

## Responding to the international needs in the 21<sup>st</sup> Century

### — Taking the example of the University of Tokyo —

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#### ABSTRACT

The international research collaborations of the University of Tokyo have been carried out by the pure curiosity of individual faculty members or by responding to the need of each discipline.

In the year 2004, the University of Tokyo got its autonomous status as a “national university corporation” due to legal change for all national universities in Japan. One year before the corporation, the University of Tokyo drafted a charter which should guide us as an autonomous university. The charter was drafted observing the globalization process going on and trying to make it an opportunity for the University of Tokyo to have an international aspect.

The charter pointed out two values which are important to us. One is to explore the highest scholarship and to serve to the public through the achievements in higher learning. The second is that we will recognize ourselves as a Japanese university located in Asia and that we will strive to strengthen our links with Asia.

The University of Tokyo embraces a great variety of disciplines and research areas with its 10 faculties, 16 graduate schools, 11 research institutes, 21 university-wide centers, and numerous research centers which has accumulated in the 130 years of history. The research and the related international activities have been carried out by pure curiosity of respective departments or researchers themselves.

These international activities will continue to develop but with the above mentioned corporatization some of the activities will be aligned and supported to achieve the goals pointed out in our charter.

Now we see some interdisciplinary networks or initiatives evolving which try to focus on global issues. There are some international collaborative works within the framework of East Asia which seek common grounds and differences in this region. Some departments create research labs abroad to explore a new frontier.

The globalization seems to push us towards a “global standardized” value system leading the world’s universities to work in the same manner on same problems, at the first place. But working abroad with international partners, we also see that there is a strong need to treat different culture and different countries differently and that the appreciation for cultural diversities is important.

Relating this with our second emphasis mentioned in our charter we will drive our international collaboration forward.

Although the international research collaborations seem to be taking a good step we still see that much more work should be done for the international education. We also see that we need to build more frameworks and also facilities to do so.

In the coming years we will work on this and we hope to meet our charter emphases both in research and educational aspects.

## Internationalization Research Collaboration of the University of Tokyo

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## The Charter of the University of Tokyo (enacted in 2003)

- The goals of the University of Tokyo lie in maintaining as well as developing the highest level of education and research in the world and in serving the public interest of the world.
- Keeping in mind that we are a Japanese university located in Asia, this university, by taking advantage of the expertise accumulated in Japan, will strive to strengthen its links with Asia.

## The University of Tokyo: General Information

- Established: 1877
- Organization:
  - Faculties-10
  - Graduate Schools-16
  - Research Institutes and Centers-32
- Number of Personnel:
  - Faculty Members-Approx 4,000
  - Administrative Staff-Approx 3,000
- Students enrolled: Approx 30,000
- Annual Budget: Approx 2 billion USD



## International Center for Elementary Particle Physics (ICEPP)

- **MISSION:**
  - As a **shared facility**, open to all Japanese scholars, ICEPP's mission is to **promote and assist international research collaboration** for the study of the most fundamental particles and forces of nature by **using the world's most forefront particle accelerators**.
  - Established in year 1974.
- **Accomplishment of ICEPP:**
  - 1970's: Intl. Collaboration with DESY, German Electron Synchrotron
    - DASP Exp. with e<sup>+</sup>e<sup>-</sup> collider DORIS
    - JADE Exp. with PETRA.
  - Since 1980's: Intl. Collab. With CERN, European Organization for Nuclear Research.
    - 1982-OPAL Exp. with e<sup>+</sup>e<sup>-</sup> collider LEP1
      - Z<sup>0</sup> Particle
    - 1996- OPAL Exp. with e<sup>+</sup>e<sup>-</sup> collider LEP2
      - W<sup>+</sup>W<sup>-</sup> Particle
    - 2007- ATLAS Exp. with large hadron collider LHC
      - Higgs particles and supersymmetry
- **Contributions of UT Team:**
  - Proposal and main function in OPAL Exp.
  - Proposal and main function in ATLAS Exp.

Here... [http://www.icepp.s.u-tokyo.ac.jp/index\\_e.html](http://www.icepp.s.u-tokyo.ac.jp/index_e.html)



In an ever pursuit for most fundamental particles at the world's highest energy level in union with world scientists!



Some of the UT Team

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## International Research Collaboration in Big Sciences: Example of CERN

**LHC:**  
Protons accelerated to 7TeV  
40,000,000 collisions/sec.

**27km**

**CERN:  
European Organization for  
Nuclear Research**

- The world's largest particle physics laboratory
  - 20 member states
  - 28 non-member countries
  - 8 observers
- Participating people:
  - About 3000 staff at CERN (without researcher)
  - About 6500 researchers (representing 500 universities and 80 nationalities), about half of the world's particle physics community

**LHC Computing Grid** →

- 15 Petabytes (15 million Gigabytes) of data annually
- A global data storage and analysis infrastructure

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## Institute for Cosmic Ray Research (ICRR)

Elucidating the principles of space (vast scale) and elementary particles (miniscule scale) at the same time.

More... [http://www.icrr.u-tokyo.ac.jp/index\\_e.html](http://www.icrr.u-tokyo.ac.jp/index_e.html)

Exploring the enigmatic origin of ultra-high cosmic rays

Telescope Array, U.S.A.

Chacabuta Observatory, Bolivia

Tibet Air Shower Array  
Exploring the composition of cosmic rays and observing solar magnetic field, etc.

CANGAROO, Australia

Y-ray telescope  
Exploring the origin of cosmic rays like the supernova remnant

**In an ever pursuit for the best observation spot in the world**

**SUPER KAMIOKANDE**

- Neutrino detection and nuclear decay search in quest for **grand-unified field theory**
- 40m in height and diameter, 1000m under the ground, 50,000-ton water Cherenkov detector. Predecessor Kamokande led to **Nobel Prize** in Physics in 2002 of Prof. Koshiba for creating "**nuclear astronomy**".
- Cryogenic Laser Interferometric Gravitational Wave Telescope
- Akeno Giant Air Shower Array, and other

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## Historiographical Institute — The Fundamentals for the History of Japan

**MISSION:**

- Examine, compile, and publish historical documents relating to pre-modern Japanese history (yr.887-1868).
- Originating in 1801, official since 1869, transferred to UT in 1888.

**Conservation of the historical documents**

**Reproduction of documents for Research Use**

**Compilation of Source Books on the historical documents**

**International Outreach:**

- Collaboration with Chinese and Korean historiographical institutions which share Chinese letters
  - Sharing techniques & archives
- Compilation of Japanese documents in foreign countries
  - Portugal, Spain, Russia, East Asia, which have historical relationships with Japan.
- Disseminating archives through internet: **SHIPS containing 28 databases!**
  - 1,300,000 access/month
  - About 20 % from outside Japan

Information on:  
-Archive  
-Person  
-Feature  
-Location

More... <http://www.hi.u-tokyo.ac.jp/index-e.html>

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## East Asia Liberal Arts Initiative (EALAI)

**Role of EALAI :** To share liberal arts resources of UT with East Asia, aiming holistic development of university students. Through two-way educational exchanges with other universities in East Asia, EALAI fosters mutual progress leading to the formation of shared approaches to liberal arts education in the region.

**EALAI Projects**

- Sharing knowledge with East Asia
- Learning from East Asia
- Establishing centers for liberal arts education in China

**Partner Universities**

- Peking University
- Scout National University
- Vietnam National University, Hanoi
- Nanjing University

**Liberal Arts at UT**

- the only national university in Japan that has kept and continues to enhance its liberal arts college

More... <http://www.ealai.c.u-tokyo.ac.jp/>

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## Alliance for Global Sustainability (AGS)

AGS: An **international partnership**, since 1996 of four leading universities for forming a cooperative venture that seeks solutions to the issues around **global sustainability**.

Partner Universities:

- The University of Tokyo (UT)
- Massachusetts Institute of Technology (MIT)
- Swiss Federal Institute of Technology (ETH)
- Chalmers University of Technology (Sweden).

Three-fold Mission of the AGS:

- Research: **Improving scientific understanding of global environmental challenges** by creating new knowledge through research
- Education: **Educating new generation leaders** with the knowledge and skills required to meet the challenges of sustainable development
- Outreach: Taking a step beyond normal academic dissemination of results to **facilitate implementation**

Management chart of the AGS

...now also in collaboration with the IR3S, a research network within Japan for sustainable science.

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## International Alliance of Research Universities (IARU)

Yale, UC Berkeley, PKU, UT, NUS, ANU, Copenhagen, ETH, Cambridge and Oxford

Strategic drawing together of a selected group of **research-intensive universities**

Similar values, a similar vision and a commitment to educating future world leaders.

- Exchange of researchers and students
- Research collaborations
- Joint degree and dual degree

**“Global Changes and Sustainability” Project**

1. Movement of People
2. Longevity and Health
3. Energy, Resources and Environment
4. Security

The University of Tokyo will host the symposium on “Energy, Resources and Environment” commemorating its 130th Anniversary in February 2007.

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## WuXi Representative Office by the School of Engineering

- Collaboration with: Chinese Univ., Research Institutes, Industry
- Field: Energy, Environments, and Manufacturing Science
- Exchange and cooperative research on energy and environmental problems, environmental conscious design and manufacturing.
- Collaboration with industry sectors on nano-technology and microelectronics.

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See... <http://133.117.6.211/~wuxi/chinese/index.html>

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## Japan-China Collaboration on Emerging and Re-emerging Infectious Diseases initiated by the Institute of Medical Science

- Research Center for Asian Infectious Diseases (IMSUT):
  - 1 project office in Beijing
  - 2 research labs (ISVL, LAMIM) in collaboration with Chinese Academy of Sciences, Institute of Biophysics & Institute of Microbiology
  - 1 joint program in Harbin with Chinese Academy of Agricultural Sciences
- Targets of “Japan-China Collaboration on Emerging and Re-emerging Infections” Project:
  - Establishment of a continuous academic research collaboration in China
  - Development of international research collaboration on infectious diseases
  - Nurturing of internationally active talents

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**Campus Internationalization**


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- Development of "International Campus" at Kashiwa**

  - World-class research facilities
  - Upgrade lodging facilities
  - Living support system in collaboration with the local community
  - Improve the environment for promoting the internationalization of the campus
- Developing Infrastructure for Internationalization**

  - Lodging facilities for foreign researchers (International Guest House)
  - Enriching materials in foreign languages



**Providing Students with International Experiences**

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UT students at Devonian sites in Australia which do not exist in Japan (vice versa also planned).
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Providing students with international experiences which lead to deeper understanding and better scholarship.



**Challenges in Promoting Internationalization**

- Acquisition of housing, scholarships, and space for facilitating the acceptance of exchange students and researchers from abroad.
- Improvement of the English abilities of administrative staff so as to provide better administrative support for the overseas students.
- Establishment of the effective and efficient system for student/researchers exchange – in order to exchange as many students/researchers as possible.
- Responding to the diverse needs arising during the course of internationalization of education and research; needs could be different depending upon the fields of specialty.



**Closing**

- UT, with an awareness of its being both a Japanese university and part of Asia, will further promote internationalization.
- UT aspires to become a university where multifarious human resources from around the world assemble out of the desire to participate in the UT's education and research activities replete in creativity and intellectual stimuli.

Thank you!

