

ISTC in Brief

Nonproliferation through Science Cooperation

The objectives of the ISTC are to:

- Provide weapons scientists in the CIS the opportunity to redirect their talents to peaceful activities
- Support basic and applied research and technology development
- Contribute to the transition to market-based economies
- Foster the integration of scientists and engineers from CIS states into the global scientific community
- Contribute to solving national and international technical problems



The International Science and Technology Center (ISTC) was established by international agreement in November 1992 as a nonproliferation program to provide peaceful research opportunities to weapons scientists and engineers in Commonwealth of Independent States (CIS) countries.

Although the end of the Cold War greatly reduced the threat to international security posed by a super-power confrontation, it presented a different pressing concern: the defection of scientists and engineers with knowledge related to weapons of mass destruction (WMD) and their delivery systems from elite research institutes in the former Soviet Union to rogue nations and terrorist groups. The proliferation of technologies related to nuclear, biological, and chemical weapons and the missile systems used to deliver them presents one of the most serious threats to peace and security faced by the international community today.

Acting to prevent potential proliferation of WMD technology from CIS weapons institutes, Japan, Russia, the United States and the European Communities established the ISTC to assist these institutes and their highly qualified scientists in adapting to the post-Cold War environment. In the CIS, Armenia, Belarus, Georgia, Kazakstan and the Kyrgyz Republic are members of the ISTC. Norway and the Republic of Korea have also

acceded to the ISTC, and now participate as financing members in ISTC activities.

Since beginning operation in March 1994, the ISTC has funded over 840 peaceful scientific projects engaging over 30,000 scientists and engineers at nearly 420 institutes in the CIS. These projects cover a broad range of science and technology areas, many of which address problems of global importance such as:

- Environmental remediation and monitoring
- Improved safety for nuclear reactors
- Innovative methods for nuclear waste management
- New vaccines and treatments for bacterial and viral diseases
- Efficient concepts for future energy production.

As the ISTC enters 2000, the Center continues to expand its capabilities, coordinating the efforts and resources of numerous member governments, public and international organizations, and private industry. Many Center programs and activities support other nonproliferation initiatives. The ISTC retains its central role in the nonproliferation of weapons technologies and through this contributes to global security.

Statement from the ISTC Executive Director



Dr. Alain Gérard was appointed as Executive Director of the ISTC in February 1997. He is a graduate of Ecole Polytechnique in Paris and received a Ph.D. in particle physics from Paris-Sud University. Prior to joining the ISTC as Deputy Executive Director in 1993, he held positions as nuclear physicist, scientific advisor, and program manager with the French Atomic Energy Commission

In March 1999, the ISTC celebrated its fifth anniversary since it started operation. This milestone was an occasion for the ISTC to take stock of its already impressive accomplishments over such a short period, but also to dedicate thoughts to the formidable challenges it is still facing. It was also for me an opportunity to look into the past and take stock of the seven years I have been serving in different capacities in the ISTC.

When I participated in the Preparatory Committee meeting, in February 1993, chaired by Glenn Schweitzer, the Executive Director designate, many people around the table doubted our Center would ever happen. When the Governing Board met for the first time in March 1994, and appointed me Deputy Executive Director, many people still viewed the ISTC as a kind of crash program, whose initial \$70 million pledge would allow the Center to stay alive for five years. As early as 1996 however, project funding surpassed \$100 million and the Center continued to grow steadily.

When I will leave the Center in year 2000, after three years serving as Executive Director, I am proud to say I will leave behind me a fantastic tool, which has the potential to continue serving for many years its objectives: reducing proliferation threats, supporting peaceful research and development in the New Independent States, and promoting cooperation between scientists of CIS countries and scientists in Europe, America, Japan, and Korea.

One key of the success of the ISTC has been its ability to overcome obstacles through permanent consultation between the governments, and never let conflicts prevail over the activities

of the Center that touched sensitive matters. It has also been to entrust to its executive arm - the Secretariat - the implementation of the consensual policy developed by the Board with sufficient flexibility to adapt to a changing environment and sufficient initiative not to become a soulless administrative machine. Owing to that, the Center was able to permanently take up new challenges, and show responsiveness to these challenges, which allowed qualifying the ISTC as "a second generation international organization."

One striking example of this responsiveness is the way the Center could launch in July of 1999 fourteen projects in support to Y2K problem prevention and remediation, while the Governing Board took the decision and pledged the funds in March of same year.

The Center has been able to spend more than \$45 million over 1999 for projects and activities serving its objectives. Two hundred one new projects were approved, for a total funding of \$42 million. Worth highlighting is the share of projects funded by ISTC Partners; with a total of \$8 million, it represents nearly 20% of total project funding, a trend confirming the attractiveness of the ISTC for many organizations, intergovernmental like CERN, and also tens of private companies.

With now over 230 projects completed, out of which 112 were completed during 1999, the challenge of exploiting the results of these projects, implementing the technologies developed, identifying commercial potential, and helping institutes to reach sustainability has become a focal point for Center activities. The "Valorization Task Force" established within the Secretariat in 1998 has focused its efforts in 1999 on better assessment of commercial value of technologies developed through ISTC-sponsored projects. The accompanying program of training project managers to business management has reached an unprecedented level.

The ISTC continued to improve its visibility in the rest of the world through a revamped Internet web page, its regular electronic bulletin sent to hundreds of correspondents, and continuous upgrading of information management and communication. The new release of thousands of "Promising Research Abstracts" on CD-ROM will again fertilize a new harvest of interest in the Center's activities.

The next Executive Director Statement will not be drafted from my pen. A few months before leaving the ISTC, I would like to express my sincere gratitude to all the people, who have constantly supported my action and contributed to make these seven years of my assignment the most exciting and rewarding challenge I ever met during my professional life. My thanks apply to the constant support I received from the Governing Board and government representatives.

I want to address my last words to my colleagues in the Secretariat: to my deputy directors and executive staff, who all contributed to maintain - through our weekly Management Committee meetings - the team spirit so essential for an organization mixing various activities and various cultures; to the heads of Branch Offices, who held firmly the ISTC flag in faraway republics; to all our staff, whose tireless dedication built the image of efficiency and reliability of the Center; and to my closest collaborators, who met the additional challenge of keeping me in high spirits in spite of day-to-day adversity.

Alain Gérard

Statement from the Chairman of the ISTC Governing Board



Dr. Ronald F. Lehman II, the Chairman of the Governing Board of the ISTC, is the Director of the Center for Global Security Research at Lawrence Livermore National Laboratory. Previously he was the Director of the U.S. Arms Control and Disarmament Agency, Assistant Secretary of Defense, Chief START Negotiator, and Deputy Assistant to the President of the USA. In 1995 he was named to the President's Advisory Board on Arms Proliferation Policy

Eight years have passed since the basic agreement establishing the ISTC was concluded. Six years have gone by since the ISTC first began operations. On each of its anniversaries the ISTC has highlighted its expanding list of accomplishments including greater investment, improved cooperation, more efficient management, and increasingly valuable projects. Both the Parties and the staff can be proud that this international organization, despite its relatively small size, has significantly enhanced international security and helped contribute to the greater well being of mankind. That is the ISTC's mission. It is performing that mission well.

Overall, the Parties have demonstrated that close cooperation ensures that the total effort is greater than the sum of the parts. Clearly, the security, economic, social, and policy challenges faced by the ISTC have not disappeared. Some of these challenges were more difficult than expected. For example, economic setbacks increased the need for investment in some states while reducing the resources available from other Parties. In the face of such difficulties and other persistent complexities, ISTC management improvements provided for more efficient use of existing funds. New initiatives such as the Partner Program brought into play additional sources of funding. And increased coordination with other multi-lateral and bilateral efforts further expanded benefits. This in turn helps make the case that additional ISTC resources can and will be used wisely.

Most importantly, the ISTC has kept its eye on the future, never forgetting its role in shaping a better, safer world for everyone. In one sense, progress has been evolutionary in that each year's program has built upon the accomplishments of the previous year. In another sense, steps such as the Partner Program and funding biological, chemical, and other non-nuclear proposals were more bold in expanding the value of the ISTC to all Parties. In every case, however, high, internationally recognized accounting, personnel, and scientific management standards have given the ISTC a solid foundation upon which to build.

Now we confront the Year 2000, a significant milestone that provides additional motivation to re-examine all our endeavors. Intense public discussion of the Year 2000 highlights the context in which the ISTC must function. Technology is advancing rapidly and human institutions are having difficulty keeping pace. Timely cooperation within the ISTC on the so-called Y2K computer «bug» was but one highly symbolic example of how ISTC Parties have worked together to mitigate risks associated with the complex technology that mankind has brought into an imperfect world. The contributions of ISTC projects to nonproliferation, arms control, the environment, energy, medicine, and science are considerable and demonstrate that cooperative international institutions can address the cascading effects of rapid technological change.

By most measures, the ISTC is a small organization. Still, the ISTC has now invested over a quarter of a billion dollars in the projects of over 30,000 scientists. Inputs, however, are less important than outputs. Our real measure of merit is not the amount of money transferred. The true value of the ISTC comes from the enhancement of international security and the strengthening of public health and well being that this intergovernmental organization makes possible. Organizing the best international scientific talent to expand the peaceful and open use of science while overcoming the downsides of technology is the core ISTC function. In the area of non-proliferation of weapons of mass destruction, the ISTC is unique in the way it performs that function.

The ISTC has become a benchmark by which many other programs are judged, but we must continue to raise our standards of excellence as we expand our accomplishments. On behalf of all members of the Governing Board, I wish to express our appreciation to the Parties, to their delegations, and to our ISTC staff in Moscow and the Branch Offices for their solid performance and personal sacrifices. Our year was saddened by the loss Dr. Paolo Fasella, the first Chair of the ISTC Governing Board. He helped create this fine organization whose continued success does him honor. Each of our eleven parties (representing some 25 countries) has its own priorities, but all have benefited from the progress already made.

Ronald F. Lehman II

Official Events

February

The Executive Director visited the International Atomic Energy Agency in Vienna and discussed the status and perspectives of ISTC/IAEA cooperation with Dr. S. Machi - Deputy Director General, Dr. V. Mourgov - Deputy Director General and other executive staff of the IAEA.

The Executive Director visited the Comprehensive Test Ban Treaty Organization and met Dr. W. Hoffmann - Executive Secretary, Dr. V. Kryuchenkov - Director of On-site Inspection Division, and Dr. M. Kebeasy - Director of International Data Center, to address issues related to coordination of R&D projects in technical areas of common interest.

March

The Governing Board marked the fifth anniversary of ISTC operations at a reception hosted at Hotel Ukraine in central Moscow.

At the invitation of the Russian Federation Ministry for Atomic Energy, the ISTC Governing Board visited the Russian Federal Nuclear Center (VNIIEF) at Sarov, meeting with VNIIEF Director R. Il'kaev and other members of VNIIEF management and the city administration.

April

The Executive Director visited the Science and Technology Center in Ukraine (STCU) for review of ISTC and STCU activities, toward coordinating and improving operations. STCU members included: Executive Director L. Owsiacki, Senior DED B. Atamanenko, DED A. DuCharme and DED F. Janouch.



President Nazarbayev of the Republic of Kazakhstan receives the ISTC Annual Report and Promising Research Abstracts from the Head of the ISTC Branch Office in Almaty, Mrs. Tomarovskaya

May

The Executive Director visited the Republic of Georgia for a review of ISTC activity in Georgia with executive branch and Parliament members, including President and Prime Minister E. Shevardnadze, State Minister V. Lordkipanidze, Minister of Foreign Affairs I. Menagarishvili, and several Chairs of Parliamentary committees. As an outcome of these meetings, the ISTC received formal notification from the Republic of Georgia of its Presidential Order "On Administration and Coordination of Cooperation in Creative Teaming of Georgian Scientists and Engineers with the ISTC," dated 30 June.

June

The Governing Board members and executive staff were received by the Russian Federation Minister of Health V. Starodubov, for discussions on future coordination of ISTC efforts in the areas of public health.

Delegations from the ISTC Parties and Secretariat were honored to be received at a reception hosted by the Ambassador of the Federal Republic of Germany to the Russian Federation, His Excellency Hans-Joerg von Studnitz, at his residence in Moscow.



The Executive Director meets with Republic of Georgia President and Prime Minister Shevardnadze

October

Delegations from the ISTC Parties and Secretariat were honored to be received at a reception hosted by the Ambassador of the United States of America to the Russian Federation, His Excellency James Collins, at his Spaso House residence in Moscow.

At the invitation of Siberian Branch of the Russian Academy of Sciences, the Governing Board members visited Novosibirsk and Akademgorodok, meeting with the Chairman of the Siberian Branch of the Russian Academy of Science - Academician N. Dobretsov, other members of the Presidium, and with leaders of the main scientific institutes in the Novosibirsk area. The Deputy Governor of the Novosibirsk Region represented the local government at the meetings.



The ISTC Executive Director and Kyrgyz Republic President Akaev discuss science and technology policy, following the latest agreement for an ISTC Branch Office in Bishkek

November

The Executive Director visited Minsk, Belarus, to sign a Protocol clarifying the status of the ISTC Belarus Branch Office with Academician A. Voitovich – President of the National Academy of Science; the Executive Director was received by S. Martynov – First Deputy Minister of Foreign Affairs.

The Executive Director met with in Brussels with Mr. Yves Sillard – Assistant Secretary General for Scientific and Environmental Affairs, NATO, and other science program directors for discussions on cooperation in seminar organization, training, and possible joint projects.

The Executive Director met with members of the Organization for the Prohibition of Chemical Weapons in The Hague, Netherlands: Director for Special Projects S. Batsanov, Director of Inspectorate Division I. Akiyama, and R. Trapp - International Cooperation Assistance, for general organization overviews and discussions on possible areas of cooperation.



United States Ambassador James Collins greets ISTC members at his residence

December

The Executive Director and Minister for Education, Science, and Culture of the Kyrgyz Republic T. Bekbolotov signed the Agreement establishing a Branch Office of the ISTC in Bishkek on 21 December. The signing ceremony was attended by B. Silaev - First Vice Prime Minister of the Kyrgyz Republic, other Kyrgyz officials, and representatives of the ISTC Parties. During his visit to Bishkek, the Executive Director met with President Askar Akaev for discussions on science and technology policy.

Accomplishments in 1999

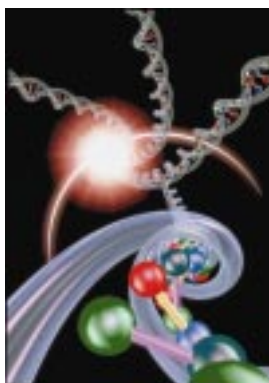
The Center, which began operations at its Moscow headquarters in early 1994, continues to consolidate its central role in nonproliferation – coordinating the resources and talents of numerous governments, national and international laboratories, and public and private sector organizations to provide CIS weapons scientists with material and logistic support for their peaceful research projects. All ISTC activities and programs encourage the integration of CIS scientists into the international community.

\$33.3 million in new funding for 146 projects through the Science Project Program; \$1.3 million for 14 projects through the Y2K Program; \$8.0 million for 41 projects through the Partner Program. Areas receiving special emphasis in 1999 include: environmental monitoring and remediation; nuclear power safety; disposal and safeguarding of nuclear materials; biotechnology.

Funding for travel support to over 1,350 scientific team members, who participated in conferences and technical meetings to enhance foreign participation in the development and execution of ISTC projects.

Addition of nineteen (19) new Partner organizations, bringing the total of ISTC Partners to 65. Partner projects have contributed nearly \$17 million to project funding since program inception in mid-1997.

Expanded Business Management Training courses for 220 project participants in seven (7) cities; focused commercialization training for Partner Project participants from VNIIEF in Sarov.



Direct grant payment to over 17,800 scientists and their team members at over 400 CIS institutes in 1999, amounting to over \$22.5 million.

Dedicated programs to enhance communication, travel and language capabilities at the Russian Nuclear Centers (Sarov and Snezhinsk) and in biotechnology institutes; first two Partner projects in the Russian Nuclear Centers.

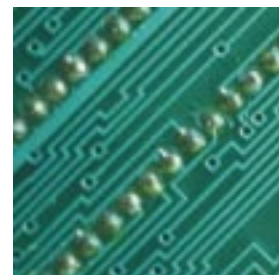
Visits by the ISTC Governing Board to the Russian Nuclear Center VNIIEF in Sarov, and to institutes in the Novosibirsk Region.

Five (5) scientific seminars and four (4) workshops and separate events dedicated to promoting ISTC technical excellence and opportunities for participation in Center programs.

Continuing support to the nonproliferation goals of the ISTC, expressed by President Shevardnadze of Georgia, and President Akaev of the Kyrgyz Republic, in meetings with the ISTC Executive Director.

Opening of a new Secretariat Branch Office in Bishkek, Kyrgyz Republic in recognition of Kyrgyz participation and valued contributions to peaceful science. Other Branch Offices are located in Minsk, Almaty, and Yerevan.

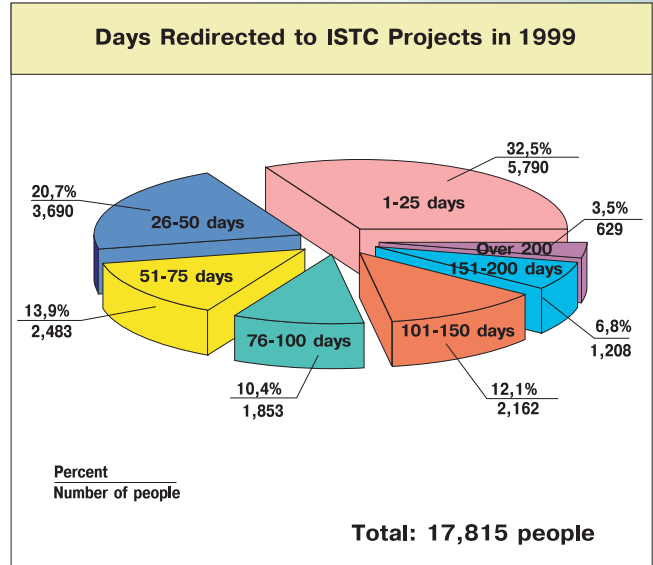
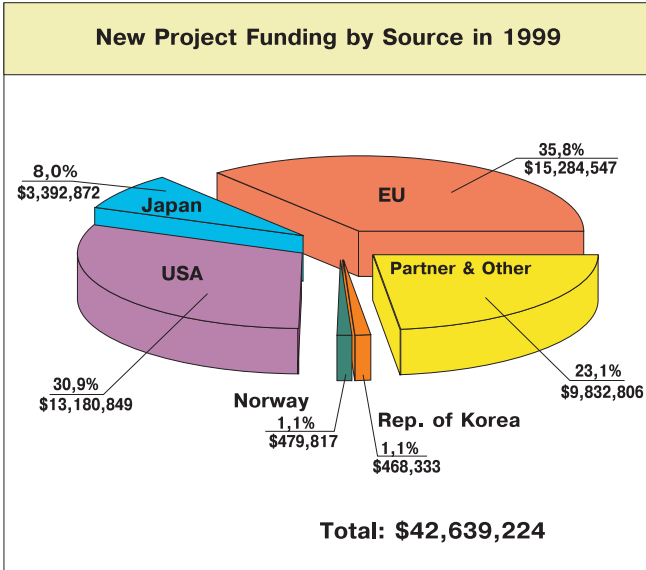
In March 1999, the Center marked its fifth anniversary of operations during the 18th Governing Board meeting in Moscow. Reflecting on ISTC progress during that period, the Parties noted the emergence of the Center as a mature and responsive organization whose effectiveness remains rooted in the multilateral, cooperative spirit in which the ISTC was founded. Cumulative funding for peaceful science projects surpassed *one-quarter billion* dollars in 1999, strengthening the support and opportunities the ISTC provides for former CIS weapons scientists.



1999 Financial Summary

To fulfill its nonproliferation mission, the ISTC Parties, Partners, and project Collaborators contribute financial, in-kind, and human resources to the Center. These resources are used to engage weapons scientists and technical team members in peaceful scientific projects through the Science Project

and Partner Programs. Additionally, the European Union, Japan, United States, Norway, and the Republic of Korea contribute to the Center Administrative Operating Budget and other ISTC programs. For detailed information, refer to the audited Financial Statements.



Science Project Program US\$33.3 M (146 projects)
 Y2K Readiness Program US\$1.3 M (14 projects)
 Partner Program US\$8.0 M (41 projects)
 New Funding Total US\$42.6 M (201 projects)

The ISTC paid 17,815 project participants US\$22,555,000 in grant payments for a total of 1,119,079 person-days of effort on ISTC projects in 1999

Funded and Completed Projects in 1999

Technology Area	Funded		Completed	
	Projects	US \$ Value	Projects	US \$ Value
Biotechnology and Life Sciences	49	11,138,817	19	2,602,500
Chemistry	7	1,073,020	2	70,000
Environment	24	5,240,086	22	7,915,990
Fission Reactors	20	5,252,789	16	6,509,600
Fusion	2	117,500	5	1,131,000
Information and Communications	8	1,227,321	1	650,000
Instrumentation	12	2,204,493	4	1,700,000
Manufacturing Technology	4	323,134	4	599,000
Materials	20	3,492,568	12	3,391,800
Non-Nuclear Energy	2	397,000	2	1,089,000
Other	3	410,000	0	0
Other Basic Sciences	2	431,996	0	0
Physics	25	6,745,460	16	4,686,760
Space, Aircraft and Surface Transportation	9	3,251,789	9	3,116,000
Y2K Readiness	14	1,333,251		
Total (Science Project, Partner, Y2K Programs)	201	42,639,224	112	33,461,650

ISTC Programs

Science Project Program

The Science Project Program is the most comprehensive nonproliferation activity conducted by the ISTC. Through this program, the ISTC solicits scientific project proposals from institutes throughout the CIS and provides funding and logistic support to project teams. Project teams receive written concurrence from the host country on whose territory their research will be conducted, and then develop and execute their project with foreign collaborating organizations. Foreign

collaborators ensure the project goals contribute to the state-of-the-art in the field, and that results will find applications to real problems in basic and applied research. The ISTC has funded hundreds of project teams through this program and directed the efforts of over 30,000 CIS researchers to peaceful science.

Terms for participation in the ISTC Science Project Program are codified in binding Project Agreements signed by the ISTC and

CIS institute management. Based on the Project Agreement, grant payments and equipment for project research are provided free of taxes and import duties to the CIS scientific teams. Project Agreements also stipulate terms for monitoring and auditing of the project and site, to ensure adherence to the financial and technical goals set out in the Agreement. The ISTC Secretariat and Parties' representatives regularly participate in monitoring project progress.

Activity in 1999

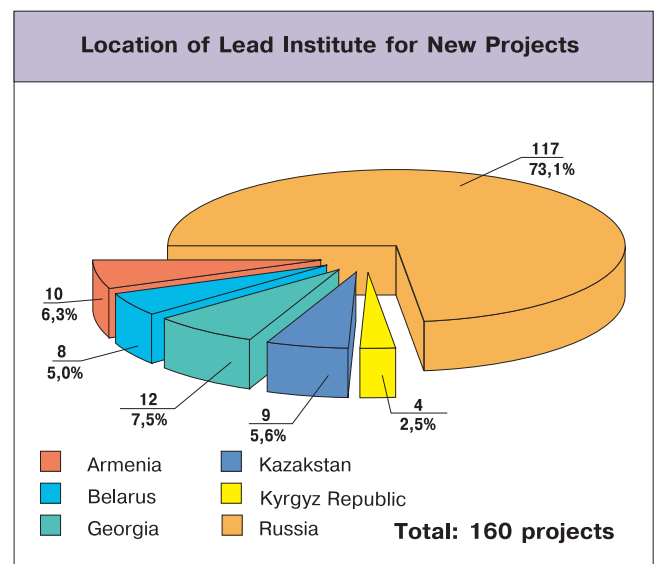
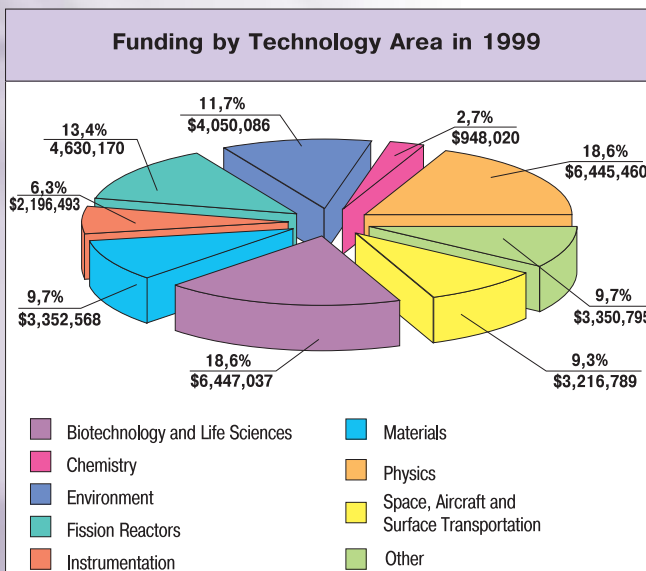
Four hundred (400) new project proposals were registered at the ISTC Secretariat.

Projects were reviewed and approved at three (3) ISTC Governing Board meetings, allocating \$34.64 million to 160 projects.

Over 200 technical on-site monitoring visits were conducted by ISTC Secretariat staff and members from the ISTC Parties; over 150 projects in 280 CIS institutes were subject to financial audits.

17,815 scientists and their technical team members were paid for at least one day of activity on ISTC projects; average number of days team members worked on an ISTC project: 63.

Contribution to Science Project and Y2K Readiness Program funding (thousands) by: EU: \$15,285; US: \$13,181; Japan: \$3,393; Norway: \$480; Republic of Korea: \$468; other: \$1,831.



Total ISTC Project Funding 1994-1999 (Science Project and Partner Programs)

Technology Area	Number of Projects	Funding
Environment Air Pollution and Control, Environmental Health and Safety, Modeling and Risk Assessment, Monitoring and Instrumentation, Radioactive Waste Treatment, Remediation and Decontamination, Seismic Monitoring, Solid Waste Pollution and Control, Waste Disposal, Water Pollution and Control	155	\$50.1 M
Physics Atomic and Nuclear Physics, Fluid Mechanics and Gas Dynamics, Optics and Lasers, Particles, Fields and Accelerator Physics, Plasma Physics, Radio-frequency Waves, Solid State Physics, Structural Mechanics	121	\$30.4 M
Fission Reactors Decommissioning, Experiments, Fuel Cycle, Isotopes, Materials, Modeling, Nuclear and Other Technical Data, Nuclear Instrumentation, Nuclear Safety and Safeguarding, Reactor Concept, Reactor Engineering and NPP, Reactor Fuels and Fuel Engineering	100	\$33.2 M
Biotechnology and Life Sciences Biochemistry, Cytology, Genetics and Molecular Biology, Ecology, Immunology, Microbiology, Nutrition, Pathology, Pharmacology, Physiology, Public Health, Radiobiology	138	\$29.7 M
Materials Science Ceramics, Composites, Electronic and Photonic Materials, Explosives, High Performance Metals and Alloys, Materials Synthesis and Processing	86	\$23.2 M
Instrumentation Detection Devices, Measuring Instruments	59	\$17.7 M
Space, Aircraft & Surface Transportation Aeronautics, Astronomy, Extraterrestrial Exploration, Manned Spacecraft, Space Launch Vehicles and Support Equipment, Space Safety, Spacecraft Trajectories and Flight Mechanics, Surface Transportation, Unmanned Spacecraft	51	\$14.9 M
Fusion Hybrid Systems and Fuel Cycle, Inertial Confinement Systems, Magnetic Confinement Systems, Plasma Physics	28	\$8.5 M
Information and Communications Data Storage and Peripherals, High-Definition Imaging and Displays, High Performance Computing and Networking, Microelectronics and Optoelectronics, Sensors and Signal Processing, Software	33	\$8.0 M
Chemistry Analytical Chemistry, Basic and Synthetic Chemistry, Industrial Chemistry and Chemical Process Engineering, Photo and Radiation Chemistry, Physical and Theoretical Chemistry, Polymer Chemistry	31	\$6.9 M
Non-Nuclear Energy Batteries and Components, Electric Power Production, Fuel Conversion, Fuels, Geothermal Energy, Heating and Cooling Systems, Miscellaneous Energy Conversion, Solar Energy	14	\$4.3 M
Manufacturing Technology CAD and CAM, Engineering Materials, Machinery and Tools, Manufacturing, Planning, Processing and Control, Plant Design and Maintenance, Robotics, Tribology	16	\$2.1 M
Other Basic Sciences and Technology Agriculture, Building Industry Technology, Electrotechnology, Geology, Natural Resources and Earth Sciences	10	\$1.2 M
Total	842	\$230.2 M

Partner Program

The Partner Program provides opportunities for private industry, scientific institutions, and other governmental or non-governmental organizations to fund research at CIS institutions via the ISTC. Partners benefit from the ISTC infrastructure which permits tax-free direct payments to CIS project teams and duty-free import of project equipment. CIS institutes and project teams benefit from their close cooperation with foreign Partners and the application of their technical skills to important and current scientific and industrial problems.

New Partner organizations are introduced to the ISTC by the ISTC Party on whose territory the Partner is located. Full information on becoming an ISTC Partner is available from the Parties, ISTC Secretariat, and is located on the ISTC website.

Summary of Advantages available to ISTC Partners:

- Established ISTC project management infrastructure
- Exemption from all taxes and customs duties on payments and imports
- Direct payments in US\$ to project scientists
- Financial control and regular audits, in compliance with GAAP
- Project agreements stipulating rights and privileges of the Partner and Institute
- Host government support and pre-approval for projects
- Strict protection of business confidential information

Activity in 1999

Nineteen (19) new Partner organizations joined the ISTC; total Partners at the end of 1999: 65.

Forty-one (41) Partner projects representing \$8.0 million were approved for funding, and eighteen (18) Partner Agreements representing \$2.8 million were signed. Total Partner contribution since program inception exceeds \$16.5 million.

List of new ISTC Partners in 1999

- Japan Atomic Energy Research Institute,
Tokyo, Japan
- Princeton University/Program for Nuclear Policy
Alternatives, Princeton, NJ, USA
- Russian-American Nuclear Security Council,
Princeton, NJ, USA
- Oak Ridge National Laboratory,
Oak Ridge, TN, USA
- Schlumberger/Schlumberger Cambridge
Research Center, Cambridge, England, UK
- Komatsu Ltd., Kanagawa, Japan
- US Air Force/The European Office of Aerospace
Research and Development, London, UK
- Lambda Physik GmbH, Gottingen, Germany
- Korea Atomic Energy Research Institute,
Yusung Taejon, Korea
- US Department of Health & Human Services/
NIH/National Cancer Institute,
Bethesda, Maryland, USA
- Lockheed Martin Corporation/Lockheed Martin
Advanced Environmental Systems, Inc.,
Arlington, VA, USA
- Mitsui Engineering & Shipbuilding Co., Ltd.,
Tokyo, Japan
- SNECMA, Paris, France
- Asahi Chemical International, Ltd., Tokyo, Japan
- Schein Pharmaceutical, Inc., Florham Park, NJ, USA
- Defense and Evaluation Research Agency,
Malvern, UK
- ENEA, Rome, Italy
- TESIS Software, Leuven, Belgium
- Lockheed Martin Corporation/Lockheed Martin
Energy Systems, Inc., Oak Ridge, TN, USA



Seminar Program

The ISTC periodically organizes and conducts seminars toward heightening the awareness of CIS scientific potential and improving the cooperation between foreign and CIS scientists. Seminars strengthen ISTC project proposals through technical exchanges at the earliest stages of proposal development. Seminar topics are of broad technical interest and support the objectives of the Center and of other international nonproliferation initiatives.

Activity in 1999

Joint NATO / ISTC Workshop on Environmental Aspects of Converting Chemical Weapons Facilities

Date: 07-10 March
Place: Spiez, Switzerland
Participants: 50

Conversion of Scientific Research in Belarus

Date: 17-22 May
Place: Minsk, Belarus
Participants: over 200

Research and Public Health Priorities in Russia and the CIS

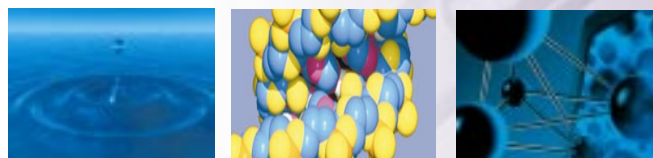
Date: 31 May - 01 June
Place: Brussels, Belgium
Participants: over 70

Scientific Advisory Committee Seminar on Large-Scale Area Remediation

Date: 21-25 June
Place: Snezhinsk, Russia
Participants: 80

Joint ISTC / IPP / NATO Workshop on Assessment of Sponsored Biological Research in Russia

Date: 31 August - 03 September
Place: Novosibirsk, Russia
Participants: over 200



Business Management Training Program

The Business Management Training Program is conducted by the ISTC Secretariat to assist ISTC project managers in developing their general business knowledge, presentation skills, and understanding of intellectual property rights. The training complements the technical aspects of the ISTC project, toward helping the project manager in future commercialization of the project results and in securing funding from sources beyond the ISTC. The program is conducted at regular intervals in locations convenient to ISTC project managers. Training typically spans several days and covers practical topics of interest for ISTC project managers and their team members: business planning, project and financial analysis for securing investment, marketing of innovative products, and strategies for effective presentations to the business community.

Activity in 1999

Eight (8) regional training courses, attended by nearly 220 ISTC project managers and leading specialists from 155 projects representing more than 75 CIS institutes; courses conducted in the cities of Kharkov, Yerevan, Pushino, Moscow, Sarov, Snezhinsk, and Obninsk.

Training session "Problems of Technology Commercialization and Intellectual Property Protection" within the first international workshop "Doing business in Russia: Technology Transfer and New Opportunities for International Cooperation" - as a supporting event of the International Aviation & Space Salon "MAKS-99" (Moscow Air Show).

Proto-business training in cooperation with General Atomics for project teams developing three new technologies at VNIIEF, VNIITF, Kurchatov Research Center, and NPO Lutch.

Three (3) training courses for nearly 300 new Project Managers and accountants at the ISTC offices to assist them in executing their ISTC projects.

Project specific training for 28 project participants in cities throughout the European Union and United States.

Five-month English language training course for VNIIEF project participants in cooperation with Sarov training institute.

Four language courses on qualification improvement for more than 15 interpreters from VNIIEF, VNIITF, institutes in Akademgorodok, and biotechnology institutes.

Publication of ISTC training manuals on Business Planning and Presentations to International Scientific Journals.

Patent Support Program

The Patent Support Program recognizes the contribution of ISTC projects and their participants to new inventions and ideas that have commercial value. The ISTC Secretariat

administers this program to provide financial support to CIS institutes. Program funds are used to pay costs associated with the initial stages of patenting.

Activity in 1999

The Patent Review committee received 44 applications and provided financial support to 28 patent applications arising from ISTC project results.

Travel Support Program

The ISTC strongly encourages CIS scientific teams to develop their project proposals with the participation of foreign collaborating organizations. The Travel Support program fosters collaboration by reimbursing travel and related expenses for CIS scientists who wish to continue technical consultations on the proposals they have submitted to the ISTC. Program funds also cover travel expenses

for scientist participation in international meetings and conferences relevant to their specialization.

Funding for the program is provided by all Parties who contribute to the ISTC operating budget, with voluntary contributions supporting specific technical areas and CIS institutes.

Activity in 1999

Scientists and technical team members were funded on 245 individual trips to collaborating organizations, seminars, and conferences located worldwide.

Grants were provided for two groups of CIS scientists to participate in international seminars in Sarov and Dimitrovgrad.

Promising Research Abstract Program

Through its contacts with hundreds of research institutes and centers throughout the CIS, the ISTC has uncovered many innovative technical projects either planned or now underway which conform to the nonproliferation objectives of the ISTC. The ISTC has collected brief descriptions and contact information for these projects into a Promising

Research Abstract (PRA) database toward the goal of publicizing the work and capabilities of CIS researchers and strengthening foreign participation in these projects. The PRA database is distributed on request to interested organizations and is available to the public on the ISTC website. The PRA Program is funded by the Government of Japan.

Activity in 1999

Total of 1410 abstracts (Version 3) were collected, formatted and distributed on CD-ROM and via the ISTC website.

Additional databases of 100 CIS institutions and interested non-CIS collaborating organizations were compiled and processed.

Japan Workshop Program

The ISTC and the Science and Technology Agency of the Government of Japan regularly organize workshops to highlight technologies and topics of global significance and to facilitate the development of project proposals corresponding to these topics. The Workshop fund covers travel expenses of CIS

scientists who participate in these workshops, which are held in cities throughout Japan. Schedules and topics for each workshop are determined by the Government of Japan in consultation with the ISTC Secretariat and relevant CIS agencies and organizations.

Activity in 1999

Information Technology and Computer Software

Date: 12 January
Participants: CIS 15 / Japan 76

Dielectrics and Ferroelectrics in Device Applications

Date: 01 November
Participants: CIS 5 / Japan 30

Y2K Program

The ISTC established the Y2K Program in March 1999 following consultations with special Y2K Competence Centers in the Ministry of Atomic Energy, Ministry of Fuel and Energy, and the Ministry of Emergency Situations of the Russian Federation, and with other national and international agencies. The program addresses the security and safekeeping of nuclear and other hazardous materials in CIS Party territories, providing funds for equipment,

materials, and technical expertise, and support to Y2K crisis centers.

Funding for this program totals \$1.4 million and is provided by the European Union, Japan, United States, and Norway. In addition, the European Union has pledged \$500,000 for equipment purchases supporting Y2K remediation efforts already identified by the ISTC.

Activity in 1999

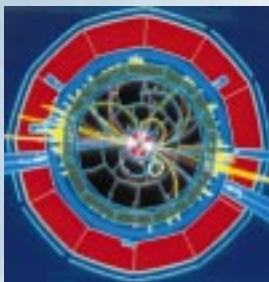
Approval and funding for 14 projects supporting Y2K integrity at nuclear power stations, nuclear fuel cycle enterprises, chemical storage and biological facilities.



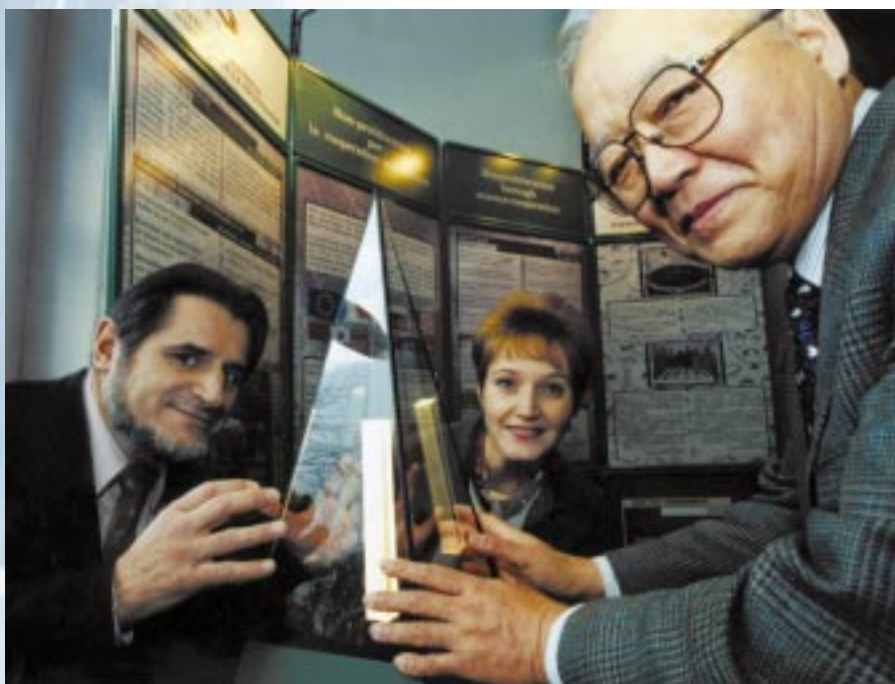
Center Highlights in 1999

CERN - ISTC: Partnership in Progress

In 1999, the European Center for Nuclear Research (CERN) continued its active support, participation, and funding for ISTC projects in high energy physics. CERN is now Partner or Collaborating organization on more than 20 continuing or planned ISTC projects.



On Monday, 22 November, major collaboration contracts were finalized between CERN and the ISTC. These contracts, worth more than 12 million Swiss Francs, are a large step forward in the cooperation between these two institutions. The agreement, which almost doubles the financial support for the ISTC Partner Program, will result in new technical equipment for CERN's latest project, the Large Hadron Collider (LHC). The two organizations finalized the contracts within the framework of the ISTC Partner Program which was developed in 1997. There are almost 60 Partners, e.g. electrical, biomedical or chemical industries or research centers such as CERN. The contribution of the contracts with these Partners amounts to about 14 million US Dollars. With the contracts finalized, almost 13 million Swiss Francs will be added to this sum.



ISTC members displaying lead-tungstate crystal provided to CERN through ISTC Partner Program

"Clearly the ISTC has come of age. The confidence of governments, the analysis of experts and the reviews of independent professionals have documented the effective operation of the Center. That is why the High Energy Physics Community at CERN has chosen to entrust to the Center major research and development projects of critical importance to the timely construction of the LHC detectors. We are looking forward to state of the art contributions from our Russian and other NIS colleagues in the years to come with the effective mediation and support of ISTC."

Roger Cashmore -
Research Director, CERN

Specialists from the Russian Federal Nuclear Center - VNIITF (Snezhinsk), as a part of ISTC Project #728, have developed unique technology to create an integral part of a CMS detector for future use at the CERN Large Hadron Collider. The first equipment was delivered and successfully tested in summer. At the December Board Meeting on CMS Collaboration, VNIITF was accepted as Associate Collaboration Member.

ISTC Partners: Helping Transition in Russian Nuclear Cities

In 1999, two ISTC Partners provided the first commercial funding for peaceful scientific research in the Russian Federal Nuclear Centers at Snezhinsk and Sarov.

Mobil Technology Company Launches Contracted Research in Russian Nuclear City



The ISTC announced 17 September that Mobil Technology Company signed a \$330,000 Partner Project Agreement with the All-Russian Institute for Theoretical Physics (VNIITF) and two institutes of the Russian Academy of Science. VNIITF is located in Snezhinsk, Russia - the nuclear city formerly known as Chelyabinsk-70. The new agreement addresses the modeling of oil flow in porous media, and will provide Mobil Technology with sophisticated new mathematical solvers used in oil well optimization.

The agreement represents one of the earliest investments by a commercial organization in contracted research

at VNIITF, and the first investment at VNIITF through the ISTC Partner Program. Dr. Vadim Simonenko - Professor and Deputy Science Director at VNIITF remarked: "We are pleased that Mobil Technology Company recognizes the broad and excellent scientific talent at VNIITF, and will be able to apply the skills of our scientists to its business interests."

"The ISTC was central in identifying the technical talent available at VNIITF and other CIS institutes. The Partner Program has proven to be a useful framework for contracting with scientific teams."

Dr. Michael B. Ray -
Manager,

Upstream Strategic Research at Mobil Technology

General Atomics Signs Agreement to Commercialize Russian Battery Technology

General Atomics announced 20 May that it has signed an Agreement with the All-Russian Research Institute of Experimental Physics (VNIIEF) in Sarov, Russia, and ISTC to engage in research and development work that will lead to commercialization of high temperature battery technology. Sarov was formerly known as Arzamas-16, one of the Russian "closed cities" which worked on nuclear weapons development.

The high temperature fluoride battery technology was developed under an ISTC grant in 1995 by Dr. Alexander Potanin, a solid-state physicist at VNIIEF who formerly worked on nuclear weapons development. His technology achieved widespread recognition through awards at prestigious international competitions in Brussels and elsewhere. During 1998 and 1999, General Atomics and VNIIEF confirmed the commercial potential of the technology for deep-well oil drilling applications. In April 1999 an Agreement on the technology was signed through the ISTC. The Agreement grants exclusive manufacturing rights on the battery to VNIIEF and worldwide distribution rights to General Atomics.



VNIIEF specialists assembling batteries in inert gas chamber

Note: Express permission to publicize Partner project information provided by Mobil Technology Company and General Atomics.

SRC Vector: Basis for International Cooperation in Biotechnology

Over the last several years, ISTC support to the State Research Center of Virology and Biotechnology "Vector" has multiplied, and the high quality of scientific research conducted by Vector specialists has led to joint projects with such US Partners as the National Academy of Science, the National Institute of Health, the Cooperative Threat Reduction Program (CTR), the Defense Advanced Research Projects Agency (DARPA), and the Department of Agriculture.



"I have a very high regard for the ISTC as the basis for Vector's international cooperation - the scale of which, thanks to our interaction with numerous ISTC Partners, is now considerable. Biotechnology problems resolved in ISTC projects are of global significance and are of direct relevance to the entire world community."

Prof. Lev S. Sandakhchiev -
member of the Russian Academy
of Science and General Director, SRC Vector



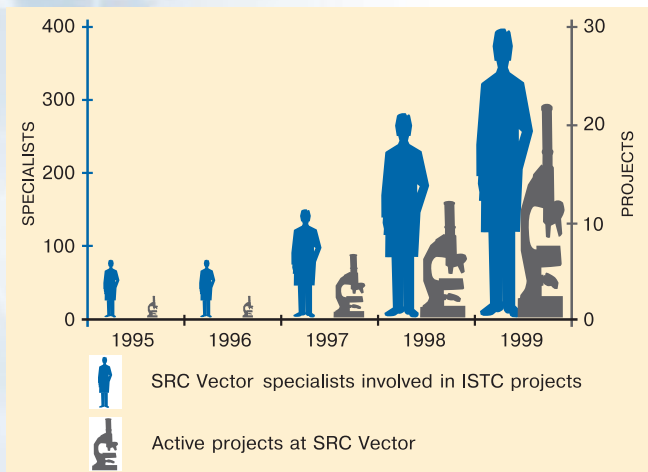
Some ISTC projects at Vector dealing with highly dangerous pathogens demand special precautions

With its unique research and experimental facilities, SRC Vector performs fundamental research in molecular biology, virology, genetic engineering, biotechnology, molecular epidemiology, theoretical virology, ecology, and bio-aerosol research. All Vector projects performed under the auspices of the ISTC are directed towards development of effective methods of treatment, prophylaxis and diagnosis of virus infections, including basic research into the study of emerging and re-emerging infections (hepatitis C virus isolates, hemorrhagic fever with renal syndrome, Crimean-Congo hemorrhagic fever,

monkeypox virus, Marburg virus, Ebola virus, and others).

In 1995 Vector specialists began working on their first two ISTC projects. Project #132-95, involving the development of a hepatitis A vaccine, was completed in 1998. Today, Vector is the sole producer of this vaccine in Russia. ISTC Project #133-95, directed towards development of an oral live measles vaccine, continues to be implemented under a new ISTC project, #1035, where studies are concentrating on the search for technology to develop a micro-encapsulated formulation of the vaccine.

Growth of ISTC-Vector Activity



Joint ISTC-Vector seminars attract renowned scientists from Russia and international community

■ **December 1994**

Joint International Symposium on Development of Vaccines Against Viral Infection

■ **September 1999**

Assessment of Sponsored Biological Research in Russia for the New Millennium

Reaching New Audiences

In addition to regular technical seminars, members of the ISTC actively promote the Center's goals and programs at international workshops with the support of local organizations.



ISTC staff conducted workshops on the radiation legacy in the CIS (Neuherberg, Germany), radioactive waste management (Krasnoyarsk, Russia), and biotechnology (Wiesbaden, Germany). The Finnish Ministry of Trade and Industry and the National Technology Agency (TEKES) organized and hosted a one-day meeting dedicated to ISTC activities for representatives from industry, universities, business incubators and technology centers (Helsinki, Finland).



Participants at the German-Russian ISTC Biotechnology Workshop, Wiesbaden



US Senator Patrick Roberts viewing anthrax cultures used in infection monitoring (Project #1215), during his August visit to the State Scientific Center for Applied Microbiology at Obolensk



In the framework of ISTC project #A-301 researchers from Yerevan State University and their American colleagues from Illinois University (Chicago) are solving problems in helix-coil transition physics in DNA. Further study of the interaction of genetic apparatus with metal based chemical compounds will open new strategies on the synthesis of highly effective anti-tumor medicines. Pictured, ISTC Project Manager Prof. Samvel Arutunian and collaborator Prof. Albert Benight at a scientific seminar in Illinois, USA

ISTC Radiation Monitoring Extends to Sea of Japan



Regular observation of radioactivity in the Sea of Japan is essential to prevent contamination of seafood, which is a traditional element in the diet of the surrounding countries. Through ISTC project #1389, specialists from the Far Eastern Regional Hydrometeorological Research Institute (FERHRI), the Moscow Engineering Physics Institute (MEPhI) and the Japan Atomic Energy Research Institute (JAERI) investigate the migration behavior of radionuclides and related oceanographic characteristics in the Sea of Japan.

The Russian specialists have demonstrated unique, high-precision technology to measure radioactivity deep underwater and on the seabed using equipment supplied by JAERI. In May and June 1999, project participants and their Japanese colleagues conducted a joint expedition in the central part of the Sea of Japan aboard the Russian research vessel Professor Khromov. An autonomous buoy was moored to measure current and two profiling drifters were deployed. For a period of three years these drifters will rise to the surface at intervals of several days to transmit data via satellite, for Japanese and Russian scientists to obtain valuable, real-time seawater temperature and salinity measurements.

"The migration of radionuclides remains a topic of active concern and interest to countries surrounding the Sea of Japan. The Japan Atomic Energy Research Institute continues to research radioactive migrations with the participation of Russian experts through the effective framework offered by the ISTC, and in 2000 plans to provide additional financial and technical support to the ISTC project."

Hiroshi Tani -
Director General of Mutsu Establishment, JAERI



Leading expert of project #1389 displaying profiling drifter

Intel Grant Recognizes ISTC Project Excellence



At the Medical Physics and Ecology Laboratory of the Moscow Engineering Physics Institute (MEPhI), participants of ISTC Project #1079 are developing a system to obtain and process data from the diagnostics departments of oncology clinics, which can speed recommendations concerning radiation therapy. Since full and complete research is only possible in this field with a powerful computer base, an ISTC team from MEPhI responded to an April competition announcement from Intel Corporation. Against stiff opposition, the ISTC team from MEPhI was awarded the grant, worth over \$90,000.

Equipment in the new computer laboratory allows researchers to process information obtained from clinics over the Internet at a speed 20 times faster than Pentium 200 processors. The scientific team can now fully realize the potential of the software, created in the course of work on the ISTC project, supporting efficient interaction in the "doctor-physicist-doctor" chain.



ISTC Project Manager receiving congratulations from Intel at the laboratory opening

"Our company takes great pleasure in having passed this computer class into the hands of specialists, who are able to actively apply this powerful instrumentation for the realization of genuine scientific research, the significance of which is further confirmed by the participation of MEPhI Faculty #1 in projects of the International Science and Technology Center."

Kamil Isaev -
Academic Program Director, Intel Corporation

ISTC Project Team wins \$250K International Tender

An ISTC project team won an international tender to supply a new Isotope Separator / Neutral Particle Analyzer (ISEP/NPA) to the Joint European Torus (JET) facility. The Separator / Analyzer was developed by a team of scientists from the Ioffe Physical Technical Institute (St. Petersburg, Russia) working in the framework of ISTC project #409. The tender agreement with JET, signed in January 1999, provides in excess of \$250,000 to the project team.

The scientists are now completing the second of a three-year ISTC project that is devoted to one of the major problems of plasma diagnostics in thermonuclear reactors. Investigation of alpha particle distribution required a new kind of neutral particle analyzer that was designed by the scientific team in the scope of project

#409. Preliminary results showed excellent parameters of new NPAs that very well met the unique requirements of JET. This was key in winning the JET tender.

In accordance with the JET contract, the new ISEP/NPA will be delivered to Oxford at the end of 1999. Following delivery, Ioffe experts with their colleagues from Great Britain will conduct the first experiments with the use of the ISEP/NPA on JET - the world's largest fusion facility.

"Only ISTC grants gave us the opportunity to continue our research and to win this tender."

Dr. Sergey Petrov -
ISTC Project Manager,
Ioffe Physical Technical Institute

Projects Funded in 1999 (Science Project and Y2K Programs)

No	Short title	Lead Institute	Approved funding, US \$	Funding Parties
Biotechnology and Life Sciences			6,447,037	
0536	Pre-clinical Test of Immunocompounds	Institute of Bio-organic Chemistry (Branch)	500,000	US
0622-2	National Virus Collection (Continuation)	Ivanovsky Institute of Virology	80,000	US
0623-2	Europlum Fluorescence Sensitizer	State Research Institute of Biological Instrument-Making	252,141	US
0972	Electrochemical Regenerator for Artificial Kidney	Electromechanical Plant «Avangard»	280,343	US
1035-2	Microcapsulated Form of the Live Measles Vaccine	NPO Vector/Institute of Molecular Biology	350,000	US
1055-2	Biosensors for Organophosphorus Compounds	Research Center of Molecular Diagnostics and Therapy	250,000	US
1080	Automated Ultrasound Hyperthermia Complex	Rostov State University/Scientific Design and Technological Department «Piezopribor»	30,000	US
1163	New Bioinsecticide	Institute of Highly Pure Biopreparations	250,000	US
1176d	Therapy with Immunogens	GosNIIPM (Applied Microbiology)	30,000	US
1263	Construction of Antitumor Strain	Institute of Biomedical Chemistry	313,600	US
1264	Test System for Pathogens Analysis	Research Center of Molecular Diagnostics and Therapy	366,250	US
1266	Eubiotic Drugs	NPO Vector/Institute of Aerobiology	161,335	US
1279	Disease Treatment with Local Heating	VNIITF	280,000	EU
1291d	Genome Structure of Hemorrhagic Fever Virus	NPO Vector/Institute of Molecular Biology	30,000	US
1344d	Microbiological Corrosion	GosNIIPM (Applied Microbiology)	30,000	US Korea
1346	Microbial Conditions in Spacecraft	Institute of Biomedical Problems	397,000	EU
1352	Technogenic Risk for Population in Nuclear Environment	VNIITF	498,000	EU
1379d	Symbol Sequences for Genetic Code Analysis	MIFI	30,000	EU US
1433	Lower Limb Prosthetics	VNIITF	220,000	EU US
1462	New Immuno- and Neuromodulatory Peptides	Institute of Bioorganic Chemistry (Branch)	298,998	US
1489	Detector for Medical Radiology	Bogoroditsk Plant of TechnoChemical Products	50,000	EU
A-092d	Culture Collection of Microorganisms	Institute of Microbiology	30,000	US
A-301d	Chromosome Aberrations Caused by Antitumor Preparations	Yerevan State University	30,000	US
A-326	Cyclodextrins in Waste Treatment	Institute of Microbiology	150,000	EU Korea
B-323	Image Processing for Cytology	Research Institute of Radiation Medicine and Endocrinology	257,000	EU
G-284	Biotransformation of Carcinogens	Institute of Plant Biochemistry	48,230	US
G-308	Medicine for Atopic Dermatitis Treatment	Kutateladze Institute of Pharmacochimistry	46,700	US
G-339	Diagnostics of Isotope Processes for Breath Testing	Institute of Stable Isotopes	300,000	US
G-342	Effect of Spirulina Platensis on Iodine in Cells	Institute of Physics (Ge)	88,000	US
G-348	Heavy Metal Transformation on Microbial-Mineral Surfaces	Institute of Physics (Ge)	119,200	EU
K-224.2	New Biopreparation for Potato Protection	Institute of Microbiology and Virology	200,000	US
KR-156.2	Bioconversion of Organic Raw Materials	Institute of Chemistry and Chemical Technology	480,240	US
Chemistry			948,020	
0932	Cleaning of Gases by an E-beam	Keldysh Research Center	200,000	US
1135	Fluoride Materials Production Technology	Russian Sci. Center of Applied Chemistry	200,000	US
1332	Metallurgy with Non Water Liquids	Mendeleev Chemical Technological University	218,020	EU
1498	System of Thermal Safety of Chemical Technologies	Russian Sci. Center of Applied Chemistry	300,000	US
K-255d	Catalytic Pheromone Synthesis	Institute of Organic Catalysis and Electrochemistry	30,000	US
Environment			4,050,086	
0101-3	Ocean Nuclear Data Base (Phase 3)	CDB LAZURIT	225,000	EU Norway
0576-2	Waste Disposal in Uranium Mines	VNIPI Promtechnology	336,000	US
0627-2	Airborne monitoring	Gromov LII (Flight Research Institute)	200,000	EU
1160	Fluid Actinides Extraction	Khlopin Radium Institute	140,000	EU
1216	Railway Transportation Safety	VNIITF	250,000	US
1222	Surface Decontamination by Solution	VNIINM Bochvar	450,000	Japan
1328	Ecological Effects of Rocket Launch	Institute of Applied Geophysics (Fedorov)	330,000	EU
1353	Regulatory Documents for Radwaste Storage	VNIPI Promtechnology	260,000	EU
1370d	Radwaste Immobilization Using Microspheres	Khlopin Radium Institute	30,000	EU US
1404	Radioactive Contamination of Yenisey River	NPO Typhoon	350,000	EU Norway
1429	Biological Soil Detoxification	Research Center of Toxicology and Hygienic Regimentation of Biopreparations	155,000	EU US
G-309	Combined System for Environmental Monitoring	Tbilisi State University	147,800	US
K-223	Decontamination of Stainless Steel	National Nuclear Center of the Republic of Kazakstan/ Institute of Atomic Energy (2)	300,000	EU Korea
K-225d	Heat Effects on Rock Salt	Kazak National University/Scientific Research Institute of Experimental and Theoretical Physics	30,000	US
K-229d	Environmental Influence on Children's Mortality	Research Center for Pediatrics and Children's Surgery	30,000	US
K-237	Remediation of Contaminated Soils	Kazak Research Institute of Fruit Growing and Viticulture	190,000	EU US Korea
K-298	Ecological Map of the Central Kazakstan	IPCON (Institute of Problems of Complex Development of Mineral Resources)	313,100	EU
K-414	Data Base for Semipalatinsk Test Site	National Nuclear Center of the Republic of Kazakstan	33,186	EU
KR-242d	Seismic Risk in Chui-River Valley	Kyrgyz Scientific and Design Construction Institute	30,000	EU
KR-310	Lidar Monitoring in Central Asia	Kyrgyz-Russian Slavonic University	250,000	EU US
Fission Reactors			4,630,170	
0515-2	Molding Technique for Scintillators	Institute of High Energy Physics (IHEP)	400,000	EU Other
1003	Monitoring of Electrical Equipment of NPPs	Russian Institute of Scientific Instruments	300,000	US
1140	Publishing of Monograph on Pulse Reactors	VNIIEF	10,000	US
1192	New Concept of Reactor Decommissioning	NIKIET (ENTEK)	250,000	EU
1261	Turbogenerator for Helium Cooled Reactor	OKBM	350,000	EU
1289	Gamma-Sources Based on Spent Europium Control Rods	NIIAR (Atomic Reactors)	77,270	EU
1316	Radiation in Nuclear Fuel Cycle	VNIINM Bochvar	102,900	US Norway
1318	High Purity Plutonium-244	VNIIEF	450,000	US Norway
1321	ROX-Fuel Fabrication	FEI (IPPE)	700,000	Japan
1356	Model for Nuclear Materials Control and Accounting	FEI (IPPE)	400,000	EU
1357	Oxide Fuel Pins under Extreme Conditions	NIIAR (Atomic Reactors)	400,000	Japan
1418	Lead Cooled Reactor with Inherent Safety	NIKIET (ENTEK)	80,000	EU Korea
1443	Plutonium Utilization Scenarios	FEI (IPPE)	410,000	EU
1449	Safe Transportation of Excess Plutonium	VNIITF	400,000	EU
1472	Radiation Resistant Optical Fibers	TRINITI	300,000	EU
Fusion			117,500	
0159-4	GLOBUS-M (Add 3)	Ioffe Physico-Technical Institute	80,000	US
1253	Stability and Transport Phenomena in Plasma	FIAN Lebedev	37,500	US
Information and Communications			804,914	
0922d	Wave Tube for TV Transmitter	NPO Toriy	30,000	EU
1287	Fortran-90 Software for Matrix Algebra	VNIIEF	145,434	EU
1342	Information System for Tumors Center	NIIT (Pulse Techniques)	299,480	US
1377	Regional Information System on Biotechnology	Volgo-Vyatka Center of Applied Biotechnology	300,000	EU US
1478d	Educational Package on Solid State Physics	VNIIEF	30,000	US

No	Short title	Lead Institute	Approved funding, US \$	Funding Parties
Instrumentation			2,196,493	
0429-2	Quality Control of Chemicals	Research Institute of Chemical Agents for Plant Protection	284,860	US
1023d	Antenna Areas for Radars	Institute of Radioengineering and Electronics (IRE RAS)	30,000	EU
1050	Mobile Device for Explosives Detection	Khlopin Radium Institute	256,000	EU US
1280	Femtosecond Diffractometry	Institute of General Physics	300,000	US
1349	Instrumentation for Solar Activity Monitoring	Sci. Engineering Center SNIIP	272,481	US
1369	Acoustic Seismic Monitoring	VNIIEF	300,000	Japan
1482	Acoustic Method for Underwater Piping Monitoring	VNIIEF	305,888	EU
A-100d	Source of Monochromatic Radiation	YerPhi	30,000	US
A-177	Stepping Motors	ASUP Ltd.	124,000	US
G-305d	Detection of Organic Materials with Neutrons	Scientific-Research Institute of Automatic Systems «Skhivi»	30,000	US
K-236	Tissue Equivalent Emergency Dosimeter	National Nuclear Center of the Republic of Kazakhstan/Institute of Nuclear Physics	263,264	US
Manufacturing Technology			313,134	
1084	Diffusion Zinc Planting of Steels	VNIIEF	142,534	US
1285d	Metallurgical Mini Plants	MISIS (Steel and Alloys)	30,000	EU
1337	New Prosthesis Designs	NPO Energia	140,600	EU
Materials			3,352,568	
0466	Rubber x-ray Protective Material	VNIIEF	100,000	US
0638-2	Zinc and Cadmium Chalcogenides	Vavilov State Optical Institute (GOI)	100,000	EU
0791	Surface Modified Diamonds	Technological Institute	100,000	US Other
1153	Superplastic Processing of Intermetallic Alloys	Institute of Metals Superplasticity Problems	300,000	EU US
1231	Plasma Technology for Thin Films Production	VNIITF	300,000	US
1313	Materials for High Temperature Turbocompressor Components	OKBM	499,900	EU
1322	Ion Beams Surface Treatment	NIKIMT (Institute of Assembly Technology)	292,000	EU
1339f	High-Strength and Creep-Resisting Composites	MISIS (Steel and Alloys)	50,000	Japan
1400	Carbon Nanomaterials and Composites.	Institute of General Physics	400,000	Japan
A-254	Resistive Materials from Tailings	Institute of Applied Problems of Physics	80,000	US Norway
A-264	Artificial Diamonds and Diamond Like Films	YerPhi	297,000	US Korea
A-288	New Types of Glass and Ceramics	Scientific Industrial Enterprise of Material Science	298,880	EU
B-263d	Crystals for Tunable IR-Lasers	Belarussian State Polytechnic Academy/Institute of Promotion of Qualification	30,000	EU
B-277	Thermal Synthesis of Alloys from Scrap	Belarussian State Research and Production Powder Metallurgy Concern/Research Design and Technology Institute of Welding and Protective Coatings	135,875	EU
G-258	Surface Passivation Technology for GaAs	Center for Structural Research	88,813	US
G-285	Electroresistive Composites	Georgian Technical University	75,600	US
G-296	Nanocrystalline Metal-Ceramics	Institute of Metallurgy (Tavazde)	204,500	EU
Other			781,996	
0656	Nuclear-Free World	VNIIEF	300,000	EU
1293	Nonlinear Problems in Earth Science	IEPT (Earthquake Prediction)	401,996	EU
B-373d	Laser Cleaning of Art Works	Institute of Physics (Be)	50,000	EU
KR-330d	Isotopic Methods for Studies of Issyk-Kul Lake	Institute of Water Problem & Hydropower Engineering	30,000	EU US
Physics			6,445,460	
0652	Hubbard's Correlation Functions	VNIIEF	27,220	US
0880	Laser Lighting Protection	VNIIEF	300,000	EU
1087	Code-Library Based on the Particles-on-Cell Method	JINR (Joint Institute of Nuclear Research)	207,700	Japan
1109	Pulsed Opening Switch	VNIIEF	243,000	US
1118	Oxygen-Iodine Laser Optimization	VNIIEF	398,840	EU Japan
1185	Multipurpose UV Source	VNIIEF	300,000	US
1202	Monograph on Materials under Dynamic Loads	VNIIEF	50,000	US
1206	Powerful Infrared Laser	Institute of High Current Electronics	200,000	US
1220d	Muon Absorber Design	VNIIEF	30,000	EU
1270	Powerful Sources of Spontaneous Light Radiation	Institute of High Current Electronics	337,000	US
1309	Fission Cross-Section for Near Lead Nuclei	Khlopin Radium Institute	240,000	EU
1405	Proton Induced Fission Cross Sections	Nuclear Physics Institute	298,000	Japan
1412	Stabilization of Turbulent Mixing	VNIITF	210,000	US Other
1454	Optical Barrier	Vavilov State Optical Institute (GOI)/Research Institute for Laser Physics	330,000	EU
1474	Gaseous Fuel Ignition by Ionization Wave	MFTI (Physics and Technology)	300,000	US
1476	Extreme Parameters for Magnetocumulative Technique	VNIIEF	365,000	EU
1484	Accelerator Source for Neutron Therapy	Budker Institute of Nuclear Physics	225,000	EU
1496	Multi-Charged Ion Source	Institute of Applied Physics	296,000	EU
1639	Tracking System for «Atlas»	VNIITF	1,216,000	EU Other
A-215	Anomalous Atoms Scattering	Engineering Center «Mashtoc»	124,800	US
A-347	Accelerators Beams Diagnostics Sensors	YerPhi	193,900	EU
B-176	ZnSe-Lasers	Institute of Physics (Be)	125,000	EU
B-266	Compact Solid State Laser	Institute of Physics (Be)	398,000	EU
B-276d	Mesoscopic Optical Elements	Belarus Academy of Sciences/Institute of Molecular and Atomic Physics	30,000	EU
Space, Aircraft and Surface Transportation			3,216,789	
0761	Supersonic Transport Airplane	TsAGI	393,000	EU Other
1171	Testing of Propulsion Feed System	Keldysh Research Center	400,000	EU
1239	Microbolometer for Astrophysics Observations	Institute of Radioengineering and Electronics (IRE RAS)	300,000	US
1334	Space Debris Impact on Spacecraft	VNIIEF	200,000	EU Japan
1360	Spacecraft Thermoregulation	Ural Branch of RAS/Institute of Thermal Physics	300,000	EU US Korea
1469	Inflatable Re-entry Technology	NPO Lavochkin	1,300,000	EU Other
G-060.2	Variable Geometry Propeller	Georgian Technical University	289,529	US
G-204	Biological Safety of Spacecraft Personnel	Tbilisi State Medical University Research Institute	34,260	US
Y2K Readiness			1,333,251	
Y2K-1	Problem 2000 in Minatom		30,000	
Y2K-3	Minatom Enterprises Software and Hardware		100,000	
Y2K-6	Y2K for IMG SCALA, SCALA-M and NPHC		124,193	
Y2K-7a	Kalininskaya NPP		122,120	
Y2K-7b	Kurskaya NPP		111,070	
Y2K-7c	Smolenskaya NPP		112,290	
Y2K-7d	Bilibinskaya NPP		80,000	
Y2K-7e	Novovoronezhskaya NPP		112,270	
Y2K-7f	Beloyarskaya NPP		101,575	
Y2K-7g	Balakovskaya NPP		117,820	
Y2K-7h	Kol'skaya NPP		101,628	
Y2K-8	Moscow Region Chemical Objects		120,000	
Y2K-9	Belarus Radiation Monitoring		70,000	
Y2K-14	Providing reliable functioning of bio-safety engineering systems		30,285	
Total: 160 projects funded in 1999			34,637,418	

CIS Institutes receiving new ISTC Funding in 1999

Armenia

ASUP Ltd., Yerevan
Engineering Center «Mashtoc», Ashtarak-2
Institute of Applied Problems of Physics, Yerevan Institute of Microbiology, Abovian
Republican Center for Deposition of Microorganisms, Abovian
Scientific Industrial Enterprise of Material Science, Yerevan
Yerevan State University, Yerevan
YerPhi, Yerevan

Belarus

Axicon, Minsk
Belarus Academy of Sciences/Institute of Molecular and Atomic Physics, Minsk
Belarussian State Polytechnic Academy/Institute of Promotion of Qualification, Minsk
Belarussian State Research and Production Powder Metallurgy Concern/Research Design and Technology Institute of Welding and Protective Coatings, Minsk
Belarussian State University/Scientific Research Institute of Nuclear Problems, Minsk
Institute of Engineering Cybernetics, Minsk
Institute of Physics (Be), Minsk
National Academy of Science of the Republic of Belarus/Plasmoteg, Minsk, Minsk reg.
National Art Museum of Republic of Belarus, Minsk
Research and Design Company «Belmicrosystems», Minsk
Research Institute of Radiation Medicine and Endocrinology, Minsk
Solix, Minsk

Georgia

Center for Structural Research, Tbilisi
ERISTAVI Research Institute of Experimental and Clinical Surgery, Tbilisi
Georgian Technical University, Tbilisi
Institute of Metallurgy (Tavadze), Tbilisi
Institute of Physics (Ge), Tbilisi
Institute of Plant Biochemistry, Tbilisi
Institute of Stable Isotopes, Tbilisi
Kutateladze Institute of Pharmacology, Tbilisi
Scientific-Research Institute of Automatic Systems «Skhivi», Tbilisi
Tbilisi State Medical University Research Institute, Tbilisi
Tbilisi State Medical University Research Institute /Research Institute of Experimental and Clinical Medicine, Tbilisi
Tbilisi State University, Tbilisi

Kazakhstan

Almaty State University, Almaty
Association ISOTOP, Almaty
Center of Health Care, Almaty
GRANIT (Special constructor- technological bureau), Almaty
Institute of Microbiology and Virology, Almaty
Institute of Organic Catalysis and Electrochemistry, Almaty
IPCON (Institute of Problems of Complex Development of Mineral Resources), Karaganda
Kazak National University/Scientific Research Institute of Experimental and Theoretical Physics, Almaty
Kazak Research Institute of Fruit Growing and Viticulture, Almaty
Kazak Scientific Research Institute of Environment and Climate Monitoring, Almaty
National Nuclear Center of the Republic of Kazakhstan, Kurchatov

National Nuclear Center of the Republic of Kazakhstan/Institute of Atomic Energy (2), Kurchatov
National Nuclear Center of the Republic of Kazakhstan/Institute of Nuclear Physics, Almaty
National Nuclear Center of the Republic of Kazakhstan/Institute of Nuclear Safety and Ecology, Kurchatov
Research Center for Pediatrics and Children's Surgery, Almaty
Scientific Research Agricultural Institute, Gwardeiski

Kyrgyz Republic

Institute of Chemistry and Chemical Technology, Bishkek
Institute of Water Problem & Hydropower Engineering, Bishkek
Kyrgyz Scientific and Design Construction Institute, Bishkek
Kyrgyz-Russian Slavonic University, Bishkek

Russia

AO Biochimash, Moscow
AO Kompozit, Korolev, Moscow reg.
Astro Space Center (Lebedev), Moscow
Bogoroditsk Plant of Techno-Chemical Products, Bogoroditsk, Tula reg., Russia
Budker Institute of Nuclear Physics, Akademgorodok, Novosibirsk reg.
Cancer Research Center, Moscow
CDB LAZURIT, N. Novgorod, N. Novgorod reg.
Chelyabinsk Federal State Unitary Prosthetic-Orthopedic Facility, Chelyabinsk, Chelyabinsk reg.
Chelyabinsk Radio Works Polyot, Chelyabinsk, Chelyabinsk reg.
Cheminform St Petersburg Ltd., St Petersburg
Chepetsky Mechanical Plant, Glazov, Udmurtia DELSI, St Petersburg
Design Bureau of Chemical Automatics, Voronezh, Voronezh reg.
Electromechanical Plant «Avangard», Sarov, N. Novgorod reg.
Electrostalsky Machine Building Plant (EMZ), Elektrostal, Moscow reg.
Engelhardt Institute of Molecular Biology, Moscow
Experimental Design Bureau Fakel, Kaliningrad, Kaliningrad reg.
FEI (IPPE), Obninsk, Kaluga reg.
FIAN Lebedev, Moscow
Fiber Optical Research Center, Moscow
GEON, Moscow
GNC Academician N.N. Andreev Acoustic Institute, Moscow
Gosatomnadzor, Moscow
GosNIIPM (Applied Microbiology), Obolensk, Moscow reg.
Gromov IIL (Flight Research Institute), Zhukovsky, Moscow reg.
Hydrometallurgical Factory of Lermontov State Association «Almaz», Lermontov, Stavropol reg.
Hypersonic System Research Institute, St Petersburg
IIEPT (Earthquake Prediction), Moscow
INEOS (Organo-Element Compounds), Moscow
Institute for Informatics and Automation, St Petersburg
Institute of Applied Geophysics (Fedorov), Moscow
Institute of Applied Physics, N. Novgorod, N. Novgorod reg.
Institute of Aviation Materials, Moscow
Institute of Biomedical Chemistry, Moscow
Institute of Biomedical Problems, Moscow
Institute of Bioorganic Chemistry (Branch), Puschino, Moscow reg.
Institute of Biophysics, Moscow
Institute of Biophysics/Chelyabinsk Branch, Oziorsk, Chelyabinsk reg.
Institute of Dynamics of the Geosphere, Moscow

Institute of General Physics, Moscow
 Institute of High Current Electronics, Tomsk, Tomsk reg.
 Institute of High Energy Physics (IHEP), Protvino, Moscow reg.
 Institute of Highly Pure Biopreparations, St Petersburg
 Institute of Immunological Engineering, Lyubuchany, Moscow reg.
 Institute of Mathematical Modeling, Moscow
 Institute of Mathematics and Mechanics, Ekaterinburg, Sverdlovsk reg.
 Institute of Medical Ecology (MSRIME), Moscow
 Institute of Metals Superplasticity Problems, Ufa, Bashkiria
 Institute of Numerical Mathematics, Moscow
 Institute of Physiologically Active Substances, Chernogolovka, Moscow reg.
 Institute of Problems of Electrophysics, St Petersburg
 Institute of Radioengineering and Electronics (IRE RAS), Moscow
 Institute of the Geophysical Services, Obninsk, Kaluga reg.
 Ioffe Physico-Technical Institute, St Petersburg
 Ivanovsky Institute of Virology, Moscow
 IVTAN (High Temperatures), Moscow
 IZMIRAN, Troitsk, Moscow reg.
 JINR (Joint Institute of Nuclear Research), Dubna, Moscow reg.
 Kapitza Institute of Physics Problems, Moscow
 Keldysh Institute of Applied Mathematics, Moscow
 Keldysh Research Center, Moscow
 Khlopin Radium Institute, St Petersburg
 Kurchatov Research Center, Moscow
 Kurchatov Research Center/Institute of Nuclear Reactors, Moscow
 Medical Radiological Scientific Center, Obninsk, Kaluga reg.
 Mendeleev Chemical Technological University, Moscow
 MFTI (Physics and Technology), Dolgoprudny, Moscow reg.
 Moscow Engineering and Physics Institute (MIFI), Moscow
 Mining and Chemical Complex, Zheleznogorsk, Krasnoyarsk reg.
 MISIS (Steel and Alloys), Moscow
 Moscow Medicine Academy, Moscow
 Moscow Power Engineering Institute, Moscow
 Moscow State University Department of Chemistry, Moscow
 Moscow State University Department of Physics, Moscow
 NIIAR (Atomic Reactors), Dimitrovgrad, Ulianovsk reg.
 NIIIEFA Efremov, St Petersburg
 NIIIT (Pulse Techniques), Moscow
 NIIKhimMash, Sergiev Posad, Moscow reg.
 NIKIET (ENTEK), Moscow
 NIKIMT (Institute of Assembly Technology), Moscow
 Nizhegorodsky State Technical University, N. Novgorod, N. Novgorod reg.
 Novosibirsk Institute of Organic Chemistry, Novosibirsk, Novosibirsk reg.
 NPO Energia, Korolev, Moscow reg.
 NPO EnergoMash, Khimki, Moscow reg.
 NPO Lavochkin, Khimki, Moscow reg.
 NPO Lutch, Podolsk, Moscow reg.
 NPO Mayak, Oziersk, Chelyabinsk reg.
 NPO Toriy, Moscow
 NPO Typhoon, Obninsk, Kaluga reg.
 NPO Vector, Koltsovo, Novosibirsk reg.
 NPO Vector/Institute of Aerobiology, Koltsovo, Novosibirsk reg.
 NPO Vector/Institute of Molecular Biology, Koltsovo, Novosibirsk reg.
 NPO Vector/Research Institute of Bioengineering, Koltsovo, Novosibirsk reg.
 Nuclear Physics Institute, Gatchina, Leningrad reg.
 OKBM, N. Novgorod, N. Novgorod reg.
 Orgenergostroy, Moscow
 Priargunskiy Production Mining and Chemical Union (PPGCHO), Krasnokamensk, Chita reg.
 Research Center of Molecular Diagnostics and Therapy, Moscow
 Research Center of Toxicology and Hygienic Regulation of Biopreparations, Serpukhov, Moscow reg.
 Research Institute of Chemical Agents for Plant Protection, Moscow
 Research Institute of Precise Engineering, Moscow
 Rostov State University/Scientific Design and Technological Department «Piezopribor», Rostov-on-Don, Rostov reg.
 Russian Institute of Scientific Instruments, Lytkarino, Moscow reg.
 Russian Scient. Center of Applied Chemistry, St Petersburg
 Scientific Research Institute of Rail Transport, Moscow
 Scientific Research Oncologic Institute, Rostov-on-Don, Rostov reg.
 Scient. Engineering Center SNIIP, Moscow
 Siberian Branch of RAS/Krasnoyarsk Scientific Center, Krasnoyarsk, Krasnoyarsk reg.
 Siberian Chemical Kombinat (SKhK), Seversk, Tomsk reg.
 Siberian Physical Technical Institute, Tomsk, Tomsk reg.
 Space Research Institute, Moscow
 St Petersburg State University/Institute of Physics, St Petersburg
 State Project Institute, Moscow
 State Research Institute of Biological Instrument-Making, Moscow
 State Scientific Center of Genetics and Selection of Industrial Microorganisms (GosNIIGenetica), Moscow
 State Unitary Enterprise Innovation Business Center «New Electrical Technologies», Moscow
 Step-Holding, Chelyabinsk, Chelyabinsk reg.
 Technological Institute, St Petersburg
 Tomsk Polytechnical University/Scientific Research Institute of High Voltage, Tomsk, Tomsk reg.
 TRINITI, Troitsk, Moscow reg.
 TsAGI, Zhukovsky, Moscow reg.
 TsKBM, St Petersburg
 Ural Branch of RAS/Institute of Thermal Physics, Ekaterinburg, Sverdlovsk reg.
 Ural State Medical Academy of Additional Education, Chelyabinsk, Chelyabinsk reg.
 Vavilov State Optical Institute (GOI), St Petersburg
 Vavilov State Optical Institute (GOI)/Research Institute for Laser Physics, St Petersburg
 VIT (Vyatka Information Technology), Kirov, Kirov reg.
 VNIIA (Automatics), Moscow
 VNIIEF, Sarov, N. Novgorod reg.
 VNIIEKhT (Chemical Technology), Moscow
 VNIIMP-VITA (Medical Instrument Making), Moscow
 VNIINM Bochvar, Moscow
 VNIINM Bochvar/State Center for Condensed Matter Physics of MinAtom, Moscow
 VNIITF, Snezhinsk, Chelyabinsk reg.
 VNIPI Promtechnology, Moscow
 VNIPIET, St Petersburg
 Volgo-Vyatka Center of Applied Biotechnology, Kirov, Kirov reg.

ISTC Organization

Parties to the ISTC Agreement

Founding Parties



European Union



Japan



Russian Federation



United States of America

Other Parties



Norway



Republic of Korea



Armenia



Belarus



Georgia

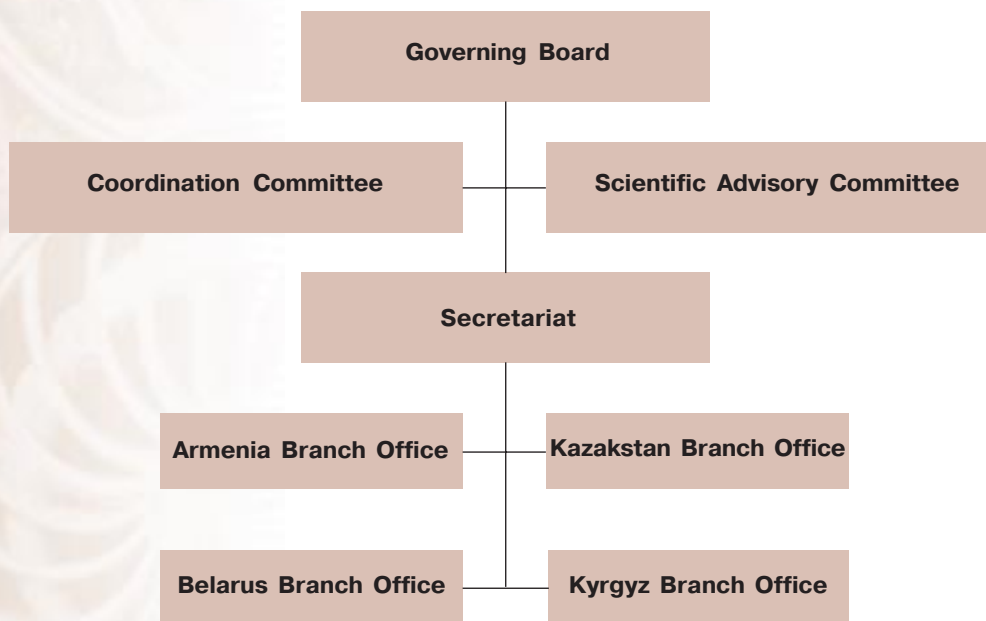


Kazakhstan



Kyrgyz Republic

CIS Parties



The **Governing Board** is the decision making body. It is made up of representatives of the European Union, Japan, the Russian Federation and the United States, plus one rotating seat for a member CIS country, held by Armenia in 1999. It develops Center policy, approves new members, sets project and budget funding levels, and directs the ISTC nonproliferation efforts.

Members of the Governing Board

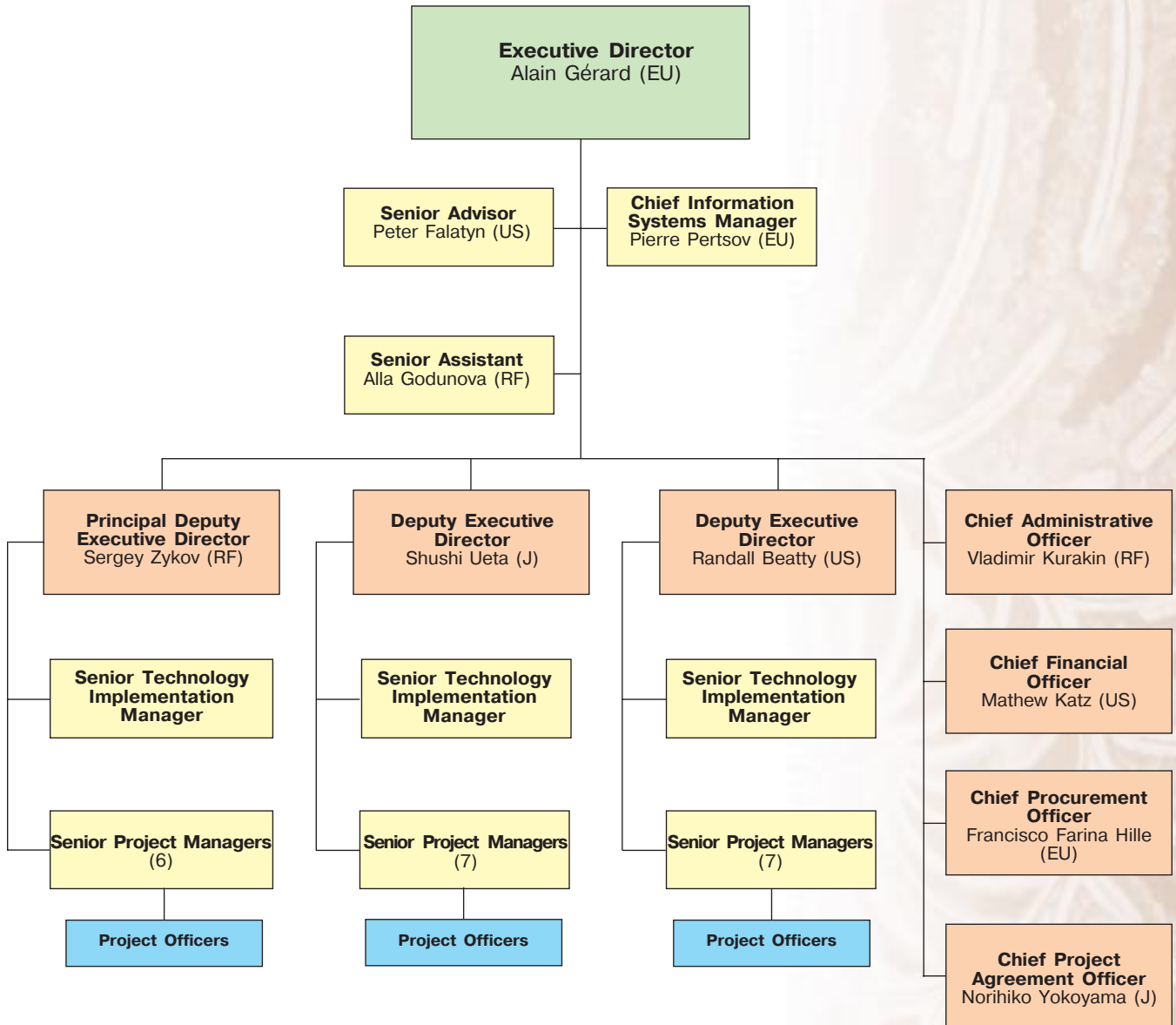
Chairperson (USA)	Ronald F. Lehman II
European Union	Jorma Routti
Japan	Norio Hattori
	Chihiro Atsumi
Russian Federation	Lev Ryabev
	Alexander Yakovenko
United States of America	Victor Alessi
Armenia	Artashes Petrosyan

The **Coordination Committee** representatives are appointed by the Parties and meet prior to Governing Board meetings to review details of projects to be considered by the Board, discuss coordination of project funding, and exchange views on policy and other issues to be brought before the Governing Board.

The **Scientific Advisory Committee** provides expert scientific evaluation of project proposals, determines new directions for project activity, and evaluates ongoing projects. At the end of 1999, Japan served as Chair of the Committee.

ISTC Secretariat

Located in Moscow, the Secretariat is the executive body of the ISTC. It implements the decisions of the Governing Board and manages the daily operations of the Center. Its international staff of over 120 scientific and administrative personnel oversees and monitors more than 600 active projects, provides training and business support to CIS project managers, and implements the many Center programs that support nonproliferation.



Technology Areas by Deputy Executive Directors

- | Zykov | Ueta | Beatty |
|--|---|--|
| <ul style="list-style-type: none"> ● Chemistry ● Fusion ● Physics ● Other Basic Sciences | <ul style="list-style-type: none"> ● Information and Communications ● Instrumentation ● Manufacturing ● Materials ● Space, Aircraft and Surface Transportation | <ul style="list-style-type: none"> ● Biotechnology and Life Sciences ● Environment ● Fission Reactors ● Non-nuclear Energy |

Note: Names indicate Management Committee members as of 31 Dec. 1999

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information on page 27



Belarus

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Georgia

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Kazakhstan

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Kyrgyz Republic

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ISTC Secretariat Contact Information

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Project Locations

