

# JST-Mirai Program; Overview and Int'l Activities

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# JST-Mirai Program



Since  
FY2017

The JST-Mirai Program promotes **high-risk and high-impact research and development (R&D)** to establish Proof of Concept (POC), where practical application feasibility may be properly judged by investors and industry.

The R&D projects set the technologically challenging goals by considering the needs of industry and society.



Annual budget for FY2020;

**7.3 billion JPY** (approx. 70 million USD)

USD=104 JPY



Number of Projects;

**196 projects** (as of Jan. 2021)

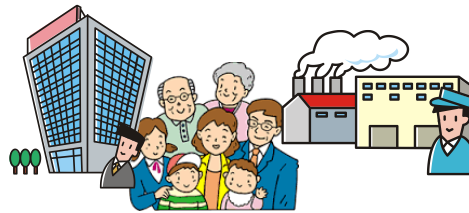
# Two Project Approaches

## Small-start Type

**MEXT**

**Areas based on the  
5<sup>th</sup> S&T Basic Plan**

Super smart Society , Sustainable  
Society, Safe and Secure Society, Low  
carbon Society



**Needs of Industry and  
Society**

**JST**

**Prioritized Themes**

**Call for proposal  
research projects (FS)**

**Feasibility Study**

**Full R&D Project**

**S&T Trends  
investigated by JST**

**Feasibility Study**

Up to 3 years  
20-45 million JPY/project

**Full R&D Project**

Up to 5 years  
750 million JPY/project

## Large-scale Type

**MEXT**

**Technology Themes**

to change current  
technology system and to be  
future basic technology

**JST**

**Call for proposal**

**R&D Projects**

**R&D Project**

Up to 10 years  
4.5 to 6.0 billion JPY/project

## ■ Setting themes to maximize social impact

- Themes set to investigate various values that the society and industries seek
- Collaboration of various organizations and researchers across a variety of academic fields including humanities and science

## ■ Creating values that the society seeks

- “Back-casting” approach R&D that brings about a transformation of society and industry for the future

## ■ Developing technological challenges

- Proof of concept (POC) that helps determine the feasibility of practical implementation

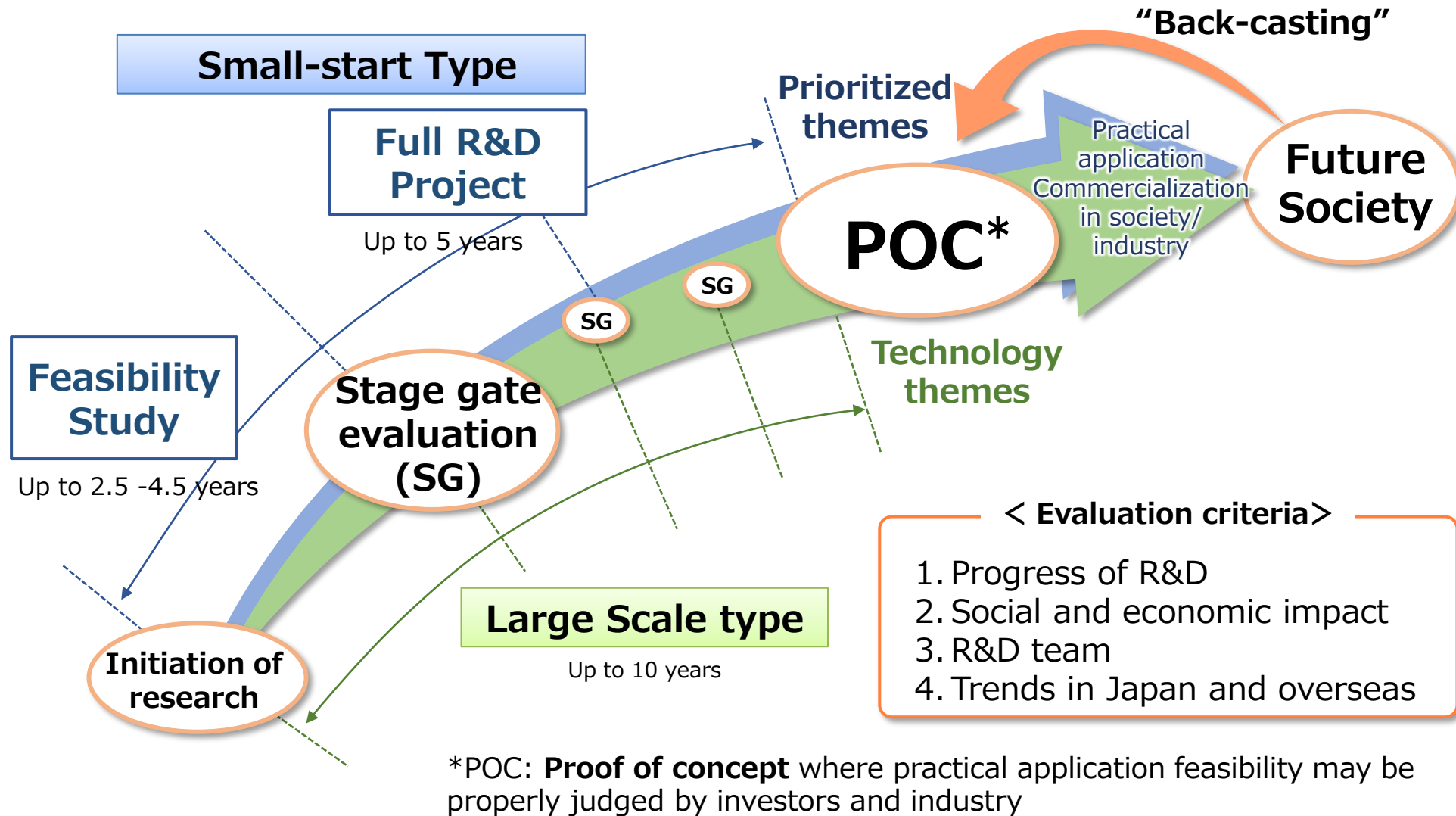
## ■ Flexible management by R&D Supervisors

- R&D Supervisors review the R&D plans, teams and progress of the projects according to the R&D portfolio for each area and prioritized theme, in collaboration with experts.

## ■ Stage-gate evaluation (SG)

- Verify impact of targets, necessary technologies and other research elements (ELSI, standardization, etc.) in addition to the scientific merit.
- Advice to spin-out or to collaborate with other sectors.
- Judge whether to scale-up, continue or terminate R&D projects.
- For “Large-scale Type”, private funding (more than 20%) is sought for the subsequent R&D activities in the promotion of participation of the private sector looking ahead to practical implementation.

# Scheme of the Program



# Areas & Prioritized Themes (1)

| Area                                     | Prioritized Themes                                                                                                                  |                                                                                                                                                                                                                                                                   |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Super Smart Society (Society 5.0)</b> | Establishment of a service platform that enables collaboration between various components and creation of new services              |                                                                                                                                                                                |
|                                          | Modeling and AI that connects the cyber and physical worlds                                                                         |                                                                                                                                                                                |
|                                          | Innovative AI technologies for sophisticated integration of cyber and physical world                                                |                                                                                                                                                                                |
|                                          | Making full use of AI and simulation technologies across different fields for a human centered society                              |          |
| <b>Sustainable Society</b>               | Innovation in manufacturing for new process of sustainable resource recycling                                                       |                                                                                                                                                                                |
|                                          | Improving intellectual capabilities to enable “a Socially Active Life” for all members of society, helping overcome labor shortages |                                                                                                                                                                                |
|                                          | Creation of innovative food production technologies responding to future changes in climate and social demands                      |                                                                                                                                                                               |
|                                          | Enhancement of product durability and usability for a resource efficient society                                                    |                                                                                         |
|                                          | Breakthrough technologies to accelerate breeding and strain improvement in biological production for a sustainable society          |    |

# Areas & Prioritized Themes (2)

| Area                           | Prioritized Themes                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Safe and Secure Society</b> | Development of a crisis navigator for individuals                                                                                                             |
|                                | Creation of "humane service" industries                                    |
|                                | Realization of safe, secure, and comfortable urban areas free from hidden hazardous substances                                                                |
|                                | Self-management of health based on the action mechanism of daily behaviors such as food, exercise and sleep                                                                                                                                      |
|                                | Realization of wellbeing by feedback based on psychological states evaluated by objective methods                                                             |
| <b>Low Carbon Society</b>      | Realization of a low carbon society through game-changing technology    |
| <b>Common Platform</b>         | Realization of common platform technologies, facilities, and equipment that create innovative knowledge and products                                                                                                                           |

For details, please visit our website (<https://www.jst.go.jp/mirai/en/index.html>)

# Full R&D Projects Presented Today

“Safe and Secure Society” Area; Development of the crisis navigator for individuals

## **Crowd control adaptive to individual and group attributes**

(PL; Katsuhiro NISHINARI, Professor, The University of Tokyo)

Development of highly accurate crowd simulator and optimum control system for whole crowds, which provide mobility information services to individuals by taking individual and group attributes into account for safe and secure society.

“Sustainable Society” Area; Innovation in manufacturing for a new sustainable resource recycle

## **Construction of integrated circular production system by product lifecycle management and innovative dismantling technology development**

(PL; Chiharu TOKORO, Professor, Faculty of Science and Engineering, Waseda University)

Development of novel separation technology between different materials by pulsed electric discharge and the life cycle simulation to optimize product design/ manufacturing assuming separation for reuse/recycling, toward the construction of a novel integrated circular production system.

“Sustainable Society” Area; Creation of innovative food production technologies in response to environmental changes in the future

## **Development of the production technology for next generation-meat using 3D tissue engineering techniques**

(PL; Shoji TAKEUCHI, Professor, Graduate School of Information Science and Technology, The University of Tokyo)

Establishment of the technology for the industrial production of cultured steaks using bovine muscle cells, contributing to a sustainable and healthy society.

## 1. Dispatching or inviting researchers for knowledge exchange

- Funding from both sides (Japan/JST and overseas)
- NDA if necessary, to protect IPs/ know-how etc.

## 2. Organizing international workshop/symposium

- Co-funding workshop/symposium from both sides
- Co-organize committee for realizing standardization on new technologies

## 3. Participating in the JST-Mirai R&D Projects

- Funding from JST
- Agreement required between JST and overseas institute

Thank you for your kind attention!