AIST Innovation Strategy

Junji ITOH
Vice-President ／Innovation Architect

National Institute of
Advanced Industrial Science and Technology

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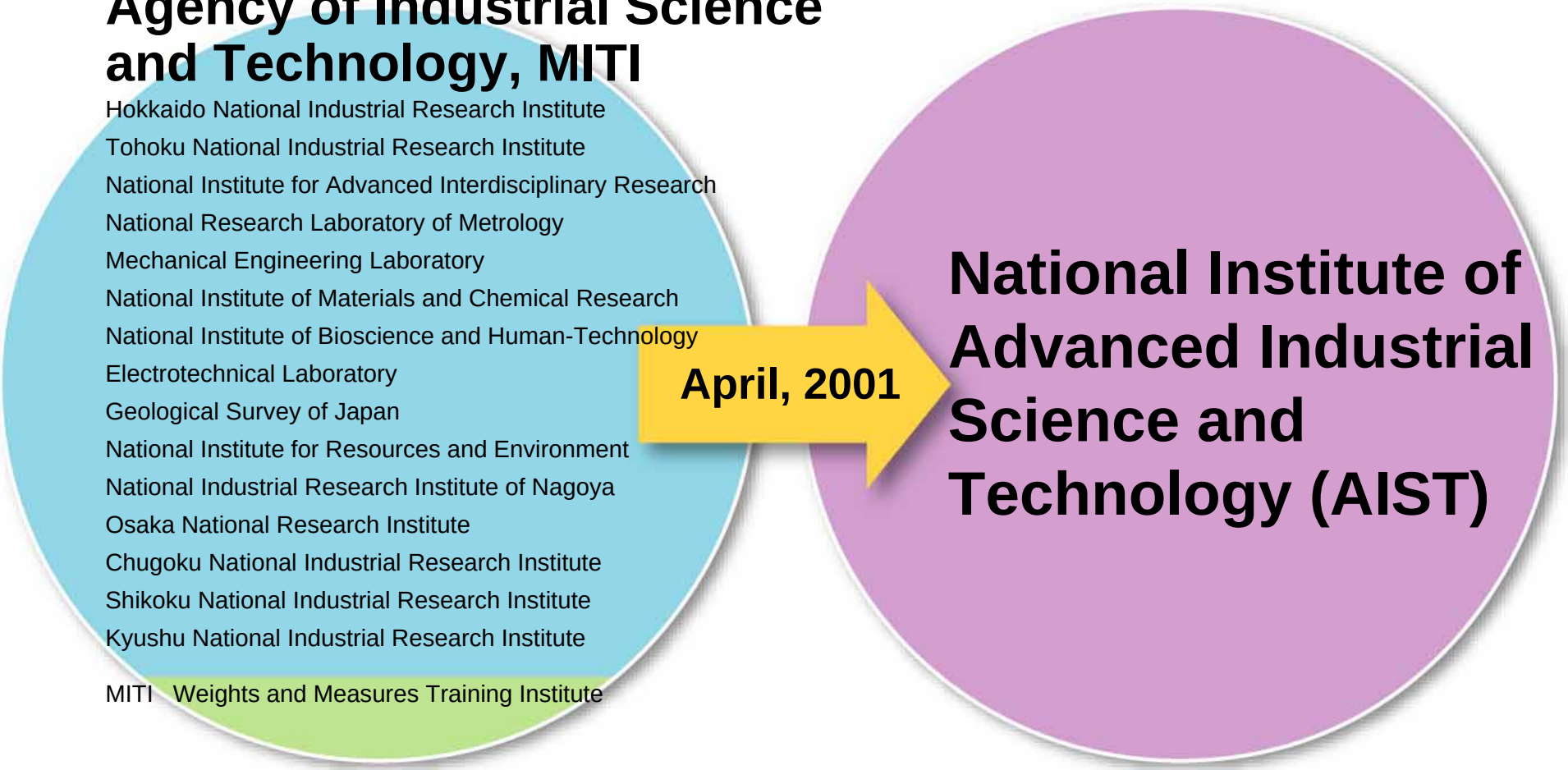
2. Innovation Hub Strategy
3. System for Practice
4. Best Practices between AIST, Industry, Education and local authorities

1.Outline of the National Institute of Advanced Industrial Science and Technology (AIST)

16 Institutes Integrated and Reorganized into One Institute



About the National Institute of Advanced Industrial Science and Technology (AIST)

National Institute of Advanced Industrial Science and Technology (AIST), established in 1876 was reorganized as an independent administrative institution after the integration of 15 research institutes under the Ministry of Economy, Trade and Industry in 2001.

AIST is the largest research organization in the area of industrial science and technology in Japan, covering field of and multi-disciplinary competence in “Life Sciences & Technology”, “Information Technology & Electronics”, “Nanotechnology, Materials & Manufacturing”, “Environment & Energy” and “Geological Survey & Applied Geoscience” and “Metrology & Measurement Technology”.

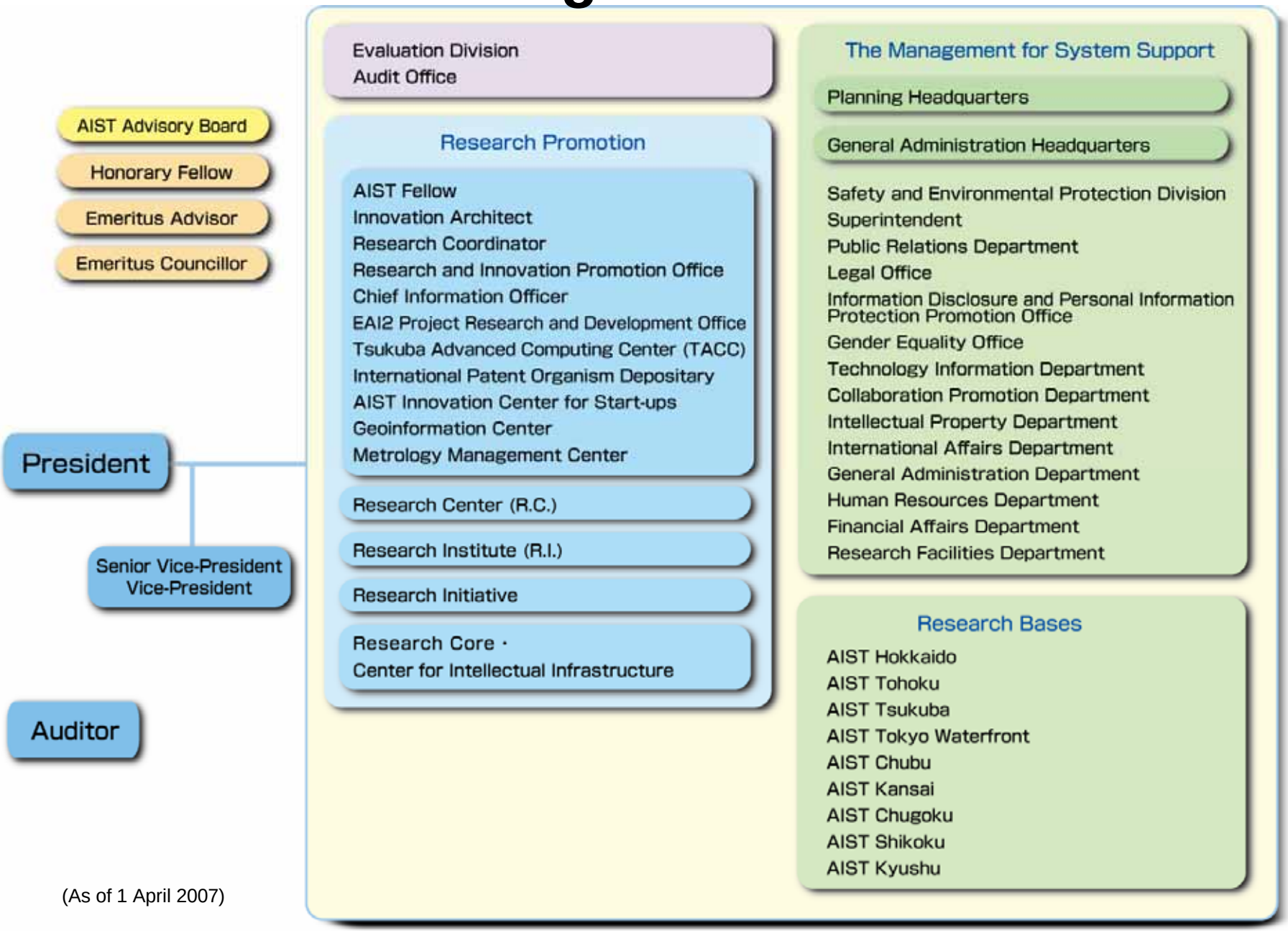
With around 3,200 employees (plus over 5,500 visiting researchers), AIST conducts “Full Research” ranging from the basic to the applied and the industrialization stage, with the intention of being an “Innovation Hub”, bringing together academia, industry, and government, to contribute to the realization of a sustainable society.

Our Mission

We will make our contributions:

- Realizing sustainable society
- Strengthening competitiveness of industries
  (Strengthening our function as an innovation hub)
- Implementing industrial policies to the regional economy
- Planning industrial technology policy

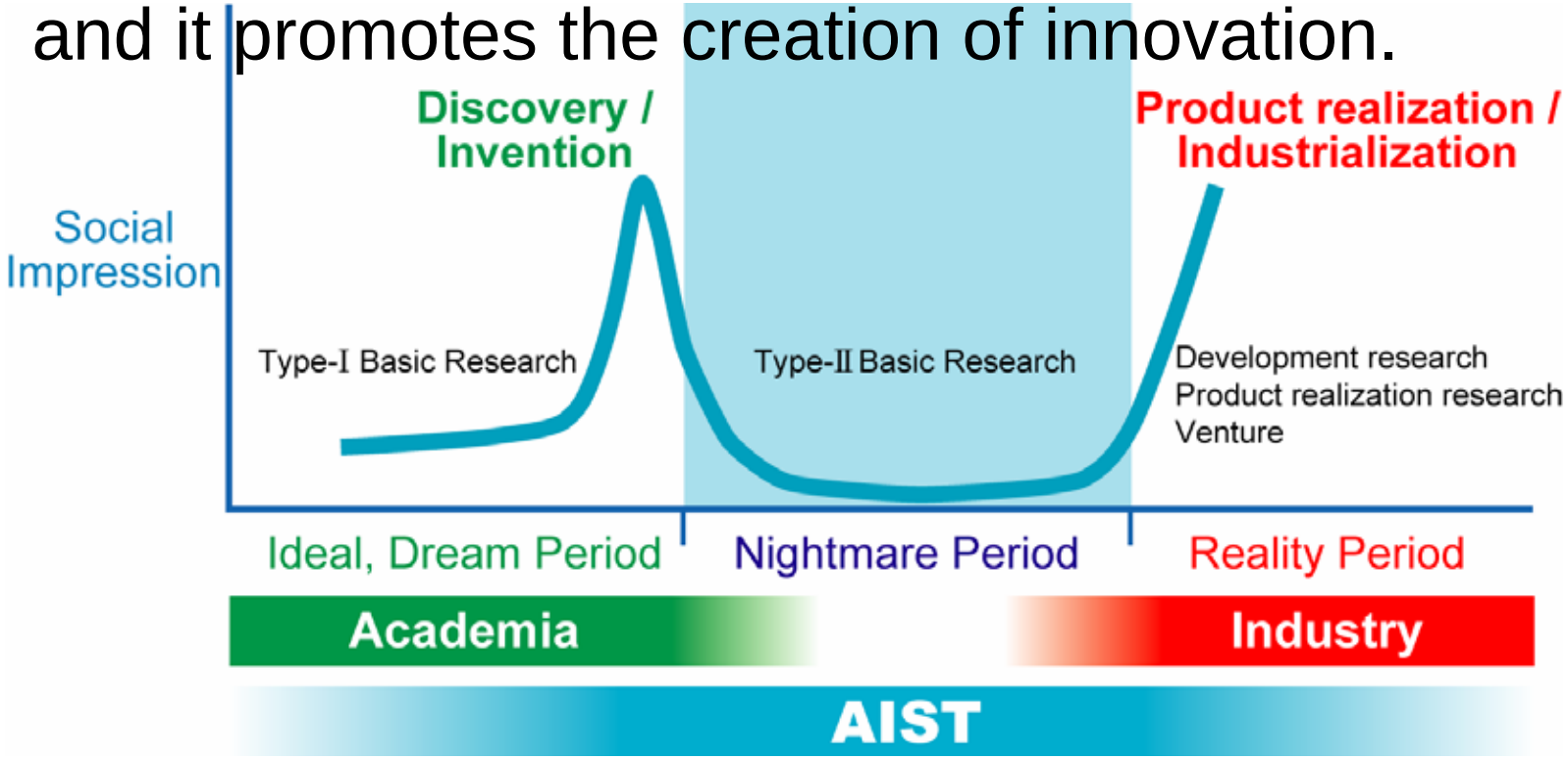
AIST Organization Chart



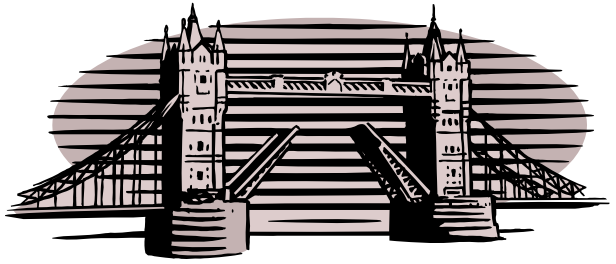
(As of 1 April 2007)

“Full Research” from Basic Research to Product Realization

- AIST plays the role of mediator between academia and industry through “Full Research,” and it promotes the creation of innovation.



2. Innovation Hub Strategy

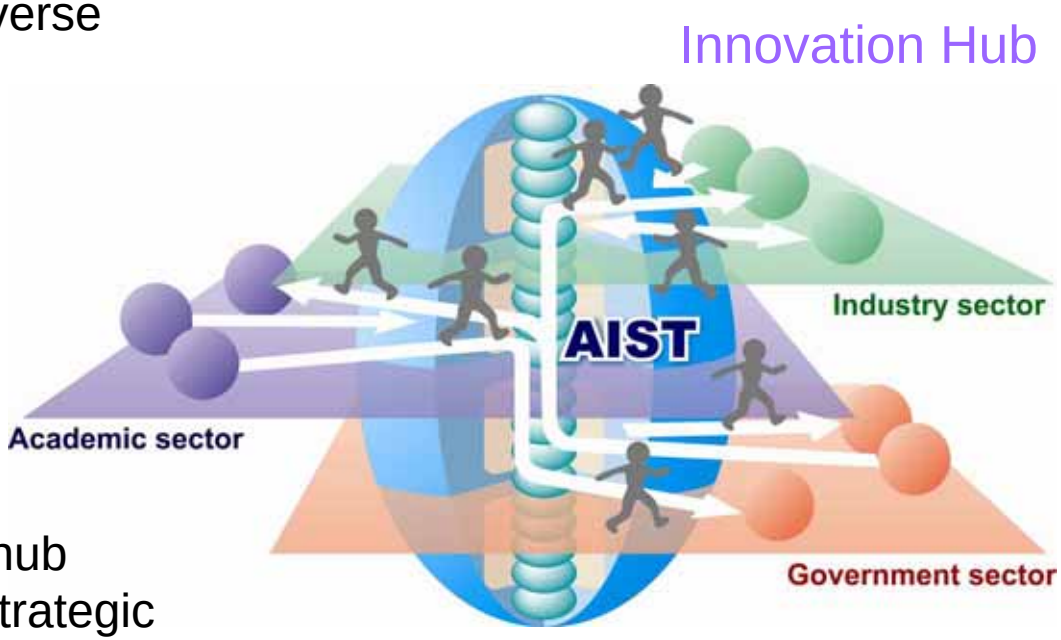


Innovation Hub Strategy

Flow and Stock

◆ Flow
"The flow" of technology among diverse sectors promoting innovation.

◆ Stock
"The Stock" of Intellectual Property attracts the new flow.

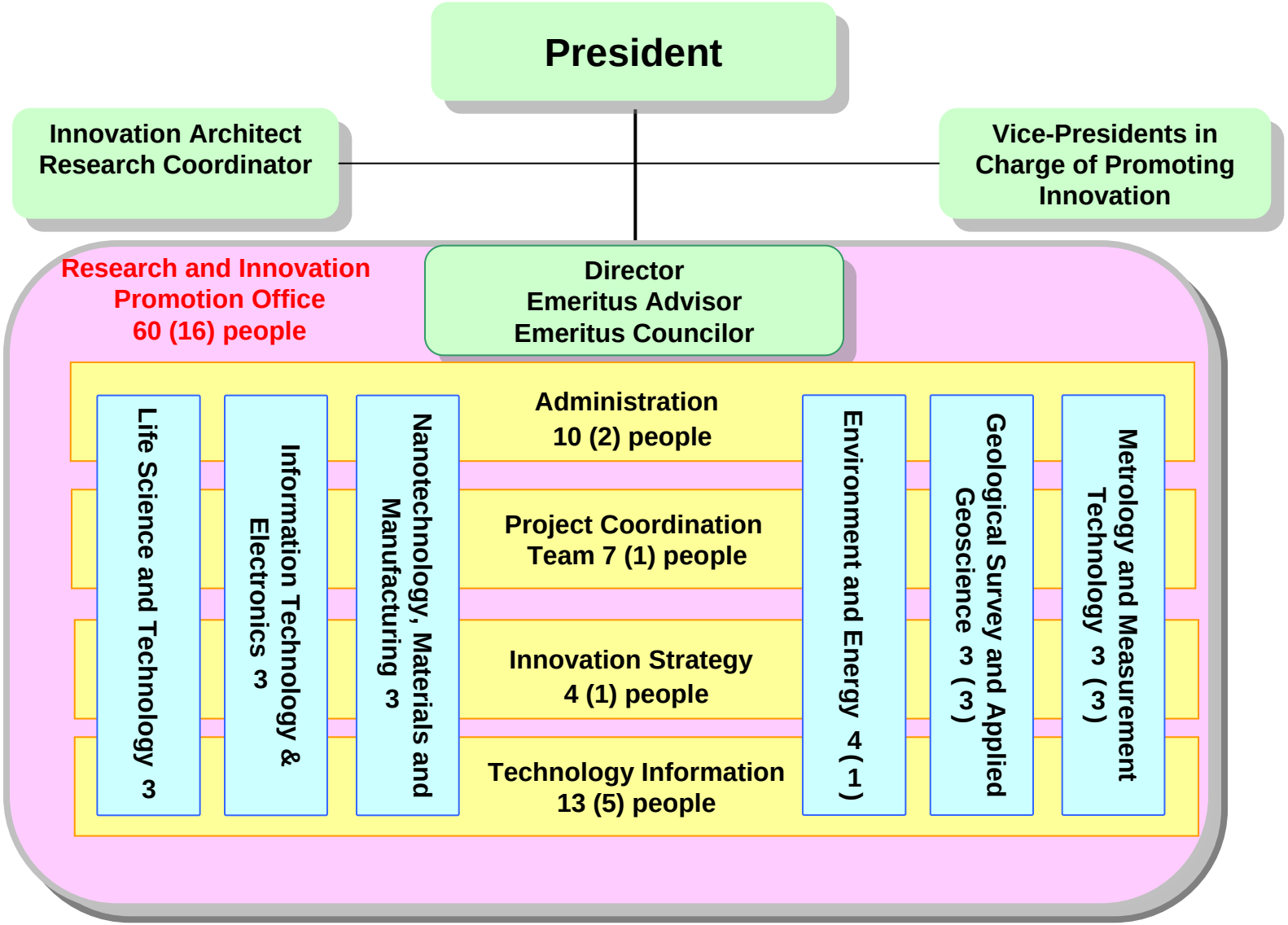


(Strategy of Innovation Hub)

AIST's function as the innovation hub consists of the implementation of strategic managements to make "the flow" and "the stock".

3. System for Practice

Research and Innovation Promotion Office



As of July 11, 2008　　※ Figures in parenthesis indicate number of people in additional post.

- **Section under Direct Control of President**
- **6 Teams for Various Disciplines and 4 Interdisciplinary Teams**

Roll & System of Collaboration Promotion Dept

Interface with Outside AIST

R & D	Joint Research	Commissioned Research	Comprehensive Cooperation Agreement	
Technology Transfer	Licensing Alienation of IPR	Technical Training	Technical Consultation	Lab Tour
Sending Staff	Commission of Delegate	Commissioned Business Trip	Mediating Side Job	
Accepting Researcher	Visiting Researcher	Postdoctoral Fellow		
Others	Cooperative Graduate School	Accepting Grant	Examination Proofreading Service (NMIJ)	
	Industrial Collaboration Promotion Board	Accepting Donation	Requested Examination & Analysis	

Spread of Outcome
(Part of AIST's major missions)

Overview of Collaboration Strategy

Specific Action Plan (New Collaboration Model: Industries, Academia and Government)

Collaboration with Industries

Project-Driven
Nat'l project, Centralized lab, Industrial Transformation Res Initiative

Co-producing Roadmap
Partnership with large corporation, Dialogue with Management, Steering Committee

Sharing Portfolio
Sharing exits of R&D

Providing Solution
Sharing scenario, Environment Field

Interdisciplinary Alliance
Bio-Medical Eng, Potential of All AIST

Collaboration with Region/SME

Networking Regions
Industrial Cluster

New Industry Creation Forum
"Five-senses" Forum, AIST Consortium

Collab with Trading Firm & Bank
Finding high-tech oriented SME

Product Realization at SME
R&D Fund for Supporting Regional SME
More than 40% have been commercialized.

Research Base
e.g. Shikoku Region

Developing Human Resource for Industrial Technology
HRD under the agreement with univs and companies

Conversation and Commitment

Wide Area Collab on Techno-Infrastructure
Geological Survey

Collaboration with Municipalities

Collaboration with Universities and Public Research Institutions / Developing and Exchanging Human Resources

Introduction of New Incubation System :"Task Force"

SA: Start-ups Advisor

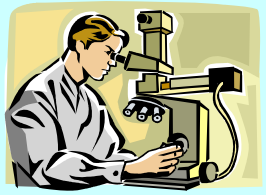
(Business Expert)

The SA probes technical potentials in preparatory stage

Probing

SA

Researchers Community (AIST)



Task Force

(2 years Incubation)

- R&D
- Business Plan Making
- Marketing
- IP Strategy

HTSU

CEO
CTO
IP

R&D Funds by INCS

HTSU: High-tech start-ups

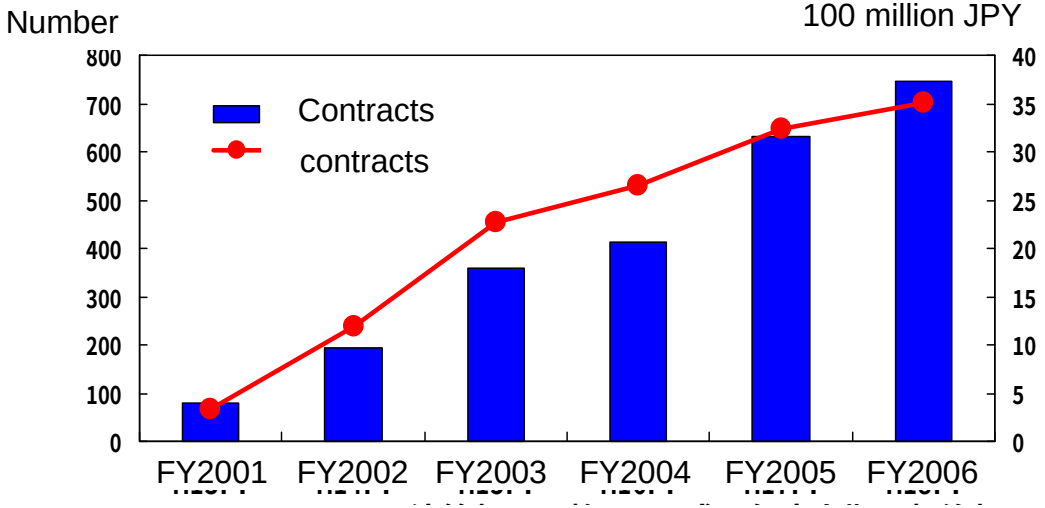
4. Best Practices between AIST, Industry, Education and local authorities

Increase of Commissioned Research Fund from Companies

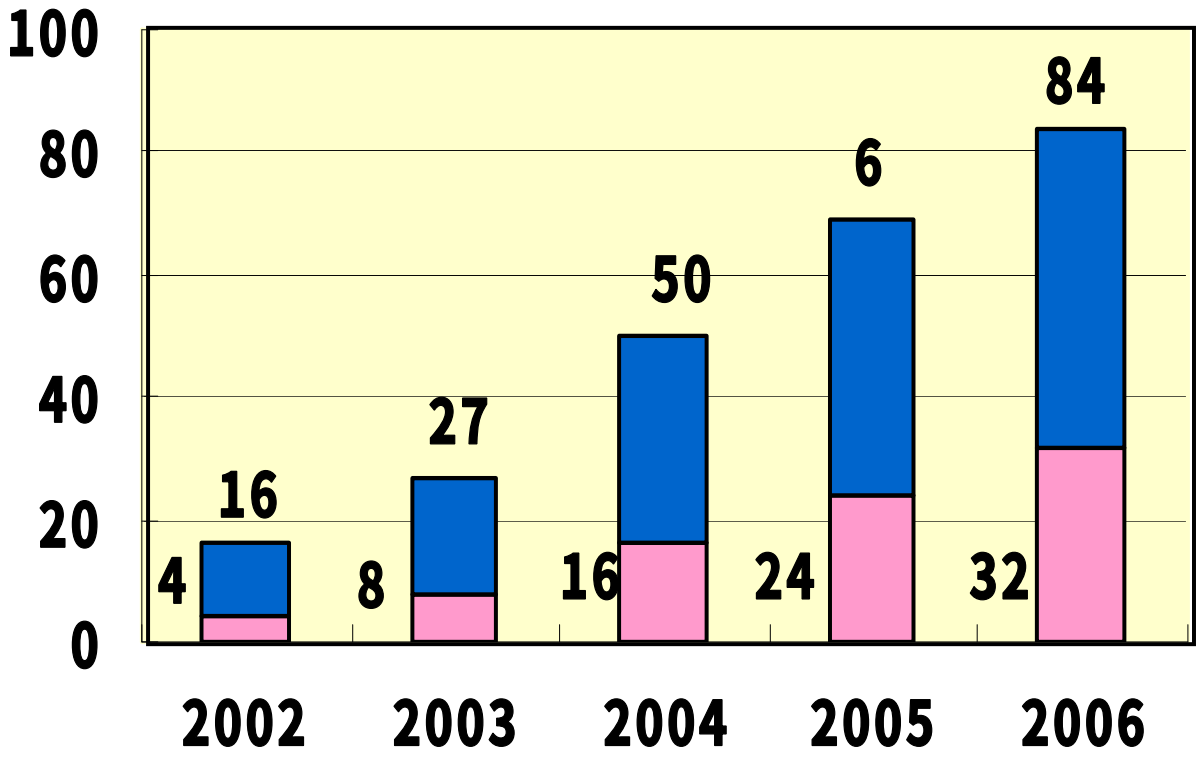
		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Commissioned Research	contracts	78	131	145	116	113	112
	budget	334 million	898 million	1227 million	1047 million	774 million	757 million
Joint Research with Research Funding	contracts	-	64	214	296	519	633
	budget	-	287 million	1050 million	1607 million	2462 million	2749 million
Total	contracts	78	195	359	412	632	745
	budget	334 million	1185 million	2277 million	2654 million	3238 million	3505 million

※Including Foreign

※ Data of FY2006 is contract price

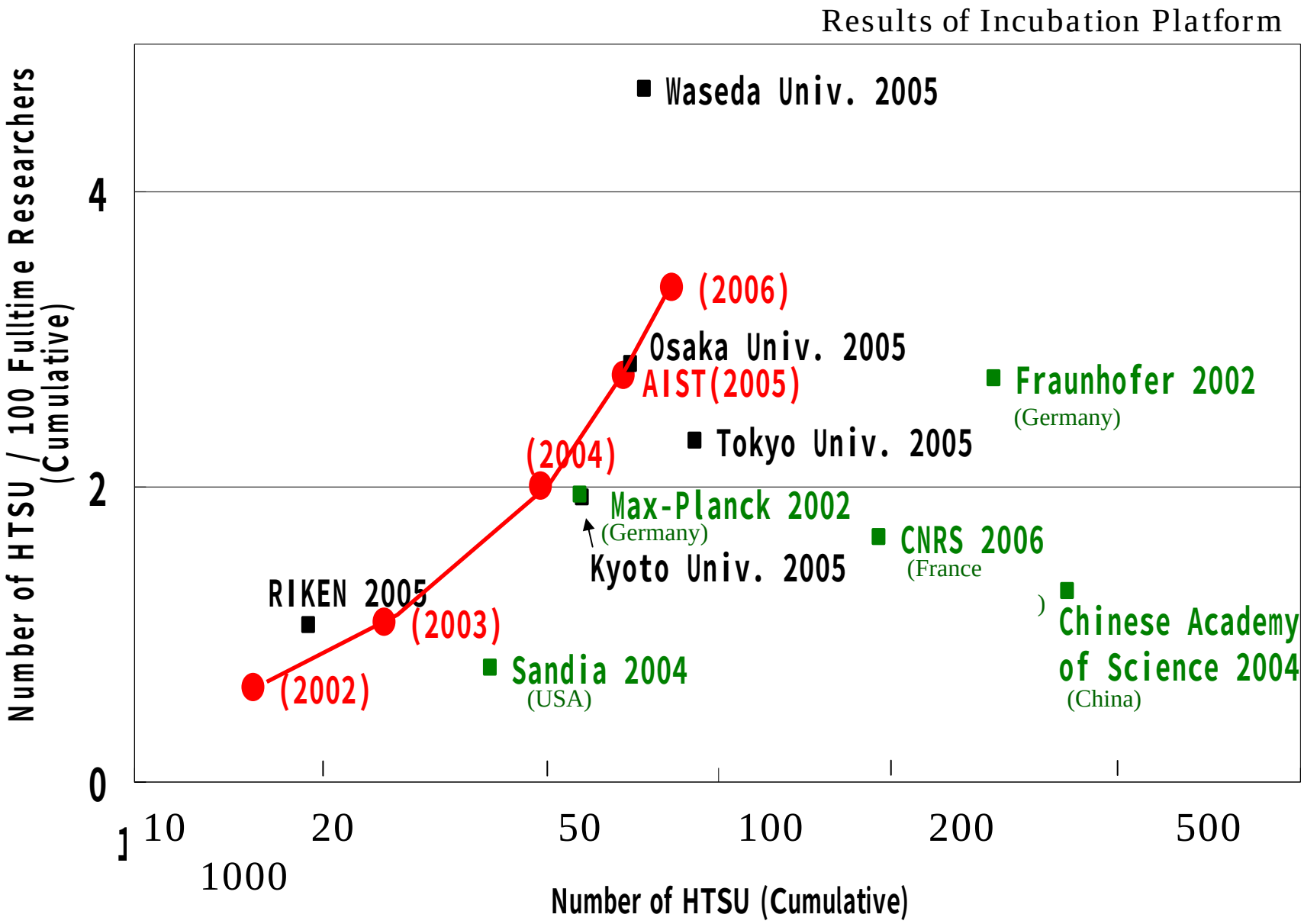


Number of AIST HTSU and TF-based HTSU

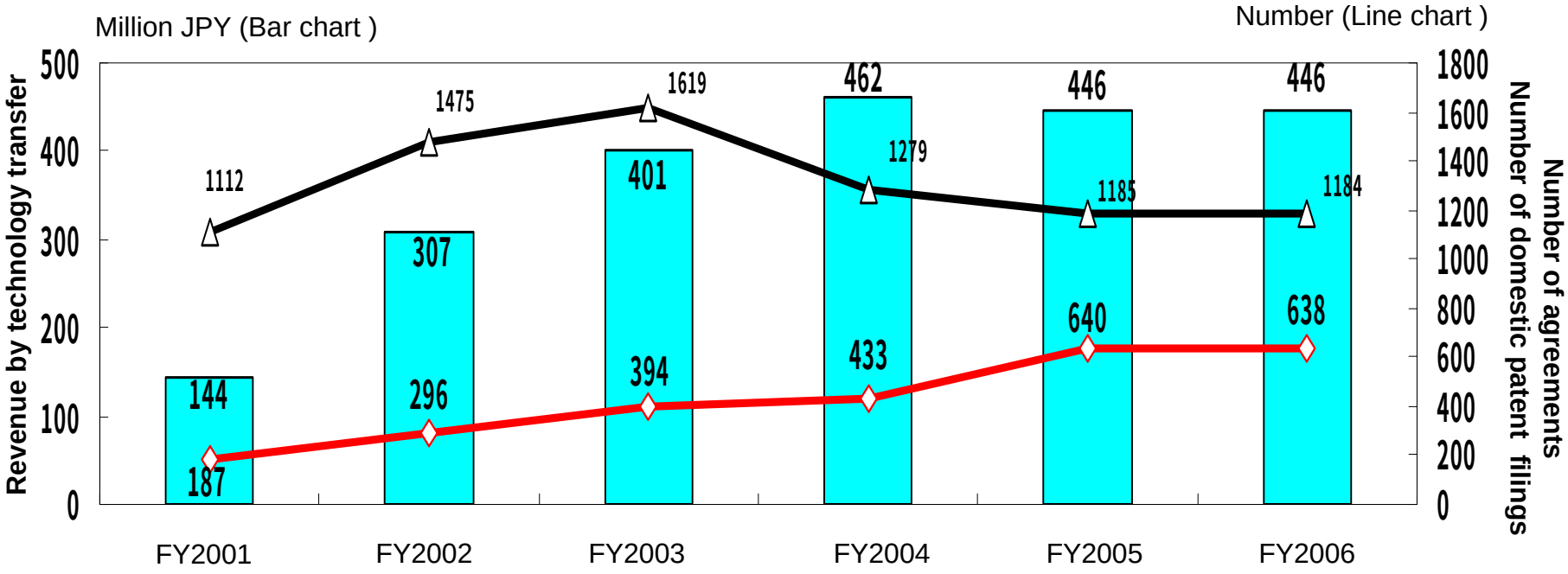


HTSU :
High-tech start-ups

Benchmark Comparison of HTSU Incubation



Number of Patent Filings, Technology Transfer Agreements, and Amount of Royalties



Example of High-tech Manufacturing

AntiFreeze Protein (AFP)

Selection of source material of AFP

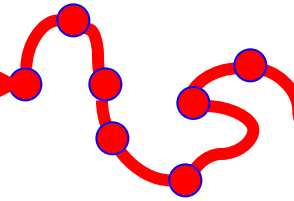
Vegetables

Fish

Insects

Fungi

Selections of procedures



We developed AFP mass-preparation technique employing only the procedures (indicated as ●) with low cost, low manpower, and high yield.

Development of a super low-cost high-efficiency refining method (production of high purity 100g minimum unit and low purity 1kg minimum unit is currently possible.)

AntiFreeze Protein (AFP)

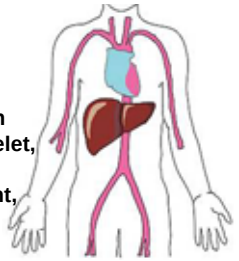
Until now, there was no technology that could steadily produce a large quantity of AFP.

Research for product realization

To create a new energy saving technology

Long-term high-quality frozen food

Cell conservation, cell transplant, regenerative medicine



The improvement of preservation technology for blood, blood platelet, ES cell, vaccine, sperm ovum, embryo, diagnostic drug, reagent, bioactive substance and others

Freezing technology at elevated temperature (new food product)

Technology for thermal storage at low temperature, technology for "ice slurry" transport, and freeze-concentration technology

This is a study of application of AFP to industry, medicine, and various other fields by using the world's first technology for mass-producing AFP. Development of freeze acceleration materials utilizing AFP will reduce energy consumption. AFP-containing cell preservation fluid is 10 times more effective than conventional fluid. These developments are in progress.

The effect of energy saving in this field : Approximately 500million kWh per year (Reduction of approximately 190 thousand tons of CO_2 output per year)

Example of IP Integration

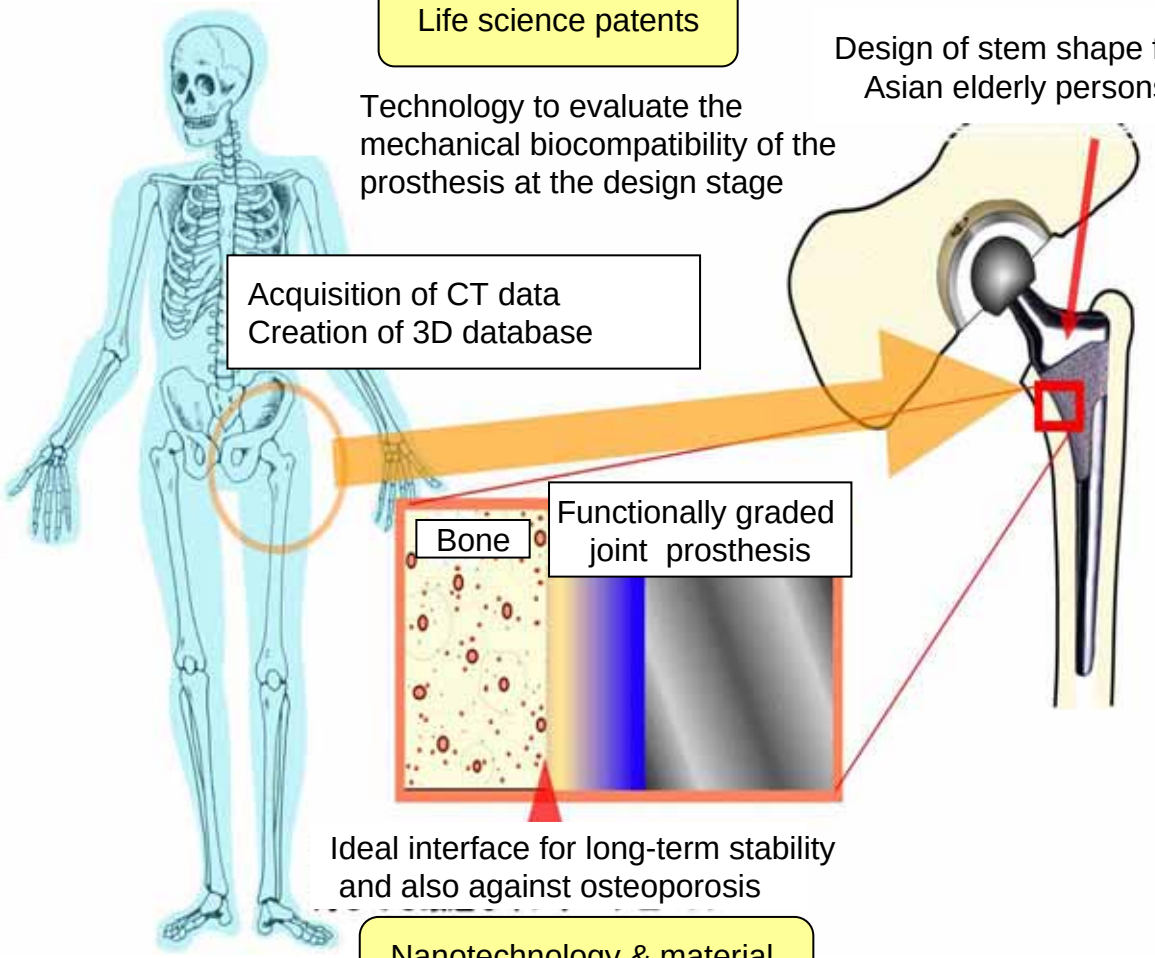
Cementless Joint Prosthesis for Asian Elderly Patients

Life science patents

Technology to evaluate the mechanical biocompatibility of the prosthesis at the design stage

Design of stem shape for Asian elderly persons

Acquisition of CT data
Creation of 3D database



Ideal interface for long-term stability and also against osteoporosis

Nanotechnology & material technology patents

1 Construction of bone database for stem design
2 Establishment of technology to evaluate the mechanical biocompatibility of prosthesis
- Institute for Human Science and Biomedical Engineering
- Measurement Solution Research Center

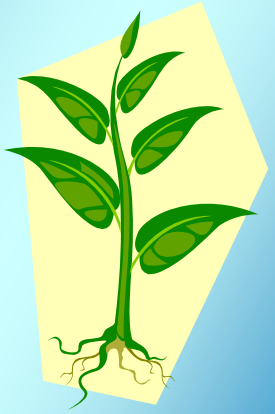
3 Creation of material for functionally graded implant
- Advanced Manufacturing Research Institute

4 Production and evaluation of bone quality improvement agent
- Nanotechnology Research Institute
- Institute for Human Science and Biomedical Engineering

Example of AIST Industrial Transformation Research Initiative

In order for safer and environmentally-conscious cultivation of genetically modified plants, which serve as sources of drugs such as interferon, we have developed the totally-enclosed cultivation system for the genetically modified plants. This “Genome-based Biofactory” will facilitate joint efforts with private companies (Nippon Paper Group, Inc., The Kitasato Institute, Hokkai Sankyo Co., Ltd.) to establish the novel manufacturing industries.

Genetically modified plants expressing animals genes
(tobacco, strawberry, rice)



Open-air cultivation is unfavorable or prohibited

AIST Hokkaido

Corporate Researchers

Development of totally-enclosed plant cultivation system

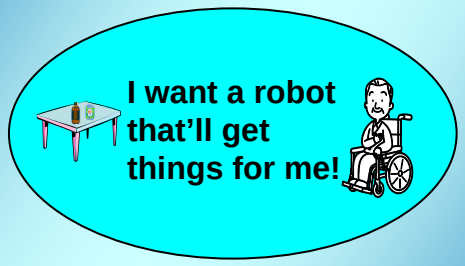
Production of pharmaceutical raw materials by cultivating genetically modified plants

Production of drugs such as interferon in fruits

Example of AIST Industrial Transformation Research Initiative

Robots that can meet diverse user demands are developed using robot middleware developed as global standard under leadership of AIST. This will be applied to create modules for various demands and to develop standard system. This is geared to transform the robot industry.

- High expectation for robots
- Diverse user demands

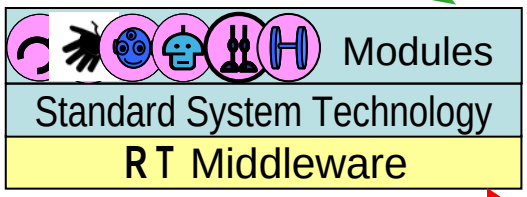


- Accumulation of advanced robot technology in Japan, the leader in this field

Can't develop robots that can meet diverse demands

University, company

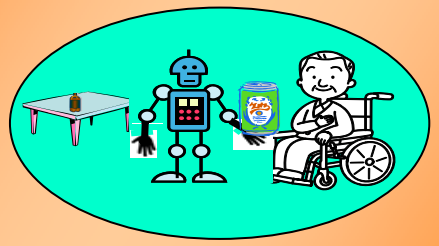
Join in development

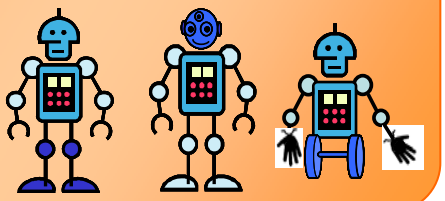


User Centered Robot Open Architecture

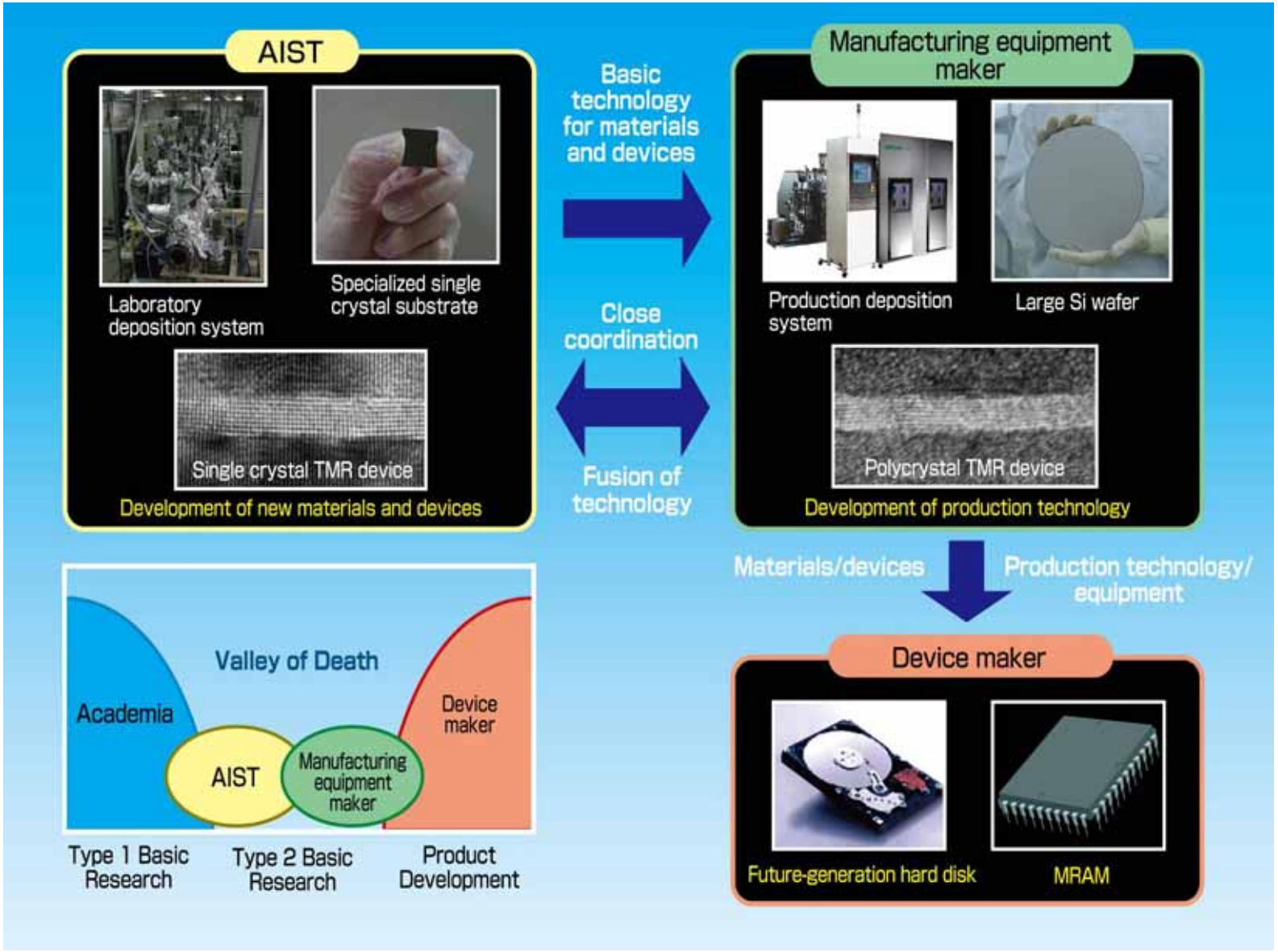
Development of standard system technology based on global middleware

Robots that can meet diverse user demands can be developed





Example of Collaboration Research Based on Matching Fund Support Scheme



Thank You