Introduction

Implementation of the 5th Science and Technology Basic Plan started in fiscal 2016.

As evidenced by the fact that multiple Japanese researchers were awarded the Nobel Prizes in recent years, efforts made in the process of implementing the 1st to the 4th Science and Technology Basic Plans for the past 20 years have resulted in great achievements that have helped advance science and technology in Japan.

Informatization, which has been accelerated by the spread of the Internet and by the development of ICT[1] is about to bring about a new society where the Internet of Things (IoT), big data and artificial intelligence (AI[2]) develop rapidly and interaction between cyberspace and real space produces new types of industries and services. In such a society, enormous amounts of data will bring the continuous generation of novel ideas and services that satisfy consumer needs. As a result, it is expected that frequent "game changes" will take place to significantly increase the competitive power of businesses, industries and the nation. Based on the assumption that such a new society will be realized, many countries have been trying to take advantage of their strengths in science, technology, society and industrial structure and have been rapidly promoting national efforts to revolutionize their manufacturing and other industries with the aim of thriving in the face of global economic competition.

In the 5th Science and Technology Basic Plan, a society where the convergence of cyberspace and real space has led to the creation of entirely new industries and services is called a super smart society. The 5th Science and Technology Basic Plan defines a super smart society as "a society that is capable of providing the necessary goods and services to those who need them at the required time and in just the right amount; a society that is able to respond precisely to a wide variety of social needs; a society in which all kinds of people can readily obtain high-quality services, overcome differences of age, gender, region and language, and live active, comfortable lives." In Japan, a super smart society is partly taking tangible form, not only in manufacturing, but also in energy and food production, medical care, local communities, infrastructure, disaster prevention and mitigation, and climate change adaptation strategies.

At this point, it is difficult to describe what the full picture of a super smart society will look like. Such a society will be realized across multiple fields and will not separately exist in each different field. With the advent of a super smart society, culture and behavior will be greatly affected, and there will be changes in how society functions. Thus, a super smart society represents a paradigm shift. From that viewpoint, the society that is partly taking form in Japan is merely "a fragment of a super smart society." At the same time, the fields where fragments of a super smart society have emerged are those in which Japan faces major social challenges. In the midst of significant changes in the social structure caused by the declining birth rate and rapid demographic aging, Japan is confronting issues such rural depopulation, decreases in the working-age population and growth in medical spending. Because conventional approaches have difficulty

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1 Information and communications technology
2 Artificial intelligence

addressing these issues, innovations in science and technology, such as those of ICT, are expected to help solve them. Thus, in fields related to these issues, initiatives have been promoted towards realizing a super smart society.

The implications of a super smart society with respect to decreases in the working-age population, for example, differ between Japan, whose working-age population is decreasing, and the U.S.A., whose population continues to increase. In any every country around in-the world, the merging of cyberspace and real space will revolutionize all of society, as well as industry. But the way that such merging affects the society of a country will vary somewhat according to the situations and challenges that each country faces and the culture of each country. Japan needs to pursue an ideal super smart society that allows Japan to capitalize on its strengths. In Japan, a developed country that is at the forefront of efforts to solve emerging issues, approaches taken to realize such a super smart society will help produce new solutions to the diverse problems that other countries will also be confronting. Consequently, the super smart society of Japan is likely to serve as an example for the future development of the world.

To realize a super smart society before the rest of the world, the whole nation needs to share a vision of such a society as the ideal future society of Japan, and necessary basic technologies should be put in place.

The 5th S&T Basic Plan describes the outcome of Japan's unique undertakings to achieve a super smart society as "Society 5.0." In Part I of the White Paper on Science and Technology 2016, Chapter 1 focuses on the changes that will be brought to our society by S&T innovations 20 years from now and envisions such a future society in order to clarify the outline of Japan's super smart society. Chapter 2 describes the direction in which efforts, including R&D on basic technologies, need to be made in order for Japan to lead the world in realizing a super smart society.