Overview of the 2018 White Paper on Information and Communications in Japan

Economic Research Office, ICT Strategy Policy Division,
Information and Communications Bureau,
Ministry of Internal Affairs and Communications

1. Introduction

On July 3, 2018, the Ministry of Internal Affairs and Communications (MIC) published the *2018 White Paper on Information and Communications in Japan*. This year's white paper*1 focuses on the theme "Sustainable Growth by ICT in an Era of Population Decline."

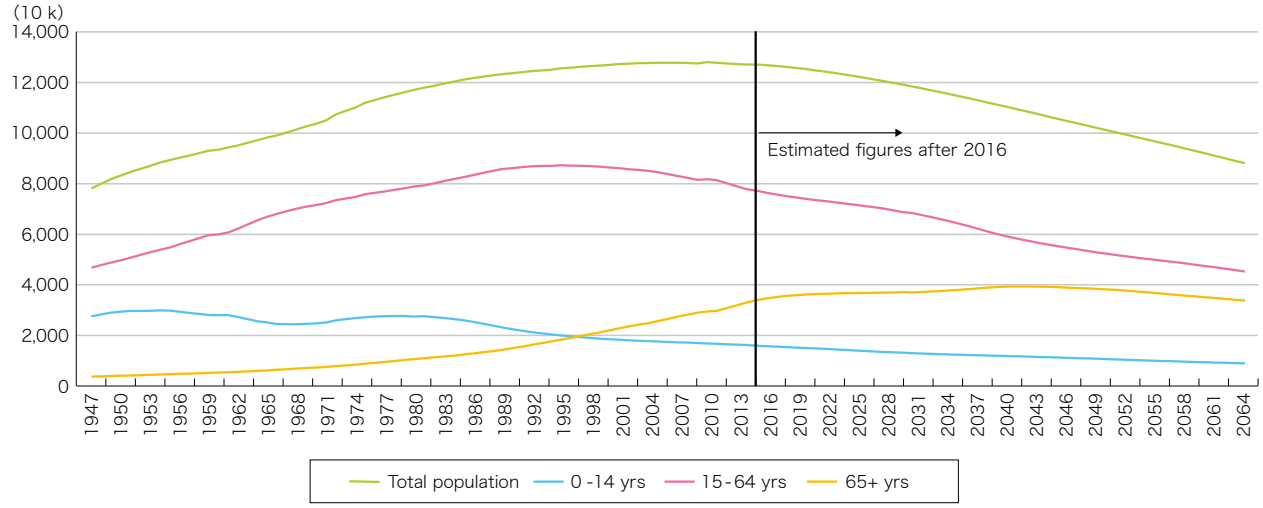
The population of Japan has been in decline since the tipping point in 2008, and the shrinking working-age population coupled with a growing elderly population could have profound socio-economic consequences as domestic demand and the scale of the economy contract and as labor shortages intensify (Figure 1). However, harnessing information communication technology (ICT) to create new value by interconnecting myriad things—people, objects, organizations, communities, and more—may offer a way to avoid the bleak consequences of this demographic trend. ICT can lead the way to sustainable economic growth even in the face of population decline by stimulating demand, by boosting productivity, and by promoting social and labor force participation.

The ever expanding use of the Internet and widespread penetration of the Internet of Things (IoT) is fueling massive growth in big data. Using artificial intelligence (AI) to analyze and interpret this data opens the way to the creation of new value.

A different view holds that we are in the era of a *digital transformation* in which society and the economy become driven by data. This transformation is set in motion when ICT—AI, IoT, etc.—began to be integrated into conventional socio-economic systems: infrastructures, institutions, organizations, production methods, and so on. These socio-economic systems will be reshaped to exploit ICT. We can also anticipate that, as the real world and cyberspace are seamlessly integrated, many partially optimized systems and institutions that until now have been shut away in particular sectors or organizations will emerge as fully optimized solutions that are available to society as a whole (Figure 2).

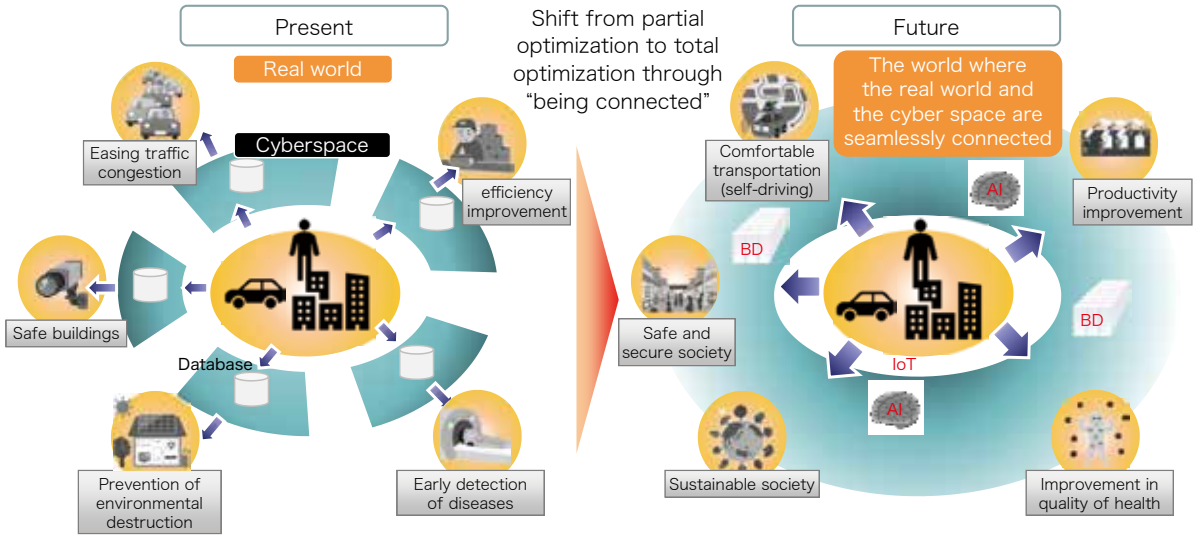
This paper will provide an overview of Chapters 2 to 4 of the white paper, which deal primarily with the creation of new value through ICT innovation.

Figure 1: Change of the population and population composition of Japan



*1 http://www.soumu.go.jp/johotsusintokei/whitepaper/index.html.
http://www.soumu.go.jp/johotsusintokei/whitepaper/eng/WP2018_outline.pdf

Figure 2: Digital transformation



2. Formation of New Economies through ICT (white paper chapter 2)

ICT is expected to contribute to sustainable growth of demand. Here we will highlight the potential role of ICT in the formation of new markets and economies, that transcend the barriers separating industries with several examples of X-Tech*2 and the sharing economy.

(1) Development of X-Tech

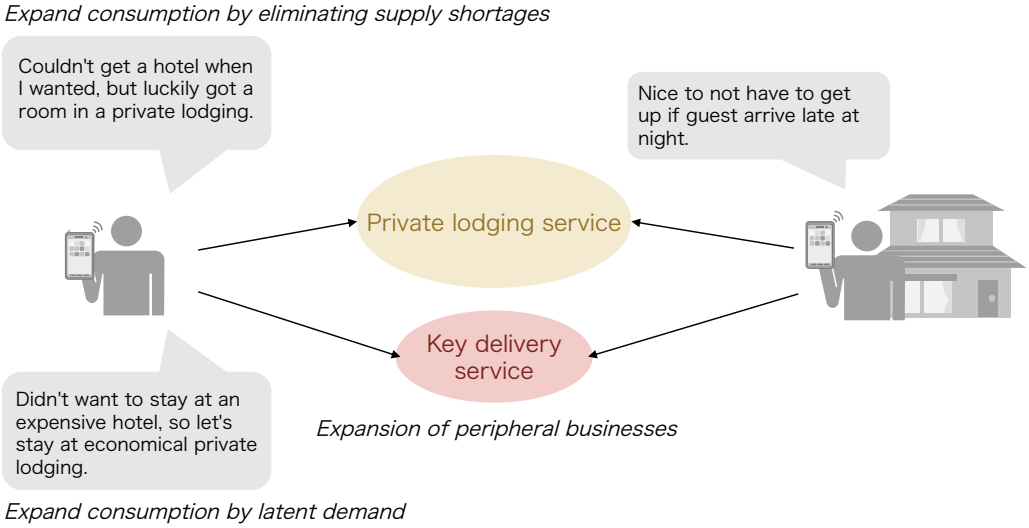
There has been significant movement in recent years to exploit digital technology and new ICT across a wide range of industries and types of businesses. Often described under the rubric of X-Tech, we now have FinTech in finance, EdTech in education, MedTech in medicine, and so on.

Taking just one example, FinTech opens the way for one-stop financial services encompassing household accounts and distribution of assets to different financial institutions, and AI-based optimal asset management for users and investment services involving relatively small amounts of money, which would help revitalize Japanese asset management.

(2) Sharing economy

By utilizing online ICT platforms, individuals are able to participate in the market as service providers. The typical example is that of a sharing economy. The sharing economy grows consumption by bringing latent demand to the surface and eliminating supply shortages, while markedly expanding the effects of peripheral businesses and services (Figure 3).

Figure 3: Image of sharing economy's contribution to economy (example of private lodging service)



*2 Pronounced "*x tech*" or "*cross tech*".

3. Productivity Improvement and Organizational Reform through ICT (white paper chapter 3)

A decline in national population is typically reflected in a decrease in gross domestic product (GDP), or total value of goods and services in the country. Improved productivity is essential to boost the additional value of products with limited human resources. Here we highlight the importance of implementing ICT together with organizational reform to boost productivity.

(1) Labor productivity in Japan

Japan ranked 21st in a comparison of labor productivity per man-hour of 35 OECD member countries, and had the lowest productivity among the G7 economies (per employee in 2016).

(2) Improving labor productivity

Labor productivity is defined as (amount of additional value)/(labor input); that is, the amount of additional value created by a worker in an hour. Productivity can be increased by either reducing the denominator or by increasing the numerator, but leveraging ICT to increase the numerator (*i.e.*, improving amount of additional value) side of the equation is generally more effective. A trial calculation was conducted based on the results of a questionnaire sent out to Japanese companies to determine whether improving the efficiency of labor input or increasing additional value was more effective in boosting the productivity of labor. We found that the productivity of labor could be enhanced 1.1 times by saving labor associated with the work, but productivity could be enhanced 4.0 times by adding value to existing products and services or by developing new products and services (Figure 4).

(3) Necessity of organizational reform

Japan's labor productivity growth lags behind the U.S. and other G7 nations. Measures for shoring up Japan's productivity can be divided into four types of innovations: organizational, process, marketing, and product.

In a survey comparing recent innovations by major American corporations versus Japanese corporations, it was found that U.S. corporations outperformed Japanese corporations across the board in all four types of innovations. In terms of organizational innovation, for example, the U.S. corporations completed corporate restructuring more than three years ago, while a good number of Japanese corporations were still struggling with restructuring over the past three years (Figure 5). Organizational reform is clearly essential to derive increased profits from ICT, and we can anticipate that Japanese corporations will step up their restructuring efforts in the years ahead.

4. Promoting Inclusion through ICT (white paper chapter 4)

As the population of Japan continues to shrink, metropolitan areas are expected to become more densely populated and the number of single-person households will continue to rise. This means that the population of socially isolated people may increase, since they lack trustworthy people such as family members to provide companionship and assistance in case of emergencies.

One strategy for augmenting the labor force as the population continues to decline will be to open the workforce to greater participation from various categories of people who until now have been marginalized or underemployed such as women, older adults, and people with disabilities.

(1) Communication through ICT to promote greater social participation

Social media has become immensely popular, which has made it much easier for people to connect and interact than was possible in the days before the spread of the Internet. Social media provides

Figure 4: Productivity and problem solving solutions through ICT

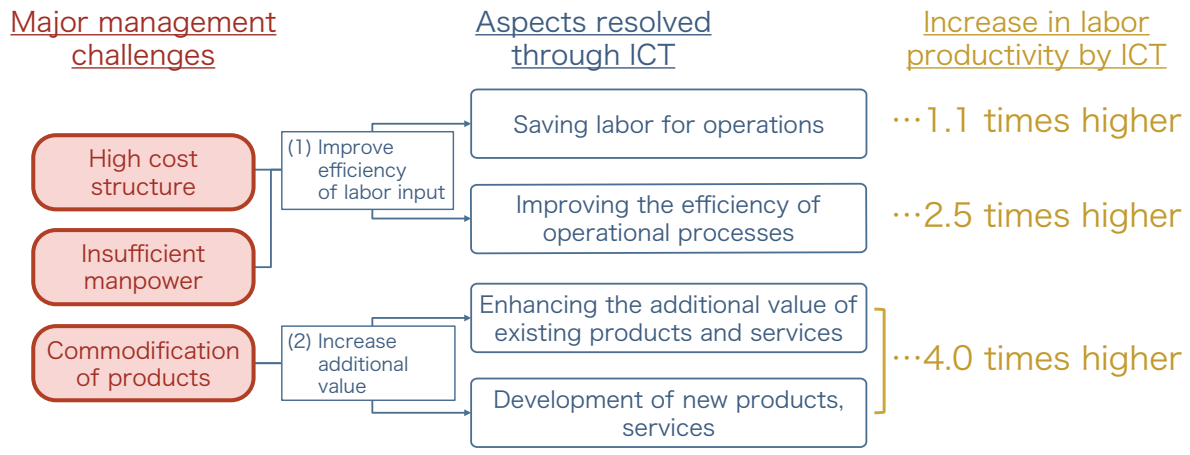
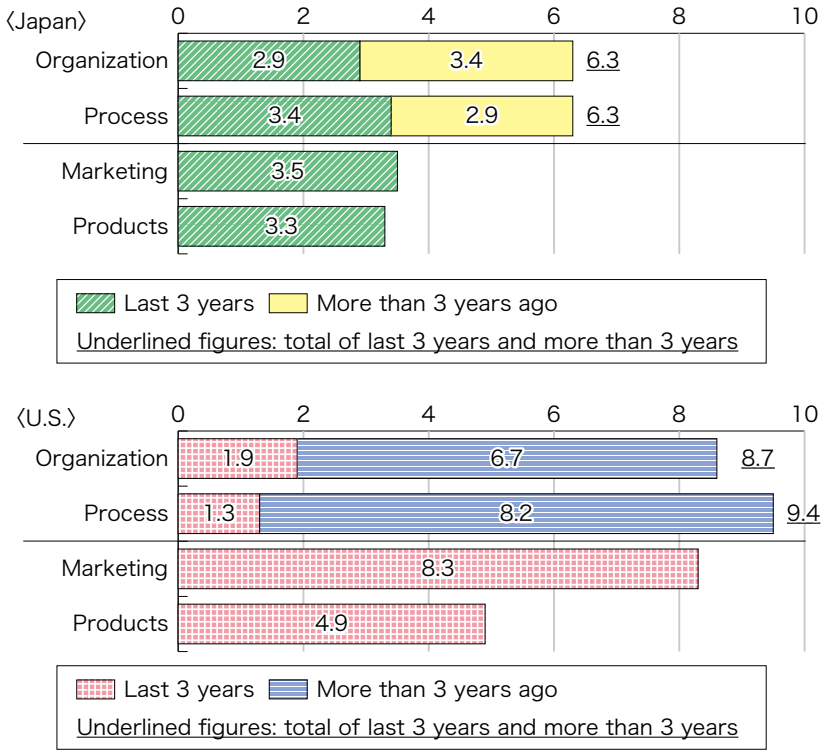


Figure 5: Innovation in Japan vs. U.S.



Based on a survey, we asked corporations to provide examples of each type of innovation. We then calculated averages for the total number of examples.

a way of gathering information, a way of making new friends, and a host of other beneficial uses. In surveying what Japanese users and foreign users like about social media, we found that far fewer Japanese users (compared with users in other countries) saw the benefits of social media for (a) building new relationships and (b) strengthening existing relationships.

Social media also offers a way to complement or supplement contacts in the real world. For example, visualization through ICT enables people who are in a position to help to reach out and assist communities that need help, it opens the way to community-based SNSs and sharing economy platforms that promote mutual aid and cooperation among local people in the community, and supports a wide range of initiatives all across the country.

(2) New ways of working supported by ICT

ICT supports diverse ways of working that enable people to closely communicate with colleagues in the office and to work without actually going to the workplace The *2018 White Paper on Information and Communications* discusses three types of ICT-supported work options is some detail: (1) business ICT tools, (2) telework, and (3) crowdsourcing.

(a) Business ICT tools

In recent years we have seen a vast increase in deployment and usage of tools facilitating communications, workforce management, and other administrative capabilities such as in-house SNS, chat, web conferencing, and other advanced features. A survey revealed that adoption of business ICT tools at an office or company did not have any discernable impact on ease of work for individual employees. Yet we also found that the employees who were most positive in their adoption and use of the ICT tools evaluated ease of work and working conditions more favorably. This would indicate that not only adoption of business ICT tools but positive use of the tools by employees is connected to the perception of ease of work or favorable working conditions.

(b) Telework

Telework is a flexible workstyle that exploits ICT to enable employees to make more efficient use of time and spaces. According to the *Communications Usage Trend Survey in 2017*, 13.9% of Japanese companies currently support telework in some form, and more widespread adoption of the practice is anticipated. Through an interview with employees who are not using but desiring to use telework, we discovered there are yet a number of sticking points in the corporate work environment and corporate rules that prevent telework schemes from being implemented. Most of the responses emphasized that "lack of relevant rules in the company" and "lack of social environment for telework."

(c) Crowdsourcing

A survey regarding crowdsourcing revealed that 30% of respondents had heard of the concept, but only 4.7% had actually used crowdsourcing in performing their work. We assume that crowdsourcing will achieve far greater name recognition and usage among independent teleworkers as they take on crowdsourcing-related contracts and assignments in the years ahead.