

AIST Management Policy and Research Strategy

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Expanding our multilayered research network



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and have developed the concept of “Full Research.” Under this concept, we engage in “Type 2 Basic Research” while undertaking “Type 1 Basic Research,” and developing the project all the way to “Product Realization Research” concurrently and continuously. This system allows researchers from different backgrounds to solve specific research issues.

In the future, I hope our Full Research concept will develop to become a model for basic research as well as industrial technology research in Japan. This can be expected both for the contents of research and the people who engage in research.

In April 2005, AIST, as an independent administrative institution started to run with nongovernment officialism. Now, the staff members and researchers are no longer government officers, so diverse employment patterns and work styles are available. This allows each researcher to work in a manner that brings out his/her best, which in turn, will promote research activities.

AIST plays the role of a mediator, an innovation hub, to bring together academia and industry through the integration of human resources, systems, and organizations. AIST advances Full Research through the multilayered network of research sectors, regions, and countries, as well as among industry, academia, and government. I believe AIST can contribute significantly to the society through this role.

This pamphlet summarizes the management policy and research strategy of AIST. It is important for us that people understand the AIST management system so that we can strengthen the function as an innovation hub.

Our society has reached a consensus that the conflict between the continued development of industries and the preservation of the earth's environment must be solved by mobilizing the forces of science and technology. Achievement of a sustainable society has become a common issue for humankind. The sustainable society, however, cannot be achieved by scientific research and technological development alone. It must be accomplished by changing the human activities we engage in everyday. It can be achieved only by transforming the actual industrial activities.

Therefore, we set forth the fundamental goals of the National Institute of Advanced Industrial Science and Technology (AIST) as follows:

- (1) To improve our society by advancing industrial science and technology in Japan
- (2) To strengthen the international competitiveness of the Japanese industry
- (3) To achieve a sustainable society

AIST entered the Second Mid-term Goal Period (the Second Period in April 2005). Since AIST had been established in April 2001, we have worked diligently on promoting an effective research methodology for industrial science and technology,

AIST Management Policy and Research Strategy

This pamphlet explains the Management Policy of AIST, the largest public research organization in Japan. It also describes the Research Strategy for the Second Mid-term Goal Period that will serve as a basis for AIST's role as an "innovation hub."

Management Policy

Basic principle of AIST

- **Contribution to society through the advancement of industrial technology**

AIST will work toward a sustainable society by taking a leadership role in industrial technology innovations in Japan.

Mission

- **Contribution to a sustainable society**

AIST strategically engages in research and development to provide a high-quality, safe, and sound life where people can coexist with nature.

- **Contribution to industrial competitiveness**

AIST transforms the structure of Japanese industries and strengthens the industrial competitiveness through innovations in industrial technology by enhancement of its function as the innovation hub.

- **Contribution to local industrial development**

AIST engages in world level research and development using local technological resources. It also helps the local industrial technology by strengthening the cooperation among local industries, academia, and governments.

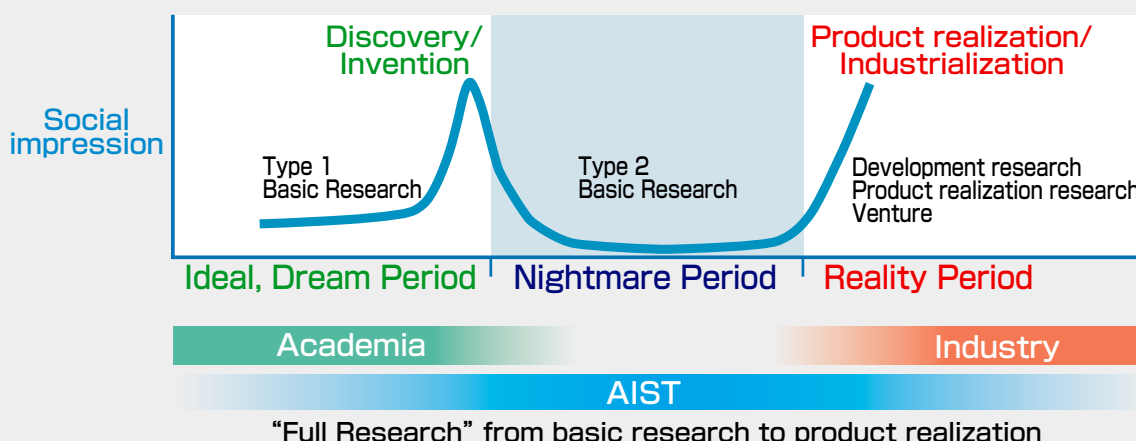
- **Contribution to industrial technology policies**

AIST identifies research and development issues to be undertaken by the Japanese government, by understanding and analyzing the environment of the industrial technology, and then proposes policies about mid- and long-term industrial technology strategies.

New research methodology

- **Advancement of "Full Research"**

Novel results are created through selection, integration, and application of knowledge accumulated by discovery and invention. This process of researches is called "Full Research," a unique and original research methodology developed by AIST.

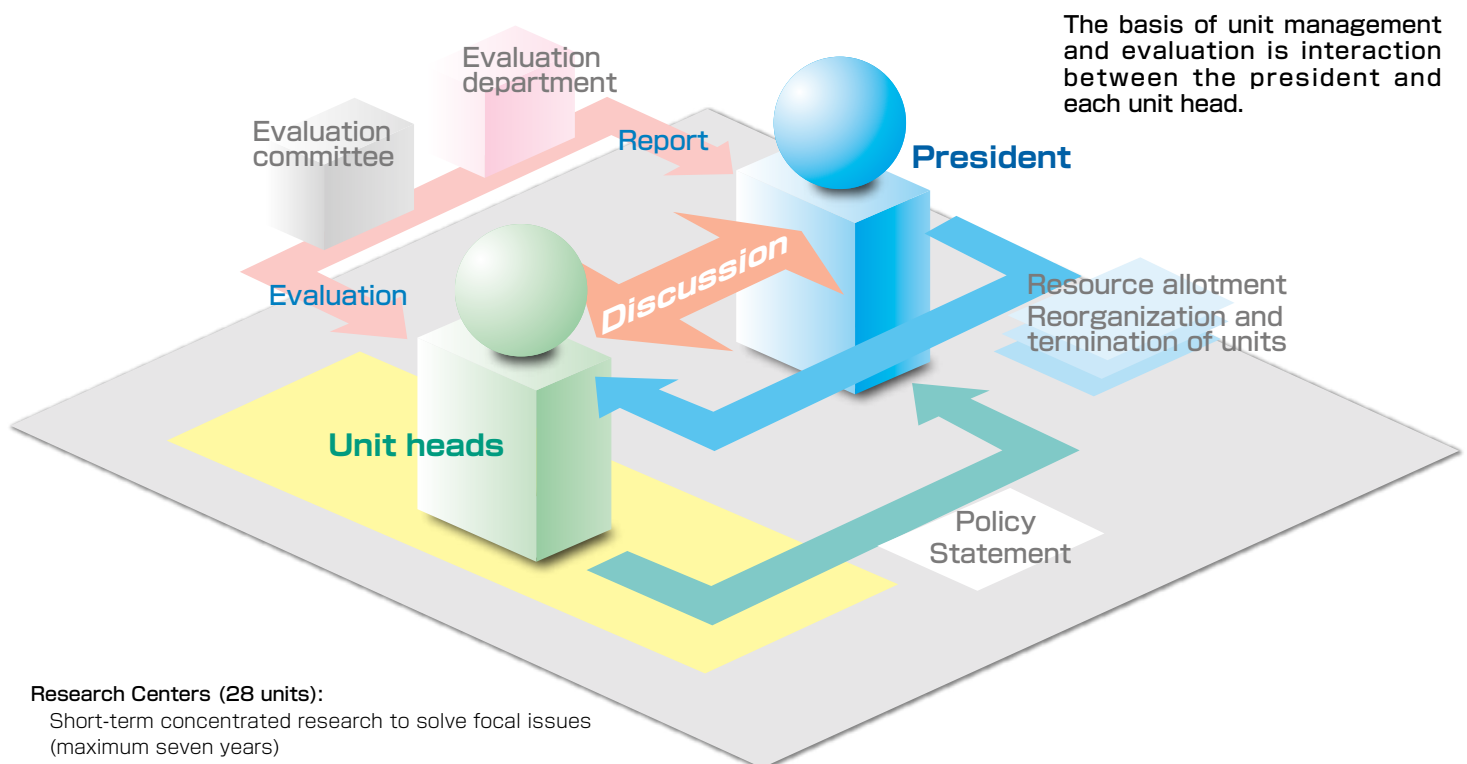


Raising staff awareness and sharing the principle

- The president and all staff members engage in direct conversation to raise awareness and to share the principle. Over 15 internal workshops are held every year.
- Vice-presidents are appointed to act as bridges between researchers and management. Our unique system allows mutual and simultaneous sharing of information.
- The "Charter" defines the basic position of AIST in the society (see back cover). It was drafted by a committee of nine young staff members.

Autonomous management

- The organizational structure allows direct communication between the president and the heads of research units and research/management departments.
- Every year, the heads of research units and research/management departments submit managerial policy statements. These will be accepted after a direct discussion between the president and the heads.
- Unit heads have maximum managerial autonomy, and their performances are evaluated by external experts and senior members of internal management.
- The organizational structure is reviewed according to the Management Policy, and research units are reorganized or terminated if necessary.
- One or more research coordinators are assigned to each research field to identify the potential for inter-unit collaborations and determine research strategies in the corresponding field.



Research Centers (28 units):

Short-term concentrated research to solve focal issues (maximum seven years)

Research Institutes (21 units):

Continuous research and search of potentials

Research Laboratories (7 units):

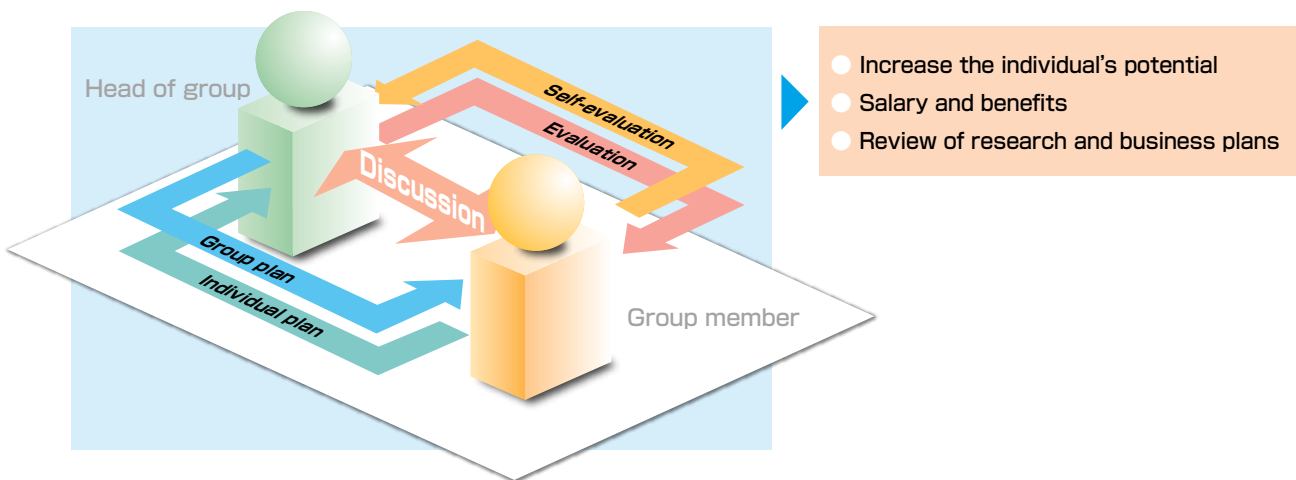
Research necessary to start up new Research Centers or Research Institutes

(As of April 1, 2007)

● Bringing out the best in people

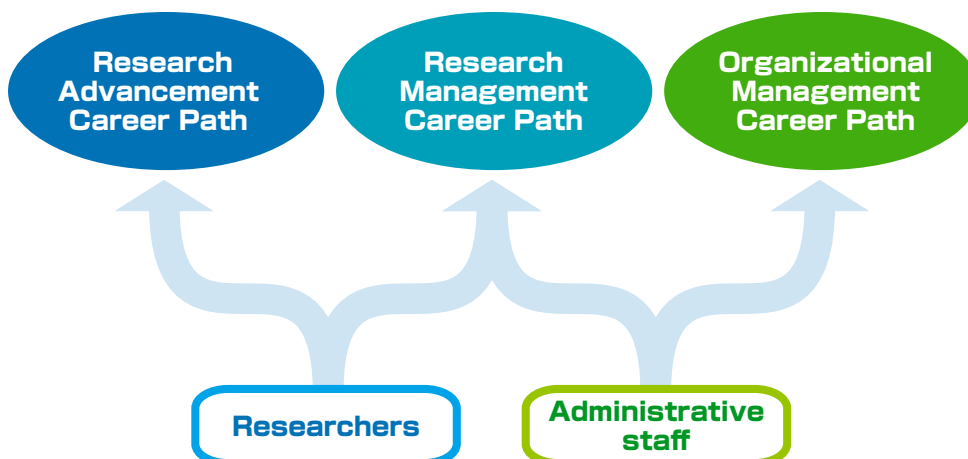
● Transparent and fair evaluation system

- Each staff member sets objectives and goals for his/her work upon discussion with the superior.
- Every year, each staff member conducts self-evaluation of short-term performance, and has short-term evaluation upon discussion with the superior. The result is reflected in salary and benefits. This is also used in reviewing the research and business plans.



● Diverse career paths and experts with advanced knowledge and skills

- AIST has three career paths which aim to bring out the best in each staff member. Opportunities are given to all members.
 - Research Advancement Career Path to engage in research strategically
 - Research Management Career Path to manage for development of new technologies
 - Organizational Management Career Path to manage organization effectively
- AIST encourages staff members to learn knowledge and develop skills to maintain the high level of specialization needed for their work.
- The AIST original certification system determines staff members' aptitudes for each career path.



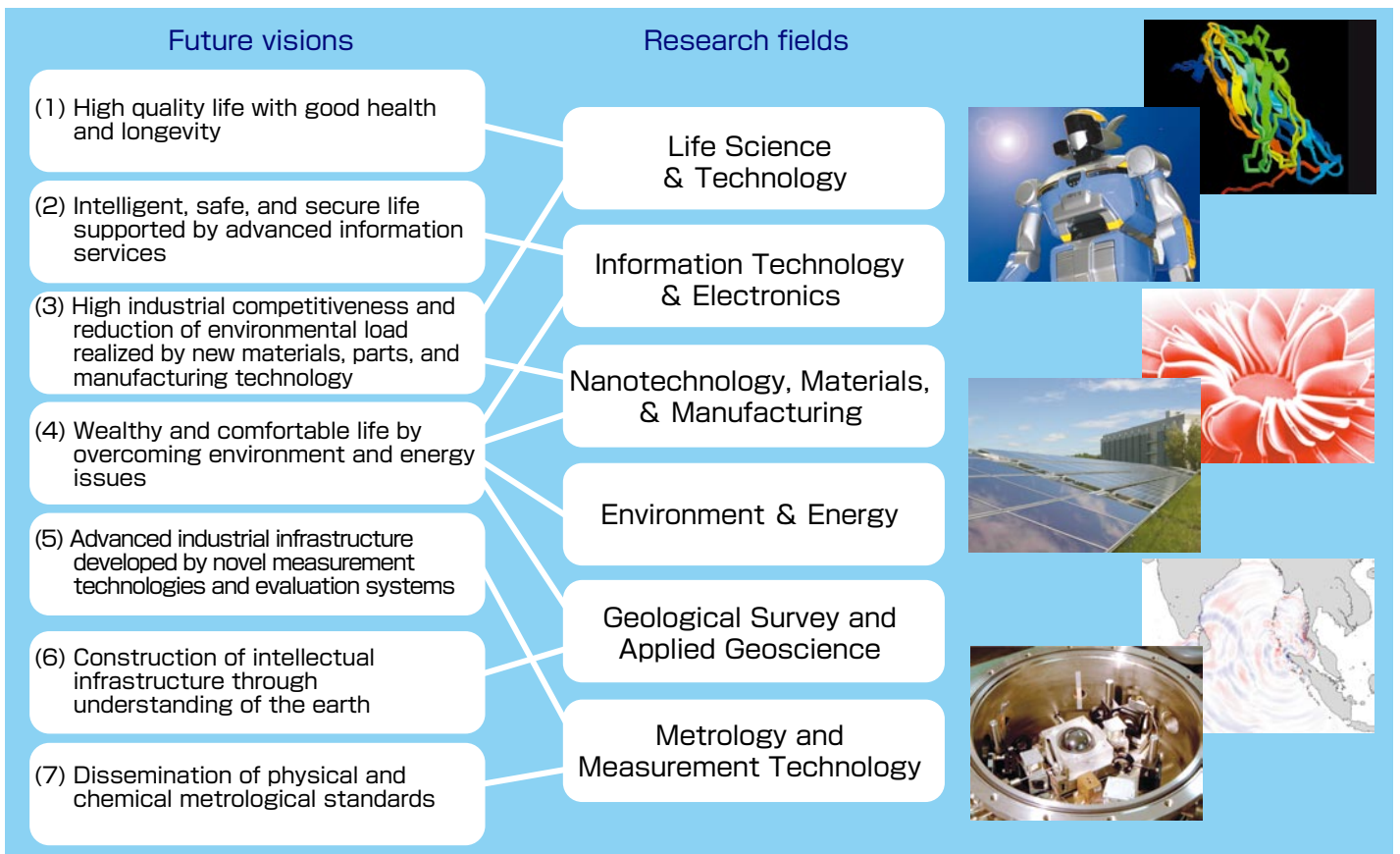
Research Strategy: for further progress in the Second Period

Research Strategy for next five years of the Second Period

- Researchers developed and refined the Research Strategy through repeated discussions.
- Researchers developed the Second Mid-term Plan based on the Research Strategy, and the Plan is applied to unit management. This assures systematic practice and unity of research activities.
- Unit members share views on research subjects to raise motivation and discern direction of research.
- The Research Strategy is reviewed every year according to the progress of researches.

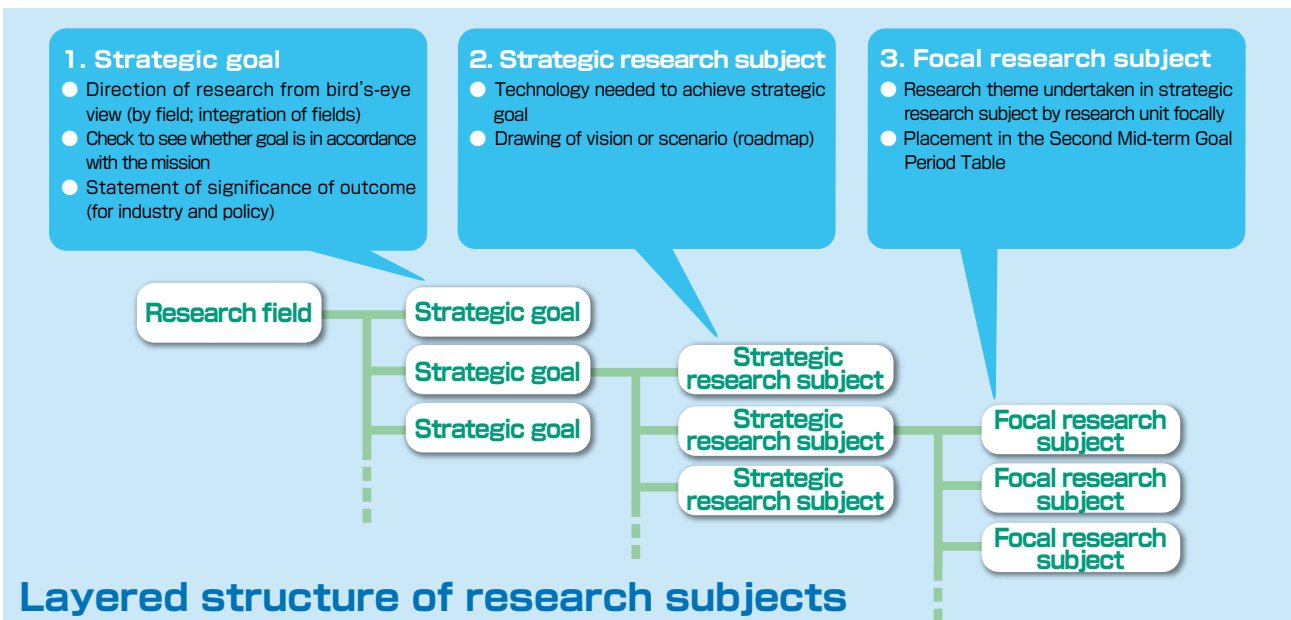
Future visions of society and industrial technology

- Five outcomes (1 to 5 in the following diagram) are projected for the basic principle of AIST, “to realize a sustainable society.” They will be ensured by AIST’s diverse research resources and proper application of the research findings to society and industry under the “Full Research” concept.
- Geological survey (6) and measurement standardization (7) are established to realize safe and sound industrial activity and social life.



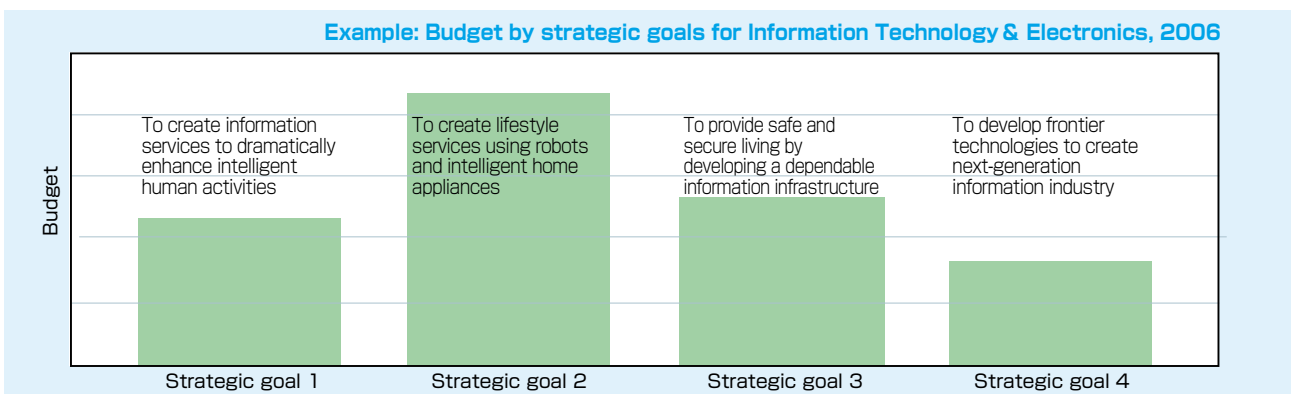
Multilayered structure of research subjects to achieve future visions

- Research subjects are determined to aim maximum results by analyzing the research potential and understanding the demands of government, industry, and society.
- Layered research subjects can be developed by common understanding between top management and staff members through discussions.
- Strategic goals and subjects are determined in top-down style through discussions with senior members of the industry and the Ministry of Economy, Trade and Industry, so that the AIST's potential meet the demands of the industries.
- Research themes are positioned as focal research subjects, and are determined in bottom-up style. These are undertaken by research units to achieve strategic research subjects.
- Research subjects are published on the Internet to allow external input.



Strategic resource allotment

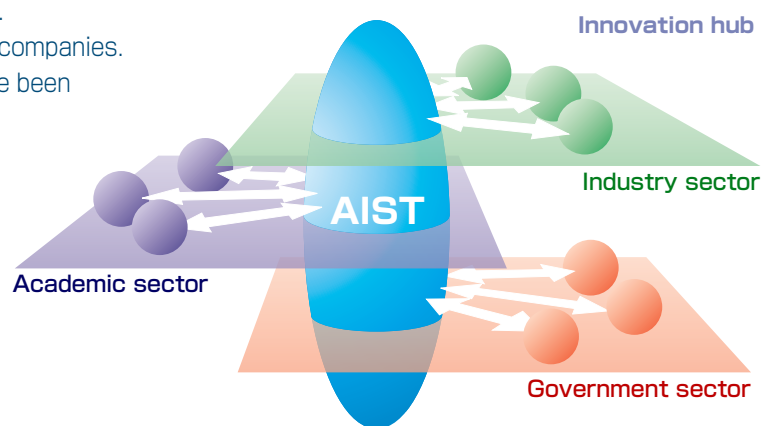
- Budget is allocated for each strategic goal using technological portfolio analysis.
- Allotment is clearly defined to cover the five years of the Second Period.
- Staff members are employed strategically.



● Paradigm of new collaboration among industry, academia, and government

● Building function as the innovation hub

- Innovators, people who create innovations, can act as focal points for academia, industry, or government, and form a multilayered network.
- AIST connects and synergizes the layers with its powerful interface in each layer of the network.
- AIST's function as the innovation hub includes the implementation of strategic managements to allow flow and synergy of research findings amongst innovators.
- Researchers are encouraged to start up venture companies.
As of April 1, 2007, a total of 84 companies have been established as AIST ventures.

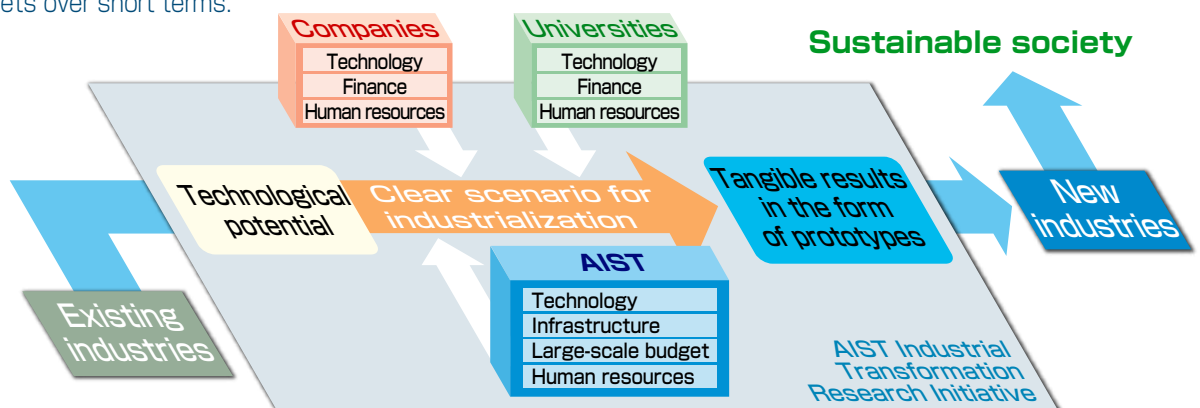


● Value enhancement through integration of intellectual property and fusion of different disciplines

- AIST actively promotes technology transfers based on the diverse intellectual property generated at AIST.
- Technology transfers are done from an industrial perspective. This involves integrating intellectual properties and fortifying them with additional research. Such activities may cross the boundaries of research units.
- Technological opportunities by integration of knowledge in different fields are sought in seminars organized voluntarily by researchers.

● New project to promote industrial transformation

- The "AIST Industrial Transformation Research Initiative" was established to provide a new mechanism for collaboration among industry, academia, and government. The purpose is to create new industries by overcoming the "nightmare period" experienced in technological development.
- Members with unique talents share a clear scenario for new industries, and develop prototypes by concentrating large-scale budgets over short terms.



● Employment and training

- Competent people coming from diverse backgrounds are employed through examination or open recruitment.
- Personnel from industry and academia are actively employed as heads of research units.
- Since AIST staff members are no longer government officers, flexible staff exchange that benefits both AIST and companies is now possible.
- Research programs are organized jointly with universities to educate undergraduate students, graduate students, and corporate researchers.
- AIST endorses equal gender opportunity.

● Training young people who can serve as an immediate workforce in industry

■ Training of post-doctorates in industrial technology

Post-doctorates with advanced academic research capacity are employed in research projects executed jointly by AIST and companies. They can hone their skills in product realization research for which objectives and deadlines are clearly stated. They are trained as post-doctorates in industrial technology, and they can subsequently serve as an immediate workforce in the companies.

■ Training of advanced specialists

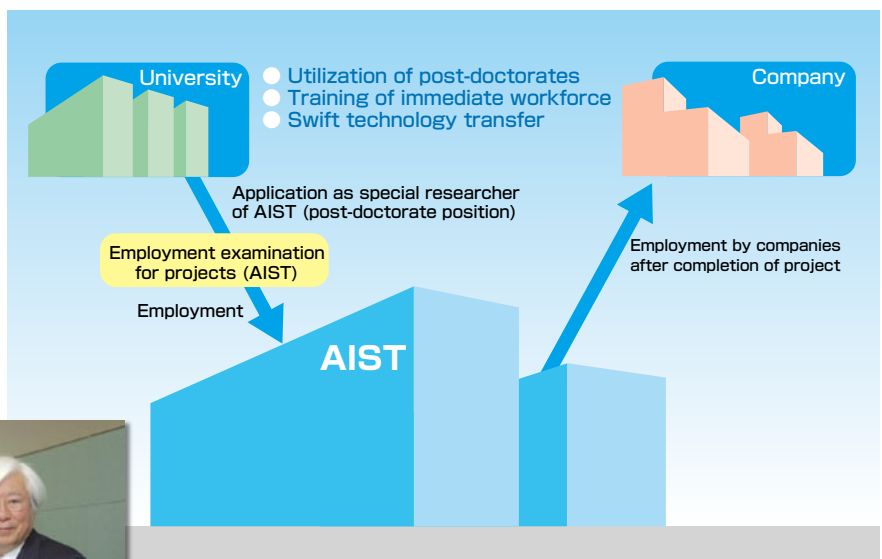
Advanced specialists with vital technological knowledge for research and development are trained by diversity of researches and state-of-the-art research infrastructures in AIST.

■ Training of human resources for small and medium companies

Personnel from small and medium companies are dispatched to AIST through cooperation with the science and technology promotion policies of local governments. The human resources for high-tech oriented businesses are nurtured utilizing the research infrastructure of AIST.

On-the-job-training (OJT) conducted jointly with companies

Human resources are trained through joint research projects which involve use of state-of-the-art infrastructure, expert instruction, and public grants. They are sent to companies and are expected to carry with them AIST's intellectual property and knowledge. This enables swift technology transfer.



Cooperative agreement signed with Sumitomo Electric Industries, Ltd. on May 26, 2005.

The objective of this innovative agreement is wide-ranging cooperation from basic research to training human resources in industrial technology.

Understanding local demands and potentials throughout Japan and responding accordingly

- AIST Tsukuba is an extensive core research base at which approximately 70 percent of AIST's researchers and facilities are concentrated.
- Understanding local industrial potentials and demands, the regional research bases focus their specializations to conduct world level research in their respective fields.
- Diverse demands are met by AIST as a whole to provide flexible solutions, while strengthening the interface with local industries.
- Buds of innovation that may sprout locally are identified promptly, and AIST as a whole grows them into internationally competitive technologies.

Strengthening regional research bases

The regional research bases engage in region-specific research, in accordance with the Industrial Cluster Projects of the Ministry of Economy, Trade and Industry.

	Area of focus	Outline
AIST Hokkaido	Genome-based biofactory	Bioengineering research using genome information to produce useful substances such as bioactive molecules from transgenic plants.
AIST Tohoku	Chemical processes with low environmental loads	Energy conserving chemical process technology is developed using supercritical fluid and membranes as reaction sites. The goal is to lead industries to a Sound Material-Cycle Society.
AIST Chubu	Advanced material processes	New integrated manufacturing technologies are developed to involve a wide variety of materials, equipments, and processes. Comprehensive research and development of functional materials with great effects on energy conservation and environmental preservation are conducted.
AIST Kansai	R & D in medical engineering	A new model of medical engineering about researches on cells, tissues and stress signals is developed in close cooperation with other government agencies.
	Ubiquitous energy devices	Development of compact and portable energy devices such as fuel cells and secondary batteries with high efficiency and environmental conformity.
AIST Chugoku	Biomass energy	An economically feasible system for extracting liquid fuel from biomass resources is developed. An international strategic center is established through cooperation with other Asian countries.
AIST Shikoku	Health technology	Research and development in health industries such as healthcare technology using highly sensitive measurement of biological molecules and highly pure salt manufacturing needed for dialysis patients.
AIST Kyushu	On-site sensing and diagnostic system	A novel on-site sensing and diagnostic system for harsh industrial or living environment is developed. That is desired in all fields of industries.
AIST Tokyo Waterfront	Bio-IT fusion technology	A collaborative research body working on unique and advanced research projects in field of biotechnology and IT, all of which will lead to creating new businesses and gaining larger market shares.
Akihabara Site	Collaboration among industry, academia, and government for IT (software)	Collaboration among industry, academia, and government is promoted for IT research with focus on information security and grid technology.

Network of Excellences

AIST research bases throughout Japan collaborate with academia and industry as centers of excellence (COEs). AIST will be a "hub" in linkages of the COEs, and form a huge network of industry-academia-government collaboration, a Network of Excellences (NOE).



Active international partnerships

- AIST strengthens research networks in Asia, and bilateral cooperative relations with major research organizations worldwide through cooperation agreements.
- AIST acts as the hub of an international research cooperation network to establish a global system for sustainable development.
- AIST provides a workplace for international personnel and ensures integration of motivated human resources.
- AIST disseminates its research achievements, with comprehensive security provision and export control management.

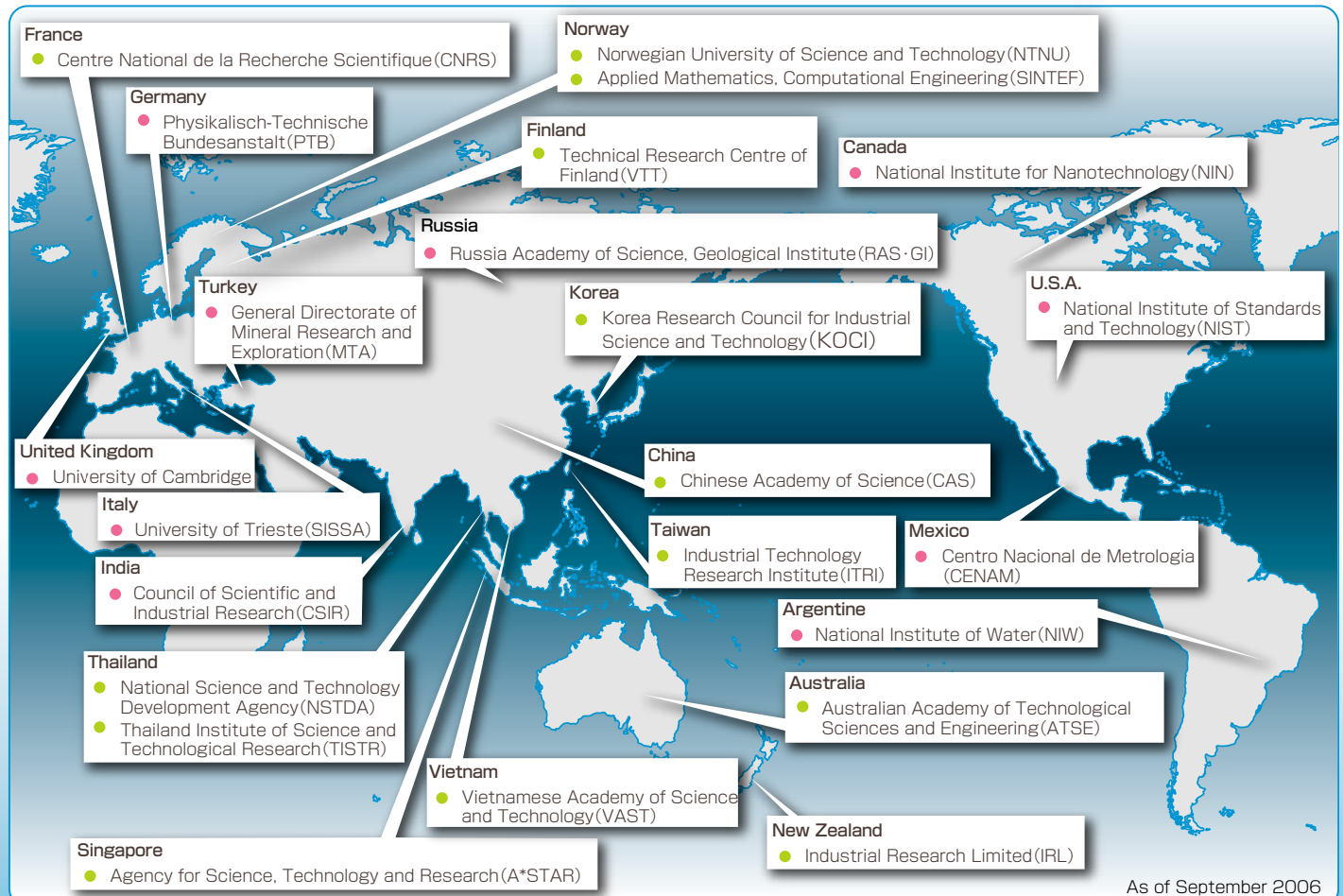
A comprehensive research cooperation agreement signed with the Chinese Academy of Sciences on May 19, 2004.



Growing AIST's international research network

Comprehensive agreements on research cooperation with 13 major organizations in 11 countries / regions (●).

114 MOUs in specific fields with organizations in 32 countries / regions (some are shown with ●).





CHARTER

Full Research in Society, for Society

The common goal of humankind is to realize a society in which every person can enjoy a comfortable life. Science and technology can lead the way to such a society. The mission entrusted to AIST and its staff, as members of the scientific community, is to develop science and technology that complements society and the environment.

We, the staff members of AIST, recognize our mission and responsibility to society. We work towards the realization of such a society through research and development in industrial science and technology. In order to achieve this goal, we set forth the following principles.

Accurate Assessment of Social Trends

We endeavor to ascertain social trends and needs at every level of society from local communities to the international stage, to identify key issues promptly, and to propose scientific and technological solutions in collaboration with other organizations.

Creation of Knowledge and Technology

We value each person's autonomy and creativity and display our collective strength through collaboration and synergy, creating new knowledge and innovative technology based on advanced research efforts.

Application of Research Findings

We contribute to Japan's industrial development by applying our research findings to academic pursuits, intellectual infrastructure development, technology transfer, and policy proposals. We endeavor to enhance and disseminate science and technology through human resources development and the open sharing of information.

Responsible Conduct

We are actively involved in improving our own abilities and our working environment in order to perform our duties more effectively. We respect both the letter and the spirit of the law and maintain a strict sense of ethics in all our affairs.

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