International Collaborative Research Grant

2010 Application Guidelines

March 2010

National Institute of Information and Communications Technology

Contents

6. Eligible Applicants

Contact:
        Special Research Group
        Collaborative Research Department
        National Institute of Information and Communications Technology
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        Fax: 042-327-5604
        E-mail: senshin_3subsidy@ml.nict.go.jp
        URL: http://www2.nict.go.jp/

1. Application Guidelines

The National Institute of Information and Communications Technology ("NICT") invites project applications for the International Collaborative Research Grant 2010. To help develop advanced information and communications technology, the Grant supports research and development activities by international collaborative research teams composed of leading Japanese and foreign researchers.

(1) Application Period

Monday, March 15, 2010 to Tuesday, April 20, 2010 (17:00)

(2) Application Method

Register the necessary information on the inter-ministerial research and development management system (e-Rad) and deliver the application documents to the address below directly by hand or by mail.

Address:
Special Research Group
Collaborative Research Department
National Institute of Information and Communications Technology
4-2-1 Nukuikita-machi, Koganei City, Tokyo
184-8795

If submitted by mail, the front of the envelope should be marked "Application for International Collaborative Research Grant" in red.

(3) Application Deadline

The application documents must be received by 17:00 on the last day of the application period. Those submitted by mail must also be received by the deadline.

No application will be accepted after the deadline. **(For the application documents to be valid, the applicant must register on the e-Rad system and submit the application documents by the application deadline.)**

(4) Applicant

A project applicant is a representative of an institute, the institute the research coordinator of a Research Team belongs to.

(5) Documents Required for Application

<u>Submit original copies of each document. They do not need to be clipped.</u>

The documents below are required for the application.

・ Application for International Collaborative Research Grant (Form 1)

・ Attachments to the above application form

  Attachment 1: Project Cover Sheet

  Attachment 2: Summary of Research Plan

  Attachment 3: Summary of Research Budget

  Attachment 4: Summary of Research Plan and Budget Estimation (for individual researchers)

  Attachment 5: Status of Applying for and Receiving Other Competitive Funding including from Other Ministries

  Attachment 6: Indirect Cost Rate Statement (when applying for indirect costs)

  Attachment 7: Drawings

・ Other attachments

  ・ A brochure that gives information on the research institute the research coordinator belongs to (A4 size, two copies)

  ・ The articles of incorporation (in the case of a limited liability company)

・ Others

The necessary application forms are available for download from the e-Rad website or the NICT website.

Attachments 1 to 7 need to be prepared in Japanese using the forms designated by NICT (see below) and following any specific instructions.

Items that are instructed by NICT to be written in English except for signatures should be clearly typed or printed by computer or word processor for accuracy. Documents must be of Japan Industrial Standard A4 size.

(6) Preparation of Application Documents

The application documents should be prepared according to each section of these Application Guidelines and according to the notes, the restrictions on the number of pages, and the instructions in italic (red) type that appear on each form and attached document without any error or omission. Before submitting the application forms, delete all comments (e.g. in red italic type).

If you have any question concerning the application documents, contact us at the address in (9) below.

(7) Registration on e-Rad

To make a project application, it is first necessary to register information about the research institute and the researchers on the inter-ministerial research and development management system (e-Rad) and to submit application information.

When logging on to the e-Rad system from a PC, the PC needs to import an electronic certificate. For details, refer to the e-Rad website.

http://www.e-rad.go.jp

It is possible that registration processing requires many days. Therefore, allow at least two weeks for processing.

Once information about the research institute and the researchers has been registered on the e-Rad system, there is no need to register it again when applying for programs under the jurisdiction of other government ministries.

Centered on the competitive funding programs under the jurisdiction of government ministries, e-Rad is an inter-ministerial system for the online management of research and development processes (e.g. application reception, inspection, approval, approval issue management, result report).

The name "e-Rad" stands for electronic research and development.

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1. Registration of research institute

The institute the research coordinator belongs to needs to be registered on the e-Rad system by the application deadline.

Refer to the e-Rad website for details on how to register. (It is possible that registration processing requires many days. Therefore, allow plenty of time for processing.)

2. Registration of researcher information

The research coordinator who makes a project application needs to register researcher information on the e-Rad system and obtain a system login ID and password. (Registration of co-researchers is not necessary.)

Refer to the e-Rad website for details on the necessary procedures. (Researcher information is registered by the affiliated institute.)

3. Submission of application information

After logging in to the e-Rad system, the research coordinator enters and submits the project application information. The application information then receives approval by the office representative of the affiliated research institute.

<u>After verifying that the "Registration Status" window contains the message "Now being accepted by distributing agency,"</u> submit the application documents to NICT by the application deadline.

After NICT accepts the application information, the "Registration Status" window updates to "Now being processed by distributing agency."

4. Application process

1 **Research Coordinator** **Obtain Application Guidelines and application forms**
Download Application Guidelines and application forms from NICT website or e-Rad website
http://www.nict.go.jp, e-Rad http://www.e-rad.go.jp

2 **Research Coordinator** **Enter and submit application information and prepare and submit application documents**
Enter application information, prepare application documents, and submit them

Submit

3 **Application assistant of affiliated research institute** **Verify, request revision of, or reject application information and application documents**
The application assistant of the affiliated research institute verifies, requests the revision of, or rejects the application information and the application documents.

Verify

4 **Office representative of the affiliated research institute** **Approve, request revision of, or reject application information and application documents**
The application assistant of the affiliated research institute verifies, requests the revision of, or rejects the application information and the application documents.

Approval, Submission

5 **NICT officer** **Accept, request revision of, or refuse application information and application documents**
The NICT official accepts, requests the revision of, or refuses the application information.

Accept

Acceptance of application

5. Precautions on input of application information

If the message "Now being accepted by distributing agency" does not appear in the "Registration Status" window by the deadline, the application becomes void. If this message does not appear, immediately contact the affiliated research institute.

It is not necessary to upload application documents during the registration of application information.

Refer to "5 E-Rad Guidelines" for details about how to enter application information.

6. Points of concern on use of e-Rad system

The e-Rad system operates under the following service hours.

Monday to Friday: 6:00 to 2:00 the next day

Saturday and Sunday: 12:00 to 2:00 the next day

The system stops operations on Saturdays. These times also apply to holidays.

Regardless of these times, the system stops operations during a period of maintenance or inspection. The website gives advance notice before stopping operations.

7. For inquiries on how to use e-Rad

A Help Desk is available to handle questions about how to use the e-Rad system.

Contact:

Help Desk

Tel: 0120-066-877 (Toll free)

Service hours: 9:30 to 17:30

＊Excluding Saturdays, Sundays, national holidays, and the year end/new year holiday (December 29 to January 3)

8. Other Precautions

1. In principle, after the application documents are accepted they are not returned. **Keep copies of the application documents in the event that NICT makes inquiries about them.**

2. If you submit the application documents by mail, in the event the documents do not arrive due to an accident or they arrive late, you are advised to keep a record of the postage date by using registered mail.

3. If any of the submitted application documents contains an omission, you may make corrections within the application period (by the deadline). If you notice an omission immediately contact the office below.

    If NICT finds an omission in the application documents or the e-Rad application information, the person in charge will immediately contact you and request you to make corrections.

9. Making Inquiries

Contact:

(Person in charge: Mori)

Special Research Group

Collaborative Research Department

National Institute of Information and Communications Technology

Tel: 042-327-6014

Fax: 042-327-5604

E-mail: senshin_3subsidy@ml.nict.go.jp

Website: http://www.nict.go.jp/

2. Selection Method

(1) Screening Method

NICT selects a project application through a formal examination, taking into consideration a review of the project theme by the NICT screening committee composed of external experts. (For details, refer to 3-(6) Grant Selection Criteria.)

As part of the review process, the screening committee may conduct an interview, if necessary. (The applicant bears the expense of attending the interview.)

(2) Number of Projects Selected

Below is the number of projects scheduled for adoption in fiscal 2010.
1. Single-year projects (fiscal 2010): Several

(3) Selection Decision and Notification

NICT announces the selection decisions on its website (http://www.nict.go.jp/index-J.html) within 60 days after the application deadline.

The applicants receive an approval/rejection notification. For approval, in addition to stating the amount of eligible costs, NICT may modify any item of the grant application or add conditions, if necessary. For rejection, NICT states the reason.

NICT may announce the name of the research coordinator, the project name, the project outline, and the project location (prefecture) stated on the Application for International Collaborative Research Grant (Form 1).

(4) Elimination of Duplication and Excessive Concentration

In accordance with the Guidelines for Proper Allocation of Competitive Funding (an agreement at the liaison conference of government ministries concerned with competitive funds, dated September 9, 2005 and revised on March 27, 2009), if a research coordinator receives approval for public research funding, or competitive funding from another ministry, for another project, he may not make this project application if it has the same theme name and content as the other project. (If the research coordinator receives an application decision from another grant program while this project application is under review, he should immediately contact NICT.)

When preparing the application, use the application documents to state information about the receipt of other competitive funding including that from other ministries or the application/receipt status of other public funding. If the information about the application/receipt status of other competitive funding including that from other ministries contains a false statement, NICT may revoke the approval.

To eliminate duplicate projects and excessive concentration in funding, NICT may share application information with officers at other public funding programs or at other competitive funding programs including those of other ministries. NICT may revoke the approval of the project application if not doing so results in unreasonable duplication and excessive concentration.

(5) Action against False Statements

If an application is found to contain a false statement, NICT may reject the project proposal regardless of the screening result. If the false statement is discovered after an approval decision, NICT may revoke the grant decision and release details about the handling of the incident.

3. Outline of Grant Program

This section provides an outline of the International Collaborative Research Grant Program. For details, refer to the International Collaborative Research Grant Rules ("Grant Rules").

(1) Program Objective

The aim of the International Collaborative Research Grant ("Grant") is to provide research teams composed of leading Japanese and overseas researchers the opportunity to conduct research and development for the cultivation of new business in the fields of communications and broadcasting through the rendering of service that uses the research results, or other improvements in the method of rendering service. This funding therefore contributes to international research and development collaboration, international standardization, and the creation of new business in the fields of communications and broadcasting.

(2) Grant Target

Funding is given to an applicant who submits a grant application and receives a favorable grant decision.

(3) Target Research Area

The target research area is advanced information and communications technology and the target recipient of funding is an international collaborative research team ("research team") that demonstrates potential in the promotion of international research and development collaboration, international standardization, and the creation of new business in the fields of communications and broadcasting.

The target research area includes the priority field of information and communication technology (ICT). (Refer to Table 1.)
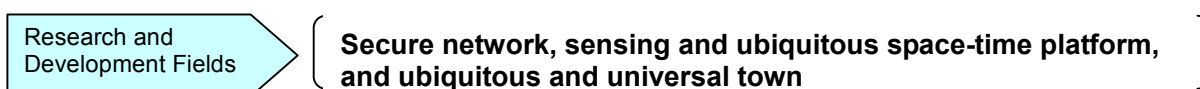
New generation network technology

As the backbone of all ICT industry, this technology supports future networks by enabling a flexible and reliable response to new demands.
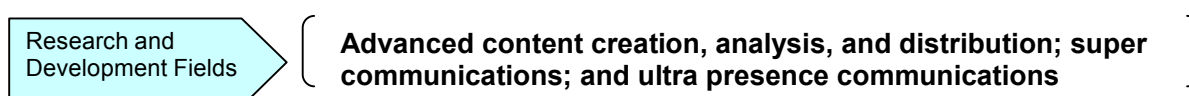
> Research and Development Fields

Network infrastructure, ubiquitous mobility, ICT paradigm creation, and ubiquitous platforms

ICT for Safety and security technology

This technology protects people from hidden threats in the ubiquitous network society. ICT is the basis of a firm social infrastructure for building a positive society that reduces anxiety over crime, disaster, medical care, social welfare, and the environment.

> Research and Development Fields

Secure network, sensing and ubiquitous space-time platform, and ubiquitous and universal town

Universal communications technology

This technology, based on user-friendly ICT, helps to build a society that enables people to interact any time regardless of location to generate new knowledge and value.

> Research and Development Fields

Advanced content creation, analysis, and distribution; super communications; and ultra presence communications

(4) Grantee Requirements

・ A grantee is an institute that conducts its own research and is located in Japan.

・ A grantee is an institute the research coordinator of a research team belongs to.

・ A grantee is an institute that is responsible for accounting management related to the research planning and research activities of a research team.

(5) Requirements of Research Team

A research team that carries out a project is a group that studies a research task either jointly or by individual assignment. The research team needs to satisfy the requirements below.

1. A research team is composed of four or more researchers ("Researchers" include a research coordinator and co-researchers).

2. A research team is composed of researchers from more than one country including Japan.

3. A research coordinator is appointed to represent a research team.
   The research coordinator represents the research team and plays a leading role in drawing up and implementing a research plan.
   The research coordinator speaks fluent Japanese. The research institute he belongs to is located in Japan and his research is conducted in Japan.

4. Researchers on a research team belong to research institutes*. Each affiliated institute is located in Japan and overseas.
   * A research institute is a university, a national and public experimentation and research institute, an independent administrative institution and public-service corporation whose purpose is experiment and research, a research laboratory, a research division of a private company, or an NICT designated institute engaging in research and development.

(6) Grantee Selection Criteria

To select a grantee, NICT uses the items below as a point of reference.

1. A research team has sufficient research and development capability to properly carry out a project. Based on cooperation between researchers, the research team is a highly efficient international collaboration.

2. The research content satisfies the   requirements below:

a)   Creativity: the research is creative and based on an original idea.

b)   Effectiveness: through the organic integration of advanced technology from Japan and overseas, the research is a highly effective international collaboration that contributes to international standardization and the creation of intellectual property.

c)   Wide applicability: the new fields of business created by the developed technology have high growth potential, or the developed technology has the potential for wide application in the fields of communications and broadcasting.

3. A grantee has difficulty funding research and development activities without support.

4. A grantee has the financial capability to cover its portion of the costs necessary for proper implementation of a project.

5. A grantee has an appropriate system and sufficient capability to manage accounting and other affairs concerning a project.
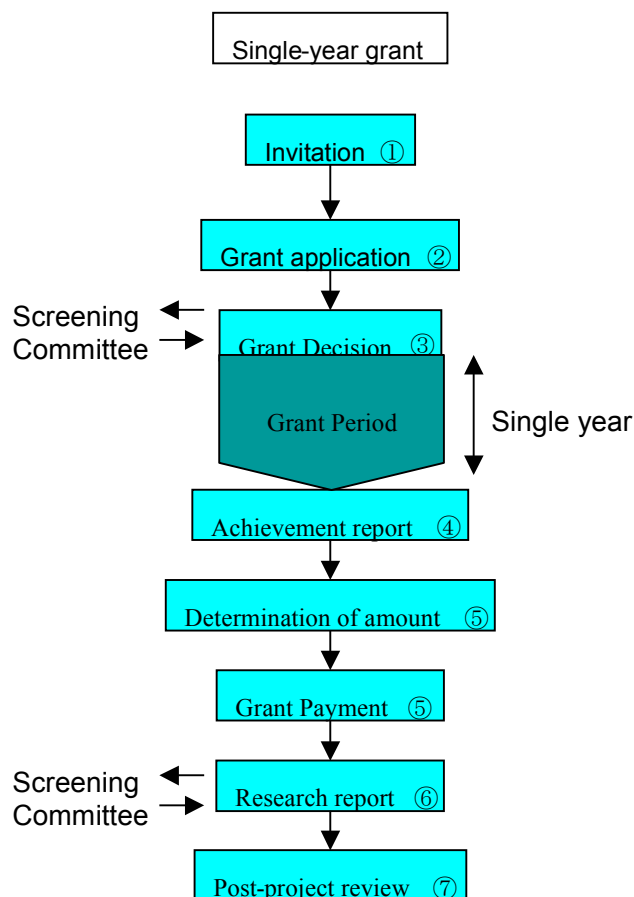
(7) Type of Grant Period

The type of grant period is single year. <u>It is still possible to implement a grant project, with the same research outline and objective, for up to four years.</u>

(8) Mechanism of Grant Program

1. NICT issues application guidelines and calls for project proposals.

2. A prospective grantee selects the type of grant period (single year), registers application information on the e-Rad system, and, through the affiliated institute of the research coordinator, submits a grant application to NICT. (An applicant is a representative of the affiliated institute of the research coordinator.)

3. The NICT screening committee reviews the project proposal. NICT decides whether to select the project proposal taking the review results into consideration and sends a grant decision notification to the applicant.

4. The grantee submits an achievement report to NICT at the end of each project year.

5. NICT reviews the achievement report, determines the amount of the grant, and pays the amount.

6. After completion of the project, the grantee submits a Research Report to NICT.

7. The NICT screening committee conducts a post-project review based on the Research Report. NICT sends the review results to the grantee.

＊NICT conducts a timely inspection to verify whether the grantee is implementing the project appropriately.

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                    │  Single-year grant  │
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                       ┌──────────────────┐
                       │  Invitation  ①   │
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                    ┌────────────────────────┐
                    │  Grant application  ②  │
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Screening  ←─                    ▼
Committee  ─→       ┌────────────────────────┐
                    │  Grant Decision  ③     │      ▲
                    │                        │      │  Single year
                    │      Grant Period      │      │
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                    └────────────────────────┘
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                    ┌────────────────────────┐
                    │  Achievement report  ④ │
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                 │  Determination of amount  ⑤  │
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                    │   Grant Payment  ⑤     │
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Screening  ←─                    ▼
Committee  ─→       ┌────────────────────────┐
                    │  Research report  ⑥    │
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                   │  Post-project review  ⑦  │
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(9) Classification of Researchers

To carry out a project, researchers are divided into types. A research team is composed of a research coordinator and co-researchers.

1. Research Coordinator

A research coordinator is the person who represents a research team and plays a leading role in drawing up and implementing the research plan.

2. Co-Researcher

A co-researcher is a person who is assigned research tasks. Co-researchers cooperate with their research coordinator on research activities.

3. Research Assistant

A research assistant is a person who works under a research coordinator and co-researchers. A research assistant supports the activities of a research team at each institute the researchers belong to.

4. Other Worker

An "other worker" is a person who supports experiments, the collection of materials, and other tasks at the research site for a certain period.

＊ It is necessary to register the name of the research coordinator (1), the names of the co-researchers (2.), and the names of the research assistants (3) in advance on the application.

＊ A graduate student is not permitted to be a research coordinator (1) or a co-researcher (2).

   ＊ An undergraduate student is not permitted to be a research coordinator (1), a co-researcher (2), or a research assistant (3).

(10) Eligible Costs

The costs eligible for the Grant ("eligible costs") are direct and indirect costs＊ necessary for carrying out a project (research and development) during a grant period (from the day the grant is approved to the last day of the final fiscal year of the grant decision).

＊ All expenses and related processes (e.g. ordering, contract, receiving inspection, payment, adjustment) need to occur within the grant period.

a) Direct Costs

Item	Extent of the costs eligible for the grant
1. Cost of Equipment	(1) The cost of purchasing, leasing, and renting machinery and equipment necessary for the research and development activities (including parts and other components of machinery that are not covered by the cost of goods). (2) The cost of manufacturing, altering (including design), repairing machinery and equipment necessary for carrying out research and development activities. Some costs under (1) and (2) above may not be covered by the Grant, such as basic machinery and equipment that are clearly owned at the research site. (3) The cost related to construction, modification, purchase, or renting of buildings (including the cost of accessory facilities for buildings such as gas, water supply, heating, lighting and ventilation systems), which is needed exclusively for the research and development activities covered by the grant application and indispensable for the same, excluding the deposit, security money, and key money. * Costs under (1) and (2) include software. * In principle, costs under (1) and (2) exclude an item with less than one year of service life and an item with an acquisition value or an additional utility value of less than 200,000 yen. (Applies under 6. Others.)
2. Travel Expenses	The expense of travelling to collect information and data and to conduct various surveys necessary for the research and development activities, the expense of travelling to attend study meetings and consultations, and the expense of travelling to attend academic meetings to present the research results achieved with the Grant, including the expense of transportation (for the shortest route to and from the destination) and accommodation. ∗ Applies to a research coordinator, co-researchers, and research assistants.
3. Fees and Other Service Expenses	To conduct research and development, the fees (remunerations) to people who cooperate by providing expert knowledge and collecting information, and the expenses of people who support experiments and arrange materials at the research site for a certain period (other service expenses). * Does not apply to a research coordinator, co-researchers, and research assistants.
4. Printing and Copying Expenses	The expense of preparing a Research Report and other documents necessary for the research activities.
5. Meeting Expenses	The expense of holding meetings such as renting a conference room. * Does not include wining and dining.
6. Others	Other costs that are not listed above such as the cost of materials and supplies, material processing and analyzing, communication and transportation. For example, the computer rental fee, the database access fee, the machinery repair cost, the attendance fee of an academic meeting, and the document purchase cost, which are considered necessary for the research and development activities. * Upon NICT approval, applies to consignment and subcontracting fees (Applies to 1. Cost of Equipment if recognized as an asset.) * In principle, applies to a consumable supply with less than one year of service life or an acquisition value of less than 200,000 yen.

b) Indirect Costs

Indirect costs are expenses incurred by a grantee that are necessary for management at a research

institute carrying out competitively funded research. To receive the indirect costs, the research institute makes a request in the Application for International Collaborative Research Grant.

The research institute has a responsibility to allocate indirect costs in a systematic and appropriate manner in accordance with in accordance with the Common Guidelines for Allocation of Indirect Costs of Competitive Fund (an agreement at the liaison conference of government ministries concerned with the competitive fund dated March 27, 2009) and to ensure transparency in the their use. (Refer to the Common Guidelines on the management and use of indirect costs.)

Indirect costs are calculated by multiplying the total direct costs by the indirect cost rate. The indirect cost rate is based on a designated computation method.

The indirect cost rate is calculated from the latest financial statements (income statements). (The indirect cost rate is recalculated for a grant extension application.)

See below for the basic idea behind the computation method of the indirect cost rate.

> The basic idea is to look in the title of account "selling, general, and administrative (SGA) expenses" in the latest annual securities report. The indirect cost rate is the cost of sales amount excluding items that are clearly selling expenses expressed as a percentage cost of sales (calculated to two decimal places).

Indirect costs are calculated based on a calculation method for each type of organization below. For a detailed calculation, a grant applicant should take the appropriate steps to consult with an account.

In principle, the indirect cost rate does not change during a grant period. (For a grant extension decision, if the institute a research coordinator belongs to changes, the indirect cost rate may change.)

① School (e.g. national university, educational corporation)

Indirect cost rate (%) = (Administrative expense ∕ Gross expenditure) X 100

Administrative expense = (Labor cost – Teacher cost) + Administration cost

- The indirect cost rate is calculated based on the latest financial statement. It has a ceiling of up to 30% of the direct costs.

- From the items classified as "GA expenses" in a revenue and expenditure statement, the indirect cost rate is the amount of gross expenditure excluding the teacher cost expressed as a percentage of gross expenditure.

- If multiple universities are under the control of an educational corporation, the

indirect cost rate is calculated based on the whole corporation, not individual schools.

② Public service corporation

Indirect cost rate (%) = [(Administrative expense∕Total operating expenses) – Indirect costs] X 100

- ・ The indirect cost rate is calculated based on the latest financial statement. It has a ceiling of up to 30% of the direct costs.

- ・ In a cash flow statement, the indirect cost rate is calculated as the percentage of the administrative expense in relation to total operating expenses. It is possible to exclude indirect costs from items classified under the total operating expenses. The indirect costs that can be deducted from the total operating expenses are limited to items in which an administrative expense clearly does not occur (reconsignment expense and joint research expense).

③ Others　　(An organization that makes financial statements based on commercial law and standard business accounting practices)

Indirect cost rate (%) = [(SGA expenses – Selling expense)∕Cost of sales] X 100

- ・ The indirect cost rate is calculated based on the latest financial statement. It has a ceiling of up to 30% of the direct costs.

- ・ There are three computation methods for deducting the selling expense.

1) If the amount of GA expenses is specified in an income statement, use this amount.

2) If notes in an income statement clarify GA expenses, calculate the GA expenses by multiplying the rate stated in the notes by the amount of SGA expenses.

3) If notes in an income statement do not clarify GA expenses, make a list of excludable selling expense items, including each amount. Deduct the total amount of excludable selling expenses from SGA expenses to obtain the amount of GA expenses. This calculation needs to be verified by the company concerned.

(11) Grant Amount

1. The grant amount is equivalent to 50% of the amount of direct costs calculated for each expense item. Fractions less than 1,000 yen in the amount are rounded off.

2. Add up each expense item in (1) to make a subtotal. The grant amount is limited to 10 million yen if the subtotal calculated in (1) exceeds　　10 million yen in a project year.

3. An organization that applies for indirect costs calculates the amount of indirect costs by multiplying the amount in (2) by the indirect cost rate calculated based on a designated computation method. Fractions less than 1,000 yen in the amount are rounded off.

4. The grant amount is the sum of the amounts in (2) and (3).

Examples of Calculation of the Grant Amount:

The grant recipient is another type of research organization and the grant period is single year
(Research period of one year, research expenses of 30 million yen, and indirect cost rate of 10%)
The total grant amount is 11 million yen, 10 million yen for direct costs (limit) and 1 million yen for indirect costs (10% X 10 million yen).

*The indirect cost rate is calculated based on a designated computation method using the latest financial statements.

(12) Grant Accounting

To operate and manage a project in an appropriate manner, a grantee maintains an administrative system to clarify accountability at the institute, to prepare a suitable operation and management environment, and to implement measures to prevent unauthorized actions. The person who does accounting for the grantee and researchers on the research team are required to perform their respective tasks in accordance with the Grant Rules and implementation manuals.

The grantee is required to keep grant accounting separate from other accounting. The grantee is required to record income and expenditure details in a ledger, to save related vouchers, and to preserve account records and vouchers for five years from the day of completion of the project.

(13) Management of Acquired Property

If the NICT Grant is used to purchase articles a project, the grantee is required to record purchase details in a ledger and be clear about purchase management conditions both during and after the grant period

After the completion of the research and development project, the grantee is required to obtain prior approval from NICT for using, assigning, exchanging, leasing, or pledging any property (e.g. machinery, implement) whose acquisition value or additional utility value is 500,000 yen or over for any purpose contrary to the objective of the Grant. This provision does not apply to a property subject to a separate

disposal restriction period that has expired.

(14) Achievement Report

At the end of each project year or the completion of a project, the grantee submits an achievement report to NICT. The report includes accounting documents showing the incurred costs and a document describing research and development results achieved during the relevant fiscal year.

(15) Determination of Grant Amount and Settlement

NICT reviews an achievement report in accordance with the preceding article and may conduct a field audit, if necessary. If the achievements of a project are found to be consistent with the contents of the grant decision and they satisfy the attached conditions, NICT will acknowledge the completion of the project, determine the final amount of the Grant, and notify the grantee.

The grant payment (adjustment) occurs after settlement of the grant amount. (In principle, the determination of the grant amount and the settlement occur at the start of one fiscal year after the year in which the achievement report was submitted.)

(16) Accounting Manager

A grantee appoints a person in charge of accounting for a project (to manage general accounting).

(17) Compliance after Decision to Approve Grant

A grant project is carried out through an operation grant of the national government. A grantee is required to practice appropriate accounting in accordance with the Law on Appropriate Enforcement of Subsidized Budgets and the Law's Enforcement Orders. When using grant money, the grantee is required to comply with provisions found in the Grant Rules and an implementation manual.

If NICT finds the grantee in violation of these provisions, NICT may revoke the grant decision.

(18) Implementation Meeting

After making a decision to fund a project, NICT holds an implementation meeting to explain compliance matters to the grantee.

To ensure the smooth implementation of the project, the research coordinator (or co-researchers) and the accounting manager participate in the meeting.

(19) Submission of Research Report

At the end of each project year in a grant period, the grantee is required to submit to NICT a Research Report on the activities of the research team for the relevant project year.

After the completion of a project, the grantee is required to submit a Research Report covering the whole grant period by a day appointed separately by NICT.

When making a grant extension application, the grantee needs to prepare a midterm report of research results and submit the report along with the application to NICT. The report covers research results up to the time in which the grantee applies for a grant extension.

(20) Indirect Cost Report

An institute receiving indirect costs is required to prepare and submit an indirect costs allocation report to NICT on June 30 one year after each project year of a grant period. (Refer to the Common Guidelines for details about the indirect costs allocation report.)

(21) Research Result Announcement and Report

Researchers on a research team need to announce project research results at an academic meeting or in a journal within two years after the completion of a project. The announcement clearly states the research was made possible through NICT funding.

A report on research project results is prepared each project year of a grant period. After the completion of the grant period, an annual report is prepared within 20 days after the end of each project year about the project's ongoing impact (e.g. contribution to international standardization, application for industrial property rights, commercialization of research results). The research team must submit these reports to NICT along with publications containing the research project results.

The research results belong to the research team and the team decides how to share the results.

(22) Revenue Payment from Research Results

For five years after the completion of a   grant period, if the commercialization of research

project results is found to generate considerable revenue for a grantee, NICT may request the grantee to pay all or part of the Grant, not exceeding the determination amount.

(23) Post-Project Review

A project is reviewed by the screening committee after the completion of a grant period.

The grantee receives the review results and NICT may announce the name of the research coordinator, the project name, the project outline, and the project location.

After the completion of the grant period, if the grantee applies for the Grant again, the results of a post-project review may be used as a reference for evaluating the next application.

(24) Change in Institute Research Coordinator Belongs to

If a research coordinator changes the institute he belongs to, it is possible to continue a project by following the procedure below. If this procedure is difficult to implement, the research coordinator and NICT may make a separate arrangement.

・ When a research coordinator changes the institute he belongs to, the grantee submits a Request for Approval of Modification of project Plan to NICT.

・ The grantee and the research institute the research coordinator has moved to sign a written agreement on the transfer of the grant project. Until the day of transfer of the grant project, each original institute retains responsibility for accounting and implementing the project.

・ To transfer the project, the research institute the research coordinator has transferred to submits to NICT a Transfer Approval Application and the written agreement on the transfer of the grant project.

＊ The original grantee and the new grantee manage and adjust the grant account for the fiscal year in which the transfer occurs.

＊ The indirect cost amount of the original grantee is calculated by multiplying the indirect cost rate by the direct cost amount required to implement the project up to the day of transfer.

＊ The new grantee calculates an indirect cost rate based on the latest financial statements. The new indirect cost amount is calculated by multiplying the new indirect cost rate by the direct cost amount required to implement the project after the day of transfer. The new indirect cost rate may not be higher than the original indirect cost rate stipulated in　　the grant decision. (If the original grantee did not
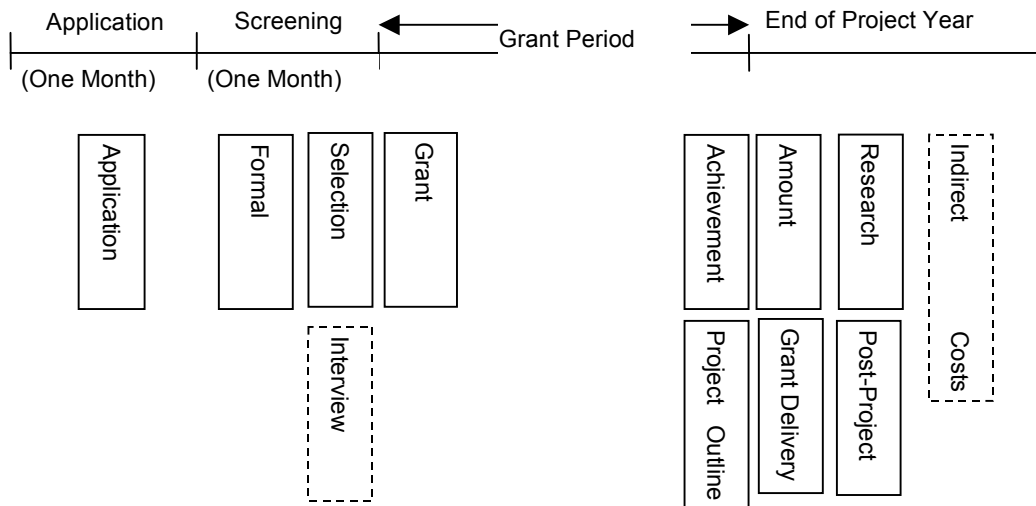
receive funding for indirect costs, the new grantee may not receive it.)

(25) Disclosure

NICT may share information registered by applicants on the e-Rad system for use on the Government Research and Development Database operated by the Cabinet Office.

(26) Grant Implementation Schedule

Below is an outline of the grant implementation schedule.

(27) Reference Material

International Collaborative Research Grant Rules

http://www2.nict.go.jp/q/q266/s807/202/H21youkou2E.pdf

NICT Regulations on Response to Misconduct in Research Activities

http://www2.nict.go.jp/m/m611/fusei/fusei-kitei.pdf

(28) Appropriate Enforcement of Competitive Funds

This section describes measures related to the appropriate use of competitive funds. One example is the response to a researcher (and other researchers and organizations who acted in concert with the researcher) who improperly used or improperly received research expenses with respect to other competitive funds (including at other ministries). Another example is the response to a researcher (and

other researchers and organizations who acted in concert with the researcher) who committed research fraud with respect to other distributed research funds (including at other ministries). These measures are based on the "Guidelines on Appropriate Enforcement of Competitive Funds" (an agreement at the liaison conference of government ministries concerned with competitive funds, dated September 9, 2005 and revised on March 27, 2009) and the "NICT Regulations on Response to Misconduct in Research Activities" (Regulation No. 35, 2006).

(1)   A researcher who improperly used research expenses is subject to application restrictions. Other researchers who acted in concert with the researcher are subject to the same restrictions. (Application restriction period: depending on the degree of misconduct, from two to five years starting one year after the year the improper use of research expenses was identified)

(2)   If a researcher (and other agents acting in concert with the researcher) improperly uses or improperly receives research expenses with respect to a grant project, NICT will share information about the misconduct with other competitive fund sections (including at other ministries). The information includes the name of the researcher who improperly used or improperly received research expenses, the name of the system, the name of the affiliated institute, the research theme, the budget, the research year, and the details of misconduct. A researcher (and other researchers acting in concert with the researcher) who improperly used or improperly received research expenses may be subjected to application restrictions by other competitive funds (including at other ministries).

(3)   A researcher who is found to have committed research fraud is subject to application restrictions. Research fraud is the fabrication, the falsification, and the fraudulent use of a research proposal, research work, and an announcement of research results. (Application restriction period: Depending on the degree of misconduct, from two to 10 years starting one year after the year research fraud is identified)

If research fraud is not found, but a researcher is found to be the author of an article or a report containing research fraud, the researcher is subject to application restrictions. (Application restriction period: Depending on the degree of misconduct, from one to three years starting one year after the year research fraud is identified)

(4)   NICT rejects the application of a researcher who is found to have committed research fraud and a researcher who has not committed research fraud but who is found to be the author of an article or a report containing research fraud. If the researcher who is found to have

committed fraud is a co-researcher or a research assistant, the application may be approved by excluding the co-researcher or the assistant researcher from the application.

(5) If research fraud is committed with respect a grant project, NICT will demand the return of all or part of the research funds related to the fraud stop paying funds to the grant project. The payment of other research funds may be terminated or their use may be forbidden.

(6) NICT will share information about research fraud with other competitive fund sections (including at other ministries). The information includes the name of the researcher who committed research fraud, the name of the system, the name of the affiliated institute, the research theme, the budget, the research year, and the details of research fraud. Other competitive funds (including at other ministries) may impose application restrictions on a researcher who commits research fraud and a researcher has not committed research fraud but who is found to be the author of an article or a report containing research fraud.

(29) Response to Misconduct

The NICT Grant is a subsidy that requires no return. A grant recipient is required to use the funds effectively and properly. The grant recipient is required to prepare various applications and reports. If the grant recipient commits one of the violations stated below, NICT may revoke the grant decision based on the Grant Rules and grant decision notifications. NICT may then demand the return of funds that have already been distributed and disclose information about the misconduct. NICT may also apply a surcharge on the funds to be returned. Be aware that punishment provisions (criminal penalties) are also applicable based on the Law on Appropriate Enforcement of Subsidized Budgets ("Appropriate Enforcement Law," "Law No. 179, 1955).

(1) The unauthorized use of property acquired through the Grant and the grant project for unintended purposes

(2) Violation of the grant decision or the grant conditions

(3) Violation of laws, ordinances, and government disciplinary measures

(4) Misconduct, negligence, or other inappropriate action with respect to a grant project under NICT

(5) The failure to submit required reports as described beforehand or the submission of false reports

(6)   Misconduct in research activities (e.g. fabricated data and results, falsification, fraudulent use)

・ Grant Rules Article 14, Article 15, Article 24, and Article 25

・ Appropriate Enforcement Law: Article 3 Responsibility of Related Parties, Article 11 Management Diligence, Article 23 Onsite Inspection, Articles 29 to 32 Punishment Provisions

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Article 29 of Appropriate Enforcement Law

1. If the recipient of grant funds, indirect grant funds, or a loan obtains the funding by means of falsification or other misconduct, the recipient will receive a prison sentence or five years or less or a fine of 1 million yen or less, or both a prison sentence and a fine.

2. The provision in the preceding clause applies to a person who is aware of the misconduct when applying for funds or a loan.

Article 30 of Appropriate Enforcement Law

For a violation in accordance with Article 11, if a person uses grant funds, or indirect funds, for a purpose other than the grant objective, the person will receive a prison sentence of three years or less or a fine of 500,000 yen, or both a prison sentence and a fine.

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4. Preparation of Application Documents

Read these instructions carefully before filling out the Application for International Collaborative Research Grant and Attachments 1 to 7. Make sure that there no errors or omissions in the documents.

The application documents must be prepared in Japanese by filling out the attached forms (You may make your own forms imitating the attached forms. In such case, be careful about the layout, not to omit any item or make mistakes.) following the instructions, if any, specifically given on such forms. Items that are instructed by NICT to be written in English except for signatures should be clearly typed or printed by computer or word processor for accuracy.

Prepare the application documents based on the consensus of the entire research team. Make sure there is no difference in opinion among researchers.

Application for International Collaborative Research Grant (Form 1)

- This form must be filled out in Japanese by the research coordinator.

- An applicant is a representative of an institute, the institute the research coordinator of a research team belongs to. (The seal mark used is the applicant's official seal.)

- In item "2 Eligible Costs," enter the "Eligible costs − Total" amount from the totals table in the Summary of Research Budget (Attachment 3).

- In item "3 Amount Requested" enter the "Amount Requested − Total" amount from the totals table in the Summary of Research Budget (Attachment 3).

- In item "4 Scheduled Commencement Day and Completion Day of Project's Research Activities," even if the research schedule is expected to be two years or more, enter one year for single year or two years for multi-year.

- Enter the contact address of the research institute (or the research division) to which the research coordinator belongs in item "6 Contact Address of Research Coordinator."

- For details on the "International Collaborative Research Grant Rules" mentioned in this application form, contact us at the office below.

Attachments to Grant Application Form for International Collaborative Research Grant (Attachments 1-7)

(1) Project Cover Sheet (Attachment 1)

・ This form must be filled out in Japanese by the research coordinator.

・ The signature must be written directly with a black or blue pen.

・ A researcher ID is an eight digit number obtained after registering on the inter-ministerial research and development management system (e-Rad).

・ An affiliated institute ID is a 10 digit code number obtained after registering on the e-Rad system.

In item "5) Applicable Research Field" and item "6) Research Theme Number for UNS Strategic Programs," select a research theme under "Research Fields and Themes in UNS Strategic Programs II" in Table 1 "Research and Development Fields (Applicable Fields)." Enter the name of the field and the number. Make sure the selection is consistent with the research theme in the application.

・ If applying for indirect costs, enter the indirect cost rate in item "8 Indirect Costs." This rate is calculated using the Indirect Cost Rate Statement (Attachment).

・ In item "9 Grant Period," select single year.

・ In item "10) Grant Amount Requested," enter the combined amount the year. Enter the amount requested for the first year again underneath. (The same amount as item "3 Amount Requested" on the application.)

・ In item "11) Research Schedule"　enter the research and development period, which includes the grant application period.

・ If a grant extension application or a single-year application is expected in the future, enter that information as far as possible.

・ In item "13) Other Funding," for the period until the grant is paid, enter the funds for necessary grant-related out-of-pocket expenses and the funds for half the individual expenses.
When procuring funds, be careful to take account of restrictions on combining, using, and managing funds.

A grant decision may be revoked if it is unclear how other types of funds are procured and handled.

(2) Summary of Research Plan (Attachment 2)

・ This form must be filled out in Japanese by the research coordinator.

・ The item "Research Outline" must not exceed 255 characters in length.

- In field column "3) Research Content," for items a) Other Characteristics of Research, b) Main Areas of Research, and c) Research Subfields, refer to Table 2. Enter the applicable codes (four digits) for each item. For item d) Keywords, refer to Table 3. Enter the applicable keyword codes (three digits). If an applicable keyword code is not present, enter a free description (30 characters or less).

- In item "4 Characteristics of Research," describe the project in terms of "Creativity, Effectiveness, and Applicability." Use one page for each characteristic.

- In item "5 Research Plan," enter the one year plan. For reference, enter the plan for subsequent years.

- The columns for research coordinator and accounting manager must be entered in Japanese only.

- The column for co-researchers should be entered in Japanese, but may be entered in English, if necessary.

- If there are more than eight co-researchers, add another page in the same form and enter the information as "Co-Researcher (Member 9)," "Co-Researcher (Member 10)," and so on.

(3) Summary of Research Budget (Attachment 3)

- This form must be filled out in Japanese by the research coordinator.

- When entering the eligible costs, enter the combined total for each researcher in the "Summary of Research Plan and Budget Estimation (for individual researchers). (See below.) (Unit: 1000 yen).

- For the amount requested, enter half the amount or less of the eligible costs for each item. (The combined total of direct costs of the requested amount for each project year may not exceed 10 million yen.) If applying for indirect costs, the sum of the direct cost total and the indirect cost total equals the fiscal−year total.

- If applying for indirect costs, enter the indirect cost amount by multiplying the direct costs by the indirect cost rate. The indirect cost rate is calculated based on the Indirect Cost Rate Statement. The indirect costs have a ceiling of 30% of the amount of the eligible costs.

(4) Summary of Research Plan and Budget Estimation (for individual researchers) (Attachment 4)

- The research coordinator and all co-researchers are required to enter pages 9 to 13. On the upper right of each page in the column "Member," enter the "Member No." in sub-item "8) Collaborative Research System" under item "(2) Summary of Research Plan."

- A researcher ID is an eight digit number   obtained after registering on the e-Rad

system. (Without an ID it is impossible to enter information.)

・ An affiliated institute ID is a 10 digit code number obtained after registering on the <u>e-Rad system</u>. (Without an ID it is impossible to enter information.)

・ This form may be filled out in Japanese or English. However, Japanese is preferable. (A tentative translation may be requested in some cases.)

・ In the byline, the signature must be directly written with a black or blue pen.

・ Items concerning the summary of research plan

  • Item "2 Description of Assigned Research Activities" must be written in about half a page. (This column must be included in the same page as "1. Member of the Team. ")

  • In item "3) Research Plan," enter information about the two-year plan including the eligible fiscal year and the scheduled number of hours per year to work on this research. (Use one page for these two items.)

  • For item "5) Research Assistant at Same Institute (Excluding Applicant)," enter the research team members (excluding the research coordinator and co-researchers) who will work on the project at the institute.

  A post-doctorate and a graduate student may engage in the research.

  A research assistant may receive travel expenses.

  • An undergraduate and a part-timer hired to assist project activities (such as experiments, the collection of materials, and other tasks at research site for a certain period) may not be registered as a research assistant.

・ Items Concerning Budget Estimation

  • In item "6) Application Budget Estimation," enter the total amount of costs necessary for research and development activities in each fiscal year and their breakdowns. Calculate the total amount for each expense item. (Use units of 1,000 yen. Fractions less than 1,000 yen are rounded off.)

  • Enter the eligible direct costs within the scope specified in "(11) Eligible Costs" under "3. Outline of Grant Program" of the Application Guidelines.

(5) Status of Applying for and Receiving Other Competitive Funding including from Other Ministries (Attachment 5)

If <u>any researcher or co-researcher</u> involved with   this grant application and the research is currently

receiving other public funds or applying for other funds, <u>summarize and enter the information here</u>. As a unified response measure, this attachment is based on the "Guidelines on Appropriate Enforcement of Competitive Funds" (an agreement at the liaison conference of government ministries concerned with competitive funds, dated September 9, 2005 and revised on March 27, 2009) and the "NICT Regulations on Response to Misconduct in Research Activities" (Regulation No. 35, 2006).

<u>(Only the status of the research coordinator needs to be registered on the e-Rad system.)</u>

(6) Indirect Cost Rate Statement (Attachment 6)

An institute applying for indirect costs calculates them from the latest financial statements (income statements) using an indirect cost rate based on a designated computation method.

<u>Attach the financial statements (used to calculate the indirect cost rate) to the calculation sheet.</u>

(7) Drawings (Attachment 7)

Prepare one page for all drawings used to describe the research content.

(8) Other Required Documents

In addition to the Application for International Collaborative Research Grant and Attachments (1) to (7) above, the following documents are required to be submitted.

- ・ Pamphlet of the affiliated research institute (Submit two copies)

- ・ Articles of incorporation (in the case of a limited liability company)

5. E-Rad Guidelines

This section describes how to enter application information in the e-Rad system.

The information to enter on the e-Rad system and the information to fill in on the application form are the same. However, be aware that there may be differences in the terms used.

Registration of application information (Input of common research information)

Item	Content
New or Continuation	"New" * In some cases, "new" may also be an application that continues from the previous fiscal year.
Theme ID	Input not required.
Research Theme Name	Enter the name under "Project Name" on the application.
Research Type	This item is not selectable on the e-Rad system. Refer to the application (Attachment 2) to verify the correct type.
Research Period	"2010 to 2010" ∗ This item is equivalent to "Grant Period" on the application.
Research Objective	Provide an excerpt from "Research Objective" on the application.
Research Outline	Provide an excerpt from "Research Outline" on the application.

Registration of application information (Enter individual research information)

Item	Content
Indirect Costs	Select whether to apply for indirect costs.

Registration of application information (Input the budget amount at the time of application)

Item	Content
Details	Enter the "Amount Requested" from the "Summary of Research Budget" of the application.

Registration of application information (Enter information on research organization)

Item	Content
Researcher Information	Only enter the name of the research coordinator. (Registration of co-researchers is not necessary.)
Direct Costs	Enter the amount using "Total Direct Costs" under "Amount Requested" from the "Summary of Research Budget" of the application.
Indirect Costs	Enter the amount using "Indirect Costs" under "Amount Requested" from the "Summary of Research Budget" of the application.
Effort	Enter the "Research Engagement Rate" from the application

Registration of application information (Enter the application/receipt status)

Item	Content
Change in Institute Research Coordinator Belongs to	Enter the application/receipt status of other funding programs with respect to the research coordinator. * The e-Rad system does not require the input of status information for co-researchers. However, include this information on the application (Attachment 5).

Table 1

Research and Development Fields (Applicable Fields)

Research Field		Research Theme	
New generation network technology	①Network Infrastructure	Next-Generation Backbone Technology	1-1
		Next-Generation IP Network Technology	1-2
		Next-Generation Network Technology	1-3
		Photonic NetworkTechnology	1-4
	②Ubiquitous Mobility	Radio Wave Resource Development	2-1
		Intelligent Transport Systems (ITS)	2-2
		Next-Generation Mobile Communication Systems	2-3
		Seamless Heterogeneous Network Systems	2-4
		Next-Generation Satellite Communication Systems	2-5
	③New ICT Paradigms	Quantum Info-Communication Technology	3-1
		Nano-Biology ICT Networks	3-2
		Terahertz Technology	3-3
		Brain Interface Technology	3-4
	④Ubiquitous Platforms	Ubiquitous Service Platform Technology	4-1
		Personal Authentication and Payment Systems	4-2
		Ubiquitous Terminal Technology	4-3
		Digital Rights Management (DRM) Infrastructure	4-4
		Spatial Information Infrastructure Technology	4-5
ICT for Safety and security technology	⑤Secure Networks	Satellite and Terrestrial Communications during Emergencies	5-1
		Network Operations and Management	5-2
		Technology to Block Malicious Communications	5-3
		Impersonation Prevention Technology	5-4
		Next-Generation Encryption Technology	5-5
		Information Leakage Prevention Technology	5-6
	⑥Sensing and Ubiquitous Time-Space Platforms	Environment Sensing Technology	6-1
		Radio Propagation Monitoring and Measurement Technology	6-2
		Precision GPS Technology	6-3
		Precision Time and Frequency Standard Technology	6-4
		Electromagnetic Environment Protection	6-5
	⑦Ubiquitous and Universal Town	Network Robot Technology	7-1
		Home Network Technology	7-2
Universal communications	⑧Advanced Content Creation, Analysis, and Distribution	Content Reliability and Analysis	8-1
		Knowledge Base Technology	8-2
		Content Aggregation and Utilization Technology	8-3
	⑨Super Communications	Text Translation Technology	9-1
		Voice Recognition Technology	9-2
		User-Friendly Communication Technology	9-3
		Network Community Support Technology	9-4

⑩Ultra Presence Communications	Ultra High-Resolution Video Technology	10-1
	3D Video Technology	10-2
	3D Sound Technology	10-3
	Five Senses Communication Technology	10-4
	Sense Information Retrieval and Communication	10-5

Table 2

Codes of Main Fields and Sub-Fields

No.	Research Field	Research Div.	No.	Research Field	Research Div.
0101	Life Science	Genome	0499	Nano Technology and Materials	Others
0102	Life Science	Medicine and Medical Care	0501	Energy	Fossil Fuel and Derived Fuel
0103	Life Science	Food Science and Technology	0502	Energy	Nuclear Energy
0104	Life Science	Brain Science	0503	Energy	Natural Energy
0105	Life Science	Bioinformatics	0504	Energy	Energy Saving and Energy Use Technology
0106	Life Science	Environment and Ecosystem	0505	Energy	Reducing the Impact on the Environment
0107	Life Science	Matter Production	0506	Energy	Contribution toward Global Community
0189	Life Science	Common Basic Research	0589	Energy	Common Basic Research
0199	Life Science	Other	0599	Energy	Other
0201	Info-Communications	High-Speed Networks	0601	Manufacturing Technology	Precision Technology
0202	Info-Communications	Security	0602	Manufacturing Technology	Processing of Precision Parts
0203	Info-Communications	Services and Applications	0603	Manufacturing Technology	Extreme (High Value Added) Technology (e.g. Micromachines)
0204	Info-Communications	Home Appliance Networks	0604	Manufacturing Technology	Minimizing the Environmental Impact
0205	Info-Communications	High-Speed Computing	0605	Manufacturing Technology	Quality Management and Factory Safety
0206	Info-Communications	Simulation	0606	Manufacturing Technology	Advanced Manufacturing
0207	Info-Communications	High Capacity and High Speed Storage Devices	0607	Manufacturing Technology	Medical and Healthcare Devices
0208	Info-Communications	Input/Output *1	0608	Manufacturing Technology	Assembly Processes
0209	Info-Communications	Recognition and Understanding Meaning	0609	Manufacturing Technology	Systems
0210	Info-Communications	Sensors	0689	Manufacturing Technology	Common Basic Research
0211	Info-Communications	Human Interface Evaluation	0699	Manufacturing Technology	Other
0212	Info-Communications	Software	0701	Social Infrastructure	Forecast Technology and Research on the mechanisms of Unusual Natural Phenomena

0213	Info-Communications	Devices	0702	Social Infrastructure	Applied Technology Research on Minimizing the Impact of Natural Disasters
0289	Info-Communications	Common Basic Research	0703	Social Infrastructure	Ultra-Advanced Disaster Support Systems
0299	Info-Communications	Other	0704	Social Infrastructure	Accident Prevention Technology
0301	Environment	Global Environment	0705	Social Infrastructure	Degradation Prevention of Social Infrastructure
0302	Environment	Global Environment	0706	Social Infrastructure	Safety Measures for Toxic Hazards and Dangerous Substances
0303	Environment	Environmental Risk	0721	Social Infrastructure	Reconstruction of Living Spaces That are Natural and Harmonious
0304	Environment	Recycling Systems	0722	Social Infrastructure	Regional and Community Research
0305	Environment	Biodiversity	0723	Social Infrastructure	Safe Water Recycling and General Water Management
0389	Environment	Common Basic ResearchCommon Basic Research	0724	Social Infrastructure	Transportation Systems for New Lifestyles
0399	Environment	Other	0725	Social Infrastructure	Barrier Free
0401	Nano Technology and Materials	Nano Materials (Applied to Electrons, Magnetism, and Optics)	0726	Social Infrastructure	Universal Design
0402	Nano Technology and Materials	Nano Materials (Applied to Structural Material)	0789	Social Infrastructure	Common Basic Research
0403	Nano Technology and Materials	Nano Information Devices	0799	Social Infrastructure	Other
0404	Nano Technology and Materials	Nano Medical Care	0801	Frontier	Space Science (e.g. Astronomy)
0405	Nano Technology and Materials	Nano Biology	0802	Frontier	Space Development and Utilization
0406	Nano Technology and Materials	Energy and Environmental Applications	0821	Frontier	Marine Science
0407	Nano Technology and Materials	Surface and Interface	0822	Frontier	Marine Development
0408	Nano Technology and Materials	Measurement Technology and Standards	0889	Frontier	Common Basic Research
0409	Nano Technology and Materials	Processing and Synthesis	0899	Frontier	Other

0410	Nano Technology and Materials	Basic Properties of Matter	0900	Humanities and Society	—
0411	Nano Technology and Materials	Computation, Theory, and Simulation	1000	General Natural Science	—
0412	Nano Technology and Materials	Materials for Creating Safe Spaces			
0489	Nano Technology and Materials	Common Basic Research			

*1: This theme refers to technology to simplify input/output on info-communication systems. Excluding Research Div. Nos. 209 to 211.

Table 3

Research Keywords

No.	Keyword	No.	Research Keyword
001	Gene	049	Dependable computing
002	Genome	050	Algorithm
003	Protein	051	Modeling
004	Sugar	052	Visualization
005	Lipid	053	Analysis and evaluation
006	Nucleic acid	054	Storage system
007	Cell and structure	055	Data storage
008	Biological molecule	056	Large-scale filing system
009	Bio-functional use	057	Multi-modeling interface
010	Development and differentiation	058	Image, text, and voice recognition
011	Brain and nerves	059	Multilingual processing
012	Animal	060	Automatic tabbing
013	Plant	061	Virtual reality
014	Microbe	062	Agent
015	Virus	063	Smart sensor system
016	Behavior studies	064	Software development efficiency and stability
017	Evolution	065	Directory and information search
018	Information engineering	066	Content archive
019	Proteome	067	System-on-chip
020	Translational research	068	Device design and manufacturing process
021	Transplantation and regenerative medicine	069	High-density package
022	Medical care and welfare	070	High-performance device
023	Regenerative medicine	071	Low power consumption and high energy density
024	Food	072	Display
025	Agricultural and marine products	073	Remote sensing
026	Genetically-modified food	074	Monitoring (excluding remote sensing)
027	Biotechnology	075	Atmospheric phenomenon
028	Senility	076	Climate change
029	Cancer	077	Hydrosphere phenomenon
030	Diabetes	078	Pedosphere phenomenon
031	Circulatory organ and high blood pressure	079	Biosphere phenomenon
032	Allergy and asthma	080	Environmental quality quantification and measurement
033	Infectious disease	081	Environmental change
034	Cranial nerve disease	082	Hazardous chemical substance
035	Aging	083	Waste processing
036	Drug responsiveness	084	Waste recycling
037	Bio devices	085	Air pollution prevention and purification
038	Photonic network	086	Water/land contamination prevention and purification
039	Advanced communications	087	Environment Analysis
040	Cable access	088	Pollution prevention and policy
041	Internet advancement	089	Ecosystem repair and maintenance
042	Mobile communications	090	Sustainable agriculture, forestry, and fisheries

No.	Research Keyword	No.	Research Keyword
043	Satellite network	091	Construction and maintenance of sustainable urban infrastructure
044	Encryption and authentication	092	Natural symbiosis
045	Secure network	093	Policy research
046	Reliable network	094	Magnetic recording
047	Copyright and content protection	095	Ultra-fine semiconductor
048	High-performance computing	096	Ultra-fast information processing
No.	Research Keyword	No.	Research Keyword
097	Atomic-molecular processing	147	Energy efficiency
098	Scanning probe microscope (e.g. STM, AFM, STS, SNOM)	148	CO2 emission reduction
099	Quantum dot	149	Reduction in global greenhouse gases
100	Quantum wire	150	Fuel cell
101	Quantum well	151	H2O
102	Super lattice	152	Electric bicycle
103	Molecular machine	153	LNG automobile
104	Nano machine	154	Hybrid automobile
105	Tunnel phenomenon	155	Ultra-precision measurement
106	Quantum computer	156	Optical source technology
107	DNA computer	157	Precision polishing
108	Spin electronics	158	Plasma processing
109	Strongly-correlated electronics	159	Micromachine
110	Nano tube and fullerene	160	Precision component processing
111	Quantum confinement	161	High-speed prototyping
112	Self-organization	162	Ultra-precision die transcription
113	Molecular recognition	163	Injection molding
114	Select electronic device	164	High-speed assembly molding
115	High-performance laser	165	High-speed transmission circuit design
116	Super-conducting material and element	166	Micro connection
117	Highly efficient photovoltaic material and	167	Virtual reality
118	Quantum beam	168	Human-centered production
119	Optical switch	169	Joint manufacturing system
120	Photonic crystal	170	Quality management system
121	Micro resonator	171	Low entropy manufacturing system
122	Terahertz/infrared material and element	172	Global change forecasting
123	Nano contact	173	Earthquake
124	Super molecular chemistry	174	Volcano
125	Molecular beam epitaxy and epitaxy	175	Tidal wave
126	Single molecule detection (SMD)	176	Landslide
127	Optical pin set	177	Torrential rain
128	Molecular motor	178	High tide
129	Enzyme reaction	179	Flood
130	Confocal microscope	180	Fire
131	Electronic microscope	181	Natural disaster
132	Super-thin film	182	Observation and prediction of natural phenomena
133	General energy	183	Earthquake-proof
134	Renewable energy	184	Vibration control
135	Nuclear energy	185	Seismic isolation
136	Solar battery	186	Disaster prevention
137	photovoltaic generation	187	Disaster prevention robot

No.	Research Keyword	No.	Research Keyword
138	Wind power	188	Calamity reduction
139	Geothermy	189	Recovery and reconstruction
140	Waste heat utilization	190	Lifesaving
141	Co-generation	191	Fire fighting
142	Methane hydrate	192	Maritime safety
143	Biomass	193	Emergency communications
144	Natural gas	194	Crisis management
145	Energy saving	195	Real-time management
146	New energy	196	National land development
No.	Research Keyword	No.	Research Keyword
197	Land improvement	246	Marine utilization
198	Land preservation	247	Marine conservation
199	Regional and community	248	Marine resources
200	Living space	249	Deep-sea environment
201	Urban improvement	250	Marine ecosystem
202	Urban congestion	251	Continental shelf
203	Water resource	252	Polar region
204	Water cycle	253	Philosophy
205	Basin zone	254	Psychology
206	Water management	255	Sociology
207	Fresh water manufacturing	256	Education
208	Drought	257	Cultural anthropology
209	Life extension	258	History
210	Prolonging life	259	Literature
211	Cost reduction	260	Law
212	Environmental response	261	Economics

213	Construction machinery
214	Construction management
215	International cooperation
216	International contribution
217	Geographical information system(GIS)
218	Traffic accident
219	Distribution
220	Next-generation transportation system
221	Intelligent transportation system (ITS)
222	Advanced cruise－assist highway system
223	Transportation demand management
224	Barrier free
225	Universal design
226	Transport machine
227	Electronic navigation
228	Air traffic control
229	Rocket
230	Artificial satellite
231	Reusable transport system
232	Space infrastructure
233	Utilization of space environment
234	Satellite communications and broadcasting
235	Satellite positioning
236	International space station (ISS)
237	Earth observation

238	Planetary probe
239	Astronomical phenomena
240	Space science
241	Air utilization
242	Oceanography
243	Ocean development
244	Marine microbe
245	Ocean exploration