

NTT Group's Medium-term Management Strategy

In November 2002, the NTT Group announced a plan entitled “Vision for a new optical generation—Broadband leading to the world of resonant communication”. As a step toward this vision, the NTT Group has formulated a medium-term management plan consisting of management objectives, specific actions, and proposals for solutions.

1. Japan's information and communications market: current conditions and issues

This market already has approximately 17 million fixed-line 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 84 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 [1] 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 greater diversity and complexity in customer demands. On the other hand, a number of problems are becoming evident, including quality and connectivity between IP networks, security against cyberterrorism 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. It will be necessary to achieve reliable connectivity and security, ensure a smooth migration from fixed-line telephony and metal wire systems to IP telephony and optical fiber, and solve many other problems through an overall plan created and implemented not only by the information and communications companies, but also by a wide coalition of government and industry groups.

2. Developing safe, secure, and convenient ubiquitous broadband services

2.1 Management objectives

NTT has three management objectives for meeting customer needs:

- (1) Use the combined strengths of NTT to actively build the ubiquitous broadband market and help achieve the e-Japan Strategy [2] and the u-Japan Initiative [3]
- (2) Build a safe, secure, and convenient communications network environment and broadband access infrastructure, while achieving seamless migration from fixed-line to IP telephone service and from metal wire to optical fiber systems
- (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 disasters or other emergencies
- Proven research and development capability in key technologies: technologies that ensure the security of information and infrastructure integrity, technologies for building large-scale opera-

tions and information systems, and optical fiber technologies for increasing communication capacity.

2.2 Specific actions

To achieve the above management objectives, NTT will take the following five actions (Fig. 1).

(1) *NTT will develop and implement a ubiquitous broadband service by integrating fixed and mobile communications, etc.*

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, and 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 (Fig. 2).

i) Super-high-speed interactive video communications over optical fiber will be combined with mobile communications services (known as fixed-mobile convergence) to provide ubiquitous services that can be accessed from PCs, TV sets, mobile telephones or information appliances. Some service examples are:

- Connecting the work site with the office for crisis management, disaster recovery management or workflow management
- Providing home security and remote control of home systems

ii) Multi-site video conferencing and other services via real-time interactive video communications will give users in different locations the sense of being in a single location. Some service examples are:

- 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 consultation, such as financial and life planning, through simulation software and video communications

iii) Comprehensive, wireless-enabled portal services will provide customers with the information they need accurately and quickly. Some service examples are:

- Comprehensive search and retrieval of word-of-mouth information about 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

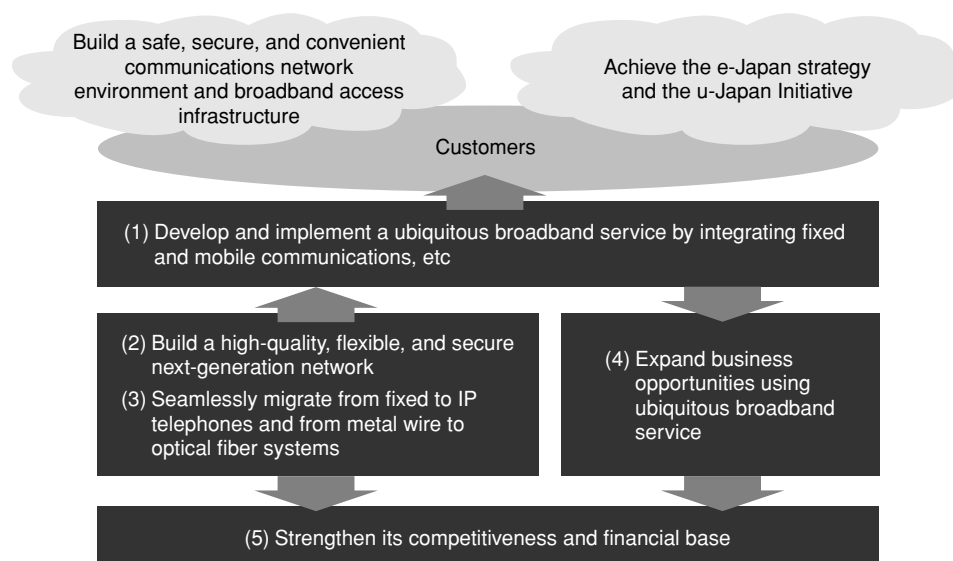


Fig. 1. Specific actions.

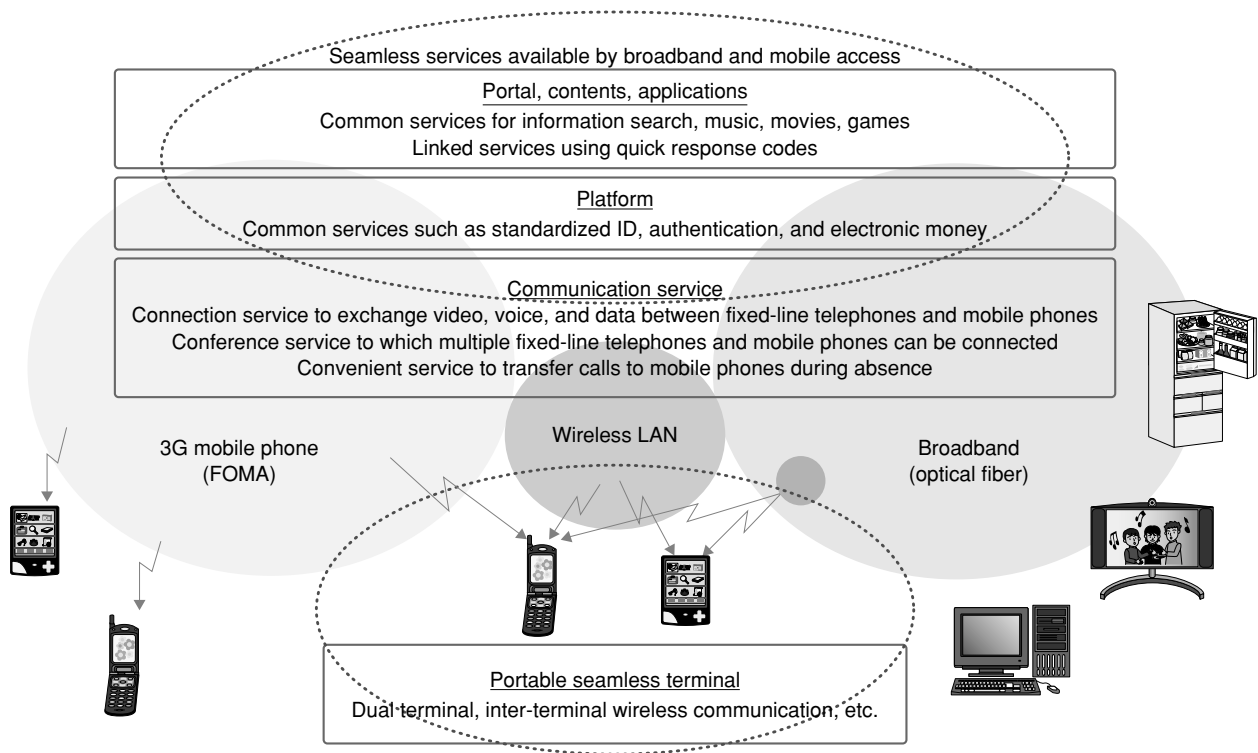


Fig. 2. NTT will develop and implement a ubiquitous broadband service by integrating fixed and mobile communications, etc.

- Total solutions as a group to support new businesses and more efficient business processes for our customers.
- 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
- Hosting services and other solutions that meet the IT needs of medium-size business customers
- Ubiquitous broadband services utilizing a flat-rate structure that is not based on call distances. Customers will be given service options that meet their requirements for quality, speed (data volume), reliability and security levels, with various rates depending on service content.

(2) NTT will build a high-quality, flexible, and secure next-generation network

NTT will promote IP telephone services as an alternative to fixed-line service and provide various 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. It will study the following issues, which are obstacles to network providing services in a broadband society, and find solutions.

- Traffic control and management: How should we prioritize traffic as the traffic volume rapidly increases, and how should we restrict illegal traffic?
- Network safety and cyberterrorism countermeasures
- Defense against abuses on the Internet, such as theft and impersonation, violations of privacy, and the 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 help to overcome the barriers to the development of a broadband society. We will contribute to a more economical network and lower service prices by utilizing IP technology to lower device costs and wavelength division multiplexing to lower transmission costs. In addition, we will develop and implement 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 will enable more effective maintenance of quality and security by restricting illegal traffic. System-wide management of congestion will also allow important communication lines to be kept open during a natural disaster. The next-generation network will be built with a common service foundation that merges mobile and fixed communications. Each NTT group company will play a role that capitalizes on its strengths. NTT will aim for early implementation of carrier-grade technology as a core technology for the next-generation network, including optical multiplexing and node architecture technology. It will also seek to achieve efficiencies in equipment investment in connection with the construction of optical fiber access infrastructure and the next-generation network. NTT will strive to eliminate regional differences in the development and availability of broadband services. These objectives will be achieved through the final two actions discussed below.

(3) NTT will seamlessly migrate from fixed to IP telephones and from metal wire to optical fiber systems

Maintaining both metal wire and optical fiber access methods 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 will formulate and announce an outline for this transition by 2010, taking into account the interests of customers and operators of related businesses.

During the conversion to IP telephony, the existing fixed-line network will still serve as the network of last resort for emergency notification, safety informa-

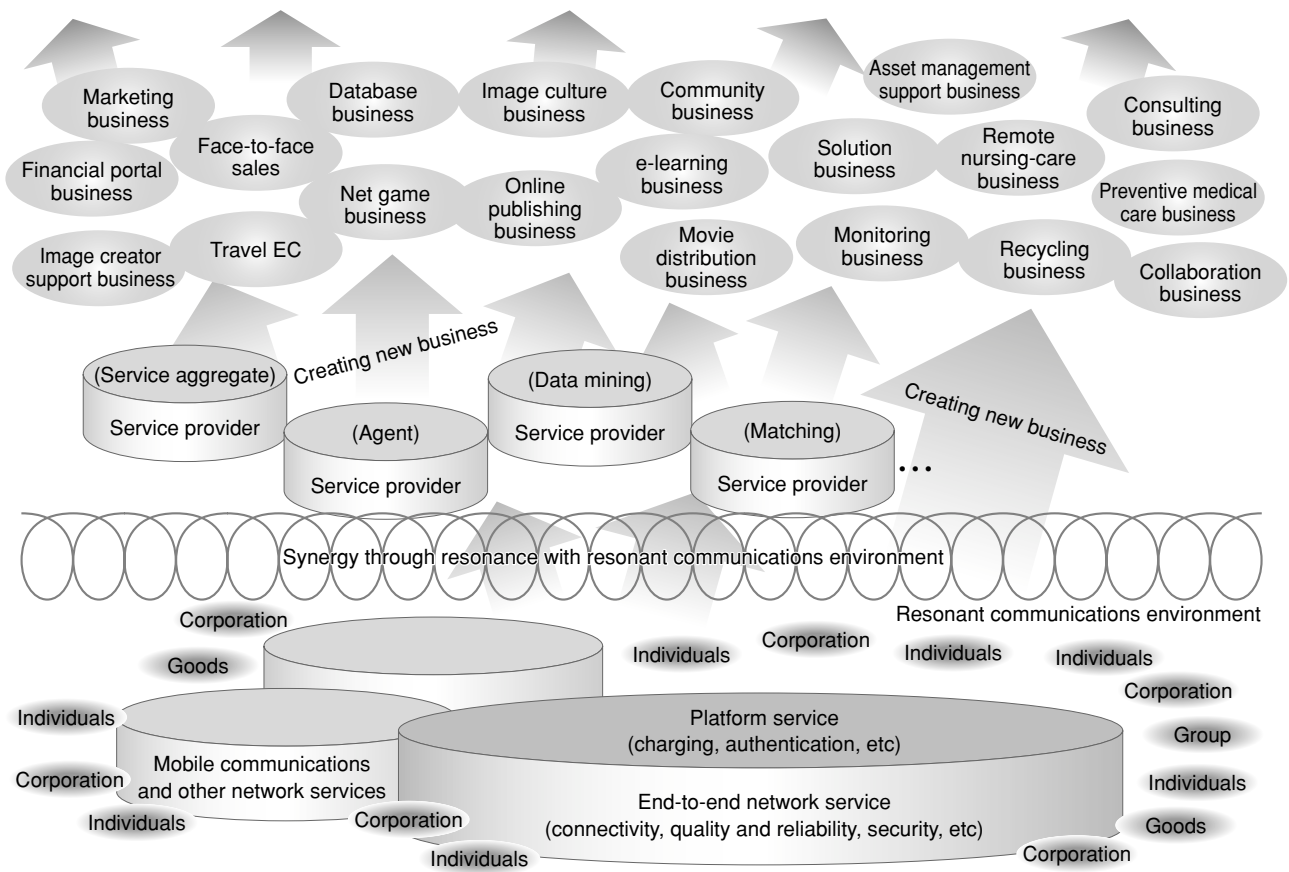
tion, telephone number portability, and interconnectivity between operator networks, so the fixed-line network must still be maintained for some time. NTT will ask all interested parties to consider an appropriate scheme for retaining the fixed telephone network system, including retention from the perspective 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) NTT will expand business opportunities using ubiquitous broadband service

We will 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 (**Fig. 3**). This expansion will cover:

- Visual content-related distribution over 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 (radio-frequency identification) tags
- Business opportunities using group management resources
- Procurement of more outsourcing contracts for maintenance and management services that will enable NTT to make best use of its experience and know-how in communications equipment maintenance and building management
- Procurement of more outsourcing contracts for efficient and high-quality accounting and payroll services using internal shared service centers within NTT
- Expansion of NTT real-estate businesses and promotion of energy-related businesses to mitigate



EC: electronic commerce

Fig. 3. Expansion of business opportunities through reinforcement of platform business.

the increased energy burden associated with the transition to broadband.

(5) *NTT will strengthen its competitiveness and financial base*

NTT will enhance the quality of customer services, strengthen its competitiveness and profitability, and develop an improved financial infrastructure by promoting ubiquitous broadband services, pursuing new business opportunities, and reducing costs in operations and equipment investments. To achieve these objectives, it will be necessary to lay the groundwork 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 through business process re-engineering as the transition to optical fiber access and full IP connectivity unfolds.

To maintain and reinforce its reputation as a secure,

safe, and reliable brand, NTT intends to take the steps needed to respond to customer demands. NTT will enhance its end-to-end delivery system (by shortening 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. Specifically, it will:

- 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 its competitiveness and financial base, NTT will take the following steps to increase company value:

- Improve returns to shareholders (including repurchasing its own stock based on market demand and supply conditions for it)
- 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

2.3 Proposals for solutions: optimizing the development of a broadband society

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. The digital divide between people with and without access 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.

2.3.1 Ensuring the connectivity and security required in the ubiquitous broadband era

A committee composed 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 the standpoints of national security and anti-terrorism measures. Information security is an issue that affects the security of many critical infrastructure elements such as energy, transportation, and finance. 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. This will involve: i) cooperation between the national government and operators involved in infrastructure construction and maintenance, in addition to cooperation with international interests and ii) joint development and standardization of policy guidelines in cooperation with standards organizations.

2.3.2 Solving the digital divide

In order to create 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. It will work to simplify device and network service interfaces and promote public awareness of illegal transactions and other abuses on the Internet and methods of preventing them.

To stimulate local communities and promote remote-medicine and education, it will be necessary to avoid 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 fixed wireless access (FWA). It will promote joint efforts by the public and private sectors (including cooperation with projects for constructing government networks by local governments and initiatives for servicing areas with poor reception through terrestrial digital broadcasts provided by cable broadcasters) and will secure national and local government funding for these projects.

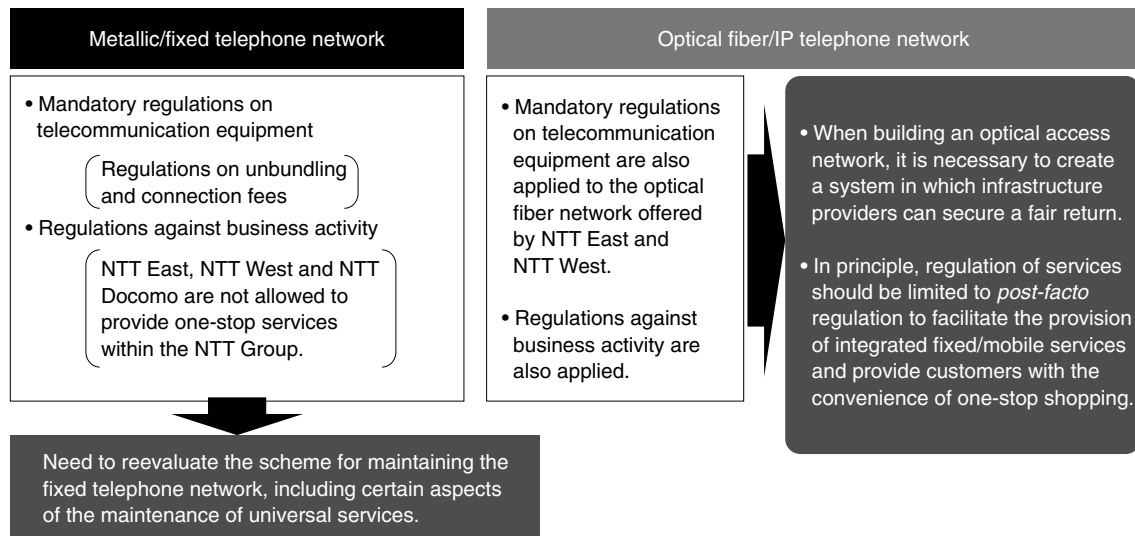


Fig. 4. Competition in the ubiquitous broadband era.

2.3.3 Competition in the ubiquitous broadband era

As society converts to IP and optical fiber, there will be a dramatic change in the nature of competition compared with the situation for conventional fixed telephones (Fig. 4). This trend must be reexamined at an early stage to ensure the sound development of a broadband society. We must create 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. A connectivity scheme for interactive video services must be considered from the viewpoint of maintaining the quality and security expected by providers and 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.

References

- [1] http://www.nttdocomo.co.jp/english/p_s/service/foma/index.html
- [2] http://www.kantei.go.jp/foreign/policy/it/enkaku_e.html
- [3] http://www.soumu.go.jp/joho_tsusin/eng/Releases/NewsLetter/Vol15/Vol15_12/Vol15_12.html

* This article is based on NTT NEWS RELEASE at: <http://www.ntt.co.jp/news/news04e/0411/041110d.html> (Editorial Office)

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