Hitachi Group's Technology Innovation Drives Creation of Next-generation Values

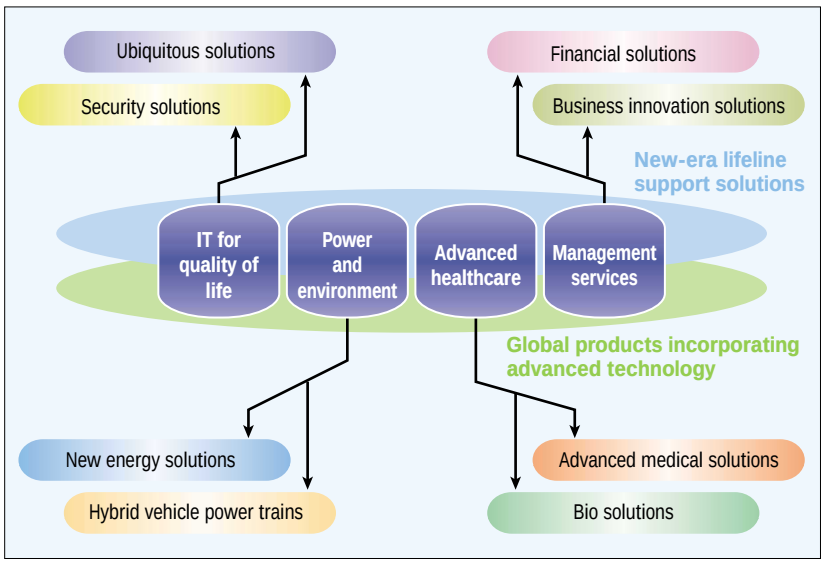
Senior Corporate Officer and General Manager
Corporate Technology Office, Corporate Venture Capital Office (At time of interview)
Shojiro Asai, Dr. Eng.

With little prospect for economic recovery in the near future, the Hitachi Group is restructuring its business domains in order to create new businesses that will contribute to sustained development of society as a whole. New strategic businesses and technology initiatives are being developed primarily by the recently established Corporate Technology Office to leverage the Group's comprehensive technological capabilities and capture greater synergies. From now on, Hitachi will focus its resources on four key business domains: "IT for Quality of Life," "Power and Environment," "Advanced Healthcare," and "Management Services." Exercising general control over these areas is Dr. Shojiro Asai, General Manager of the Corporate Technology Office, who will here discuss the significance and prospects of the Hitachi Group's new strategic initiatives aimed at creating new values.

Further Growth Through Openness to Relations Outside the Company

World markets today are reputedly in the worst shape they have been since the Great Depression of 1929. Yet looking back on that era, one will also note that the Great Depression laid the essential groundwork for the remarkable innovations that followed, including the development of the computer and the semiconductor. Out of the depths of the depression itself human intellect was inspired to new heights and this cleared the way for remarkable technological advances. Year by year, the Hitachi Group demonstrates its full potential might in the technology development sphere, and plans to make significant progress. By having all of our Hitachi people pull together and show their entrepreneurial spirit, we can see beyond the current market downturn, and by cultivating new technologies and businesses, we will emerge from the on-going waves of globalization and business restructuring as a winner.

The new style that has now come to pervade every phase of business from the development of new products to mass production to marketing involves a more flexible approach that draws upon the wisdom and the talents of people outside the company including customers, partners, venture capitalists, and university researchers. Indeed, this kind of regular contact and friendly rivalry with people outside the company has the effects of sharpening discipline and rekindling spirit within the company. It is also true that by staying within one's own little world, it is easy to overlook some of the broader changes that are going on in the wider world outside. The exchange of technology with people outside the company, combined with the active origination of new technologies and proposals opens one's eyes and causes one to listen attentively. Seeking to flourish and grow through such open



Four Business Domains and Representative "Inspire the Next" Business Fields

relationships is clearly the direction in which Hitachi should evolve in the years ahead.

Creation of New Businesses by Self-contained Business Units

We can only marvel at the ability of people involved in new business ventures and venture capital to conceptualize, to evaluate, and to execute, and to accomplish things quickly. There are clearly many things that we who work for large organizations could learn from these venture entrepreneurs.

From this point of view, we are going to need some way that we can inquire of each employee what he or she would do as an entrepreneur, and then some arrangement enabling us to take the answers and exploit them in a way that is beneficial to the company. In the business style now emerging, we are likely to see the formation of teams consisting of small groups of people with diverse skills including technicians, that act in much the same way as small self-contained entrepreneurial ventures. If each and every one of us pursued his/her job as if it was his/her own business, this would reinvigorate the company as a whole.

At the same time, it is also important that the larger units of parent company business groups and group companies identify the next generation of their own core businesses based on the needs of their customers, and work to expand and develop Hitachi's business portfolio.

Certainly it is essential for any corporation to have the sustained continuity of sound mainstay businesses, but from the customers' standpoint, you are not really contributing to society unless you can offer new values. While being ever mindful of our "best solutions partner" commitment to our customers, the parent company business groups and group companies are making every effort to expand Hitachi's new business portfolio based on a clear vision projected both within and outside the company.

Becoming a Global Player

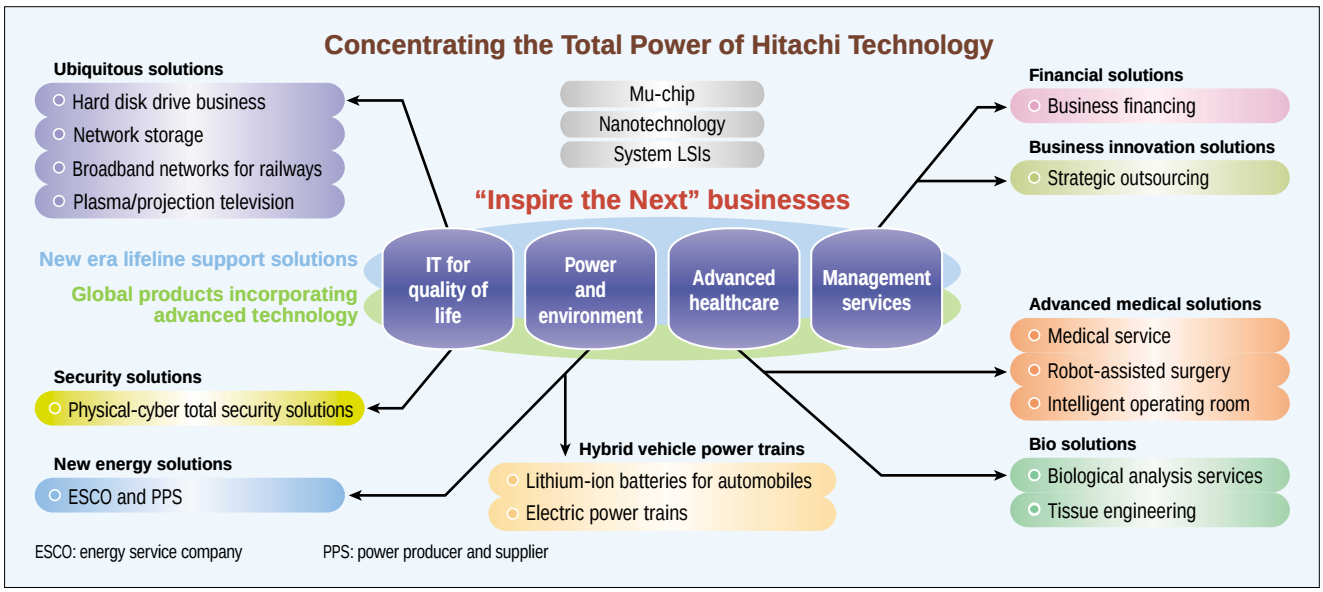
Moreover, as a consolidated corporate entity, it is also critically important to determine how the Hitachi Group can increase the value of the Hitachi brand by realizing greater synergy effects.

Hitachi, facing the question of what the real needs of the society are, is now at the stage where it must identify those business domains that fully exploit the Company's strengths and must reexamine the products and services that the Company chooses to make available. Indeed, this is why the Corporate Technology Office has been redefining the areas of business and technology that Hitachi should focus its resources on in the years ahead.

The Hitachi Group's mainstay businesses have been largely based on legacy social infrastructure systems such as electrical power, water supply, and transportation together with IT-related hardware, system integration, and other information system services. These systems and services are currently being redefined as two core-competence fields. The first is New Era Lifeline Support Solutions that enhance and converge information system services and social infrastructure systems. The second is Global Products Incorporating Advanced Technology that aims for long-term growth in the global market centered about competitive hardware and software incorporating advanced technologies and knowledge of the Hitachi Group.

The two fields will expand within the four domains of IT for quality of life, power and environment, advanced healthcare, and management services. Each domain contains several businesses categorized as "Inspire the Next" businesses, some of which are shown in the figure as "representative" business fields. Later in this issue we will hear from key people who will articulate the visions of each of these domains, but here I would only note that the common mission of Hitachi Group in all these four domains, as exemplified by business in the Private Finance Initiative (PFI) and other successes is to provide solutions that fully exploit the Company's broad-ranging technology and experience cultivated over many years, to be a global player that can provide solutions toward the rebuilding of Japan's economy.

Based on the new businesses that harness individual initiative and creativity, combined with the power and synergy of the group as a whole, the Hitachi Group will continue to create new values that will help shape the next generation.



Creating Innovative Businesses that Generate New Demand

IT for Quality of Life

Introduction of the Information Lifeline to Realize the Ubiquitous Information Society

Making Customers' Dreams Come True. In the End, That's Where the Information Lifeline Really Makes a Difference.

COO, Information & Telecommunication Systems (At time of interview)
Takashi Hatchoji

We have entered an era in which Internet connections via portable telephones and PCs in the home or office have become an accepted part of our everyday lives. We are finally getting a taste of the "Ubiquitous information society," in which anyone can access and transmit information safely and comfortably, and enjoy the value of that information. Based on the understanding that "Information is a lifeline," the Hitachi Group is promoting comprehensive efforts, ranging from hardware to solutions, aimed at making the ubiquitous information society a reality. Takashi Hatchoji, COO of the Information & Telecommunication Systems, talks about the Hitachi Group's role in a society in which information acts as a crucial lifeline.

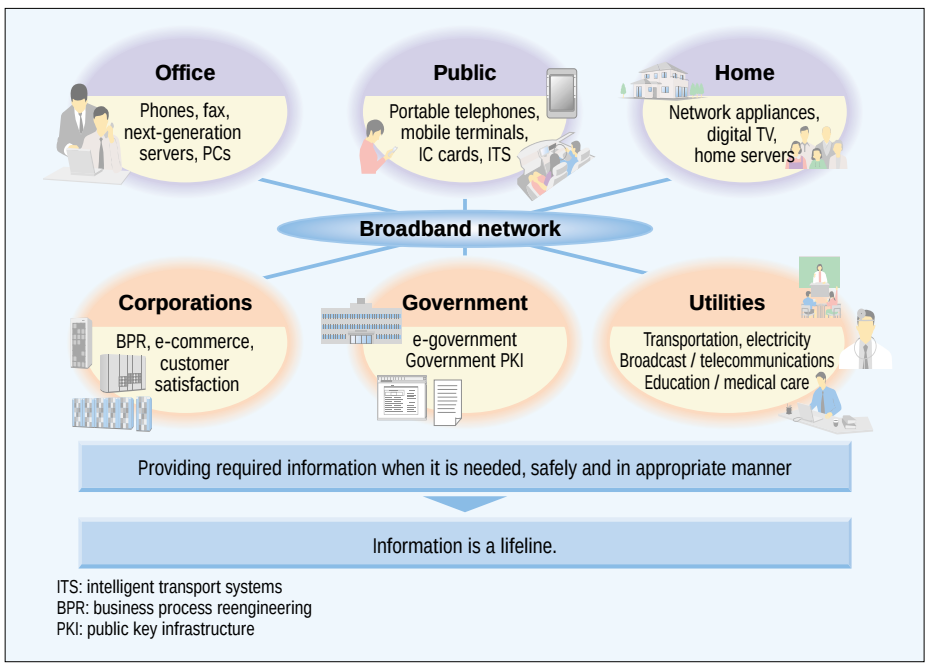
Information and Its Value Permeate the Society

Ubiquitous (from the Latin "to exist everywhere") has become one of the keywords used to express a vision of the near future of information systems. The "Ubiquitous Information Society" — in which network-ready computers can be found everywhere, and anyone can carry out information transactions anytime, anywhere, without special awareness or skills — is no longer just a dream.

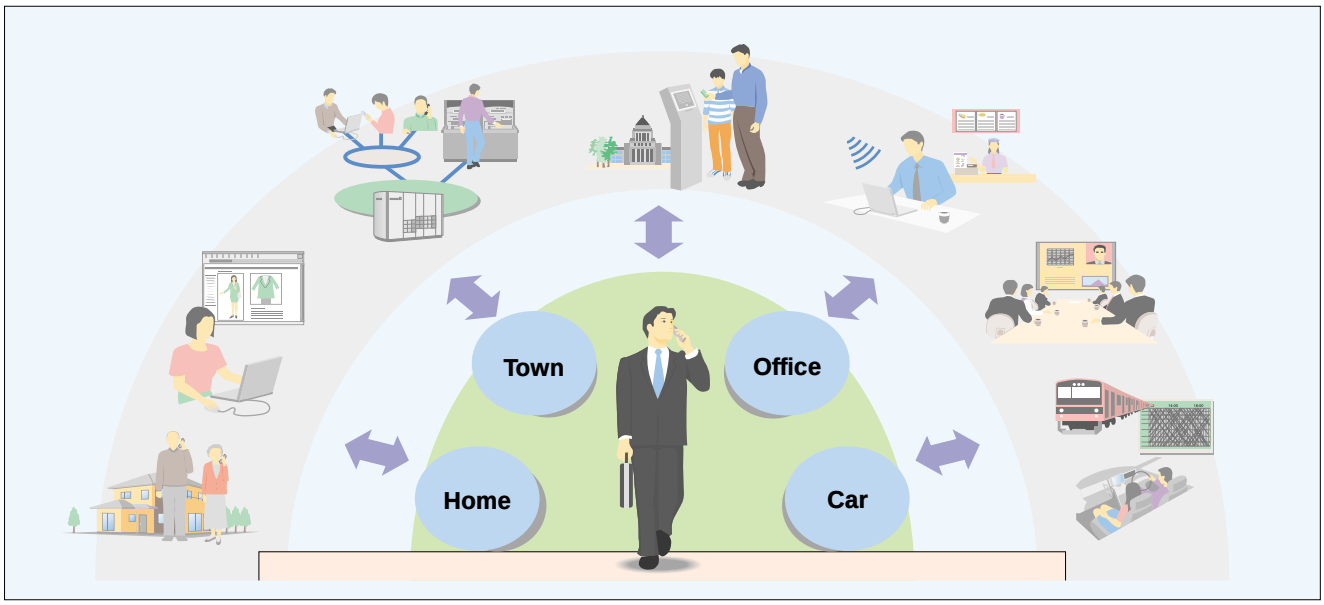
At the end of 2002, Japan boasted the world's second largest Internet user population at 69.42 million users, and nearly 100% of companies with 300 or more employees had established Internet connections. Information accessed through the Internet is fast becoming an essential part of our social activities. Meanwhile, the number of portable telephone users reached 75.66 million at the end of March 2003, 62.46 million of whom had subscribed to mobile Internet services. In this environment, which enables network connections regardless of time or place, we are seeing the first signs of the real Ubiquitous Information Society.

In the Ubiquitous Information Society, required information should be provided whenever it is needed, safely and in a suitable manner. In other words, information will become one of society's lifelines.

"Just like the conventional lifelines



Ubiquitous Information Society and the Introduction of the Information Lifeline



Open, Interactive, Ubiquitous Relationships Throughout the Society

such as electricity, water, gas, and transportation," explains Hatchoji, "information and its value will come to permeate every aspect of our society, becoming one of the foundations that supports our social lives. It is the desire of the Hitachi Group to create just such a society, and we hope to make full use of the experience, technologies, talent, and business infrastructures that we have devoted our energies to in providing safe traditional lifelines so far."

There are two important perspectives in terms of establishing this information lifeline: providing an information infrastructure, and creating new value using this information. The Information & Telecommunication Systems and Ubiquitous Platform Systems play a central role in promoting activities based on an integrated vision.

"In the future, telecommunications will become an even more critical part of our social infrastructure. In terms of hardware, there will be an increasing demand for development of attractive products, each offering high added value, including servers, storage devices, end-user terminals, and a wide range of component devices. We will also strengthen development of middleware that collaborates these various devices, and brings out their best performance. And we are focusing efforts on various types of applications and services that make use of the information that will become available. As a corporation fully equipped with these constituent technologies, we will be judged on how effectively we can harness this potential."

Expanding the Potential of the Individual

Amidst growing demands for strong business infrastructures using Information Technologies, it has become important to develop solutions that provide customers with a wide range of technologies in ideal combinations.

"We plan to strengthen our abilities in the field of consultation from the customer's perspective. We will refine our ability to make the customers' requirements our own, and to provide appropriate solutions. It is not enough simply to understand these increasingly higher needs; we must have the ability to propose solutions while responding flexibly to the changes in society."

By building up track records of proven performance, Hitachi will endeavor to be the company that first comes to mind when the customer is in need of advice or consultations.

The information lifeline that offers high reliability and convenience can only be created through the full realization of two types of value—visible value, as in the form of hardware, and intangible value, achieved by providing and utilizing information essential to business and daily lives with security and stability.

Hatchoji's view is that the information lifeline will bring to society not only an awareness of the convenience and comfort of being able to access and transmit information ubiquitously, but also an awareness that each individual is always connected to the rest of the world.

"The relationship between the individual and the world will become open, interactive, and ubiquitous. Each individual will then have to decide for himself/herself how to find value in that relationship, and how to bring that value to life. The fact is, we are now entering the era of the individual, and ubiquitous information environments will only add more momentum to this trend. In business scenarios as well, individuals must increase their own level of skill and motivation, and work to build open, interactive, ubiquitous relationships with customers."

There is no doubt that as we move closer to the ubiquitous information society in which anyone can enjoy the value of information, the awareness of the individual will dramatically change as well.

"The ideal approach of the Hitachi Group—whose true value is in the individuals that make up its whole—is to create open, interactive, ubiquitous relationships throughout the society, and support the formation of the information lifeline that will act as a foundation for a richer and more comfortable society. Our ultimate goal is to become a company that makes customers' dreams come true."

Power and Environment

Advanced Technologies Targeting Two Major Themes: Energy and the Environment

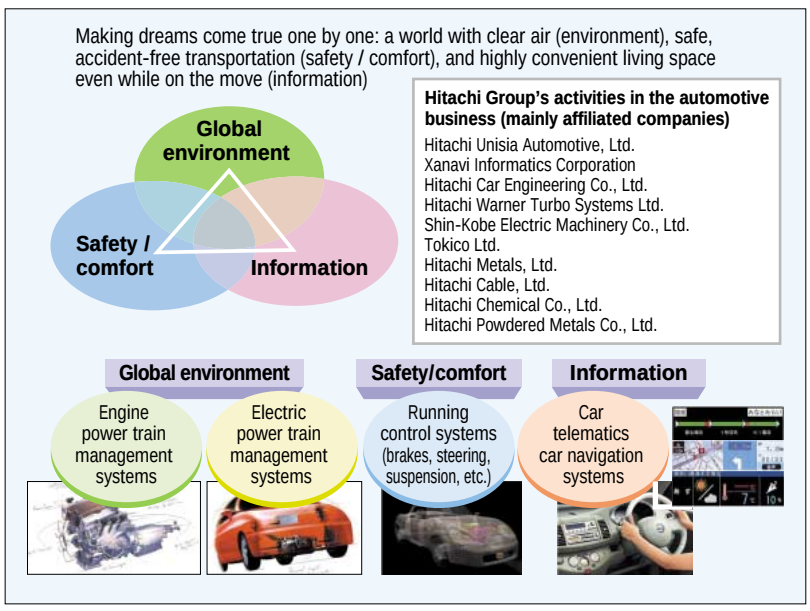
The Hitachi Group Provides Answers for Improving the Fuel Economy of Automobiles —the Trump Card for Reducing CO_2.

CTO, Automotive Systems (At time of interview)
Junzo Kawakami, Ph.D. Eng.

Global-scale environmental problems have been gaining increasing attention. Global warming in particular is an issue that demands the concerted efforts of all advanced nations, and Japan is also promoting measures in both the public and private sectors to prevent global warming, as the country strives to achieve the targets outlined in the Kyoto Protocol. The Hitachi Group is promoting a wide range of research and development in order to contribute to these measures from a corporate perspective. One area that has received particular attention is the reduction of CO_2. Junzo Kawakami, CTO in Hitachi's Automotive Systems, talks about research and development that supports the creation of clean automobiles with even more advanced energy-saving capabilities.

Contributing to Global Warming Countermeasures from Automobile Parts

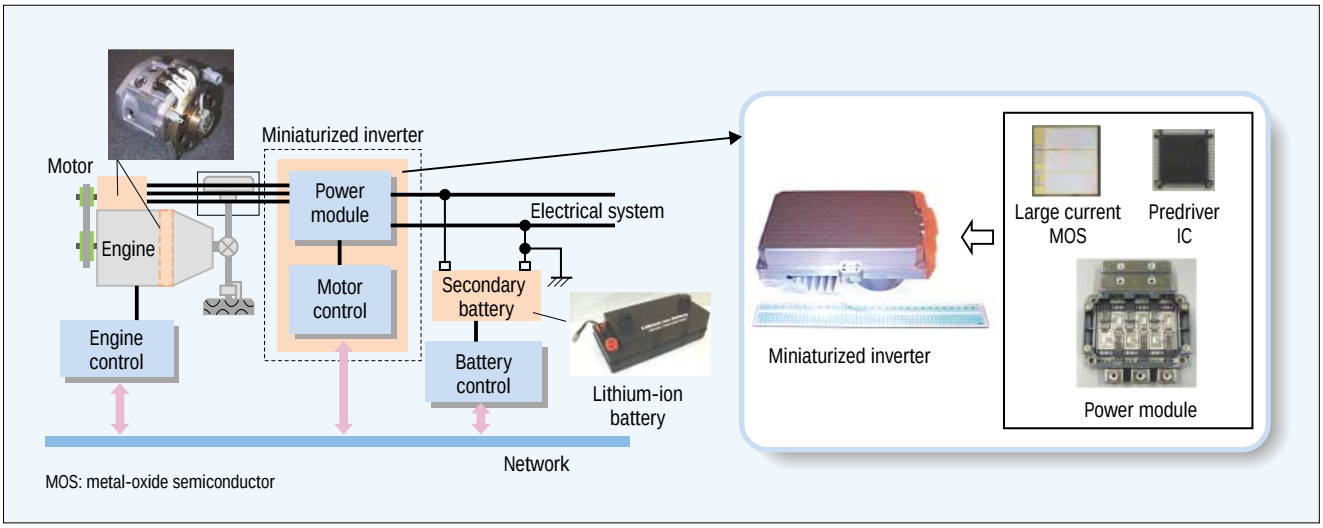
The whole of the 20th Century has been characterized by a pursuit of greater comfort and convenience in human lifestyles. Technology has evolved, and industry has achieved startling developments. At the same time, however, there have been growing concerns regarding the destruction of the natural environment—particularly the effects of global warming due to CO_2 (carbon dioxide) and other so-called greenhouse gases, and measures to combat these trends have become an increasingly urgent issue.



The Hitachi Group: Creating New Value for Humans, Cars, and Society, and Making Dreams Come True

Developed nations have adopted the Kyoto Protocol, which stipulates that overall emissions of greenhouse gases shall be reduced by at least 5% below 1990 levels in the commitment period 2008 to 2012. Japan's targets for reduction are 6% below 1990 levels. In order to achieve these goals, global warming prevention measures must be undertaken by both the private and public sector; in other words, we must work to reduce the volumes of CO_2 exhaust.

Improving fuel consumption in automobiles is one of the countermeasures that the Hitachi Group has contributed to this very difficult issue—reducing CO_2 on a global scale to protect the Earth. Exhaust volumes from the transportation sector accounted for 20.7% of the total 1.237 billion tons of CO_2 generated in Japan during 2000*), and the largest part of this was automobile exhaust gases. Even at a very rough estimate, if we can reduce CO_2 emissions from auto-



Hybrid EV Configuration

mobiles by 30%, then we will be able to reduce overall emissions by 6%.

"Reducing CO_2 emissions from automobiles means building cars with low fuel consumption," explains Kawakami. "The Hitachi Group can contribute to this effort in the capacity of an automotive parts manufacturer. Currently, we are promoting technological development with a particular focus on two targets: reducing fuel consumption in gasoline engines, and developing hybrid electric vehicles (EVs) that combine gasoline engines and electric motors."

Contemporary gasoline engines can be divided into two main types, depending on the location of the gasoline injection. The first type is conventional Port Fuel Injection (PFI), in which the gasoline is injected into the intake port through which air is drawn into the cylinder. The second type, Direct Injection Gasoline (DI-G) engines (in which the gasoline is injected directly into the cylinder itself), have gained attention for offering lower fuel consumption than the PFI method.

"In both cases," Kawakami continues, "the Hitachi Group is promoting research and development aimed at achieving efficient combustion with less fuel, while at the same time reducing the amount of harmful materials in the exhaust. Through long years of experience in the field of thermal power plants, we have acquired and developed technologies for the visualization, observation, and simulation of combustion phenomena. We also have technologies for the design and machining of gasoline injector tips, electromagnetic solenoid technologies for controlling the injection timing down to the thousandth of a second, and catalyst technologies for removing harmful materials from exhaust. Automobiles represent the one industry in which we can demonstrate our capabilities most effectively, for the very reason that such a wide range of technologies come into play."

Demonstrating Hitachi's Strengths in Combining a Wide Range of Technical Capabilities

Hybrid EVs is another field in which Hitachi can demonstrate its strengths as a general electrical manufacturer. Hybrid EVs are able to reduce CO_2 in exhaust by about 50% compared to conventional gasoline engines. Even so, this translates into higher production costs, and the resulting increase in the cost of the vehicle itself tends to discourage potential users, so cost reductions have become a critical issue in this regard.

"The Hitachi Group has been working on the development of electric vehicles for over thirty years. We're putting our know-how and technical abilities as a general electrical manufacturer to use in the development of smaller and less expensive motors, inverters, and secondary batteries, which are all essential to hybrid EVs. Inverters are an excellent example. Through collaboration between our Automotive Systems and our Semiconductor & Integrated Circuits, we have developed an incredibly small inverter, which is only one sixth the size of earlier models. We're working on developing smaller, less expensive motors and secondary batteries as well. This is easier said than done, you know; we still have a number of difficult technical issues to overcome before we reach our goal. Naturally, this is where we can rely on the Group's synergistic effect, which transcends the borders that separate business fields."

Kawakami predicts that in ten years, hybrid EVs will proliferate to the point where they will account for about 25% of all automobiles.

"Our goal is to have Hitachi Group's parts installed most of these vehicles at that time, and this is why we are devoting so much energy to this field right now. Looking back on the 90-year history of the Hitachi Group, we have always been among the first to concentrate our resources in the hottest fields, where technological reforms are advancing with the greatest speed, and expanding our business as we create new value for our customers. We feel that automotive devices represent this hottest of fields today. I wouldn't be surprised if our technologies have the potential to change the very foundations of our automobile culture."

The challenge of technologies is to open up new doors for the future. But it is this enormous effort that will also contribute to the realization of a "sustainable world," characterized by harmony in social development, economic development, and protection of the global environment.

* Source: "Greenhouse gas exhaust volumes in 2000" (Ministry of the Environment)

Advanced Healthcare

Medical Care Transformed by Biotechnology

Giving "Medicine" Form Requires the Power of "Tools"

President, Hitachi Medical Corporation
Hiroshi Inomata

As the aging society with declining birthrate arrives, signs of major changes can already be seen even in medical care. New developments such as tailor-made medicine, regenerative medicine, and novel surgical-support systems are placing extra emphasis on the constitution of individual patients and on easing the burden of convalescence. Against this background, the Hitachi Group has begun to integrate many of its diverse technologies with a view to enhancing society through medical care. Hiroshi Inomata, the president of Hitachi Medical Corporation, talks about creating new value in Hitachi Group's medical-care field with the aim of achieving a society where everyone can sing the praises of a long, healthy life.

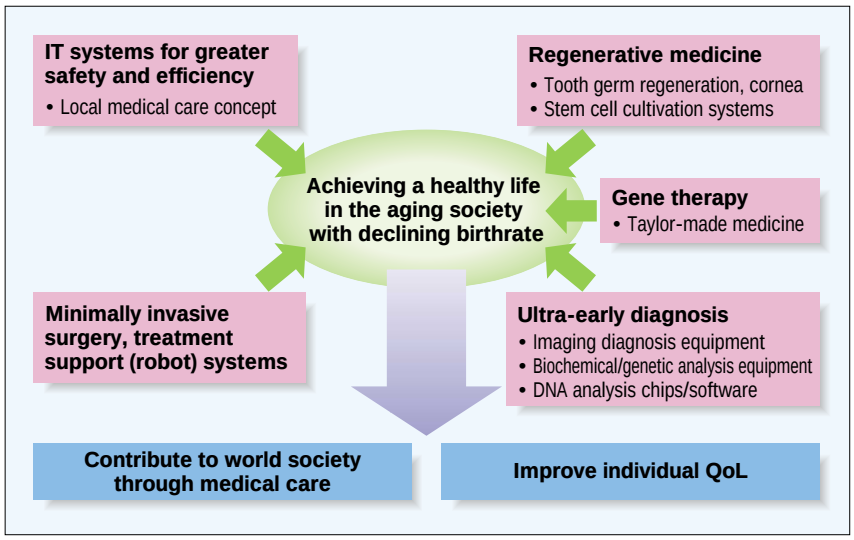
New Medical Care Based on the Needs of the Times and Technical Progress

The 21st century has been given a number of names — such as the "century of life" and the "environmental century" — in anticipation of things to come, and it has even been called the "elderly century" by some. The Ministry of Health, Labour and Welfare of Japan has announced that the country's 65-and-older population of 21.87 million people greatly exceeded the 0-14 population of 18.6 million people in the year 2000. They also predicted that the 65-and-older population would increase to 33.34 million in 20 years time to become 26.9% of the total population. In short, the time is coming in which more than one in four Japanese will be an elderly person.

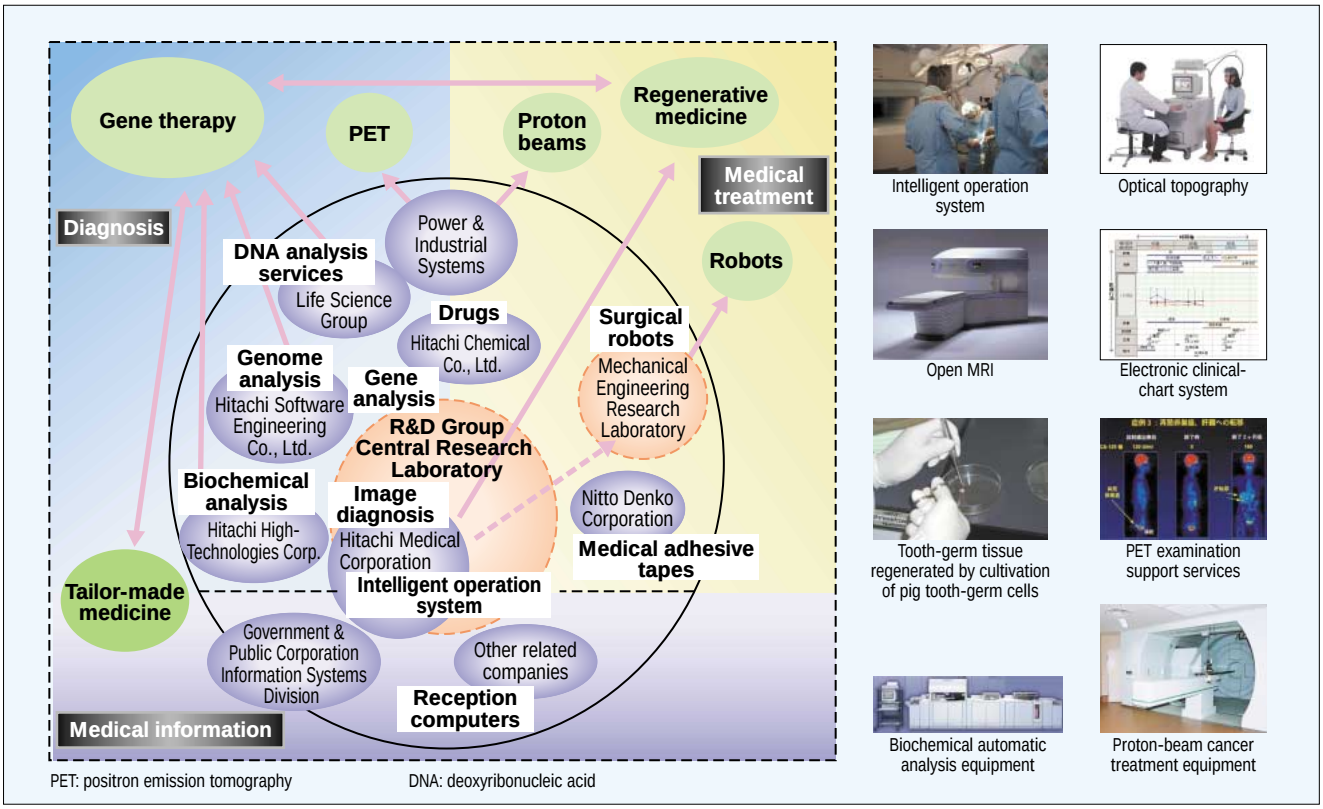
Some attribute this development to a higher standard of living in Japan and progress in medical care. At the same time, however, how to extend a "healthy life" is still an issue in medical care. Of course, living a long life sounds wonderful, but would we say this if such a life was bedridden?

According to President Inomata, "Future medical care in support of the aging society with declining birthrate must be both efficient and personalized despite the contradictory nature of these two features. To this end, we must apply cutting-edge technologies in a wide variety of fields such as IT (information technology), biotechnology, and mechanical engineering. For example, IT systems can make administrative processes more efficient and reliable, biotechnology can make regenerative medicine and tailor-made medicine based on an individual's genetic makeup a reality, and advanced medical devices can enable ultra-early diagnosis of diseases and surgery that minimizes psychological and physical stress. In other words, the aim of new medical care that integrates these various technologies is to improve the quality of life (QoL), that is, to enable each and everyone of us to live a full and dynamic life." The Hitachi Group is determined to utilize all of the technologies at its disposal to realize this aim.

At present, European and American compa-



Future Outlook for Medical Care and Medical Equipment



Hitachi Group Expansion into Medical Care

nies have a large share of the medical equipment market. This does not mean to say, however, that the technical level of Japanese companies is inferior. It simply means that they should be able to demonstrate their ability in analysis/diagnosis medical devices using electronic, optical, and measurement technologies and in new and upcoming fields like regenerative medicine and gene therapy. This would help improve not only market share but also the level of medical care and QoL not only in Japan but throughout the world as well.

Toward a Society Where Everyone Can Live Their Lives to the Fullest

To fulfill this potential, development work must be accelerated and costs lowered. With this in mind, Hitachi Medical is adding product quality to its business foundation of development expertise, production efficiency, sales proficiency, and quality customer service, and is working to make all five of these elements stronger. In addition, based on the concept of "from equipment to solutions and from diagnosis to treatment," Hitachi Medical is planning a revolution in its business portfolio.

In this regard, President Inomata says "We are making a transition to a comprehensive medical-services company that will provide not just medical equipment but also solutions to the various problems confronting hospitals. This will include electronic clinical charts, of course, but also IT-based support of information sharing between medical clinics, for example, to contribute to the construction of local medical care platforms."

The open magnetic resonance imaging (MRI) equipment developed by Hitachi Medical has been praised for high picture quality and high functionality in addition to the comfortable, non-oppressive feeling that it gives patients. This product occupies 54% of the American open MRI market.

President Inomata points out that "We have used the open MRI to develop an intelligent operation system in cooperation with Tokyo Women's Medical University, and have achieved good results in the treatment of brain tumors. The next step is to achieve advanced medical care centering on new value-added diagnosis equipment like this open MRI. After that, we can take on the challenges of regenerative medicine, everyone's dream for the future."

At present, the company's effort is being focused on tooth regeneration. In relation to teeth, it is said that chewing provides a stimulus to the brain and that preserving healthy teeth maintains healthy brain functions. Research and development in this area is proceeding through joint industry-university projects with the aim of achieving a "third tooth" by regenerating the tooth base, or "tooth germ," from cells in part of the tooth.

As President Inomata says, "Even things that were only dreamed about ten years ago are now becoming a dream that can really come true. Making these dreams a reality will enable us to help everyone to live their lives to the fullest even when confronted with disease or old age. That is my dream and the dream of Hitachi Medical."

It goes without saying that technology convergence across many disciplines is essential to achieving next-generation medical care such as IT-based solutions, advanced medical care including remote surgery, and regenerative medicine. To fulfill the dreams described here by President Inomata, the Hitachi Group is beginning to integrate many of its diverse technical abilities.

Management Services

New Relationship between "Monozukuri Technologies" and "Corporate Management"

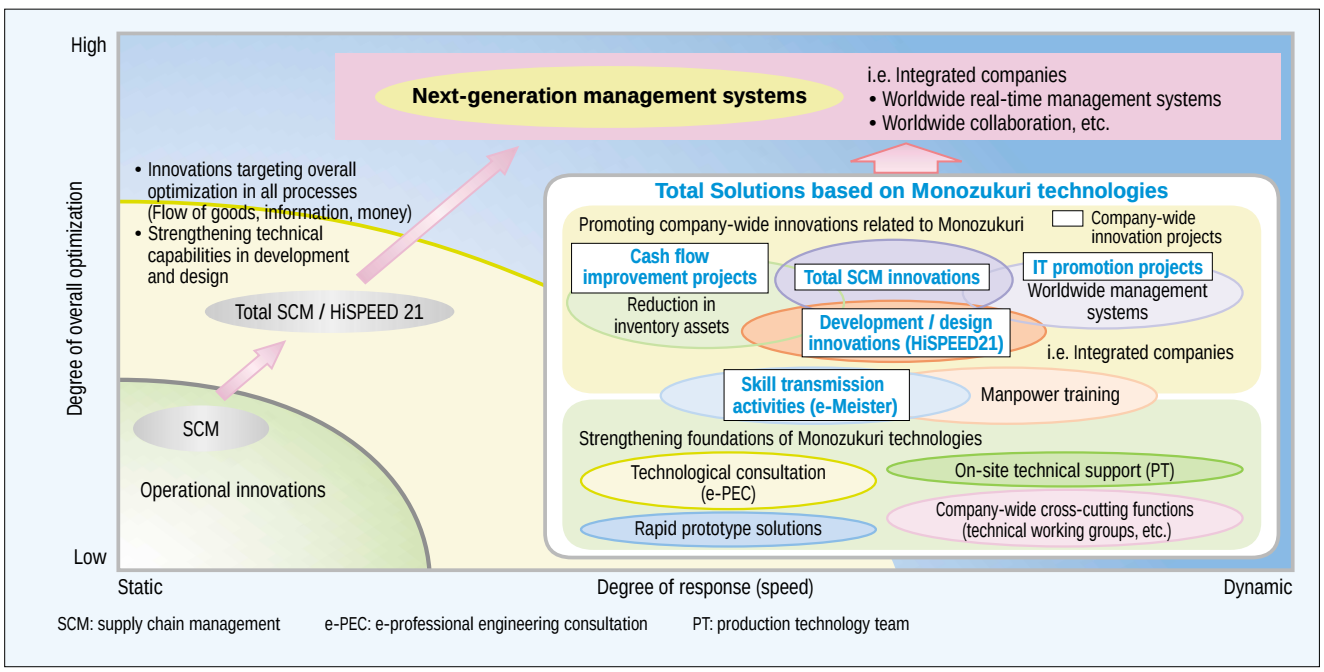
Contributing to the Recovery of the Production Industry through the Knowledge of Monozukuri Technologies

General Manager, MONOZUKURI Engineering Division
Tateo Shimizu

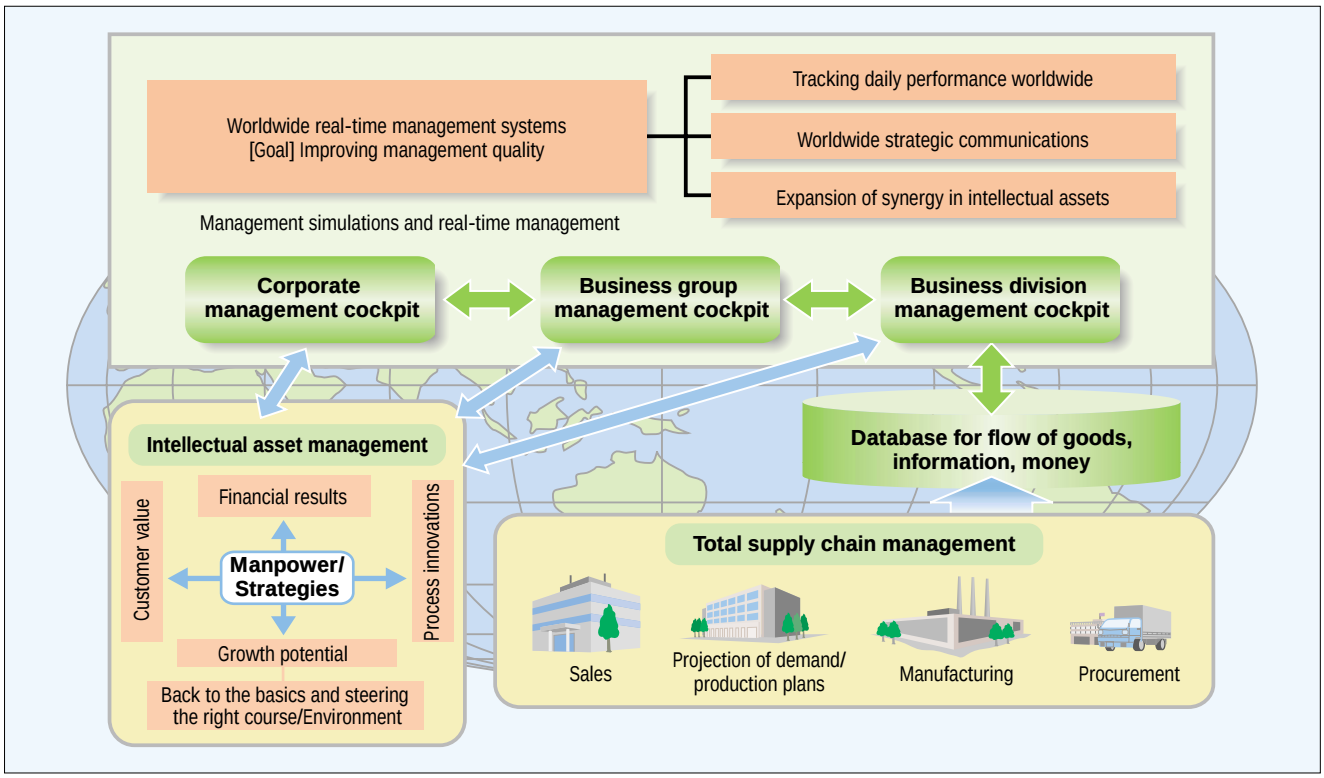
Japan's production industry has been characterized as struggling due to the effects of the protracted economic recession. We must not give in, however, but rather resort to awareness reforms, technological and management innovations. Currently, the Hitachi Group is promoting innovations in management efficiency through "Monozukuri Technology" innovations and the use of strategic information technologies with a focus on knowledge. Furthermore, we are working to put the knowledge attained through internal innovations to use in contributing to the production industry as a whole. Here, Tateo Shimizu, General Manager of the MONOZUKURI Engineering Division, speaks about the Hitachi Group's new concept of "Monozukuri Technology."

The Hitachi Group's Monozukuri Innovations: Getting Positive Results

It has been said for some time now that we are in an era in which things don't sell. The economy is in a slump, and it appears that Japanese corporations—particularly in the production industry, which had been the driving force behind the economy—have lost the confidence they once had along with their old vigor. One of the reasons indicated for this is the tendency to be limited by



New Relationship between "Monozukuri Technologies" and "Corporate Management"



Worldwide Real-time Management Systems

past experiences of success. In other words, companies are unable to rid themselves of the value sense and business styles of an era long past, and of conventional production, sales, and management systems, and this has made it impossible for these companies to respond to changes in the international market.

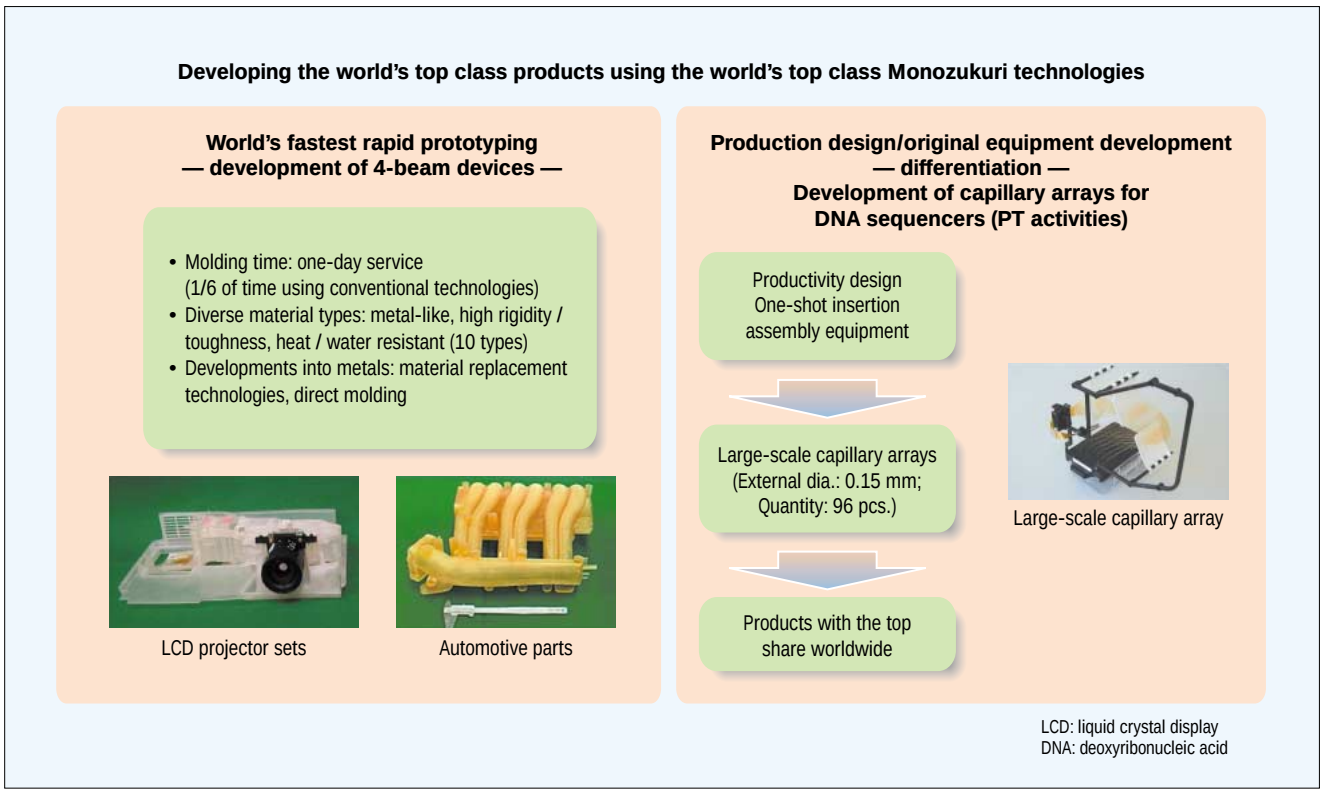
"The marketplace is changing dramatically, on a global scale, so companies must change as well. The Hitachi Group is no exception; we must change the way in which we approach innovations of technology and management, and create mechanisms that facilitate management which makes optimum use of manpower and technologies. This is the key concept of the activities being led by the MONOZUKURI Engineering Division and promoted throughout the Hitachi Group: company-wide innovation projects, and activities aimed at strengthening the foundations of Monozukuri technologies."

Among the various company-wide innovation projects being promoted at present are: (1) TSCM (total supply chain management) Innovations; (2) Development of a "Worldwide real-time management system" that establishes techniques based on past management know-how, and utilizes intellectual assets (non-financial assets) and simulation technologies; (3) "HiSPEED 21 Activities," which are designed to improve design quality and shorten design time through the use of design techniques and integrated digital engineering; and (4) "e-Meister Activities," which pass on the techniques of highly skilled veterans in the workplace using the latest digital media technologies and aim for even greater levels of mastery.

Activities aimed at strengthening the foundations of Monozukuri technologies include dispatching the world's top technical experts to promote a variety of activities, including the development of new technologies within the Hitachi Group, PT (production technology team) activities that support actual processes and consulting related to these activities, activities conducted by working groups involved in technological development, and technology exchanges within groups in specific technology fields.

Total supply chain management is the foundation of a management system that is based on Hitachi's unique style of production operations. It enables visualization of "the flow of things," which is the focus of standard SCM, as well as "the flow of money" and "the flow of information," and incorporates new techniques that will bring about innovations in the total business process in order to improve performance. Its function is to strategically utilize information technologies, while at the same time building foundations for overall optimization and low-cost management systems. Worldwide Real-time Management Systems promote the strategic use of traditional financial information in addition to non-financial information and knowledge (intellectual assets). Specifically, these are strategic management systems that support real-time decision-making by promoting an understanding of real-time cash flow and income through the BSC (balanced score card) method, the FIV (future inspiration value) method, and throughput techniques, as well as effective communication among managers. Customer satisfaction and management quality can be dramatically improved by reconstructing business models to match the needs of a wide range of business styles.

"Sweeping awareness reforms will also be required to accomplish this," says Shimizu. "In a situation where it's said that the lifetime of mass-produced items is less than three months, management from a perspective of monthly trends simply doesn't hold water. You have to look at worldwide trends on a weekly or daily basis, and sometimes even in real time, and you have to



Examples of Activities for Strengthening the Foundations of Monozukuri Technologies

make appropriate decisions based on this information. To do this, we've changed the mechanisms for making timely and appropriate decisions from traditional human systems and replaced them with new worldwide management systems that strategically apply information technologies."

The results of these types of awareness reforms and of fast and appropriate management decisions have already taken shape since the establishment of the MONOZUKURI Engineering Division in April 2000. We have made definite progress toward innovations for improving management quality on a worldwide scale. For example, production lead time, from order receipt to delivery, has been shortened by about 30% on average throughout the Group compared to previous times and posted a consolidated free cash flow of 200 billion yen in FY2001. Furthermore, development time has been cut in half, inventory for production has been reduced (also by about half), and the production planning cycle now operates on a real-time, daily or weekly basis.

Converting a Wide Range of Cultivated Knowledge into Assets for the Whole Company

"When I talk about Monozukuri, I'm not just talking about production," explains Shimizu. "I'm talking about using TSCM innovations, development and design innovations, e-Meister skill transmission activities, technical support PT activities, and other processes discussed earlier to develop products that blend the various advanced technologies available within the Hitachi Group, and building worldwide real-time management systems that make strategic use of Hitachi's management resources to achieve a synergistic effect within Hitachi, and strengthening the foundations of Hitachi's management."

Stated simply, the "Monozukuri" that the Hitachi Group aims to establish could be considered "engineering with the customer in mind." The framework of "reliability," which the Hitachi Group has built up and handed down over the years, is thus filled out with effective response to the customers' needs, in a format that most closely resembles the customers' preferred style. This is the ultimate goal of "Monozukuri," which is based on the interaction of a variety of technologies.

An important feature of the MONOZUKURI Engineering Division is that it supports in-house development to achieve this ideal style of Monozukuri, and provides the technologies and know-how developed or implemented to outside parties in the form of Solutions.

"We provide the knowledge that we have obtained through our own innovations as tools, and also carry out consulting and business support activities. We then polish and refine these tools, reflecting the experience that we have gained through these activities. The issues that we are facing are common issues for Japan's entire production industry. If we can work together to solve these problems and promote awareness reforms, and pursue research into Monozukuri technologies, then I believe that we will be able to usher in a new era for the Japanese production industry."

This approach is an embodiment of the Hitachi Group's philosophy of contributing to society.

"The use of the Japanese word 'Monozukuri' [the crafting of things of quality] in the name of the MONOZUKURI Engineering Division is a reflection of the strong resolve of President, Chief Executive Officer and Director, Etsuhiko Shoyama and the rest of the company's executives. Creating the truly high-quality products that customers want is the specialty of the Japanese production industry, and we want to promote a renewed awareness that Japan has the technology and intellectual power to back this up. I am confident that the broad range of knowledge cultivated by the Hitachi Group in its capacity as a general electronics manufacturer will be very effective in this regard."