Explanatory Meeting

Overview of the Moonshot R&D program and the call for proposals to achieve Moonshot Goal 8 and 9

November 2021

Japan Science and Technology Agency
Department of Moonshot Research and Development Program

Agenda

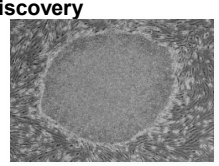
1. **Overview of the Moonshot R&D（p.3～p.23）**
2. **Call for Proposals（p.24～p.34）**
3. **R&D after the adoption（p.35～p.39）**
4. **Precautions（p.40～p.52）**

Overview Moonshot R&D program

○Around the world, there is an increasing investment in R&D to tackle complex social issues and generate disruptive innovation.
○The Moonshot R&D Program was launched for this same purpose, promoting challenging R&D and exploring innovative ideas in basic research.

Basic Research Results

iPS cells that form the basis of regenerative medicine and drug discovery



YAMANAKA Shinya
Director, Center for iPS Cell Research and Application, Kyoto University

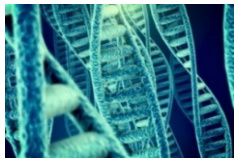
High-speed computer applying quantum mechanism of light

YAMAMOTO Yoshihisa
Professor, Stanford University

Overseas research trends for disruptive innovation

USA

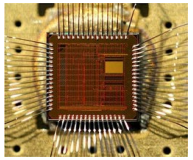
Gene-Environment interaction



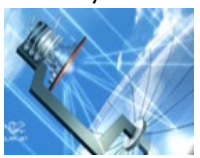
Ready-to-use Space transfer vehicle

EU

Neuro-computer Mimicking cranial nerves



Artificial Photosynthesis



China

Micius satellite using quantum cryptography

Japanese innovative R&D stimulates innovation and additional investment to the next R&D

Complex Social Issues
(global warming, natural disasters, declining birthrate, and aging population. etc.)

Moonshot R&D Program

- Sets ambitious goals and concepts that will have big impacts on future society.
- Gathers knowhow from all around the world, directed by leading researchers in their fields.
- Promotes innovative R&D by being unafraid of failure and maximizing basic research capabilities.

Innovative ideas in basic research

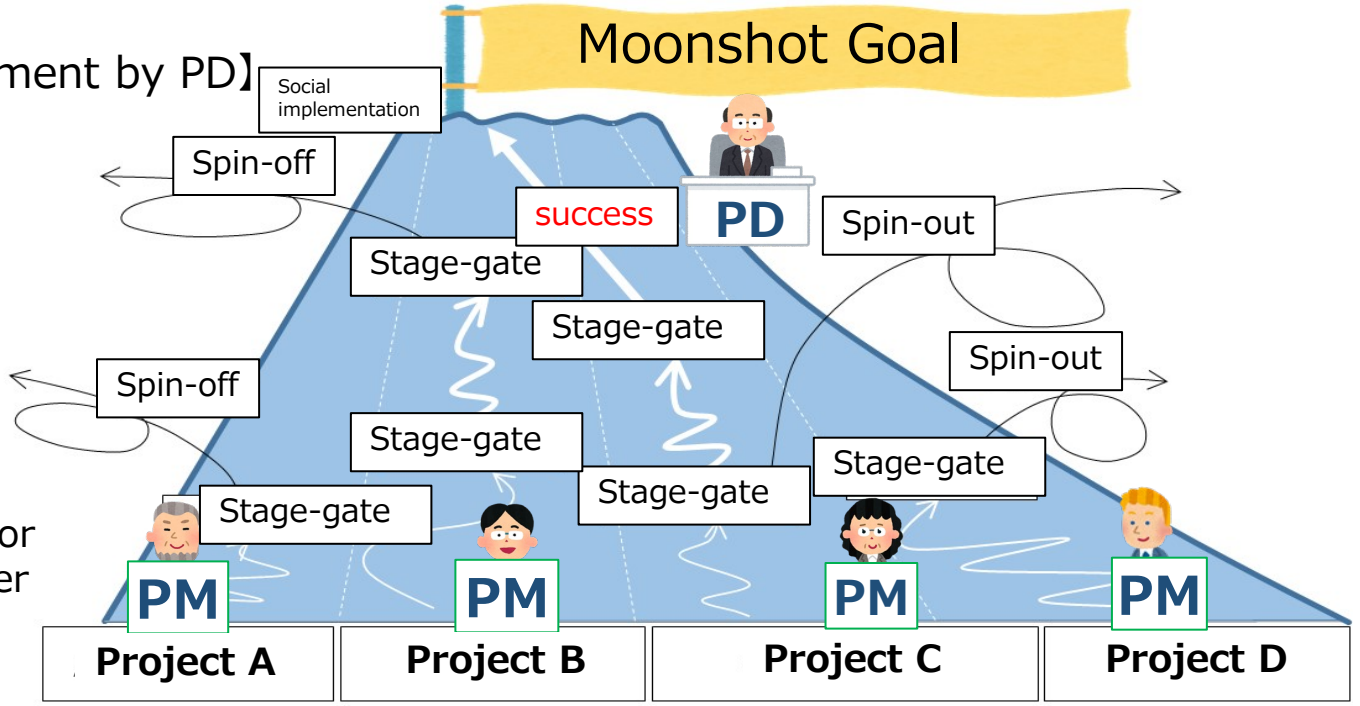
MOONSHOT RESEARCH & DEVELOPMENT PROGRAM

Overview

Moonshot R&D program

(1)The government sets ambitious goals and concepts to solve social issues and make big impact on future society.
(2) Project Managers (PMs) are selected from among the world's top-level researchers, under Program Directors (PDs) who supervise the R&D projects.
(3) PDs create portfolios for the whole R&D to achieve the Moonshot Goals and promotes challenging R&D unafraid of failure.
(4) PDs flexibly reconstitute portfolios to achieve the goal through stage-gate evaluation, and spin-out of the R&D program is recommended. Frontier R&D support system with data-management system.
(5) The budget of the program is 100 billion yen from a multi-year fund established in FY2018, and 15 billion yen of FY2019. The R&D period is 10 years at maximum.

【Portfolio management by PD】



PD: Program Director
PM: Project Manager

Elements of Moonshot Goal

I. Inspiring

- Clarity of objectives and its necessity
- Strong impact on our future society and the industries
- Values that are sharable among people all over the world
- Intellects brought together from all over the world

II. Imaginative

- Innovative and radical change of our future societal system
- Clear image of our future direction

III. Credible

- Not only ambitious but also scientifically feasible
- Validity of progress towards the Goal
- Consistency with relevant strategies and Policies

Note: Human centric is the basic concept of Moonshot Goals.

Overview

Moonshot Goals that R&D projects have already started to achieve

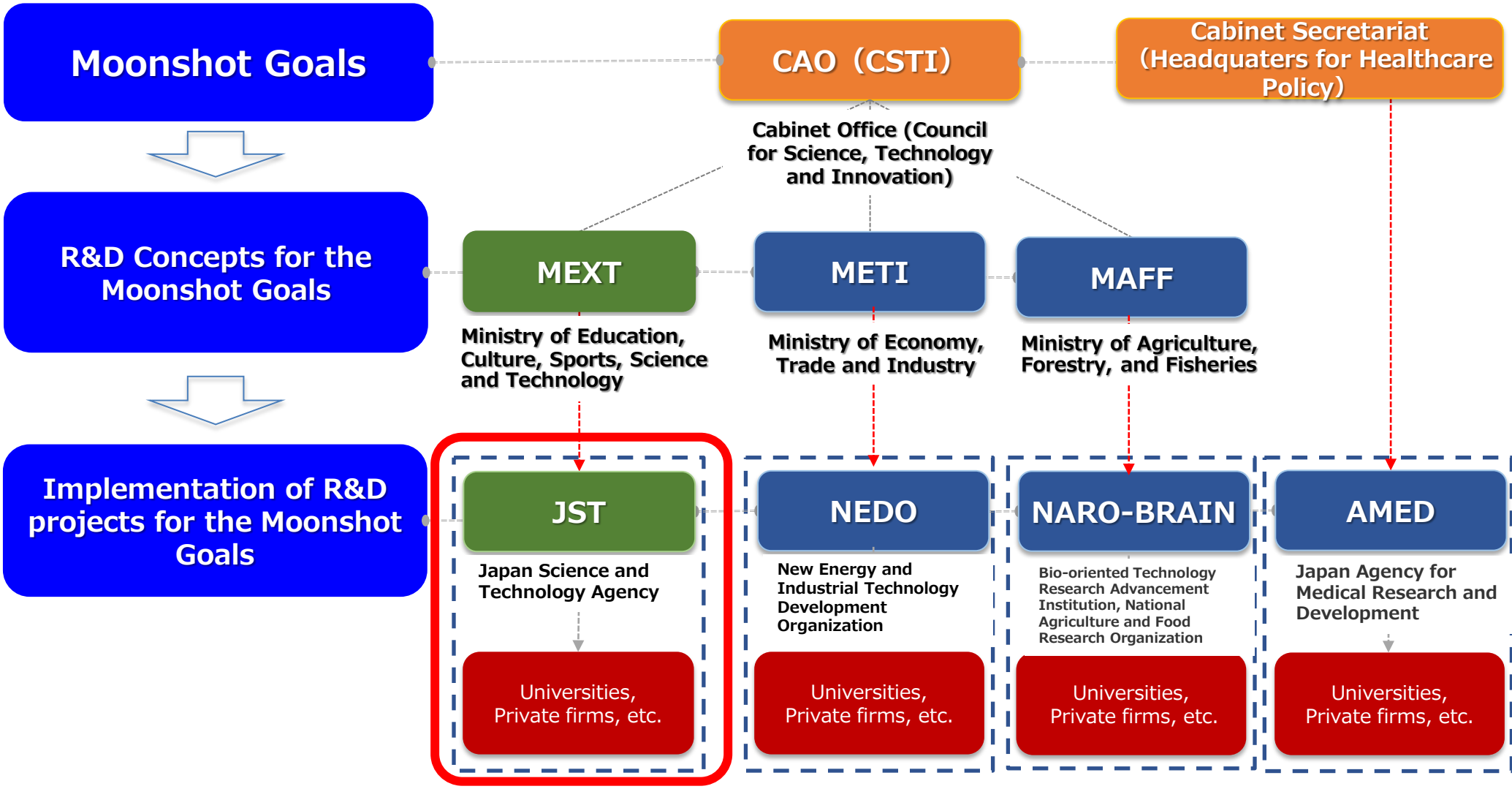
Areas for MS Goals

- Turning Japan's aging society into an innovative and sustainable society by harnessing diversity through techno-social transformation
- Recovery for global environment and growth of civilization
- Exploring frontiers with science and technology

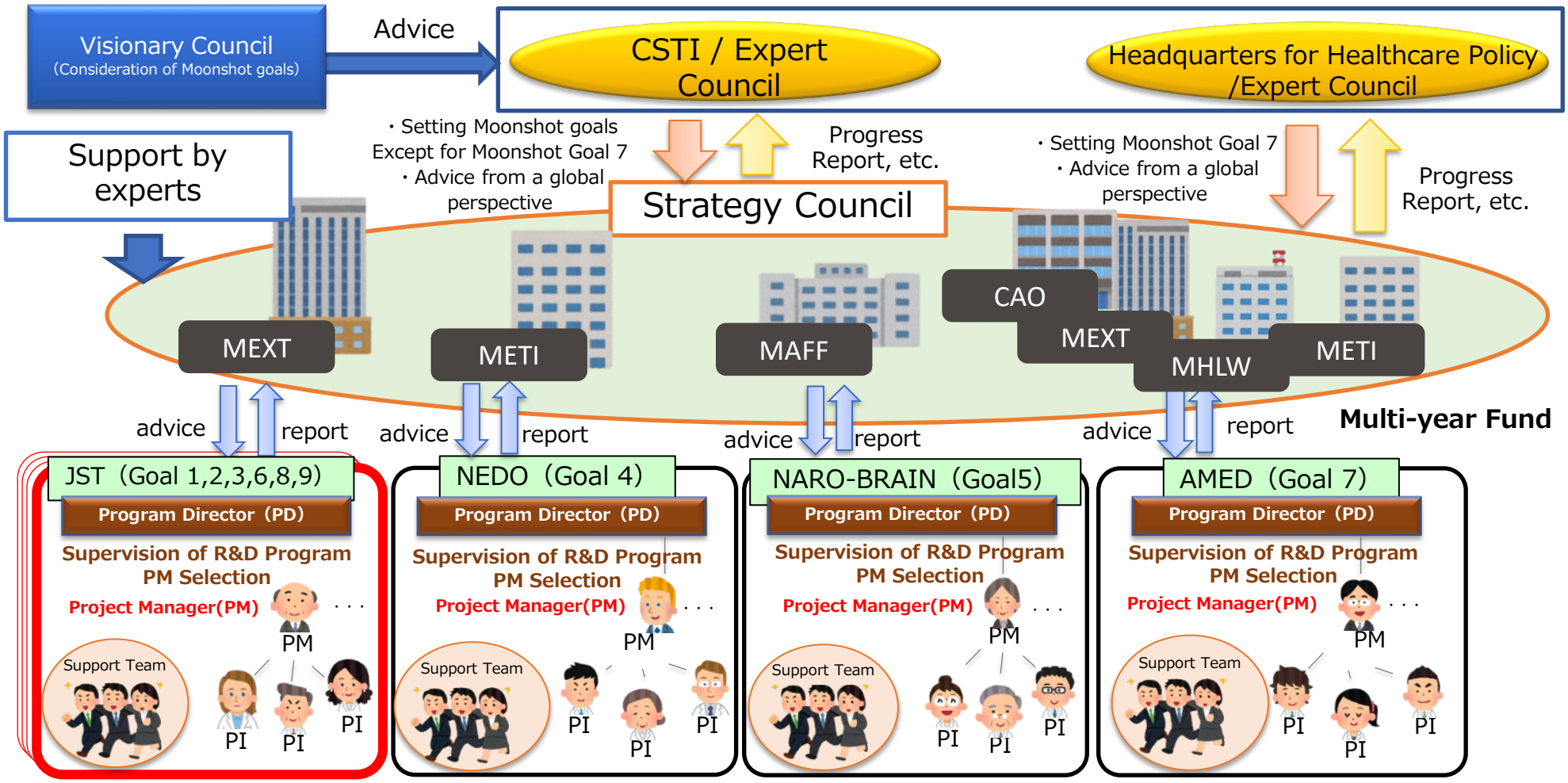
- Goal 1 ：**Realization of a society in which human beings can be free from limitations of body, brain, space, and time by 2050.（JST）**
- Goal 2 ： **Realization of ultra-early disease prediction and intervention by 2050.(JST)**
- Goal 3 ： **Realization of AI robots that autonomously learn, adapt to their environment, evolve in intelligence and act alongside human beings, by 2050.（JST）**
- Goal 4 ： Realization of sustainable resource circulation to recover the global environment by 2050.（NEDO）
- Goal 5 ： Creation of industry that enables sustainable global food supply by exploiting unused biological resources by 2050. (NARO-BRAIN)
- Goal 6 ： **Realization of a fault-tolerant universal quantum computer that will revolutionize economy, industry, and security by 2050.（JST）**
- Goal 7 ： Realization of sustainable care systems to overcome major diseases by 2040, for enjoying one's life with relief and release from health concerns until 100 years old. (AMED)

"Moonshot for Human Well-being"

Structure of the Moonshot R&D program



Promotion system



Overview

New Moonshot Goals

○In the Moonshot R&D program, challenging R&D projects are promoted to achieve ambitious national goals to attract people in order to solve important issues such as aging society, global warming.
○In this program, addition of goals is allowed according to change of social environment.
Therefore, new Moonshot Goals have been added considering the economic and social changes brought by COVID-19.

Moonshot Goals

- Goal 1 : Realization of a society in which human beings can be free from limitations of body, brain, space, and time by 2050. (JST)
- Goal 2 : Realization of ultra-early disease prediction and intervention by 2050.(JST)
- Goal 3 : Realization of AI robots that autonomously learn, adapt to their environment, evolve in intelligence and act alongside human beings, by 2050. (JST)
- Goal 4 : Realization of sustainable resource circulation to recover the global environment by 2050 (NEDO)
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New Moonshot Goals

"Moonshot for Human Well-being"
(人々の幸福に向けたムーンショット型研究開発)

13 visions suggested by the Visionary Council

Social Environment Change

Ideas of young researchers

Overview

Process for determination of the new Moonshot Goals

Multifaceted investigation challenge for new normal initiatives program (MILLENNIA Program, 2021.1-2021.7)

21 brainstorming teams prepared reports on their investigative research regarding their visions for an ideal 2050 society.

2021.8

JST selected the Moonshot Goal candidates

2021.9

New Moonshot Goals were determined by the Council for Science, Technology and Innovation(CSTI)

R&D projects to achieve the goals

2021.9

New Moonshot Goals were determined by CSTI

2021.10

JST assigns Program Directors

2021.11-

JST calls for proposals and selects Project Managers (PMs)

2022.4-

R&D Projects start

※For more details on MILLENNIA Program
https://www.jst.go.jp/moonshot/en/program/millennia/index.html

Program Director

Moonshot Goal	Program Director（PD）
【Moonshot Goal 8】 Realization of a society safe from the threat of extreme winds and rains by controlling and modifying the weather by 2050.	**Dr. MIYOSHI Takemasa** Team Leader, Data Assimilation Research Team, RIKEN Center for Computational Science
【Moonshot Goal 9】 Realization of a mentally healthy and dynamic society by increasing peace of mind and vitality by 2050.	**Dr. KUMAGAI Seiji** Associate Professor, Kokoro Research Center, Kyoto University

Make sure to check the details in the application guidelines and the “ PD’s supplement”.

Management Structure for JST's Moonshot R&D

Cross-sectional Support

- PMs Support Team (ELSI)
- PMs Support Team (Mathematical Sciences)

✓ International Collaboration
✓ Support for ELSI, Mathematical Sciences (Cross-sectional approach)
✓ Data Management .etc

R&D Program Management

Governing Committee

Program Director (PD) 1

PD 2
PD 3
PD 6
PD 8
PD 9

・Responsible for the whole R&D regarding MS goal
・Direction of PMs

R&D Project 1

Leader's Institution (PM Affiliated)

[Calling for Proposal]
Project Manager (PM)

Direction of R&D

Performer (Implementation of R&D)

Performer

R&D Project 2

Leader's Institution (PM Affiliated)

[Calling for Proposal]
Project Manager (PM)

Direction of R&D

Performer

Performer

Project team includes top-level engineers, and young, senior, and other researchers are brought together for their vast knowledge to construct organizations to implement R&D.

Program Director(PD)'s duties

- **Realize the concept and achieve the MS Goals, strategically build a draft of portfolio*, and promote R&D in a challenging and systematic way.**

  *The management plan that summarizes the project components(combination) and resource allocation, etc.

- When building a draft of portfolio, in principle, **combine multiple projects that take different research approaches**.

- Always **understand the progress of R&D** based on the portfolio, and manage and **supervise in a unified manner the PMs** who oversee the relevant projects while constantly reviewing the portfolio, such as allocating resources with a focus on research that is steadily progressing, and discontinuing a project if it is deemed to be unlikely to produce results.

*Reference: Guidelines for Operation and Evaluation of the Moonshot R&D Program

Project Manager(PM)'s duties

- **Under the direction of the PD, refine a proposed project during an open call to improve it, draw up a project plan:**
  - ✓ target setting of project
  - ✓ preparation of R&D details and implementation schedule
  - ✓ establishment of an R&D system to implement the project
  - ✓ formulation of a plan to allocate research funding to participating R&D institutions in the project etc.
- **Strategically implement the project**
- **Flexibly and nimbly implement project modifications** and changes in direction, including practical use of some research results in society

*Reference: Guidelines for Operation and Evaluation of the Moonshot R&D Program

PM activities

The PMs take management on their own through the following PM activities and carry the responsibility for the R&D projects in general for the achievement of the MS Goals and the realization of the R&D concepts.

【Major PM activities】

- The PMs **formulate the scenario** to achieve the MS Goals through **backcasting**—achieving the Goals
- **Designing ambitious R&D projects that are more than just extensions of conventional technologies**
- Building R&D organizations by collating the relevant knowledge from different researchers—top runner, young, and senior—in and outside Japan（including selection of performers)
- **Implementing and undertaking the management of R&D projects**
  （To flexibly conduct reviews to alter the orientation, including the acceleration or deceleration of R&D items conducted by each performer)
- Publication and outreach activities based on the results of R&D projects
- Ensuring management of the various assignments

Leader's institution

A leader's institution, based on its contract with JST, organizes an environment in which the PM activities can be performed effectively and efficiently, hires personnel to support the PM, and constructs organizational infrastructure, thereby providing various types of support to the PMs' activities, including managing the progress of the R&D projects undertaken by the performer, who works for the leader's institution or any other organization, and supporting the PM activities. In addition, a leader's institution should manage the cross-organizational support provided to PM activities with the front-runner support function of Moonshot R&D, in addition to direct support for PM activities.

● **Organizing a system to support PM activities**

（including hiring and undertaking the management of the work done by personnel supporting the PM activities from the Leader's Institution)

[PM activities to support]

① Designing R&D projects（including selection of performers)
② Implementing and undertaking the Management of R&D projects
（including reviews to alter the orientation of R&D items conducted by each performer）
③ Cooperation with JST（including agreement on the regulations governing implementation overseen by R&D institute and JST, and contracting businesses)
④ Publication and outreach activities based on the results of R&D projects, and the like

Performer

Performer: selected by PM in the elaboration period after project is adopted

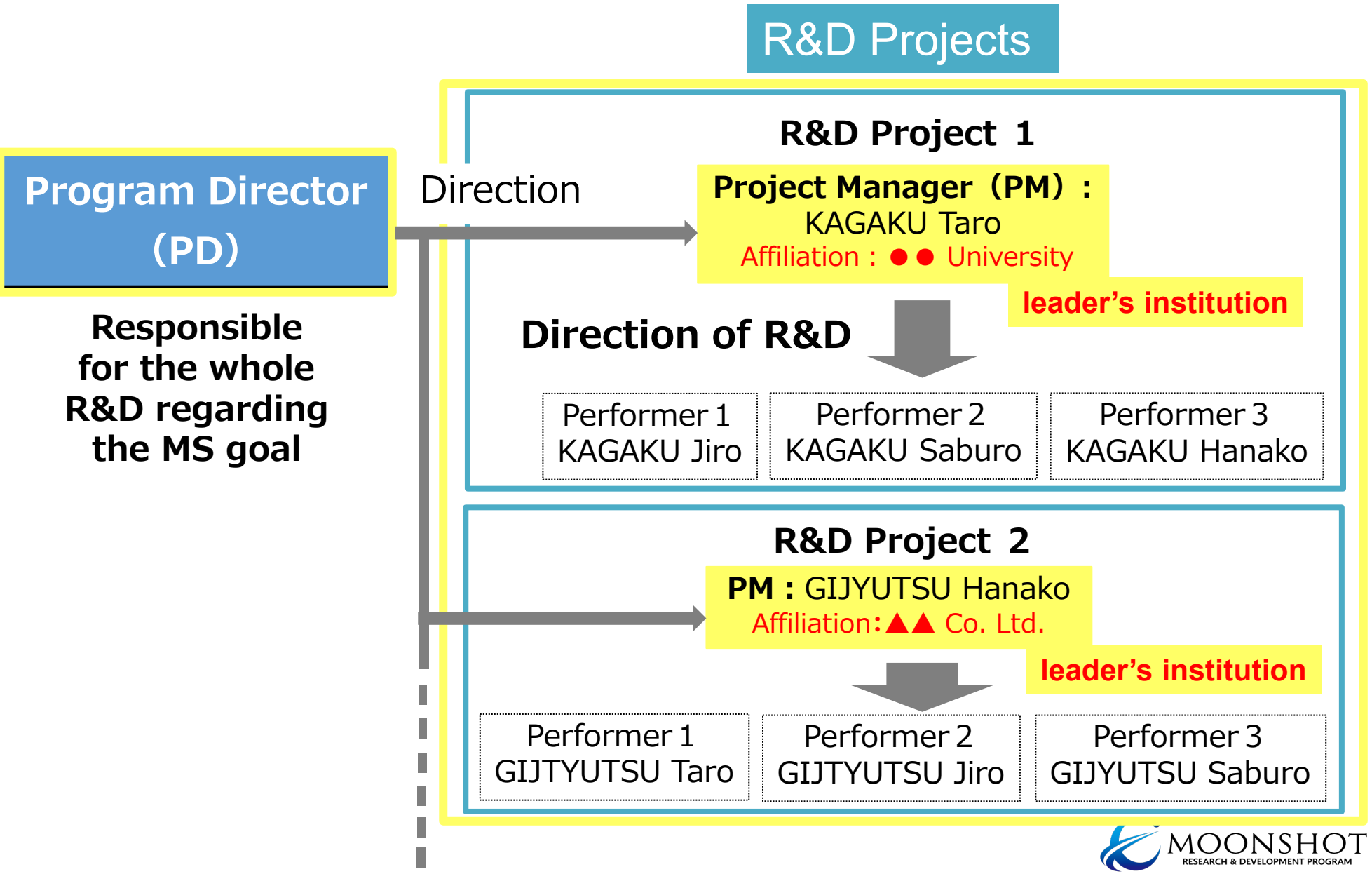
The performers implement the contents of the assignments for the research and development in the R&D project as instructed by the PM, to achieve the MS Goals and embody the R&D concepts. JST concludes R&D agreements with the R&D institutions of performers and pays for the costs of R&D.

【Note】Selection of performers by the PM

The PM builds R&D organizations by selecting performers through methods such as designation, public invitation. The composition of the R&D institutions is determined during the elaboration period; however, depending on the progress status, changes in external environments, performers may be added and/or switched even during the period in which the R&D projects are executed.

In the application forms please specify a major performer candidate, who is essential for implementing the R&D project.

R&D organization



Core Research and Feasibility Study

As it is particularly important to adopt diverse and challenging R&D ideas while promoting R&D for MS Goals 8 and 9, we take the following two approaches to promote R&D by integrating R&D projects:

Please fill in the proposal form for either Core Research or Feasibility Study.

Core Research	Feasibility Study
R&D project aiming to achieve the Moonshot Goal with your scenario, a grand design that leads to the goal's achievement by backcasting from your vision of an ideal 2050 society	R&D project that contributes to the Moonshot Goal, without a scenario that leads to its achievement

For more details, make sure to see "PD's supplement".

Overview of the call for proposals

MS Goal	Research Period, R&D funds (direct cost)	Number of PMs adopted
【MS Goal 8】 Realization of a society safe from the threat of extreme winds and rains by controlling and modifying the weather by 2050.	**（1）Core Research（Research Period: 5 years in principle)** Up to a total of 900 million yen to 1.2 billion yen per PM (Up to a total of 300 to 600 million yen in years one to three) *We also welcome projects whose budget will be substantially less than this. **（2）Feasibility Study** **(Research Period: As long as is necessary, up to three years)** Up to a total of 50 million yen per PM *We also welcome projects whose budget will be substantially less than this.	**（1）Core Research** Roughly three to six **（2）Feasibility Study** Roughly five to fifteen
【MS Goal 9】 Realization of a mentally healthy and dynamic society by increasing peace of mind and vitality by 2050.	**（1）Core Research（Research Period: 5 years in principle)** Up to a total of 700 million yen per PM (Up to a total of 300 million yen in years one to three) *We also welcome projects whose budget will be substantially less than this. **（2）Feasibility Study** **(Research Period: As long as is necessary, up to three years)** Up to a total of 100 million yen per PM *We also welcome projects whose budget will be substantially less than this.	**（1）Core Research** Roughly three to six **（2）Feasibility Study** Roughly five to fifteen

Overview of the call for proposals

MS Goal	Core Research	Feasibility Study
MS Goal 8	Contains at least one of the following elements: a “meteorological approach” or an “engineering approach”	Contains at least one of the following R&D elements: a “meteorological approach,” an “engineering approach,” “ELSI research,” or “mathematical science studies”
MS Goal 9	Contains all of the following elements: “clarification of mental mechanisms,” “mental status transitions,” and “application in society”	Contains at least one of the following R&D elements: “clarification of mental mechanisms,” “mental status transitions,” and “application in society” (however, “application in society” alone is not acceptable)

For more details, make sure to see “PD’s supplement”.

Overview

[MS Goal 8]
Core Research & Feasibility Study

<table>
<tr><th>R&D element / Category</th><th>Meteorological approach</th><th>Engineering approach</th><th>ELSI research</th><th>Mathematical science studies</th></tr>
<tr><td>Core Research</td><td colspan="2">Mandatory to select at least one element</td><td>Optional</td><td>Optional</td></tr>
<tr><td>Feasibility Study</td><td colspan="4">Mandatory to select at least one element</td></tr>
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[MS Goal 9]
Core Research & Feasibility Study

Category \ R&D element	Understanding mechanisms of the mind	Mental status transitions	Application in society
Core Research	Mandatory	Mandatory	Mandatory
Feasibility Study	Mandatory to select at least one element (However, “Application in society” alone is not acceptable)		

Call for Proposals

Application and selection schedule

Application Deadline

11/1/2022, noon (Japan Standard Time)

(Research proposal acceptance via e-Rad begins: mid-November)

Please understand that applications made after the deadline will not be accepted under any circumstance.

Period of document-based review	mid-January - early-February
Period of interview-based review	mid-February - late-February
Notification and announcement of selection results	late-March

The dates for the interview-based review will be announced later.

Call for Proposals

Application requirements (PM candidate)

Proponents need to satisfy ALL application requirements (1 to 5) as listed below. The requirements need to be maintained during the period of the execution of the R&D projects.

1. Applications must be filed by one person, not by a group.

2. All responsibilities of the R&D project must be undertaken for all periods of the R&D project's implementation.

3. A program regarding research and ethics education has been completed at the institution to which he or she belongs. Alternatively, an education program provided by JST must be completed by the application deadline.

Call for Proposals

Application requirements (PM candidate)

4. A pledge must be made regarding the following four items.
   The proponent must:

- Understand and be willing to conform to the “Guidelines for Responding to Misconduct in Research Activities" (decision, Minister of Education, Culture, Sports, Science and Technology, February 18, 2014)
- Understand and be willing to conform to "Guidelines for the Management and Audit of Public Research Funds In Research Institutions (practice standards)" (revised on February 1, 2021)
- Not have committed any misconduct in research and development activities (forgery, falsification, and theft) or any unjustifiable use of trusted research funds
- Not have committed any misconduct in research and development activities with respect to the past achievements of the researches and developments described in the applicable written proposal

*The pledges are available from the screen to fill in the information of proponents on the Cross-ministerial R&D Management System (e-Rad).

5. For Core Research, as much effort as possible must be made to monitor and manage PMs’ activities.

*However, if the PD decides that it is extremely effective for the PM to perform part of the research and development of an R&D project on his or her own to achieve a particular objective, he or she may participate in research and development as a performer.

Call for Proposals

Application requirements (for foreign researchers)

- There are no restrictions on the PM's nationality.
- You can apply for this call even if you currently belong to an organization outside Japan and your leader's institution* is not determined at the time of application. If, however, you are not able to designate your leader's institution within three months** of being selected, then the adoption could be canceled.

*The leader's institution must be the PM's employer (a university, college, public organization, private enterprise, or the like) and be a Japanese corporation that is based in Japan. A PM must determine the leader's institution as the base of his or her own activities in Japan during the elaboration period.

**If the PM does not choose the present institution as the leader's institution, the deadline will be six months after the adoption.

Call for Proposals

Application requirements (R&D Project –Core Research)

【Core Research】

Before making an application, the proponents must understand that items 1 to 3 below must be satisfied for the R&D project they propose.

1. Compatibility with the Moonshot R&D program

To contribute to the resolution of social problems and have a significant impact on industry and/or society, as well as to introduce a challenge based on a bold concept towards achieving the MS Goals

2. Scenarios leading to the achievement of MS Goals

- ✓ As a scenario that is addressed in an R&D project, that is grasped not only from technological viewpoints but also from a broad perspective, including social viewpoints
- ✓ The problems that should be overcome are analyzed and identified.
- ✓ To resolve problems that should be overcome, the methods and/or means are presented based on scientific proof.

Note: Describe the scenario to accomplish your research milestones from time of adoption as a PM, and in addition, describe what ripple effects (impact) will be brought to society.

3. Plans for constructing a research and development organization

The measures and plans for constructing an organization that further develops the ability to conduct R&D projects at the highest level, regardless of its location within or outside of Japan, not limited to a specific research community, and leveraging knowledge from a wide range of fields to solve problems

Application requirements (R&D Project –Feasibility Study)

【Feasibility Study】

Before making an application, the proponents must understand that items 1 to 3 below must be satisfied for the R&D project they propose.

1. **Compatibility with the Moonshot R&D program**
   To solve main issues or bottlenecks for achieving the MS Goals

2. **Scenarios leading to the achievement of MS Goals**
   To resolve problems that should be overcome, the methods and/or means are presented based on logical proof

Note: In contrast to Core Research, you don't need to describe the whole concept (scenario) required to achieve the MS goal. Please propose an R&D project that can partly contribute to the achievement of the MS Goal.

3. **Plans for constructing a research and development organization**
   The measures and plans for constructing an organization that further develops the ability to conduct R&D projects not limited to a specific research community, and leveraging knowledge from a wide range of fields to solve problems

Call for Proposals

Application requirements (R&D Project)

1. The Periods to implement R&D projects

（1）Core Research

- The period to implement R&D projects is, in principle, five years from the adoption of the PM. A period of the execution of the evaluation is supposed to be, besides the third year, in the fifth year after the timing of the adoption of the PMs and, in addition, the evaluation is performed whenever the PDs recognize it necessary to do so. In either case, the R&D project may be altered (accelerated, decelerated) or terminated.
- The maximum period is ten years if it is decided to continue beyond the five-year period.

（2）Feasibility Study

- The period to implement R&D projects is, at a maximum of three years from the adoption of the PM. The evaluation is carried out when the project finishes and, in addition, whenever PDs recognize it necessary to do so. In either case, the R&D project may be altered (accelerated, decelerated) or terminated.

2. The monetary amount for R&D projects

- See the application guidelines and PD's supplement.

The R&D budget for an R&D project at the initial stage will be judged and determined by the PD at the time of elaboration after adoption.

Call for Proposals

Application requirements (Leader's institution)

- A proponent, even if it is unclear whether the organization to which the proponent belongs will be his or her leader's Institution, is allowed to make an application.
- However, a proponent must determine their leader's institution by the close of the elaboration stage.
- The adoption will be canceled if the leader's Institution is not determined within, in principle, three months* following the adoption of the project.

*If PM does not choose the present institution as the leader's Institution, the deadline will be six months after the adoption.

Call for Proposals

Application requirements (Leader's institution)

Before making an application,
the proponents must fully understand that items 1. and 2. below must be satisfied by the leader's Institution.

1. To be an employer of the PM, which is a university, college, public organization, private enterprise, or the like, that is a Japanese corporation and has a base of activities in Japan, and to employ the PM by the end of the elaboration period.

2. To accept the items described in section 4.1.2*, "The roles and responsibilities of leader's institutions" and to finalize a contract with JST

*A leader's institution, based on its contract with JST, organizes an environment in which the PM activities can be performed effectively and efficiently, hires personnel to support the PM, and constructs organizational infrastructure, thereby providing various types of support to the PMs' activities, including managing the progress of the R&D projects undertaken by the performer, who works for the leader's Institution or any other organization, and supporting the PM activities. Specifically, it supports the activities in section 4.1.1,"The roles and responsibilities of the PMs."

In addition, a leader's institution should manage the cross-organizational support provided to PM activities with the front-runner support function of Moonshot R&D, in addition to direct support for PM activities.

Call for Proposals

Viewpoints in selection

Our selection will be based on the following viewpoints and made in a comprehensive manner.

(i) Nature as a PM

〇To have a wide human network of relevant researchers within and outside of Japan and to possess specialized knowledge

〇To have the ability for management to construct an optimum R&D institution and review the organization proactively, depending on the status of the progress (including those in relation to the management and usage of research data) and to have leadership ability

(ii) R&D project Proposed by a PM

〇 The target and/or the contents of the project proposed by the PM (referred to as "proposal contents" from here) must be based on a bolder idea than conventional ones and be a challenging one and must be an innovative one with which a strong impact is expected in the future industry and/or society.

〇 The proposal contents must be able to clearly explain the adequate scenario (the hypothesis of the success) from the viewpoint of social implementation including the viewpoint of technology and the assignments of the roles to governmental bodies and private sectors for the achievement of the goal in 2050*.
*As for an R&D project in the category of Feasibility Study, the point will be replaced with “The proposal contents must be able to clearly explain that R&D results aimed to be achieved at the end of the proposed project can solve main issues or bottlenecks to achieve the whole MS goal”.

〇 The proposal contents must entail collecting the knowledge of researches and developments and ideas at a high level, regardless of their geographical location within or outside of Japan or the like.

Call for Proposals

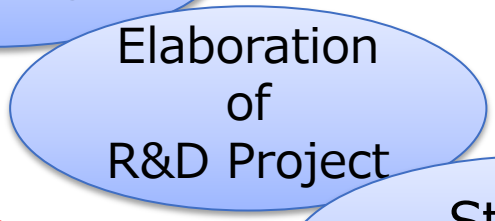
From the call to the start of the R&D project

Call held for each Moonshot Goal

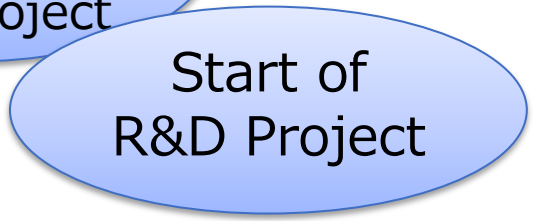
(mid-January – early February)
Selection of proponents to be interviewed by the PD in cooperation with the sub-PD and the advisors

(mid-February – late February)
Interview by PD in cooperation with the sub-PD and the advisors

JST makes decisions on what is discussed by the Governing Committee based on the results of interviews, and selects the PMs

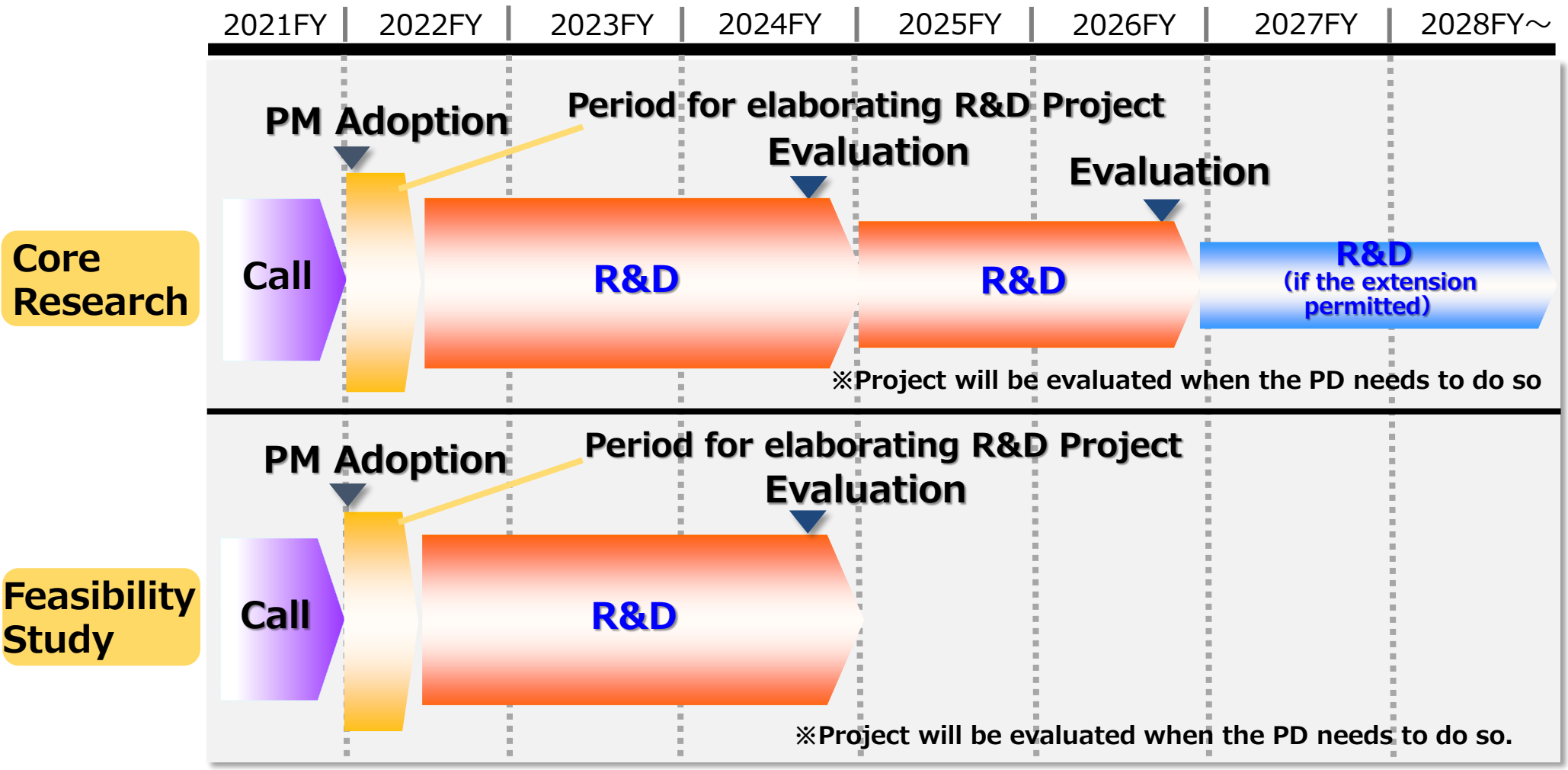


PM reviews the R&D project under the direction of the PD, and structure organizations to support PM activities
Elaboration Period：within 3 months after PM adoption, in principle



R&D after the adoption

Schedule of the R&D project



For more details about the policy for selection of projects, and promotion of R&D, please make sure to see "PD's supplement".

R&D after the adoption

Elaboration of the R&D project

-Reviewing and embodying the contents of the R&D project

The PMs, whose elaboration is recognized as appropriate by the PDs are allowed to execute the R&D project based on a determination of the elaboration appropriateness.

R&D Project at PM adoption → Reviewing R&D Items/ Budget Plan/ R&D Project Plan → Planning R&D institutions to implement R&D Projects → Selection of performers and their institutions

PM

Opinions From Different Fields

PD's Direction of PMs

- Designation
- Public invitation

Reviewing the scenario as R&D Project

【Core Research】 To make proposals for the plans for constructing specific R&D plans (the R&D items, contents, approach, plans for distributing budgets, etc.) and an R&D organization based on the scenario that should be realized in the R&D project up to the third year, fifth year, and tenth year after the time of the adoption of the PM for the achievement of the MS Goals

【Feasibility Study】 To make proposals for the plans for constructing specific R&D plans(the R&D items, contents, approach, plans for distributing budgets, etc.) and an R&D organization

R&D Item 1
- ✓ R&D contents
- ✓ Goal, Milestones
- ✓ Contents, Approaches
- ✓ Budget allocation

R&D Item 2

R&D Item 3

【Plan of Selecting Performers】 (Performer's Role, When to select, selection method, etc..)

R&D Item 1	Planned institution 1, Planned institution 2, Planned institution 3
R&D Item 2	Planned institution 1
R&D Item 3	Planned institution 1, Planned institution 2

Selection of performers at the start of R&D project

Performer

Performer

Performer

Selection of Performers

Reviewing the scenario to attain the MS Goals

Elaboration of the R&D project

-Supporting PM activities

The adoption will be canceled if the leader's Institution is not determined within, in principle, three months* following the adoption of the PM.

*If PM does not choose the present institution as the leader's Institution, the deadline will be six months after the adoption.

- **Constructing a System to Support PM Activities**
  - ○Determining a leader's Institution
  - ○Proposing plans to structure the organization to support PM activities
  - ○Constructing an organizational infrastructure to ensure the support necessary at the beginning of the R&D project and organizing an appropriate environment
- **Other**
  - ○Making arrangements for and organizing implementation regulations* to define items that should be observed by participants in the R&D project
  - ○The leader's institution must be the PM's employer that is based in Japan. a PM must determine the leader's institution as the base of his or her own activities in Japan.

*Before the R&D entrustment contract, the R&D institutions and JST prepare regulations for intellectual property, the handling of secrecy, and other operational rules for the R&D project. The R&D institutions should make a pledge.

Participation of researchers affiliated with overseas R&D institutions

- It is possible for researchers affiliated with overseas R&D institutions to participate in the R&D project as performers.

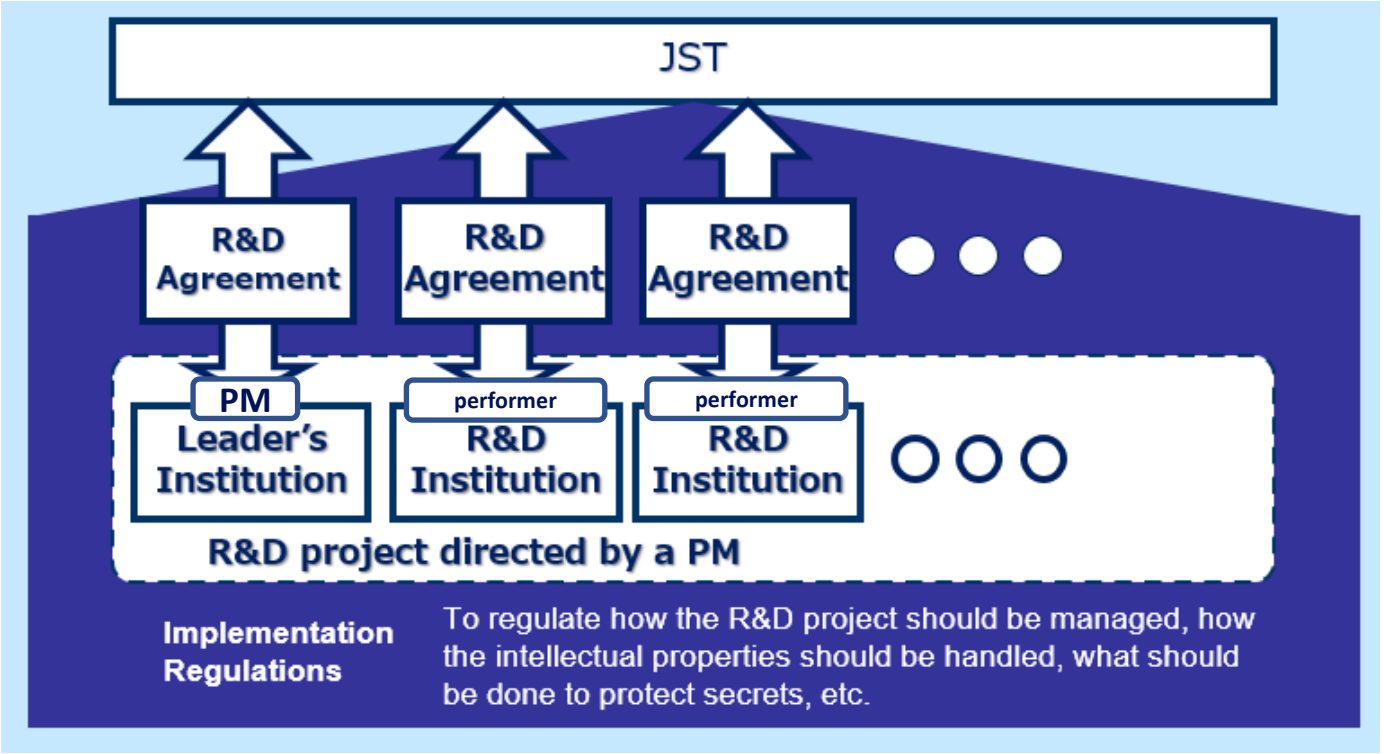
- The R&D institutions should enter into an R&D agreement with the content presented by JST. If it is not possible to enter into an R&D agreement within six months after adoption, or if it is judged that the research at the applicable R&D institution cannot be conducted appropriately, the implementation of the R&D at the applicable R&D institution will not be permitted.

- For the details, see section 4.8, "Items the R&D institutions should pay attention to in particular."

Contract and agreements required to start the R&D project

- For the start of an R&D project, JST makes, in principle, a contract for entrustment of the R&D with the leader's Institution, and the R&D institution, separately.

- The leader's Institution, R&D institutions, and JST prepare regulations for intellectual property, the handling of secrecy, and other operational rules for the R&D project. The institutions should make a pledge.



(1) R&D Concepts

Call for proposals is held for each Moonshot Goal. Please make sure to see the following contents.

- Moonshot Goal
- R&D Concept and PDs' Supplement

For More Details:

(Japanese)

https://www.jst.go.jp/moonshot/koubo/202111/

(English)

https://www.jst.go.jp/moonshot/en/application/202111/

(2) How to apply

Applications are received via e-Rad, the cross-ministerial R&D management system.

Please see the following URL for how to register :
https://www.e-rad.go.jp/en/researcher/index.html

Please understand that applications made after the deadline will not be accepted under any circumstance.

Note that an application cannot be accepted if the proposal is withdrawn after the application deadline.

(3) Conflict of interest

To ensure a fair and transparent evaluation, parties with interest that are listed below will not participate in the selection processes regarding relevant proponents.

a. A person who is a relative of the proponent

b. A person who belongs to the same department, major, or the like as the proponent at a university, college, or R&D organization of a national research and development corporation or the like or to the same enterprise as the proponent

c. A person who engages in a close joint R&D project with the proponent. This refers to, for instance conducting a joint R&D project, coauthoring a research paper, being members of an R&D project for the same purpose, or being joint researchers tasked with a problem from the proponent, or practically belonging to the same R&D group as the proponent

d. A person who is closely associated with the proponent as a teacher or student, or they have a direct employer-employee relationship

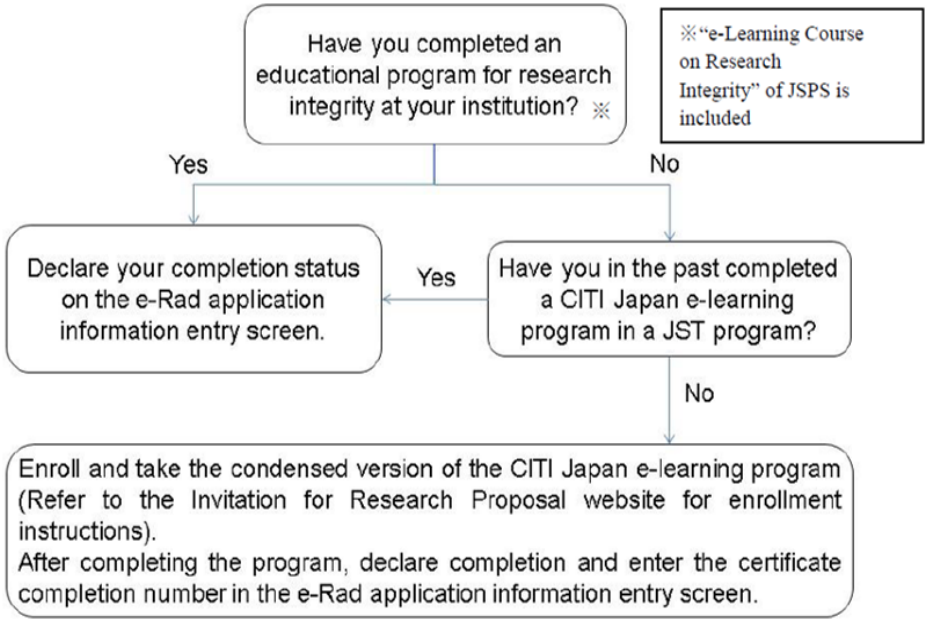
e. A person who is in an academically competitive relationship with the proponent's R&D project or who belongs or belong to an enterprise that is in a competitive relationship in the market

f. Any other person who is judged, by JST, to have shared interests with the proponent

Precautions (4)Taking a course on research ethics

- To apply to this program, proponents need to have completed a course on research and ethics education **by the application deadline.**
- Note that if we cannot confirm their finishing the course, we will regard their applications as not having satisfied the requirements.

The flowchart for completing a course on research ethics and declaring the completion of a course



※Condensed version of the eAPRIN (formerly CITI Japan) e-learning Program, please see also: https://edu2.aprin.or.jp/ard/

(5) Restrictions on multiple applications

Restrictions on applications

- No one proponent is allowed to make applications of two or more R&D projects for the same MS Goal.
- Anyone who is already a PM for another MS Goal (1~7) may not apply. Please note that “apply” here refers to proposing an R&D project as the proponent (PM).
- No one proponent is allowed to make applications of an R&D project for two or more MS Goals.
- In the case in which you plan to participate, as a PM or a performer, in the proposal for two R&D projects or more and two or more of the R&D projects are adopted, we may make adjustment, depending on the judgment of a PD, after considering the contents, the scale, etc. of the R&D, for the reduction of the R&D cost and for not allowing the participations in some problems among the R&D project in which the applicable researcher participate.

(5) Restrictions on multiple applications

Eligibility for applications and planning for R&D projects to fulfill MS Goals 8 and 9
(For those who are currently engaged in R&D projects in the Moonshot Research and Development Program)

Position in other Moonshot project \ **Position in project for MS Goals 8 or 9**	PM (Proponent)	Performer
PM	**X**	✓ **(Note 2)**
Performer (Note 1)	✓ **(Note 2)**	✓ **(Note 2)**

(Note 1): The MS Goals (1, 2, 3, 6, 8, 9) driven by JST define a “performer” as someone “who manages the assignments for the researches and developments entailed in the R&D projects, as instructed by the PM, to achieve the MS Goals and embody the R&D concepts.” This definition of “performer” also applies in the case of the MS Goals (4, 5, 7) handled by other funding agencies.

(Note 2): Once you are allowed to participate in the project to achieve MS goal 8 or 9, any extreme convergences or irrational duplication will be taken into consideration, and, based on the PD’s judgement, you may be subject to adjustments such as the research funds for the project being reduced or applied to only one of the research projects you are carrying out.

Precautions (5) Restrictions on multiple applications

Eligibility for applications and planning for R&D projects to fulfill MS Goals 8 and 9
(For those who are not currently engaged in R&D projects in the Moonshot Research and Development Program)

Position in project for MS Goal 8 \ Position in project for MS Goal 9	PM (Proponent)	Performer
PM (Proponent)	X	✓ (Note)
Performer	✓ (Note)	✓ (Note)

(Note): Once you are allowed to participate in the projects to achieve both of the MS goals, any extreme convergences or irrational duplication will be taken into consideration, and, based on the PD's judgement, you may be subject to adjustments such as the research funds for the project being reduced or applied to only one of the research projects you are carrying out.

Precautions (6) Research facilities and equipment

- It is desirable that universities, colleges, national research and development agencies, and the like use "a system to share research facility/equipment by the unit of a research organization".
- R&D institutions must endeavor to share the particularly large and general-purpose-performance research facility/equipment purchased for this program as long as it is within the scope of research and does not present obstacles to applicable research projects
- This applies to research facility/equipment purchased with other research funds and for purchasing/sharing them; a total of two or more research funds based on what is stated above within the scope of the management conditions of other research funds.
- In addition, from the viewpoint of the effective and efficient implementation of each R&D project implemented in this program, some arrangements may be made for the facility to be purchased with the direction of the PD in cooperation with the sub-PD and the advisors etc.

Precautions

(7) Human rights protection and the management of the observance of laws

- If a research project needs to include life ethics and/or safety measures, then it must acquire approval from the ethics committees in and outside the R&D institution and/or follow necessary procedures.

  ・Necessity of an agreement about cooperation with an opponent

  ・Consideration of the handling of personal information

  ・Inclusion of life ethics and/or safety measures etc.

- The laws and ordinances in the relevant countries must be observed when a research activity overseas and/or a joint R&D project with an overseas R&D institution is performed.

Supplement (1)
Restriction due to an unjustifiable R&D fund use

Measures for researchers whose applications and qualifications for participation are restricted in other competitive funds

The researchers who are restricted due to an unjustifiable use of research funds, in other competitive funds under management of a national governmental body or an incorporated administrative agency, are restricted from making an application or qualifying to participate in this program during the period in which they are restricted from qualification and application in other competitive funds. "Other competitive funds" include those that start new calls in the fiscal year 2022 or later. The systems that were terminated in the fiscal year 2021 or earlier are also included.

*For the specific systems currently within the scope, access the following website: https://www8.cao.go.jp/cstp/compefund/

Supplement (2)
Data management

The PM will be asked to submit, together with the R&D project plan to JST, the **"Data Management Plan"** that compiles **the retainment and management and the publication or non-publication of the R&D data accrued as a fruit and the principles of the usage of the R&D data you can publish** and, based on this plan, to appropriately implement **the storage, management, publication, partial publication or non-publication of the data** on the basis of the "Guidelines for Operation and Evaluation of the Moonshot R&D Program" and "JST's basic policies for handling research achievements toward an open science promotion."

Please see also the below website of the Cabinet Office for a related discussion.
https://www8.cao.go.jp/cstp/tyousakai/kokusaiopen/

Supplement (3)
Common policies with competitive funds

- Personnel cost and costs for delegated work other than research (buyout costs)

The project is intended to subsidize a PM and performer in the payment of personnel cost and costs for delegated work other than research (buyout costs) from direct costs.

*Section 5.10 “Cross-ministerial expenses handling partitioned table”

- When an affiliation of an R&D Principal Investigator (PI) judges that young researchers employed from the budget of the project should conduct their voluntary research activities to contribute to the improvement of their own research and management capabilities, and that such activities will not become an obstacle to the promotion of the project, part of their efforts regarding the project can be allocated for the activities and their personnel cost regarding the activities can also be refunded from the budget.

*Section 5.16 “Voluntary research activities of young researchers employed for implementing the project”

- It is recommended that doctoral course students necessary for implementing R&D in the project be proactively employed as RAs, unit prices be set according to the nature and contents of their work and their salaries be paid according to work hours under an appropriate work management.

*Section 5.14 ”Improving the treatment of doctoral students”

Details on the call for proposals

- For more details on the call for proposals:

  https://www.jst.go.jp/moonshot/en/application/202111/

  Dates of interview-based reviewing will be announced via the above webpage.

- Inquiries about the call for proposals

  E-mail: **moonshot-koubo@jst.go.jp**

  ***Please make sure to write "[new MS goal]" in the subject.**