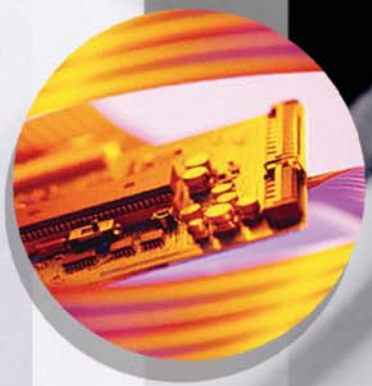
I S T C

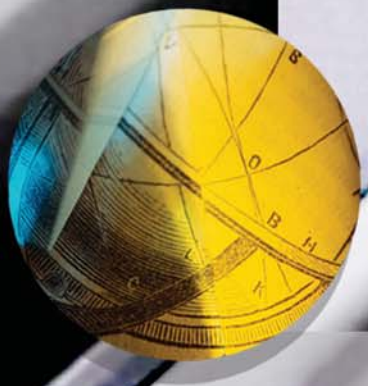
М Н Т Ц

ANNUAL REPORT

2007

International Science and Technology Center





Nonproliferation Through Science Cooperation

TABLE OF CONTENTS

TABLE OF CONTENTS

GOVERNING BOARD CHAIRMAN STATEMENT

The International Science and Technology Center (ISTC) has evolved considerably since agreement on its broad, bold mandate was reached in 1992. Today, the Center is as an established and mature institution with a new headquarters in the heart of Moscow. An expanding number of Parties from the European Union, Asia, and North America routinely turn to the ISTC to address nonproliferation and related international security and scientific challenges. Much has been accomplished, but much has also changed.

The ISTC was born with a great sense of urgency at the begininning of the nineties. One measure of the viability of an organization is its ability to keep focused on its core mission even as it modifies itself to reflect rapid political, economic and technological change. By that measure, the ISTC remains an effective and unique catalyst for nonproliferation cooperation.

Rapid change can complicate the functioning of any organization, especially an intensely coordinated international organization with highly diverse membership such as that in the ISTC. Yet, this has always been more than a complication for the ISTC. Such a process gives the ISTC its opportunities to contribute even more to the security and prosperity of its Parties and all of humanity. Changes outside the ISTC create the challenges that motivate the Parties to renew their efforts, and mostly stay committed. It provides the ISTC fresh thinking, new talent, and refined processes to improve performance, including quality if they work.

The success of the ISTC will always depend on its response to outside development. Throughout its history, but perhaps more now than ever before, the ISTC must refresh its strategic vision and reenergize its operations. Both are necessary. In the past, we have seen the scope of projects move beyond the nuclear sphere to include chemical, biological, missile and other fields. We have seen the participants expand beyond direct government funding to include industrial and non-profit partners. We have seen key institutions move from dependency to self sustained funding, in some cases including commercial ventures. We have seen the operations of the Center supplemented and decentralized in regional and branch offices. We have seen a step-by-step process of including international best practices in the day-to-day activities of the Center.

Dr. Ronald F. Lehman II

Improving the efficiency of all aspects of ISTC programs is important to the Parties, but the real measure of merit must be its effectiveness. With initiatives related to basic science through advanced development, sustainability and commercialization, networking and outreach, and training and travel, many different scorecards are kept to evaluate progress. Such measures of output may be more meaningful than simply adding up all the monetary inputs, but they remain secondary to assessments by the Parties of the Center's contribution to their own security and that of other friendly nations.

As dual-use technology advances and spreads around the world, embedded scientific engagement such as the close technical cooperation provided by the ISTC may be essential to identifying and reducing risks. This may be the greatest nonproliferation task in the years ahead. Thus, building upon the close working relationships among scientists and governments that have developed at the ISTC, the greatest nonproliferation accomplishments of the Center may be found in the future rather than the past.

The considerable efforts by the ISTC to contribute to nonproliferation and international security is derived from the resources and resolve of the Parties. A successful contribution to these goals, however, is heavily dependent upon a world-class staff that serves in the Moscow headquarters and in the Branch Offices. The leader of that international team is the Executive Director. The ISTC is fortunate to welcome as its new Executive Director, Adriaan van der Meer, with exactly the skills and experience needed to deal with new developments. At the same time, on behalf of the Board of Governors, I wish to express our deep gratitude to Norbert Jousten for his wise and steady leadership

as Executive Director, including during a lengthy, but very important extension. We are comforted in the knowledge that in his next assignment he will continue to be a valued partner of the ISTC. We also wish to commend Sergey Vorobiev, the Russian Federation Deputy Executive Director, for his fine service as Acting Executive Director. Turnover of personnel is a normal and healthy aspect of any dynamic organization. In welcoming new faces, however, we wish to acknowledge the vital contributions, often at great sacrifice, of all our staff including a number of outstanding individuals who are moving on to new opportunities. The successful transformation of the ISTC to meet the new proliferation challenges rests on the strong foundation they helped build.

Dr. Ronald F. Lehman II
Chairman of the ISTC Governing Board

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.

2007 Highlights

- ISTC was actively engaged in developing a new vision statement and strategic plan that is intended to serve as the framework for its future development
- Georgia provided the CIS rotating Governing Board seat during the year in exemplary fashion and will be replaced by Belarus in the year 2008
- 73 Regular projects and 74 Partner projects were funded and Technology Implementation Plans prepared by institutes for each as a basis for future planning
- ISTC financially supported 18 patent applications for innovations related to funded projects
- ISTC supported the travel of 138 Russian and CIS experts to international seminars, workshops and Partner events using the Mobility Program
- Norbert Jousten, ISTC Executive Director for the past 3 ½ years, ended his term on December 31

EXECUTIVE DIRECTOR STATEMENT

The activities of the International Science and Technology Center (ISTC), headquarted in Moscow, and with branches in six other countries, fall in two broad categories. Firstly, they relate to financing of research projects that promote knowledge development in civilian areas. Secondly, the Center carries out a number of supplementary activities to ensure commercialization of the research results but also to integrate scientists in the international scientific community. The Center not only contributes to the nonproliferation of weapons of mass destruction but also to the further economic development of the countries involved through the promotion of innovation, job creation and diversification of economic activities.

The ISTC is a unique organisation bringing talented people together on an international scale, be it from the public or from the private sectors, in order to lay the foundations for further practical scientific and technological development. I would like to thank the Parties of ISTC for entrusting me with the execution of these important tasks as Executive Director of the Center. Obviously, I owe much to my predecessor, Mr. Norbert Jousten, who during the last three years guided ISTC through a period of considerable change in Russia and in the other Newly Independent States.

I look forward, together with all involved in the work of ISTC, to further move the Center forward in carrying out my tasks. I trust that my personal experience gained during several years of working with the countries concerned will be of use in my new role. It is clear that much remains to be done in the field of redirection of knowledge and skills to peaceful activities but also into reinforcing links with the scientific community striving to reach self-sustainability of research institutes.

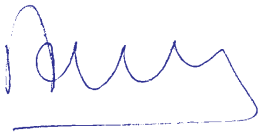
What has been achieved so far? During the period 1994-2007 the total number of institutions that signed projects amounts to more than 980. The total number of projects funded reached 2,600 with a total budget of $786 million.

There are two types of projects, namely, regular projects funded by each of the Parties, and Partner projects, that provide opportunities for mainly the private industry, but also other organizations to fund research in the institutes in the countries within which ISTC works. In 2007, ISTC accomplished new project funding for 147 projects in the amount of $49.2 million of which ISTC Partners provided $21.8 million for 74 projects. Direct grants were paid to nearly 20,000 scientists and their team members, amounting to almost $40 million. The ISTC welcomed 44 new partner organizations in 2007 making the total number of the Partners 379 since the inception of the Partner Program. During these years, the total funding provided by them is $238.4 million.

Adriaan van der Meer

These results show that there is a keen interest to work with ISTC and the immediate future task for 2008 is to view possibilities to accelerate funding procedures and promote the qualitative output of the work. In this respect the discussions in 2007 about the new vision of ISTC is crucial and it is expected that this discussion would be finalized in 2008. It is important for ISTC to work in line with the rapid developments in Russia and the other countries as well as to take into account the needs of its commercial partners, whilst at the same time fully adhering to its nonproliferation mission.

I intend to work closely with all Parties and Partners on an equal footing in achieving these objectives thereby responding to the new challenges also deriving from the process of the worldwide globalization that has brought scientists and other partners closer and closer. It is clear that within that context communication and information about ISTC is crucial. Together with ISTC staff members I also would like to further work on these issues.



Adriaan van der Meer
ISTC Executive Director

SCIENTIFIC ADVISORY COMMITTEE (SAC)

Yasushi Seki

SAC Committee

Co-Chairmen Statement

The existence of a Scientific Advisory Committee (SAC) within the ISTC organizational structure is embedded in the ISTC statute, more specifically Article VI, which states among others that the persons appointed to SAC shall be prominent members of scientific disciplines relevant to the Center's objectives and that its main task is "to advise the Board on fields of research and applications to be encouraged".

In operation since 1994, its role has been concentrated until recently on the scientific evaluation of regular projects submitted to ISTC for funding, as well as organizing a yearly "SAC Seminar" with the purpose of taking stock of the evolution of the scientific fields covered by ISTC, identifying promising avenues and promoting cooperation between scientists of the Parties to the ISTC.

With the evolution of the activities of ISTC, the presence of SAC within the overall ISTC apparatus does not appear to be put in question but its role should follow this evolution. To meet this requirement, SAC has prepared a new Terms of Reference specifying in more detail its mission and operation. This Terms of Reference was submitted to the ISTC Governing Board during its April 2008 meeting, and were subsequently approved.

Beyond the traditional role of providing review and ratings for the regular project proposals and of conducting SAC Seminars, the following activities are now confirmed:

- Upon request by the Board, performing Ex Post evaluation on a yearly basis of regular projects upon their completion
- Upon request by the Secretariat, advising on selection of programmatic activities and evaluation of their implementation
- Advising on the ISTC Seminars and Science Workshops and performing Ex Post evaluation of these activities as appropriate
- Identifying regular project proposals with sustainability potential for possible support through the relevant ISTC sustainability support services

Through these activities that correspond to the updated scope of ISTC objectives SAC hopes to fulfill more fully the role of scientific adviser to the ISTC. Its independent capability of assessment and evaluation (SAC members serve in their personal capacities) should be an asset for the Parties and the Secretariat, in their difficult task of shaping a bright future for ISTC under strict financial pressures and the obligation of meeting new challenges through the adaptation of its mode of operation.

Yasushi Seki and Yutaka Murakami

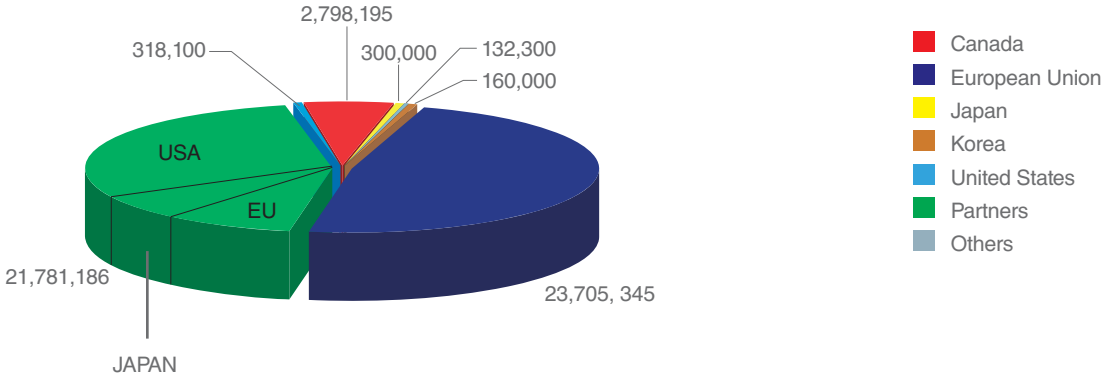
OVERVIEW OF ISTC ACTIVITIES IN 2007

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 former weapons scientists and technical team members in peaceful science projects through ISTC Programs.

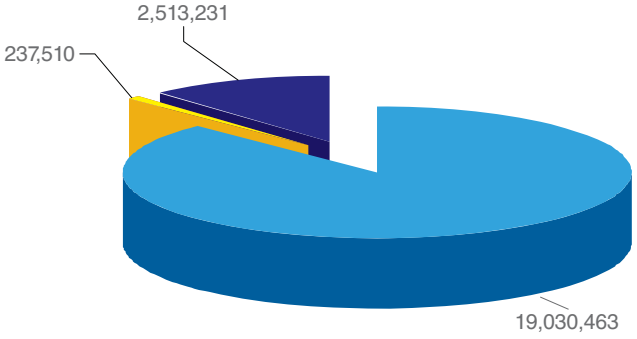
In 2007, the ISTC accomplished:

- New project funding for 147 projects in the amount of $49.2 million, of which ISTC Partners provided $21.8 million for 74 projects
- The addition of 44 new Partner organizations to the existing 335 Partners, that have provided $235.2 million in project funding since program inception

TOTAL New Project Funding ($) in 2007 by Source



ISTC Partner Project Funding ($) by Party in 2007



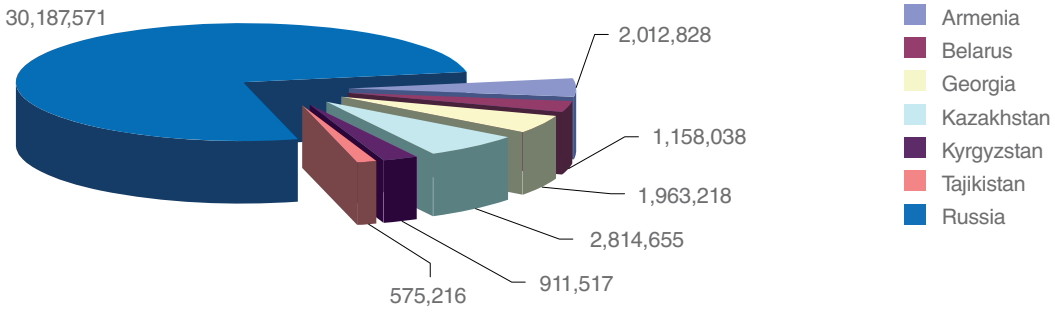
Party	Type	No. of projects, Funded in 2007	Amount 2007
United States	Total	58	19,030,463
	G	55	18,428,320
	NG	3	602,143
Japan	Total	6	237,510
	G	0	0
	NG	6	237,510
European Union	Total	10	2,513,213
	G	6	1,093,213
	NG	4	1,420,000
Total	Total	74	21,781,186
	G	61	19,521,533
	NG	13	2,259,653

G – Government Organizations

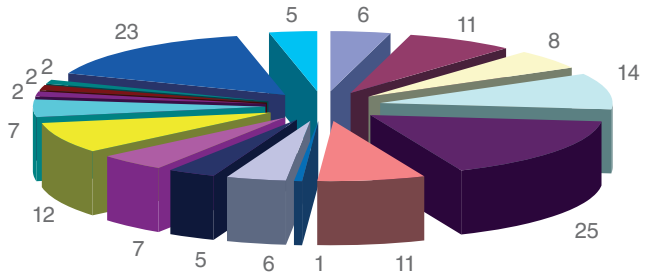
NG – Non-government Organizations

Direct grant payments to 19,916 scientists and their team members, amounting to $39.6 million

Grants Paid in 2007 by the ISTC to CIS Beneficiary Scientists ($)

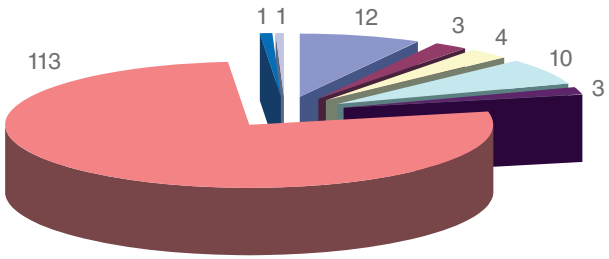


2007 Project Funding ($) by Technology Area



Tech Field	No. of projects 2007	Allocated funds 2007
Agriculture	6	1,549,855
Biotechnology	11	3,891,597
Biotechnology and Life Sciences	8	2,529,127
Chemistry	14	3,292,527
Environment	25	10,238,313
Fission Reactors	11	4,856,809
Fusion	1	35,000
Information and Communications	6	2,295,455
Instrumentation	5	1,807,625
Manufacturing Technology	7	2,842,688
Materials	12	4,049,518
Medicine	7	2,150,193
Non-Nuclear Energy	2	64,750
Other Basic Sciences	2	497,771
Physics	23	7,512,722
Space, Aircraft and Surface Transportation	5	1,101,266
Other	2	479,910
Total:	**147**	**49,195,126**

2007 Project Funding ($) Received by Beneficiary Country



Beneficiary country	No. of projects 2007	Allocated funds 2007
Armenia	12	4,319,984
Belarus	3	588,507
Georgia	4	1,064,879
Kazakhstan	10	3,879,013
Kyrgyzstan	3	1,181,847
Russia	113	37,792,546
Tajikistan	1	304,053
Ukraine	1	64,296
Total:	**147**	**49,195,126**

INNOVATION

ANNUAL REPORT 2007

INNOVATION

ANNUAL REPORT

2007

In the late 1990's, it was recognized that many of the projects that had been funded primarily on the basis of nonproliferation criteria had in fact developed interesting new technologies, vaccines and inventions that seemed to have the potential for further commercial development. To capitalize, the ISTC began to develop and introduce new programs and initiatives that could further assist both scientists and institutes to advance these results to a stage that might attract private sector investment interest. Many of these initial support mechanisms, such as paying for patents, travel support to meet with potential partners, training, etc. have since been expanded and have continued to evolve to provide a more sophisticated framework to support the permanent redirection of scientists and even institutes. More recently, new initiatives such as the Commercialization Support Program and Innovation Initiatives have added a new dimension of support to the re-direction goals of the ISTC and some of the more visible examples of the results of these efforts are showcased in the following **Innovation** and **Job Creation** parts of this report. Not only are permanent jobs in non-weapons oriented commercial structures being created but new innovations are making significant contributions to global technology advances in the 21st century.

Ensuring Safer And More Efficient Aircraft

Flight efficiency and safety tests using specialized wind tunnels play a vital role in the creation and upgrading of aircraft, reducing the actual and environmental costs of real flight-testing. As wind tunnel conditions naturally differ from the conditions of a real flight it is necessary to make complicated and detailed corrections of the data obtained during wind tunnel experiments. The correction parameters depend on the wind tunnel design and the specific conditions of the experiment.

The European Transonic Wind Tunnel (ETW) test section in Germany where many of the ISTC Project methodologies were tested.

The main objective of **Project #3085** was to improve techniques of experimental data correction when performing tests in transonic wind tunnels. Scientists from the **Central Aerohydrodynamic Institute (Zhukovsky, Moscow)**, in cooperation with experts from the European Transonic Wind Tunnel (ETW GmbH, Koln, Germany) developed theoretical and experimental wind tunnel investigations of stationary and non-stationary phenomena. The unique correction technique created by the Russian research team during the course of the Project offers a significant increase in the accuracy of experimental data, reducing the number of preliminary methodical runs, and decreasing the cost of an experiment by up to 10 %.

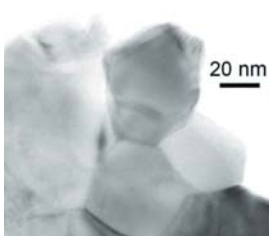
Outcome: A unique and cost-saving technique for increasing the accuracy of data obtained during aircraft wind tunnel testing

Creating The Building Blocks For Nanotechnologies

Investigation into the area of nanoclusters and nanosystems has laid the foundations for the new science of the 21st century - nanotechnology. Mechanical, magnetic, electric, optical, and catalytic properties of nanoparticles (clusters) strongly depend on their size. One of the primary goals of nanotechnology research is to learn how to synthesize nanoparticles of a set size and with the desired properties.

Project #2310, funded by the European Union and undertaken by the **Kutateladze Institute of Thermophysics (IT, Siberian Branch of the Russian Academy of Science, Novosibirsk, RF) and the All-Russia Research Institute of Theoretical Physics (VNIITP, Sarov, RF)**, considered the synthesis of nanoparticles using laser technologies. The Project initially began in 2003 in close cooperation with foreign collaborators from Geteborg University (Sweden) and Marseilles University (France). The Russian institute's experimental facility was considerably modernized as part of the project, implementing the newest methods of laser ablation monitoring and synthesized nanoparticles diagnostics, resulting in the IT facility becoming a state-of-the-art complex capable of carrying out the synthesizing and investigation of nanoparticles of any material. The new facility, coupled with the unique expertise of the science teams enabled advanced investigation into methods of nanoparticle synthesis at various stages of their formation under laser ablation. Small nanoparticle clusters are building blocks for bigger particles that are in great demand in optoelectronics, catalysis, the manufacture of fuel cells, and for various coatings

Nanocluster technology



Nanoclusters created during the course of Project #2310

As a result of research carried out during the project and using an original methodology for the elimination of defects in nanoclusters by 'soft' laser burning, a new technology for the synthesis of stable crystal zinc oxide nanoclusters of controllable size has been developed for use in catalysis and opoelectronic devices.

Outcome: An innovative new technique for creating consistently high-quality nanoclusters that can be used as the building blocks for nanotechnology development

Monitoring The Body's Physical And Mental Processes During Sleep

Sleep is the main regulatory factor for all life processes and allows the body to restore strength that has been expended during the day. Currently, clinical investigation during sleep requires methods and devices that are complicated, expensive, and not comfortable for a patient. For example, to carry out a polysomnographic examination, one needs to fix more than 10 various sensors and electrodes onto the body of the patient who must adapt to the equipment over at least 2-3 nights. This is the only way to ensure that the test results reflect the real situation of sleep and are not affected by the stress and discomfort caused by the sensors and electrodes.

Project #2548, financed by the European Union, allowed the **Institute of Biomedical Problems (Moscow, RF)** to research and develop a system for non-contact monitoring of the functional state of a sleeping person that would provide information not only about heart function, respiration and motion, but also about the state of their regulatory system and functional balance of the body. The research team has developed a hardware and software system which consists of a special data-reading device placed in the bed (under a pillow or mattress) that does not come into direct contact with the sleeping person, and which can identify and extract information about cardio activity, respiration and motion activity. The computer program created under the Project allows visualization of the received physiologic signals and can analyze and evaluate the functional state of a person, presenting the data to the physiologists and clinicians in a clear and easy-to-use form.

Outcome: A non-contact method to monitor and record the many physical and mental states of a person during sleep to assist with the diagnosis and early warning of potential illness or disease.

Technology to Detect Diseases of the Eye

The ability to more accurately examine the condition of the human eye retina holds an increasing urgency for the medical profession as, according to 2007 data, the frequency of visual system diseases among adults is reaching between 25 - 47 % of the population. Such a high prevalence and growth of eye diseases among people of various ages requires new approaches to the early detection of disease in the eye retina. Electrophysiological and neurophysiological methods are widely used to evaluate the state of both the eye retina and the optic nerve, with current methods based on stimulation of the eye retina by impulses from a monitor. However, all currently available diagnostic technologies enable stimulation of no less than eight segments of the eye retina simultaneously, and the inability to stimulate and examine one eye retina segment at a time may lead to an incomplete diagnosis.

Project #A-644, financed by Japan, brought together a multi-disciplinary team of specialists in electrophysiology, mathematics, programming, electrical engineering and computer sciences working with the **University of International Economic Relations (Yerevan, Armenia)**. Collaborating on the project was the Nagoya University School of Medicine, Nagoya, Japan with the project itself funded by the Japanese Government. The research team in Armenia developed a computer-based methodology to stimulate only one eye retina segment at each stimulation step that allows for the consecutive stimulation of separate segments of the eye retina and provides the most realistic picture of the eye retina.

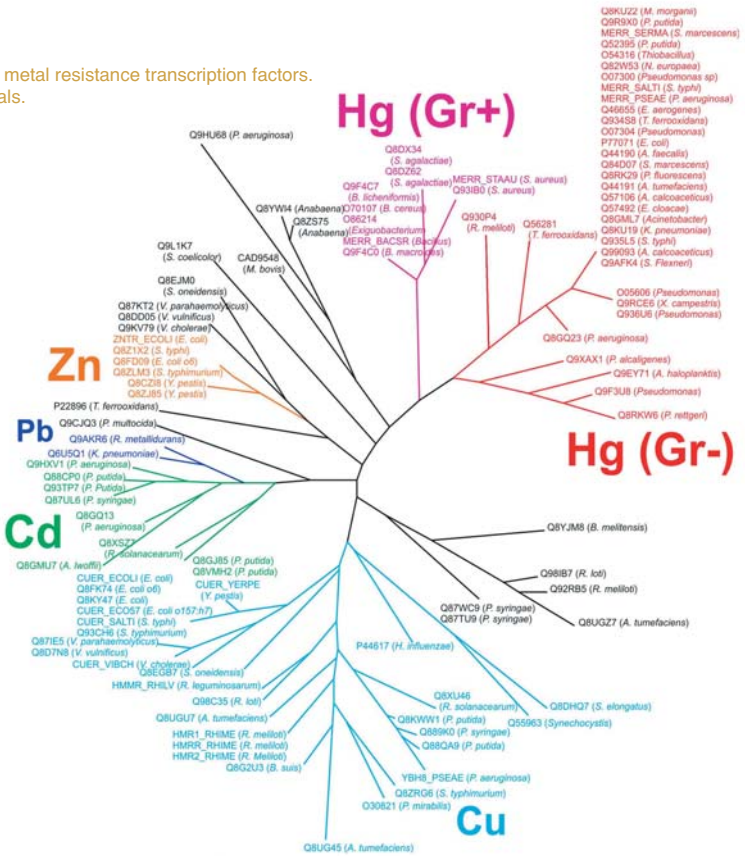
Outcome: A novel technology and methodology for the detailed examination of the eye's retina, to better detect the presence of eye disease

Computational Mapping of DNA

The number of worldwide registered genome sequences of microorganisms, plants, and animals is exponentially increasing due to recent advances in DNA sequencing techniques. This development is fueling the biotech revolution, which promises a wide variety of future solutions and products, such as new drug therapies, gene-therapy, pest-resistant crops, bio-fuels, and new industrial enzymes. However, this revolution can only progress with tools that can identify and analyze the variety and complexity of gene regulatory sites that control the translation and transcription of DNA into proteins and or enzymes. Additionally, there is a need to perform analyses of identified regulatory sites and genes in order to determine what part of the DNA sequences are important to their function.

For **Project #2766**, scientists at the **Federal Unitary State Enterprise - Institute of Strategic Stability (FUSE ISS) and the Institute for Information Transmission Problems of the Russian Academy of Sciences (IITP RAS)**, located in Moscow, RF, developed several models and internet-based tools to analyze gene sequences. The algorithms developed not only analyze the gene regulatory sites, but also can study the variability in genes, create more detailed evolutionary trees of related organisms, and can perform metagenomic analysis (i.e. the study of not only one genome, but a complex of genomes). Using these new tools, drug resistance in bacteria was studied (relevant to development of new antibiotics), as well as heavy metal resistance in bacteria (useful for bioremediation of polluted soils), biosynthetic pathways of industrial relevant enzymes, genes of chloroplasts (useful to build highly efficient bio-solar cells), and gene regulatory sites in genomes of various microorganisms (important for new drug therapies). The results of the project have been published in over 80 international publications. Currently, the participants are looking at ways to commercialize the search-algorithms developed within the project, which was financed by the European Union.

Outcome: Several computational and internet tools used to map genome sequences were developed and can be used in the search for new drug therapies, the development of bioremediation techniques, the discovery of new industrial enzymes, and the innovation of bio-solar cells



Phylogenetic tree for heavy metal resistance transcription factors. The colors indicate the metals.

New Materials and Metals for Industry

Titanium carbide and related hard metal alloys have unique properties that are of particular interest to the aerospace, chemical, electronic and radio industries. However, producing quality alloys at nanocrystal level is problematical and currently it is only possible to produce nanocrystal carbides of a very small size. To solve the problem, 'inhibitors' are usually added to the nanocrytals, but these can decrease the specific characteristics of the alloy that make it so useful to the mechanical engineering industries.

Project #G-961, supported by the European Union, aimed to develop a new approach to the creation of nanocrystal titanium carbide hard alloys for the manufacture of wear-resistant and high-temperature products. The research team from the **Georgian Technical University (Tbilisi, Georgia)** developed three novel methods to produce larger and purer nanocrystals which have been subsequently used in the manufacture of prototype nozzles for hydraulic cutting and wire dies for drawing cables and tubes.

Results have so far proven a technical and market performance which are higher than those of similar products available on the market. Compared with existing hard-alloy products, the new products have much higher quality characteristics: density by 2-2.5%, bend strength by 10-30%, hardness by 10-20 %, service life 1.5 to 2 times longer, mass 2-2.5 times greater, and the cost price at 2.5 to 3 times less than other products on the market.

Outcome: New alloys have been manufactured and are now being put to commercial use mostly in the transport and mechanical engineering industries

A New Treatment for Memory Loss

Memory impairments and a decrease of cognitive functions are common features of aging and various age-related neurodegenerative disorders; in particular, Alzheimer's disease (AD). All existing cognition- and memory-enhancers have a significant limitation in that they can act on memory only during the time of its acquisition, protecting only 'new' memory. These drugs cannot restore old memory, which is reduced due to aging or neurodegenerative processes.

Project #2368, funded by the United States, investigated the mechanisms and conditions that transform old memory into a form that is sensitive to pharmacological regulation and treatment, and looked for ways to help restore memory loss.

Results from work undertaken by the **Anokhin Institute of Normal Physiology of the Russian Academy of Medical Sciences (AINP, Moscow, RF)** has revealed new neurochemical properties of reactivated old memory that make it sensitive to pharmacological regulation, in particular, by different modulators of glutamate receptors (GR). Using these findings, researchers from the Institute of Physiologically Active Compounds, Russian Academy of Sciences (IPAC, Moscow, RF) were able to synthesize the broad spectrum of the specific properties of GR. Bringing together the experience of the two research groups under an umbrella of an ISTC project offered the opportunity to develop new forms of drug therapy that may revolutionize the treatment of memory loss.

Outcome: Development of a radically new group of chemical compounds for the treatment of memory loss caused by natural ageing or neurodegenerative disorders, such as Alzheimer's, resulting in an enhancing agent with new memory stimulating properties proposed for preclinical trials

Enhancing Safety in the Chemical Industry

Ensuring safety during the production and transportation of dangerous chemicals is a major concern for all industrial nations. Although there is a large body of research in this field, there remain numerous scientific and technical difficulties related to this area due to the complex nature of the issues involved, with solutions requiring the integrated use of theoretical and experimental methods, data processing techniques and mathematical modeling. **Project #1498**, financed by the United States, and involving a specialist team from the **Russian Scientific Center of Applied Chemistry (St Petersburg, RF)** concentrated on solving the most in-demand problems of reaction hazard assessment.

A technical meeting between the Russian research team and specialists from Dupont, Wilmington, USA

The main objectives of the project were to develop new, and improve on existing methods for safety procedures using calorimetric experiments, kinetics evaluation, the simulation of chemical processes and an assessment of reaction hazards. The team also aimed to create a new generation of thermal safety software (TSS) which is currently extensively used by the chemical industry.

The two-year project started in April, 2000, with two American collaborators – the Dow Chemical Company and The Dupont Company and with financial support provided by the United States. The results achieved during these 2 years were of such interest to the collaborators that the project was extended for an additional four years with the Mary Kay O'Connor Process Safety Center (USA) joining as a third collaborator. In total, the project lasted for 6 years and ended February, 2007.

Outcome: The development of improved methods for the production and transport of hazardous chemicals, and the successful commercialization of thermal safety software (TSS) which is now in use by chemical companies and universities in England, France, Germany, Japan, the USA and Taiwan

Environmentally Friendly Metalworking

Conventional machining and metalworking utilizes metal removal fluids (MRF) that are intended to improve tool life, reduce friction, and resolve other technical problems. However, MRFs have some negative environmental and health effects that have been well documented and have led to stricter industrial standards. Overhauling current metalworking facilities to comply with these new standards has been estimated to cost the US metalworking industry up to $10 billion.

The Initiative for Proliferation Prevention (IPP) Program of the United States Department of Energy (DOE), one of ISTC's major governmental Partners, in conjunction with a major US automotive corporation, initiated a two year research project (**Project #3616**) in May 2007 in close collaboration with the **Moscow Institute of Steel and Alloys (MISA)**, Moscow, RF, to eliminate MRF from the metalworking process by developing an innovative new technology called the 'dry machining process'. MISA will use a patented technology called Self-Propagating High-Temperature Synthesis to coat super hard materials such as nitrides, carbides and diamonds on the newly designed tools. Project results have shown that the higher speed of 'dry drilling' and increased tool life achieved through super hard coatings and new tool designs will shorten machine down-time and significantly increase productivity throughout the metalworking industry. At the same time, by eliminating the use of MRFs, the 'dry machining' process could save the metalworking industry billions of dollars in costs related to dealing with environmental and health issues linked to MRFs.

Outcome: The project has demonstrated that 'dry drilling' of aluminum alloys with cemented-carbide drills proves to be significantly more productive and environmentally safe than conventional high-speed steel drills using metal removal fluids

The Development and Commercialization of New Drugs

In 2007, a consortium of five research institutes headed by the **Institute of Biomedical Chemistry** (Moscow, RF) completed the research stage and started preclinical testing of recombinant L-asparaginase, a new and potentially highly effective drug against children's leukemia and acute leucosis. According to clinicians, the drug developed in **Project #2828**, and funded by a United States Government Partner, will be in great demand in Russian clinics and may save thousands of lives every year. The preliminary data has proved that the drug is highly efficient and much more affordable compared to similar western products. In addition to promoting the product on the Russian market it is also planned to test the new drug in western clinics.

Profs. Lev Denisov and Olga Goncharova of the Center for Immunological Engineering (Lyubuchany, Russia)

Another project, also supported by a United States Government Partner, involves the development of recombinant human interferon-beta (rhIFN-b) which can be used against multiple sclerosis. The rhIFN-b now available in Russia is imported from the USA and Europe. People suffering from multiple sclerosis need permanent life therapy, which costs $20,000-30,000 a year. In Russia there are 120,000 - 150,000 people, who need such treatment. **Project #2909** developed a domestic interferon rhIFN-b which has successfully completed preclinical trials. The registered trademark of the new drug is «Ronbetal», and it is expected to be 40% less expensive than its foreign analogues. The Ethics Committee at the Ministry of Health of the Russian Federation has given permission to carry out clinical tests at the leading neurological hospitals of the Sechenov Medical Academy, Moscow. The first and the second stages of the clinical trials under the on-going project began in 2008.

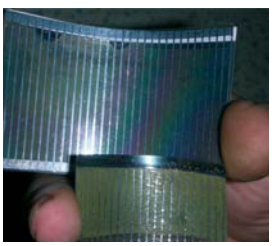
Outcome: The development and clinical trial stages of new, low-cost, drug treatments for children's leukemia and acute leucosis, and multiple sclerosis

Technologies To Harness Solar Power

The increasing use of solar power as a major source of alternative, ecologically viable energy is driving development of novel technologies able to harness this valuable energy source. According to many studies, by the year 2020 alternative energy sources will provide 20% of the worlds energy needs, of which 7% is expected to come from solar energy sources.

Project #B-1029, funded by Canada, is concerned with developing high efficiency solar cells and solar modules made from standard and commonly available industrial equipment.

Project teams from the **Institute of Electronics, National Academy of Sciences of Belarus, the Joint Institute of Solid State and Semiconductor Physics, and the National Academy of Sciences of Belarus** (Minsk, Belarus) have successfully worked with the most perspective materials, and now have patents registered in Belarus and Russia.



High-efficiency solar cells

Outcome: The Belarus research teams have developed patented processes for the creation of solar cells and solar modules, which, given their high commercial potential, has led specialists from ISTC's Commercialization Program to support a plan for a pilot pre-industrial facility for the production of thin film solar cells

New Technologies To Recycle Gunpowder and Solid Rocket Fuel

Quantities of weapons ammunition with an expired working life remain stored in the warehouses of military bases of the Former Soviet Union. Such ammunition may represent a potential security, environmental or safety threat if the storage facilities are not secured or the ammunition is kept in unstable conditions or decommissioned incorrectly. The **Institute of Mining Mechanics (Tbilisi, Georgia)** is engaged in finding peaceful, industrial and commercial use for some of the compounds and rocket fuels that had been created for the former Soviet defense sector. Utilizing compositions from dismantled weapons, the Institute, supported with funding from the European Union, has initiated **Project #G-1096** that is creating new forms of industrial explosives. Initial research work led to the development of the 'Business Standard for Industrial Explosives' (number 20754729-001-2006), that details the detonation characteristics of conversion powders and rocket fuels, and also details conditions of manufacture, transportation, storage and use.

Explosives being tested in Tbilisi, Georgia

Outcome: An international business standards guide on industrial explosives has been published. Also, a computer program to identify the optimum type of explosives and designs for drilling and blasting operations in open-cast mines has also been developed by the research team, and a program for commercializing the results of the ISTC project was started in 2008

Improving The Quality Of Wheat Extracts

The northern regions of Kazakhstan produce high quality wheat that offers one of the best sources for gluton and related wheat by-products, such as starch liquid and bran. However, the quality of the wheat grain can be reduced during normal processing which is important not just to the baking industry, but also in microbiological research where wheat by-products can be used as bio-fertilizers and plant growth enhancers. Currently there are no waste-free technologies that protect the full quality of the wheat grain during processing. A team of scientists from the **National Center on Biotechnology of the Republic of Kazakhstan (Stepnogorsk)** developed **Project #K-1313** to investigate possible solutions. The project was funded by the United States Department of Agriculture, Agricultural Research Service, a US Partner of ISTC.

The Kazakhstan team, working in collaboration with the Western Regional Research Center in California, developed a process of biorefining wheat grain that has a number of benefits, primarily related to the amount of gluton that can be produced. From every ton of wheat flour, it became possible to produce an additional 25 to 30 Kg of dry gluton without any loss of quality; a result that is of great interest to the baking industry. The team was also able to research the use of wheat bran as a bio-stimulator for plant and cell growth. Preliminary research revealed that a wheat bran preparation stimulated the formation of roots of plants. When tested on indoor and greenhouse plants, plant growth accelerated by up to 20%. The new non-toxic and non-carcinogenic plant growth regulator that the team developed during the course of the project is now expected to have a use, not just in increasing the speed of general plant growth, but also in microbiological research where the wheat bran preparation can be used in cell engineering, as it considerably increases the growth and morphogenesis of cells.

Outcome: A new methodology for the commercial processing of wheat and its by-products that increases yield without decreasing quality, and the development of a non-toxic bio-stimulator for plant and cell growth using wheat bran

Identification And Prevention Of Epidemic Disease

Amebiasis, an intestinal parasitic disease, is most commonly found in developing countries. The vulnerability of the developed world to epidemics caused by this disease was clearly demonstrated by an outbreak of intestinal amebiasis that occurred in Tbilisi, Georgia, in 1998, that resulted in an extremely high number of liver abscess cases. Filtration and disinfection of the city's water supply were not adequate to remove or kill the E. histolytica cysts. Following the outbreak, the implementation of additional clinical and laboratory testing, and the improvement of monitoring and surveillance systems of E. histolytica and other pathogenic protozoan infections in Georgia became a high medical priority.

The outbreak of amebic liver abscess was the impetus behind **Project #G-617** 'The Prevention of Amebiasis and Creation of Diagnostic Test Systems for Entamoeba Histolytica Strains Isolated in Georgia'. The project, initiated in October 2001, supported the outbreak investigation, which was a close collaborative effort between the **National Center for Diseases Control (Tbilisi, Georgia)**, the United States Center for Disease Control, and the University of Virginia, US, and focused on the surveillance, diagnostics and genotyping of amebic strains circulating within the country. The work proved to be highly successful from a public health standpoint, as the outbreak was mitigated although not completely eliminated and improvements in the water system helped to control the outbreak. The project also revealed a much higher rate of asymptomatic colonization with E. histolytica in family members of patients with amebic liver abscess, implicating the family as a source of new infections that maintained the epidemic in Tbilisi. The project resulted in new diagnostic tests for amebiasis based on the identification of unique genetic markers for the epidemic strains in Tbilisi and helped to advance the science of infectious diseases and parasitology, as evidenced with the acceptance of several scientific publications and presentations of work from this project in several international research journals and at conferences.

Outcome: Mitigation of an intestinal parasitic disease epidemic in Georgia and the development of a diagnostic test kit to help combat, and offer early identification, of the disease

Increasing The Environmental Benefits of Recycled Waste

Municipal solid wastes (MSWs) contain biodegradable organic wastes. When disposed at open landfills, these putrescent materials contaminate soil and ground waters, form local sources of infectious and epidemic diseases and create a danger to human health. Anaerobic bioprocess technology that results in energy carrier (biogas) and organic-mineral fertilizer production, and the suppression of pathogenic microorganisms that cause disease is considered the most promising alternative to incineration technologies currently employed by towns and cities across the globe.

To address the issue, the **Laboratory of Renewable Energy**, an integral part of the **National High Technology Center of Georgia,** based in Tbilisi, with financial support from the United States (**Project #G-891**) and in collaboration with Western research and commercial organizations from France and the US, developed a conceptual model of biorefinery for reprocessing of non-sorted municipal solid wastes. The reprocessing resulted in production of energy carriers like methane and hydrogen and dry organic mineral fertilizers, including recovery of ferrous and non-ferrous metals, plastics and inert materials. The novel methods and technologies first developed under the project are the two–phase anaerobic fermentation technology for combined production of biomethane and biohydrogen from the organic fraction of MSW, cost effective CO_2 based freeze explosion pretreatment method for increasing digestibility of organic biomass (including cellulosics), a cost effective method for CO_2 separation from both biohydrogen and biomethane, and a new technology for drying of organic mineral fertilizers obtained as the result of anaerobic treatment of organic wastes.

Outcome: The research team from the Laboratory of Renewable Energy, Georgia, is developing a business plan for the construction of an environmentally beneficial and economically effective pilot scale waste reprocessing biorefinery that will initially be adapted to one of the landfills in Tbilisi, Georgia

Diagnostic Kits for Rapid Detection of Multi-Drug Resistant Tuberculosis

The current emergence of Multi-Drug Resistant Tuberculosis (MDR-TB) is of growing concern for public health authorities in many countries. Addressing this issue, the **State Research Center for Applied Microbiology and Biotechnology (SRCAMB)** in **Obolensk, RF** has been funded by an ISTC governmental Partner, the US Department of Health and Human Services Biotechnology Engagement Program, to develop a rapid test kit for identification of TB drug resistance against the four most commonly used antibiotics. Unlike other methods requiring special equipment and highly skilled personnel, this test, developed within **Project #2748**, can be run at any sanitary station, including in rural areas. Moreover, it saves about two weeks of precious time necessary to prescribe the appropriate treatment according to the classical procedure.

Diagnostic kit for mukti-drug resistant tuberculosis

About one million MDR-TB tests per year are needed in Russia alone, according to current estimates. Therefore, this work is closely coordinated with Federal Service for Surveillance in Consumer Rights Protection and Human Well-being (Rospotrebnadzor), which is responsible for a broad range of public health issues in Russia. The institute is now preparing a request to ISTC and interested Partners for commercialization support to upgrade the production facility to cover the demands of the Russian market and Russian public health authorities.

Outcome: The development of a rapid test kit for identification of TB drug resistance that can be used in remote rural areas

JOB CREATION

ANNUAL REPORT 2007
JOB CREATION
ANNUAL REPORT
2007

In 2007, the ISTC accelerated development and implementation of a new initiative that was created and aimed at permanently re-directing Former Weapons Scientists (FWS) to civilian employment while still providing them with a technological or scientific level of performance requirement. The **Commercialization Initiatives** (now **Innovation Initiatives**) of the Commercialization Support Program has proven to be very successful in doing just this and reached an effective level of delivery this year, as the following examples clearly illustrate. The number of re-direction jobs expected to be created in 2008 is significantly greater as a high number of these types of Innovation Initiatives, or 'II', were only approved for support in 2007.

Decommissioning Nuclear Power Stations and Submarines

The **Research and Design Institute of Construction Technology (NIKIMT), Moscow, RF**, is designated as the leading Russian institution for nuclear power plant dismantling. With ISTC support, NIKIMT has developed waterjet-cleaning technology that, amongst other uses such as precision cutting in metal shops or heavy-duty field applications like cutting and cleaning, can be used to decommission and decontaminate nuclear submarines, giving this technology an important nonproliferation role.

The main customers at the initial stage of the project will be the enterprises of the Russian Government Agency 'Rosatom', the Russian company 'Gazprom' for internal and external cleaning of pipelines, and shipbuilding plants for cleaning ship hulls. Technologies for the dismantling of nuclear submarines are also an outcome.

Water-jet cutting technology

There is currently a large program within the "Global Partnership Against Weapons and Materials of Mass Direction" program being implemented by the G8 and others to carry out exactly such dismantling and decommissioning. NIKIMT is receiving support from ISTC to establish pilot production, marketing and business services capabilities.

In addition to ISTC support, NIKIMT is contributing a significant amount of its own funds for the purchase of equipment and to fund other business development activities. A Czech partner has invested a significant amount of in-kind support which will result in establishment of production facilities for the manufacture and promotion of the waterjet technology, primarily to the Russian/CIS market. NIKIMT expects to create sustainable civilian jobs for 30 former defense scientists.

30 FWS jobs created

II#110: Further to the 30 jobs expected to be created, it is projected that Waterjet sales for NIKIMT could reach the level of at least 55 total systems sold for the period 2007-2011. Annual revenue by 2011 is projected to be in the order of $2.9 million, with annual net profits of $461,000

Producing Ultra-High Purity Ammonia For The Electronics Industry

Ultra-high purity ammonia (UHP-ammonia) is widely used in the manufacturing of electronic components and especially Light-Emitting Diodes (LEDs), an extremely fast-growing market both in Russia and globally. Only a few production centers in the world are manufacturing ammonia of such high grade for the electronic industry, with Russia mainly relying on imported UHP-ammonia, which is more expensive than domestic products.

In anticipation of growing demand for this product in Russia, the **Khlopin Radium Institute (St. Petersburg, RF)** has developed a new technology for creating UHP-ammonia and ISTC is funding the establishment of a pilot production line that will initially supply electronic production centers in Saint Petersburg. The capacity of the new facility is expected to be two tons annually by 2009. The Institute plans to scale up the facility and increase production to up to 16 tons annually by 2011 to meet the fast growing demand for this product. The first accredited analytical lab for UHP ammonia is being established in Russia to assure the quality of the final product.

33 FWS jobs created

II#109: Specialists from the Khlopin Radium Institute will obtain new sustainable civilian jobs within this project. If successful, ISTC support will provide the Institute with the capacity to generate additional revenue of up to $1.3 million after 2011

New Water Filters And Purification Systems

The **Institute for Physics and Power Engineering named after A.I. Leypunsky (IPPE), Obninsk, RF** is working together with ISTC to commercialize the production of filtering elements with nano-structured membranes and filtering systems designed for processing high quality potable water and the purification of industrial liquids. ISTC is providing support to IPPE to purchase equipment and materials, implement infrastructure upgrades, provide business travel support, as well as marketing, legal and business advice. ISTC commercialization support is based on technology developed within the framework of completed ISTC **Project #1595**, financed by the United States, in which the institute developed an innovative filtering technology that allows for the covering of polyethylene substrate with a thin metal membrane layer without damaging the substrate shape and structure. The purification in IPPE's filter occurs not in the body of the element, but on its surface.

In Central Western Russia alone, the demand for integrated systems producing high quality potable water is over 1,000 systems annually, while the demand for membrane filtering elements is 500,000 items annually. IPPE, although a relative newcomer to the market, expects to capture a market share of 10-15%. In addition to ISTC support, three additional organizations are contributing funding to this Initiative: the institute itself, the Russian Agency for Science and Innovation (Rosnauka), and the Obninsk Center of Science and Technology.

Filtering Elements and Equipment for the Processing of High Quality Potable Water and Purification of Industrial Liquids

35 FWS jobs created
II#095: An additional 19 permanent civilian jobs will also be created. Annual revenue by the forth year is expected to be $1.7 million with annual net profit of $456,

Production of Radiation-modified Polymer Samples

The **Urals Plant of Polymer Technologies 'Mayak' (UPPT Mayak), Chelyabinsk Region, RF**, was established in the closed city of Ozersk in August 2005, with the aim of commercializing the production of radiation-modified products. UPPT Mayak is now an independent civilian business unit, created out of a former defense-focused science institute. UPPT Mayak can now be characterized as a supplier of high-quality heat-shrink tubes and tapes. A robust growth in the consumption of heat shrinking products is expected in the next five years and UPPT Mayak is perfectly positioned to take advantage of this market opportunity.

ISTC leveraged the support that has been provided to UPPT Mayak by ISTC's UK Government Partner, the Closed Nuclear Cities Partnership (CNCP) of the Department of Business, Enterprise and Regulatory Reform (BERR), formerly known as the U.K. Department of Industry and Trade. Together, ISTC and CNCP funded an initiative on the Production of Radiation-modified Polymer Samples at UPPT Mayak.

Thermal Shrink tube developed by MAYAK

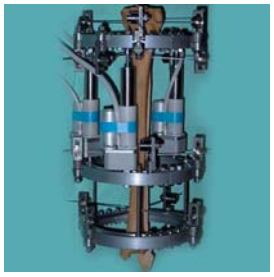
28 FWS jobs created
II#103: Permanent sustainable civilian jobs and an expected annual revenue for the business anticipated to be $1.04 million, with annual net profit of $185,000 after the second year

Manufacturing And Promoting Orthopedic Devices

LLC NOI (New Orthopedic Instruments) was founded in the closed Russian nuclear city of Sarov, with the primary goal of commercializing a newly developed orthopedic, automated device for lengthening human limbs. This device was created by a research team that included former defense engineers, designers and medical specialists from the host **All Russian Institute of Experimental Physics (VNIIEF)**. The uniqueness of the new device relates to the technology of an automatic drive that allows for 'customized' or individual patient limb lengthening.

A smooth and continuous lengthening process has been found to significantly reduce treatment complications. Additionally, the new technology does not require that the patient remain in hospital and so can reduce stress and treatment costs.

The institute, with support from ISTC, is establishing a pilot production line to manufacture the limb lengthening device, and will promote these devices to Russian and CIS clinics, identified from preliminary market research and customers' requests.



Advanced Automatic Compression-Distraction Device for Limb Lengthening

21 FWS jobs created
II#082: 9 additional permanent civilian jobs will also be created. LLC NOI is targeting revenues of $815,000 in three years after production line commissioning

Sapphire Crystal Production for Laser Systems

Over the past six years, there has been a dramatic 90% annual growth in the world demand for sapphire parts used in civilian laser systems. **LT-Pyrkal**, a company based in **Yerevan, Armenia**, specializes in R&D crystal production and processing for civilian laser accessories, components, and systems. The company employs 120 highly qualified specialists and workers, and has industrial facilities for laser production and synthetic crystal growth.

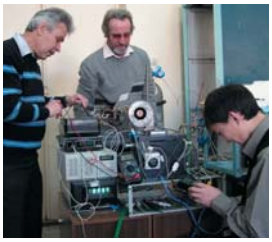
Taking advantage of the increasing demand for sapphire crystals, LT-Pyrkal, with ISTC support, is implementing improvements in the production, quality and yield of optic sapphire crystals using technology developed in Armenia.

Sapphire Crystal production laboratory

35 FWS jobs created
II#101: By expanding its production capabilities, the company is meeting growing demand for its sapphire crystal products, and increasing its sales and profit potential at the same time. Sustainability of the business will be supported by high operational profitability of the crystal production (60%) and considerable volume of sales that is expected to be up to $778,000 per annum by the third year

Development Of Cleaner Energy
ISTC's Fuel Cell Targeted Initiative

Technologies developed through ISTC's Fuel Cell Targeted Initiative (**Project #2904**) engage former defense scientists in sustainable work from three Russian institutes: **All Russian Institute of Experimental Physics (VNIIEF), Sarov, Boreskov Institute of Catalysis, Novosibirsk, and the Karpov Institute of Physical Chemistry, Moscow, Russia**. Co-funded by Canada, the EU, and the US, the initiative opens new horizons in a number of civilian engineering areas, ranging from heating boilers and internal combustion engines to portable power generators for prolonged geological, archeological and other kinds of expeditions.



Laboratory tests of the prototype Power Plant working on methanol with 150 W capacity

The key element of these technologies is the controlled conversion of fuel into so-called syn-gas (a mixture of H_2 and CO with some addition of CO_2 and N_2), which enables a higher efficiency of the entire process of energy generation, with dramatically decreased emission of CO, CH, and NOx. It is the proven benefits that these new technologies offer to environmental protection that makes research in this area of such international significance.

The Initiative has also obtained a considerable co-funding commitment from GazProm, with whom VNIIEF has signed a contract. ISTC's Commercialization Group is working with the scientists to identify those results which may have commercialization value outside the ISTC Targeted Initiative. These results may make a substantial contribution to the commercial sustainability of participating Institutes

ISTC PROJECT MAP:

LOCATION OF ISTC PROJECTS / COUNTRIES

- **ISTC PROJECT LOCATION**
- **CIS CAPITALS WITH ISTC PROJECTS**
- **ISTC PROJECTS LOCATED IN MOSCOW REGION**

Dubna
Elektrostal
Fryazino
Khimki
Khotkovo
Korolev
Lyubertsy
Lyubuchany
Nemchinovka-1
Obolensk
Podolsk
Protvino
Puschino
Ramenskoye
Serpukhov
Shatura
Shcherbinka
Troitsk
Zelenograd
Zhukovsky

PROGRAM SUMMARIES

Competency Building Program

is aimed to support former Weapons of Mass Destruction (WMD) experts and their organizations by providing and improving basic skills needed to create, maintain and develop self-sustainable business and commercialization of technologies.

The following courses and seminars were provided by ISTC in 2007.

Multimedia Training Courses and Remote Education

Date	Title	City / Country
05.02.2007 – 10.02.2007	Intellectual Property	Moscow, Russia
05.02.2007 – 10.02.2007	Project Management	Ufa, Russia
05.02.2007 – 10.02.2007	Presentation Skills	Yerevan, Armenia
05.02.2007 – 10.02.2007	Business Administration	St. Petersburg, Russia
05.02.2007 – 10.02.2007	Negotiations for Success	Bishkek, Kyrgyzstan
05.02.2007 – 10.02.2007	Intellectual Property	Sarov, Russia
05.02.2007 – 10.02.2007	Business Administration	Bishkek (Kyrgyzstan)
05.02.2007 – 10.02.2007	Business Administration	Sarov, Russia
05.02.2007 – 10.02.2007	Intellectual Property	Yerevan, Armenia
05.02.2007 – 10.02.2007	Knowledge and Technology Management	Moscow, Russia
05.02.2007 – 10.02.2007	Business Administration	Almaty, Kazakhstan
05.02.2007 – 10.02.2007	Business Plan Development	Russia
05.02.2007 – 10.02.2007	Business Plan Development	Obninsk, Russia
05.02.2007 – 10.02.2007	Business Administration	Tbilisi, Georgia
05.02.2007 – 10.02.2007	Essential Principles of Informational Technologies and Practical Computer Usage	Bishkek, Kyrgyzstan
05.02.2007 – 10.02.2007	Business Administration	Bishkek, Kyrgyzstan
05.02.2007 – 10.02.2007	Business Administration	Sarov, Russia
05.02.2007 – 10.02.2007	Business Administration	Almaty, Kazakhstan
05.02.2007 – 10.02.2007	Innovation Management and Management of Innovation Risks	Moscow, Russia
05.02.2007 – 10.02.2007	Knowledge and Technology Management	Armenia, Tajikistan, Kyrgyzstan, Russia
05.02.2007 – 10.02.2007	Business Administration	Yerevan, Armenia
05.02.2007 – 10.02.2007	Business Plan Development and Business Administration	Almaty, Kazakhstan
05.02.2007 – 10.02.2007	Business Plan Development	Russia
05.02.2007 – 10.02.2007	Business Plan Development	Bishkek, Kyrgyzstan
05.02.2007 – 10.02.2007	Business Plan Development	Minsk, Belarus
05.02.2007 – 10.02.2007	Introduction to R&D Commercialization of Results	Minsk, Belarus
05.02.2007 – 10.02.2007	Introduction to Business Administration	Yerevan, Armenia
22.03.2007 – 23.03.2007	Commercialization of R&D results in collaboration with the United Kingdom Department of Trade and Industry's Closed Nuclear Cities Partnership	Moscow, Russia
04.2007	Distance Training Courses Assessment	Bishkek, Kyrgyzstan
25.06.2007 – 27.06.2007	Presentation Skills and Business Negotiations	Bishkek, Kyrgyzstan
30.05.2007 – 01.06.2007	Commercialization of R&D results	Yekaterinburg, Russia
10.04.2007 – 11.04.2007	E-learning Education	Dimitrovgrad, Russia
11.07.2007 – 12.07.2007	Joint ISTC / CNCP seminar on Commercialization of R&D results	Armenia

Seminars

Date	Title	City / Country
20.09.2007 – 21.09.2007	Seminar for Technology Managers (CTCOs)	Moscow, Russia
26.09.2007 – 27.09.2007	Technology Commercialization	Yekaterinburg, Russia
26.09.2007 – 27.09.2007	Commercialization of R&D results	Tbilisi, Georgia
14.10.2007 – 20.10.2007	Commercialization seminar	Baku, Azerbaijan
15.10.2007 – 20.10.2007	Certification and IPR Issues	Dushanbe, Tajikistan
17.12.2007	Introduction to R&D results Commercialization	Minsk, Belarus
03.09.2007 – 06.10.2007	Knowledge and Technology Management	Moscow, Russia

Promoting CIS Science & Technology

The ISTC carries out a range of promotional activities to inform the international private and public science and 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.

ISTC at BioEurope 2007, Hamburg, Germany

The ISTC also undertakes media advertising and the promotion of its services via the ISTC website, an ISTC Newsletter and the creation of sector or event specific general promotional materials, such as CD-Roms, brochures and this Annual Report.

ISTC's Science Workshops and Seminars Program, together with parallel Supplementary Budget focused activities, assist the integration of former WMD experts into the international S&T community and to engender sustainable cooperation both during the lifetime of an ISTC project and beyond. Canada, the European Union, the United States, and Japan fund these activities.

ISTC Involvement in Promotional Events and Science Workshops / Seminars in 2007

Date	Title	City / Country
05.02.2007 – 10.02.2007	XIII International Conference on Methods of Aerophysical Research (ICMAR XIII)	Berdsk, Russia
12.03.2007 – 13.03.2007	IX Khariton's International Topical Scientific Readings "Extreme States of Substance. Detonation. Shock Waves Conference"	Sarov, Russia
12.03.2007 – 13.03.2007	Symposium and Spring School "Nano and Giga Challenges in Electronics and Photonics: From Atoms to Materials to Devices to System Architecture (NGC-2007)"	Phoenix, USA
15.03.2007 – 16.03.2007	UK/EU Stem Cell Workshop	Moscow, Russia
20.03.2007 – 22.03.2007	Americana 2007, Innovation Technologies Conference	Montreal, Canada
24.03.2007 – 26.03.2007	The Conference "Russian Anticancer Drug Discovery" Satellite symposium "Strategy of Search for New Methods of Treatment and Diagnostics of Cancer, Perspectives for International Collaboration"	Moscow, Russia
26.03.2007 – 28.03.2007	ACS Spring 2007	Chicago, USA
16.04.2007 – 20.04.2007	Hanover Fair, Fuel Cell and Hydrogen Energy Conference	Hanover, Germany
23.04.2007 – 27.04.2007	GrantwritingWorkshop	Yekaterinburg, Russia
22.05.2007 – 26.05.2007	ISTC-Canadian Workshop "Aerospace Technologies"	Moscow, Russia
28.05.2007 – 01.06.2007	ISTC-Canadian Workshop "Environmental Mercury Pollution: Mercury Emissions, Remediation and Health Effects",	Astana, Kazakhstan
28.05.2007 – 01.06.2007	XIX International Conference on Coherent and Nonlinear Optics and Laser Application and Technology (ICONO/LAT 2007)	Minsk, Russia
04.06.2007 – 07.06.2007	Photonics North 2007, International Photonics Conference	Ottawa, Canada
04.06.2007 – 07.06.2007	Workshop "Cleaning Up Sites Contaminated with Radioactive Materials"	Moscow, Russia
04.06.2007 – 07.06.2007	VI International Conference "Nuclear and Radiation Physics"	Almaty, Kazakhstan
11.06.2007 – 14.06.2007	International Conference on Laser Applications in Life Sciences (LALS-2007)	Moscow, Russia
18.06.2007 – 21.06.2007	International Conference on Muon Catalyzed Fusion and Related Topics (MCF-07)	Dubna, Russia
27.06.2007 – 29.06.2007	Workshop on Material Sciences "Nanostructured Materials"	Vienna, Austria
01.07.2007 – 14.07.2007	Summer School on Global Security and Non-proliferation Issues for Specialists from Russia and CIS	Moscow, Russia
01.07.2007 – 06.07.2007	EUCASS, 2nd European Conference for Aerospace Sciences	Brussels, Belgium
02.07.2007 – 02.07.2007	3rd International Conference IHISM '07 "The interaction of hydrogen isotopes with structural materials"	St Petersburg, Russia
22.07.2007 – 29.07.2007	The Summer School on New Materials and Information Technologies (SCORPh – 2007)	Astana, Kazakhstan
14.08.2007 – 18.08.2007	International Symposium "Bulk Nanosrtuctured Materials: from fundamentals to innovations" (BNM-07)	Ufa, Russia
06.09.2007 – 08.09.2007	INTAS conference on energy	Kiev, Ukraine
18.09.2007 – 20.09.2007	Response to Chemical Emergencies Including Terrorist Attacks and Industrial Accidents	St Petersburg, Russia
19.09.2007 – 21.09.2007	Bio Japan 2007, Biotechnology Conference	Yokohama, Japan
24.09.2007 – 27.09.2007	10th International Seminar "Advanced Nuclear Fuel Cycle for the XXI Century"	Nizhniy Novgorod, Russia
01.10.2007 – 04.10.2007	ISTC-STCU workshop in Portugal during EU Presidency Meeting	Porto Salvo, Portugal
02.10.2007 – 05.10.2007	International Scientific-and-Technological Exhibition-Congress "Mechatronics and Robotics (M&R-2007)"	St Petersburg, Russia
08.10.2007 – 10.10.2007	New Polymers and Radioprotectors for Biology and Medicine	Yerevan, Armenia
09.10.2007 – 11.10.2007	Conference "Spinelectronics: Novel Phenomenon and Materials"	Tbilisi, Georgia
17.10.2007 – 19.10.2007	International Advisory Group Meeting and Topical Issues of Population Protection Against Biological Threats	Moscow, Russia
18.10.2007 – 19.10.2007	International workshop tuberculosis "State of Question in Russia and Pathway Towards the Foundations of a Russian Cluster	Moscow, Russia

Date	Title	City / Country
24.10.2007 – 25.10.2007	RemTech, International Remediation Technologies Conference	Banff, Canada
29.10.2007 – 30.10.2007	43rd Japan workshop on Accelerator Science, "Basic to Application" in Russia and CIS	Tsukuba, Japan
07.11.2007 – 09.11.2007	Nuclear Trafficking Workshop	Dushanbe, Tajikistan
07.11.2007 – 09.11.2007	Forum on Alternative Energy	Moscow, Russia
11.11.2007 – 15.11.2007	ANS 2007, Nuclear Society Conference	Washington DC, USA
12.11.2007 – 14.11.2007	BioEurope 2007, International Biotechnology Conference	Hamburg, Germany
19.11.2007 – 22.11.2007	IAEA International Conference on Illicit Nuclear Trafficking: Collective Experience and the Way Forward	Edinburgh, UK
07.12.2007 – 10.12.2007	EANM Learning Course on PET and PET/CT in Oncology	Vienna, Austria

ISTC Scientific Subscription Initiative

Building Sustainability by Opening the World's Best Information Resources to the Russian and CIS Scientific Community

The ISTC's Scientific Subscription Initiative (SSI) is a relatively new program developed by the ISTC Secretariat to provide access to a wide range of reputable, internationally known scientific journals, publications and information services for ISTC beneficiary institutes. Since 2006, a consortium of 25 Russian/CIS biological research institutes receives free access to approximately 840 highly rated scientific journals by Elsevier (www.ScienceDirect.com). This resource is highly appreciated by the scientists, and more than 12,000 publications are downloaded each month within the SSI.

In 2008, the ISTC will focus on further development of the Initiative, expanding and diversifying the scope to meet the more specific needs of a larger scientific community. At the same time, the role of the Institutes will eventually evolve from purely "ISTC beneficiaries" towards partnership and cost sharing. ISTC is also pursuing cooperation with interested Russian Agencies in this area.

The Initiative is funded by US Governmental Partners (DHHS Biotechnology Engagement Program, US BioIndustry Initiative, US BioChem Redirect Program, US Department of Agriculture) and by Canada. These budget contributors recognize that up-to-date scientific information is critical to maintaining a high-level of science, finding collaborators, and facilitating integration of FWS into the international scientific community.

Summary of ISTC Project Funding

Technology Area	2007				1994 -2007	
	Funded		Completed		Funded	
	No. of Proj	$ Value	No. of Proj	$ Value	No. of Proj	$ Value
Agriculture Diagnostics, disease Surveillance, Food & Nutrition, Plant Protection, Vaccines and Therapeutics	6	1,549,855	5	1,923,668	79	25,471,754
Biotechnology Biochemistry, Biodiversity, Bioinformatics, Industrial Biotechnology, Bioremediation, Biosafety and BioSecurity, Cytology, Genetics and Molecular Biology, Microbiology, Radiobiology	11	3,891,597	14	5,855,428	265	96,702,509
Biotechnology and Life Sciences Biochemistry, Cytology, Genetics and Molecular Biology, Ecology, Immunology, Nutrition, Pathology, Pharmacology, Physiology, Radiobiology	8	2,529,127	0	0	9	2,879,127
Chemistry Analytical Chemistry, Industrial Chemistry and Chemical Process Engineering, Photo and Radiation Chemistry, Physical and Theoretical Chemistry, Control and Accounting, Destruction and Conversion, Safety and Security	14	3,292,527	12	3,753,665	181	48,301,851
Environment Environmental Health and Safety, Modeling and Risk Assessment, Remediation and Decontamination, Seismic Monitoring, Solid Waste Pollution and Control, Waste Disposal, Dangerous Materials Transportation	25	10,238,313	32	8,340,608	420	130,887,924
Fission Reactors Decommissioning, Experiments, Fuel Cycle, Reactor Fuels and Fuel Engineering, Nuclear Instrumentation, Isotopes, Materials, Modeling, Nuclear and Other Technical Data, Nuclear Safety and Safeguarding, Materials and Materials Conversion, Control and Accounting, Physical Safety and Security at Facilities	11	4,856,809	22	6,903,413	250	82,884,453
Fusion Hybrid Systems and Fuel Cycle, Inertial Confinement Systems, Plasma Physics	1	35,000	0	0	48	14,353,124
Information and Communications High Performance Computing and Networking, Data Storage and Peripherals, Data Storage and Peripherals, Microelectronics and Optoelectronics, High-Definition Imaging and Displays, Sensors and Signal Processing, Year 2000 Problem	6	2,295,455	9	3,537,850	104	27,608,960
Instrumentation Measuring Instruments	5	1,807,625	4	1,578,228	129	35,985,628
Manufacturing Technology CAD and CAM, Engineering Materials, Machinery and Tools, Manufacturing, Planning, Processing and Control, Plant Design and Maintenance, Robotics, Tribology	7	2,842,688	3	1,824,491	76	21,435,916

Technology Area	2007				1994 -2007	
	Funded		Completed		Funded	
	No. of Proj	$ Value	No. of Proj	$ Value	No. of Proj	$ Value
Materials High Performance Metals and Alloys, Ceramics, Composites, Organic and Electronics Materials, Explosives, Control and Accounting	12	4,049,518	14	3,146,141	205	65,800,106
Medicine Diagnostics & Devices, Disease Surveillance, Drug Discovery, Radiomedicine, Vaccines	7	2,150,193	13	3,870,742	212	77,859,503
Non-Nuclear Energy Batteries and Components, Fuel Conversion, Fuels, Heating and Cooling Systems, Miscellaneous Energy Conversion, Solar Energy	2	64,750	8	2,362,416	60	20,213,888
Other Agriculture, Building Industry Technology, Electrotechnology	2	479,910	3	775,062	18	2,908,512
Other Basic Sciences Geology, Natural Resources and Earth Sciences	2	497,771	1	383,680	26	5,747,604
Physics Atomic and Nuclear Physics, Fluid Mechanics and Gas Dynamics, Optics and Lasers, Particles, Fields and Accelerator Physics, Plasma Physics, Radiofrequency Waves, Structural Mechanics	23	7,512,722	26	8,383,190	393	97,537,603
Space, Aircraft and Surface Transportation Aeronautics, Extraterrestrial Exploration, Manned Space Station, Space Safety, Spacecraft Trajectories and Mechanics, Surface Transportation, Unmanned Spacecraft, Space Vehicles and Support Equipment	5	1,101,266	3	822,960	99	28,176,328
Total	**147**	**49,195,126**	**169**	**53,461,543**	**2574**	**784,754,790**

ISTC STRUCTURE

Permanent Governing Board Parties


Canada


European Union


Japan


Russian Federation


United States

Other Parties


Norway


Republic of Korea

CIS Parties


Armenia


Belarus (Board Member in 2008)


Georgia (Board Member in 2007)


Kazakhstan


Kyrgyzstan


Tajikistan

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 Georgia in 2007 and by Belarus in 2008.

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	Roman Waschuk
European Union	Zoran Stancic
Japan	Jun Yanagi, Takeshi Hikihara
Russian Federation	Lev Ryabev
United States of America	Victor Alessi
Georgia	Natia Jokhadze

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

Sabine Hey - Senior Program Manager
Redirection of Former Weapons Scientists
Global Partnership Program
Department of Foreign Affairs and International Trade
Ottawa, Canada
Tel: 1 (613) 944-2429
Fax: 1 (613) 944-1130
E-mail: sabine.hey@international.gc.ca

European Union

Robert Burmanjer – Head of Unit, Unit D-3
Specific International Cooperation Activities
Directorate General for Research
European Commission
Brussels, Belgium
Tel: 32 (2) 296-8944
Fax: 32 (2) 296-6252
E-mail: robert.burmanjer@ec.europa.eu

Japan

Ryoko Henna - Officer
International Science Cooperation Division
Ministry of Foreign Affairs
Tokyo, Japan
Tel: 81 (3) 5501-8229
Fax: 81 (3) 5501-8228
E-mail: ryoko.henna@mofa.go.jp

Rikutaro Hamada - Officer
Ministry of Education, Culture, Sports, Science and Technology (MEXT)
International Science and Technology Affairs Division
Science and Technology Policy Bureau
Tokyo, Japan
Tel: 81 (3) 6734-4055
Fax: 81 (3) 6734-4058
E-mail: hamada@mext.go.jp

Russian Federation

Lyubov Kondratenkova - Coordinator, ISTC
Federal Agency for Atomic Energy
Moscow, Russian Federation
Tel/Fax: 7 (499) 949-2012
Tel/Fax: 7 (499) 949-2047
E-mail: LKondratenkova@umvs.faae.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

United States of America

Kathryn Insley - Senior Coordinator for ISTC Bureau of Nonproliferation
Bureau of International Security and Nonproliferation
Office of Cooperative Threat Reduction
Department of State
Washington, DC, USA
Tel: 1 (202) 647-2056
Fax: 1 (202) 736-7698
E-mail: InsleyKE@state.gov

Jason Rao – NWMDE Program Coordinator
Director BioIndustry Initiative
Bureau of International Security and Nonproliferation
Department of State
Washington, DC, USA
Tel: 1 (202) 647-2601
Fax: 1 (202) 736-7698
E-mail: raoje@state.gov

Norway

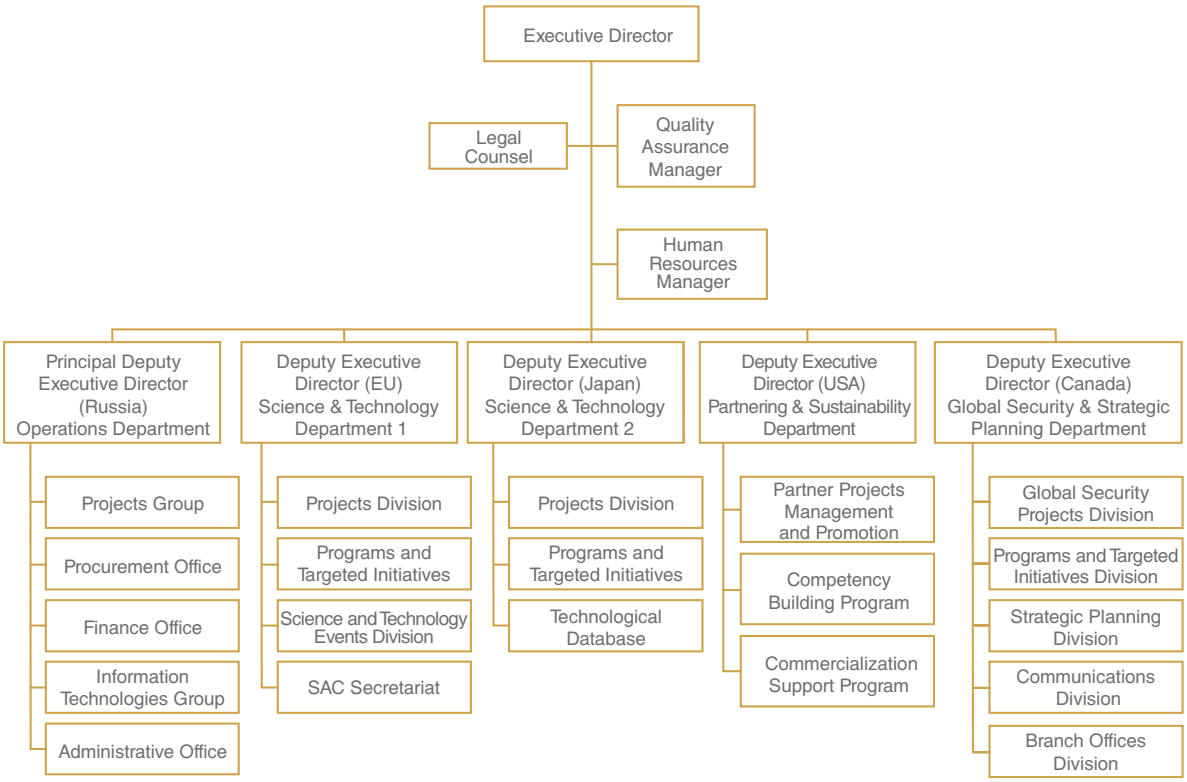
Roger Joergensen - Advisor
Section for the High North, resources and Russia
Royal Norwegian Ministry of Foreign Affairs
Oslo, Norway
Tel: 47 (2) 224-3246
Fax: 47 (2) 224-2774
E-mail: roj@mfa.no

Republic of Korea

Choi, Eun-Ok - Director
Multinational Cooperation Division
Ministry of Education, Science and Technology
Seoul, Republic of Korea
Tel: 82 (2) 2100-6784
Fax: 82 (2) 2100-6785
E-mail:echoi2@mest.go.kr

Ji-In Ahn - Manager
Global R&D Networking Department
Korea Foundation for International Cooperation of Science and Technology
Seoul, Republic of Korea
Tel: 82 (2) 6710-74444
Fax: 82 (2) 6710-7409
E-mail: jiahn@kicos.or.kr

ISTC SECRETARIAT



SECRETARIAT CONTACT INFORMATION

General Inquires / Public Information
Phone: 7 (495) 982-3200
Fax: 7 (499) 982-3201
E-mail: istcinfo@istc.ru

Executive Director (European Union)
Adriaan van der Meer
Phone: 7 (495) 982-3100
Fax: 7 (499) 978-0110
E-mail: vandermeer@istc.ru

Principal Deputy Executive Director Operations (Russian Federation)
Sergey Vorobiev
Phone: 7 (495) 982-3102
Fax: 7 (499) 978-1331
E-mail: vorobiev@istc.ru

Deputy Executive Director Global Security & Strategic Planning (Canada)
Leo Owsiacki
Phone: 7 (495) 982-3103
Fax: 7 (499) 978-0227
E-mail: owsiacki@istc.ru

Deputy Executive Director Science & Technolgy 1 (European Union)
Waclaw Gudowski
Phone: 7 (495) 982-3210
Fax: 7 (499) 978-4637
E-mail: gudowski@istc.ru

Deputy Executive Director Science & Technology 2 (Japan)
Yasuhiro Yukimatsu
Phone: 7 (495) 982-3108
Fax: 7 (499) 978-3603
E-mail: yukimatsu@istc.ru

Acting Deputy Executive Director Partnering & Sustainability (USA)
Patrick Russo
Phone: 7 (495) 982-3111
Fax: 7 (499) 978-4926
E-mail: russo@istc.ru

• • • • • • •

ISTC Branch Office, Armenia
Yerevan, Republic of Armenia
Hamlet Navasardyan
Tel.: 374 (10) 52-47-40
Fax: 374 (10) 58-44-83
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, 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 (727) 293-9740
Fax: 7 (727) 293-9694
E-mail: tomarovskaya@istc.ru

ISTC Branch Office, Kyrgyzstan
Bishkek, Kyrgyz Republic
Vitaly Kovalenko
Tel: 996 (312) 431-171
Fax: 996 (312) 431-171
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

GLOSSARY

Bio-safety/Bio-security Program is aimed at providing additional resources to support various Bio-safety and Bio-security initiatives.

Commercialization Support Program is aimed to facilitate and strengthen long-term commercial self-sustainability efforts by ISTC beneficiaries through promoting marketable products and services.

Communication Support Program (CSP) is aimed to support eligible CIS institutes and organizations for building IT infrastructure where existing capabilities inhibit the accomplishment of ISTC projects and the development of commercial opportunities.

Competency Building Program is aimed to support former Weapons of Mass Destruction (WMD) experts and their organizations by providing and improving basic skills needed to create, maintain and develop self-sustainable business and commercialization of technologies.

Counter-Terrorism Program is aimed to support activities with respect to counter-terrorism and law enforcement, which are within the mandate of the ISTC and which are not yet foreseen and are not available through existing ISTC activities, such as regular projects.

Governing Board is the primary ISTC decision-making body, which is made up of representatives from Canada, the European Union, Japan, the Russian Federation and the United States, with one yearly rotating seat for representation of one of the CIS Party.

Mobility Program is aimed at providing additional possibilities of direct communication of the CIS scientists with their colleagues from abroad through financing international travels related to ISTC projects and activities.

Partner Promotion Program is aimed to attract, initiate and develop active partnerships, networks and Partner projects with private industries, NGOs and Governmental organizations coming from the ISTC Parties.

Patenting Support Program is aimed to provide assistance and support in appropriate protection of intellectual property created under regular projects for its effective exploitation.

Programmatic Approach is a policy of the ISTC, approved in 2003, which encourages the development of projects along 6 selected or topical areas.

Science Workshop and Seminar Program is aimed at promoting the integration of ISTC beneficiary institutions and their former WMD experts into the global S&T community through supporting of various science events.

Scientific Advisory Committee (SAC) is an ISTC body that provides expert scientific evaluation of project proposals, determines new directions for project activity, and evaluates ongoing projects on behalf of the ISTC Governing Board.

Scientific Subscription Initiative is a new program launched in 2006 to provide electronic access to scientific to internationally known scientific journals, publications and information services.

International Science and Technology Center (ISTC)
Krasnoproletarskaya 32-34,
127473, Moscow
Russian Federation

www.istc.ru