



## Creating Technological Innovation through Cross-Ministerial, Industry-Academy-Government Cooperation, Contributing to a Japanese Economic Recovery through Society 5.0

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World-leading science and technology innovation is vital for our nation to achieve economic recovery and growth. Launched in Japan two years ago, the Cross-ministerial Strategic Innovation Promotion Program (SIP) has produced numerous successes as planned. At the same time, SIP has uncovered new issues.

Says Dr. Kazuo Kyuma, Chair of the SIP Governing Board, “The mission of the SIP is to produce highly advanced successes, while responding to changes in the environment in a flexible manner. This program has been designed to succeed in all research programs, helping return the Japanese economy to a position of leadership in the world.” Dr. Kyuma is even more enthusiastic about the SIP today than when the program was originally established.

Under the strong leadership of the prime minister and the Minister of State for Science and Technology Policy, the Council for Science, Technology and Innovation (CSTI) directs the progress of the SIP. The Council leverages cross-ministerial and industry-academy-government cooperation to make consistent and comprehensive progress, engaging in all phases of research from basic research to practical adoption. This research serves as the basis to overcome critical issues which our nation must overcome by any means possible. The SIP began with 10 main programs in fiscal 2014, adding Cyber-security for Critical Infrastructure as an additional research program during fiscal 2015. The efforts of each program director (PD) and the members of the CSTI have been a positive influence in breaking down the vertically segregated nature of Japanese society. The interchange among experts across specialty fields has resulted in numerous development breakthroughs.

What these particularly successful programs have in common is the strong leadership of program directors and sub-program directors from industry and academia, each taking ownership of certain aspects of the programs. Leaders from industry focus mainly on return of investment, guiding research and development that leads to a clear exit strategy. Leaders from academia focus mainly on ways to delve deeper into world-leading technologies. The coordination among these leaders creates valuable innovations. While the various SIP programs have already delivered numerous success to date, it would not be an overstatement to say that the SIP has become a model of industry-academy-government cooperation for our nation.

The SIP has been subject to two annual progress evaluations to date. The focus of outside assessors has been on practical adoption and commercialization of SIP research. For example, a research program granted an annual budget of ¥3 billion will have been invested a total of ¥15 billion over the course of five years. To recover profits over a 10-year span, the program must generate a business of ¥300 billion, an average of ¥30 billion per year, at an assumed profit margin of five percent. While reports have stated that programs have developed a new generation of

professionals or established foundation technologies, these results are nothing more than we expect. The key measure of the SIP is whether programs result in the creation of new businesses and/or strengthen our nation’s industrial competitiveness.

In January 2016, the 5th Science and Technology Basic Plan was adopted by cabinet decision, mapping our nation’s science and technology policy for the next five years. The primary focus of the Basic Plan is the creation of Society 5.0. Society 5.0 is the culmination of advanced information and communications technology (ICT) and Internet of Things (IoT) technology, integrating the cyber and physical worlds to create new value. This new, human-oriented society will provide more comfortable and more vital lifestyles by creating both economic development and solutions to social issues. The SIP continues to add research programs and modify plans toward the achievement of Society 5.0.

In the year 2020, the Olympic and Paralympic Games come to Tokyo. The 1964 Tokyo Olympics were a milestone that pushed Japan to develop and roll out the famous shinkansen bullet trains and introduce the world to the Olympics via live satellite broadcast. In the same way, we look forward with high expectations to the 2020 Tokyo Olympic and Paralympic Games as a driving force to unveil impressive advancements in science and technology innovation. The SIP is working to this end across nine initiatives, including next-generation urban transportation systems and hydrogen energy systems. We will continue to push for economic growth through science and technology innovation.

### Profile

Dr. Kazuo Kyuma received his Ph.D. in electronics engineering from the Tokyo Institute of Technology in 1977. That same year, he joined the Central Research Laboratory of Mitsubishi Electric Corporation. In 1998, Dr. Kyuma was named artificial retina LSI business project manager in the Semiconductor & Device Business Group. After that, Dr. Kyuma was promoted to other posts, including general manager of the Advanced Technology R&D Center (2003), executive officer (Corporate R&D 2006), senior vice president (Semiconductors & Devices 2010), executive vice president (2011), and senior corporate advisor (2012). In 2013, Dr. Kyuma was named to serve full time on the Council for Science and Technology Policy. He assumed his current duties with the Council for Science, Technology and Innovation in 2014.

## Members of the SIP Governing Board

### [Governing Board Chair]



### Kazuo Kyuma

Executive Member, Council for Science, Technology and Innovation, Cabinet Office

### [Members]



### Takahiro Ueyama

Executive Member, Council for Science, Technology and Innovation, Cabinet Office



### Yuko Harayama

Executive Member, Council for Science, Technology and Innovation, Cabinet Office



### Takeshi Uchiyamada

Chairman of the Board, Toyota Motor Corporation  
Vice Chairman, Keidanren (Japan Business Federation)  
Executive Member, Council for Science, Technology and Innovation, Cabinet Office



### Motoko Kotani

Professor and Director, Advanced Institute for Materials Research  
Executive Member, Council for Science, Technology and Innovation, Cabinet Office



### Masakazu Tokura

Representative Director & President, Sumitomo Chemical Co., Ltd.  
Vice Chairman, Keidanren (Japan Business Federation)  
Executive Member, Council for Science, Technology and Innovation, Cabinet Office



### Kazuhito Hashimoto

President, National Institute for Materials Science  
Executive Member, Council for Science, Technology and Innovation, Cabinet Office



### Takashi Onishi

President, Science Council of Japan  
President, Toyohashi University of Technology  
Executive Member, Council for Science, Technology and Innovation, Cabinet Office

## SIP Progress

### 2013

<b>August</b>	Request for budgetary appropriation (Science, Technology and Innovation promotion expenditures*1) from Cabinet Office budget reserve
<b>September</b>	Council for Science, Technology and Innovation selects 10 individual program candidates based on national/economic needs Establishment of Governing Board (comprised of the executive members of Council for Science, Technology and Innovation) to provide advice/assessments
<b>October</b>	Cabinet Office calls for Policy Advisors **2 for selected issues
<b>December</b>	Policy Advisors selected Participants take the lead in drawing up research and development plans

### 2014

<b>February</b>	Public workshops
<b>March</b>	Pre-Assessments
<b>April</b>	Public comment period for research and development plans
<b>May</b>	Council for Science, Technology and Innovation decides issues, program directors (PD), budget allocation
<b>June</b>	Program directors named, budget fund transferred to ministries, call for R&D institution participants
<b>July</b>	Deadline for participants, selection process begins (documentation, interviews)
<b>August</b>	Final determination of issues, R&D institutes; build R&D structure
<b>October</b>	Official launch of R&D activities
<b>December</b>	SIP Symposium 2014

### 2015

<b>March</b>	2014 Year-end evaluations
<b>April</b>	2015 Initial budget allocation decisions
<b>June</b>	Council for Science, Technology and Innovation approves Cyber-security for Critical Infrastructure as a new research program candidate Call for Policy Advisor (program director candidate) for new research program candidate
<b>August</b>	Policy Advisor selected
<b>October</b>	SIP Symposium 2015
<b>November</b>	Council for Science, Technology and Innovation approves Cyber-security for Critical Infrastructure as a new research program candidate

### 2016

<b>January</b>	2015 Year-end evaluations
<b>March</b>	2016 Initial budget allocation decisions
<b>October</b>	SIP Symposium 2016

\*1 A total of ¥50 billion set aside in fiscal 2014 budget appropriation bill (35 percent (¥17.5 billion) allocated to medical field R&D as budget reserve funds)

\*\*2 Part-time Cabinet Office staff. Program directors, after start of program