Change is a Chance!

“The environment surrounding business is changing by the minute”—many modern companies feel this is true regardless of their field or size of business. How can we capitalize on these changes for dramatic growth in the future? The Ministry of Economy, Trade and Industry (METI) presented a vision to answer this question in April this year.

Japan has entered an era of full-fledged population decline, while technological innovation dubbed the “fourth industrial revolution” continues to develop. In order for Japan to best harness the power of this revolution and shift to a new phase of economic growth amidst this demographic change, a “compass” shared by both the public and private sectors is needed. To this end, METI has compiled the “Interim Report on the New Industrial Structure Vision: Strategic Efforts for Taking the Lead in the Fourth Industrial Revolution.” In developing this Vision, we put great value on technological innovations, such as IoT, big data, artificial intelligence (AI), and robots. Data stands to be a tremendous source of new value when massive amounts of interactions and information in nature and society are compiled and shared through networks, analyzed on a real-time basis, and used for the social implementation of new services and products. For example, products and services will be customized more meticulously to suit individual customer needs; assets hidden in society will be matched with individual needs at low financial cost; and AI and robots will support humans by taking on a greater share of time-consuming activity. How to adapt to such an environment is critically important for businesses facing these changes. If businesses can successfully manage these changes, not only for the development and production of new products and services, the benefits will be substantial and dramatic future growth ensured. On top of that, today’s market expands globally beyond national borders. If you can navigate successfully, opportunities are everywhere all across the globe. We expect that industrial and employment structures will be transformed dramatically as a result of such changes. So, what changes specifically are taking place in business and society and what is presented in the Vision? In the following pages we will touch upon the key points and introduce you to the opinions facing business leaders.
Tip on embracing new technologies to boost competitiveness

 Amid the drastic changes in business and society caused by the digital revolution, countries across the world are developing strategies and taking necessary actions in order to adapt. While some people say that Japan is being left behind, I believe that it is also true that it has an advantage in terms of technologies and experience in physical fields such as manufacturing. The fusion of physical technologies and cyber technologies is progressing rapidly, which provides us with a great opportunity to gain new competitiveness and escape from the economic plateau that has lingered in Japan for the last two decades.

In January this year, the government published the 5th Science and Technology Basic Plan and presented a super "smart" society, "Society 5.0," which solves social issues by connecting various systems using digital technologies as a basis while fusing cyber space and reality. Society 5.0 is also defined as a society that provides the best products and services according to individual needs. The government is committed to making strong promotional efforts for this plan.

The Interim Report on the New Industrial Structure Vision released in April this year gives a good summary of future directions, discussing how Japan will change in line with the digital revolution based on the idea of the Vision and identifying issues and strategies central to the process of changing.

Innovation will advance through the collision of different cultures. As stated in the Vision as well, "business expansion from the global perspective" and "open innovation" will be especially important in promoting the strategies outlined in the Interim Report. The digital revolution is happening simultaneously around the world, including in developing economies. The issues facing Japanese society are also issues common to other countries. I believe using our solutions for help addresses other countries' issues will enhance Japan’s competitiveness. It is important to constantly send global messages. Open innovation will start from close collaboration among industry, government, and academia. I think we will then need to take on the challenge of promoting global open innovation. Innovation will advance through the collision of different cultures, and I think universities, research institutes, and companies in Japan should serve as a platform for such exchange.

The front line of business, supported by mutual trust, holds the keys to the future. The strengths of Japan lie in the front line of business, supported by mutual trust fostered through craftsmanship, meticulous work, and relationships full of consideration for others. The Vision proposes a future where various social issues are solved using data collected from the front line through IoT. Japan is particularly well-positioned to utilize these technological advances and offer related solutions for social issues, standing in the shoes of the persons concerned. Japan can lead the world by taking advantage of such potential and communicating the results to the international community. I personally felt Japan's potential when I found that many people agreed with the idea of Society 5.0 when I presented it in January this year at the World Economic Forum, which focused on the fourth industrial revolution. The Interim Report on the New Industrial Structure Vision contains a lot of insights for companies to bear in mind when developing business strategies. As you can see from the title "Interim Report," it is still evolving. I suggest business managers read the report and discuss with employees people outside of the company. I believe this will contribute to the evolution of the vision and the formation of a common understanding among society.

This sort of understanding will serve as a foundation for collaborations among the government, research and educational institutes, venture businesses, small- and medium-sized companies, and major companies, fostering a forward-looking spirit in individuals and organizations. I expect such initiatives will create momentum for new businesses that expand beyond existing boundaries and enhance the power of Japanese society as a whole.

"An international forum held at the end of January every year in Davos, Switzerland, convening top leaders from the world, including heads of state:"

How to stay competitive during revolutionary change

Ataka: What we are seeing now is a technological evolution that’s like a maglev appearing on the tracks back in the time of steam engines. As we prepare for the coming drastic changes in society and industry, Japan is facing challenges like the lack of valuable data to overseas, expensive data processing costs, and a shortage of human resources capable of utilizing that data. If nothing is done about this situation, Japan could lose its competitive strength and fall behind other advanced economies.

Nagashima: Japan is trying to enhance added value in the manufacturing industry through data utilization, and Japan is also doing quite well in this respect. However, Japan is lagging behind in terms of the utilization and development of human resources to support these initiatives. The types of jobs that humans will do will change in the future. Companies have implemented thorough labor reforms to ensure equal payment for equal work and has created a system for putting the right people in the right places across the whole society, while Japan has just begun to work on it. Also, in education, as the source of national strength, we should focus on the development of capacity for utilizing data and the fostering of systems, rather than developing homogeneous skills to “do exactly as instructed” because such skills are replaceable with AI.

Technological revolution will also solve regional issues.

Ataka: I would like every business person to understand that any data can be a source of value, depending on its utilization. In addition to problem-solving abilities and English language skills, the ability to analyze data and understand its significance will be essential for all industries and occupations in the future. In particular, I would like to tell people working in country areas that technological innovations can solve such regional issues as aging population and depopulation.

Nagashima: I believe people will see more merit in living in rural areas with better environments in the future. With the advent of remote working capabilities, we are seeing more job opportunities in non-urban areas. This is a great opportunity to attract talented people to improve the situation.

Take action in the era of change

Ataka: Now is the time that venture businesses with innovative technologies and ideas can change the world. It’s a chaotic time like the end of the Edo period. I hope young people will enjoy participating in this new “revol” as they also changes the world to the top of the world. I suggest that the government establish a special zone where people can attempt new things more freely in all fields with minimum restrictions in order to create an environment where new talents and passion can blossom, rather than merely granting permission to submit applications from limited areas.

Nagashima: AI cannot voluntarily deal with unprecedented social challenges. Thanks to the technological evolution, new approaches to social issues can be made with fewer people and lower costs than before, which allows us to grasp valuable experiences. I know that is a safety device for human beings, but I hope most people will recognize that change is inevitable and try to raise the chances for success through trial and error. My point is, like the saying about Awao-design, it is important for people to join in and dance, rather than just watching the changes from the sidelines.

Ataka: I think the Interim Report on the New Industrial Structure Vision released in April provides good hints for such challenges as it shows the future issues and actions to take for AI and big data from a long-term perspective.

Lead the world with Japan’s strengths

Hiroaki Nakanishi (Executive Chairman of Hitachi, Ltd. Member of the New Industrial Structure Committee, Industrial Structure Council)

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Smart transportation

Thanks to technological developments in autonomous cars and drones, the transportation of people and goods will be safer, freer, and less expensive, and new services will also emerge. For example, the efficiency of main line transportation in the logistics industry will be improved by the introduction of truck platooning. Goods delivery using drones will also be more common in the future.

The government aims to introduce autonomous transportation services for the Tokyo Olympic and Paralympic Games in 2020 and self-driving vehicles that can be used on expressways. If full autonomous driving is disseminated, in-car advertisement and services (e.g., education, entertainment) will come into the market. Use of unmanned devices will also advance in other areas including agriculture. If autonomous driving on regular streets is realized, it will spread to diverse areas, including unmanned transportation services and logistics, while shared transport services will also expand. Such changes will contribute to solving social problems like traffic accidents, traffic jams, people having difficulties in transportation, as well as global environmental problems.

The conventional segmentation of industries, for example, the car manufacturing industry, the transportation industry, including railways, the logistics industry and the shared transportation industry may see industrial realignment based on social needs beyond such segmentation.

Encourage demand through business solutions!

Toyota established an AI research base in the U.S. to become a “monozukuri-plus-service-providing company” through cooperation with various organizations, including universities, AI-related companies, and venture businesses. The TRI will have full discretion in deciding what approaches to take toward shared goals with Toyota. It also plans to focus on the development of an innovative working environment by introducing flexible working conditions and a personnel evaluation system based on the point addition principle.

Smart purchasing

The efficiency of production will be further facilitated by connecting and utilizing data from various fields, including manufacturing, distribution, and sales. Companies will be able to develop and sell products and services that are better suited to customers’ needs.

As for the supply side, supply chains will be further optimized. The time from order to delivery will be shortened, while curbing excessive inventory.

In terms of the production side, automation utilizing AI and robots will advance. As for the maintenance of facilities, early malfunction detection and alert systems will be realized using sensor data. We will also see “mass customization” that quickly supply products in bulk, at a low price based on individual preferences.

In marketing, shared use of consumption data will further advance through cooperation between different companies. Product development utilizing customer data is already being conducted, but in the future, companies will be able to develop and sell products with more value added based on a real-time, accurate understanding of consumer preferences, which will contribute to the stimulation of latent demand.

How will business change in line with advanced digital data utilization? We may see more customized products and services, autonomous manufacturing and sale systems, and industrial realignment beyond the segment and development of new businesses to solve social issues.

We will walk you through this vision of the future from various perspectives, including transportation, living, purchasing and sale of products, and health.

Smart health maintenance to support the elderly

Utilizing advances in health and medical data, AI and robots, more customized healthcare services will be provided, while burdens on people working in medical and nursing care industries are reduced.

There will be further expansion of the current movement toward recording and analyzing real data collected by wearable devices, etc., to visualize health conditions and provide healthcare and preventative services. Also, recommendations for medical consultation based on health data will become more common.

The burdens on people working in medical fields will be reduced in line with the computerization of medical information, optimization of nursing care plans, and introduction of management systems using AI and robots expected with AI’s enhanced recognition and control functions. Moreover, people will be able to utilize biological information analysis in both designing pharmaceuticals suited for each individual’s constitution with fewer side effects or detecting diseases at an early stage.

Innovating store management strategies using real-time data analysis

Yosuke Okada, CEO, ABEJA, Inc.

Despite the fact that domestic brick-and-mortar stores in the retail and distribution industries are a reservoir of real data, these businesses lag behind EC websites in terms of the collection and analysis of multifaceted data. Our store data analysis service “ABEJA Platform,” utilizing a deep learning algorithm, collects, analyzes, and visualizes data concerning the attribution and purchase behaviors of visiting customers and thus supports efforts to improve marketing strategies, productivity, and the customer buying experience. More than 300 stores have purchased the service.

In order to realize integrated management of supply chains in the retail and distribution industries, we will promote efforts in new areas with an eye to the fourth industrial revolution, including the joint city development project with the Tokyo Group and the cooperative project with Osaka Industries’ technology development base.

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When we think about our future workplace, the use of AI and robots will be expanded in almost every industry. Automation will advance not only in fixed and routine work, but also in non-routine work, which we expect will contribute to solving Japan’s manpower shortage amidst a depopulation trend. We may also see the rise of new jobs, such as those utilizing and working with AI and robots, and other jobs in which direct human involvement has value. Meanwhile, for the middle layer, which is the largest employment market (see the figure on the right), new skills such as literacy regarding information, data and IT will be required.

**What kind of jobs will increase or decrease?**

Let’s see how the content of some jobs will change.

Firstly, jobs in the upstream process that require high-level skills, such as management planning, product planning, marketing and R&D, are expected to increase as new businesses and markets expand in various industries. Next, manufacturing and procurement jobs are likely to decrease due to the increase of automated and unmanured plants utilizing IoT and robots and due to the automation and the streamlining of supply chains. How about sales and retailing jobs? A decrease in jobs with less value added will be inevitable due to the development of technologies for matching products and services with collected customer data and determining customer needs. However, these types of jobs may increase in areas where a sense of security is an important factor in deciding on a purchase. The key is whether the job can be replaced with technologies such as AI and big data.

The same principle applies to service jobs as well. Jobs that are replaceable with technologies are likely to decrease, while jobs with high value added for which direct service by humans enhance the service’s quality and value are likely to increase. Finally, IT-related jobs that are deeply connected with IoT, big data and AI are expected to increase in areas where high-level skills are required. On the other hand, back-office jobs, such as wage management and data entry, will decrease as they will be replaced by AI and global outsourcing.

**Japan at a turning point: remain as it is or reform itself?**

The table on the right page shows the forecast of the increase and decrease in the number of employees by job category. The important point is that it shows two scenarios, one for the “business as usual (BAU) scenario” and the other for the “transformation scenario.” If the current borders and closed corporate cultures of the companies, group corporations and industries are maintained, we will be dependent on overseas countries for data platforms, which are the foundation for data utilization, and we will see more serious losses of employment opportunities caused by automation and digitalization. To avoid such a scenario coming true, it is essential to cultivate and acquire new demand by utilizing data and technological innovation in the fourth industrial revolution. Forward-looking initiatives with an eye to future changes in economic and social systems will be the key to solving education, human resources development, introduction of foreign human resources, and labor market and employment system reforms. Will we choose to do nothing about the current situation and give in to a stable and gradual decline, or will we choose a path of painful transformation? The Interim Report on the New Industrial Structure Vision provides seven policies for what Japan should do at this turning point. What are the specific strategies for the future? On the next page, we will introduce you to the seven points.

The following measures are also being considered!

**Accepting overseas human resources using a “Japan-version green card for highly skilled foreign personnel”**

To manage successfully in the intensifying world-level competition, we need to adapt skilled workers regardless of their nationality, gender or age. The securing of foreign professionals and engineers is especially important in the IT field, for which a shortage of human resources is expected. The U.S. and the U.S.S.R. include entrepreneurs, specialists, and intellectual workers in the category of permission for permanent residency. Also, the lengths of stay required for application in these countries are shorter than in Japan. Japan aims to introduce a “Japan-version green card for highly skilled foreign personnel” with the world’s shortest residency requirements and an eye to actively accepting such overseas workers.

**Improving IT skill levels by introducing programming curriculums in the elementary and secondary education**

Since the human resource skills required by jobs are changing, there is an urgent need to build a new educational system based on these changes. Fostering advanced IT skills is one of the most important matters. As one means to this end, the government aims to make programming education mandatory in order to foster logical thinking.

Countries around the world, beginning with the U.S., have made programming curriculums mandatory. Japan also works on improving skills at each developmental stage by introducing hands-on learning in elementary schools, education on digital content in junior high schools, and mandatory computer science classes in high schools.

### Change in the number of employees by job category

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<thead>
<tr>
<th>Job category</th>
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<tbody>
<tr>
<td>Information service</td>
<td>-1.36 million</td>
</tr>
<tr>
<td>Manufacturing and procurement</td>
<td>-1.36 million</td>
</tr>
<tr>
<td>Sales and procurement</td>
<td>-0.62 million</td>
</tr>
<tr>
<td>Service (high productivity of supply replaced)</td>
<td>-0.62 million</td>
</tr>
<tr>
<td>IT-related jobs</td>
<td>-0.96 million</td>
</tr>
<tr>
<td>Back office</td>
<td>-1.45 million</td>
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</tbody>
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*Note: Negative numbers indicate decreases while positive numbers indicate increases.*

*Source: Japan Cabinet Office, Ministry of Internal Affairs and Communications, Employment Status Survey 2019*

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*Development of technologies including IoT, big data, AI and robots, which provide the foundation for the fourth industrial revolution, will surely have a great impact on individual work styles and the employment structure of the entire society. This is because technological innovation will change the jobs and roles that have to be filled by humans. We need to forecast future developments bearing in mind the social situation, paying attention to the low birth rates, aging populations and globalisation.*

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**Required skills will drastically change!**

**This is how the employment structure will change**
## Seven Key Points in the Re-designing of Economy and Society

<table>
<thead>
<tr>
<th>Point</th>
<th>Description</th>
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| 1 | Developing environments for promoting data utilization  
Japan aims to establish data platforms and intercompany data distribution markets. Utilization of personal data will be promoted bearing in mind a balance with privacy protection. Development of security measures and rules will also be promoted.|
| 2 | Fostering and securing human resources, improving flexibility in employment systems  
Japan will work on the improvement of primary and secondary education, development of top-class human resources, and enhancement of the level of mid-skilled human resources in an integrated manner. Japan also plans to accept more highly skilled foreign personnel. The flexibility of labor market and employment systems will be increased in order to realize smooth labor immigration.|
| 3 | Accelerating innovation and technology development  
Japan will promote open innovation by breaking down the barriers between companies, universities, venture businesses, national research and development agencies and other organizations. In addition, Japan will put more effort into promoting national projects by establishing world-class innovation hubs.|
| 4 | Fortifying financial functions  
Japan will fortify the functional capabilities of public-private funds as they relate to the supply of risk money, while also reviewing the status of intangible assets and their evaluation methods. Further, Japan will also consider measures concerning institutions and systems in order to maximize the power of FinTech in an integral manner.|
| 5 | Facilitating smooth conversion of industrial and employment structures  
To accommodate the change in management environment, Japan will promote a governance system in which business owners are able to swiftly make decisions. In order to meet companies’ diverse needs, Japan will develop systems and environments in which owners are able to revitalize and reorganize business in a timely and flexible manner.|
| 6 | Delivering the 4th Industrial Revolution to SMEs and local economies  
In order to promote the introduction of IT among small- and medium-sized companies, the government will pursue a variety of projects and policies, including dispatching experts, supporting automation, and developing a common system that transcends traditional boundaries between industries and companies. It aims to revitalize regional economies by enhancing the competitiveness of small- and medium-sized companies.|
| 7 | Further enhancing economic and social systems to address the revolution  
Based on a long-term vision for the future and concrete goals, Japan will conduct regulatory reforms to accommodate the changing situation. In addition, the quality of administrative services will also be improved by utilizing innovative technologies. International coordination will also be promoted from a global perspective. |