Remarks for Special Issue on Social Infrastructure that Guarantees Safety, Security, Fairness, and Efficiency

Today we find ourselves in a time of worldwide turmoil, forced to confront social issues. The disruption caused by the novel coronavirus disease (COVID-19) has been particularly pronounced, having far-reaching impacts on our traditional social structures. We are now living in a time of dramatic transformation that is affecting the entire world all at once.

The Japanese government enacted a package of six legislative bills related to digital reformation on May 12, 2021, including establishment of the Digital Agency on September 1, 2021 to accelerate seamless sharing of information. The Agency will also tackle the social issues that have emerged from the pandemic, and then further enhancement of digital transformation (DX) of public administrations will be strongly expected.

In Tokyo and other locations in Japan, long-delayed large-scale sporting events are being held one after the other under the new normal amidst COVID-19. Furthermore, the World Expo is scheduled to be held in Osaka in May, 2025. These international events require urgent changes in transportation hubs, such as airports and seaports, as well as in the broadcasting industry, which is responsible for transmitting world-class events across the globe in an attractive manner.

The deterioration of aging social infrastructure is another issue that can no longer be postponed. Natural disasters, including torrential downpours have become more devastating and more frequent

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than ever in recent years, heightening the risk of disruptions to operations. On the social side, Japan now faces labor shortages due to the declining birthrate and aging population since 1997. From the viewpoint of public safety and security on a global scale, we are faced with not only natural disasters, but also numerous other threats such as piracy, terrorism, and the proliferation of mass-destruction weapons. The Indo-Pacific region, to which Japan belongs, is no exception. In pursuit of peace, stability, and prosperity around Japan, the Japanese government is promoting the Free and Open Indo-Pacific initiative.

The digital transformation is regarded as crucial to solving these domestic social issues and international threats. Sensing technology, for example, plays a critical role in capturing the movement of humans and objects as well as in visualizing the conditions of public infrastructure. NEC is also making remarkable progress in optical sensor technology for observing greenhouse gases that cause global warming from space, infrastructure monitoring technology for assessing the deterioration of buildings and public infrastructure on the ground from space, and muography for the nondestructive measurement of volcanic activity, landslides, and underground structures by utilizing muons, which are elementary particles that fall from space. What's more, deep learning is playing a central role in sparking the third artificial intelligence boom. Deep learning is not only used for various applications including the analysis of real-world environments but also leveraged to improve the accuracy of traditional areas, including biometric recognition of fingerprints and faces. Network and information technology is another critical component of the digital transformation, facilitating efficient exchange of the massive quantities of data generated by sensing and information processing.

In this special issue, "Social Infrastructure that Guarantees Safety, Security, Fairness, and Efficiency," NEC takes a look at how digital transformation is making an impact on public administration services, broadcasting, airports, and other infrastructure that support our social systems. We also show how sensing technology is extending our reach from the bottom of the sea to space, and zoom in on the incredible technology that made it possible for the Hayabusa2 asteroid explorer to collect samples from the asteroid Ryugu and bring them back to Earth with courage and hope for people all over the world suffering from the COVID-19 pandemic. NEC's involvement in the research and development of these technologies has perfectly positioned us to introduce cutting-edge infrastructure technology that can help shape the future from the bottom of the sea to the far reaches of outer space.

NEC hopes you enjoy the future as portrayed by this special issue and looks forward to working together with you to make it a reality.

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