

ISTC [2001]



International Science & Technology Center

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## ISTC - Accomplishing Its Objectives

# NONPROLIFERATION THROUGH SCIENCE COOPERATION

The International Science and Technology Center (ISTC) was established by intergovernmental agreement in November 1992.

**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 ISTC coordinates the efforts of numerous governments, international organizations, and private sector industries, providing weapons scientists from Russia and the Commonwealth of Independent States new opportunities in international Partnership. ISTC is central in the management of science Partnerships. Through its political, legal, and financial frameworks, **ISTC contributes to:**

- Fundamental Research
- International Programs
- Innovation and Commercialization

by linking the demands of international markets with the exceptional pool of scientific talent available in Russian and CIS institutes.

**In 2001, ISTC accomplished:**

- New science project funding for 280 projects in the amount of \$75.8 million. Of this, \$30.8 million for 104 projects was provided by ISTC Partners.
- Direct grant payments to 22,704 scientists and their team members, amounting to \$29.9 million. Total redirection supported by the ISTC in 2001 is equivalent to 6,020 full-time person-years.
- Addition of 34 new Partner organizations, who have provided over \$70 million in project funding since program inception.
- Expanded funding for seminars, workshops, and scientist travel, to strengthen international exchanges on ISTC projects and programs.

Partnership through the ISTC addresses initiatives from government agencies and programs, private industry, international organizations - strengthening scientist-to-scientist exchange, and promoting long-term integration and mutual benefits for all participants.

International Science  
& Technology Center

[2001] Annual Report

## STATEMENT FROM THE EXECUTIVE DIRECTOR



*Prof. Dr. Michael Kroening was born in Weixdorf/Dresden, Germany, and received his Ph.D. in experimental nuclear physics from the Johannes Gutenberg-University in Mainz in 1974. Dr. Kroening has held positions of Research Scientist at the Max Planck Institute for Chemistry, and headed quality assurance research at Siemens AG-Kraftwerk-Union in Erlangen. In 1990, he was appointed Director of the renowned Fraunhofer-Institut for Nondestructive Testing IZFP and named Professor at the University of Saarbrücken as Chair of Nondestructive Testing and Quality Assurance. He was member of the German Reactor Safety Commission RSK until 1999. His professional memberships include the scientific advisory board of the German Society of Nondestructive Testing, Chairman of the advisory board of Q-Net GmbH. Dr. Kroening is an Honorary Fellow and Professor at several societies and universities in the Russian Federation and India.*

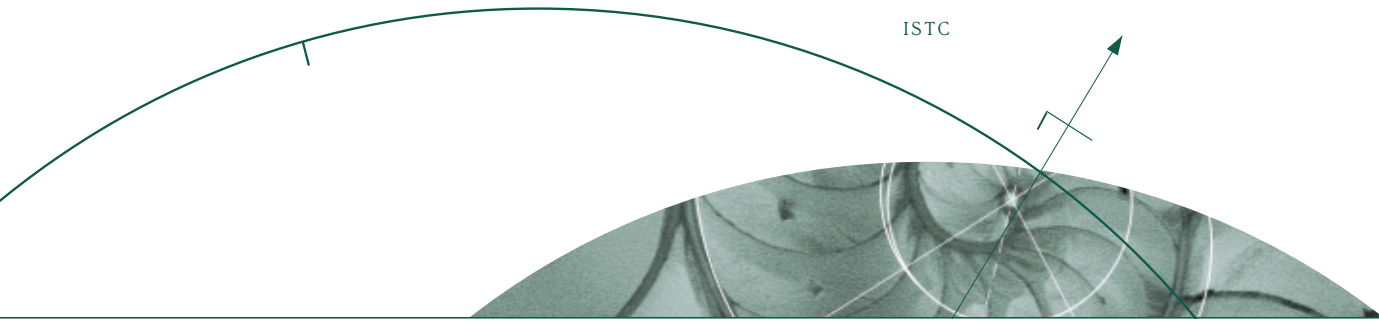
The year 2001 marks the new century. The world has changed. The terrible terrorist attacks on New York and Washington have hurt us all; their appalling dimension has uncovered the global threat of unsolved security problems. The community of nations have responded. The President of the United States has found solidarity and support when he called for joint global efforts against terrorism. I am sure that worldwide partnership with the United States will be considered, in time, the best gift for the birth of the 21st century.

The mission of the International Science and Technology Center is directed to a part of global security risks - the proliferation of weapons of mass destruction. The year 2001 has shown the need for ISTC and the value of its organization as an international initiative of shared responsibilities. Moreover, the ISTC mission has evolved from an assistance program to a program of partnership between the ISTC member states - strengthening its political framework and programs.

Trust and partnership is based on understanding. ISTC has implemented procedures for programs that reflect the priorities of the Parties and Partners. A continuous dialogue with the CIS member states through the headquarters and branch offices has strengthened the recognized value of the ISTC mission and its support of the scientific community. Partnership is fundamental, professional services a must to accomplish our goals. Last year, ISTC could demonstrate its ability to adjust its organization and procedures to the needs of new programs and activities. The Partner Program is a major part of ISTC's accomplishment, offering the best chance that ISTC will achieve sustainable results through international science cooperation.

The strategic quality of the ISTC mission is a result of the commitment of ISTC Parties and Partners, the professional accomplishments of our staff, and the scientific excellence of our project teams. ISTC - a strong partnership for a bright, optimistic view on international cooperation and the shared responsibilities of nonproliferation.

Michael Kroening



## 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.*

The decision to establish the International Science and Technology Center (ISTC) to promote nonproliferation through scientific cooperation was made by the founding parties in 1992. From the beginning, the founders understood that new ground would be explored, both in science and in international cooperation. As the Parties have sought additional ways to enhance their security and prosperity and advance knowledge, the ISTC has attracted greater attention and wider participation.

The ISTC exists for the mutual benefit of its Parties, but its achievements serve all of humanity. Over the last decade, the ISTC has come of age as a path breaking intergovernmental organization. Each year since coming into being, the importance of the ISTC has grown. In each of its ten years, even as important milestones are passed, the ISTC has been called upon to take on more challenges. This is perhaps the best measure of its value.

The ISTC has been praised for the large number of scientists engaged, the many institutes rejuvenated, the considerable investments made, and the many joint projects completed. These are important measures of merit. Yet, preoccupation with quantitative measures of success misses the importance of the qualitative dimensions - the contributions to science, the confidence gained, the bonds built, and the new experiences in cooperation among geographically diverse participants. The sharing of lessons learned, the exchange of best practices, the teaming of skills from different disciplines in different lands - all of these are considerable achievements. In learning to work together, each of the eleven Parties (representing 25 countries) has also advanced their own, internal science cooperation.

The ISTC has truly been an experiment itself, a successful one. For nations leaving behind the Cold War, it has demonstrated a new path. For newly independent nations, it has kept some friends working together and added new

friends to the mix. For the European Union, it has been a dramatic integration in the international arena. For the high technology economies of East Asia, it has been an opportunity to build ties where there was once isolation.

In recent months, the Parties have undertaken a number of acts that reinforce their commitment. The Russian Federation and the European Union stressed the importance of the ISTC in a recent summit statement, and the ISTC received notification from the Russian Federation Ministry of Foreign Affairs confirming the status of the ISTC as equivalent to a diplomatic mission. After its strategic review, the United States has suggested a promising new future for partnership through the ISTC and increased funding. Japan has committed additional scarce resources. Other Parties have established branch offices, and rotation for Newly Independent States on the Governing Board insures each a period of membership. The location of Governing Board meetings now move among the Parties, and the use of Executive Board Meetings has enhanced agility while reducing costs.

Growing support from the Parties, however, cannot substitute for an effective staff and an energetic, efficient process. The ISTC has been fortunate to have remarkable individuals from many nations devoting themselves to the organization's goals. Their success results in an even greater workload as the size of the program expands. This, in turn, requires modernization of management practices and tools. The ISTC will continue to raise our standards of accomplishment and excellence. 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 and Regional Offices for their efforts, and even personal sacrifices, to ensure the success of the ISTC.

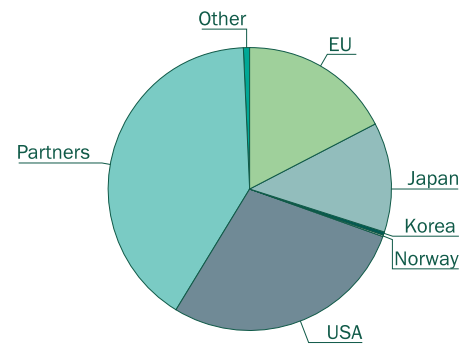
Ronald F. Lehman II

## 2001 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 that support nonproliferation. For detailed information, refer to the audited Financial Statements.

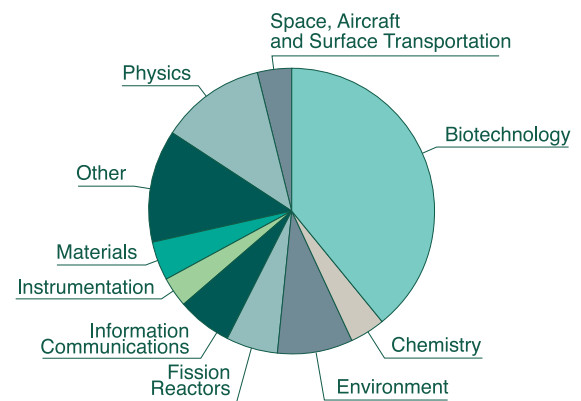
### New Project Funding by SOURCE

Source	Allocated funds
EU	\$13,188,652
Japan	\$9,496,809
Korea	\$269,335
Norway	\$100,000
USA	\$21,423,172
Partners	\$30,767,201
Other	\$538,000
<b>Total:</b>	<b>\$75,783,169</b>

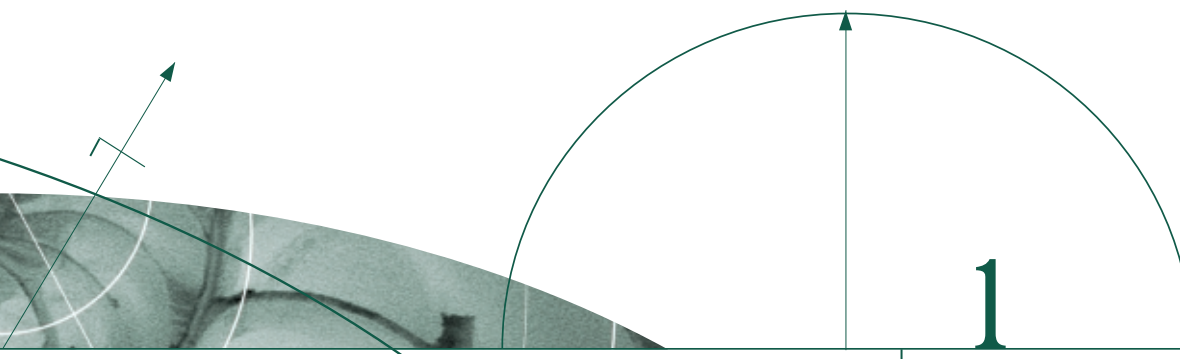


### New Project Funding by TECHNOLOGY AREA

Tech area	Allocated funds
Biotechnology	\$29,621,418
Chemistry	\$3,014,173
Environment	\$6,463,836
Fission Reactors	\$4,428,536
Information - Communications	\$4,725,423
Instrumentation	\$2,583,240
Materials	\$3,341,272
Other	\$9,649,041
Physics	\$9,014,624
Space, Aircraft and Surface Transportation	\$2,941,606
<b>Total:</b>	<b>\$75,783,169</b>



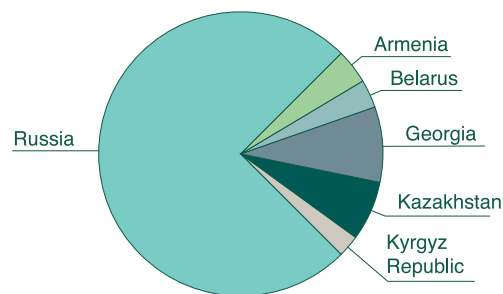




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## New Project Funding by LOCATION of LEAD INSTITUTE

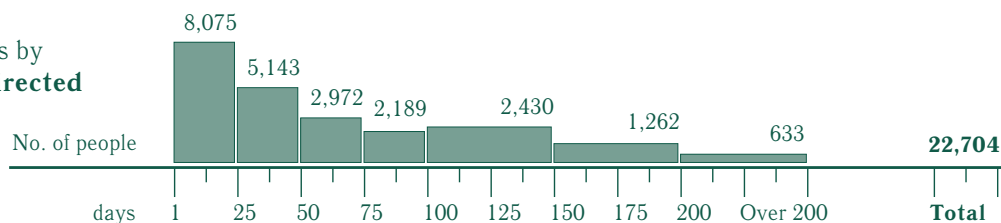
Country	No. of projects
Armenia	.11
Belarus	.9
Georgia	.24
Kazakhstan	.19
Kyrgyz Republic	.7
Russia	.210
<b>Total:</b>	<b>280</b>



## Participants Redirected to ISTC Projects in 2001

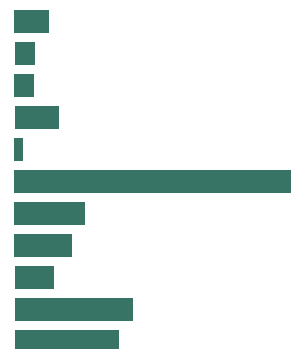
The ISTC paid **22,704** project participants **US\$29,853,000** in grant payments for a total of **1,323,691** person-days of effort on ISTC projects in 2001.

### Participants by Days Redirected



### Participants by Country / Region

Country / Region	Number of people
Armenia	.985
Belarus	.563
Georgia	.549
Kazakhstan	.1,240
Kyrgyz Republic	.244
Russia / Moscow	.8,117
/ St. Petersburg	.1,993
/ Chelyabinsk	.1,633
/ Novosibirsk	.1,105
/ Nizhny Novgorod	.3,332
Other	.2,943
<b>Total:</b>	<b>22,704</b>



## EVENTS

- January**
- The ISTC received diplomatic notification from the Republic of Belarus confirming full privileges for the ISTC Branch Office in Belarus, as stated in the signed protocol.
  - The Scientific Advisory Committee held its 20th meeting at the ISTC Headquarters in Moscow.

- February**
- The ISTC and Russian Federation Ministry of Emergency Situations concluded an Agreement of Intent outlining coordination of ISTC projects with safety applications and promotion of project results within Russia.
  - The ISTC noted with sadness the passing of Taniel Lordkipanidze, who was instrumental in establishing ISTC operations in Georgia.

- March**
- The Governing Board held its 24th meeting at the ISTC Headquarters in Moscow, approving 62 new projects representing nearly \$13 million in funding. Georgia was invited to participate on the Governing Board through the next year.

- April**
- The ISTC received a «Decree of the President of Georgia» appointing Ambassador from Georgia to the Russian Federation, Zurab Abashidze, to the ISTC Governing Board.

- May**
- At the invitation of the Japan Ministry of Foreign Affairs, the ISTC visited numerous organizations to identify areas of interest in cooperation with ISTC scientists and to promote Japanese industry development through ISTC programs. Meetings included: Federation of Economic Organizations; Ministry of Foreign Affairs; Ministry of Education, Culture, Sports, Science, and Technology; Ministry of Economy, Trade, and Industry; Japan Atomic Energy Research Institute.
  - At the invitation of the Academy of Sciences, the ISTC visited the Republic of Tajikistan for an evaluation of scientific potential in research institutes, and for discussions on Tajikistan accession to the ISTC.
  - The Scientific Advisory Committee held its 21st meeting at the ISTC Branch Office in Minsk, Republic of Belarus.

- June**
- The Executive Director welcomed the newly appointed Governing Board member, Ambassador Zurab Abashidze, to the ISTC for discussions on Georgia - ISTC cooperation.
  - The European Commission Director General for Research, Mr. A. Mitsos, and Head of the European Union delegation in Moscow, Mr. R. Wright, visited the ISTC for discussions on EU programs and coordination with the ISTC.
  - The ISTC met with Russian Federation Minister for Atomic Energy Alexander Rumyantsev for discussions on ISTC development and contributions to nonproliferation.
  - The Executive Director reported to the Committee on Industry, External Trade, Research, and Energy of the European Parliament in Strasbourg, France.
  - The ISTC visited Georgia for discussions with State Minister George Arsenishvili, representatives of several Ministries, and the President of the Academy of Science, on ISTC activities and scientific priorities endorsed by Georgia. The Executive Director spoke before the



In recognition of the status of the ISTC Branch Offices, the head managers are routinely invited to official events.

Pictured: Pope John Paul II greets the Head of the Armenia Branch Office during his visit to Yerevan in September

President Nazarbayev of Kazakhstan receives ISTC information from the Head of the Kazakhstan Branch Office during a November meeting of diplomatic missions in Almaty



ISTC Executive Director and Rector of Tbilisi State University unveiling the new ISTC Georgian Branch Office.

Georgian Parliament on ISTC activities in support of scientific integration. The Executive Director and the Rector of Tbilisi State University presented the new ISTC Georgian Branch Office in an opening ceremony.

- The Funding Parties to the ISTC provided nearly \$9 million in funding for 36 new projects approved by the Governing Board through an Internet-based electronic decision and funding system.

**July** • The ISTC received official notification that the Georgian Parliament ratified the Agreement Establishing an ISTC Georgian Branch Office.



ISTC Executive Director meets with Republic of Armenia President Kocharyan

**August** • At the invitation of the Far Eastern Branch of the Russian Academy of Sciences, the ISTC visited several government and scientific organizations in Vladivostok and Khabarovsk, for discussions on strengthening Far Eastern support and participation in ISTC activities.

**September** • The Governing Board convened an Executive Session meeting at the ISTC Headquarter in Moscow, for discussions on advancing ISTC's nonproliferation mission.

- During a visit to Yerevan, the Executive Director was honored to be received by the President of the Republic of Armenia, Mr. Kocharyan. At the invitation of the Republic of Armenia, the ISTC held discussions on ISTC activity and development with the Speaker of the National Assembly, A. Khachatryan; the President of the National Academy of Sciences, Academician Sarkissian; the Minister for Science and Education, Academician Ghazarian; the Rector of Yerevan State University, Academician Martirosyan.

- The ISTC welcomed members of a security issues delegation from the House of Councilors, National Diet of Japan, for discussions on ISTC contributions to nonproliferation.



ISTC meeting with members of the National Diet of Japan.

**October** • The Executive Director visited the Norwegian Royal Ministry of Foreign Affairs for discussions on improving Norway - ISTC cooperation and enhanced participation.

- The Scientific Advisory Committee held its 22nd meeting at the ISTC Headquarters in Moscow.
- The Governing Board held its 25th meeting at the ISTC Headquarters in Moscow, approving 76 new projects representing over \$16.5 million and Euro 7.3 million in new funding.

**November** • The ISTC received notification from the Russian Federation Ministry of Foreign Affairs confirming the status of the ISTC as equivalent to a diplomatic mission.

- The ISTC welcomed Ambassador from the United States to the Russian Federation, Alexander Vershbow, for overview presentations on ISTC activities and United States - ISTC cooperation in biotechnology.



ISTC Management Committee members welcome US Ambassador Vershbow.

**December** • The Executive Director visited Almaty, Kazakhstan for a review of ISTC project activities at the Institute of Nuclear Physics, National Academy Center of Agrarian Research, Kazakh National University, and Institute of Chemical Sciences.



# ISTC Programs

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## 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 41,000 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 2001

**Projects** were reviewed and approved at three (3) funding sessions, allocating \$45 million to 176 projects.

**Financial audits** were conducted on 244 projects (including 229 final audits and 15 annual audits) through on-site ISTC staff visits to 367 institutes (349 institutes for final audits and 18 institutes for annual audits).

**22,704 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: 58

### Science Project Audits by External Agencies

#### EU Court of Auditors

The purpose of the visit was to audit the funds committed by the European Union in FY 2000 and review the process of funding, monitoring, and auditing procedures, contracting / procurement operations, and the ISTC project accounting system. Thirteen projects funded by the EU were reviewed at the ISTC. Two projects were visited on-site in Moscow: Project #425, High Energy Density Research Center; Project #545, Institute of Chemical Technology.

#### US Defense Contract Audit Agency

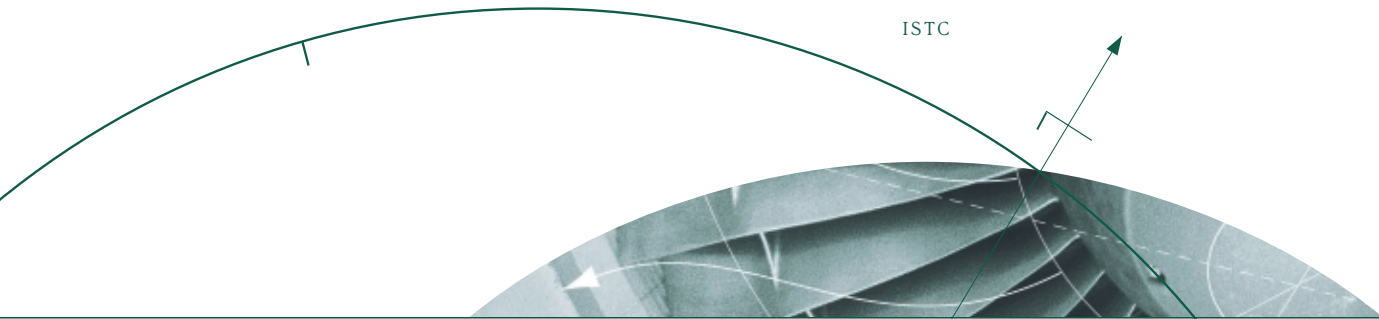
Thirty-one projects in Russia and CIS countries were audited, including: 6 projects in Russia, 10 projects in Armenia, 5 projects in Georgia, 3 projects in the Kyrgyz Republic, and 7 projects in Kazakhstan. The audits were conducted from April through July 2001. In addition, 4 projects funded by DARPA were audited in April 2001 and 2 projects funded by DTRA were audited in September 2001. Over \$9.6 million in project costs were audited. 73% of projects audited were accompanied by technical experts from US industry or governmental agencies, including Boeing, Los Alamos National Laboratory, Argonne National Laboratory, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, Centers for Disease Control and Prevention, Christopher Newport University, DTRA, and DARPA.

#### US General Accounting Office

The GAO visit focused on oversight process, including project monitoring, audit procedures, and other controls. Six institutes were selected for on-site audits: TsAGI, Zhukovsky (3 projects); Institute of Immunology of the State Concern BioPreparat, Lyubuchany (4 projects); MIFI (4 projects); State Research Center of Applied Microbiology, Obolensk (7 projects); GosNIIOKhT (4 projects); Russian Research Institute of Automatics (4 projects). The resulting GAO report «Weapons of Mass Destruction: State Department Oversight of Science Centers Program» was presented to the US Senate in May 2001.



DCAA Auditors and technical experts visiting the ISTC offices.



## 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.

### 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

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.

### Activity in 2001

**Thirty-four (34)** new Partner organizations joined the ISTC;

total Partners at the end of 2001: 135

Full list of ISTC Partners is available at the ISTC web site.

**One hundred four (104)** Partner projects representing \$30.8 million were approved for funding.

Total Partner contribution since program inception exceeds \$72 million.



## ISTC PARTNERS: GROWING CONFIDENCE

European pharmaceutical giant Bayer AG joined the ISTC Partner Program in 1998, and since then has funded 6 ISTC projects in chemistry, chemical process engineering, and pharmacology.

*«Bayer's experience with the ISTC has been very positive. We feel this type of cooperation is not only remarkable regarding the achieved results, but also because of guaranteeing necessary security on investments in research projects and intellectual property rights. For these reasons, Bayer can only recommend other companies join the ISTC Partner Program.»*

Heiner Gattineau - General Manager  
Bayer Representative Office in Russia

*«During the 4 years I have been involved in ISTC partner projects funded by Bayer, I have been impressed by the reliability and high level of professionalism shown by the ISTC staff. The ISTC is providing good advice, new contacts, and excellent service to its Partners.»*

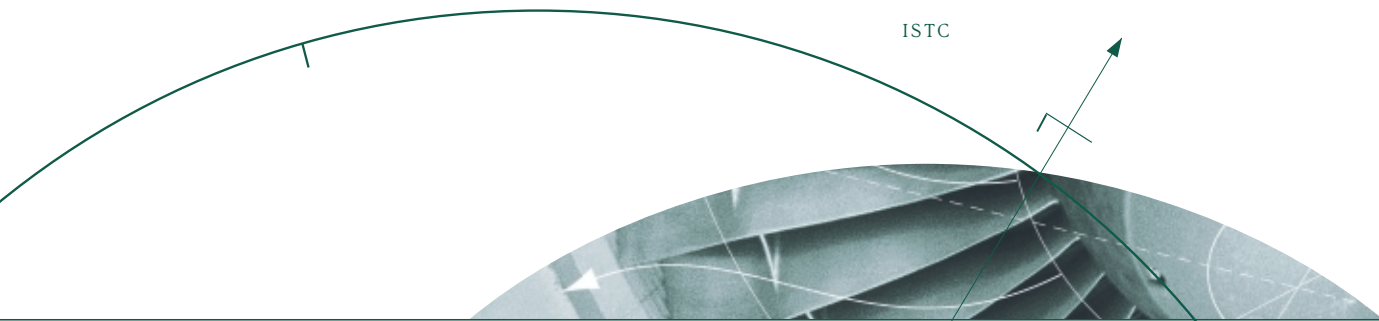
Dr. Juergen Kirsch - Central Research  
Bayer AG

### Promising Trends in Long-Term Partnership

Amidst today's grim prospects of traditional power production and its ecological effects on the environment, the research into opportunities presented by thermoelectric materials and devices becomes ever more promising. Thus it is only natural that one of ISTC's most prospective and longest projects deals with the subject. The Ioffe Physico-Technical Institute of St. Petersburg, Russia and Komatsu Ltd. of Kanagawa, Japan entered into a five-year project within the framework of the ISTC Partner Program, which, in terms of time span, is the longest project ever managed by the ISTC. This Project 2096 follows two smaller Ioffe-Komatsu projects successfully completed in 2000-2001 and dealing with problems of thermoelectric power generating and cooling technologies. With these technologies viewed as having great potential for the future business of Komatsu, the prominent Japanese production company funding the research and the St. Petersburg scientists offering their expertise on the subject hope to make theirs a win-win relationship. In this project, the participants seek to combine the experience and knowledge of over 20 Russian scientists - former missile technology experts - and the technological and marketing potential of world-known industrial equipment producers.

*«In the course of our cooperation with the Ioffe Institute, the ISTC infrastructure proved an extremely efficient instrument of project management. We are sure that Project 2096 will yield substantial results, and our Russian partners and Komatsu Ltd. will benefit from this cooperation.»*

Kohei Kusaka - Chief Manager  
Strategic Planning Department,  
Research Division  
Komatsu Ltd.



## SEMINAR PROGRAM

The ISTC organizes and conducts seminars toward heightening the awareness of CIS scientific potential, maintaining strong international scientific cooperation between foreign and CIS scientists, linking scientific potential with technology markets, and establishing cooperation with other international organizations and programs. Seminar topics are of broad technical and global interest and support the objectives of the Center and of other international nonproliferation initiatives.

### Activity in 2001

#### **Fourth ISTC Scientific Advisory Committee (SAC) Seminar «Basic Science in ISTC Activities»**

Date: 23-27 April 2001

Place: Academgorodok, Novosibirsk area, Russia

Budget: \$40,000

The purpose of the 4th SAC Seminar was to review the state of development in selected science sectors, such as: high energy physics, astronomy and astrophysics, bio-sciences. The seminar program included general, state-of-the-art lectures by eminent scientists, followed by three days devoted to more specialized presentations, ending with a panel discussion grouping scientists from various fields. Participants of the Seminar had an opportunity to make acquaintance with the activities of several institutes located in Novosibirsk. During the technical tours, participants visited plasma installations of Budker Institute of Nuclear Physics, Siberian Synchrotron Radiation Center, SRC «VECTOR», Institute of Cytology and Genetics, and others. The representatives of several ISTC staff maintained their contacts with participants from other organizations, continuing a constructive dialog. The total number of Participants was 187, including 24 invited foreign specialists.

The participants were very pleased with the meeting - in particular its interdisciplinary character that allowed them to meet colleagues

from other areas of science representing Russia/CIS, Japan, EU, and USA. It is worth quoting the SAC member Professor Alain Pompidou: «The purpose of the Novosibirsk Seminar, related to the SAC initiative, gave an opportunity to raise links between physics and bio-sciences. Everyone could express on their own topics, but plenary sessions and fruitful discussions around the posters gave an opportunity for many exchanges and better knowledge between different scientists belonging to all generations. The dynamism of the young students was impressive! The technical visits were very impressive. The warm welcome of the organizer, the professional management of the meeting, and last but not least, the spectacular weather gave to this seminar a very special touch that I shall remember.»

#### **Seminar on «Scientific and Technical Potential for Conversion in the Military-Industrial Complex of the Western Urals»**

Main Organizer: Perm Scientific Center of the Ural Branch of RAS

Date: 16-23 June 2001

Place: Perm, Russia

Budget: \$37,000

This Seminar continued the series of regional seminars that had been held in Georgia, Kazakstan, the Kyrgyz Republic, Belarus, and Armenia. This Seminar highlighted recent progress and potential in the most advanced fields of science and technology in one of the largest industrial centers of Russia - Western Urals. About 202 scientists and specialists from more than 14th cities attended the Seminar. A broad spectrum of problems discussed during the Seminar attracted attention of physicists, mechanists, biologists, chemists, ecologists, designers, technologists, and mine workers. Several scientific presentations were specially noted as very promising applied research, such as technology of reprocessing worn automobile metal-cord tires and MHD - technologies in metallur-



gy. During the ISTC session, general information about Center activities was presented. That session was of major concern for the participants and encouraged a series of useful discussions - in particular about the programs of self-sustainability of scientific teams.

### **XVII International Conference on Coherent and Nonlinear Optics (ICONO)**

Main Organizers: National Academy of Science of Belarus (NASB); Scientific Council on Optics and Laser Physics of RAS; Institute of Physics NASB; Institute of Atomic and Molecular Physics NASB; Lomonosov Moscow State University; Institute of Laser Physics RAS; General Physics Institute RAS; Lebedev Physics Institute RAS

Date: 26 June - 1 July 2001

Place: Minsk, Republic of Belarus

Budget: \$23,000 (ISTC co-sponsor)

This is a large and well-known conference. Within the last 35 years, ICONO became the largest conference in the Former Soviet Union and Eastern Europe in the field of nonlinear optics and quantum optics, laser physics, fundamental laser spectroscopy and atoms, and molecules and condensed matter. In addition to the scientific sessions, ICINO 2001 offered the participants an exhibit and program of short courses. Approximately 580 scientific reports were presented at the Conference. One of the major events of the Conference was the meeting of the Executive Committee of the European Physical Society (EPS), chaired by Prof. Duclou. As a result of that meeting, several concrete proposals related to the development of international scientific cooperation have been developed.

Within the frame of the ICONO program, the ISTC workshop was arranged, covering ISTC activities in Belarussia and Russia in the field of laser physics and non-linear optics. It was mentioned that about 200 projects in the area of lasers were submitted to the ISTC

and from this amount about 16 projects were submitted as Partner projects. A number of foreign collaborators and experts involved in ISTC projects presented results and their experience in collaboration with CIS Institutions in the frame of ISTC projects.

### **International Conference «Holography and Optical Information Processing»**

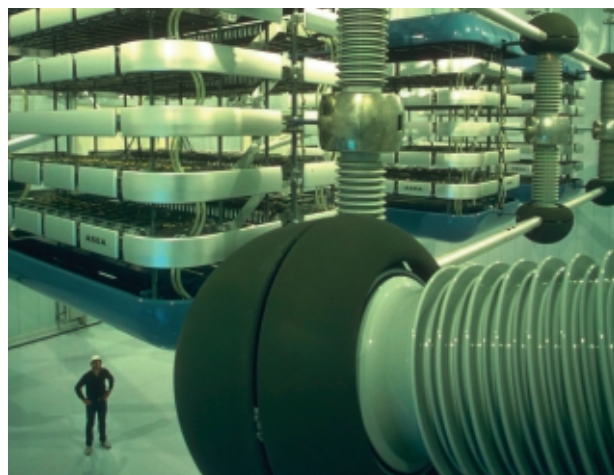
Main Organizer: Kyrgyz-Russian Slavonic University

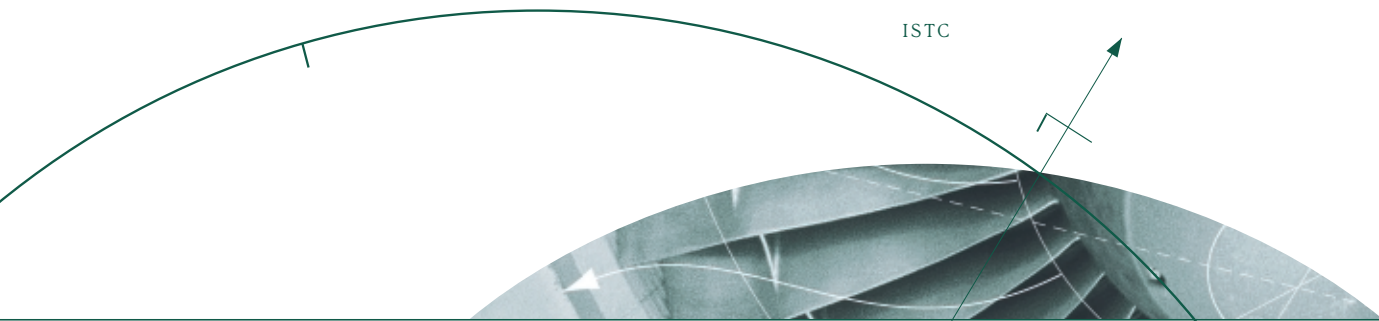
Date: 3-8 September 2001

Place: Issyk-Kul Lake, Kyrgyz Republic

Budget: \$16,000 (ISTC co-sponsor)

The main purpose of this Conference was to establish and strengthen further scientific relations of the Republic's scientists and partners from other CIS and non-CIS countries in the area of applied Holography and Optical Information Processing. The Scientific program of the event covered such areas as holography and medium storage, opto-electronic devices and elementary bases, optical memory and neuron networks, holographic image and optical data processing.





## BUSINESS MANAGEMENT TRAINING PROGRAM

The Business Management Training Program is conducted 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 mainly through Regional Training Centers 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, intellectual property protection, strategies for effective presentations to the business community, and others.

### Activity in 2001

**Business Career Development** subprogram was initiated to provide professional upgrade training for personnel of R&D Institutes, including: a 10-day training course in the most up-to-date telecommunication technologies for 5 VNIITF specialists by Lucent Technologies; 2 long-term on-site training courses in 3-D modeling, visualization, and database creation and management for 50 VNIITF specialists by Animatech and RDTEX.

**Fifty-six (56) training courses** for more than 700 ISTC project participants were conducted on aspects of business management and technology commercialization (Moscow – 19, Armenia – 5, Georgia – 1, Ekaterinburg – 9, St. Petersburg – 8, Almaty – 8, N. Novgorod – 6). The Regional Training Center in Novosibirsk was initiated, with its first two training courses.

**The ISTC and Science and Technology Center in Ukraine** jointly organized a training conference on Intellectual Property

aspect in technology commercialization in Tbilisi, Georgia for 25 ISTC project participants representing 17 Georgian institutions, with a training seminar on «How to Commercialize R&D Products (Innovations).»

**Interactive on-the-job training** on Commercialization of Technology resulting from ISTC projects was conducted by Technopark in Obolensk, for specialists from the State Research Center of Applied Microbiology.

**Two training courses** on Technology Implementation Planning have been conducted by the ISTC Secretariat for more than 80 ISTC project participants in Georgia and Armenia.

Three training sessions were held for nearly 200 project managers and accountants of newly funded ISTC projects to assist them in executing their work.

**A 4-week focused training/mentoring project** for 2 VNIIEF experts on technology commercialization was held at the IC2 Institute, Austin, Texas, USA.

**Two ISTC project participants** received 2-weeks training on R&D Management in the Republic of Korea.

**Nine employees** of the Central Analytical Laboratory on Monitoring of Chemical Weapons Elimination, GosNIIOHT received 1-month intensive English Language Course. The training manual on Technical Proposal Preparation was published.

**Eight project participants** received professional training in the National Nuclear Corporation (NNC), Manchester, UK.

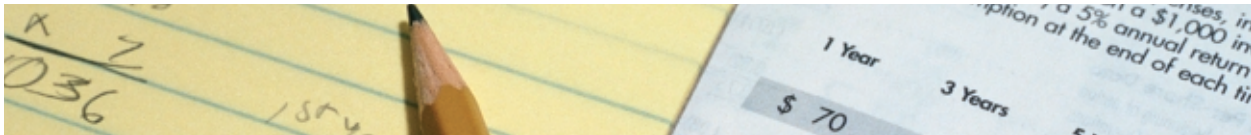
### Business Career Development

Open computer centers in the Russian Federal Nuclear Centers in Snezhinsk and Sarov were funded through the United States' Nuclear City Initiative, envisioning these facilities as the «start-up» basis for Russian scientists to transition from secret institutes to local commercial entities. These centers offer high-quality computer programming facilities and skills to foreign companies looking to

out-source their operations for reasons of economics or logistics. This is targeted to the accelerated restructuring and creation of new jobs at enterprises in the cities of Sarov, Snezhinsk, and Zheleznogorsk, to help individuals and groups obtain additional skills, develop appropriate technologies, and increase contacts with broader scientific, industrial, and business communities - creating self-sustaining jobs contributing to the civilian sector of the economy. The scientific staff who have joined these open computer centers can benefit from additional equipment and further training so that they can be more competitive in the world marketplace. The US Department of State - through the framework of the ISTC - committed \$1 million to support this Business Career Development activi-

ty, making hardware and software contracts plus associated training available to the selected Russian scientists. Three training projects were proposed for the Open Computer Center «Strela» in the city of Snezhinsk - with Animatek, Lucent, and Oracle.

The companies have made multiple visits to Snezhinsk to discuss the capabilities, needs and proposals of the team at Strela. In each case, the ultimate goal is to bring commercial work to Strela. All three of these companies offered to form strategic partnerships with Strela that would provide substantial commercial jobs. For these three training projects, it is expected that approximately 60 full time jobs will be created immediately. Within a year after the completion of this initial training, these projects could employ up to 75 people.



## TECHNOLOGIES DATABASE PROGRAM

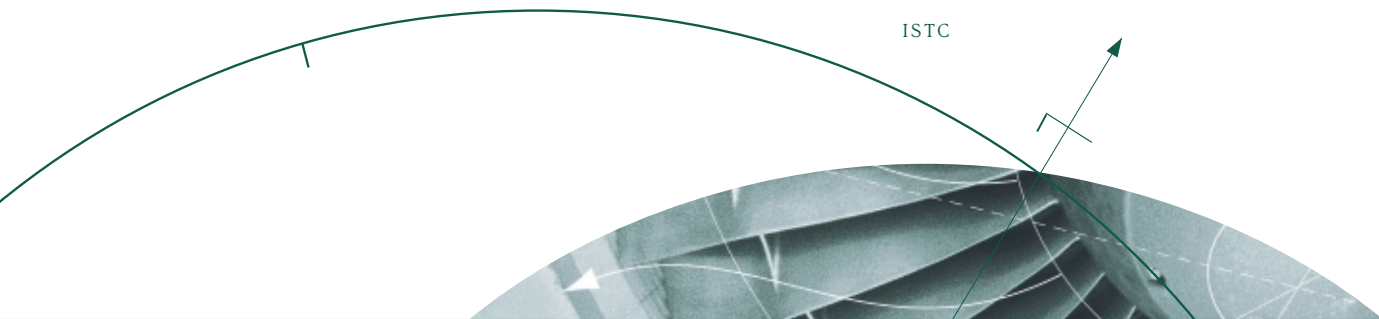
Through its contacts with hundreds of research institutes and centers throughout the CIS, the ISTC has uncovered many innovative technical projects either planned or now underway which conform to the nonproliferation objectives of the ISTC. The ISTC established the Technologies Database Program (formerly Promising Research Abstracts) to establish and expand information exchange infrastructure concerning research activities, toward promoting the expertise of CIS research institutes and cooperation between CIS and foreign technical experts.

### Activity in 2001

The new CIS Science and Technologies Internet Portal was opened at: [www.tech-db.ru](http://www.tech-db.ru) with 6 organizations as portal participants. Expanded participation is planned.

**Next version (4) of Promising Research Abstracts CD-ROM** was published, containing more than 1,600 abstracts from 250 CIS organizations. New Technologies Abstracts Database was created. It is designed to collect abstracts of existing technologies for investment and of innovative projects at final stages of development. The ISTC continues to collect new abstracts for the its databases and is preparing a new CD-ROM with updated data.

**The ISTC continues planning** to support national science and technology databases creation in CIS countries. These national databases will be opened for the public and available through the Internet.



## 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 begin or continue technical consultations on the proposals they submit 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 voluntary contributions supporting specific technical areas and CIS institutes.

### Activity in 2001

Scientists and technical team members were funded on 186 individual trips to collaborating organizations, seminars, and conferences located worldwide. In a parallel activity, 15 scientists received funding for visits to European Partnering events through the European Union Mobility Support Fund.

## WORKSHOP PROGRAM

The ISTC regularly organizes workshops to highlight technologies and topics of global significance and to facilitate the development of project proposals and the inclusion of Partners and collaborators

in ISTC activities. Workshop funding covers travel expenses of CIS scientists who participate in these workshops, and related organizational expenses.

### Activity in 2001

Event	Date	Location
Aeronautic Days 2001	29-31 January	Hamburg, Germany
Robotics; Organisms from Frozen Land; Medicinal Plants	31 January	Gifu, Japan
Computational Tools for Technology Businesses	09-10 April	Boston, MA, USA
Problems of the Aral Sea Area	19-21 April	Almaty, Kazakstan
Project Status Review of the Cooperative Threat Reduction Program	21-22 May	Moscow, Russia
ISTC Activities in Russia / CIS: Environments, Materials, and Information Technologies	23 May	Tokyo, Japan
New Environmental Exposition (NEXPO) 2001	29 May - 01 June	Tokyo, Japan
Increasing Threat of Infectious Diseases	11-13 June	Bergendal, Sweden
Ecological Problems of Nuclear Submarines Disposal	04-09 July	Severodvinsk, Russia

Event	Date	Location
Nuclear Reactor Technologies	09 July	Tokyo, Japan
Moscow Air Show (MAKS) 2001 – International Technology Transfer Symposium	15-16 August	Zhukovski, Russia
Inorganic Scintillators SCINT 2001	16-21 September	Chamonix, France
Interaction of CIS Participants in the Area of Sanitary Monitoring	19-21 September	Almaty, Kazakstan
Accelerator Technologies	02-03 October	Wako, Japan
Samsung-ISTC Forum: «Bridging Science and Industry»	09-10 October	Moscow, Russia
UK/Russia Seminar on Biotechnology: International Partnerships and Commercial Opportunities	17-18 October	Edinburgh, Scotland
Arctic Initiative	25-27 October	Brussels, Belgium
New Chemical Materials	12-13 November	Milan, Italy

## COMMUNICATION SUPPORT PROGRAM

Communications Support aims to improve the telecommunication infrastructure of institutes where current capabilities inhibit the successful accomplishment of ISTC work and the development of commercial opportunities.

### Activity in 2001

**The ISTC implemented support plans** providing high-speed Internet access and creating websites at 13 research institutes:

10 in Russia, 2 in Kazakstan, 1 in the Kyrgyz Republic. Institutes benefiting from Communication Support include the State Research Center of Virology and Biotechnology (VECTOR), Pokrov Biopreparation Plant, the Institute of Problems of Electrophysics, the Institute of Nuclear Physics in Kazakstan, and the Kyrgyz-Russian Slavic University.

**Technical support assessment** at 4 other institutes continues, for later implementation.

## VALORIZATION SUPPORT PROGRAM

Valorization Support is directed to projects whose results have commercial and scientific potential that can produce long-term economic support for weapons scientists and engineers and support their redirection to peaceful endeavors.

### Activity in 2001

**Market research and competitive analysis** were provided by consultant companies on 14 ISTC projects identified as having exceptional commercial potential, to assist the ISTC in promoting these technologies in world markets.

**The ISTC concluded a sustainability** benchmarking and road-mapping contract with a multinational group of specialists in

the field of innovation management, intellectual capital leveraging, and technology policy. The effort is led by the IC2 Institute of the University of Texas at Austin.

**The ISTC concluded a service contract** with the Center for Science Research and Statistics (Moscow), for collection of data on completed ISTC projects, toward studying favorable aspects of participation on ISTC projects.

**Licenses and subscriptions** to on-line technology transfer databases and market research were added to the ISTC inventory of valorization resources.

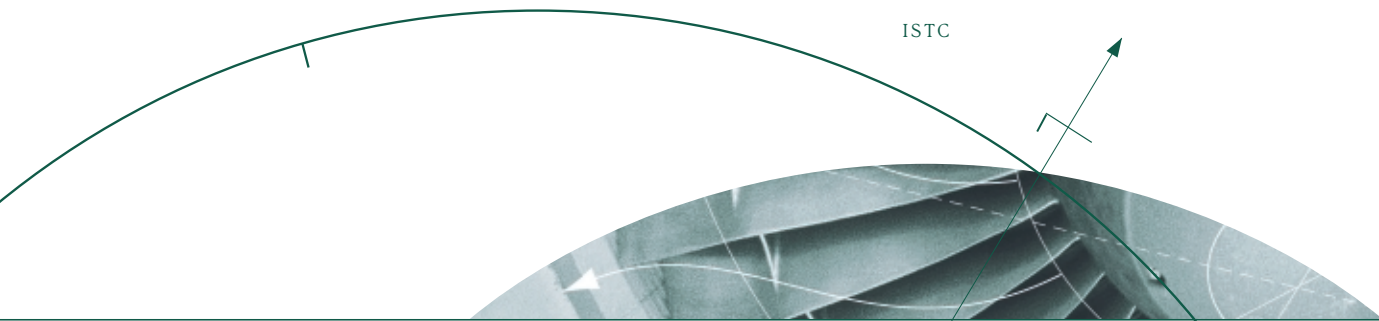
**An ISTC Monograph Series** based on several ISTC projects was funded with first publications in 2001.

## PATENTING 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 2001

The Patent Review committee received 33 applications and provided financial support to 25 patent applications arising from ISTC project results.



## HIGHLIGHTS

### CERN-ISTC: Model for International Collaboration

The European Center for Nuclear Research (CERN) and the European Union have provided over \$5 million for a series of nine ISTC projects contributing to the ATLAS detector facility at CERN. These projects include the participation of leading physics research institutions in Russia and Armenia: Institute of High Energy Physics (Protvino); Joint Institute of Nuclear Research (Dubna); VNIITF (Snezhinsk); VNIIEF (Sarov); the Moscow Engineering and Physics Institute (Moscow); Yerevan Physics Institute (Yerevan). The St. Petersburg Institute of Nuclear Physics (Gatchina) contributed to detector design, assembly, and testing; and the plant «MachineStroitel» (Perm) to development and manufacture of the detector structure. Scientists from many of the leading physics centers will take part in the experiments now planned at CERN.

*«International collaboration is a strong force of CERN. By pooling intellectual and financial resources, national universities and institutes can stay at the forefront of modern research through the scientific network centered on CERN experiments. The ISTC has been central to including leading Russian and CIS scientists in CERN's progress.»*

Prof. Luciano Maiani  
Director-General, CERN

### Building 887 : An Aladdin's Cave for Physicists

Building 887 on the Prévessin site is home to numerous experiments bringing together physicists and engineers from around the world. Its diversity makes the huge building a replica of CERN in miniature.

The big wheel to be used for the ATLAS muon chambers is much the most spectacular installation currently occupying Building 887. But it is far from being the only attraction. Push open the heavy doors of this immense hall and it is a bit like entering a physicists' Aladdin's cave.

The building, 55 meters wide and 300 meters long, is a treasure trove of engineering and technology, a

CERN in miniature, housing dozens of collaborations from all over the world. With its 15,000 square meters, it is the largest hall in CERN, and has room for great numbers of experiments in search of space.

Experimental groups certainly beat a path to its door. Every year, physicists and engineers of all nations arrive. Some stay only a few days, others settle in for years at a time. Some arrive with their own logistical back-up, others arrive without a thing to their name. Fortunately, the «hotelkeepers» of Building 887 are remarkably helpful.

#### **ATLAS Big-Wheel becomes a reality**

A prototype of one of the eight sections that will form one of the big-wheels of the ATLAS muon spectrometer has been installed in building 887 at Prévessin. A 10 meter-high construction, it weighs about 2.5 tons. Imagine a circle made of eight pieces that size, and you'll soon get an idea of the scale of what will become the world's biggest support structure for tracking devices. Its completion is a feather in the cap of the team that designed it as the support of tracking chambers in a comprehensive test of the ATLAS muon system. Over 40 institutes in 11 countries are involved in the construction of the ATLAS muon spectrometer.

The 7000 ton Atlas detector at CERN includes the contributions of many leading Russian and Armenian physicists working through the framework of ISTC projects.

Excerpts from CERN Bulletin #29/2001



## Early Warning on Solar Storms

### Armenian Scientists contributing to a World-Wide Network with ISTC Support

Violent solar explosions, including solar flares and coronal mass ejection, dominate space weather conditions. Some are powerful enough to disrupt space-based satellite electronics, damage ground-based power grids, and even harm space station crews. Depending on their energy, solar storm particles can reach the Earth within 10 minutes to several hours after explosions on the sun. Reliable and timely forecast and alert service is vital to power, communication, and navigation system integrity, and can save hundreds of millions of dollars in maintenance and repair expenses.

The Cosmic Ray Division (CRD) of the Yerevan Physics Institute maintains two high-altitude observatories in Armenia to observe solar events. The Mt. Aragats station - at 3,200 meters altitude - is now providing real-time monitoring of extreme radiation storms using neutron monitors and a solar neutron telescope. Professor Ashot Chilingarian - CRD Director and Project Manager of ISTC Project A-216 - is leading the research on Mt. Aragats, to answer fundamental questions of ion acceleration on the Sun.

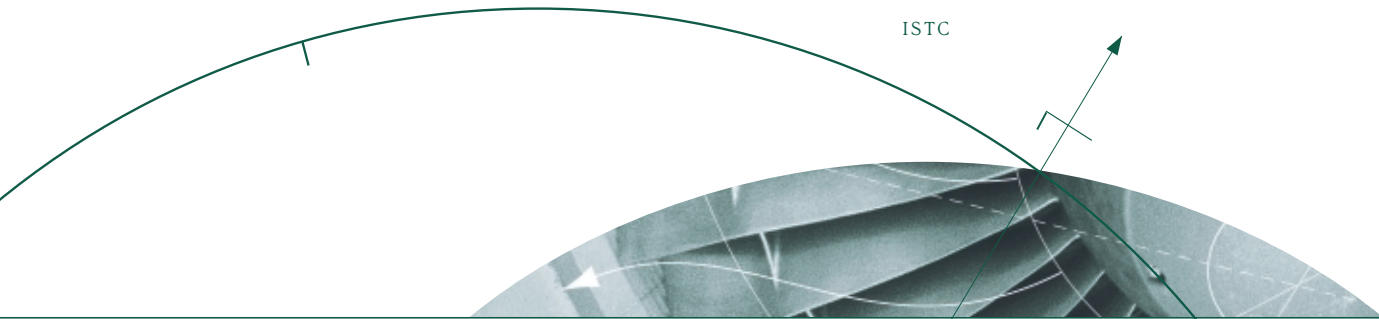
Project A-216 Participant and Mt. Aragats station maintenance chief calibrating the Solar Neutron Telescope.

Japan and the United States provide funding through the ISTC to pay grants supporting the staff at the Aragats station, numbering over 100 and including 40 scientists. Other ISTC funds are used to provide networking equipment that links the observatory with other stations in Japan, Switzerland,

Bolivia, Hawaii, and Tibet - providing 24 hour coverage of sun storms.

Professor Chilingarian says that with their data analysis techniques, the CRD can send alerts on the arrival of harmful particles to the Earth, allowing sufficient time to place satellites in a defensive stand-by mode, protect power grids, and warn airlines scheduling flights over the Earth's poles. His team is now proposing a forecast and alert service, aided by additional detectors and improved data handling software. This, he believes, can become a major commercial activity. On-line data from the Aragats station is already available: <http://crdlx5.yerphi.am>

In September, the ISTC conducted its first coordination meeting with all head managers of the five ISTC Branch Offices in Armenia, Belarus, Georgia, Kazakhstan, and Kyrgyz Republic. The Executive Director welcomed all participants.



## Samsung-ISTC Forum: «Bridging Science and Industry»

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On 09-10 October, the Samsung Corporation and the International Science and Technology Center opened the first Samsung-ISTC Forum at the Renaissance Hotel in central Moscow. The goal of the two-day Forum was presentation to top Samsung management of Russian/CIS technologies for applications in the extensive Samsung product line.

Forum participants included the ISTC Deputy Executive Director and President of Samsung Advanced Institute of Technology

The opening address was provided by Dr. Wook Sun - President, Samsung Advanced Institute of Technology, located in Suwon, Republic of Korea, with plenary session address on Russian technology policy by Dr. Gennady Tereschenko - Deputy Minister, Ministry of Industry, Science and Technology of the Russian Federation. ISTC Deputy Executive

Director Randall Beatty welcomed the participants.

Following an open call for proposals conducted in the summer, over 100 were received and rated. Samsung selected 55 scientists to attend the Forum to further present their technologies. The scientists are from numerous elite research institutes in Russia (Moscow, St. Petersburg, Novosibirsk, Vladivostok), Armenia, Georgia, and Belarus. The Forum program was organized jointly by Samsung and the ISTC. Funding for all scientist travel and accommodation at the Renaissance Hotel was provided in full by Samsung.

*«The scientific quality of the proposals received after the open call exceeds my expectations. Following our technical sessions here, Samsung will conduct a thorough evaluation of the various technologies toward determining promising development projects with the scientific teams made available by the ISTC.»*

Dr. Wook Sun - President  
Samsung Advanced Institute of Technology

## Restoration of National Treasures

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Earlier investigations in Europe have shown the promise of laser cleaning methods to restore works of art. Now, ISTC Project #B-373 funding provided by the European Union is building a novel, portable laser system for cleaning stone, wood, metals, fabric, and paintings encrusted by dust and biological deposits. Thirty-six scientists and other technical personnel from the Institute of Physics in Belarus will build energy-stabilized YAG:Nd lasers and develop techniques to effectively and safely remove pollutants, toward the restoration of art masterpieces.

Before / After view of bronze icon restored by laser cleaning



## New Internet Portal Promoting Russian Science and Technology Innovation

### ISTC Technologies Database Expands with new Partnerships

On 14 December, the International Science and Technology Center (ISTC) announced at a Moscow press conference the launch of a new Commonwealth of Independent States' science and technology portal. The portal has been in development since early 2001, and to date several other organizations have opened their databases to public access via the portal. These include the Euro-Asian Physical Society, Center of High Technologies under the Ministry of Atomic Energy, State Conversion Foundation «Inconvers,» science press agency «InformNauka,» and Scientific Projects and Internet Technologies company. Additional portal services will be provided by the NeurOK company.

Presentation of the science and technology portal to media members at the Central House of Journalists.



The portal was founded to promote Russian and CIS scientific achievements to a broad audience, integrating scientists into international markets while stimulating direct contacts between technology specialists and the business community. The portal address: <http://www.tech-db.ru> is available free of charge, unifying several substantial electronic databases through a common semantic search engine, in English and Russian languages. The ISTC is now in process of expanding its portal partners with the Academy of Science of Belarus, and other organizations have expressed interest. ISTC Deputy Executive Director Michiaki Okubo clarified: «If organizations agree to partially or wholly open their databases to the public, respect the nonproliferation goals of the ISTC, and wish to contribute to the process of Russian and CIS science integration, then they are welcome to participate in the portal.»

*«The creation of this new database through the ISTC is a timely and important step in maintaining and multiplying Russian scientific potential. Furthermore, development in the worldwide innovative process is impossible without the removal of barriers to information. I'm convinced this new program will promote open and useful exchanges between specialists from many nations».*

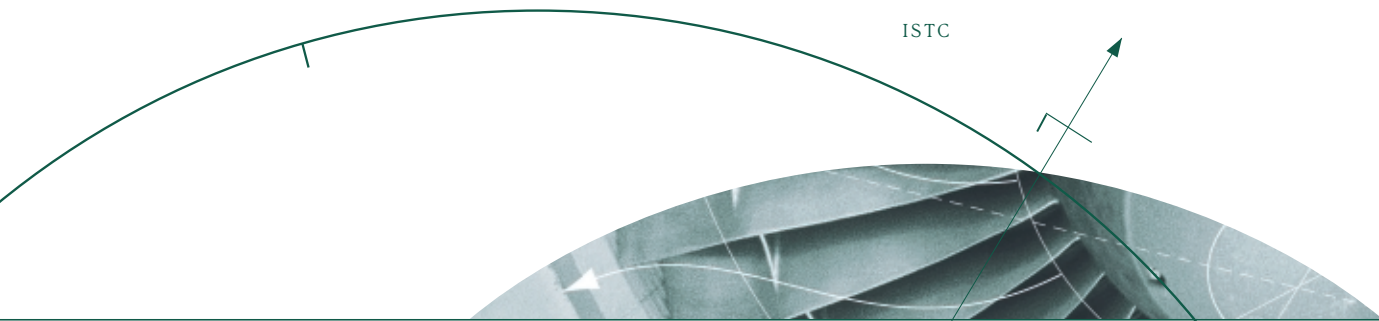
Prof. Sergey P. Kapitsa - President  
Euro-Asian Physical Society

## Presidential Recognition for Excellence in Physics

A scientific team from the Russian Federal Nuclear Center (VNIIEF) in Sarov was awarded the First State Prize of the Russian Federation by President Vladimir Putin, for their work related to ultra-high magnetic effects in solid state physics. The team participated on the ISTC Project #0238 «Semiconductors in Superstrong Magnetic Fields» which was jointly funded by the European Union and United States in the amount of \$250,000. President Putin received the VNIIEF team for the award in the «Giorgii Hall» of the Kremlin.

Dr. Olga Tatsenko and other members of the award winning team with RF President Vladimir Putin in the Kremlin.





Project Manager for Project #0238, Dr. Olga Tatsenko explains: «There are many characteristics of materials that can be researched only in superstrong magnetic fields. That is why the President stressed the uniqueness of our results.» Dr. Tatsenko further remarked that without these fundamental material properties, its impossible to create new magnetic memory elements for information technologies.

*«Thanks to financing from Project #0238, we were able to conduct the research that resulted in a State Prize. Our work has received enormous acclaim in international scientific circles, and the highest praise in Russia.»*

Dr. Olga Tatsenko - Project Manager #0238 VNIIEF

tained at Vector in Koltsovo, and a new generation of variola vaccines and anti-viral drugs based on study of the live virus. In particular, Building 6 at Vector - where the variola research is conducted - has already received upgraded biosafety engineering and ventilation equipment. Fiber optic Internet and communication networks have been added, providing Building 6 and other Vector facilities with global information access. Research in accordance with World Health Organization guidelines continues toward low toxicity vaccines, specific drugs, study of molecular diversity of variola strains, and other measures for population defense. Funding for these ISTC projects exceeds \$4 million, and is provided by the United States' Department of Health and Human Services and the Defense Threat Reduction Agency.



The ISTC supports numerous seminar and workshop events, such as this seminar in Severodvinsk, Russia on nuclear submarine disposal, organized by the International Ecological Safety Center of the Ministry for Atomic Energy. The seminar was attended by 300 international participants. ISTC Deputy Executive Director from the European Union attended on behalf of the ISTC.

## Scientists United in Research for Population Defense

The variola virus - responsible for the disease smallpox - has killed more people in the 20th century than all wars combined. Through a massive international effort, smallpox was eradicated during the 1970s. At that time, the World Health Organization sanctioned two stocks to be used for further research: one in the Russian Federation, one in the United States. Since that time, countries have stopped vaccinating their citizens, and the general population now has either limited or no immune defense against variola. Public health officials have voiced concerns that variola virus strains could be illegally maintained in countries supporting terrorism, providing a highly lethal and contagious agent for viral weapons.

A series of ISTC projects is now dedicated to providing improved biosafety equipment and safeguards for the Russian variola collection main-



*«I am very happy to let you know that on April 28, 2001 we started research work on the variola virus in Building 6, under the joint program. Building 6 was prepared and certified in accordance with national and international requirements. No doubt it was possible thanks to your strong support for the Biosafety and Biosecurity projects and the variola virus research program. Please accept my deepest thanks for your continuous help and great efforts in moving forward with the above projects. We are sure that our scientists will do their best to successfully accomplish the World Health Organization approved variola virus research activities.»*

Prof. Sandakhchiev welcoming US Congressional staff members to Vector.

Letter from Prof. Lev S. Sandakhchiev - Director General, State Research Center of Virology and Biotechnology, VECTOR, to the United States and the ISTC.

## Matching Industry Needs with Technical Talent

The processing of hazardous gasses to make beneficial commercial products can pose significant risks to workers in the chemical industry if they are not properly managed. In addition, time delays in gas sampling, transport, and final analysis are problematic for companies addressing automated closed loop process control to gain the highest efficiency. On-line analysis of industrial operations using molecular sensors inserted directly into critical process streams is a promising way to address process control, safety, and cost-effectiveness.

When Partner company Air Products and Chemicals, Inc. (APCI) approached the ISTC seeking new, selective, and inexpensive molecular sensors for detecting hydrogen sulfide, the ISTC was able to match the APCI request with a team at the Institute of Chemical Physics in Moscow. The team, lead by Dr. Eduard Oleinik, had earlier completed an ISTC project on new functional materials and chemical sensors (#0082). Based on the earlier research, they were well positioned to respond to the APCI request. Through Project #0082, Oleinik's team developed portable, sensitive sensing devices approaching the parts per billion (ppb) range, capable of determining - in real time - mass, conductivity, and concentrations of various gasses. Now, through a new Partner project with APCI, the team at the Institute of Chemical Physics is developing sensors for hydrogen sulfide, specific to APCI commercial applications. Prototype evaluation at hydrogen production facilities of the new hydrogen sulfide sensor is envisaged as an outcome of the APCI project.

*«The ISTC provided a low-cost way of matching APCI's need for these new sensors with top scientists who otherwise would have remained unknown to us. The APCI Partner project through the ISTC demonstrates how industry can benefit from government initiatives.»*

Vincent Magnotta - Manager, Technology Transfer  
Air Products and Chemicals, Inc.

## ISTC: Supporting Regional Initiatives

The Ministry of Economy, Trade, and Industry of Georgia has emphasized the efficient use of regional energy resources that will enable Georgia to reduce its dependence on power provided by neighboring countries, and further reduce consumption of imported fossil fuels. To support this Georgian initiative, wind energy potential and its distribution in Georgia is under study through ISTC Project #G-539. The project is funded by Japan and headed by the Wind Energy Scientific Center «Karenergo,» who will use an existing network of 40 meteorological stations to obtain synchronous wind measurements and vertical velocity profiles. Karenergo envisions the creation of a wind energy cadastre, indicating optimal locations for energy production.

According to a recent study, demand for electricity in Georgia is expected to grow by 50% through 2012, and is unlikely to be met through current and projected supplies. Investment in wind energy provides an alternative source of environmentally clean electricity and the wind energy cadastre of Georgia (#G-539) will be able to quantify the potential for Georgia of this alternative source. A 1 megawatt unit costs \$1 million, and according to Project Manager Archil Zedginidze, supplying wind energy at an acceptable regulated price for Georgia will allow a good return on investment. Three possible sites are under discussion for wind tower «farms» containing 40 generators and requiring an investment of \$40 million, supplying electricity to 8,000 homes or local industry. Possible sources of financing include EBRD and the private utility company AES with US AID technical assistance. The optimal site selection awaits the outcome of the ISTC project.



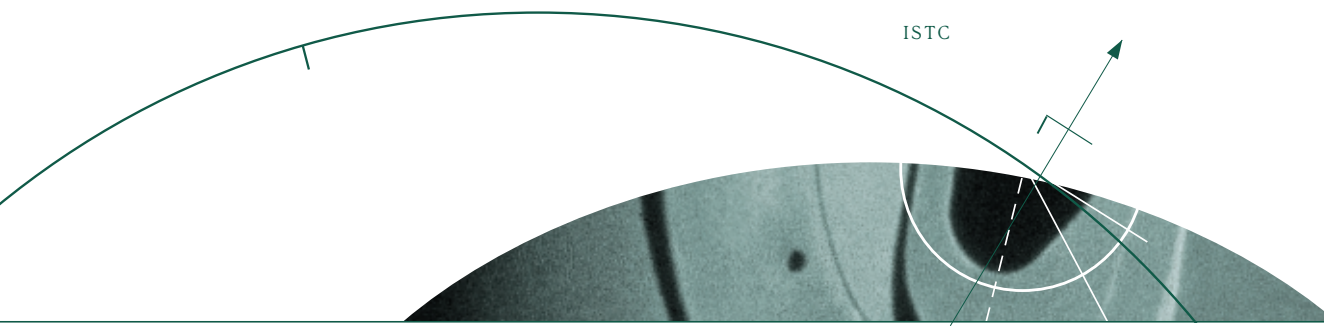
In 2001, the ISTC furthered work begun under the previous Y2K Program, with 700,000 Euro in funding from the EU to remediate safety systems crucial to nuclear power plants in the Russian Federation. The program improved the margin of safety for many systems, along with operability and reliability. Pictured: a technician at the Kalinin NPP tests new software and hardware systems provided by the ISTC.



# LOCATION OF ISTC PROJECTS












## RUSSIAN FEDERATION

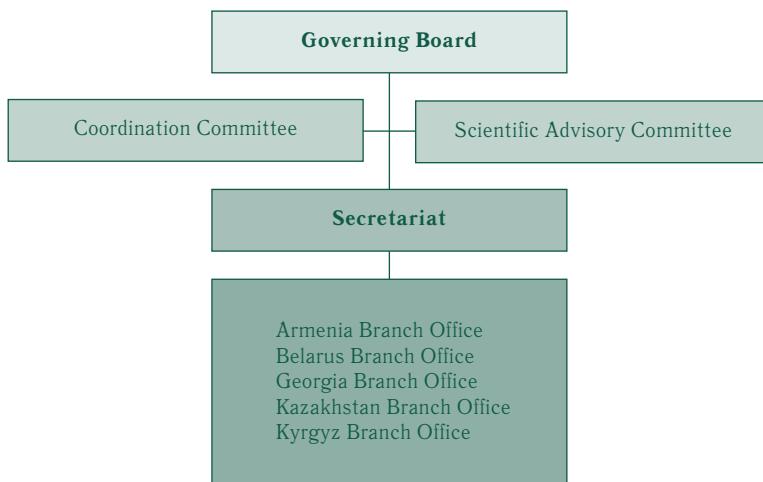
- ISTC PROJECT LOCATION
  - ISTC PROJECTS LOCATED IN MOSCOW REGION
- Bolshie Vyazyemy
  - Chernogolovka
  - Dolgoprudny
  - Dubna
  - Dzerzhinskiy
  - Elektrogorsk
  - Elektrostal
  - Fryazino
  - Istra-2
  - Khimki
  - Klimovsk
  - Korolev
  - Lytkarino
  - Lyubertsy
  - Lyubuchany
  - Mendeleevo
  - Mytishi
  - Nemchinovka-1
  - Obolensk
  - Podolsk
  - Protvino
  - Puschino
  - Sergiev Posad
  - Serpukhov
  - Stupino
  - Troitsk
  - Zelenograd
  - Zhukovsky



**ISTC Organization**

## PARTIES TO THE ISTC AGREEMENT

Founding Parties				Other Parties		CIS Parties				
										
European Union	Japan	Russian Federation	United States of America	Norway	Republic of Korea	Armenia	Belarus	Georgia	Kazakhstan	Kyrgyz Republic



**Members of The Governing Board:**

- Chair (USA) . . . . . Ronald F. Lehman II
- European Union . . . . . Achilles Mitsos
- Japan . . . . . Yuji Miyamoto
- . . . . . Kenichi Suganuma
- Russian Federation . . . . . Lev Ryabev
- . . . . . Vladimir Pavlinov
- United States of America . . . . . Victor Alessi
- Georgia . . . . . Zurab Abashidze

**Members of The Scientific**

**Advisory Committee:**

- Chair (Japan) . . . . . Masayuki Nakagawa
- . . . . . Yutaka Murakami
- European Union . . . . . Jean-Pierre Contzen
- . . . . . Alain Pompidou
- Russian Federation . . . . . Evgeny Avrorin
- . . . . . Yuri Trutnev
- United States of America . . . . . Steven Gitomer
- . . . . . Diane Snyder

The **Governing Board** include representatives of the European Union, Japan, Russian Federation, and United States, plus one rotating seat for a member CIS country, held by Georgia in 2001.

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 and program activities, and evaluates ongoing projects.

## ISTC Organization

# ISTC Parties Contact Information

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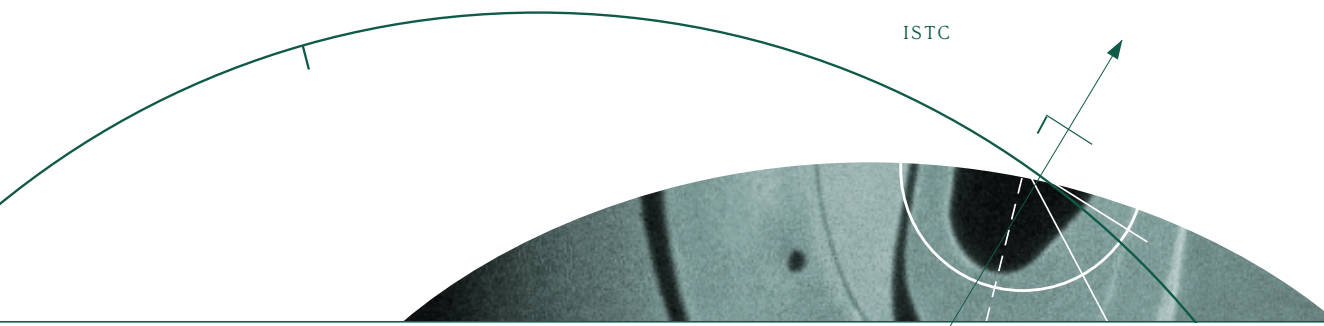
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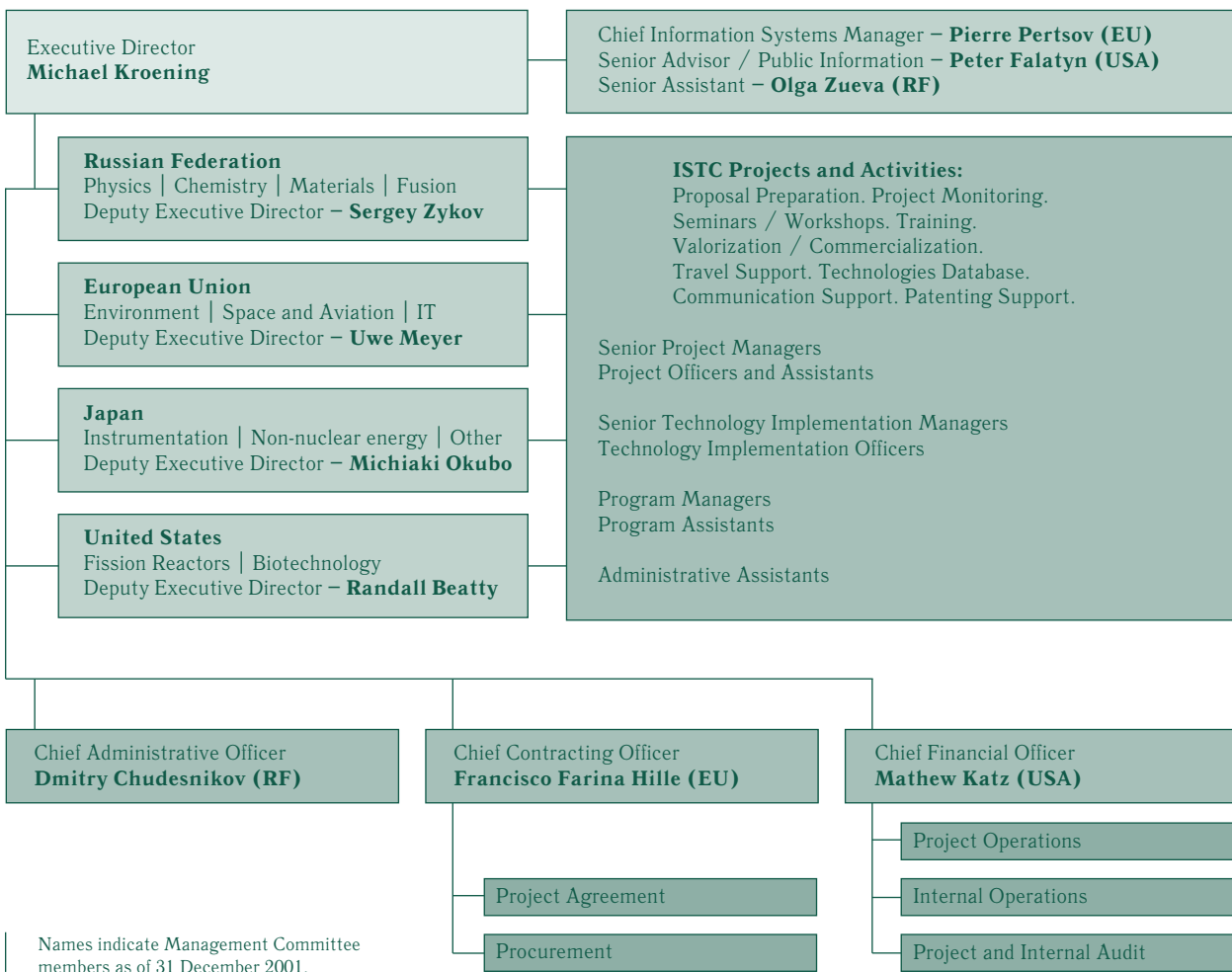
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**ISTC Organization**

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## Summary of ISTC Project Funding

Technology Area / Technology Field	2001		2001		1994-2001	
	Funded		Completed		Funded	
	# Proj.	\$ Value	# Proj.	\$ Value	# Proj.	\$ Value
<b>Biotechnology and Life Sciences</b> Biochemistry, Cytology, Genetics and Molecular Biology, Ecology, Immunology, Microbiology, Nutrition, Pathology, Pharmacology, Physiology, Public Health, Radiobiology	79	29,621,417	19	2,964,364	289	84,003,328
<b>Chemistry</b> Analytical Chemistry, Basic and Synthetic Chemistry, Industrial Chemistry and Chemical Process Engineering, Photo and Radiation Chemistry, Physical and Theoretical Chemistry, Polymer Chemistry	14	3,014,173	4	582,500	69	15,801,959
<b>Environment</b> 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	32	6,463,836	29	7,435,540	228	67,652,971
<b>Fission Reactors</b> 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	20	4,428,536	14	5,485,277	155	48,758,284
<b>Fusion</b> Hybrid Systems and Fuel Cycle, Inertial Confinement Systems, Magnetic Confinement Systems, Plasma Physics	6	1,699,000	1	1,000,000	37	11,080,013
<b>Information and Communications</b> Data Storage and Peripherals, High-Definition Imaging and Displays, High Performance Computing and Networking, Microelectronics and Optoelectronics, Sensors and Signal Processing, Software	17	4,725,423	7	505,310	66	16,218,407
<b>Instrumentation</b> Detection Devices, Measuring Instruments	12	2,583,240	10	3,679,000	86	23,032,997
<b>Manufacturing Technology</b> CAD and CAM, Engineering Materials, Machinery and Tools, Manufacturing, Planning, Processing and Control, Plant Design and Maintenance, Robotics, Tribology	12	2,825,540	1	40,000	38	6,811,650
<b>Materials</b> Ceramics, Composites, Electronic and Photonic Materials, Explosives, High Performance Metals and Alloys, Materials Synthesis and Processing	16	3,341,272	11	2,216,900	124	39,888,480
<b>Non-Nuclear Energy</b> Batteries and Components, Electric Power Production, Fuel Conversion, Fuels, Geothermal Energy, Heating and Cooling Systems, Miscellaneous Energy Conversion, Solar Energy	6	2,534,000	3	958,000	30	8,870,936
<b>Other</b>	5	1,326,213	4	193,540	12	1,919,753
<b>Other Basic Sciences</b> Agriculture, Building Industry Technology, Electrotechnology, Geology, Natural Resources and Earth Sciences	5	1,264,288	3	72,354	19	3,855,368
<b>Physics</b> 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	45	9,014,624	21	4,189,000	228	50,568,407
<b>Space, Aircraft and Surface Transportation</b> Aeronautics, Astronomy, Extraterrestrial Exploration, Manned Spacecraft, Space Launch Vehicles and Support Equipment, Space Safety, Spacecraft Trajectories and Flight Mechanics, Surface Transportation, Unmanned Spacecraft	11	2,941,606	9	3,040,238	70	19,675,418
<b>Totals:</b>	<b>280</b>	<b>75,783,169</b>	<b>136</b>	<b>32,362,023</b>	<b>1,448</b>	<b>398,137,971</b>