NII

Inter-University Research Institute Corporation
Research Organization of Information and Systems

National Institute of Informatics

National Institute of Informatics
2010–2011

Contents

Greeting from the Director General

Needless to say, academic research organizations are now under increased pressure to clarify their missions and roles, plan and implement unique activities, and effectively demonstrate their various successes.

National Institute of Informatics (NII) has designated the following missions and roles: To create future value (create scholarship) as Japan's sole comprehensive academic research institute in the field of informatics; to attain the status of a national center for informatics research activities; and to spearhead and develop service operations related to the academic information infrastructure (academic networks and contents) — a task vital to the research and education activities of today's academic community overall. Through the above efforts, the NII aims to realize the effective contributions internationally as well as to domestic society.

These missions have now reached a particularly important stage, after the ten-year history from the IT boom to IT bubble collapse. The field of informatics thus needs to demonstrate new theories, methodology, and applications (future value) that can generate new types of actual value for human and society. In addition, needs are growing as regards the formation of a 'Cyber Science Infrastructure (CSI)' that organically combines elements such as shared ultra-high-speed networks, research resources, and science software and databases, as well as human resources, in order to realize global competitiveness in broader-ranging research and industrial and education activities. The need is therefore urgent to develop academic information infrastructure that will lead seamlessly to that of the next generation. Science Information Network (SINET3) that launched in last year, and next generation science contents infrastructure formation by cooperation with universities is parts of the concrete result.

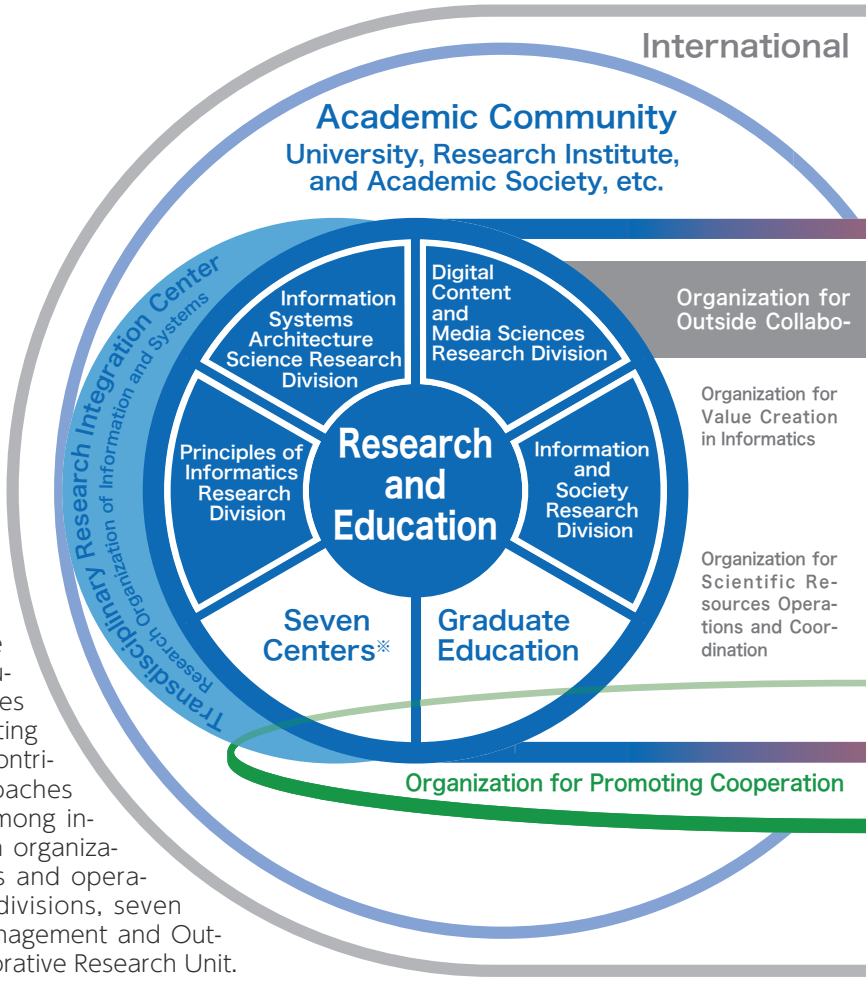
NII intends to focus its efforts on fulfilling these missions by further strengthening its research structure and by making the institution more accessible.

We look forward to the continued understanding and support of all related parties.

Masao Sakauchi
Director General, National Institute of Informatics
April 2010

Future Value Creation through Informatics by

As Japan's only general academic research institution seeking to create future value in the ed research and development activities in information-related fields, including networking, through applications. As an inter-university research institute, NII promotes the creation of a that is essential to research and education within the broader academic community, with throughout Japan, as well as industries and civilian organizations.
Founded in April 2000, NII marked its new beginning in April 2004 as a member of the Re-



Advancing integrated research and education in the field of informatics

Informatics is a new academic discipline based not just only on computer science and information technology, but on the human, social, and life sciences. NII advances informatics research with the goals of creating future value; furthering social and public contributions; promoting interdisciplinary approaches to information processing; partnerships among industry, government, academic, and civilian organizations; and international research activities and operations. NII has established four research divisions, seven research centers, the Organization for Management and Outside Collaboration on R&D, and the Collaborative Research Unit.

Reserch

Seeking to establish a new academic discipline through long-range promotion and systemization of a broad range of informatics research, ranging from the natural sciences through the human and social sciences, NII contributes to informatics development by creating future value (ranging from theoretical and methodological work through applications) throughout the discipline.

Social contributions

NII seeks to achieve harmony between society, culture, and social systems, in addition to creating platforms and portals that encourage the establishment, searching, and use of content to develop, and enliven, and disseminate academic, cultural, educational, publishing, and environmental activities, as well as the social and public activities of localities, nonprofit organizations, and other entities.

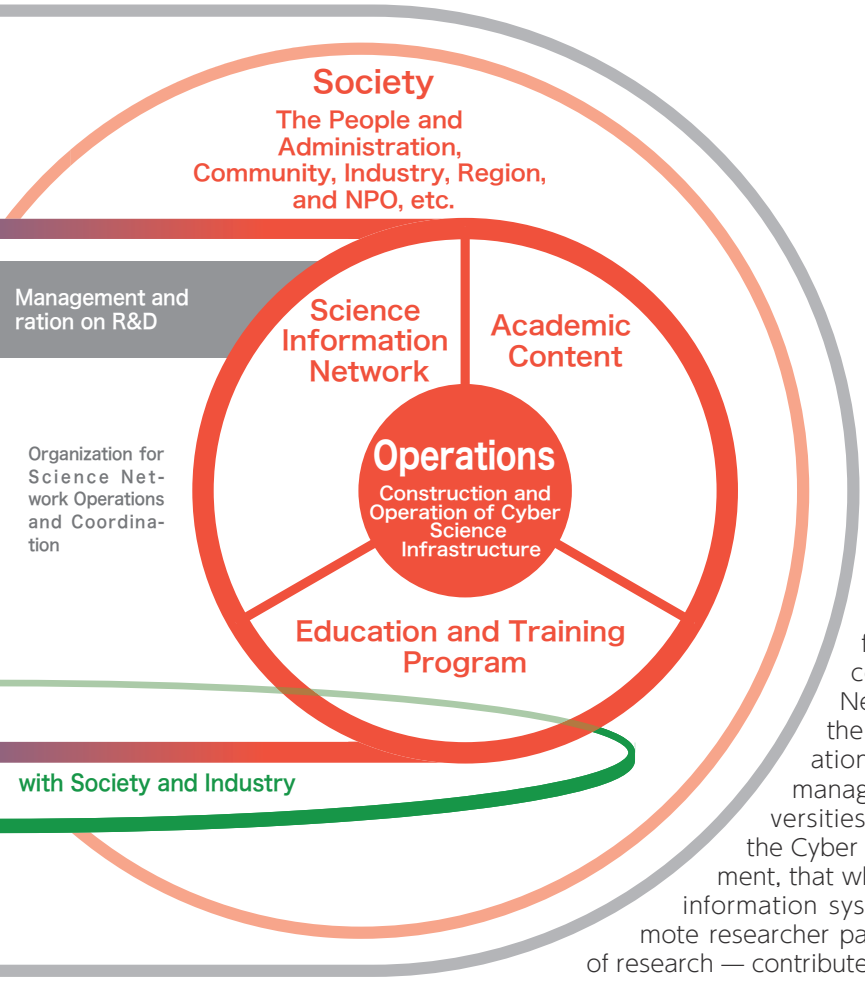
Interdisciplinary approach to information processing

NII promotes cross-functional interdisciplinary research and promotes synergistic efforts between academic disciplines to enable progress in new and developing domains. Established in April 2005 at the Research Organization of Information and Systems, the Transdisciplinary Research Integration Center undertakes interdisciplinary research across a broad range of fields, seeking to elucidate issues in the life and earth system sciences.

Advancing Research and Operations in Tandem

new discipline of informatics, National Institute of Informatics (NII) seeks to advance integrat-
software, and content. These activities range from theoretical and methodological work
state-of-the-art academic-information infrastructure (the Cyber Science Infrastructure, or CSI)
a focus on partnerships and other joint efforts with universities and research institutions

search Organization of Information and Systems.



※Seven Centers
- Center for Grid Research and Development
- Research and Development Center for Informatics of Association
- Grace Center: Center for Global Research in Advanced Software Science and Engineering
- Research Center for Community Knowledge
- Strategic Research Projects Incubation Center
- Research and Development Center for Academic Networks
- Research and Development Center for Scientific Information Resources

Promoting the Cyber Science Infrastructure (CSI)

NII advances the formation and operation of the CSI, a state-of-the-art academic information infrastructure. Through these efforts, the entire research organization — comprising the Organization for Scientific Network Operations and Coordination and the Organization for Scientific Resources Operations and Coordination, that which plan and manage partnerships and cooperation with universities and other institutions throughout Japan; the Cyber Science Infrastructure development Department, that which handles development and operation of information systems; and the research centers that promote researcher participation and incorporation of the results of research — contributes to the academic community.

Partnerships among industry, government, and academic sectors

NII enjoys close ties to and works in close partnership with universities and public and private research institutions. Joint efforts include research projects and human resource development, as well as activities promoting the utilization of research results based on partnerships with civilian organizations, as represented by localities and nonprofit organizations.

International research activities

NII strives to expand its informational reach to the international community through the sharing of academic information with overseas researchers and conducting joint research with overseas research institutions. Such efforts are based on memorandum of understanding (MOUs) on international exchange concluded with universities and research institutions from around the world. NII also engages in the development of an infrastructure for international distribution of scientific information and international academic networks.

Graduate education and human resource development

At the Graduate University for Advanced Studies, NII has established an interdisciplinary Ph.D. program in Informatics to achieve mid-to long-term growth — both qualitative and quantitative — in researchers and engineers in the field of informatics. NII has established a base for development of strategic human resources and seeks to train engineers with the skills to link the spheres of industrial and academic research.

Principles of Informatics Research Division

In the Principles of Informatics Research Division we seek to discover new principles, theories and methods in informatics, and extend our goal to pioneering the frontiers to try and achieve a paradigm shift in informatics.

Solving Issues in the Real World with Mathematics —Mathematics and Logic and Their Applications

Graph theory is a branch of mathematics that studies the properties of graphs consisting of a set of vertices and a set of edges. It has wide applications for computer data structures and algorithms.

In fact, the real world is full of phenomena that can be expressed with a graph, road networks. For example, the mechanism for traffic jams is one such an example (Note: Jamology is a little different. Jamology studies the reasons for traffic congestion. Here, we are talking about the impact of a traffic jam after it has occurred, which is perhaps completely different from Jamology). When there is an accident somewhere, traffic jams extend widely, thinly and on a large scale. How to analyze this "widely and thinly" is quite a difficult problem, one that is often discussed in mathematical circles.

More specifically, when the shortest route is displayed on a car navigation system, the calculations must be quick with a tolerable degree of accuracy and speed, adjusting for accidents etc. with each passing moment. No matter how accurate, calculations that take an hour are meaningless. How quickly and how accurately to do it are perfect examples for theory problem (in fact, graph theory problem).

Graph coloring (for example, the famous Four Color Problem) is also applied to Scheduling, which is one of the main topics in Operation Research (which is Prime Ministor Hatoyama's discipline). It deals with, for example, being able to save billions of dollars in airfares by successfully scheduling major league tournaments. A range of conditions, such as half each of home and away games, or that a nine-game series at home is no good, are fed into a computer which runs the calculations.

Let us mention that many big companies, such as Microsoft, AT&T (the American telecommunications company), Google, IBM, also hire a lot of researchers who are experts in theory, including graph theory and theoretical computer science. The people in the theory group have almost no responsibilities. It is enough to work on your own research. However, when other people work on developing software and something strange happens, if it is a logic problem, everybody comes together to find the solution. As we see here, theory, including graph theory, has been applied to all over the world. NII has several outstanding theory researchers.

(Ken-ichi Kawarabayash)

Current Research Topics of Reseach Staff of NII

Mathematical Informatics	
Takeaki Uno	●Efficient and practical fast algorithms for solving large scale problems arising from data mining and genome sciences ●Theory of Complexity on Discrete algorithms and enumeration algorithms ●Practical efficient computational models and algorithms for industrial engineering such as scheduling, logistics, and vehicle routing problems
Ken-ichi Kawarabayashi	●Graph coloring problems in discrete math ●Structural graph theory and its applications to algorithms ●Network flow and disjoint paths problem
Kunihiko Sadakane	●Succinct data structures for efficient storage and search of data ●Data structures for fast string processing ●Graph exploration algorithms, random walks
Ken Hayami	●Numerical Analysis, Numerical Linear Algebra ●Development and analysis of iterative methods for large systems of linear equations, least squares problems.
Mathematical Logic	
Makoto Kanazawa	●Lambda calculus and formal grammar ●Logical semantics of natural language
Makoto Tatsuta	●theory of programs ●type theory ●constructive logic
Quantum Information	
Shouko Utsunomiya	●Quantum simulation using optical semiconductors ●Quantum solid state physics in optical semiconductors
Kae Nemoto	●Quantum information/computation ●Quantum optics ●Theoretical physics

Betting on the Quantum Computer —A Unique Approach to Quantum Computing

I was excited by the idea that there is a connection between information science and physics that at first glance seem far apart from one another. Quantum mechanics involves some mysterious phenomena, such as the idea that monitoring something changes its state and the fact that a correlation between two particles does not disappear no matter how far apart they are from one another. In a quantum computing algorithm, these quantum mysteries are used as basic principles. The act of making the quantum computer a reality is also the act of verifying the core of quantum mechanics, and I find that very intriguing.

In the late 1980, I assumed photons as quantum bits(*1) and considered the idea of constructing a basic gate. To achieve this goal, however, optical crystals with extremely radical properties are needed, and so this was impractical.

All of the researchers who knew the reality of the experiments felt something close to that.

Now the situation has changed. Many extremely talented people have participated in the field and are challenging various possibilities. A number of methods have been proposed to achieve quantum computing. The current approach of creating a quantum gate that operates quantum bits and then combining these to execute a quantum algorithm is simple in mathematic terms. But that doesn't mean it's necessarily the right answer in engineering terms.

Because it's in direct opposition to nature. Everything in this world is connected to the outside world. However the proposed quantum register that stores the data for a quantum computer must be completely cut off from the outside world or the calculations will be in error. They say that computing will be possible if error correction is done at every step, but there are limits to the degree to which human beings can engineer the natural world. We need to think of a way that is not in conflict with nature and yet brings out the essence of quantum mechanics.

What we're considering right now is a method of creating a system in which determining the state at which the energy in the physical system is at a minimum (the ground state) will provide the answer to the mathematical problem that you want to solve.

You bring the system to the ground state through experimentation. You keep cooling the materials and at absolute zero the system is at ground state. In technical terms, this is the same as creating a Bose-Einstein condensate (or BEC) (*2). In order to solve a mathematical problem, the particles must interact with each other. The challenge is how quickly we can cool a system that is far more complex than a BEC.

Fortunately, however, when a sufficient number of bosons reach the ground state, other bosons also go down to that state. I have high hopes for this power of nature.

Current quantum computers use an interferometer to cause many particles to interfere with one another. The interference pattern provides the solution to a mathematical problem. The quantum computer I'm describing is a refrigerator that progressively cools a multi-particle system, and the state at absolute zero provides the answer to the problem. The method is completely different, although I think there are some similarities.

Major inventions are usually achieved within five years of when the concept is developed. If it can't be done in five years, it will probably never become a reality. The next five years will determine success or failure.

(*1) Quantum bit: the smallest unit of quantum information. May also refer to a photon, electron spin or other material that contains this information.

(*2) Bose-Einstein condensate (BEC): A phenomenon in which, when a gas composed of many atoms is cooled using a laser, all of the atoms reach the identical lowest energy state and begin to act as a single enormous atom. This phenomenon was predicted by Einstein and was first achieved in 1995.

(Yoshihisa Yamamoto)

Keiji Matsumoto	●Quantum information and computation
Yoshihisa Yamamoto	●Photonic quantum information systems ●Electronic quantum simulation systems
Tim Byrnes	●Quantum Information ●Quantum Computation ●Solid State Physics
Material and Life Informatics	
Keiichi Kuma	●Comparative genome analysis based on molecular evolutionary approach
Hiroko Satoh	●Chemoinformatics ●Computer chemistry ●Molecular modelling
Asao Fujiyama	●Comparative genomics research
Intelligent Informatics	
Ryutaro Ichise	●Machine learning ●Knowledge Systems ●Data mining
Tetsunari Inamura	●Human robot interaction ●Synthetic study of robot intelligence based on stochastic information processing ●Intelligent information processing based on embodiment of robots
Katsumi Inoue	●Inference and Knowledge Representation ●Hypothesis-finding based on Induction and Abduction ●Knowledge Discovery for Systems Biology
Nigel Collier	●Text Mining ●Natural Language Processing ●Ontology Engineering
Ken Satoh	●Construction of multiagent systems with speculative computation ●Applications of AI to Legal Reasoning
Hideaki Takeda	●Knowledge sharing system ●Semantic Web ●Design theory

Information Systems Architecture Science Research Division

The Information Systems Architecture Science Research Division deals with the research issues in software/hardware architectures of computers and networks, and their system implementation.

Flexibility on the Leading Edge —The Latest Science Information Network

Academic information infrastructure must continue to evolve to address particular requirements inherent in research and educational applications, such as remote lectures using high-definition TVs, transfer of huge amounts of data, shared use of cutting-edge experimental devices, and international collaboration with foreign research organizations. SINET3, which was launched in 2007, evolved into the network architecture to provide quite a rich variety of network services compared with previous one. Ethernet services and dedicated line services as well as IP network services are provided in a single network with high quality and high reliability. The dedicated line can be configured on-demand by specifying parameters, such as the destinations, the bandwidth, and the start and finishing times, directly from users. This drastically enhanced the usability of the dedicated lines, and NII was the first to put it to practical application. For instance, this on-demand capability enabled astronomical researchers to create a high-resolution virtual radio telescope on demand by selectively connecting radio telescopes from among Yamaguchi, Gifu, Tsukuba, and Hokkaido areas. SINET3 can also set up a variety of virtual private networks (VPNs) which facilitate collaborative work among people at various different locations by using a closed user group environment. Nuclear fusion, seismology, high energy, grid computing, and other research fields utilize VPNs to share data from cutting-edge experimental devices among researchers throughout the country in real time.

Lots of latest networking technologies and NII's original ideas were combined to construct such an innovative infrastructure. For example, dynamic resource allocation and control capabilities for layer-1 devices, which drive generalized multi-protocol switching (GMPLS) and link capacity adjustment scheme (LCAS) technologies, were developed for the world's first layer-1 bandwidth-on-demand services. A great many people such as researchers, telecommunications service providers, and equipment manufacturers were involved in and supported the design and deployment of the infrastructure. We would like to continue to make more people aware of the network's practical value and develop new networking capabilities by reflecting the feedback from users.

(Shigeo Urushidani)

Current Research Topics of Reseach Staff of NII

Network Architecture	
Shoichiro Asano	● Integrated control technologies for next-generation all-optical networks ● Survival of network operation against natural calamities
Shunji Abe	● Researches on performance analysis based on communication traffic measurement and QoS control method ● Researches on mobile IP communication
Kensuke Fukuda	● Measurement and analysis of Internet traffic ● Network science
Information Network	
Shigeo Urushidani	● Dynamic resource optimization technologies for multi-layer networks ● Universal switching system architecture
Yusheng Ji	● Resource allocation and quality of service in communication networks ● Network traffic modeling and analysis ● Wireless ad-hoc and sensor networks
Motonori Nakamura	● Network Communication Systems ● Security/Authentication Technologies ● Network Operations and Administrations
Shigeki Yamada	● Research on ubiquitous and mobile networks and their applications ● Research on Delay/Disruption-Tolerant Networks (DTNs)
Computer Architecture	
Kento Aida	● Parallel and distributed computing ● e-Science
Michihiro Koibuchi	● Computer system networks ● On-chip multiprocessor networks ● Large-scale high-performance computing systems
Hiromichi Hashizume	● Human interface with computer augmented reality ● Collaboration support systems ● Sensor applications

Encouraging Interactions Among Asian Researchers —Towards holding NII-based international seminars

Research communities are usually formed through academic meetings. Researchers present their new findings when they gather in these locations, and are criticized, encouraged, or given the opportunity of working together. They gain a great deal through research and personal interactions. Needless to say, Asian researchers can also participate in these meetings held often in Europe and America. However, they meet less frequently, and it is not easy to become part of the communities.

Unlike in the past, the level of research conducted in Asia has risen to a point where discussions are now possible on a global level. I therefore believe that an Asian community should be established and a mechanism formulated from which the ongoing work and research results are communicated to the world. The new type of seminar that looks promising will be an Asian version of the famous Dagstuhl Seminar in Germany. The most notable feature of the Dagstuhl Seminar is that the Seminar aims to encourage interactions between researchers who are active worldwide through discussions on important issues in each area of informatics. It is not of a structure where programs are prepared beforehand and researchers make presentations. On the first day, each of the participants presents the issues in the areas he/she is involved with and provides a brief introduction to the research he/she is engaged in. Then all the participants vote to determine the program for the entire week of the Seminar. The participants dine together, and their seats are switched each time by lottery. Hiking and other events are planned. During the week of the seminar, the participating researchers become very close.

The Seminar is extremely attractive, and the weekly programs are arranged two and a half years in advance. It would be great to have an Asian version of such seminar that is effective in both forming a community for researchers in Asia, and promoting research communication worldwide. It would be an appropriate project for NII to pursue as it aims to become a center of research activities in Asia. The organizers should not be limited to researchers from NII or other universities or research organizations from Japan. It is my hope that researchers from universities that have concluded tie-up agreements with NII will also function as organizers.

NII has initiated numerous international joint research projects. Each of them has been recognized by the global society, but we cannot say that the activities of NII are fully understood. International meetings held by NII once or twice a year are not sufficient, but if they were held regularly once or twice a month, more impact would be felt. Through sustained actions, we can make our activities more visible.

Although NII is not a university, it has a system for educating students in doctoral programs. This is possible because we participate in the Graduate University for Advanced Studies, where diverse inter-university research institutes are utilized for education. Although many excellent foreign students and working people study at NII, it is not well known because of its special systems. If NII gains more presence in Asia and understanding is fostered, I expect that we will attract a greater number of best students and researchers from other Asian countries.

(Zhenjiang Hu)

Takashi Matsumoto	●Research on fault-tolerant functions for the SSS-PC operating system ●Research on high-performance embedded microprocessors which can efficiently cooperate with high-speed network
Kenichi Miura	●Grid Computing ●Supercomputer Architecture and Performance Analysis ●Parallel Numerical Algorithms for Large Scale Simulations, Monte Carlo Method, Nonlinear Dynamics
Software infrastructure	
Ichiro Satoh	●Middleware for ubiquitous, mobile and distributed computing
Soichiro Hidaka	●Bidirectional graph transformation ●Optimization of XML query language
Zhenjiang Hu	●Principle of Programming: Functional Programming, Programming Algebras ●Software Engineering: Dependable Software Construction, Bidirectional Model-driven Software Development ●Parallel Programming: Skeletal Parallel Programming, Automatic Parallelization
Software Engineering	
Shin Nakajima	●Dependable Software Engineering ●Formal Methods ●Model-Checking
Hiroshi Hosobe	●Theory and solution of soft constraints ●Constraint programming for graphical interfaces ●Hybrid concurrent constraint programming
Shinichi Honiden	●Autonomous Agents and Multiagent Systems ●Ubiquitos Computing ●Software Engineering
Nobukazu Yoshioka	●Agent oriented software engineering ●Agent Architecture ●Security Software Engineering
Tomohiro Yoneda	●Dependable VLSI system implementation based on asynchronous circuit technology ●Formal verification of real-time software
Kenji Tei	●Middleware for open wireless sensor networks ●Software Engineering for Cyber-Physical System

Digital Content and Media Sciences Research Division

The Division conducts research on various types of contents and media such as text and video in terms of analysis, creation, compilation and application, and their processing methods from the theories to the systems.

Human-Agent Interaction: Leading the Way to the Future
The Approach to Agent Design

Interaction in HAI(Human-Agent Interaction) refers to the various types of information produced during interchange with a human and an agent. It covers all of the information in interaction: dialogue, appearance, facial expressions, behavior, emotions and so on. Our research focuses on not the information provided through natural language but on non-verbal information because such non-verbal one is independent of background knowledge, cultures and can be implemented with a low-cost.

We classify such interaction into three categories: (1) interaction between a human and a robot (2) interaction between a human and an life-like agent, and (3) interaction between a human and a human mediated by agents. By comparing these three types of interaction and identifying the similarities and differences, we develop a methodology to design agents. Anthropomorphism is the key concept. When a human user recognizes various appliances as human-like, we are able to apply design methodologies developed in HAI to thats of such appliances.

Life-like agents in interaction (2) does not have a physical body like a robot. In modern-day society, we spend a lot of time using computers and cellular phones, and these agents can be created at a much lower cost than a robot, so they will play a larger and larger role as time goes on. For example, usage of a robot is absolutely assumed in HRI(Human-Robot Interaction). In contrast that, we study necessity of such a robot for HAI. This implies an important problem that which of an life-like agent, a robot and a human is most suitable as a good partner to assist a user in various cooperative tasks. We think HAI has an advantage that it is free from various restrictions in such conventional research fields like HRI, HCI(Human-Computer Interaction).

Also human-centric interaction design is HAI's characteristic. A human quite outperforms agents and robots in learning and adaptation. Thus we need to maximumly utilize user's ability for HAI, and try to develop concrete methodologies to bring out user's abilities with the minimum cognitive load. From this background, we are studying HAI through paradigm sift from "friendly machines to humans" to "friendly humans to machines".

(Seiji Yamada)

Current Research Topics of Reseach Staff of NII

Foundations of Content Management	
Fuyuki Ishikawa	●Service-Oriented Computing (Web Services and Ambient Services) ●Application of Formal Methods
Isao Echizen	●Technologies and systems for multimedia content security ●Integrity of multimedia content ●Information hiding
Norio Katayama	●Data Management Technology for Video Corpus Analysis
Hiroyuki Kato	●Optimization for casual queries to database ●Fundamental issues on optimizing queries to XML databases
Atsuhiro Takasu	●Data mining and text mining ●Information extraction from document stream ●Distributed index processing
Akihiko Takano	●Informatics of Association ●Algebra of Programming
Shingo Nishioka	●Research on Scalable Association for Huge Corpus Access ●Interactive methods in information space based on association
Kazutsuna Yamaji	●Research data sharing and its metadata management ●Platform system activating the research community
Text and Language Media	
Akiko Aizawa	●Identification and linkage of text information ●Statistical language analysis and automatic construction of linguistic resources ●Language media and interfaces
Jun Adachi	●Information retrieval and integration of heterogeneous data ●Modeling and implementation of high-performance information retrieval systems ●Text mining
Keizo Oyama	●Research on techniques for utilizing web information ●Research on an integrated platform for scholarly information services ●Research on full text search technology
Yusuke Miyao	●Syntactic parsing, semantic parsing ●Information extraction ●Information retrieval
Pattern Media	
Asanobu Kitamoto	●Data mining from large-scale scientific image databases ●Earth and environmental informatics ●Digital archives for cultural heritage

Create the Infrastructure for Knowledge Development with an Awareness of the Needs of Society —The Goal of NII's Information Services Program

We provide a variety of academic information services. First, there's the CiNii (pronounced "sainii") database. This is a database of scientific papers that have published in journals and other academic publications in Japan, which present the achievements of cutting-edge research. It provides not only search for papers, but also access to pdf version of papers.
NII also operates the WebCat database. This is a database of the books in university libraries nationwide. WebCat assists researchers in searching rare books and other works in many libraries, not just in the library at the institution with which they are affiliated.
The "Kaken" database is a database of reports on the achievements of the grants-in-aid for scientific research that are awarded by the Ministry of Education, Culture, Sports, Science and Technology. This database is useful for investigating what research is currently being conducted at universities in Japan. It gives you a broad overview of the research of a certain quality since each of them has received economic assistance from the national government.
NII has been developed these databases for more than two decades, mainly for researchers.
A new topic is *institutional repository (IR)*. An institutional repository is what a university or other research institution takes the responsibility for making information available, based on the policy of that institution. Previously, there was one large database that was maintained by the national government and subjected to centralized control. Now, due to the popularization of the Internet, it is possible for each institution to make information available on an autonomous basis. With IRs, the institution can make available the bulletins published by individual departments, as well as valuable cultural assets or other materials held by the university. NII links the repositories of individual institutions to make it possible for researchers to conduct cross-sectional searches nationwide.
The services in NII have been changed significantly, because the diffusion of Internet has changed the style of information usage dramatically in the past 10 years.
Once the persons and institutions who were the bearers of information were clearly divided into three categories, namely those providing the information, those using the information, and those that connected the two. But in the Internet age, all of these activities constitute a single loop. The same person or institution can gather information, create new knowledge, and make the data available. Once scientific information has been provided just for domain experts, but now it is open to broader people.
So we changed our services into those with more speed and more flexibility. For example, CiNii got a new modern interface and search engine so that the access becomes twice. The other example is Researchers Name Server which integrates information from different sources in the Internet with researchers names. It provides a new way to use scientific information. We are also applying modern natural language processing technology for better information access.

(Hideaki Takeda)

Kazuya Kodama	● A study on structure of multi-dimensional image information and communication systems of distributed shared image environment with real-time quality control
Imari Sato	● Physics-based object shape and reflectance modeling ● Creating spatially immersive displays for human computer interaction
Shin'ichi Satoh	● A Study on video analysis, retrieval, and knowledge discovery based on broadcast video archives ● A study on image retrieval
Akihiro Sugimoto	● Sensing and understanding human activities in our daily life ● Automatic modeling of 3D objects ● Computer vision under the existence of digitization errors
Gene Cheung	● image/video coding and streaming ● immersive media communication
Hiroshi Mo	● A study on case based video indexing ● A study on intelligent video structuring
Duy-Dinh Le	● Semantic representation for video indexing and retrieval ● Advanced video search engines ● Face annotation and retrieval ● Video mining ● Efficient methods for handling high
Human and Knowledge Media	
Kenro Aihara	● Computer supported lifelong learning by using digital archives about historical and artistic objects ● Integration of user's context in real- and virtual World
Frederic Andres	● Model Driven Archicture knowledge management ● Image learning ontology ● Semantic tracking & computing
Ikki Ohmukai	● Personal communication and interation in semantic web environment ● Information sharing and distribution based on personal network
Helmut Prendinger	● Life-like characters and avatars in virtual worlds ● Participatory science and collaboration in the 3D Internet ● Automatic content creation ● Emotion and sentiment recognition from text
Mayumi Bono	● Understanding Multimodal interaction ● Understanding Conversational Structures in Multi-party Interaction
Seiji Yamada	● Human-Agent Interaction ● Interactive Information Gathering/Retrieval

Information and Society Research Division

We remain dedicated to aiding in the creation of a society in which information is integrated into the real world, based on interdisciplinary research on information and systems technologies and on issues in the human and social sciences.

Coping with the Multifaceted Character of Universities —Establishing Information Security Policies

In 2005, the National Information Security Center (NISC) Japan established government-wide standards to improve information security levels at public institutions. Under these new standards, national universities have been pressingly obligated to improve information security measures.

Information security measures consist of three elements: improving confidentiality, improving integrity, and improving availability. The objectives of the government-wide standards are to improve confidentiality by preventing information leakage, to improve integrity by preventing the falsification of data, and to improve availability by not interrupting administrative services. However, universities, which use information networks for research and education purposes, face challenges that differ from government institutions and private enterprises.

For example, university researchers may establish their own servers and use them for research. If they happen to include personal information or other sensitive data, there is a potential risk for information leakage in the event of outside attacks. However, indiscriminately forbidding the use of these servers would prevent research activities from being carried out. Therefore, there is a need to establish rules on the treatment of confidential information that are adapted to the needs of universities.

Another part played by universities is in the development of previously unimagined, new software. For example, file sharing software is ground breaking technology that makes decentralized distribution of information possible. Although issues such as copyright infringement may arise if such technologies are misused, shutting them down across the board discourages the growth of new technology. This is why it is critical to establish rules that do not hinder creative research activities.

To address these various needs, it is essential to have the cooperation of specialists in both legal and technological fields. Together, the Working Group for the Information Security Policy for National Universities and Institutions (National Institute of Informatics) and the Network Guideline Working Group (Institute of Electronics, Information and Communication Engineers) have drafted a set of standardized and practical information security regulations that are appropriate for higher education institutions.

In the field of informatics, the creation of original technologies that were previously unimaginable may sometimes lead to legal issues that could not have been anticipated at the time applicable laws were established. Forestalling these issues allows researchers to be more at ease when using information technologies. In recognition of such efforts, the head of our working group accepted an information security distinguished service award at the Prime Minister's residence on February 4, 2008.

(Hitoshi Okada)

Current Research Topics of Reseach Staff of NII

Information Use	
Noriko Arai	●Designing collaborative learning environment ●Knowledge sharing, distance learning ●Mathematical logic
Kouichirou Ueki	●Development of the next generation information system
Noriko Kando	●Evaluation of information access technologies ●Exploratory search and user interface ●Cognitive research for exploratory search ●Extracting attitudes and relations from text ●Cross-lingual information access
Hironobu Gotoda	●Similarity search for 3D models ●Visualizing citation links among research papers
Teruo Koyama	●Term extraction from text corpora ●Structurization of terms ●Structural analysis of terms ●Knowledge representation and use
Nobuhiro Furuyama	●Speech-Gesture Coordination ●Perception-Action Cycle in Communication
Akira Miyazawa	●Union catalogue database construction and usage ●Metadata representation and construction ●Character codes as a fundamental tool for data representation ●D: Data processing utilitiesndexing
Science Information	
Sumio Kakinuma	●Science and Technology Policy Studies ●Scientometrics ●Sociology of Science ●Research platforms and cyberinfrastructure

The Key to Creating an IT Infrastructure for Schools
An Open Platform System that Anyone Can Use

NetCommons is an open source information sharing platform developed by NII. Currently it is widely used to build websites at schools and other public institutions. It allows you to freely combine different modules with one another. If you just want to create a simple website, even a beginner can do that in fifteen minutes.

Although many schools have websites, from the outset a website was designed to publish research and the like on the Internet. In other words, it was a one-way architecture that wasn't designed for bidirectional exchanges with users. Also, website creation and system and server maintenance were a major burden.

It could also combine the functions of a portal site and groupware. I wanted to integrate all of these aspects and create something that could be used as a one-stop resource.

Enormous costs would be required to try to completely prevent risk from such things as viruses, spam and server attacks. Moreover, only a few major corporations manage their own servers, and it would be difficult for a school or other organization to do so. At the same time, there would still be concerns if the management of the school registry, grades and other important personal information were left completely up to an outside organization. You want to take the lead in managing this kind of information yourself. With NetCommons, you can do all of your writing and editing on the web, and this reduces the danger of files going astray. We also plan to keep working to improve our security structure.

There was one example in which NetCommons was used as part of an elementary school class. The assignment was to write a one-page essay telling people about something that you do well and then post it on the Internet. It was designed to help students learn what they needed to do to effectively communicate their thoughts to others without saying either too much or too little. The student evaluations had comments like "I now have confidence in my ability to communicate information well" and "In order to communicate information, it's important to think of how it will be received by the other person."

In society from now on, more and more we will not be communicating our thoughts directly through speech but making judgments based on thoughts put down in written form. There is a lot of debate about the plusses and minuses of the impact of the Internet on children. But I think learning how to master the ability to express yourself from the time that you're in elementary and junior high school will be a major help in enabling people to survive in the information age.

People are the source of information. I'd like to increase the usefulness and independence of NetCommons and free people from their dependence on servers and terminals. Up to now, it's taken a great deal of knowledge and energy to transmit information and operate a website on the Internet. And it also required a lot of money. I'd like for NetCommons to remove these hurdles and allow anyone to safely communicate information on the Internet on an equal footing. I'd like to make it a type of social infrastructure—like the water supply.

(Noriko Arai)

Morio Shibayama	● Metrical analysis of research trends and research evaluation ● Statistical study on change of research environment ● Study on indentification of creativity in research activities
Yuan Sun	● Bibliometric research on university-industry-government relations ● Structure analysis on network of informatics related research ● DIF research in Japanese achievement testing
Masaki Nishizawa	● Investigation study on network structure of information sciences related research and its trends ● Empirical analyses on the role of Grants-in-Aid for Scientific Research for promotion of basic research ● Empirical analyses on network for industrial-government-university cooperation in Japan
Information Public Policy	
Masashi Ueda	● Network policy for broadband society ● Social and economic analysis of open source software
Hitoshi Okada	● Research on Critical Growth Factors of E-Commerce and E-Money ● Research on University Information Security Policy Portal (UISPP)
Tetsuro Kobayashi	● Social and political consequences of ICT use ● Social network and human communication ● Social capital theory
Noboru Sonehara	● Digital commerce (dCommerce) system ● Intellectual property rights lifecycle management system

Grand Challenge

NII promotes studies on the following topics that may lead to breakthroughs in informatics.

- Breakthroughs algorithms
- Dependable software
- Content value creation
- Bridging the semantic gap affecting image media
- ICT governance: its social system and legal system

Projects

Cyber Science Infrastructure (CSI)

- Science Information Network SINET3
  Organization for Science Network Operations and Coordination
- Integrated middleware for CSI
  Center for Grid Research and Development
- Academic Content Service
  Organization for Scientific Resources Operations and Coordination
- UPKI (Inter-University PKI) joint public key infrastructure for universities
  Organization for Science Network Operations and Coordination
- Research and Development on Resources linkage for E-science (RENKEI Project)

Informatics for future value creation

- Cyber information infrastructure for the information-explosion era
  Jun Adachi
- Quantum information processing project
  Yoshihisa Yamamoto
- Science Grid
  Kenichi Miura
- Next-generation Informatics Research Infrastructure
- Development of the Fastest Database Engine for the Era of Very Large Database and Experiment and Evaluation of Strategic Social Services Enabled by the Database Engine
  Masaru Kitsuregawa

Next-generation software strategies

- Top SE (Education Program for Top Software Engineers)
  Shinichi Honiden
- Development of Dependable Network-on-Chip Platform
  Tomohiro Yoneda

Information environment/ content creation

- Associative information access for spontaneous learning
  Akihiko Takano
- Generic Engine for Transposable Association (GETA)
  Akihiko Takano
- Content integration and handling technology for digital archiving
  Jun Adachi
- Thinking content - The Smartive Project
  Shinichi Honiden
- Research Infrastructure for Evaluation of Information Retrieval and Access Technologies – NTCIR (NII Test Collection for IR Systems)
  Noriko Kando

A solutions-seeking approach

- Global health tracking system: BioCaster
  Nigel Collier
- Technologies to reduce environmental impact based on IT
  Ichiro Satoh

Social/public contribution

- Cultural Heritage Online in Japan
  Yuzo Marukawa
- IMAGINE –Federated associative search for heterogeneous information resources
  Akihiko Takano
- Information sharing system – NetCommons
  Noriko Arai
- Data-centric Social System Design Science
  Noboru Sonehara

Integrated informatics

- The Bio-portal-in-Japanese Project
  Asao Fujiyama

Research Center

Center for Grid Research and Development

The Center for Grid Research and Development is responsible for development and maintenance of NAREGI Version 1 grid middleware, its deployment to the Cyber Science Infrastructure, and support of grid operation.

Research and Development Center for Informatics of Association

The Center seeks associative calculation mechanisms for large-scale contents, and develops practical information technology to enhance associative ability of human.

GRACE Center: Center for Global Research in Advanced Software Science and Engineering

This Center produces top-level researchers (Top RE) and educates top-level software engineers (Top SE) by building global research organizations and promoting research, practice, and education together for advanced software engineering.

Research Center for Community Knowledge

The objective of this research center is to study how "common knowledge" is formed and developed in the cyber space. More precisely, we research and develop the next generation's knowledge & information sharing infrastructure, which is named "NetCommons".

Strategic Research Projects Incubation Center

The Center plays a role in developing potential projects and incubating them into strategic and organized projects by providing research support.

Research and Development Center for Academic Networks

The Research and Development Center for Academic Networks is responsible for conducting research and development as well as construction of the cutting-edge infrastructures of the academic network and the UPKI (Inter-University Public Key Infrastructure) for Japanese universities, both forming the core of the Cyber Science Infrastructure (CSI) by cooperating with Japanese universities and relevant organizations.

Research and Development Center for Scientific Information Resources

The Center coordinates and operates with the related organizations in conducting advanced research and development about their circulation and generation, common of the academic digital content on the Cyber Science Infrastructure (CSI).

Organization for Management and Outside Collaboration on R&D

Organization for Science Network Operations and Coordination

The Organization coordinates and operates the construction of Science Information Network, middleware and others as part of the core of Cyber Science Infrastructure (CSI).

Organization for Scientific Resources Operations and Coordination

The Organization coordinates and operates the management of scientific resources and the provision of services as part of the core of the Cyber Science Infrastructure (CSI).

Organization for Value Creation in Informatics

Meeting future social and technological requirements through value creation in informatics, the organization is making continuous research efforts are made to overcome grand challenges by organizing all Japanese universities and research institutions in each research area.

Organization for Promoting Cooperation with Society and Industry

Promoting research activities in informatics to contribute to society and the public and to reinforce government-industry-academia collaboration, and aiming at sharing research results and their values with society and industry, the organization is developing innovative model and frameworks for promoting cooperative activities.

Research Cooperation

NII actively promotes research funded by Grants-in-Aid for Scientific Research, joint research with private organizations, and externally funded research (such as commissioned research).

Grants-in-aid for Scientific Research (FY2009) (as of March 2010)

Research Categories	Number	Awarded Amount (thousands of yen)
Specially Promoted Research	1	107,640
Scientific Research (A)	3	32,890
Scientific Research(B)	14	70,980
Scientific Research(C)	12	15,340
Exploratory Research	5	6,500
Encouragement of Young Scientists(A)	4	18,720
Encouragement of Young Scientists(B)	11	15,080
Encouragement of Young Scientists(launch of activities)	4	4,290
Scientific Research in Priority Areas	11	359,800
Special Purposes	6	4,000
Total	71	635,240

University-Industry Cooperation and Collaboration (FY2009) (as of March 2010)

	Number	Amount Received (thousands of yen)
Joint Research with the Private Sector, etc.	13	211,591
Commissioned Research	21	291,082
Endowments	14	31,355

Collaborative Research

As an inter-university research institution, the NII provides opportunities for mutual exchange and research among researchers in universities and research institutions in Japan, while actively promoting many collaborative research projects. As of March 2010, it carried out 103 collaborations and accept a member of collaborative scholars of a total of 529.

NII Visiting Researchers (FY2009) (as of February 2010)

Categories		Number
Visiting Researchers	(Foreign Research Scholars)	17
〃	(JSPS Postdoctoral Fellowship for Foreign Researchers)	11
〃	(Others)	16
Cooperative Scholars		19
Requested Researchers*		61
Project Researchers		63
Special Joint Researchers		27
Total		214

*Of the whole body of Project Researchers, twelve have currently been accepted under the postdoctoral researcher system established by the NII.

Contact: Research Promotion Division
Research Support and General Affairs Team
TEL: +81-3-4212-2105, 2116
FAX: +81-3-4212-2180
E-mail: kaken@nii.ac.jp

Intellectual Properties

NII creates, collects, and manages intellectual property and promotes the use of this intellectual property to contribute to society.

Total Number of Inventions and Applications for Patents (total number sincce FY2004) (as of March 2010)

Total	76
Attribution : Organization Attribution	73
: Individual Attribution	3
Applications Number	84 (Domestic Number 64, foreign number 20)
Registration Number	14 (Domestic Number 13, foreign number 1)

Contact: Intellectual Property Office
TEL: +81-3-4212-2123
FAX: +81-3-4212-2180
E-mail: chizai_web@nii.ac.jp

Graduate Education Activities

NII provides graduate education under the three main forms described below, in its efforts to train leading researchers capable of combining a broad view with advanced specialization. Students develop the ability to address challenges by capitalizing on NII's unique strengths, including comprehensive informatics research systems and a practical environment in which theoretical research and practical development are combined.

(1) Participation in the Graduate University for Advanced Studies
(2) Cooperation with graduate universities
(3) Special collaboration with research students

Department of Informatics, The Graduate University for Advanced Studies

Establishment of the Department

The Department of Informatics (advanced Ph.D. program), which began at the Graduate University for Advanced Studies with the participation of the NII in April 2002, saw its first class of students graduate in March 2005.
And Sokendai introduced A five-year doctor course program from 2006. (Admission Quota - A five-year doctor-course program: 4 / A three-year doctor course program: 6) Sokendai is a graduate university composed of 22 majors in six subjects, five of which (corresponding to 20 majors) are shared among inter-university research institutes.

Aims and Structure of the Department

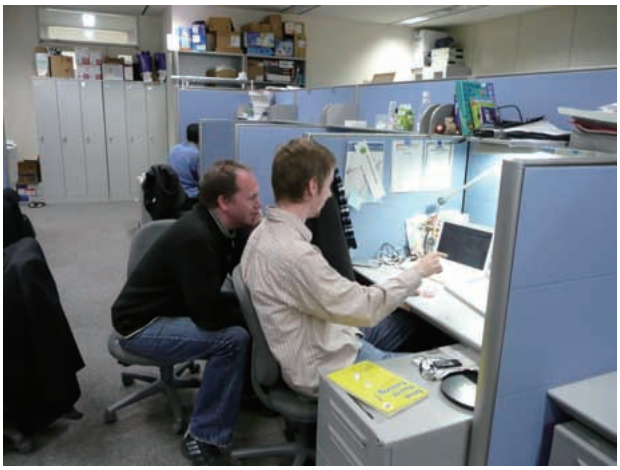
The Department's goal is to foster outstanding young international IT researchers and technicians. Students work toward obtaining a Ph.D.
The Department covers the following six research areas, and offers a total of over 70 subjects.

- Fundamental Informatics
- Foundations and Infrastructure Science
- Software Science
- Information and Media Sciences
- Intelligent Systems Science
- Information Environment Science

Description

Since its start, the Department of Informatics has proactively accepted students from overseas. For this reason, the department features lively cultural exchanges among its diverse student body.
The Department also features a large number of students with full-time jobs, with such students accounting for about half of the department's total enrollment.

Guidance for new students



Graduate students office

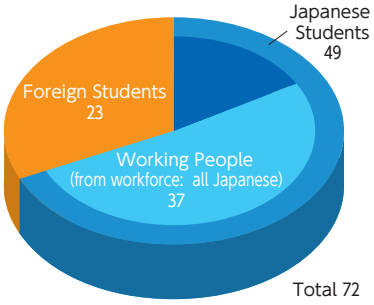
Enrollment (as of April 2010)

A five-year doctor course program	A three-year doctor course program	Research Student	Total
22 (10)	50 (13)	3 (3)	75 (26)

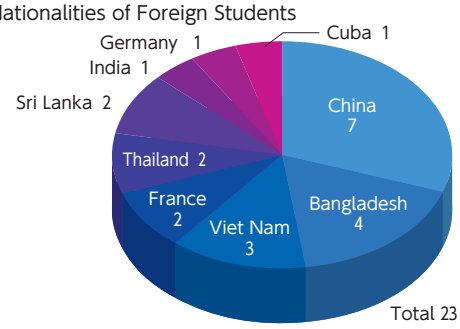
( ) Foreign students among total

Students Data (as of April 2010)

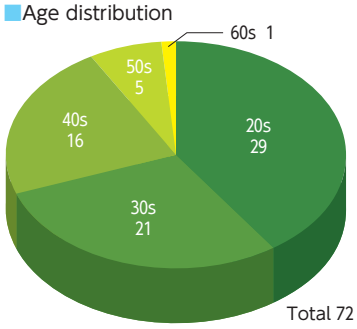
Current Students



Nationalities of Foreign Students



Age distribution



Career options

Year of Graduation	University/Institution	Company	Not yet determined	Total
FY2009	8 (5)	3 (1)	1 (1)	12 (7)
FY2008	5 (1)	2 (0)	1 (1)	8 (2)
FY2007	4 (2)	4 (1)	0	8 (3)
Total	17 (8)	9 (2)	2 (2)	28 (12)

( ) Foreign students among total

Cooperation with Graduate Universities

NII actively cooperates with the graduate university of Tokyo, Tokyo Institute of Technology, Waseda University and JAIST. NII also accepts graduate students from these institutions for additional instruction.

Cooperation with graduate Universities

University	Graduate School	
The University of Tokyo	Graduate School of Information Science and Technology	FY2001～
Tokyo Institute of Technology	Graduate School of Information Science and Engineering	FY2002～
	Interdisciplinary Graduate School of Science and Engineering	FY2003～
Waseda University	Graduate School of Fundamental Science and Engineering	FY2005～
	Graduate School of Creative Science and Engineering	FY2005～
	Graduate School of Advanced Science and Engineering	FY2005～
JAIST (Japan Advanced Institute of Science and Technology)	School of Information Science	FY2009～
Kyushu Institute of Technology	Graduate School of Computer Science and Systems Engineering	FY2010～
	Faculty of Computer Science and Systems	FY2010～

Special Collaboration with Research Students

NII accepts students from other universities as research students in special collaborative projects, fostering both research and education.
And for exchanging the student of NII and the MOU conclusion system, NII accepts the foreign student as "an international internship PROGRAM" from 2005.
These students not only benefit from our extensive research databases and our infrastructure for information exchange, but also perform research under the instruction of NII research staff.

Universities which research students for special collaboration belong to (as of April 2010)

University	Graduate School
Chiba University	Graduate School of Advanced Integration Science
Keio University	Graduate School of Science and Technology
	Graduate School of Media and Governance
Tokyo University of Science	Graduate School of Engineering
Universidad de los Andes	
Ecole Centrale de Nantes	

The number of students from other universities for special collaboration or cooperation between graduate universities is shown in the table on the right.

Students from other universities (as of April 2010)

Master Course	Ph.D. Course	Research Students	Total
27	37	3	67

Accepting students from abroad through an international internship program

FY2009	13 countries	87

Non-MOU Grant

FY2009	6 countries	7

Contact: Research Promotion Division, International Affairs and Education Support Team
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edubase Portal – education in anytime, anywhere

From fiscal 2006, Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) has been conducting an IT Specialist Program (ITSP). The ITSP promotes educational center cultivating top-level IT specialists with the foresights of social and technical trends.
The ITSP is held in eight centers in Japan, and each center has developed many advanced course materials and has cultivated in its courses. The goal of the Course Materials Refinement Project in ITSP is integrating knowledgebase to share knowledge in each center.
The National Institute of Informatics (NII) contributes to the Course Materials Refinement Project by building the "edubase Portal."

The edubase Portal is a website to aggregate and broadcast the electrical course materials, which composed from videos and video-synchronized slides. In the edubase portal, there are more than 200 course materials about advanced computer science and software engineering from 36 universities contributing to the ITSP. The edubase Portal achieves the anytime/anywhere self education about advanced computer science and software engineering. The learner can access the edubase Portal via the Internet, search course materials, and see it by using only web browser.
As the second future for the authors, the edubase Portal is preparing to provide supporting materials to publish materials through the edubase Portal, such as the guideline documents necessary to make the copyright and license agreement, the guidance book to build the original course materials.

The edubase Portal opens a new epoch in the education.

URL http://edubase.jp/

Screenshot: compiling videos and slides

- The edubase's world-first feature enables synchronizing operations of videos and presentation slides by using only web browser and internet connection, there is no need to use exclusive editing software.

Screenshot: broadcasting videos

- In contrast to other video-broadcasting websites, edubase provides advanced feature of easy broadcasting synchronized video and presentations slides.
- The edubase Portal supports Firefox and Internet Explorer on Windows and Mac OS X.

Screenshot: searching contents

- Users can search contents via a spreading view of search results. Axes are chosen from matching rate, number of broadcast requests, length of each video, number of comments and the number of stars(favorites).
- The details of the search result that user pointed pop up.

NII Library

The NII Library holds a number of books and periodicals on informatics, including on-line journals as part of its role as an informatics research/education center.
Library collaborates with the nearby Meiji University Library to provide access to information of academic documents for students of the Graduate University for Advanced Studies.

Inventory, Magazine titles (end of March 2010)

Document type	Books	Bound journals	Journals (in title)
Domestic documents	10,944	8,402	207
Foreign documents	11,048	7,833	202
Total	21,992	16,235	409

Major on-line journals and databases

	Service	Publisher
1	ACM Digital Library	Association for Computing Machinery
2	APS online	American Physical Society
3	CUP online	Cambridge University Press
4	IEL	IEEE,IEE
5	MathSciNet	American Mathematical Society
6	OUP online	Oxford University Press
7	Springer Link	Springer
8	Science Direct	Elsevier B.V.
9	Wiley Interscience	John Wiley & Sons.
10	IEICE	The Institute of Electronics, Information and Communication Engineers

Facility, Equipment

	Reading room	Stack room
Area	140㎡	271㎡
Seats	8	3
PC for search	2	
Other equipment	Automatic Book Circulation Machine (Sumitomo 3M ABC-III)	
	Micro reader printer (Konika Minolta SP7000)	
	Copier (DocuCentre-Ⅲ C2200)	

Reading room 1

Reading room 2

Stack room

Subscribed journals

Contact: Information Service Team,
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International Exchange

As Japan's sole comprehensive academic research institute in the field of informatics, the NII presents research results to the world and strives to contribute globally through efforts related to informatics – by promoting active international exchange among researchers and students and helping to establish informatics research bases – as a partner in various international joint projects.

Global Liaison Office (GLO)

NII established the Global Liaison Office (GLO) in order to actively promote international cooperation with prominent overseas institutes. The GLO is concluding International Exchange Agreement (MOU) with the organizations and implementing a variety of measures that promotes international research exchanges.

International Exchange Agreement (MOU)

NII actively promotes conclusion of International Exchange Agreement (MOU, memorandum of understanding) with overseas universities and research institutions, and holds various exchange activities such as joint research project, interactions between researchers and students, and seminar/symposium.
Also, "MOU Grant" and "NII International Internship Program" support dispatch and invitation of researchers and students between MOU institutes. As of April 2010, MOU institutes/universities are over 62 in 18 countries in Asia, Oceania, North America, and Europe.

MOU Grant/ Non- MOU Grant

The system of MOU Grants was established in FY 2005 to assist in research related to sending and hosting researchers to promote research-related exchange with overseas research institutions, including those with which MOUs have been concluded. In FY 2006, a new system of Non-MOU Grants was established to assist in research related to the hosting of researchers from overseas research institutions, including those with which no MOUs have been concluded. This latter initiative includes the acceptance of doctoral students as interns.
In FY 2009, the decision was made to dispatch 21 researchers to a total of nine nations and to accept 48 researchers from a total of 12 nations under both of these grant systems.
(The total number of nations to which researchers are dispatched includes multiple countries visited by the same researcher on a single assignment.)

MOU on cooperative research: (as of April 2010)

For research cooperation (Number: 54 Institutes)	
Republic of Singapore	School of Computing, National University of Singapore
Kingdom of Thailand	Chulalongkorn University
	Asian Institute of Technology
	Kasetsart University
	National Electronics and Computer Technology Center, National Science and Technology Development Agency (NECTEC)
Republic of Korea	Korea Institute of Science and Technology Information
	Department of Computer Science and Engineering, Seoul National University
People's Republic of China	Chinese Academy of Sciences, Institute of Computational Mathematics and Scientific/Engineering Computing, Academy of Mathematics and System Sciences
	School of Electronics and Information Engineering, Tongji University
	Department of Automation, School of Information Science and Technology, Tsinghua University
	School of Electronics Engineering and Computer Science, Peking University
People's Republic of Bangladesh	University of Dhaka
Socialist Republic of VietNam	International Research Center MICA Hanoi University of Technology
	Hanoi University of Technology
	Vietnam National University of Ho Chi Minh City
	University of Science, Vietnam National University, Ho Chi Minh City
United States of America	School of Engineering and Computer Science University of Michigan-Dearborn
	College of Engineering, University of Washington, Seattle
	Indiana University
	Department of Computer Science, University of Maryland
	New Jersey Institute of Technology
Canada	Faculty of Mathematics, University of Waterloo
	Department of Computing Science, Alberta Ingenuity Centre for Machine Learning (AICML), Faculty of Science, University of Alberta
	School of Computer Science, McGill University
Ireland	The University of Limerick (Lero - the Irish Software Engineering Reserch Centre)
Republic of Italy	Department of Informatics, Torino University
United Kingdom of Great Britain Northern Ireland	Department of Computer Science, Faculty of Engineering Science, University College London
	Faculty of Mathematics and Computing, Open University
	University of Bath
	University of Bristol
	Department of Computing at Imperial College London
	The Computing Laboratory, University of Oxford
	School of Computer Science & Electronic Engineering, University of Essex
Republic of Austria	Vienna University of Technology
Kingdom of the Netherlands	Centre for Mathematics and Computer Science (CWI)
Czech Republic	Czech Technical University in Prague
Federal Republic of Germany	Faculty of Applied Informatics, University of Augsburg
	German Research Center for Artificial Intelligence (DFKI)
	The Faculty of Applied Science of the University of Freiburg
	The RWTH Aachen University (Faculty of Mathematics, Computer Science and Natural Sciences)
	The German Academic Exchange Service (DAAD)
	Faculty of Mathematics, Informatics and Statistics, University of Munchen
French Republic	Universite de Nantes Laboratoire d'Informatiquede Nantes-Atlantique (LINA)
	Institut National de Recherche en Informatique et en Automatique (INRIA)
	Institut National Polytechnique de Grenoble (INPG)
	Universite Joseph Fourier-Grenoble 1
	Laboratory of Computer Sciences, Paris6 (LIP6), Pierre and Marie Curie University (UPMC)
	Institute National Polytechnique de Toulouse (INPT)
	National Center for Scientific Research (CNRS)
	Université Paul Sabatier (Université de Toulouse III)
Portuguese Republic	INESC-ID
Australia	The Australia-Japan Research Centre of The Australian National University
	National ICT Australia Limited (NICTA)
	The Faculty of Engineering, Physical Sciences and Architecture, The University of Queensland

For development and operational cooperation (Number: 8 Institutes)	
Republic of Korea	Korea Education & Research Information Service
United States of America	North American Coordinating Committee on Japanese Library Resources
	Institute for Scientific Information, Inc.
	Association of Research Libraries (ARL)
United Kingdom of Great Britain and Northern Ireland	The British Library
Federal Republic of Germany	Hochschulbibliothekszentrum des Landes Nordrhein-Westfalen
Taiwan	National Center for High-Performance Computing (NCHC)
Europe	Delivery of Advanced Network Technology to Europe (DANTE)

Accepting students from abroad through an international internship program

As part of its student exchange activities with institutions with which it has concluded MOUs, from FY 2005, the NII has accepted overseas students through an international internship program.
The goal of this international internship program is to provide graduate students (in master's and Ph.D. courses) from universities and research institutions that have concluded MOUs with the NII the opportunity to take part in research and to receive guidance from professors at NII. Students enroll for two to six months, depending on their research interests.
In FY 2009, NII accepted a total of 97 interns from institutions with which it had concluded MOUs in thirteen countries: Singapore, Thailand, Korea, China, Bangladesh, Vietnam, U.S.A, Canda, UK, Czech, Germany, France, and Australia.
In addition, the decision has been made to use non-MOU grants to accept one intern from non-MOU institution in the Germany.

Names of universities and other institutions sending interns during the 2009 fiscal year and their countries:

Name of University / Institution	Number	Country
[International Internship Program]		
School of Computing, National University of Singapore	2	Republic of Singapore
Chulalongkorn University	7	Kingdom of Thailand
Asian Institute of Technology	5	
Kasetsart University	1	
NECTEC	2	
Seoul National University	5	Republic of Korea
Tongji University	5	People's Republic of China
Tsinghua University	1	
Peking University	1	
University of Dhaka	1	People's Republic of Bangladesh
Hanoi University of Technology	3	Vietnam National University of Ho Chi Minh City
Vietnam National University of Ho Chi Minh City	7	
University of Washington, Seattle	1	United States of America
New Jersey Institute of Technology	2	
University of Waterloo	3	Canada
McGill University	4	
University College London	1	United Kingdom of Great Britain and Northern Ireland
University of Bristol	1	
Imperial College London	1	
University of Oxford	1	
Czech Technical University in Prague	1	Czech Republic
The RWTH Aachen University	6	Federal Republic of Germany
Universite de Nantes	6	French Republic
Institut National de Recherche en Informatique et en Automatique (INRIA)	2	
Institut National Polytechnique de Grenoble (INPG)	8	
Universite Joseph Fourier-Grenoble 1	6	
Pierre and Marie Curie University (UPMC)	5	
Institute National Polytechnique de Toulouse	3	
Université Paul Sabatier (Université de Toulouse III)	2	
National Center for Scientific Research (CNRS)	4	Australia
[Non-MOU Grant]		
University of Hamburg	1	Federal Republic of Germany
Total	98	

Intercommunion of researchers

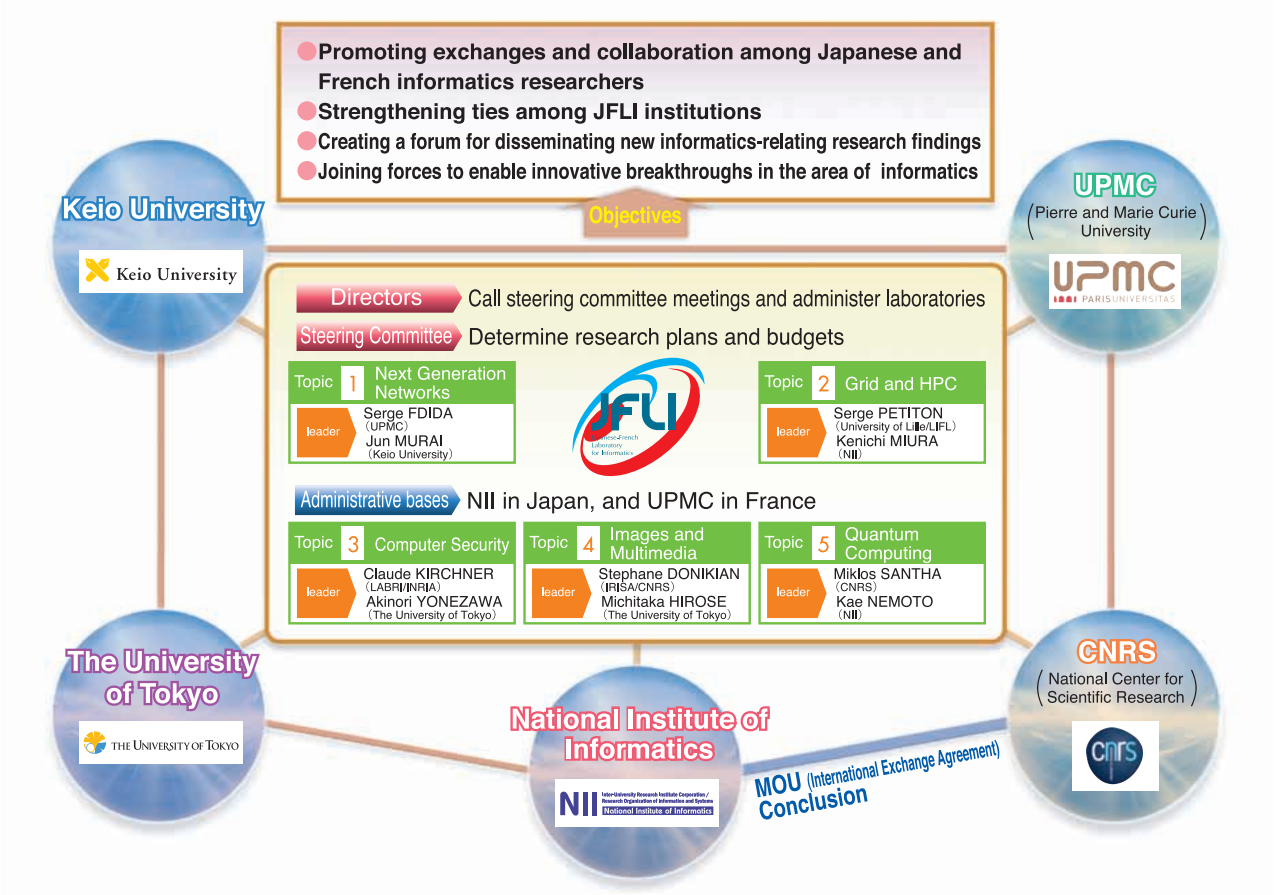
Acceptance of researchers from abroad (FY2009)

Program		Number of researchers
Japan Society for the Promotion of Science (JSPS)*1	Postdoctoral Fellowships for Foreign Researchers	6
	Postdoctoral Fellowships for Foreign Researchers (Short-term;for researchers from Western countries)	3
	Invitation Fellowship Program for Research in Japan	0
Other researchers accepted (visiting researchers, visiting professor [full-time])*2		56

*1 The figures above include those for personal accepting from the previous fiscal year.
*2 The figures above include researchers accepted by the MOU/Non-MOU Grant and the number of acceptance is 37 researchers.

Japanese-French laboratory for Informatics (JFLI)

Japanese informatics researchers are involved in all kinds of exchanges with their French counterparts, pursue active collaborations with National Center for Scientific Research (CNRS) and other French institutes, and these initiatives continue to make significant headway and achieve solid results.
This idea of further merging our separate facilities into a collaborative framework that promotes closer research ties centering on a single collaborative institute is the concept behind the Japanese French Laboratory for Informatics (JFLI).
By addressing the five basic themes of next-generation networks, grid and High-Performance Computing (HPC), computer security, images and multimedia, and quantum computing, the five-institute JFLI will not only further strengthen computer science research between France and Japan, it will also serve as a forum for the exchange and dissemination of new findings among informatics researchers.
Based on collaboration among five research institutes in Japan and France, the JFLI is established in National Institute of Informatics in Japan and in Pierre and Marie Curie University (UPMC) in France.



Program of German Academic Exchange Service (DAAD Program)

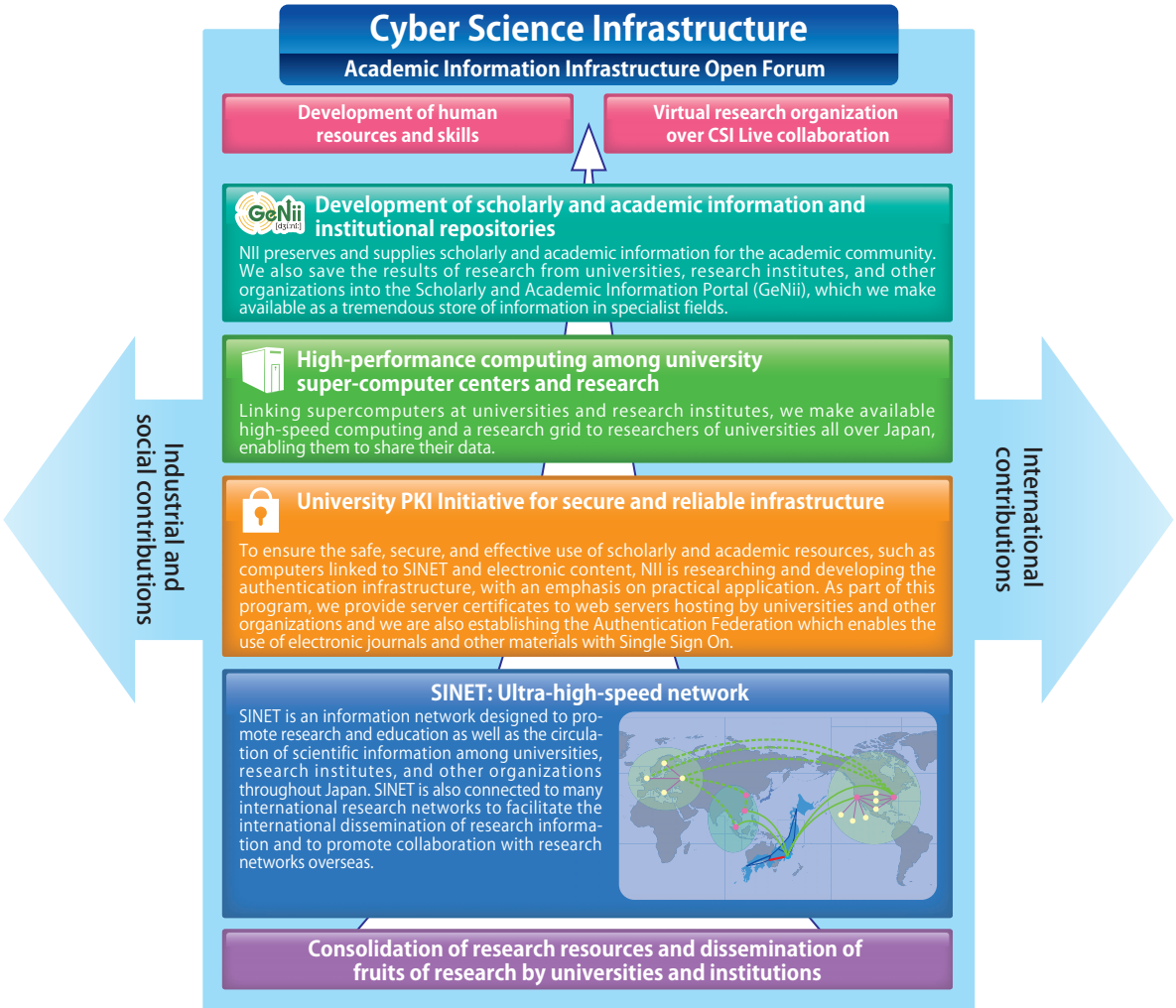
NII has concluded an international exchange agreement with Deutscher Akademischer Austausch Dienst (DAAD), which is a funding agency in Germany. Based on it, we started the "Research at International Science and Technology Center" program, the content of which is to receive a maximum of 10 German postdoctoral researchers per year from 2009 to 2012. This program is subject to only two institutes, NII and the International Computer Science Institute (ICSI), U.S. Berkeley.
As of April 2010, we have received four postdoctoral researchers and they have conducted research under their supervisor in the field of informatics. In addition, each postdoctoral researcher receives research funding in this program.

Consolidation of Cyber Science Infrastructure (CSI)

http://csi.jp/

NII is promoting the consolidation of the Cyber Science Infrastructure (CSI) through cooperation with universities and other organizations. CSI means an information environment that incorporates and utilizes various research activities and results from universities and research institutions – such as supercomputers and other distinctive scientific utilities and resources, scientific software and databases, and human resources that Japanese universities and research institutions possess – over a super high-speed network, transcending the borders of organizations or scientific fields. This infrastructure will guarantee an environment that enables the promotion of cutting-edge higher education as well as research and development of technology in universities, research institutions, and industry. NII puts in strategic efforts to the following areas, as expanding the various development projects and operations it has implemented to date within the framework of the CSI.

1. Establishment of science information network, grid environment, and UPKI through cooperation between NII, the university IT centers and other organizations
2. Establishment of the infrastructure for next- generation scientific resources through cooperation between NII, university libraries, academic societies and other organizations



NII, universities and other research institutions will collaborate and cooperate closely to facilitate the above, and Japan's academic community will work as one to prepare and vigorously promote the framework for advancing CSI construction.

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Infrastructure Planning Division
TEL: +81-3-4212-2215
FAX: +81-3-4212-2230
E-mail: plan@nii.ac.jp

Science Information Network (SINET3)

http://www.sinet.ad.jp/?set_language=en

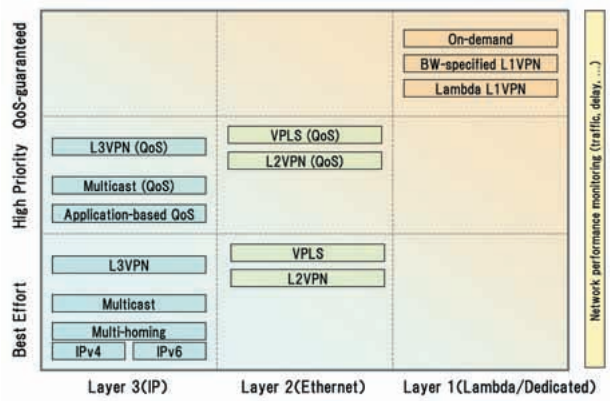
Science Information Network is an information communication network connecting universities and research institu- (connection points); it is designed to promote research and education as well as the circulation of scientific infor- tions, and similar entities. The Science Information Network is also connected to research networks such as Inter- to facilitate the international dissemination of research information and to promote collaboration with research SINET3 was launched in April, 2007. It features improved reliability and more network service in comparison with

SINET3 network architecture

To realize the diverse range of services it provides, the SINET3 network's characteristics include the following: (1) an optical/IP hybrid architecture; (2) a hierarchical architecture consisting of two layers, the backbone (core) nodes and research-facility (edge) nodes; (3) flexible resource assignment to each layer; (4) enhanced features for high reliability, through use of a multi-loop backbone; and (5) a large-capacity backbone with maximum line capacity of 40 Gbps.

SINET3 network services

In order to promote progress in research, development, and the educational environments that make use of networks, SINET3 is diversifying the menu of services it provides. SINET3 characteristic services include the provision of: (1) multiple layer services (IP, Ethernet, lambda/dedicated line) to increase the flexibility of networking between user organizations, (2) enriched VPN (Virtual Private Network) services to achieve secure coordination over networks, (3) enhanced QoS (Quality of Service) for stable support of real-time applications and other systems sensitive to network quality, (4) Layer-1 bandwidth-on-demand services for the purposes of ultra-high-capacity and ultra-high-quality data transmission, and (5) network performance (traffic, delay, etc.) monitoring for the visualization of network status.



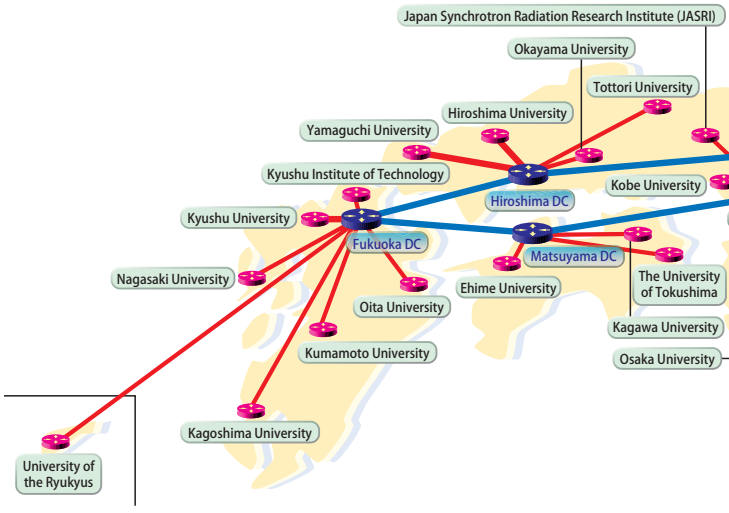
Scope of network service of SINET3

SINET Promotion Office

In October 2007, the SINET Promotion Office was established to promote use of the Science Information Network.
The services provided by the Office include consulting, user support, network service training and promotion, and educational activities for advanced use of SINET3.

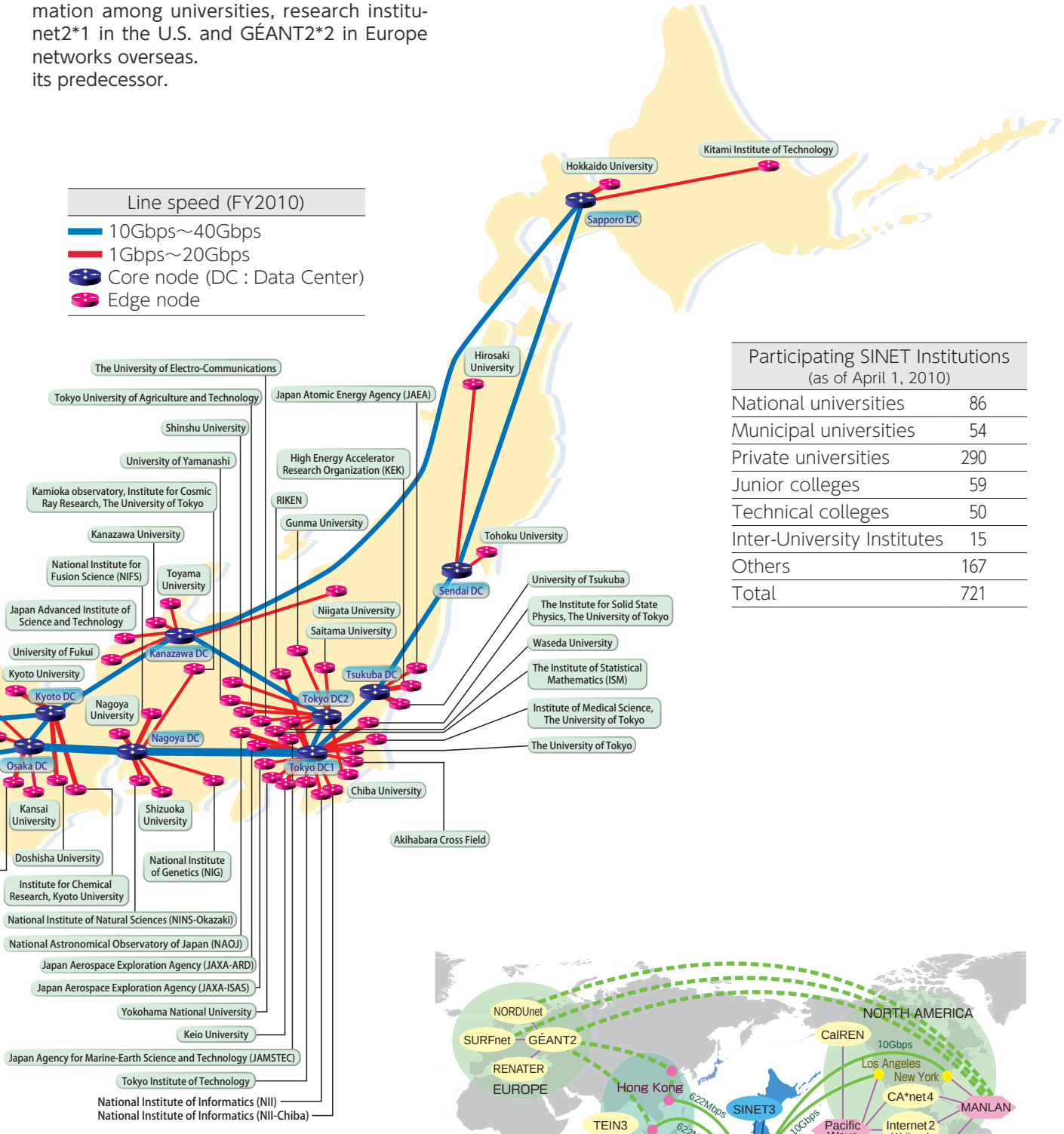
*1 Internet2 Abilene is a testbed network operated by the next-generation Internet development project "Internet2" and involves more than 200 participating universities and research institutes across the US.

*2 GÉANT2 GÉANT2 is a pan-European research network formed by the EC as a policy initiative, and covers more than 3,500 participating research and educational organizations in more than 34 countries.



Contact: SINET Promotion Office
TEL: +81-3-4212-2269
FAX: +81-3-4212-2270
E-mail: support@sinet.ad.jp

tions throughout Japan via nationwide nodes
mation among universities, research institu-
net2*1 in the U.S. and GÉANT2*2 in Europe
networks overseas.
its predecessor.



Participating SINET Institutions (as of April 1, 2010)	
National universities	86
Municipal universities	54
Private universities	290
Junior colleges	59
Technical colleges	50
Inter-University Institutes	15
Others	167
Total	721

To New York : 10Gbps
To Los Angels : 10Gbps
To Singapore : 622Mbps
To Hong Kong : 622Mbps

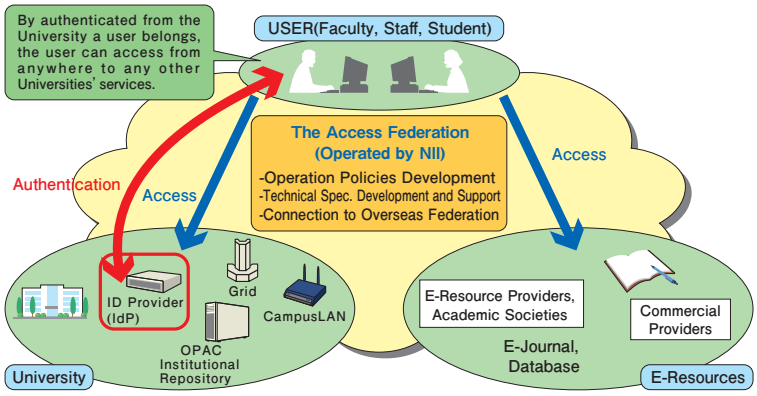
International Network Collaboration

University Public Key Infrastructure (UPKI)

https://upki-portal.nii.ac.jp/

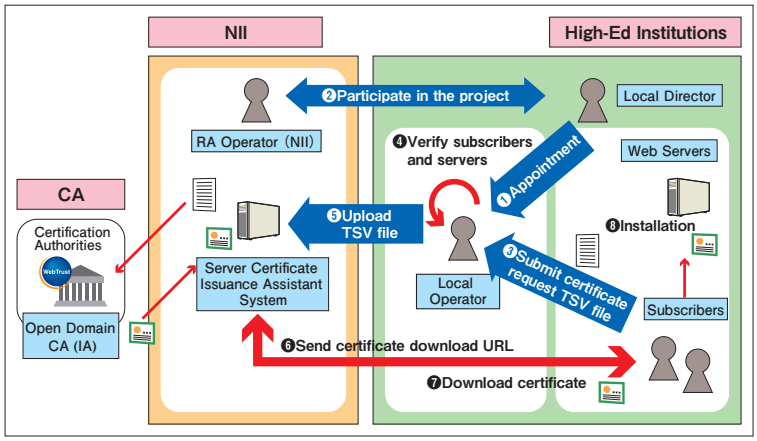
Establishment of the Access Federation by Shibboleth

Many web-based services restrict access using authentication. Authentication is essential, especially for the use of academic e-resources. Authentication is normally required for each individual services. To eliminate this inconvenience, we are working to establish a single sign-on environment using Shibboleth technology.
With Shibboleth technology, operators of academic e-resources provide services by trusting the authentication information provided by the authentication infrastructure in each university. This is called the Federated Authentication by Shibboleth.
To build mutual trust among universities and service providers (SPs) upon Shibboleth- based authentication infrastructure, it is necessary to develop the policies and the technical specifications adjusting among universities and SPs on the exchange of authentication information. The organization consists of participating universities and in charge of above tasks is called "federation". Many such federations have been established in various overseas countries. In Japan, the National Institute of Informatics is currently working with universities to establish a federation and also collaborating with publishers of electronic journals and academic database providers to enable one-stop access to academic resources.



Issuing Open Domain Server Certificates

Public (open domain) server certificates are essential for confirming the actual existence of web servers in a university, i.e. the authenticity that the web server is actually owned by the university, and for encrypting connection between the client and the web server by SSL/TLS protocol. We are coordinating a research project to examine issues related to certificate issuance. In addition to certificate issuance, this project involves participant universities in some processes of certificate issuance and registration. The project also seeks to expedite and optimize registration and issuing procedures. Though each participant university must establish a cooperative system for the registration process in the university, this project makes it much easier to obtain server certificates for universities.
Certificates issued by this project are used for web servers and for the academic Access Federation mentioned above, and helps to improve security for all aspects of SINET.
In the second phase of the project, which began in FY2009, the majority of the workflow to register and issue certificates within NII has been systemized, and further streamlining and optimization has been done. Already more than 2,000 certificates have been issued and the project is being pursued jointly with more than 120 universities and other academic institutions.



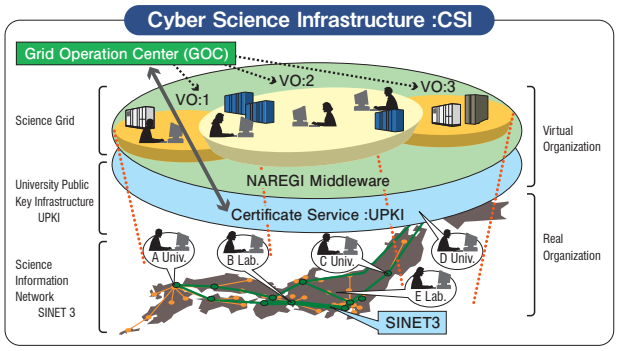
Contact: Inter-Universities Affairs Team, Infrastructure Planning Division
TEL: +81-3-4212-2218
FAX: +81-3-4212-2230
E-mail: upki-office@nii.ac.jp

NAREGI Middleware/e-Science community

http://www.naregi.org/

Construction of the Science Grid and Realization of Cyber Science Infrastructure (CSI)

The Science Grid enables not only to share computing resources unilaterally, but also to organize research communities (VO:virtual organizations) which can share data and resources within and among themselves. The NII pursues realization of CSI by using the grid technologies to form research-communities. It also provides support for the deployment and operation of National Research Grid Initiative (NAREGI) Grid Middleware and promotes training for grid users, as well as international research activities undertaken jointly with overseas academic institutions through international cooperation.



NAREGI Middleware

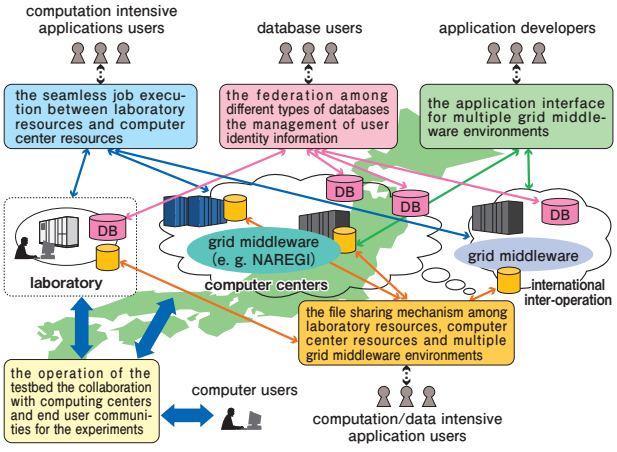
Originally as "The National Research Grid Initiative (NAREGI)" project and later as a part of the "Development and Applications of Next-Generation Supercomputer" project, research and development on the NAREGI Middleware was conducted over the five-year period from 2003 through 2007. In FY 2008, the outputs of this project were released as the NAREGI Middleware Version 1.0.
NAREGI Middleware is software designed for sharing data and computing resources by combining multiple supercomputers and high-end servers which are connected by networks as a single massive virtual computing resource.
NAREGI middleware is an open-source software and is easily available to anyone on the Web. Users can selectively use only the subset of the functions, depending on operational modes and requirements.

Deployment of NAREGI Middleware

NAREGI middleware has been incorporated into some of the supercomputer systems operated by nine university IT centers, and evaluation and trial operations of NAREGI middleware has been underway in FY 2009. This trial operation will allow users to use effectively and efficiently the computing resources owned by the university IT centers. We are currently working not only with university IT centers, but also with several research organizations with national cooperative research facilities to install the NAREGI middleware. We maintain cooperative relationships with these organizations in order to carry out promotion activities, such as user training, which will be needed in the future.

Expansion of the Grid Environment toward the e- Science communities

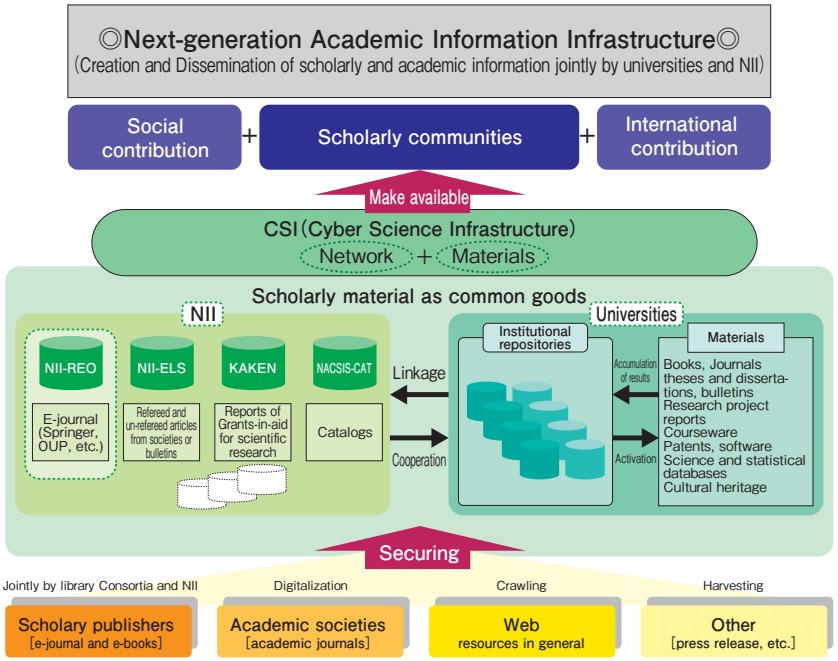
From FY 2008 through 2011, we have started "Resource linkage for e-Science (RENKEI)", as a part of a project entitled "Research and Development on Systems Integration and Collaborations for Realizing e-Science". The objective of this project is to develop software that will enable the sharing and linking of small-scale resources at the departmental/research laboratory level, with the large-scale resources of university IT centers, as well as with overseas grids operating under different environment, including computing resources, data, databases, and applications. We believe this project will create the seamless linking of small-scale and large-scale computational environment, thus strengthening the research capabilities of the e-science communities.



Contact: Center for Grid Research and Development
TEL: +81-3-4212-2857 FAX: +81-3-4212-2803 E-mail: naregi-office@grid.nii.ac.jp

Establishment of Next-Generation Academic Information Infrastructure

Next-generation Academic Information Infrastructure is an important element of Cyber Science Infrastructure (CSI). It serves as an information platform that will secure Scholarly and Academic Information that is essential to the scholarly community while also ensuring its stable supply. At the same time, it collects and organizes the results of education and research that are produced at universities and research institutes, enhances their value, and disseminates them to society at large.



Support for Linkage between Institutional Repositories

http://www.nii.ac.jp/irp/

Institutional repositories comprise a series of services provided by universities to members of their communities, in order to manage and transmit digital data created by universities and their members.
NII has conducted a collaborative program with universities to support the operation of institutional repositories. It involves the extension and integration of existing scholarly and academic information services at NII and the enhancement and improvement of information dissemination from universities.

Activities

Since FY 2005, NII has entrusted to universities various tasks related to promoting the development of institutional repositories.
It also entrusts surveys and R&D for developing new services through collaboration between institutional repositories and improving their user-friendliness.
In addition to those entrusting projects, it supports universities and other academic institutions for content enhancement, system linkage and community formation.

FY / Tasks entrusted	FY2005	FY2006	FY2007	FY2008	FY2009
Area 1 (Development and operation of institutional repositories)	19 institutions	57 institutions	70 institutions	68 institutions	74 institutions
Area 2 (Advanced R&D)	—	22 projects	14 projects	21 projects	21 projects

Contact: Institutional Repository Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2350 FAX: +81-3-4212-2375 E-mail: ir@nii.ac.jp

GeNii (NII Scholarly and Academic Information Portal)

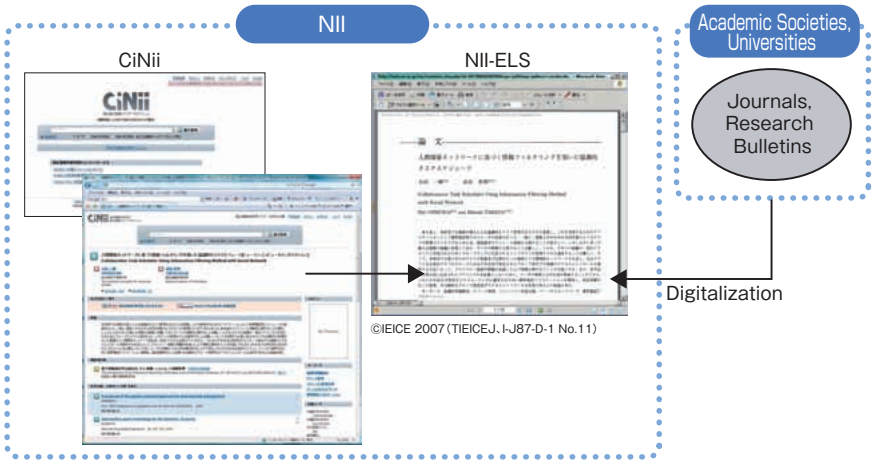
http://ge.nii.ac.jp/

GeNii is a web-based service offering comprehensive scholarly and academic information created by NII in collaboration with university libraries, academic societies, and researchers.
Currently GeNii presents information in five major areas; (1) academic papers (CiNii), (2) books/journals (Webcat Plus), (3) research results (KAKEN), (4) specialized academic information (NII-DBR), and (5) institutional repositories (JAIRO). These areas feature individual search engines suited to the relevant content, while the GeNii Integrated Search System provides a tool for cross-referenced searching to help users quickly find the information they need.

CiNii (NII Scholarly and Academic Information Navigator)

http://ci.nii.ac.jp/

- CiNii provides citation information, primarily in Japanese, together with navigation tools for searching both text and citation references.
- Basic search is available to anyone via the internet, while citations and fee-based electronic library content are available to registered users only.
- We are expanding the pool of available data and improving text hit rates by linking various database services, including university institutional repositories, J-STAGE, and Japana Centra Revuo Medicina (Ichushi) Web.



- We are currently promoting intersystem links with university libraries and other facilities by providing search APIs (application program interfaces) such as OpenURL and OpenSearch.

Database volume by content type (as of March 2010)

Content		Items	Links to full text
NII citation index database (CJP)		Bibliographies = 1.64 million Cited papers = 17.70 million	
NII electronic library service (NII-ELS)	Academic journals	Bibliographies, abstracts and papers =3.12 million	All
	University research bulletins	Bibliographies, abstracts and papers= 0.93 million (with full text=0.38 million)	Some
Japanese Periodical Index		Bibliographies = 8.52 million	

NII Electronic Library Service (NII-ELS)

- The NII Electronic Library Service is a vast digital archive encompassing recent as well as past research papers, providing access to page images of a comprehensive collection of research papers sourced from journals published by academic societies and universities research reports. Searching and browsing is available via CiNii.

NII-ELS bibliography (as of March 2010)

Participating organizations	Journals (with full text of articles)	Research papers
1,423 (academic societies 327)	4,215	3.5 million

Contact: NII-ELS Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2340
FAX: +81-3-4212-2370
E-mail: els@nii.ac.jp

Contact: CiNii Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2300 FAX: +81-3-4212-2370 E-mail: ciniiadm@nii.ac.jp

KAKEN (Grants-in-Aid for Scientific Research)

http : //kaken.nii.ac.jp/

- This site presents a brief overview on themes (themes when initially adopted) and results (e.g., reports and reviews) of the research themes funded by grants-in-aid for scientific research from the Ministry of Education, Culture, Sports, Science and Technology and the Japan Society for the Promotion of Science.
- Provides access to the latest scientific information in Japan.

Stored documents (as of March 2010)

Research themes
620,000

Contact: KAKEN Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2300
FAX: +81-3-4212-2370
E-mail: Kaken_fdbk@nii.ac.jp

JAIRO (Institutional Repositories Portal)

http://jairo.nii.ac.jp/

- This will enable crossover searches of academic information (research papers published in scholarly journals, academic dissertations, study reports, etc.) accumulated in institutional repositories in Japan.
- Displays statistics on frequently accessed and new content.

Stored content (as of March 2010)

Institutional Repositories	Contents
148	870,000

Webcat Plus

http://webcatplus.nii.ac.jp/

- Even when searching ambiguous themes, Webcat Plus' associative search function can help you find the right books.
- Webcat Plus helps you find not only the out of print books in libraries, but also the latest publications that are not yet in libraries.
- Webcat Plus lets you view information in its table of contents, attached advertising material, or cover.

Database contents (as of March 2010)

Books	Journals
16,400,000	320,000

NII-DBR (Academic Research Database Repository)

http://dbr.nii.ac.jp/

- This site features specialized databases prepared by Japanese academic societies and research groups.
- Cross-searching of two or more databases is possible, in addition to the standard individual database search.

Stored databases (as of March 2010)

Databases	Contents
29	1.98 million

Contact: GeNii Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2300
FAX: +81-3-4212-2370
E-mail: geniiadm@nii.ac.jp

Catalog Information Service

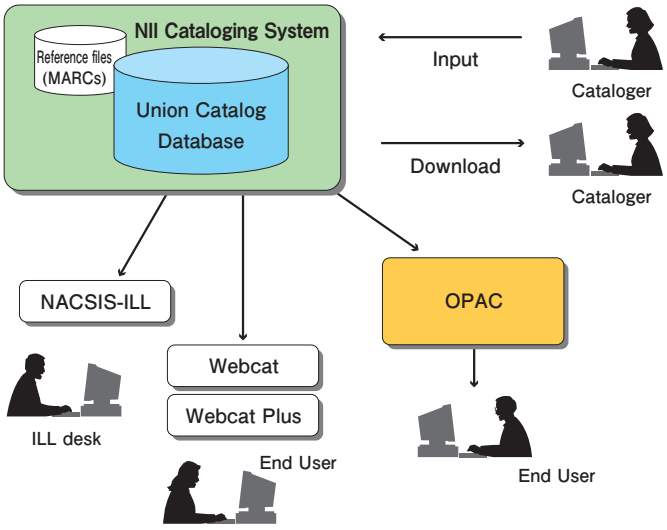
The Catalog Information Service consists of the Cataloging System and the Interlibrary Loan System (ILL).

Cataloging System (NACSIS-CAT)

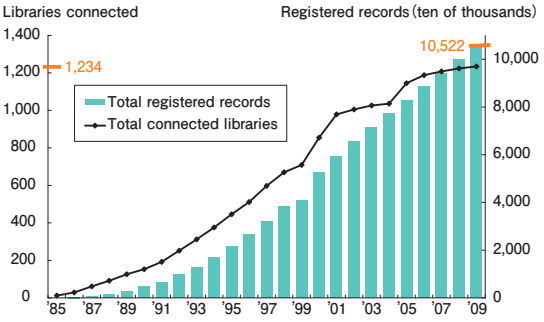
The NACSIS-CAT Cataloging System offers union catalog databases of academic documents (books and serials) held by university libraries and other such institutions throughout the country. These databases were compiled to support scholarly research and can be searched to determine instantly where specific materials are housed. To improve efficiency, standardized cataloging data (MARC) are referred to when constructing databases, and university libraries and other institutions share the work of inputting records online. The System also includes a function for referencing similar databases in other countries (OCLC in the USA, HBZ in Germany).
The union catalog of books and serials consisting of the compiled databases can be freely accessed via the worldwide web online search service (Webcat Plus).

Interlibrary Loan System (NACSIS-ILL)

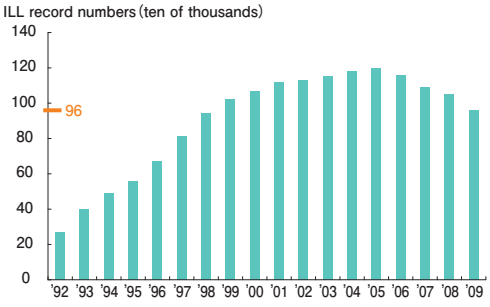
The Interlibrary Loan System (NACSIS-ILL) supports the exchange of books and serialized research dissertations among libraries to facilitate the provision of documents to researchers at universities and other institutions.
The service applies the latest information from the union catalog databases constructed by NACSIS-CAT, resulting in improved efficiency and prompt delivery of documents to users.
Users of the system may also request materials from the British Library Document Supply Centre (BLDSC), and may use the interlibrary loan service between overseas university libraries through collaboration with overseas ILL systems (such as the OCLC system in the US and KERIS in the Republic of Korea).
The efficiency of the system has been enhanced with an offsetting service for ILL document copying and other charges.



Outline of cataloging system



Trends in number of libraries connected and number of records registered



State of use of the ILL system

The National Center for Science Information Systems (NACSIS) was the forerunner of the National Institute of Informatics (NII). The acronym NACSIS is still used in the names of some NII services.

Contact: NACSIS-CAT Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2310
FAX: +81-3-4212-2375
E-mail: catadm@nii.ac.jp

NII Repository of Electronic Journals and Online Publications (NII-REO)

- The NII Repository of Electronic Journal and Online Publications (NII-REO) archives the content of electronic journals and promotes their use as part of a joint effort with the University Library Consortia to ensure stable, sustainable access to electronic content.
- The terms and conditions applying to use of this content are based on contracts signed with publishers.

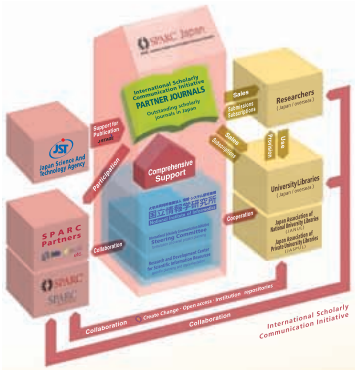
Stored content (as of March 2010)

Publisher	Number of titles	Number of articles	Collecting year
IEEE Computer Society	about 29	about 220,000	1988-2008
Kluwer online	about 500	about 350,000	1997-2005
Oxford University Press	about 150	about 850,000	1849-2003
Springer	about 1,100	about 2,090,000	1847-1996

Contact: NII-REO Desk, Scholarly and Academic Information Division
TEL: +81-3-4212-2303 FAX: +81-3-4212-2370 E-mail: reo@nii.ac.jp

International Scholarly Communication Initiative (SPARC Japan)

This project began in FY2003 for strengthening the electronic journals of the scholarly publications of Japan's academic societies, with a view to keeping in the hands of Japanese researchers the outstanding research results that are currently published abroad and further promoting the international dissemination of research results.
Academic journals published in Japan are earning great respect internationally. In collaboration with scholarly organizations, university libraries, SPARC (USA), and SPARC Europe, we are helping to establish a structure to ensure ongoing electronic publishing of these journals in a way that is economically feasible.
In recent years, particularly, there have been positive initiatives in dissemination and advocacy activities as well as support for the creation of institutional repositories, with a view to establishing an "Open Access" model for barrier-free access to research results.



Contact: Scholarly and Academic Information Division
TEL: +81-3-4212-2360 FAX: +81-3-4212-2375 E-mail: sparc@nii.ac.jp

Education and Training Programs

The National Institute of Informatics provides a range of training programs for university and other academic personnel responsible for scientific and academic information at universities and elsewhere.

User Training

NII offers database/operation training courses for those working in NACSIS-CAT/ILL services. Regional courses are also offered in conjunction with university libraries. NII also advances the development of self-learning materials that can be used on the web.

- NACSIS-CAT Training Courses (Book course/Serial course)

This course provides the opportunity to learn the structure of NACSIS-CAT, its contents, data uploading methods (input standards), and operation rules.

- NACSIS-ILL Training Course

This course provides the opportunity to learn the structure of NACSIS-ILL, its contents, and operation rules.

Advanced Training Programs

NII provides opportunities for academic research support staff at universities and research institutes to learn the latest in specialized and advanced technologies.

- NACSIS-CAT/ILL Workshop
- Seminar for University Librarians

Cooperation for User Training Sponsored by Universities

To support guidance and user training on NII services sponsored by universities and academic societies, NII offers a number of services, for example providing training texts or materials, curriculum advice, and assignment of user IDs.

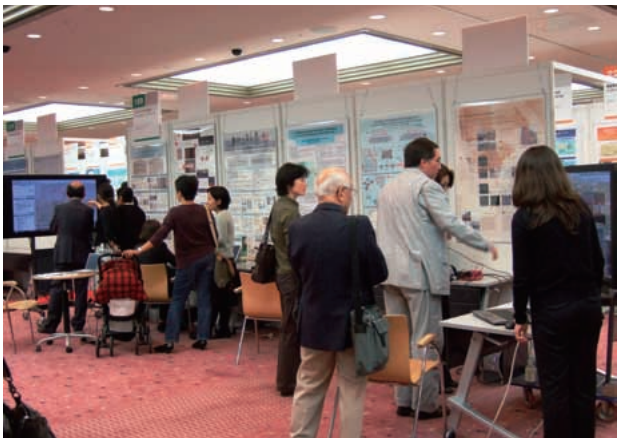
Contact: Scholarly and Academic Information Division
TEL: +81-3-4212-2177 FAX: +81-3-4212-2375 E-mail: edu@nii.ac.jp

Dissemination of Research Results

NII holds lectures and symposia and issues publications under the general aim of disseminating research findings on informatics widely throughout society, and informs details by NII's website and e-mail newsletter.

Open House

NII, a research institution, which is widely open to the public, holds "Open House" two days once a year to present its activities and research results to the public as well as to researchers and Ph.D. candidates.



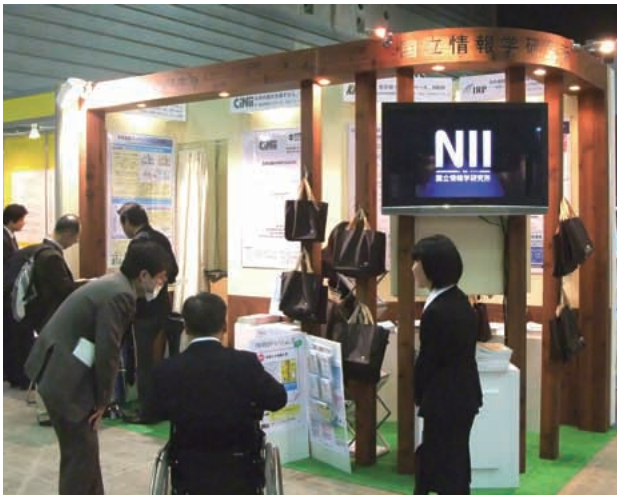
NII Open House (June, 2008)

Symposia and Study Meetings

NII announces results of research and communicates information by holding symposia and workshops addressing research subjects and the latest issues in informatics from broad-ranging perspectives, welcoming researchers from the front lines of the field in Japan and around the world.

Exhibitions

NII attempts to disseminate its research results and promote its information service through presentations in various exhibitions



Library Fair & Forum (November, 2009)

Open Lectures and Seminars

NII also holds open lectures and seminars.

NII Public Lectures

NII researchers have held public lectures on a wide range of themes related to informatics - a total of eight per year, with no more than one held in any given month - at the National Center of Science in Hitotsubashi, Chiyoda Ward, Tokyo. Some content from past lectures has been made available to the public as streaming media from the NII website. * in Japanese

NII Public Lectures (December, 2009)

Karuizawa Saturday Salon

The NII hosts seminars on issues and topics related to informatics for both researchers and the general public several times a year at the International Seminar House for Advanced Studies (Inose lodge: Karuizawa, Nagano Prefecture).

- Videos of lectures and recitals are available on the NII website * in Japanese
- Publication of Karuizawa Doyo-Konwakai Koenshu: Chi to Bi no Harmony ("Collection of Lectures from the Karuizawa Saturday Salon: Harmony of Intelligence and Beauty") * in Japanese

Karuizawa Saturday Salon (June, 2008)

Publications

NII publishes books and periodicals detailing its research findings.

■NII Series (Maruzen Library)
This series of commercial books introduces and describes the details of NII research using familiar examples that are easily understood by the general public. * in Japanese

NII Series (Maruzen Library)

■NII Technical Report
NII Technical Reports are issued as individual publications such as research papers, reference materials, and manuals covering the results of NII research, to serve generally as updates on the NII's research activities. These reports are available through the NII website.

NII Technical Report

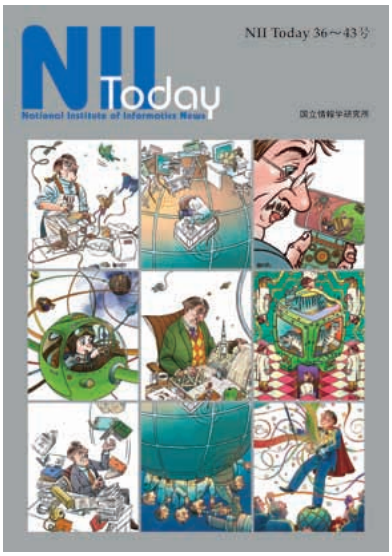
■Progress in Informatics
Progress in Informatics is an international peer-reviewed journal published by the NII, aiming at the promotion of research and development in the broad area of informatics. The journal provides the international academic community with a venue for discussion and a means of exchanging information covering a wide range of fields involving informatics applications. The published articles consist not only of original research papers but also of surveys and project reports which contribute internationally to the progress of research and development. We ask for submissions for articles all the time.

Progress in Informatics

■Please access to our website for further information
http://www.nii.ac.jp/

Public information magazine

NII Today (Japanese/English)
Catalogue of NII (Japanese/English)
Outline of NII (Japanese/English)
Annual Report (Japanese)



NII Today (Quarterly)

Contact: Publicity and Dissemination Team, Planning and Promotion Strategy Department
TEL: +81-3-4212-2145
FAX: +81-3-4212-2150
E-mail: kouhou@nii.ac.jp

Staff/Budget

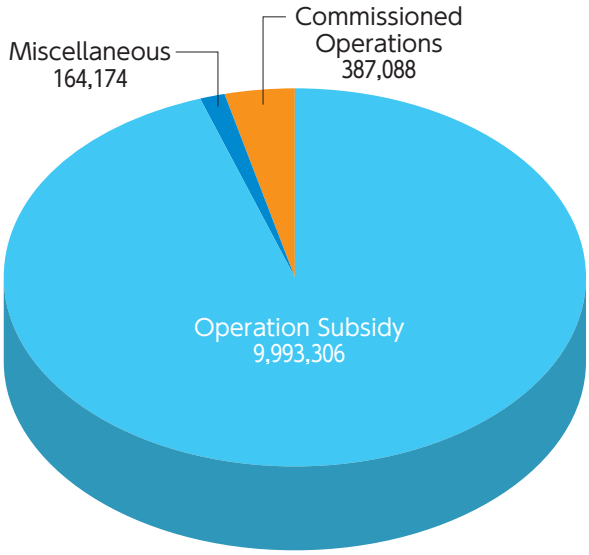
Staff (as of April 1, 2010)

	Director General	Deputy Director General	Professors	Associate Professors	Assistant Professors	Assistant	Subtotal	Other Employees	Total
Full-time Employees	1	1	37	32	13		84	55	139
Visiting Professors etc.			50	21	1		72		72
Organization for Promoting Cooperation with Society and Industry			13				13		13
Coordinate Professors			3	1			4		4
Specially Appointed Professors etc. (Project-based)			13	9	4	1	27		27
Other Outside Researchers									82
Support Staff									77
Graduate Students									131

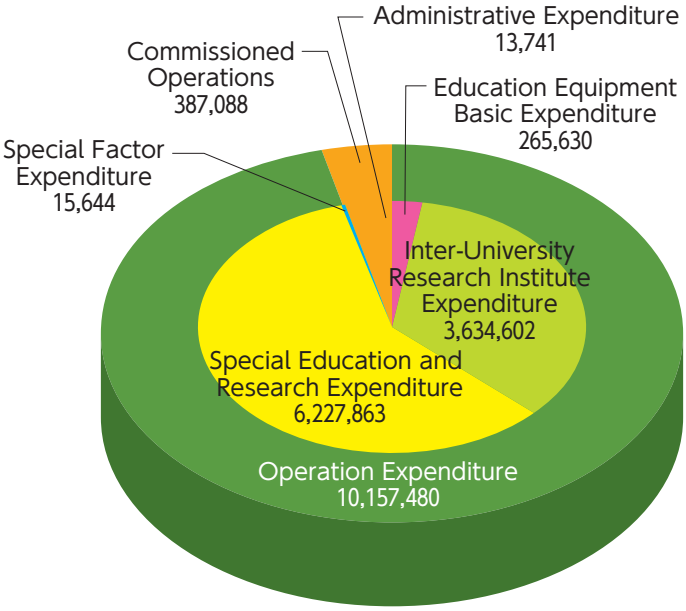
Budget (FY2010)

(unit: thousand yen)

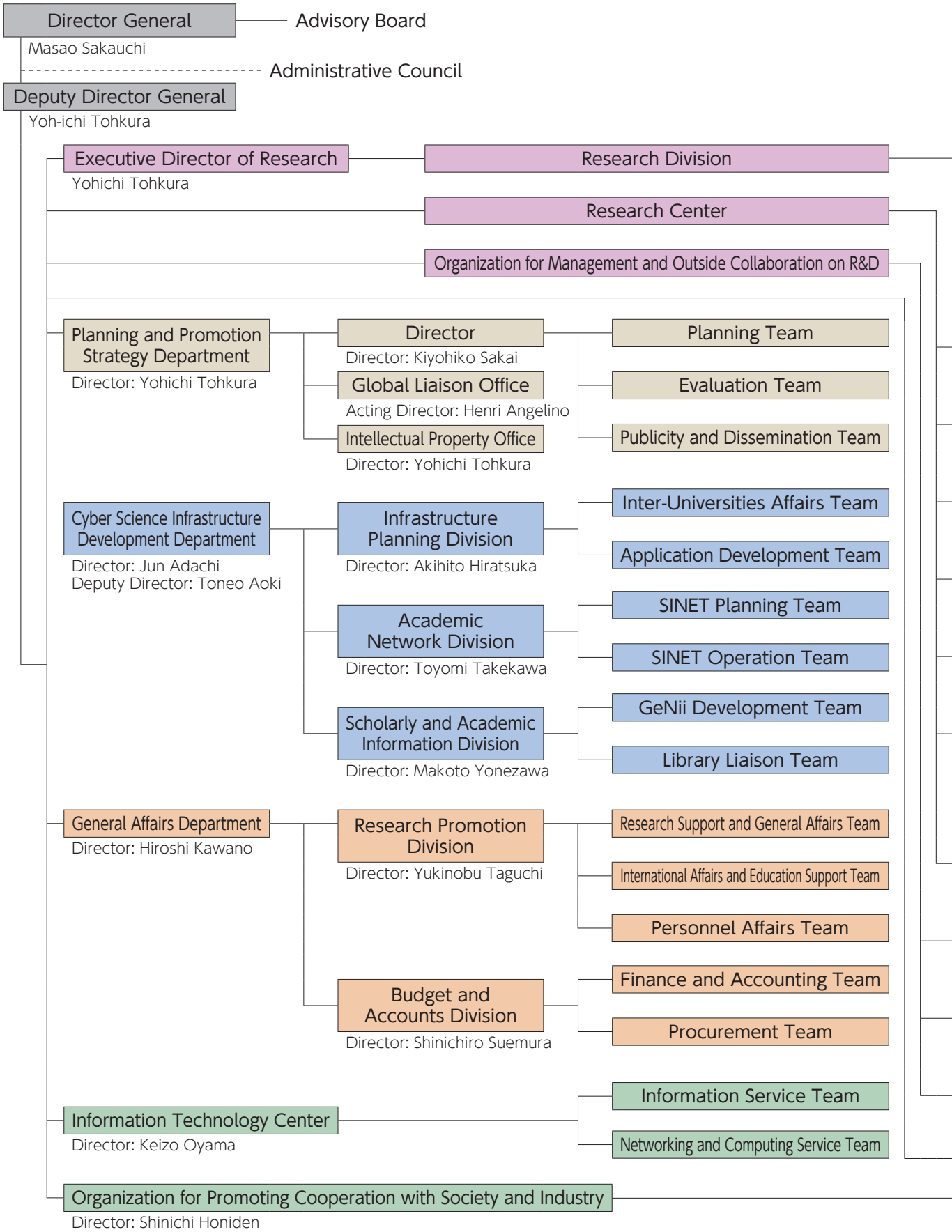
Income 10,544,568



Expenditure 10,544,568



Organization (as of April 2010)



Principles of Informatics Research Division

Director: Asao Fujiyama

Professor	Katsumi Inoue	Ken-ichi Kawarabayashi	Ken Satoh	Hideaki Takeda
	Makoto Tatsuta	Kae Nemoto	Ken Hayami	Asao Fujiyama
	Yoshihisa Yamamoto	Keiichi Kuma		
Associate Professor	Ryutaro Ichise	Tetsunari Inamura	Takeaki Uno	Makoto Kanazawa
	Nigel Henry Collier	Kunihiko Sadakane	Hiroko Satoh	Keiji Matsumoto
Assistant Professor	Shoko Utsunomiya	Timothy Byrnes		

Information Systems Architecture Science Research Division

Director: Shinichi Honiden

Professor	Shoichiro Asano	Shigeo Urushidani	Zhenjiang Hu	Ichiro Satoh
	Shin Nakajima	Hiromichi Hashizume	Shinichi Honiden	Kenichi Miura
	Shigeki Yamada	Tomohiro Yoneda	Kento Aida	Motonori Nakamura
Associate Professor	Shunji Abe	Yusheng Ji	Michihiro Koibuchi	Kensuke Fukuda
	Hiroshi Hosobe	Takashi Matsumoto	Nobukazu Yoshioka	
Assistant Professor	Kenji Tei	Soichiro Hidaka		

Digital Content and Media Sciences Research Division

Director: Keizo Oyama

Professor	Akiko Aizawa	Jun Adachi	Keizo Oyama	Shinichi Satoh
	Akihiro Sugimoto	Atsuhiro Takasu	Akihiko Takano	Seiji Yamada
	Shingo Nishioka			
Associate Professor	Kenro Aihara	Frederic Andres	Isao Echizen	Ikki Ohmukai
	Norio Katayama	Asanobu Kitamoto	Kazuya Kodama	Imari Sato
	Helmut Prendinger	Yusuke Miyao	Kazutsuna Yamaji	
Assistant Professor	Fuyuki Ishikawa	Hiroyuki Kato	Hiroshi Mo	Gene Chenug
	Mayumi Bono	Duy-Dinh Le		

Information and Society Research Division

Director: Noboru Sonehara

Professor	Noriko Arai	Sumio Kakinuma	Noriko Kando	Teruo Koyama
	Noboru Sonehara	Akira Miyazawa		
Associate Professor	Hitoshi Okada	Hironobu Gotoda	Morio Shibayama	Yuan Sun
	Masaki Nishizawa	Nobuhiro Furuyama		
Assistant Professor	Kouichirou Ueki	Masashi Ueda	Tetsuro Kobayashi	

Center for Grid Research and Development

Director: Kenichi Miura

Research and Development Center for Informatics of Association

Director: Akihiko Takano

Grace Center: Center for Global Research in Advanced Software Science and Engineering

Director: Shinichi Honiden

Research Center for Community Knowledge

Director: Noriko Arai

Visiting Professor	Henri Angelino (Full - time)		Michael E Houle (Full - time)	
	Kiyoshi Agusa	Hideharu Amano	Keijiro Araki	Hiroki Arimura
	Katsushi Ikeuchi	Hiroshi Ishiguro	Toru Ishida	Katsuro Inoue
	Kazunori Ueda	Hitohide Usami	Sebasitian Uchitel	Atsushi Ohnishi
	Hisamichi Okamura	Mizuhito Ogawa	Manabu Okumura	Masanao Ozawa
	Kunio Kashino	Mitsuhiro Kishimoto	Masaru Kitsuregawa	Yasuo Kuniyoshi
	Shu Kuramoto	Sadao Kurohashi	Jiro Kokuryo	Takashi Gojobori
	Kazunobu Konishi	Jennifer Marjorie Corbett	Motoshi Saeki	Sumio Sugano
	Masaaki Sugihara	Masato Takeichi	Yuzuru Tanaka	Yoshiaki Tanaka
	Yuichi Nakamura	Yoshiki Niwa	Bashar Nuseibeh	Anthony Finkelstein
	Teruo Higashino	Yoshiaki Fukazawa	Hideo Matsuda	Shinichi Mineo
	Günter Müller	Gerard Milburn	Kazuaki Murakami	Hiroshi Yasuda
	Hayato Yamana	Yoshinori Yokoyama	Katsuya Watanabe	
Visiting Associate Professor	Satoshi Akutsu	Takeo Igarashi	Koji Eguchi	Shingo Oue
	Eiji Oki	Haruhiko Kaiya	Eiji Kamioka	Hideaki Kikuchi
	Takashi Koga	Yoichi Sato	Jin Song Dong	Kenjiro Taura
	Tao Zhang	Kazushige Terui	Takeshi Naemura	Yuko Noguchi
	Takahiro Hara	Yutaka Matsuo	Mio Murao	Hironori Washizaki
	Youdai Watanabe			
Visiting Assistant Professor	Masashi Inoue			
Coordinate Professor	Taisuke Sato	Yasuo Tan	Satoshi Tojo	
Coodinate Associate Professor	Tsuyoshi Murata			

Strategic Research Projects Incubation Center

Director: Yohichi Tohkura

Research and Development Center for Academic Networks

Director: Shigeki Yamada

SINET Promotion Office

Director: Shunji Abe

Visiting Professor	Shinichi Iwasaki	Shiro Usui	Kazutoshi Eguchi	Mitsuo Kawato
	Tsuyoshi Kitani	Keiichi Kubota	Madoka Tsuchiya	Akihiro Hada
	Takashi Hanazawa	Akira Maeda	Kou Miyake	Hiroshi Miyabe
Visiting Associate Professor	Yayoi Hirose			

Research and Development Center for Scientific Information Resources

Director: Hideaki Takeda

Organization for Science Network Operations and Coordination

Director: Masao Sakauchi

Organization for Scientific Resources Operations and Coordination

Director: Masao Sakauchi

Organization for Value Creation in Informatics

Professor (by Special Appointment)	Michihiro Aoki	Shuichi Itahashi	Ryusuke Kawai	
	Hironobu Kuruma	Hideki Tanaka	Yoshinori Tanabe	
	Toshihiko Tsumaki	Takako Nakatani	Masami Nakamura	
	Shigetoshi Yokoyama			
Associate Professor (by Special Appointment)	Yoshinao Isobe	Toshiyuki Kataoka	Fumihiro Kumeno	
	Kei Kurakawa	Eisaku Sakane	Makoto Nonaka	
	Eric Platon	Yuzo Marukawa		
Assistant Professor(by Special Appointment)	Takeshi Abekawa	Rihoko Inoue		
	Binti Abdullah Nik Nailah			
Project Assistant	Ryuji Masukawa			

Collaborative Research Unit

Facilities / Location

National Center of Sciences

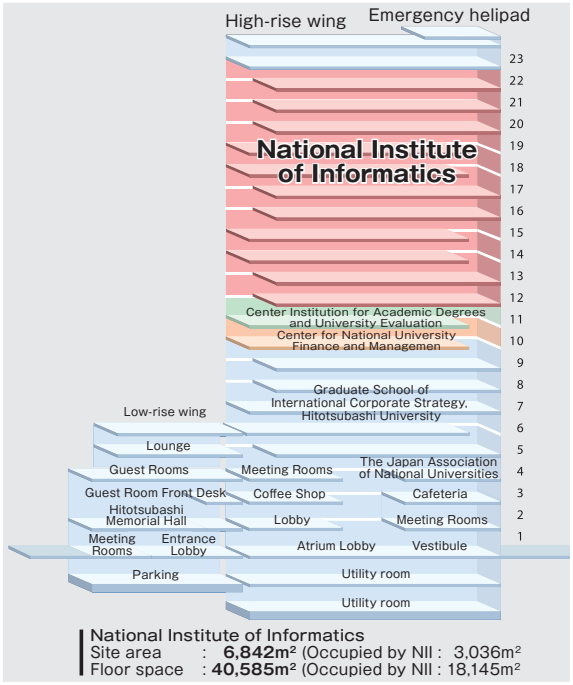
The National Center of Sciences was established as a center for scientific research in informatics, for academic exchanges, for the dissemination of scientific information, and to provide to society as a whole the benefits of an infrastructure of academic research in Japan. Construction was completed in December 1999. The Center consists of three principal institutions: the NII, the Hitotsubashi University Graduate School of International Corporate Strategy, and the Center for University Finance. The Center aims to provide a developed base for intellectual creativity through the comprehensive application of the academic functions of each institute. Conference facilities are located in the lower floor of the building, including the Hitotsubashi Memorial Hall. These are available for use for various activities, such as international conferences, lectures, and other academic meetings organized by national universities.

National Center of Sciences

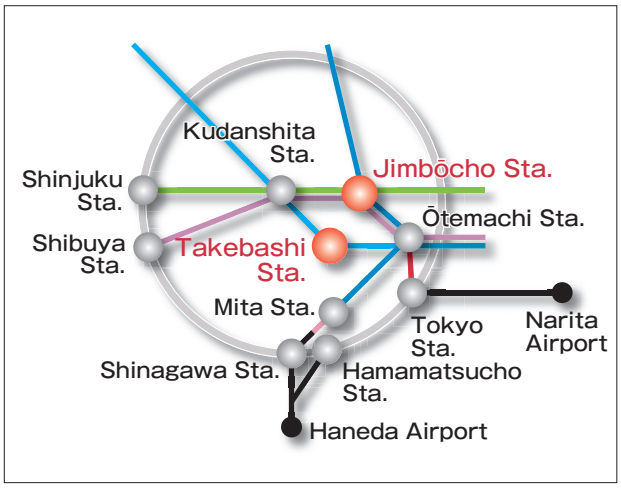
National Institute of Informatics (NII)

http://www.nii.ac.jp/

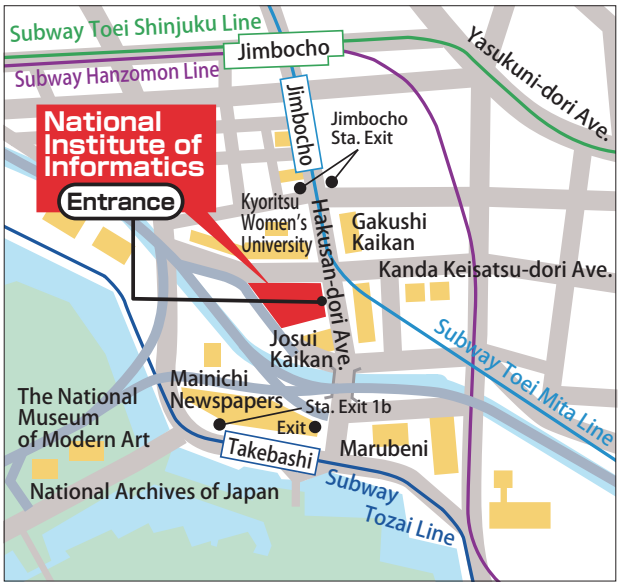
National Center of Sciences Bldg. 2-1-2
Hitotsubashi, Chiyoda-ku, Tokyo 101-8430
TEL: +81-3-4212-2000 (Exchange)



Route Map

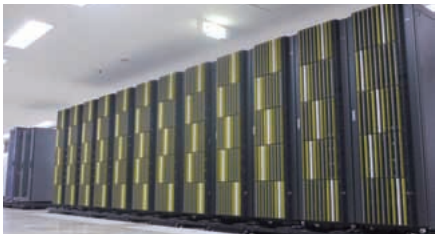


Subway Toei Shinjuku Line
Subway Hanzomon Line
Subway Toei Mita Line
Subway Tozai Line



Chiba Annex (Inage-ku, Chiba City)

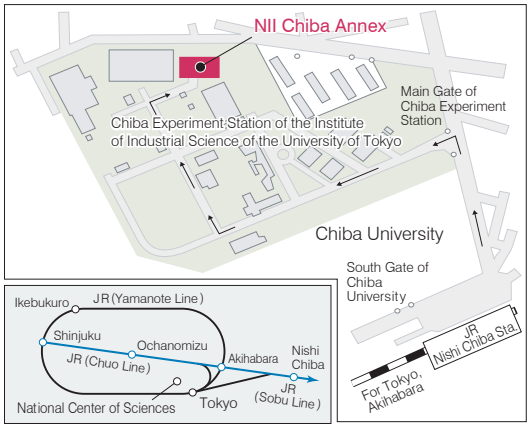
The Chiba Annex is a facility for computer systems and networking equipment used to operate the Science Information System and to provide scientific information services. It was built in November 1994 and is located in the Chiba Experiment Station of the Institute of Industrial Science of the University of Tokyo.



Chiba Annex

1-8 Yayoi-cho, Inage-ku, Chiba-shi, Chiba 263-0022
TEL: +81-43-285-4911 (Exchange)

Guide Map



Site area (rented) : **1,782m²**
Floor space : **3,943m²**

International Seminar House for Advanced Studies Inose Lodge (Karuizawa, Nagano Prefecture)

The International Seminar House for Advanced Studies, or Inose Lodge, was built on land donated by Dr. Hiroshi Inose, the first director general of NII. His idea was to create an ideal place for interdisciplinary and international discussions.

Uses

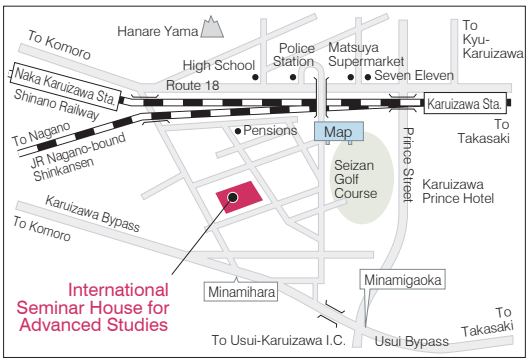
1) Domestic and international academic conferences, seminars, etc.
2) Public lectures and social gatherings, etc.
3) Research and training of NII researchers and staff.

International Seminar House for Advanced Studies Inose Lodge

http://www.nii.ac.jp/access/karuizawa/

1052-471, Okan Minamihara Nagakura, Karuizawa, Karuizawa-cho, Kita Saku-gun, Nagano 389-0111
TEL: +81-267-41-1083 FAX: +81-267-41-1075

Guide Map



Site area : **3,339m²**
Floor space : **667m²**

Contact: Research Support and General Affairs Team, Research Promotion Division
TEL: +81-3-4212-2105 FAX: +81-3-4212-2180 E-mail: kaken@nii.ac.jp

Administrative Council

Members advise the Director General regarding plans for NII projects and other important matters related to management and operations.

Setsuo Arikawa	President, Kyushu University
Haruhisa Ichikawa	Professor, The Department of Human Communication, The University of Electro-Communications
Hidehiko Tanaka	Professor, Graduate School of Information Security, Institute of information Security
Miwako Doi	Chief Fellow, Corporate Research & Development Center, TOSHIBA Corporation
Mario Tokoro	President & CEO, Sony Computer Science Laboratories, Inc.
Shojiro Nishio	Trustee, Vice President, Osaka University
Toyoaki Nishida	Professor, Department of Intelligence Science and Technology, Graduate School of Informatics, Kyoto University
Sadaoki Furui	President, Library, Tokyo Institute of Technology
Yoichi Muraoka	Professor, Faculty of Science and Engineering, Waseda University
Yoshifumi Yasuoka	Executive Director, National Institute for Environmental Studies
Yohichi Tohkura	Deputy Director General, NII
Asao Fujiyama	Director, Principles of Informatics Research Division, NII
Shinichi Honiden	Director, Information Systems Architecture Science Research Division, NII
Keizo Oyama	Director, Digital Content and Media Sciences Research Division, NII
Noboru Sonehara	Director, Information and Society Research Division, NII
Kenichi Miura	Director, Center for Grid Research and Development, NII
Akihiko Takano	Director, Research and Development Center for Informatics of Association, NII
Shigeki Yamada	Director, Research and Development Center for Academic Networks, NII
Noriko Arai	Director, Research Center for Community Knowledge
Jun Adachi	Director, Cyber Science Infrastructure Development Department, NII
Ken Satoh	Head, Department of Informatics, School of Multidisciplinary Sciences, The Graduate University for Advanced Studies

Advisory Board

Advisory Council for Research and Management Members provide advice and suggestions to the Director General regarding joint research programs and other important matters related to the operation of NII, in response to requests from the Director General.

Masanori Aoyagi	Director of the National Museum of Western Art
Setsuo Arikawa	President, Kyushu University
Kazuo Iwano	Senior Executives, future Value Creation Team, IBM Japan
Hideko Kunii	Chairman of Ricoh IT Solutions Co., Ltd.
Keiichi Kubota	Director General, NHK Science & Technical Research Laboratories
Hiromichi Shinohara	Director and Senior Vice President, Director of Research and Development Planning Department, NTT (Nippon Telegraph and Telephone) Corporation
Makoto Nagao	Librarian of the National Diet Library
Hideyuki Nakashima	President, Future University Hakodate
Shojiro Nishio	Trustee, Vice President, Osaka University
Masafumi Maeda	Managing Director, Executive, Vice President, the University of Tokyo
Hideo Miyahara	President, National Institute of Information and Communications Technology
Teruyasu Murakami	Senior Fellow, Nomura Research Institute, Ltd.
Yoichiro Murakami	President, Toyo Eiwa Jogakuin
Lotfi A.Zadeh	Professor, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley
Takeo Kanade	Professor, Robotics Institute, Carnegie Mellon University
Gerard Van Oortmerssen	Director, ICTRegie (ICT Research and Innovation Authority, the Netherland)
Michel Cosnard	Chairman and CEO, INRIA
Thomas F. Coleman	Professor and Dean, Faculty of Mathematics, Waterloo University
Wolfgang Wahlster	Director and CEO, The German Research Center for Artificial Intelligence
Marek Rusinkiewicz	Vice President and General Manager, Telcordia Technologies, Inc.
Ramesh Jain	Professor, Department of Computer Science, University of California, Irvine
Bob Williamson	Scientific Director, NICTA (National ICT Australia)
Jeff Kramer	Senior Dean, Faculty of Engineering and Imperial College Business School, Imperial College London
Michael A. Keller	Ida M. Green University Librarian, Director of Academic Information Resources, Publisher of HighWire Press, and Publisher of the Stanford University Press
Duk-Hoon Kwak,	President and CEO, KERIS (Korea Education and Research Information Service)
Yi Zhang	Professor, Vice Provost for International Affairs, Office of International Cooperation and Exchange, Tsinghua University
Thaweesak Koanantakool	Vice President, National Science and Technology Development Agency
Victor Zue	Director CSAIL (Computer Science and Artificial Intelligence Laboratory), MIT

Professors Emeriti (NACSIS: National Center for Science Information Systems)

Kimio Ohno	Former Deputy Director General, NACSIS, Professor Emeritus, Hokkaido University
Atsunobu Ichikawa	Professor Emeritus, Tokyo Institute of Technology
Hitoshi Inoue	Former Deputy Director General, NACSIS
Tatsuo Nishida	Former Deputy Director General, NACSIS, Professor Emeritus, Kyoto University

Professors Emeriti (NII : National Institute of Informatics)

Takamitsu Sawa	Former Deputy Director General, NII, President, Shiga University
Mitsutoshi Hatori	Former Professor, Multimedia Information Research Division, NII, Professor Emeritus, Tokyo University
Yasuharu Suematsu	Former Director General, NII, Professor Emeritus, Tokyo Institute of Technology
Eisuke Naito	Former Professor, Human and Societal Information Research Division
Katsumi Maruyama	Former Professor, Information Systems Architecture Research Division, NII
Kinji Ono	Former Professor, Information Foundation Research Division
Takeo Yamamoto	Former Professor, Multimedia Information Research Division, NII, Professor Emeritus, University of Library and Information Science
Haruki Ueno	Former Professor, Principles of Informatics Research Division, NII
Masamitsu Negishi	Former Professor, Information and Society Research Division, NII

History

1973 October	Ministry of Education, Science, Sports and Culture proposes an "Improved Circulation System for Academic Information" in the Third Report (Basic Policies for the Promotion of Scholarship) of the Science Council.
1976 May	Research Center for Library and Information Science (RCLIS) is established at the University of Tokyo.
1978 November	"A New Plan for Academic Information Systems" is presented to the Science Council by the Minister of Education, Science, Sports and Culture. The Science Council issues a response in January 1980.
1983 April	Center for Bibliographic Information is established at the University of Tokyo, with the reorganization of the Research Center for Information and Library Science.
1986 April	National Center for Science Information Systems (NACSIS) is established, with the reorganization of the Center for Bibliographic Information, the University of Tokyo.
1997 March	International Seminar House for Advanced Studies, Inose Lodge (Karuizawa, Nagano Prefecture) is established.
2000 February	Operations move to a building in the National Center of Sciences (Hitotsubashi, Chiyoda-ku, Tokyo).
1997 December	An Advisory Panel on a Core Institution for Scientific Research in the Information Field is established by the Ministry of Education, Science, Sports and Culture.
1998 January	A proposal entitled "Promoting Computer Science Research" is published by the Science Council of Japan, calling for the establishment of a core institution for inter-university research in informatics.
1998 March	Advisory Panel on a Core Institution for Scientific Research in the Information Field issues its report.
1998 April	Coordination Office is established for the Core Institution for Scientific Research in the Information Field; committee is formed in May.
1999 March	Coordinating Committee of the Core Institution for Scientific Research in the Information Field issues its report.
1999 April	Preparatory Office is established for the Core Institution for Scientific Research in the Information Field; committee is formed in May.
1999 July	Preparatory Committee of the Core Institution for Scientific Research in the Information Field issues its interim report.
2000 March	Preparatory Committee of the Core Institution for Scientific Research in the Information Field issues its final report.
2000 April	National Institute of Informatics (NII) is established, with the reorganization of NACSIS and assumption of its functions.
2002 April	Ph.D. Program in Informatics is established in the Department of Informatics, Graduate University for Advanced Studies.
2002 September	Research Planning and Promotion Strategy Office is founded.
2002 October	International Course is established within Ph.D. Program in Informatics.
2003 January	Global Liaison Office is formed.
2003 April	National Research Grid Initiative (NAREGI) begins. Initiation of Project to Improve Infrastructure for International Circulation of Scholarly Information
2004 April	NII begins a new chapter as a member of the new Inter-University Research Institute Corporation / Research Organization of Information and Systems.
2005 April	The official service of GeNii (NII Academic Contents Portal) is launched.
2007 June	Science Information Network (SINET3) is launched.

Inter-University Research Institute Corporation
Research Organization of Information and Systems

National Institute of Informatics

NII