detailed studies are published for worldwide consumption as the IPv6 Solutions Guidelines on the IPv6 Deployment Field Trial Website to promote expansion of and migration to IPv6.



Solutions for Health and Public Welfare

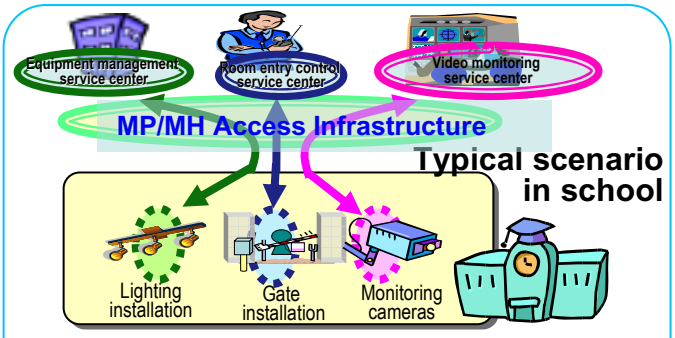


■Home Care Support Service (Asahikawa-shi)
With information distributed via IPv6, care terminals were used to provide remote control of in-home care service, as well as to implement "house call" service via IPv6 mobile terminals.

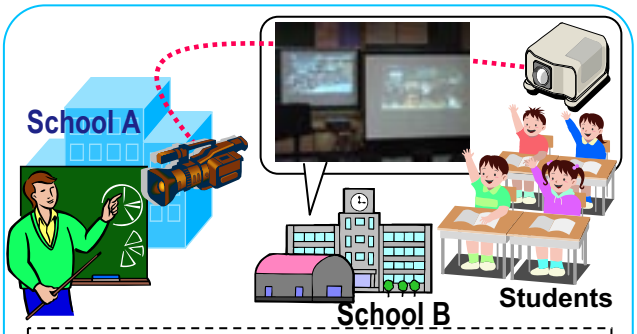


■Regional Medical Network (Wakayama prefecture)
By exploiting IPv6's secure end-to-end communications capabilities, a medical link system equipped with advanced personal information security features was built that spans a number of medically-oriented agencies and facilities.

Solutions for Education

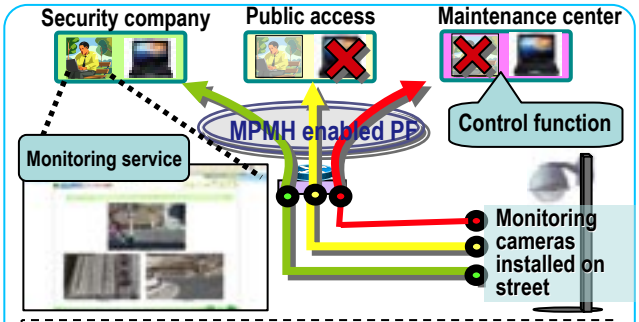


■IPv6 Educational Multi-Service (Tokyo)
Applying IPv6's capacity to simultaneous control multiple connections, a school security system that provides appropriate protection of personal information was demonstrated.



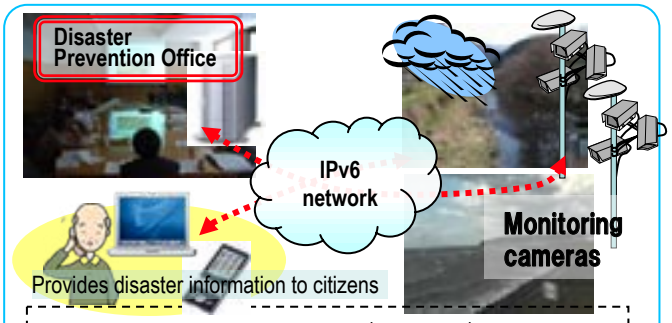
■Inter-school Image Distribution (Hiroshima)
Using IPv6's ability to directly access any terminal and to distribute to multiple locations, an education network system was developed for distributing courseware and providing remote classes.

Solutions for Crime and Disaster Prevention



■Secure Town Service (Kawasaki)

Making use of IPv6's simplified setup and its capability to simultaneously control multiple connections, the secure town service was built to safely and securely distribute image information to help in crime-fighting.



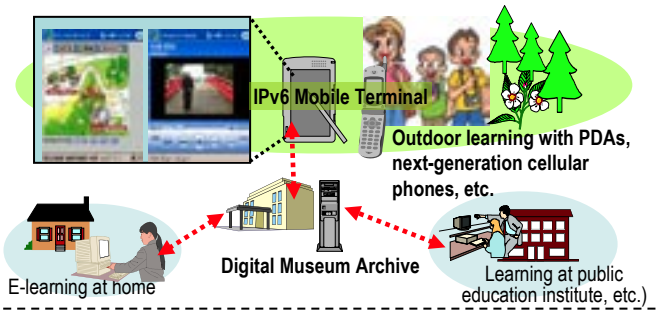
■Disaster Prevention System (Niikappu)

Exploiting IPv6's trouble-free connectivity and its ease-of-maintenance and management, a system was assembled that provides image-based fixed-point observation as well as the quickness and flexibility of information and voice calls over portable devices.

Solutions for Tourism

■Music Town (Okinawa)

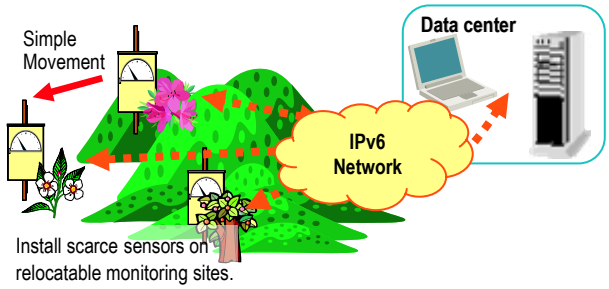
Motion picture multi-casting was realized using IPv6 across multiple ISPs.



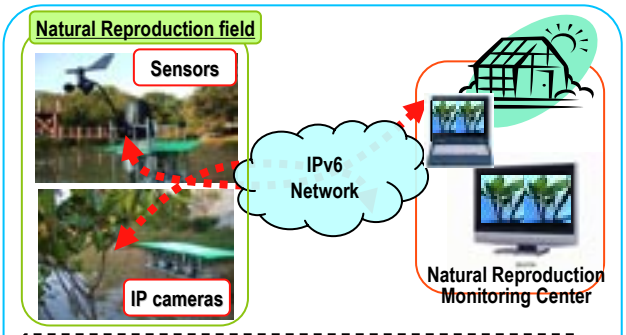
■Local Digital Museum (Tateyama, Toyama Prefecture)

Utilizing mobile terminals with built-in cell phone functionality that supports IPv6, a "mobile" education system was built with wireless LAN spots for providing educational materials intimately connected to the environment, historical landmarks, and lifestyles of the area.

Solutions for the Environment

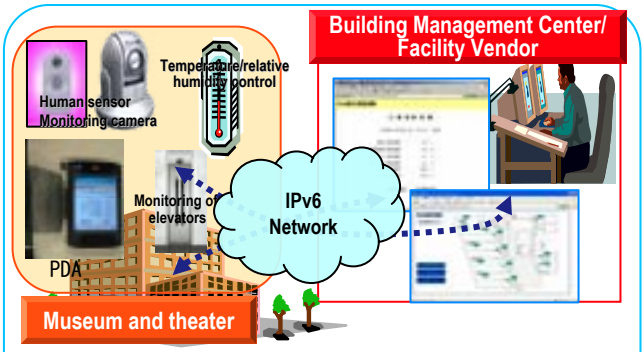


■Environment Monitoring (Tottori Prefecture)
Making use of IPv6's plug-and-play capabilities, a simple mobile sensor system was assembled to more effectively use scarce sensors.

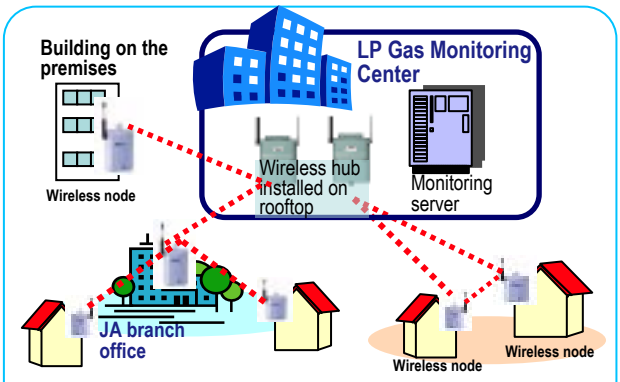


■Natural Reproduction Monitoring (Miyakojima)
Exploiting IPv6's rich addressing and plug-and-play capabilities, a system that continuously monitors natural reproduction processes was built.

Solutions for Facilities Management



■Building Facility Management (Tokyo)
Using IPv6's rich addressing capabilities, air conditioning, elevators and other equipment in a number of cultural centers were remotely managed from a central location, amply demonstrating the ability to efficiently operate building facilities from afar.



■Liquefied Petroleum Gas Tele-Metering (Kochi Prefecture)
Utilizing IPv6's plug-and-play and static terminal addressing capabilities, a monitoring system that remotely checks meters was assembled.

* The location names shown in the figures indicate the areas at which this trial was performed, not the execution entities who performed the trial.

Survey on Supply-side and Demand-side Trends for Telecommunications Services (Current Status in FY2005)

MIC has compiled the "FY2005 Survey on Supply-side and Demand-side Trends for Telecommunications Services (Current Status in FY2005)."

In line with the "Basic Approach of Competition Review in the Telecommunications Field" and the "FY2005 Details for Implementation of Competition Review in the Telecommunications Field," MIC has conducted a survey on the "Current Status of Markets in FY2005," as part of the "Competition Review for FY2005."

In FY2004, MIC compiled the competition status for such market segments as "mobile communications," "Internet access" and "intra-company networks." In FY2005, the "fixed telephone" market segment is added to those segments, for grasping a wider range of market trends. MIC will, based upon the "Current Status of Markets in FY2005," compile a report on the results of FY2005 competition review.

Points regarding survey on supply-side trends for telecommunications services (FY2005)

Fixed telephones

(1) The percentage of non-NTT fixed telephones within fixed telephones was 2.6% as of the end of September 2005, an increase of 1.8% compared to the end of March 2005.

- With the development of the new type of non-NTT fixed telephones, their share of the fixed telephone subscribers has been growing.
- The number of subscribers for NTT East and West fixed telephones and ISDN stood at 95.0% as of the end of September 2005, a drop of 2.5% compared to the end of March.

(2) IP telephony numbers in use stood at 10.6 million at the end of December 2005, an increase of 8.6% compared to the end of September 2005.

- Compared at the end of September 2005, they stood at 17.9% of fixed telephone subscribers (not including IP telephony)
- 0AB-J numbers type IP telephony alone showed an increase of 67.1% between the end of September and the end of December 2005.

(3) The top 3 providers of the IP telephony numbers in use occupy 78.5% of the total as of the end of December 2005.

- BB Technology occupies 45.0% of the market as of the end of December 2005, a drop of 3.3% compared to the end of September. Together with NTT Communications and KDDI, the top three companies occupy 78.5% of the total.

Cellular telephones & PHS

(1) The number of cellular telephone and PHS subscribers stood at 94.75 million as of the end of December 2005, an increase of 1.2% compared to the end of September.

- With cellular telephones at 90.18 million and PHS at 4.57 million, the growth rate slowed down considerably in FY2005.
- Vodafone was losing ground at one stage but returned to growth in September 2005. The NTT DoCoMo and au groups continue to show growth.

(2) The ratio of 2G to 3G subscribers was 52:48 at the end of December 2005 (NB: The ratio was 65:35 at the end of March 2005).

- 3G cellular telephones were growing fast in comparison to the previous fiscal year. In particular, the NTT DoCoMo group showed high net growth.
- Browser phone services accounted for 86.8% in cellular telephones, showing virtually no change over the previous year.

(3) The total number of PHS subscribers stood at 4.57 million at the end of December 2005, a drop of 2.9% on a year-to-year comparison.

- Note however that subscriber numbers for WILLCOM were up 23.3% year on year
- PHS subscribers started to rise again in FY2005.

Public wireless LAN

(1) The number of subscribers to

public wireless LAN stood at 6.25 million as of the end of December 2005.
- It is not possible to make a direct comparison since what is included in the report was expanded (to include usage as an option to other access services), but the trend is towards an increase.

(2) The three top areas for installation of base stations were Tokyo (44.0%), Osaka (10.9%) and Aichi (5.3%).
- The number of base stations in Tokyo has increased 2.3 times on a year-to-year comparison.
- Most-used installation sites include public transport (30.6%) and restaurants (22.3%).

ADSL

(1) The number of subscribers stood at 14.48 million as of the end of December 2005. This marks an increase of 1.15 million over the end of December 2004.
- As of the end of September 2005, the top three providers were Softbank BB, NTT East, and NTT West, with 73.8% of the market. Together with eAccess and ACCA Networks, the top five accounted for 95.9% of the total.

(2) Net growth in numbers is falling each year, totaled 630,000 for the period from April to September 2005.
- Compared to the 2.8 million increase in lines for the period from October 2002 to March 2003, this showed a quarter of the growth in net numbers.

(3) The household penetration rate stood at 28.7% as of the end of December 2005. The number of prefectures with more than 20% penetration has expanded to 39.
- Household penetration rates continue to be higher in eastern Japan than western Japan.
- Shizuoka Prefecture has the highest penetration rate at 37.9%, followed by Tokyo at 36.1%.

FTTH

(1) The number of subscribers has surpassed CATV Internet, making it the second for broadband lines.
- The number of subscribers stood at 4.637 million as of the end of December 2005. This is an increase of 1.9 times on a year-to-year comparison (an increase of 2.225 million lines).
- As of the end of September 2005, NTT East and West and the electric power company operators accounted for 75.7% of total subscribers

(2) For the period from April to September 2005, net growth in numbers for NTT East and West accounted for 63.8% of the total, showing an increase off 11.6% on a year-to-year comparison.
- The net increase for electric power company operators was 17.5% of the total, down 5.7% on a year-to-year comparison.

(3) As of the end of December 2005, collective housing accounted for 1.993 million lines, with the rest totaling 2.645 million lines.
- For collective housing, the share for NTT East and West for the period from July to September 2005 stood at 41.1%, an increase of 2.2% compared to the same quarter of the previous year.
- For non-collective housing, NTT East and West accounted for a 72.9% share as of the end of September 2005, a drop of 0.4% compared to the same quarter of the previous year.

(4) Average nationwide household penetration as of the end of December 2005 stood at 9.2%.
- There is still a gap with the penetration rate for ADSL (28.7%)
- Looking at the top penetration areas, penetration in western Japan is higher.

CATV Internet

(1) The number of subscribers stood at 3.227 million as of the end of December 2005. This shows an increase of 354,000 compared to the previous year.
- Even though the number of subscribers is increasing, movement is at the rate of about a 3% increase.
- The number of providers for CATV Internet remained generally stable during this fiscal year.

(2) The highest figure for household penetration was in Mie Prefecture, with 23.0%, followed by Fukui and Toyama Prefectures. The rankings have not changed over the previous year.
- The average nationwide household penetration stood at 6.4% as of the end of December 2005 (the household penetration rate for FTTH stood at 9.2%).
- The prefectures with over 15% of household penetration were Mie Prefecture (23.5%), Fukui Prefecture (19.8%), and Toyama Prefecture (18.9%)

Internal corporate networks (corporate use)

(1) The overall market for new-type WAN services expanded.
- The market for new type-WAN services is made up of IP-VPN, Wide-area Ethernet, MEGA-DATA Nets and the like.
- There was particularly strong growth for Wide-area Ethernet and MEGA-DATA Nets.
- The market share of IP-VPN fell below 50% for the first time at the end of March 2005.

(2) In the market as a whole, HHI (Herfindahl-Hirschman Index) was flat. The top 3 companies showed a tiny increase in share.
- In the Wide-area Ethernet market, HHI showed a slight decline, In the IP-VPN market, HHI showed a tiny increase.
- The share of the top 3 companies showed a tiny decrease both in the Wide-area Ethernet market and the IP-VPN market.
- In the IP-VPN market, NTT Communications has been increasing its market share in recent years.
- In the Wide-area Ethernet market, the market share for electric power company operators is showing an upward trend.

Points regarding survey on market trends for telecommunications services (FY2005)

Fixed telephones

(1) The NTT subscriber telephone "that I've always used." The other fixed telephones stand out for their cheap rates.
- A major reason for subscribing to CATV telephone or 0AB-J type IP telephony is the existence of cheap combination rates together with Internet or broadcast services.
- Emergency call is seen as the most important point for as fixed telephone
- More than half of people who do not subscribe to fixed telephones gave as a reason that they use cellular or PHS telephones.

(2) 0AB-J type IP telephony is the fixed telephone service that people would like to use in the future.
- The number of users aggressively wishing to switch fixed telephones remains limited.
- The main reason for people wanting to switch fixed telephone is basic charges and call charges.
- More than 60% of those wanting to switch are leaning towards 0AB-J type IP telephony.

(3) The main reason for choosing a "MYLINE" or "MYLINE PLUS" operator is that rates are cheap.
- The main reasons given when registering with or switching operators are "cheap rates" and "set reduction."
- Factors affecting the NTT group include "I belong to the same group as the fixed telephone company" or "I had been using them before the introductions."

(4) 050 type IP telephony is used as one way to reduce call rates.
- Penetration to users as a whole is still limited.
- The main reasons for use are related to cheap rates, such as "long-distance rates are cheaper" or "it's a discount service that includes Internet."
- The main reasons for dissatisfaction include "call quality", "the lack of emergency call services" and "the range of free calls."

Cellular telephones and PHS

(1) The reasons for selecting operators include "business brand," "use by family and friends" and "area."
- Business brand and use by family or friends are more important than rates or discounts.

(2) Most complaints concentrate on "rates."
- There are strong complaints concerning "rate levels (high rates)" and rate packages (rate plans, discount systems).
- Complaints about rate systems being too complicated are increasing, especially among older users.
- There are strong complaints about high fixed-charge for flat-rate telecommunication services.

(3) Use of the terminal for multiple functions is developing, with music, movies and payments being added to checking email and surfing the web.
- Usage rates for checking email and surfing the web is higher among younger people.
- The use of music downloads is developing, and high-level use as television, radio, or electronic wallet is beginning.
- Monthly rates are higher for the younger user groups, and high-level users of 3G cellular telephones are also on the increase.
- Just under 70% use their cellular telephones for calls even when they are at home (including parallel use

with fixed telephones).
(4) The number of people requesting a switch in operators using the number portability system remains low for the moment.
- Those requesting a switch accounted for 14.7%, with a trend to more users among young people.
- (1) Base rates, (2) terminal functions, (3) use of operator's unique services are important.
- Reasons for not wanting to switch include "satisfaction with current service" as well as "family discounts and discounts associated with long-term usage" and "not wanting to change email address."

Broadband

(1) The main reasons for selection are "connection speed" for FTTH and "always on" for ADSL and CATV Internet.
- With regard to the selection of operators, the main reason for FTTH is "business brand" and for ADSL and CATV Internet, it is "cheap rates."
- Within broadband, usage time for FTTH users is particularly long.
- FTTH also shows a trend for higher average monthly usage rate.

(2) Broadband usage is mainly for email and surfing the web.
- Online shopping and Internet banking are becoming popular, but IP telephony and image transmissions are still for the future.
- Among FTTH users, there is more wide-ranging usage such as image-related usage and administrative services usage.
(3) More than 30% of non-FTTH users would like to switch to FTTH.
- The reason for the wish to switch is "outstanding communications speed" in 90% of cases.
- There is especially a strong trend towards NTT East and West's FTTH services.
- The main reason for not switching or not being able to switch is "the rates are more expensive than the ones currently paid", in just under 40% of cases.

(4) Just under 60% would like integrated providers of Internet, fixed telephones and cellular telephone.
- Just under 50% respond that they would like this if there was a discount service.
- The main reasons for wanting integrated services are "all-in-one billing would be simpler" (50%) and "reduced rates due to discounts" (36%).

Internal corporate networks (corporate use)

(1) The main services used by corporations are trunk-line IP-VPN, wide-area Ethernet and the like, and branch-line Internet VPN, IP-VPN and the like.
- Both for trunk-line and branch-line, the increase of Internet VPN stands out. IP-VPN is on a downturn.
- The growth rate for trunk-line wide-area Ethernet and branch-line Megadata Nets stand out.
(2) More companies are introduc ing IP telephony both for internal and external calls.
- The introduction for internal lines has now topped 30%, with more than 60% planning an introduction or studying the matter.
- Overwhelmingly, the reason for the introduction is a reduction in communication costs.
- There are slight differences between the way 050 type IP telephony and 0AB-J type IP telephony are used, with the latter seeing more switching from existing telephone subscribers.

(3) More than 70% of corporations provide their employees with mobile telephones.
- About 30% of corporations have completed the introduction of mobile internal line telephones.
- Almost all of the corporations that have introduced mobile internal line telephones use PHS indoors, but many of the corporations that are studying future introduction are investigating mobile internal line telephones using cellular telephones based on wireless LANs.
- However, there is still a lot of improvement to be made in the pricing and functionality of the terminals, as well as voice quality and operability.

Basic Concept on the Management of Price Cap Regulations --Report from the "Study Group on the Management of Price Caps"--

The "Study Group on the Management of Price Caps" has compiled its findings as a report on basic concepts that should be considered when calculating the value X (the estimated productivity growth rate) needed to set the new standard tariff index, to be applied for three years as from October 1, 2006.

The Study Group on the Management of Price Caps (under the Director-General of the Telecommunications Bureau) was established in November 2005. To date, the price cap regulations are applied to tariffs for voice transmission services, including telephone and integrated services digital networks (ISDN), of NTT East Corp. and NTT West Corp. Upon application of the price cap regulations, the standard tariff index (the upper limit of charges) is calculated by adding the value X (the estimated productivity growth rate) to cost information, etc. of NTT East and NTT West. Thus, the value X is to be set forth for the next three-year period beginning from October 2006.

Main points of the report

Chapter 1: Aim of this study group

- Price caps are vitally necessary to people's lives and the economy, and are introduced so as to keep prices low for services without real competition. They are used for user rates for voice transmission services (telephone and integrated digital communications services) and specialized services provided by NTT East and West.
- With regard to the operation of price caps, a standard tariff index (upper limit) is established by adding the estimated productivity growth rate (value X) to cost information from NTT East and West. The aim of this study group is to look at concepts related to establishing value X for the next three-year starting from October 2006).
- In doing this, a prudent investigation is sought from the two points of view of bringing about policies that safeguard user benefits while also giving NTT East and West incentives to improve their management efficiency, while taking into consideration that the telecommunications market has seen dramatic changes in market structure unlike anything that has ever been seen in any market before.

Chapter 2: Establishing estimated productivity growth rate (value X)

- This report estimates revenue and costs that are needed for the calculation of value X, and also investigates compensation rates and rate of variability in the consumer price index. In addition, having investigated the management efficiency of NTT East and West, it clarifies thinking on the establishment of value X. In doing this, while taking into consideration the point of the price cap system, it conducts its investigation from a policy point of view, responding to the structural changes in the telecommunications market, along with the shift in networks from PSTN to IP. At the end, it also lays out future subjects for investigation.

Chapter 3: Estimating revenues for specified telecommunications services

- With regarding to estimating revenues for specified telecommunications services, it is appropriate to use a method that is both highly transparent and objective. Taking into consideration that this is a time of change in the structure of the market with the communications network as a whole moving from PSTN to IP networks, and the medium-term that was announced by the NTT group in November 2004, revenue estimates for NTT East and West until FY2008 were first sought.
- The revenue estimates for NTT East and West take into account the companies' medium-term management strategy, along with the assumption that by FY2010, 30 million subscriber that is equal to about half of fixed line telephone subscribers will have shifted to optical IP telephony (Pattern A). Taking also the point of view of NTT East and West that one cannot come up with estimates based solely on pattern A, estimates are also shown based on

the existing downward trend in fixed line telephones plus the assumption that, rather than shifting to optical IP telephony, the shift will be to dry copper direct connection telephones (Pattern B).

- In addition to the two assumptions shown above, the study group also added an assumption that neither optical IP telephony nor dry copper direct connection telephones would advance (Pattern C), and so prepared revenue estimates based on three different patterns.

Chapter 4: Estimating costs for specified telecommunications services

- With regard to costs for specified telecommunications services, in the same way as for revenues in the previous chapter, a request was first made to NTT East and West for cost estimates as well as measures for improving management efficiency, and these were studied.

- As a result of this, for fixed line telephone operating costs, installation and maintenance of local line facilities, supply costs (the cost of referring business to subsidiaries), a conclusion was obtained under fixed conditions concerning the possibility of additional cost reductions within the possibilities of each pattern.

- In addition, one characteristic of the telecommunications business is that there is a possibility that, at times of demand reduction, the economics of scale can turn negative. When a value of elasticity was calculated regarding demand trends for NTT East and West's network costs, the results supported a negative turn in economics of scale in all cases. Within this, pattern A included fixed costs higher than the cost model. This would be due to the metal lines that become a non-operational asset when shifting to optical IP telephony being included as terminal line costs in the estimations.

Chapter 5: A framework for compensation rates for specified telecommunications services

- Compensation rates for specified telecommunications services were calculated using the same methods as in the past. Calculation of value X was done using a median value (1.60% for NTT East, and 1.57% for NTT West) of the upper limit value of this compensation rate (compensation rates obtained from outside capital and owned capital) and the lower limit value (compensation rates obtained only from borrowed capital).

Chapter 6: Setting the rate of variability for the consumer price index

- With regard to the rate of variability of the consumer price index that is used in calculating value X, having decided to use the estimated value of the calculation period for value X, the average value (0.5%) as announced by the government was used in selecting the estimated value.

Chapter 7: Analyzing management efficiency for NTT East and NTT West

- In setting value X, an analysis of the management efficiency of NTT East and West was conducted using established objective analysis methods, and an investigation was conducted as to whether the non-efficiency calculated as a result would be eliminated by the management efficiency measures of NTT East and West over the period during which the price cap system would be applied.

- Consequently, a result was obtained showing the existence of non-efficiency that would not be eliminated by the management efficiency measures of NTT East and West.

Chapter 8: Reflections on setting value X

- Taking the above analysis into consideration, when value X for NTT East and West was calculated concerning the three patterns (A to C), a value X was obtained that would broadly approve a price increase (Case I).

- However, when implementing the cost reductions that were analyzed in Chapter 4 (Case II) and eliminating the non-efficiencies analyzed in Chapter 7 (Case III), the value X turned out to be positive, excepting pattern A.

- So, when calculating value X based on the various assumptions, the value X could be set above and below the rate of variability of the consumer price index. But, given the fact that one cannot estimate with a high degree of probability the actual tempo at which the shift from PSTM to IP networks will occur, one cannot determine that a specified calculation takes precedence over other calculations.

- So, in circumstances where it can be estimated that the networks and services that make up the market will change dynamically, it is not

necessarily appropriate to set value X based on specified assumptions grounded in a price cap system.
- In concrete terms, if value X is set at a much higher level than the rate of variability of the consumer price index, it would be an inducement for PSTN to survive longer than necessary which would not be appropriate from the viewpoint of neutrality in rules of competition. On the other hand, if value X is set at a much lower level than the rate of variability of the consumer price index, this would cause excess profits for NTT East and West, and by applying this as resources for the construction of IP networks (next-generation communications networks), this could well hinder fair competition with other competitive operators. In addition, there is a possibility that, through price increases in fixed line telephone tariffs, a burden would be placed on subscribers that continue to stay with fixed line telephones.
- Therefore, taking into consideration this investigation from the point of view of a policy of neutrality in rules of competition and maintaining benefits for users this study group determined that it is appropriate to set value X at the rate of variability of the consumer price index in the light of fixing tariff levels (nominal value) paid by consumers.
- In promoting the shift from PSTN to IP networks, while on the one hand the development of penetration of optical IP telephony services will be centered around large-scale users and users in urban areas, it will be necessary to have safeguards to maintain benefits for users who will experience delays in the availability of these services due to users being small-scale, or for geographical reasons.
- This approach was in fact used by British Telecom in the UK in 2002 when subscriber lines were resold as a safeguard to maintain benefits for small-scale users.
- In addition to the fixed line telephones referred to above, with regard to specialized services too, these will continue to be used to a reasonable extent as a means of communications vital to the operation of existing systems. When these systems are up for revision it is estimated that there will be a gradual shift to other services and it is appropriate to set value X based on the revenue estimate submitted by NTT East and West.

Chapter 9: Future issues for investigation

- With regard to the subscriber line sub-basket of voice transmission baskets, taking into consideration that the principle of competition has begun to apply to the base rate of NTT East and West and that competitors can now bill combining base rates and communications charges, it will be necessary to take a detailed look at how these are handled in the future.
- Also, as the shift from PSTN to IP networks develops, if IP-based services such as optical IP telephony are recognized as being vital to people's lives and the economy, it will be necessary to investigate the appropriateness of setting a price cap for these services. At that time, with IP based services being provided as bundles that differ from existing tariff systems, it will be necessary to conduct flexible investigations that go beyond existing baskets taking into consideration the trend towards greater variety in tariff systems.
- Next, through the investigation on estimated costs for specified telecommunications services, it was possible to look at the points that need further investigation in NTT East and West's cost structure, such as entrusting business to subsidiaries, operating costs for fixed line telephones and maintenance costs for facilities. It will be necessary to investigate in the future whether cost data for NTT East and West that is announced based on telecommunications business accounting regulations at this administrative office is not removed from management conditions.
- In addition, at the present time, a price cap with value X as the rate of variability of the consumer price index is appropriate but, in this case, as demand for fixed line telephones continues to decrease in the future, one can conceive of the possibility that, in terms of calculation, connection charges may overtake NTT East and West's user charges. In order to avoid such a state of affairs, and to put in place a safeguard to prevent an actual increase in burden for fixed line telephone users, it is appropriate to study more deeply, as an alternative choice when revising value X in the future, a price cap that would set value X at zero.
- Finally, with regard to the relationship between price caps and universal services, it is possible that, if NTT East and West's share of the fixed line telephone market were to fall dramatically, fixed line telephones may be removed from being liable to price caps. But this is something

that would require governmental consideration in maintaining the cheapness of these services as universal services. For this reason, in case the shift from PSTN to IP networks progresses, it will be necessary to carry out a more in-depth investigation in the future as to whether services that make up the universal service system are targeted for price caps and to determine the relationship between universal services and price caps. This would be done not from the perspective of improper use of leadership, but from the perspective of maintaining the cheapness of a universal service that is vital to people's lives.

Chapter 10: Conclusion

- This report determined that, from the perspective of avoiding inequality between users in the midst of the shift from PSTN to IP networks, it is appropriate to make value X the rate of variability in the consumer price index.
- In addition, with regard to the issues that became clear in the course of this process, it will be necessary to conduct additional investigations that are consistent from the perspective of whether there are to be revisions or not in the framework of competitive rules, as the move to IP progresses.

Report from "Study Group on Utilization of ICT in Medical Field"

Since October 28, 2005, MIC and the National Institute of Information and Communications Technology (NICT) have been jointly holding the "Study Group on Utilization of ICT in Medical Field" (Chair: Prof. Dr. TANAKA Hiroshi, Director of the Center for Information Medicine at Tokyo Medical and Dental University). As the Study Group compiled its findings as a report, MIC releases the report.

In Japan, which is stepping into the era of low birthrate and aging society, it is expected that the social role of medicine will become further significant. When looking into social circumstances surrounding medicine, a variety of issues are being pointed out, including increasing fees for medical treatment and safety/efficiency of medical treatment to be improved.

At medical institutions, where the needs of patients have been diversifying, medical treatments have become increasingly advanced and specialized. Thus, it is expected that patient-oriented environments must be prepared for providing patients with high-quality effective medical services.

Although ICT has been anticipated to contribute to resolving such issues relating to medicine, ICT has not been fully utilized to date as expected, resulting in a limitation in terms of scope.

In order to promote ICT utilization in the medical field, the Study Group has compiled the report after multifaceted deliberations upon the possibility of ICT utilization in the medical field.

This report i) describes a future image of new medical treatments -- in the ubiquitous network age -- for realizing safe and secure medical treatments as "ubiquitous health/medical treatments" through use of ICT, and ii) proposes specific ICT measures with RFID tags, etc.

The Role Expected of ICT in Medical Field

The roles that are expected of ICT in solving issues in the medical field areas below:

Improvement in the medical quality

◆ Bringing about access to the most recent medical information, improvement in patients' own understanding of their illnesses, participation in treatment plan, and the individualization of medical treatment.

(Examples) Medical treatment based on evidences (consultation guidelines based on the EBM (Evidence-Based Medicine) method), the most appropriate treatment plan (clinical pass), virtual reality surgery, tailor-made medical treatment, etc.

Reduction and rationalization of the administrative burden

◆Bringing about laborsaving in administration within facilities and medical treatment within the region, as well as administrative cooperation and cost reductions.

(Examples) Improvement of administrative flow, automated record of state of stocks and consumption of medical supplies and automated ordering, automated record of state and location of medical workers and patients, regional coordination of patient consultations, etc.

Improvements of the safety and reliability of medical treatment

◆Bringing about the elimination of human error, through the realization of real-time and accurate information delivery and sharing among medical workers, and also bringing about the prevention of medical malpractice through support for medical procedures and ongoing monitoring

(Examples) Automated checks for errors in identification or medications, automated checks for missed medication through prescriptions and implementation procedures, safe maintenance of medical recipients, etc.

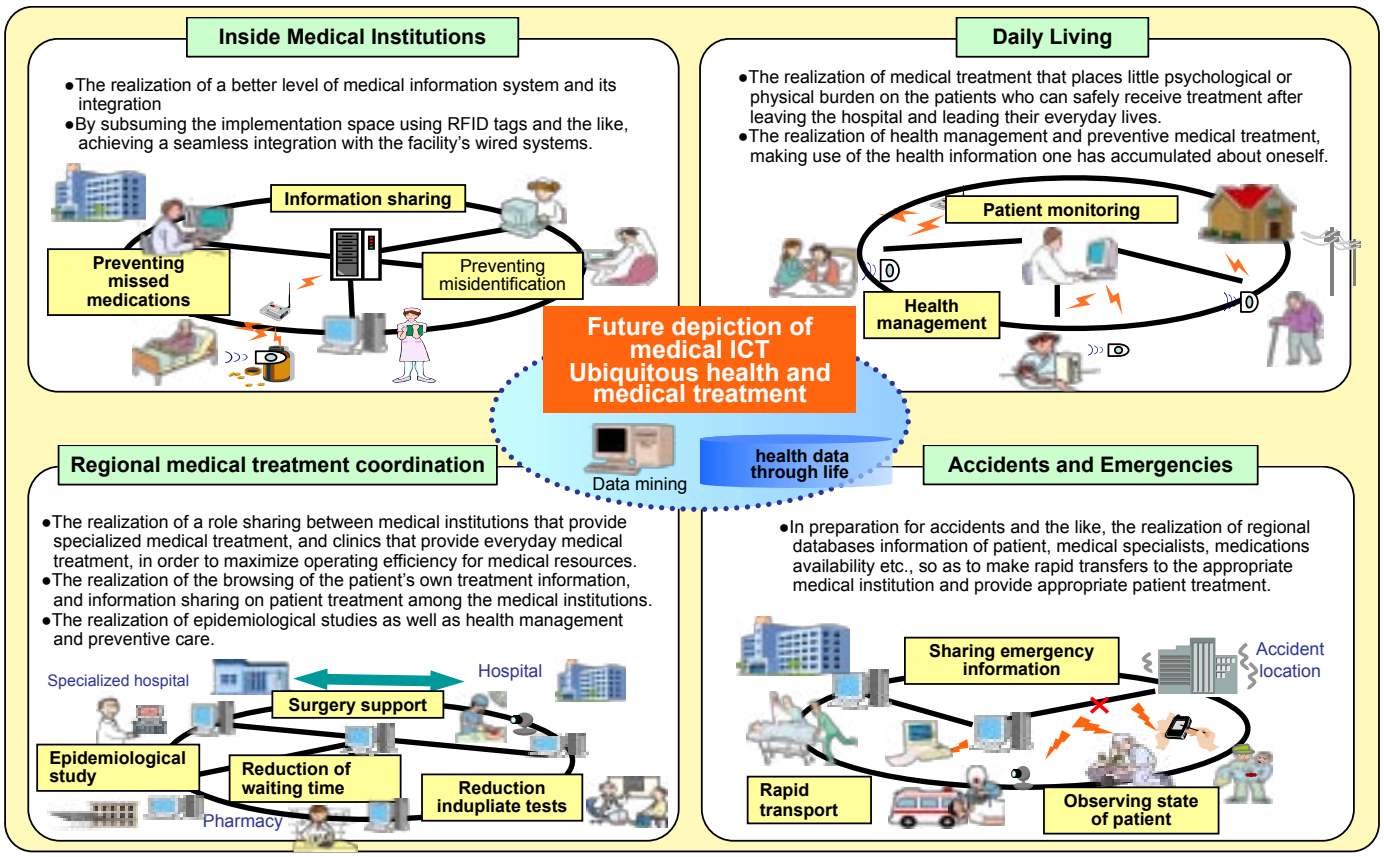
Patient-oriented medical services

◆Bringing about the reduction of both the psychological and physical burden of patients, and the most appropriate medical treatment for the patient

(Examples) Reduction of hospital visits and duplicate tests, shortening of waiting times, disclosing own diagnosis information, informed consent, second opinion, preventive medical care, quick return to one's family, etc.

Future Image of New Medical Treatment in the Ubiquitous Network Age
--Overview of Ubiquitous Health and Medical Treatment--

Through ubiquitous networks, optimal medical services will be available to anyone, at any time and anywhere.
In addition, health management and preventive medical care will be realized in the four fields shown below:



Examples of Utilization of ICT in the Ubiquitous Network Age (inside medical institution)

By fixing RFID tags to medical workers, patients, medical equipment and the like and putting in place a relevant antenna in the facility, it will be possible to grasp in real time the whereabouts of medical workers, patients and medical equipment as well as their state (patients' vital information, state of usage of medical equipment etc.). This will contribute to bring about a quick response to sudden changes or falling in the state of patients, and ensure reliable maintenance of medical equipment.