

**FINAL REPORT on the  
PROPOSAL TO PROVIDE ASIAN SCIENCE AND TECHNOLOGY  
INFORMATION**

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**Introduction:**

The Asian Technology Information Program (ATIP) was officially established in January of 1995, under a memorandum of understanding between the National Institute of Standards and Technology (NIST) and New Mexico US-Japan Center (at the University of New Mexico.) Subsequent to its founding under the Japan Center, ATIP incorporated as an autonomous non-profit 501(c)3 organization. ATIP currently maintains offices and/or operations in Japan, China, South Korea, Republic of Singapore, Taiwan, India, Australia, Indonesia, Malaysia, other Asian countries, and, Albuquerque, New Mexico. ATIP's mission is to collect, analyze, and disseminate timely and accurate information on Asian science and technology trends and developments to the US government, industry, and university community. ATIP has developed a high-caliber of expertise and experience associated with tracking Asian science and technology.

ATIP conducted a seven-month Asian science and technology information program for the Office of Energy Research (ER), U.S. Department of Energy (DOE.) The seven-month program consists of: 1) monitoring, analyzing, and disseminating science and technology trends and developments associated with Asian high performance computing and communications (HPC), networking, and associated topics, 2) access to ATIP's annual series of Asian S&T reports for ER and HPC related personnel and, 3) supporting DOE and ER designated visits to Asia to study and assess Asian HPC.

**Scope of Programs and Activities:**

ATIP conducted a series of activities to assess ongoing Asian HPC and related trends and developments. Specifically, ATIP monitored government, industry, professional, and other original sources of Asian information which described/outlined HPC related programs, activities, trends, developments, and other relevant information. Additionally, ATIP conducted site visits to government, industry, and university laboratories and related facilities, to assess first-hand those relevant and timely activities conducted in Asia, as well as, attend and subsequently report on Asian conferences, workshops, symposia, and other public and professional meetings related to HPC, networking, and associated topics.

This program reported on the scientific, technical, and market activities on Asian research, development, and manufacturing in HPC, networking, related information technology, and relevant specialized end applications. The scope of the program and activities focused on direct and timely analyses of relevant scientific and technical trends and developments.

### **Programs and Activities:**

As noted above, ATIP implemented a seven-month information program, consisting of tracking, analyzing, and disseminating relevant scientific, technical, planning, market trends, and developments. The scope of the activities included: site visits to Asian industry, government, and university R&D, manufacturing, and policy and planning organizations; translation and compilation of relevant Asian information, journal abstracts, product literature, and other relevant information; analyses of scientific and technical trends and developments; collection, abstracting, and analyses of Japanese and other Asian public HPC procurement documents; dissemination of the results of the program and activities to relevant ER and other ER specified US government, industry, and university audiences; ER access to ATIP's annual series of S&T reports which address diverse Asian geographic and S&T topics/sectors; and, logistical and other support for ER related/designated visits to Asia to observe and analyze Asian S&T trends and developments.

#### Monitoring trends and developments

ATIP implemented a program to track significant/relevant scientific and technical trends and developments in the area of HPC, networking, applications, and related areas. The activities resulted from site visits by staff and other experts, attendance at professional and association meetings, the translation and compilation of relevant Asian journal and periodical articles, product literature, public procurement and planning documents, as well as, other relevant information.

**Monitoring publicly disseminated information** - As one basis for scheduling site visits, attending conferences, workshops, and other public meetings, as well as collecting, analyzing, and disseminating printed documents, ATIP staff and experts monitored press releases, newspaper and journal articles, trade and association publications, and other relevant information.

**Site visits** - As a major component in support of tracking the most significant and recent scientific and technical trends and developments, ATIP staff and consultants conducted site visits to relevant Japanese and other Asian R&D and related facilities to observe and report on relevant programs and activities.

Reports resulting from site visits included some or all of the following: a description of the relevant site projects; data, schematics, drawings, and photographs, when available; names and backgrounds of researchers; and a historical background of the organization's activities and relationships.

Translation was provided as required, and on a feasible basis. Site locations as well as topics were determined as a result of the monitoring activities outlined above, referrals by industry associations and independent experts, and US government and industry identified topics and organizations as part of ATIP's overall information programs.

**Conference, workshop, and other public meetings** - ATIP staff and experts attended conferences, workshops, and other public meetings conducted in their

original Asian language as was feasible, or English if available, and subsequently produced reports which contained abstracts of presentations, copies of presentation materials, photographs, tables, schematics, drawings, proceedings, product literature, and other relevant information as available and feasible.

Technical literature, journal articles, press releases, and product literature - In support of an increased and timely ER awareness of Japanese and other relevant Asian relevant scientific and technical trends and developments in HPC and its associated topics, ATIP collected, translated, and compiled technical literature, journal articles, press releases, and other relevant information/documents.

Asian HPC Procurements - ATIP staff and consultants collected, abstracted in English, analyzed, and reported on Asian public HPC procurements. Activities included monitoring public sources of information, meetings with the most recognized experts in the field (in Asia), site visits to laboratories planning procurements, as well as, Japanese and other Asian government offices supporting the planning and funding of HPC procurements.

HPC Asia - An important component of this program was the use of a well regarded regional public forum as a mechanism for gathering and assessing relevant information, in context. ATIP was instrumental in the formation of this regional conference series, HPC Asia, which has already met in Taiwan, Korea, and Singapore. HPC Asia 2000 met in Beijing during May 2000. As part of the conference activities, ATIP also supported a series of Steering Committee Meetings that were invaluable for close interaction with key HPC leaders from the Asian region. DOE ER representatives were encouraged to participate in these events and ATIP made special efforts to integrate them into the Asian HPC community as a way to better understand capabilities and possible opportunities for collaboration.

#### Annual Briefing on Asian HPC

ATIP met with DOE personnel no less than every three months to provide them with up to date information about HPC developments in Asia. In addition, ATIP arranged for DOE Undersecretary and other headquarters staff to visit and meet with Japanese HPC experts in Baltimore at SC'03. ATIP also provided "guided tours" through the Asian research exhibits at SC'03, introducing DOE scientists to key Japanese, and other Asian HPC researchers.

In addition to the activities to monitor and report on Asian HPC trends and developments as outlined above (throughout the seven month period of this report), ATIP additionally conducted an annual briefing which addressed Asian strategic technology directions, future plans for government support of HPC, significant research programs, industry composition, and associated plans for future procurements in Asia. The following outlines more details of these activities;

**Strategic Technology Directions** - To augment the monitoring and reporting as outlined above, ATIP conducted a set of activities to understand and report on Asian strategic technology directions in HPC. Specific activities will include investigations of Asian HPC architectures, software and hardware technologies, and leading-edge applications.

**Asian Government Support** - ATIP additionally investigated Asian government support of their indigenous HPC industries. Activities addressed financial investment patterns, technological programs, public procurements, international relations/relationships, and the role of individual ministries.

**Research Programs** - A set of activities was also conducted to address the status of relevant Asian University, Industry, and Governmental programs in Asia and abroad. Information was collected based-on site visits, attendance at professional meetings (as available), and via publicly available literature in Asia.

**Industry Composition** - A final component of the project investigated the composition, collaboration/relationships, competitiveness of the Asian industry, and it's strategic market directions, internal and international (Pacific Rim, Europe, US Rest -of-World) conditions, and Vendor/User interactions and relationships. This component of the overall program also relied on site visits, collection of public information, and analyses and dissemination of the information.

#### Dissemination of information

A high degree of dissemination to the DOE -ER and its designated US government, industry, and university community was supported through the use of ATIP's US and Japan-based Internet servers, as well as interactions with ATIP staff, consultants, and collaborating organizations. ATIP, delivered monthly updates/reports to ER personnel as designated by the Office of Energy Research, via electronic mail (Email) delivery, and archive the information on ATIP's WWW sites. Additionally, ATIP's annual briefing materials were made available to all ER designated recipients at the conclusion of the project. The briefing provided an overview and analyses of all information collected and reported during the period of this proposal.

Additionally, ATIP staff and experts regularly interacted with ER to provide updates and answer questions on the activities carried out under this proposal.

As noted above, ATIP provided a briefing based-on the four target areas as described previously and the results of the associated programs and activities.

### Access to ATIP Reports

ATIP provided access to its series of, archived and current, Asian S&T reports to ER personnel, during the period of this program. The ER designated recipients for automatic electronic mail delivery or access to reports via ATIP's secured WorldWide Web and ftp sites. ER access and distribution/ redistribution of these reports were limited to ER personnel only.

### Office of Energy Research Visitors to Asia

As often as requested, ATIP supported site visits and technology tours of ER designated individuals and groups in HPC, networking and/or topics subsequently and mutually agreed upon. Specifically, ATIP's staff and experts suggested the most relevant locations/organizations for visits; introductions; consultation on logistical aspects of visits including travel, hotels, and directions to site visits; escorts for individuals and groups; and provide briefings prior to visits.

### **Program Timeframe:**

ATIP began the proposed program and associated activities on October 1, 2002 through April 30, 2003.

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### **Appendix A: ATIP "HPC in Asia" Web Site**

This web site, located at <http://www.atip.org/HPC/>, contains the following sections:

HPC-Asia  
HPC Asian News  
HPC Reports  
ChinaTop50  
AsiaTop80  
Past Reports  
Presentations  
Upcoming Events  
Recent Events  
TANet/I2  
Upcoming Reports  
HPC Related Links  
Search...

**Appendix B: ATIP Reports on HPC (researched during contract period)**

- ATIP03.035: Recent HPC Activities in China (15 pages)
- ATIP03.030 : HPC-Asia 2002 (9 pages)
- ATIP03.028 : Quantum Computation Program at ANU (10 pages)
- ATIP03.027 : Korea Top 50 (13 pages)
- ATIP03.022 : Embedded High Performance Computing (eHPC) (10 pages)
- ATIP03.021 : Solid State and Optical Approaches to Quantum Info Science (17 pages)
- ATIP03.018 : Cryptographic Research in Japan (10 pages)
- ATIP03.016 : Bioinformatics in India (26 pages)
- ATIP03.014 : GCC 2002 and Grid Computing in China (15 pages)
- ATIP03.005 : AISTs Grid Technology Research Center (12 pages)
- ATIP03.004 : Indian Chip Design Activities (15 pages)
- ATIP02.053 : Petaflop Protein Explorer (9 pages)
- ATIP02.052 : Life Sciences Promotion in Singapore (14 pages)
- ATIP02.047 : PRAGMA (15 pages)
- ATIP02.046 : Quantum Information Technology in Japan (29 pages)
- ATIP02.045 : GMP2002 (12 pages)