Overview of the 2021 White Paper on Information and Communications

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In this white paper, the special theme of Part 1 is "Livelihood and Economy Supported by Digital Technologies," reflecting on Japan's efforts toward digitalization, as well as the present situation and challenges of digital utilization in daily life, in corporate activities, and in the public sector. It also examines the changes caused by digitalization accelerated by the COVID-19 pandemic. The white paper reports that it is necessary to improve the digital utilization capabilities of the people and to promote digital transformation in the private and the public sectors strategically and seamlessly in order to realize a resilient society that is capable of dealing with infectious diseases and natural disasters. The white paper states that these initiatives entail the establishment of common platforms for the digital society. In addition, Part 2 provides the latest data on the current state of information and communications in Japan, as well as the policy trends centered on the efforts of the Ministry of Internal Affairs and Communications (MIC). This article provides an overview of Part 1.

1. History of digitalization in Japan

(1) History of Japan's digitalization policies

Since the enactment of the Basic Act on the Formation of an Advanced Information and Telecommunications Network Society in 2000, Japan has been promoting digitalization by laying down various national strategies including the e-Japan Strategy in 2001. The white paper highlights the goals and key initiatives of the national strategies, dividing them into four phases; namely, the first phase of development of ICT infrastructure, the second phase of promotion of ICT utilization, the third phase of promotion of digital data utilization, and the fourth phase of aiming to build a digital society.

(2) Progress of digitalization of Japanese society

The state of the uptake of ICT infrastructures in terms of fixed-line communications shows that the number of FTTH subscribers has increased rapidly since the late 2000s, and the ratio of households with access to ultra-high-speed broadband has reached 99.98 percent in 2015. The shift to broadband in mobile communications has also continued, with more mobile devices connecting to the Internet than PCs in 2010, and the ratio of households with smartphones reaching more than 80% in 2019. According to the OECD, the ratio of optical fiber for fixed-line broadband in Japan ranked second in 2020, and mobile broadband penetration ranked first in 2019.

Japan's use of ICT infrastructure is progressing to a certain degree, as shown by the scale of the e-commerce (BtoC) market for daily life reaching approximately 19.4 trillion yen in 2019. Meanwhile, in corporate activities, ICT investments have been sluggish, reaching only around 15.8 trillion yen in 2018. This contrasts with the continually increasing ICT investments in the U.S. There is also a shortage in ICT personnel of about 220,000 as of 2018, and it is estimated that there will be further shortages in the future.

(3) Digitalization of Japan as measured by international indicators

As to Japan's global position in digitalization, for example, in the digital competitiveness ranking by the International Institute for Management Development (IMD), Japan ranked 27th among 63 countries in 2020. In particular, Japan scored low in "international experience" and "digital/technological skills" for "talent," and in "opportunities and threats," " agility of companies," and "use of big data and analytics" for "business agility."

2. Current situation and challenges of digitalization

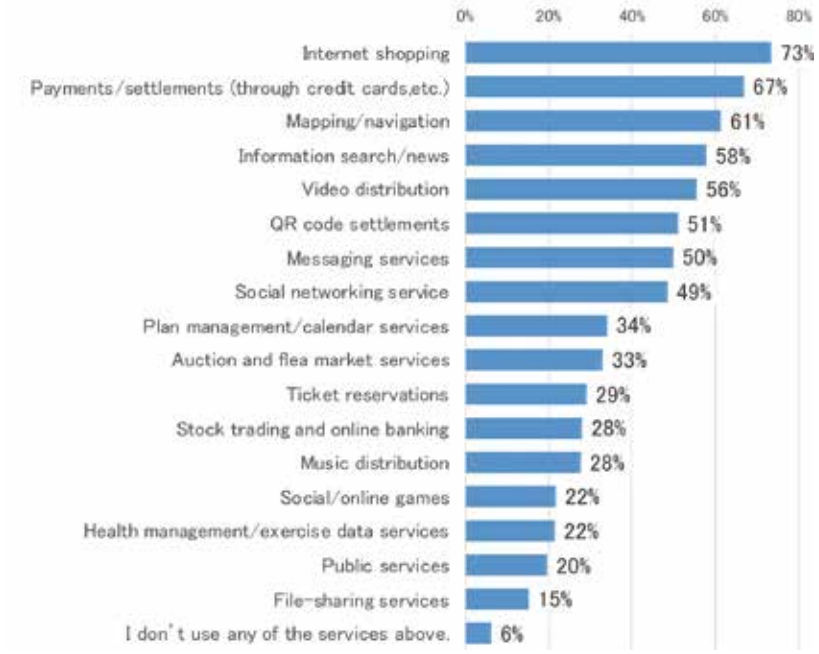
(1) Current state and challenges of digital utilization in daily life

In a survey conducted by MIC among the general public, when asked about the Internet services they normally use, many respondents replied that they particularly use "Internet shopping" and "payment and settlement (through credit cards, etc.)" (Figure 1). In addition, when asked about the reason for the slow progress of digitalization in society, most of the respondents pointed out "anxiety about information security and privacy breaches" (52%) and "lack of literacy among users" (44%).

Moreover, according to the Cabinet Office (2020) "Public Opinion Survey on Utilization of Information and Communication Devices," smartphone and tablet usage is particularly low among people in their seventies or older ("not using" is 50%). The top reasons cited were "not necessary for living life" (52%), "not knowing how to use" (42%), and "relying instead on family members" (40%). There is a need for initiatives to support the use of digital technology so that older people are not left behind by the digital society.

Figure 1: Internet services for daily use

(n=1000)



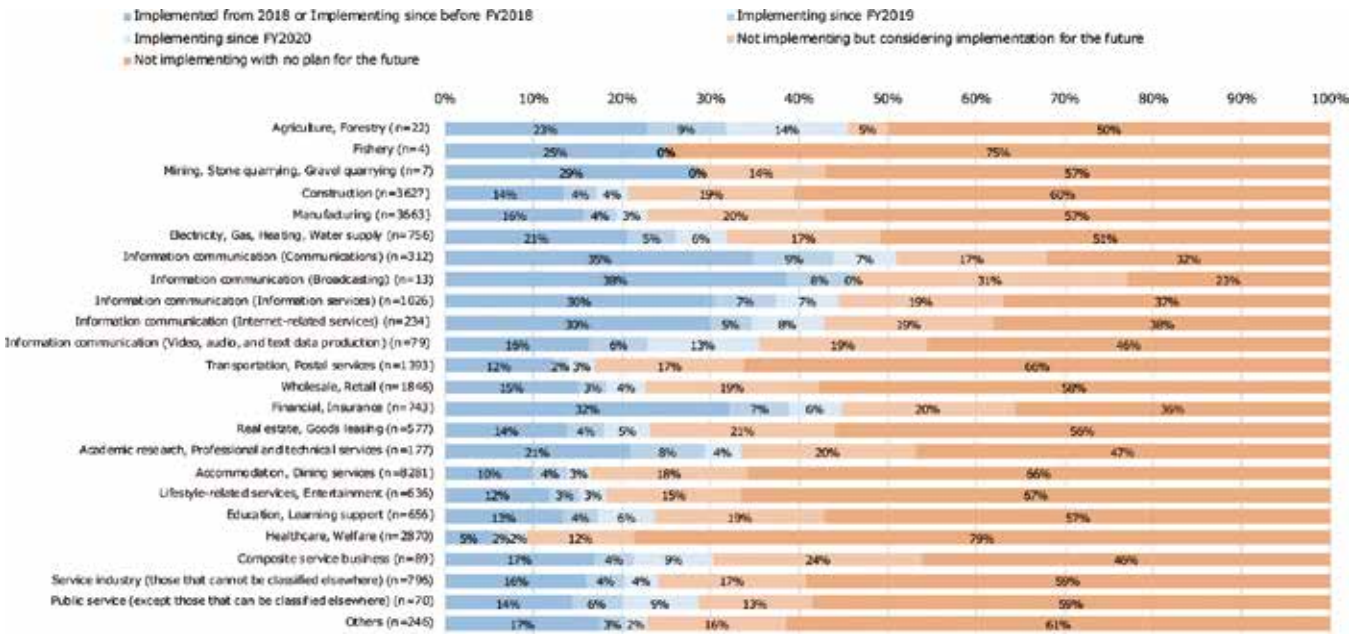
(2) Current state and challenges of digital transformation of corporate activities

In Japan, ICT has contributed to improving productivity amid the decline of the productive-age population. However, the impact of ICT's contribution to improving productivity is not sufficient due to the low amount of ICT investments and their being mostly aimed at improving operational efficiency. Compared with the U.S., Japan's labor productivity remained at about 60% as of 2019.

The COVID-19 pandemic has prompted the acceleration of digitalization on a global scale, leading to changes in consumption behavior, digital disruptions that force existing companies to exit the market as digital companies enter, and acceleration of the globalization of the digital market. For companies to survive, they must use digital technologies to develop new products, services, and business models, and to transform their organizations, corporate culture, and workstyles. In other words, they need to carry out "digital transformation (DX)" to create new added values.

In a survey conducted by MIC among company workers on the status of DX efforts in Japan, about 60% of companies responded that they have "not implemented, and no future plans" for DX. Detailed results show that DX initiatives are progressing in some industries (Figure 2). In addition, while many of the responses of companies in Japan cited "operational efficiency and

Figure 2: Efforts for digital transformation (Japan)



cost reduction" (45%) as the purpose for implementing DX, many of the responses in the U.S. and Germany pointed to "creation of new products and services" and "improvement of customer satisfaction," which are the primary objectives of DX. Regarding DX issues, Japan had a significantly higher number of responses pointing to "shortage of human resources" (53%) compared with the U.S. and Germany. In addition to the lack in quantity and quality of ICT human resources, another problem in Japan is that ICT human resources are skewed towards ICT companies rather than user companies.

(3) Current state and challenges of digitalization in the public sector

Since the formulation of the e-Japan Strategy, Japan has taken steps to bring administrative procedures online, to reform government information systems, and to strengthen IT governance. It has achieved a certain degree of success in improving the efficiency of internal government organizations and in establishing systems and infrastructures. This is exemplified by efforts to reduce the operating costs of information systems through the implementation of the individual Number system and the establishment of systems to accelerate the distribution and utilization of administrative data. Even during the COVID-19 pandemic, the government has also made good use of the "Mynaportal" for processing applications for special cash payments. On the other hand, the complexity of the procedures for the administrative services that are provided to the public and business operators remains an issue that needs to be addressed. There is also a need for further dissemination of the use of the individual number card. Residents are, therefore, not fully enjoying the benefits of the use of digital technology.

As shown by the advanced digital government initiatives overseas, many countries now have systems that enable carrying out various procedures on government portal sites. Denmark has implemented thoroughly designed user-centric services, while the U.K. has been working to improve services through agile development on the basis of feedback from the citizens. South Korea has required the use of a common standard framework for government services and plans to deploy the framework overseas, while the U.S. is actively promoting the introduction of cloud among government agencies. Further, establishment of base registries is being promoted in the EU and other countries.

In March 2020, Japan compiled a "Grand Design for Realizing Digital Government," presenting the directions of efforts to be taken towards the realization of administrative services in 2030 along four pillars (Figure 3).

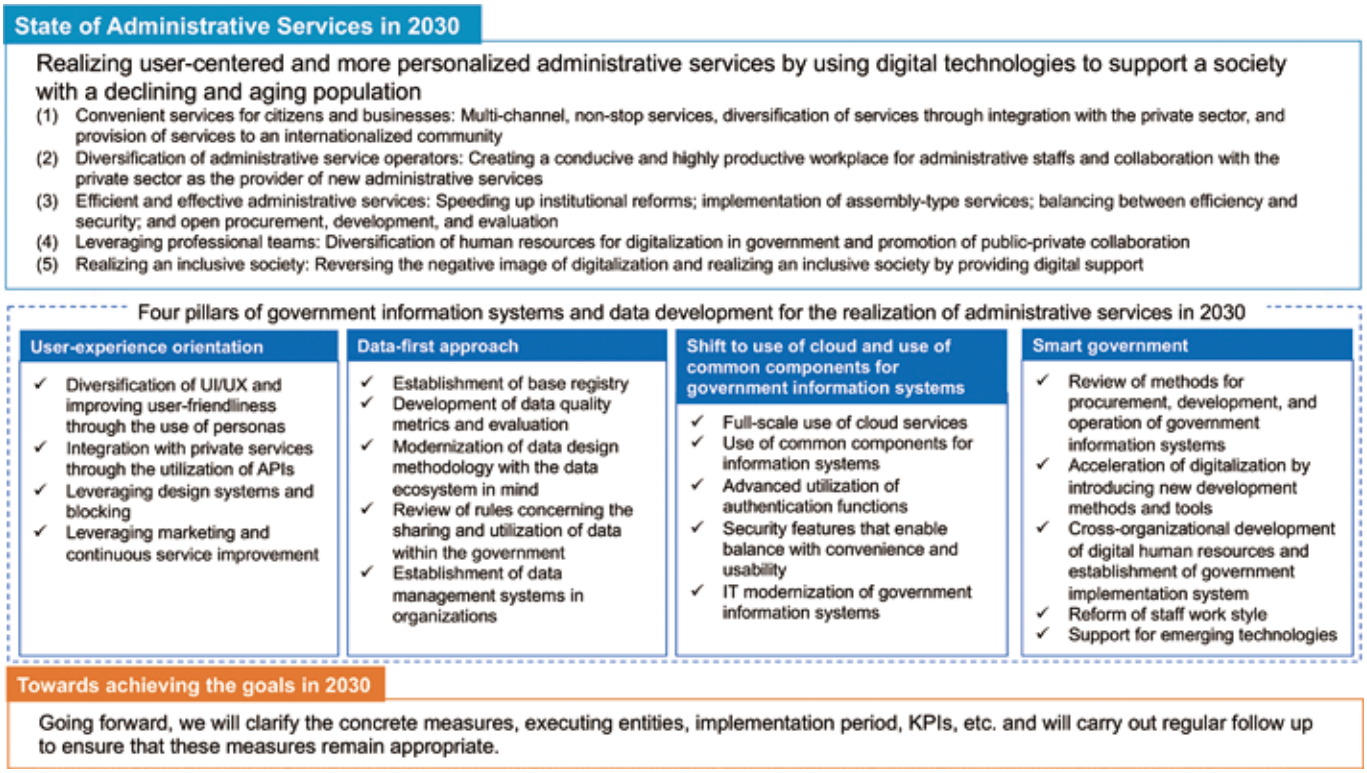
3. Acceleration of digitalization brought about by the COVID-19 pandemic

(1) Expansion of digital utilization during the COVID-19 pandemic

During the COVID-19 pandemic, "nesting consumption" has grown, and households using Internet shopping have been increasing rapidly since March 2020. Also, the usage rate of paid video streaming services has increased more than the previous years in 2020.

In addition to the expansion of online consumption, Internet traffic is also dramatically increasing due to telework and remote

Figure 3: The four pillars shown in the Grand Design



Source: Materials of the Liaison Committee of the CIO of each Ministry and Office on March 31, 2020
*This is a tentative translation by our office.

classes. On average, Internet traffic has been increasing by around 20% annually, but it increased by more than 50% in 2020.

(2) Digital utilization in the public sector during the COVID-19 pandemic

In Japan, the national and local governments have implemented various efforts using digital technologies to provide prompt economic assistance to citizens and to monitor the status of infections and risks in the regions. These efforts have largely been considered as the result of the development of digital infrastructures for national and local governments and have been hailed as landmark use cases in the introduction of new development methods. However, they have also led to the manifestation of problems related to the restrictions imposed by systems, rules, and customs, as well as issues related to procurement and project management.

Governments overseas have also resorted to the use of digital technologies during the COVID-19 pandemic. In Denmark, systems have been put in place to enable completing the processing of cash benefits online and for real-time monitoring of patient numbers. In Korea, the government implemented prompt payment of benefits through partnerships with credit card companies and shared the status of infections in real-time. Taiwan established a name-based mask-rationing system and made the stock status of medicines in pharmacies available as open data.

(3) Changes in corporate activities during the COVID-19 pandemic

While Japan's corporate activities declined significantly in the second quarter (April-June period) of 2020, the degree of the decline and the status of recovery vary by industry. In the manufacturing sector, industries are recovering due to the recovery in exports to the U.S. and China. In the non-manufacturing sector, retail and telecommunications have exhibited strong performance due to the rise in Internet shopping and the digitalization of companies; but face-to-face industries have been sluggish. Among the listed companies, GAFA and other "tech companies" in the U.S. are seeing increased overall performance, and ICT-related industries in both Japan and the U.S. are exhibiting significant gains in their market capitalization.

Moreover, although Japan has manifested a certain level of entrenchment of telework, which is the typical example of the changes in corporate activities during the COVID-19 pandemic, its implementation rate differs depending on the industry, region, and size of the company. Also, the rate of telework implementation rose during the state of emergency but declined after it was lifted. A recent survey by MIC aimed at the general public pointed to the ease of taking time for self and family as a particular benefit of telework (Figure 4). As to the challenges and barriers for telework, many respondents particularly pointed out the unsuitability of the nature of their job and company systems to telework (Figure 5). It

Figure 4: Advantages of telework

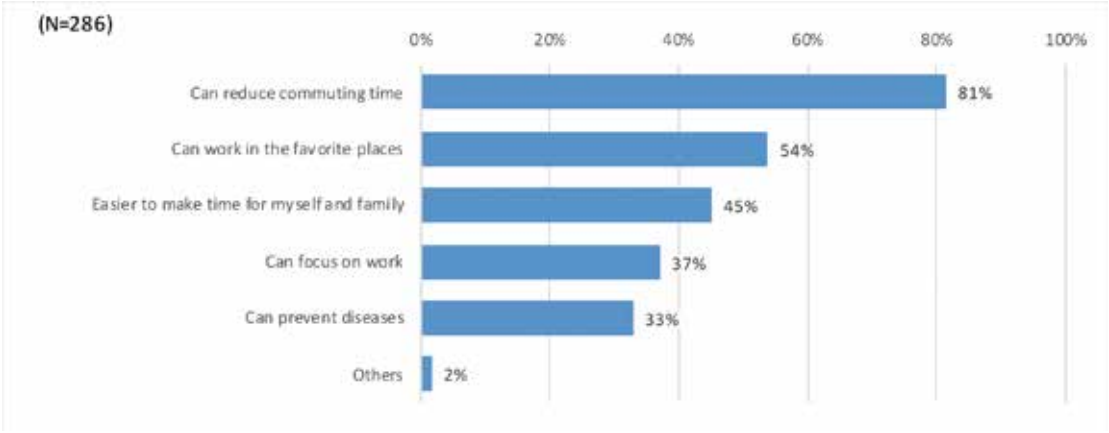
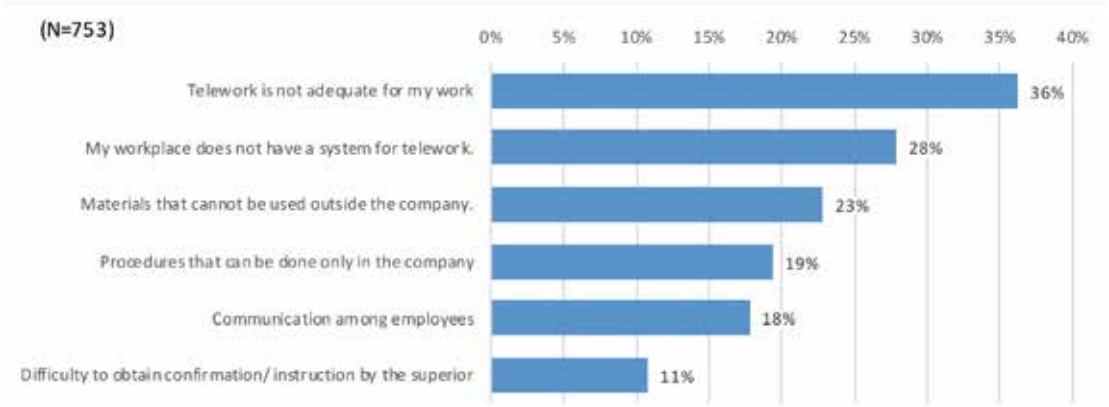


Figure 5: Challenges and barriers for telework (upper ranking choices)



is important to view telework as a means to realize the vision being aimed at, rather than making the implementation of telework itself as the ends.

(4) Issues that emerged from the use of digital technologies during the COVID-19 pandemic

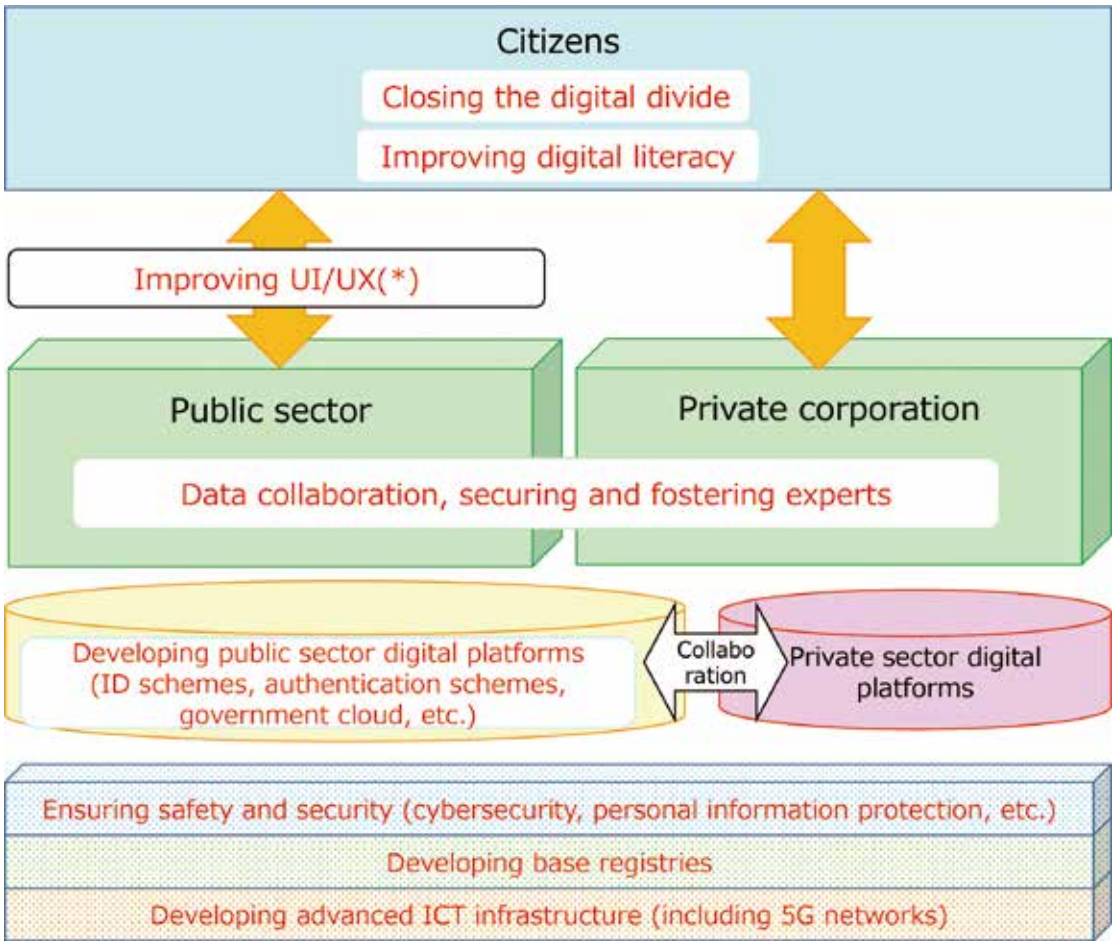
With the rapid digitalization of the entire society during the COVID-19 pandemic, various challenges toward the realization of a digital society have emerged. Regarding security risks, according to the Information-technology Promotion Agency (IPA) "Top 10 Threats to Information Security 2021," attacks targeting telework and other activities ranked new for organizations, and threats to online payments and other transactions ranked as the top threats for individuals. Improving the literacy of users is also important in dealing with these security risks.

4. Toward the realization of digital transformation that "leaves no one behind"

Going forward, Japan needs to build a society with a strong resilience to deal with infectious diseases and natural disasters. It needs to build a sustainable society that addresses issues—such as the shrinkage of the working population and the domestic market due to the declining and aging population and the reduction in digital competitiveness due to the changes in the industrial structure brought about by global digitalization—by increasing productivity and creating new added values. Also, it needs to build a society that can offer a diverse, rather than a one-size-fits-all, form of happiness, leaving no one behind.

To this end, initiatives to encourage users (the public) to use digital technology (eliminating the digital divide, improving digital literacy, and improving UI/UX), digital transformation (data distribution and collaboration, securing and developing digital human resources, shift to open and cloud-based systems, and work-style reform) of suppliers (private companies and the public sector), and construction of common platforms (establishment of advanced information and communications infrastructures, establishment of base registry, and ensuring safety and security) must be promoted strategically and in a seamless manner.(Figure 6).

Figure 6: Digital transformation that "leaves no one behind" should be tackled strategically and in a seamless manner



*UI stands for "user interface" and UX for "user experience."
*Words written in red are future policy challenges.