The Digital Revolution and the Evolution of e-Government

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1. The Digital Revolution

Economic discipline today has been ingeniously destroyed by the enormous global Internet market—that is, we are on the verge of a digital economy. Despite the fact that the information technology (IT) revolution has only just begun, the impact of the ensuing social changes will be on a scale greater than that of the Industrial Revolution.

- **Shift to new techno-economic paradigm**

For some decades in the future, the technological innovation which will have a major impact on our economy will be knowledge-intensive innovation such as that related to IT, bio-technology and new products. In such technological fields, research and development (R&D) will become so important that their technologies will be merged and amalgamated. Advanced Internet networks connecting such industrial fields will provide the vital infrastructure in the development of a knowledge-intensive industry and will represent a quantitative leap through improvements in the increased rate of labor productivity. Also, a substantial rise in capital productivity will be observed throughout the economy in IT industrial areas by accelerating the shift from the existing techno-economic paradigm to a new techno-economic paradigm. Moreover, this will promote the development of science and technology and its relationship with R&D, and help to initiate a chain reaction of innovation, thereby bringing on a qualitative change in economic systems, and social systems in general.

- **Establishment of a knowledge-intensive society based on the Internet**

The most important aspect of the IT revolution is the change in interaction in various areas, such as in human relations, the economy, public administration and politics, by the effective use of information networks. This will enable the reform of our social system from the very foundation revitalizing the interchange between the various fields by promoting effective use and creation of knowledge.

Taking a look at today's economy, progress is being made in the globalization of finance and the level of taxation and accounting systems in each country, so that the institutional frameworks supporting our economy has started to show significant changes. At the same time, a knowledge-intensive and creative economy based on the Internet is about to be produced from IT innovation, financial globalization and the interaction between IT innovation and the existing economic disciplines.

Improvements in information networks, reform of enterprise organizations to effectively utilize IT and reform of the social system and industrial rules to meet new technological developments will accelerate the paradigm shift from the existing economic structure to a twenty-first century digital economy.

When observing the regions where economic and social development have been successful by effectively utilizing networks, in most cases the revitalization of innovation has been successful by combining R&D in the related fields. At the same time, through the collaboration of industry, government and academia, a knowledge-based society based on the Internet, in other words, a knowledge-intensive society is about to be created.

However, for the Japanese economy to display its potential and to be revitalized, a chain reaction of innovations should be organized. Success depends on whether or not Japan can transcend its knowledge-intensive society, improve its infrastructure for a more effective use of IT, and steadily develop a corporate organizational reform—reform of its social systems and industrial guidelines through the collaboration of the industrial, public and private sectors.

2. Impact of the Digital Economy

The digital economy has already begun and e-business has been steadily developing in the United States. E-business can be classified roughly into business to business (B2B)—transactions between enterprises—and business to consumer (B2C)—transactions between enterprises and consumers. In 1999, Internet commerce in the United States totaled $34 billion (¥3.9 trillion), 11.1 times greater than Japan, so rapid growth can be observed. In 1998 and 1999 in particular, Christmas trade battles referred to as "e-Christmas" became the perfect opportunity to establish Internet businesses. It has been reported that American consumers spent approximately $5.3 billion on online shopping during the 1999 Christmas season alone.

Even in Japan, which is several years behind the United States in e-business, the remarkable expansion of mobiles has led to an increase in e-business. According to a joint survey conducted by the Electronic Commerce Promotion Council of Japan (ECOM) and the former Ministry of International Trade and Industry (MITI), although the B2C and B2B markets were only ¥824 billion and ¥21.6 trillion respectively as of 2000, these figures are expected to grow to approximately ¥13.3 trillion (16 times) and approximately ¥111 trillion (5 times) respectively in the next five years.

Steadily expanding business results in the B2C market include tourism, automobiles, computers and peripheral equipment. According to a survey compiled by the American Society of Travel Agents (ASTA), 16.5 million people booked airplane tickets or hotels or settled accounts on the Internet in 1999, a sharp increase from 6.7 million in 1998. In addition, areas indicating steady progress include finance, software, publications and music companies proficient in digitalization. Such intangible products can be directly delivered to consumers via the Internet. This is also true for services such as consulting, banking, insurance, securities, education and medical services. Substantial growth is expected in these fields in the future.

- **Toward a new competitive stage**

In line with a financial "big bang," by relaxing regulations and recognizing the holding company system, financial institutions are trying to develop an interlocking banking business, securities transactions and insurance. If a network is used, personal information can be obtained from these three business environments, and customers with larger assets can be enclosed with very little cost. Accordingly, in this new market, various types of enterprises such as Sony, Family Mart, Ito-Yokado, Toyota or foreign affiliates will be able to join, and competition that goes beyond business conditions or national boundaries will be developed.

A network market will attract public attention from (i) the significant reduction in cost; (ii) the ease in obtaining market information, and its (iii) attractiveness as a new source of advertising or sales channels. The Matsui Securities Co. Ltd., a typical Japanese online securities company, provides services at one-tenth of the existing cost by having extensively reduced its branch office costs and personal expenses. After the reduction in costs, service charges for stock sales transactions were liberalized in October 1999. Since then, competition in the securities industry has become extremely severe.

In banking, the Internet has had a similar effect. For example, a single over-the-counter

transaction at a branch office costs $1.07; via the Internet it can be completed for a mere 1 cent. However, price wars are more severe on the Internet market, so it is not easy to gain consumer loyalty. Furthermore, an increase in sales means an increase in advertising and system construction expenses as well as maintenance fees. Therefore, even a company like Amazon.com, with a world-wide brand-recognition, is currently having difficulty converting sales into black ink. Nevertheless, in the intensifying international competition, over-the-counter services, which cost more to an unspecified number of people, cannot be provided. Therefore, services that emphasize financial planning should be provided by targeting only those individuals with substantial savings. Therefore, it is necessary to convert the remaining services to Internet transactions. A fair number of branch offices may be reduced in the future.

Since online business has now become a full-scale activity, competition between enterprises is about to shift into a new stage associated with a change in business conditions.

• One-to-one marketing

The magazine *Nikkei Net Business* (Nikkei Business Publications) has a "Nikkei EC Grand Prix" competition for which I was a member of the judging committee for the final rounds. This year, 570 firms applied and awards were carefully determined by examining factors such as sales, the novelty of a business model and consumer protection.

The grand prize winner this year was Sofmap Co. Ltd. which had Internet sales last year of more than 10 billion, the largest PC mail order site in Japan. Sofmap serves customers by skillfully taking into account the link between the Internet and the actual shops through the use of a website and 2 million Sofmap cards. The company's one-to-one service system for customers has also been greatly improved. This is a typical example of success through the skillful linking of "click and mortar," that is, real shops and cyber shops.

Tsustaya Online, a CD and DVD rental company, received an award in the mobile category, but fell behind in their progress on the web. Consequently, by placing an emphasis on information dispatching and rental reservation via cellular phones, they were able to attain about ¥150 million a month in sales. Weekend Homes Co. Ltd. and Wedding Net received an award in the less than ¥100 million category for their one-to-one services in housing design and construction and from wedding reservations to ceremonies. Their after-sales service systems are also well organized.

Orbis, a cosmetics company with ¥100 million in sales, independently develops cosmetics by taking into consideration consumer needs on its website. They were awarded a prize because their success was due to the fact that by taking health matters into consideration they were able to gain an excellent customer-base. Another winner was Cecile Co. Ltd., in Tokushima, which had good business results with annual sales reaching ¥1 billion.

The Cafeglobe received a prize in marketing. The company prepares women's magazines on the web by attracting editors of female magazines. The main reason why we awarded them a prize was because their business model attracts first-class members through a membership system and their products are created after consulting the ideas of their members. They have already shown positive results in handling product planning and consultations for various companies.

As you can see from these prize-winning firms, the greatest advantage of the Internet is the establishment of long-lasting customer relationships through mass customization via one-to-one marketing. The importance of this has been recognized, but if one tries to conduct this in an Internet-free environment, the cost becomes prohibitive, and therefore unprofitable. However, if customers can be attracted by a skillful combination of the Internet with actual shops by providing data that meets the needs of individuals, business opportunities will expand. Many feel that B2C has no future, or that they are companies which will soon be in the red, but if enterprises develop their business by making efficient use of the special features of the Net then there is no reason why they will not be successful.

A business model which emphasizes low cost and customer-relationship via the Net will develop a win-win game between the web establishments and the stakeholders. At first, if they offer a function by which consumers can exchange and offer their opinions with the web operator quickly responding to questions, the reliability of the web will be improved. At the same time, the reliability of the establishment providing advertisements on the web can be improved, so they will be able to provide useful market information. From this, both evaluations can be improved by matching the needs of the customers and the establishments that advertise. Moreover, the evaluation of investors can be improved. There is a definite change in the way business is conducted.

- **Main flow of e-business – B2B**

The main current of the Internet business is B2B which is expected to grow to ¥111 trillion by

the year 2005. In comparison with B2C (¥13 trillion), therefore, it is extremely large. A more detailed look reveals that the electronics and information related products, (that is, the market share in electronic parts supply), is the largest portion followed by automobile parts supply and construction. At the initial stage, business takes place between specific closed companies, after which the making and receiving of orders, between existing clients and companies requesting parts is carried out on the Net. Sooner or later, parts are furnished by participating suppliers around the world who can produce excellent products at a low cost by selecting companies able to meet the delivery deadline.

A network to deal with automobile-related products is under construction. Since 1 October of 2000, the three companies Daimler-Chrysler, GM and Ford established Covisint to supply parts on the Web and this year Renault and Nissan also joined. In the future, they plan to supply parts from various companies on a global scale. Although for the time being, they plan to only use companies with credibility so that they can create an environment to commonly utilize part suppliers with existing transactions.

An e-marketplace therefore plays an important role. An e-marketplace is an environment that enables companies around the world to utilize the making and receiving of orders through a unified method and to freely make or receive orders through its access. Predictions indicate that the e-marketplace will account for ¥44 trillion of the ¥100 trillion in the B2B market by 2005. As mentioned earlier, the e-marketplace in automobile or electronic parts was created and mutually linked worldwide.

The e-marketplace has four functions. Under the present specifications: (i) an "aggregator" or "catalogue" for searching transactions with fixed prices is suitable for dealing with standard products in which the plural number of sellers and buyers participate. Even though the market share of such transactions is unquestionably high, if this is the only function, its utilization is unnecessary by investing in new equipment. Thus, the marketplace should have the following three functions, (ii) a seller-oriented "auction" suitable for transactions of rare or second-hand goods; (iii) a buyer-oriented "reverse auction" with which the plural number of sellers deal, and (iv) an "exchange" for transactions in order to present mutual conditions in which product specifications suitable for specially ordered products that meet certain standards. Nowadays, by integrating these 4 functions, Web construction now enables us to do one-stop processing. By linking these functions, the e-marketplace will become extremely easy to use for both buyers and sellers.

• **Functions which support the e-marketplace**

The three important functions which support the e-marketplace are: supply chain management (SCM), customers relationship management (CRM) and enterprise resource planning (ERP). Unless these three conditions are met, the business process will not be efficient and an enterprise will not be able to take maximum advantage of IT.

If a company already owns computers to implement these three requirements, however, it is highly unlikely that the total reduction in cost will be fully noticed. To construct and maintain a secure system which is capable of controlling huge databases such as a third-generation design or motion pictures, and to prevent the disclosure, hacking or corruption of vital data, huge amounts of physical and human capital will be necessary.

Therefore, service functions such as an application service provider (ASP) or an Internet data center will become important in the future. An ASP is a vendor that prepares various applications on a server so that companies will have access to the most up-to-date applications via the network. An Internet data center, on the other hand, is the business center that controls customer servers in large buildings, where monitoring systems resistant to disasters have been improved, or where hardware or software is available to companies for instant utilization of an extremely secure environment at reasonable charges. At present, large-scale vendors in Japan and in the West are on the way to providing such services. If diversified functions to controlling data and data exchange at large centers are vastly improved, an Internet data center could be the turning point for B2B. Companies may then be in a position to invest in core projects and focus on reducing costs by outsourcing certain tasks.

• **Future outlook of the e-marketplace**

In current conditions, although the e-marketplace only takes and receives orders, in the future it should be linked to a network able to settle accounts. Furthermore, it should provide a credit function for insurance, in particular for non-life insurance. Although many large-scale companies have assembly lines to fill orders in the e-marketplace, most of the companies which accept orders and supply parts are smaller enterprises. Thus, the amount of funds and lack of liquidity could be a major problem. Therefore, a loan which acts as a bridge will be required. At present, commercial transactions, trading companies, non-banks and local

financial institutions provide bridge loans, this does not exist in the e-marketplace. A credit function is being developed for the e-marketplace.

In addition, B2B—related alternative dispute resolution (ADR)—a means of addressing civil disputes other than through lawsuits—should be introduced immediately. Lawsuits not only take a long time to settle but can also have a negative impact on the company's image, and it is also difficult for the persons involved in the dispute to receive sufficient redress. After protecting the privacy of the people in the dispute, it is necessary to organize and examine the effective use of an intermediary organization to promote communication between the interested parties and to recommend an intermediary solution, such as an amicable settlement or compromise.

At the end, the relationship between the e-marketplace and logistics is also important. Even if an order is made or received on the Net and no physical distribution takes place, the loss in efficiency is significant.

IT investment is indispensable to provide the above-mentioned functions even if such functions are entrusted externally. To make effective use of investments, there should be a review of the organization's existing system. Moreover, an adequate review with respect to commercial practice or labor-management relations should also be implemented.

3. Internet security

- **Improvement in the electronic certification infrastructure**

Basic legislative improvements on electronic authentication and electronic signatures took place during last year's regular Diet sessions, the most important being the "Law Concerning Electronic Signatures and Certification Services" which came into effect on 1 April 2001. This law clarifies the presumption concerning the genuine establishment of a document with an electronic signature. At the same time, voluntary accreditation and designated investigation systems were adopted with respect to certification services and investigative organs that carry out examination of the relevant certification services respectively.

There is some background for the necessity to improve electronic certification infrastructure increases. For example, in the case of transactions via electronic mail, the name of the sender is attached so that the recipient can determine who sent the mail. However, in

the present electronic mailing system, it is easy for a third person to steal an email address and use it illegally. It is therefore dangerous to trust in the confirmation of an individual through e-mail. Consequently, the individuals in question should both confirm by using electronic signatures and encrypting the relevant documentation to prevent it from becoming corrupted. It is necessary to create a mechanism to exchange important private documents with ease such as contracts, even on the Net.

Another matter is the issuance of official e-government documentation. The securing of originality has become an issue in digitizing official documents. If duplication or corruption can be easily accomplished, the document cannot be regarded as official. Consequently, electronic authentication and an encryption are regarded as essential in the exchange of official electronic documents. If a document is certified through an electronic signature, the title holder of the document can be authenticated as the person with authority. In addition, if a document is encrypted to prevent corruption, the possibility of infringing the provisions of Article 157 of the Penal Code can be reduced. In other words, an official electronic document with an electronic signature may have the same weight as an official document impressed with an official seal, such as the seal of a city mayor. As certification in the said Law is subject to personal certification services, with respect to attributable certification, this may be prepared in a separate agreement or through an electronic certification system for commercial registration applied under the jurisdiction of the Ministry of Justice. However, formal testifying power is clarified in the said Law, which will influence the judicial judgment and have an effect on reducing the lack of authenticity in the conclusion of an e-contract. In the future, if the full-scale electronic authentication infrastructure is improved and its usage disseminated, it will be possible to conclude a formal contract allowing businesses to develop with a sharp reduction in clerical costs or personal expenses. It is important to create an environment where digital documentation, designs and written contracts can not become effective unless encrypted with an electronic signature.

As mentioned earlier, to place electronic commerce into full-scale practice, it is important to construct a secure and extremely safe system by utilizing encryption and electronic authentication. In addition, a global infrastructure to ensure authentication should be developed by ensuring mutual applicability (operability). Thus, an electronic authentication project such as Identrus (which is supported by major Japanese and Western financial institutions) may be very significant. Identrus has its head office in New York and

participants include Sanwa Bank, the Industrial Bank of Japan, Sumitomo Mitsui Banking Corporation and Bank of Tokyo-Mitsubishi.

Identrus has roughly two roles. One, is to determine system requirements based on international technological standards by formulating operational guidelines of authentication authorities common to member financial institutions. The other is to operate Root CA to authenticate member financial institutions in line with the rules formulated. Member financial institutions provide electronic authentication services by operating electronic authentication authorities in conformity with specifications drafted by Identrus and by issuing digital certificates for Identrus standards to client companies.

Identrus performs attributable authentication necessary for transactions between enterprises. Furthermore, in order to establish full-scale e-commerce between firms, a links to a site where accounts can be settled is indispensable. One might say that the Identrus concept aims to establish international standards through the initiatives of financial institutions in the field of e-certification in B2B by effectively utilizing its strengths. After sufficiently considering such international situations, it is necessary to formulate a system strategy on an open e-marketplace or electronic procurement.

• **Next-generation cellular phones and multi-function IC cards**

Cryptographic keys are used in private communications and electronic authentication and should be safely stored like a registered seal. But how can we store them? Cryptographic keys used on personal computers connected to the Internet may be stolen or corrupted by hackers. Therefore, cryptographic keys should be installed on integrated circuit (IC) cards.

ID cards may be used for access control in order to prevent data leakage or illegal use and to protect personal data, so they have a multi-purpose function. For example, they can be used as telephone cards, cash cards, debit cards, credit cards, e-money or member cards. Consequently, diversified companies have been groping with the development of next-generation business through complicated tie-ups.

In the future, the use of IC chips in third-generation cellular phones will be of particular importance. There are three standard types: the card type, plug-in type and pre-paid type. If a telephone number is inputted into a card-type phone, it will not function like a real telephone until the card is inserted. Card-type cellular phones are called SIM cards and are popular in Europe. The French manufacturer Schlumberger is the world's largest manufacturer of IC

card phones. In a plug-in type phone, a chip is installed beforehand and then a telephone card function is prepared but with this type of phone, an application cannot be added. Therefore, although the basic functions are preinstalled, additional functions are added by inserting pre-paid chips. The European strategy is to emphasize card-type phones but all three types are expected in Japan. NTT DoCoMo will begin next-generation cellular phones soon may also pursue all sorts of capabilities. In relation to an e-government, it is anticipated that dissemination and use of ID cards will rapidly expand. Even in the United States which is falling behind in the distribution of IC cards, there has been a shift toward IC cards. In this way, if electronic authentication and IC cards continue to spread, we will continue to see great progress in overall electronic transactions.

- **Establishment of a framework for personal data protection**

A framework for personal data protection should be established for the institutional environment which is also indispensable if the Net is to become an all-out sales channel. If the progress of digitization continues, many cases of invasion of privacy are likely to take place. For example, for authentication, in addition to personal data, property or genetic information are converted to a database. Thus, it is possible that such data could be used in insurance assessment.

Japan has introduced the Act for Protection of Computer Processed Personal Data held by Administrative Organs and the said regulations in public administration, so that the use other than for proper purposes or leaking to a third person is subject to legal action. In the private sector, however, provisions related to personal data protection are found here and there in special separately prescribed laws so that inclusive provisions do not exist.

On the other hand, in accordance with the EU derivatives on personal data protection, the EU is obliged to amend the personal data protection law to include the private sector. The provision of Article 25 of the EU directives decrees the prohibition of the transfer of personal data of a resident within the EU to a third country which does not have sufficient and appropriate personal data protection legislation. It is crucial to improve effective personal data protection legislation from a global perspective. Although a bill on the personal data protection law submitted to the ordinary Diet this year was not come into existence, it is preferable that companies take voluntary measures before legislation comes into effect.

4. E-government and Restructuring of Administration

• System that supports e-government

At present, a network system to support Japan's electronic government is being created. One is the Kasumigaseki WAN which covers the central government. Since the completion of the physical network in March 2000, the system has entered an experimental stage which includes the use of encryption and electronic authentication. Since the Kasumigaseki WAN is connected to the existing ministerial LANs, a bridge authentication system through which each bureau validates data via an inter-ministerial authentication system has been introduced.

Another is a the Local Government Wide Area Network (LGWAN) plan with its intranet function of administrative organizations. Corroborating experiments in 47 prefectures and 12 cabinet-order designated cities were completed in September of this year. Since then, an environment in which official documents can be exchanged electronically by means of a highly secured network covering approximately 3200 local governments has been scheduled to be in place by the middle of 2003. Paralleling improvements in the LGWAN, corroborating experiments for a system to accept electronic applications, notification or electronic procurement are scheduled to commence this year.

What I would like to emphasis is that we should not forget the basic concept of electronic administration as a major principle. Although the public will have to take part in various administrative procedures, which are unavoidable, such procedures, including identity-confirmation, are very complicated. Such procedures, therefore, should be simplified as much as possible by reforming the administrative system. To accomplish this, IT should be used. Public administrative services should be improved so that the public can easily access information from any location, such as reception counters at public locations. For example, convenience stores or post offices would be suitable reception sites. At the same time, the administrative business of civil servants should be implemented smoothly. So, it is important to recognize the effect IT will have on administrative reform. Furthermore, for electronic administration, a new collaboration between the public and private sectors should be created. So, I would like to emphasize the necessity for collaboration between the public and private sectors based on the LGWAN example.

There are three primary objectives in creating the LGWAN: (i) improvement of public services; (ii) efficiency and simplification of public administrative business, and (iii) restraint of two-tier or three-tier investment through confusing networks. Since LGWAN is a highly

secure network connecting all local government networks, official documentation can be exchanged between public administrative organs through digital means. In the future, this is scheduled to be linked to the Kasumigaseki WAN. At the end of March this year, the Operational Council was inaugurated for the operation of LGWAN. Although 47 prefectures and 12 largest cities now participate in the council, eventually all municipalities will participate. Based on this decision, the control of authentication or cryptography and major services are to be entrusted to authentication authorities and carriers respectively. In addition, in keeping with the internal audit system, system audits, financial audits and information control audits are to be entrusted to private auditing organizations.

Special technical features of LGWAN include linking to Virtual Private Networks (VPN) by utilizing routing technology called multi-protocol label switching (MPLS). Since the Internet has a security problem, there are great risks, for example the problem of hacking or cracking. However, TCP/IP can be utilized as a communication protocol for accessing routes to the Internet.

The originality of a digital document is secured through an authentication system such as electronic signatures or a public key infrastructure (PKI). Authentication units include group authentication which certifies representatives of autonomous bodies, and organizational authentication which certifies the entire organization and not only its departments and sections. Individual authentication which subjects all staff brings with it enormous expense. In addition, the volume of lines or capacity of servers can create difficulties. Checking work associated with periodical reshuffling can bring on serious consequences. In order confirm identity, an IC card should be used. An environment in which only persons with authority have access to a system should be created, especially when opening a file from an terminal where identity is confirmed by IC card. In this case, biometrics could be utilized. For instance, various combinations of passwords, a skeletal structure of a finger, fingerprint, voice or iris recognition.

This network including electric authentication and is quite advanced. Consequently, if local governments are able to maintain and improve upon it, any difficulties can arise. Accordingly, the active involvement of private companies having technical expertise becomes necessary. The effective utilization of an application service provider (ASP) is being seriously examined. Since the upgrading of application software or database control is a great burden to local governments, if the network can be uniformly managed, it will reduce the onus on local

governments. APS should be established at the Internet Data Center (IDC) to protect LGWAN security.

Regional cooperation between local governments should be considered with respect to the construction and operation of government electronic application and procurement systems connected to and operated by the LGWAN. For this reason, difficulties should be addressed from the financial and personnel aspects if a municipality independently maintains and operates the systems. In this sense, the IT Promotion Council organized by the Ministry of Public Management, Home Affairs, Posts and Telecommunications, an advisory group to the Minister, expressed the view that joint improvements and operations should be promoted (Report on the IT Promotion Council Ministry of Public Management, Home Affairs, Posts and Telecommunications, July 2001). Improvements to the electronic authentication infrastructure is also scheduled to enable individuals or companies to complete electronic applications, notification or procurement via the Internet. Related to this, the construction and practical usage of a resident registration network or commercial registration network and a bidding system for public works projects are underway. If public procurement or an electronic system of tax returns is implemented full-scale, its relationship with the settlement of accounts should also be seriously considered. In other words, consideration should be given to how we can construct a highly secure network (network with electronic authentication) where important private and official documentation or contracts between local governments, designated financial institutions and private juridical persons are exchanged. In this sense, we should examine the global trend toward the Identrus electronic authentication system in which leading Japanese and Western financial institutions are participants.

A residential registration card system is planned for all citizens who would like one. Although name, birthday, sex, residential registration code, IC card password and expiry date will without doubt be included in a residential registration card, there will be a space provided for municipality use. A security key for the card is also being examined that can be utilized when a resident makes an electronic application or notification via the Internet. In order to prevent leakage of information or tampering of personal data, the residential registration network will be entirely different from LGWAN. The card will provide the ability to control access to data or detect illegal action.

- **Administrative reform and democracy**

In the “e-Japan Priority Policy Program” announced in May 2001, the goal will be to launch an e-government by 2003. The ultimate aim will be to create a digital democracy by reforming the administrative and business processes, and by improving accessibility to administrative services. Consequently, measures to improve the technical infrastructure should also be taken concurrently with the movement of administrative reform. The creation of a cross-sectional organizational system to implement electronic applications, notification and procurement should begin now by reviewing the positions of information policy departments in each local government. For this, the appointment of a chief information officer (CIO), which is a common practice in the private sector, should be seriously examined.

In addition, if all local governments independently introduce electronic administrative services, it may be difficult from the viewpoint of finance and human resources. Accordingly, system construction should take into account the commissioning of administrative services to the private sector or regional cooperation with local governments. Although these remain as future inquiry issues, it is important to create a new order of cooperation between the industrial and public sectors and a new regional system by linking the electronic administration movement with the trend toward decentralization.

In any event, the Japanese electronic administration policy could be considered remarkable, and is the most ambitious project of its kind in the world today. I would like to reiterate however, we should not forget the concept of administrative digitalization which encourages one-stop administrative procedures and expands administrative services. For this, we must reform administrative organizations (business process engineering: BPR). Through this, a networked society and digital democracy can be created with the support of the industrial, public and private sectors.