JST-Mirai Program
(Small-start type / Large-scale type)

FY2020
Application Guideline

Application period

From Thursday, April 30, 2020
to 12:00 (noon, Japan time)
on Tuesday, June 30, 2020

Note: This translation is provided as a reference material. If there is any discrepancy between this translated version and the original Japanese version, the original Japanese version prevails.

国立研究開発法人
科学技術振興機構
Japan Science and Technology Agency

Department of R&D for Future Creation
April 2020

<Main Schedule>

R&D proposal acceptance begins	Thursday, April 30, 2020
Application deadline (Deadline for submitting applications through the e-Rad system)	12:00 noon (Japan time) on Tuesday, June 30, 2020

* The briefings for solicitation are held online in consideration of the new coronavirus disease (COVID-19) outbreak. For details, visit the following website:

https://www.jst.go.jp/mirai/jp/open-call/research/r02/index.html

Application of proposal is implemented via e-Rad system (https://www.e-rad.go.jp/; see Chapter 5 “Submission via the Cross-ministerial R&D Management System (e-Rad).”

As the application deadline approaches, heavy demands on the e-Rad system could cause the application deadline to be missed. Please give yourself enough time to complete submission of proposal.

No proposal for which the application procedure has not been completed via e-Rad by the deadline is subject to examination for any reason.

Document screening period	Late-July to Late August
Interview screening period	Early-August to Late-September
Notification/announcement of selected projects	November or after
R&D project begins	November or after

* The dates are expected dates. They are subject to change.
* Specific interview selection schedule will be determined by JST.
* As soon as determined, the document screening and the interview selection schedule will be announced on the following website:

https://www.jst.go.jp/mirai/jp/open-call/research/r02/

<R&D Themes for which proposals will be solicited>

The application period and R&D themes for FY2020 are as follows:

R&D Type	R&D Area
Small-start Type (Feasibility study)	"**Realization of a Super Smart society (Society 5.0)" area** (Program Officer: Akira Maeda) Making full use of AI and simulation technologies across different fields for a human-centered society <new>
	"Realization of a Sustainable Society" area (Program Officer: Hideyo Kunieda) 1. Enhancement of product durability and usability for resource-efficient society 2. Breakthrough technologies to accelerate breeding and strain improvement in biological production for a sustainable society <new>
	"Realization of the Most Safe and Secure Society in the world" area (Program Officer: Ken-ichi Tanaka) 1. Self-management of health based on the action mechanism of daily behaviors such as food, exercise and sleep 2. Realization of wellbeing by feedback based on psychological states evaluated by objective methods <new>
	"Realization of a Low Carbon Society, a Global Issue" area (Program Officer: Kazuhito Hashimoto) "Realization of a low carbon society through game changing technologies"
	"Common Platform Technology, Facilities and Equipment" area (Program Officer: Nobuyuki Osakabe) Realization of common platform technologies, facilities and equipment that create innovative knowledge and products
Large-scale Type	(Program Officer: Yoshihiro Oishi) Innovative device technologies to achieve ultra-high level information processing in the age of trillion sensors (TSensors) <new>

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Chapter 1 Invitation to R&D Proposals

1.1 JST-Mirai Program

1.1.1 Overview of JST-Mirai Program

Today, new knowledge and ideas can have a great influence on the international competitiveness of organizations and nations. It is important to boldly attempt new experimentation and promote high-risk and high-impact research and development (R&D) that will yield important innovations. The 5th Science and Technology Basic Plan states that, “Japan will popularize and disseminate suitable methods for promoting challenges” in the R&D projects conducted by the government ministries. Japan demands the large-scale promotion of new, profitable creations that can assist in the building of future industries and in reforming society; specifically, aggressive activities for promoting the creation of new values such as “Realizing of a world-leading super smart society (Society 5.0)” address in the 5th Science and Technology Basic Plan.

In response to the goals mentioned above, JST commenced the JST-Mirai program in FY2017.

By considering the social and industrial needs (including potential ones), this program will set technologically challenging goals with clear targets (exits) designed to produce beneficial economic and social impacts. In an attempt to reach a stage (proof of concept: POC) where application feasibility may be judged, the R&D for prospective projects will take advantage of the promising results produced by prior programs such as “Strategic Basic Research Program” and “Grants-in-Aid for Scientific Research.” This R&D will adopt operation practices that allow innovative ideas to be readily incorporated and rapidly, flexibly, and swiftly brought to commercialization.

The JST-Mirai program consists of two different project approaches: “Small-start Type” and “Large-scale Type.”

- Small-start Type

  A large number of R&D projects, beginning with feasibility study at a relatively low budget (small start), are narrowed down and integrated into cost intensive full-scale research. In feasibility study, many ideas are publicly called for to determine the feasibility of R&D toward full-scale research. In transition from feasibility study to full-scale research and during the full-scale research period, a stage gate evaluation [Note 1)] is conducted to narrow down the R&D projects and form an optimum R&D project group. The R&D project is called for through open invitation, etc. based on the “prioritized theme” set by JST according to technological classifications (areas) required for a future society set by the Ministry of Education, Culture, Sports, Science and Technology (MEXT).

- Large-scale Type

  The “Large-scale Type” R&D involves collecting and analyzing information on science, technology and innovations and changes existing technology systems. R&D projects relating to “technology themes” identified by MEXT to become platform technologies in the future are publicly called for and intensively funded.

This program, with aim of R&D to attain the POC, evaluates the progress of collaboration with the private sector in the stage gate evaluation, in addition to the progress of R&D as the scientific

aspect. In particular in a “Large-scale Type” R&D, private funding above a certain level is sought after the first stage gate evaluation (for details, see Chapter 3)

Note 1) Stage gate evaluation: An evaluation that divides the R&D period into multiple stages and decides whether to continue or end the R&D projects at each stage.

1.1.2 Purpose and characteristics of JST-Mirai Program

The rapid development of digital technologies combined with progress in open innovation has forced the global structure for creation of innovation to undergo great changes. Society and industries are at a great turning point in Japan. The JST-Mirai Program sets a goal for strengthening its strategic R&D in a style of challenging innovation creation to keep yielding new values.

JST aims to realize an "innovation ecosystem" that keeps innovation constant in view of solving social and industrial issues and creating new industries in its operation of JST-Mirai program. For that purpose, we challenge R&D which is technically extremely difficult and not clear the market at present by connecting the government, universities, and industries covering from basic study to practical application.

1.1.3 Important matters of the JST-Mirai Program and characteristics of its management

(1) Focus on “new value” creation by R&D that meets the purpose of prioritized themes and technology themes

● Concrete forms of values that the society seeks

The JST-Mirai program employs a “backcasting” approach R&D that draws an image of the future society through the rapid development of science and technology and brings about the transformation of society and industry in the above-mentioned "small-start type" and "large-scale type" R&D.

● Themes for attempting various mergers

We set the prioritized themes and technology themes which investigate various values that the society and industries seek and promote the collaboration and partnership of various organizations and researchers, including the cooperation of a variety of academic fields and integration of the humanities and science. At the same time, we also call for the themes to promote the solution for multiple issues with the realization of the value, or social implementation in mind.

R&D proposals for program that takes into account these points are called for.

● R&D management by R&D Supervisors (Program Officers: POs)

“Chapter 6 Prioritized Theme and Technology Theme for Research Proposals” (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf) explains the outline of prioritized themes and technology themes and the POs’ policies for selection and management. Take into account the outlines and messages in it.

In the “Small-start Type” R&D, the PO will review the organization, etc. of R&D teams as required for providing the R&D portfolio for each area and prioritized theme.

(2) Responsibilities of and expectations for R&D Principal Investigators (PIs) and institutions

● Setting the POC for excellent implementation ideas and value implementation

In the JST-Mirai program, R&D is conducted with stages set by the R&D PI to determine the "feasibility" of R&D required for achieving the prioritized themes and technology themes (proof of concept: POC). The POC is set as milestones to be pursued through R&D in consideration of social and industrial issues that are the core for achieving the prioritized themes and technology themes. It is necessary to widely predict multiple effect of implementation ideas on activities in society and companies to which the results are transferred when having achieved the POC. Milestones to be achieved during the R&D period are required to be set on R&D for the POC.

In the "Small-start Type" R&D, the R&D PI (Project Leader: PL), responsible for the relevant R&D project, is selected by solicitation for R&D project under the management by the PO throughout the prioritized themes in the relevant area. The PL promotes R&D based on the original and challenging ideas under the flexible management by the PO . The PL is expected to accurately understand social and industrial needs and takes proactive approaches for improving the feasibility. In the feasibility study, an R&D plan should be made according to "3.4.1 Evaluation in "Small-start Type," as a step toward full-scale research in addition to the solution of technological bottlenecks required for achieving milestones during R&D and confirmation of feasibility.

In the "Large-scale Type" R&D, the R&D PI (Program Manager: PM), selected by solicitation for R&D project, is granted a great deal of authority, and expected to play a main role for building and promoting the R&D team composed of top-class researchers

The R&D PIs of both "Small-start Type" and "Large-scale Type" R&D set the POC and milestones when the R&D theme is adopted according to the preliminary evaluation and coordination with the R&D Supervisor, and conducts R&D to aim to achieve them. In the course of R&D, the R&D PI may flexibly manage the operation such as the review of the R&D plan or optimization of operation (including the organization of a new team).

● Improving support systems

The R&D institution is requested to provide proper support for the promotion of R&D, for example, dispatching aides to assist R&D management by the R&D PI; setting an intellectual property management committee for creating, protecting and utilizing intellectual property rights (see "(4) Promoting Industry-Academia Collaboration"), and supporting collaboration among R&D institutions. JST also cooperates in building a support system together with R&D institutions as required.

● Positive participation and achievement of young researchers

It is particularly expected to promote challenging and creative R&D by a broad array of academic fields, including those integrating the humanities and science, and in diversity in age and gender. In view of the fact that many researchers who achieved world-class excellent research outcome conducted the basic study leading to the outcome when they were young, young researchers who forge the future of science and technology in Japan are expected to participate and take major roles in R&D. It is, therefore, recommended that R&D PIs invite young researchers to their R&D

as well as young researchers in industry, academic and governmental circles voluntarily tackling R&D management as R&D PI. JST will consider the support for R&D management training courses together with R&D institutions as required.

● **Changing R&D PI**

To put the value the society and industry seek into practice, or social implementation, we assume to change the weight of R&D dynamically in each R&D phase of each stage in the integrated management of basics and application. In order to achieve the value required by society and industry, that is, to reach the social implementation phase, dynamic changes in the weight of R&D content in management covering basics and application are assumed in the R&D phase at each stage.

In order to implement such dynamic changes effectively, it is possible to change the R&D PI. It is based on the assumption that the progress of the R & D phase will result in the need for restructuring, or in the event of a considerable reason that the R&D led by the R&D PI cannot be continued. These will be decided at the PD committee. In addition to the change, the allotment of part such as the R&D PI's task to the assistant is also assumed.

(3) Flexible and "thorough" R&D

● **Spiral and flexible R&D promotion**

The JST-Mirai program allows a "spiral model" of R&D in addition to that of a "linear model" that presumes reaching the goal from the seeds of basic research to applied research. For example, it allows timely responses, such as basic research conducted for solving issues appearing during R&D and a team for it to be formed (including the participation of new joint R&D institutions), new technologies and findings to be introduced, society and industries to respond to constantly changing needs, the results of some R&D to spin out, collaboration with other organizations and ELSI (Ethical, Legal and Social Issues).

To improve the likelihood of reaching the goal and maximize the results from any approaches, POs and JST staff examine progress in detail in addition to staging gate evaluations to perform an intense management.

● **Stage gate implementation**

The JST-Mirai program performs a "stage gate evaluation" during the R&D period, which is a strict evaluation for judging whether to continue or revoke R&D from the viewpoint of the likelihood of reaching the goal. Papers and patents are utilized as part of evidence for judging the feasibility of reaching the goal.

The "Small-start Type" R&D adopts many small start R&D projects that have relatively small R&D budgets and aim to verify R&D plans, necessary technology, and research elements toward meeting the requirements for carrying out full-scale R&D (small starts), and expanding the feasibility studies that have passed the stage gate evaluation into full-scale research (stage up).

Concerning projects that do not reach the stage up but can contribute to other projects for reaching the POC and the component research and technologies, the "Small-start Type" may take into account the challenging and highly original research and attempt to merge with other projects or utilize them as component research and technology.

The “Large-scale Type” performs the first stage gate evaluation of approximately three years (the 4th fiscal year) from the start of R&D. Private funding (more than 20%) is sought for the subsequent R&D activities in the promotion of participation of the private sector in view of social implementation. Be sure to see, "3.4.2 Evaluation in Large-scale Type” for the stage gate evaluation of the “Large-scale Type” R&D.

The R&D aiming for achieving the POC is promoted through these approaches to contribute to solving social and industrial issues and creating new industries.

(4) Promoting Industry-Academia Collaboration

● Intellectual Property Management Basic Policy

The JST-Mirai program has decided to connect R&D results to values for economic and social impacts in order to obtain secure and effective rights for the results in order to obtain and maintain reliability and superiority.

For this purpose, JST sets out basic policies common to this program, “Intellectual Property Management Basic Policy,” to attempt to integrate activities for R&D and intellectual properties and encourage the preparation of integrated policies for obtaining rights, announcement, non-disclosure and utilization of results.

The R&D PI needs to establish the mutual agreement “Treaty of mutually owned intellectual properties,” which complies with the basic policies agreed with participating organizations and researchers. This treaty needs to be submitted to JST and the PO within a certain period of time of research initiation and its review results will be used to judge whether R&D should be conducted.

Promotion of R&D based on basic policies is expected to strengthen collaboration and bridging with society and industries.

The basic policies are provided separately. See below for contents and details.

https://www.jst.go.jp/mirai/jp/manual/index.html

1.1.4 Management system for the JST-Mirai program

In the organization of JST-Miral program, the Program Director (PD) supervises the whole JST-Mirai program, and the PO is responsible for managing the R&D area and technology theme in charge (see the figure below).

The “Program Director committee for JST-Mirai program” (“PD committee”) will be organized as the supreme body of managing the JST-Mirai program. The PD chairs the PD committee, in which outside experts and JST executive directors in charge participate as committee members.

The PD committee reviews the important management matters for the JST-Mirai program: it decides on the important policies of the program, sets prioritized themes and technology themes, coordinates cross-disciplinary matters including budgets, selects project candidates, and decides whether to continue or to revoke projects on the basis of stage gate evaluations.

Each R&D management committee is composed of the PO, who chairs the committee, outside experts who support the PO, and JST staff as the committee members. This committee selects prioritized theme candidates for “Small-start Type” R&D subject to deliberation in the PD committee, selects candidate projects for adoption, manages daily progress of projects via site visit, instructs the R&D PI about the operation of R&D, and performs stage gate evaluations. The committee also

increases or decreases the amount of R&D costs, merges projects, and revokes projects (early termination) through evaluation.

* Each Small start Type Area has a Prioritized Theme. R&D project are promoted under each prioritized theme.
* Large-scale Type has several technological themes. R&D project are promoted under each technological theme.

Fig. Organization of JST-Mirai program

1.2 Researchers Considering Applying for /Participating in the Program

1.2.1 Contribution to achieving Sustainable Development Goals (SDGs)

JST contributes to achieving sustainable development goals (SDGs)

At the UN Sustainable Development Summit held in September 2015, the outcome document **"Transforming Our World: the 2030 Agenda for Sustainable Development"** was unanimously adopted. The outcome document focuses on Sustainable Development Goals (SDGs) as the more comprehensive new global action targets for humanity, the planet and prosperity. The 17 goals of the SDGs not only indicate challenges on sustainability faced by the humanity, but also require these challenges to be solved in an integrated and inclusive manner. To this end, it is hoped that innovation in science and technology will solve these social issues and provide a scientific basis for making better policy decisions. These roles agree with the new responsibilities of science, i.e., "Science in Society and Science for Society" set forth in the "Declaration on Science and the Use of Scientific Knowledge" (Budapest Declaration*) adopted by the International Science Council in 1999. As a core organization promoting Japan's science and technology policy, JST promotes cutting-edge basic research and is engaged in problem-solving R&D to meet the needs of society. SDGs are universal goals that can cover the entire JST's mission. JST will co-create values with the industry, academia, government, and public through its projects, and work with the researchers to achieve a sustainable society.

Michinari HAMAGUCHI
President, Japan Science and Technology Agency (JST)

* The Budapest Declaration states that "Science for Knowledge," "Science for Peace," "Science for Development" and "Science in Society and Science for Society" are the responsibilities, challenges and obligations of science in the 21st century.

○ See the website below for Sustainable Development Goals and JST's approaches:
https://www.jst.go.jp/sdgs/actionplan/index.html (Japanese)
https://www.jst.go.jp/sdgs/en/actionplan/index.html (English)

1.2.2 Promotion of diversity

JST Promotes Diversity!

The diversity is an essential requisite for promotion of scientific and technological innovations. It is possible to open a new perspective of science and technology by the collaboration and discussion among various stakeholders having different specialties and values, irrespective of gender and nationality. JST, by promoting advances in diversity in its all activities in science and technology, is undertaking possible problems of our future society, contributing to the strengthening of industrial competing power of Japan as well as to the enrichment of spiritual happiness of people. Our activities in this field are in accord with the “Sustainable Development Goals (SDGs)” agenda of the United Nations, in which goals relevant to diversity advancement are shown, including gender equality, contributing to efforts on our domestic problems but also to those on problems common to various countries.

Currently, the active participation of women in various fields is considered as the central part of the growth strategy as “the largest potential in Japan.” In the R&D sector, extensive participation of female researchers is also substantially important, and indispensable as one of those who support science, technology and innovation. JST expects the active participation of female researchers in this open call. JST is constantly making efforts for institutional improvement, for example, the improvement of our “Childbirth, Child-raising and Nursing Care Support System” to provide an environment in which a researcher on leave can return to his/her research project based on the voice of the system user.

The new research proposals are also examined from a viewpoint of diversity.

Dear Researchers: We look forward to receiving R&D proposals from as many of you as possible.

Michinari HAMAGUCHI
President, Japan Science and Technology Agency (JST)

We Are Waiting for Your Application!

JST is promoting diversity in research, based on our perspective that the diversity is for understanding of other researchers having ideas different from yours, and for creation of new values by combining your and their ideas. The diversity thus has the potentials to give solutions not only to the domestic problems but also to problems common in all nations across the world. Therefore, JST is undertaking the societal problem of the globe such as the Sustainable Development Goals (SDGs) through the promotion of diversity in research and collaborating with foreign institutions.

JST is promoting the diversity by ensuring the activities of women researchers, of course young researchers, and researchers with foreign citizenship. To ensure that each researcher is fully able to exercise his/her skills, JST is providing continual supports for childbirth, childcare, and homecare of elderly relatives, and also endeavoring to maintaining a balanced membership composition in committees and alike. JST especially welcomes the application of women researches to our program, from whom we cannot have so many research proposals in previous years, to realize environments where various kinds of researcher can work, cooperating and competing with each other. Through these activities, JST is pursuing the creation of new values.

We are sincerely waiting for your active applications, especially those from female researchers.

Miyoko WATANABE
Deputy Executive Director, Japan Science and Technology Agency (JST)
Director, Office for Diversity and Inclusion

1.2.3 Towards the promotion of fair research

Towards the Promotion of Fair Research

Recent incidents involving misconduct and dishonesty in research activities have resulted in an alarming situation that threatens the relationship of trust between science and society, and hinders the healthy development of scientific technologies. To prevent misconduct in research activities, there must be a concept of self-purification in the scientific community. Each researcher must strictly adhere to strict discipline and work to create new knowledge and inventions that are useful for society, based on high moral standards that meet the expectations of society.

As a funding agency for research, JST considers research misconduct to be a grave issue and makes every effort to prevent it in cooperation with relevant organizations, with the goal of regaining public trust.

1. JST believes that honesty in research activities is extremely important for Japan, which seeks to develop itself through science and technology.
2. JST supports honest and responsible research activities.
3. JST strictly condemns any misconduct in research activities.
4. JST will promote education in research ethics and reform its research funding programs in cooperation with the relevant organizations in order to prevent misconduct.

We must develop a healthy scientific culture based on social trust, so as to build a society filled with hopes and dreams for a bright future. We therefore request the continued understanding and cooperation of the research community and related institutions.

Michinari HAMAGUCHI
President, Japan Science and Technology Agency (JST)

1.2.4 Open access and data management plan

JST announced the basic policy for handling R&D achievements towards the promotion of open science in April 2017. The policy covers the basic concepts for allowing one's access to papers on R&D achievements and archiving, as well as on managing and disclosing R&D data.

In principle, researchers participating in this program are mandated to make the produced documents on R&D achievements available to the public via the repository organizations or publications for open access. Researchers are also requested to prepare a data management plan (DMP). This DMP should contain details on policies and plans for archiving, managing, and publishing, or the non-disclosure of research data, which are being developed for achievements. Researchers must also submit the DMP, along with the R&D plan document to JST. It is also mandatory for them to undertake archiving, managing, and publication of research data based on this DMP.

Please see the following for details:

○ JST Policy on Open Access to Research Publications and Research Data Management :
https://www.jst.go.jp/EN/about/openscience/policy_openscience_en.pdf

○ Implementation Guideline: JST Policy on Open Access to Research Publications and Research Data Management:
https://www.jst.go.jp/EN/about/openscience/guideline_openscience_en.pdf

JST analyzes statistic data including the number of data modules, types of data, types of publication and place of data storage aiming for the confirmation of entered data, support of researchers, and feedback to the basic policy (revision). The analyzed data is released to the public but the data available for tracing personal information such as name is strictly held back.

* For the bioscience data, also see "4.18 Release of data from the National Bioscience Database Center."

Chapter 2 Call for Proposals and Selection (“Small-start Type” and “Large-scale Type”)

2.1 “Small-start Type”

2.1.1 Concerning the “Small-start Type”

The JST-Mirai program “Small-start Type” employed backcasting type R&D that draws an image of the future of society through the rapid development of science and technology and brings about the transformation of society and industry. With new values desired by society and industry set as the prioritized theme, research ideas are called for from researchers belonging to universities, companies and public research institutes, and an R&D Principal Investigator (Project Leader: PL) and R&D project are selected (For the overlapped prioritized theme subject to selection process, see Application Guideline Annex “Chapter 6 Prioritized Theme and Technology Theme for Research Proposals (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf).

(1) R&D areas and prioritized themes

R&D Type	R&D Areas
Small-start Type (Feasibility study)	“**Realization of a Super Smart Society (Society 5.0)” area** (Program Officer: Akira Maeda) Making full use of AI and simulation technologies across different fields for a human-centered society <new>
	“Realization of a Sustainable Society” area (Program Officer: Hideyo Kunieda) 1. Enhancement of product durability and usability for resource-efficient society 2. Breakthrough technologies to accelerate breeding and strain improvement in biological production for a sustainable society <new>
	“Realization of the Most Safe and Secure Society in the World” area (Program Officer: Ken-ichi Tanaka) 1. Self-management of health based on the action mechanism of daily behaviors such as food, exercise and sleep 2. Realization of wellbeing by feedback based on psychological states evaluated by objective methods <new>
	“Realization of a Low Carbon Society, a Global Issue” area (Program Officer: Kazuhito Hashimoto) “Realization of a low carbon society through game changing technologies”
	“Common Platform Technology, Facilities and Equipment” area (Program Officer: Nobuyuki Osakabe) Realization of common platform technologies, facilities and equipment that create innovative knowledge and products

(2) Structure of "Small-start Type"

1) Outline of "Small-start Type" R&D

- The PL of a university, business firm or public R&D institution conducts R&D.
- R&D is aimed for reaching a stage to determine the feasibility of R&D (proof of concept: POC) and the outcome is proactively transferred to companies and society.
- R&D proceeds stepwise. At first, a large number of relatively less budget-consuming issues are adopted (small start), and then narrowed down for the transition to full-scale research to which budget is concentrated. The first phase is a period in which a number of new ideas are employed to see their feasibility.
- The achievement of POC is pursued by narrowing down R&D issues through the stage gate evaluation Note). For the R&D issue which is successfully transferred from the feasibility study to full-scale research through the stage gate evaluation (stage-up), R&D is accelerated for achieving the POC by, for example, expanding its scale to strengthen the R&D team. Considering the nature of R&D aiming for achieving the POC, the progress of partnership and collaboration with the private sector is examined in the stage gate evaluation in addition to the scientific progress of R&D.
- During the feasibility study period, in addition to the solution of technological bottlenecks required for achieving milestones during the R&D period and the confirmation of feasibility, an R&D plan should be prepared according to "3.4 Evaluation" as the preliminary step toward full-scale research.
- Since challenging and creative R&D is preferred in the small-start type, an issue that does not succeed in "stage-up" but may contribute to other issues to achieve the POC, as well as its element studies and technologies, may be integrated into another issue or its element studies utilized.

Note) Stage gate evaluation: R&D period is divided into a number of stages, and continuation or termination of the R&D project is determined at each stage.

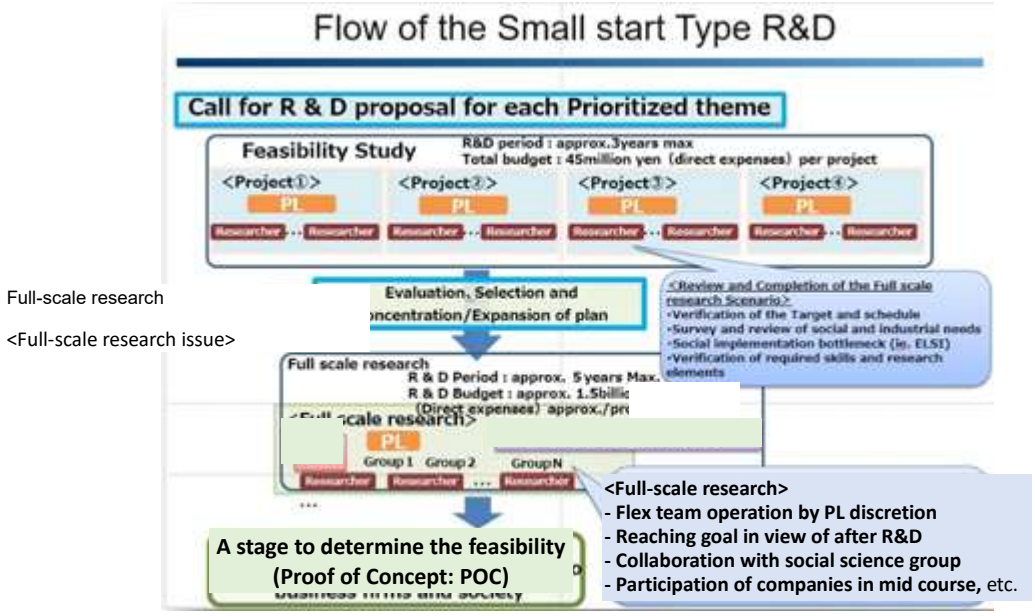


Fig. 1 Outline of "Small-start Type" R&D

* Feasibility Study (Component-technology type):

In addition to the proposals of research ideas for the transfer to full-scale research as described above (General type), some of the prioritized themes invite the proposals of component technologies that contribute to achieving prioritized themes as the “Small-start Type (Component technology type)”.

We would like to ask the PL who performs the “Small-start Type R&D (Component technology type)” to embark on the development of component technologies for introducing the results into full-scale research to be conducted under the prioritized theme to achieve the goal. For such a purpose of the Component-technology type, proposals of novel ideas by young researchers are expected.

The research proposal aiming for the Component technology type when it is adopted may be changed to the R&D theme intended for the transition to full-scale research during the R&D period through evaluation equivalent to the general type when PO finds it necessary.

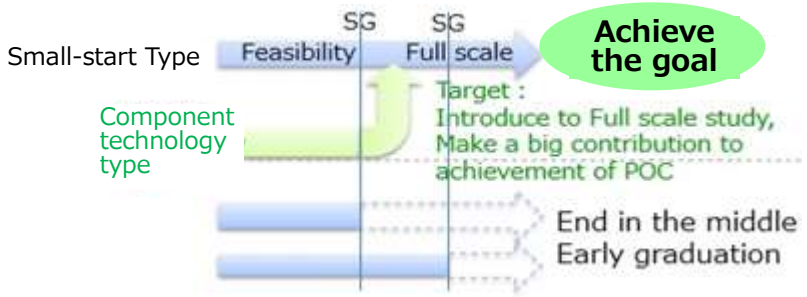


Fig. 2 Image of “Small-start Type (Component technology type)” R&D

For the prioritized theme requiring the proposals of “feasibility study (Component technology type),” confirm Application Guideline Annex, Chapter 6 "Prioritized Theme and Technology Theme for Research Proposals" (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf)."

Proposals for the prioritized theme in the “Realization of a Sustainable Society” area: Enhancement of product durability and usability for resource efficient society, and those for the prioritized theme in the “Common Platform Technology, facilities and Equipment” area: Realization of common platform technologies, facilities, and equipment that create innovative knowledge and products are called for this fiscal year.

2) R&D costs and periods

R&D costs and periods are set for individual prioritized themes. Be sure to see Application Guideline Annex Chapter 6 "Prioritized Theme and Technology Theme for Research Proposals (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf)" before making the R&D plan. JST pays R&D costs (direct costs) and indirect costs (a maximum of 30% of the direct costs) to the R&D institution as commissioned R&D costs based on the R&D agreement.

3) R&D team

The PL is asked to organize an optimum R&D team composed of a number of researchers. The

proposal can be submitted before the team is organized.

a. The PL can organize a group (“joint R&D group”) consisting of researchers from another laboratories of the R&D institution or other R&D institutions, if necessary for realizing R&D ideas, in addition to the “PL’s R&D group” led by the PL. A proposal by an individual is allowed, but the progress of matters concerning system construction required for implementing full-scale research must be entered in the R&D proposal documents.

b. Of the researchers in the “joint R&D group,” the PL needs to participate in the R&D team, if is formed, as “the main joint researcher.”

c. Depending on the need for promoting R&D, researchers and their aids, etc. can be employed in the scope of R&D costs (in the scope of the R&D agreement of the R&D institution). See “2.3 Common matters concerning proposal selection for projects” for the requirements for R&D structure.

2.1.2 Proposal selection for “Small-start Type” R&D

JST calls for R&D proposals for each prioritized theme in the areas stipulated by the government. Applicants are requested to submit R&D Plan of Feasibility Study by clarifying the POC to be attained within the R&D issue including full-scale research.

Members of the R&D management committee cooperate with the PO in the selection process by the prioritized theme (for details, see “2.1.2 Proposal selection for “Small-start Type” R&D, (5) Selection viewpoints” and “2.3.3 Selection method”).

(1) R&D proposals sought

1) R&D proposals concerning the seven prioritized themes described in “2.1.1 (1) Target areas and prioritized themes for call” are requested.

2) Adequate R&D proposals should be applied for each of the prioritized themes by carefully reading the outline of individual prioritized themes and the PO’s policies for application and selection processes described in Application Guideline Annex, Chapter 6 "Prioritized Theme and Technology Theme for Research Proposals (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf)."

3) Be sure to read “2.3 Common matters concerning proposal selection for projects” which contains important common matters.

(2) Number of proposals for adoption

The number of proposals to be adopted for each prioritized theme is two to nine (depending on the purpose of each prioritized theme, proposal state and budget).

(3) Special treatment upon adoption

1) Concerning possible coordination of areas and prioritized themes

The Program Director or PO, etc. may conduct an interdisciplinary coordination on the adoption of R&D proposals for prioritized themes. Consequently, a proposal may be adopted not under the original prioritized theme, but under a different prioritized theme. In such a case, a notice is sent to the R&D proposer as the decision of coordination is made in the process of selection.

2) Concerning specific project survey

A “specific project survey” may be conducted on particular prioritized themes in order to attract proposals during this and the next submission window. When there is an R&D proposal potentially capable of collecting supplement data a short period of time with small budgets and meeting the selection criteria next time or after the next time, the relevant R&D proposer may be requested surveys on specific projects aside from the issue selected by the PO.

A prerequisite for specific project survey is, in principle, a reapplication under the pertinent prioritized theme by the time specified by the PO. In that case, the proposal is handled in the same way as other R&D projects; no priority is given. Further, no direct application is allowed for the specific project survey.

(4) Requirements for application

Requirements for application are described in 1) to 3) below.

Be aware of the following, which relates to application requirements:

- R&D proposals that do not meet application requirements are, in principle, neither accepted nor adopted.
- When the R&D proposal is adopted, application requirements must be maintained throughout the entirety of the R&D period. If the requirements cease to be maintained during the R&D period, the entire, or part of the research project is finished early (cancellation) in principle

In addition to the requirements in 1) to 3) below, the proposer should also carefully read and understand the description in “2.3.2 Concerning restrictions on duplicate applications for the JST-Mirai program.”

1) Requirements for applicants

a. An applicant who leads R&D should be affiliated with an R&D institution (including a private firm, incorporated association or incorporated foundation) to organize an R&D team in that R&D institution upon becoming the project leader (the proposer may be of any nationality).
   * The following individuals may also apply as the R&D PI:
     - A foreign researcher who is affiliated with an R&D institution in Japan.
     - A researcher who is not affiliated with any specific R&D institution in Japan, or is affiliated with an overseas R&D institution, and when selected as the R&D PI, can be affiliated with an R&D institution in Japan to conduct R&D (any nationality is acceptable).

b. A researcher who can undertake responsibilities as a representative of the research team throughout the R&D period (for details, see “3.5 Responsibilities of R&D Principal Investigator (PI) and Main Joint Researchers”).

c. The applicant should have completed an educational program on research integrity at the affiliated R&D institution, or the same program provided by JST prior to by the deadline for proposals (for

details, see “4.1 Enrolling in and completing educational program on research integrity”).

d. In making an application, the applicant should pledge to:

- Understand and comply with “Guidelines for Responding to Misconduct in Research” (a decision made by Minister of Education, Culture, Sports, Science and Technology, August 26, 2014);
- Understand and comply with “Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)” (revised on February 18, 2014);
- Avoid misconduct in research (fabrication, falsification and fraudulent use) and improper use of research funds as the project leader and team members when the R&D proposal is adopted; and.
- Guarantee that there is no record of misconduct in research activities relating to the past R&D outcomes entered in the R&D Proposal Document.

* The applicant is requested to confirm the above pledges on the application information entry page of e-Rad.

2) Requirements for R&D team

The following requirements must be met.

a. An R&D team is an optimum system for realizing the idea of the R&D applicant, who will gain the position of R&D PI once the proposal is accepted.

b. A joint R&D group within an R&D team is necessary and essential for the realization of R&D ideas and can substantially contribute to achieving research goals.

c. If an overseas R&D institution participates as a joint R&D group (in such a case that a researcher affiliated with an overseas R&D institution participates as a main joint researcher), it can be difficult to conduct R&D on realizing the research idea without input from the overseas R&D institution (receiving such input requires approval from the PO). In such a case, it should be possible to obtain results, such as intellectual property rights.

* When including an overseas R&D institution in the R&D team, describe in the R&D plan (R&D Plan of Feasibility Study (Form 3)) for the R&D proposal the reason a researcher affiliated with an overseas R&D institution is required. Further, the overseas R&D institution must sign a contract agreeing to the proposed content stipulated by JST (maximum indirect costs is 30% of direct costs). Before the interview for proposal selection, submit the specified form (to be outlined later) that shows prior approval from a person in charge of contracts for the overseas R&D institution (inquiries may be made by the secretariat during the selection process).

3) Requirements for R&D institutions

R&D institutions must fully recognize that the original funding for R&D agreements is sourced from public funds, and they should make efforts to conduct their R&D efficiently, as well as to comply with associated laws. Any R&D institution that cannot perform the responsibilities described in “3.6 Responsibilities of R&D institutions” will not be approved to conduct research. Therefore, be sure to obtain prior approval from the R&D institution at which you plan to conduct your R&D before submitting an application.

(5) Selection viewpoints

The JST-Mirai program expects the participants to promote highly impactful R&D for realizing a better society and set a stage (concept of proof: POC) to determine the feasibility of R&D as the goal.

This is a significant feature of this program since its launch in FY2017, and we will continue to keep this feature in solicitation and selection this fiscal year.

For the invitation and selection of proposals in this fiscal year, we reviewed the selection criteria and proposal documents (forms) to encourage the applicant to make proposals even more in line with the purpose of this program. The review is intended to make it easier to understand the purpose of this program, and does not change the original purpose of the program.

1) Selection criteria [preliminary evaluation: "Small-start Type"]

Common selection criteria for the JST-Mirai program "Small-start Type" are described below (Small-start Type R&D proposals are required to meet all standards from 1 to 4).

Small-start Type
1. Setting goals for proposal ・Set highly impactful goals to realize a better society.
2. Making an R&D plan ・Design an appropriate path to the goal based on the current research situation. ・Make an appropriate R&D team and allocate roles suitable for achieving the goal. ・Make a target achievement plan such as the involvement of society and industry.
3. Technological difficulty level of proposal ・Make a breakthrough in science and technology, not an extension of conventional technology. ・Maintain the competitiveness and originality of proposal in light of domestic and overseas R&D trends.
4. R&D team ・Build a system to enable the applicant (PL) to show leadership toward achieving the goal. ・Keep a good management of the utilization of R&D results such as intellectual property rights. ・Disseminate information on the R&D ideas in an easy-to-understand manner.

<Supplement>

・The PL of the "Small-start Type" R&D needs to play a role for promoting R&D under the PO. The PL is expected to integrate the collaboration with her/his aids, pass the position as the PL to another researcher, and deal with the affiliated instituion for support, etc. in a comprehensive way to manage the while R&D project. Therefore, the preparation and investigation concerning the introduction of the R&D support method and system, etc. by the affiliated R&D institution are also considered as reference in the selection of R&D in feasibility study.

・The “Small-start Type (Component technology type)” is not transferred to full-scale on an individual basis, but designed to establish the component technology necessary to achieve the goal of the R&D project carried out under a prioritized theme. The selection process is conducted in accordance with the relevant prioritized theme and selection criteria for the Small-start Type.

2.1.3 Guidance for entry in “Small-start Type (Component technology type)” R&D proposal documents (forms)

The application requirements such as R&D period and costs differ depending on the prioritized theme. Be sure to read the application requirements provided in Application Guideline Annex “Chapter 6 Prioritized Theme and Technology Theme for Research Proposals (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf) before making an application.

The R&D proposal forms differ between ordinary feasibility study and feasibility study (Component technology type). Download the forms according to the type of R&D from the open call website (https://www.jst.go.jp/mirai/jp/open-call/research/r02/).

The prioritized theme seeking “Small-startTtype (Component technology type)” R&D is as follows:

・“Realization of a Sustainable society” area

Prioritized theme: Enhancement of product durability and usability for resource efficient society

・”Common Platform Technology, Facilities and Equipment” area

Prioritized theme: Realization of common platform technologies, facilities, and equipment that create innovative knowledge and products

Classification: ST09 “Mathematical Models or Analytical Methods to Investigate Truth from Diverse Real Data”

For the application to component technology type R&D, refer to “2.1.5 Guidelines for entry in “Small-start Type (Component technology type)” R&D Proposal Document (Form).

For the application to other prioritized themes, refer to “Guidelines for entry in “Small-start Type” R&D proposal documents (forms).”

When you consult a person who plays a role of coordinator or a person in charge of the related company to clarify POC issues or social or industrial issues which must be entered in the proposal documents, please state the view of this person if it is possible in Form 9 “View of the Coordinating Person or Company Contact” (this does not apply to the Small-start Type (Component technology type)). The submission of Form 9 is not mandatory.

2.1.4 Guidelines for entry in “Small-start Type” R&D proposal documents (forms)

Be sure to use the forms provided for this fiscal year. Please download the forms from the project website shown below, and appropriately prepare R&D proposal documents by following the guidelines for entry in these forms (refer to blue letters in the proposal documents).

https://www.jst.go.jp/mirai/jp/open-call/research/r02/
* Be sure to use the forms for the small-start type R&D.

A list of the documents to be submitted is shown below.

Form No.	Document name
Form 1	R&D Proposal: Cover
Form 2	R&D Project Description
Form 3	R&D Plan of Feasibility Study
Form 4	R&D Budget Plan for Feasibility Study
Form 5	R&D Project Applicant (Project Leader)
Form 6	Other Funding Supports
Form 7	Protection of Human Rights and Compliance with Laws and Regulations
Form 8	References
Form 9 (Optional)	View of the Coordinating Person or Company Contact

* Ensure the file does not exceed 3MB.
* Be sure to check “(2) Managing the conflicts of interest (persons engaged in selection) in “2.3.3 Selection method” when preparing the proposal documents.
* See “Chapter 5 Submission via the Cross-ministerial R&D Management System (e-Rad)” for application methods for R&D proposals.
* Be sure you have an appropriate understanding of “Chapter 4 Key Points for Application” and “Chapter 2, 2.3.2 Concerning restrictions on duplicate applications for the JST-Mirai program” before making an application.

2.1.5 Guidelines for entry in “Small-start Type (Component technology type)” R&D proposal documents (forms)

Be sure to use the forms provided for this fiscal year. Please download the forms from the following project website, and appropriately prepare R&D proposal documents by following the guidelines (refer to blue letters in proposal documents) concerning completing such forms:

https://www.jst.go.jp/mirai/jp/open-call/research/r02/

* Be sure to use the forms for the small-start type (component technology type)R&D.

A list of the documents to be submitted is shown below.

Form No.	Document name
Form 1	R&D Proposal: Cover
Form 2	R&D Project Description
Form 3	R&D Project Applicant (Project Leader)
Form 4	Other Funding Supports
Form 5	Protection of Human Rights and Compliance with Laws and Regulations

* Ensure the file does not exceed 3MB.
* Be sure to check “(2) Managing the conflicts of interest (persons engaged in selection) in “2.3.3 Selection method” when preparing the proposal documents.
* See “Chapter 5 Submission via the Cross-ministerial R&D Management System (e-Rad)” for application methods for R&D proposals.
* Be sure you have an appropriate understanding of “Chapter 4 Key Points for Application” and “Chapter 2, 2.3.2 Concerning restrictions on duplicate applications for the JST-Mirai program” before making an application.

2.2 “Large-scale Type”

2.2.1 Concerning the “Large-scale Type”

The JST-Mirai program “Large-scale Type” intensively invest to R&D dealing with technology themes specified by the Ministry of Education, Culture, Sports, Science and Technology(MEXT) to collect and analyze information on science, technology and innovation, change the current technology system and become the platform technology of the future. The R&D Principal Investigator (PI) who has a good power of idea would have a great authority as the program manager (PM). We hope that the PM will become the center of building and promoting a system to organize a top-level R&D team

In “Large-scale Type”, early participation of private companies is desired in the phase of the 1st stage gate evaluation (see “2.2.1 (2) 9) Stage gate evaluation) to promptly connect the new platform technology created to social implementation and induce private investment, and “the organizations asked for funding (“the sponsoring organizations”)” must commit a predetermined level of funding for the subsequent R&D. If the sponsoring organization does not fund the predetermined amount of costs, an early termination (cancellation) of the R&D project may be decided. Be sure to read “2.2.1 (2) 9) Stage gate evaluation” for stage gate evaluation.

(1) Technology theme for open call

R&D Type	R&D Areas
Large-scale Type	(Program Officer: Yoshihiro Oishi) Innovative device technologies to achieve ultra-high level information processing in the age of trillion sensors (TSensors) <new>

(2) Structure of “Large-scale Type”

1) Operation by PO

An PO oversees multiple technology themes to manage the entire “Large-scale Type” R&D. To accomplish this, the PO supports program managers (PMs) by giving advice on their activities and state of goal achievement, in collaboration with experts for technology themes (e.g. R&D management committee members), and through the selection of R&D projects, advice, coordination and approval of R&D plans (including R&D budget plan and R&D team), site visits, and any other necessary means to fully explore each technology theme. The PO also gives advice on the evaluation of the progress of R&D, change of PMs and cancellation of R&D projects to the PD committee for the management of PMs and R&D projects.

2) Management of R&D projects by the PM

The Program Manager (PM) assumes a stage to reach for determining the feasibility of R&D (POC) based on his/her original and outstanding R&D ideas, sets milestones and makes R&D plans

(including R&D budget plan and R&D team) to reach the stage. The PM is responsible for all R&D projects and R&D team in charge, and promote R&D towards the goal through the management of progress and guidance.

The PM forms an optimum R&D team composed of a number of researchers and organizations, and begins R&D when the R&D plan is approved by the PO. The PM also promotes the R&D project with the stage gate evaluation in mind (to determine whether the R&D project should be continued or revoked) based on the milestones set at the launch of the R&D project.

3) Getting hold of PMs and progress of R&D projects by the PO

○ The PM gives a periodic report about the progress of R&D to the PO approximately once every six months. The PO and R&D management committee members ask the PM to make a progress report as required to get hold of the progress by the PM efficiently, and conduct site visits, etc.

○ The PO and R&D management committee members ask improvements to the PM, as required, according to the periodic report on progress, etc.

○ The PD committee makes a request to JST for the dismissal of the PM based on the evaluation and investigation by the PO if it determines that improvements for the progress of R&D requested by the PO and R&D management committee members are not made, or it seems unlikely for the project to produce any outcome to achieve the goal.

○ The PM is allowed to ask for advice from the PO and R&D management committee members. When asked for advice by the PM, the PO and others must provide proper response.

○ JST will conclude an R&D agreement with the R&D institution according to the PM's R&D plan approved by the PO. Based on the agreement with JST, the R&D institution conducts R&D.

4) R&D costs

For the budget of a product, please refer to Application Guideline Annex "Chapter 6 Prioritized Theme and Technology Theme for Research Proposals" (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf).

For the projects accepted in FY2020, the first stage gate evaluation will be made by the end of FY2023 at the latest. The PO will determine the timing of the stage gate evaluation. For more information on the R&D budget, refer to Application Guideline Annex "Chapter 6 Prioritized Theme and Technology Theme for Research Proposals: 6.2 Large-scale Type."

Based on the R&D agreement, the JST makes a payment to cover R&D costs and indirect costs (up to a maximum of 30% of direct costs) to an R&D institution; these are contract R&D costs.

5) R&D costs: assessment and variability

The proposed budget and R&D costs are subject to assessment during the selection period; they can be changed to reflect constraints on the budget for the whole project. Actual R&D costs are determined from the strict examination and approval of the R&D plan by the PO, results of stage gate evaluation, and the progress of R&D.

The R&D budget is set each fiscal year according to the progress of R&D and the total budget allocation for all projects in that year.

6) R&D period

An R&D period is about nine-and-a-half-year maximum, from November 2020 to March 2030 (or until the end of the fiscal year following the 10th fiscal year), as long as the R&D initiative in question continues after the stage gate reviews. If the stage gate reviews and progress indicators result in early termination of R&D (cancellation), the PM is expected to consult with the PO, for example, to summarize R&D achievements within a year.

The actual R&D period is determined from the strict examination and approval of the R&D plan by the PO, results of stage gate evaluation and the progress of R&D, etc.

7) R&D team

The PM is asked to form an optimum R&D team, composed of a number of organizations and researchers and drawn together by her/his own excellent, original R&D ideas. To organize the team, R&D institutions and researchers should be selected using appropriate methods, including nominating and calling for to integrate top-level R&D power and knowledge in Japan.

a. The PM may set up an R&D group (“joint R&D group”) composed of researchers affiliated with laboratories or R&D institutions in order to follow through on R&D ideas.
b. Of the members of an R&D team, the representative of the “joint R&D group” participates in the team as the “main joint researcher.”
c. Researchers and research assistants for an R&D project may be employed using R&D costs (within the R&D institution’s R&D agreement) if needed to advance the research.
   * See “2.2.2 (3) Requirements for application” for those for the R&D team.
d. The PM can set up the “PM’s R&D group” composed of researchers led by the PM.

8) R&D support system

The PM should establish a system and measures to support R&D to ensure that R&D is carried out effectively and efficiently and researchers can concentrate on their R&D tasks.

To achieve this goal, the PM should identify a system and measures to support and promote R&D, in cooperation with the main joint researchers and R&D institutions. The R&D institutions, in particular, are expected to fully exploit their various functions and mechanisms to support the R&D project, as well as providing any assistance needed by the PM.

The PM should summarize support measures to which R&D institutions express a commitment and enter it in the R&D proposal documents.

9) Stage gate evaluation

The results of Stage gate evaluation may lead to (i) changes in team composition, (ii) increases or decreases in R&D costs, and (iii) termination of an R&D project.

For the projects accepted in FY2020, the first stage gate evaluation will be made by the end of FY2023 at the latest. The PO will determine the timing of the stage gate evaluation.

In the large-scale type R&D, in order to ensure that newly created fundamental technologies are brought swiftly to social implementation, and also attract private investment, the “sponsoring organization” is asked to supply 20% or more of the total R&D costs for the subsequent R&D at the time of the first stage gate evaluation from the launch of the R&D. If no sponsorship funding is secured, a comprehensive evaluation may lead to the early termination (cancellation) or adjustment

of the R&D project (for details, see “3.4.2 Evaluation in Large-scale Type”).

2.2.2 Proposal selection for “Large-scale Type” R&D

JST calls for R&D proposals of technology theme specified by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in every area. The PO collaborates with the R&D management committee members to select proposals in each Technology Theme. In FY2020, JST calls for one technology theme.

(1) R&D proposal sought

1) R&D proposals are called for in one Technology Theme, as described in “2.2.1 (1) Technology theme for open call”
2) Read carefully about the outline of technology themes and policies of POs for open call, selection and operation detailed in Appendix Application Guideline, Chapter 6 "Prioritized Theme and Technology Theme for Research Proposals (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf)” to make suitable proposals for the relevant technology themes.
3) Be sure to read “2.3 Common matters concerning proposal selection for projects,” which contains important common matters.

(2) Number of project proposals for adoption

We plan to accept one project in Technology Theme in FY2020.

(3) Requirements for application

Requirements for application are described below in points 1)-3).
Please be aware of the following requirements:

* An R&D proposal that does not meet all requirements by the selection deadline will, on principle, be neither selected nor accepted.
* Application requirements are retained throughout the entire R&D period, once a proposal has been accepted. If any requirements are neglected during this period, the whole or part of the R&D project will be terminated early (cancellation). Before applying, ensure that you have read and understood “Chapter 4 Key Points for Application” in addition to the following points, 1)-3).

1) Requirements for applicants

The applicants should meet all of the following requirements.

① The application should be made by one person who is assigned as the program manager (PM); it may not be a joint proposal.

② The PM should engage in PM work at the highest possible effort.

③ An applicant who becomes the PM should be affiliated with an R&D institution in Japan to form a research team there (there are no restrictions on the applicant’s nationality).

* The applicants mentioned below may also propose R&D projects
  - Researchers of foreign nationality who are affiliated with R&D institutions in Japan;

- Researchers who are not affiliated with any Japanese organization or affiliated with overseas R&D institution, but who can be affiliated with an R&D institution in Japan to form an R&D team if accepted as the PM (there are no restrictions on the applicant's nationality).

* People affiliated with private firms, including R&D institutions other than universities, are also acceptable.

④ The applicant should be able to manage every aspect of R&D project as the PM of the R&D team throughout the R&D period.

* See "3.5 Responsibilities of R&D Principal Investigators and Main Joint Researchers" for additional details.

⑤ The applicant should have completed an educational program on research integrity at the affiliated R&D institution or the same program provided by JST by the deadline for proposals.

* See "4.1 Enrolling in and completing educational program on research integrity" for details.

⑥ In making an application, the applicant should pledge to:

- Understand and comply with "Guidelines for Responding to Misconduct in Research" (a decision made by Minister of Education, Culture, Sports, Science and Technology, August 26, 2014);
- Understand and comply with "Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)" (revised on February 18, 2014);
- Avoid misconduct in research (fabrication, falsification and fraudulent use) and improper use of research funds as the project leader and team members when the R&D proposal is adopted; and.
- Guarantee that there is no record of misconduct in research activities relating to the past R&D outcomes entered in the R&D Proposal Document.

* The applicant is requested to confirm the above pledges on the application information entry page of e-Rad.

2) Requirements for the R&D teams

The following requirements must be met. Also see "2.2.2 Proposal selection for "Large-scale Type" R&D : (4) Requirements for application.

a. An R&D team is an optimum system for realizing the idea of the R&D applicanat, who will gain the position of a PM once the proposal is accepted.
b. A joint R&D group within a research team is necessary and essential for the realization of R&D ideas and can substantially contribute to achieving research goals.
c. If an overseas R&D institution participates as a joint R&D group (in such a case that a researcher affiliated with an overseas R&D institution participates as a main joint researcher), it can be difficult to conduct R&D on realizing the research idea without input from the overseas R&D institution (receiving such input requires approval from the PO). In such a case, it should be possible to obtain results, such as intellectual property rights.

* If an overseas R&D institution is included in the R&D team, describe the composition of the overseas team in the **Joint R&D group "a"** column of the Large-scale R&D Proposal (R&D Plan-Form 3). Also enter the reason why the joint researchers affiliated with the overseas R&D

institution are needed in the Special Matters column.

The overseas R&D institution must, in principle, accept JST's R&D funding guidelines (maximum indirect costs of 30%) when signing an R&D agreement with JST. Please submit a form (to be finalized later) to show prior approval by a responsible person in the contract department of the overseas R&D institution before the selection interview. An overseas R&D institution is not allowed to participate in an R&D team unless an R&D agreement can be signed.

3) Requirements for R&D institutions

An R&D institution must fully recognize that R&D funding is public money; it must therefore comply with the laws that require R&D to be carried out efficiently.

A project at an R&D institution that cannot fulfill the requirements and responsibilities described in "3.6 Responsibilities of R&D institutions" will not be approved. Be sure to obtain prior approval from the organization at which the R&D will be carried out before making an application.

(4) Selection viewpoints

1) Selection standards (preliminary evaluation standards)

Common selection criteria for the JST-Mirai program "Large-scale Type" are described below (all conditions from 1 to 4 must be met for the large-scale type proposals).

Large-scale Type
1. Setting goals for proposal ・Set highly impactful goals to realize a better society.
2. Making an R&D plan ・Design an appropriate path to the goal based on the current research situation. ・Make an appropriate R&D team and allocate roles suitable for achieving the goal. ・Make a target achievement plan such as the involvement of society and industry.
3. Technological difficulty level of proposal ・Make a breakthrough in science and technology, not an extension of conventional technology. ・Maintain the competitiveness and originality of proposal in light of domestic and overseas R&D trends.
4. R&D team ・Means to achieve the goal such as the involvement of private companies are provided under the R&D team. ・The R&D PI (PM) is capable of understanding the issues of the whole team and promoting R&D to achieve the goal under the R&D system (including intellectual property management and information dissemination).

<Supplement>

1. For the viewpoints and policies of for selection and policies of operation for individual prioritized themes and technology themes, see Application Guideline Annex "Chapter 6 Prioritized Theme

and Technology Theme for Research Proposals (https://www.jst.go.jp/mirai/jp/uploads/application-guideline-r02-c6.pdf).

2. The “unreasonable duplications” or “excessive concentration” of R&D costs is also a factor of selection. For details, see “4.2 Measures against unreasonable duplication and excessive concentration.”

3. JST may ask for the submission of information materials besides the R&D proposal documents to manage the conflicts of interests among R&D researchers. (An example is a case in which the PM allows an organization with a conflict of interest to participate in a joint R&D group.)

2.2.3 Guidelines for entry in R&D proposal documents (forms)

Be sure to use the R&D proposal forms provided for this fiscal year. Please download the R&D proposal forms from the project website shown below, and appropriately prepare R&D proposal documents by following the guidelines for entry in these forms (refer to blue letters in the proposal documents).

https://www.jst.go.jp/mirai/jp/open-call/research/r02/

A list of the R&D proposal documents to be submitted is shown below.

Form No.	Document name
Form 1	R&D Proposal: Cover
Form 2	R&D Project Description
Form 3	R&D Plan of Full-scale Research
Form 4	R&D Budget Plan
Form 5	R&D Project Applicant (Program Manager)
Form 6	List of Achievements, Results of Evaluation at Completion, List of Patents
Form 7	Other Funding Supports
Form 8	Protection of Human Rights and Compliance with Laws and Regulations
Form 9	References

* Ensure that the file does not exceed 3MB.
* Be sure to check “(2) Managing the conflicts of interest (persons engaged in selection) in “2.3.3 Selection method” when preparing the proposal documents.
* See “Chapter 5 Submission via the Cross-ministerial R&D Management System (e-Rad)” for application methods for R&D proposals.
* Be sure you have an appropriate understanding of “Chapter 4 Key Points for Application” and “Chapter 2, 2.3.2 Concerning restrictions on duplicate applications for the JST-Mirai program” before

making an application.

2.3 Common matters concerning proposal selection for projects

2.3.1 Solicitation and Selection Schedule

R&D proposal acceptance begins	Thur., April 30, 2020
Briefing of Solicitation	For details and application to proposal, see the open-call page of the website for JST-Mirai program: https://www.jst.go.jp/mirai/jp/open-call/research/r02/
Application deadline (Deadline for submitting applications through the e-Rad system)	12:00 noon (Japan time) on Tuesday, June 30, 2020

Application of proposal is implemented via e-Rad system (see Chapter 5 Submission via the Cross-ministerial R&D Management System (e-Rad)).

As the application deadline approaches, heavy demands on the e-Rad system could slow down the application process and even cause the application deadline to be missed. Please give yourself enough time to complete submission of the proposal.

No proposal for which the application procedure has not been completed via e-Rad by the deadline is subject to examination for any reason.

Document screening period	Late-July to Late August
Interview screening period	Early-August to Late-September
Notification/announcement of selected proposals	During November
R&D project begins	After November

* The dates are expected dates. They are subject to change.
* Specific interview selection schedule will be determined by JST.
* As soon as it is determined, the document screening and the interview selection schedule will be announced on the following website:
  https://www.jst.go.jp/mirai/jp/open-call/research/r02/

2.3.2 Concerning restrictions on duplicate applications for the JST-Mirai program

The following restrictions are imposed on duplicate applications concerning R&D proposals called

for the JST-Mirai program in FY2020. Certain measures may also be taken for unreasonable duplication or concentration for other projects inside and outside JST that are not described here. See “4.2 Measures against unreasonable duplication and excessive concentration” for details.

<Common to “Small-start Type” and “Large-scale Type” R&D themes>

(1) An R&D Principal Investigator (PL/PM) is only allowed to apply ONE proposal for every prioritized and technology theme in both the “Small-start Type” and the “Large-scale Type” R&D.

(2) The researcher who is currently the PL/PM of an R&D project in the JST-Mirai program cannot apply to the open call, except when that R&D project is scheduled to end within FY2020. If the R&D project is extended due to evaluation results, etc., or continued as full-scale research, an individual coordination is made to single out the project led by the R&D PI.

(3) The following restrictions are imposed on R&D proposals if the applicant participates in R&D as the main joint researcher:

a. Multiple applications are not allowed in which the R&D PI and the main joint researcher exchange positions.

b. If a person participates in two or more R&D proposals as an R&D PI or a main joint researcher and multiple R&D projects are adopted, the PO takes into account the contents and scales of the research to make adjustments, such as decreasing R&D costs or disapproving some of the R&D projects in which the researcher participates.

<Only applies to “Realization of a Low Carbon Society, a global issue” area (Small-start Type)>

At present, the “R&D PI” of the Advanced Low Carbon Technology Development (ALCA), a strategic basic research program, cannot apply for the “Realization of a low carbon society” area of JST-Mirai program (Small-start Type) (except for the case that the R&D period of the R&D project ends within FY2020).

2.3.3 Selection method

See “Solicitation and Selection Schedule” on the cover for the schedule related to selection.

(1) Selection process

The PO cooperates with the R&D management committee to review documents and conducts interviews in order to make a selection. She/he may also seek cooperation from outside evaluators.

For the “Small-start Type” R&D proposals, a preliminary screening may be carried out prior to the document-based screening depending on the number of applications, etc. for each prioritized theme to mainly check whether the requirements for the small-start type R&D proposal document (R&D Project Description-Form 2) are met.

This preliminary screening mainly examines the consistency of the proposal with the purpose of the prioritized theme (potential contribution to achieving the targets of the prioritized theme), and with the purpose of the “Small-start Type” R&D. Only proposals that pass the preliminary screening proceed to the document-based screening (R&D Plan of Feasibility Study (Form 3)).

The preliminary screening is only for the “Small-start Type”. The prioritized theme subject to the preliminary screening is not disclosed.

In addition, surveys besides the above may be conducted if necessary, for selection. Furthermore, if the R&D PI or a main joint researcher is affiliated with a commercial organization, submission of a financial statement may be requested.

JST selects the R&D PI (PL/PM) and R&D projects based on the above procedure.

The R&D management committee members are introduced on relevant webpages of the website of this program (https://www.jst.go.jp/mirai/jp/). The members may be changed any time from the beginning of open call to the end of selection.

(2) Managing the conflicts of interest

To achieve fair and transparent evaluation and research fund allocation, JST will manage the conflicts of interest as described below in accordance with JST’s rules.

1）Managing conflicts of interest of those involved in selection

For fair and transparent evaluation, the following stakeholders are excluded from the selection of R&D applicants, etc.

a. Those who are in kinship with an R&D applicant.
b. Those who belong to the same department or major the same subject at an R&D institution of a university or a national R&D agency, or work in the same company.
c. Those who currently closely conduct joint research with the R&D applicant (for example, a joint project, co-authored research paper, research members having the same objectives, or joint researcher of a research project organized by the applicant; in short a person considered to belong to the same research group).
d. Those who are in a close teacher-student relationship or in a direct employment relationship with an R&D applicant.

e. Those who are in an academically or commercially competitive relationship with the R&D projects of an R&D applicant.
f. Others who are judged to be stakeholders by JST.

2）Managing conflicts of interest of R&D applicant

If the R&D applicant makes a research proposal with a “R&D applicant-related organization” specified as a joint R&D group, and JST allocates research funds to the latter, it may cause a conflict of interest. Consequently, JST properly determines and manages the conflicts of interest between the two in consideration of the necessity, rationality and appropriateness of doing so to avoid any doubt from third parties.

The “R&D applicant-related organizations” refer to the joint R&D group that meet any of the following. For “a” and “b,” not only R&D applicant but also the spouses and relatives within the first degree of R&D applicant (hereinafter collectively referred to as “R&D applicant, etc.”) shall be handled as follows:

a. An organization established based on the R&D results of “R&D applicant, etc.” (including the cases where the R&D applicant, etc. is not directly involved in management and only holds the title of a technical adviser, or where the R&D applicant, etc. only hold shares.)
b. An organization where the “R&D applicant, etc.” is appointed as an officer (including CTO but not a technical advisor).
c. An organization where the “R&D applicant, etc.” holds shares.
d. An organization from which the “R&D applicant, etc.” earns royalty income.

JST will deliberate a research proposal with a “R&D applicant-related organizations” specified as a joint R&D group at an R&D management committee from the perspective of necessity, rationality and appropriateness of doing so.

To specify a “R&D applicant-related organizations” as a joint R&D group, the applicant is requested to notify that the “R&D applicant-related organizations” is involved in the joint R&D groups in the “Other Points of Concern” column of the proposal document.

JST may request applicants to submit additional documents to manage the conflicts of interest of “R&D applicant, etc”.

3）Managing conflicts of interest of JST

Adopting a JST-invested company (hereinafter referred to as the “invested company” for the program and allocating R&D funds to the invested company may fall under the JST’s conflicts of interest. To avoid this, JST will implement management of the conflicts of interest to avoid any doubt from third parties related to JST and the invested company.

JST will deliberate a research proposal with a JST invested company at the R&D management committee from the perspective of necessity, rationality and appropriateness of selecting the invested company.

Therefore, involvement of the company invested by JST should be notified in the “Other Points of

Concern” column of the proposal document.

JST manages the conflicts of interest to secure its fairness and transparency and does not handle a JST-invested company unfavorably. You are asked to cooperate with JST for its management of the conflicts of interest.

* For JST-invested companies, visit the following website:

https://www.jst.go.jp/entre/result.html#M01

When JST no longer funds the company, the company is not included in the management of the conflicts of interest and does not need to make a notification.

* The standard date of the notification is the day on which the open call for this program begins. The company to which JST has announced to invest as of this date should be notified. The company to which investment is internally decided but not announced need not be disclosed to maintain confidentiality within JST.

For the disclosed investment of JST that is publicized, please visit the following website:

https://www.jst.go.jp/entre/news.html

(3) Interviews for selection and notice of selection results

a. A R&D applicant who is selected for interview as a result of document-based selection receives such a notice and is informed on guidelines for interview, schedule, and additionally requested information materials. Submission of applications and plans for other research funds may also be requested at the time of the interview. JST and the PO may contact proposers subject to interviews concerning matters for which explanations are requested at the interview, depending on results of document-based selection and surveys. If an R&D Principal Investigator or a main joint researcher is affiliated with a commercial organization, submission of a financial statement may be requested.

The interview schedule will be announced on the following website as soon as it is determined.

https://www.jst.go.jp/mirai/jp/open-call/research/r02/

b. A R&D applicant whose proposal is not adopted at document-based selection revives a notice of the selection result from e-Red in the e-mail. Please make sure your e-mail address is setup to "receive" an "e-mail about the selection result" from e-Rad. The reasons why the proposal was not adopted are mailed separately.

c. The R&D applicant her/himself is requested to explain the contents of the proposal at the time of the interview. Interviews are in principle conducted in Japanese. However, if a R&D applicant finds it difficult to explain a proposal in Japanese, she/he may explain it in English.

d. For a R&D applicant to be adopted as a result of interview selection, it may be subject to adjust the R&D plan and team, as well as conditions of an R&D agreement. If a R&D applicant does not agree to these conditions, his/her proposal shall be declined.

e. A R&D applicant whose proposal is adopted through the said selections receive a written notice as well as a procedure for R&D initiation.

f. A R&D applicant whose proposal is not adopted as a result of interview selection receives a written notice or an e-mail of the selection result from e-Rad after all selection process is over. The reasons why the proposal was not adopted are mailed separately.

Chapter 3 Selection Perspective (Common to “Small-start Type” and “Large-scale Type”)

3.1 Flow of R&D promotion

After selection process, R&D is initiated by making (1) R&D plans and (2) R&D agreement.

3.1.1 Preparing an R&D plan

After a proposal is selected, the R&D Principal Investigator (Project Leader (PL) for the “Small-start Type”, and Program Manager (PM) for the “Large-scale Type”) will be requested to prepare an R&D plan covering the entire R&D period and an annual R&D plan for each fiscal year (R&D items, implementation plan, R&D costs and R&D team, etc.). The R&D plans are determined after the confirmation and approval by the PO.

In determining the R&D plans, R&D projects may be integrated, linked, or adjusted to achieve the purpose of the relevant prioritized or technology theme. In addition, R&D costs and R&D teams may be reviewed during the R&D period according to the budget allocation to the entire program.

The PO may instruct an allocation of a certain period of time to make R&D plans in the “Large-scale Type” R&D.

3.2 R&D agreement

After the above R&D plans are determined, JST will enter into an R&D agreement with the R&D institutions with which the PL/PM and main joint researcher are affiliated. In principal, patents and other intellectual property rights resulting from R&D shall, in accordance with contract R&D agreement terms, reside with R&D institutions under the condition that the R&D institutions abide by the items provided in Article 17 (Japanese version of the Bayh-Dole Act) of the Industrial Technology Enhancement Act. However, this rule does not apply to foreign R&D institutions.

If the R&D institution cannot conclude an R&D agreement with JST, failed to establish a system necessary for managing and auditing public research expenses or guidelines for research misconduct, or undergoes an extremely unstable financial situation, R&D by that R&D institution may not be carried out. For details, see “3.6 Responsibilities of R&D institutions.

3.3 R&D costs

JST will pay R&D costs (direct cost) and indirect costs (30% of the direct costs in principle) as the R&D costs for commission to R&D institutions based on the R&D agreement.

3.3.1 R&D costs (direct costs)

R&D costs (direct costs) are the costs that are directly related to and required for the pursuit of the subject research. R&D costs can include:

a. Commodities: Costs for the purchase of new facilities (*1), equipment, consumable supplies, etc.

b. Travel Expenses: Expenses for travel by the PM/PL, main joint researcher, R&D participants listed on the R&D plan and Individual Researcher.
c. Personnel costs: Salaries for R&D participants (excluding the R&D PM/PL, main joint researcher) and honorariums.
d. Other Expenses: Costs related to the presentation of R&D results (research paper submission fees, etc.), costs for leasing and transferring of equipment, etc.

*1 The purchase of new research equipment and apparatuses will proceed according to the "Research Equipment and Apparatus Sharing Systems for Research Organization Units" (hereinafter referred to as "apparatus sharing systems"), which shall operate on the premises of "Introduction of New Research Equipment and Apparatuses Operating Integrally with Research Organization Management" (Advance Research Fundamentals Working Group, Scholarship Commission, November 2015). Please refer to "4.12 Promoting the joint use of research facilities and equipment" for details.

(Note) The following costs are examples of those not treated as R&D costs (direct cost):

- Costs for items which are inconsistent with the research objectives
- Costs considered to be more appropriately handled as overhead cost (indirect cost)
- Costs that is determined by JST to be unauthorized use at the time of settlement) (*2)

*2 For certain items, JST has created specific rules and guidelines for the program from sources like the R&D agreement, administration manuals, and a common governmental expense categorization table. Universities, etc. (Universities, public R&D institutions and public-service corporations recognized by JST) and companies (mainly R&D institutions operated by private companies) may differ in their handling of administrative matters. For more details, please refer to the following websites (only in Japanese).

https://www.jst.go.jp/contract/index2.html

3.3.2 Indirect costs

Indirect costs are the costs required for the management, etc. of R&D institutions pursuing R&D; they are in principle 30% of R&D costs (direct costs). According to "Common Guidance for the Execution of Indirect costs of the Competitive Fund" (agreed upon by the coordination committees of relevant ministries and agencies on April 20, 2001 and revised on July 18, 2019), regarding indirect costs, a policy on use, etc. shall be created and shall be systematically and properly executed to ensure that use is transparent.

R&D institutions that receive allocated indirect costs are requested to manage them properly and store documents Note), such as receipts, that prove their appropriate use for five years from the fiscal year following the fiscal year of the R&D project completion. The head of the R&D institutions that have received the allocated indirect costs should report their actual use for each fiscal year by June 30 of the next fiscal year to JST through the cross-ministerial R&D Management System (e-Rad).

Note) the figures added with indirect costs such as other competitive funding, etc. in the evidence documents are acceptable (categorized expenses in the unit of agreement are unnecessary.)

3.3.3 Multiple-year contract and carryover

From the perspective of the effective and efficient use of R&D costs to maximize R&D results and prevent unauthorized use, in order to be capable of carrying over R&D costs and procurement contacts over financial years, JST has made R&D agreements into multiple-year contracts. With regard to carrying over, universities are treated differently from business firms. In addition, multiple-year contract or carrying over may not be acceptable to the office management system of some research organizations.

3.4 Evaluation

3.4.1 Evaluation in “Small-start Type”

The PO grasps the progress of R&D and R&D results, and with the cooperation of the R&D management committee members, carries out the stage gate and post-stage-gate evaluations.

<R&D project evaluation>

a. The PO grasps the progress of R&D and R&D results, and with the cooperation of the R&D management committee members, etc., carries out an evaluation for the transition from feasibility study to full-scale research (1st stage gate evaluation), and evaluation of full-scale research (2nd stage gate evaluation) and ex-post evaluation. The 2nd stage gate evaluation is carried out about three years after the start of full-scale research, and ex-post evaluation as early as possible after the termination of R&D, or at an appropriate time before the termination of R&D, depending on the characteristics and development stage of R&D.
b. In addition to the above, the R&D project is evaluated at the time when the PO judges it necessary.
c. The results of stage gate evaluation, etc. will be reflected in the subsequent adjustment of R&D plans and resource allocation (including increase or decrease of R&D costs and review of R&D team). Depending on the evaluation results, measures such as early termination (cancellation) of the R&D project or coordination between R&D projects will be taken.
d. After a certain period of time has passed since the end of R&D, follow-up surveys will be conducted on the progress and utilization status of R&D results and the activities of participating researchers. An external expert appointed by JST will perform follow-up evaluation based on the results of follow-up surveys.

In addition to the evaluation of R&D projects, prioritized themes and POs may be evaluated. In this case, the progress of each theme toward the goal, and the operational state are evaluated. The R&D representative of the selected R&D project must cooperate for this process in a scope required for evaluation.

<Stage gate evaluation criteria>

The evaluation criteria for the 1st stage gate evaluation, carried out for the transition from feasibility study to full-scale research, and the 2nd stage gate evaluation are shown below (comprehensive evaluation based on items 1 to 4).

The 1st stage gate (“Small-start Type”: at the time of transition from

feasibility study to full-scale research)

1. Progress of R&D

・R&D results are steadily obtained during feasibility study period.
・There is a plan reflecting R&D results during feasibility study for achieving the goal.
・When multiple projects are integrated, their effects and plans are well sorted out.

2. Social and economic impact

・The project aims for the creation of R&D results that benefit the whole society.
・The social and industrial needs are accurately understood.

3. R&D team

・Means to achieve the goal such as the involvement of private companies (e.g. participation of researchers and engineers, provision of equipment and research site, and cooperation for demonstration) are provided under the R&D team.
・The PL is capable of understanding the issues of the whole team and promoting R&D to achieve the goal under the R&D team (including intellectual property management and information dissemination).

4. Trends in Japan and overseas

・Competitiveness and originality of the project are demonstrated by analyzing R&D and economic trends around the world including Japan.

The 2nd stage gate (the 3rd fiscal year from the start of full-scale research)

1. Progress of R&D

・R&D results are steadily obtained.
・The requirements for transferring R&D results to private companies, etc. are identified.
・The issues unfavorable for the achievement of the goal may be solved within a predetermined period.

2. Social and economic impact

・A concrete image of social implementation is drawn and specific impact is estimated based on the image.

3. R&D team

・R&D is promoted with cooperation of private companies, etc. under the R&D team.*
・The PL is capable of understanding the issues of the whole team and promoting R&D to achieve the goal under the R&D team (including intellectual property management and information dissemination)

4. Trends in Japan and overseas

・Competitiveness and originality of the project are demonstrated by analyzing R&D and economic trends around the world including Japan, and an image of social implementation is drawn.

* Evaluation is based on, among others, the specific cooperation of private companies (e.g. participation of researchers and engineers, provision of equipment and sites, cooperation for demonstration) and an extensive system planning to seamlessly connect to R&D after the completion of full-scale

research.

3.4.2 Evaluation in “Large-scale Type”

The PO grasps the progress of R&D and R&D results, and with the cooperation of the R&D management committee members, carries out the stage gate and post-stage-gate evaluations.

<Evaluations of R&D project program manager (PM)>

a. The PO grasps the progress of R&D and R&D results, and with the cooperation of the R&D management committee members, etc., carries out stage gate evaluations for the R&D project (the 1st stage gate evaluation and 2nd stage gate evaluation), and ex-post evaluation. The 1st stage gate evaluation is conducted about three years (the 4th fiscal year) from the start of R&D to determine continuation of the R&D project. The 2nd stage gate evaluation is carried out about three years after the 1st stage gate evaluation, and ex-post evaluation at the last year of the R&D period.
b. In addition to the above, the R&D project is evaluated at the time when the PO judges it necessary.
c. The results of stage gate evaluation, etc. will be reflected in the subsequent adjustment of R&D plans and resource allocation (including increase or decrease of R&D expenses and review of R&D team). Depending on the evaluation results, measures such as early termination (cancellation) of the R&D project or coordination between R&D projects will be taken.
d. The activities of the PM are also evaluated while the R&D project is evaluated in an integrated manner.
e. After a certain period of time has passed since the end of R&D, follow-up surveys will be conducted on the progress and utilization status of R&D results and the activities of participating researchers. An external expert appointed by JST will perform follow-up evaluation based on the results of follow-up surveys.

In addition to the evaluation of R&D project, the PO is also subject to evaluation concerning the progress of R&D to achieve the theme and the state of administration, etc. The PM is asked to cooperate within the scope deemed necessary for the evaluation.

<Stage gate evaluation criteria>

In the “Large-scale Type”, the 1st stage gate evaluation is carried out about three years (4th fiscal year) from the start of R&D, and the 2nd stage gate evaluation about three years later with the evaluation criteria shown below (comprehensive evaluation based on items 1 to 4).

In the “Large-scale Type”, a certain level of funding for the subsequent R&D is sought from the “sponsoring organizations,” defined below (see ① to ③ below) in the phase of the 1st stage gate evaluation after the start of R&D to promptly connect the new platform technology created to social implementation and induce private investment. If the sponsoring organization does not fund the predetermined amount of costs, an early termination (cancellation) of the R&D project may be decided.

① Definition of the organization asked for funding (sponsoring organization):
Private companies such as incorporated companies, equity companies, and limited private companies, as well as general incorporated foundations, general incorporated foundations, public

interest incorporated foundations, and public interest incorporated foundations

② Definition of funding from the sponsoring organization:

(a) Joint R&D costs (including indirect costs), donations, goods (including facilities, equipment and consumables), personnel expenses, gratitude, and travel expenses, etc. contributed to the promotion of R&D project of the R&D institutions which has signed an R&D agreement with JST and for which the sponsoring organization is selected.

(b) R&D costs (good costs (including equipment and equipment costs, consumables costs), personnel expenses, gratitude, and travel expenses, etc.) directly paid by the sponsoring organizations for the promotion of R&D of the adopted project. This also includes expenditures for researchers dispatched by the sponsoring organization to the R&D institutions which has signed an R&D agreement with JST.

(c) Expenses related to the entitlement of R&D results of the adopted issue directly paid by the sponsoring organization.

③ Definition of a certain level of funding:

20% or more of the annual total R&D cost (contract R&D cost from JST (sum of direct and indirect costs) and fund from the sponsoring organization).

$$\frac{\text{Fund from the sponsoring organization}}{\text{R\&D cost from JST} + \text{Fund from the sponsoring organization}} = 20\% \text{ or more}$$

The 1st stage gate (the 4th fiscal year from the start of R&D)
1. Progress of R&D ・R&D results are steadily obtained ・Issues on social implementation and solutions are planned. ・An image to transfer R&D result to private companies is drawn.
2. Social and economic impact ・The project aims for the creation of R&D results that benefit the whole society. ・Specific impact on society as a whole is estimated.
3. R&D team ・R&D is promoted with cooperation of private companies, etc. under the R&D team (more than 20% of private fund). ・The PM is capable of understanding the issues of the whole team and promoting R&D to achieve the goal under the R&D system (including intellectual property management and information dissemination).
4. Trends in Japan and overseas ・Competitiveness and originality of the project are demonstrated by analyzing R&D and economic trends around the world including Japan.

The 2nd stage gate (the 3rd fiscal year from the first stage gate evaluation)
1. Progress of R&D ・R&D results are steadily obtained. ・The requirements for transferring R&D results to private companies, etc. are identified. ・The issues unfavorable for the achievement of the goal may be solved within a predetermined period.
2. Social and economic impact ・A concrete image of social implementation is drawn and specific impact is estimated based on the image.
3. R&D team ・R&D is promoted with cooperation of private companies, etc. under the R&D team (more than 20% of private fund, and closer cooperation [participation of researchers and engineers, provision of equipment and site, cooperation for demonstration, etc.] ・The PM is capable of understanding the issues of the whole team and promoting R&D to achieve the goal under the R&D system (including intellectual property management and information dissemination).
4. Trends in Japan and overseas ・Competitiveness and originality of the project are demonstrated by analyzing R&D and economic trends around the world including Japan, and an image of social implementation is drawn.

3.5 Responsibilities of R&D Principal Investigator (PI) and Main Joint Researchers

(1) R&D PI, main joint researcher and individual researchers are responsible for fully recognizing that JST R&D costs are funded by precious tax revenues collected from citizens, and for fairly and efficiently executing budgeted expenditures

(2) Once a proposed R&D project is selected, the PI and main joint researcher shall affirm that they will fulfill the following requirements, presented to them via JST briefings and other means, and submit to JST a written document evidencing this affirmation.

a. Comply with application guidelines and other requirements.

b. Pledge not to become involved in research misconduct (fabrication, falsification, plagiarism) or in the improper use of R&D costs, upon understanding that the costs are covered by taxes.

c. To prevent any research misconduct and improper use of R&D costs, enroll in and complete the JST-specified research integrity educational program (eAPRIN (former CITI)) and promise to educate the research participants of the obligation to enroll in and complete the program and make them understand.

For details refer to “4.1 Enrolling in and completing educational program on research integrity.”

Note that failure to complete the research integrity educational program in c. above can result in the suspension of the R&D costs until confirmation has been made that the program has been completed.

(3) The R&D PIs and research participants are required to complete the research integrity educational program (eAPRIN (former CITI)) specified by JST to prevent misconduct in R&D (fabrication, falsification and plagiarism). For details, refer to “4.1 Enrolling in and completing educational program on research integrity.”

(4) Promotion and management of R&D

a. The R&D PI is held responsible for the whole R&D team, with responsibilities including preparation and implementation of the R&D plan. The R&D PIneeds to comply with “Intellectual Property Management Basic Policy,” conclude “Treaty of mutually owned intellectual properties,” and cooperate with R&D institutions in order to promote proper activities for intellectual properties.

The R&D PI is responsible for cooperation with R&D institutions to provide an R&D site and research environment necessary for R&D promotion. When serious obstruction of R&D implementation location and environments to promote research is found, R&D project may be cancelled.

“Intellectual Property Management Basic Policy”
https://www.jst.go.jp/mirai/jp/manual/index.html

b. The R&D PI is also responsible for submitting R&D reports and other required documentation to the JST office and evaluating R&D project as well as responding to the request of JST office or

PO to send the progress report as required.

(5) The R&D PI is also responsible for the appropriate execution, management and operation of R&D projects and R&D costs (expenditure planning, monitoring, etc.) together with the R&D institutions, as well as the appropriate management of participants in the R&D. The main joint researcher is responsible for the management of the allocated R&D costs (expenditure planning, monitoring, etc.) together with the R&D institution. When students join to R&D team, their academic supervisors are also responsible as “research monitors” for the terms and conditions of the R&D agreement with JST. If, for example, a student has committed misconduct or other improprieties, both the student and the academic supervisor will be held accountable.

(6) The R&D PI is asked to be mindful of research and working environments and conditions for their own group's research participants, and research staff and others whose employment is being funded by R&D costs.

(7) It is recommended that R&D PI actively supports the development of varied domestic and international career paths for young doctoral researchers employed with R&D costs. In the research project selection interview, conformation should be made with research project applicants about the plan for supporting the development of varied domestic and international career paths for young doctoral researchers employed with R&D costs[*1].
For details, see “4.13 Improving the treatment of (latter-stage) doctoral students,” “4.14 Ensuring self-sustaining, stable research environment for young researchers” and “4.15 Supporting various career paths for young researchers.”
[*1] Some of the activities based on the career support activity plan may be included in the research effort.

(8) Handling of R&D results
a. Given that the R&D project conducted in this program is financed by the government and the R&D results must be transferred to the society and industry, it is asked that R&D results are actively reported on both domestically and internationally, with due consideration for the acquisition of intellectual property rights. It is also asked that active efforts be made to secure intellectual property rights under the “Intellectual Property Management Basic Policy.” In principle, intellectual property rights are to be applied, in accordance with R&D agreement terms, by the R&D institutions with which researchers are affiliated.
b. When reporting on R&D results through research papers or other media, please indicate that the results were obtained via the JST-Mirai program “Small-start Type”/ “Large-scale Type” R&D.
c. Based on the “Basic Policy of JST for Handling Research Achievements toward the Promotion of Open Science,” every researcher should submit to JST a data management plan that sets forth policies on the storage, management, disclosure/restricted disclosure/non-disclosure of R&D data obtained from R&D activities for each of the items below, together with the R&D plan. Further, the storage, management, and disclosure/restricted disclosure/non-disclosure of data based on the above policies must be handled in a suitable manner. For details regarding the entry of the following items, please refer to the “Operational Guideline for the Basic Policy of JST for Handling

Research Achievements toward the Promotion of Open Science" below.
https://www.jst.go.jp/pr/intro/openscience/guideline_openscience.pdf

<Entries in the data-managing plan>

- Policy on the storage and management of research data to be managed
- Policy related to publicity and non-publicity in regard to research data
- Providing methods and systems for data to be made public
- Assumed use applications for public research data
- Initiative for the promotion of the use of public research data
- Other items of note

d. The R&D PI and researchers are requested to participate in the workshops and symposia that JST holds in Japan and overseas, interdisciplinary activities and outreach activities aiming for the promotion of R&D collaboration and synergy in prioritized themes, technology Themes and areas of this program with researchers of the R&D projects. In addition, she/he is expected to actively promote global activities and issue information while promoting R&D activities.

(9) Researchers are asked to actively engage citizens in discussions of science and technology to promote citizen's understanding and support of science and technology. Efforts to engage citizens in discussions of science and technology will be evaluated both interim and post-completion evaluations.
* For details, refer to "4.17 Promoting dialogue and collaboration with the public" and "4.12 Promoting the joint use of research facilities and equipment."

(10) Researchers shall abide by R&D agreements entered into by JST and R&D institutions and shall abide by JST's various rules.

(11) It should be noted that JST will provide research project names, names of researchers, R&D cost information, and other required information to the Cross-ministerial R&D Management System (e-Rad) and the Cabinet Office ("4.24 Handling of Information, such as research subjects, on e-Rad" and "4.25 Providing information to the Cabinet Office through e-Rad"). The R&D representative, therefore, may be asked to provide various types of information in that connection.

(12) Researchers will cooperate with accounting examinations by JST, accounting audits by the national government, and similar activities.

(13) Researchers will cooperate with JST-Mirai Program evaluations. Researchers will cooperate by providing various types of information, responding to interviews, etc. in connection with follow-up evaluations performed sometime after project completion.

3.6 Responsibilities of R&D institutions

R&D institutions must fully recognize that the R&D funds are public funding, ensure compliance with related law, and make efforts to implement the research effectively upon implementation. R&D institutions that cannot accomplish the tasks described below will not be enjoined to implement research; thus, when applying, the prior consent of all R&D institutions (hereinafter referred to as the participating organization) at which the implementation of research is planned shall definitively be obtained.

(1) For domestic organizations

a. R&D institutions shall conclude the R&D agreement with the content proposed by JST. Further, they are responsible for properly implementing research in accordance with the R&D agreement, documents for administrative process, and R&D plans. When the agreement cannot be concluded, or when it is judged that R&D at an R&D institution is not being implemented properly, the implementation of R&D at the research organization is not be approved.

* For the latest sample of the R&D agreement document, please refer to the URL below.

https://www.jst.go.jp/contract/index2.html

b. R&D institutions, with an autonomously instituted management and audit system for public research budgets, are obligated to properly execute the contract research funds in accordance with the “Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)” (decided by the Minister of Education, Culture, Sports, Science and Technology on February 15, 2007; revised on February 18, 2014). R&D institutions, in addition to reporting the status of their management and audit system for public research budgets to the Ministry of Education, Culture, Sports, Science and Technology (MEXT), are also obligated to support various investigations into their system implementation and other related matters. (“4.21)

https://www.mext.go.jp/a_menu/kansa/houkoku/1343904.htm

c. In accordance with the “Guidelines for Responding to Misconduct in Research” (August 26, 2014, adopted by the Minister of Education, Culture, Sports, Sciences and Technology), R&D institutions are asked to construct necessary regulations and systems that they are responsible for in order to prevent misconduct. R&D institutions are responsible for responding to various investigations relating to systems construction based on the guideline. (“4.22)

https://www.mext.go.jp/b_menu/houdou/26/08/1351568.htm

d. R&D institutions are responsible for ensuring that research participants fully recognize the contents of the above guideline described in b and c and have been trained with teaching materials related to research ethics provided by JST.

e. R&D institutions shall expend and manage R&D costs properly in accordance with the

regulations of the research organization while considering flexibility; when items are regulated by administrative process documents, etc., provided by JST, which state rules specific to the program, the rules shall be obeyed. (For R&D institutions receiving Grants-in-Aid for Scientific Research expenses, it is possible that items not described in administrative process documents for use in R&D costs may be handled in conformity with the Grants-in-Aid for Scientific Research expenses.)

f. R&D institutions shall either enter into contracts with associated researchers that ensure that intellectual property rights resulting from the implementation of research will be accorded to the R&D institutions or construct work regulations in this vein. In case a student who is not employed by a research organization participates in research, a necessary measure, such as concluding a contract with the student in advance, needs to be taken in order for pertinent intellectual property right associated with the invention (including ideas) that the student made during the research to belong to the research organization unless it is clear that the student cannot be an inventor. Take into consideration eliminating conditions unfavorable to the student, the inventor, concerning the price of transferring the intellectual property right.
In addition, when intellectual property rights are transferred or exclusively licensed, the prior approval of JST is needed, and when application, registration, implementation, and renunciation are conducted, a prior report to JST is needed in principle.

g. R&D institutions are responsible for responding to accounting investigations by JST and account audits by the Government.

h. R&D institutions shall follow measures pertaining to changing terms of payment and will accept decreased payments on R&D costs decided upon by JST based on JST investigations related to administrative managing systems, financial conditions, etc.
Depending on the results of the project evaluation at the end of the JST's medium- and long-term objective periods, it may be called for dissolution or contraction. In the case of any changes to national budgetary measures, JST may take such measures as contract termination or reduction in contract research expenses, during the term of the contract pursuant to the special provisions of the contract R&D agreement. Based on the results of the intermediate evaluation (stage gate evaluation), etc. of the research subject, JST may take measures, such as changing the contract research funds or the contract period or cancelling the research. If JST determines that the continuation of R&D is not appropriate, it may take measures, such as cancellation of the contract even during the term of the contract. The R&D institutions need to accept these measures.

i. When R&D institutions are national or municipal institutes, such organizations concluding R&D agreements must definitively implement necessary budgetary measures before starting R&D agreements for which they are responsible. (In case it becomes apparent that the non-fulfillment

of necessary procedures after contracting will occur, measures to release the R&D agreement and rescind R&D costs will be taken.)

j. As part of the effort to prevent misconduct in research and development activities, JST has required researchers, who are part of newly selected R&D projects and who are also affiliated with an R&D institution, to enroll in and complete the educational program on research integrity (the procedures required for enrollment will be handled by JST). The R&D institution must supervise the relevant researchers to enroll in and complete the program, without fail.
In the event that the relevant researchers fail to complete the educational program as stipulated despite repeated reminders by JST, JST will instruct the R&D institution to halt, partially or entirely, the execution of contract R&D costs payments. In line with this instruction, the R&D institution is to halt all use of the R&D costs and not restart their use until further notice from JST.

k. Take necessary measures, such as concluding a joint research contract with participating organizations within a range of R&D agreements with JST concerning handling of intellectual property rights or confidentiality in order to avoid problems in properly undertaking R&D or utilizing the R&D achievements.

l. Since the contract R&D costs are funded by national funds, the R&D institutions shall take appropriate measures to fulfill their accountability in consideration of economics, efficiency, effectiveness, legality, and accuracy. The R&D institution shall strive to execute them in accordance with a plan and shall not procure something to consume budgetary funds at the end of the R&D period or at the end of the fiscal year

(2) For overseas institutions

a. In principal, R&D institutions shall conclude R&D agreements with content proposed by JST. (In some cases, the contract terms may be altered when the change is considered reasonable due to the characteristics, etc. of the R&D.) Indirect costs are capped at 30% of direct costs. Further, R&D institutions are responsible for proper implementation of the research in accordance with the R&D agreement document and R&D plan. When R&D agreement cannot be concluded, or when it is judged that R&D at the R&D institution will not be properly implemented, the implementation of R&D at the R&D institution shall not be admitted.
* For the sample of the R&D agreement for overseas institutions, see the following website:
https://www.jst.go.jp/mirai/jp/open-call/research/r02/
* JST may decide to avoid R&D agreement in view of the security export control if the institution is enlisted in the “Foreign User List[*1]” published by the Ministry of Economy, Trade and Industry.
If you wish to form a research team that includes overseas research institutions (approval of

[*1] The Ministry of Economy, Trade and Industry disclosed the “Foreign User List” to suggest the possibility of cargo and technology used for the development of weapons of mass destruction, etc.
https://www.meti.go.jp/policy/anpo/law05.html#user-list

PO is required), the reason of the need for joint researchers belonging to overseas R&D institutions must be entered in the R&D proposal documents. This also applies to the proposal for which R&D costs from JST is assumed. In case that an agreement is not made, a cooperation plan with that overseas group also need to be entered in the R&D proposal documents.

b. R&D institutions are responsible for properly disbursing and managing R&D costs for which they are responsible based on the R&D agreement, guiding principles, etc. When JST designates guiding principles, etc. separately; they are responsible for creating and reporting expense details (for domestic organizations, this corresponds to accounting books) in English. R&D institutions shall respond to various investigations related to implementation status per JST request in the period of the agreement.

c. R&D institution shall transfer intellectual property rights resulting from R&D to JST without compensation (Article 17 of the Industrial Technology Enhancement Act, the Japanese version of the Bayh-Dole Act, will not apply to overseas organizations).

d. A predetermined form (Prior confirmation on the conclusion of a contract for overseas R&D institutions), which ensures that the R&D institution (person in charge of the contract division) has made prior agreement on each term of the contract, must be submitted by entering the contact person for the contract for overseas R&D institutions in the form by the time of interview for selection (see the website below offering the relevant information).

If the R&D agreement cannot be concluded and it is difficult to implement the cooperation plan, the adoption will be canceled.

* Form of prior confirmation for overseas R&D institutions on the execution of agreement:
https://www.jst.go.jp/mirai/jp/open-call/research/r02/

3.7 Other Consideration

3.7.1 Difficulties in continuing R&D

JST will determine whether or not to continue R&D in the following cases based on the discussions at the PD committee and R&D management committee:

a. The R&D PI has died, or received an order for commencement of guardianship;

b. The R&D PI committed improper use of R&D expenses or misconduct in R&D activities; or

c. Other cases making the continuation of R&D difficult

3.7.2 Childbirth, Child Care and Nursing Care Support System

JST implements the childbirth, child care, nursing care support system as part of its efforts to promote gender equality. The system is intended to allow a full-time researcher who is paid from R&D costs (excluding indirect costs) for a JST project to continue R&D during childbirth, child care or nursing care, or continue her carrier when returning to R&D after an imperative leave for the above reasons. In the system, JST pays “gender equality promotion costs” (upper limit: JPY 300,000/month × Number of support months) for R&D project.

For details, please visit the following website:

https://www.jst.go.jp/diversity/about/research/child-care.html

3.7.3 Using JREC-IN Portal

The Researcher Human Resources Database (JREC-IN Portal: https://jrecin.jst.go.jp/) is one of the largest portal sites supporting the career of research human resources in Japan. It is a service to carry information on human resources relating to R&D including researchers, their supporters and engineers for viewing free of charge.

At present, the database has more than 130,000 registered users, and publishes more than 19,000 annual job postings for universities, public R&D institutions, private companies, etc. To find research personnel (post doctors, researchers, etc.) having an advanced knowledge in promoting R&D projects, please use the JREC-IN Portal.

JREC-IN Portal is linked to researchmap and the user can log in JREC-IN Portal using the ID and password of researchmap. In addition, the information registered in researchmap can be used in the resume and accomplishment list creation function of JREC-IN Portal, allowing the user to create these forms easily.

Chapter 4 Key Points for Application

4.1 Enrolling in and completing educational program on research integrity

An R&D proposer must complete the educational program on research integrity before applying to open call. If JST cannot confirm the completion of program, the applicant may be considered to have failed to meet the application requirements.

To enroll in the educational program on research integrity and to submit a declaration of completion, follow either procedure (1) or (2) below. For how to enter with e-Rad, please refer to Chapter 5 “Submission via the Cross-ministerial R&D Management System (e-Rad)”.

(1) For applicants who have completed an equivalent program at their institution

Applicants who have already completed an educational program on research integrity by an e-learning program or educational seminar (including eAPRIN (former CITI)) by the time of their application are requested to declare the completion on the e-Rad application information entry screen.

(2) For applicants who have not completed an equivalent program at their institution (including for applicants at their institution that do not have such a program)

a. If applicants have completed eAPRIN (former CITI) in the past JST project, etc.

Applicants who have completed eAPRIN (former CITI) at the time of application for JST projects are requested to declare the completion on the e-Rad application information entry screen.

b. Other than “a” above

Applicants who find it difficult to enroll in an educational program on research integrity because their institution does not offer such a program or for other reasons may enroll in and take the condensed version of the eAPRIN (former CITI) through JST. For instructions on enrolling in this program, visit the website of “Public Invitation of R&D Proposals”:

R&D open call website:

https://www.jst.go.jp/mirai/jp/open-call/research/r02/

Applicants are requested to enroll in the program from the following URL:

https://edu2.aprin.or.jp/ard/

No cost is incurred for enrolling in and attending the program, which takes about one to two hours to complete. Once enrolled, applicants are expected to attend and complete the program without delay, declare the completion of the program, and declare the completion and enter the completion confirmation document number certificate (7 digits + ARD) in the e-Rad application information entry screen.

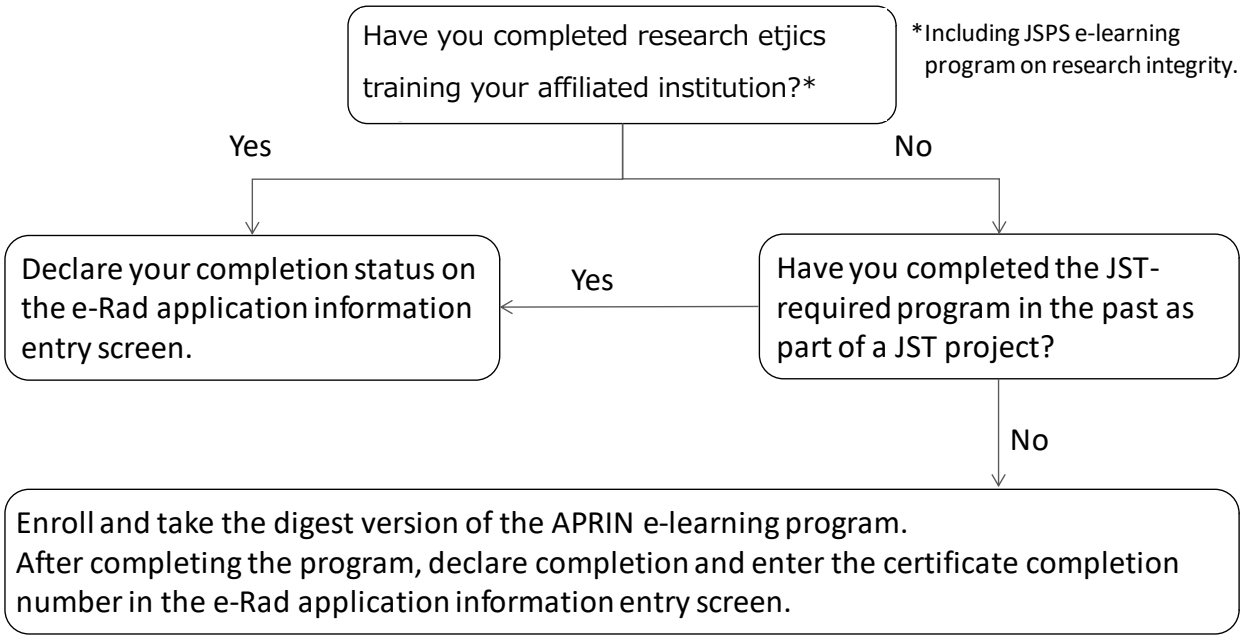
■ Contact for the Program on Research Integrity:

Research Integrity Division, Department of Audit and Legal Affairs, JST

E-mail: rcr-kousyu@jst.go.jp

■ Contact for application:
Department of R&D for Future Creation, JST
E-mail: kaikaku_mirai@jst.go.jp
* Enter the project ID indicated on e-Rad, name of applicant, and project name.

Flow chart for declaring enrollment and completion of the educational program on research integrity



JST has required R&D researchers participating in the R&D of this program to enroll in and complete the “eAPRIN (former CITI).” Since this requirement will remain unchanged in the next fiscal year, all participants of adopted R&D are required to enroll in and complete the eAPRIN (former CITI) in principle, except those who have already completed it at their institution or in a JST project.

4.2 Measures against unreasonable duplication and excessive concentration

○ Measures against unreasonable duplication

In the case where competitive funding is unnecessarily allocated from multiple sources such as the government or independent administrative corporations (including national R&D agencies; hereinafter the same) to the same researcher and same R&D project (in terms of its name or the content of R&D receiving competitive funding and/or research funding through open call (collectively called “competitive funding, etc.”)) and any of the following applies, the R&D project may be excluded from the selection process of this program, the decision for approval canceled, or the costs reduced

(“cancellation of approval, etc.”):

- In the case where simultaneous proposals have been submitted for multiple sources of competitive funding, etc. and a duplicate approval has been granted for essentially the same R&D proposal (including heavily overlapping cases; the same shall apply hereinafter)
- In the case where a duplicate application is made for funding an R&D project that is essentially the same as another R&D project that has already been selected and received the competitive funding, etc.
- In the case where there is an overlap of R&D costs for the same purpose in multiple R&D projects
- Other cases equivalent to the above

Even at the application stage of this project, no restriction is imposed on the application for other competitive funding program, etc. However, if the research project is selected by another competitive funding program, etc. it shall be conveyed promptly to the Department of R&D for Future Creation, JST. If there is any omission in this report, the approval decision for the research project may be revoked.

○ Measures against excessive concentration

Even if the content of R&D proposed for this program differs from the content of R&D using another competitive funding program, etc., measures such as the cancellation of approval may be put into motion in this program in the case where the overall research fund allocated to the same researcher or research group (“researcher, etc.”) in the relevant fiscal year exceeds the limit of effective and efficient use, or cannot be consumed within the R&D period, and falls under any of the following,:

- The allocation of R&D fund is excessive in the light of the capabilities of the researcher, etc. and the research methods being used, etc.
- The allocation of R&D fund is excessive in comparison with the amount of effort allocated to the R&D project (the percentage of working hours required for conducting R&D to the total working hours (*))
- Unnecessarily expensive research equipment is purchased
- Other cases equivalent to the above

In the case where the content of entries in the proposal documents changed after being submitted to this program, etc., for example, as the same proposal was adopted by another competitive funding program, this must be reported immediately to the administrative officer of this program. If reporting is omitted, the cancellation of approval, etc. may be put into motion.

* The total working hours of an R&D researcher refer to not only the hours spent for research activities, but also the whole working hours including those for educational activities and management work

Concept of effort

Definition of effort

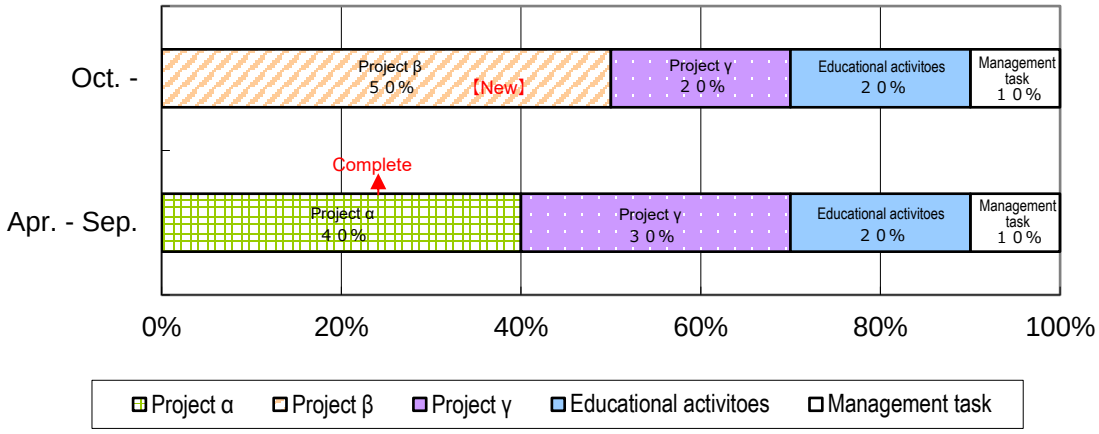
○The 3rd Science and Technology Basic Plan defines an effort as “a percentage of working hours for a researcher to engage in each task, such as research, education, or management.”

○When researchers apply for a research subject, they will be asked to indicate “the proportion of the time required for conducting the research to the total working hours.”(*)

○It is important to note that this “total working hours” include not only the time spent on research activities, but also the time spent on educational activities and management tasks.

○The effort value may be changed according to the review and assessment of the research plan.

Ex.: Percentages of working hours for projects α, β and γ in the total working hours whereby project α is discontinued and project β is adopted in the middle of the fiscal year, and project γ is implemented throughout the year



○The project α ended at the end of September (allocation rate 40%) and the project β was newly started from October (allocation rate 50%) which will change the effort value of the project γ from 30% to 20%.

* Guidelines on the Proper Implementation of Competitive Funds (Agreement in the Liaison Committee of Ministries and Agencies Concerned with Competitive Funding, June 22, 2017)

○Providing information on application content to eliminate unreasonable duplication and excessive concentration

In order to eliminate unreasonable duplication and excessive concentration, JST may partially provide information on the application content (or selected research subjects or projects) to persons in charge of other competitive funding program, etc., including at other ministries and agencies, to the extent necessary, through cross-ministerial R&D Management System (e-Rad). When asked, JST may also provide information in the same way to facilitate these checks at other competitive funding program, etc.

4.3 Status of acceptance of other applied competitive funds, including of those of other ministries and agencies

If the entry on unreasonable overlap or excessive deconcentration differs from the facts, it may result in the rejection of the R&D project, cancellation of the adoption or reduction in R&D costs.

4.4 Measures against an improper use and improper receipt of funds

JST will respond strictly to an improper use and improper receipt of research funds (hereinafter referred to as an “improper use, etc.”) as explained below.

○Measures to be taken when an improper use, etc. of research costs is found

(i) Measures to cancel the agreement

For a research subject for which an improper use, etc. has been found, JST will cancel or change the consigned contract and request for return of all or part of the consignment expenses. In addition, JST may not enter into a contract for the next and subsequent fiscal years.

(ii) Measures to restrict eligibility for application and participation (*1)

If a researcher who has made an improper use, etc. of research funds of a project (including a researcher who has conspired; hereinafter referred to as a “researcher who made an improper use, etc.”) or is accredited to have been involved in the improper use, etc. will be regarded as to have violated the duty of due care required of a prudent manager(*2), JST will restrict his/her eligibility for application for or participation in this project or give him/her a strict reprimand as shown in the following table, depending on the degree of injustice.

JST may provide the persons in charge of other competitive funding programs, including those of other ministries and agencies and independent administrative corporations under their jurisdiction, with a summary of the improper use, etc. (name of the researcher who has made the improper use, etc., project name, affiliated institution, research and development proposal, amount of budget, fiscal year of research, description of misconduct, and description of measures that have been taken). [This restricts the eligibility for application for and participation in other competitive funding program, etc., including other ministries and agencies.]

*1 The “application and participation” refers to proposal of or application for a new subject, new participation in research as a joint researcher, or participation in an ongoing R&D project (continued subject) as an R&D Principal Investigator or joint researcher.

*2 “A researcher who has violated the duty of due care required of a prudent manager” refers to a researcher who was not recognized as being involved in an improper use, etc. but has violated the duty to conduct the project with the attention of a prudent manager.

Classification of improper use or improper receipt	Degree of improper use		Application prohibited period *3
Those researchers who engaged in improper use and any researchers colluding in the said improper use *1	1 Personal use for personal gain		10 years
	2 Other that above	①Major influences on society, or strongly aggravated	5 years
		②Improper use other than ① or ③	2 – 4 years
		③Minor influence on society, or weakly aggravated	1 year
Those researchers awarded competitive funding, etc. through false or other improper means and any researchers colluding in the said improper use			5 years
Those researchers who were not involved in the improper use but were in violation of the requirement to exercise the duty of due care required of a prudent manager *2			A minimum of 1 year to a maximum of 2 years according to the researcher's degree of due care required of a prudent manager

In the following case, JST gives a strict reprimand, instead of restricting eligibility for applications and participation.

*1 In the case of 1, the act has minor impact on society and is determined to be less vicious and the degree of improper use is small.

*2 In the case of 2, the act has minor impact on society and is recognized as less vicious

*3 The eligibility for participation is also restricted for the fiscal year in which the improper use and the like have been determined as such.

(iii) Publication of fraudulent case

For the researchers, who have made an improper use and the like of research funds and violated the duty of due care required of a prudent manager in this project, are subject to restrictions on eligibility for application for and participation in it. JST will publicly disclose the overview of the fraudulent case (researcher name, project name, affiliated institution, fiscal year of research, description of misconduct, and description of measures that have been taken). The overview of the fraudulent case (project name, affiliate institution, fiscal year of research, content of misconduct, and description of measures that have been taken) is also released, in principle, by the Ministry of

Education, Culture, Sports, Science and Technology (MEXT).

"Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)" states that if the misconduct is found and determined as a result of the survey, the R&D institution is required to announce the survey results promptly. Each institution should act properly in accordance with the guidelines.

* For the outline of the misconduct cases currently published on the website of MEXT, please refer to the following website.
https://www.mext.go.jp/a_menu/kansa/houkoku/1364929.htm

4.5 Measures taken against researchers whose eligibility for application and participation have been restricted due to other competitive funding program, etc.

The researchers who have been subject to the restriction due to the improper use, etc. of R&D funds in other competitive funding program, etc.* managed by the government or independent administrative corporation are also restricted on their eligibility for application to and participation in this program while their right to apply is restricted in other competitive funding program, etc.

The other competitive funding program, etc. also include the program that will start open invitation from FY2020. The measures also apply to the program terminated before FY2019.

* For the actual list of program, etc. subject to these measures, visit the following website:
https://www8.cao.go.jp/cstp/compefund/

4.6 Measures taken against violation of related laws and regulations

If R&D is conducted in violation of applicable laws, regulations or guidelines, disposal and/or penalties are imposed on the project pursuant to the related law or regulation, and R&D costs may be suspended, or the decision to allocate R&D costs cancelled.

4.7 Storage of receipts pertaining to indirect costs and report on actual use

R&D institutions that receive allocated indirect costs are requested to manage them properly and store documents, such as receipts, that prove their appropriate use for five years from the fiscal year following the fiscal year of project completion.

R&D institutions that have received the allocated indirect costs should report their actual use for each fiscal year by June 30 of the next fiscal year to JST through the cross-ministerial R&D Management System (e-Rad) (R&D institutions that have acquired multiple competitive funds are requested to report all the indirect costs relevant to them).If you do not know how to operate e-Rad for reporting, refer to e-Rad Operation Manual (https://www.e-rad.go.jp/manual/for_organ.html) or "Frequently Asked Questions" (http://faq.e-rad.go.jp).

4.8 About carryover

If the R&D institution finds it difficult to finish spending its research fund within the fiscal year along with the progress of the project due to difficulties in prior investigation or determination of research methods, various conditions related to planning or design, weather conditions, difficulties in obtaining materials or for other unavoidable reasons, JST may allow the research fund to be carried over to the end of the next fiscal year.

4.9 About cross-ministerial cost categorization table

In this program, the cost structure is determined based on the cross-ministerial cost categorization table that is to be commonly used for competitive funds. For the handling of costs, please refer to the following cross-ministerial cost categorization table.

https://www.jst.go.jp/contract/download/2020/2020mirais309betsu.pdf

4.10 Diversion of cost among items

For diversion of cost among the items, the amount of diversion permitted without JST approval is capped at 50% of the total direct costs.

4.11 Securing R&D period up to the end of fiscal year

JST takes the following measures for all the competitive funds so that researchers can conduct R&D until the end of the fiscal year.

(1) R&D institutions and researchers shall submit a project completion notice as an outcome promptly after the completion of the project. JST will confirm it and perform acceptance inspection of the R&D results.

(2) The deadline for submitting the accounting performance report shall be May 31.

(3) The deadline for submission of the R&D results report shall be May 31.

Each R&D institution should strive to establish a necessary system based on the understanding that these measures are taken to secure the R&D period which ends at the end of the fiscal year.

4.12 Promoting the joint use of research facilities and equipment

“About reforming competitive research expenses toward sustainable creation of research achievements (mid-term summary)” (Committee for reforming competitive research expenses, June 24, 2015) considers it proper to share relatively large facilities and equipment for universal use while aiming to fully achieve the research objectives.

In addition, “About introduction of a joint use system for new research facilities and equipment integrated with research organization management” (Advanced Research Base Subcommittee, Council for Science, Technology, November 2015) requests that universities and national research and development agencies should operate a “joint use system for research facilities and equipment for each research organization unit” (hereafter referred to as “equipment joint use system”).

“Research Ability Improvement Reform 2019” (Ministry of Education, Culture, Sports, Science and

Technology, April 23, 2019) and “Comprehensive package to strengthen research capacity and support young researchers” (Council for Science, Technology and Innovation, January 23, 2020) also stress the promotion of the development and sharing of research facilities and equipment.

Based on these, R&D institutions are requested to promote joint use of research facilities and equipment purchased by this program, in particular, large and versatile ones, so as not preclude the performance of research and development proposals. Such purchase shall be made within control conditions of other research costs and in accordance with the equipment joint use system in the affiliated institution. The use of facilities and equipment purchased with other research funds and purchase or use with combined multiple research funds shall also be actively promoted. Note that the management of shared facilities and equipment should be balanced with their use to achieve the purposes of the research and development proposals.

Besides the above equipment joint use system, R&D institutions are requested to collaborate actively with joint use systems such as the “University Collaborative Research Facility Network Project” managed by inter-university R&D institution, the National Institute for Fusion Science, National Institutes of Natural Sciences with the aim of mutual use of equipment throughout the nation, as well as the “Project for Supporting the Effective Use of Research Equipment” and “Program for supporting introduction of the new sharing system” used by universities to promote the joint use of research facilities and equipment beyond the framework of research organizations and R&D institutions.

○“About introduction of a joint use system for new research facilities and equipment integrated with research organization management” (Advanced Research Base Subcommittee, Council for Science and Technology, November 25, 2015)
https://www.mext.go.jp/component/b_menu/shingi/toushin/__icsFiles/afieldfile/2016/01/21/1366216_01_1.pdf

○ “About reforming competitive research expenses toward sustainable creation of research achievements (mid-term summary)” (Committee for reforming competitive research expenses, June 24, 2015)
https://www.mext.go.jp/b_menu/shingi/chousa/shinkou/039/gaiyou/1359306.htm

○“About unifying the rules for the use of competitive funds” (Agreed upon by the coordination committees of relevant ministries and agencies on competitive funds, revised on April 20, 2017
https://www8.cao.go.jp/cstp/compefund/shishin3_siyouruuru.pdf

○“Purchase of shared facilities under multiple research funding systems (combined use)” (Revised on July 20, 2017)
https://www.mext.go.jp/a_menu/shinkou/torikumi/1337578.htm

○“University Collaborative Research Facility Network Project
https://chem-eqnet.ims.ac.jp/

○“Program for supporting introduction of the new sharing system”
https://www.jst.go.jp/shincho/program/pdf/sinkyoyo_brochure2019.pdf

4.13 Improving the treatment of (latter-stage) doctoral students

In order to attract outstanding students and working people from home and abroad, the 5th Science

and Technology Basic Plan has set up a numerical goal of providing about 20% of the (latter-stage) doctoral students with grants equivalent to their living costs as part of an enhanced financial support for them, and the expansion of their employment in Teaching Assistants (TAs) and Research Assistants (RAs) with improved labor conditions are called for. The “Comprehensive package to strengthen research capacity and support young researchers” (Council for Science Technology and Innovation, January 23, 2020) lays stress on the “promotion of ensuring an appropriate level of salary as RAs, etc. in competitive funding and joint research fund” as one of concrete measures with the goal of realizing “Doctoral students who hope to receive grants equivalent to their living costs in the future.”

Furthermore, “Ideal Form of University Education in 2040 ~ Measures to Improve Constitution for Developing Human Resources Who Lead Society ~” (Summary of Deliberations) (University Subcommittee, Central Education Council, January 22, 2019) and “Development of Science, Technology and Innovation Policies for Knowledge-based Value Creation - Leading the World by Realizing Society 5.0 - midterm summary” (The Special Committee on Comprehensive STI Policy, Council for Science and Technology, October 24, 2019) also stressed that the employment of (latter-stage) doctoral students as Research Assistants (RAs) and Teaching Assistants (TAs) should be promoted with diverse resources including competitive funding and joint research with companies as part of efforts to reserve the time for their study and reduce the load of teachers.

When you employ (latter-stage) doctoral students as RAs, etc., you are supposed to pay an appropriate amount of salary for the supportive work.

With these in mind, you need to take into account proactive employment of (latter-stage) doctoral students as RAs and TAs required for R&D in this program, with salary levels equivalent to their living expenses by setting a unit price that suits to the nature and content of work and make payment according to the working hours under proper work management. When applying for this program, you should include the amount of salary paid to these (latter-stage) doctoral students in the financial planning.

- For the salary levels equivalent to living expenses, we recommend annual income of JPY 1.8 million to 2.4 million and monthly salary of JPY 150,000 to 200,000. Based on this estimate, you can figure out the amount of salary and include it in your budget. Aside from hourly payment, monthly or annual payment may also be considered according to the nature and content of work.

  * Salary levels equivalent to living expenses (JPY 1.8 million to 2.4 million/year)

  In the 5th Science and Technology Basic Plan, an annual salary of JPY 1.8 million to 2.4 million is assumed as a guide for the amount of money required for living based on the assumption that annual income of JPY 1.8 million is reasonable for covering living expenses, as well as the research incentive allocated to the researcher in the Research Fellowship for Young Scientist(DC) to allow outstanding Ph.D. students to concentrate on their research without feeling financial anxiety.
- The actual amount of salary and payment period will be decided by the R&D institution. It does not limit payment above or below the above levels.
- When hiring students as RAs, etc., you need to avoid excessively long working hours and consider the balance between the work and study/learning time of (latter-stage) doctoral students.

4.14 Ensuring self-sustaining, stable research environment for young

researchers

The importance of securing a term of about 5 years or more for the fixed-term post assigned to research assistants and postdocs. etc.is pointed out in “Research Ability Improvement Reform” (Ministry of Education, Culture, Sports, Science and Technology, April 23, 2019) and “Development of Science, Technology and Innovation Policies for Knowledge-based Value Creation - Leading the World by Realizing Society 5.0 - midterm summary” (The Special Committee on Comprehensive STI Policy, Council for Science and Technology, October 24, 2019) because short-term employment could be an obstructive factor in career development.

In regard to national university corporations and inter-university research institute corporations, “Guidelines for reform of personnel and salary management in national university corporations, etc. ~Toward building attractive personnel and salary management effective for improving education and research capabilities~" (Ministry of Education, Culture, Sports, Science and Technology, February 25, 2019) states ”To meet two requirements, “fostering young teachers and securing stable employment,” it is desired to promote an institutional design which takes into account the development of researchers while maintaining mobility, for example, by securing a certain period of employment, in the order of 5 to 10 years, even in fixed-term posts using highly flexible expenses such as indirect costs or donations.”

Based on these points, when the project in this program hires young researchers such as research assistants or postdocs, a certain period of employment (5 years or more) should be ensured as much as possible with an attempt to secure the period up to the stage gate as the length of term by using external funds including indirect costs, basic research funds and donations, etc. while making confirmation with the personnel and accounting staff at the administrative departments.

4.15 Supporting various career paths for young researchers

In “Basic Policy for Supporting Various Diverse Career Paths of Young Post-doctoral Researchers Employed with Public Research Funds of the Ministry of Education, Culture, Sports, Science and Technology (MEXT)” (Human Resources Committee, Council for Science and Technology, December 20, 2011), it is requested that public R&D institutions employing young post-doctoral researchers with public research funds and R&D principal investigators should actively work for young post-doctoral researchers to secure various career paths in Japan and abroad. Based on the understanding of these circumstances, when the R&D project, adopted by this program, employs young researchers such as special-appointment or post-doctoral researchers with allocated public research funds (competitive funds, other project research funds, or public research funds for universities), special efforts for supporting these researchers to obtain diverse carrier paths are requested. Use of indirect costs for these efforts may be considered.

If approval is gained from the R&D principal investigator and affiliated institution, appropriation is allocated to a certain part of efforts (up to 20%) made by young researchers employed in this program, including activities effective for improving self-motivated research activities and research and management capabilities based on “Enforcement Policy concerning Self-motivated Research Activities, etc. of Young Researchers Employed for Conducting Projects in Competitive Funding” (Agreement in the Liaison Committee of Ministries and Agencies Concerned with Competitive Funding,

February 12, 2020). Visit the following website for more information:

○JST Self-motivated research activities, etc. of young researchers employed with competitive funding:

https://www.jst.go.jp/osirase/2020/pdf/20200414.pdf

4.16 Security export control (to prevent technology leakage to foreign countries)

A lot of cutting-edge technologies are being researched at R&D institutions, and in particular at universities, there is heightened risk of leakage of leading-edge technologies, as well as materials and equipment used for research, due to an increase of foreign students and researchers through internationalization, which has increased the risk of these technologies being exploited for the development and manufacture of weapons of mass destruction, etc. In order for R&D institutions to carry out various R&D activities, including contract R&D, they are required to take systematic responses to ensure that R&D results that may be diverted militarily are not passed on to those who may perform these activities, such as developing of weapons of mass destruction for terrorist groups.

In Japan, exports are restricted (*) pursuant to the Foreign Exchange and Foreign Trade Act (Act No. 228 of 1949) (hereinafter referred to as the “Foreign Exchange Law”). This, in principle, requires those who intend to export (provide) freight or technologies regulated by the Foreign Exchange Law to obtain approval from the Minister of Economy, Trade and Industry. Research institutions are required to comply with the foreign exchange law, as well as the country’s laws and regulations, guidelines and notifications. If they conduct R&D in violation of relevant laws and regulations or guidelines, they are subject to termination of research funding allocation or revoking of the decision on research fund allocation, besides legal dispositions and penalties.

* At present, Japan’s security export control system has two main systems based on international agreements: List Regulation and Catch-all Regulation. The List Regulation system is a system which, in principle, requires those intended to export or provide freight (or technologies) that meet specifications or functions of a certain level or higher, such as carbon fibers, numerical control machine tools, etc., to obtain approval from the Minister of Economy, Trade and Industry. The Catch-all Regulation system is a system that requires those intended to export or provide freight (or technologies) not subject to the List Regulation system which meet certain requirements, such as application, customer or notification requirements, to obtain approval from the Minister of Economy, Trade and Industry

Not only the export of goods but also the provision of technology is also subject to the regulation of the Foreign Exchange Law. Providing technologies subject to the List Regulatory to non-residents or those in foreign countries requires prior permission. Provision of technology includes providing technical information, such as design drawings, specifications, manuals, samples and prototypes in storage media, such as paper, e-mail, CD, DVD, or USB memory and providing work knowledge through technical guidance, training or technical assistance in seminars. Acceptance of foreign students from foreign countries, and activities, such as joint research, may also involve many exchanges of technologies that may be subject to foreign exchange law.

The details of security export control are disclosed on websites, such as of the Ministry of Economy, Trade and Industry. For details, refer to the following.

・Ministry of Economy, Trade and Industry (METI): Security Export Control (general)
https://www.meti.go.jp/policy/anpo/

・Ministry of Economy, Trade and Industry (METI): Security Export Control Handbook
https://www.meti.go.jp/policy/anpo/seminer/shiryo/handbook.pdf

・Center for Information on Security Trade Control
http://www.cistec.or.jp/index.html

・Ministry of Economy, Trade and Industry (METI): Guidance for the Control of Sensitive Technologies for Security Export for Academic and Research Institutions
https://www.meti.go.jp/policy/anpo/law_document/tutatu/t07sonota/t07sonota_jishukanri03.pdf

4.17 Promoting dialogue and collaboration with the public

In Promoting “Dialogue on Science and Technology with the Public (Basic Approach Policy),” adopted on June 19, 2010 by the Minister of State for Science and Technology Policy in charge and by the decision of the expert diet members, it is considered essential for a selected research project for receiving a minimum of JPY 30 million per year of public research fund (competitive or project research fund) to promote the following objectives: Continuously produce outstanding scientific and technological achievements through “Dialogue on Science and Technology with the Public” and reflect these achievements in society for accelerating the development of science and technology in Japan, as well as gaining public understanding and support to promote science and technology together. In addition, in the “5th Science and Technology Basic Plan,” as decided by the Cabinet on January 22, 2016, it is required to deepen the relationship for dialogue and collaboration among various stakeholders, such as researchers, the public, media, industries, and policy makers. Such relationship is considered as a “co-creation,” and is contrary to the conventional relationship in which science and technology and society stand opposite each other. From these points of view, an approach is required to explain the contents and achievements of research activities to society and public in the most widely understandable manner possible and promote dialogue and collaboration between diverse stakeholders. To this end, researchers are requested to actively undertake the continuous releases of R&D achievements through lectures, symposiums, and the internet, and full activities involving diverse stakeholders in the roundtable meetings.

(Reference) Promoting Dialogue on Science and Technology with the Public (Basic Approach Policy)
https://www8.cao.go.jp/cstp/stsonota/taiwa/taiwa_honbun.pdf

(Reference) “5th Science and Technology Basic Plan”
https://www8.cao.go.jp/cstp/kihonkeikaku/5honbun.pdf

4.18 Releasing data from National Bioscience Database

The National Bioscience Database Center (NBDC) (https://biosciencedbc.jp/) was established in the Japan Science and Technology Agency in April 2011 to promote integrated use of life sciences

databases created by various research institutions. “Progress of Life Sciences Database Integration Promotion Project and Future Directionality” (January 17, 2013) states that the center will play a central role in expanding the target projects receiving data and services from the database.

Based on the understanding of these circumstances, researchers are requested to cooperate in publishing the following types of data obtained from this project and databases

No.	Data type	Publication destination	Publication URL
1	Overview of public database that has been built	Integbio Database Catalog	https://integbio.jp/dbcatalog/
2	Copies of data related to the results published in the papers	Life Science Database Archive	https://dbarchive.biosciencedbc.jp/
3	Data related to human of above 2	NBDC Human Database	https://humandbs.biosciencedbc.jp/

<Contact information>

National Bioscience Database Center, Japan Science and Technology Agency

Phone: 03-5214-8491

e-mail: nbdc-kikaku@jst.go.jp

4.19 Regarding systematic numbering in acknowledgments of papers

When announcing R&D results obtained in this program. you must indicate that R&D was funded by JST.

When the aid of this program is explained in the Acknowledgement of the paper, “JST-Mirai Program Grant Number <10-digit systematic number>”must be included. The same applies to the submission or posting of the paper. 10-digit systematic number of this program is <JPMJMI + 4-digit project number>:

The following examples show the acknowledgment of the paper:

【English】

This work was supported by JST-Mirai Program Grant Number JPMJMIxxxx.

【Japanese】

本研究は、JST 未来社会創造事業 JPMJMIxxxx の支援を受けたものです。

* When two or more programs are related to the paper, all the related program names and systematic numbers should be written.

4.20 Reforming competitive research expenses

Currently, the government is discussing institutional improvement of competitive research funds for more effective and efficient use of R&D costs based on “Integrated Innovation Strategy 2019” and “Comprehensive package to strengthen research capacity and support young researchers.” If the

government indicates a policy for the institutional improvement and operation common to other competitive funding program during the open call period, we will inform you when applying the policy to the open call and operation.

4.21 Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)

(1) About implementation of proper systems in accordance with the "Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)"

R&D institutions applying for this project and conducting R&D should comply with the contents of the "Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)" (revised on February 18, 2014) *1.

R&D institutions are requested to establish a system for managing and auditing research funds under their responsibility in accordance with the above-mentioned guidelines and strive for proper execution of research funds. If the Ministry of Education, Culture, Sports, Science and Technology (MEXT) finds the system implementation of an R&D institution inadequate as a result of investigation of the status of system implementation in accordance with the above-mentioned guidelines, it may take measures, such as reduction in the indirect costs of all the competitive funds distributed from the Ministry of Education, Culture, Sports, Science and Technology and the independent administrative corporations under its jurisdiction.

*1 For "Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)," visit the following website:
https://www.mext.go.jp/a_menu/kansa/houkoku/1343904.htm

(2) Submission of "Self-evaluation Checklist for Implementation of Proper Systems" based on "Guidelines for Management and Audit of Public Research Funds in R&D institutions (Implementation Standards)"

Before concluding an agreement for this program, each R&D institution is requested to establish a system for managing and auditing R&D costs in accordance with the above-mentioned guidelines, and submit "Self-evaluation Checklist for Implementation of Proper Systems" (hereinafter referred to as the "checklist"), and a report indicating the status of system implementation. (The R&D institution that fails to submit the checklist cannot conduct R&D.)

R&D institutions need to submit the checklist to Office of Research Funding Administration, Promotion Policy Division, Research Promotion Bureau, the Ministry of Education, Culture, Sports, Science and Technology using a form available on the website shown below by the date of concluding the contract R&D agreement via the cross-ministerial R&D Management System (e-Rad). R&D institutions that have submitted the checklist on a separate occasion after April, 2020 need not submit it this time. In addition, the organizations that do not conduct research activities or those that conduct research activities but conclude (or plan to conclude) an agreement that they do not receive budgetary allocations or measures from MEXT or independent administrative corporations under its jurisdiction do not need to submit the checklist.

For details on submitting the checklist, visit the following MEXT website:
https://www.mext.go.jp/a_menu/kansa/houkoku/1301688.htm

*Note: R&D institutions must have their e-Rad environment available before they can submit the checklist. Please note that the registration usually takes about two weeks. For details on the procedure for using e-Rad, visit the website below.

https://www.e-rad.go.jp/organ/index.html

The above-mentioned guidelines include a focus on “promoting the dissemination and sharing of information.” R&D institutions are requested to post this checklist on their websites, etc. to actively send information.

4.22 Guidelines for Responding to Misconduct in Research

(1) About implementation of proper systems in accordance with “Guidelines for Responding to Misconduct in Research”

R&D institutions are requested to comply with the “Guidelines for Responding to Misconduct in Research” (Adopted by the Minister of Education, Culture, Sports, Science and Technology, August 26, 2014)[*1] before applying for this project and performing R&D activities.

If the Ministry of Education, Culture, Sports, Science and Technology (MEXT) finds the system implementation of an R&D institution inadequate as a result of investigation of the status of system implementation in accordance with the above-mentioned guidelines, it may take measures, such as reduction in the indirect costs of all the competitive funds distributed from Ministry of Education, Culture, Sports, Science and Technology and the independent administrative corporations under its jurisdiction.

*1 For “Guidelines for Responding to Misconduct in Research,” please visit the following website
https://www.mext.go.jp/b_menu/houdou/26/08/1351568.htm

(2) About submission of the checklist on the status of efforts in accordance with “Guidelines for Responding to Misconduct in Research”

Each R&D institution needs to submit the checklist on the status of implementation in accordance with “Guidelines for Responding to Misconduct in Research” (hereinafter referred to as the “Research Misconduct Checklist”). (The R&D institution that fails to submit the checklist cannot conduct research)

The Research Misconduct Checklist must be submitted via the Cross-ministerial R&D Management System (e-Rad) from R&D institutions to the Office for Research Integrity Promotion , Human Resources Policy Division, Science, and Technology Policy Bureau, Ministry of Education, Culture, Sports, Science and Technology in the website format shown below by the day the R&D agreement is concluded. R&D institutions that have submitted the Research Misconduct Checklist on a separate occasion after April, 2020 need not submit it this time. The organizations that do not conduct research activities or those which conduct research activities but do not receive budgetary allocations or measures from the Ministry of Education, Culture, Sports, Science and Technology or

independent administrative corporations under its jurisdiction do not need to submit the checklist.

For details on submitting the Research Misconduct Checklist, please visit the following MEXT website:

https://www.mext.go.jp/a_menu/jinzai/fusei/1374697.htm

*Note: R&D institutions must have an environment to use e-Rad for submission. Please note that the registration of an R&D institution in e-Rad usually takes about two weeks. For details on the procedure for using e-Rad, visit the website below:

https://www.e-rad.go.jp/organ/index.html

(3) About measures against misconduct in research activities in accordance with "Guidelines for Responding to Misconduct in Research"

JST will respond strictly to any misconduct found in the research activities in this program as follows:

(i) Measures to cancel the agreement

If a specific misconduct, such as fabricating, tampering or plagiarism, is found in a research and development proposal of this project, JST will cancel or change the contract R&D agreement and request for refunding of all or part of the contract R&D costs, depending on the nature of the misconduct. JST may not enter into a contract for the next and subsequent fiscal years.

(ii) Measures to restrict eligibility for application and participation

For a person involved in a specific misconduct in research papers or reports in this project or a person who is determined to have neglected the duty of care as a person responsible for the papers, reports, etc., although they cannot be determined to have been involved in the misconduct, JST will restrict eligibility for application for or participation in this program, depending on the degree of viciousness and responsibility for the specific misconduct.

If JST takes measures to restrict eligibility for application and participation, JST provides the information to persons in charge of competitive funds distributed from Ministry of Education, Culture, Sports, Science and Technology and the independent administrative corporation under its jurisdiction (hereinafter referred to as "MEXT-related competitive funding programs") and to those in charge of competitive funds distributed from other ministries and agencies and the independent administrative corporation under their jurisdiction (hereinafter referred to as "other ministry-related competitive funding programs"). This may also result in restrictions on eligibility for application for and participation in the Ministry of Education, Culture, Sports, Science and Technology and other ministry-related competitive funding programs.

Applicants subject to restrictions on application due to a specific misconduct		Level of specific misconduct	Application prohibited period *
Persons involved in	1. Malicious person who intends to conduct a specific misconduct from the beginning of the research		10 years

<table>
<tr><td rowspan="4">a specific misconduct</td><td rowspan="3">2. Author of a paper from a research where a specific misconduct was committed</td><td rowspan="2">Author who is responsible for such a paper (Supervisor, representative author, or a person deemed to have equivalent responsibilities)</td><td>Misconduct having a major impact on the progress of research in this field or society, or considered to be highly malignant</td><td>5-7 years</td></tr>
<tr><td>Misconduct having a minor impact on the progress of research in this field or society, or considered to be less malignant</td><td>3-5 years</td></tr>
<tr><td>Author other than the above</td><td>2-3 years</td><td>2-3 years</td></tr>
<tr><td colspan="2">3. Any person involved in a specific misconduct excluding that set forth in 1 and 2.</td><td></td><td>2-3 years</td></tr>
<tr><td colspan="3" rowspan="2">An author who is not responsible for a specific misconduct but is responsible for papers from a research in which a specific misconduct was committed (Supervisor, representative author, or a person deemed to have equivalent responsibilities)</td><td>Misconduct having a major impact on the progress of research in this field or society, or considered to be highly malignant</td><td>2-3 years</td></tr>
<tr><td>Misconduct having a minor impact on the progress of research in this field or society, or considered to be less malignant</td><td>1-2 years</td></tr>
</table>

* Eligibility for participation is also restricted for the fiscal year in which a specific misconduct is determined as such

(iii) Measures against researchers who have been subject to restrictions on their eligibility for application for the competitive funding program, etc. and for basic expenses

For researchers whose eligibility for application and participation have been restricted due to a specific misconduct in research activities that receive MEXT-related competitive funds, operating costs subsidies provided to national university corporations, Inter-University R&D institution Corporation and independent administrative corporations under the jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology, private school subsidies or other basic expenses, or other ministry-related competitive funds, JST will restrict eligibility for application and participation in this program.

(iv) Publication of misconduct case

If a researcher committed misconduct in the R&D activities in this program, JST will publish the

outline (researcher name, project name, affiliated institution, fiscal year of research, description of misconduct, and description of measures that have been taken) of the misconduct case. The description of misconduct case (name, type, research field and outline of misconduct case, name of expenses involved in misconduct, measures that were taken by an R&D institution and by funding agency) are also, in principle, published by the Ministry of Education, Culture, Sports, Science and Technology (MEXT).

The above-mentioned guidelines state that if it is determined that misconduct has been found, R&D institutions shall publish the results of investigation promptly. The R&D institutions are requested to respond properly.

https://www.mext.go.jp/a_menu/jinzai/fusei/1360483.htm

4.23 Mandatory education on research integrity and compliance

Researchers who are to participate in an R&D project in this program shall receive education on research integrity to prevent misconducts in research activities, as stipulated in “Guidelines for Responding to Misconduct in Research,” and education on compliance stipulated in “Guidelines for Management and Audit of Public Research Funds in R&D institutions.”

During the conclusion of a contract R&D agreement after adopting a research and development proposal, the R&D principal investigator must submit a document that confirms that all researchers who are to participate in the R&D project for this program have received education on research integrity and compliance, and have understood the contents.

4.24 Handling of information, such as research proposals, on e-Rad

JST handles the information related to each adopted research proposal on e-Rad (project name, title of research and development proposal, name of affiliated R&D institution, name of R&D Principal Investigator, amounts of budget, implementation period, and outline of research subject) as the information to be released as set forth in Article 5, item (i) (a) of “Act on Disclosure of Information Held by Independent Administrative Corporations” (Act No. 140 of 2001). After adopting a research proposal, JST will publish this information on the website of the program, in timely and appropriate manner.

4.25 Providing information to the Cabinet Office through e-Rad

In order to promote science, technology, and innovation policies based on objective grounds, the 5th Science and Technology Basic Plan (Cabinet Decision of January, 2016) requires a thorough registration of public funds in the Cross-ministerial R&D Management System (e-Rad) to facilitate evaluation and analysis. The information registered in e-Rad is used to evaluate the nationally funded R&D properly and plan effective and efficient comprehensive strategies, resource allocation policies, etc. Based on the information registered in e-Rad, CSTI and related ministries and agencies associate the output and outcome information with input to the publicly funded research program. To this end, a thorough registration of outcome information, such as papers, patents, and accounting performance, is called for.

It is also requested to enter information on the R&D results, accounting performance and the

execution performance of indirect costs for the competitive funds for an adopted research subject for each fiscal year in e-Rad.

This provides the Cabinet Office with the information necessary for macroeconomic analysis, such as information on the R&D results, accounting performance.

4.26 Registering researcher information to researchmap

researchmap (https://researchmap.jp/) is the largest researcher information database in Japan in the form of a comprehensive list of Japanese researchers, and the registered performance information can be published through the Internet. The researchmap is also linked to e-Rad and the faculty databases of many universities to allow the registered information to be used by other systems as well. This eliminates the needs for researchers to repeatedly register the same performance in various applications and databases.The information registered in the researchmap is also effectively used for investigation for planning of national scientific and technological policies and for statistical utilization. Researchers are requested to register information to researchmap.

4.27 Patent application by JST

If an R&D institution does not acquire any rights for an invention, JST may acquire the rights. If the R&D institution does not intend to acquire rights for the invention, the researcher should convey the relevant information on the invention promptly to JST in any format. (The above “relevant information on the invention” refers to the information required for JST to determine the applicability for patent, such as a copy of the internal notification of the invention used in the R&D institution.)

JST conducts a review based on the information that has been received. If JST determines that it can make a patent application for the invention, the R&D institution and JST will separately conclude an agreement for transferring the patent right.

Chapter 5 Submission via the Cross-ministerial R&D Management System (e-Rad)

5.1 Cross-ministerial R&D Management System (e-Rad)

The Cross-ministerial R&D Management System (e-Rad) is a cross-ministerial system that provides a series of on-line processes to manage the publicly funded research projects under the jurisdiction of ministries and agencies (Acceptance of applications → Selection → Adoption → Management of adopted subject → Registration of research results and accounting performance).

* The “e-Rad” is the abbreviation of the Cross-ministerial R&D Management System, which is created by adding the capital letter of “e” of “Electric” to the capital letters of “Research and Development” for science and technology.

5.2 Application method using e-Rad

R&D institutions are requested to make an application using e-Rad.
For the application flow, refer to the procedure as follows.

(1) Pre-registration for using e-Rad

R&D institutions and researchers must be pre-registered before e-Rad can be used.

① Registration of R&D institution

An R&D institution needs to be registered to e-Rad by the time of application. An R&D institution is requested to appoint one administrative representative in charge of the e-Rad who download the form of R&D institution registration from the e-Rad portal site (hereinafter referred to as the “portal site”) to apply for registration. (In case of a researcher who belongs to an R&D institution outside Japan or does not belong to any R&D institution, the researcher himself/herself shall apply.) Since registration takes several days, the research institute should perform the registration procedure more than two weeks before. Once the registration is completed, the research institute needs not to register the information again when applying for a program or project under the jurisdiction of other ministries or agencies. Similarly, if the research institute has already registered its information in a program or project under the jurisdiction of other ministry or agency, it need not register its information again.

For details of registration of the R&D institution and download of the form, visit the following website:

https://www.e-rad.go.jp/organ/entry.html

② Registration of researcher

The R&D institution must register information on researchers who conduct R&D, and issue a log-in ID and a password.

For the procedure to register researcher information, refer to the manuals, posted on the portal site, for the administrative representative of the R&D institution and for persons in charge of administrative work.

(2) Entry of application information in e-Rad

The researcher planned to make an application for the open invitation via e-Rad should refer to the operation manual for researchers on the following portal site:

https://www.e-rad.go.jp/manual/for_researcher.html

<Notes>

① See Recommended operating environment for login to e-Rad: (https://www.e-rad.go.jp/operating_environment.html)

② Application requires entry of information on the website along with an attachment of the application form (R&D proposal). Download the Application Guideline and R&D proposal forms from the open call website of this program (https://www.jst.go.jp/mirai/jp/open-call/research/r02/) The application form that can be uploaded is a single file having the maximum capacity of 3 MB. If you include image data in the file, be careful of the file size.

③ The created application form file must be uploaded in PDF format. Note the following points when using PDF format.

・Delete all the markups before converting your file to PDF.
・Do not set up a password for the PDF on the R&D proposal.
・Confirm that the converted PDF files have been paginated.
・Be sure to review the converted PDF file as it may get gibberish by page or file

* You can convert your file to PDF format at the menu page after logging in e-Rad.

④ An application whose status is not changed to “Under Process of Funding Agency” or “Accepted” by the submission deadline will be invalidated. Confirm the application status on the “Subject List” screen.

(3) Other

An incomplete application form will not be subject to selection. Be sure to read “Application Guideline” and “Procedure for Preparing Proposal Forms” and then fill out the form carefully (Do not change the format of the application form). JST does not accept a request to replace or return the application form.

5.3 Others

(1) Operation of e-Rad

The operation manual of e-Rad can be viewed or downloaded from the portal site (https://www.e-rad.go.jp/). You must agree the terms of service before the operation.

(2) Where to direct questions on how to use the e-Rad system

Questions about the program itself are answered by staff of Department of R&D for Future Creation, JST, just as usual. Questions about e-Rad operation methods are answered by e-Rad Help Desk. Before asking questions, be sure to read the website for the open call for this project and e-Rad Portal site carefully. **JST will not answer any questions regarding the status of the examination or acceptance.**

Questions about projects and procedures for preparing and submitting application documents	Department of R&D for Future Creation, JST	<We accept an inquiry e-mail only (excluding emergency cases)> E-mail: kaikaku_mirai@jst.go.jp Phone: 03-6272-4004 Business hours: 10:00-17:00 * Excluding Saturday, Sunday and public holidays [We may ask you to contact us by e-mail even though you contact us by phone.]
Questions about e-Rad operation methods	e-Rad Help Desk	0570-066-877 (9:00～18:00) * Excluding Saturday, Sunday, public holidays and New Year holidays

○Open call website of this program: https://www.jst.go.jp/mirai/jp/open-call/research/r02/

○e-Rad portal site: https://www.e-rad.go.jp/

(3) Availability of e-Rad

As a rule, e-Rad operates 24 hours a day 365 days a year, but it may stop the service for system maintenance. If decided to do so, it will be preliminarily notified on the portal site.