



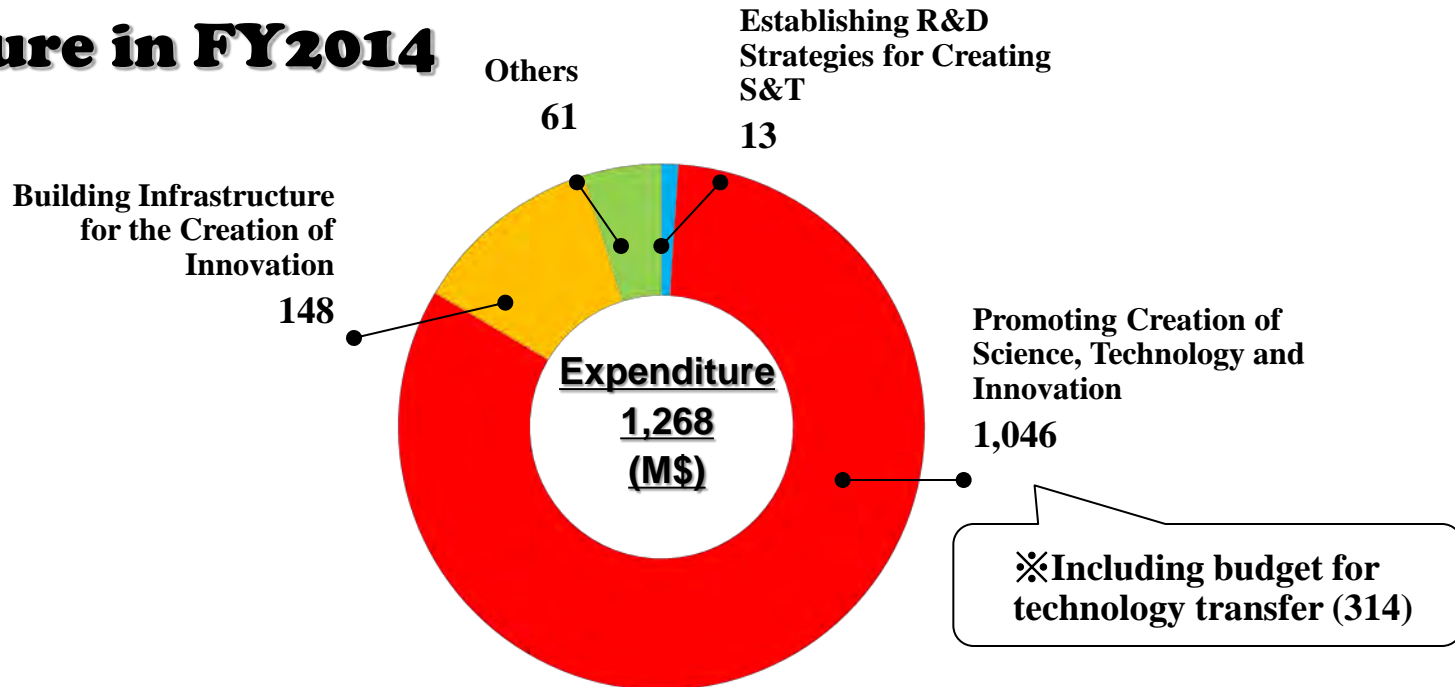
Support and Funding Programs for Industry-Academic Collaborative R&D

Tetsuya, ITO

Manager, Dept. of Industry-Academic Collaboration
Japan Science and Technology Agency (JST)

Budget for Technology Transfer in JST

● Expenditure in FY2014



\$1 = ¥100

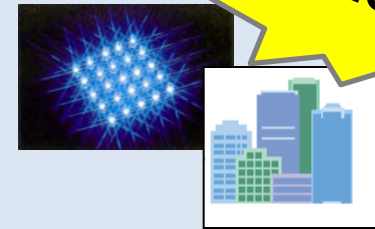
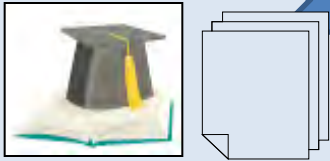
● Organizations

President
Executive
Directors

- Department of Industry-Academic Collaboration
 - Office of Advanced Measuring Technology
- Department of Industry-Academic Alliance
- Department of Business Innovation Development
 - Support for Entrepreneurship Office
- Center for Intellectual Property Strategies
- Center for Revitalization Promotion

The Overview of JST's Industrial-Academic Collaboration Support

Research outcomes
in academia



Innovation

(a) Intellectual Property Support



- Supporting patent acquisition
- Enhancing patent values
- Licensing patents
- Managing IP database
- Formulating IP strategies

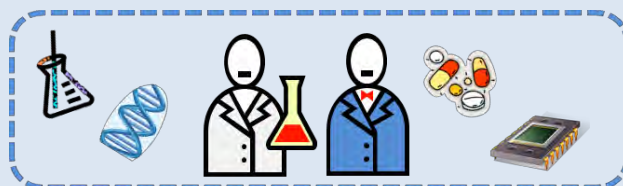
(b) Matching Support



Special meetings:

- New Technology Presentation Meetings
- The Universities Exhibition of Technology
- Open Innovation Seminars

(c) Research and Development Support

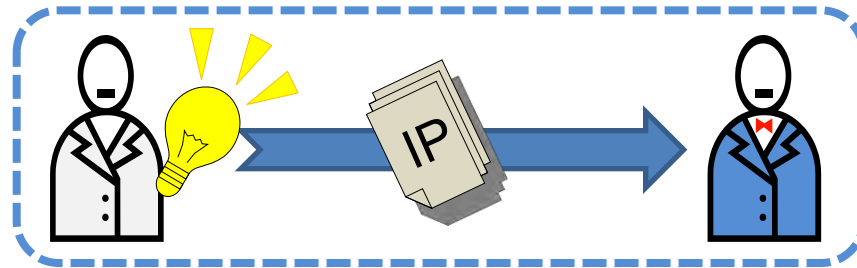


Various funding programs:

- A-STEP / S-Innovation / KYOUSOU (共創)
- SENTAN (先端) / COI / SUCCESS, etc.

2. Overview of JST's industrial-academic collaboration division

(a) Intellectual Property (IP) Support



(a) Intellectual Property (IP) Support



Academia

**(i)
Supporting
patent
acquisition**

**(ii)
Enhancing
patent
values**

**(iii)
Licensing
patents**



Industry

**(iv) Maintaining IP database
(J-STORE)**

<http://jstore.jst.go.jp/index.html?lang=en>

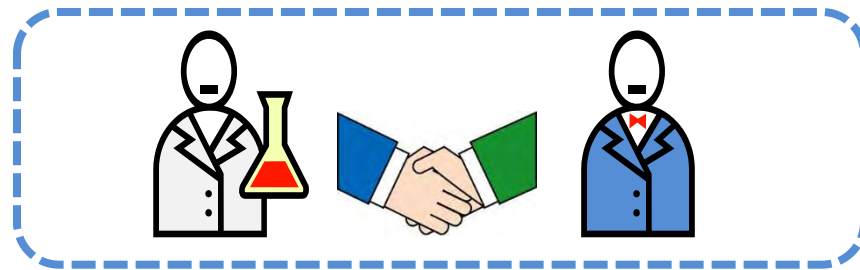
(v) Formulating IP strategies

(a) Intellectual Property (IP) Support

Services	
(i) Supporting patent acquisition	JST staff members provide a consultation service for university researchers and staff concerning intellectual property issues related to their research achievements. JST also financially support Japanese universities in their acquisition of foreign patents.
(ii) Enhancing patent values	JST collects and centralizes patents which are scattered across Japanese universities and could be important to the nation. JST also provides financial support for R&D activities to enhance or reinforce the value of these patents.
(iii) Licensing patents	Where Japanese universities entrust the use of their patents to JST, then JST helps license these patents to private companies using JST's IP professionals and their networks.
(iv) Maintaining IP database	JST offers a free database named J-STORE which includes information about those Japanese universities' intellectual properties which are available to be licensed.
(v) Formulating IP strategies	JST's committee for intellectual property strategies, a committee consisting of outside experts, publishes reports on national intellectual property strategies.

2. Overview of JST's industrial-academic collaboration division

(b) Matching Support



(b) Matching Support



Approaches from Academia to Industry



New Technology Presentation Meetings

Academic researchers present their research achievements to people from the industrial sector.

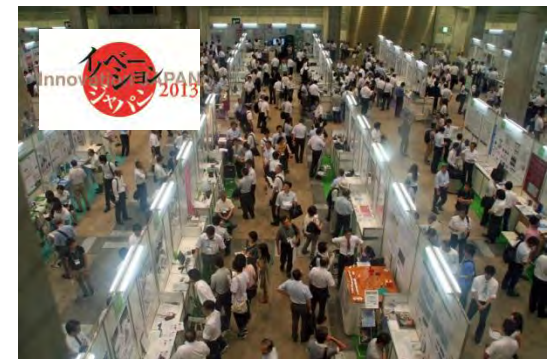
- Started in 2004
- Approximately 80 events in 2014
- Successful matching ratio: 26%



The Universities Exhibition of Technology

About 350 universities participate and present their cutting-edge research outcomes to people from the industrial sector.

- Started in 2004
- Once a year (September 11-12, 2014)
- Co-hosted with NEDO
- Number of participants: Approx. 24,000 people
- Successful matching ratio: 29%



(b) Matching Support



Approaches from Industry to Academia



Open Innovation Seminars

Companies give presentations to academic researchers about their technological needs or bottlenecks in their R&D.

- Started in 2008
- Every couple of months
- Successful matching ratio: 26%



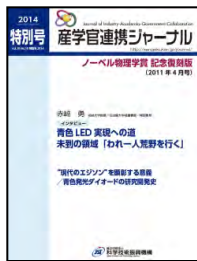
“Successful matching” :
Presentations led to industrial-academic collaboration, such as technical guidance, a material transfer agreement, joint research, licensing, a new study group, etc.

(b) Matching Support

Other Services to Facilitate Industrial-Academic Collaboration

Monthly Magazine

<http://sangakukan.jp/journal/>



- Recent trends related to industrial-academic collaboration
- Opinion pieces written by professionals and researchers

Database

<http://sangakukan.jp/shiendb/>



- Information about funding programs and services, upcoming events, and people working in the industrial-academic collaboration field

Lectures: Human Resources Development for S&T Innovation

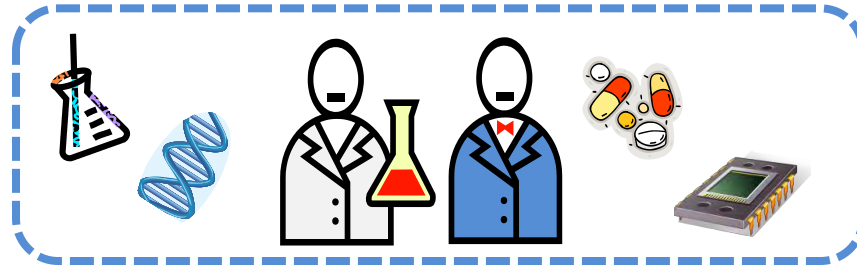
<http://www.jst.go.jp/tt/mekiki/>



- Designed for people working in the field of industrial-academic collaboration, especially at Japanese universities
- Six courses consisting of lectures and complementary activities such as case studies and small group discussions
- No participation fees and the course materials are free.

2. Overview of JST's industrial-academic collaboration division

(c) Research and Development (R&D) Support



Major Funding Programs (of the industrial-academic collaboration division)

Budget in FY 2014

(1) A-STEP

(Adaptable and Seamless Technology Transfer Program)

\$127.2 M

(2) S-Innovation

(Strategic Promotion of Innovative Research and Development)

\$7.1 M

(3) KYOUSOU (共創)

(Collaborative Research based on Industrial Demand)

\$11.5 M

(4) SENTAN (先端)

(Development of Systems and Technologies for Advanced Measurement Analysis)

\$30.5 M

(5) COI

(Center of Innovation Program)

\$83.2 M

(6) SUCCESS

(Support program of Capital Contribution to Early-Stage companies)

\$25.0M

(1) A-STEP

(Adaptable and Seamless Technology Transfer Program)

A-STEP is the most traditional and standard funding program at JST, targeted at all technology fields and R&D phases in order to facilitate technology transfer from academia to industry.

Characteristics of A-STEP

Priority Areas:

Working toward the creation of innovation in science and technology, we will focus on the following areas in accordance with the fourth phase of the national Science and Technology Basic Plan, and effectively create new systems and services by combining various programs.



Green Innovation



Life Innovation



Nanotechnology and Materials



**Information and
Communications Technology**



**Science and Technology for
Society**

Japan Agency for Medical Research and Development (AMED)

Expected Functions of AMED

(a) management of medical R&D, (b) management of data produced from clinical research and trials, (c) support for practical application, (d) support for improving R&D infrastructure, (5) promotion of international strategy



President-elect

**Prof. Makoto
SUEMATSU**

Dean, School of
Medicine,
Keio University

Presiding Ministries :

Cabinet Office, MEXT, METI, MHLW (Ministry of Health, Labor and Welfare)

Budget for FY 2014 : 1,955 million USD

Including in-house R&D budget (Exchange rate: 1 USD = 100 JPY)

Number of Employees : Approx. 330 staff

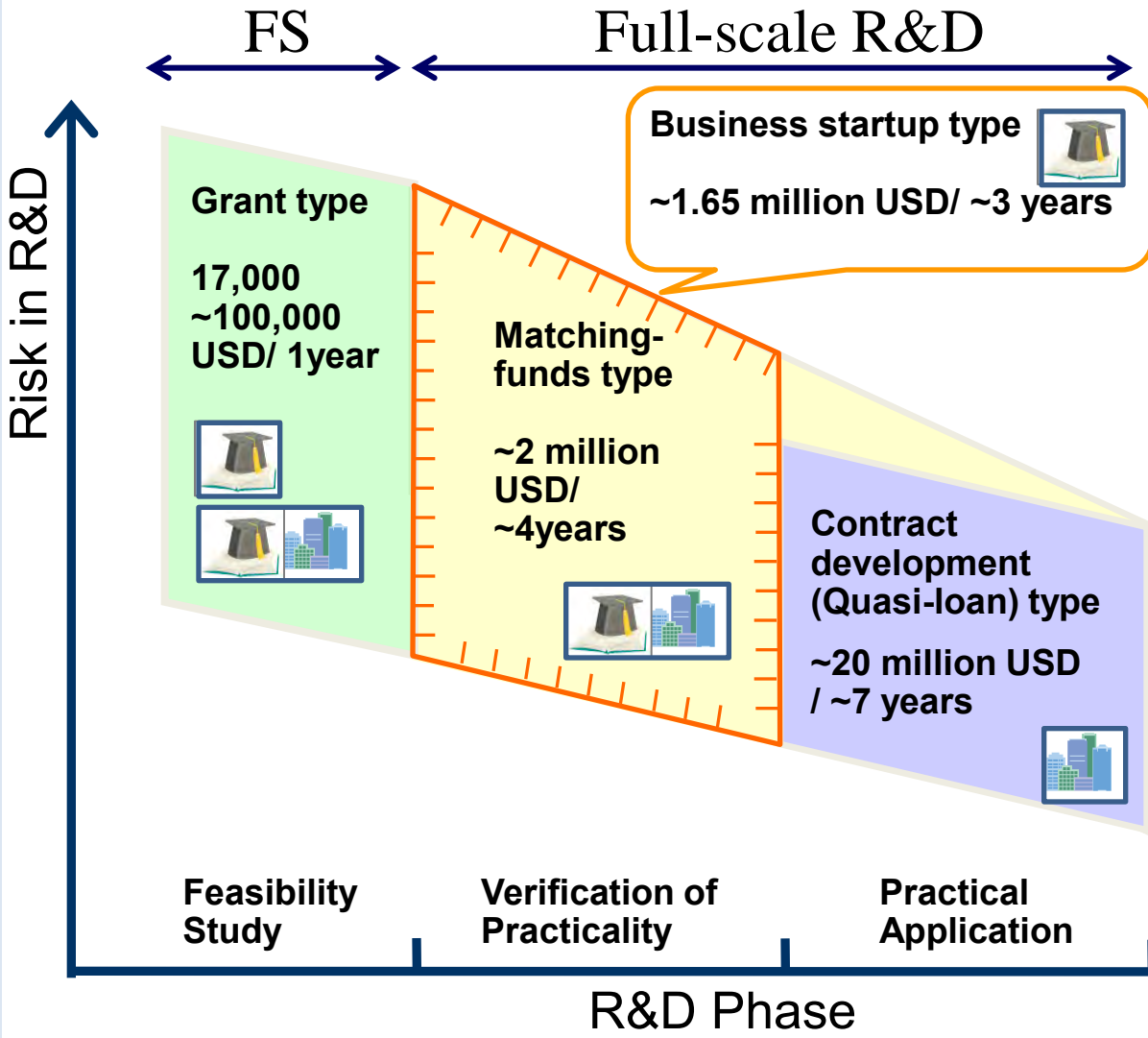
R&D fields:

- (1) Drug Discovery, (2) Medical Device
- (3) Translational and Clinical Research Core Centers
- (4) Regenerative Medicine, (5) Genomic Medicine
- (6) Cancer
- (7) Psychiatric and Neurological Diseases/ Disorders
- (8) Emerging/ Re-emerging Infectious Diseases
- (9) Rare/ Intractable Diseases



Yomiuri Shinbun Building,
20~24th floors @
Otemachi, Tokyo

Characteristics of A-STEP



☞ Promote technology transfer through industry-academia collaborative R&D based on the research outputs and intellectual properties generated by basic research in universities.

☞ Provide seamless support for various R&D phases, from basic research to practical application.

☞ Cover all fields of science and technology.



Solo application from academic researchers



Joint application of researchers from academia and industry



Solo application from companies

(2) S-Innovation

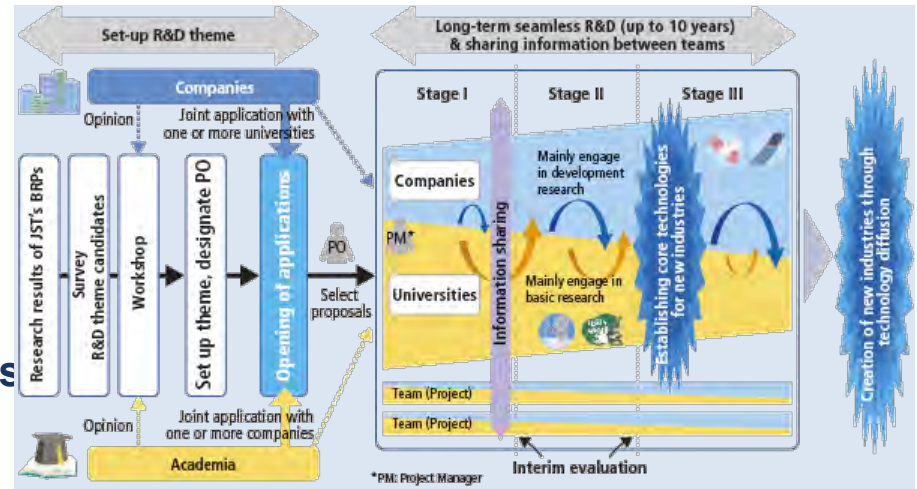
(Strategic Promotion of Innovative Research and Development)

S-Innovation aims to return outstanding achievements of JST's basic research programs to society and to create the foundations of new industries.



Characteristics of S-Innovation

- “R&D themes” are selected mainly from outputs of JST’s basic research programs.
- JST appoints a Program Officer (PO) for each R&D theme.
- JST and PO form a consortium for each R&D theme with several research teams which consist of members from both academia and industry.
- Long-term (up to 10 years) collaborative researches are carried out under the leadership of POs in order to create the foundations of new industries.



R&D Budget	\$700,000/year for each project
R&D Period	Max 10 years for each project
R&D Themes	iPS Cells (2009~), Organic Electronics (2009~) Photonics Polymer (2009~), Superconductivity System (2009~) ICT/IRT for Aged Society (2010~), Spin Current (2011~)

(3) KYOUSOU

(Collaborative Research based on Industrial Demand)

KYOUSOU aims to bolster Japanese industrial competitiveness by contributing to the solution of technical issues common in industry.

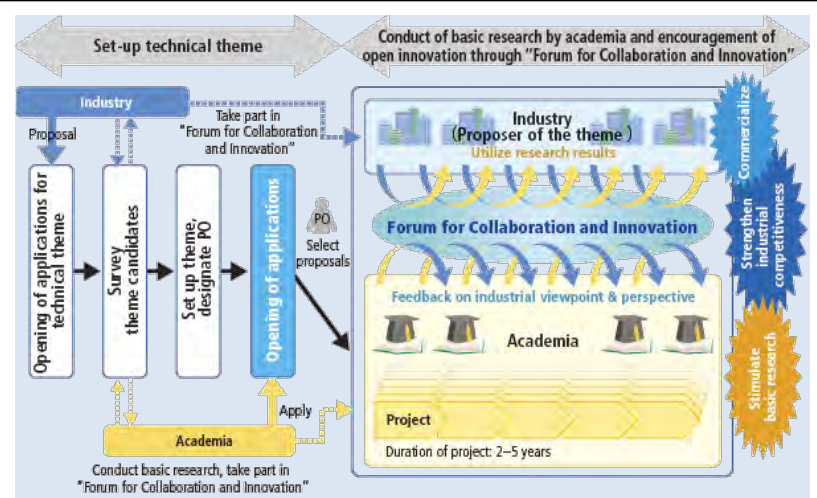
Kyou Sou

共創

= co- = creation

Characteristics of KYOUSOU

- Technological themes are set by JST based on requests from industry. These themes last up to ten years.
- JST appoints Program Officer (PO) for each technological theme.
- Under the leadership of POs, approximately ten research projects, consisting of only academic researchers, carry out fundamental research to solve technological issues common in industry.
- JST organizes special meetings for each theme so that people from industry and academia can exchange opinions.



R&D Budget	\$300,000 /year for each research project
R&D Period	2~5years for each research project
Technological Themes	Heterogeneous Structure Control (2010~) Terahertz-wave (2010~) <i>In vivo</i> Molecular Imaging (2011~) High Performance Magnets (2011~) Marine Product Processing Supply Chain (2012~)

(4) SENTAN

(Development of Systems and Technologies for Advanced Measurement Analysis)

SENTAN aims to create Japanese-made measurement and analysis technologies that are first-of-their-kind and the best in the world.

Dr. Koichi TANAKA, Shimazu Corporation

He is a Nobel Laureate in Chemistry 2002 for developing a novel method for mass spectrometric analyses of biological macromolecules. He is also serving as a development advisor of SENTAN.



Characteristics of SENTAN

- About 40 prototypes have been commercialized in this program since 2004.
- The total sales of these products are estimated to be upward of 450 million USD.

(As of May, 2014)

Type	Component technology development	System development	Practical realization
R&D Expenses (standard)	200,000~300,000 USD/ year	500,000 USD/ year	400,000 USD/ year (matching-funds)
R&D Period	3.5 years or less	5.5 years or less	2.5 years or less



High-Speed Three-Dimensional Tomography System of Anterior Eye
(Utsunomiya University and Fuji Film Cooperation)



A State-of-the-Art Scanning Probe Microscopy
(Shimadzu Corporation)



The world's fastest SNP detection device
(Tokyo Institute of Technology and Biotech cooperation)

(5) COI
(Center of Innovation Program)

COI aims to establish innovation platforms in Japan, “COI sites,” where researchers from both academia and industry work together to actualize desirable future societies by the end of ten years from now.



Characteristics of COI

- ☞ MEXT/JST selected 12 COI sites (and 14 COI trial sites) in 2013 in order to establish innovation platforms in Japan where universities and companies can work on R&D together.
- ☞ Each site took a “backcasting approach,” in other words, (i) visualizing an ideal society, (ii) identifying what kinds of challenges we are facing now, and (iii) formulating its R&D plan.
- ☞ R&D activities are supposed to be carried out by multi- and/or inter-disciplinary teams based on industrial-academic collaboration.

R&D Budget

Up to 10 million USD/ year / site

※The companies involved are requested to share some portion of the R&D cost.

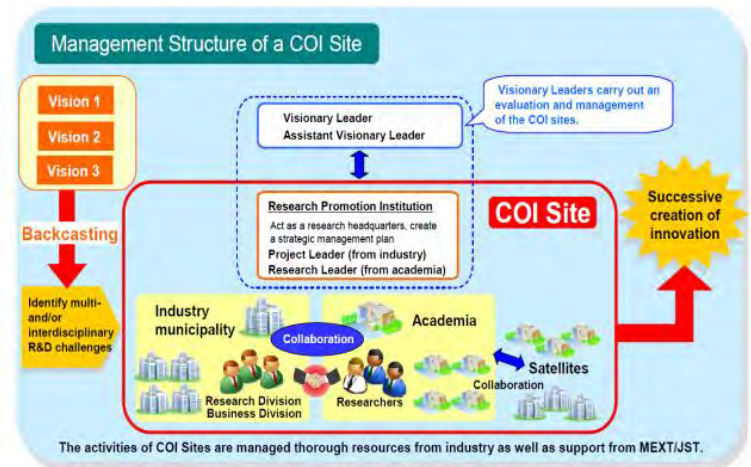
R&D Period

Up to 9 years

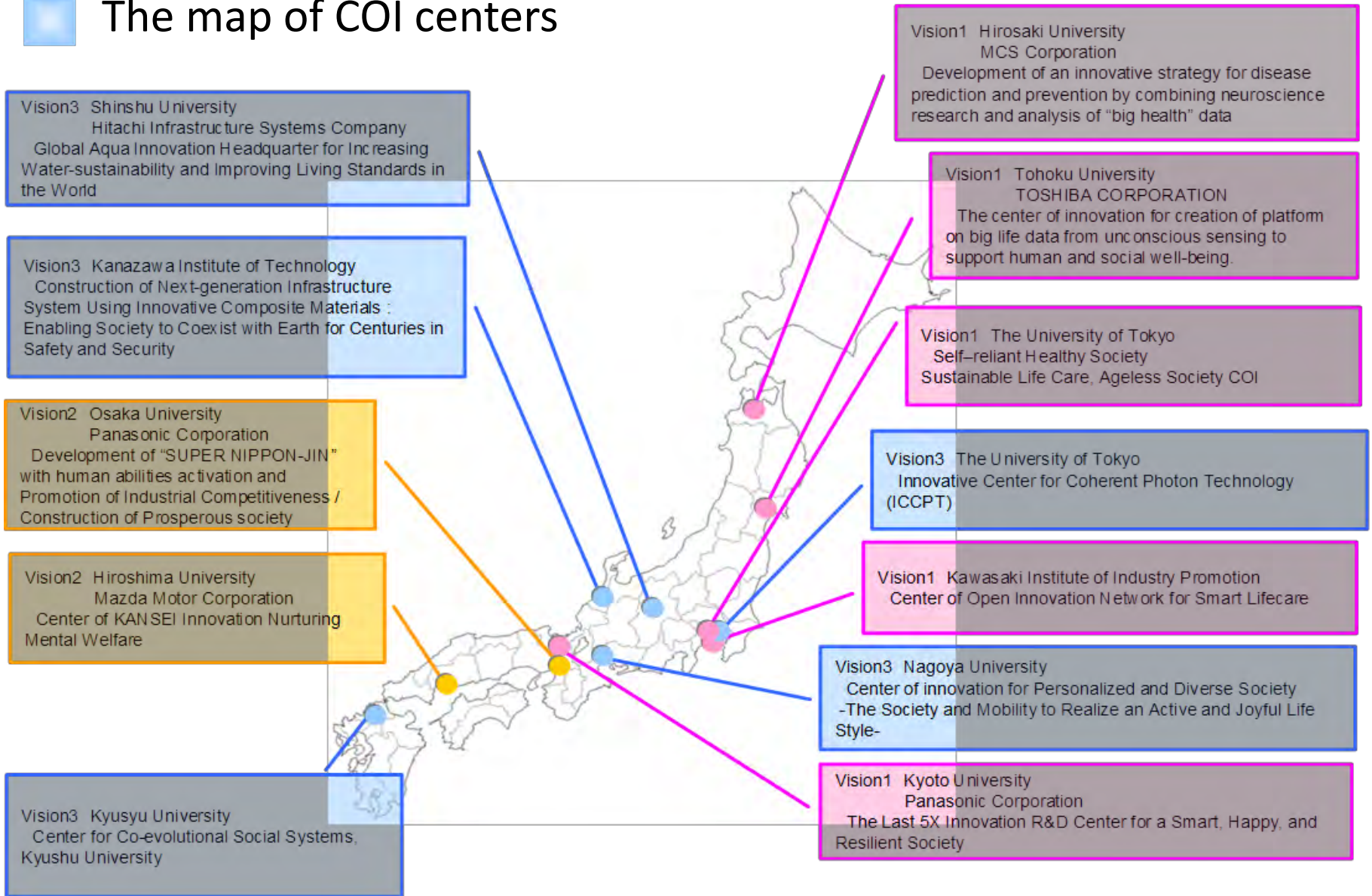
Three Visions of COI STREAM

1. Smart Life Care, Ageless Society
2. Smart Japan
3. Active Sustainability

※COI is a part of MEXT’s initiative, COI STREAM.



The map of COI centers



(6) SUCCESS

(Support program of Capital Contribution to Early-Stage companies)

SUCCESS aims to sponsor technology-based university's startups that are working on commercialization of JST's research achievements.



Characteristics of SUCCESS

- ☞ JST supports business startups which are working on commercialization of research achievements funded by JST.
- ☞ JST provides financial support and contribution in kind, such as intellectual properties and research equipment owned by JST, advice and consultation for strategic management, etc.
- ☞ JST's investment is expected to encourage further investment from the private sector to these startups.

Amount of investment	Up to 5 million USD / startup ※JST's investment cannot exceed the amount that can acquire 50% of the voting power of a startup.
Number of startups to be supported	2~5 startups / year
Prospective recipients	Startups in the making or ones started basically no more than five years ago, which are working on commercialization of research achievements funded by JST

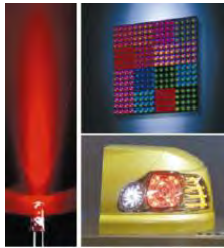
Remarkable Achievements of JST's Industrial-Academic Collaborative Projects

★ 1960 1970 1980 1990 2000 2010

1959-
Artificial quartz



1972-1976
GaAlAsRed
LED



1980-
Natural interferonβ



1991-1996
Bi-Based
superconducting wire



2001-2004
Water- ¹⁸O for PET
(positron-emission
tomography)

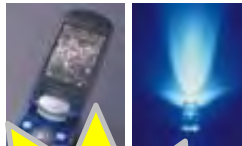


Since 1958

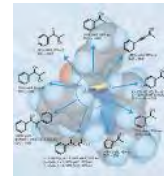
1978-1980
Magnetic material
Amorphous metals



1986-
GaN Blue LED



1991- 1998-
NOYORI catalyst



2005-
Producing antibodies
for therapeutic and
industrial use



2006-
Low-cost ultrasmall
satellite with short-
term R&D



The total sales of these products are estimated to be upward of 6.8 billion USD from 1958 to 2013.

Nobel Prize in
Physics
(2014)

Nobel Prize in
Chemistry
(2001)

JST's Management for Achieving Research Outcomes

◆ The following activities ensure the quality of research conducted by JST. These are core competences of JST as a funding agency promoting cutting-edge science and technologies.

- Peer review by experts outside of JST.
- Progress management and site visit carried out by program officer (PO) and JST staff.
- Milestone evaluation
- Advice for promoting practical of technologies and launching start-ups



**Thank You for
Your Kind Attention!**