# National Institute of Informatics News
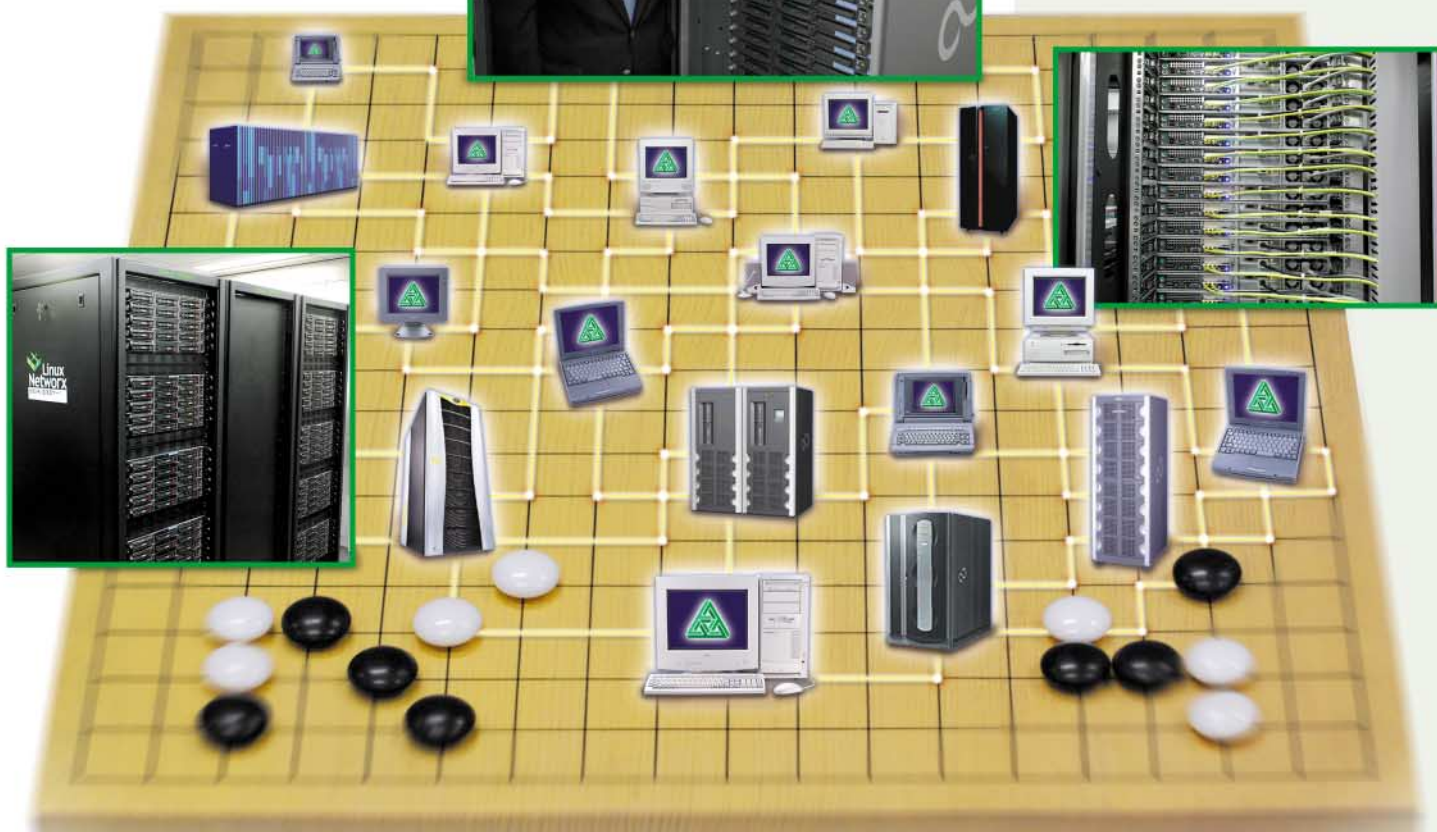
NAREGI

Grid computing is the software technology which makes globally distributed computer resources accessible as a single system with the high-speed networking, just like the electrical power is made available to factories and home via the electrical power distribution network. Grid computing or "The Grid" is expected to be one of the important next generation technologies in the IT infrastructure. The "Grid" has various aspects in its usage, such as connecting globally distributed computers to conduct ultra-large scale computations, and combining large-scale distributed databases as a single image. At NII we are conducting a research and development project on the grid middleware technologies, called NAREGI, with universities, national laboratories and industry.(for details to p.11)

## ■ Degital Commerce

Digital Content Laboratory of National Institute of Informatics has been launched in April, 2004. The laboratory is in charge of "Research on Digital Rights Management (DRM) and Digital Rights Expression (DRE) for digital content distribution". When distribution of digital content via broadband network is realized, security in distribution of such content will be more significant. For the secondary and tertiary distribution, metadata attached to distributed content will have significant role for the content to be re-used, controlled and promoted.

Such metadata includes information on presence, rights, retrieval, quality, adaptation, context of contents. Our research on digital content production and distribution targets on the area of metadata management, distribution, and portal technologies. As a first step, digital cinema works by students of universities and colleges specializing cinema productions will be made available via website to be viewed by those visited to the site so called "Digital Cinema Gate".

*(Noboru Sonehara, Professor, Information Networking, Infrastructure Systems Research Division)*

## Latest Information Strategy Forum 2004, Sponsored by National Institute of Informatics and Nikkan Kogyo Shimbun
## Grid Computing : IT Infrastructure of the 21st Century
## Grid Potential — From Science to Intelligent Manufacturing

The National Institute of Informatics (NII) cosponsored the Latest Information Strategy Forum 2004 ("Grid Potential- From Science to Intelligent Manufacturing") with Nikkan Kogyo Shimbun on Friday October 22 at the Hotel Grand Palace (in Chiyoda-ku, Tokyo).

At the beginning of the forum, Mr. Kenichi Miura, Director of the Collaborative Center for Grid Research, delivered a keynote speech entitled "The Future of Grid Computing Launched by NAREGI." He discussed the overview, the present situation and future prospects of the National Research Grid Initiative (NAREGI), a project aimed at the formation of ultrahigh-speed computer networks.

Mr. Tadashi Ikegami, Vice Chairman of the Research Grid Industrial Application Council, then gave a special lecture entitled "Industry's Expectations for the Science Grid." In addition to a discussion of expectations relating to research in grid computing and to NAREGI, Mr. Ikegami addressed the need for large-scale computing resources in industrial product R&D.

These lectures were followed by a panel discussion: "The Future of the Science Grid," with Mr. Miura as moderator. The panelists included Mr. Naoya Sasaki (Director of the Advanced Design Simulation Center, Mechanical Engineering Research Laboratory, Hitachi Ltd./member of



Lectures by Mr. Miura and Mr. Ikegami

the Research Grid Industrial Application Council); Mr. Toshikazu Takada (Chief Researcher at Fundamental and Environmental Research Laboratories, NEC Corporation); Mr. Shojiro Nishio (Professor at Osaka University / Science Officer of MEXT); Mr. Fumio Hirata (Professor at the Institute for Molecular Science); and Mr. Satoshi Matsuoka (Professor at the Global Scientific Information and Computing Center, Tokyo Institute of Technology /Visiting Professor at NII).

The panelists had a lively discussion on a range of matters: the scalable grid, the impact of science on methodology, human resources development, the ripple effect on industry, infrastructural use of the grid, international collaboration and competition, and future prospects for the grid. We also included topics of particular interest selected based on questionnaires completed by participants prior to the forum.

During a Q&A session at the end of the forum, the panelists received numerous questions regarding the future of NAREGI and related issues, revealing significant interest in NAREGI.

About 150 people attended this highly successful event, coming from MEXT, various universities, research institutes, and IT companies.

As a follow-up to this forum, we are planning to hold another on Tuesday, November 30, entitled "Use of the Grid in Business" to discuss the business grid.

*( Planning and Coordination Section )*


Panelist Discussion

# MESSAGE FROM FOREIGN RESEARCHER

Software Research Division

## Julien QUINT

2002 Grenoble Universite Recherche (Universite' Joseph Fourier, France) Ph.D.

I am currently a visiting researcher under a postdoc fellowship from the Japanese Society for the Promotion of Science (JSPS) at the National Institute of Informatics in Tokyo, Japan. I obtained my PhD in Computer Science in November, 2002 from the Universit Joseph Fourier in Grenoble, France. My research was conducted at the GETA-CLIPS-IMAG laboratory and the MLTT team of the Xerox Research Centre Europe in Grenoble.

Most of my current work is in the area of natural language processing, and more specifically presyntactic analysis and weighted finite-state calculus. As a part of my thesis, I specified a formalism for text segmentation named Sumo; I am preparing a working prototype for anyone to play with. This includes a weighted finite-state calculus library and a full-featured command language, as well as some related tools and data. I hope to make it publicly available; at least a demo that was presented at the ACL 2004 conference will be available shortly. For more information, you can consult my publicationsat:

http://pom.clacbec.net/julien.quint / An early goal of Sumo was to be able to deal with word-segmentation problems arising inthe so-called "languages without separators", e.g. Chinese or Japanese. As a result, and since I am working in Japan, I became interested in presyntactic applications with a focus on Japanese such as transliteration and language learning. This part of my work is related to the Papillon project and conducted in collaboration with researchers from NII and CNRS in France. As part of this work, I made available a web interface for Japanese transliteration: http://papillon.ex.nii.ac.jp:8998/aaaa/

An interesting part of this interface is that it allows to consult a database of around 6,500 kanji (built by Dr. Ulrich Apel at NII) in SVG (Scalable Vector Graphics), which provides useful information and services for foreigners learning Japanese.

# NII MESSAGE FROM NII RESEARCHER

Project Researcher, Human-Machine Symbiosis, Intelligent Systems Research Division

## Tao Zhang

1993 （P.R.China) Tsinghua University B.Eng.
1995 Tsinghua University M.Eng.
1999 Tsinghua University D.Eng.
2002 Saga University Ph.D.
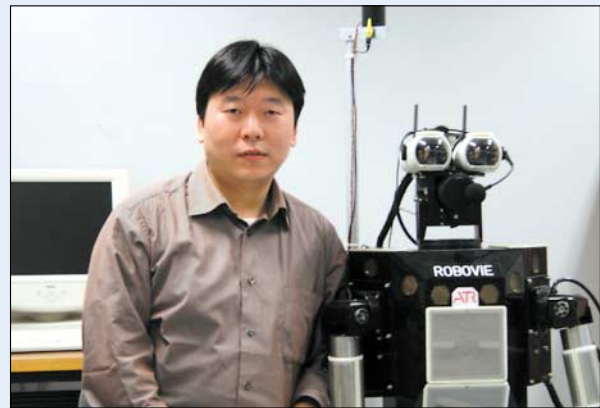
After I received B.Eng, M.Eng and D.Eng degrees in Tsinghua University of China, I joined Saga University of Japan to promote my second Ph.D. degree with the support from Japanese Government Scholarship (MENBUSHU Scholarship). In Saga University, my research fields included industrial robot and welfare robot intelligent control, neural network, power system maintenance optimization, human intention extraction from neurophysiological signal, etc. In 2002, I received the Ph.D. degree and continued my research for one year as a researcher and a visiting associate professor in Saga University. Since Oct. 2003 I became a member of the Prof. Ueno's laboratory in NII. The object of my research is the symbiotic robot.

In the future welfare society, various types of intelligent robots coexist with human at the places of everyday life, and aim in helping human. It is foreseeable that constructing such a system would be helpful in aged society, such as Japan, where there will not be enough younger generations to take care of the aged members. Prof. Ueno firstly nominated this system as a symbiotic autonomous human-robot system. The development and implementation of this system is one of the main projects in NII. Toward such a system, my interest is focus on building a cognitive knowledge-based model in order to implement it and extend its applications to wide areas.

I proposed a frame-based knowledge model and a kind of coordinative control for symbiotic autonomous human-robot system. With different types of frames and their hierarchy structure, features of robots and typical activities of this system, such as human-robot interaction, cooperative operation, etc., are clearly described. Based on this knowledge model, a symbiotic autonomous human-robot system can be defined in the software platform, called Software Platform for Agent and Knowledge Management (SPAK), developed by our laboratory. With the use of SPAK and the support from several techniques, such as distributed software agents, tele-operation via wireless network, local robot control programs, etc., the coordinative control of symbiotic autonomous human-robot system can be implemented according to human commands.

In our laboratory, an actual symbiotic autonomous human-robot system comprised of humanoid robots (ROBOVIE, PINO), mobile robot (SCOUT) and entertainment robot dog (AIBO) is constructed and various kinds of experiments are made to demonstrate the effectiveness of this system.

As my further research topics, I want to improve the performance of symbiotic autonomous human-robot system and integrate more functions in the system. For instance, I am recently developing a coordinator robot, which can understand human requests and autonomously carry out many kinds of decision-making. Moreover, a symbiotic autonomous human-robot system needs a general behavior manager, many kinds of security measurement, etc. Additionally, I will apply this system for performing more complex tasks, especially using it for welfare enterprise. In the future, we expect to create an actual high-intelligent, human-friendly symbiotic autonomous human-robot system. I believe I can obtain great achievements in NII which will be helpful for my future career.

# The International Joint Workshop : Natural Language Processing in Biomedicine and its Applications was successfully held

The International Joint Workshop on Natural Language Processing in Biomedicine and its Applications was successfully held in Geneva from August 28-29 (http://www. genisis.ch/~natlang/ JNLPBA04/).

The workshop was motivated by the realization that in recent years there has been growing interest in the application of natural language processing techniques to texts in the domains of biology and medicine. These techniques are designed to overcome the information overload on scientists and clinicians that has resulted from the massive growth in the scientific literature. Methods are being developed to automatically locate, organize and manage facts relating to experimental results and clinical reports. The workshop brought together over 50 leading researchers from around the world with a shared interest in overcoming these problems to establish common research themes and goals.

*( **Nigel Collier,** Associate Professor, Symbolic Reasoning, Foundation of Informatics Research Division )*

## Graduate Education

# Nine Students Enrolled in the Department of Informatics in October

The Department of Informatics at the Graduate University for Advanced Studies (Sokendai) accepted nine new students (including two in the International Graduate Course) for the term beginning October 2004.

An orientation meeting for these new students took place at NII on Thursday, October 7.


Guidance on the Ph.D. program in informatics at NII

The meeting was conducted in English: introductions, explanations of courses and curriculums, etc.

Students then toured the NII Library and graduate student's room. A reception was held for the new students at the tearoom on the third floor; Mr. Suematsu (Director General), proffesors, and current students gave a warm welcome to the newly-enrolled students.

On Tuesday, October 12, an opening ceremony was held at the main campus of Sokendai in Hayama, Kanagawa Prefecture.

Including these new entrants, there are now a total of 57 students, 22 of whom are from abroad.

*( Research Cooperation Division )*


Entrance ceremony of the Graduate University for Advanced Studies in Hayama

## Message from Graduate Students

### Kazuki Kobayashi
Department of Informatics, School of Multidisciplinary Sciences
The Graduate University for Advanced Studies

Interviewer: Today we are going to interview Mr. Kobayashi, who is in the third year of a doctoral course. Thank you for being with us.

Kobayashi: Thank you for having me today.

Interviewer: Let me ask you about the location. NII seems a perfect place to study, doesn't it?

Kobayashi: Our department is indeed located in a convenient place. Many conferences are held at the NII building, and I can go shopping in Akihabara by bicycle.

Interviewer: Did these advantages contribute to your choice of this university?

Kobayashi: That's partly true, but the most important factor was my instructor. I first came to know about this university when my instructor, Mr. Yamada, moved here.

Interviewer: So you've been studying with Mr. Yamada since you were in your master's course?

Kobayashi: No, since I started studying with Mr. Yamada in a doctoral course; I completed my master's course at another university.

Interviewer: It seems quite a hard decision to make: to start your doctoral course in a different university.

Kobayashi: It was a good choice, I think.

Interviewer: Why are you so sure?

Kobayashi: I had been feeling uncomfortable since my enrollment in the master's course. So I was really pleased to start my research anew after I changed university. Still, I will have to work hard to complete my studies in time for graduation.

Interviewer: It's not a bad idea to change subjects in the middle of your course after moving to a different university. Your research subject is human/robot interaction⋯ I'm afraid we're going to run out of time before going into the details. I hope that we can talk about this some other time. Thank you very much.

Kobayashi: I'm not sure I answered your questions in a satisfactory manner, but I hope my answers are of some help to the readers.

* The interviewer is Mr. Masahiro Hamasaki, third-year student on a doctoral course.

### Yohei Seki
Department of Informatics, School of Multidisciplinary Sciences
The Graduate University for Advanced Studies

I enrolled at the graduate university of National Institute of Informatics (NII) after I participated in an NTCIR project, a series of evaluation workshops designed to enhance research in information access technologies using information retrieval and natural language processing. I believed it was important that advanced research in natural language processing be undertaken that utilized semantics or pragmatics and that kept accumulating evaluations for new proposals. After entering the graduate university, I tackled the research theme "Multi-document viewpoint summarization based on user's information needs". Multi-document summarization has been a 'hot' topic for the past five years. From multiple documents, several summaries can be produced according to various 'viewpoints'. One type of summary viewpoint is the specification focusing on the 'topic'. Another type of summary viewpoint is the specification focusing on text structure and 'genre', Genre refers to the type of document (such as diary, reporting article, or editorial). It is a recognizable form of communication in which a document is used in a social activity such as publishing. This kind of research is related to the field called 'pragmatics' in linguistics. I researched this theme to form summaries according to the user's viewpoint by annotating text structure and genre to documents, with machine learning technique.

# Trial Opening of KAKEN (Grant-in-Aid Scientific Research)

On October 14, 2004, the National Institute of Informatics (NII) opened its "KAKEN (Grant-in-Aid Scientific Research)" to the public on a trial basis. Grant-in-Aid Scientific Research is a program to support research activities at universities and similar institutions; this database records the research subjects adopted by this program and provides summaries of the results.

This was formed through a combination of the "Database of Subjects Adopted by Grant-in-Aid Scientific Research" and the "Database of Summary Results in Grant-in-Aid Scientific Research," which have been available to researchers for a fee at NII's information retrieval service (NACSIS-IR).

It allows you to search for and view research subjects recorded over the course of several years.

In addition, you can browse research subjects by research field, subject, and institute.

You can view this trial database at : http://seika.nii.ac.jp/

*( Contents Division )*

# Streaming of the "Information Security Seminar"

The National Institute of Informatics tested a new form of lecture using Internet streaming, which will allow students to learn from anywhere, at any time.

The streaming content consisted of the "Information Security Seminar" held under the sponsorship of MEXT on August 31 at Hitotsubashi Memorial Hall. This content was made available for one week, from September 9 to 15.

Streaming is a technique for receiving and playing simultaneous video and voice data over the Internet. This allows students to receive lectures at their convenience.

Since the lecture dealt with security issues, we limited access to people associated with the university through the use of password. Nevertheless, during the week these people accessed the content as many as 3,665 times, from locations throughout the country.

Since this was the first run, we conducted a questionnaire on the streaming process. We received many favorable comments from security managers and others who weren't able to attend the live seminar — who told us, for example, that the system was "convenient because you can view the lectures easily at any time."

Now that the streaming of videos and music is in practical use due to the increase in Internet access speeds, streaming is considered an extremely promising method to offer courses.

Through the use of streaming techniques, we intend to provide more people with the opportunity to take courses.

*( Planning and Coordination Division )*

# ■ Karuizawa Saturday Salon 2004

On September 11, October 2, and October 23, 2004, the fifth, the sixth and the seventh lectures of the Karuizawa Saturday Salon were held at the International Seminar House for Advanced Studies in Karuizawa, Nagano.

### The Fifth Lecture : September 11, 2004

## Creation of New Vitality - Innovation View

Professor, Graduate School of
Kochi University of Technology

## Hiroyuki Mizuno



The economy bottomed out and there are some signs of an economic upturn.  However, in general, it is not active enough.  This is the current status of Japan.  Then, how do you generate the dynamism of Japan in the 21st century?  Is there any recipe for it?  Schumpeter gave one of the recipes.  Joseph Alois Schumpeter (1883-1950) spent his life trying to pursue, "How does the society change? What is the energy source for it?" He inferred it "by innovation".  Then, what is an innovation?  Unfortunately, the word "innovation" was translated into Japanese as "gijutsu kakushin". It is certain that a social reform by technology also means innovation. However, what Schumpeter meant by innovation is broader and deeper.  Based on the current situation in Japan, I would like to consider how innovation should be.

(Excerpt quoted in leaflets handed out at the seminar)

### The Sixth Lecture : October 2, 2004

## Birth of Robotics and its Development

Inspector General,
Japan Society for the Promotion of Science

Professor Emeritus, University of Tokyo

## Hirochika Inoue



The modern technology called robotics has appeared in the late 20th century and showed rapid progress. In the first half of the 21st century, various robots will be introduced into everyday human life, and it even came to be expected to change human lifestyle toward QOL.

A robot is a comprehensive technology and is built by systematizing many elements. Its main application areas include automation and intelligence of work and have supported innovation of the manufacturing technologies in automobile industry and electronics industry. However, now that personal robots and humanoid robots are brought to realization and expanded their application areas to services in the non-manufacturing industry and livelihood support to people. A robot has come to show the possibilities as new active info-communication terminal which is connected with information network. It is clear that the next-generation robot is considered to develop as real world information system by expanding its territory.

Furthermore, in the future society which a new-generation robot as such a recognition-action-computation system is penetrated and used, the relationship between robots and human beings will be taken up as a kind of the humanity issues, the integration of various studies including labor infrastructure side, cognitive and mental side, legal and economic side, traceability system, art, design, contents, literature, drama, and sports science.

This talk is almost the replay of the farewell lecture with

regard to robotics study I worked on since my enrollment in graduate school in 1965 up until the retirement. Regarding many aspects of robotics which I personally dealt with students, I would like to introduce them as visual history of robot development by video and in conjunction with it, and I look toward the future of science of robotics.

(Excerpt quoted in leaflets handed out at the seminar)

## Violin Concert "Wien, Wien!"

### Violinist
### Junko Ohtsu

### Pianist
### Tomoko Okada



The seventh annual lecture concert at Inose lodge in Karuizawa was given under the theme of "Wien, Wien!".

Before the program had began, there was an announcement by Ms. Ohtsu that the first piece, "Ave Maria" (Ellens Gesang III, D839, Op. 52-6) by Franz Schubert, would be dedicated to late Prof. Hiroshi Inose, the founder of NII, and, also, to late Mrs. Shizuko Kurokawa who was one of the most enthusiastic supporters for the NII lecture series in Karuizawa. Ave Maria was composed in 1810 by Schubert to a German translation of Sir Walter Scott's poem from " The lady of the Lake", which was translated into Japanese by Kojin Shimomura, the author of "The Tale of Jiro". Other musical selections included such as Sonatine for Violin and Piano No. 3 (D408, Op. 137-3) by Schubert and gem of violin show pieces by Fritz Kreisler. The program was concluded with lovely waltz from the operetta, "The Merry Widow" by Franz Lehar, in high spirit.

The violin music accompanied by a piano of Bosendorfer, the Vienna's signature piano maker, created wonderful atmosphere as if the audience were taken to the gracious city of music, Vienna. (by Ms. Junko Ohtsu)

*(Publicity and Dissemination Division)*

## ■ Award

### Associate Professor Takeaki Uno and Masashi Kiyomi (The Graduate University for Advanced Studies) won BEST IMPLEMENTATION AWARD for FIMI'04

At Frequent Itemset Mining Implementations 04(FIMI04) in the midst of the international conference ,IEEE international Conference on Data mining which was held in November 2004, BEST IMPLEMENTATION AWARD was granted to the following papers (programs) that Takeaki Uno ,associate professor ,and Masashi Kiyomi ,the student of Department of Informatics in the Graduate University for Advanced Studies, had announced.

FIMI is a contest of the algorithm that solves the frequent occurrence set enumeration problem that is a basic problem of data mining. It is the one compared by actually making the program and experimenting which one is the fastest truly, though many algorithms had been developed up to now.

In a contest, this time when it was the second, associate professor Uno's algorithm gained a lead on other algorithms greatly and was won the championship.

LCMv.2 : Efficient Mining Algorithms for Frequent/Closed/Maximal Itemsets
Takeaki Uno,Masashi Kiyomi and Hiroki Arimura
Relevant Website : http://fimi.cs.helsinki.fi.fimi04/

# ■ Intellectual Property Center News

Beginning with this issue, we will periodically publish the "Intellectual Property Center News" to cover the activities of this center and topics related to intellectual property.

### 1. Activities of Intellectual Property Center, Research Organization of Information and Systems
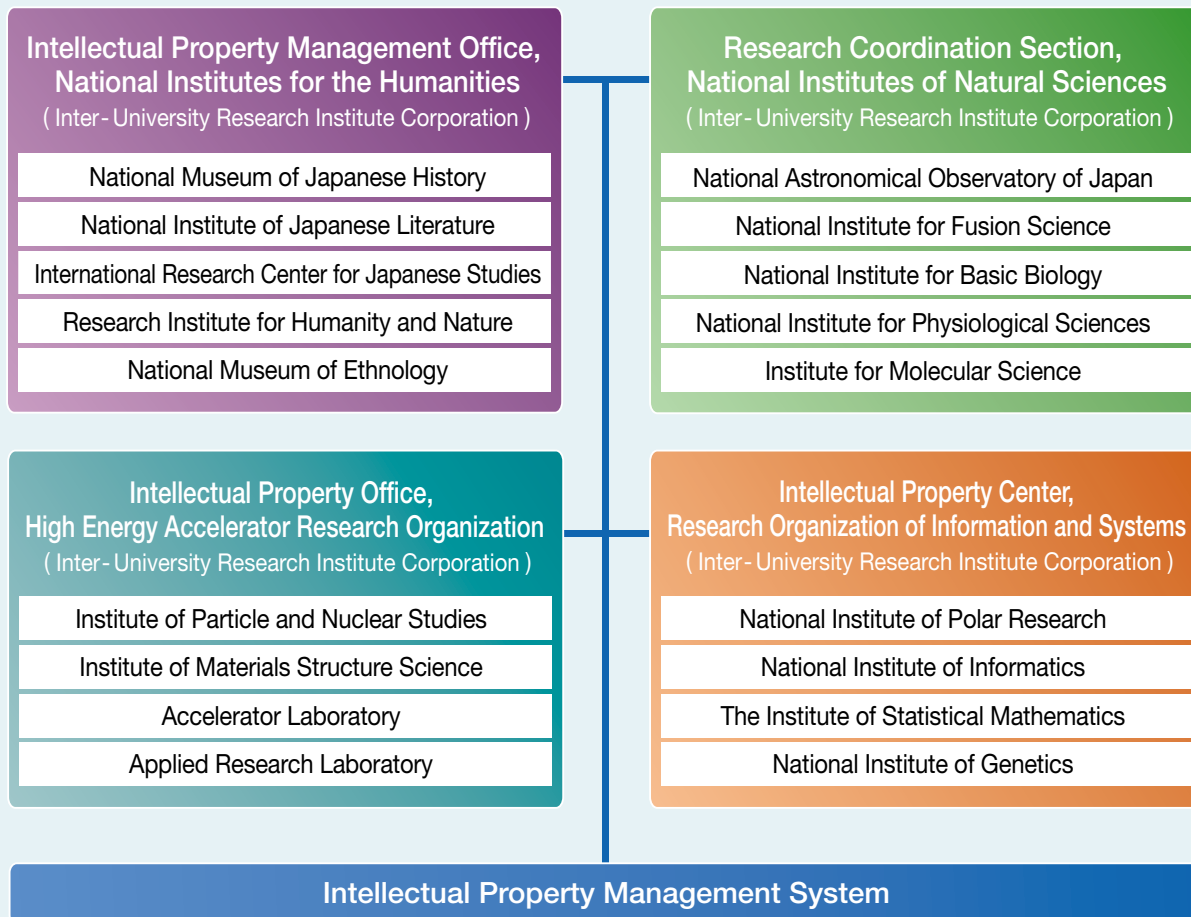
The Intellectual Property Center carries out various activities in accordance with the "Intellectual Property Policy", the "Conflict of Interest Policy" and "the Regulations on Employee Inventions" established. We assign center staff, such as intellectual property managers under Yasuharu Suematsu, Director of the Intellectual Property Center, to engage in overall planning for development of intellectual property centers at inter-university research institutes led by MEXT, implementation of these development projects, and running of this organization's intellectual property committee, which mainly consists of intellectual property committee chairpersons from the individual institutes.

To carry out the intellectual property center development project, the remaining three inter-university research institutes (National Institutes for the Humanities, National Institutes of Natural Sciences, and the High Energy Accelerator Research Organization) have also set up sections to oversee all aspects of intellectual property. We have established a liaison committee to ensure coordination and efficiency among these four organizations.

In addition, to publicize the activities of the inter-university research institutes, we participated in "Innovation Japan 2004" in September and in "DATABASE TOKYO 2004" in October. In the future we will actively promote activities related to intellectual property; for example, through promotion method to create intellectual property and through usage presentation of intellectual property held by the inter-university research institutes.

## Plenary Meeting / Liaison Committee of Intellectual Property Sections at Inter-University Research Institutes

**Intellectual Property Management Office, National Institutes for the Humanities**
( Inter-University Research Institute Corporation )

- National Museum of Japanese History
- National Institute of Japanese Literature
- International Research Center for Japanese Studies
- Research Institute for Humanity and Nature
- National Museum of Ethnology

**Research Coordination Section, National Institutes of Natural Sciences**
( Inter-University Research Institute Corporation )

- National Astronomical Observatory of Japan
- National Institute for Fusion Science
- National Institute for Basic Biology
- National Institute for Physiological Sciences
- Institute for Molecular Science

**Intellectual Property Office, High Energy Accelerator Research Organization**
( Inter-University Research Institute Corporation )

- Institute of Particle and Nuclear Studies
- Institute of Materials Structure Science
- Accelerator Laboratory
- Applied Research Laboratory

**Intellectual Property Center, Research Organization of Information and Systems**
( Inter-University Research Institute Corporation )

- National Institute of Polar Research
- National Institute of Informatics
- The Institute of Statistical Mathematics
- National Institute of Genetics

### Intellectual Property Management System

## 2. Recent Topic: Experimental Research at Universities and Execution of Patents

There has long been a belief among university researchers that one can use patents freely in university research, under the assumption that this does not represent patent infringement. In this regard, there is a difference in opinion between academia and industry. Based on this view, not only the university but also any company partnered with the university could use competing competitor patents in joint research activities, which could lead to conflict with companies owning the patents; this could have a negative effect on collaborative relationships between businesses and universities. The Industrial Structure Council of METI has been discussing this issue and a report draft was released on September 29. Many people may already know about this topic from previous newspaper reports (e.g., Oct. 18, 2004 issue of Nikkei). Until now only one precedent has been established on the interpretation of this issue, based on a court judgment in the United States. However, with the promotion of industry-academia-government collaboration, more cases will likely arise in the future. The report draft concludes that "Experimental research set forth in Article 69 of the Patent Law is limited to experiments that are intended for confirmation of the feasibility or effectiveness of patents; it doesn't include ordinary research at universities, and therefore, use of patents without permission constitutes a patent infringement even in research at universities." This decision is meeting opposition from those who insist that universities apply for patents only for the purpose of invigorating research activities. However, it seems that large companies are taking a cautious line in basic research area, based on Patent Office recommendations. It's important to raise awareness among those associated with the inter-university research institutes concerning the necessity to apply for patents without infringing existing patents. I believe that this is a realistic approach to this issue.

*( **Kazuhiro Hiraide,** Intellectual Property Manager, Intellectual Property Center, Research Organization of Information and Systems )*

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# National Institute of Informatics Public Lectures 2004, "Eight words to deepen Informatics"

The Third Lecture : Thursday September 16, 2004
## "Internet Telephony"

Professor and a Director, Research Center for Testbeds and Prototyping, National Institute of Informatics.

## Shigeki Yamada

He received the B.E., M.E., and Ph.D.degrees in electronic engineering from Hokkaido University in 1972, 1974, and 1991, respectively. He worked in the NTT laboratories from 1974 to 1999, was involved in the research and development on high-performance digital switching systems and network-wide distributed systems. He moved to NII in 1999. His current research interests include ubiquitous and context-aware computing networks, and privacy-enhancing technologies. From 1981 to 1982, he was a visiting scientist in the Computer Science Department, University of California, Los Angeles.

This lecture overviews the latest technologies, services and future directions of Internet telephony. The Internet telephony is transport of telephone calls over the Internet, no matter whether traditional telephony devices, multimedia PCs or dedicated terminals take part in the calls and no matter whether the calls are entirely or only partially transmitted over the Internet. The Internet telephony requires the Voice over Internet Protocol (VoIP) technologies to take analog signals, like the kind you hear when you talk on the phone, and turning them into digital data that can be transmitted over the Internet. The most significant benefit of the Internet telephony and driver of its evolution is money-saving and easy implementation of innovative services including UMS (unified messaging systems) through various media/service conversions and IP (Internet Protocol) call centers for better customer relationship management.

# Topics

## The Fourth Lecture : Thursday, October 23, 2004
## " Code Language "

Professor, Functional Network, Infrastructure Systems Research Division, Supervisor

Office for Public Relations Promotion and Professor in the Department of Informatics, the Graduate University for Advanced Studies

### Jun Fujioka

In 1990 The Tokyo Institute of Technology, graduate school science-and-engineering graduate course electricity and the second-half course completion of an electronics specialty doctor. Doctor of engineering. entered into NTT. Through the Swiss Confederation college-of-engineering Zurich school associate member research worker, the University of Tokyo part-time teacher (assistant professor of an associate member), etc., and will be the present post since April 2004. Research field code theory.

As the progress of information society like the prevailing of internet or mobile phone mail goes on, the importance of information security is recognized .I explained the code language technology playing a center part in that information security technology, basing on the main outcome of the modern code language theory. Beginning with a basic way of thinking of modern code language theory, I introduced the concept of technology to conceal (common key code language or open key code language) or technology to certify(digital signature) as a concrete technology and also referred to the information infrastructure(PKI) to utilize them.

*(Publicity and Dissemination Division)*
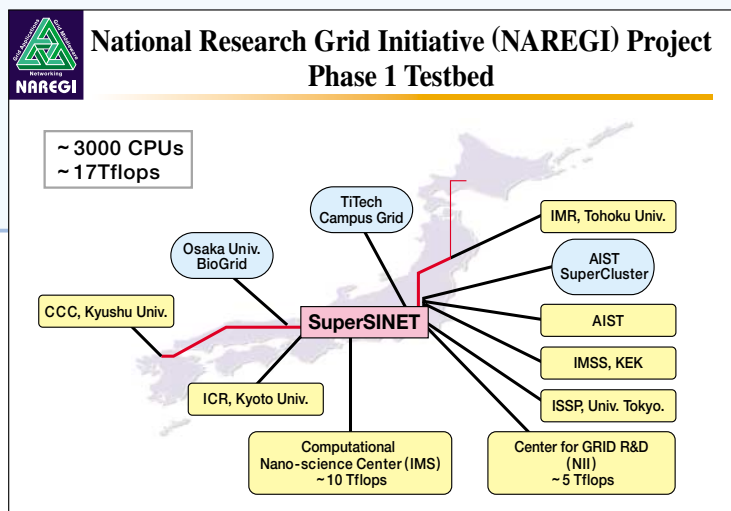
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### Description of a cover

## The National Research Grid Initiative Project（NAREGI）

***Kenichi Miura,*** *Professor, Collaborative Center for Research Grid*

The National Research Grid Initiative Project (NAREGI) is funded by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), covering the period of FY2003 to FY2007. The objectives of this project are to conduct R&D on the Grid middleware which can provide computational infrastructure for scientific and engineering research in Japan, and to facilitate the development of grid-enabled applications for nano-science and nano-technology, in order to prove the usefulness of the Grids in future scientific and industrial applications.

In March 2004, a 5-TFLOPS-class computer facility was installed at the Center for Grid Research and Development of NII, which manages and conducts research and development on grid middleware for NAREGI Project. At the same time, a 10-TFLOPS-class computer facility was installed at the Center for Grid Application Research in Nano-science of the Institute for Molecular Science, and we have established the NAREGI testbed connecting two centers over the Super-SINET. We are in the process of expanding the testbed over the collaborating research organizations, in order to accelerate the research and development activities.

**National Research Grid Initiative（NAREGI）Project Phase 1 Testbed**

3000 CPUs
17Tflops

TiTech Campus Grid

IMR, Tohoku Univ.

Osaka Univ. BioGrid

AIST SuperCluster

CCC, Kyushu Univ.

SuperSINET

AIST

IMSS, KEK

ICR, Kyoto Univ.

ISSP, Univ. Tokyo.

Computational Nano-science Center（IMS） 10 Tflops

Center for GRID R&D （NII） 5 Tflops

Detailed information on the research and projects of NII is available at our Website.
▶ http://www.nii.ac.jp/index.html

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