R&D proposal “Small-start type” called for in FY2019 (Form 1)

Confidentialty class2

|  |  |  |
| --- | --- | --- |
| Prioritized Theme | \* In the “Realization of a low carbon society, a global issue” area, please describe the  Prioritized Theme, Sub-Theme number, classification of  proposals, and Bottleneck Issue. | |
| Title of R&D project  *\* about 20 words* |  | |
| R&D period | (1) Total period: Month, 2019 – Month, Year ( years) | |
| (2) Feasibility study: Month, 2019- Month, Year ( years) | |
| (3) Full scale research: Month, Year – Month, Year ( years) | |
| R&D Budget  \* (1) = (2) + (3)  Omit decimal point | (1) Total R&D cost for whole period ( million yen) | |
| (2) Total R&D cost for feasibility study ( million yen) | |
| (3) Total R&D cost for full scale research ( million yen) | |
|  |  | |
| Name of R&D Project Leader |  | Plan to exchange the Project Leader: □ Yes □ No □ Undecided  *\* Check* |
| Affiliated  Institution, Department, Title |  | |
| Effort for this FY | This fiscal year: % | |
| Conflicts of interest with PO  \* Check | Conflict of interest with R&D supervisor (PO): □ Yes □ No  \* If “Yes,” describe contents in Form 3 “6. Other” | |
| Conflicts of interest  with R&D proposer  *\* Check* | Participation of R&D proposer-related organizations: □ Yes □ No  *\* If “Yes,” describe contents in Form 3 “6. Other.” For details, Check “(2) Managing the conflicts of interest (persons engaged in selection) in the Application Guideline 2.3.3 Selection method.”* | |
| Researcher number | \* Enter the 8-digit “e-Rad” login ID number which is provided by registering researcher information on the Cross-ministerial Research and Development Management System (e-Rad) | |
| Information on Project Leader | URL:  Author ID:  \* URL if website (lab website, researchmap page) available for information on Project Leader, or ID if ORCHID ID, Researcher ID, or SCOPUS author ID is known | |

R&D Project Description (Form 2)

\* Be sure to check the policies of the R&D supervisors for each area, which are described in the Application Guideline. See “2.1.2 (6), Selection viewpoints” and “Appendix Application Guideline, Chapter 6 Prioritized Theme and Technology Theme for Research Proposals.”

1. POC to be achieved by this R&D project

\* Provide simple and clear descriptions of the POC\*\* to be reached by these R&D projects during the Small-start type research phase and the full-scale research phase. POC is neither an outline nor purpose of the research.

\*\* A stage for the society and industries to be able to judge practicability (proof of concept; POC)

2. Reasons for setting the particular POC

\* Take into account the following when describing why you set a particular POC as a goal:

- What are the social and industrial problems relating to the Prioritized Theme for which immediate actions should be made to determine a solution? Also provide how and why these problems were chosen.

- Values, i.e. social and economic impacts, that are believed to create both in Japan and overseas when these problems were solved (social implementation of technologies that allow the POC to be reached)

\* If you consider the POC or social/industrial issues with a coopoeration with the person promotes cooperation of academia and industry like coordinator or the person in charge of the company, describe opinions of the coordinator as detailed as possible in form 9 “View of the person promotes cooperation of academia and industry like coordinator or the person in charge of the company.” Submitting a proposal (form 9) is optional and not mandatory.

\* Prepare a separate compact summary of the contents of “1. POC to be reached by these R&D projects” and this description, in about 170 words in English, and include this summary in the “research objective” section of “common provisions” on e-Rad.

3. Measures necessary for reaching POC

\* Clearly describe the background and any problems that may hinder you in reaching the stipulated POC. Describe necessary measures that will be taken toward realizing the POC during both the Small-start type research phase and the full-scale research phase. Also, describe the originality, inherent challenges, and effectiveness of your proposal.

\* If possible, describe ideas for developing the research results beyond the POC (business model, distribution to private firms) and their social implementation (optional). (These can be subjects approached during research into the Small-start type, even if they are not yet concrete ideas. In such a case, describe the preparatory situation using form 3.1).

\* In the case of a proposal relating to the “realization of a low carbon society, a global issue” area, quantitatively show the degree to which the technology projects to be approached will contribute to the realization of a low carbon society by approximately 2050.

**- Do not exceed two A4-size sheets (no exceptions) -**

R&D plan of Feasibility Study (Form 3)

1. Preparatory situation at the beginning of full-scale research

\* Provide a concrete description of the following, including the preparatory situation for full-scale research and R&D trends in Japan and overseas.

- Evidence-based verification of social and industrial impacts, as well as social and industrial needs

- Technology issues and understanding of their difficulties and feasibility

- Your understanding of the problems relating to the social implementation of the proposal

- Details of the full-scale research plan (team to conduct research, budget, milestones)

- Details of activities to be taken, keeping in mind the development of research results (business model, passing research results to private firms, etc.)

2. Matters to be achieved in Feasibility Study

\* On the basis of 1., clearly describe, in about 170 words in English, matters to be achieved during the Small-start type research phase.

\* Copy this description and paste it into the “research outline” section of e-Rad’s “common provisions.”

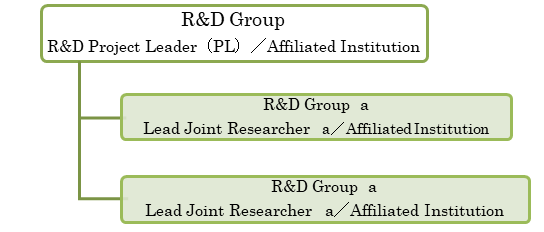
3. Contents of the execution of Feasibility Study

**- Do not exceed 10 A4-size sheets (no exceptions) –**

4. Team to conduct Feasibility Study

(1) Schematic illustration of an R&D team

\* Illustrate an R&D team (Correct the illustration according to the proposed ideas and plans for R&D as appropriate. The illustration below is provided for reference.)



R&D Group b

Lead Joint Researcher b/ Affiliated Instituation

(2) Project Leader’s Group

(example)

|  |  |  |  |
| --- | --- | --- | --- |
| Name of  Project Leader | Name of organization1) | Title | Effort2) |
| *OO OO* | *OO university*  *graduate school*  *OO department OO major* | *professor* | *40%* |
| Name of R&D  Participant3,4)) | affiliation (omit if same as above5) | title | |
| *OO OO* |  | *professor* | |
| *OO OO* |  | *associate professor* | |
| *OO OO* |  | lecturer | |
| *XX XX* | *XX Co., Ltd., XX Institute* | *chief researcher* | |

1) If the organization you are currently affiliated with differs from the organization at which you propose to conduct the adopted research, describe the latter in the column relating to special matters and inform us of the reason you have chosen this institution.

2) In the “effort” column, enter the distribution percentages (%) for the time required for the research relative to 100%, which represents the Total work hours (including not only research activities but also education and therapeutic activities) of researchers in a year.

3) Fully describe the roles to be played by the members of the research group.

4) Add necessary information concerning the researchers participating in R&D. A description such as “X researcher” is acceptable in cases where the names of researchers are not known at the time the proposal is submitted.

5) When multiple organizations are required to research a particular item, the addition of members from different organizations as participants in the R&D process is acceptable.

(2-1) Role of the group in relation to generating R&D ideas

(2-2) Special matters

\* Give details of situations (background, reasons, etc.) when work hours (effort) is necessary for completing special tasks (such as managers including the head of research departments or chairmen of academic associations in the process).

(3) Lead joint R&D Group

\* When joint research groups (joint research organizations) outside of the organization the Project Leader is affiliated with are required, describe each group separately. Describe all the joint research organization which concludes an R&D agreement with JST and is planned to be allocated R&D costs.

\* It is possible to include members of various research organizations affiliated with industries, universities, and the government in joint research groups.

\* There is no limit to the number of joint research groups; however, forming an optimal team for pursuing the Principal Investigator’s research idea should be the priority.

\* Add or delete tables depending on the number of research groups involved.

\* It is not mandatory to add members of joint research groups to research teams.

**①** **Joint R&D Group a** (example)

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Lead joint researcher | Name of joint research organization1) | Title | Effort2) |
| *OO OO* | *OO Institute OO Department OO team* | *team leader* | *10%* |
| *Researcher number6): 12345678*  *Research organization code7): 1234567890* | |
| Name of R&D Participant3,4) | Affiliation (omit if same as above) | Title | |
| *OO OO* |  | *chief researcher* | |
| *OO OO* |  | *researcher* | |
| *Plan to employ two* |  | *special researcher* | |
| *XX XX* | *XX Co., Ltd. XX Institute* | *chief researcher* | |

1)-5) See previous pages.

6) Provide the eight-digit number of the main joint researcher, which was given upon registering researcher information on the R&D management system common to ministries (e-Rad).

7) Provide the codes for each affiliated research organization given by the R&D management system common to ministries (e-Rad).

<Role of groups in generating R&D ideas>

<Special matters>

\* Enter situations when and reasons measuring of work hours (effort) is necessary during special tasks (such as when managers, such as heads of research departments or chairmen of academic associations, are involved).

\* When adding an overseas research organization to a research team, see “2) Requirements for research teams” of Application Guideline “2.1.2 (5), Requirements for applications,” and then describe in this column the reason the inclusion of joint researchers affiliated with overseas research organizations is necessary.

**② Joint R&D Group b**

\* Add or delete the joint R&D group such as " joint R&D group b" or " joint R&D group c" as necessary.

(4) Other participating R&D organizations

|  |  |  |
| --- | --- | --- |
| Name of R&D  participant3,4) | Affiliation | Title |
| *OO OO* | *OO Institute OO Department OO team* | *chief researcher* |
| *OO OO* |  | *researcher* |
| *XX XX* | *XX Co., Ltd. XX Institute* | *chief researcher* |

\* Private firms and universities that have not signed an R&D agreement with JST in regard to participation but that are collaborating and cooperating with research groups that have signed an R&D agreement with JST relating to participation.

(4-1) Role of organizations participating in R&D ideas

(4-2) Special matters

\* When adding an overseas research organization to a research team, see “(2 Requirements for research teams” of Application Guideline “2.1.2 (5), Requirements for application,” beforehand and describe the reason joint researchers affiliated with overseas research organizations are required.

5. The Principal Investigator’s management policies

(1) Policies for research management

\* Improvement, correction of proceedings, introduction of new findings and technologies, policies for developing results

(2) Policies for managing intellectual property

\* Policies for managing intellectual property should include the following:

- A basic idea of the Principal Investigator concerning how to build a management system and manage the intellectual property of the project.

- A basic description of how research results created by this research project will be grouped so that they are not considered to constitute intellectual property; in addition, a basic plan for deciding whether the results should be disclosed to the public.

- A basic plan concerning acquiring and maintaining or abandoning or transferring (including how to obtain funding) intellectual property rights during and after researching this project.

6. Other

**(Common)**

\* Describe the current status of preparations and examinations as to the support measures and systems at major research organizations.

\* If there are conflicts of interest with the R&D supervisor, describe the specific contents. In addition, if there are conflicts of interest with the R&D proposer of this proposal, describe the specific contents. Check (2) Managing the conflicts of interest (persons engaged in selection) in the Application Guideline “2.3.3 Selection method” for the definition of conflicts of interest.

**(by Prioritized Themes)**

\* If there are any other special matters specified by a Prioritized Theme, describe them here.

R&D Budget (Form 4)

-*In this form, describe R&D budgets during Feasibility Study only. For R&D costs during a full-scale research period, describe the Total amount in form 1.*

-During the Small-start type phase, different Prioritized Themes may have different research periods. Be sure to check the R&D supervisor’s policies relating to the area in question by consulting the Application Guideline contained within “Prioritized Theme and Technology Theme for Research Proposals” when completing this form. Delete unnecessary lines for later FY(s) as necessary (For example: If R&D period is three years, delete lines for fourth and fifth years.).

-Enter an annual research-expense plan for each expense item and for each research group.

-More detailed research expense plans are requested for selection interviews.

-Research expenses may be reviewed upon adoption or during the research period, depending on the budgeting situation of the entire program, the management of the research area by the R&D supervisor, or the project-evaluation situation.

-Propose a necessary, adequate, and optimum team composition for realizing the Principal Investigator’s research idea. A joint research group is essential for realizing a research idea and would greatly contribute to achieving a research objective.

〇 R&D cost plan by expense account (for an entire team)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1st year  (2019 Nov. -2020 Mar.) | 2nd year  (2020 Apr. -2021 Mar.) | 3rd year  (2021 Apr. -2022 Mar.) | 4th year  (2022 Apr. -2023 Mar.) | 5th year  (2023 Apr. -2024 Mar.) | Total  (million yen) |
| Equipment expense |  |  |  |  |  |  |
| Supplies expense |  |  |  |  |  |  |
| Travel expense |  |  |  |  |  |  |
| Personnel expense, gratitude  (number of  researchers) | (　 ) | ( 　) | ( 　) | ( 　) | ( 　) | ( 　) |
| Other |  |  |  |  |  |  |
| Direct cost |  |  |  |  |  |  |
| Indirect cost |  |  |  |  |  |  |
| Total  (million yen) |  |  |  |  |  |  |

\* R&D cost accounts and their uses are as follows:

- Facility and equipment: purchases of facilities and equipment

- Supply: purchases of supplies

- Travel: travel expenses for the Principal Investigator and researchers

- Personnel and gratitude: personnel costs of researchers, engineers, research aids, and RA (\*), as well as for providing tokens of gratitude

\* See Application Guideline “4.15, Improving the treatment of (latter-stage) doctoral students” for RA (research assistant).

〇 Special matters

\* Stipulate optimum budget and ratio for each account.

\* If applicable, describe the reasons personnel expenses exceed 50% of the Total research expenses or supply expenses and travel expenses exceed 30% of the Total research expenses.

〇 R&D Budget plan by group

\* Propose a necessary, adequate, and optimum team composition for realizing the Principal Investigator’s research ideas. A joint research group is essential for realizing a research idea and can greatly contribute to achieving a research objective.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1st year  (2019 Nov -2020 Mar.) | 2nd year  (2020 Apr. -2021 Mar.) | 3rd year  (2021 Apr. -2022 Mar.) | 4th year  (2022 Apr. -2023 Mar.) | 5th year  (2023 Apr. -2024 Mar.) | Total  (million yen) |
| Project Leader Group  OO university |  |  |  |  |  |  |
| Joint research G-a  XX university |  |  |  |  |  |  |
| Joint research G-b  XX university |  |  |  |  |  |  |
| Direct costs |  |  |  |  |  |  |
| Indirect costs |  |  |  |  |  |  |
| Total (million yen) |  |  |  |  |  |  |

〇 Major facilities to be utilized (name of instrument, installation site)

〇 Major facilities planned for purchase  
(more than JPY 5,000,000 for every order, name of instrument, approximate cost)

(example)

Group A:

XXXXXXXXX 15,000 thousand yen (Purchase fiscal year )

XXXXXXXXX 5,000 thousand yen (Purchase fiscal year )

XXXXXXXXX 10,000 thousand yen (Purchase fiscal year )

Group B:

XXXXXXXXX 7,000 thousand yen (Purchase fiscal year )

XXXXXXXXX 10,000 thousand yen (Purchase fiscal year )

R&D Project Applicant (Project Leader) (Form 5)

〇 Basic information on the Project Leader (PL)

|  |  |  |  |
| --- | --- | --- | --- |
| Name |  | | |
| Nationality/  gender |  | Birth date (A.D.) |  |
| Affiliation, title |  | |  |
| Academic history  (after graduation from college) | Academic history：  (Filling-in example)  OO year OO university OO department graduation  *OO year OO graduate school OO department master’s course*  *OO major*  *OO year OO graduate school OO department doctoral course OO major*  *OO year Ph.D. (OO major) (OO university)* | | |
| Research history  (main history and research contents) | Job history：  (Filling-in example)  OO year-OO year OO Co.,Ltd OO R&D department (development of OOOO)  *OO year-OO year OO university special associate professor (research on OOOO)*  *OO year-OO year OO Co., Ltd OO department (in charge of OO)* | | |
| Other special matters | *(voluntary description on social contributions, international activities)* | | |

〇 List of achievements by the Project Leader (PL)

\* Describe up to 20 previous achievements, such as published papers and books, related to this R&D project in chronological order, starting with the most recent.

\* Follow the instructions below concerning items on papers to be described (the same applies to authored books):

\* You may choose the order of the items freely.

\* Place a “●” mark in front of a paper cited in form 3.

<Project Leader>

*(example)*

- Author(s) (all authors), Title, Journal/Book, Volume, Page numbers and Published year

<Lead Joint Researcher a>

*(example)*

*- Author(s) (all authors), Title, Journal/Book, Volume, Page numbers and Published year*

<Lead Joint Researcher b>

*(example)*

*- Author(s) (all authors), Title, Journal/Book, Volume, Page numbers and Published year*

Other Funding Supports (Form 6)

\* If the Principal Investigator and Lead Joint Researchers are receiving, applying for, or planning to apply for alternative funding systems or other research subsidies (including from private foundations or overseas organizations), describe the research title, research period, role, amount of research expenses received, and efforts made thus far for each of system or subsidy. Also, see Application Guideline “4.2, Measures against unreasonable duplication and excessive concentration.”

\* If a description is found to be false, an adopted proposal may be cancelled later.

\* If, during the selection process for this R&D proposal, a description in this form requires alteration because the research subsidies applied or planned to be applied for, as mentioned above, have been altered, correct this form and send a notification e-mail to the contact details provided at the end of these application requirements.

\* Copies of the application documents and plans submitted to other systems may be requested during the selection interview.

(example)

Project Leader: *XX XX (name)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name of program | Situation | Name of research projects  (name of representative) | R&D  period | Role  (representative/ shared role) | (1) Received research  expense (whole period)  (2) (FY2020 planned)  (3) (FY2019 planned)  (4) (FY2018 actual) | Effort  (%) |
| JST-Mirai  Program (this  Proposal) | applied |  |  | representative |  |  |
| *Grant-in-Aid for Scientific Research(S)* | received | ◊◊ creation by xx  (OOOO) | 2017 Apr. -2021 Mar. | representative | 1. 100 thousand yen 2. 50 thousand yen   (3) 25 thousand yen  (4) 5 thousand yen | 20 |
| *JST Strategic Basic Research Programs*  *CREST* | applied | ◊◊ upgraded function by xx  (OOOO) | 2019 Oct.  -2024 Mar. | shared role | (1) 140 M yen  (2) 35 M yen  (3) 8 M yen  (4) - |  |

-List, in descending order of the amounts received (over the entire period), subsidies received or expected to be received. Then, describe subsidies applied for and those that you plan to apply for, if applicable.

-If a subsidy is being received or you expect to receive it, enter “received.” Enter “applied” if you have applied for but not yet received a subsidy or if you plan to apply for a subsidy.

-Describe representative or shared duties under “role.”

-Describe the amount (direct costs) to be received by the research representative her/himself under “research expenses received by the research representative.”

-Describe the distribution ratio of the time required to perform the research relative to 100%, which represents Total annual work hours (including not only time for research activities but also educational and therapeutic activities) under “effort” [as defined at the Comprehensive Science, Technology, and Innovation Convention]. Only account for efforts expended or planned to be expended on the presumption that a proposal is adopted by JST-Mirai program, not efforts made in regard to proposals submitted to other research organizations, such as those applied to or those planned to be applied to. The Total efforts made during the Small-start type phase and efforts made toward subsidies being received should not exceed 100%.

-Add or delete lines as necessary.

(example)

Lead Joint Researcher *a: XX XX (name)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name of  program | Situation | Name of research projects  (name of representative) | R&D  period | Role  (representative/sharing) | (1) Received expenses (whole period)  (2) (FY2020 planned)  (3) (FY2019 planned)  (4) (FY2018 actual) | Effort  (%) |
| JST-Mirai  (this Proposal) | applied |  |  | shared |  |  |
| MHLW, Grants-in-Aid for Science Research | received | ◊◊ creation by xx  (OOOO) | 2017 May -2021 Mar. | representative | (1)50 thousand yen  (2)20 thousand yen  (3)20 thousand yen  (4)　5thousand yen | 10 |
|  |  |  |  |  | (1) thousand yen  (2) thousand yen  (3) -  (4) - |  |

(example)

Lead Joint Researcher *b: XX XX (name)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name of program | Situation | Name of research projects  (name of representative) | R&D  period | Role  (representative  /sharing) | (1) Received expenses (whole period)  (2) (FY2020 planned)  (3) (FY2019 planned)  (4) (FY2018 actual) | Effort  (%) |
| JST-Mirai  (this Proposal) | applied |  |  | shared |  |  |
| *OO Foundation*  *xx Research Grants* | received | *◊◊ creation by xx*  *(OOOO)* | *2018 Apr. -2020 Mar.* | *representative* | *(1)2 thousand yen*  *(2)0 thousand yen*  *(3)1 thousand yen*  *(4)1 thousand yen* | *15* |
|  |  |  |  |  | (1) thousand yen  (2) thousand yen  (3) -  (4) - |  |

Protection of Human Rights and Compliance with Laws and Regulations (Form 7)

\* Describe the measures and actions that you will take if your research involves compliance with the related laws and regulations (e.g. research requiring the consent and the cooperation of the other party when implementing the research plan, research requiring consideration for the handling of personal information and research requiring efforts regarding bioethics and safety measures).

This applies to surveys, research, experiments which require an approval procedure in an ethics committee inside and outside the research institution, such as for example questionnaire surveys in which personal information is involved, interview surveys, the use of provided samples, analysis study of the human genome, recombinant DNA experiments, experiments on animals, etc.

\* When your R&D team includes an overseas joint research group, be sure to describe the preparedness on regulations concerning security export control both in PL's research group and the domestic joint research group.

\* Please indicate where this is not applicable.

References (Form 8)

\* Provide the names of two (2) individuals who have good knowledge of your Research Project (non-Japanese person(s) are acceptable). Provide names of the reference person, institution and contact information (phone numbers and e-mail address). The evaluators (JST and R&D Supervisor) may contact them regarding the R&D proposal during the screening process.

\* Providing this reference information is not mandatory.

View of the person who promotes cooperation of academia and industry, such as coordinator or person in charge of company (Form 9)

**\* Submission of this form is optional and not mandatory.**

Author name:

Affiliation:

Title:

Contact address (voluntary):

\* Please prepare within 1 page. (It can be prepared by more than one person.)

\* Person who prepares should not be Project Leader or research participant but the person who promotes cooperation of academia and industry or the person in charge of the company who is supposed to receive the technology that achieves POC in future. The person can be outside those included in form 3 “4. Team to conduct Feasibility Study”.

\* The person who promotes cooperation of academia and industry can also be the person who supports realization of POC.

\* Please include supplemental information that is not described in form 1-5. For example, public or private firms’ needs, domestic and overseas trends around this research proposal, expectation of the achievement of POC and possibility of expanding after POC, role of the person promoting cooperation of academia and industry, relationship with programs of government departments or local governments.

It is not necessary to write an evaluation of the PL or reason for recommendation.