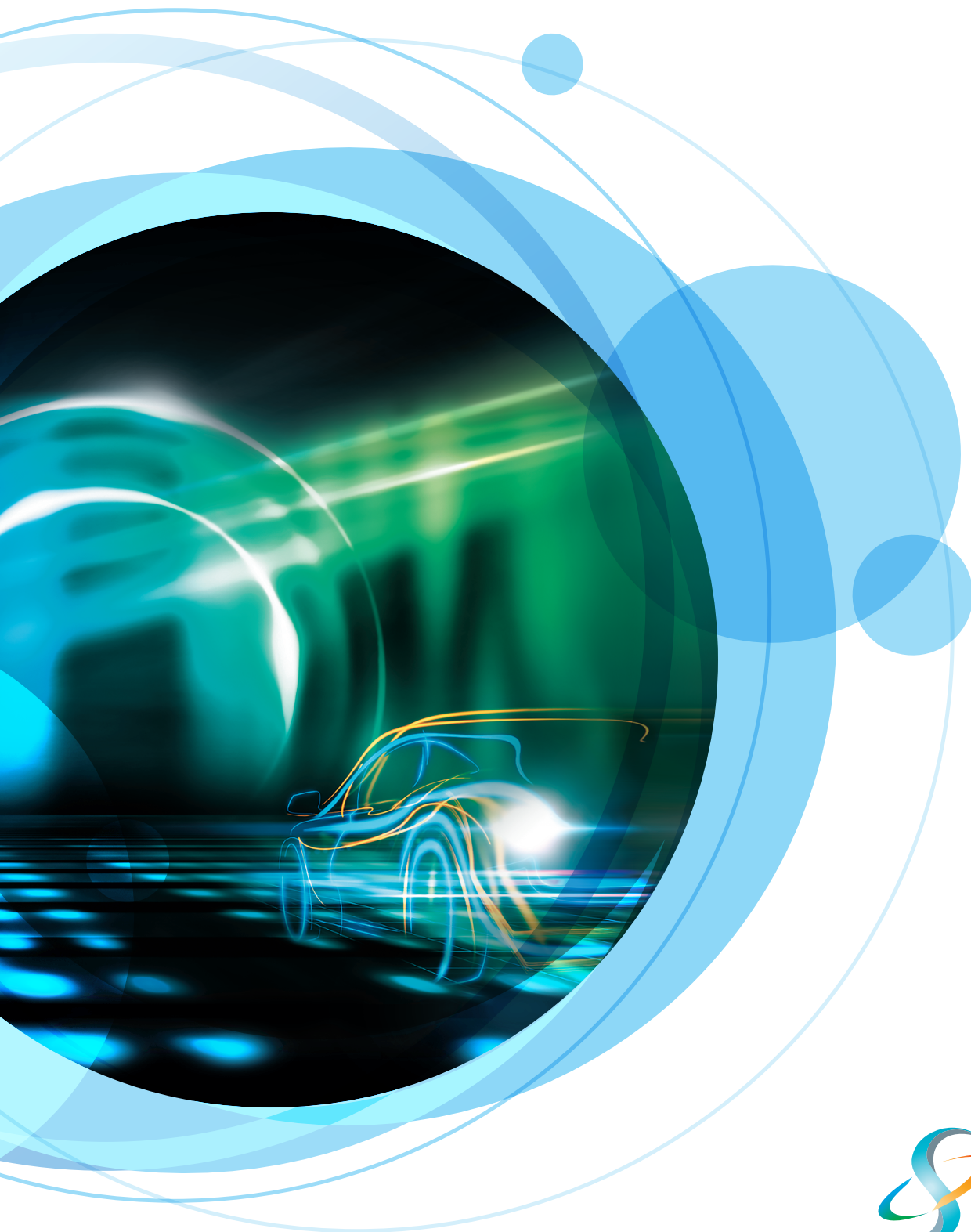


# SIP 2nd Phase : Automated Driving for Universal Services — Mid-Term Results Report (2018–2020)



# Heading toward the Final Stretch

Seigo Kuzumaki

SIP-adus Program Director

Three years have passed since the second phase of SIP was commenced in April 2018, and we are going up toward the final stretch to achieve the SIP challenge, which encompasses the range stretching from research and development to social and business implementation.

The achievements of our seven-year activities since the first phase of SIP were resulted from the industry-academia-government collaboration accelerated through the vision and roadmap shared among stakeholders and consensus made in the related industries.

For realization of Society 5.0, we in the second phase of SIP are working on “creation and distribution of traffic environment information” as well as “establishing a communication portal of geographical data” linked to the high precision 3D map so as to create a database and promote its exploitation, and also started to “building a safety assessment evaluation environment in virtual space” and “making a validation method of cybersecurity” based on our belief that safety is the first for the implementation of automated driving. We defined these four activities as the most crucial to push forward toward social and business implementation on this stage.

The spread of COVID-19 since early 2020 substantially affected the SIP activities, such as suspension of the field operational tests in Tokyo waterfront area, among others, while its impact on the program was minimized by running straight to the year of 2020, which is our milestone defined since the beginning of the first phase of SIP, with the world’s first level 3 vehicles and several models with DMP’s high precision 3D map launched on the market under the related regulations amended as scheduled. I can tell that this was achieved with the industry-academia-government and cross-ministerial collaboration, which is our asset, and that this is the fruits of the efforts by each and every stakeholder involved in automated driving development. Allow me to express my heartfelt gratitude.

With the growing shared awareness that the realization of an automated driving society requires both competition and cooperation, our initiatives related to the international cooperation and the fostering of public acceptance are also being advanced in unison. Entering into the final stretch, we are going to gain the momentum to boost our activities to contribute to solve social issues as much as we can, in reducing traffic accidents and mitigating driver shortage and others, with automated driving technologies.

# Solving Social Issues through Automated Driving to Realize Society 5.0

Takafumi Kakudo

Deputy Director General for Science, Technology and Innovation, Cabinet Office

Through the Council for Science, Technology and Innovation, the Cabinet Office has promoted the Cross-Ministerial Strategic Innovation Promotion Program (SIP) and other initiatives targeting the realization of Society 5.0, which means creating new value via the advanced fusion of the cyber and physical spaces, achieving economic growth, and solving social issues. Automated driving recognizes the big data consisting of the vast amount of information collected from roadside and on-board sensors in cyberspace, uses AI to process that data and make decisions, and controls the driving of vehicles in the real world. It is therefore viewed as an embodiment of Society 5.0.

We have pursued automated driving initiatives in accordance with the Public-Private ITS Initiative/Roadmaps established in 2014 by the IT Strategic Headquarters. The designation of the Future Investment Strategy 2018, in that same year, as a flagship project to drive innovation for Society 5.0 provides another example of how automated driving has proven a crucial pillar of the growth strategy.

Under the leadership of the Program Director and Sub Program Directors, I believe that the SIP research and development initiatives on automated driving have linked the relevant government agencies, industry, and academia and diligently produced results in sectors and disciplines that must be treated as cooperative areas. These include the concept of dynamic maps, as well as the generation and distribution of the static and dynamic geographic data required for automated driving and driver assistance systems, safety assurance, security, and communication.

Although technological advances are undeniably important to achieving automated driving, it is also necessary to establish systems and rules to manage the new technologies appropriately, as well as to foster public acceptance by not only those who will use automated driving, but also society as a whole, and to cooperate on an international level.

At the same time, the 6th Science, Technology, and Innovation Basic Plan formulated in March of this year seeks to capitalize on the convergence of knowledge by integrating know-how from the humanities and social sciences in the pursuit of solutions to social issues.

During the second phase of SIP, we will continue to use the framework of industry-academia-government collaboration we have already built as a basis to channel our achievements into the social implementation of automated driving, as well as foster public acceptance and strengthen initiatives designed to intensify international cooperation.

# Aiming to Maximize the Outcomes

Kiyoshi Imai

Executive Director, New Energy and Industrial Technology Development Organization

It is the mission of the New Energy and Industrial Technology Development Organization (NEDO) as a management agency to maximize the outcomes of the second phase SIP-adus program and bring them to a successful conclusion.

Our activities are based on three pillars in accordance with the SIP operational guidelines. The first is the management of the program itself, including tasks such as calling for applications of researchers who can lead projects, contract execution, fund management, and progress management. NEDO also conducts technical peer-review evaluations and research activities from an expert perspective, drawing upon our knowledge and networks that have been cultivated through the past national project management experience. The second pillar is to offer environment where a variety of stakeholders from industry, government, and academia can work together as a team to solve problems and improve the efficiency of business operations. Working closely with the Cabinet Office, we have promoted the project through the management of working groups, task forces, and other entities under the Steering Committee, invitations for applications of participants in field operational tests in the Tokyo waterfront area, and assessments of the impact of COVID-19 on their research activities, while fully utilizing online solutions to avoid a lack of communication in the program especially since the onset of the pandemic. The third pillar is to provide support for communications and public affairs. We will actively promote communication through our website and SNS and organize various events, by offering information and worldwide activities to establish international cooperation and standards, which will realize greater public awareness to the program and achieve earlier implementation of research and development results in society.

Looking back at our activities, we have faced various difficulties, especially since the spread of COVID-19, including the suspension of the field operational tests in the Tokyo waterfront area. We would like to express my respect to many stakeholders who have devoted themselves to sharing various ideas amid working style never experienced before and who always remain engaged in activities to find solutions.

With less than two years left in the second phase SIP, we are now in the final stretch of the program. With the goal of achieving the future prosperity for society, we will diligently pursue our activities in collaboration with SIP members. We would like to express our gratitude for your continued understanding and support for the SIP-adus program.

# Preface

SIP-adus Interim Report Editorial Committee  
September 2021

The SIP-adus (Cross-ministerial Strategic Innovation Promotion Program (SIP) Automated Driving for Universal Services) program, started from 2018 as part of SIP, has advanced various projects aiming at wider implementation of automated driving systems from expressways to prefectural and municipal roads, as well as of their technologies for logistics and transportation services.

Passing the halfway mark of the 2nd phase in FY 2020, this report summarizes and compiles the research and development results halfway through SIP-adus activities and to ensure that these and other results reported during the activities of the past three years are available for the latter half of this program as well as after its completion. The English edition also serves to globally share these results, which will be utilized as basis for discussions through the process of establishing standards and institutional frameworks.

This report includes the background of each theme and project with their *raison d'être* and overall perspectives, for which the leaders of the projects introduce details of the technical aspects through reference papers and other information to support professional use by readers. We expect our readership, who is interested in automated driving systems and possesses the relevant technical background, to obtain a more profound understanding about the SIP-adus program and its activities with the support of this report.

We would like to express our profound gratitude to the stakeholders who devoted their time to contribute to the report despite their busy schedule, and hope that this report provides an opportunity to become familiar with SIP-adus's activities and achievements, as well as to help to enhance understanding of automated driving systems for our readers, who will ultimately define the success of our objectives based on the report.

## Members of the Editorial Committee

(Titles as of their taking office (April 1, 2021))

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