Chapter 6

Future Vision of 2030: Overcoming Population Decline and Revitalizing Local Economies with ICT

Part 2

Section 1 Further Evolution of ICT

In this section, we examine the direction of ICT's further evolution as a supplement to the examinations in the previous chapters.

1. ICT evolution and issues

(1) Issues facing further ICT evolution

The following three points are considered to be particularly crucial in fully manifesting the potential of ICT in the future.

The first point is the construction of network infrastructure that will be able to carry the enormous amounts of big data distribution. Capacities have expanded rapidly in the network sector, as we have seen already. Further breakthroughs will be required however, given the explosive growth in data distribution that will come with the advent of the IoT. In addition to realizing 5G and Beyond 5G for mobile access, the establishment of revolutionary technologies, such as multicore fiber and optical multilevel transmission, will be necessary for backbone networks.

The second point is the construction of platforms that will enable a diverse range of IoT devices to operate autonomously. It is anticipated that industrial robots, domestic robots, autonomous vehicles, and many other kinds of machines will use sensors to determine their own position, orientation, and speed as well as obtain data about their surroundings and use these data to operate autonomously. However, the coordinated realization of this autonomy requires the establishment of technologies and rules.

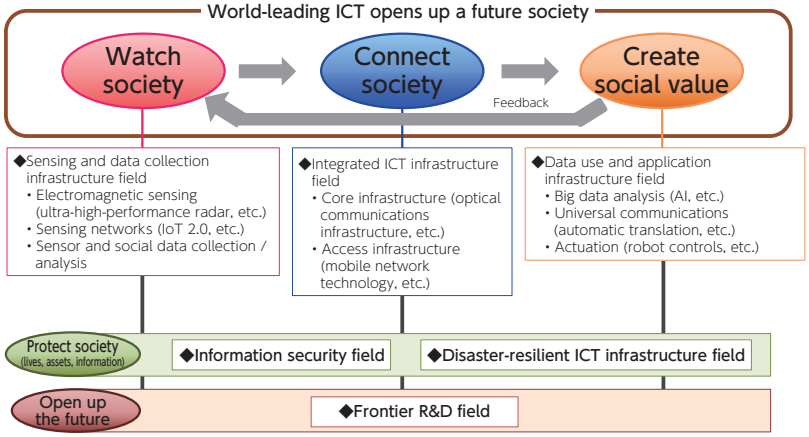
The final point is the reinforcement of security and disaster resiliency for society-wide ICT. It is predicted that the evolution of ICT and its application will result in ICT being used to optimize control of transportation systems, logistics systems, and all other pubic systems. As we progress toward this society-wide ICT, strengthening the security and disaster resiliency of ICT systems will become a more important challenge than ever before.

2. Examinations of "new information and communications technology strategies"

We need to identify technological issues that should be priority R & D subjects and concentrate our R & D efforts on them through close industry-academic-government cooperation, in order to benefit from the generation of new value and the reformation of public systems that will be the result of realizing world-leading society-wide ICT—i.e., realizing an advanced future society through the pursuit of a social ICT revolution.

The following figures arrange the technological fields that have been positioned as priority R & D fields to be taken up over the next five years in the pursuit of a social ICT revolution (Figure 6-1-2-1).

Figure 6-1-2-1 Priority R & D fields in the pursuit of a social ICT revolution



(Source) Interim report from the Technology Strategy Committee of the Information and Communications Technology Subcommittee, Information and Communications Council, MIC

Section 2 Overcoming Population Decline and Revitalizing Local Economies with ICT

In this final section, we extend the examinations of the previous section and sketch out what kind of society ICT is expected to create around the year 2030 from three perspectives: town development, people, and work.

In the area of town development, continued ICT advances will lead to ICT being used to optimally control transportation systems, logistics systems, and many more public systems. Practical autonomous vehicles will be realized, allowing people to travel to their destinations quickly and safely without fear of traffic congestion or accidents. Smart roads, bridges, and all other public infrastructure are expected to help cut maintenance and management costs and greatly boost safety in times of disasters.

Turning to the economy, the application of big data will have permeated all industries, improving productivity not only in the manufacturing industry but also in the core industries in regional economies such as the service industry, the agriculture, forestry, and fishery industries, and medical and social security industries. At the same time, these industrial sectors will have overwhelming adopted robots to resolve labor shortages and further boost productivity as well as to produce new innovation.

As for people, precise health management using wearable devices will be commonplace, resulting in many more people living healthier even in their advanced years. Robots will assist people with housework, caregiving, and other aspects of daily life, and they will also be entrenched as good communication partners. The realization of practical automatic multilingual translation will eliminate language barriers to communication, thereby further improving mutual understanding between people from different countries and cultural backgrounds.

And in the area of work, as a result of robots and other ICT taking the place of people in some jobs, the role of people will gradually shift to more creative work. In a broad sense, the ability to apply ICT will increase further in importance. As seen by the rise of the sharing economy in the service industry and the emergence of the maker movement in the manufacturing sector, we will see acceleration in the expansion of the roles individuals play in the economy. And flexible working arrangements relying on ICT, such as telework, will become widely accepted as a means of allowing more people to participate in society in accordance with their circumstances and enabling them to fully exercise their creativity in the location and environment best suited for them (Figure 6-2-1-1).

Figure 6-2-1-1 Image of a future society in which ICT is widely used and applied