

S&T Policy and Industry-University Collaboration in Japan

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(MEXT)**

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Science and Technology Basic Plan



S&T Basic Law
(1995)

1st Basic Plan
(FY 1996-2000)

2nd Basic Plan
(FY 2001-2005)

3rd Basic Plan
(FY 2006-2010)

● Structuring a new R&D system

- Support plan for 10,000 post-doctoral fellows
- Promotion of industry-university-government collaboration etc.

● Total governmental R&D investment

17 trillion yen
(→17.6 trillion actually).

● Strategic priority

- Promotion of basic research
- **Prioritization of R&D on national/social subjects**

● S&T system reforms

- **Doubling of competitive research funds**
- Enhancement of industry-university-government collaboration

● Total governmental R&D investment

24 trillion yen
(→21.1 trillion actually)

● Strategic priority

- Promotion of basic research
- **Selection of “Strategic Prioritized S&T” (Key Technology of National Importance etc.)**

● S&T system reforms

- Developing, securing and activating **human resources**
- **Creating scientific development and persistent innovation**

● Total governmental R&D investment

25 trillion yen

Basic Ideas

○ Basic Stances

- ① Science and Technology to be supported by public and to benefit society
Aiming for continuous advancement of the level of science
⇒ Creation of intellectual and cultural values
Returning research fruits to society and the public through innovation
⇒ Creation of social and economic values
- ② Emphasis on developing human resources and competitive research environments

○ Policy Goals

- ① Quantum Jump in Knowledge Discovery & Creation
- ② Breakthroughs in Advanced S&T ③ Sustainable Development
- ④ **Innovator Japan** ⑤ Promotion of life-long health of the public
- ⑥ The World's Safest Nation

○ Fundamental Concept

Total amount of governmental R&D expenditures expected to reach 25 trillion yen over 5 years (on 1 % of GDP by 2010 ,with an expected annual nominal growth rate of 3.1 %)

Strategic Priority Setting in S&T

○ Promotion of Basic Research

Curiosity-driven research ⇒ Formation of diversity

Basic research aiming at future application based on specific policies

⇒ Creation of knowledge for contiguous innovations

○ Priority Setting in R&D for Policy Oriented Subjects

Four important prioritized fields (life sciences, IT, environmental sciences, nanotechnology and materials science/technology),

Four fields to be promoted (energy, MONO-ZUKURI, infrastructure, frontiers)

Promotion Strategies:

- Selection of strategic prioritized S&T activities as the targets of prioritized investments during 2006-2010.

① Social and public concerns/ needs (safety and security, etc)

② Global competition in S&T

③ Key technology of national importance (super computers, space transportation systems, etc.)

- Strengthening emerging/ interdisciplinary fields

→adequately lead to innovation

S&T System Reforms

1. Fostering human resources as well as encouraging their S&T activities

- Create an environment for individuals to develop their abilities
- **Strengthen functions of universities to foster human resources**
- Cultivate human resources that meet the needs of society
- Broaden the range of human resources who play major role in S&T activities in the next generation

3. Strengthening the infrastructure for S&T promotion

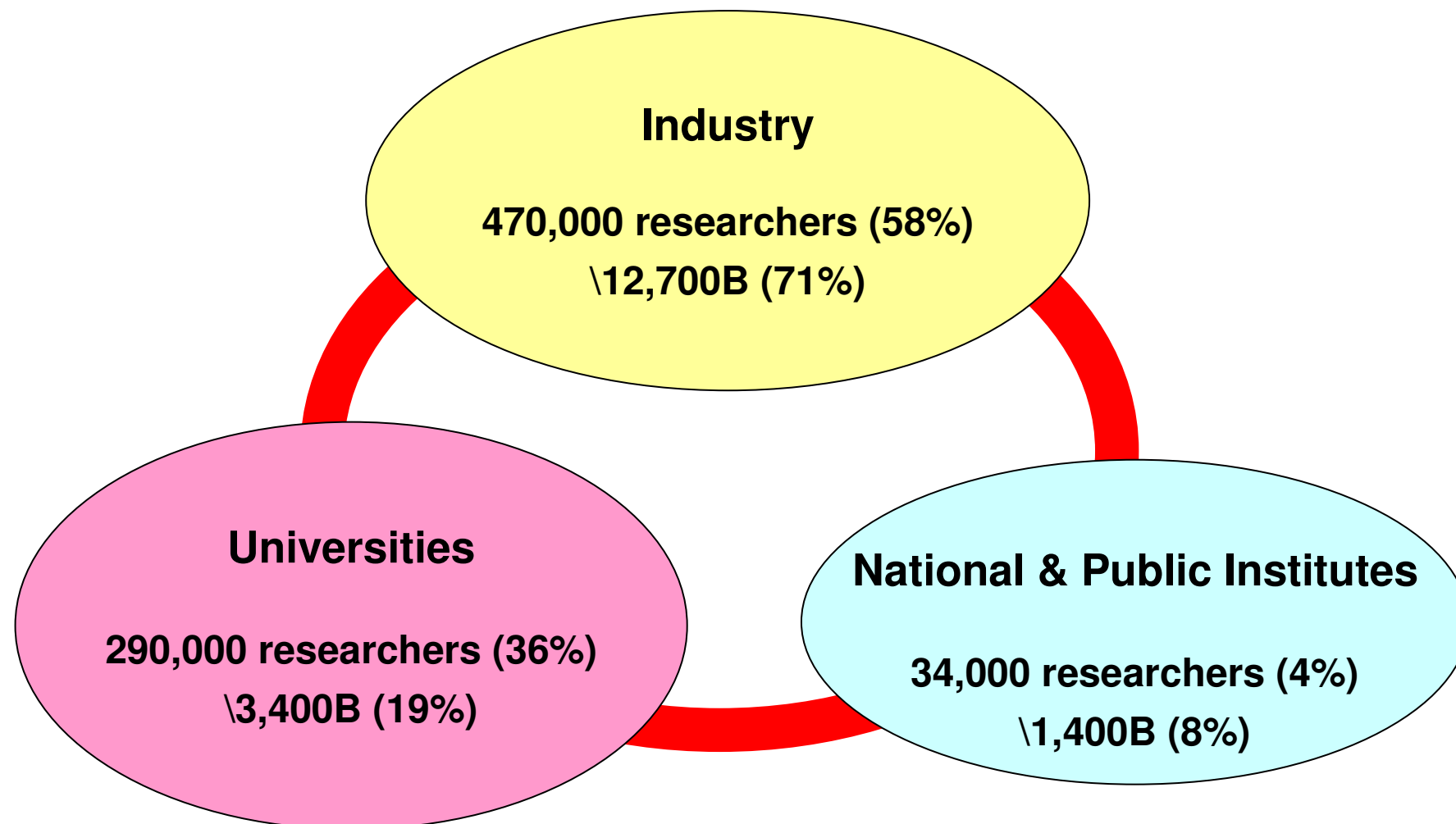
- Construction of research-educational infrastructure
- Arrangement of the intellectual infrastructure
- Creating, protecting and utilizing the intellectual property
- Positive action for standardization
- Arrangement of research and information infrastructure
- Promoting activities of academic conferences
- Promotion of R&D by public research organization

2. Developing science and creating continuous innovation

- Create a competitive environment
- **Strengthen the competitiveness of universities**
- **Strengthen the system that creates innovation (Promoting Cooperative Research & I-U-G Collaboration)**
- **Construction of regional innovation systems and vigorous regions**
- Effective and efficient promotion of R&D
- Removing the institutional/ operational bottlenecks that acts against the promotion of S&T policies

4. Strategically promoting international activities

- Systematic undertakings in international activities
- Cooperation with Asian countries
- Construction of an environment for strengthening international activities and attracting talented foreign researchers



Chronicle

- 1998 “The Law on Promotion of Technology Transfers from Universities to Industry “ = Establishment of TLOs
- 1999 “The Law on Special Measures for Industrial Revitalization”
= Japanese “Bayh-Dole Act”
- 2001 “The 2nd Science and Technology Basic Plan”
- 2002 “The Intellectual Property Basic Law”
- 2004.4 National University Reform
(parts of the government → independent entities)
- 2006 The 3rd Science and Technology Basic Plan
amendment of “The Fundamental Law of Education”
(= re-defining roles of universities)

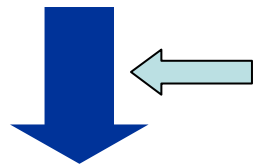
Newly Defined Roles of Universities

- **To make its own policy for collaboration with industry and local communities**
- **To initiate intellectual property cycle (to nourish new knowledge)**
- **To become the core for sustainable development of society and community**

Changed Policy for IP Management

before 2004

:IPRs belong to researchers (individuals) or Government.



contract base, clear responsibility, incentive for researchers, fairness

after 2004

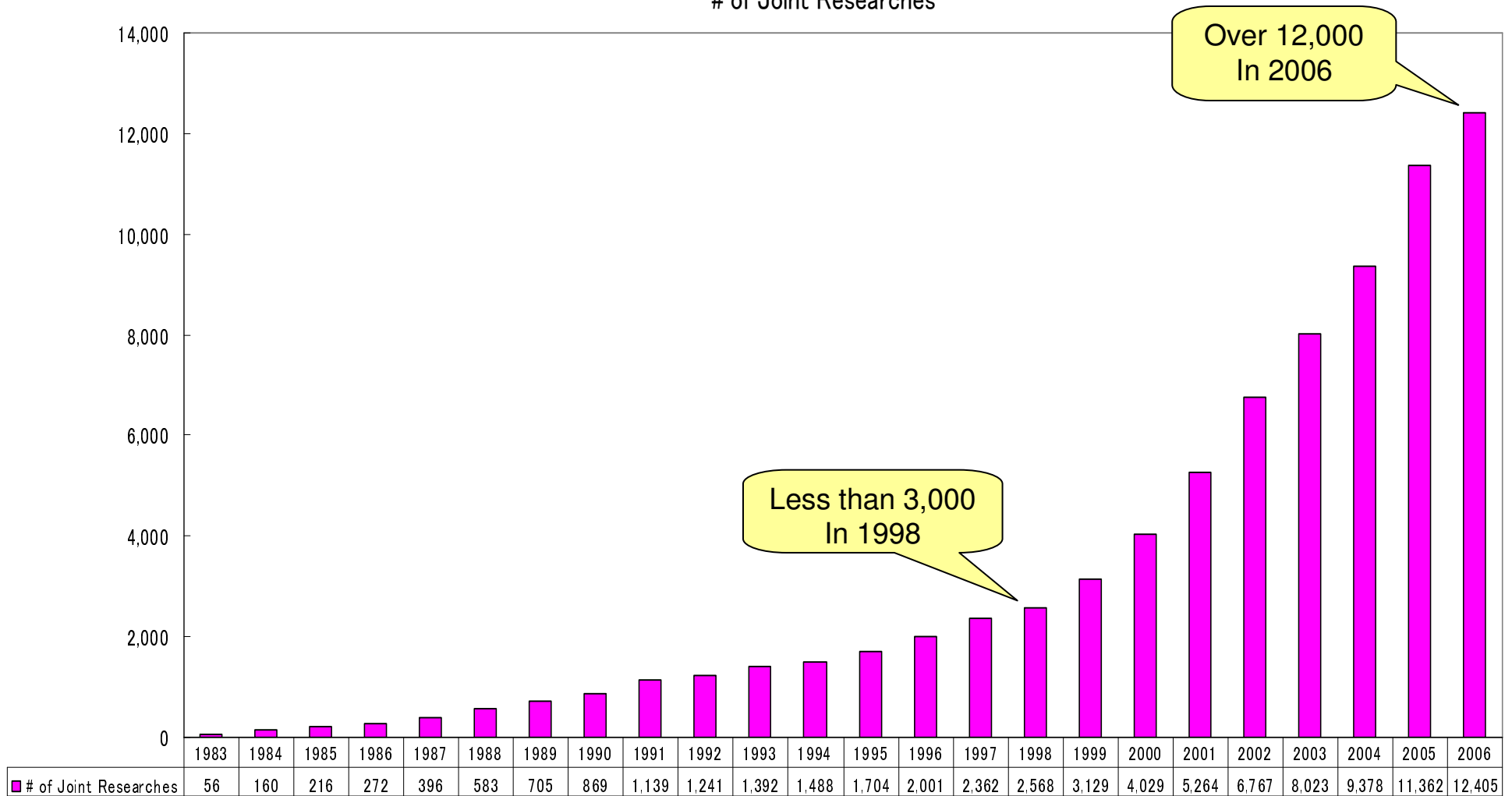
**: IPRs belong to universities
(Universities should manage their own IPRs)**

Improvement in I-U Partnership



of Joint Researches between Industry & National Univ.

of Joint Researches



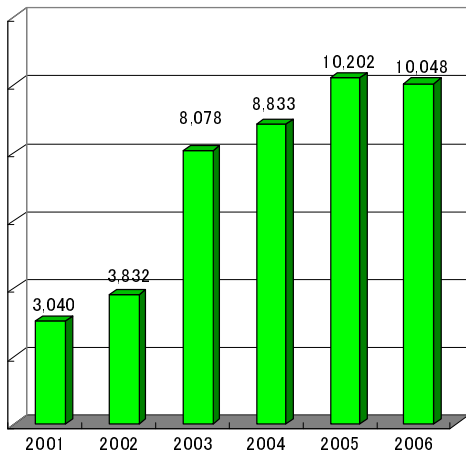
Improvement in Universities' IP activities



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Number of Inventions

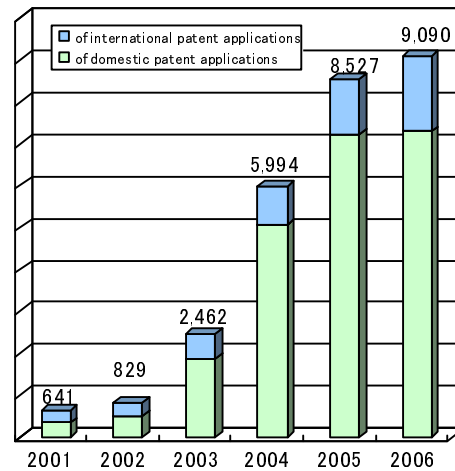
#of inventions of universities



	2003	2004	2005	2006
National Universities	6,787	6,968	7,748	7,796
Public Universities	197	275	594	572
Private Universities	1,094	1,590	1,860	1,680
Total	8,078	8,833	10,202	10,048

Number of Patent Applications

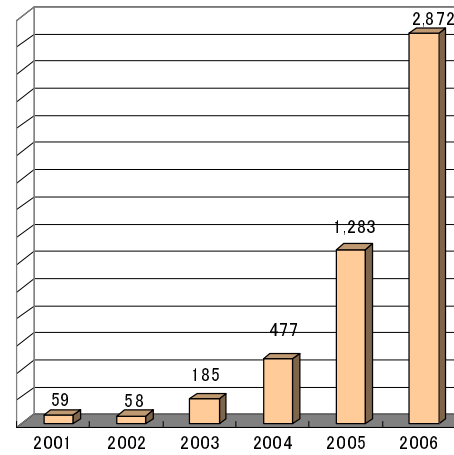
#of patent applications of universities



	2003	2004	2005	2006
National Universities	1,344	4,152	6,255	7,003
Public Universities	67	122	285	369
Private Universities	1,051	1,720	1,987	1,718
Total	2,462	5,994	8,527	9,090

Number of Licenses

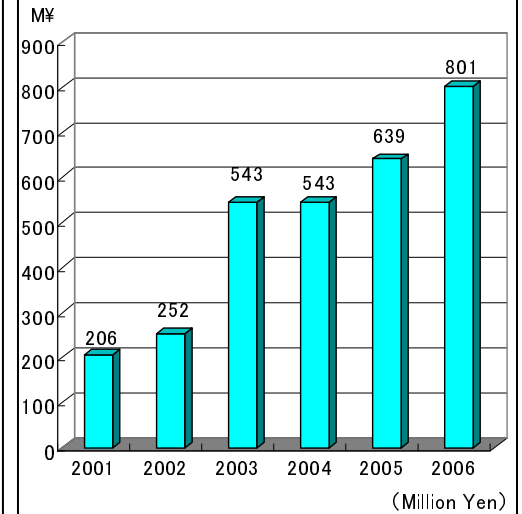
#of licenses of universities



	2003	2004	2005	2006
National Universities	79	223	932	2,026
Public Universities	0	7	34	37
Private Universities	106	247	317	809
Total	185	477	1,283	2,872

License Income

License income of universities

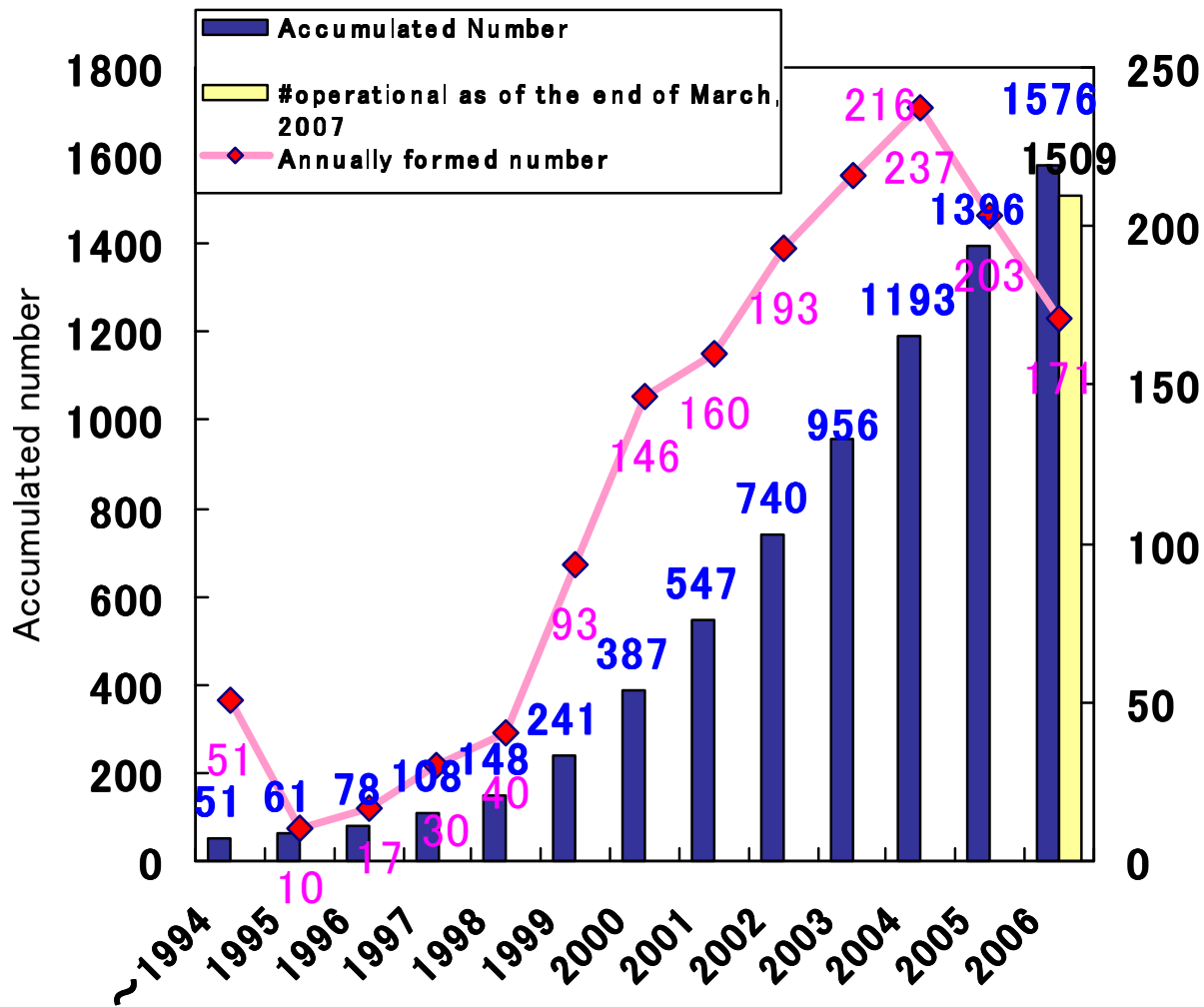


	2003	2004	2005	2006
National Universities	428	416	437	567
Public Universities	0	2	2	18
Private Universities	116	125	200	217
Total	543	542	639	801

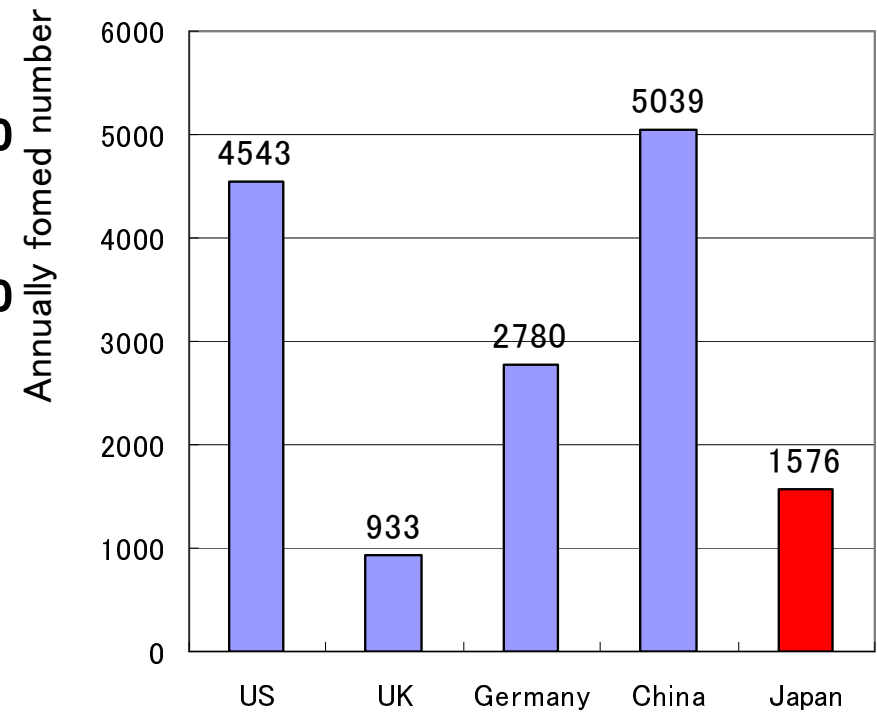
University based Start-ups



University based Start-ups Formed in Japan



Country-by-country comparison



- **To Promote Collaboration**

- **Promote Joint Researches by Matching Funds. (\ 1.8B)**
- **Tax deduction for I/U collaborative research**
- **Dispatch experts to universities for coordination or technical advice. (\ 0.9B)**
- **Hold meetings of university researchers and companies.**

- **To Promote Technology Transfers**

- **Support R&D conducted by university researchers and entrepreneurs who are intended to make start-ups. (\ 3.9B)**
- **Support R&D conducted by companies (inc. start-ups) to whom university technologies are transferred. (\ 5.2B)**

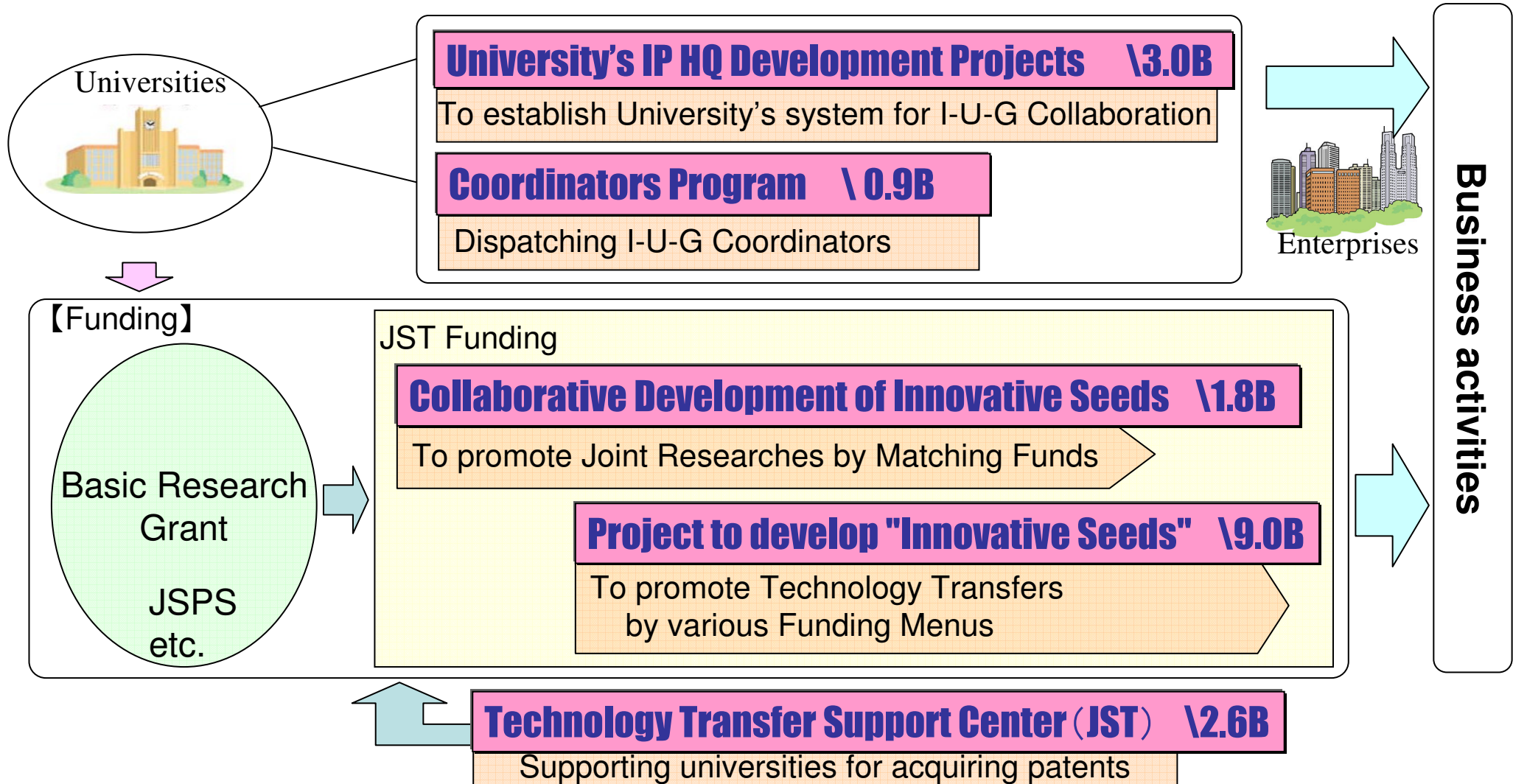
- **To Execute Strategic Plan for Creation, Management and Utilization of Intellectual Property of Universities**

- **Strengthen University Intellectual Property Offices. (\ 3.0B)**
- **Establishment of rules or guidelines for Management of IP including Technology Transfer**
- **Support for Overseas Patent Applications. (\ 2.0B)**

Strengthening Industry-University Partnership



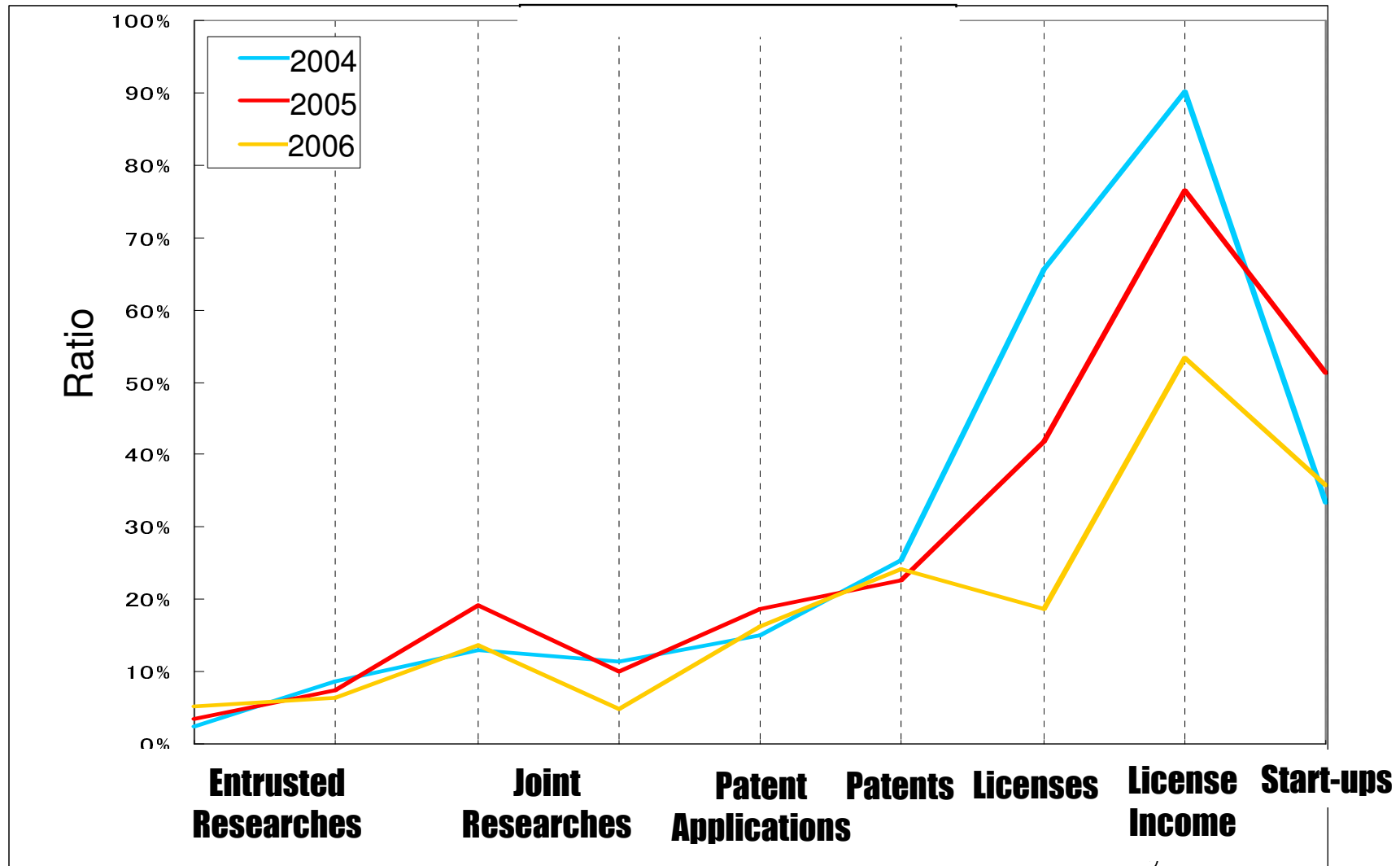
Overview of MEXT's Programs



Evaluation of MEXT's Programs



direct effects of MEXT's programs on all university's activities



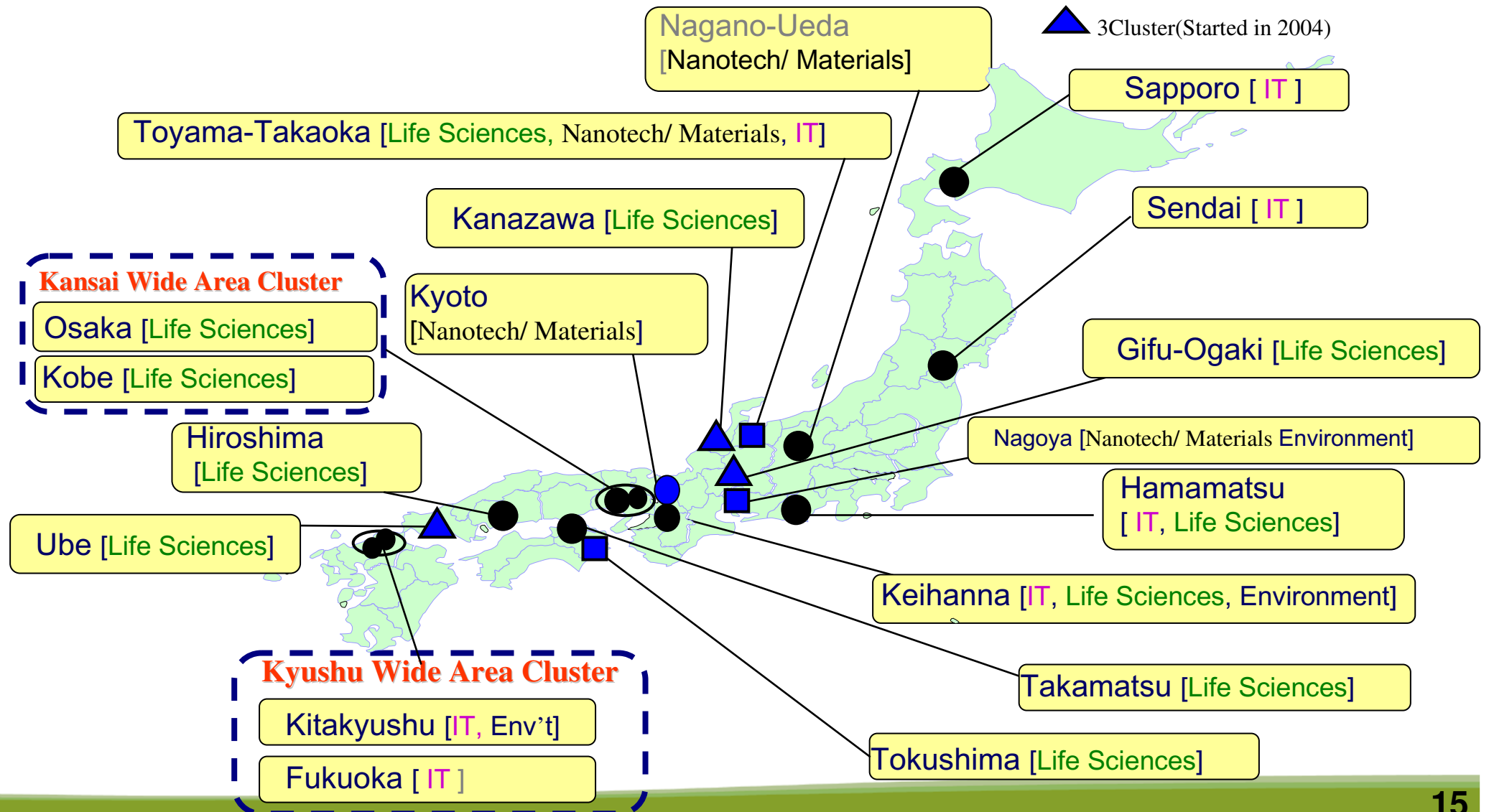
Development of Regional Innovation Systems



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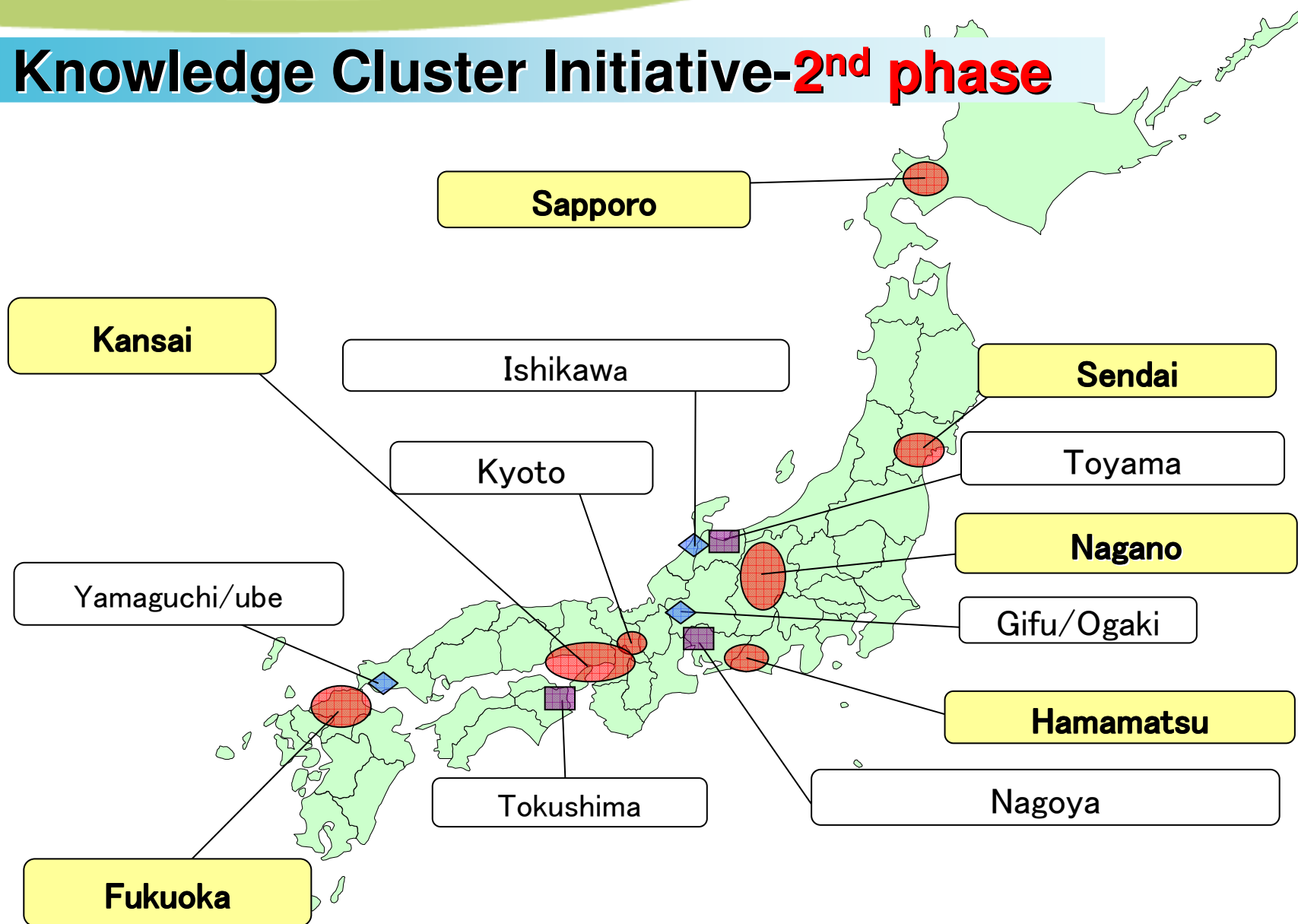
Knowledge Cluster Initiative

- 11Cluster(Started in 2002, end)
- 1Cluster(Started in 2002, active)
- 3Cluster(Started in 2003)
- ▲ 3Cluster(Started in 2004)



Development of Regional Innovation Systems

Knowledge Cluster Initiative-2nd phase



Development of Regional Innovation Systems

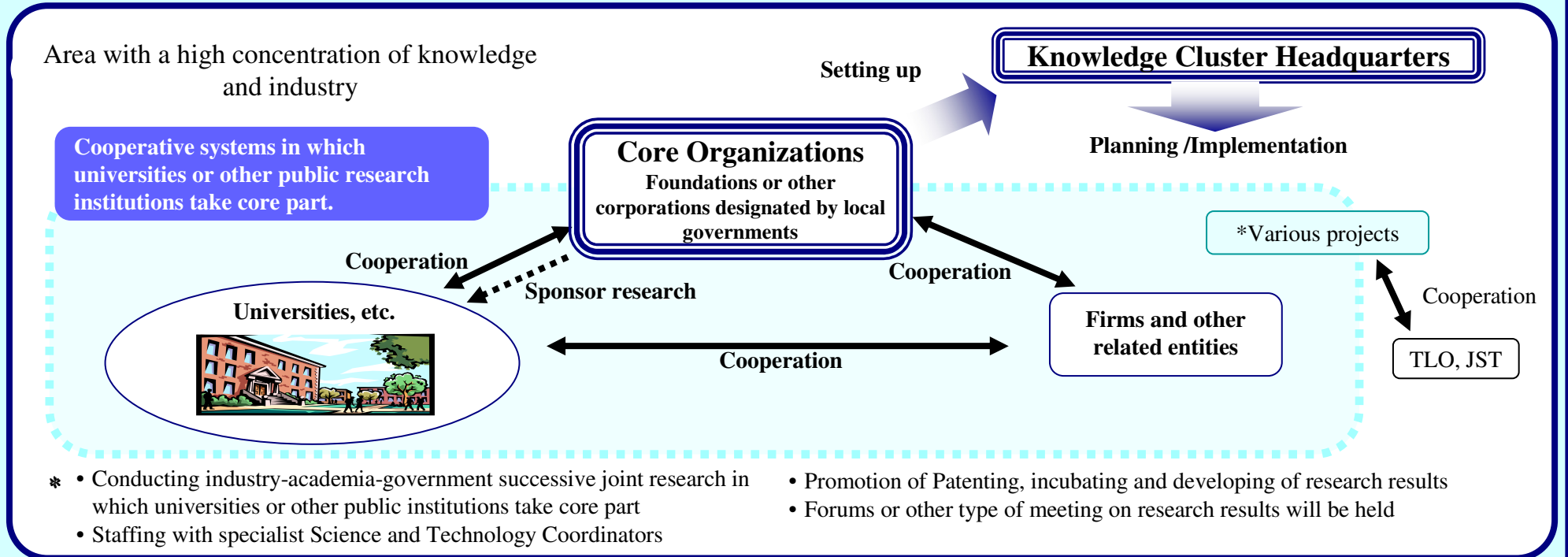
Structures of the Knowledge Cluster Initiative

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selecting areas, evaluation
Funding to core organizations

Cluster Creation Plans of Local Governments

- ◆ Local governments make their own action plans
- ◆ Intensive promotion of various projects for creating Knowledge Clusters
- ◆ Cooperative systems by industry, academia and government in which universities etc. take core part
 - Setting up the Knowledge Cluster Headquarters (Control Tower)
 - Promotion of supporting systems by S&T coordinators etc.



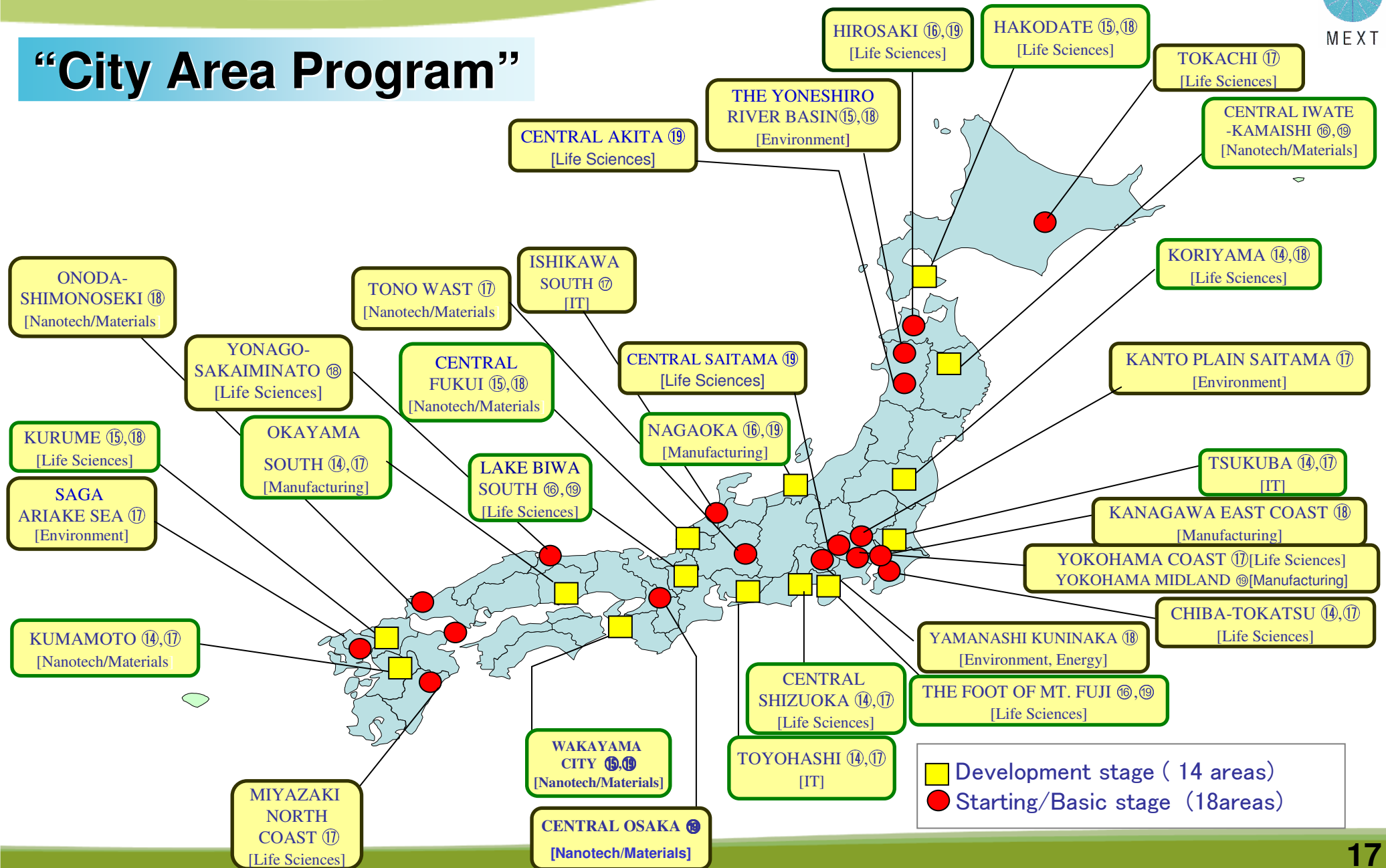
Knowledge Cluster Initiative will positively cooperate with other relevant projects like the Industrial Cluster Project of the Ministry of Economy, Trade and Industry (METI).

Development of Regional Innovation Systems



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“City Area Program”



Achievement of Regional Programs (2002-2005)

1. Developed Industry-academia-government collaboration networks in regions

⇒ 3764 (1316 from industry) researchers participated in industry-academia-government collaborations

2. Produced large number of technology seeds

⇒ Patent applications : 1928 (Domestic) 272 (Overseas)

⇒ 800 seeds led to commercialization, trial products, or venture-startups

- **More Licensing, More Technology Transfer**

⇒ Deepen I-U Partnership
in order to make university's "wisdom" available to the public.

● Japanese Companies provided
2,700B\ to foreign univ. (300%)

⇒ need Strategic Partnership

900B\ to Japanese univ.

- **More Entrepreneurship**

⇒ fostering Start-ups, human resource development

● Japanese Universities received
2B\ from foreign companies (0.2%!!)

in 2005

⇒ cultivating new R&D fields,

in order to make the society more innovative

- **Responding to Globalization**

⇒ Strengthen International activities and capability
(technology transfer, patents, etc.)

Thank you for your attention

We are ready to provide more information

<http://www.mext.go.jp>

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