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EXECUTIVE SUMMARY

ISTC – PURSUING OUR OBJECTIVES

NONPROLIFERATION THROUGH
SCIENCE COOPERATION

The objectives of the ISTC are to:

- Provide former weapons scientists in Russia and the Commonwealth of Independent States (CIS) countries the opportunity to redirect their knowledge and skills to peaceful activities
- Support basic and applied research and technology development
- Contribute to the transition to market-based economies
- Foster the integration of former weapons scientists and engineers from Russia and CIS countries 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 industry, providing former weapons scientists from Russia and the Commonwealth of Independent States new opportunities in international partnership. The ISTC is central in the management of these science partnerships.

Through its political, legal, and financial frameworks, the ISTC contributes to fundamental research, international nonproliferation programs, and innovation and commercialization by linking the demands of international markets with the exceptional pool of scientific talent available in Russian and CIS institutes.

In 2005, the ISTC accomplished:

- New project funding for 163 projects in the amount of \$51.3 million, of which ISTC Partners provided \$21.5 million for 56 projects
- Direct grant payments to 24,984 scientists and their team members, amounting to \$43.9 million
- Addition of 42 new Partner organizations to the existing 242 Partners who have provided over \$207 million in project funding since program inception
- Expanded funding for seminars, workshops and scientist travel to strengthen international exchanges on ISTC projects and programs
- Restructuring of the Secretariat to create a new Global Security and Strategic Planning Department
- Completion of an internal efficiency review

GOVERNING BOARD CHAIRMAN STATEMENT



Dr. Ronald F. Lehman II
Chairman

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.A. 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 International Science and Technology Center enters the year 2006 with great pride. One could see this pride, for example, in last year's historic Almaty Board Meeting, hosted by Minister Vladimir S. Schkol'nik, who had for so long served on the Board personally in order to help the infant organization step up to immense start-up challenges. One could see it also in the enthusiasm shown at the ribbon cutting ceremony at the new headquarters. Most importantly, the new building will help us work more effectively and efficiently in support of our nonproliferation mission.

At the same time, friends of the ISTC see the building's fine appearance, modern facilities, and convenient location almost as accolades for the success of the organization. The Dean of our Governing Board, the Representative of the Russian Federation Minister Lev Ryabev deserves our appreciation for the efforts he undertook to permit us to open the new year and the next phase of the ISTC's history in our own office space.

Much has been accomplished, and new contributions continue to emerge. Strong support from the Parties and the highly motivated staff, both in the Moscow Secretariat and in the Branch offices, have permitted the ISTC to press ahead on a much wider front in both substance and participants. Above all, the performance by ISTC funded scientists continues to advance, with progress even in such difficult areas as sustainability and commercialization. Canada and Tajikistan have demonstrated that new parties can be integrated quickly. Indeed, every party to the ISTC has now served at least a one-year term on the Board itself. The number of private and government affiliated partners has also grown.

The ISTC portfolio of resources and research assets has become more diverse and more agile. The qualitative performance measures are every bit as solid as the quantitative ones.

Our success can be attributed in part to a balance of experienced hands and new blood. We are saddened, however, and do worry when some of the greatest contributors move on. For many years, the ISTC could look with confidence to our Russian Deputy Executive Director, Sergey Zykov, to make the complex become simple again. EU Board Member and European Research Director-General Achilleas Mitsos proved to be an energizer of great power who stayed personally engaged year after year. Now both have moved on to new chapters in their lives. They will be missed, but they left behind an organization far stronger because of their work.

The ISTC will continue to improve its existing approaches to the priorities the Parties have identified. Nevertheless, changing circumstances now require the ISTC to revisit the basics. What are we doing that we should really leave behind? And what are we not doing that we should now do? How do we best serve the interests of the Parties today, as opposed to yesterday? How should we share the benefits and the burdens? The Governing Board has undertaken a major strategic review, to be concluded in 2006. This review will draw from parallel brainstorming sessions within the organization and with the Parties. Undoubtedly much that has been sound practice and priorities will remain. Changes, however, will also undoubtedly be necessary. We must take into account our success in reducing some legacy problems, and we must step up to the new challenges presented by economic, social, and technological change that impacts international nonproliferation and security priorities of the Parties.



EXECUTIVE DIRECTOR STATEMENT



Norbert Jousten
Executive Director

Mr. Jousten started his professional career in 1970 in the private industry, at Siemens and Westinghouse. In 1980 he joined the European Commission. His successive assignments were in the Euratom Safeguards Directorate, Luxembourg, the Euratom Supply Agency, Brussels, the Commission Delegation in Vienna (IAEA, UN, Relations with Austria). In 1992 he joined the External Relations Directorate General in Brussels, to be in charge of important sectors of the EU's Tacis programme. As Head of Unit he was responsible for Nuclear Safety, Regional Cooperation, including the Northern Dimension and Black Sea Co-operation, the Tacis Cross Border Co-operation and Regional Programmes. Since 1995 he had also represented the European Commission in international fora (G7 Nuclear Safety Working Group, EBRD Nuclear Safety Funds, G24). From 2001 till 2004 he was Head of the Delegation of the European Commission to Ukraine, Belarus and Moldova in Kiev. Mr. Jousten joined the ISTC in April 2004.

2005 was another exciting year for the ISTC. We have continued to play an important role in creating science partnerships and collaborations between countries, international business and former weapons scientists from Russia and the CIS, whose peaceful redirection remains the ISTC's core activity.

This year's Annual Report showcases the ISTC's work in supporting international science cooperation with nonproliferation goals. In doing so, the ISTC assists its stakeholders – governments, the global private sector and the international science community – in building sustainable

working relationships of benefit to all participants. For this reason, the theme for this year's report is one of Partnership. In all of our governmental, commercial, scientific or academic relations, the ISTC acts to ensure transparency and equitable benefit for all of those with whom it works. Progress through Partnership really does mean something in the daily life of the ISTC and I believe this is reflected in the Report we present here.

The ISTC continues its outreach efforts to expand our network for scientists and institutes and we now have almost 300 International Partners. Our long-term commitment to Partner development will ensure that the ISTC can provide a wide range of opportunities for our beneficiaries to achieve their long-term goals. In conjunction with this we have also made considerable progress in the development of procedures to handle Intellectual Property Rights, to ensure that the fine work done by ISTC beneficiaries is appropriately safeguarded. It is my hope that this will provide a foundation for future growth and self-sustainability through commercialization.

We also continue to develop and deploy tools to increase the knowledge base of our recipients. One of the ISTC's main objectives is to familiarize an increasing number of experts with modern global marketplace mechanisms. These tools will help institutes to better understand world markets for the benefit of their own participation in the global community as well as communicate with a larger group of scientists internationally. As an example, the first ISTC Resource Center was opened in Bishkek, Kyrgyzstan, in September. In addition, we have grown our distance-learning and capacity-building programs in an effort to provide recipients with the real-world business skills they need to realize their growth potential and be successful in market economies.

Other highlights at the Secretariat include the creation of the new Global Security and Strategic Planning Department, added at the direction of the Governing Board. Headed by the new Canadian Deputy Executive Director, the Department helps to ensure that the ISTC is properly integrated into global nonproliferation efforts and the G-8 "Global Partnership", which has the re-direction of former weapons scientists as one of its priorities.

We have also made great efforts to improve our own performance by conducting a comprehensive internal efficiency review to identify key areas for improvement. We plan on improving the way we do business – everything from project management and procurement to improved travel planning, records maintenance and communications. This will ensure that the ISTC continues to be a transparent organization focused on best-business practices and cost accountability, and will serve to strengthen our relationships with our Funding Parties, Partners, and Beneficiaries. The recently formed Project Management Committee will ensure that our project staff has a mechanism to communicate new ideas and concerns directly to senior management.

As always, we take note of our primary mission, which is to support our beneficiary scientists and institutes. With that in mind, I look forward to another successful year of meeting the priorities of our Funding Parties while maintaining the support of our host countries and continuing to build the confidence of former weapons of mass destruction scientists in the ISTC.



2005 OFFICIAL EVENTS

February 21

The Scientific Advisory Committee (SAC) held its 32nd meeting in Tokaimura, Japan, which included a series of technical visits to Japan Atomic Energy Research Institute facilities.



SAC Committee members
32nd meeting

March 20-30

The ISTC Executive Director visited Japan at the invitation of the Government of Japan

April 11

The Governing Board held its 36th meeting in Almaty, Kazakhstan, approving 24 new projects representing over \$1.8 million and Euro 3.5 million in new funding.

May 23

The Executive Director represented the ISTC at the exhibition, "Ulianovsk Region: Challenges and Outlook for Development", which was hosted by the State Duma of the Russian Federation and highlighted the successful cooperation between the ISTC and R&D institutions in the Ulianovsk region since 1994.



ISTC Executive Director Norbert Jousten
at the State Duma Exhibition

May 30

The Scientific Advisory Committee held its 33rd meeting at ISTC Headquarters in Moscow, which included visits to the Moscow Engineering Physics Institute and the Moscow State Institute of Steel and Alloys.

July 31

The ISTC conducted its 37th Project Funding Session, approving 40 new projects representing nearly \$5.4 million and Euro 5.2 million in funding.

September 9

The ISTC organized the opening ceremony of the first ISTC Resource Center in Bishkek, Kyrgyzstan. The Resource Center will become a catalyst in promoting the skills of local scientists in commercializing scientific research and helping them find other practical applications for their expertise and achievements.

September 12

The ISTC organized a workshop at ISTC Headquarters in Moscow, Russia, which included representatives from 10 of Russia's closed nuclear cities, Canada, the EU, Japan, Russia, and the USA. The purpose of the workshop was to discuss expanding current bilateral cooperation with Russia's closed nuclear cities.

September 20

The ISTC, in collaboration with the US Embassy in Dushanbe and the Academy of Sciences in Tajikistan, officially opened a new Communications Center in Dushanbe. The event marked the completion of an ISTC Communication Support Program project that provided 8 bio-related institutes in Tajikistan with Internet and low-cost international telephone services.

September 26-28

The ISTC Executive Director visited the Republic of Korea

September 29

The Scientific Advisory Committee held its 34th meeting at ISTC Headquarters in Moscow.

October 5

The ISTC celebrated the 10-year anniversary of operations at the Belarus Branch Office in Minsk. During this time, the ISTC has funded 49 regular science projects in Belarus to a sum of \$17.3 million, engaging 700 Belarus scientists annually and involving 200 science collaborators from Canada, the EU, Japan, Korea and the USA. In addition, 13 Partner projects totaling \$13.2 million have been supported by CERN, 3M, KETI, Fraunhofer Gesellschaft, the US National Cancer Institute, and the University of Mannheim.

October 28

The ISTC Governing Board held its 38th meeting at ISTC Headquarters in Moscow, approving 39 new projects representing over \$5.5 million and Euro 4.3 million in new funding.

November 11

The ISTC Executive Director participated in meetings in Tbilisi with representatives from the scientific and educational communities in Georgia. The meetings included discussions about expanded participation of scientists in Georgia in ISTC activities.

SCIENCE PARTNERSHIPS

SCIENCE AND TECHNOLOGY COOPERATION

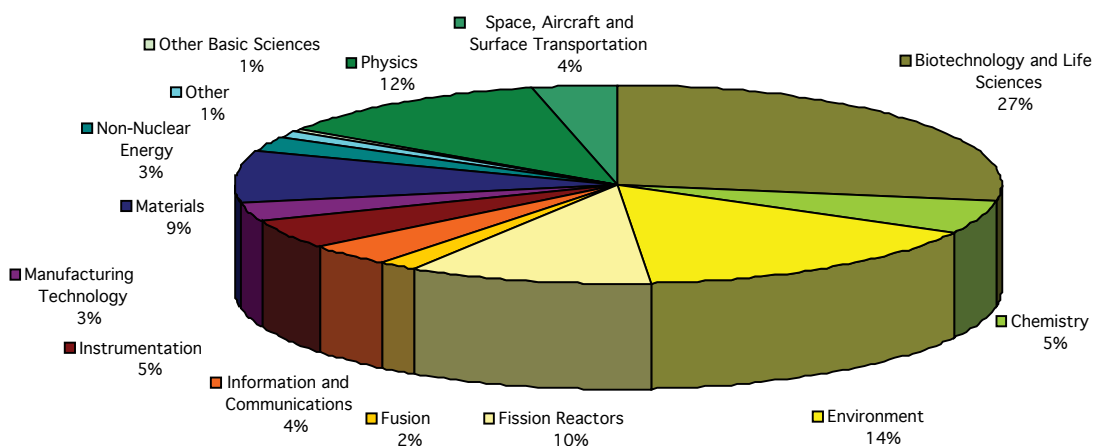
The ISTC has been at the forefront of engagement with former Weapons of Mass Destruction (WMD) scientists and engineers since its inception over a decade ago. 2005 provided further testimony of the ISTC's capacity to promote scientific cooperation and foster technological innovation in creative and constructive ways through a number of collaborative efforts and programmatic activities.

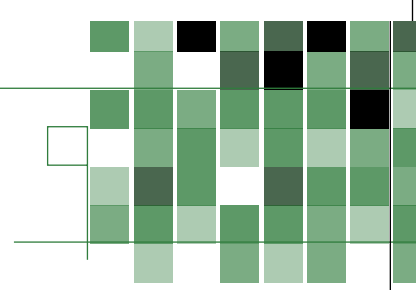
The Science Project Program is the most comprehensive nonproliferation activity conducted by the ISTC. In 2005, \$51 million was allocated for 163 new Regular Projects. Regular Projects are those which are funded by the Governing Parties through the ISTC. Overall, 512 Regular Projects were underway during 2005 and encompassed 15 science and technology areas, focusing mostly on Biotechnology and Life Sciences, Environment, Fission Reactors, Physics and Materials, but also R&D in Instrumentation, Information and Communications, Space, Aircraft & Surface Transportation, Materials, Fusion, and Non-Nuclear Energy.

The ISTC works closely with the CIS National Academies of Sciences and other CIS governmental organizations and S&T- institutions and industry (more than 700 in the CIS) in charge of science management in these countries.

The ISTC also assists their research institutions to implement sustainable strategies and to develop project proposals that are more attractive for collaborators (more than 1,000 from ISTC countries), and nearly 300 Partners from ISTC Funding Parties.

ISTC Technology Areas in 2005

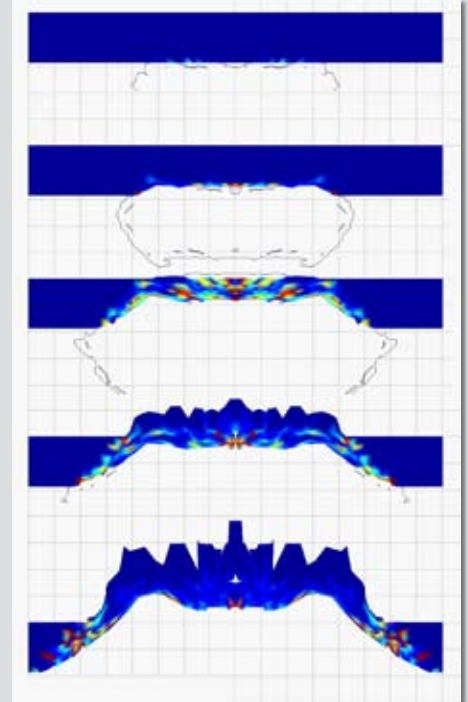




Three examples of the 500 + regular projects, active and under implementation, include:

ISTC Project #KR-899-Novel Efficient Metal-Containing Energetic Materials for Underwater Explosions in Industry (Funded by the European Union)

This project has investigated several novel substances that can be used to facilitate focused underwater explosions, which are of interest to commercial partners engaged in underwater demolition and construction. The team, centered at the Kyrgyz-Russian Slavonic University was able, using a supplied computing complex (shown here with the Project Manager, Dr. Pavel Komissarov), to predict the behavior of an explosion being used to break up a 2-meter thick sheet of ice. The results were verified via experiments in special chambers at the Semenov Institute of Chemical Physics in Russia. Very close collaboration with Krispin Technologies in the USA and the Laboratory of Combustion and Detonation and SME Centre de Recherches du Bouchet in the EU, supported the research and offered these collaborating organizations early access to the project results.



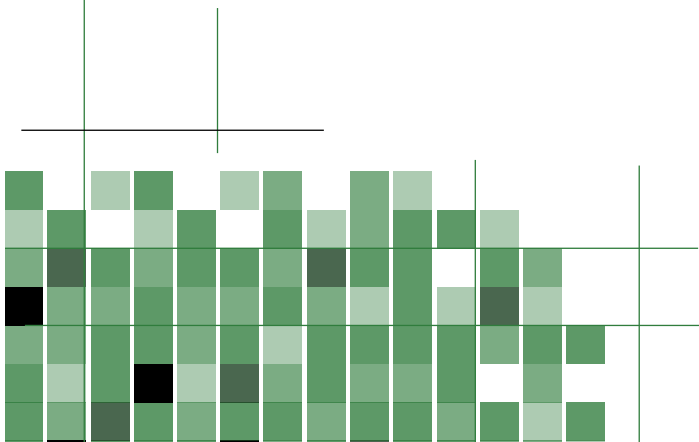
ISTC Project #2580 - Development of a Fixed-Site Diagnostic Test Stand with Removable Pulsed Power Source for Study of Liner Implosion (Funded by the USA)

Working with All-Russian Research Institute of Experimental Physics (VNIIEF), Sarov, Russia, Project #2580 concerns the development of a unique experimental diagnostic stand for the modeling of physical processes and

the study of substance properties. The project also enables research into implosion of current-conductive cylindrical and quasispherical environments (liners) and their interaction with current-conductive walls and near-wall perturbation.

Advantages of the stand come from the replaced sources of a current on the basis of helical and disk explosive magnetic generators.

Three joint VNIIEF/LANL experiments, aimed at the study of processes that lead to the initiation of damage under shock conditions and ultimately to material failure, have also been carried out in Sarov under the auspices of the ISTC.

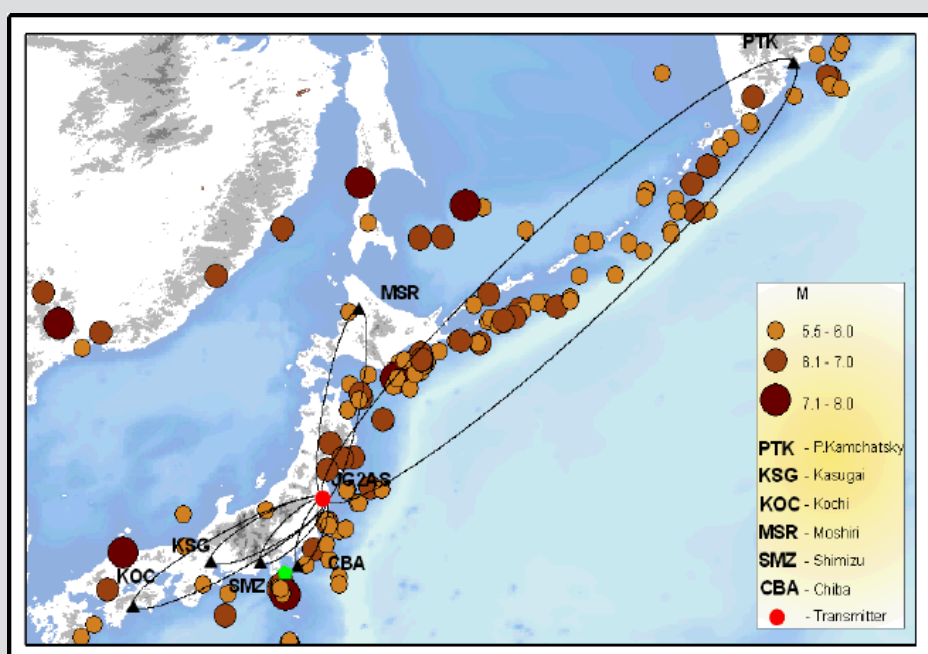


ISTC Project #1121- Organization of the Russian - Japanese Geophysical Observatory for Complex Studies of Electromagnetic and Seismic Precursors of Earthquakes (Funded by Japan)

This project was funded for six years and was designed to develop new methods of earthquake prediction and clarify the mechanisms of earthquake origin. The project built on previous research efforts in Japan which led to the establishment of a new field of research called "Seismoelectromagnetics and related phenomena". However, this project differs from previously conducted earthquake precursory research by application of new technology for registration and data processing (mainly methods of radiophysics).

A special station, Karymshino, was installed on the Kamchatka peninsula (Far-Eastern Russia) and was designed for regular complex monitoring of many parameters: local seismicity, Ultra-Low-Frequency (ULF) and Extremely-Low-Frequency (ELF) electric and magnetic field variations, seismo-acoustic emission, Very-Low-Frequency (VLF) transmitter signals as indicators of perturbations in the upper atmosphere, hydrology and geochemistry changes in wells and springs, and atmospheric variations in the troposphere. In addition, the station uses data on regional seismicity (27 stations) and the results of satellite remote sensing above Kamchatka.

The station is rurally situated with low industrial interferences and frequent seismicity, which is advantageous in comparison with observation stations in industrial countries such as Japan, the USA and Europe. The Karymshino station is currently considered as a reference station for Japanese networks and one of the best places to check new theoretical ideas.



A schematic of radio transmitter and receivers in the Japan-Russia system together with earthquake ($M > 5.5$) epicenters in the period 2000-2003.

Regular complex registrations in Karymshino station started in June of 2000, and after installation and testing, two remote sites for precise electromagnetic ULF observation at the Barkhatnaya valley and at Kariaka volcano were commissioned in 2005. The main result of the project is classification and analysis of reliability and occurrence rate of the effects that could be used for short-term earthquake prediction, including those newly-discovered during observation from the Karymshino station:

- The depression of natural ULF noise 3-4 days before an earthquake;
- The appearance of seismo-acoustic pulses in the last day before the main shock;
- An increase of ELF electromagnetic emission from the atmosphere 2- 5 days ahead of an earthquake; and
- Pre-seismic VLF transmitter signal perturbations in the upper atmosphere.

Another important result of the project was the development of a theoretical model of earthquakes based on the concept of vertical fluid migration through the lithosphere. Moreover, there were about 60 papers published in international scientific journals and a number of reports were presented at various international symposiums and meetings. Current research is continuing in the framework of ISTC Project #2990.

The sensitivity zone of the receiver (named here as PTK – Petropavlovsk-Kamchatsky) is shown by an elliptical curve which covers the seismo-active region of North Japan-Sakhalin-Kuriles.

Programmatic Approach

The Programmatic Approach (PA) is a new policy of the ISTC, approved by the ISTC Parties at the 38th Governing Board Meeting (GBM) in October 2005. On the basis of this decision, the Center nominated a number of Science Coordinators among its staff, who developed "PA topical area reports" (PATs) for consideration by the Parties, as follows:

- Nano Technology
- Science & Technology in Support of Counter –Terrorism
- Global Climate and Environment
- Space and Aeronautics
- Drug Design & Development
- Central Asian Disease Surveillance
- Nuclear Safety Benchmarking and High Energy Technologies
- Instruments and Technology for Radiation Medicine

In January 2006, ISTC Parties approved the PATs in principle and requested the Secretariat to proceed according to the approved methodology.

The ISTC Targeted Initiatives (TIs) are one of the instruments available to fulfill the Programmatic Approach objectives and to enhance strategic partnerships between the scientific community and their counterparts in private industry.

The Targeted Initiatives also provide scientists in Russia and the CIS an alternative and more focused format to standard ISTC projects in their transition to a sustainable mode of operations in a market environment.



Meeting of Fuel Cell Targeted Initiative Steering Group at the ISTC in December

The Fuel Cell Targeted Initiative seeks to focus ISTC-related activities on the final goal of development, manufacture and testing of a pilot power plant of five-kilowatt capacity based on fuel cell technology. This pilot power plant will then be used as a production prototype for commercialization. The selection of fuel cell technology for the first ISTC Targeted Initiative was based on the availability of skilled teams of scientists in closed cities, the international importance of this technology, and an ISTC portfolio of more than 40 research projects related to fuel cell projects.

As part of an effort to create partnerships between the international community and government agencies and industries in Russia and the CIS, the ISTC is also identifying and developing a number of other types of Targeted Initiatives.

The Law Enforcement Targeted Initiative (LETI), which will support counter-terrorism objectives, will initially help international partners develop forensics technologies and new applications in collaboration with the Russian Ministry of the Interior (MVD) and other government agencies.

The primary objectives of the Law Enforcement Targeted Initiative are to: support law enforcement-related research and development; enhance law enforcement's technological capacity; foster self-sustaining relationships; and generate civilian employment opportunities. The LETI is being carried out with the full support and involvement of MVD.

Foreign Collaboration

The ISTC is contributing to a multinational program uniting scientists and policymakers in the Caucasus region through assessment and information sharing on seismic risks.

Funding of \$300,000 for Project #A-651, provided by the European Union and the United States, through the ISTC, is now supporting Armenian and Georgian scientists from 8 institutions in a Caucasian Seismic Information System. The ISTC project began as part of a comprehensive, coordinated effort, also funded through

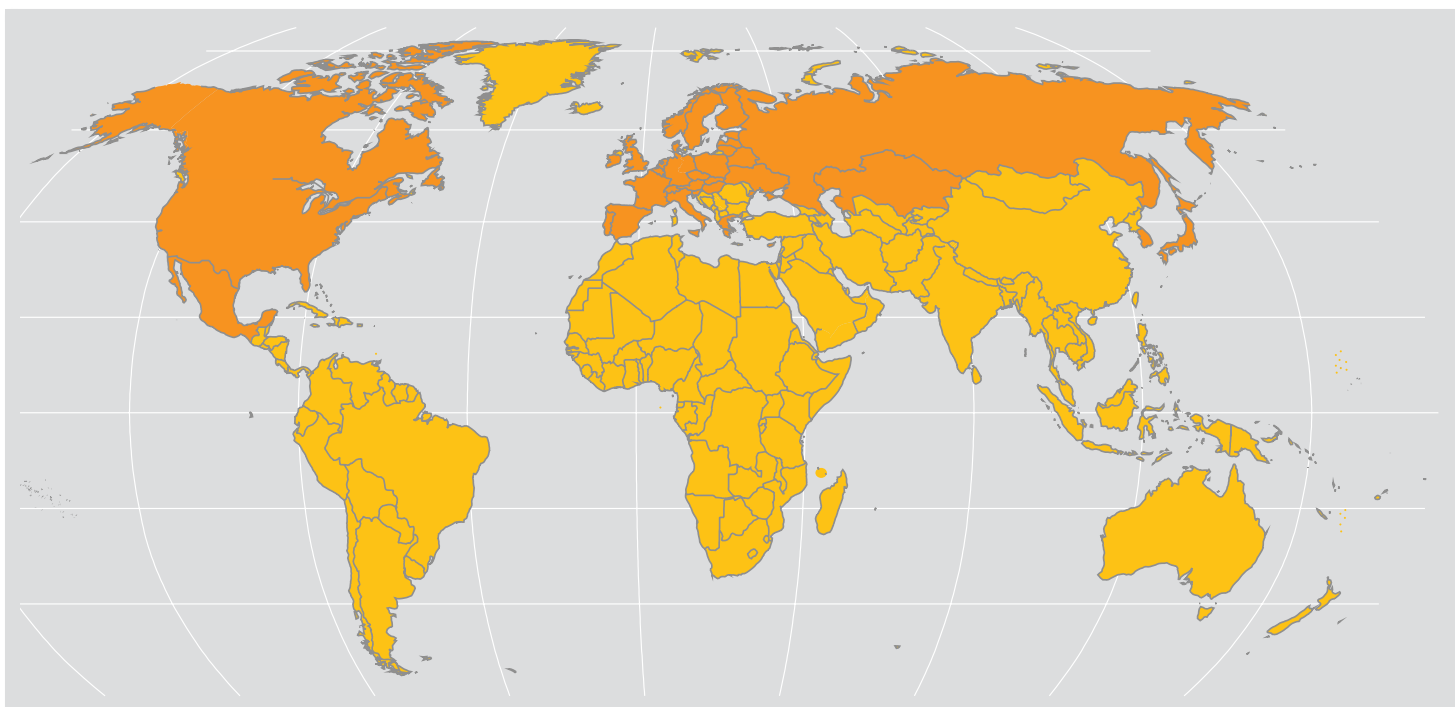
the NATO Science for Peace program. The Lawrence Livermore National Laboratory in the USA is a principal collaborator, with other collaborator institutes located in Greece and France. They coordinate the Armenian and Georgian scientific efforts with those in Turkey, Russia, and Azerbaijan.

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.

ISTC's GLOBAL REACH



■ - Location of ISTC's Parties, Partners and Collaborators

Workshops and Seminars as Vehicles to Engage and Integrate

In 2005, the ISTC combined its Seminars Program and Science Workshops Program into a Science Workshops and Seminars Program. This program supports the integration of former WMD experts in Russia and the CIS into the international scientific community and seeks to promote sustainable cooperation. These goals are pursued through funding provided by Canada, the EU, the United States, and Japan that allows experts in Russia and the CIS to interact and exchange ideas in science and technology. These funds also help scientists establish new contacts and cooperative opportunities with colleagues from the ISTC Parties, Russia, and other CIS countries.

The ISTC organized or provided support for 30 such events in 2005. As examples:

Conference on Advancing International Cooperation on Bio-Initiatives in Russia and the CIS (April 28-29), in Rome, Italy

This international conference, which was organized by RANSAC and the Centro Volta, included about 30 top-level experts from Russia, Kazakhstan, Uzbekistan, Canada, the United States, and the European Union. Participants at the conference recommended similar follow-up events and activities to further pursue cooperation on bilateral initiatives and agreements.

Conference on Contamination of Soil (October 3-7), in Bordeaux, France

The leading conference on pollution

of soil and groundwater systems, ConSoil 2005 focused on remediation of contaminated soils. The ISTC Workshop at ConSoil 2005 consisted of 2 special sessions, "Radioactive Contamination in Russia and other CIS countries", that were open to all members of the conference.



Participants at the ISTC Workshop at ConSoil 2005

The 8th ISTC Science Advisory Committee Seminar "Bio-Fuels in Clean Power Production & Transport" (November 29-30), in Moscow, Russia

The Seminar considered all aspects of the production and utilization of bio-fuels. The two-day event began with state-of-the-art presentations and was followed by specialized presentations on advances and prospects of Bio Fuels, ending with a panel discussion on steps for the future.



Participants at the 8th ISTC Science Advisory Committee Seminar "Bio-Fuels in Clean Power Production & Transport" in Moscow, Russia

Canadian-Russian Colloquium on Aerospace Technologies (December 5), in Moscow.

The objective of the Colloquium was to enable CIS and Canadian aerospace experts to meet and discuss possible future ISTC projects. The priority for the first Colloquium was to enable experts from Canada and the CIS to interact and initiate direct collaboration.

Laboratories Working Together

International Scientific Laboratories (ISLs) are designed to link resources of research institutions and industry in the CIS with those from Party countries. This assistance reaffirms the positive experience gained through the ISTC's Science Projects Program and fosters the goal of the long-term engagement of scientific teams. In 2005, an ISL for Optical and Laser Diagnostics at the Stepanov Institute of Physics, Minsk, Belarus commenced operations. ISTC Project #B-1065, which was funded by the EU, as well as three Partner Projects with the German Fraunhofer Gesellschaft (FhG) Institute, provides an important basis for the operations of this ISL. Space and facilities at the ISL in Minsk were purchased with financial contributions from the Government of Belarus, the ISTC, and the Fraunhofer Institute for Non-Destructive Testing (IZFP).

Prospective ISLs were also being developed in 2005 in Russia at the Sukhachev Forest Institute in Krasnoyarsk and the Research Institute for Complex Testing of Optic-Electronic Devices in Sosnovy Bor. These ISLs would provide a unifying framework for existing ISTC Regular and Partner Projects. For instance, the ISL in Krasnoyarsk would combine the efforts of partners in Germany with ISTC projects focused on climate change in Eurasia, ecosystems in Central Siberia, and atmospheric investigations over northern Eurasia. Furthermore, European S&T organizations from France, Germany and Sweden have confirmed their interest in establishing an ISL on the base of the research facility at Sosnovy Bor.



Kalvinkovskaya and Bushuk carry out investigations in advanced directions of optical nondestructive testing using a laser scanning microscope equipped with continuous wave and femtosecond lasers at the ISL in Minsk, Belarus

Supporting Collaboration

Through the ISTC, thousands of foreign collaborators are engaged on a voluntary basis in cooperation with CIS scientists. The following programs are in support of such collaboration:

Travel Support Program - The ISTC strongly encourages CIS scientific teams to develop their project proposals with the participation of foreign collaborating organizations. Travel Support Programs funded by all ISTC Parties encourage collaboration by reimbursing travel and related expenses for CIS scientists and for experts from the Party-countries who wish to begin or continue technical consultations on the proposals they submit to the ISTC. Travel Support Program funds also cover travel expenses for scientist participation in international meetings and conferences relevant to their specialization. Over 400 scientists and experts were supported in 2005 on visits to many of the ISTC supporting countries.

Communications Support Program (CSP) - CSP aims to improve the telecommunication infrastructure of institutes where current capabilities inhibit the successful accomplishment of ISTC project participation and the development of commercial opportunities.

In 2005, 6 projects were funded for a total of \$920,000 in Kazakhstan, Kyrgyzstan, Russia, and Tajikistan. When completed, these projects will provide Internet, and in some cases telephone service to over 580 former WMD scientists.

Contact Expert Group - (CEG) is a form of joint activity with foreign collaborators that the ISTC has pursued for ten years, upon the initiative of the European Union. Objectives of CEGs include technical monitoring of on-going projects, information exchange and coordination of ISTC projects, strengthening of collaboration, and initiation of new projects, meetings, publications and other joint actions. There are currently several CEGs, including ISTC projects related to Nuclear Power Plant (NPP) life management and safety, verification of methods and technical data for control of reactor pressure vessels and interiors, structure of materials, and development of uniform norms and regulations.

The ISTC is an active Member of the Contact Expert Group on international Radwaste Projects in Northwest Russia (IAEA). The CEG has developed a comprehensive database which provides all participants with information on goals, status and donors of the relevant projects. The results and recommendations of this expert group provided a basis for the G8 Global Partnership Program.

Since November 2001, the ISTC and the EU DG Research have agreed to convene yearly meetings of an **International Working Group (IWG) for the European Nuclear Cities Initiatives (ENCI)**, and more broadly for International Transition Initiatives – open to governmental, non-governmental and private sector entities – in order to analyze/discuss/coordinate the cooperative efforts by the Federal Agency for Atomic Energy (RosAtom) and by the global

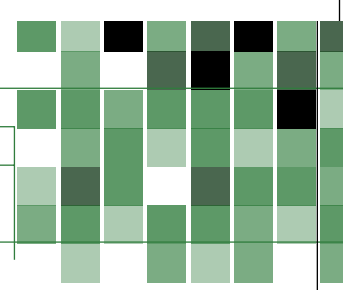
community to strengthen the civilian conversion, the economic diversification and the re-orientation of the closed Russian Nuclear Cities (RNCs) and their assets.

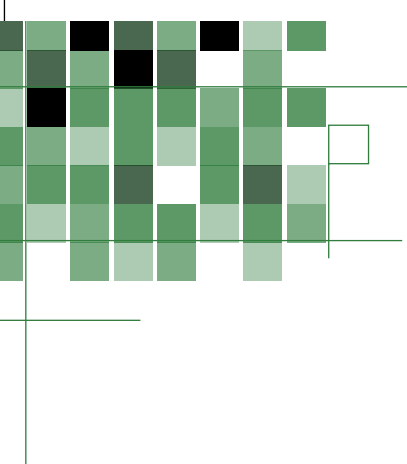
The ISTC is also a member of **NICOLE** (Network for Contaminated Land in Europe), which was set up in 1995 following an initiative from the European Chemical Industry Council (CEFIC). NICOLE is the principal forum where industry, service providers and academia cooperate to develop and influence the state of the art in contaminated land management in Europe. It is open to public and private sector organizations, and has been initiated as an action within the European Commission's Environment and Climate RTD Programme from 1996.

The ISTC also co-sponsored and took part in the following nuclear conferences:

- International Conference on Nuclear Power in Space (March), in Podolsk, Russia
- International Conference on Space Nuclear Systems (June), in San Diego, USA
- ICENES-2005, the 12th International Conference on Emergent Nuclear Energy Systems, (August), in Brussels, Belgium
- The 4th International Conference on VVER Safety (September), in Podolsk, Russia
- International Workshop "Experimental Performance of KTM Tokamak and Research Program" (October), in Astana, Kazakhstan
- The 16th NEUTRONICS Seminar "Neutron and Physical Problems of Nuclear Power" (November), in Obninsk, Russia

LOCATION OF ISTC PROJECTS





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

PUBLIC/PRIVATE PARTNERSHIPS

INTERNATIONAL OUTREACH

Providing Russian and CIS former weapons scientists and institutes with long-term employment sustainability in the civilian marketplace is one means of the ISTC achieving its nonproliferation goals. To achieve this, the ISTC actively seeks to expand its international business and governmental networks through its Partners Program and the Commercialization Support Program.

These Programs offer technology matchmaking, project management and pre-commercialization of technologies support to former weapons scientists, to enable private companies, investors and governmental research organizations to partner and capitalize on the high-tech scientific skills and technologies available today in Russia and the CIS.

The principal goal is to create medium to long-term sustainable businesses and R&D partnerships between international companies and organizations, and former Russian/CIS weapons scientists.

Private companies and governmental research organizations join the ISTC as Partners and use their R&D budgets to fund civilian work in their areas of interest by former weapons scientists. ISTC Partners may, at no cost, direct the ISTC to find scientists or institutes who can meet their technology or commercial R&D requirements. Having selected scientists or project teams, Partners can choose to engage the ISTC in assisting with pre-commercialization initiatives or R&D project management for technology development programs in Russia or the CIS, paying scientists directly for the work they carry out

through the ISTC's tax-exempt and internationally audited programs. Partners can generally expect to wholly or majority-own the outcomes of projects which they have funded and share Intellectual Property Rights (IPR) with scientists and institutes in Russia and the CIS.

Partners

By December 2005, the ISTC had recognized 284 Partners, each accepting the ISTC's nonproliferation objectives as a condition of application. 42 new Partners joined the Partner Program in 2005. This is the second highest number of new Partners since the Partner Program was created in 1995.

In each ISTC party, the total number of Governmental and Commercial Partners by the end of 2005 is as follows (numbers in brackets represent new partners in 2005): Canada-2 (1); the EU-90 (16); Japan-61 (4); Korea 27 (12); the USA-104 (9).

In 2005, 56 new Partner Projects were funded, 47 from governmental Partners and 9 commercial Partners. Total Partner funding in 2005 for R&D projects was \$21,086,869.

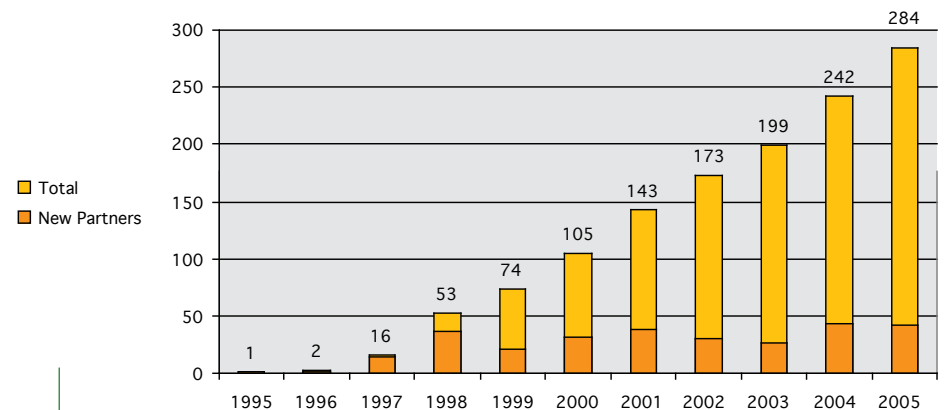
ISTC Partner Project Funding
by Country in 2005

| Partner | Amount 2005, \$ | No. of projects, funded in 2005 |
|---|-----------------|---------------------------------|
| Canada | - | 0 |
| EU | 1,736,485 | 10 |
| Japan | 1,142,140 | 5 |
| Korea | 100,000 | 1 |
| USA | 18,108,244 | 40 |
| Total Partner funding since 1995: \$207,028,948 | | |
| Total Partner Projects since 1995: 534 | | |

ISTC Partner Government and Non-government Organization Funding

| Type | No. of projects, funded in 2005 | Amount (\$) 2005 | Amount (%) 2005 | No. of funded partner projects | Amount (\$) total | Amount (%) total |
|-------------------------|---------------------------------|------------------|-----------------|--------------------------------|-------------------|------------------|
| Total | 56 | 21,086,869 | 100.00% | 534 | 207,028,948 | 100.00% |
| Government organization | 47 | 19,772,069 | 93.76% | 422 | 189,908,171 | 91.73% |
| Non-government | 9 | 1,314,800 | 6.24% | 112 | 17,120,778 | 8.27% |

ISTC Partner Numbers



Commercial Success Story

ISTC Partner Project # 3148p - Software-Hardware Complex for Detection and Threat Prevention of Acts of Terrorism

Institute: Russian State Scientific Center for Robotics and Technical Cybernetic, Saint-Petersburg, Russia

Partner: Hitachi Kokusai Electric Inc., Japan

The Purpose of the Project is to protect infrastructure or individuals at risk of terrorism, crime or malicious intent.

The Aim of the Project is to create an integrated software and hardware system able to protect buildings of critical or national importance that, if destroyed, would have serious impact

on population health, safety, security or economic well-being. The system is particularly required to safeguard governmental institutions and infrastructure against possible acts of terrorism, and to detect unauthorized intrusion into closed zones or private property.

Two types of alarm system are to be developed:

- An alarm system for the protection of critical infrastructure. The system, based on the application of stereovision, will interact with other applications such as range finders and intelligent computer software to identify individuals or objects of a suspicious nature.
- An alarm system for civil application, protecting private houses, offices, stores, cottages, garages. The system will identify possible intrusion into a property and detect any invader.

Both systems will immediately notify relevant authorities or persons of potential intrusion.

Uniqueness of the Project. Pioneering developments enable intruder detection against the background of a changing physical environment (moving grass and trees, rough sea) and changing light (sun covered by clouds, moving car lights, street illumination).

Newly developed technologies for intruder recognition, coupled with intelligent software analysis of potential terrorist behavior, are brought together in this challenging project with the aim of creating a safer, more secure environment.

Detection of potential intruders or objects of suspicion in a changing environment



Working with Governments 1

US Department of Health and Human Services Improves TB Control in the CIS

One-third of the world's population has been infected with Mycobacterium tuberculosis and it is the current leading cause of preventable death in adults due to a single identifiable infectious agent worldwide. Tuberculosis (TB) has emerged as a major public health problem in Russia and in many of the former Soviet republics. Thus, the prevention, epidemiology, treatment, and diagnostics of TB are the first priorities for public health and research efforts.

TB, including multi-drug resistant (MDR)-TB is indeed one of the main focuses of an ISTC Partner – the US Department of Health and Human Services/Biotechnology Engagement Program (DHHS/BTEP) under the US Bio-Chem Redirect Program. 17 funded projects related to various aspects of TB control, mainly in Russia but also in Georgia and Armenia, deal with establishing comprehensive methods of molecular epidemiology by genotyping of pathogen clinical isolates, and developing methods of rapid diagnostics of TB and MDR-TB through microchip technology applicable to clinical laboratories and nutrient media-based diagnostic kits.

Special attention is paid to the study of pathogenesis of latent TB forms in order to develop effective drugs and vaccines. New animal models are investigated and vivarium facilities upgraded to ensure an international level of animal care and use. With DHHS/BTEP funding, the Research Center for Tuberculosis Clinical Trials is being developed at the Research Institute for Phthisiopulmonology in Moscow, Russian Federation and a National TB

Control Program for the Republic of Armenia will be established within a BTEP-funded project, offering effective TB control on a national scale.

Successful project implementation through the ISTC Partner Program guarantees effective collaboration between CIS institutes and leading US TB laboratories, including frequent exchange of visits of US and CIS scientists and the training of CIS scientists in the laboratories of their US collaborators.



Meeting in NIH-NIAID, Bethesda, Department of TB investigations, collaborator for BTEP Project #2201, May, 2005

Working with Governments 2

UK Department of Trade and Industry Closed Nuclear Cities Partnership

The UK Department of Trade and Industry (DTI) partners with the ISTC to implement a number of projects and initiatives in Closed Nuclear Cities and Centers with funding from the UK Closed Nuclear Cities Partnership Programme (CNCP).

Through ISTC cooperation, it has been possible to develop new valuable initiatives targeted at the creation of economically sustainable organizations formerly involved in nuclear weapons research.

The UK DTI joined the ISTC Partner Program in April 2002. By the end of 2005 under the cooperation of the CNCP, the UK DTI has allocated \$2.2 million for 7 ISTC Partner projects, involving more than 300 scientists (over half of these are former nuclear weapons specialists).

One of the first successfully completed DTI Partner projects is ISTC Partner Project #2824 ('Elaboration of a Training Center to Develop Technology for Production of High Quality Cutting Tools in Snezhinsk') which was implemented by Raster-Technology Ltd, Snezhinsk. The objective of the project was to reorient the "military" personnel of the city of Snezhinsk to civil activities in the sphere of polygraph machine building and the packaging industry.

As a result, highly qualified personnel were trained in design and production of cutting tools and packaging. High-tech equipment (laser complex, plotter) was also developed and produced. This enabled the development and manufacturing of cutting dies and tools. Twenty (20) permanent working places were created for the establishment of the total technological cycle at the company including all stages of the process, namely, order registration, design, laser cutting of die bases, breadboarding of samples, die arrangement, counter-matrix production, and cutting of final package. During project implementation, a manufacturing building (former VNIIEF printing-house) was renovated to correspond to the requirements of future production.

As of the end of 2005, Raster-Technology Ltd, Snezhinsk, is a successfully operating company meeting the packaging demands of companies in the Ural Region.

Partner Activities

Canada



Canada became a full Governing Board Member of the ISTC in 2004, and developed its outreach services to Canadian business with the ISTC appointment of its first Canadian-based consultant in 2005. The consultant will focus on promoting the services and opportunities available to Canadian Biotech companies through the ISTC and encourage them to initiate ISTC projects in the Bio Technology and Life Science sectors.

In early 2005, the ISTC collaborated with Foreign Affairs Canada, the Canada Eurasia Russia Business Association (CERBA), and the Saskatchewan Trade and Export Partnership (STEP), to organize forums in Edmonton, Calgary and Saskatoon for representatives from the business and academic sectors of the Canadian oil and gas, and biotech communities.

With support from the ISTC and Foreign Affairs Canada, nine Russian experts in oil spill bioremediation took part in the Calgary 28th Arctic and Marine Oil Spill Program Technical Seminar on Oil and Gas Ecology.

The seminar introduced technologies developed at top Russian Federation institutes such as the All-Russia Institute for Plant Protection, the Institute of Biochemistry and Physiology of Microorganisms, Moscow State University, Kazan State University, and Gubkin State University of Oil and Gas. During the seminar, Russian scientists were able to meet and exchange views with Canadian commercial and governmental organizations.

Proposals introduced at the seminar extended beyond oilspill technologies to cover a range of bio-remediation solutions that would employ technologies developed in Russia and the CIS.

European Union



In April, German Chancellor Gerhard Schröder and Russian President Vladimir Putin attended the opening of the 5-day international technology and innovation fair, 'Hannover Messe 2005', which included the participation of the ISTC. Current and potential Partners visited the ISTC exhibition area to learn more about the Russian and CIS R&D sectors and how a range of ISTC services enables organizations to access the expertise of scientists working within Russia and the CIS. As part of efforts to integrate former weapons scientists into the international scientific community, the ISTC supported a delegation of Russian and CIS experts in fuel cell technologies to attend the Hannover exhibition, which enabled them to meet and exchange opinions with experts from across the international fuel cell sector.

In May, ISTC meetings took place at the UK's 7th Cambridge Bio-Partnering Exchange and in November, the ISTC was one of the main sponsors of the prestigious international Bio-Europe 2005 conference and exhibition held in Dresden, Germany. The ISTC arranged a number of Bio-company meetings and supported a formal presentation from the Puschino Research Laboratory.

The ISTC organized a number of international business meetings throughout the year, including a senior-level delegation visit by the Danish Confederation of Industry to ISTC Headquarters and Russian scientific institutes. The ISTC also supported workshops on High-Power Radio Frequency Technology in Russia in the framework of a UK Department of Trade and Industry technology trade mission.

Japan



ISTC Partner Promotion activities in Japan in 2005 ranged from individual ISTC meetings and visits with companies to workshops at technology fairs taking place in Japan. In close cooperation with the Japanese Government, the ISTC participated in the Technology Transfer Fair 2005 in Tokyo in late November, where the ISTC's exhibition stand attracted more than 100 commercial visitors.

The ISTC's Technology Matchmaking service has proved to be one of the most efficient tools for successful partner promotion and for establishing new partner projects. The ISTC has been able to match technologies and Russian and CIS institutes with the specific R&D needs of Japanese Partners, as well as potential Japanese Partners, with the proposals of Russian and CIS scientists and institutes.

The ISTC has also organized a number of Japanese governmental and commercial delegation visits to institutes, and supported negotiations between Partners and Russian and CIS scientists, providing full assistance in preparing partner project proposals. A number of promising research proposals from Russian and CIS scientists were introduced to potential partners, resulting in four new ISTC partner projects totaling more than \$1 million between Japanese commercial partners and Russian and CIS institutes in 2005. Another four projects totaling about \$500,000 are planned for 2006.

The ISTC and Japanese Ministry of Education, Culture, Sports, Science and Technology regularly organize workshops to highlight technologies and topics of global significance and to facilitate the development of relevant project proposals. The ISTC Workshop Program fund covers travel expenses of CIS scientists who participate in these workshops, which are held in cities throughout Japan. The following workshops were held in 2005:

- The 34th Japanese Workshop on Advanced Biotechnology in Russia/ CIS, in Tokyo (June)
- The 35th Japanese Workshop on Advanced Materials in Russia/ CIS, in Tokyo (October)
- The 36th Japanese Workshop on Advanced Catalysis in Russia/ CIS, in Tokyo (December)
- The 37th Japanese Workshop on Advanced Nanomaterials in Russia/ CIS, in Ibaraki (December)



ISTC staff Masaki Sato and Luidmila Liman at Japan Fair 2005

Republic of Korea



The ISTC Workshop Program in the Republic of Korea continues to attract wide interest from Korean research institutions, industry and private companies, with more than 150 attendees at each event. In 2005, four workshops were arranged in the Republic of Korea:

- The 6th Korean Workshop on Biophysics, Marine Biotechnology and Environmental Monitoring, in Busan (April), which was attended by 10 ISTC-supported Russian experts;
- The 7th Korean Workshop on Functional Thin Film and Coatings, and New Plasma Technology, in Seoul (September), which was attended by 9 ISTC-supported experts from Russia and the CIS;
- The 8th Korean Workshop on Key Technologies for Chemical Materials and their Industrial Applications, in Daejeon (November), which was attended by 8 ISTC-supported Russian experts;
- The 9th Korean Workshop on Key Technologies for Optical Technologies and Applications, in Seoul (December), which was attended by 5 ISTC-supported Russian experts.

As a direct result of these workshops, 12 new Korean Partners joined the ISTC's Partner Program in 2005 (bringing the total to 27). One new Partner project has been started and several proposals are in the process of detailed discussion and preparation.

Additionally, the ISTC received more than 10 Korean delegation visits to Russia in 2005, including a delegation of 21 representatives from 14 companies belonging to the Korean Industrial Technology Association (KOITA).

United States



One of many active US Partners in the ISTC is the US Bio-Industry Initiative (BII), whose goals are to support accelerated drug and vaccine development to combat highly infectious diseases, and reconfigure CIS biological production facilities for civilian use.

BII has worked in cooperation with the ISTC to support drug and vaccine development and the commercial conversion of large-scale biological production facilities in Russia. BII-supported research ranges from the nanoparticle delivery of TB drugs to new approaches for treating cancer and CNS disorders to avian flu monitoring in Siberia. BII has also catalyzed two unique consortia, "Orchemed" and "TEMPO", which foster drug discovery efforts of multiple institutions and promote the harmonization of drug testing standards.

In April, BII sponsored through the ISTC the participation of several scientists in the Society for Quality Assurance Meeting, held in Orlando, Florida.

In May, the Partner sponsored the participation of several veterinary experts from Russian institutes to Veterinary Biologics Training at the USDA in Ames, Iowa.

In June, BII supported through the ISTC the participation of Russian specialists to BIO2005 in Philadelphia, Pennsylvania.

In September, BII cosponsored the second annual conference on Molecular Medicine and Biosafety. BII supported business development training for staff of the Pushchino SPF Animal Breeding Facility at Charles River Laboratories in Boston, Massachusetts.

In November, in partnership with the US State Department and the Science and Technology Center in Ukraine, the ISTC supported a delegation of Russian and CIS chemical engineering experts and provided an exhibition stand at the annual American Institute of Chemical Engineers conference in Cincinnati.

Commercialization Support

The ISTC's Commercialization Support Program (ComSP) supports efforts by former weapons scientists to bring to the marketplace near-to-market innovative technologies in Russia and the CIS. ComSP acts as a risk-sharing mechanism to leverage and co-fund investments by private sector partners and venture capitalists that create permanent civilian workplaces for former weapons scientists and technicians.

Beginning in 2005, ISTC Partners began using ComSP to fund CIS Commercialization Initiatives.

Services offered by ComSP include:

- Advanced Matchmaking to pair ISTC beneficiaries with partners, investors, clients, and other commercial entities and facilitate the development of commercial relationships
- Pre-commercialization support to former WMD scientists for market research, business planning, travel and communications support to meet with potential customers and investors, business and legal consulting including help with contracts, licensing and patent support
- Technology transfer, technology licensing, support for the development of innovation and commercialization infrastructure

- Development of Russian/CIS-based R&D Project Teams for successful commercial partnership
- Risk-sharing through co-funding with private partners and investors to bring to the market advanced technologies involving former weapons scientists
- IPR Asset Inventory and Analysis services to help former WMD institutes assess, develop, protect, and exploit intellectual property rights portfolios



Since 2003, the Commercialization Support Program has funded 10 initiatives for a total of over \$3.5 million, creating nearly 450 new workplaces. In 2005 alone, total funding was over \$2.5 million.

Commercialization Support Success Stories

Commercialization Initiative #CI-011 Blast Maker (Kyrgyz Republic)

This Commercialization Initiative (CI-011) was based on the results of ISTC projects #KR-067 and #KR-566 and in July 2005, a partnership began to develop between the Kyrgyz Russian Slavonic University, Blast Maker, and Union Espanola de Explosivos (UEE), a Spanish company and ISTC Partner. The hardware and software system, made by the Kyrgyz Russian Slavonic University

and Blast Maker, enhances operational performance at open pit mines. The system uses computer modeling to determine optimal drilling and blasting locations to increase output and efficiency for large mining operators. Union Espanola de Explosivos is a world-leader in the manufacture of explosives for civil engineering and mining industries and is seeking to differentiate its products through value-added services. The ISTC's support helped bring the system to the attention of this Spanish Partner, as well as helping to develop a much needed marketable prototype. As a result, successful business meetings were held and a Memorandum on Cooperation between



Meeting between UEE, Kyrgyz Russian Slavonic University and Blast Maker

the Kyrgyz and Spanish participants was signed for the joint commercialization of the system.

Commercialization Initiative: #CI -007 Open TechnoPark in Sarov (Russian Federation)

In December 2005, the ISTC began a new commercialization initiative implemented by Limited Liability Company «Technologies Transfer Center «Systema-Sarov» and involving the Russian Federal Nuclear Center - All-Russian Research Institute of Experimental Physics (VNIIEF) to

establish an Open Technopark, outside the fence of the closed city of Sarov, where high-level VNIIEF specialists and their potential Russian counterparts as well as foreign commercial partners from private & public sectors can meet and work together for mutual benefit. The initiative includes mainly support for infrastructure development, but also support for business development, training, promotion & marketing.

the ISTC, in approving this initiative, joins the multilateral efforts of the Russian Government (both federal and regional levels), Russian private capital, other International Organizations and foreign private capital enterprises to help build an effective infrastructure for the Open Technopark, which makes it an attractive place for future investments and expanding commercial partnerships.

Commercialization Initiative: #CI -010 Production of Nail Decoration Systems (Nizhny Novgorod, Russian Federation)

ImagiNail of Russia, the partner of Pearl Technology Holdings, requested ISTC assistance to develop a beauty industry product based upon technologies from the Russian Federal Nuclear Center - All-Russian Research Institute

of Experimental Physics (VNIIEF). The new product will be able to decorate fingernails and print a small (5 mm x 5 mm) two-dimensional code directly on a fingernail that can be used for personal identification. The new product has many uses in hospitals, for patient identification, or at amusement parks for tracking

children. The ISTC's flexibility enabled the Russian team to retain and redirect the commercialization initiative when market needs shifted, demonstrated the value of the Commercialization Support Program in addressing such needs and providing high-level customer service to ISTC beneficiaries and their partners at the speed of business.

Commercialization Support (continued)

Recognizing the importance of the identification, protection, and exploitation of **Intellectual Property (IP)** associated with ISTC-funded projects, as well as a need for transparency of intellectual property rights allocation to attract international cooperation, the ISTC continues to expand its support in the field of IP.

In particular, new procedures for ISTC activities were considered and approved with the objective of increasing the awareness of ISTC staff and project participants when handling IP issues.

Additionally, a new system of reporting on IP creation, protection, and exploitation; a database on inventory of IP created through ISTC projects; and a series of training and distance learning seminars to increase understanding of IP issues were developed.

The **Patenting Support Program** also continues to provide financial and consulting support for recipients seeking intellectual property rights protection.

In an effort to provide more training opportunities for scientists and managers, the ISTC is creating **resource centers** that will reach larger numbers of participants more cost-effectively.

The Resource Center in Bishkek, which was officially opened in September, was the first such center funded by the Competency Building Program and will bolster ISTC efforts to help scientists develop necessary skills to commercialize their scientific work. Distance-learning courses on computer skills, business plan development and intellectual property rights have already been conducted at this resource center and should facilitate sustainable business activities.

The **Technologies Database Program** helps CIS specialists to find investors and scientific collaborators for their innovative projects.

The ISTC's internet portal "Science and Technologies in CIS" (<http://tech-db.istc.ru>), launched in 2001 in the framework of the Program, assists scientists in the promotion of their research to fellow members of the scientific community and to potential commercial partners.

The portal is a powerful information exchange tool that brings the research and development capabilities of its participants to the attention of potential collaborators and investors worldwide.



ISTC Staff Tatiana Florina and Andrey Vakhliaev with Diploma and Gold Medal Award

For its contribution to the promotion of CIS scientific achievements, the Technologies Database Program was awarded a diploma and gold medal during the 10th international exhibition held in the framework of "High-Technology Week" in St. Petersburg in October 2005.

The **Competency Building Program** supports former WMD experts and their institutions by providing the means to improve basic skills required to develop and maintain self-sustainable businesses and the commercialization of technologies.

Both Parties and Partners can use the Competency Building Training program to support their own research efforts with former WMD scientists.

For example, the US Bio-Industry Initiative has funded collaboration with the Center for New Medical Technologies (TEMPO).

Through the ISTC, a TEMPO training program on Business Plan Development was created for members of institutes that are part of the TEMPO network of non-profit organizations. Participants in the training were selected from institutes in Moscow, the Moscow region, St. Petersburg and Novosibirsk. The training provided participants with the knowledge and skills necessary to develop and protect business plans and proposals. This type of training is a critical component of ISTC efforts to foster innovation and attract potential investors to Russia and the CIS countries.

Nine different multimedia courses were also developed and created by the Competency Building Program in 2005: Intellectual Property; Business Plan Development; Business Administration; Introduction to Commercialization; Negotiation for Success; Business Communication and Presentation Skills; Business Valuation; Project Management; and Attracting Investment for High Technology Sectors.

GLOBAL SECURITY PARTNERSHIPS

STRENGTHENING COOPERATION

The ISTC remains committed to the principle of 'nonproliferation through science cooperation'. The nonproliferation mission continues to evolve to meet new global requirements. In recognition of broader security challenges, the ISTC continues to extend its work beyond just the nuclear field and is extensively engaging former weapons scientists in chemistry, biology, aeronautics, and other fields. The Global Security and Strategic Planning Department was established in 2005 as part of an effort by the ISTC to more effectively redirect the expertise of former WMD scientists in Russia and the CIS in support of global nonproliferation programs and initiatives.

G-8 Global Partnership

Common security goals and a shared philosophy of nonproliferation through engagement prompted Canada to identify the ISTC as a crucial partner in the execution of one of the key priorities of the G-8 Global Partnership Against the Spread of Materials and Weapons of Mass Destruction. The ISTC plays an important role in engaging former WMD scientists at priority facilities and institutions but also implements projects which have enhanced Global Partnership efforts with respect to dismantling nuclear submarines, destroying chemical weapons and disposing of fissile materials. The ISTC is also well positioned and prepared to play a lead role in G-8 Partnership efforts to reduce the threats of bio-terrorism.

Bio-terrorism and the spread of biological weapons have been identified as threats that some believe eclipse the dangers of nuclear and chemical weapons proliferation. The importance of programs to counter these dangers has been repeatedly acknowledged at G-8 Global Partnership summits, and the ISTC is currently engaged in a wide variety of projects that seek to improve bio-security and bio-safety to reduce the threats of potential bio-terrorism. Canada, in particular, has initiated a major program of workshops in Russia and the CIS to specifically engage and promote bio-safety through training and knowledge-sharing.

The ISTC is also working with former WMD scientists on bio-security projects implemented through a partnership with the US Defense Threat Reduction Agency (DTRA) at critical biological and agricultural institutional facilities in Russia and the CIS. These projects are principally directed at physical security upgrades, improving quality controls, safety and security and surveillance, detection and response measures, but they also encourage collaborative efforts that make biotechnology and pharmaceuticals in Russia and CIS countries more attractive to commercial partners.

As part of DTRA activities in 2005, the ISTC facilitated a visit by a US delegation led by senators Richard Lugar and Barack Obama, as well as William Burns, the new US Ambassador to the Russian Federation, to the Institute of Phytopathology in Golitsyno, Moscow Region. The visit emphasized the important work of Russian scientists under the auspices of DTRA to conduct bio-security and bio-safety upgrades in a former "closed" biological facility. Another example of ISTC and DTRA



Senators Richard Lugar and Barack Obama at the All-Russia Institute of Phytopathology (VNIIF)

collaboration is current support for specialists at the Russian State Research Center of Virology and Biotechnology "VECTOR" in safeguarding the genetic material of laboratory cultures of natural variola viruses. While large-scale actions are being undertaken by the World Health Organization to fully eliminate natural variola viruses, these laboratory cultures are currently preserved at VECTOR and the US Center for Disease Control and Prevention because of their value for virology and medicine, especially in the context of immunization efforts. ISTC and DTRA support is critical to ensure that new diagnostic methods can be developed from this genetic material while also improving the security of these dangerous biological materials.

International Organizations

The ISTC is seeking to strengthen collaboration with other international and multilateral organizations, such as the Science and Technology Center in Ukraine (STCU), the International Atomic Energy Agency (IAEA), NATO, the Civilian Research and Development Foundation, and the Nuclear Threat Initiative. In 2005, preliminary discussions were held with the IAEA, NATO, STCU, and the Nuclear Threat Initiative about areas of mutual interest and ways to enhance complementary programmatic activities. Through identifying and cultivating these important partnerships in the global security sphere, the ISTC will continue to leverage resources to address proliferation threats posed by nuclear, biological, chemical and radiological weapons, materials, and infrastructure.

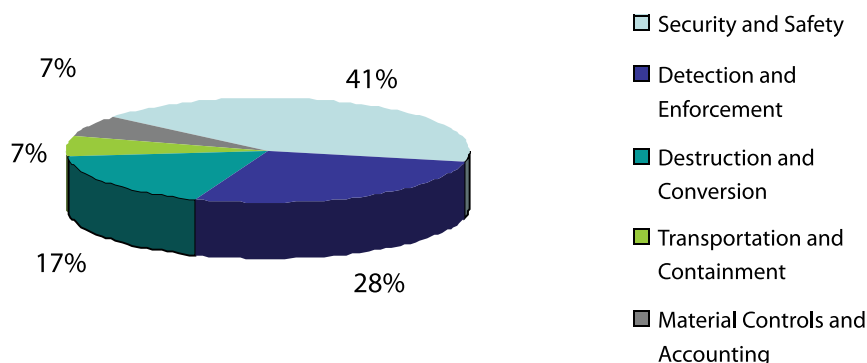
Enhancing Global Security

The ISTC helps channel the expertise and talents of former WMD scientists in Russia and the CIS States towards developing technologies that address the threats posed by chemical, biological, radiological and nuclear (CBRN) weapons, and materials. The ISTC currently manages 155 projects that range from new technologies for submarine dismantlement and chemical weapons destruction to new processes for ensuring the safety and security of CBRN sites and measures to secure dangerous pathogens and fissile materials. These projects involve nearly 7000 scientists at 260 institutes across Russia and the CIS.

Project Areas

- **Security and Safety:** Projects in this area involve physical protection measures, including physical barriers, detection systems and user authentication systems, at the facilities that work with CBRN materials as well as new technologies that address this theme.
- **Detection and Enforcement:** Projects in this area involve technologies that support securing the flow of dangerous materials by improving detection at facilities, as well as during transport and storage.
- **Destruction and Conversion:** Projects in this area involve technologies supporting the destruction of WMD materials or their conversion to new forms that pose reduced risks.
- **Transportation and Containment:** Projects in this area relate to identifying improvements in the secure transportation and alternatives to long-term storage of CBRN materials.
- **Material Controls and Accounting:** Projects in this area involve the development of technologies, processes and systems that can be used to measure, label and track CBRN materials.

Global Security Projects by Area



ISTC Project #2637- Developing the Experimental Model of a Device for Nuclear Material Detection by Photoneutron Technology (Funded by Canada)

As part of the Global Security & Strategic Planning Department's enforcement and detection activities, Canada is providing over \$140,000 funding to the Kurchatov Institute in Moscow for this two-year project, which seeks to improve existing technologies and, particularly, the sensitivity and range of devices detecting fissile materials.

Nuclear weapons experts believe that hand-made nuclear bombs with power equivalent to several kilotons of trinitrotoluene could be fabricated by large terrorist organizations with access to fissile materials. The current abilities of "passive" detection systems such as radiation monitors are limited, especially in terms of masked or shielded

radioactive and fissile materials. These systems cannot detect non-radioactive materials such as lithium or heavy water since these materials do not emit ionizing radiation.

The aims of the project include: experimental demonstration of nuclear material detection by photoneutron technology as applied to the physical protection of nuclear objects; theoretical and experimental optimization of beam target construction and electron beam parameters to achieve the best probability parameters of nuclear material detection; determination of the parameters related to the efficiency of nuclear material detection by photoneutron technology; and obtaining the required information and designing proposals for the development of a pilot device available for physical protection of nuclear objects.



Canadian Bio Team and ISTC DED Leo Owsiacki at 'VECTOR', Novosibirsk

Branch Offices

The ISTC's Branch Offices in Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, and Tajikistan are integral links in the ISTC's global security efforts. The offices play a critical outreach role for the ISTC by helping increase the visibility of ISTC activities among former WMD scientists in the CIS, while helping the ISTC expand its nonproliferation partnerships in these countries. The Branch Offices were added to the Global Security & Strategic Planning Department in August 2005.

Highlights



- **Armenia:** Branch Office staff organized a number of seminars for project managers and potential ISTC project participants, as well as ISTC international seminars. The Branch Office Head made a presentation on the ISTC at the Armenian Doctors' World Congress in San Francisco, and participated in meetings with the management of the Chamber of Commerce, the Industrial Coalition of Armenia, and representatives from a number of consultancy companies in Armenia.



- **Belarus:** The Branch Office Head made a presentation about the ISTC and opportunities for international cooperation at several conferences, while Branch Office staff organized and participated in a number of visits of delegations from the USA, Canada and Korea with government officials and scientific research institutes.

- **Georgia:** The Branch Office Head made presentations about the ISTC at numerous workshops in Georgia and participated in several round-tables and seminars. She also presented a report on the ISTC Commercialization Support Program and a presentation about ISTC projects at a June symposium in Baltimore.



- **Kazakhstan:** The Branch Office Head briefed President Nursultan Nazarbaev on ISTC activities in Kazakhstan, and also participated in BioChem Redirect program activities. The Branch Office hosted the 36th Governing Board in Almaty in April, and assistance was provided to ISTC partners from the UK Ministry of Defense during two visits to Kazakhstan.



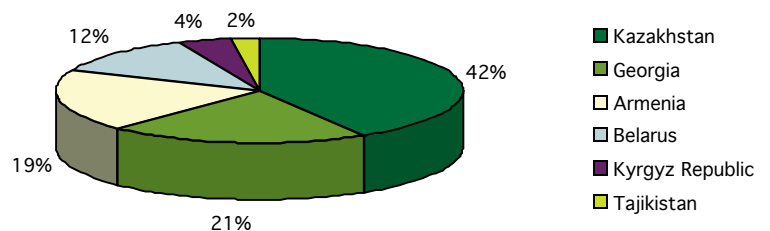
- **Kyrgyzstan:** Branch Office staff assisted in preparing a seminar and educational opportunities on radiation physics. The Branch Office Head participated in a round-table discussion with a delegation of the US State Department in September. The Branch Office officially opened a Resource Center in September in Bishkek.



- **Tajikistan:** The Information Office Manager provided support in organizing two seminars on ISTC project proposal preparation, as well as a seminar for the accountants and managers of ongoing ISTC projects. The Information Office assisted with the opening of a Communication Center through an ISTC Communication Support Program project.



Total ISTC Project Funding in CIS Countries
(not including Russia)



PROMOTING PARTNERSHIPS

Through its broad network of contacts and relationships in scientific communities worldwide, the ISTC is well-positioned to promote greater awareness of science in the media and general public. In addition to continuing its traditional support of scientists of all ages, the ISTC unveiled some new initiatives in 2005 to encourage deeper interaction among members of the scientific community, the general public and the media in Russia and the CIS.

World Physics Year

In cooperation with the International Union of Pure and Applied Physics, the UN and UNESCO declared 2005 as World Physics Year. The ISTC supported this international effort with a series of programs held in Russian cities, including "It's all relative", a conceptual art exhibition that featured ironical views of Russian artists on physical patterns of the world after Einstein.

'Science to Society' Contest

The Moscow House of Science was the venue for an award ceremony recognizing the finalists and winners of the Fourth All-Russian 'Science to Society' Contest. The contest was co-organized by the ISTC as part of its ongoing effort to engage a wide range of science and media professionals in promoting an awareness of scientific achievement in Russia.



Discussion at the ISTC Science Café
"Travel Through Space and Time"

Science Cafes

As an advocate of greater scientific interaction and collaboration, the ISTC initiated a new type of science promotion event in 2005 called "Science Cafe", modeled after the European phenomenon, Café Scientifique. The Science Café provides a venue where scientists, journalists, politicians and people with a professional or personal interest in scientific issues can meet to discuss topical issues in an informal and a relaxed setting. The ISTC organized four Science Cafes in 2005 under the following themes: "City Ecology", "Medicines in Our Life", "Travel Through Space and Time – a dream or reality?", and "AIDS in Russia".

Events, Tradeshows and Promotional Materials

The ISTC also carries out a range of promotional activities to inform the international private and public technology sector on R&D or late stage technology opportunities that are available through working with the ISTC and former weapons scientists in Russia and the CIS. These activities include participation at major international trade shows, scientific and technological exhibitions or conferences, the organization and funding of sector specific science exchange workshops, and targeted company visits. The ISTC also undertakes media advertising and the promotion of its services via the ISTC website, Partner Newsletter and the creation of sector or event specific general promotional materials, such as CD-Roms, brochures and this Annual Report.



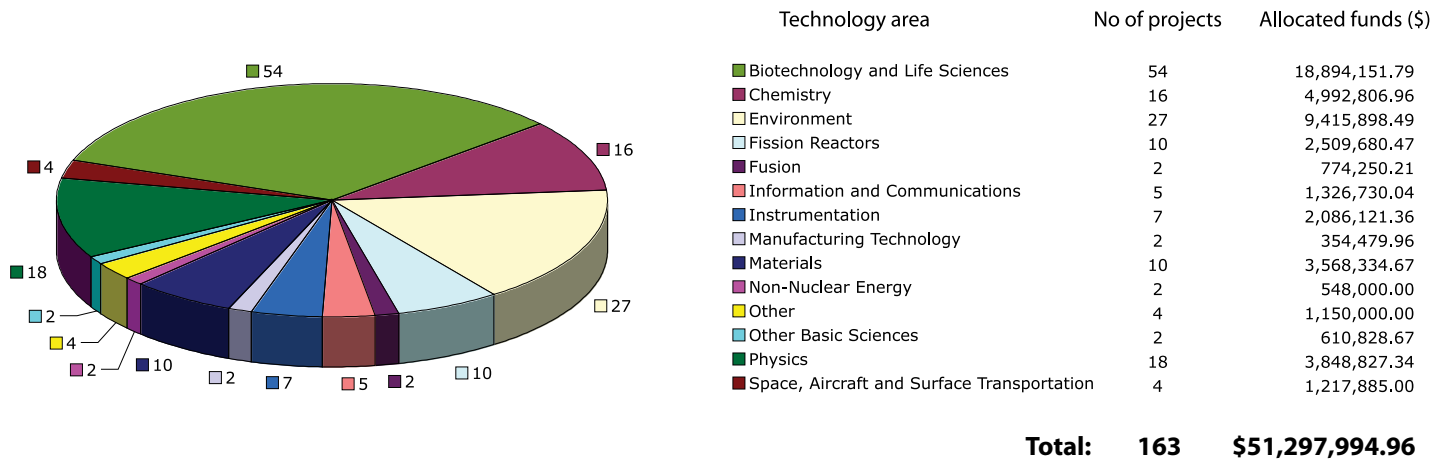
ISTC staff with Tatiana Zargarova from the Institute of Bioorganic Chemistry, Pushino Branch at Bio Europe 2005, Dresden, Germany

2005 ISTC FINANCIAL SUMMARY

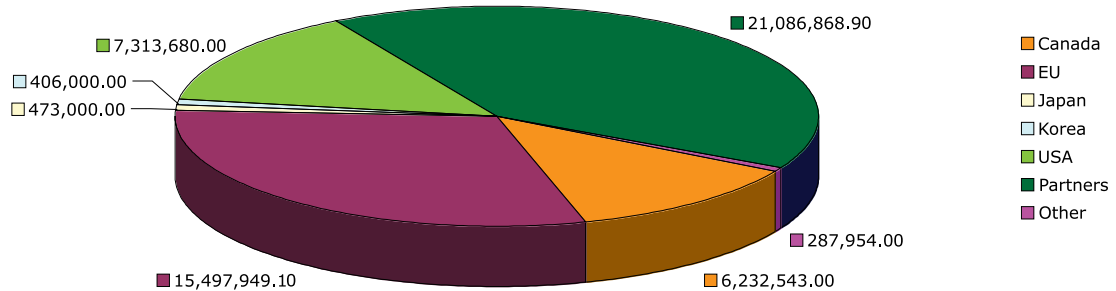
To fulfill its nonproliferation mission, the ISTC Parties, Partners and Project Collaborators contribute financial, in-kind, and human resources to the Center. These resources are used to engage weapons scientists and technical team members in peaceful science projects through ISTC Programs.

New Project Funding by Technology Area

(Regular & Partner Projects)



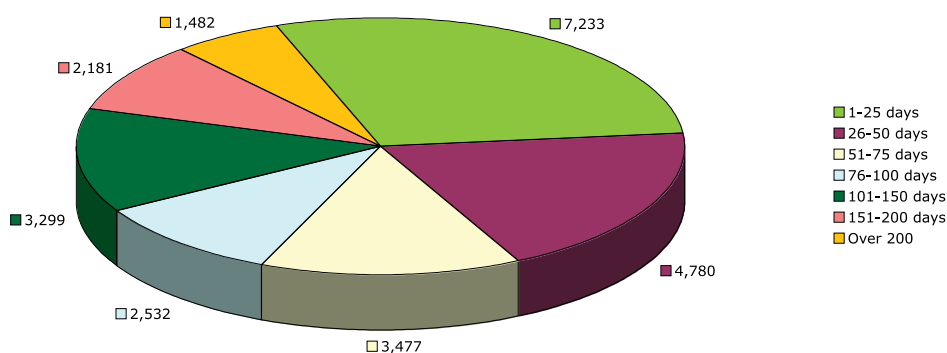
New Project Funding by Source (\$)



Participants Redirected to ISTC Projects

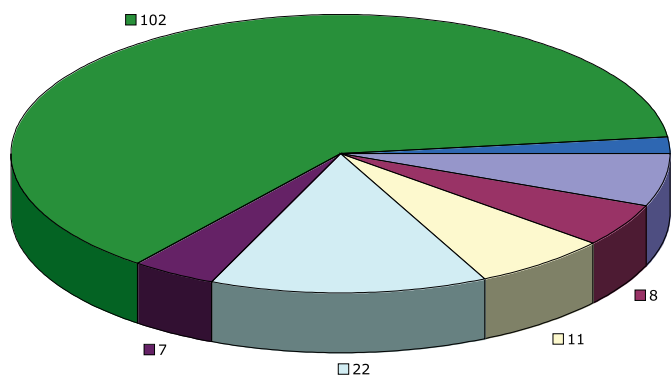
In 2005, the ISTC paid 24,984 project participants US\$43,910,856 in grant payments for a total of 1,822,126 person-days of effort on ISTC projects.

Participants by Days Redirected



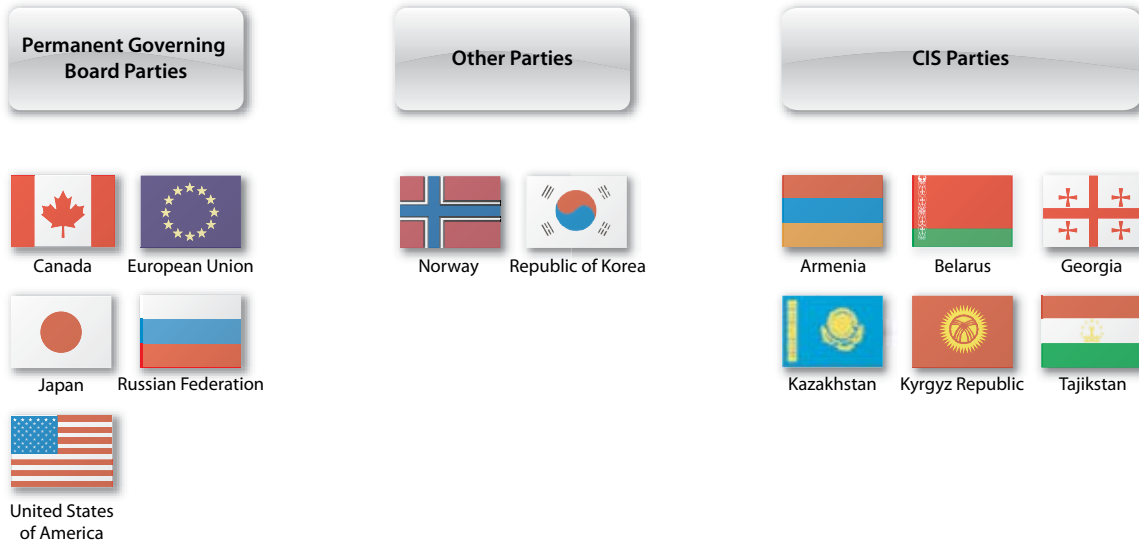
Total Project Participants 24,984

New Project Funding by Location of Leading Institute



| Country | No. of projects 2005 | Allocated funds 2005 (\$) |
|---------------|----------------------|---------------------------|
| Armenia | 10 | 2,620,323.45 |
| Belarus | 8 | 1,235,506.30 |
| Georgia | 11 | 2,498,266.04 |
| Kazakhstan | 22 | 6,729,376.34 |
| Kyrgyzstan | 7 | 2,493,357.35 |
| Russia | 102 | 35,094,740.48 |
| Tajikistan | 3 | 626,425.00 |
| Total: | 163 | \$51,297,994.96 |

ISTC STRUCTURE



The Governing Board includes representatives of Canada, the European Union, Japan, the Russian Federation, and the United States, plus one rotating seat for a member CIS country, held by the Republic of Armenia in 2005.

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 and evaluates ongoing projects, as directed by the Governing Board.

Members of the Governing Board:

Chair (USA) - Ronald F. Lehman II
Canada - Allan Poole
European Union - José Manuel Silva Rodriguez
Japan - Jun Niimi, Kozo Honsei
Russian Federation - Lev Ryabev, Vladimir Pavlinov
United States of America - Victor Alessi
Armenia - Levon Mkrtychyan

Members of the Scientific Advisory Committee:

Japan - Yasushi Seki (Chairman), Yutaka Murakami
Canada - Konstantin Volchek
European Union - Jean-Pierre Contzen, André Syrota
Russian Federation - Evgeny Avrorin, Yuri Trutnev
United States of America - Steven Gitomer, Upendra Rohatgi Singh

PARTIES CONTACT INFORMATION

Canada

Stéphane Lessard - Head, Former Weapons Scientist Program
Global Partnership Program, Foreign Affairs Canada
Ottawa, Canada
Tel: 1 (613) 944-0827
Fax: 1 (613) 944-1130
E-mail: stephane.lessard@dfait-maeci.gc.ca

European Union

Barbara Rhode
Head of the Unit "Multilateral Cooperation Activities"
European Commission
Research Directorate General,
International Scientific Cooperation
Brussels, Belgium
Tel: 32 (2) 295-9888
Fax: 32 (2) 296-9227
E-mail: barbara.rhode@ec.europa.eu

Marthe Leonidou
Principal Administrator "Multilateral Cooperation Activities"
European Commission
Research Directorate General,
International Scientific Cooperation
Brussels, Belgium
Tel: 32 (2) 295-1422
Fax: 32 (2) 296-9227
E-mail: marthe.leonidou@ec.europa.eu

Russian Federation

Lyubov Kondratenkova – Coordinator,
ISTC
Federal Agency for Atomic Energy
Moscow, Russian Federation
Tel/Fax: 7 (495) 239-2012
Tel/Fax: 7 (495) 321-4355
E-mail: kondratenkova@istc.ru

Andrei Krutskikh
Department for Security and Disarmament Issues
Ministry of Foreign Affairs
Moscow, Russian Federation
Tel: 7 (495) 244-4775
Fax: 7 (495) 253-9082

Japan

Yoshihide Tsuda - Officer
International Science Cooperation Division
Ministry of Foreign Affairs
Tokyo, Japan
Tel: 81 (3) 5501-8229
Fax: 81 (3) 5501-8228
E-mail: yoshihide.tsuda@mofa.go.jp

Goro Watanabe
Senior Specialist for International Research Coordination
International Science and Technology Affairs Division
Science and Technology Policy Bureau
Ministry of Education, Culture, Sports, Science and Technology (MEXT)
Tel: 81-3-6734-3990
Fax: 81-3-6734-4058
E-mail: goro@mext.go.jp

United States of America

Ann-Catherine (Cathy) Blank - Coordinator, ISTC
Office of Proliferation Threat Reduction
Department of State
Washington, DC, USA
Tel: 1 (202) 736-7976
Fax: 1 (202) 736 7698
E-mail: blankac2@state.gov

Jane Tannenbaum – Deputy Coordinator for Science Centers Program
Office of Proliferation Threat Reduction
Department of State
Washington, DC, USA
Tel: 1 (202) 736-7693
Fax: 1 (202) 736-7698
E-mail: tannenbaumjj@state.gov

Norway

Erik Svedahl
Department Director General
Section for the Northern Areas, Polar Affairs and Nuclear Safety
Royal Norwegian Ministry of Foreign Affairs
Oslo, Norway
Tel: 47 (2) 224-3502
Fax: 47 (2) 224-2774
E-mail: erik.svedahl@mfa.no

Ingar Amundsen
Senior Advisor
Norwegian Radiation Protection Authority
Osteras, Norway
Tel: 47 (67) 162-539
Fax: 47 (67) 147-407
E-mail: ingar.amundsen@nrpa.no

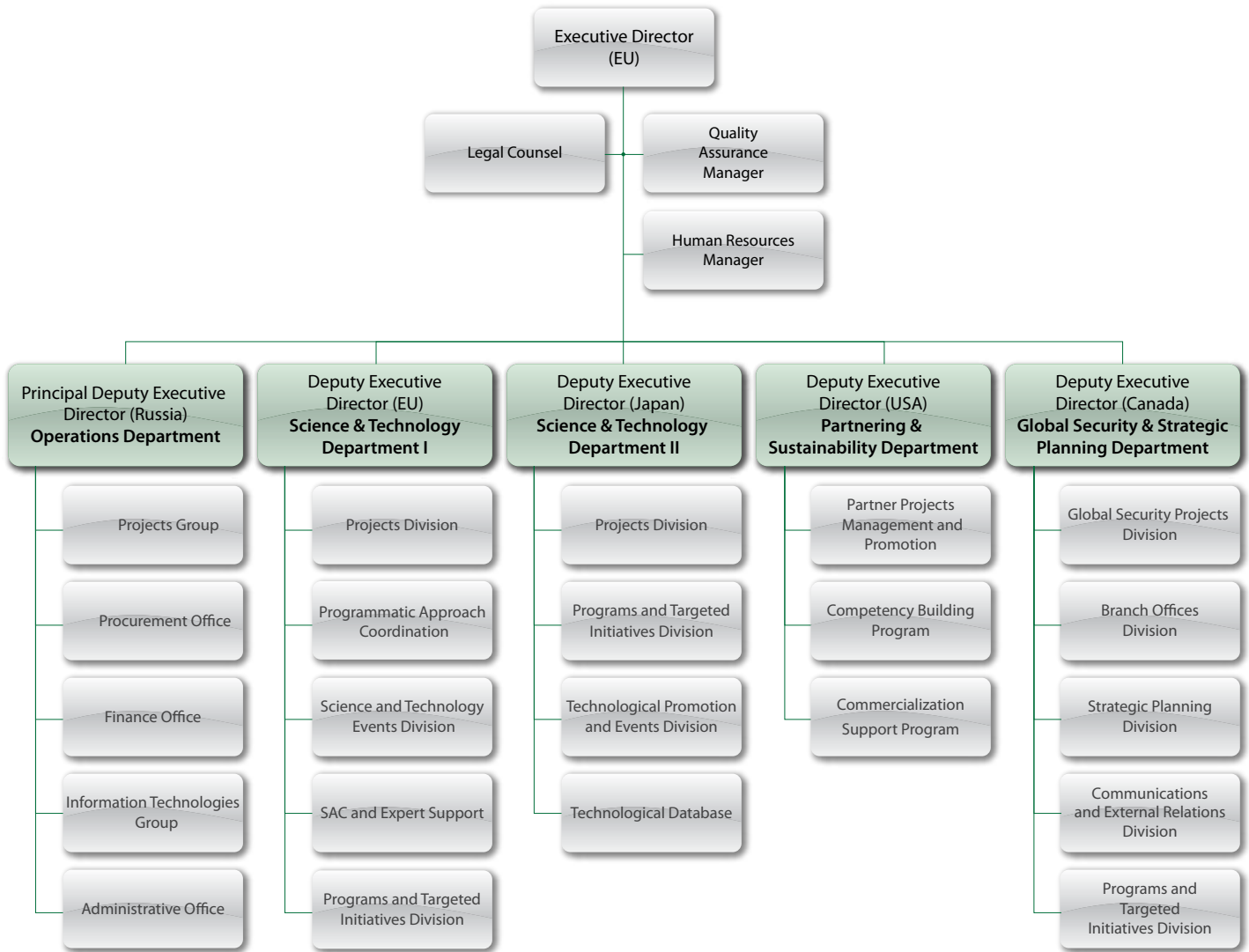
Republic of Korea

Joo-han Kim – Director
Europe and Oceania Cooperation Division
Ministry of Science and Technology
Kwachon, Republic of Korea
Tel: 82 (2) 503-7631
Fax: 82 (2) 502-0264
E-mail: jhkim@most.go.kr

Myungsoo Kim – Director
Division of Electromagnetic Metrology
Korea Research Institute of Standards and Science
Taejon, Republic of Korea
Tel: 82 (42) 868-5015
Fax: 82 (42) 868-5018
E-mail: mkim@kriss.re.kr

ISTC SECRETARIAT

Headquartered in Moscow with Branch Offices in six CIS countries, 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.



SECRETARIAT CONTACT INFORMATION

General Inquires / Public Information

Tel.: 7 (495) 982-3200

Fax: 7 (499) 978-0110

E-mail: istcinfo@istc.ru

Executive Director (European Union)

Norbert Jousten

Tel.: 7 (495) 982-3100

Fax: 7 (499) 978-0110

E-mail: jousten@istc.ru

Principal Deputy Executive Director

Operations (Russian Federation)

Tel.: 7 (495) 982-3102

Fax: 7 (499) 978-0939

Deputy Executive Director

Science & Technology 1 (European Union)

Uwe Meyer

Tel.: 7 (495) 982-3210

Fax: 7 (499) 978-4637

E-mail: meyer@istc.ru

Deputy Executive Director

Science & Technology 2 (Japan)

Daiji Takeuchi

Tel.: 7 (495) 982-3108

Fax: 7 (499) 978-3603

E-mail: takeuchi@istc.ru

Deputy Executive Director

Partnering & Sustainability (USA)

Laura Schmidt-Williams

Tel.: 7 (495) 982-3111

Fax: 7 (499) 978-4926

E-mail: williams@istc.ru

Deputy Executive Director

Global Security & Strategic Planning
(Canada)

Leo Owsiacki

Tel.: 7 (495) 982-3103

Fax: 7 (499) 978-0227

E-mail: owsiacki@istc.ru

ISTC Branch Office, Armenia

Yerevan, Republic of Armenia

Hamlet Navasardyan

Tel.: 374 (10) 524-740

Fax: 374 (10) 584-483

E-mail: navasardyan@istc.ru

ISTC Branch Office, Belarus

Minsk, Republic of Belarus

Alexander Klepatsky

Tel.: 375 (17) 294-9130

Fax: 375 (17) 294-9136

E-mail: klepatsky@istc.ru

ISTC Branch Office, Georgia

Tbilisi, Republic of Georgia

Irina Khomeriki

Tel.: 995 (32) 223-700

Fax: 995 (32) 912-386

E-mail: khomeriki@istc.ru

ISTC Branch Office, Kazakhstan

Almaty, Republic of Kazakhstan

Natalia Tomarovskaya

Tel.: 7 (3272) 610-272

Fax: 7 (3272) 501-639

E-mail: tomarovskaya@istc.ru

ISTC Branch Office, Kyrgyzstan

Bishkek, Kyrgyz Republic

Vitaly Kovalenko

Tel.: 996 (312) 660-140

Fax: 996 (312) 282-859

E-mail: kovalenko@istc.ru

ISTC Branch Office, Tajikistan

Dushanbe, Republic of Tajikistan

Mukhabatsho Khikmatov

Tel.: 992 (37) 227-8737

Fax: 992 (37) 227-9394

E-mail: khikmatov@istc.ru

SUMMARY OF ISTC PROJECT FUNDING

| Technology Area | 2005 | | | | 1994-2005 | |
|--|-----------------|---------------|-----------------|---------------|-----------------|----------------|
| | Funded | | Completed | | Funded | |
| | No. of Projects | \$ Value | No. of Projects | \$ Value | No. of Projects | \$ Value |
| Biotechnology and Life Sciences Biochemistry, Cytology, Genetics and Molecular Biology, Ecology, Immunology, Microbiology, Nutrition, Pathology, Pharmacology, Physiology, Public Health, Radiobiology | 54 | 18,894,151.79 | 61 | 14,452,288.06 | 503 | 191,947,199.43 |
| Chemistry Analytical Chemistry, Basic and Synthetic Chemistry, Industrial Chemistry and Chemical Process Engineering, Photo and Radiation Chemistry, Physical and Theoretical Chemistry, Polymer Chemistry | 16 | 4,992,806.96 | 14 | 3,689,567.00 | 140 | 38,450,589.74 |
| 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 | 27 | 9,415,898.49 | 32 | 9,222,065.98 | 357 | 108,781,224.78 |
| 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 | 10 | 2,509,680.47 | 28 | 9,646,970.54 | 226 | 71,022,451.23 |
| Fusion Hybrid Systems and Fuel Cycle, Inertial Confinement Systems, Magnetic Confinement Systems, Plasma Physics | 2 | 774,250.21 | 2 | 77,000.00 | 47 | 13,623,571.55 |
| 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 | 5 | 1,326,730.04 | 9 | 2,342,393.00 | 96 | 24,754,106.87 |
| Instrumentation Detection Devices, Measuring Instruments | 7 | 2,086,121.36 | 10 | 2,251,114.00 | 117 | 32,228,229.20 |

| Technology Area | 2005 | | | | 1994-2005 | |
|--|-----------------|----------------------|-----------------|----------------------|-----------------|-----------------------|
| | Funded | | Completed | | Funded | |
| | No. of Projects | \$ Value | No. of Projects | \$ Value | No. of Projects | \$ Value |
| Manufacturing Technology CAD and CAM, Engineering Materials, Machinery and Tools, Manufacturing, Planning, Processing and Control, Plant Design and Maintenance, Robotics, Tribology | 2 | 354,479.96 | 9 | 3,115,600.00 | 61 | 20,495,414.84 |
| Materials Ceramics, Composites, Electronic and Photonic Materials, Explosives, High Performance Metals and Alloys, Materials Synthesis and Processing | 10 | 3,568,334.67 | 23 | 6,087,615.00 | 179 | 58,534,950.06 |
| Non-Nuclear Energy Batteries and Components, Electric Power Production, Fuel Conversion, Fuels, Geothermal Energy, Heating and Cooling Systems, Miscellaneous Energy Conversion, Solar Energy | 2 | 548,000.00 | 5 | 1,575,416.00 | 55 | 18,571,761.89 |
| Other | 4 | 1,150,000.00 | 2 | 330,000.00 | 24 | 5,490,166.00 |
| Other Basic Sciences Agriculture, Building Industry Technology, Electrotechnology, Geology, Natural Resources and Earth Sciences | 2 | 610,828.67 | 3 | 821,300.00 | 25 | 5,500,445.67 |
| 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 | 18 | 3,848,827.34 | 47 | 9,440,010.76 | 340 | 81,983,705.85 |
| Space, Aircraft and 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 | 4 | 1,217,885.00 | 5 | 1,324,197.55 | 89 | 25,619,588.38 |
| Total | 163 | 51,297,994.96 | 250 | 64,375,537.89 | 2259 | 697,003,405.49 |