

Cybermedia Center, Osaka University
for all academic institutions

Greetings from the Center Director



Professor Shojiro Nishio,
Director, Cybermedia Center, Osaka University

After serving as the inaugural director of the Cybermedia Center, I am honored to begin my second term as director after 13 years. I am also committed, together with the Center faculty members and administrative staff, to advance the Center's core mission of fostering new thinking, discovery and innovation and expand its sphere of intellectual activities and global outreach.

When the Cybermedia Center was established in 2000, I envisioned the creation of a cyberspace, or cyber society, to play an active role in networking and promoting intellectual activities across the campuses of Osaka University. This new format for intellectual engagement would be founded on a variety of media resources, ranging from digital content to information and communications media. In other words, this cyber space or society would provide a novel interface with enormous capacity for exchanging information and ideas.

Currently, I also serve as chairperson for the Committee on Academic Information, established in February 2013 under the aegis of the Ministry of Education, Culture, Sports, Science and Technology. As its name suggests, the Committee deliberates on issues that are intimately tied to what the Cybermedia Center does. Some time ago I spoke with Professor Sawako Hanyu, President of Ochanomizu University and acting chairperson, about my reappointment to Director of the Cybermedia Center. On that occasion Professor Hanyu warmly remarked, “You must have had foresight in giving your center a name like that well over a decade ago” .

More than ten years have passed since the Center was launched with this pioneering vision. Along the way, the Center has continued to expand its responsibilities and undergone major transformations. For example, in terms of organization, a new Department of Information and Communications Technology Services was established which now oversees administrative matters.

Last year, the Planning Office for Information-related Affairs, which deliberates on information-related issues from the standpoint of Osaka University as a whole, called for a pan-university organization that would plan and implement general information-related policies. As a result, the Office for Information and Communications Technology Services was formed at the beginning of this academic year. The Cybermedia Center is positioned to play a vital role in supporting this office's various undertakings, and it has already begun to conduct a variety of activities operating under this new framework.

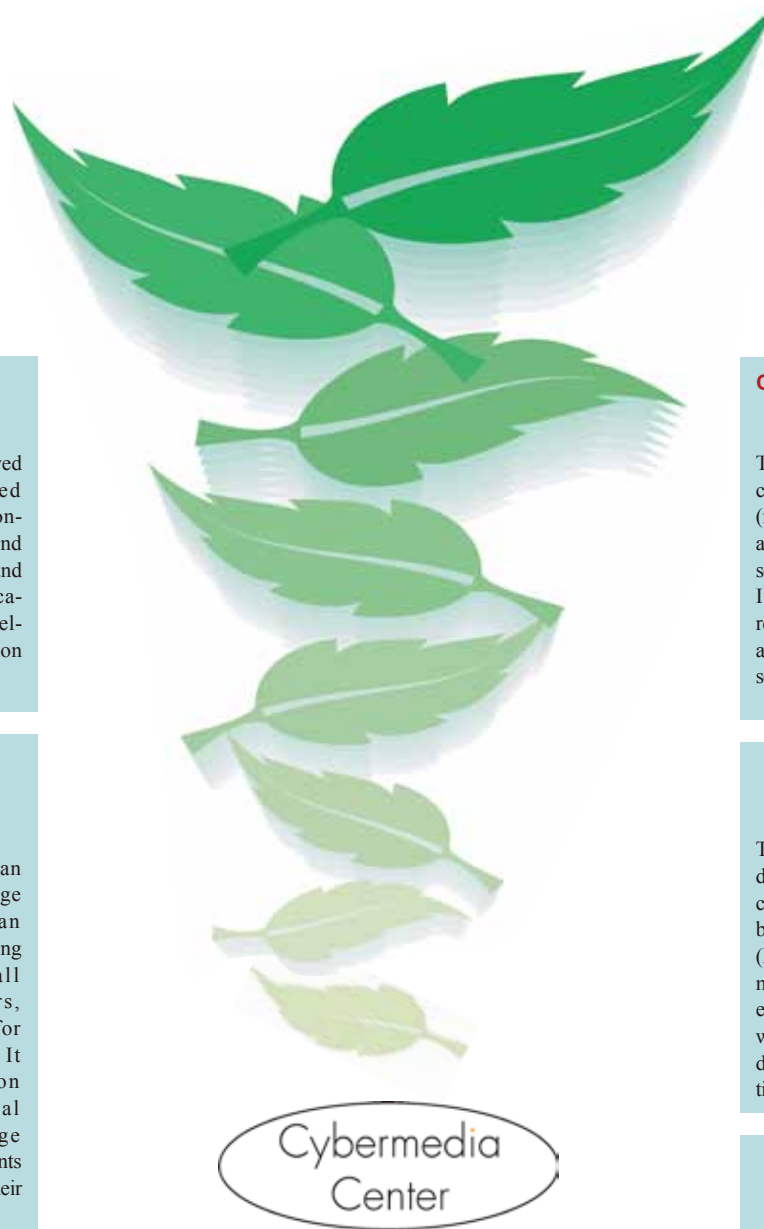
Against the backdrop of rapid progress in information and communication technologies in recent years, there has been a growing awareness of the need for a nationwide academic cloud system to reinforce Japan's international competitiveness in science technology and academic studies. That is, the very function assigned to the Cybermedia Center at the time of its inception is now regarded as an important national agenda. As such, the Center takes on a new responsibility to meet the public's expectations in providing a model for technology innovation to be implemented nationwide.

The timing couldn't have been better. We have received a substantial budget for earthquake-proofing and renovating the Main Hall of the Cybermedia Center, as well as for constructing a new IT core building that will house supercomputers and other devices, all projects which have been eagerly awaited. Slated for completion by the end of academic year 2014, these new facilities will make it possible for the Center to tackle the bigger and ever-more exciting responsibilities it has been charged with.

In 2015, the Center will celebrate a significant milestone—its fifteenth anniversary. This occasion will crown the completion of various infrastructural projects planned over the course of the upcoming year. During my term as Director and in collaboration with everyone at the Center, I resolve to deliver on our commitment to reinforcing the Center's role in helping lead Osaka University into a new era of academic and technological advancement.

Eight Leaves of the Center

The Cybermedia Center is composed of eight research divisions. By integrating the functions of information-related organizations at Osaka University in a complementary and organic manner, we coordinate the various stages of information processing technology infrastructure in order to provide infrastructure technology for accumulating and transmitting digital content, and optimize usage.



Infomedia Education Research Division

This research division is involved in constructing an advanced information education environment, providing information and information ethics education, and conducting research and education activities for faculty development of information education staff.

Multimedia Language Education Research Division

This division seeks to create an ideal environment for language education by developing an innovative, user-friendly learning management system for all language teachers/learners, and self-learning software for foreign-language learners. It also supports the operation and maintenance of several computer-assisted language laboratories, and provides students with opportunities to optimize their learning of foreign languages.

Large-Scale Computational Science Research Division

This division is involved in assisting in the operation of the supercomputers system, disseminating technologies for visualizing computational results, providing education on advanced technologies for using the supercomputer system, and conducting education and research activities for computational science and other related courses.

Applied Information Systems Research Division

This division conducts education and research into system architecture and operating technology involving large-scale data, to assist in the operation of our supercomputers and cloud systems, and to support users. It also performs research and education in the visualization of large-scale data and the architecture of cyber-physical systems.

University-wide Information and Communications Infrastructure Services Promotion Division

This division is involved in promoting and managing the smooth execution and enhancement of university-wide support services which the Cybermedia Center is implementing, such as the maintenance, operation, and user-support of information communication systems installed for education, research, and clerical work.

Computer-Assisted Science Research Division

This division supports efficient computer applications and education (relevant also to supercomputers) aimed at identifying and solving scientific problems. It also conducts education and research activities in mathematical and computational modeling of scientific problems.

Cyber Community Research Division

This division is involved in the design of digital libraries, cyber communities, and social networks, building information modeling (BIM), development of risk management systems for urban areas, and evaluation of urban infrastructure, while providing computer-aided design and graphic science education.

Advanced Networked Environment Research Division

This division supports the operation and utilization of the Osaka Daigaku Information Network System (ODINS), which introduces novel networking technologies such as high-speed networks, and mobile networking environments with lower energy consumption. It also conducts educational activities on networking technologies, security issues, information ethics, etc., for university students and staff. In addition, it conducts state-of-the-art research on network-related topics.

Overview

As a Joint Usage and Joint Research Center approved by the Ministry of Education, Culture, Sports, Science and Technology(MEXT), the Cybermedia Center offers support in the areas of large-scale computation, information communication, multimedia content, and education.

We have the ultra-high-speed supercomputers and computing servers, and provide a powerful high-performance computing environment for university researchers across Japan. The Cybermedia Center plays the role of the nation's hub for instruction in and dissemination of advanced information technology. In addition, the Center bears responsibility for the campus IT infrastructure and for promoting its effective use.

We also provide facilities for advanced education to Osaka University students.



logo of Cybermedia Center
The logo visualizes the wavelike transmission of information from one point to another, composing 'CMC', the initials of the Cybermedia Center.

Our Medium-term Goals, Second Period(2010-2015)

Education	Research	Social Contribution
<ul style="list-style-type: none"> We develop and maintain a state-of-the-art information system. We provide exceptional information processing education and computer-assisted language education, using cutting-edge information and communications technology. 	<p>In addition to fulfilling the important roles of a National Joint-Use Facility, we promote the following activities of our research division:</p> <ul style="list-style-type: none"> Interdisciplinary research and fusion science. Educational research, contributing to global information. Interdisciplinary research, specifically exploiting our National Joint-Use Facility. 	<ul style="list-style-type: none"> As one of the National Joint-Use Interdisciplinary Facilities, we continually offer services to and contribute to the development of universities across the nation. We conduct Supercomputing Contests for high school students, with an emphasis on human resources development in the field of computational science and technology. Through the discussions at the Osaka Advanced Research Collaboration Forum for Information Science and Technology, we identify transitional moments in social needs and seed science and technology, and promote joint efforts of industry and academia.
<p>Research Activity Support</p>		
<ul style="list-style-type: none"> We support development of a high-level educational research environment, and fulfill the important roles of a National Joint-Use Facility in this respect. 		

Suita Main Building



Houses the world's fastest class of ultra-high-speed supercomputers, a server equipment room for the Academic Cloud (Campus Cloud), several research departments, and the main office of the Department of Information and Communications Technology Services.

Toyonaka Education and Research Building



Houses classrooms equipped with the Information Education System and CALL System computers, research departments, ODINS network rooms, and a server equipment room.

Minoh Research Division



Including ODINS network rooms, a server equipment room, and a computer learning room.

Main Activities

Education

Information Media Education Multimedia Language Education

Together with the Information Education System and the Computer Assisted Language Learning (CALL) System (used in foreign language education), the Educational Computer System consists of approximately 1,200 PCs that are connected and operated over the campus network.

Information education covers everything from basic use of e-mail and the Internet to sophisticated computer skills such as computer programming.

Through the CALL System, and the use of information and communications technology, we provide customized support for various levels of language and cultural study.



*Information Education Classroom

CLE & WebOCM

CLE is a course management system using web technology. The system provides various functions, such as the downloading of course materials as PDF files or PowerPoint slides, a discussion board facilitating communication among students and instructors, and online assignment submission.

WebOCM is a user-friendly learning management system that has been developed to allow practical and effective self-study in and out of the classroom, by providing tools such as a multimedia dictionary (translating English, German, French, Korean, and Chinese to Japanese), which can be used to look up words from Websites or PDF files with a simple double-click.

Collaboration with the Teaching and Learning Support Center (TLSC)



In collaboration with the Teaching and Learning Support Center*, the Cybermedia Center utilizes state-of-the-art information and communications technology in the development of a new teaching method called 'Active learning'. Active learning facilitates spontaneous learning by students, who actively identify problems in specific fields and attempt to solve them. We are responsible for the university-wide planning, development, and implementation of teaching and learning-support facilities, such as the course management system, the lecture recording system, the student-response recording and analyzing system, etc.

*The campus organization was established in June, 2013, with support from the Special Management Grants for "Enhancement of internationally outstanding education and research center facilities," from the MEXT.

Research Activity Support

Digital Library

In cooperation with the University library, the digital library provides academic information databases and remote access to electronic journals.

The digital library houses multimedia terminals and public network jacks equipped with an authentication system. We provide digital library services, as well as a research environment for utilizing online information.



*University Libraries HP

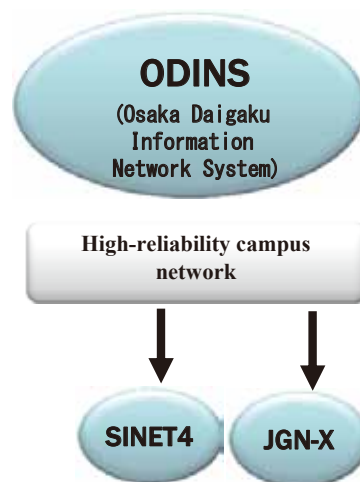
http://www.library.osaka-u.ac.jp/index_eng.php

Repair and Maintenance of the Information Network

The Center supports the operation and maintenance of the Osaka Daigaku Information Network System (ODINS), the campus network which serves as the information network infrastructure for supporting research and education activities at Osaka University.

In 2013, ODINS was upgraded to the 6th version, which introduces wider-area campus WLAN service, stronger anti-spam and anti-virus e-mail service, and a more effective firewall system.

We provide a high-speed and highly reliable campus network system with enhanced service quality and a secure environment.



Academic Cloud(Campus Cloud)

For the purposes of operational efficiency, enhanced security, and information-system cost reductions, we have consolidated and integrated the server serving the university, creating a private cloud system within the university, known as the campus cloud. Thus far, roughly 20 systems, managed by the department or by others, have moved to and begun to operate in the campus cloud. The campus cloud also offers e-mail service, and has incorporated roughly 8,000 accounts from 20 departments.

In addition, we are investigating the possibility of building a hybrid cloud utilizing public cloud systems, and are considering the construction of an academic cloud which will enable system collaboration and integration with other universities.

Research

Large-scale computer system

The Cybermedia Center offers a high-performance computing environment, consisting of large-scale computing systems, for researchers and scientists in academia and industry. The large-scale computing systems are categorized into two classes: vector computers (NEC SX-8R and SX-9) and PC clusters (NEC Express5800/120Rg-1 and Express5800/53Xh). In addition, the Cybermedia Center provides training courses and support, to optimize the benefits gained by users of these systems.

Furthermore, these large-scale computing systems form part of Japan's revolutionary High-Performance Computing Infrastructure. (<https://www.hpci-office.jp/folders/english>)



Supercomputer system
NEC SX-9 × 10 nodes
Total processing capacity: 16TFLOPS
Total memory: 10TB



Supercomputer system
NEC SX-8R × 20 nodes
Total processing capacity: 5.3TFLOPS
Total memory: 3.3TB

Social Contribution



Supercomputing Contest (SuperCon)

The Supercomputing Contest for High School Students (SuperCon) is a team-based programming competition. From 1995 to 2004 it was hosted by the Global Scientific Information and Computing Center (GSIC) of the Tokyo Institute of Technology, but since 2005 it has been co-hosted by the GSIC and the Cybermedia Center.

The SuperCon provides high school students with the unique experience of using supercomputers. Another distinctive feature of the SuperCon is its duration; after commencing with a tutorial on supercomputing using vectorization and parallel computing, it lasts four days, during which students create a program for solving a high-level problem.



*Supercomputing Contest

VisLab OSAKA

The Cybermedia Center has formed an interdisciplinary group called 'VisLab OSAKA' and established its office in the Knowledge Capital of Osaka Umekita, aiming at large-scale simulation research and dissemination of the visualization results. The members of the group are NICT, Kansai University, Kwansei Gakuin University, Osaka Electro-Communication University, the Biogrid Center Kansai, Consortium Kansai, the Cyber Kansai Project, and our center.

We also mount exhibitions and workshops to present the visualization results of various studies at The Lab, where all can encounter the advanced technologies of the Knowledge Capital.



VisLab OSAKA
science x visualization x osaka

Joint Usage/Research Center for Interdisciplinary Large-scale information Infrastructures

The Joint Usage/Research Center for Interdisciplinary Large-scale Information infrastructures is composed of eight centers equipped with supercomputers: the Information Initiative Center of Hokkaido University, the Cyberscience Center of Tohoku University, the Information Technology Center of the University of Tokyo, the Global Scientific Information and Computing Center of the Tokyo Institute of Technology, the Information Technology Center of Nagoya University, the Academic Center for Computing and Media Studies of Kyoto University, the Cybermedia Center of Osaka University, and the Research Institute for Information Technology of Kyusyu University.

This is a network-type joint usage and collaborative research center, whose core institution is the Information Technology Center of the University of Tokyo. The Joint Usage/Research Center began as a program of the MEXT in April 2010.

The Cybermedia Center promotes joint usage/research for optimization of vector and scalar hybrid computing, management technology for vector and scalar hybrid computers, and large-scale data visualization technology. (<http://jhpcn-kyoten.itc.u-tokyo.ac.jp/en/>)

HPCI Project

The revolutionary High Performance Computing Infrastructure has been constructed by connecting the flagship K computer and other major supercomputers in Japan, including that of the Cybermedia Center of Osaka University, via high-speed networks. The special contribution of the Cybermedia Center lies in providing the authentication system, which enables the convenient use of such supercomputers by utilizing the unified ID.

Industrial Collaboration Activities: Osaka Advanced Research Collaboration Forum for Information Science and Technology (OACIS)

Since 2002, the OACIS forum has been stimulating the Kansai area economy by providing an opportunity for industry and academia to meet and interact. The OACIS forum has been supported by the Cybermedia Center and the Graduate School of Information Science and Technology through services such as the semi-annual OACIS symposium, which presents the latest developments in information technology, expert lectures providing a range of IT knowledge, and opportunities for discussion on themes suggested by OACIS members.

History

Education Center for Information Processing

April 1981: Established as a university joint education research facility
 February 1982: Mitsubishi Electric general-purpose COSMO 900II introduced
 April 1982: Information processing education using TSS begun
 February 1987: Upgrade to a combination system using an IBM 3090-200 general-purpose computer and PC (5550)
 March 1992: Upgrade to a distribution system featuring 388 NeXT workstations
 March 1996: Upgrade to a group of Sony servers and 500 PC QuarterL (equipped with NEXTSTEP)
 March 2000: Upgrade to a group of IBM servers and 700 PC IntelliStation E pro (equipped with Linux)
 End of March 2000: Reorganization

University Libraries

May 1931: University libraries established
 September 1988: OPAC service begun
 March 1995: CD-ROM search service on campus LAN begun
 December 1997: Electronic exhibition service on Internet (Kaitokudo) begun
 August 1999: Electronic exhibition service for ancient western maps of Asia begun
 End of March 2000: Partial reorganization

Computation Center

April 1962: Computation Center inaugurated
 April 1967: Batch service begun
 September 1967: NEAC2200 Model 200, communication control unit, and peripheral equipment introduced
 January 1968: Osaka University MAC9 (TSS) system service begun
 April 1969: Computation center inaugurated as a National Joint-Use Facility
 March 1972: NEAC2200 Model 700 (No. 1) and NEAC2200 Model 500 introduced
 June 1986: Supercomputer SX-1 service started
 March 1994: Osaka Daigaku Information Network System (ODINS) introduced
 January 1997: Supercomputer SX-4/64M2 service begun
 March 1998: Exemplar V2200/N server service begun
 End of March 2000: Reorganization

Cybermedia Center

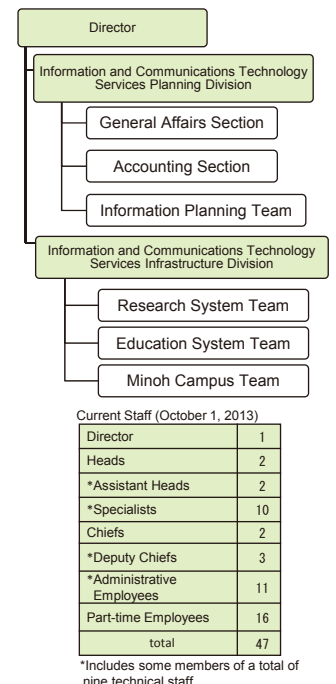
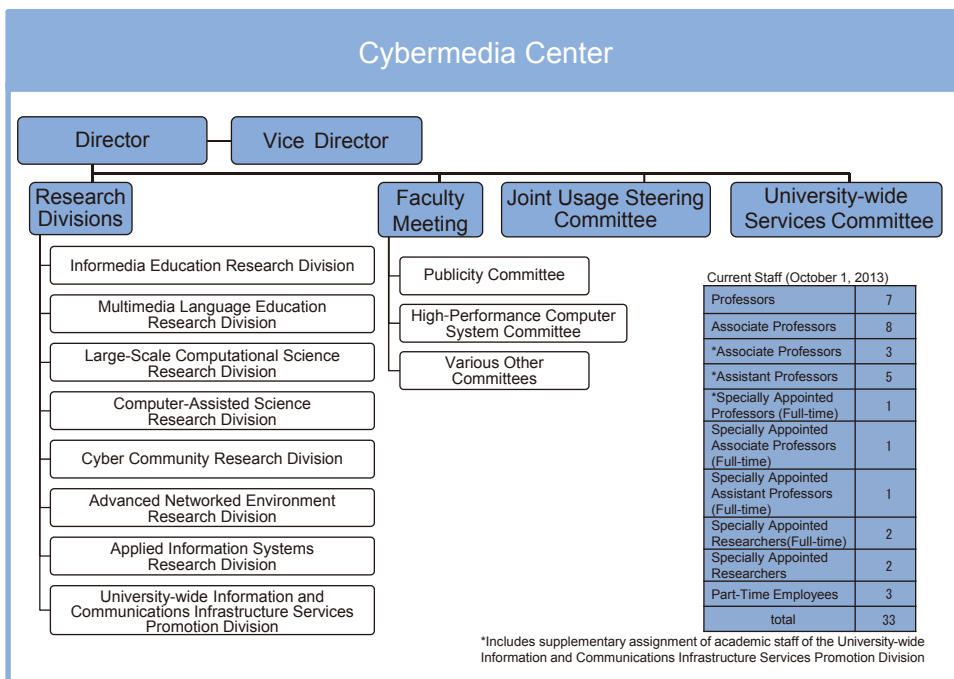
April 2000: Founded
 January 2001: SX-5supercomputer introduced
 September 2001: Digital library system introduced
 November 2001: High-speed campus intranet system (ODINS4) introduced
 January 2002: Biogrid infrastructure system introduced
 March 2002: Application server, uniform account system, and portal system introduced
 September 2002: Construction of the Toyonaka Education and Research Wing completed
 January 2003: Datagrid infrastructure system introduced
 March 2005: Upgrade the computer system for educational purposes
 April 2006: Department of Information and Communications Technology Services established
 (responsible for the clerical operations of the Cybermedia Center)

October 2006: University-wide IT authentication system (CA/RA) introduced
 January 2007: SX-8R supercomputer and PC cluster introduced
 March 2007: Upgrade to general-purpose computer system
 April 2008: Osaka Daigaku Information Network System (ODINS5) introduced
 July 2008: SX-9 supercomputer introduced
 March 2009: Upgrade to Computer-Assisted Language Learning system
 June 2009: Joint Usage/Research Center for Interdisciplinary Large-scale Information Infrastructures designated (to commence April 2010)
 October 2010: Upgrade to university-wide IT authentication system (CA/RA)
 October 2012: Upgrade to general-purpose computer system
 April 2013: Osaka Daigaku Information Network System, 6th version (ODINS6), introduced
 April 2013: Office for Information and Communications Technology Services established

Organization

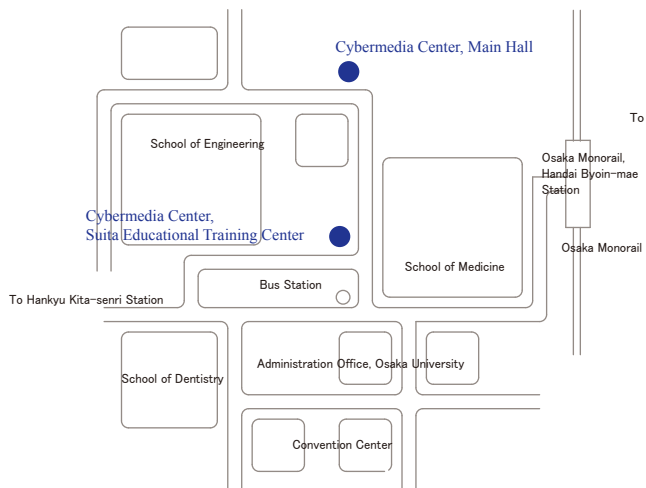
Office for Information and Communications Technology Services

Department of Information and Communications Technology Services



Cybermedia Center, Main Hall

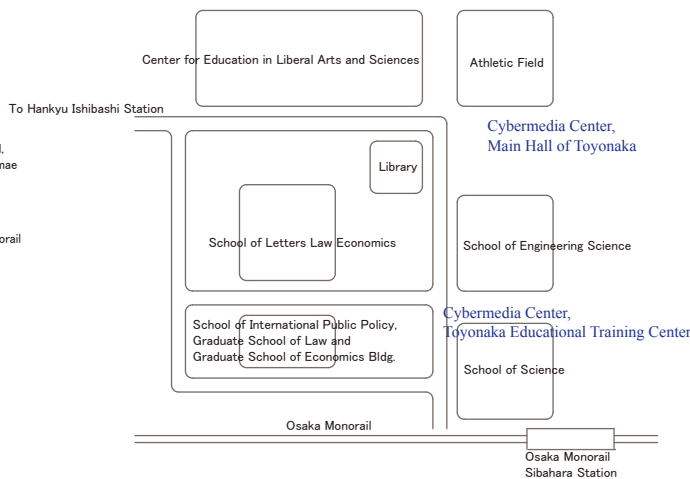
5-1 Mihogaoka Ibaraki City, Osaka, 567-0047, Japan
 TEL +81-6-6877-5111 FAX +81-6-6879-8814



Suita Campus

Cybermedia Center, Main Hall of Toyonaka

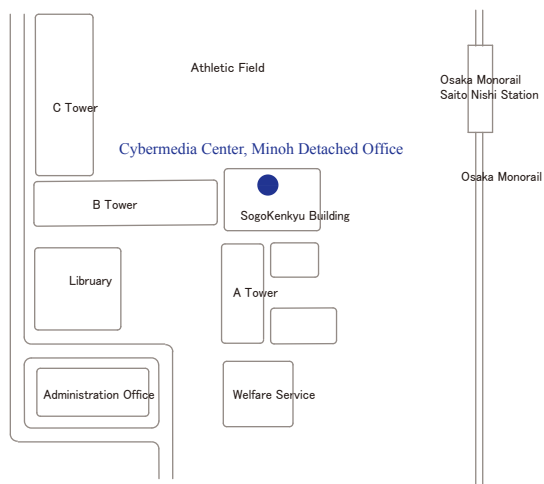
1-32 Machikaneyama-cho Toyonaka City, Osaka 560-0043 Japan
 TEL:+81-6-6850-6111 FAX:+81-6-6850-6819



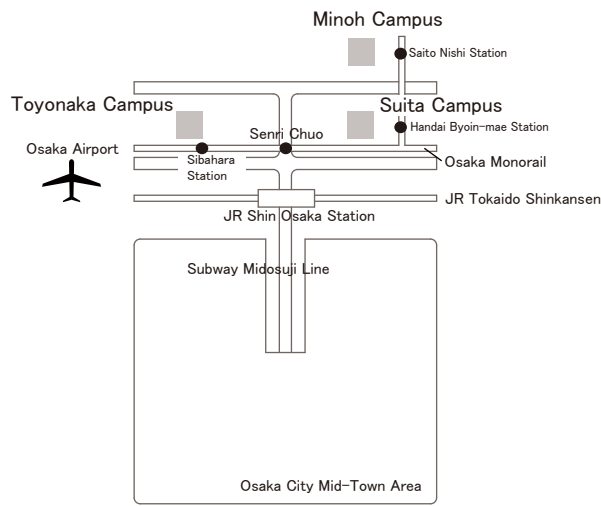
Toyonaka Campus

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Minoh Campus



Location