Details of the R&D Focus Area/Program

FY2025
RISTEX R&D Programs

"Responsible Innovation with Conscience and Agility"
(RInCA)
Call for R&D Proposals
[Application Guidelines]

Application Call Period

April 9, 2025 (Wed) to June 4, 2025 (Wed) at 12:00 PM (noon, Japan time)

Please refer to the separate guidelines for general information. This section outlines the R&D supervisor's perspectives behind the Program's approach to calls for proposals and selection and provides a general overview of the Program. Be sure to read this section carefully before submitting your proposal.
https://www.jst.go.jp/ristex/proposal/proposal_2025.html

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.

Japan Science and Technology Agency

Research Institute of Science and Technology for Society (RISTEX),
Japan Science and Technology Agency (JST)

April 2025

The research and development program for which proposals are being solicited in this application guidelines (Details of the R&D Focus Area/Program) is the “Responsible Innovation with Conscience and Agility” (RInCA) (hereinafter referred to as “this program”). Please also refer to the application guidelines <General Information> in the separate booklet when preparing your proposal.

■Selection Schedule

Call begins	April 9, 2025 (Wed)
Briefings on solicitation	April 24, 2025 (Thu) Conducted online For further details, please refer to the proposal solicitation website listed below. (https://www.jst.go.jp/ristex/proposal/proposal_2025.html)
Application deadline *1	June 4, 2025 (Wed) at 12:00 PM (noon, Japan time) (No delays accepted)
Document screening period	June-July 2025 (planned)
Notification of document screening results	Notice will be provided at least one week prior to the interview screening (planned).
Interview screening *2	August 6, 2025 (Wed) Conducted online
Candidates interview with the Program Supervisor *3	August 26, 2025 (Tue) Conducted online
Notification and announcement of selection results	Late September 2025 (planned)
Start of R&D	Early October 2025 (planned)

*1 *Deadline for submitting applications through the Cross-ministerial R&D Management System (e-Rad).

*2 Candidates eligible for the interview selection process are required to prepare and submit “presentation slides” and “answers to the preliminary questions for the interview selection process” prior to the interview selection meeting. [Only for the Scenario Creation Phase and Solution Creation Phase] In addition to the aforementioned materials, candidates are also required to create and submit a “presentation video. ”

*3 The interview selection process is planned to be conducted online via Zoom. We kindly ask for your cooperation in conducting a connection test in advance.

CONTENTS

Chapter 1. Concept of Program Supervision in Solicitation and Selection

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■Background

While the significance of the deepening relationships and interactions between science and technology (S&T) and society has been recognized for some time, these are now becoming increasingly important due to the rapid advancement of emerging sciences and technologies. Such sciences and technologies, which are advancing at an accelerating pace, are characterized by extremely rapid transition from R&D to social implementation, their uncertain and multifaceted impact on humans and society, and their overwhelming impact. They expand the relationship of science and technology to people and societies, providing new knowledge and benefits, and enabling people and societies to be better. On the other hand, they have also had the potential to cause irreversible destruction throughout human history.

Looking back, discussions regarding the relationship between S&T and society have been posing various serious challenges at different times in history. There has been the recognition of the negative impacts of S&T on people, society and the environment, including the social responsibility of scientists in research after World War II; global environmental problems such as industrial pollution, some cases of which have caused severe regional damage, and atmospheric pollution and climate change; and accidents at nuclear power stations. Awareness of these, however, has come to motivate engagement in further discussions about the relationship between S&T and society. Awareness of these, however, has undeniably motivated the engagement in further discussions about the relationship between S&T and society. Against this backdrop, research on ethical, legal and social implications/issues (ELSI) was established formally for the first time in the budget allocated for the Human Genome Project launched in 1990 in the US. This is a research area which anticipates and considers the ethical, legal and social implications of R&D outcomes, which has later expanded its focus on genome research to other areas such as other emerging biotechnologies, information technology, nanotechnology and brain science.

Meanwhile, as a significant issue that arose during the start of the Program, we cannot overlook

the impact that COVID-19 has had on our daily and economic activities. We have experienced the unknown virus and its infectious risks, abrupt environmental changes and uncertain prospects, the vast flow of information with sometimes dubious contents, the anxiety and fear of the invisible, criticism and discrimination, disruption and disparity –situations that lead to confusion. As the way of life and society have now changed dramatically, it can be said that the need to reexamine the relationship between S&T and society is once again being brought into question.

The political and societal position of the Program is to respond to global-scale problems faced by humanity (grand challenges) as exemplified by the Sustainable Development Goals (SDGs), which have been identified as important mission at a policy level and in industrial circles. With the rapid expansion of environmental, social and governance (ESG) investment in the global marketplace, there is a call to reconcile values emphasizing economic rationality with values such as the sustainability of the natural environment and giving consideration to gender and equity. In this situation, there is an expectation that S&T will contribute to resolving social issues including the grand challenges, and the transcendence and integration of various disciplines and collaboration with diverse stakeholders are considered important to this end. Moreover, it is necessary for such efforts to not only result in the overcoming of issues, but to also involve a discussion and anticipation of problems that, from the early stages of R&D, include researchers across disciplines and various stakeholders in society. Upon such a foundation, we could achieve the creation of innovation which truly contributes to the greater good of society. This is known as the responsible research and innovation (RRI), positioned as a concept that has its origin in ELSI in the US, as well as S&T governance and public engagement mainly developed in Europe.

Japan’s science and technology policy is also based on this trend. With regard to S&T and innovation, the Basic Act on Science and Technology was substantially revised for the first time in 25 years and came into effect as the Basic Act on Science, Technology and Innovation in April 2021. Of particular note are the deletion of the clause which excluded humanities and social sciences (“those relevant only to the humanities”) from its definition of S&T, and the inclusion of “creation of innovation” in its objectives. The 6th Science, Technology and Innovation Basic Plan (Cabinet Decision of March 26, 2021), which is drawn up based on this law, places a particular emphasis on creation and application of “comprehensive knowledge” by integration of knowledges in humanities/social sciences (HSS) and natural sciences in order to promote policymaking by back-casting as well as social changes led by innovation. To realize these, it is mentioned that co-creation

by researchers and various stakeholders is essential, and that promotion of engagement in ELSI is necessary to resolve increasingly complex social issues and implementation of emerging sciences and technologies.

However, the current situations of these attempts seem to imply that concepts and ideas of ELSI/RRI may not be so successfully establishing activities which are to be integrated in R&D and innovation in such a way as to produce synergetic effect. A situation is evident in which R&D and the social implementation of results tend to take place first, and the discovery of points at issue and the raising of questions related to, e.g., ethics, legal issues, responsibility and human wellbeing occur afterward. To overcome this situation, “comprehensive knowledge” through “co-creation” by stakeholders is required. It is also necessary to promote practical collaboration from the early stages of development and implementation in close cooperation with the practitioners of scientific and technological development and implementation, and to conduct reflective examination of S&T and their value as well as their relationship with people and society.

■Focus on Humans: Consideration from the Perspectives of Human Nature and Interaction between People and Society

Development of S&T related to human subjects is more prominent than ever and has the potential to change various aspects of people and society, including one’s self-understanding and decision-making, human autonomy, interpersonal relations and group relations. Advances in S&T are expected to contribute to improvement of people’s lives and societies, but in order for this to be realized, a harmonious relationship should be maintained between S&T and individuals/organizations that make decisions according to various needs and desire and act based on those decisions, as well as the societies in which they exist. Although S&T has the ability to make life more pleasant and convenient, if it relieves one’s desire too naively, this may destabilize sustainability of society. In addition, S&T has the power to control human behavior (regardless of its intention). As excessive control could cause, for example, ethical problem of justification and legal problem of fairness, it may even jeopardize people’s very wellbeing by threatening individuals’ autonomy or resulting in backlash or despair. Emerging sciences and technologies in particular are characteristic not only for their distinctively rapid pace of progress and immense impacts on people and societies, but also for norms and ethics associated with them being not necessarily given and change dynamically, and thus attention should be paid to such aspects.

When pursuing R&D and social implementation of S&T, careful consideration of ethical, legal and

associated social issues that become apparent in trying to achieve a harmonious relationship with humans and societies is an essential part of responsible research and innovation. For such a pursuit to have an effect, focusing on “humans/individuals” who make up the society, and considering issues based on the understanding of their characteristics in cognitions and social behavior would be one key aspect. Far from being a mere gathering of people, our society comprises of various elements such as organizations, norms, laws and economic/industrial systems, exhibiting multiple functions. In such a society, for us to envisage the future, it is essential to contemplate what meaning we should assign to S&T, how it could be accepted and used, and how it should be positioned now and in the future. Answering these questions requires not only macro-level perspectives such as the vision of society expected to be achieved by the advancement of S&T, as well as institutional, normative and ethical dimensions, but also micro-level considerations such as the current states of literacy and understanding of S&T; value systems; anticipated impacts of S&T on society including costs and risks/benefits; trust in S&T itself and organizations and groups that promote S&T; and cognition, behavior and psychological reactions of particular communities and individuals with regard to S&T. It is important to grasp the characteristics of decisions and behavior comprehensively by incorporating the notion that people do not always make rational decisions, and by elucidating distortions due to cognitive bias or incentives.

■Creation of Value Relevant to the Japanese Context

When considering the relationships between S&T and humans/societies, we need to examine and envisage how S&T should be with/for the present and future society in which we live. In other words, each subject that engages in such a discussion needs to start the examination from the society s/he or it belongs to while also being aware of the uniqueness of the society as well as universal characteristics of the society. In that sense, how to perceive the significance of Japan as a given setting is one crucial perspective in such an examination.

Although S&T possesses a certain degree of universality, its implementation requires examination of particular approaches which take into account the characteristics and conditions of the specific society (community). In addition, how conflicts of embedded values and ethical issues manifest in the process of implementation of S&T’s outputs depends on the society’s unique history, institutions and customs. Accordingly, rather than merely borrowing/applying theories and case studies from overseas, notably Europe and the US, we need to engage with the fundamental question of what kind of value we are trying to realize by continuous discussions and articulation from various

perspectives while pragmatically confronting the challenges facing Japanese society.

In doing so, it is important for us to adopt a perspective conscious of Japan's social, cultural and historical attributes. We can look at the issues either by adopting a global perspective on Japan, or by a Japanese local perspective on the world, but here I suggest that we scrutinize the generality and uniqueness of cases and social contexts in Japan, as such an attempt may enable us to conceive universal value that meets a global standard, and to discover the strategies for building an optimal relationship between S&T and humans/societies, as well as benefits S&T brings. There is anticipation that this could lead to the creation of new value and services that stem from Japanese people, society, culture and history, and even to rulemaking adaptable to the international community.

■The Challenge of Co-creative Science, Technology and Innovation

One point to note is that we should not regard these efforts to reconciling S&T with humans and societies as brakes on R&D, but rather as navigators for the creation of innovation and the future society, thereby serving as the impetus for us to presciently and actively create many options for the future. In order to ensure the effectiveness of such efforts, we must engage in the "issues occurring at this very moment" at the sites of R&D, as well as to point out potential future issues and to start discussing these under the appropriate framework. With consideration for the complex and multilayered elements as well as diverse perspectives of people/societies, we need to contemplate how S&T really should be, search for theories and implement the design of R&D or of technology to industries/economies while attempting to constantly question its agreement with humans/societies. On-site engagement in such a pursuit repeatedly and interactively, I would suggest, is what is truly required of future R&D.

In terms of emerging sciences and technologies, first, there would be post-R&D cases, of which ethical, legal and social issues are already apparent and need to be attended to immediately. For example, legal regulations relating to the safety of technologies related to automated driving, artificial intelligence, which is being used extensively for decision-making support and the application of genome-editing technology to crops and foods fall into this category. Many relevant issues have already been recognized on the R&D front, requiring practical collaboration in R&D among researchers in the humanities and social sciences and other stakeholders, with the goal of addressing the issues to find solutions.

There also would be cases which are anticipatory in nature with regard to R&D, of which specific

issues have not yet become apparent due to uncertainty/ambiguity associated with the topics or areas of S&T. In such cases, it is required to promptly anticipate possible impacts, both positive and negative, and risks of R&D, as well as to seek the possibility of reconciliation with humans/societies, so that appropriate measures can be taken. Examples of this kind include synthetic biology and materials informatics which hold the potential to bring innovation to various areas; human augmentation which enhances human capabilities by technology; neurotechnology, which involves reading and intervening in human emotions; and generative AI, whose use is rapidly expanding. In these exploratory areas of S&T, an approach involving not only discussing these only from the perspective of how people and societies would accept them and adapt/adjust to them, but also deliberating the significance and philosophy of S&T while, given the reality of uncertainty, exploring and assessing with researchers in HSS and various stakeholders what a vision for humans and societies should be, is becoming even more important.

Besides emerging sciences and technologies, there are also existing areas of S&T of which social applications have already been realized, or for which policies have been implemented, that urgently require the consideration of ELSI, in the services resulting from them and the associated ethics, along with the derivation of value which is to be realized. Examples include the use of biometric technologies such as automatic facial recognition and their implications for privacy, the ethics and designing of governance in the application of block-chain technology, the issues of “dual use” in bacterial/viral research and drone technology, gendered innovation, the ethics of applying the concept of nudge in behavioral economics to public policy. These have the possibility of resulting in immense impacts on social institutions, R&D structure, and human behavior, but at the same time, these are also the areas in which innovations based on interaction with societies/people are anticipated to occur, and as such, engaging in these issues with new perspectives is considered important.

Besides, co-creative science, technology and innovation is the very embodiment of collaborative efforts among a true diversity of stakeholders including researchers in natural sciences and HSS, technical developers, and citizens living in society. To move beyond joint research as a mere formality, unidirectional public understanding activities and subservient risk management and

compliance, science and technology communication[1] that enables co-creation is important.

With ongoing advancement in communication-related information technology and cognitive science, we should also consider the streamlining and sophistication of methodologies for “dialogue” and “deliberation.” The communication that occurs amid experimentation in co-creative science, technology and innovation is also likely to contain uniquely Japanese contexts, and here, too, important components of R&D can be found.

■Learning from Experience and History

Building upon past experience is crucial in addressing the aforementioned perspectives as part of R&D. With regard to the deepening relationships between S&T and humans/societies, so-called trans-science issues (questions that can be asked of, but cannot be answered by science alone) have existed since before the emergence of ELSI and RRI, and been earnestly addressed also in Japan. Typical examples include pollution, chemical terrorism, BSE crisis, the accident at the Fukushima nuclear power stations, and the COVID-19 pandemic and numerous problems associated with it that we are facing at this very moment. These are likely to serve as historically significant turning points for the relationships between S&T, humans and societies.

In addressing ethical, legal and social implications/issues related to emerging sciences and technologies and co-creative science, technology and innovation now and in future, R&D must take a stance of learning from past achievements and problems while also keeping in the mind that the future may far exceed those experiences and predictions.

Emphasizing the above-mentioned points, the Program promotes practical and comprehensive R&D on ELSI/RRI that bring together the knowledge of researchers and stakeholders, targeting universal issues that arise between S&T and humans/societies, as well as issues unique to Japanese society.

The Program aims to build a responsible research and innovation ecosystem in which S&T and humans/societies are in harmony by presenting concrete cases through trials, actively disseminating information domestically and internationally, building functions and mechanisms that will continue after the Program ends, and developing diverse ELSI/RRI human resources.

[1] In this context, science and technology communication refers not only to the narrow definition of responses and verbal exchanges on S&T topics between experts and non-experts, but also encompasses a broader range of activities aimed at deepening the relationship between science and technology innovation and society. These activities include enhancing understanding, facilitating two-way communication, engaging in dialogue, participating in policy-making processes, and co-creation.

Chapter 2. Overview of R&D

2.1 The Goal of the Program

The Program aims to realize a society in which science and technology (S&T) in a harmonious relationship with humans and societies can create new value in a sustainable manner, by promoting the development of practical collaborative models to carry out responsible research and innovation while identifying and anticipating ethical, legal and social implications/issues.

2.2 R&D Focus

The Program supports R&D of ELSI/RRI, which aims to create practical collaborative models that contribute to the dissemination and establishment of responsible research and innovation. Specifically, it promotes R&D that engages in “exploration and forecasting” of the society S&T should seek to achieve, and of the new values and changes it brings to people and society, “analysis and evaluation” of the risks/benefits and impacts that arise from this, “design and governance” of R&D from a human, social and ethical perspective, and “advancement of science and technology communication” that contributes to the promotion of responsible research and innovation.

The Program addresses the issues unique to Japanese society that arise between S&T and humans/societies, with an emphasis on international deployment and outreach. It is important to consider issues in the context of local characteristics of Japanese society, culture, and history. By contemplating the generality or uniqueness of Japanese contexts/cases, it may become possible to figure out appropriate responses by S&T, humans and societies, or to present new values which can be shared globally. Thus, it seeks to go beyond importing overseas research and case studies or theories.

In R&D projects, importance should be placed on having research concepts based on specific efforts to address ELSI in S&T. In consideration of the current status of R&D for the targeted emerging sciences and technologies, specific challenges should be defined, such as those for which ELSI issues have already emerged and the impact of solutions, although a reactive measure, is significant; those for which ELSI studies should be undertaken prospectively from the early stages of R&D; and those for which ELSI studies are urgently needed for sciences and technologies that have already been implemented in society.

This program also places importance on R&D that may contribute toward strengthening the foundations for ELSI/Responsible Research and Innovation (RRI) practices as well as disseminating and establishing ELSI/RRI activities. This would include, for example, the following: R&D that engages in theory construction by conducting global comparative studies and trend analysis related to the relationship between emerging technologies and society; R&D for discovering human resources and building networks for ELSI/RRI; R&D on ELSI/RRI methodologies and evaluation indexes that can be applied to diverse emerging technologies, etc. These research projects do not necessarily always require a comprehensive team structure or practical RRI initiatives, and may also be comparatively small-sized projects in terms of duration and budget.

Examples of key anticipated outputs are listed below (a, b and c).

a. Creation of tangible measures for ELSI

- The development of tangible solutions that take into account the nature of S&T and related ELSI
  - Analysis and evaluation of risks/benefits and impacts from the perspective of ELSI
  - Implementation of business design that offers new value, and proposals for strategies for intellectual property and standardization
  - Recommendations for the rule-making, including regulations such as laws and ordinances, frameworks such as certification and regularization and economic measures such as insurance and compensation
  - Proposals for design guidelines, boundary conditions and codes of conduct (CoC) for R&D under various social and environmental conditions
  - Proposals for evaluation indicators and principles for risk governance, and guidelines which can serves as a shared understanding.

b. Development of co-creative mechanisms and methodologies

- Development of mechanisms and methodologies for dynamic/organic feedback to the sites of research regarding the impact of S&T on people and society, as well as ethical and legal issues, from the upstream stage of R&D

- Exploration/forecast/analysis of the vision of society that S&T should aim, the structure of problems, issues to be dealt with and stakeholders involved
- Designing of dialogue and coordination methods for co-creative science, technology and innovation
- Methods of upstream co-creation with stakeholders, and the function of technology assessment

• Empirical verification and development for the advancement of function and design in science and technology communication
- Methodology of translation of knowledge regarding S&T and associated risks among stakeholders in various positions
- Methodology of dialogue and coordination for establishing constructive discussions and convergence, while taking into account the presence of diverse perspectives

• Development of systems, tools, evaluation methods and indicators that contribute to the advancement of science and technology communication, with the application of new S&T, such as information and communication technology.

c. Case analysis of trans-science issues and recommendations based on archive for the future society

• Conducting case analysis and discovering past and present problems related to trans-science issues that have been faced by Japan or the world, giving recommendations for the future and disseminating information to the world based on archives.

* The Program covers issues considered important in terms of the relationship between S&T and humans/societies, which provide a foundation for the engagement in ELSI of S&T and which should be referred to in its development, especially issues with significant social impacts, such as those relating to human life (e.g, issues related to emerging infectious diseases including COVID-19, or the accident at the Fukushima nuclear power stations resulting from the Great East Japan Earthquake).

Regarding “b. Development of co-creative mechanisms and methodologies,” which focuses on co-creative science, technology and innovation, and development of methodology, it is expected to be pursued in combination with “a. Creation of tangible measures for ELSI,” as it should be conducted based on the characteristics of target S&T/ELSI. Also, we welcome proposals which challenge “c.

Case analysis of trans-science issues and recommendations based on archive for the future society" as these should provide a firm foundation for R&D in ELSI.

There of course would be plenty of proposals for outputs not listed here, which should depend on the research themes. Applicants are also welcomed to make suggestions flexibly regarding the duration of R&D, the budget size, and project structure, according with R&D items listed in a, b and c.

2.3 Notes on the R&D Implementation Structure and Approach

- Domestic universities, research institutes, public interest corporations, private companies, NPOs, NGOs, administrative agencies and other entities that can be entrusted with research by JST as an organization will collaborate to conduct R&D.
- In conducting R&D, the basic principle is to work in specific partnerships and collaborations with R&D practitioners, stakeholders and communities that share the same awareness of issues and challenges, including researchers in humanities and social sciences, natural sciences, and engineering, corporations, NPOs and NGOs, media, URAs, communicators, legal professionals, administrative organs and local communities. In the past, pioneering R&D and initiatives related to ELSI and RRI have been conducted mainly in the HSS. We expect that the proposals not only take the application of this expertise and the uses of those personnel as a basis, but also attempt to cooperate and connect with the sites of R&D in natural sciences and industry.
- There is not necessarily a general rule that sites, stakeholders, and communities are to engage in initiatives under specific forms of cooperation or collaboration when conducting R&D which contributes to the foundation strengthening and/or promulgation/taking root of the workings of ELSI/RRI. Regardless of whether cooperation or collaboration is involved, superior proposals are adopted.
- The program is not about supporting the R&D of individual technologies themselves, but for research that supports putting them into practice in responsible ways. Accordingly, we welcome proposals that include cooperation and connection with other existing R&D projects and programs currently underway.
- We will consider gender and other diversity perspectives in all aspects of R&D, including research subjects, research methods, prerequisites and design in technological development.

- The Program calls for rapid return and dissemination of results by understanding the changes and needs of people and society while promoting R&D and taking a business creation perspective.
- When planning and implementing R&D, we place great importance on RRI perspectives. In other words, it is important to incorporate an approach that is anticipatory, reflective, deliberative, inclusive and responsive.
- The Program aims to produce human resources with a deep understanding of ELSI/RRI through implementation of R&D activities and the ability to apply this understanding in practical R&D activities. Specifically, we will develop human resources who, while specializing in the humanities, social sciences, or particular S&T fields, are able to work or be involved in ELSI/RRI across multiple S&T fields and topics without being confined to conventional disciplinary frameworks. Therefore, the Project welcomes the participation and recruitment of young people in their 20s to 40s. When employing young researchers in the Project, the Principal Investigator will be asked to provide a plan for their development (e.g., what skills and abilities they will need, devices from which they can gain experience, and anticipated places where the skills and abilities acquired through the Program can be used on an ongoing basis) .

2.4 Management of the Program

JST RISTEX will operate the Program using the following structures and methods.

- A Program Supervisor is put in charge of operating the Program and provides overall management.
- Program Advisors are appointed to give specialist advice to the Program Supervisor.
- In addition, program implementation committee members and evaluation committee members are appointed to seek opinions from external experts in specialized areas necessary for the implementation and evaluation of the R&D.
- Together, the Program Supervisor, Program Advisors, program implementation committee members and the secretariat conduct the call for projects and its selections, taking the necessary actions for effective program management (e.g., running program meetings, advising on R&D, conducting site visits, etc.).
- The Program Supervisor will conduct reviews as necessary, including the adjustment of

R&D budgets and the restructuring and consolidation of Projects.

- In running the Program, we will respond flexibly, considering the social situation and international trends, which includes changes of emphasis and amendments to the call and selection policy.
- We will actively conduct various activities to promote exchange, cooperation and interaction among the Projects selected and set up opportunities for discussion with internal and external parties with cross-sectional and holistic perspectives of the Projects (e.g., program-wide meetings). We will also conduct outreach activities about R&D outcomes (such as meetings for reporting outcomes and disseminating information on the Web.).

In addition, the Program plans to implement the following activities.

■Networking activities for team building

The Program envisages the implementation of Projects by “teams” which aim for co-creation between researchers in S&T and HSS, as well as diverse stakeholders from society, from the beginning of the R&D. However, we know that it is not always easy for people from different sectors and areas of expertise to come together on a daily basis to form a team for an R&D project.

Throughout the year, with the cooperation of institutions inside and outside JST, the Program will conduct activities to identify potential and participants from a wide range of sectors and fields, and continue to plan networking events such as open forums for meeting others.

In addition, if the intervention by the Program or JST can contribute to the increasing possibility of cooperation and collaboration with researchers and stakeholders inside and outside the Program and the strengthening of the team structure, we will conduct active networking and its support.

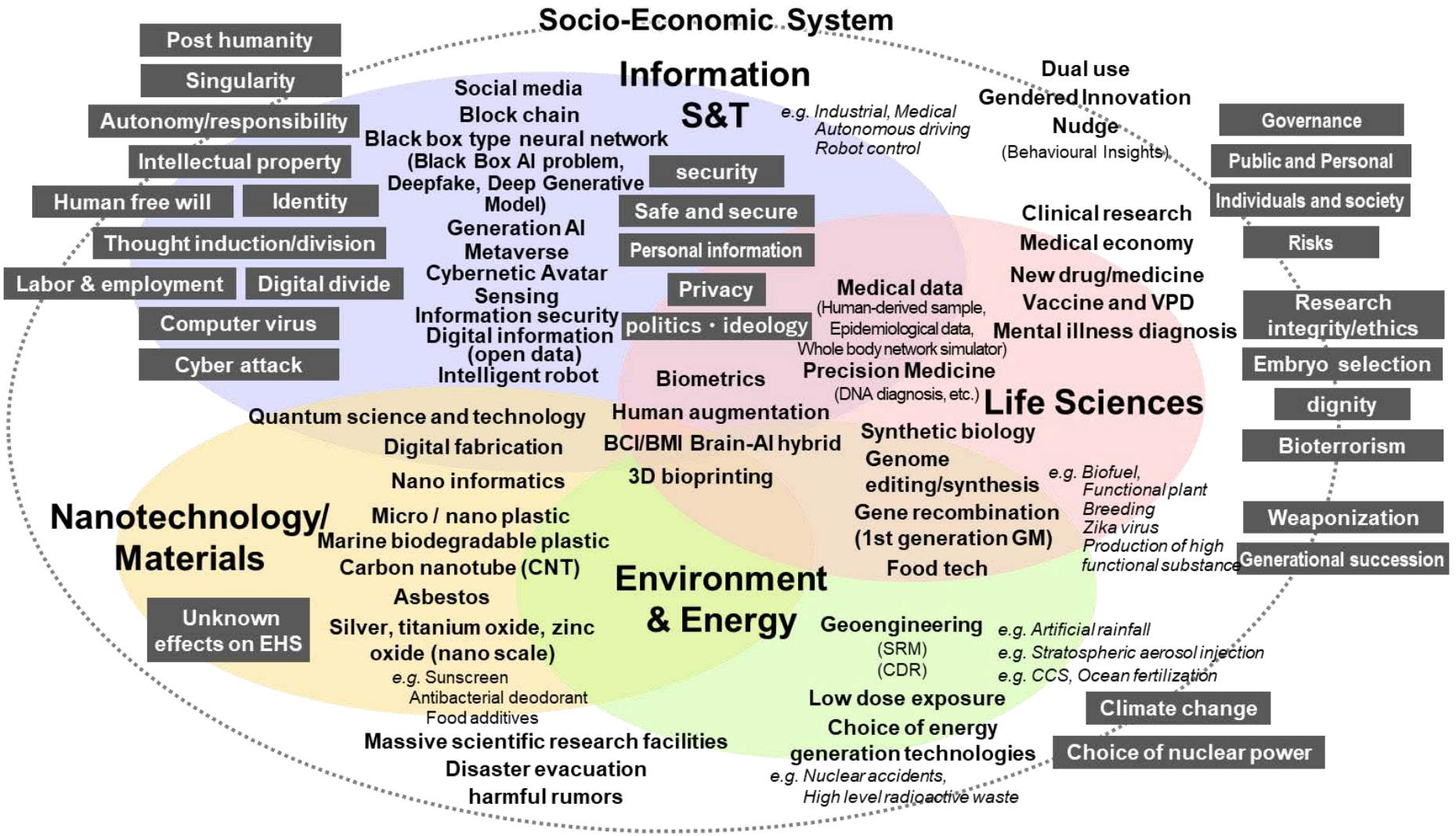
■Engaging in discourse on the question regarding the fundamental values of life, people and society

In promoting R&D, we ask that the diverse members who participate in each project, including researchers from the humanities, social sciences, natural sciences, and engineering, as well as technology developers and social stakeholders, explore “common issues related to the fundamental values of life, people, and society” (points at issue), and hold continuous discussion. In this discussion, it will be necessary to “verbalize” and “represent” the challenges involved in

ELSI/RRI and the responses to such challenges through the examination of how to formulate R&D questions from the perspective of examining various concepts related to “the greater good for people and society,” and through activities to critically evaluate the significance of practices and results. In the Program, we support and aggressively promote this activity, which we call “engagement in discourse.”

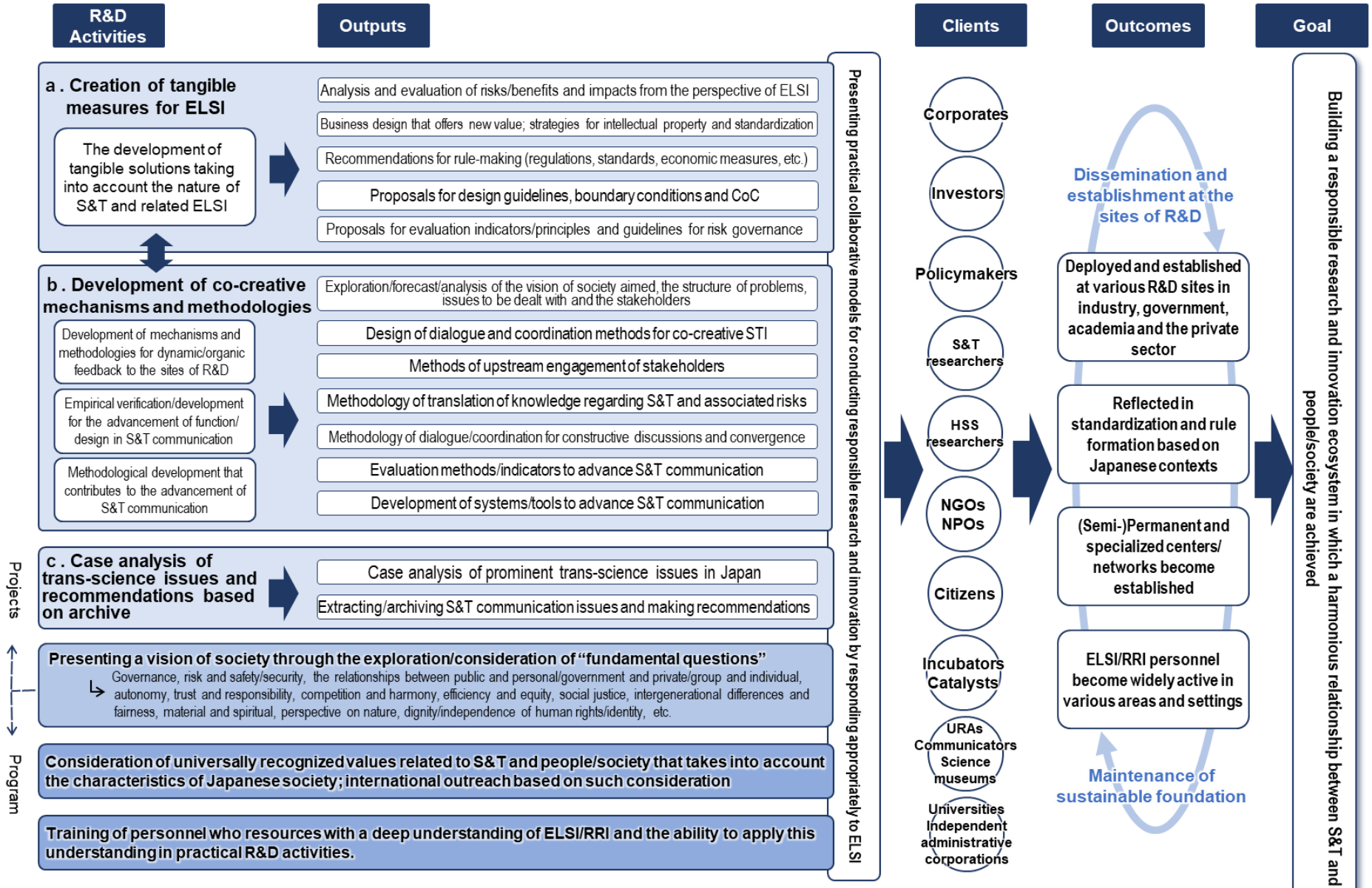
The engagement in discourse can be considered as a challenge to set the crucial “questions,” and to verbalize the vast thoughts and ideas put into answering them. These are the questions which would lead the engagement in ELSI/RRI to the realization of society truly valuable for humanity, such as whether the society aimed by the target S&T is unequivocally ideal, how we should judge the values S&T is about to generate, and where the responsibility lies for problems surrounding S&T.

This Program positions the engagement in discourse as the foundation for the overall conceptual structure of the Program, and thus, it encourages discussions across Projects. To promote such attempts, we will actively set up necessary activities and opportunities as well as disseminate information within Japan and overseas, as the Program’s own activities



* Prepared based on JST-CRDS research reports (CRDS-FY2019-RR-04, CRDS-FY2021-RR-07) etc. (March 2025 Revision)

Characteristic emerging technologies in each field and keywords example regarding Ethical, Legal and Social Implications/Issues



Logic model of R&D program (2024)

2.5 R&D Period and R&D Budget

In this program, R&D budgets and periods will be flexibly set according to the particulars of proposals from the perspective of flexible and dynamic funding according to the characteristics of R&D topics, social needs and other factors.

■ R&D Projects

- R&D Period: 1–3 years and 6 months
- R&D Budget: Approx. 6-12 million yen/year (direct costs) *

  * Applicants are welcomed to make suggestions flexibly regarding the duration of R&D, the budget size, and project structure, according with R&D items.

a. The R&D budget will be adjusted based on the content of the proposal, the research and development plan, and the selection policy.
b. For the fiscal year 2025, R&D is scheduled to commence in October. Please budget for the six months until the end of the fiscal year.
c. For the use of R&D budget (direct costs) and indirect costs, please refer to the application guidelines <General Information> in the separate booklet: “3.5 R&D Budget ” and “Chapter 5 Q&A on Call for R&D Proposal.”
d. JST will not directly employ the principal investigator or other researchers involved in the R&D.

As per the Commissioned Research Contract, JST will pay the institution implementing the project for all R&D budget (direct costs) and indirect costs (in principle, 30% of direct costs).–

2.6 Number of Projects to be Selected

R&D Projects: Approx. 2 projects

2.7 Main Perspectives for Selection

When selecting proposals, decisions are made following comprehensive investigations in accordance with the proposed budget size while emphasizing the following points, and the accepted proposals are selected. When submitting a proposal, be sure to refer to “Chapter 1. Philosophy on Program Supervision in Solicitation and Selection” and “Chapter 2. Overview of R&D Program.”

① The objectives of the proposed R&D project are in agreement with the objectives of the Program and specific issue or area of S&T has been set as the subject of R&D.
② The significance of the proposed R&D is logically expressed and there is a clear vision for contributing to the dissemination and establishment of responsible research and innovation which is to be achieved after the R&D.
③ The originality of the proposed R&D (the focus of the R&D or the setting of the issue, the implementation structure, innovations in R&D management, etc.) is clearly expressed and is challenging in light of trends in relevant R&D and initiatives in Japan and overseas.
④ The results of the proposed R&D are expected to have an impact (creation of academic /public value, contribution to current or future social or industrial needs, transmission and expansion to other disciplines/areas in Japan and overseas, etc.).
⑤ Issues, hurdles and difficulties relating to conducting and implementing the proposed R&D are anticipated and specific countermeasures have been investigated.
⑥ Through realistic collaboration/cooperation with the sites of R&D and stakeholders that share an understanding of the problems and issues, the structures necessary for implementation of the R&D have already been established or there are specific concepts and plans for implementation structures to be established (including reinforcement during the R&D period).
⑦ The plans for the proposed R&D (size of budget, period, milestone setting, etc.) is appropriate.

In addition, the following points are subject to assessment as additional elements.

- The detailed description of practical and challenging collaboration with the sites of R&D in emerging sciences and technologies and stakeholders (proposals that include collaboration and links with other R&D projects or programs related to emerging sciences and technologies that are currently underway are welcomed).
- Specificity of the path to the design and implementation of the outputs to be produced.
- The potential for creating universally recognized value that meets a global standard and the possibility of international deployment, based on the considerations of generality/uniqueness of contexts of Japanese society or Japanese cases.
- Practical setting of skills and abilities believed to be necessary for the personnel that the

proposed R&D project seeks to develop and produce and specificity of innovations for such development and production and concepts after completion of the project.

Chapter 3. Guide to Completing the Proposal

Please refer to the original Japanese version.

Chapter 4. References

(Related websites)

■ **Cabinet Office**

- the “6th Science and Technology / Innovation Basic Plan”
  https://www8.cao.go.jp/cstp/kihonkeikaku/index6.html
- the “Integrated Innovation Strategy 2024”
  https://www8.cao.go.jp/cstp/tougosenryaku/2024.html
- “Convergence of Knowledge: Basic Concept and Strategic Promotion Measures — Interim Summary”
  https://www8.cao.go.jp/cstp/stmain/20220408.html

■ **Japan Business Federation**

- “Toward the Formulation of a Basic Plan for Science, Technology, and Innovation”
  https://www.keidanren.or.jp/policy/2020/099.html

■ **Ministry of Education, Culture, Sports, Science and Technology (MEXT)**

- “Development of Science, Technology, and Innovation Policy for Knowledge-Intensive Value Creation: Aiming to Be a Country that Leads the World in Realizing Society 5.0 (Final Summary)”
  https://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu22/houkoku/1422095_00001.htm

■ **JST**

Center for Research and Development Strategy（CRDS）

- “Toward Deepening of Relationship with Society in Science, Technology, and Innovation Policy: Creation and Establishment of ELSI/RRI in our Country”
  https://www.jst.go.jp/crds/report/CRDS-FY2019-RR-04.html
- “Science, Technology, and Innovation Reform in View of Expansion from ELSI to RRI: Toward Strengthening of Lateral Efforts in Policy, Funding, and R&D”
  https://www.jst.go.jp/crds/report/CRDS-FY2021-RR-07.html
- “Explanation of ELSI for Natural Science Researchers”
  https://www.jst.go.jp/crds/report/CRDS-FY2021-XR-02.html

Research Institute of Science and Technology for Society

- Responsible Innovation with Conscience and Agility（RInCA）
  https://www.jst.go.jp/ristex/rinca/en/
- Human-Information Technology Ecosystem（HITE）
  https://www.jst.go.jp/ristex/hite/en/index.html
- ELSI initiatives
  https://www.jst.go.jp/ristex/en/research-activities/elsi/index.html