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

2014

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Introduction

As Japan's only comprehensive academic research institute in the field of informatics, the National Institute of Informatics (NII) has a mission of promoting basic research in informatics from a longterm perspective together with practical research designed to solve issues that confront society. This research is developed in one of the 4 research divisions: Principles of Informatics, Information Systems Architecture Science, Digital Content and Media Sciences or Information and Society. Moreover as an inter-university institution the NII is the leader/coordinator of different national projects including researchers from other Japanese universities or industry e.g. "Quantum Information Science" or "Big Data Mathematics" or "Cyber Physical Systems". On the other hand as part of an Inter-University Research Institute, the NII also has the missions of operating a network (SINET4) linking universities and research institutes, creating an academic information infrastructure necessary for research and educational activities in the academic community, providing academic content and service platforms and, through those activities, it is a very important mission to develop human resources and making social and international contributions.

There are few institutions anywhere in the world that conduct research in informatics and simultaneously provide IT services and a network. We believe that operating our own systems and concentrating on the field of informatics, which is developing at a furious speed, are the best ways to stay on top of trends in IT and contribute to create cutting-edge information services with universities. Academic information infrastructure is indispensible to all academic disciplines. The NII aspires to help academia achieve breakthroughs by providing robust information infrastructure for researchers across a range of disciplines.

NII and its Cyber Science Infrastructure(CSI) have achieved significant development. We believe that ICT is widely recognized as the core enabler for scientific findings and social innovation. In the United States, the IT sector has accounted for 25% of economic growth since 1995, and the basic research that supports the industry plays a considerable role. While it is a traditional picture that new technologies generate services, the creation of non-conventional information and communication technology is being driven by new, idea-driven services. In these circumstances in this century, we will redouble our efforts to create a more flexible academic research system.

We respectfully ask for the continued understanding and support of all related parties.

Inter-University Research Institutes

Inter-University Research Institute Corporations are Japanese research institutes that facilitate joint university research. As research institutes that cover a range of fields and can be used by all universities, the Inter-University Research Institute Corporations provide free of charge to researchers nationwide the kind of large, cutting-edge equipment, tremendous volumes of academic data, high-value data, and analytical procedures that individual universities would have difficulty maintaining. The National Institute of Informatics was established in 2000 and was incorporated into the Research Organization of Information and Systems, an Inter-University Research Institute Corporation, in 2004.

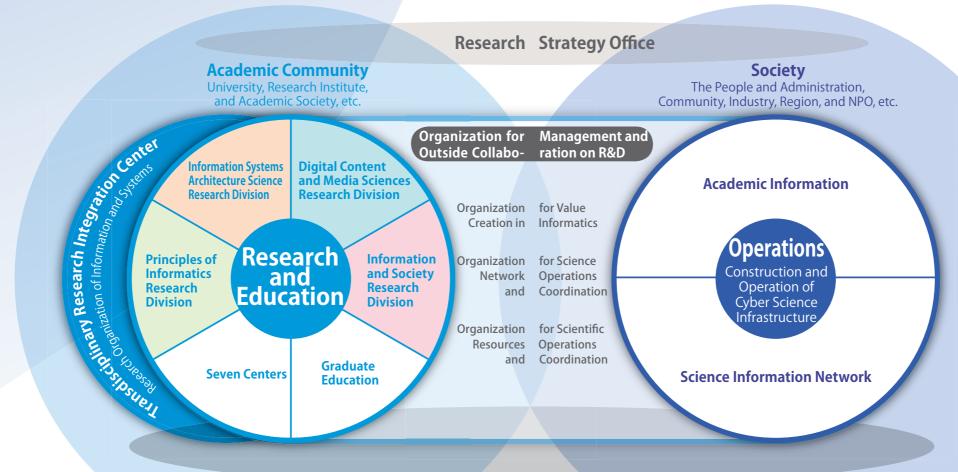


April 2014 Director General, National Institute of Informatics

Masaru Kitsuregawa

Future Value Creation through Informatics by Advancing Research and Operations in Tandem

As Japan's only general academic research institution seeking to create future value in the new discipline of informatics, National Institute of Informatics (NII) seeks to advance integrated research and development activities in information-related fields, including networking, software, and content. These activities range from theoretical and methodological work through applications. As an interuniversity research institute, NII promotes the creation of a state-of-the-art academic- information infrastructure (the Cyber Science Infrastructure, or CSI) that is essential to research and education within the broader academic community, with a focus on partnerships and other joint ef- forts with universities and research institutions throughout Japan, as well as industries.



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.

Reserch

Seeking to establish a new academic discipline through the promotion and systemization of a wide range of informatics research ranging from natural science to human and social sciences, NII aims to create future value through new theories, methodologies, and application deployment, thereby contributing to the development of informatics.



NII encourages close partnerships between universities, public research institutions and private institutions to conduct projectbased joint studies, as well as human resource development and to promote the utilization of its research results in society.

Interdisciplinary information processing

To further the development of new domains through synergistic efforts between cross-functional interdisciplinary research and diverse academic disciplines, NII undertakes cross-functional transdisciplinary integration research at the Transdisciplinary Research Integration Center of the Research Organization of Information and Systems.

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 and the society.

International exchange



Social contribution

NII strives to further the international contribution of informatics through the active promotion of international exchanges between researchers and students and an approach focused on the formation of an informatics research center through international collaboration, in addition to publishing its research results internationally.

NII seeks to achieve harmony between society, culture, and social systems in addition to creating platforms and portals that make effective use of content to disseminate and enliven social and public activities in the field of academic, cultural, education, publishing, environmental, regional, and NPO activities.

Graduate education and uman resource devel



In the Ph.D. program for informatics in the School of Multidisciplinary Sciences at the Graduate University for Advanced Studies, NII aims to nurture world-class researchers in the field of informatics and establish a base for the development of engineers with the skills to link the industry with academics to develop high-level human resources.

>>> Research

Principles of Informatics Research Division

We conduct research aimed at establishing new principles and theories in informatics, and opening up new fields of study

Learning from the careful integration of hardware and software Understanding the performance of large-scale quantum computers

Kae Nemoto

In recent years, scientists from around the world have turned their attention to the emerging field of quantum information science and technology. Quantum technology may have many promising applications, from secure communication to high-performance computation and beyond. Here, in the Quantum Information Science Group, we have been at the forefront of these developments. In 2009, we introduced a detailed architecture for a large-scale quantum computer. Furthermore, in 2011, in collaboration with NTT Basic Research Laboratories, we demonstrated hybrid quantum devices that may form the basic elements of such an architecture.

Recently, in 2013, in a further collaboration with NTT Basic Research Laboratories, we undertook a rigorous analysis of the performance of a large-scale quantum computer. One of the central aspects of quantum computation is the need for fault tolerance, which ensures that imperfections in quantum computers can be controlled, allowing for reliable quantum computers to be built from realistic quantum devices. The purpose of our research was to investigate the practical cost of operating a quantum computer in a fault-tolerant manner. By carefully integrating the various layers of technology—from control of the quantum hardware to the structure of the quantum algorithm—we were able to precisely understand this cost.

As part of this analysis, we considered an implementation of Peter Shor's famous algorithm for factoring composite prime numbers. This allowed us to establish a clear benchmark against which other quantum computers may be compared. In addition, we found that to improve the performance of quantum computers, developing more efficient software may be significantly more important than improving the hardware. This result indicated that designing more efficient quantum circuits should be a priority.

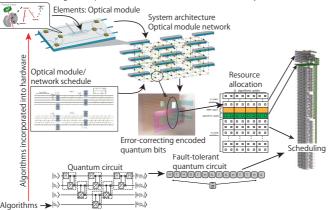
Motivated by this challenge, we developed an online application-

Kae Nemoto Quantum information/computation / Quantum optics / Theoretical physics

meQuanics—that was designed to harness the collective intelligence of the crowd. By translating the task of designing quantum circuits into a challenging game, we created an open-science platform to accelerate our research effort. By discovering more efficient quantum circuits we will lessen the stringent requirements for the basic elements of quantum computers, which will assist in the ongoing development of quantum technology by experimental scientists. Looking toward the future, our plan is to continue in our effort to design and develop practical quantum technology in collaboration with scientists at institutions around the world.

From quantum physics to quantum computer architecture

Quantum control: Light and quantum bits (atomic and solid state two-level system)



Figures: Conceptual figure illustrating the integration of layers of technology

Connecting academia and society through linked data Developing and promoting Linked Open Data (LOD) technology

The World Wide Web was invented in the early 1990s in order to share academic information, but it soon moved beyond the realms of academia. It spread throughout our society quickly, and changed the way in which we distribute information. It was a revolutionary change in information distribution using the Web and now another revolution, named "Linked Data" or "Linked Open Data (LOD)," has just started. The Web is a network of information based on links between documents, creating a so-called "Web of Documents." LOD forms networks in the same way but between data, creating what is known as a "Web of Data."

LOD creates a globally shared data environment similar to the web, and it enables users to access and link to data without worrying about which dataset it belongs to, who manages it, or where in the world they are based. Linking between individual data makes them all part of a single global dataset.

In our group, we are working to develop LOD technology and to promote technology amongst academic communities and the general public. In terms of technical development, we are working on a prototype system that will analyze how we describe and use concepts as they change with the times, and set out the ontology of change.

We are currently applying them to species based on taxonomy. We are also working on demonstrations to show that it is possible to simply combine different types of data using LOD (Figure 1).

In terms of promoting technology amongst academic communities and the general public, we are working to establish and publish core datasets. For example, we are gathering and publishing integrated data on the scientific and Japanese



Figure 1: Yokohama Art Spot: An application using LOD to link together information on events, museums and other local attractions and display it on a map

Current Research Topics of Reseach Staff of NII

Keiji Matsumoto Quantum information and computation

Tim Byrnes

	Efficient and practical fast algorithms for solving large scale problems arising from data mining and genome sciences /
Takeaki Uno	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
Ryota Kobayashi	Data mining / Computational neuroscience / Machine learning
Ken Hayami	Numerical Analysis, Numerical Linear Algebra / Development and analysis of iterative methods for large systems of linear equations,
Ren nayann	least squares problems / Numerical solution of inverse problems
Yuichi Yoshida	Property testing / sublinear time algorithm / constraint satisfaction problem / approximation algorithm
Mathematical Log	gic
Mathematical Log	
Makoto Kanazawa	Lambda calculus and formal grammar / Logical semantics of natural language
Makoto Kanazawa	Lambda calculus and formal grammar / Logical semantics of natural language Theory of programs / Type theory / Constructive logic

Applications of Bose-Einstein condensation to quantum technology / Quantum information and computation

Material and Life Informatics

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 base Intelligent information processing based on embodiment of robots	
Katsumi Inoue	Inference and knowledge representation / Hypothesis-finding base	
Nobutaka Ono	Blind signal separation / Microphone array / Acoustic signal processi	
Nigel Collier	Text Mining / Natural Language Processing / Ontology Engineering	
Ken Satoh	Construction of multiagent systems with speculative computation /	
Hideaki Takeda	Knowledge sharing system / Semantic Web / Design theory	
Shigeki Yamada	Resilient networks / Disruption-Tolerant Networks (DTNs)	

Hideaki Takeda

names of different species, as well as information on museums. DBpedia is a project to extract large volumes of data from Wikipedia and share it via a data hub. We are managing the Japanese version, as part of which our role is to link a range of datasets within Japan (Figure 2).



Figure 2: Datasets linked to the DBpedia Japanese

sed on stochastic information processing /

ed on induction and abduction / Systems biology / Systems resilience

ing

Applications of AI to Legal Reasoning

Information Systems Architecture Science Research Division

We conduct research into the architecture and systems behind computers, networks and other forms of hardware and software.

Next generation wireless networks Towards faster, more reliable ubiquitous wireless networks

Yusheng Ji

The information and communication environment continues to evolve at a rapid pace, becoming ever faster and more convenient. One of the most important roles in that evolution is being played by wireless communication, as an integral part of users' daily lives. Among various electromagnetic waves spreading through the spaces around us, including infrared, visible light and x-rays, the ones with longer wavelengths are widely used for television and radio broadcasts as well as for transmitting information via mobile devices such as mobile phones. Wireless communication becomes more and more popular and indispensible in our daily life since it can be used while on the move without having to connect to wires and cables. As radio waves spread out across spaces however, decay of signals leaves communication susceptible to interference from other radio signals. To realize faster, more reliable ubiquitous wireless networks, there are a number of issues that we need to resolve.

Given that radio frequencies are a limited resource, it is becoming increasingly important to use radio waves more ef-

ficiently, as wireless communication becomes more widely available. There are a number of potential solutions. Current technologies for mobile phones are referred to as the Fourth Generation, or 4G. In order to improve the transmission capacity with limited radio frequency, adaptively changing the size of cells (the areas covered by individual base stations) in line with changing volumes of traffic and communication environments is considered as one of the possible solutions. We are conducting research on coordination and cooperation between cells, in order to minimize cellular interference in heterogeneous networks. Another approach for the same purpose is to enable communications between mobile devices without passing through base stations (called "device-todevice (D2D)" communication), while regular cellular communications are done through base stations. For communication to users who are difficult to be reached by direct radio links, intermediate nodes can be used to relay radio waves. Our research therefore extends to areas such as relay node selection and efficient relay methods.

We are also doing research on ad-hoc networks, whereby wireless communication takes place as required, without relying on existing infrastructure. Ad-hoc networks are increasingly attracting attention in areas such as communication between vehicles, and mechanisms to enable autonomous communication in times of need, in the event of a disaster for instance. Such kind of network can also be used for gathering "big data" with large volumes of data illustrating various social phenomena. With almost all kinds of "things" around us being connected to the network, we are entering an age known as the "Internet of things" (IoT). With that in mind, we intend to keep on thinking about ways to transmit information faster, safer, and more efficiently.

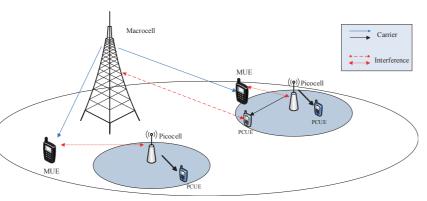


Figure: Radio signal interference in heterogeneous wireless cellular networks

Current Research Topics of Reseach Staff of NII

Network Architecture		
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

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
	Masahiro Goshima	Processor Architecture / Memory Architecture / Digital Circuit Technology
	Hiromichi Hashizume	Human interface with computer augmented reality / Collaboration support systems / Sensor applications

Using "multi-chip NoCs" that seamlessly connect multiple NoCs Development and application of next generation centralized ECUs on dependable platforms

Automotive control systems contain various different types of electronic control units (ECUs), all widely distributed among cars. As the sensors/ actuators and ECUs have fixed connections however, it is not easy to utilize the unused computational power of ECUs for other functions. What is more, the failure of an ECU directly leads to the loss of the function related to the ECU.

Based on the idea of using intelligent sensors and actuators connected directly to a network, approaches to integrating individual ECUs into a centralized ECU on a many-core system have recently been studied. The aim of our research is to develop a highly reliable next-generation centralized ECU along these lines, using dependable network-on-chip architecture.

Network-on-chip (NoC) is a scalable and flexible method of forming a many-core system, by creating a network on the chip itself and communicating between cores via packet switching.

A number of projects in Europe are already looking into approaches to centralized ECUs based on NoC. What we are proposing is "multi-chip NoC," whereby multiple NoC chips are seamlessly connected together.

Multi-chip NoC technology enables various different configurations as necessary, simply by connecting multiple small, inexpensive NoC base chips together. Other benefits include redundancy at the chip level, which leads to tolerance to chip failure. Furthermore, if a router or link inside the chip fails, packets are distributed dynamically around it, enabling dependable routing. To detect CPU core failure, each task is executed on two cores, and the results are compared. When the comparison fails, the

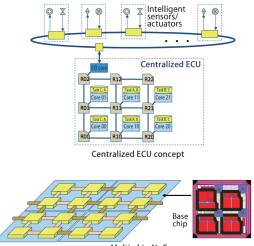
Software infrastructure

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 / Zhenjiang Hu Software Engineering: Dependable Software Construction, Bidirectional Model-driven Software Development / Parallel Programming: Skeletal Parallel Programming, Automatic Parallelization	
Software Engineering		
Kazunori Sakamoto	Software Testing / Source Code Analysis and Transformation / Programming Language / Programming Education	
Shin Nakajima	Dependable Software Engineering / Formal Methods / Model-Checking	
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	

Tomohiro Yoneda

faulty core is found by temporarily executing the task on the third core, and then the system is dynamically reconfigured to exclude the faulty core.

We are also providing algorithms to allocate tasks, which are obtained from non-redundant Simulink descriptions, on cores redundantly, thereby enabling application and program developers to continue with development as normal, without worrying about duplication or other aspects of dependable task execution.



Mu	ltj-ç	hip	NoC

Digital Content and Media Sciences Research Division

We conduct research into methods of analyzing, generating, storing, using and processing text, images and various other content and media, from theories to actual systems.

CPS – Linking the real world to the cyber world Sensing situations in real environments through users

Kenro Aihara

To gather information and recognize real-world situations, systems need to perform both macro situation appraisal by sensing the environment (e.g. how many people? where are they?) and micro situation appraisal based on the movements of various different moving objects (people, vehicles, goods, etc.). As many of the subjects of situation appraisal are related to human activity in some way, it is particularly important to understand how people act in the real world.

We are conducting research based on trials in actual fields, with the aim of devising infrastructure systems and applications that are capable of recognizing and providing information on users' actions via applications on users' mobile devices (smartphones), and throwing light on technology to estimate user situations.

[Understanding situations based on user inner feelings]

Services based on mobile devices in use around town are called "location-based services", or LBS. In terms of context however, the user's location alone is insufficient. It is important to ascertain the context that they

are in too, including internal factors such as their goals and feelings. This is what we mean by "situation". A user's situation includes factors such as their relationships with other people. As part of our research, we are trying to understand and estimate users' feelings, and estimate their relationships with other people based on their log records, with the aim of understanding their situation.

[Information selection technology to increase migrationl

To revitalize local economies, it is important to increase migration, by increasing the number of visitors for instance, or extending the amount of time they

Current Research Topics of Reseach Staff of NII

Foundations of Content Management

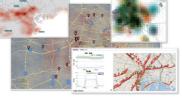
tors such as the cost of individual actions, based on "irrationality" in human behavioral selection, and developing a system accordingly. [Potential for industrial applications] • We are looking to apply technology to trial services as part of projects

spend in the area. We are proposing a model that takes into account fac-

- for organizations such as the Ministry of Economy, Trade and Industry and the New Energy and Industrial Technology Development Organization (NEDO).
- · We are working on trials as part of initiatives to revitalize local economies, in areas such as the tourism sector.
- · Understanding behavior has the potential be an invaluable source of information in the marketing sector in particular.



Gathering information on people's real-world movements, interests and feelings through app



Integrated analysis of diverse data, with the aim of identifying macro trends and performing micro situation appraisal

Learning about human behavior from everyday conversations Research aimed at understanding multi-party and multi-modal interaction

We are carrying out research with the aim of understanding the mechanisms (rules/systems) behind multi-party and multi-modal interaction, by observing everyday conversations between people. Multi-party interaction refers to conversations involving three or more people, as opposed to one-to-one conversations. Multi-modal interaction refers to conversations taking place via various different means, including not only speech, but also gestures and gazes. In Japan, a great deal of effort is being focused on developing partner robots that are able to interact with people, and human-like androids. Based on the guestion "can a robot join an idobata kaigi (water-cooler conversation)?", the aim of the "Ido-Robo Project" is to put forward a framework for research into multiparty and multi-modal interaction through discussion with researchers in various different fields, including linguistics, cognitive science, information science, sociology and robotics. The four main foci of our research are (1) creative theatrical activities involving robots and androids, (2) science communicators' (SC) activities at the National Museum of Emerging Science and Innovation (Miraikan), (3) joint construction of a fire festival at Nozawa Onsen spa resort, and (4) conversations using Japanese Sign Language

Our field of research with regard to (1) creative theatrical activities involving robots and androids revolves around observation of how engineers, playwrights and actors perceive the role played by robots and androids within society. Research as part of (2) SC activities at Miraikan is focused on verbal communication of knowledge between scientifically knowledgeable SC and visitors to the museum, who may or may not be scientifically knowledgeable. In terms of (3) joint construction of a fire festival at Nozawa Onsen spa resort, our research involves observing how people interact with one another by using gestures, gazes, and calling. Research on (4) conversations using Japanese sign language revolves around ob-

Pattern Media

Asanobu Kitamoto	Data mining from large-scale scientific image databases / Earth and	
Kazuya Kodama	A study on structure of multi-dimensional image information and construction and construction and construction with real-time quality control	
Imari Sato	Physics-based object shape and reflectance modeling / Creating spa	
Shin'ichi Satoh	A study on video analysis, retrieval, and knowledge discovery base	
Akihiro Sugimoto	Sensing and understanding human activities in our daily life / Auton Computer vision under the existence of digitization errors	
Gene Cheung	image/video coding and streaming / immersive media communicat	
Hiroshi Mo	A study on case based video indexing / A study on intelligent video	
Duy-Dinh Le	Semantic representation for video indexing and retrieval / Advanced Face annotation and retrieval / Video mining / Efficient methods for	
Human and Knowledge Media		
Kenro Aihara	Computer supported lifelong learning by using digital archives about Integration of user's context in real- and virtual World	
Frederic Andres	Model Driven Archicture knowledge management / Image learning	
Ikki Ohmukai	Personal communication and interation in semantic web environme	
Helmut Prendinger	Life-like characters and avatars in virtual worlds / Participatory scien Automatic content creation / Emotion and sentiment recognition fro	
Mayumi Bono	Understanding Multimodal interaction / Understanding Conversation	
Seiji Yamada	Human-Agent Interaction / Intelligent Interactive Systems	

Description, analysis, and guarantee of functions and quality in the integration of Web services / Fuyuki Ishikawa Description, analysis, and verification of requirements and specifications in software development Isao Echizen Technologies and systems for multimedia content security / Integrity of multimedia content / Information hiding Data Management Technology for Video Corpus Analysis Norio Katavama Optimization for casual queries to database / Fundamental issues on optimizing queries to XML databases Hiroyuki Kato Latent model based text mining / Time series data analysis / Pattern matching of structured data Atsuhiro Takasu Akihiko Takano Informatics of Association / Algebra of Programming Research data sharing and its metadata management / Platform system activating the research community Kazutsuna Yamaii Text and Language Media Identification and linkage of text information / Statistical language analysis and automatic construction of linguistic resources / Akiko Aizawa Language media and interfaces Information retrieval and integration of heterogeneous data / Jun Adachi Modeling and implementation of high-performance information retrieval systems / Text mining Data analysis of web user behavior and improvement of access to information / Web information retrieval technology / Keizo Oyama Full text search technology

based services

Yusuke Miyao	Syntactic parsing, semantic parsing / Information extraction / Information retrieval
Junichi Yamagishi	Speech information processing / speech-based human machine interaction / speech-based assistive technology

Mayumi Bono

servation of how people interact with one another using sign language, whereby their main linguistic modality relies on using parts of their body (hands)

In terms of methodology, we are (a) identifying problem areas by observing behaviors, (b) recording and manually annotating video footage, and then analyzing annotated videos, (c) developing methods of understanding interaction, including automatic annotation and machine learning, and (d) feeding our analyses back into research fields.

Until now, most research about interaction has involved recording data in a controlled environment, such as a laboratory, and then extracting human interaction mechanisms. The aim of our research is to identify rules and systems without interfering with real-world contexts.



Figure 1: Creative theatrical activities involving robots and androids



Figure 2: Science communicators activities at Miraikan

d environmental informatics / Digital archives for cultural heritage communication systems of distributed

patially immersive displays for human computer interaction ed on broadcast video archives / A study on image retrieval matic modeling of 3D objects /

ation

structuring

ed video search engines / r handling high

out historical and artistic objects /

g ontology / Semantic tracking & computing

nent / Information sharing and distribution based on personal network

nce and collaboration in the 3D Internet / rom text

tional Structures in Multi-party Interaction

>>> Research

Information and Society Research Division

We conduct interdisciplinary research combining information and systems technology with human and social sciences, for a society in which the information world merges with the real world.

Field experiment to examine the effects of online election campaigning Demonstrating the causal effects of election campaigning via Twitter for the first time in Japan

Tetsuro Kobayashi

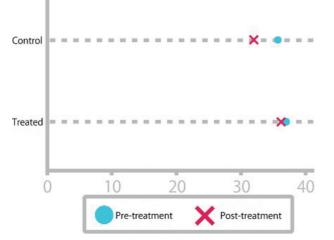
We fielded a randomized controlled trial^{*1} during the Upper House elections in 2013, to examine the effects that election campaigning via Twitter has on voting and related political attitudes. Rigid random assignment made it possible to test the causal effect of online election campaigning for the first time in Japan.

We examined the effects of tweets made by the Mayor of Osaka, Toru Hashimoto, by running a field experiment for roughly one month prior to the voting date. Our findings indicated that following Hashimoto on Twitter led to an increase in positivity towards Hashimoto himself and his party, the Japan Restoration Party. There was no discernable effects however on voting, or issue attitudes and knowledge of the issue position of Japan Restoration Party. It indicates that, while election campaigning on Twitter has no discernible effects with regard to communicating policies, users are likely to feel more positively towards politicians and political parties if they continue to see messages from them on their timelines. It should be noted that correlational analysis using large volumes of tweets and their association with election results cannot reveal any causal effects of online election campaigning. In this regard, our experiment is noteworthy in that it was for the first time able to clearly demonstrate the causal effects, thanks to the rigid random assignment which is the hallmark of scientific experiments. Identifying the effects of new types of political communication is crucially important in the debate surrounding the Public Offices Election Act.

We used an online survey to recruit Twitter users to the experiment who didn't currently follow any of Toru Hashimoto, Shinzo Abe or Goshi Hosono. We then randomly assigned the participants who agreed to be part of the experiment into a treated group and a control group. We asked participants in the treated group to follow all three politicians, and instructed participants in the control group to follow Shinzo Abe and Goshi Hosono only. That meant that any difference in the post-treatment measures between the treated and control groups would be attributed to following Toru Hashimoto on Twitter.

Participants began following the politicians roughly one month prior to the voting date. Post-treatment measurements were then fielded immediately after the voting deadline on the day of the election. The results indicated that, while feeling thermometer score towards Hashimoto (on a scale of 0-100) had fallen by 3.86 in the control group during the experiment, it had only fallen by 0.19 in the treated group (Figure). Feeling thermometer score towards the Japan Restoration Party meanwhile fell by 0.49 in the control group during the experiment, but increased by 3.5 in the treated group. This shows that reading tweets from Hashimoto helped to prevent any deterioration in his personal image, and actually increased positivity towards his party. As there was no discernible effect on participants' policy attitudes or knowledge of issue position of Japan Restoration Party however, following Hashimoto made no difference in terms of encouraging participants to vote for his party.

This suggests that, rather than facilitating policy communication, election campaigning on Twitter has a mere exposure effect as users continue to see messages from politicians on their timelines, and could help to form positive attitudes towards politicians and candidates.



^{*1:} Randomized controlled trial

Experimental method intended to perform rigorous causal inference, avoiding any bias

Flexibly protecting and using personal information Highlighting attitudes through conjoint analysis

People have different views when it comes to using and protecting personal information. Although we all agree on the basic premise that personal information should be protected, opinions differ greatly regarding the extent to which we should provide information. There are also widely differing attitudes regarding what we should get in return. We are conducting research into individual views such as these, on the subject of protecting and using personal information.

In order to do that, we are using a technique called "conjoint analysis". This involves setting out a number of subjects for assessment and asking respondents a series of questions, in order to ascertain the correlation between elements in a trade-off situation and highlight how people think and behave. As part of our research, we are asking randomly selected online participants to compare nine different cards displayed on screen, and then to choose which statements regarding personal information they agree with, in order. We intend to illustrate people's attitudes by showing participants cards combining various different elements and repeatedly surveying which cards they prioritize.





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	Stereoscopic displays / Acoustic rendering systems / Similarity search for 3D models
Teruo Koyama	Term extraction from text corpora / Structurization of terms / Structural analysis of terms / Knowledge representation and use
Takayuki Mizuno	Statistical analysis, modeling, prediction and control of socioeconomic phenomena based on big data / Econophysics
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

Hitoshi Okada

Our findings to date indicate that even people who do not wish to provide their personal information are willing to provide certain information in return for points or other such benefits, and that people are willing to provide or post personal information via social media as a trade-off for enjoying the relevant services. Whereas many respondents said that they did not want to provide personal information when using travel cards, plenty said that they were happy to provide personal information when using commercial cards, based on the expectation of points or other benefits. Attitudes vary significantly depending on the situation, purpose and benefits received. Companies need to have a rough idea of the extent to which individuals will provide their personal information if they receive sufficient benefits in return, so that they can provide services accordingly. Companies should also establish mechanisms so that they can enter into contracts with those providing personal information, based on an understanding that they, as the party obtaining and using information, are in a tradeoff situation between costs and benefits. That is a potential shortcut to establishing a social environment in which personal information can be put to good use.

Card that appears to be selected as first by a person who does not mind providing his/her purchase history accordingly but is unwilling to provide his/ her location information



Card that appears to be selected as first by a person who does not mind providing his/her location information particularly but is unwilling to provide his/ her purchase history

ity research and education evaluation / arning environments and society data commons / .h for promotion of basic research / / cooperation in Japan

Research on University Information Security Policy Portal (UISPP)

cation

n and society data commons

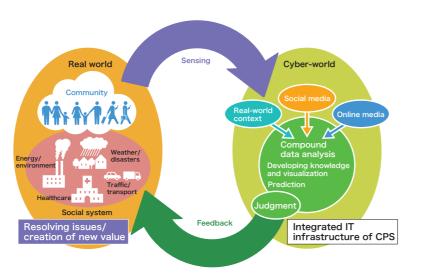
Main Projects to Promote

Artificial Brain Project – Can a robot get into the University of Tokyo? Project director : Noriko Arai

This project was launched mainly by the National Institute of Informatics to provide a dream for young people. It aims at opening up a new frontier by reintegrating the artificial intelligence field, which has been subdivided since 1980. Specific benchmarks are achieving a high score on the National Center Test for University Admissions by 2016 and passing the entrance examination for The University of Tokyo by 2021. We have been working to achieve these goals through this project. In 2012 and 2013 we conducted evaluation tasks at the NTCIR, CLEF international conference. Many NLP groups participated in these tasks. In 2013, the robot took the practice examination of the National Center Test for University Admissions held by a major preparatory school for university entrance examinations. The results indicated that the robot has an 80% probability of passing exams for 400 of about 800 universities.

Cyber-physical Integrated IT Infrastructure Project to Optimize Social Systems and Services Research representative : Jun Adachi

We have been working with universities and industry to conduct research of a cyber-physical system (CPS) at a societal scale. CPS is expected to increase efficiency in social systems and services and create new value by integrating the information system (cyber) with the physical system (physical) that functions in the real world. The information system is used to link data from the real world that are obtained through diverse sensors with a range of information, and analyzes them. We also strive to contribute to society specifically through analysis of big data obtained in the real world, and research of a management system.



Todai Robot character

Figure: Social cyber-physical system (CPS)

Quantum Information Network Project Representative : Yoshihisa Yamamoto

Application of quantum technology is expected in many fields, such as information processing, communications, sensing and standards. This project aims to achieve a breakthrough by incorporating knowledge of the latest computer science and neuroscience into quantum information science. Specifically, we conduct research in three fields: a quantum artificial brain that can solve NP-complete, NP-hard problems with reasonable accuracy and high speed; quantum secure networks that prohibit eavesdropping no matter what advanced computation capabilities are introduced in the future; and a quantum simulator that reveals characteristics of quantum many-body systems.

ERATO Kawarabayashi Large Graph Project Research Director : Ken-ichi Kawarabayashi

The Internet web structure and large networks, such as Facebook, Twitter and other social networks, are expanding daily, and it is expected to reach nearly 100 billion in the near future. With this, the information volume has been increasing much faster than the advance of hardware. Promptly dealing with problems that will arise in the future presents an urgent task.

This project aims at developing high-speed algorithms that deal with probable problems in reality by taking advantage of the latest mathematical theories in theoretical computer science and discrete mathematics.

Research Center

Research and Development Center for Academic Networks

Develops and offers new services and fuctions for increasing the operational efficiency of the Science Infomation NETwork 4 (SINET4), which constitutes part of the Cyber Science Infrastructure (CSI).

Research Center for Knowledge Media and Content Science

Promote cutting-edge research on the analysis and use of knowledge content in academic fields.

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

Develop TopSE and TopRE by integrating research, practical application, and education in advanced software engineering. http://grace-center.jp/?lang=en

Research Center for Community Knowledge

Develop next-generation information and communications technology and information sharing platform system by creating "NetCommons" and "ReaD&Researchmap".

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).

Global Research Center for Quantum Information Science

Promote activities such as cutting-edge research and personnel development to establish NII as a world-class international hub for guantum information.



Global Research Center for Cyber-Physical Systems

Promote researches on cyber and physical(real) world collaboration aiming at solving social issues and creating new values through the research.



Global Research Center for Big Data Mathematics

Engaged in cutting-edge research and human capital development to establish NII as a world-class hub for Big Data Mathematics with a central focus on developing high-speed algorithms.

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.

Frame of Research Collaboration

NII actively promotes research funded by Grants-in-Aid for Scientic Research, joint research with private organizations, and externally funded research. We also accept proposals for and carry out open collaborative research, in an effort to pave the way for new collaborations.

Taking on varied research challenges, from basic to applied research Grants-in-Aid for Scientific Research (KAKENHI)

Grants-in-Aid for Scientific Research (KAKENHI) provide funding to support a wide range of academic research based on ideas devised freely by researchers, covering everything from basic to applied research. Staff and researchers actively apply for KAKENHI, and many have been successful.

In addition to being selected as research representatives, we are also engaged in a large number of research projects as co-researchers (meaning that we receive a share of funding), in cases where other institutions have been made research representatives.

As we need co-researchers for KAKENHI for which NII has been selected, we also engage in collaborative research along the same lines too.

Conducting a range of cooperative research with different companies Cooperative research with private institutions and other external bodies

We take on researchers and receive research funding from private institutions and other external bodies, for the purpose of engaging in cooperative research with NII researchers. Research projects last for one year as a rule, but at the same time there is an option to extend some contracts over several years. 1) Receiving funding only

- We receive funding required for cooperative research from private institutions and other external bodies. Cooperative researchers then work from their respective locations.
- ⁽²⁾ Taking on researchers
- We take on researchers from private institutions and other external bodies, to carry out cooperative research at NII while continuing with their regular job. Essential overheads are covered under our research costs up to a certain point.
- ③ Taking on researchers and receiving funding
- We take on researchers and receive funding to carry out cooperative research.

Taking on engineers and researchers from private institutions and other external bodies, and providing graduate level instruction **Cooperative researchers** http://www.nii.ac.jp/research/kenkyou/jyutakukenkyuin/

We take on engineers and researchers currently working for private institutions and other external bodies, providing that they have graduated from university or are deemed to have reached an equivalent academic level. Essential overheads are covered under our research costs up to a certain point.

Research periods are up to one year, but can be extended to the following fiscal year and beyond if deemed necessary.

Paving the way for wide-ranging collaboration with researchers and conducting research aimed at creating value NII open collaborative research http://www.nii.ac.jp/research/collaboration/kyoudou#02

We accept proposals for collaborative research, with NII staff acting in a liaison capacity. We accept proposals every year for the following three types of open collaborative research.

- Strategic research proposals based on strategic themes set out by NII
- General research proposals based on specific areas of research or outlines put forward by members of staff
- Proposals for research planning meetings aimed at paving the way for new collaboration or furthering existing research, through meetings at International Seminar House in Karuizawa Researchers affiliated with a wide range of domestic institutions are eligible to apply for open collaborative research. That includes the option for staff members and graduate students to become collaborative researchers, as well as staff from private companies, universities and technical colleges (although the applicant may not be a graduate student.)

We are particularly keen on proposals for research planning meetings, so please collaborate us in taking things to the next level.

Grants-in-Aid for Scientific Research (KAKENHI) received in fiscal 2013

	Number	Amount (thousands of yen)
Representative	83	276,103
Co-researcher (Other institution > NII)	55	27,881

http://www.nii.ac.jp/research/collaboration/kyoudou/

Cooperative research with private institutions and other external bodies

	Number	Amount (thousand of yen)
FY2011	13	11,054
FY2012	29	28,699
FY2013	45	50,177

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 Pate

(as of March 2014)			•	
152	Attribution : Organization Attribution	163	Total Number 163	
11	Attribution : Individual Attribution	105	Iotal Number	
141	Domestic Number	Applications Number 173		
32	foreign number	Applications Number 173		
40	Domestic Number	Desistration Number 46		
6	foreign number	40	Registration Number 40	
	Domestic Number	46	Registration Number	

List of Japanese patents owned

•				(as of Ma	arch 2014)
Patent	Registration number	Joint Patent	Patent	Registration number	Joint Patent
Apparatus, method and program for retrieving and displaying image information	4441685		Quantum Key Distribution Method, Communication	4862159	
Quantum key delivering method and communication apparatus	4231926		System, and Communication Device	4002139	
Time-series data analysis device, and time-series data analysis program	4734559		Time Reference Point Information Transmitting System and Receiver	4621924	
Information-Sharing System, Information-Sharing Server,	4799001		Quantum Repeater	5082039	
Information-Sharing Method, and Information-Sharing Program	4799001		Collection / Delivery Route Selection System	4374457	
Ultrasonic distance measurement system and method	4041899		Air conditioner for vehicle and its control method	5177667	
Sequential content delivery device, sequential content receiving device, and method therefor	4734563		Route Switching Method, Server Apparatus, Boundary Node Apparatus, Rout Switching System, and Switching Program	5062845	•
Contents presentation apparatus, contents presenting method and contents presentation program	4403276		Direct path establishing method, server device, sender network node device, direct path establishment network, and program thereof	4999112	•
Text content presentation apparatus, text content presentation method and text content presentation program	4143628		Path Management Control Method, Path Management Control Program, Path Management Controller and Path Management Control System	4806466	
Method and apparatus for evaluating communication traffic that uses fragmentray self-similarity process	4081552		Intramemory data structure of finite automaton, memory storing data with the structure, and finite automation executing apparatus using the memory	5063780	
Imaging device and imaging method using out-of-focus structure	4437228		Emission Allowance Trading System and Emission Allowance Trading Method	5207195	
Information resource retrieval device, information resource	4324650		Method and device for searching ambiguous frequent itemset	5267847	
retrieval method and information resource retrieval program	4324030		Device and method for learning data management, and	5224280	
Active content distribution system, active content distribution program and active content distribution method	4392503		vehicle air-conditioning device and equipment control device Virtual stereoscopic image display device and		
Device and method for generating traffic congestion	4729411		method of displaying virtual stereoscopic image	5263960	
prediction information, and sroute search system	4204270		Quantum repeater, and system and method for generating extended entanglement	5296924	
Content selling device and method	4304278				
Document indexing device, document retrieval device, document classifying device, and method and program thereof	4362492	•	Distance measuring method, distance measuring receiving station equipment, and position measurement system	5305324	
Video provision device and method	4359685		Quantum computing device and method for Ising model	5354233	
Projection image correction system and correction information generation program	4982844		Video display device	5373662	
Digital content registration distribution apparatus, system and method	4956742		Method and device for accelerating speed of successfully generating	5414006	
Communication path apparatus for data driven processor having tree type diversion	5115922		entanglement, and quantum repeater that uses the method and device		
path and merging path, and packet transfer mode for data driven processor Airing structure of three dimensional integrated			Quantum repeater, and system and method for generating extended entanglement	5414007	•
electrical circuit and layout method therefor	5024530		Information processing device, method, program, and recording media	5424306	

List of registered trademarks

Trademark mode	Registration number	Trademark mode	Registration number	Trademark mode	Registration number
NII	4811291	n c net commons	5152641	学認/GAKUNIN	5341899
Net Commons	4832775	Commons Partners	5208443	NetCommons Ready	5369242
picture+NET	4934163	NeXt Commons	5191260	遷画	5490233
NAREGI 💥	4952143	researchmap	5261160	picture (パレット)	5498318
トップエスイー	4943324	GRACE+picture	5275386	picture(学認/GAKUNIN)	5498319
スマーティブ	4976131	picture (grace)	5261216	picture(情報犬)	5538784
WebELS	4980388	picture (garce/NPO)	5279082	情報犬	5538785
Net Commons	5182361	edubase	5296963	picture (サイニィ /CiNii)	5580217

* NAREGI is also a registered trademark in the United Kingdom, and Germany (Registration Number: 4952143)

Cooperative researchers

Number
34
31
42

Proposals accepted in fiscal 2014

	Number	%
Strategic research proposals	13	54.17%
General research proposals	57	67.86%
Proposals for research planning meetings	5	83.33%
Total	75	65.79%

(as of March 2014)

Trademark mode	Registration number
picture(ミカエル)	5600802
meQuanics	5622078
picture(GeoNLP)	5645544
SIGVerse	5649553
PrivacyVisor	5653596

>>> Education

TopSE and edubase : Education Services for IT specialists

GRACE Center provides TopSE education program, edubase Cloud and edubase Space for education environment for IT specialist, and edubase Stream as a portal site aimed at continuously disseminating and developing good IT educational materials. These services aim at cultivating the leading IT specialists who have the ability to take the initiative in software development in companies and other entities.

intellectual manufacturing education founded on science TopSE http://www.topse.jp/english/

The TopSE education program is a practical education program aiming to cultivate software engineers who have acquired highly advanced development techniques based on the concept,"intellectual manufacturing education based on science." Many young software engineers and researchers from industry are

joining the practical program on the basis of practices.

Creation of Intelligence in the Ubiquitous Environment edubase Space http://edubase.jp/space/

edubase Space offers an ideal educational environment in advanced IT human resource development, in which students are encouraged to discover problems and cultivate their imagination. It supports education conducted in various styles, including lectures, discussions, group work, as well as distance learning. A classroom equipped with the latest IT equipment can also be used as an experimenting ground in the ubiquitous environment.



edubase Space

TopSE Certification

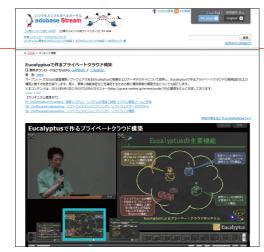
edubase Cloud http://edubase.jp/cloud/

An IT laboratory where you can test your ideas without restraint

edubase Cloud can create an environment in which you can acquire necessary IT resources when needed, and can test your ideas without restraint. Utilization of Cloud in the actual training grounds is expected, from basic technology of Cloud to Project Base Learning in the IT field.



Cloud server room



edubase Stream

Graduate Education Activities http://www.nii.ac.jp/graduate/index_e.html

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 (also known as"SOKENDAI") (2) Cooperation with graduate universities (3) Special collaboration with research students

Department of Informatics, The Graduate University for Advanced Studies (SOKENDAI)

Establishment of the Department

The Department of Informatics (3 year doctoral programs), which began at SOK-ENDAI 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. SOKENDAI was Japan's first university to provide doctoral programs solely with the objectives of encouraging original and international academic studies that transcend conventional disciplinary frameworks and developing cutting-edge academic disciplines to create new directions in science.

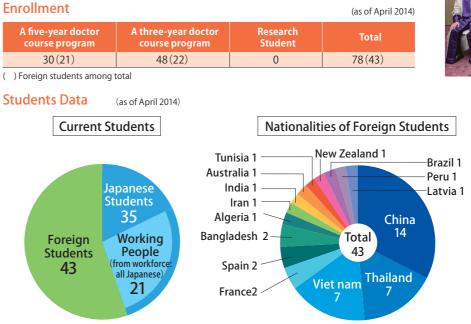
Aims and Structure of the Department

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 Science
- 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 of Informatics welcomes international students. There is active cross-cultural exchange among students. The Department also has a large number of students holding full-time jobs. They account for approximately 30% of all students in the department.



Portal site for Learning Anytime Anywhere edubase Stream http://stream.edubase.jp/

edubase Stream provides video educational materials of the cutting edge software science and engineering developed by universities and institutes in Japan, in addition to conventional educational material. The site synchronizes video materials with the sides to allow us to lean software technologies easily anytime anywhere only with the Internet ready browser.



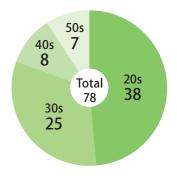
Guidance for new students





Medal ceremony

Age distribution



Career options (past three years) (past three				
Year of Graduation	University/Institution	Company	Not yet determined	Total
FY2013	7(5)	0(0)	2 (2)	9(7)
FY2012	6(1)	3 (0)	1 (0)	10(1)
FY2011	8(3)	1 (0)	2(1)	11 (4)
Total	21 (9)	4(0)	5 (3)	30(12)

() Foreign students among total

Cooperation with Graduate Schools

NII actively cooperates with the University of Tokyo, Tokyo Institute of Technology, Waseda University, JAIST, Kyusyu Institute of Technoloty and The University of Electro-Communications. NII also accepts graduate students from these institutions for additional instruction.

Cooperation with Graduate Schools

University	University Graduate School			
The University of Tokyo	Graduate School of Information Science and Technology	FY2001~		
Tokyo Institute of	Graduate School of Information Science and Engineering	FY2002~		
Technology	Interdisciplinary Graduate School of Science and Engineering	FY2003~		
	Graduate School of Fundamental Science and Engineering			
Waseda University	Graduate School of Creative Science and Engineering	FY2005~		
	Graduate School of Advanced Science and Engineering			
JAIST (Japan Advanced Institute of Science and Technology)	School of Information Science FY			
Kyushu Institute of	Graduate School of Computer Science and Systems Engineering	FY2010~		
Technology	Faculty of Computer Science and Systems	112010 -		
The University of Electro-Communications	Graduate School of Information Systems	FY2012~		

Special Collaboration with Research Students

NII accepts students from other universities as research students in special collaborative projects, fostering both research and education.

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 of students (FY2013)

University				
Ochanomizu University	Keio University			
Chiba University	University of Tsukuba			
The University of Electro-Communications	The University of Tokyo			
Tokyo Institute of Technology	Tokyo University of Science			
Australian National University	Grenoble Institute of Technology			
University of Groningen	Royal Institute of Technology			
Stanford University	University of Strathclyde			
Tongji University	University of Brunswick – Institute of Technology			
University of Poitiers				

(FY2013)

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				
Master Course	Ph.D. Course	Total		
33	20	53		

>>> International Exchange

Contribution to Internationalization of Informatics

Overview

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.

Research Exchange with Universities and Institutions (FY2013)			
NII Internship Program	146 students from 17 countries		
MOU Grant/ Non-MOU Grant	36 persons to 18 countries 50 persons from 24 countries	Japan So the Prom Science (

International Exchange Agreement

Country		Organization	Country		Organization
People's Republic of		Department of Automation, School of Information Science and Technology, Tsinghua University	nformation Irland		University of Limerick
China		Institute of Computational Mathematics and Scientific/Engineering Computing,	French Republic		Computer Laboratory Nantes Atlantique, University of Nantes National Institute for Research in Computer Science and Control(INRIA
		Academy of Mathematics and System Sciences, Chinese Academy of Sciences			
		Tongji University			Grenoble Institute of Technology(INPG) Joseph Fourier University(UJF)
		School of Electronics Engineering and Computer Science, Peking University		-	
		Hong Kong University of Science and Technology (HKUST)			Laboratory of Computer Sciences, Paris6 (LIP6), Pierre and Marie Curie University
		The School of Electronic, Information and Electrical			National Polytechnic Institute of Toulouse(INPT)
		Engineering, Shanghai Jiao Tong University			National Center for Scientific Research (CNRS)
Taiwan	-	University of Science and Technology of China			Paul Sabatier University(UPS)
Taiwan		College of Electrical Engineering and Computer Science, National Taiwan University			Claude Bernard University Lyon 1
Kingdom of		Chulalongkorn University			The University of Paris Sud
Thailand		Asian Institute of Technology			The Electronics and Information Technology Laboratory (LETI)
		Kasetsart University			University of Nice Sophia Antipolis
	•	National Electronics and Computer Technology Center, National Sci- ence and Technology Development Agency (NECTEC)	United Kingdom of Great Britain	•	Department of Computer Science, Faculty of Engineering Science, University College London
Socialist		International Research Center MICA, Hanoi	and		Faculty of Mathematics and Computing, Open University
Republic of	┍	University of Technology	Northern Ireland		University of Bristol
VietNam		Hanoi University of Science and Technology			University of Bath
		Vietnam National University of Ho Chi Minh City			Department of Computing, Imperial College London
		Vietnam National University, Ho Chi Minh City, University of Science	-		The Computing Laboratory, University of Oxford
		Vietnam National University, Hanoi, University of Engineering and Technology			School of Computer Science & Electronic Engineering, University of Esser
Describerto Describerto	-	Engineering and Technology			School of Informatics, The University of Edinburgh
People's Republic of Bangladesh		University of Dhaka			Newcastle University
Republic of		Department of Computer Science and Engineering,	Federal Republic		Faculty of Applied Informatics, University of Augsburg
Korea		Seoul National University	of Germany		German Research Center for Artificial Intelligence (DFKI)
		Korea Education & Research Information Service			Faculty of Applied Science, University of Freiburg
Republic of Singapore	•	School of Computing, National University of Singapore		•	Faculty of Mathematics, Computer Science and Natural Sciences, RWTH Aachen University
Australia		The Australia-Japan Research Centre, The Australian National University			German Academic Exchange Service (DAAD)
		National ICT Australia Limited (NICTA)			Saarland University
	•	The Faculty of Engineering, Physical Sciences and Architecture, The University of Queensland		•	Faculty of Mathematics, Informatics and Statistics, University of Munchen
		Faculty of Engineering and Information Technologies, The University of Sydney	-	•	Technical University Berlin
	F-			•	Fraunhofer Institute for Open Communication Systems (FOKUS)
	•	Smart Transport Research Centre, hosted by the Faculty of Built Environment & Engineering, Queensland University of Technology		•	Braunschweig University of Technology
United States of		Department of Computer and Information		_	University Library Center of North Rhine-Westphalia(HBZ)
America		Science, University of Michigan-Dearborn		_	German National Library of Science and Technology
		College of Engineering, University of Washington, Seattle			German National Library of Medicine
		University Information Technology Services, Indiana University	Kingdom of the Netherlands		Faculty of Civil Engineering and Geosciences, Delft University of Technology
		Department of Computer Science, University of Maryland	Republic of Austria		Vienna University of Technology
		New Jersey Institute of Technology	Republic of Italy	ě	Department of Informatics, Torino University
		International Computer Science Institute			Electronics, Information and Bioengineering, Politecnico di Milano
		Reischauer Institute of Japanese Studies, Harvard University	Switzerland		Institute of Electrical Engineering, Ecole Polytechnique Federale de Lausann
		University of Southern California	Dinizenana	Ŏ	The Idiap Research Institute (Idiap)
		North American Coordinating Committee on Japanese Library Resources	Finland	•	The Aalto University, School of Electrical Engineering
		Institute for Scientific Information, Inc.	Czech Republic	•	Czech Technical University in Prague
		Association of Research Libraries (ARL)	Spain	•	Polytechnic University of Valencia(UPV)
Canada		Faculty of Mathematics, University of Waterloo			Technical University of Madrid
		University of Alberta			Polytechnic University of Catalonia(UPC)
		School of Computer Science, McGill University	Portuguese		
		Simon Fraser University (SFU)	Republic	-	Institute of Investigation and Development of Computer system, Engineering in Lisbon(INESC-ID)
Argentina		Faculty of Exact and Natural Sciences, University of Buenos Aires			INESC Technology and Science (INESC TEC)
3					I France I have a University of Color as an difference of any
For research co	onor	ation : 85	Arab Republic of Egypt Kingdom of Morocco		Egypt-Japan University of Science and Technology Rabat International University

Intercommunication of researchers

(as of April 2014)

		, , ,
	Program	Number of researchers
Japan Society for	Postdoctoral Fellowships for Foreign Researchers	2
the Promotion of	Postdoctoral Fellowships for Foreign Researchers (Short-term; for researchers from Western countries)	0
Science (JSPS)	Invitation Fellowship Program for Research in Japan	1
Other researchers accepted (visiting researchers, visiting professor [full-time])		14

(as of April 1, 2014)

>>> International Exchange

NII Shonan Meeting

In February 2011, the NII launched the NII Sho nan Meetings, the first Dagstuhl-style seminar* held in Asia. The purpose of the NII Shonan Meetings is to resolve various challenges in the field of informatics by assembling the very best researchers from around the world to engage in intensive discussions on issues in the field of informatics in an atmosphere that promotes close interaction. This meeting is based on a partnership agreement concluded with Kanagawa Prefecture.

The meeting's venue, the Shonan Village Center, provides an environment in which participants can focus on research activities in a setting that provides both spectacular natural beauty and easy access from Narita Airport.

We have organized over 35 seminars to date.

*Dagstuhl Seminar : A key seminar series in the field of informatics, held roughly every week, in Dagstuhl, Germany. The series is based on a structure whereby participants live in close guarters for one week for intensive discussions on various topics under a specified theme for each seminar.

Support System

The Office of NII Shonan Meetings and Shonan Village Center staff handle various activities on behalf of seminar management, including issuing invitations, providing information on lodging and accommodations, and preparing venues on meeting days.

The program also includes various activities intended to deepen interaction between participants, including hikes in nearby natural areas and historical walking tours of Kamakura.

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



Shonan Village Center



Top-level informatics researchers come together for intensive discussion.



NII Shonan Meeting (May 2013)

The Recent Topics of the NII Shonan Meetings

- 1. Intelligent Information Processing Chances of Crowdsourcing Nov. 18-21, 2013, 21 participants
- 2. Cognitive Social Robotics: intelligence based on embodied experience and social interaction Nov. 11-14, 2013, 23 participants
- 3. Implicit Computational Complexity and apprications: Resource control, security, real-number computation
- Nov. 4-7, 2013, 24 participants
- 4. Software Analytics: Principles and Practice Oct. 21-25, 2013, 28 participants
- 5. Coinduction for computation structures and programming languages Oct. 7-10, 2013, 31 participants
- 6. Compact Data Structures for Big Data Sep. 27-30, 2013, 31 participants
- 7. First International Symposium on Computational Behavioral Science Sep. 26-28, 2013, 23 participants
- 8. Many-cores and On-chip Interconnects Sep. 23-25, 2013, 21 participants
- 9. Engineering Adaptive Software Systems (EASSy) Sep. 9-12, 2013, 33 participants
- 10. Discrete Algorithms Meet Machine Learning Aug. 10-13, 2013, 14 participants

NII Shonan Meeting Memorial Symposium

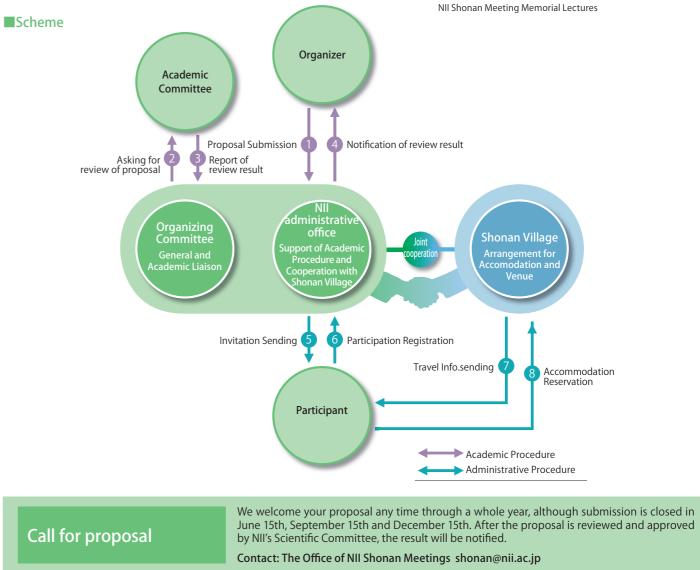
To mark the first anniversary of the start of the NII Shonan Meeting, we organized a symposium on the theme of "For Making Future Value From Asia" in November 2012. The keynote lectures were given by Professor J.D. Ullman of Stanford University who is world-famous for his research on database theory; Professor R.A. Kowalski of Imperial College, London, who is a first-class virtual logic programming researcher; and Professor M. Kitsuregawa, the current Director General of the National Institute of Informatics.

Over the period of two years since the launch, the NII Shonan Meeting has steadily gained visibility, and both project applicants and themes have broadened. We will continue to implement further activities in the future as a venue where Japanese and Asian researchers can manifest leadership.

NII Shonan Meeting Memorial Lectures

In partnership with Kanagawa Prefecture and the Shonan Village Program Promotion Committee, and with assistance from Village Shonan, Inc., we have organized NII Shonan Meeting Memorial Lectures on three occasions to date, as part of our NII Shonan Meeting outreach activities.

We invite researchers with links to NII Shonan Meetings or NII itself to serve as guest speakers, delivering public lectures on the very latest research in the field of informatics.







NII Shonan Meeting Memorial Symposium(November 2012)



>>> Cyber Science Infrastructure (CSI)

Agreement with German Academic Exchange Service (DAAD)

In December 2009 NII has signed a special agreement for 3 years with the German Academic Exchange Service (DAAD) that has allowed German post-doc to stay for one year at NII to conduct their research under the mentoring of NII researchers. This program existed also at the International Computer Science Institute (ICSI) in Berkeley, USA.

During 3 years NII has received 10 new post-docs. The contract has been renewed for 5 years until 2017 introducing more flexibility to welcome more German post-docs. We accepted four new researchers in fiscal year 2013.

Japanese - French Laboratory for Informatics: JFLI.

The Japanese-French Laboratory for Informatics (JFLI) was created in 2009 as a hub for the collaboration in informatics between Japan and France and regroups French National Center for Scientific Research (CNRS), Pierre and Marie Curie University - Paris 6, The University of Tokyo (Graduate School of Information Science and Technology), the NII and Keio University. 2012 will see an extended cooperation between the same partners who have decided to create an International Mixed Unit (UMI), which will focus on 5 main topics : (1) Next Generation Networks, (2) High Performance Computing, (3) Software, Programming Models and Formal Methods, (4) Virtual Reality and Multimedia and (5) Quantum Computing.



JFLI Establishment Agreement Signing Ceremony

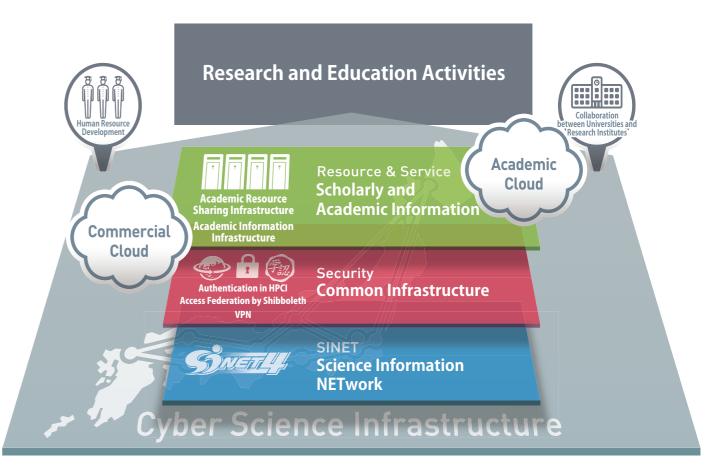


http://glo.nii.ac.jp/

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



We will work in close collaboration and cooperation with universities and research institutions to facilitate the above, as we join forces with Japan's academic community to effectively implement the framework for advancing CSI construction.

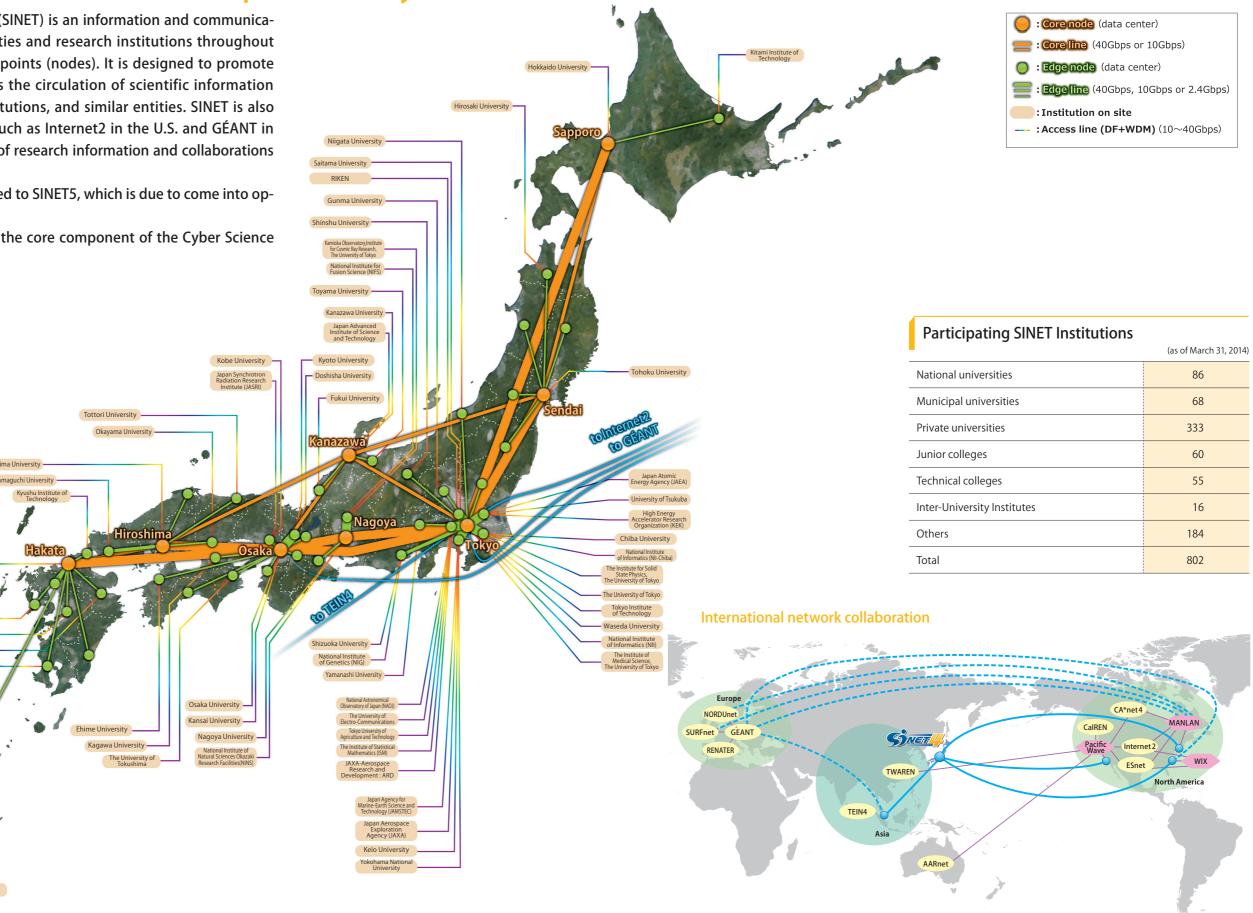
Oita University

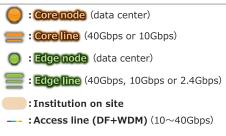
A Network that Extends Across Japan and Beyond

The Science Information Network (SINET) is an information and communication network connecting universities and research institutions throughout Japan via nationwide connection points (nodes). It is designed to promote research and education as well as the circulation of scientific information among universities, research institutions, and similar entities. SINET is also connected to research networks such as Internet2 in the U.S. and GÉANT in Europe to facilitate dissemination of research information and collaborations over networks.

The current SINET4 will be upgraded to SINET5, which is due to come into operation in April 2016.

SINET4 plays an important role as the core component of the Cyber Science Infrastructure(CSI).





Science Information Network 4 (SINET4) http://www.sinet.ad.jp/index_en.html?lang=english

lines

Science Information NETwork 4



OHigher network speed

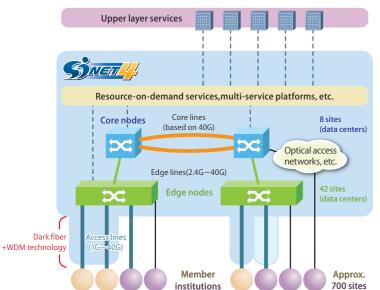
The effecitive network bandwidth has been increased and the rerouting function has been improved by reconfiguring the network and adopting solutions including dark fiber and WDM technology. This has made the network even more cost effective.

2Provision of diverse services

As well as retaining all of the services available under SINET3, SINET4 also features improved and expanded capabilities in areas such as resource-on-demand.

BHigher edge node stability

SINET4 positions both edge nodes and core nodes in data centers, improving the reliability of the network including its availability, maintainability, and security.



Schematic of Configuration of Supported Network Services 40G/ L2/L3 10Gbps Core Node IP Router 1150 Logical Router IPv4/IPv6 L3VPN L2VPN/VPLS L2OD 40G/10G/ L2/L3 The band can be changed 2.4Gbps Path Edge Node L2 Multiplex L1SW L 3 L1 12 IPv4/IPv6 L3VPN L2VPN/VPLS L2 On-Demand L1VPN L1 On-De **Equipment of Member Institutions**

G Establishment of an environment for high-speed access

By undertaking shared procurement of access lines, a faster ac-

cess system has been created for member institutions other

than those on site (Institution on site). In addition, installment of

Installation of interfaces and service-providing platforms to sup-

nodes completed in all prefectures in Japan.

port the upper layer is being considered.

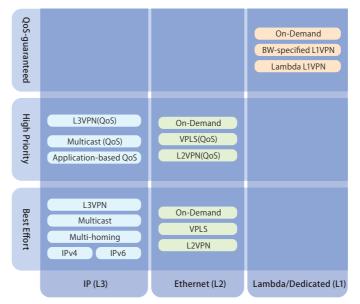
Opper layer deployment

SINET4 Network Services

We have designed a user-friendly and expanded services, for example resource on-demand (L1/L2) functionality, performance improvement software, and a portal page.

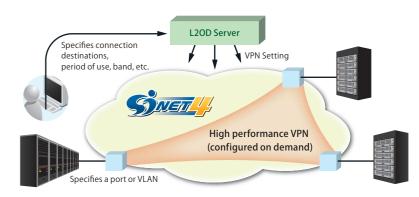
SINET4 Services

(Classification by network layer and QoS)



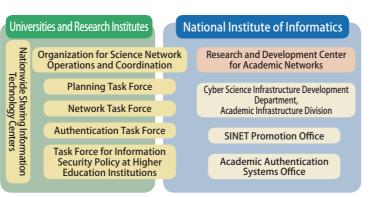
Resource-on-demand services

When the user specifies an origin, a destination, duration, bandwidth to make a VPN reservation on the web display, the path is automatically set up and ready to use at the specified time.



Organization for Science Network Operations and Coordination

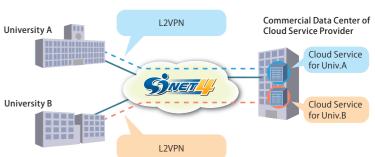
The administration of the Science Information Network is done in collaboration and cooperation between nationwide research institutes for information technology at universities and research institutes, and the Research and Development Center for Academic Networks at the NII based on the Organization for Science Network Operations and Coordination, which is a joint organization of universities, research institutions and the NII.



Private Cloud Environment via SINET

http://www.sinet.ad.jp/service/other/cloud_services

We have built a framework that allows cloud service providers (email, storage, remote access, etc.) to connect directly to SINET. SINET users can access these services in a safe environment.





SINET4 Service Menu

Servi	ice Menu	SINET4
	E/FE/GE (T)	O
Provided Interface	GE (LX)	O
	10GE (LR)	O
	Internet Access	O
	IPv6	\bigcirc
	Multi-Homing	\odot
	Full Routes	\bigcirc
L3 Service	IP Multicast	\bigcirc
LS Service	L3VPN	\odot
	Application-based QoS	\bigcirc
	IP Multicast (QoS)	\odot
	L3VPN (QoS)	\odot
	L3VPN (Multicast)	Planned
	L2VPN/VPLS	\odot
L2 Service	L2VPN/VPLS (QoS)	\odot
	L2 On-Demand	Planned
L1 Service	L1 On-Demand	O
	Commercial Cloud Connection	O
User Support /	Performance Measurements	\bigcirc
Information Offering Service	Traffic Measurement	\bigcirc
	SINET Portal	Planned

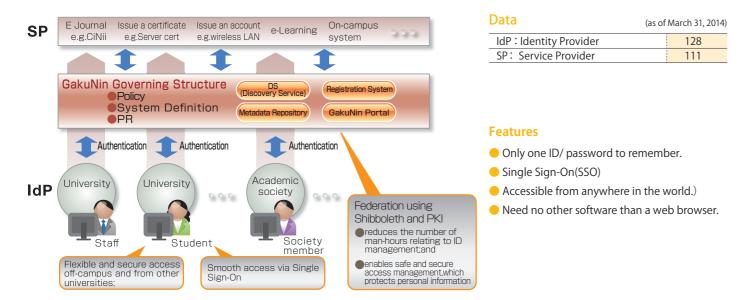
* Other services are also being considered

Establishment of Authentication Infrastructure

Academic Access Management Federation in Japan (GakuNin) https://www.gakunin.jp/docs/en/fed/about

Aiming to improve usability and to cut the operation cost of internal systems, many universities are now switching to the cloud services. The Academic Access Management Federation (GakuNin) is a structure that allows the use of a university's authentication infrastructure not only for internal services, but also for other collaborating universities and commercial services including the cloud, thus facilitating the safe and secure use of academic services on the Internet by identifying individuals and organization. With Single Sign-On, users can seamlessly and automatically log-in to multiple internal and external services just with a single log on procedure simply. For universities, building an authentication infrastructure compatible with GakuNin, this raises the baseline of security measures and reduces the cost of ID management.





GakuNin strives to maintain reliability by annual assessment of the IdPs operated by universities and institutions. GakuNin also provides LoA1 (Level of Assurance 1) certification services through the Open Identity Exchange (OIX) in the United States. Universities that have been certified for this high level of authentication infrastructure are able to use the US government services, including the databases of the National Institutes of Health(NIH).

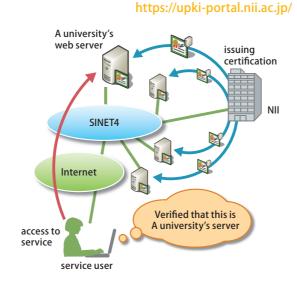
Issuing Server Certification

NII has issued highly secure server certification that meets the unified international WTCA (Web Trust for CA) standard for online servers connected to the academic information network (SINET).

Server certification certifies online server operators(domain names) and attempts to improve security such as making it easy to identify phishing sites. It can also simultaneously realize online browsers and communication encoding between online servers, and also protect matters such as personal information that has been entered on online browsers.

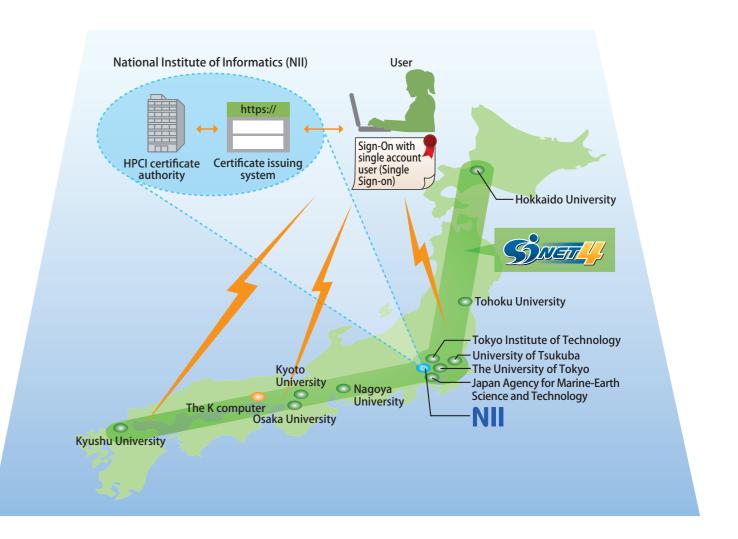
Through the proliferation of server certification, NII is working to improve SINET's security.

Server certification issuance situation	(as of March 31, 2014)
Number of certificates issues	19,047
Number of institution such as universities	323 institution



Construction of the Authentication Infrastructure and network infrastructure for the High-Performance **Computing Infrastructure (HPCI)**

High Performance Computing Infrastructure (HPCI) aims to build computational environment, which meet the needs of various users in academics and industries, by federating the K computer in Kobe as a core system and supercomputers in universities and research institutes in Japan. The HPCI has an single sign-on authentication mechanism, which allows users to gain access to any computing resources by using a common login account to improve usability. NII is constructing and operating the certificate authority and the authentication portal, in collaboration with the K computer and universities, which is the core of the single sign-on authentication mechanism. A high-security mechanism based on electronic certificates is adopted to ensure security and reliability when using the HPCI. With these features, users access their accounts only once, get advantage of the HPCI in a reliable secure and convenient way. Additionally NII operates Science Information NETwork, SINET4. SINET4 provides network infrastructure in HPCI for using remote supercomputers and sharing large experimental data.



>>> Academic Information Infrastructure

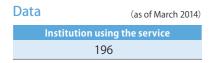
Support for Linkage between Institutional Repositories

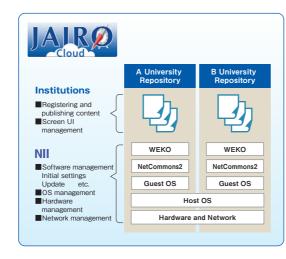
http://www.nii.ac.jp/irp/en/

In order to contribute to improving next-generation academic content platforms, NII promotes open access, and supports collaboration and the building of institutional repositories to communicate the outcome of educational research at universities and elsewhere. So far, NII has supported content enrichment, system collaboration and community formation at academic institutions in Japan. As a result, institutional repositories have now been built and are operational at more than 400 institutions.

JAIRO Cloud (shared repository service)

For institutions that find it difficult to independently build and operate their own repositories, NII provides a shared repository system environment in the form of a cloud service based on our institutional repository software WEKO (http://weko.at.nii.ac.jp/).



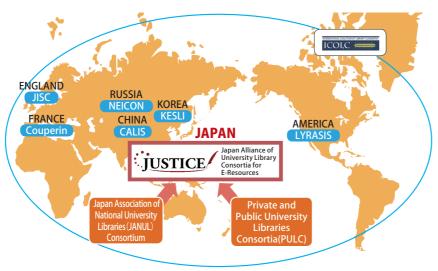


http://www.nii.ac.jp/irp/en/

Japan Alliance of University Library Consortia for E-Resources (JUSTICE)

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

Aiming to implement a range of activities to provide stable and continuous access to academic information, including e-journals, JUSTICE is a leading large-scale consortium with approximately 500 participating national and private university libraries. To support the activities, NII has set up Library Liaison Office that functions as the JUSTICE Secretariat and is staffed from university libraries.



Electronic archives

NII-REO (NII Electronic Resource Archives) http://reo.nii.ac.jp/index_en.html

Back numbers of international electronic journals (approx. 3.7 million) and an electronic collection of humanities and social science material (approx. 300,000 items) are stored on NII servers and provided to universities in Japan. The electronic resources are maintained in collaboration with JUSTICE.

We carry out the following activities to protect and provide electronic academic information on a permanent basis.

CLOCKSS http://www.clockss.org/clockss/Home

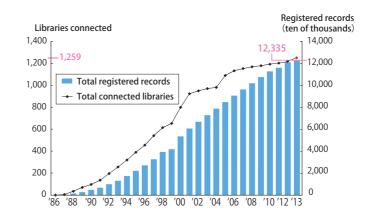
An international project to ensure the long-term survival of, and guarantee access to electronic journals. NII participates in the project as the archive node for Asia and are doing promotion activities for university libraries.

Catalog Information Service http://www.nii.ac.jp/CAT-ILL/en/

The Catalog Information Service consists of the Cataloging System(NACSIS-CAT) and the Interlibrary Loan System (NACSIS-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 union catalog of books and serials consisting of the compiled databases can be freely accessed via the worldwide web online search service (CiNiiBooks)



Interlibrary Loan System (NACSIS-ILL)

The Interlibrary Loan System (NACSIS-ILL) supports the exchange of books and journal articles among libraries to facilitate the provision of documents to researchers at universities and other institutions.

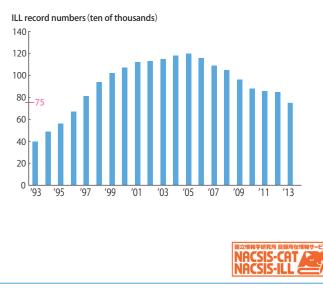
The service applies the latest information from the union catalog databases constructed by NACSIS-CAT, resulting in improved efficiency and prompt delivery of documents to users.

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.

Education and Training Programs

We provides a range of training programs to develop human resources who support academic information infrastructure in Japan at universities. User Training (Catalog Information Service / JAIRO Cloud (shared repository service)) Advanced Training (web services for academic information, academic literacy education) Comprehensive Training (comprehensive themes involving academic information infrastructure for developing core human resources)





Publishing and Communicating Academic Information

NII accumulates and structures the outcome of educational research produced at universities and research institutions, and provides access through a user-friendly interface.

Academic Information Platforms Essential to Researchers and Students

CiNii (NII Scholarly and Academic Information Navigator)

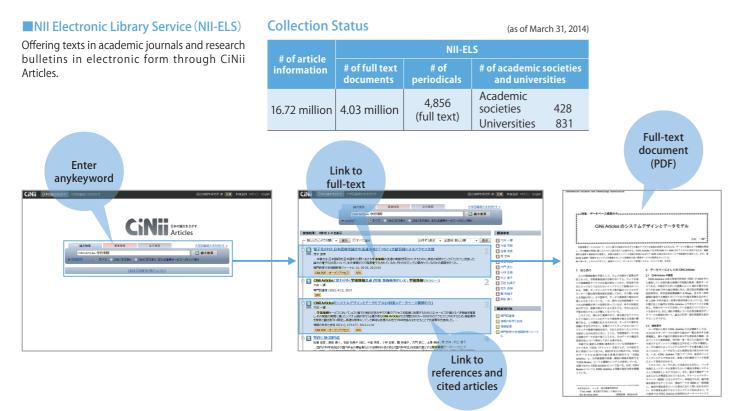
http://ci.nii.ac.jp/en

This is a database service that can be exhaustively searched for academic information such as articles, books and journals. NII is expanding the pool of data available and improving text hit rates by linking various database services. In addition, NII is promoting intersystem links with university libraries and other facilities by providing search APIs(application program interfaces) such as OpenSearch.

CiNii Articles – Searching for Japanese research papers –

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

"CiNii Articles" enables you to search information on academic articles published in academic society journals, university research bulletins or articles included in the National Diet Library's Japanese Periodicals Index Database. It is available free of charge for anyone. In viewing paid content, special rates and other privileges are offered to institutional fixed-price users (registration by institution) or users with an ID (individual registration).



CiNii Books – Searching for books in university libraries –

http://ci.nii.ac.jp/books/?l=en

CiNii Books is a service that enables searching of information on books and journals that are held in university libraries in Japan.

It is possible to search for about 10 million titles held in 1200 university libraries (totaled over 100 million books), and about 1.5 million authors of these books that has been accumulated through the online cataloging system (NACSIS-CAT) which NII provides. It is available for anyone without registering.

Collection Status (as of March 31, 2014)		
# of book and journal information	# of holding information	# of member libraries
10.73 million	128 million	1,259



For Searching Japan's Latest Research Information

KAKEN (Database of Grants-in-Aid for Scientific Research)

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. It provides access to the latest scientific information in Japan. The research result report is available in PDF (FY2008 onwards).

Stored documents (as of March 31, 2014)



Crossover Searches of Academic Information Accumulated in Institutional Repositories in Japan

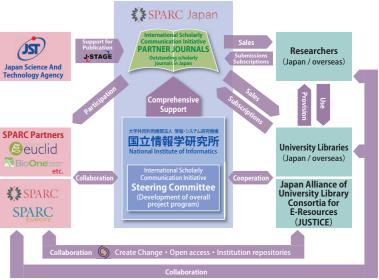
JAIRO (Institutional Repositories Portal)

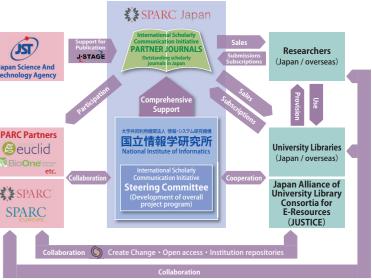
This enables crossover searches of academic information (research papers published in scholarly journals, academic dissertations, study reports, etc.) accumulated in institutional repositories in Japan. Users are able to access full-text of each repository, as well as linking to CiNii

Stored content	(as of March 31, 2014)	
Institutional Repositories	Contents	
343	2,000,000	

International Scholarly Communication Initiative (SPARC Japan) http://www.nii.ac.jp/sparc/en/

SPARC Japan was launched in FY2003 based on cooperation with academic societies and university libraries, and in collaboration with SPARC (USA) and SPARC Europe. The aim is to promote further dissemination of the outcome of academic and scientific research in Japan, as well as to promote the digitization and international distribution of academic journals published by Japanese academic societies, and to contribute to improvements in the international infrastructure for the distribution of academic information. The basic plan of action for the fourth term (FY2013-2015) is to "implement open access under a framework of international collaboration, to promote the distribution of academic information, and to strengthen the ability to disseminate information." As well as promoting collaboration with university libraries and researchers, the project aims to understand the issues around open access, and to study the measures that universities should adopt





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





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

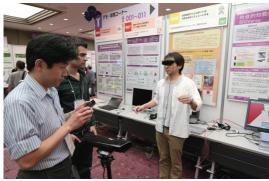


International Scholarly Communication Initiative

NII holds lectures and symposia and issues publications under the general aim of disseminating research finding 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.



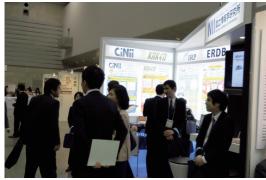
NII Open House (June, 2013)

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, 2013)

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 (November, 2013)

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).

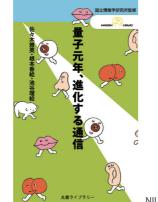
• Videos of lectures and recitals are available on the NII website * in Japanese

• 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

Publications

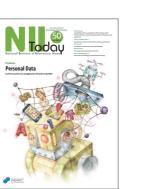
NII Series (Maruzen Library)

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



Public information magazine

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



NII Today (Quarterly)

NII Library

The NII Library holds a number of books and periodicals on informatics, including online 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			
	(as of April 2014)		
Document type	Books	Bound journals	Journals (in title)
Domestic Documents	14,757	9,497	243
Foreign Documents	13,952	8,217	22
Total	28,709	17,714	265

Major online journals and databases

Service	Publisher
ACM Digital Library	Association for Computing Machinery
APS online	American Physical Society
CUP online	Cambridge University Press
IEL	IEEE, IEE
MathSciNet	American Mathematical Society
OUP online	Oxford University Press
Springer Link	Springer
Science Direct	Elsevier B.V.
Wiley Online Library	John Wiley & Sons.
IEICE	The Institute of Electronics, Information and Communicati

Facility, Equipment

	Reading room	Stack roor
Area	140m ²	271m ²
Seats	8	3
PC for search	2	
Other equipment	Automatic Book Circulation N	lachine
	Micro reader printer	
	Copier	

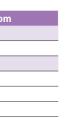
NII Series (Maruzen Library)

WEB		
	nttp://www.nii.ac.jp/en/ our website for further information	
	nel http://www.nii.ac.jp/event I lectures and symposia on NII Video	
•Twitter h @jouhouken offi	nttp://twitter.com/jouhouken/ icial account	国立情報学研究所
Facebook	https://www.facebook.com	n/jouhouken



Reading Room 1





Subscribed journals

>>> Organization

Organization / Staff / Budget

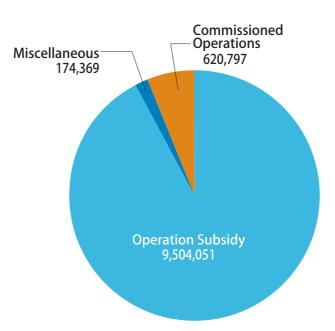
Organization	Chart		(as of April 2
Director General			
Desservels Structure O	Mar Danutu Diverter Concerd		Global Liaison Office
Research Strategy C	Office Deputy Director General		Pre & Post Research Center Group
			Mathematical Informatics Takeaki Uno Ken-ichi Kawarabayashi Ryota Kobaya
	Principles of Informatics Research Division		Ken Hayami Yuichi Yoshida Mathematical Logic Makoto Kanazawa Makoto Tatsuta
D 10000	Information Systems Architecture Science Research Division		Quantum Information Shoko Utsunomiya Kae Nemoto Keiji Matsumot Tim Byrnes
Research Division	Digital Content and Media Sciences Research Division		Material and Life Informatics Hiroko Satoh Asao Fujiyama Intelligent Informatics Ryutaro Ichise Tetsunari Inamura Katsumi Inoue
	Information and Society Research Division	_	Nobutaka Ono Nigel Collier Ken Satoh Hideaki Takeda Shigeki Yamada
	Research and Development Center		Network Architecture Shunji Abe Kensuke Fukuda
	Research Center for Knowledge Media and Content Science		Information Network Shigeo Urushidani Yusheng Ji Computer Architecture Kento Aida Michihiro Koibuchi Masahiro Goshima Hiromichi Hashiz
	GRACE Center: Center for Global Research in Advanced Software Science and Engineering		Software infrastructure Ichiro Satoh Soichiro Hidaka Zhenjiang Hu Software Engineering Kazunori Sakamoto Shin Nakajima Shinichi Honide
Research Center	Research Center for Community Knowledge		Nobukazu Yoshioka Tomohiro Yoneda Kenji Tei
	Global Research Center for Quantum Information Science		Foundations of Content Management Fuyuki Ishikawa Isao Echizen Norio Katayama Hiroyuki Atsuhiro Takasu Akihiko Takano Kazutsuna Yamaji
	Global Research Center for Cyber-Physical Systems		Text and Language Media Akiko Aizawa Jun Adachi Keizo Oyama Yusuke Mi Junichi Yamaqishi
	Global Research Center for Big Data Mathmatics		Pattern Media Asanobu Kitamoto Kazuya Kodama Imari Sato Shin'ichi S Akihiro Sugimoto Gene Cheung Hiroshi Mo Duy-Dinh Le
Organization for Management	Organization for Value Creation in Informatics		Human and Knowledge Media Kenro Aihara Frederic Andres Ikki Ohmukai Helmut Prendinger Mayumi Bono Seiji Yamada
and Outside Collaboration	Organization for Science Network Operations and Coordination		Information Use Noriko Arai Kouichirou Ueki Noriko Kando Hironobu Go
on R&D	Organization for Scientific Resources Operations and Coordination		Teruo Koyama Takayuki Mizuno Akira Miyazawa Science Information Yuan Sun Masaki Nishizawa Information Public Policy Hitoshi Okada Tetsuro Kobayashi Noboru Sonehar
	Academic Infrastructure Division		Coordination, Infrastructure & Liaison Team SINET Team
Cyber Science Infrastructure	Scholarly and Academic Information Division	—	SINET Promotion Office Academic Authentication Systems Office
Development Department	Library Liaison Cooperation Office		
	Advanced IT Center		Library Liaison Team – GeNii Development Team Library Support Team
			Content system, Development Office
	Planning		 Planning Team International Affairs and Education Support Team
General Affairs Department	Office for Social Collaboration		Publicity Team
	General Affairs Division		- Collaboration Support Team FIRST Support Team
	Budget and Accounts Division		– General Affairs Team Personnel Affairs Team
			 Finance and Accounting Team Procurement Team
			FIGUREMENT ream

Staff

	Director General	Deputy Director General	Professors	Associate Professors	Lectors	Assistant Professors	Subtotal	Other Employees	Total
Full-time Employees	1	2	32	32		9	76	58	134
Specially Appointed Professors			9	8	1	13	31		31
Support Staff									165

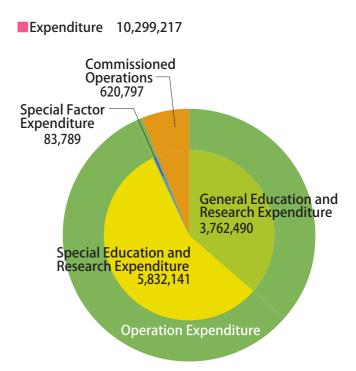
Budget (FY2014)

Income 10,299,217



(as of April 2014)

(unit: thousand yen)



(as of April 1, 2014)

Administrative Council

Discusses important matters concerning the management and operations of the NII in response to consultations from the Director General, such as the selection of the NII Director General as well as academic personnel, joint research plans and matters concerning the NII in the mid-term targets and plans of the Research Organization of Information and Systems.

Kiyoharu Aizawa	Professor, Department of Information and Communication Engineering of the University of Tokyo	Shinichi Honiden	Deputy Director General, NII Director, GRACE Center: Center for Global Research in Advanced Software Science and Engineering, NII		
Shinji Shimojo	Professor, Cybermedia Center Osaka University		Deputy Director General, NII		
Yuzuru Tanaka	Professor Graduate School of Information Science and Technology Hokkaido University		Director, Cyber Science Infrastructure Development Department, NII		
Тапака	Director, R&D Strategy Group, Research and Development Center, NTT-		Director, Principles of Informatics Research Division, NII		
	WEST (NIPPON TELEGRAPH AND TELEPHONE WEST CORPORATION)		Director, Information Systems Architecture Science Research Division, NII Director, Research and Development Center for Academic Networks, NII		
Hideyuki Tokuda	Dean of Graduate School of Media and Governance Professor, Faculty of Environment and Information Studies, Keio University	Shin'ichi Satoh	Director, Digital Content and Media Sciences Research Division, NII		
Yoshiaki Fukazawa	Professor, Department of Computer Science and Engineering, Waseda University		Director, Information and Society Research Division, NII		
Michihiko Minoh	Professor, Academic Center for Computing and Media Studies, Kyoto University		Director, Research Center for Knowledge Media and Content Science, NII		
Hiroto		Noriko Arai	Director, Research Center for Community Knowledge, NII		
Yasuura	Trustee (Vice President), Kyushu University		Director, Global Research Center for Quantum Information		
Shinya Watanaho	Vice President and Executive Officer, Hitachi, Ltd. Chairman		Science, NII		
	& CEO, Hitachi Information & Telecommunication Systems Global Holding Corp.	Ken-ichi Kawarabayashi	Director, Global Research Center for Big Data Mathematics, NII		
		Keizo Oyama	Head, Department of Informatics, School of Multidisciplinary Sciences, The Graduate University for Advanced Studies, NII		

Advisory Board

Consists of domestic and overseas members with extensive and advanced knowledge on science information and responds to consultations from the Director General regarding issues on research in informatics and on development and construction of Cyber Science Infrastructure.

Hugh Durrant-Whyte	CEO, NICTA(National ICT Australia) Professor, Twente University	Michel Cosnard	Chairman & CEO, INRIA(Institut National de Recherche en Informatique et en Automatique)		
Willem Jonker	CEO of EIT (European Institute of Innovation & Technology) ICT Labs	Nelson Morgan	Deputy Director, ICSI(International Computer Science Institute)		
Anthony Finkelstein	Dean of the Faculty of Engineering Sciences, University College London	Tamer Özsu	University Research Chair, David R. Cheriton School of Computer Science, University of Wa-		
	Chairman and Wissner-Slivka Chair Department		terloo		
Hank Levy	of Computer Science and Engineering, Univer- sity of Washington	Wolfgang Wahlster	Director and CEO of DFKI(German Research Cen- ter for Artificial Intelligence)		
Christine Borgman	Presidential Chair & Professor of Information Studies, University of California Los Angeles	Yanghee Choi	Director, Multimedia and Mobile Communica- tions Laboratory, School of Computer Science and Engineering Seoul National University		
	Director Computer Science Center, Ho Chi Minh		and Engineering Seoul National University		
Dong Thi Bich THUY	City University of Science	Hong MEI	Research Vice President, Shanghai Jiao Tong University		
		-	Oliversity		

Professors Emeriti

NACSIS: National Center for Science Information Systems

1	Name	Degree day
	Kimio Ohno	1992/6/25
	Atsunobu Ichikawa	1992/6/25
ĺ	Hitoshi Inoue	1999/6/22

NII : National Institute of Informatics

Name	Degree day
Takamitsu Sawa	2002/4/1
Eisuke Naito	2004/7/2
Mitsutoshi Hatori	2004/11/19
Kinji Ono	2004/11/19
Takeo Yamamoto	2005/4/1
Yasuharu Suematsu	2005/4/1

Name	Degree day
Haruki Ueno	2007/4/1
Katsumi Maruyama	2008/4/1
Masamitsu Negishi	2010/4/1
Kenichi Miura	2011/4/1
Masao Sakauchi	2013/4/1
Shoichiro Asano	2013/4/1

History

1973	October	Ministry of Education, Science, Sports and Culture tion" in the Third Report (Basic Policies for the Promo
1976	May	Research Center for Library and Information Science
1978	November	"A New Plan for Academic Information Systems" is particular of the Science, Sports and Culture. The Science Council issues the Science Council issues the Science Council issues and the S
1983	April	Center for Bibliographic Information is established a Center for Information and Library Science.
1984	December	The NACSIS-CAT catalog information service is launc
1986	April	National Center for Science Information Systems (N/ liographic Information, the University of Tokyo.
1987	April	The Science Information Network (SINET) is launched
	April	The NACSIS-IR information search service is launched
1994	November	Chiba Annex (Inage-ku, Chiba City) is built
1997	March	International Seminar House for Advanced Studies, In
	December	An Advisory Panel on a Core Institution for Scientific Education, Science, Sports and Culture.
1998	January	A proposal entitled "Promoting Computer Science Restablishment of a core institution for inter-universit
	March	Advisory Panel on a Core Institution for Scientific Res
	April	Coordination Office is established for the Core Instit formed in May.
1999	March	Coordinating Committee of the Core Institution for S
	April	Preparatory Office is established for the Core Institution formed in May.
	July	Preparatory Committee of the Core Institution for Sci
2000	March	Preparatory Committee of the Core Institution for Sc
	February	Operations move to a building in the National Cente
	April	National Institute of Informatics (NII) is established, v
2002	April	Ph.D. Program in Informatics is established in the De
	September	Research Planning and Promotion Strategy Office is
	October	International Course is established within Ph.D. Prog
2003	January	Global Liaison Office is formed.
	April	Initiation of Project to Improve Infrastructure for Inte
2004	April	NII begins a new chapter as a member of the new Ir tion of Information and Systems.
2005	February	Organization for management and Outside Collabrat
	April	The official service of GeNii (NII Academic Contents P
2007	April	The Planning and Promotion Strategy Department is
	June	Science Information Network (SINET3) is launched.
2009	April	NII Scholarly and Academic Information Navigator (C are revamped. Japanese Institutional Repositories Online (JAIRO) is
	June	The Academic Information Infrastructure Open Foru
2010	February	The first NII Shonan Meeting takes place.
2011	April	Science Information Network (SINET4) is launched.
	April	The Library Liaison Office is established.
	November	CiNii Books is launched.
2012	April	Japanese Institutional Repositories Online Cloud (JAI
	•	

proposes an "Improved Circulation System for Academic Informaotion of Scholarship) of the Science Council.

e (RCLIS) is established at the University of Tokyo.

presented to the Science Council by the Minister of Education, ues a response in January 1980.

at the University of Tokyo, with the reorganization of the Research

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IACSIS) is established, with the reorganization of the Center for Bib-

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Inose Lodge (Karuizawa, Nagano Prefecture) is established. Ic Research in the Information Field is established by the Ministry of

Reseach" is published by the Science Council of Japan, calling for the ty research in informatics.

search in the Information Field issues its report.

tution for Scientific Research in the Information Field; committee is

Scientific Research in the Information Field issues its report. aution for Scientific Research in the Information Field; committee is

cientific Research in the Information Field issues its interim report.

cientific Research in the Information Field issues its final report.

er of Sciences (Hitotsubashi, Chiyoda-ku, Tokyo).

with the reorganization of NACSIS and assumption of its functions.

epartment of Informatics, Graduate University for Advanced Studies. founded.

gram in Informatics.

ernational Circulation of Scholarly Information.

Inter-University Research Institute Corporation / Research Organiza-

ation on Science Information Network

Portal) is launched.

is established.

CiNii) and the KAKEN database of grants-in-aid for scientific research

officially launched.

um is established.

AIRO-Cloud) is launched.

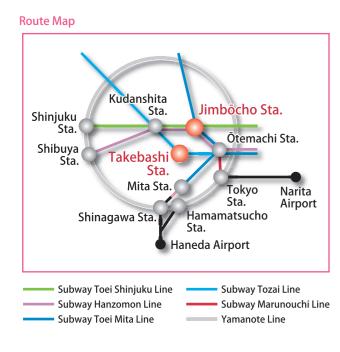
Facilities / Location

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 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



Guide Map

National Institute of Informatics (NII)

TEL: +81-3-4212-2000 (Exchange)

National Center of Sciences Bldg. 2-1-2

Hitotsubashi, Chiyoda-ku, Tokyo 101-8430

High-rise wing

Emergency helipad

Cafeteria

Meeting Rooms

Vestibule

National Institute

of Informatics

Meeting Rooms of Na

Atrium Lobby

Utility room Utility roor

Lobby

Site area : 6,842m² (Occupied by NII: 3,036m²)

Floor space : 40,585 m² (Occupied by NII : 18,145 m²)

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

National Institution for Academic

nal Center for Teacher's

National Institute of Materials

National Insitute of Special Need

Center for National University

Finance and Management Institute of National Colleges of Technology, Japan

Low-rise wing

Guest Rooms

Hitotsubashi Hall

Parking

ing Entrance

National Institute of Informatics

Guest Room Front Desk Coffee Shop

Degrees and Un

Science

Education



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.



Facade of Chiba Annex

The International Seminar House for Advanced Studies (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.

1) Domestic and international academic conferences, seminars, etc. 2) Public lectures and social gatherings, etc.

3) Research and training of NII researchers and staff.



Facade of Seminar House



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



Contact Info for Inquiries

Contents & Contact	E-mail	TEL	FAX
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Intellectual Properties (p.15) Planning Division, Office Social Collaboration, FIRST Support Team	chizai_web@nii.ac.jp	03-4212-2124	03-4212-2150
Top SE and edubase : Education Services for IT specialists (p.16) ●Research Center, GRACE Center: Center for Global Research in Advanced Software Science and Engineering	secretariat@grace-center.jp	03-4212-2729	03-4212-2697
Graduate Education Activities (p.17) Planning Division, International Affairs and Education Support Team	daigakuin@nii.ac.jp	03-4212-2110	03-4212-2150
International Exchange (MOU) (p.19) Planning Division, International Affairs and Education Support Team	international@nii.ac.jp	03-4212-2165	03-4212-2150
International Exchange (Shonan Meeting) (p.20) • NII Shonan Meeting Administrative Office	shonan@nii.ac.jp	03-4212-2165	03-4212-2150
International Exchange (DAAD/JFLI) (p.22) Planning Division, International Affairs and Education Support Team	international@nii.ac.jp	03-4212-2165	03-4212-2150
Science Information Network (p.24) • Academic Infrastructure Division, SINET Team	support@sinet.ad.jp	03-4212-2269	03-4212-2270
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Catalog Information Service (NACSIS-CAT/ILL) (p.31) • Scholarly and Academic Information Division, CAT/ILL Desk	catadm@nii.ac.jp	03-4212-2310	03-4212-2375
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CiNii (p.32) • Scholarly and Academic Information Division, CiNii Desk	ciniiadm@nii.ac.jp	03-4212-2300	03-4212-2370
SPARC Japan (p.33) ●Scholarly and Academic Information Division, SPARC Desk	sparc@nii.ac.jp	03-4212-2351	03-4212-2375
Public Relations / Media Relations (p.34) Planning Division, Publicity Team	kouhou@nii.ac.jp	03-4212-2145	03-4212-2150
NII Library (p.35) Scholarly and Academic Information Division, Support Team, Library Desk	library@nii.ac.jp	03-4212-2142	03-4212-2180
Facilities / Location (p.40) ●General Affairs Division, General Affairs Team	soumu@nii.ac.jp	03-4212-2000	03-4212-2120

NII Inter-University Research Institute Corporation Research Organization of Information and Systems National Institute of Informatics National Center of Sciences Bldg. 2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo 101-8430 TEL +81-3-4212-2000 http://www.nii.ac.jp/