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Management Innovation in the "Ubiquitous" Age Advanced by the IT/Network Integration

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1. Establishing the Driving Force for Subsequent Growth

A preliminary report by the Cabinet Office announced on November 14, 2003, revealed that the real GDP of the Japanese economy has grown for seven consecutive quarters. The main factors are believed to be the increase in external demands (exports minus imports) and equipment investment. In particular, increased export to China and other Asian countries boosted net exports, while equipment investments are making a rapid recovery in strong export industries (electric machinery, machinery and others). Despite these positive economic indicators, there are still some concerns for the Japanese economy that leave a sense of uncertainty for the future.

The first concern is the "strong yen" in a business recovery phase led by external demands.

The second concern is the gradually spreading view that "it will still take some time to achieve a full-fledged consumption recovery" as the contributory share of consumption, which was one of the plus factors of GDP until June 2003, has fallen to almost zero in the 4th quarter of FY2003.

Thirdly and lastly, is the concern that the prolonged deflation will adversely affect the confidence of consumers as well as that "deflation of assets," which is not currently reflected in the price index, will effect business performance and individual consumer spending.

Under this economic situation, Japanese companies have been steadily improving their earnings by reducing fixed costs including labor-related charges. However, the pace of earnings improvement has recently slowed down. Japanese companies are now at a turning point where they should change over to management that aims to resume revenue growth.

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*This article is based on the digest of the keynote speech given at C&C User Forum 2003 on Dec. 3, 2003, and has been edited with the cooperation of the secretariat of Akinobu Kanasugi, President of NEC Corporation.

Photo 1 Akinobu Kanasugi during speech.

According to the results of research on medium-term management issues for the future compiled by the Japan Management Association, many corporate executives were found to believe that prospects for financial strength and earnings improvement are looking brighter to some extent, and that these executives will take renewed action toward revenue growth. With so much anxiety lingering in their minds, establishing the driving force for subsequent growth has become their common challenge (**Fig. 1**).

2. Key Factors of Renewed Corporate Growth

I believe that the key factors of future growth are "globalization," "market-oriented (or customer-oriented) business" and "ubiquitous environment." The following is the summary of these three important factors.

(1) Globalization
Japanese companies are required to "understand the status of globalization and respond

appropriately." Of great importance is the construction of a global value chain built on collaboration.

It goes without saying that every aspect of the economy including capital and trade is becoming increasingly globalized. As a new framework for the global economy, the number of regional trade agreements centered on FTAs (Free Trade Agreements) has been increasing since the 1990s. Upon taking into consideration the reduction and/or abolition of tariffs under these regional trade agreements, it is essential that the global supply chain be optimized (**Fig. 2**).

In addition, competition with global enterprises in the domestic market is becoming much stiffer than expected. Under such circumstances, Japanese players need to attain a global-level competitiveness in every aspect of business including cost, quality, speed and services. For example, the share of foreign vendors is rapidly increasing in the domestic PC (21 percent) and PC server (45 percent) markets (data from IDC Japan, 2002). To deal with the PC price reductions and abrupt demand fluctuations caused by the increasingly fierce competition, NEC utilizes those companies specialized in Electronics Manufacturing Service (EMS) and Third-Party Logistics (3PL) in an effort to build a new value chain for our PC business that transcends borders (**Fig. 3**).

(2) Market-Oriented (or Customer-Oriented) Business

Research on perceived consumer confidence (Dentsu, Inc., June 2003) reveals that consumers are tiring of scrimping and saving, and are starting to rethink buying even somewhat expensive goods as long as the high price is reflected in the quality. Some companies have quickly taken notice of this change and are employing a completely customer-oriented business, consequently demonstrating remarkable performance in the sluggish Japanese economy. These companies are expanding by quickly offering products and services that have real value as seen from the customer's viewpoint.

In the upcoming digital broadcasting age, the audience will potentially have more opportunities for interactive communication. It will be essential for enterprises to make the most of such opportunities to quickly find out consumer needs and develop products and services in response to such demands.

In matured or sluggish markets, rather than a "one shot sales" business model, what is necessary is an "continuous revenue source" business model that can continuously make profits from existing customers.

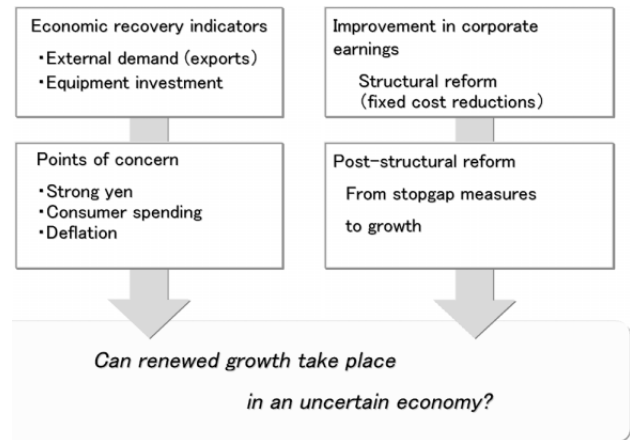The point is to improve customer satisfaction and

Fig. 1 Status of Japan's economy and companies.

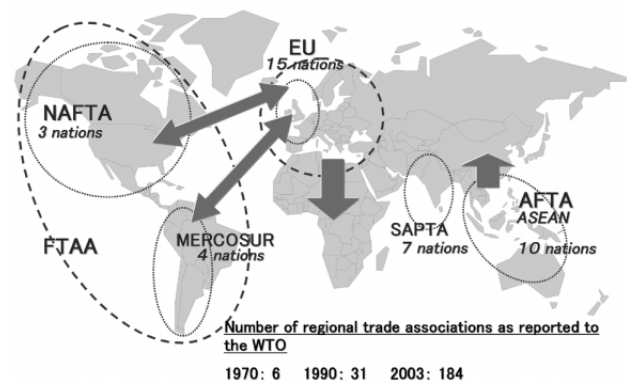— Changes among the world's key regional trade associations —

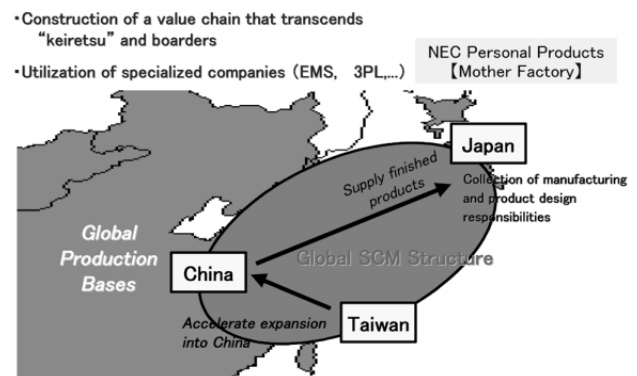**Fig. 2 Expansion of economic globalization.**

Fig. 3 Global value chain for NEC's PC business.

maximize lifetime customer value by building a long-lasting relationship through high-quality services (**Fig. 4**).

(3) Ubiquitous Environment

Ubiquitous environment means "an environment in which computers exist everywhere in our daily life and in society, and can be freely accessed anytime and anyplace through information networks." Japan is attracting attention from Europe, the US and Asian countries for its advanced infrastructure.

As part of this infrastructure, the broadband service in Japan has more than 10 million subscribers and offers the lowest service charges in the world. Moreover, the mobile environment is said to be "ahead of other countries by one-half to two years." Once home information appliances such as audio-visual devices of which Japanese manufacturers enjoy an overwhelming competitive advantage are connected to the broadband and mobile networks, it is expected that a ubiquitous society unique to Japan will be formed (**Fig. 5**).

To lead the world in ubiquitous environment by utilizing Japan's cutting-edge infrastructure and its competitive advantage in the field of home information appliances, the Japanese government officially announced its "e-Japan Strategy II" in July 2003. In the e-Japan Strategy II, the focus has been shifted from improvement of infrastructure, the central point of the previous "e-Japan Strategy" initiative, to the utilization of broadband and mobile infrastructure. Specific targets have been set in seven sectors including medical, small to medium corporate financing and living to promote their utilization (**Fig. 6**).

Once ubiquitous society is realized through this IT strategy, it will bring about a substantial profit for Japanese companies. To be more specific, the creation of new products and markets utilizing ITS and IC tags, improvement of value-added products and services, and the sophistication of corporate IT systems will play decisive roles in outpacing the global competition (**Fig. 7**).

Therefore, it is necessary for companies to focus on their strengths and establish a new value chain based on a collaborative style of management in order to offer products and services having true customer-oriented value to users and consumers who have become very sensitive to investment results in the current deflationary environment. Of particular importance to Japanese companies who have focused on improving earnings through structural reform is a flexible collaboration taking advantage of the world's most
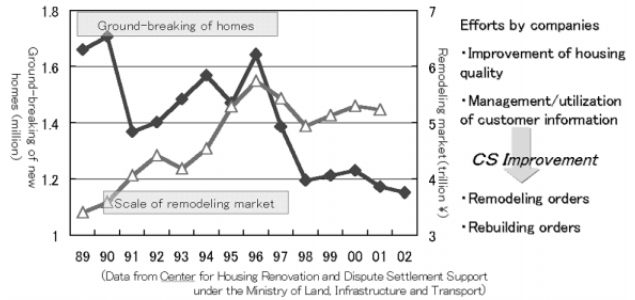

Fig. 4 Working towards growth through improving CS.
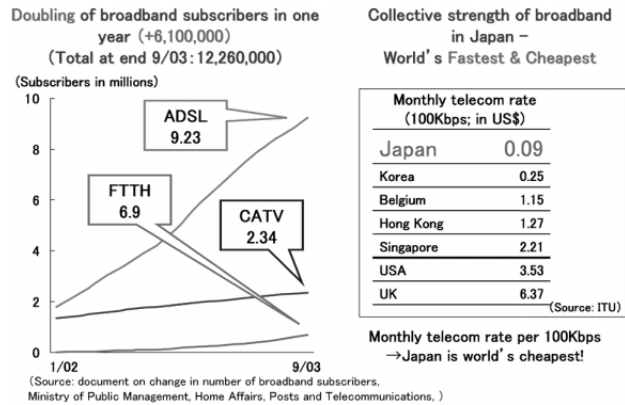
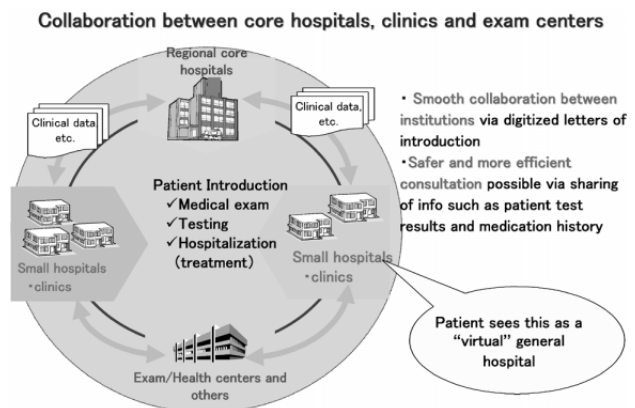

Fig. 5 Japan – Leader of the ubiquitous era.

Fig. 6 Utilization in medical services.

advanced ubiquitous environment in order to deal with global competition and market fluctuation, and to renew growth (**Fig. 8**).

3. Integration of IT and Networking: the Key to Corporate Growth

Collaborative management, indispensable for future corporate growth, is "management based on collaboration that targets the reconstruction of value chains that are capable of providing consistently 'better' products at a 'cheaper' price in a 'faster' timeframe."

Collaborative efforts are now being made across business groups in many industries, and new industrial frameworks are being formed in an attempt to achieve new growth in the future. Particularly, more companies have become committed to collaboration that links their competitive sections and/or divisions with those of other enterprises to form a stronger value chain. This type of collaboration should be flexible and responsive to the continuously changing market and global competition (**Fig. 9**).

The key to such flexibility and responsiveness is the networking and information technology based on broadband and mobile communications that form the very fundamental platform of the ubiquitous environment. NEC calls this dynamic, flexible and collaborative management utilizing networking and information technology "Dynamic Collaboration." To realize this model, we recommend specific measures in the "restructuring of network and IT infrastructures" and the utilization of these new infrastructures in the "realization of global value chain management" and "efforts toward the utilization of a ubiquitous environment."

(1)-1 Restructuring of Network Infrastructure

It is important to proceed with the restructuring of network infrastructure while keeping in mind both "cost reduction" and "what the utilization of new communications represented by collaboration should be."

Shifting from leased lines to a lower-cost broadband IP network will reduce networking cost and, moreover, it will enable IP telephone services and IP Centrex services.

At the same time, a new type of collaboration with customers, partners and colleagues is now possible thanks to higher speed broadband IP networks (**Fig. 10**).

In fact, an increasing number of customers are restructuring their networks. They are introducing unified communication system (i.e. integration of
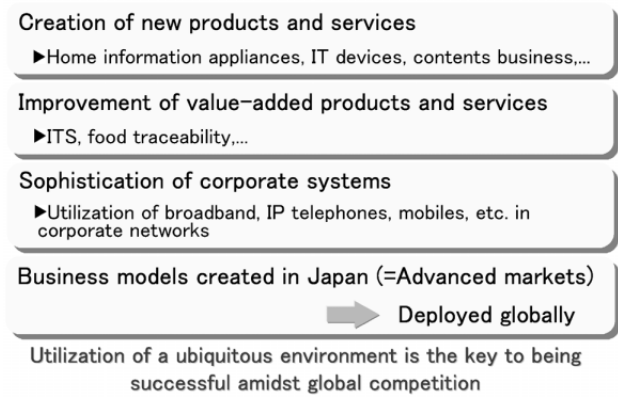
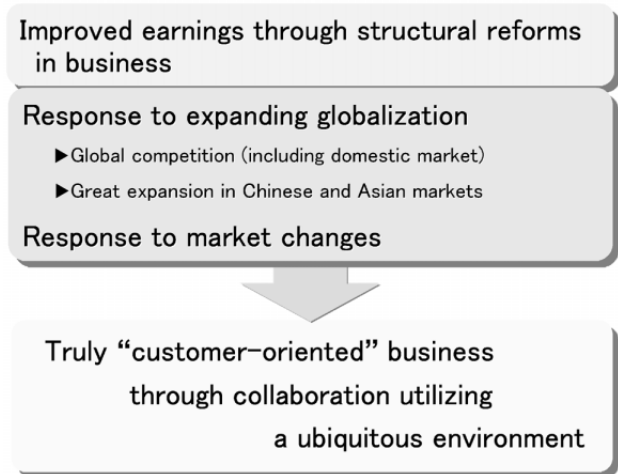

Fig. 7 **The advantage of ubiquity for Japanese companies.**

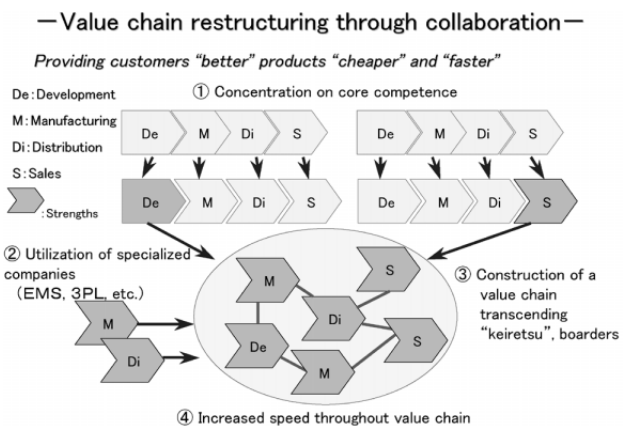Fig. 8 **Management challenges and chances in "Renewed Growth."**

Fig. 9 **A new management style via collaboration.**

voice telephony, e-mail and fax) in order to control costs and enhance their collaboration environments. To implement such "Broadband Solutions" in an actual business environment, thereby enhancing our know-how, and to provide our customers with the opportunity to experience our latest solutions, the NEC Broadband Solutions Center was opened in Shinagawa, Tokyo in January 2004. The Center, with office space and a showroom, will provide you with an idea of our broadband solutions and useful information for your network infrastructure restructuring plans.

(1)-2   Restructuring of IT Infrastructure

Requirements in the restructuring of an IT infrastructure are to keep business running, expand business and reduce costs. In other words, robustness, expandability, flexibility and security will be the important characteristics of future systems (**Fig. 11**).

A "system model" plays a key role in the design of an IT infrastructure. The idea of "hub and spoke" is intended to achieve smooth interdepartmental collaboration and business process integration. In order to effectively realize collaboration among companies under the recent expansion of value chains, we developed this model into a "hub and network" centered on an open mission-critical system (OMCS). We refer to the underlying information and networking technology of this "hub and network" model as "VALUMO," and are now working on its improvement and reinforcement.

We plan to develop the IT infrastructure further into grid computing.

(1)-3   Information Security in the Broadband Era

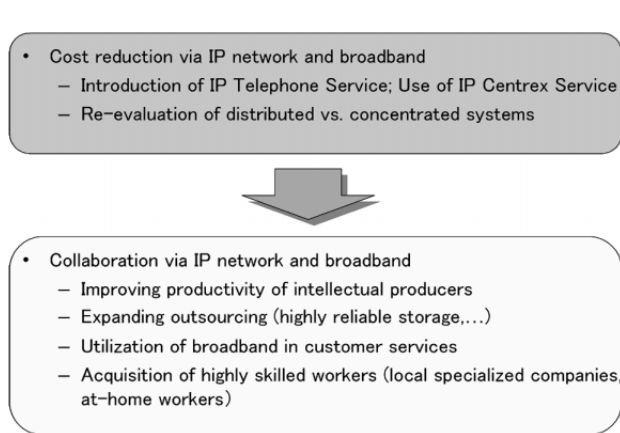One factor in network and IT infrastructure that cannot be overlooked is the improvement of security. In collaborative management, security-related measures are essential to companies. A broad and comprehensive framework is therefore necessary not only to introduce technical training, including the preparation of security policies, provision of employee training and the introduction of personal authentication, but also to improve employee awareness (**Fig. 12**).

(2) Realization of Global Value Chain Management

In NEC's value chain management for PCs, a global network links all players from suppliers and EMSs to distributors, offers real-time information sharing, cuts down demand and supply planning processes, and seeks high-speed operation. As a result, plan finalization is reduced to one week. Procurement of finished goods from four Chinese EMSs allows us to achieve simultaneous cost and inventory reduction. An efficient and effective system for this value chain management is essential.

(3) Efforts toward the Utilization of a Ubiquitous Environment"

In a ubiquitous society, various applications and consumer services are possible: distribution management and traceability management support systems using IC tags, G2B and G2C services using a ubiquitous environment, and digital broadcasting delivery to mobile phones using broadband and mobile properties (**Fig. 13**).

It is envisioned that this utilization of future-centric ubiquity will contribute to the generation of new value-added business and the strengthening of corporate competitiveness.
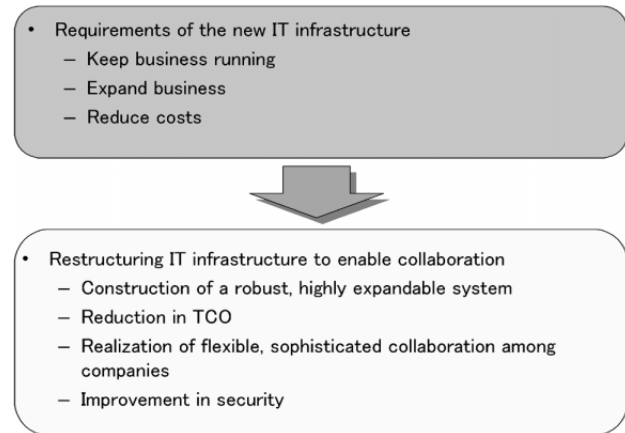
- Cost reduction via IP network and broadband
  - Introduction of IP Telephone Service; Use of IP Centrex Service
  - Re-evaluation of distributed vs. concentrated systems

- Collaboration via IP network and broadband
  - Improving productivity of intellectual producers
  - Expanding outsourcing (highly reliable storage,...)
  - Utilization of broadband in customer services
  - Acquisition of highly skilled workers (local specialized companies, at-home workers)

Fig. 10 Restructuring corporate networks.

- Requirements of the new IT infrastructure
  - Keep business running
  - Expand business
  - Reduce costs

- Restructuring IT infrastructure to enable collaboration
  - Construction of a robust, highly expandable system
  - Reduction in TCO
  - Realization of flexible, sophisticated collaboration among companies
  - Improvement in security

Fig. 11 Restructuring IT infrastructure.

With these proposals, NEC offers products and services that integrate information and networking technology for each layer of hardware, middleware and solutions. In the hardware sector, we have invested our acquired state-of-the-art computing and networking technology and, at the end of November 2003, released "UNIVERGE", a new product family of mobile IP systems, VoIP servers, multilayer switches and other IT / Network integrated products for corpo-

rations (**Fig. 14**). As for middleware, we have plans to further improve VALUMOware. And finally, a solution named "iBestSolutions" utilizes the above-mentioned products to systematize various industries and operations (**Fig. 15**).

Due to its IT and networking technology integration solutions, NEC is ready to support our corporate customers in their efforts to make management more

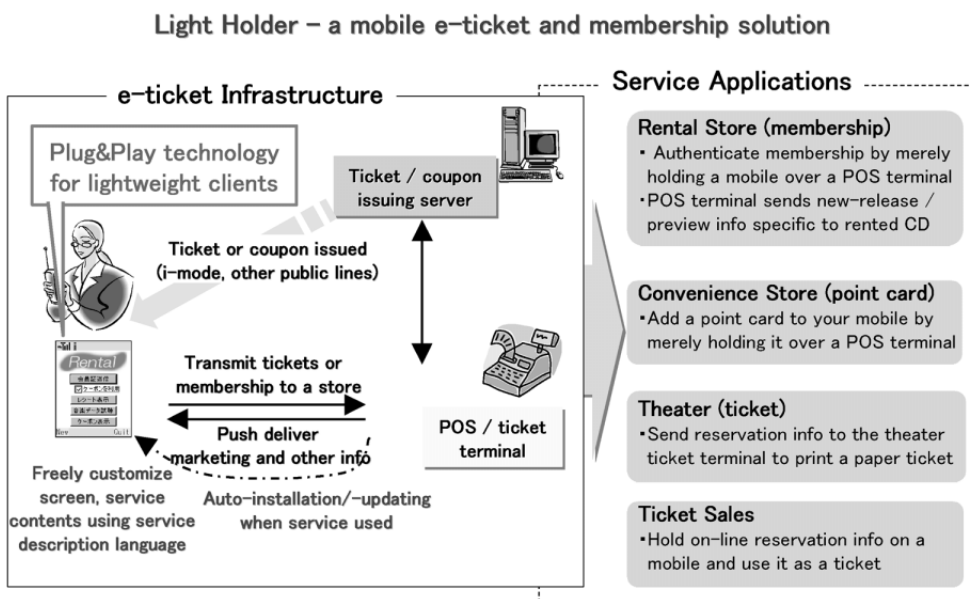**Fig. 12 Information security in the broadband era.**

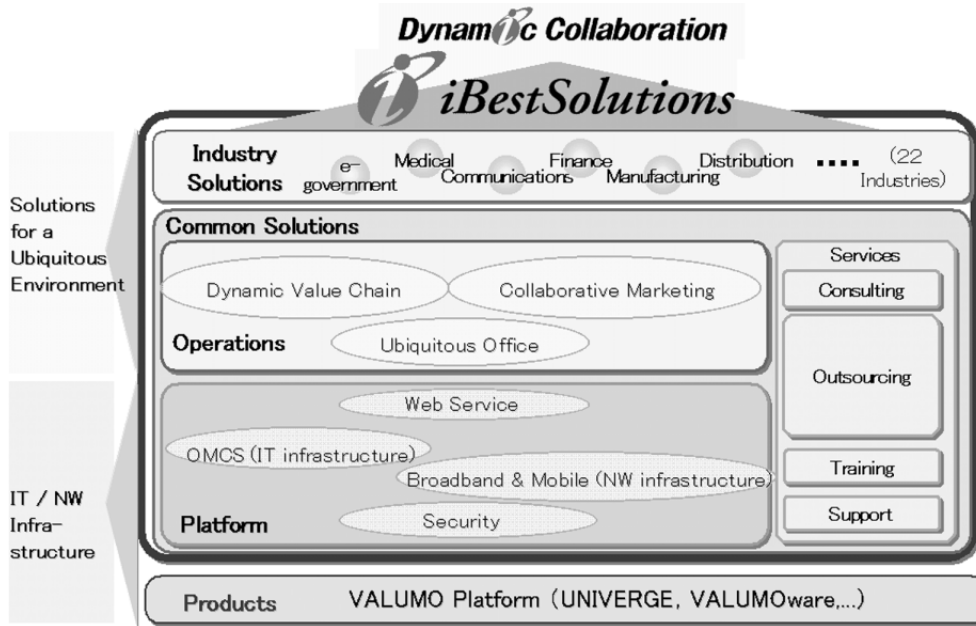**Fig. 13 Ubiquitous services with a mobile.**
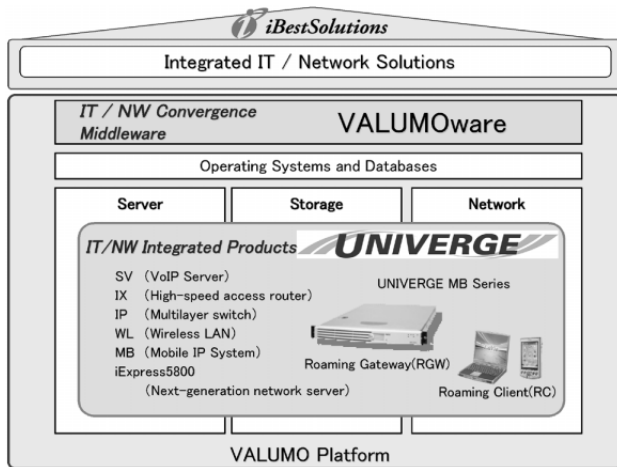
Fig. 15 Integrated IT / NW solutions.

Fig. 14 IT / NW integration hardware "UNIVERGE."

efficient and growth strategies more effective by fully using our broadband and mobile technology.

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