July 4, 1996

Aiming Toward a Humane Infomation Society
Creating a New Society by Utilizing Advanced Information Technology

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I. INTRODUCTION

A revolution in information technologies such as multimedia and the Internet is propelling us toward an advanced information society. This trend will accelerate from hereon and the effects are expected to be wide-ranging.

Although predicting the progress and the magnitude of information technology in the 21st century is difficult, based on various government plans and research, the following paradigm outlines the type of Japanese society which may emerge in the 21st century. Approximately 30 to 40% of all households will have PCs, 60% of the population will be hooked up to optic fibre cables, over 10 million persons will be communicating using computers, and digital broadcasting by satellite will be widespread. Multimedia technology, characterized by digitalization and interaction, will lead to greater diversity of services and software and the establishment of new businesses. The capacity and speed of advanced networks will increase, the cost of services decrease, and various mobile communication systems will be introduced. Corresponding with progress in information technology we should also be aware that an advanced information society will have new features which have not been witnessed in erstwhile conventional information technologies such as "multimedia", "information networks", "personalization", "elimination of borders" and "accelerated changes". Dramatic changes are taking place in what can be described as a "communication revolution". The implications of these changes are not simply confined to increased automation and efficiency of modern technology. It is most probable that the communication revolution will affect the whole social system, including politics, lifestyles, the psychology and behavior of people precipitating

major social changes. In the economic field, the emergence of new industries and industrial merging and consolidation will accelerate changes in industrial structure. In addition, it is anticipated that there will be changes in management strategies, decision making processes, the organizational structure of firms and people's work styles.

The Keizai Doyukai have published a number of proposals for the desired future shape of Japan, including; "a society that features individual diversity", "creative management", "dynamic economy", "policy-centered politics", "small government", " fair and transparent administration" and "active participation in global affairs". Because of its features and the anticipated wide-ranging effects, progress and revolution in information technology are expected to contribute to solving these issues and the realization of the desired future society.

In terms of how the emerging information society should evolve, it is important to construct the type of society in which we would like to live by effectively utilizing this new information technology.

Based on the general ideas outlined above, the Committee on the Information Society of the Keizai Doyukai describes the desired information society for the years 2000 - 2005 and discusses the issues and appropriate measures necessary for its realization.

II. A HUMANE INFORMATION SOCIETY: THE SHAPE OF OUR DESIRED INFORMATION SOCIETY

We are aiming at constructing a "humane information society" in the approaching 21st century, therefore, new information technologies which have tremendous potential for society should be utilized in order to bring out the maximum potential of humans in terms of their abilities and discovering their new lifestyles. It has been pointed out that, when compared with America and Europe, the acquisition of modern information technology has been relatively slow in Japan, and it goes without saying that it is imperative that we take measures to accelerate our progress in this field. Concurrently, we should aim toward the creation of a humane information society which allows humanity and technology to coexist harmoniously.

1. THE ESTABLISHMENT OF AN ADVANCED INFORMATION NETWORK SOCIETY

Japan, at the beginning of the 21stcentury, will be a society with an infrastructure of advanced information networks, mainly optic fibre cables. Information will become a resource equal in importance to goods and energy.

As in the case of the Internet, often referred to as "network*s of computer network", the advanced information network society will be a three dimensional horizontally constructed network society intrinsically different to the vertically constructed society that has existed hitherto. The most important feature of this system is its openness. Anyone, anytime, and anywhere can freely disseminate and access information by participating in the information network arena.

2. THE CHARACTERISTICS OF AN ADVANCED NETWORK SOCIETY

The nature of the advanced information technologies, will cause a paradigm shift in the social and economic systems and the advanced information network society will be strongly characterized by the following:

The Leading Role of the Individual

In the advanced information network society that connects individuals with one another based on their own volition, anyone can freely and easily receive and disseminate information through the network. Opportunities for individuals to demonstrate their maximum ability will increase and their accomplishments clearly evaluated. In short, we are approaching a society in which individual will play a leading role.

Increasing Individual responsibility

An individual is a basic unit in the advanced information network society. While network participation is basically entrusted to independent individuals, each individual must realize that they are responsible for the risks associated with its usage. In order for the system to operate soundly it is necessary for users to assume new morals.

A Competitive Society Based on Market Principles

In a society in which the volume of information is increasingly expanding, each player is able to determine their own behavior based on a large amount of information. As a result, the market mechanism will function more effectively and a more competitive society will evolve.

Increased Diversification

In the advanced information network society, temporal and spatial constraints will be reduced, and the opportunities and range of activities available to individuals will become greater with the expansion of choice. By combining the infinite information available, the creative potential of individuals will be significantly enhanced and this in turn will lead to increased diversification.

Diminishing Borders and an Open Society

The information network will allow all individuals to be freely linked and society will become more open as dispositions such as age, gender, social class, race, nationality, or status disappear. This will give people from all walks of life the opportunity to engage in communicative relations with each other.

An Increase In Speed and Latitude

Advanced information technologies will improve the efficiency of our daily lifestyles, work, enterprise management, government and administration, resulting in the creation of more free time. Especially in the economic sphere we will see a shift in the dominant position of "economies of scale" to "economies of speed" and then, in the future, in line with the diversification of the society, there will be an advantageous shift towards "economies of scope".

A Horizontal Society

In terms of the network, since organizations and individuals will be able to equally participate, regardless of their size or disposition, a major shift can be expected away from a vertically structured society towards a horizontally organized society. Instead of flowing vertically, the flow of information within the organization between persons holding different positions will be inclined to flow horizontally, thus increasing efficiency.

3. PERSPECTIVES ON A HUMANE INFORMATION SOCIETY

We would like to create a "humane information society" in the 21st century through utilizing the potential and features of an advanced information network society based on our volition.

We released many proposals regarding the future shape of Japan in the 21st century, and we would like to use the new information technology as a lever for the realization of our proposals. The following is an outline of considerations for the years 2000-2005 which may assist in the creation of a humane society if potential obstacles are removed and problems solved.

Lifestyles; Diversity in Lifestyles

Multimedia equipment, personal computers, and mobile telecommunications are rapidly spreading and becoming tools of our daily lives as individuals increasingly acquire their own personal electronic devices. Peoples lives are consequently becoming less constrained by time and spatiality and choices are more diversified and ample.

Diversification of Consumer Lifestyles

With the increase in the diversity of goods and services, such as online shopping, online banking, and electronic newspapers, consumption patterns will be marked by convenience. A diverse selection will enable consumers to choose the most suitable products, and the quality of their lifestyles will be improved.

Diversity & Expansion in Communication

In the same way as the telephone and facsimile help our communication, multimedia computers are used as communication tool and the development of television-telephones will enable virtual meetings with persons in remote places. The information network will bring about a change in human relationships as direct communication with one another outside of an organizational framework or hierarchy becomes possible. Human relations will become more equal and free; regardless of one*s gender, age, or organizational title barriers an individual*s character will be more important than their social disposition. In addition, the formation of virtual reality communities on the information network will produce multi-layer communities supplementing traditional communities.

Ample Leisure

Advanced information technologies will lead to an increase in the efficiency of business and a reduction in domestic chores, resulting in more free time for individuals. To support this trend , a number of new services will be developed, such as ticket information including reservation through the application of

multimedia, two-way broadcasting transmission of television, "video-on-demand", and virtual reality experiences. Moreover, the application of Information tools will lead to an increase in discretionary time and a change in people's values and behavior as their lives become more family-oriented and they begin to participate more actively in local communities.

A Family-Oriented Work Style and Equal Gender Participation in Society
Aided by advanced information networks, freer working conditions induced by flex time and flex place etc., will make it easier for individuals to combine their work duties with their family conditions and living environments. Consequently, as a result of a reduction in commuting time and an alleviation of traffic congestion problems, it is expected that individuals will have more free time to spend with their families. With the increase in the establishment of support systems for housework, nursing and child care, house chores for women will decrease enabling more women to work from home. Thus, men and women will be able to equally participate in society.

Educational Choices

In terms of education, the increase in receiving and disseminating information will foster intellectual curiosity. Services such as remote learning, will reduce geographical disparities in educational opportunities. With diversity in selection generated by the application of information equipment, education will become diversified rather than uniform, and "one-on-one education" can be adapted in accordance with the level and skill of each individual. Through the application of advanced information networks, the constraints of the classroom will be overcome and individuals will be able to engage in open research environments without institutional barriers and experience virtual reality and joint study programs. Education will become comprehensive with a network connecting households, regions, research institutes, universities and schools, offering broad access from a range of different places. The promotion of lectures on a data base and the exchange of research information will make schools, universities and think-tanks more open, and individuals will be able to freely attend lectures of their choice outside the framework of a physical educational institute. Anybody will be able to freely obtain life-long learning.
Likewise, since intellectual education will be sufficiently provided through the tools of information, education necessary for character formation, such as the cultivation of aesthetic sentiment, will be enriched.

A Safe and Peaceful Lifestyle

In the field of health and medical care, through the use of multimedia personal computers, individual households can be connected to hospitals, clinics and health centers, and patients can have medical examinations and be diagnosed while they are at home through remote monitoring. In terms of home security, through a remote control alarm system individuals will be able to monitor and remotely control their homes while they are out. The expansion of the application of information tools will contribute considerably to the safety and ease of our lives in other areas, (i.e. immediate access to accident and disaster prevention information etc.)

An Active Aging Society

As we approach the 21st century it is hoped that through the development of information technology there will be a substantial improvement in the support we are able to give to the socially disadvantaged, especially the elderly and disabled. Through the provision of home care services, various cultural activities and a structured volunteer network, the advanced information network will allow senior citizens to overcome their physical disabilities and productively participate in society by actively engaging in various activities. It will also be possible for elderly requiring care to access reliable care services, such as health care and nursing information, home medical treatment, and remote control medical treatment. It is expected that this will effectively reduce the growing financial burden on citizens that is associated with the aging population.

A Functional Legal System for Citizens

In a society where citizens are independent and fully accountable, the role of the judiciary in their lifestyle will increase. The advancement of information technology will bring people into closer touch with the legal system. Through the advanced information network people will be able to readily consult with the bar association. Telecommunication conference network systems will make on-line trials for minor offenses possible and the judicial precedent on a data base will shorten the term of a trial reducing judicial costs.

Corporations; Creative management

The progress of information technology will bring about tremendous business opportunities for enterprises, such as accelerated changes in the industrial structure,

and enterprises will be pressed to change the nature of their organization and management strategies to promote creative management.

Open-Structure Operations

In the advanced information society, the enterprise will utilize information on customers, markets, products and business resources from the widespread networks. A reduction in the barriers between enterprises and their business partners and consumers and local communities will require a more open management style.

Concretely, the spread of electric commerce (EC), e.g. CALS (Continuous Acquisition and Life-Cycle Support) and EDI (Electronic Data Interchange), will enable enterprises to form horizontal cooperative relationships with overseas and domestic partners, such as through a loose cooperative relationship on a specific project basis or through more closely tied joint business arrangements. New strategic alliances will also be formed as traditional keiretsu links and small-medium scale enterprise tie-ups diminish. The application of EC will enable a flexible manufacturing process capable of producing many varieties of products and changing production capacity, resulting in a simplified distribution channel and a reduction in costs.

Relationships with the consumer will also change. More importantly, the new marketing strategy, "relationship marketing", aimed at deepening relationships with customers, will replace the traditional marketing strategy of focusing on increasing market share. The introduction of an electronic market network will also enhance the efficient distribution of goods and services and financial transactions.

The application of network technologies, such as the Internet, has led to the diversification of mass media and methods of advertising have expanded overcoming temporal, geographical and economic constraints. The spread of EC and use of IC cards have made cyber-money for daily use possible.

Streamlined and Flexible Organizations

As a result of advanced information technology, enterprise decision making and organizational structure will undergo a dramatic transfiguration becoming more horizontal, simpler and flexible.

The in-house information networks of enterprises, such as the Intranet, will be established and applications such as voice mail, electronic mail, electronically televised conferences, and the electronic circulation of documents requiring approval will enable enterprises to collect and exchange information from anywhere

whenever necessary. As a result, information will be transmitted correctly and transparent decision making will become possible. With this kind of network, information will be exchanged mainly horizontally, and enterprise organization will shift from the traditional vertical pyramid type structure with emphasis on position to a flatter horizontal structure which an increase in the number of affiliated or spin-off companies.

In this situation, the duties and responsibilities of each employee will be clearer, and managers with different abilities will be in demand as their traditional role as a source of information declines. Among the qualities in high demand for managers are the ability to effectively coordinate, provide a clear vision of the company*s future goals, select appropriate information and create an ideal organization. .

By utilizing information networks the methods of working and standards of evaluation will change. "Group-ware" will enable many persons in different locations to work in collaboration and the productivity of the entire group will improve. Because of a clarification of job descriptions and responsibilities, there will be a greater appreciation of individuals who have a high degree of expertise and a flexible way of thinking. Through the use of information technology such as the Internet, the necessary human resources can be recruited with ease and the methods of recruiting personnel will be diversified.

Economy; A Dynamic Economy

The emerging advanced information society will give rise to the establishment of new industries and bring about a realignment of existing industry and add value to existing industries. These trends will trigger industrial development and stimulate the economy. There will be new opportunities in the information industry for venture businesses which are able to take advantage of the growth in the importance of creativity as opposed to the scale of the enterprise.

The industries related to the telecommunications and information sectors will lead the economy together with high value added manufacturing industries providing the foundation of support for the Japanese economy. In the "Information Society" the creation and flow of information will increase more rapidly than the production of goods, activating business in the fields of R & D, distribution, services and sales sectors. New industries and business, such as information support. information consulting, and software, will be created providing new employment opportunities. With the expansion of world-wide information networks we will witness an acceleration toward "boarderless" markets. Investment in information technologies by existing enterprises aiming at advancement and efficiency, will trigger an

acceleration restructuring and reengineering. In addition, advanced information technology leads to industrial merging and consolidation. The removal of barriers between industries, such as sectors of finance, retail and distribution, will promote competition between new players, such as telecommunications and software and cable television companies.

With the spread of volumes of information and an increase in the diversification and resilience of production and distribution due to information equipment, initiative in the market will shift from the supplier to the consumer, and the selection of products and services in particular available to consumers will broaden.

Politics; Policies Reflecting the Will of the People

As we progress towards an advanced information society, it is hoped that the focus of government policies will come closer to reflecting the will of the people.

By televising the activities of the diet, like C-SPAN in the US, Diet information, and Diet sessions will be able to be made public to citizens enhancing the transparency of decision making and increasing citizen interest in politics. The Diet will be able to increasingly reflect the public view through the introduction of information technology such as electronic voting. The introduction of identification codes for individuals will enable citizens to directly participate in government decision making, such as referendum.

Through the medium of the advanced information network, the electorate and politicians will be able to exchange information and the level of political consciousness of citizens toward political activities will be enhanced. The information network will allow candidates to post speeches and notices on electronic bulletin boards, which will lead to the rise in the proportion of voters, and the electorate*s interest in elections.

Administration; Small Government and Fair and Transparent Policies

The introduction of information technology, such as electronic telecommunications and information networks, will create a fair and transparent relationship between enterprises and citizens through increased information disclosure, leading to an improvement in the efficiency of government administration. Information networks integrating all sectors of the central government (referred to as "Kaumigaseki WAN") and the linking of central and local governments will increase the overall efficiency of government administration by promoting the sharing of information, and rectifying problems such as the vertical structure of organization and duplication of work. Increased efficiency will lead to a reduction in personnel who

can be re-located to administrative services that may become necessary in the future and the simplification of administrative procedures will also be promoted. In combination, all these factors will lead to a reduction in the size of the government and a decrease in the people*s burden required to support the system. Advanced information technologies will lead to an increase in the convenience of administrative services. For instance, the installation of public electronic network terminals will enable households to access terminals to obtain their own resident*s card and proof of one's seal registration, overcoming temporal and geographical constraints. After moving residence it will also be possible to carry out all registration changes and procedures involved through one convenient terminal instead of having to visit several locations. The introduction of information technology into administration in the fields of information disclosure, transactions, applications, and data preservation, promote enterprises to utilize information technology and reduce costs. For instance, the introduction of CALS for government procurement of public works will promote transparent efficient business transactions and competition which will bring about a reduction in construction costs and enterprise costs. With progress in technology for security measures, annual company reports will be submitted to the Ministry of Finance under the Stock Exchange Act by enterprises through the network and investors will also be able to monitor and access enterprise information with ease. Various statistical surveys and national censuses will be able to be quickly and efficiently conducted, and anyone will be able to freely access survey results with ease.

The Nation State; Active Participation in Global Affairs

A global advanced information network will be used at all levels and accelerate Japan*s globalisation. In particular, information from Japan will be able to be disseminated at remarkable speed and Japan will be able to actively participate in global affairs. Through information network international conferences, diplomatic exchanges with one another, for instance summits, will be able to be held at any time and not be limited to face to face meetings. With the deepening of mutual international understanding, the speed of decision making including international political and economic cooperation will be enhanced. Diplomatic exchange through telecommunication networks will solve situations in which persons are unable to participate or must postpone their meetings due to domestic political circumstances.

III. AIMING TOWARD A HUMANE INFORMATION SOCIETY ; ISSUES AND SOLUTIONS

As we approach the 21st century we would like to construct the type of "Humane Information Society" outlined above. We must begin to clearly resolve the many issues which are associated with the coming information era and not simple allow the progress to occur autonomously. These issues and possible solutions to circumvent impending problems are outlined below.

1. THE VOLITION AND ABILITY TO LIVE COMFORTABLY

Reforming the Social Climate and Individual Consciousness

It is highly possible that society's common values and customs embedded in the consciousness of individuals will come to be one of biggest obstacles to the transition to an information society. Hitherto, our country's framework and systems have been constructed on the premise of an industrial society. The consciousness of citizens, their thinking, customs and behavior have been deeply ingrained in this milieu. More particularly, individuality is not recognized in today's Japanese society. The absence of self-responsibility has given rise to mutual dependency (amae) or reliance which is distorting many aspects of society. In order to develop a more creative society which is essential for the development of an information society, it is important that a climate is created which fosters and develops diversity and new ideas. Therefore, for the approaching information society to be humane, it is essential that individuals positively change their consciousness and the social milieu changes.

As explained above, one of the major characteristics of the information society will be the establishment of a society in which the individual plays an important role. To establish a society based on individuality it is necessary for each person to have the volition and ability to realize the following; 1) to be truly independent by being responsible for their own lifestyles and by cooperating with each other on the basis of independence; 2) valuing one's own life and fully enjoying it while respecting the lifestyles of others and; 3) living a life of diversity and being tolerant toward the diversity of others by accepting idiosyncratic differences.

Forming the Next Generation of Humans

While uniform education through one's lifetime, including in schools and training in corporations, may have been an effective method of education in the industrial society, education must now be changed. In an information society which is characterized by diversity, it is important to foster and fully develop each person*s individuality and innate qualities. Therefore it becomes essential that education, including the education system and curricula, are changed dramatically in order to coincide with this need.

First, the application of information equipment will lead to an improvement in the efficiency of knowledge-oriented education enabling the focus of education to shift toward character building.

Information equipment, in particular PCs, should be actively introduced into school education and it is necessary to improve the ability not only to operate this equipment, which will become an indispensable element of the information society, but also to learn how to fully use this information (e.g. collect, utilize and disseminate information). Considering the potential wide range of effects the information age will bring about on humans and societies, it is most important that new rules and morals necessary for the information society are taught. In 1992, computers were introduced into primary and secondary schools on the basis of the new educational guidelines, PC education is being applied especially in technical and home economics classes in middle schools. This education should not just be limited to the operation of computer equipment. By way of example, a subject such as "Information Society Education" should be introduced to enhance "information literacy", and the comprehensive teaching of the new rules and morals which will be required in the information society should be also included.

Characterized by globalization, the information society will see international communication inevitably expand in leaps and bounds - the rapid penetration of the Internet being just one example. With the broadening of horizons of global citizens, learning foreign languages, in particular English as an international language will become even more important. Practical English language education in schools should therefore be developed.

Human development will become more important in education, particularly in junior and middle schools, in order for there to be a balance in the lives of humans and for there to be an understanding of the importance in engaging in direct communication and having direct contact with one another. Arts, culture, inter-personal relationship education and experiencing natural interaction with one another by way of participating in cooperative activities such as sport etc., are important aspects of human development. With the rationalization of "knowledge acquisition" education, as a result of information equipment, teachers will have more discretionary time

which should be used to focus on the personal development of students. Through the effective cultivation of students emotional and sentimental development, modern illnesses associated with advanced technology such as autism, insufficient exercise and socially inept behavior can be avoided.

Enterprises should also contribute to society by offering their personnel to instruct and guide educational institutes and by actively dispatching their staff to engage in volunteer activities.

2. POSITIVELY REFORMING CORPORATE MANAGEMENT

Reforming the Consciousness of Businessmen

As previously discussed, corporate structure and organization will become more open and horizontal as a result of advanced information technologies. To facilitate this change, the role and consciousness of upper and middle management and employees must change.

The role of executive management must shift from focus on collecting information and supervising the company to demonstrating leadership in judgment and decision making, and defining the corporate vision. A major role of the business executive will be to present a clear management vision based on a view of how the 21st century should be, and to make decisions that are both comprehensive and strategic, through the intelligent selection of relevant information from the infinite volumes of information available. Another important role of managers in the era of information will be to create an organization which enables individuals to demonstrate their full potential and to foster entrepeneurship within the company. Additionally, it is essential that executives actively use information equipment which is increasingly user-friendly and can be considered an effective means of decision making and communicating.

The role of middle management as conveyors of information to staff will be reduced and therefore, the ability of management to accomplish their task through the selection of the most useful information from the volumes available will be most important. Concurrently, managers themselves will be asked to act as members of a task force and thus their enhanced specialization will be in demand.

Information technology will enable the work of staff members to evolve from standardization to a more creative and intellectual level and these skills will be able to be clearly evaluated. Hence each individual should aim toward the realization of

their full potential in order to constantly create "a new self" and to achieve self-realization.

The Construction of a Flexible Corporate Network both Inside and Outside of Companies

There is an urgent need for corporations to construct a communication network both within their companies and externally. In this perspective, it is necessary to create an environment which will enable companies to connect with one another in order to facilitate the free exchange and sharing of information.

The Spread of End User Computing (EUC)

The share of Japanese companies using PCs and LAN systems is only one quarter of that in the US. In order to enhance the productivity of white collar workers, end user computing (EUC) should expand and be promoted. First, a system must be established in which each person has their own computer; and through the use of e-mail, information flow should be faster; improving efficiency in communication. It is essential that the efficiency of group work is increased through the use of "groupware" and the speed of decision making is enhanced resulting in a clear job description for each individual. Moreover, the active use of systems by individual workers and through the processing and dissemination of information, the intellectual productivity of white collar workers will significantly increase.

Reviewing the Organization and the Functions of White Collar Workers

In order to increase the efficiency of white collar workers, restructuring and organized networks are being introduced; at the same time, it is necessary to change methods of recruiting and appraisal. Hitherto, companies have hired "people", then taught them "job skills" after they enter the company and evaluated them accordingly. This is what has often been referred to as "Japanese style management" which has given rise to the lifetime employment and seniority wage systems. It is thus essential that personnel managers select their employees not just as "people", but for their professional skills. As a result of advanced information technologies, it will be necessary for enterprises to examine their management systems in response to changes in work styles, such as the expansion of discretionary labor systems and employees working from home. The government should also change regulations based on standard labor laws to make them compatible with the new era.

3. CREATING NEW SYSTEMS

Strengthening and Establishing a Comprehensive and Strategically Integrated Information System Policy Framework

Advanced Information technology will trigger economic vitalization through the construction of advanced industries and the continuous introduction of venture business which will stimulate the economy. As mentioned early,the characteristics of modern information technology will effect a wide range of areas and it will be an ideal opportunity to reform social system. However, Japan*s current organization and policies toward the promotion of advancing info-communications infrastructure are based on "tatewari" (the vertical division of labor) between government ministries and are therefore neither comprehensive nor strategic. It is difficult to ascertain whether the plan for an Advanced Info-Communication Society, formulated in August 1994 by the Prime Minister*s Office, will be viable. There are concerns that the plan is focusing on the independent advancement of technology of each locality and fails to integrate the country as a whole.

In order to comprehensively and strategically promote the emerging information society, the segregated vertical-structured divisions of the central government and the parochial localized system of local government affairs should be removed and above all, a concrete vision for an advanced information society, such as a JII plan, is urgently needed, immediately followed with measures for its implementation. Within this framework, the ideal form of an information society in the 21st Century and the transition process toward it must be clearly indicated so that people understand its importance; it is highly desirable that a comprehensive approach is taken to promote the infrastructure, informization and globalization of regions, software development, personal resource development and for the maintenance of a social environment.

Promotion of the AII (Asia Pacific Information Infrastructure) Project

While promoting advanced information technology domestically, it is also necessary to actively participate and help plan the creation of a Global Information Infrastructure (GII). Each country within the Asian region is wrestling with the issue of introducing advanced technology into their society. Japan should cooperate with each of these countries to establish an open network for the whole of the Asia Pacific region. In August 1994, the Asian Pacific Telecommunications Forum Japan announced its plan to construct an AII (Asian Information Infrastructure), and at the APEC Ministerial meetings in May 1995, a report addressing the problems of

information access was released by the Ministries of Telecommunications and Information Industries.

Construction of the Information Infrastructure with Public Investment

Needless to say, in conjunction with the active participation of private corporations public finance should also play an integral role in the construction of the information infrastructure required to support the new society of the 21st century. In addition to establishing info-telecommunications infrastructure and information equipment it is necessary to have infrastructure with a balance between soft and hardware by focusing on areas such as software development, fostering human resource development and creating an educational environment which is suited to the information society.

Easing of Legal, Systemic and Customary Practices and Regulations

If the merits of advanced information technology are to be fully realized, laws, systems and regulatory practices which are prohibiting the progress and facilitation of information communications, must be reviewed. Japan*s regulations do not take into consideration the rapid development of advanced info-communications that has taken place over the last few years and are therefore unable to effectively meet the needs of the new society. There are concerns that the current system of regulations will not only be an obstacle to progress in advancing information technology, but will make the approaching information society a cost-expensive society. There is an urgent need to review all regulations on the basis of the principles of total freedom and keep regulations to their necessary minimum in order to maximize the active participation of private corporations including the application of concrete information technology.

Some progress can be seen in terms of deregulation in the field of telecommunications, for example the simplification and faster processing of procedures of authorizing prices and services, the gradual realization of links between dedicated voice lines and public networks, and the gradual implementation of basic voice service in international VAN services; nevertheless, further deregulation is needed. Competition-enhancing measures, such as preparing a framework for smooth and fast talks concerning the linkage of NTT and newcomers dependent on NTT's existing local telecommunication network, need to be introduced.

Moreover, current prevailing laws and regulations do not allow for the use of information technologies and telecommunications in all areas such as

administration, medical care, education and business management and many new businesses and services cannot be introduced. Therefore, all regulations must be overhauled from the perspective of their compliance with the information society. For this reason we propose that a "Sub-Committee on Information Society-oriented Systems Examination" (provisional name) is created as an advisory body subordinate to the Administrative Reform Committee in order to comprehensively promote the deregulation and liberalization of laws and regulations pertaining to information technology.

Nurturing Venture Business

In order for progress in advanced information technologies to occur and for venture business to be dynamic, creative thinking and a flexibility are essential. By the same token, progress in information technologies is a good opportunity for the emergence of new venture businesses. This opportunity should be positively used to invigorate the Japanese economy and policies to promote advanced information technologies should include the nurturing and support of venture business. Concretely, measures directly applying to venture business such as funding supplies, business opportunities through software development for multi-media applications of administrative information, support for database construction etc. should be examined.

Process for Open Politics and Judicature

With the progress in information technology, a "Diet TV Channel" should be realized in order to make politics and the Diet more open. Currently, televised diet sessions showing plenary and council sessions are already broadcast in Diet Members* Officers and Ministries in Nagatacho and Kasumigaseki areas suggesting that the basic infrastructure for the start-up of the Diet Channel is already in place to a certain extent. Concrete measures are under discussion by the "Committee for the Promotion of the Diet Channel" within the Committee for the Promotion of Political Reform and we feel this project should be materialized at the earliest time-frame. Recently, several political parities, younger diet members and regional councilors began to use the electronic network in their political activities. Application is currently limited to daily political activities and the infrastructure should be created which will enable information technology to be used in electoral activities. With the prospect of elections and referendums being conducted via an electronic voting system in the future, it will become necessary to revise the Public Office Election Law and examine problems such as secret ballots and ascertaining voter eligibility.

As in the case of the legislative and administrative system, judicial procedures must become more open and familiar to citizens. While giving sufficient consideration to individual rights, the court system must consider methods of broadening public accessibility, including the potential for court sessions to be televised should.

4. SOFTWARE INFRASTRUCTURE

Promoting Information Disclosure

Disclosure of Administrative Information
The disclosure of administrative information to the public should be positively promoted in view of transparent and fair administrative practices and encouraging citizens* surveillance and participation in administrative procedures. It is hoped that the study regarding the creation of an information disclosure law, being conducted by the Council for Administrative Reform, will realize an effective system for the disclosure of public information.

Disclosure of Corporate Information

From the perspective of consumer protection and building of fair market mechanisms, corporations must also actively tackle information disclosure in a way that transcends simple public relation activities. This disclosure should not only include information on "product safety or danger" for consumer protection and financial information for a sounder stock market, but the formation of an open-end network between companies should enhance outsourcing, new business development and management efficiency; from this perspective, corporations should consider information disclosure as an important element of their management strategy.

Protection of Intellectual Property Rights

In order to encourage further creativity in the advanced information society a system must be established which effectively protects the innovator*s intellectual property rights.
Especially in terms of software and databases, the enactment of a balanced Copyright Law, which aims at protecting the rights and profits of the producer while bearing in mind a wider scope of users and user-friendliness, is essential. Moreover, considering the global scale of implications that advanced information technology

can bring forth, the establishment of common multinational rules for all countries is most important. Japan should seriously and actively participate in the discussions being conducted by bodies such as the (WIP0) World Intellectual Property Organization .

Active participation in international standardization

To fulfill the demands of network users, connections and to promote the active use of information equipment by satisfying requirements in operationability, linkage and compatibility, progress in international standardization is necessary in order to make open use possible. Especially from the standpoint of companies, international standardization of CALS and EDI on data format and at an early stage is highly desired.
Taking into consideration the fact that the international standardization process is fundamentally based on de-facto standards, it is necessary for corporations to actively take part and make proposals to various international organizations such as the ISO (International Standardization Organization) and ITU (International Telecommunications Union).

Reducing Service Utilization Costs

If the advantages of information are to be enjoyed widely in business and citizens* lifestyles, the reduction of the cost of services (telecommunications, hardware, software research and personnel training) is an important issue. In the future, information related costs are expected to increase in both corporate and individual lifestyles. We should strive toward the reduction of information related cost differentials between Japan and elsewhere.

5. NEW MEASURES FOR SAFETY AND COMFORT

Although an information society brings large benefits to economic circles, there are also a number of particular new problems which will arise. While existing regulations and systems will have to be positively revised in order to promote the advancement of information technology, new rules must be created in order to construct a sound information society.

Protection of the individuals privacy and individual data

With progress in information technologies, information can be gathered and accumulated about individuals without their knowledge and there will be an increase in discretionary misappropriation and use of information. To prevent an invasion into individual*s private lives and the misappropriation of data a suitable method of protection must be developed. To achieve this, it is necessary to investigate an appropriate legal system and create appropriate guidelines .

Ensuring Security

As a result of system breakdown, errors and interference, encryption, breakage due to human mistakes or dishonest altering, theft, software viruses etc. computerized societies may be embedded with confusion and trouble and crime may occur; in many cases individuals with no protective means are more likely to become victims. Technical solutions to security issues, such as encoding and authorization methods are being developed, but fundamentally, Japanese people are insouciant since they feel that they live in a safe environment and do not have to be particularly security-conscious.

At the same time, many issues remain to be tackled, such as ensuring safety measures, introducing legal amendments for information-related crimes, improving investigation capabilities, human resource education, and strengthening international cooperation. In the economic area, with wider use of EC, greater consideration on security issues will become essential in order to enable sound banking and securities transactions. In view of minimizing the aftermath of natural disasters, a strong information/telecommunication infrastructure must be built, through the combination of underground cables, satellites, microwaves, optic fibre networks and mobile systems.

Supporting Those with Limited Access to Advanced Information Technologies

To promote an advanced information society, it is imperative that consideration is given to all those who are "information-handicapped", that is those who lack the means to access information or the skills to operate information technology equipment. In an information society it is important that anyone can freely and easily have access to information, anytime and from anywhere. In order to realize this it is essential that a concerted effort is made to develop equipment which is affordable and easy to operate and there is widespread availability of convenient and quality diverse services.

An "information volunteer" system and organization is planned to support and teach first-time users of information equipment to the elderly and handicapped. One valid means in which enterprises should assist is by actively dispatching their staff or retired employees as information volunteers.

Scientific Clarification of the Psychological and Physical Effects on Human Beings

Currently, the scientific effects associated with advanced information are still unclear. It has been pointed out that there are a number of physical effects on human beings as a result of technological stress due to psychological influence and eletro-magnetic waves. Scientific clarification of the effects of advanced information technology on human beings both psychologically and physically is necessary.

IV. THE CURRENT ACTION PROGRAM FOR THE CONSTRUCTION OF A HUMANE INFORMATION SOCIETY

1. THE ROLE OF THE GOVERNMENT

A project named "Japan Information Infrastructure Plan" (JII) should be established immediately with a vision for the country*s comprehensive and strategic construction of an information society. Active participation in the construction of GII and AII must be sought in order to construct a global information infrastructure.
The allocation of public funds should place emphasis on the construction of information infrastructure building to support the new information society of the 21st century and to enhance activity in regions.
While legislation, systems and practices should be deregulated in order to hasten the transition toward an open and free information society, new rules must be established.
A "Sub-Committee on Information Society-oriented Systems Examination" (provisional name) should be established in order to reform the existing system.
A system which supports information disclosure should be realized and administrative information should be diffused through electronic means and the information network.
Research investigation in cooperation between industries, government and academia, in order to prepare for the establishment of new rules regarding privacy and security in the new information society should be promoted.

Through deregulation the difference between domestic and overseas costs related to information technology should be corrected.

Venture business must be foster in order to support the development of advanced information technologies.

2. THE ROLE OF THE EDUCATIONAL SECTOR

The education system and curriculum must be revised.

A subject such as "Social Information Studies" should be created which aims to provide students with comprehensive information education that focuses on rational intellectual education and efficient learning through the use of information equipment and information literacy.

Practical English language education as an international language should be introduced.

It is important that the personal development of students is included in order to nurture balanced human beings.

3. THE ROLE OF BUSINESS CIRCLES

Business Executives must actively tackle innovative corporate management which matches the new era.

Examination of the ideal form of corporate information disclosure must commence.

Establishment of international rules by actively participating in the private-sector led international standardization process and intellectual property rights.

As a contribution to society, corporate citizens should offer their human resources in an "information volunteer system" in order to promote the internationalization of educational institutes and local communities.

V. CONCLUSION

We have no choice: whether we like it or not, an era of advanced information technology is approaching and the realization of the humane information society we have outlined cannot be merely left up to this paradigmatic shift. The government, administration, individuals and corporations alike, must each positively change their consciousness and awareness. All the basic elements that have been effectively supporting the Japanese economic society in the catch-up process and the industrial society, such as unconditional priority placed on reckless economic

growth, government-led economic and social management, groupism and consensus-led conscience, may hinder the shift to an advanced information society. Let us emphasize that we must tackle the construction of a new society without fearing change and without clinging on to conventional wisdom or vested interests of the past.

Although the indicated direction is following a trend of that of a US-type society, functioning on the basis of individualism, individual responsibilities independence, market principles and competition, what is important for us is a continuous search to achieve harmony between the information society and Japan's traditional history and cultural milieu. This will lead Japan*s information society to become a more humane information society which may even serve as an exemplar model, contributing to the world.