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the Japanese original.  
The Japanese original is authoritative

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## **NTT Group's Medium-Term Management Strategy**

### **I. Japan's Information and Communications Market - Current Conditions and Issues**

Japan's information and communications market already has approximately 17 million fixed broadband users (including 12 million ADSL users and 1.6 million optical fiber users), and prices are some of the lowest in the world. IP telephone use is also spreading rapidly among individuals and companies alike.

There are more than 83 million mobile phone users, and 90% of such users use i-mode or other Internet connectivity services. The transition from 2G to 3G mobile phones is moving forward, with the number of FOMA customers expected to grow from the current level of approximately 6 million to more than 10 million by the end of March 2005. The introduction of information home appliances (Internet appliances) is also creating an emerging market for Internet access through home appliances, in addition to mobile phones and computers.

The accelerated growth of the information and communications market has spurred a greater diversity and complexity in customer demands. Customers want faster, interactive broadband services; ubiquitous services that combine fixed and mobile communications to provide "anytime, anywhere, anything" connectivity; "safe, simple and convenient" broadband portals that provide a variety of content and applications; and global one-stop services.

On the other hand, a number of problems are becoming evident, including quality and connectivity between IP networks, security against cyber terrorism at Internet weak spots, and policing of illegal transactions over the Internet. Solutions to these problems must be found before a ubiquitous broadband society can develop.

In addition, the question of how to maintain universal services, which are provided through existing fixed telephone networks, as the transition to IP telephone service progresses remains a significant issue.

As these developments suggest, the information and communications market is experiencing a period of significant transition and change. Achieving reliable connectivity and security, ensuring a smooth migration from fixed line telephony and metal wire systems to IP telephony and optical fiber, and many other problems must be resolved through an overall plan created and implemented not only by the information and communications companies, but by a wide coalition of government and industry

groups.

## **II. Developing a Safe, Secure and Convenient Ubiquitous Broadband Service**

In November 2002, the NTT Group announced a plan titled "Vision for a New Optical Generation - Broadband leading to the world of resonant communication." As a step to the realization of this vision, the NTT Group has formulated a medium-term management plan consisting of the three categories of "management objectives," "specific actions," and "proposals for solutions."

### **1. Management Objectives**

NTT will undertake to achieve three management objectives to meet customer needs.

- (1) Use the combined strengths of NTT to actively build the ubiquitous broadband market and help achieve the e-Japan Strategy and the u-Japan Initiative.**
- (2) Build a safe, secure and convenient communications network environment and broadband access infrastructure, while achieving a seamless migration from fixed line to IP telephone service and from metal wire systems to optical fiber.**
- (3) Strive to increase corporate value and achieve sustained growth.**

NTT will endeavor to achieve these management objectives by leveraging its experience in providing reliable services in the field, and its technology and R&D prowess in optical fiber implementation and network reliability. Specifically, NTT has

- Proven capability in advanced service operations for communications and information systems; protecting and managing customer information to ensure customer privacy; large-system design, operation and maintenance; and fast recovery in the event of natural disaster or other emergency
- Proven research and development capability in key technologies: technologies that ensure the security of information and infrastructure integrity; technologies for building large-scale operations and information systems; and optical fiber technologies for increasing communications capacity.

### **2. Specific Actions**

NTT will take the following five actions to achieve the above management objectives.

- (1) Develop and implement a ubiquitous broadband service by integrating fixed and mobile communications, etc.**
- (2) Build a next-generation network that is high-quality, flexible and secure.**
- (3) Seamlessly migrate from existing fixed line telephones to IP telephones, and metal wire systems to optical fiber.**
- (4) Expand business opportunities using ubiquitous broadband service.**

## **(5) Strengthen our competitiveness and financial base.**

### **(1) Develop and implement a ubiquitous broadband service by integrating fixed and mobile communications, etc.**

- Leverage NTT group's combined strengths to develop and provide a ubiquitous broadband service that meets the needs of home and business users.**
- These services will serve as fundamental tools to foster the development of a vibrant aging society, contributing to enhanced nursing care and remote/preventive medicine, higher efficiency in matching job seekers and employers, and increased opportunities for learning.**

- Customer needs are becoming more complex and diverse. Customers want faster, interactive visual communications and other types of broadband services, "anywhere, anytime, anything" ubiquitous services, "safe, simple, convenient" broadband portal services, and global one-stop services for personal and business use. NTT will use the group's combined strengths to meet these needs.
  - Combining super high-speed interactive video communications over optical fiber with mobile communications services (Fixed-Mobile Convergence) to provide ubiquitous services that can be accessed from PCs, TV sets, mobile telephones or information appliances.  
Service Examples:
    - Connecting the work site with the office for crisis management, disaster recovery management or workflow management
    - Home security and remote control of home systems
  - Multi-site video conferencing and other services via real-time interactive video communications that provide the sense of being in a single location.  
Service Examples:
    - Remote medicine combining health monitoring and medical examinations by video
    - Remote education using video textbooks and video communications between teachers and students
    - Remote face-to-face consulting, such as financial and life planning, through simulation software and video communications
  - Comprehensive, wireless-enabled portal services that provide customers with the information they need, accurately and quickly.  
Service Examples:
    - Comprehensive search and retrieval of word-of-mouth information on local stores and events, with maps and other related information, creating a one-stop search service that can be accessed from mobile devices
    - Broadband search services, such as graphics and video searching using metadata (title, performer, production date and similar related data points used to search for information), voice command searching and similar services
    - Personalized searches that provide endorsed content and advertisements tailored to the user's tastes
- Provide total solutions as a group to support new businesses and more efficient business processes for our customers.

- Provide solutions using large-scale system integration and cross-industry network system services, such as supply chain management systems that use optical fiber access or an IP network in combination with radio frequency identification (RFID) tags
  - Provide hosting services and other solutions that meet the IT needs of medium-size business customers
- Provide ubiquitous broadband services utilizing a flat-rate structure which is not based on call distances, and give customers service options that meet their requirements for quality, speed (data volume), reliability and security levels, with varied rates depending on service content.

**(2) Build a next-generation network that is high-quality, flexible and secure.**

- **Create a network environment conducive to a variety of ubiquitous broadband services by building a next-generation network using optical fiber access to flexibly and economically maintain quality and security levels**
- **Shift 30 million customers to optical fiber access and next-generation network services by 2010**

- Promote the dissemination and expansion of IP telephone services as an alternative to fixed line service and provide a variety of ubiquitous broadband services emphasizing high-speed and interactive features in order to shift 30 million customers from the existing metal wire and fixed telephone network to optical fiber access and next-generation network services by 2010.
- Work to find solutions for the following issues, which create obstacles for a network providing services in a broadband society.
  - Traffic control and management: How to prioritize traffic as traffic volume rapidly increases, and how to restrict illegal traffic
  - Network safety and cyber-terrorism countermeasures
  - Defense against abuses on the Internet, such as theft and impersonation, violations of privacy, and spreading of rumors
  - Measures for dealing with physical threats to the system from earthquakes and other natural disasters.
- The next-generation network combined with optical fiber access will provide total IP connectivity from the user's device to the network, combine the benefits of both fixed and IP networks, and contribute to overcoming the barriers to the development of a broadband society.
  - Contribute to a more economical network and lower service prices by enabling the IP technology to lower device costs and wavelength division multiplexing to lower transmission costs.
  - Enable development and implementation of flexible and convenient services by allowing flexible service-dependent bandwidth settings, and provide a simple and flexible structure for the development and introduction of various services, by allowing services to be made available through the installation of applications on the system platform.

➤ Network-wide control and management enables more effective maintenance of quality and security by restricting illegal traffic. System-wide management of congestion also allows important communication lines to be kept open during a natural disaster.

- Build the next-generation network with a common service foundation that merges mobile and fixed communications. Each NTT group company will fill a role that plays to their strengths.
- Aim for early implementation of carrier-grade technology as a core technology for the next-generation network, including optical multiplexing technology and node architecture technology.
- Seek to achieve efficiencies in equipment investment in connection with the construction of optical fiber access infrastructure and the next-generation network. NTT will play a part in the eradication of regional differences in the development and availability of broadband services. To achieve these objectives, the groundwork must be laid to resolve the issues discussed below.

**(3) Seamlessly migrate from fixed to IP telephones, and metal wire systems to optical fiber.**

- **The first step is to promote the dissemination and expansion of optical fiber access and the next-generation network.**
- **The second step is to transition from metal wire access and fixed networks to optical fiber access and the next-generation network. Procedures and other specifics for this migration will be formulated by 2010.**

- Maintaining both metal wire and optical fiber access and fixed telephone networks as well as IP networks is a burden on business operations and increases the cost to society. The first step is to promote the spread and expansion of optical fiber access and the next-generation network so that the majority of customers are using them by the year 2010. The next step is to convert completely from metal wire access and the existing fixed telephone network. NTT intends to formulate and announce an outlines for this transition by 2010, taking into account the interests of customers and operators of related businesses.
- Even while conversion to IP telephony is moving forward, the existing fixed line network still serves as the network of last resort for emergency notifications, safety information, telephone number portability, and inter-connectivity between operator networks. As a result, it is necessary to maintain the fixed line network for the time being. NTT intends to request all interested parties to consider an appropriate scheme for maintaining fixed telephone network system, including from the perspective of maintaining universal service.
- The existing fixed-telephone rates (basic rate, call rates, equipment installation rates) must be reevaluated in preparation for migration to a rate structure for services using optical fiber access and the next-generation network. NTT has already announced a revision to its basic rates and other fees as a first step in this direction.

#### **(4) Expand business opportunities using ubiquitous broadband service**

**- Utilize NTT Group's combined strengths in fixed and mobile communications and system integration to expand non-traffic-sensitive businesses, such as platforms utilizing the authentication and settlement features of the next-generation network.**

- Build on the know-how of the NTT group companies that provide ubiquitous broadband services and system integration services to expand non-traffic-sensitive businesses that utilize authentication and settlement, single-sign-on and other platform functions. In doing this, NTT will actively pursue alliances with companies outside the NTT group and seek to expand its presence in the market.
  - Visual content-related distribution using the next-generation network
  - Business related to authentication and settlement services using the next-generation network, and e-commerce businesses that combine mobile telephones and portal services
  - Business related to training and education businesses and promotion and advertising businesses that use constant-connection and interactive IP technologies
  - Business related to home security, distribution management and facility management businesses that use RFID tags
  
- Continue to expand business opportunities using group management resources.
  - Procure more outsourcing contracts for maintenance and management services that enable NTT to make best use of its experience and know-how in communications equipment maintenance and building management.
  - Procure more outsourcing contracts for efficient and high-quality accounting and payroll services using internal shared service centers within NTT.
  - Expand real estate businesses, and promote energy-related businesses to mitigate the increased energy burden associated with transition to broadband.

#### **(5) Strengthen our competitiveness and financial base.**

**- Increase revenues from next-generation network solutions and non-traffic businesses to 500 billion yen by the year 2010.**  
**- Maintain the same equipment investment level as before for fixed communications operations through 2010 - a cumulative total of 5 trillion yen.**  
**- Reduce operating costs for fixed communications businesses by 800 billion yen by 2010.**

- Enhance the quality of customer services, strengthen NTT's competitiveness and profitability, and develop an improved financial infrastructure by promoting the dissemination and expansion of ubiquitous broadband services, pursuing new business opportunities, and by reducing costs in operations and equipment investments. To achieve these objectives, the groundwork must be laid to resolve the issues described below.

- Increase revenues from next-generation network solutions and non-traffic-sensitive businesses to 500 billion yen by the year 2010.
  - Maintain the same equipment investment level as before, a cumulative total of 5 trillion yen for fixed communications operations through the year 2010. To do this, NTT will aim to substantially reduce costs for equipment investment associated with optical fiber access and the next-generation network by introducing technical innovations, reducing the cost of equipment, and improving production methods. Through these cost cutting initiatives, NTT will endeavor to make its new optical fiber access and the next-generation network businesses profitable in the near future.
  - By 2010, NTT aims to reduce costs by 800 billion yen by improving the efficiency of fixed communications operations and by reducing costs through the streamlining of operating systems and business process re-engineering (BPR) as the transition to optical fiber access and full IP connectivity unfolds.
- In order to maintain and reinforce NTT's reputation as a secure, safe and reliable brand, NTT intends to take the steps necessary to respond to customer demands. NTT will enhance its end-to-end delivery system (shortened delivery times, etc.), strengthen its one-stop service capabilities, and improve service quality and security by establishing an operations management system that leverages the group's comprehensive strengths.
    - Improve operating efficiency by reorganizing group companies, including outsourcing companies
    - Strengthen the tie between system integration and software businesses within the NTT group
    - Increase efficiency in group finance functions
  - In addition to strengthening NTT's competitiveness and financial base, NTT will take the following actions to increase company value:
    - Continued efforts to improve returns to shareholders (including through the repurchase of NTT's own stock based on market demand and supply conditions for NTT's stock)
    - Further increase management transparency by promoting information disclosure
    - Maintain management practices that emphasize compliance, including policies and procedures for maintaining the privacy of customer information
    - Establish advisory boards comprising outside experts
    - Establish committees for management appointment and compensation .

### 3. Proposals for Solutions: Optimizing the Development of a Broadband Society

- (1) Ensuring the connectivity and security required in the ubiquitous broadband era**
- (2) Solving the digital divide**
- (3) Competition in the ubiquitous broadband era**

For the healthy development of a broadband society, customers must have access to safe and secure information and communications services providing "end-to-end, any-to-any" connectivity. This requires standardization of connectivity and security from the customer's device to the network and between networks, as well as a network

environment that gives customers a selection of providers and services.

Acceleration of the migration to optical fiber access requires a system in which infrastructure providers can secure a fair return on the development and introduction of new technologies and other cost-reduction measures and a fair return on equipment investment risk.

Solving the digital divide has also become a social issue.

These issues must be addressed by a broad, unified coalition including industry participants and the government. NTT intends to lend its full support to this effort.

### **(1) Ensuring the connectivity and security required in the ubiquitous broadband era**

- A committee comprised of information and communications device manufacturers, network operators and the government should be established to form a consensus on network quality and interface standardization. This group of private and public interests should create an overall plan, taking into account international standardization and other factors. The NTT group will put forth specific proposals and will play an active part in this effort.
- Plans are already in motion to address information security from a national security and anti-terrorism standpoint. Information security is an issue that affects the security of energy (electricity, gas, etc.), transportation (railways, airlines, etc.), finance, and other important infrastructure. The development and implementation of a program consistent with government policy, including emergency and national disaster response measures, will therefore require even closer cooperation between the private and public sectors.
  - Cooperation between the national government and operators involved in infrastructure construction and maintenance, in addition to cooperation with international interests
  - Joint development and standardization of policy guidelines in cooperation with standards organizations

### **(2) Solving the digital divide**

- In order to realize a "vibrant aging society", it will be necessary to create a user-friendly environment that even unskilled users can access. NTT intends to call upon the public and private sectors to combine their efforts to this end.
  - Work to simplify device and network service interfaces
  - Promote education on illegal transactions and other abuses on the Internet and how to prevent them
- To stimulate local communities and promote remote-medicine and education, it will be necessary to solve regional differences in the development and availability of broadband services. This is an issue with significant social implications. The NTT group will play a part in overcoming these problems, by lowering facility construction costs and expanding the supplementary use of wireless access technology, such as FWA (Fixed Wireless Access).
  - Promote joint efforts by the public and private sectors, including cooperation with projects for the construction of government networks by local governments,



initiatives for servicing areas with poor reception through terrestrial digital broadcasts provided by cable broadcasters, and securing national and local government funding for these projects

### **(3) Competition in the ubiquitous broadband era**

- As society transitions to IP and optical fiber, there will be a dramatic change in the nature of competition compared with conventional fixed telephones. This trend must be reexamined at an early stage to ensure the sound development of a broadband society.
  - Creation of a mechanism to promote competition in facility construction to support the accelerated growth of optical fiber access, which will form the foundation of ubiquitous broadband services
  - The connectivity scheme for interactive video services must be considered from the viewpoint of maintaining the quality and security expected by providers, and of providing the customer with choices in providers and services
  - In principle, services should be subject to post-facto regulation, so as to ensure that customers have convenient, free and fast access to one-stop services.

Figures and descriptions contained in this document relating to future predictions were estimated according to information available at this point in time, and may change in response to trends in the Japanese economy and the information communications world, as well as new services and rate of charges, etc. The NTT Group therefore does not guarantee the reliability of the figures and descriptions relating to future predictions in question.

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