OKI's Next Generation Social Infrastructure Business

Toshinao Takeuchi

Senior Vice President
General Manager, Public Systems Business Division

OKI provides customers including government agencies and telecom operators with network systems to support communication, public systems to assist "safety/security" such as fire-fighting command and air traffic control, and social systems of high convenience such as ETC[*1] and VICS (Vehicle Information and Communication System)[*2] aimed at improving "comfort." Thereby, as social infrastructure, OKI contributes to the realization of a comfortable and affluent life for people. This issue introduces OKI's next generation social infrastructure business geared for the coming social changes.

Japan's New Growth Strategy and the "Fourth Industrial Revolution"

The "Japan Revitalization Strategy 2015"[1] received Cabinet approval in June 2015. Although the conditions of overseas economies influences it, the Japanese economy is changing into a steady one in which businesses have a strong foothold thanks to the Abenomics' "three arrows" of fiscal stimulus, monetary easing and structural reforms.

However, due to the advent of the depopulated society, growth of the working-age population cannot be expected for the time being even with maximizing participation opportunities for women and the elderly. Furthermore, the expanding ratio of the elderly will increase health care costs, and the impact on finances will likely become increasingly strong.

The government has positioned the "Japan Revitalization Strategy 2015" as the second stage of Abenomics. The success of the second stage depends on achieving "revolution in productivity" where each individual and each region can flourish its potential not merely with extending the ways of past, but with fresh new ideas to innovate the rusty capital stock. The two wheels of that cart are "realization of revolution in productivity by investment in the future" and "promotion of local Abenomics" that will regain the vibrant workplaces and attractive investments to bring back an energetic economy throughout Japan. The government perceives the coming revolution large enough to be referred to as the "Fourth Industrial Revolution," and studies in industrial and employment structure reforms through IoT (Internet of Things), big data and artificial intelligence are regarded as the keys to the challenges that lie ahead.

Social Issues Surrounding Japan

According to the statistics released by the National Institute of Population and Social Security Research in January 2012[2], the total population of Japan is expected to be 116.62 million in 2030 and drop below 100 million by 2048. The forecasted working-age population in 2030 is 67.73 million, a decline of 14 million compared with 2010. Furthermore, the population of those 65 years or older is expected to reach 36.85 million by 2030, which is a climb from 23% in 2010 to 31.6%.

This forecast indicates the human infrastructure that long supported society will diminish leading to a smaller working-age population supporting society. If the transition continues, the resulting labor shortage and increasing health care costs will raise fears of financial pressure, collapse of the pension system and disappearance of regional municipalities. With lack of labor, maintaining a safe and secure infrastructure will also be a concern.

Another major problem is the aging of the social infrastructure that was developed during the high economic growth period. By 2023, more than 30% of bridges and tunnels across the country will have surpassed their service life. Seventy percent of those bridges and tunnels are regional infrastructures and have become heavy burdens on local finances.

Large-scale natural disasters are also becoming a major issue. Earthquake occurrences have been frequent since the Great East Japan Earthquake, and there is fear a major quake will strike the Tonankai region or directly under Tokyo. Large typhoons and heavy rain that cause landslides and urban flood damages have become noticeable as well. To add to the fear, there has recently been a string of volcanic eruptions.

*1) ETC is a registered trademark of ITS Technology Enhancement Association.   *2) VICS is a registered trademark of Vehicle Information and Communication System Center.

Additionally, consideration to the global environment and security need to be addressed. In 2014, there were over 13 million foreign visitors to Japan, and this figure is steadily approaching the 20 million mark targeted by the government. Further increase is expected with Tokyo Olympics scheduled for 2020. Transportation makeover will be necessary, in addition, coping with new threats will also be an issue. Although advances in technology increase convenience on one hand, preparing for threat is equally important on the other.

OKI's Next Generation Social Infrastructure Business

To solve the problems mentioned, it is necessary to address the high maintenance cost of the social infrastructure and lack of resources. OKI will handle them with the fusion of wisdom, based on its services and expertise in information and communication technologies that include acoustics, network and mechatronics. OKI will actively utilize IoT, big data and machine learning.

Furthermore, to resolve these issues, the involvement of all parties will be required. Harmonizing wisdom of companies is also important. OKI will actively collaborate with customers as well as partners in their respective fields to aim for solutions.

1) Next Generation Transportation System

At the next generation, traffic is likely to be a mixture of legacy vehicles and a variety of autonomous vehicles with various degrees of automation. Autonomous driving can bring the enjoyment of comfort and less congestion for environmental friendliness, but at the same time, ensuring safety and security will become a big challenge. OKI is ready to provide a diverse range of solutions and services that will lead to next generation transportation system. These include the use of vehicles as sensors to collect travel and behavior history as big data for use in probe data, cooperative vehicle-highway infrastructure for autonomous driving, and danger notification of runaway vehicles.

Additionally, application to railway and maritime transportations are planned.

2) Social Infrastructure Maintenance

Extending the service life of the infrastructure through efficient inspection/monitoring, optimal repair based on data and controlling traffic to suppress deterioration will be the decisive factors in the measure against infrastructure aging. Aside from the services and solutions for extending infrastructure service life, OKI will make full use of the sensing network with distinctive features and data analysis to increase efficiency of maintenance that, so far, relied on human being.

3) Disaster Prevention and Mitigation

Large-scale disasters tend to be increasing year by year. Disaster mitigation is an important focal point in the next generation disaster prevention. "Mutual aid" and "self-help" will be demanded instead of relying solely on "public assistance." In addition, fighting specialized fires such as solar panels and chemicals, which were previously unthought-of, will be required. OKI will provide solutions and services that comprehensively strengthen the gathering, communicating and sharing of information necessary for preparedness and evacuation in an event of a disaster.

4) Security

Falling drones, new forms of crime, terrorism and attacks on infrastructure are just some of the new threats that disrupt life and are increasing every year. In the new generation security infrastructure, these threats must be quickly detected to avoid danger with construction of sensing networks that are individually tailored to land, sea and air. The behavioral data of people and vehicles obtained should be analyzed to predict danger so that government, communities, businesses and individuals can share/utilize the information. OKI will provide solutions and services that will lead to the realization of a security infrastructure.

5) Regional Revitalization Services

The problems such as birthrate decline, population aging and labor shortage are bringing major changes considered threating to the existence of regional municipalities. Each region must take advantage of its local characteristics to solve the problems and revitalize itself. As regions enhance their attractiveness, OKI with its ICT (Information and Communication Technology) will support the creation of a new life style in which people travels between cities and local regions, and the revitalization of local economy from the movements of various people, goods and money.

Conclusion

Japan is about to enter an era of change unexperienced by any other place in the world. In this era, OKI's intention is to work actively with the goal of making the next generation social infrastructure its core business.

Through technologies cultivated over the years, OKI will strive to grow together with customers towards the revolution of Japanese society.

■ References

1) "Japan Revitalization Strategy 2015," Prime Minister of Japan and His Cabinet
   http://www.kantei.go.jp/jp/singi/keizaisaisei/
2) "Population Projections for Japan (January 2012 Revision)," National Institute of Population and Social Security Research
   http://www.ipss.go.jp/syoushika/tohkei/newest04/sh2401top.html