12 themes in the 2nd Period (2018 - 2022)

SIP has newly identitied 12 themes from the fields necessary to drastically improve productivity (agriculture, logistics) to aim to contribute the revolution of productivity.

Programs

Program Name	Program Overview	Funding (Management) Agencies, Related Ministries
Big-data and AI-enabled Cyberspace Technologies	In order to maintain and reinforce international competitiveness in this field, we will establish and socially implement "Human-interaction platform technology" (R&D into sensitivity and cognitive technologies, etc.), "Technology for cross-sectional data federation", and "AI-based automatic negotiation platform technology", through integration of the world's most advanced linguistic and non-linguistic information in real-space.	New Energy and Industrial Technology Development Organization (NEDO)
Intelligent Knowledge Processing Infrastructure Integrating Cyber and Physical Domains	By collecting and accumulating on-site sensor information and linking them to virtual spaces, establish and socially implement the platform technologies related to edge platforms that can be constructed even without expert IT human resources. Then broaden the utilization base of such technologies in fields and enterprises where introduction of IoT has been slow.	New Energy and Industrial Technology Development Organization (NEDO)
Cyber Physical Security for IoT Society	Develop and demonstrate 'Cyber-Physical Security Infrastructure' that can be used to protect IoT systems and services and the entire large-scale supply chain, including small and medium-sized businesses, in order to protect various IoT devices and to establish the safety and security of society as a whole, and also promote the social implementation of development results toward the realization of secure Society 5.0.	New Energy and Industrial Technology Development Organization (NEDO)
Automated Driving for Universal Services	Establish core technologies first in the world, such as gathering and distributing technologies of road traffic information(traffic signal, vehicle probe data, etc.) as the cooperative domain among automakers in order to compete with global companies in the fierce automated driving market, and also develop base platforms and promote their commercialization to achieve SAE Level 3 automated driving system on arterial roads.	New Energy and Industrial Technology Development Organization (NEDO)
"Materials Integration" for Revolutionary Design System of Structural Materials	Aim to significantly reduce cost and dramatically shorten the development period and Materials Integration (MI) system for the inverse design, which can create suitable materials, processing and structures from the required performance, and be constructed and be socially implemented in order to maintain and develop strength in the field of Japanese materials developments. Super high performance structural materials will be developed by MI and the reliability evaluation techniques for the structural materials will be also established.	Japan Science and Technology Agency (JST)
Photonics and Quantum Technology for Society 5.0	Photonics and Quantum technologies are extremely important foundation technologies for realizing Society 5.0, and Japan has strengths in these areas. Among photonics and Quantum technologies, we are selecting laser processing, photonic quantum communication, and photonic and electric information processing as important and having high priority, to conduct the world`s most advanced research and development and implement it in society in order to further improve the international competitiveness of photonics and Quantum technologies.	National Institutes for Quantum Science and Technology (QST)
Technologies for smart bio-industry and agriculture	To realize the sustainable growth of bioeconomy in Japan, demonstrate model cases in the food value chain, where increased export of agricultural and processed products, improved production environment (improved productivity, reduced burden on workers) and reduced environmental burdens in the "venous system" such as the recycling of packages are realized, using "bio & digital" in the value chain of the food industry from production/distribution to recycling.	National Agriculture and Food Research Organization (NARO)
Energy system for an IoE society	To achieve an IoE (Internet of Energy) society in Society 5.0, design the concept of an energy system that contributes to the optimization of energy supply/demand, develop common platform technologies for the systems (power electronics), conduct R&D for application and practical implementation of such technologies (Wireless Power Transmission system), and promote systems development and standardizations for their social implementation.	Japan Science and Technology Agency (JST)
Enhancement of National Resilience against Natural Disasters	In order to minimize nationwide disaster damage, we will leverage satellites, AI and a wide variety of information to establish and socially implement an integrated system for supporting evacuation and emergency response activities for the national government to generate and share disaster prevention information, and an integrated system for municipal governments' disaster response utilizing the characteristics of each region, etc.	National Research Institute for Earth Science and Disaster Resilience(NIED)
Innovative AI Hospital System	Aim to offer sophisticated and advanced medical services through developing, establishing and socially implementing "AI hospital system" with the use of AI, IoT and big data technologies, and improve efficiency at medical institutions with drastically reduction of the burdens on medical personnel such as doctors and nurses.	National Institutes of Biomedical Innovation, Health and Nutrition(NIBIOHN)
Smart Logistics Services	Build the world's first "logistics/products data platform" to be used to accumulate, analyze, and share data at the same time as we verify its effectiveness and introduce it to society. To achieve this goal improving the efficiency and productivity of overall supply chains including those inside and outside of Japan.	National Institute of Maritime, Port and Aviation Technology(MPAT)
Development of Innovative Technologies for Exploration of Deep-sea Resources	Utilize abundant marine mineral resources in exclusive economic zones of our country and strengthen and develop our marine resource exploration technology. Drastically improve productivity in this field, establish and demonstrate marine resources survey technology deeper than 2000 meters deep first in the world and implement it in society.	Japan Agency for Marine-Earth Science and Technology(JAMSTEC)

11 themes in the 1st period (2014-2018*)

The Cross-ministerial Strategic Innovation Promotion Program SIP has identified 11 themes from the fields of energy, next-generation infrastructure and regional resources to address social issues, to revitalize the Japanese economy, and to bolster Japan's industrial posture in the world.

* From 2015 to 2019 for the theme of Cyber-security for Critical Infrastructure

Programs

Program Name	Program Overview	Funding (Management) Agencies, Related Ministries
Innovative CombustionTechnology	Realize innovative combustion technologies for improving the maximum thermal efficiency of internal combustion engines in passenger cars to more than 50% (about 40% when the SIP was commenced), by building sustainable industry-academia collaboration in the field of combustion technology. Strengthen Japan's industrial competitiveness, foster world-leading researchers, and contribute to energy savings and CO^2 emission reduction.	Japan Science and Technology Agency (JST)
Next-generation Power Electronics	Introduce major improvements (reduce loss by half, reduce volume to one-fourth of current levels) in the performance of current power electronics by using silicon carbide, gallium nitride, and other next-generation materials. Contribute to energy savings and the wider adoption of renewable energy, while creating large markets for and expanding the global market share of power electronics.	New Energy and Industrial Technology Development Organization (NEDO)
Structural Materials for Innovation (SM^4I)	Aim to achieve gains in energy efficiency by adopting SM^4I for use in aircraft, which are strong, lightweight and heat-resistant. Develop a materials integration system capable of predicting processes and the performance of materials, to help shorten development time. Nurture and expand Japan's aircraft industry, while protecting and strengthening Japan's competitiveness in the component materials industry.	Japan Science and Technology Agency (JST)
Energy Carriers	Create an economically secure, low-carbon society using hydrogen and other carriers from renewable energy sources. Spread and share these advancements around the world. Predict future innovations in technology as well as costs of energy, and develop scenarios utilizing hydrogen energy for a new energy society. Pursue establishment of technologies for the creation of a hydrogen value chain.	Japan Science and Technology Agency (JST)
Next-generation Technology for Ocean Resources Exploration	Lead the world in developing efficient survey technologies to survey cobalt-rich manganese crusts, rare metals and other hydrothermal ores, pursuing creation of an ocean resource survey industry.	Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
Automated Driving for Universal Services	Promote cooperative industry-academia-government research and development key issues leading to the creation of advanced automated driving systems. Work with relevant partners to establish public bus systems, etc. for the elderly and others with limited travel options. Drastically reduce accidents and traffic congestion for a major leap forward in travel convenience.	Cabinet Office, National Policy Agency, Ministry of Internal Affairs and Communications, Ministry of Economy, Trade and Industry, Ministry of Land, Infrastructure, Transport and Tourism, New Energy and Industrial Technology Development Organization (NEDO)
Infrastructure Maintenance, Renovation, and Management	Realization of high-quality infrastructure maintenance at a reasonable cost, under the circumstances of serious accident risk increase and maintenance cost shortage because of aging. Creation of sustainable maintenance market, and promotion of expansion into overseas market.	Ministry of Land, Infrastructure, Transport and Tourism, Japan Science and Technology Agency (JST), New Energy and Industrial Technology Development Organization (NEDO)
Enhancement of Societal Resiliency against Natural Disasters	To prepare for huge earthquakes, Tsunami, heavy rains, tornadoes, volcanic eruptions and other natural disasters, realize real-time prediction of disaster information by making maximum use of the latest science and technology, and build ICT-based real-time information sharing system through public-private cooperation. Aim to strengthen capability of each citizen to prevent, prepare and respond to disaster.	Japan Science and Technology Agency (JST)
Cyber-security for Critical Infrastructure	Develop new security technologies for protecting critical infrastructure from the growing threat of cyber-attacks, such as measures for detecting malware in supply chains and for automatically detecting abnormal operation in systems. Help strengthen the international competitiveness of Japan's critical infrastructure industry through contributions to the 2020 Tokyo Olympic and Paralympic Games.	New Energy and Industrial Technology Development Organization (NEDO)
Technologies for Creating Next-generation Agriculture, Forestry and Fisheries	Integrate agriculture policies and the creation of smart farms and innovative technologies that lead to value-added agriculture, forestry and fisheries products. Contribute to higher incomes for agricultural producers and development of rural areas. Improve quality of life, grow related industries through coordination with the private sector, and contribute to solving the world's food problems.	National Agriculture and Food Research Organization (NARO)
Innovative Design/ Manufacturing Technologies	Strengthen the competitiveness of Japan's manufacturing industry by leveraging the expertise of regional businesses and the creativity of individuals to establish a new style of manufacturing that breaks with time and location constraints. Through the innovative development of technology, facilitate high value-added product design and manufacturing to quickly respond to the needs of businesses and individual users.	New Energy and Industrial Technology Development Organization (NEDO)