独立行政法人
科学技術振興機構
Japan Science and Technology Agency

Outline of the New Mid-Term Plan

2012.4

JAPAN SCIENCE AND TECHNOLOGY AGENCY

Topics

1. Outline of the Mid-Term Plan
2. Strategies for Prioritized Research Fields
3. Reform of R&D Systems
4. JST's Support Programs for Reconstruction
5. Development of Soft Infrastructure

Outline of the Mid-Term Plan

JST's Management Policy

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Mission

As a core agency to implement the 4th Science and Technology Basic Plan of Japan,
JST contributes to the creation of S&T innovation.

Vision

① Achieve S&T innovation by promoting creative R&D

② Maximize achievements through virtual network research management system

③ Promote S&T infrastructures of Japan toward acceleration of S&T innovation

Approaches in the New Mid-Term Plan

In order to realize sustainable, secure and safe society and reinforce the industrial competitiveness,
JST enhances the function of formulating R&D innovation strategies and restructures its programs.

Enhancement of planning capabilities of R&D strategies

- ☐ Policy proposal to the relevant ministries
- ☐ Formulating R&D Strategies for JST
- ☐ R&D Strategies for each research fields, R&D systems, "Science and Technology for Society", etc

2 key pillars of JST activities

1 Promotion of Creating S&T Innovation

- ☐ Virtual network research management system
- ☐ Prioritizing research fields to meet the expectations of the society
- ☐ Promoting seamlessly from basic research to industrial development
- ☐ Restoration and reconstruction from the disaster

2 Development of S&T Infrastructures

- ☐ S&T information dissemination
- ☐ Fostering next generation human resources
- ☐ S&T communication

Creating S&T Innovation - Role of JST -

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"Kotozukuri" (value creation/ story creation)
(Producer of Innovation)

Linking

- Industry-academic-government collaboration
- Inter-ministerial collaboration
- Interdisciplinary collaboration
- International collaboration

Risk taking
(R&Ds which are difficult for private sector or university alone to implement)

Make a high impact on society or economy through S&T innovation

New approaches in the Mid-Term Plan

- Set strategic program packages
- Formulate promotion strategies with quantitative targets
- Enhance and expand PD and PO's functions
- Collaborate beyond the boundary of ministries
- Promotion of globalization and brain circulation
- System and Service-Solution Oriented

Strategies for prioritized research fields

Green Innovation

Develop the Frontier of Natural Energy

1. Stable and Low Carbon Energy Supply/Demand Systems
2. Sustainable Resource Uses
3. Sustainable Coexistence with Nature and Environment

Global Warming | **Unstable Energy Supply** | **Limited Resource Availability** | **Global Food Shortage** | **Water/Ground Pollution**

Needs

Package of Strategic Programs

Creation of Game-changing technology

Stable and Low Carbon Energy Supply/Demand Systems

Iincrease the Sustainable Energy Consumption

Energy Management
Storage Device, Use of Exhaust Heat, Systems for Energy Storage/Transportation/Supply, Systems for Energy Saving

Sustainable Resource Uses

Resource Cycle Systems for Stable Securement of Rare Materials

Sustainable Coexistence with Nature and Environment

Systems of Food Production and Water Use with Environment Adaptability and Low Environmental Load

■Life Innovation

Meet Unmet Needs though Medical Innovation

1. Prevention, diagnosis, and medical treatment to important diseases in an aging society
2. Medical equipment to improve QOL of elderly people, people with disabilities and patients
3. Basic technology to accelerate creation of life innovation

Unmet Medical Needs

- Neuropsychiatric Disorder
- Lifestyle-related Diseases
- Cancer
- Immune-mediated or Inflammatory Intractable Disease
- etc.

Needs

Package of Strategic Programs

Conduct basic research to realize Proof of Concept

- Identification of target molecules for drug discovery
- Identification of biomarkers in diagnostics
- Demonstration of effects in animal model experiments
- Completion of prototype of medical equipment

Neuropsychiatric Disorder **Preemptive Medicine**	Lifestyle-related Diseases **Preemptive Medicine**	Cancer **Molecular Target Treatment**	Immune-mediated or Inflammatory Intractable Disease **Therapy**
Epigenome to determine diseases	**Reproduction of Diseases** to accelerate drug discovery	**Nanomedicine** by new functional materials	**Diagnostic Technology** for possible medical settings

■Nanotechnology/Materials

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Solve Social Problems through Realization of Nanosystems

1. Reform of R&D system for nanotechnology and materials: Active utilization of “open innovation” platform
2. Development of new basic industries: Creation of new basic industries through vertical integrated R&D
3. Promotion of intelligent strategy, standardization strategy, HR strategy and global strategy

Green Innovation | **Life Innovation** | **ICT Innovation**

Needs

Package of Strategic Programs

Collaboration with R&D Centers and Related Projects

- TIA nano
- SACLA etc.

- Element Strategy
- Materials for Creating, Storing and Saving Energies
- Low-power-consumption and Multi-functional Nanoelectronics
- Catalyst and Process for Material Transformation
- Measurement and Analysis Infrastructure for Light and Quantum
- S&T Infrastructure for Materials and Processing Process

Knowledge infrastructure building and application technology for big data

1. System infrastructure technology to transform into Aging/Low Carbon/Secure, Safe Society.
2. Highly dependable/low delay network and mass rapid information-processing technology responding to information explosion period.
3. Harmonization/coexistent technology of the human and the information equipment environment in highly-computerized society.

Environmental Energy | **Medical And Health** | **Resilient and Secure, Safe** | **Culture with rich sense of Humanity•Creation** | **Next Generation Social Infrastructure System**

Needs

Package of Strategic Programs

Creation / Construction of the innovative concept aiming at **Global Standard**
A Challenge to **Innovative Information-Communication Device** in anticipation of Nanosystem.

of ITC

- Dependable
- Semantic Information Processing
- Nanoelectronics (Spin/Optics) Super low power consumption/High integration

by ITC

- HPC and Simulation
- Cyber/ Physical/System
- Media, Digital Contents

Science and Technology for Society

Reconstruction of resilient society

1. Sustained realization of the life with security, safety and rich in spirit.
2. Building social infrastructure which contributes to the economic growth, by controlling resource/energy utilization.

Dwindling birthrate and an Aging population, Global Warming

Change in Industrial Structure (Appreciation of Yen, Deindustrialization)

Prompt Reconstruction of the disaster-afflicted area, Increasing Risk

Needs

Examine the Solution **in Society** involving the Government and the Public.
Pursue Possibility of creating new **Industry and Employment**.

Package of Strategic Programs

Society and Science	Distortion of Social Infrastructure	Security/Safety	Earthquake Disaster Reconstruction
Service Science	Aging Society	Information Security	Reconstruction of Resilient Society
Communication of Society and Science (Includes Science for Policy and Ethics)	Low Carbon Society	Disaster Prevention・Disaster Mitigation・Crime Prevention	Bases for Reconstruction In Tohoku

Reform of R&D Systems

Promotion of S&T Innovation in an Integrated Manner

Innovation-oriented sectoral promotion strategies targeting from basic research to technology transfer

～Transform “top science” into “top innovation”～

Packages of Strategic Programs

Promotion of Strategic Basic Research *CREST PRESTO ERATO RISTEX ALCA*

Technology Transfer through Industry-Academia Collaboration

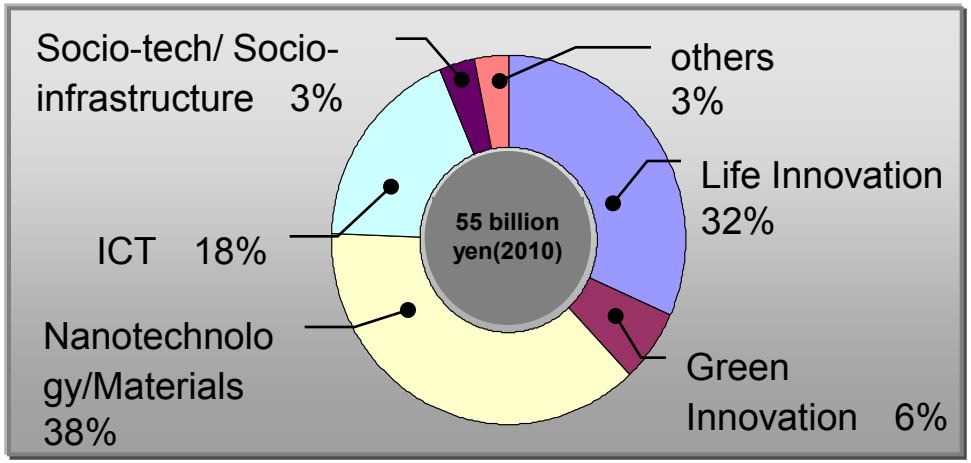
S-Innovation, Collaborative Research based on Industrial Demand, Technology-Transfer Advanced Measurement and Analysis, A-STEP

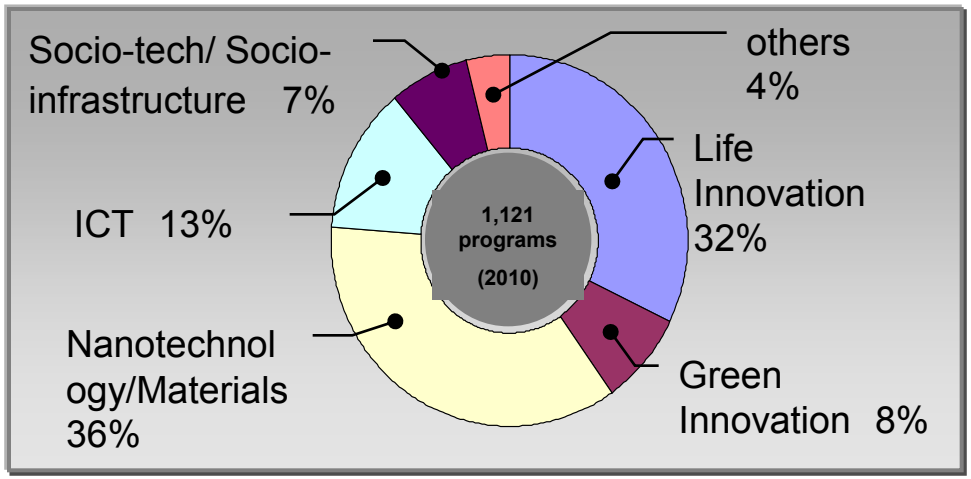
Promotion of International Research Cooperation *SICORP SATREPS*

Promoting Strategic Basic Research

Strategic Basic Research Programs

CREST / PRESTO / ERATO、ALCA、RISTEX





Creating Mission-Oriented **S＆T innovation**

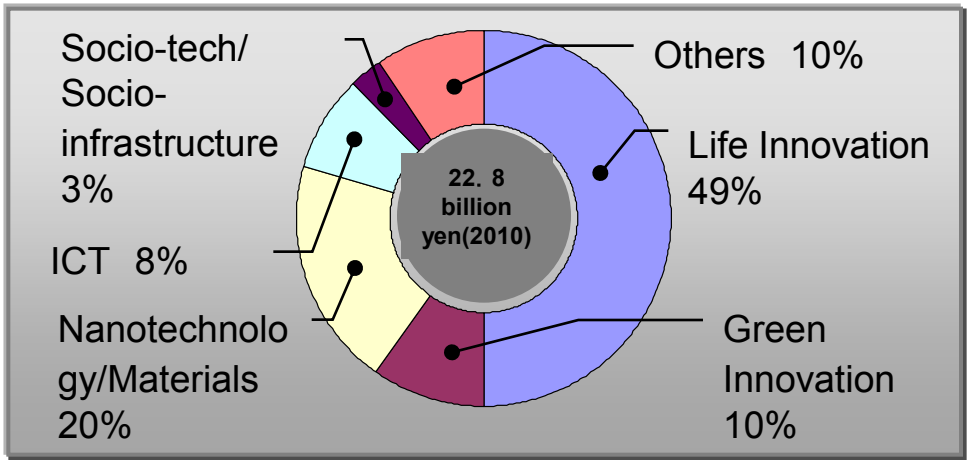
R&D systems which could contribute to innovation

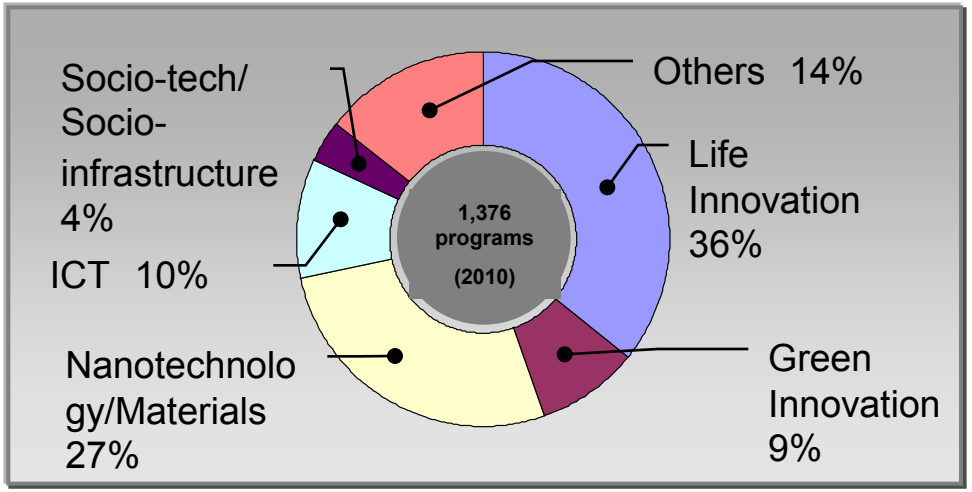
- **Strengthening of strategies（portfolio management etc.）**
- **Institutional Improvement directly leading to Innovation**

Technology Transfer through Industry-Academia Collaboration

R&D Programs Focused on Technology Transfer

Collaborative Research based on Industrial Demand, S-Innovation, Technology-Transfer Advanced Measurement and Analysis, A-STEP





Promotion of returning the achievements of mission-oriented basic research to society

Bridging the achievements of basic research to top innovation

Put more emphasis on:

- Performing as a bridge between mission oriented basic research and society (S-Innovation)
- R&D based on the future needs of Industry (Collaborative Research based on Industrial Demand)
- Strategic research fields (A-STEP)

Globalization of S&T Innovation

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JST's International Activities

- Joint research with developing countries **SATREPS**
- Joint research with advanced countries **SICORP**
- Research cooperation mainly with advanced countries. **SICP**

48 country and region (248 projects)
-as of April, 2012-

Strategic Basic Research Programs, R&D Programs Focused on Technology Transfer, etc.

Acceleration of globalization
Rise of emerging countries

Strategic promotion of international activities
—Basic strategies for advanced countries and for emerging countries—

Strengthening S&T diplomacy

Acceleration of S&T Innovation

- Utilizing overseas' potential (especially emerging countries)
- Promoting brain circulation

IPR (Intellectual Property Right)

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JST's IPR activities

Patents owned by JST: about 7,400(as of March 31, FY2011)

Patent applications supported by JST: 1,542(FY2011)

Mediation/Licensing IPR: 40(FY2010)

Patent of High Mobility Thin-film Transistor (TFT)（Prof. Hosono, Tokyo Institute of Tech.）
・Packaging JST's patents and university /industry's ones
・ Licensing to 6 companies in JAPAN and 2 companies overseas

Applying, maintaining and administrating patents

- Proper management of JST's Patents
- Supporting universities in overseas applications

Promotion of the use of IPR

Promotion of utilizing patents

Support activities of universities (TLO)

- **Organizing strong patent groups by Packaging**
- **Collaboration with investment institutions (The Innovation Network Corporation of Japan, DBJ Capital, etc.)**

Challenges to Ethical, Legal and Social Issues

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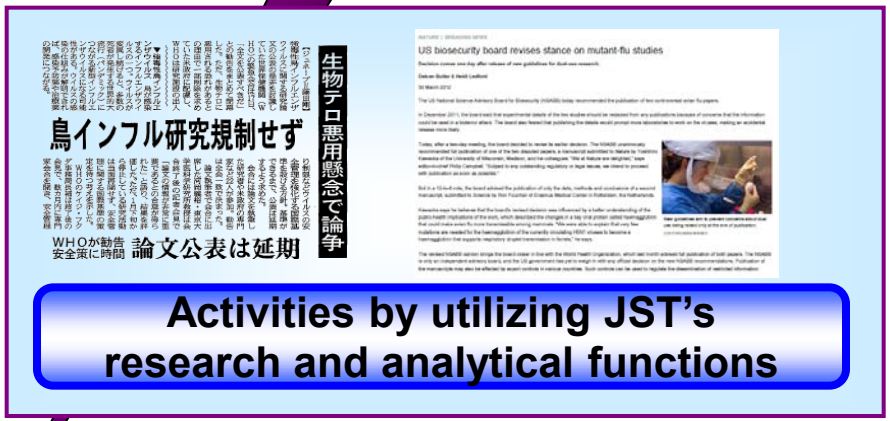
- **Prevention of misconduct in research**
  Measures for Fabrication, falsification of the research publications.
- **Proper spending of research fund**
- **Compliance with regulations and contracts**
- **Impartiality in review process**
  Secure transparency of the review process, etc.
- **Proper Management of Conflict of Interest**
- **Consideration to Environment & Safety**
- **Bioethics**
  Including measures for new challenges in embryologic and regenerative research, infectious disease research, etc
- **Personal Information Protection**
  Personal data protection in clinical research, etc

Further Enhancement

Ensure social credibility of JST through science communication tools, etc

Upgrading the system of audit and compliance



Activities by utilizing JST's research and analytical functions

JST's Support Programs for Reconstruction

JST's Activities for Promoting Reconstruction

◎ Program of Promoting Reconstruction（New Program in 2012）

Promoting R&D which could lead to commercialization by companies in disaster-afflicted area by utilizing innovative technology of universities, etc.

◎ Development of technology and devices for radiation measurements and radiation analyses （New Program in 2012）

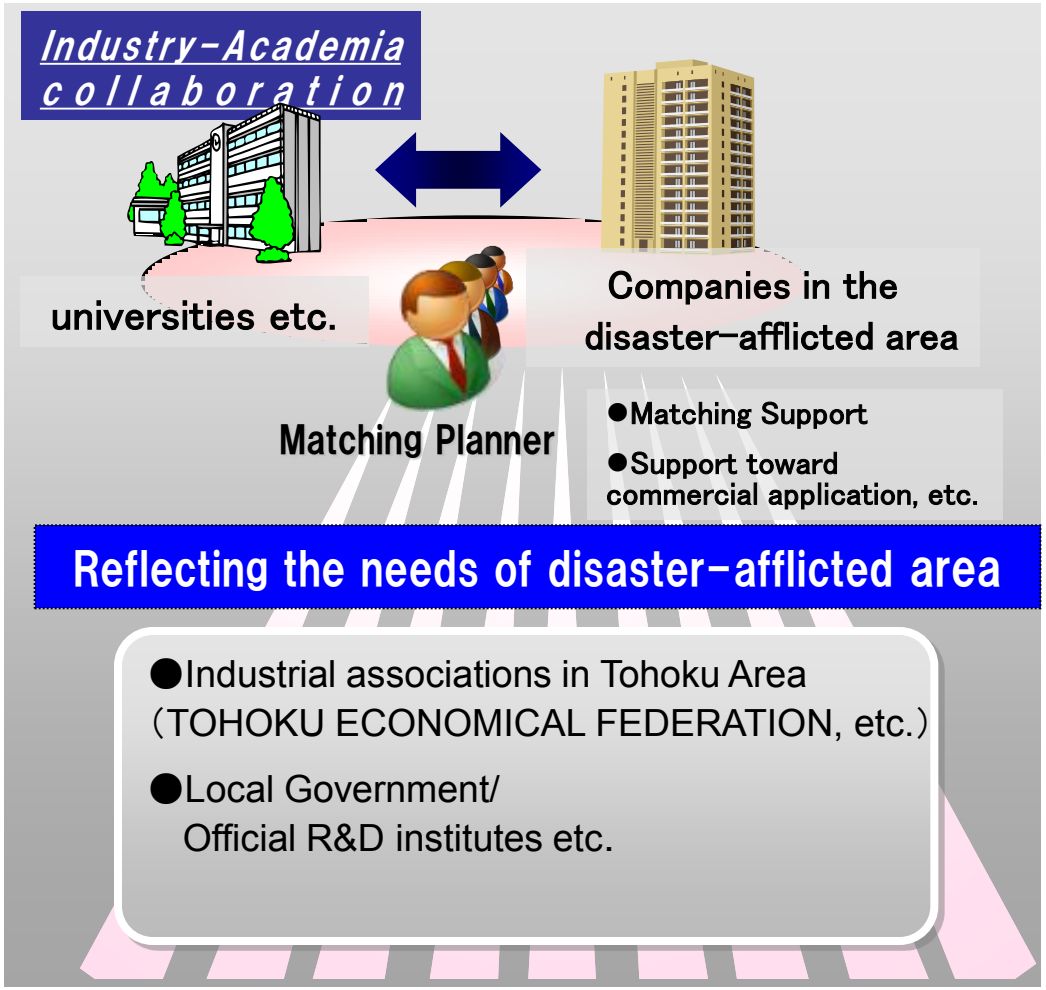
Promote the development of radiation measurement/analytical technology and devices, which would take a certain period of time but based on strong governmental and local demand. This technology and devices could enable us to detect radiation dose immediately with high accuracy and sensitivity.

Targets to be focused on:

- ✓Advanced measurement technology/devices to detect radioactive substance contained in foods
- ✓Advanced monitoring technology/devices for radioactive substance in soil
- ✓Establishment of the technology/devices which could measure alpha/beta emitting radionuclide in a short time

Program of Promoting Reconstruction

By collaborating with industrial association in Tohoku Area（TOHOKU ECONOMICAL FEDERATION, etc.）and local government, JST achieves the practical use of the innovative technology seeds of universities across the country in cooperation with companies in the disaster-affiliated area, and contributes to the reconstruction of the area.



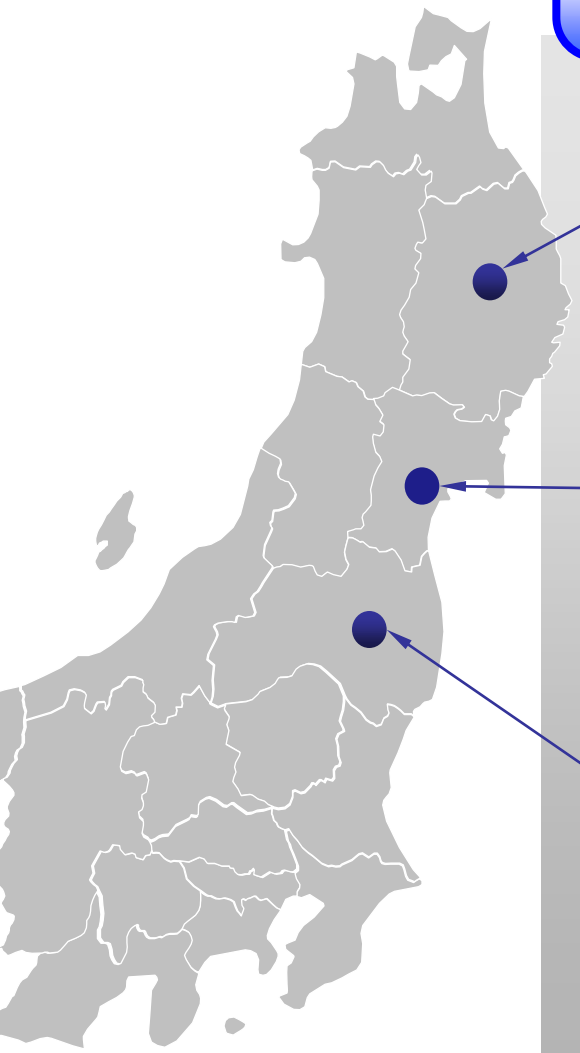
Understand the needs of disaster-afflicted area and industries in Tohoku Area

Implement industry-academia collaboration research matching their needs

Contribute to reconstruction of the economy of the disaster-afflicted area by S&T Innovation

Establishing “Centers for Promoting Reconstruction”（From April, 2012）

To promote supporting reconstruction, JST established 3 bases in Tohoku Area and provides community-based and detailed assistance to disaster-afflicted area.



Center for Promoting Reconstruction Morioka Office

Center for Promoting Reconstruction Sendai Office

Center for Promoting Reconstruction Koriyama Office

Governing board

Governing board

Governing board

General governing board

※JST placed matching planners in each office（about 18 people in total）

Development of Soft Infrastructure

Development of Soft Infrastructure to Support creating S&T Innovation of Japan

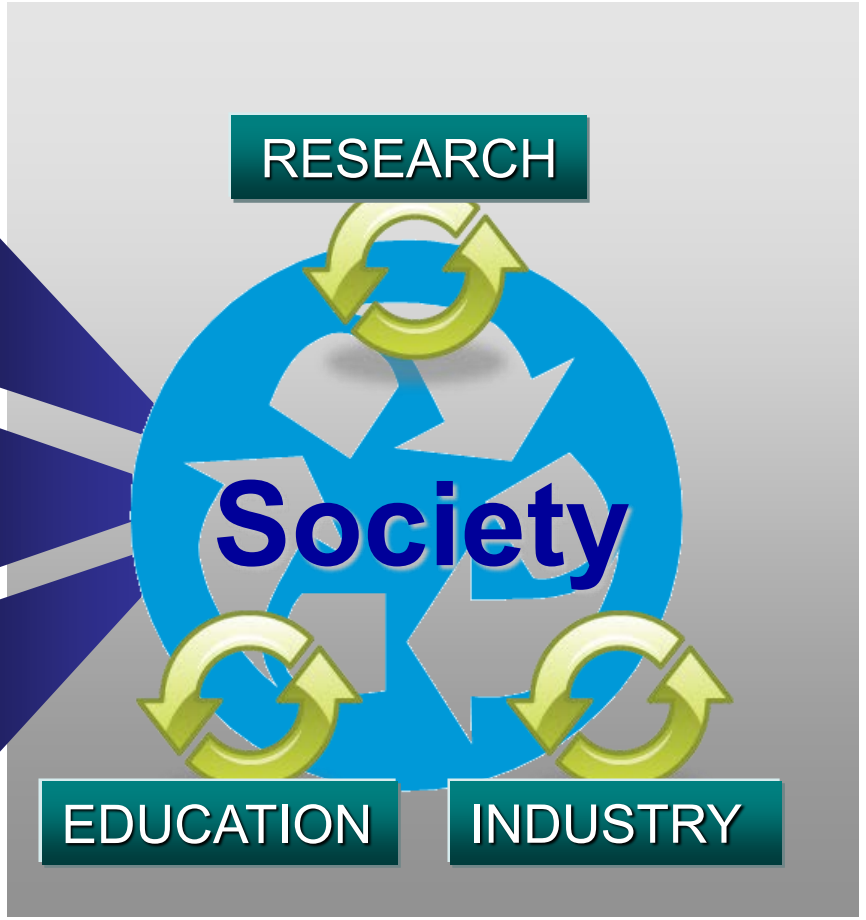
S&T information dissemination

Promoting S&T information dissemination, linkage and application
Integration of life science database

Fostering next generation's human resources

Promotion of S&T communication

Risk communication, promotion of outreach activities by Scientists, utilizing facilities such as Miraikan



Promoting S&T information dissemination, linkage and application

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Accelerate S&T Innovation by S&T information

Establish the environment where S&T information can be utilized as high value added service.

Utilize S&T information in decision making such as policy making and management strategy planning, etc

Preparing S&T information foundation of our country and Promoting dissemination of S&T information

- **Networking of digital information resources**
- **Data standardization**

Adding high value to S&T information

- **Strengthening of capability to link information such as articles, patents and facts etc.**
- **Promoting automation of extracting knowledge**

Establishing human networks

- **Forming researcher/engineer networks beyond organizations and research fields**

Industrial needs | **Extrication of policy issue** | **Social needs** | **Acceleration of R&D** | **Information transmission to the world**

JDream II　J-GLOBAL 科学技術総合リンクセンター　ReaD & Researchmap　J-STAGE　Japan Link Center

Understand the demand of users and improve these systems' functions, etc from their viewpoints

Integration of Life Science Database

Under the cooperation of 4 ministries, develop a national knowledge infrastructure of life science

CSTP

Life Science Project Team

Task Force for Integrated DB Promotion

advice

National Bioscience Database Center (NBDC)

① Strategy planning
② Portal website management
③ Development of fundamental technology for Database integration
④ Promoting integration of bio-related databases in Japan

NBDC National Bioscience Database Center

AgriTOGO 農林水産生物ゲノム情報統合データベース

Develop a national life science intellectual infrastructure

integbio.jp

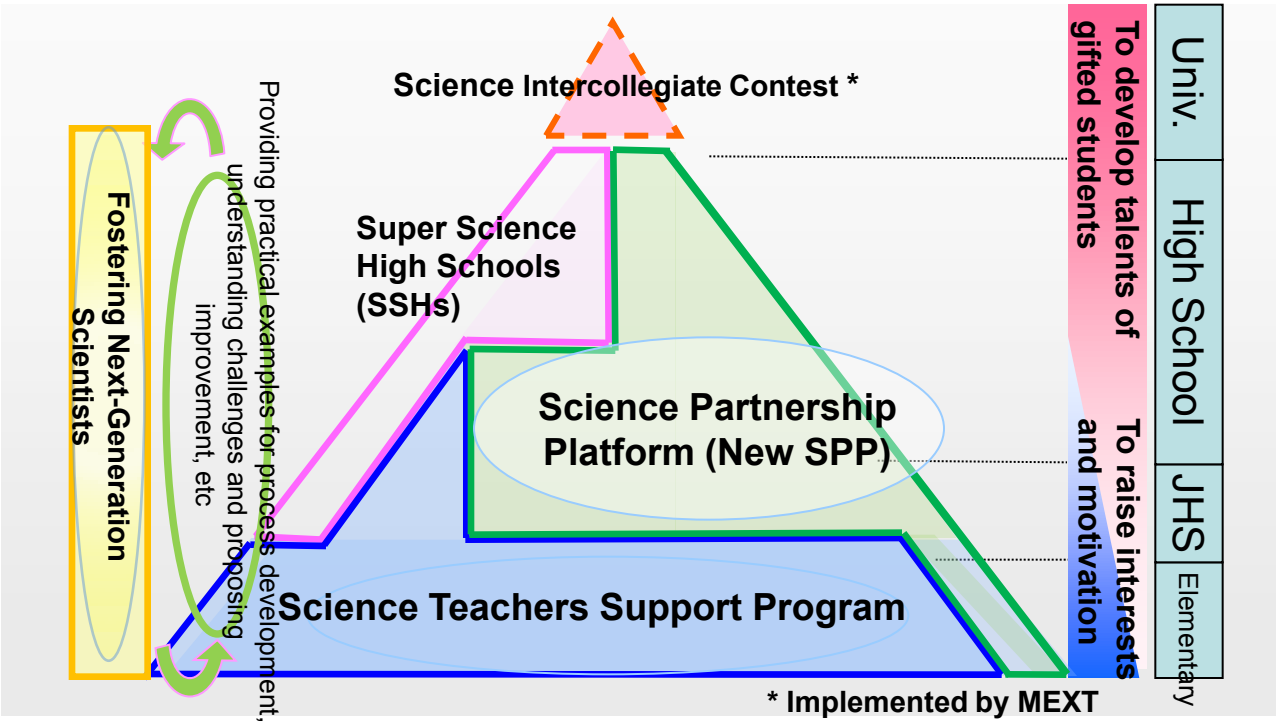
MEDALS METI database portal for life science

NIBIO

Contribute to Life Innovation

Fostering Next Generation's S&T Human Resources

The 1st Japan High School Science Championships, March 2012 (activity in New SPP)



Japan should lead the world in S&T now and future years.

Continuous and systematic training for gifted students

Integration of R&D, practice and promotion

Program to help gifted students develop their talents

Program to improve educational capabilities regarding S&T

Promotion of Science & Technology Communication

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Various Science & Technology Communication Activities

Support various activities, events and networking

Science & Technology Communication Field

Miraikan
Visitors in 2010:
Approx. 101 million

Deepening relations between society and S&T Innovation

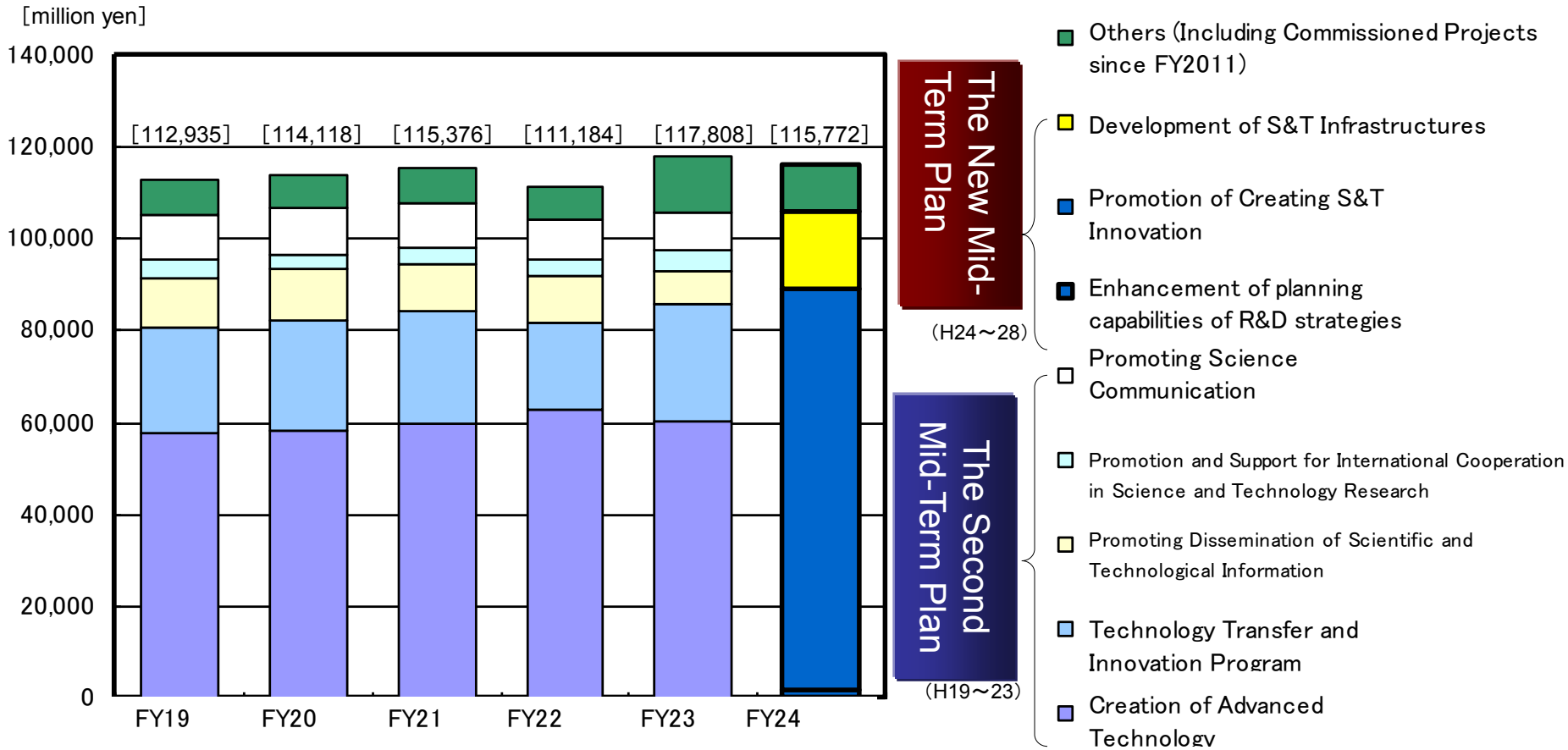
Further promotion of S&T communication activities including risk communication

Integration of R&D, practice and promotion

Promotion of various activities and expansion of field management

Changes in budget

○Initial budget



JST's Budget Transition in the Last Five Years [by research field]