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 inter-university 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 efforts with universities and research institutions throughout Japan, as well as industries.

**Research**

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.

**Partnerships between industry, academic and government sectors**

NII encourages close partnerships between universities, public research institutions and private institutions to conduct project-based 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.

**International exchange**

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.

**Social contribution**

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 human resource development**

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.
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, six research centers, the Organization for Management and Outside Collaboration on R&D.

Four Research Divisions

- **Principles of Informatics Research Division**: Seek to discover new principles and theories in informatics, as well as the development of technology and new domains that will support the future society.

- **Information Systems Architecture Science Research Division**: Conduct research into the architecture and systemization of software and hardware for computers and networks.

- **Digital Content and Media Sciences Research Division**: Conduct research spanning theories on the analysis, generation, accumulation, use and processing methods regarding diverse content and media, such as texts and video images, to their systemization.

- **Information and Society Research Division**: Conduct interdisciplinary research on information and system technology and issues in the human and social sciences in a society in which the information society and the real world are integrated.

Six Research Centers

- **Research and Development Center for Informatics of Association**: Develop and provide IMAGINE – Federated Associative Search for Heterogeneous Information Resources as an outcome of R&D for the Generic Engine for Transposable Association (GETA).

- **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.

- **Research and Development Center for Academic Networks**: Set up a network and electronic authentication infrastructure for use in CSL, benefiting from cutting-edge R&D in network development technology.

- **Research Center for Community Knowledge**: Develop next-generation information and communications technology and information sharing platform system by creating "NetCommons" and "ReaD&Researchmap".

- **Research Center for Knowledge Media and Content Science**: Promote cutting-edge research on the analysis and use of knowledge content in academic fields.

- **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 quantum information.

Creation of future value through informatics

- **Opening up new frontiers**

  - FIRST Quantum information processing project
  - Artificial brain project

Social contribution

- **Adding new colors to society through the wisdom of informatics**

  - IMAGINE: an associative search of books from diverse information sources
  - NetCommons, an information sharing infrastructure system that can be used by everyone

Grand Challenge

- Breakthroughs algorithms
- Content value creation
- ICT governance
- Bridging the semantic gap affecting image media
- Artificial brain projects
Advancing Research and Operations in Tandem

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.

Cyber Science Infrastructure
Research and education activities of academic community

A place to connect the theories of the university with the actions of the industry
Supporting academic research and educational activities
Promotion of the Cyber Science Infrastructure (CSI)

Academic Content
Operations
Construction and Operation of Cyber Science Infrastructure
Science Information Network

Resource & Service
Academic Resource Sharing
NII has built infrastructure to share academic resources where universities and other institutions share their academic research resources and computing resources.
NII preserves and supplies scholarly and academic information for the academic community. NII also saves the results of research from universities, research institutes, and other organizations in order to construct Academic Information Infrastructure, which we make available as a tremendous store of information in specialist fields.

Authentication in HPCI
Access Federation by Shibboleth
VPN

Security
User authentication· Establishing research groups
NII has established and operated the Authentication Federation (GakuNin) as an accreditation infrastructure so that, securely and efficiently make use of academic resources such as computers connected to SINET and electronic content. In addition, NII applies authentication in HPCI to use computational resources such as information infrastructure centers and provides VPN to establish closed networks for research groups.

Network
SINET
SINET is an information network developed as scholarly and academic information infrastructure for universities, research institutes, and other organizations throughout Japan. SINET4 positions both edge nodes and core nodes in data centers, and a high-speed network is made available for supporting research and education of these organizations. SINET is also linked to many international research networks.

Society
The People and Administration,
Community, Industry, Region, and NPO, etc.

Society
The People and Administration,
Community, Industry, Region, and NPO, etc.

Management and Operation on R&D
for Value Formatics
for Science Formations and Projects
for Scientific Operations
International Activities

The National Institute of Informatics (NII) actively promotes the conclusion of International Exchange Agreements (MOU, memorandum of understanding) with overseas universities and research institutions. Among institutions that have concluded MOUs, NII also holds exchange activities such as international joint research projects and interactions between researchers and students. To ensure the effectiveness of these research exchanges, NII has established systems such as the “MOU Grant” and “NII International Internship Program, and promotes research exchanges with overseas universities and other institutions in a wide range of research fields. NII promotes research exchanges through coordination and cooperation, in particular, through the NII Shonan Meeting in the Asian region, and European-based research institutes such as the Japanese-French Laboratory for Informatics (JFLI), and the German Academic Exchange Service (DAAD) program.

Graduate Education

NII joined the Graduate University for Advanced Studies and established the Department of Informatics to provide graduate education (5-year and 3-year Ph.D. programs). The department covers six research areas: Foundations of Informatics, Information Infrastructure Science, Software Science, Multimedia Information Science, Intelligent Systems Science, and Information Environment Science. NII also accepts excellent students from overseas. In addition, NII is cooperating in the provision of graduate education to graduate students pursuing Master’s or Ph.D. degrees at many universities.

<table>
<thead>
<tr>
<th>Number of Students (March 2012)</th>
<th>Domestic</th>
<th>Outside</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Graduate University for Advanced Studies</td>
<td>41</td>
<td>33</td>
<td>74</td>
</tr>
<tr>
<td>Other graduate schools</td>
<td>56</td>
<td>30</td>
<td>86</td>
</tr>
</tbody>
</table>

Organization

Director General
- Advisory Board
- Administrative Council

Deputy Director General
- Research Strategy Office

Research Division
- Principles of Informatics Research Division
- Information Systems Architecture Science Research Division
- Digital Content and Media Sciences Research Division
- Information and Society Research Division

Research Center
- Research and Development Center for Informatics of Association
- Research and Development Center for Academic Networks
- Research Center for Knowledge Media and Content Science
- GRACE Center: Center for Global Research in Advanced Software Science and Engineering
- Research Center for Community Knowledge
- Global Research Center for Quantum Information Science

Organization for Management and Outside Collaboration on R&D
- Organization for Value Creation in Informatics
- Organization for Science Network Operations and Coordination
- Organization for Scientific Resources Operations and Coordination

Cyber Science Infrastructure Development Department
- Academic Infrastructure Division
- Scholarly and Academic Information Division
- Information Technology Center
- Library Liaison Cooperation Office

General Affairs Department
- Planning Division
- Office for Social Collaboration
- General Affairs Division

NII

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NII Today
Offers an easy-to-understand guide on the details of NII’s advanced research.
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