ISTC Projects and Activities on Nuclear Forensics

Svetlana V. Genisaretskaya,
Senior Project Manager,
Global Security and Strategic Planning Department

ISTC's Motto

Non-Proliferation through Science Cooperation

What is ISTC?

- **An international organization operational since 1994**
- **ISTC now comprises 39 member countries (27 from EU), representing CIS, EU, Asia, Canada and North America**













Beneficiary Countries

- **7 CIS countries in which ISTC is operational:**
  Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Russian Federation, Tajikistan


LOCATION OF ISTC PROJECTS
МЕСТОПОЛОЖЕНИЕ ПРОЕКТОВ МНТЦ
RUSSIAN FEDERATION
KAZAKHSTAN
MONGOLIA
CHINA
JAPAN
IRAN
IRAQ
INDIA
EGYPT
SAUDI ARABIA
TURKEY
UZBEKISTAN
POLAND
BELARUS
UKRAINE
FINLAND
SWEDEN
ISTC PROJECT LOCATION
CIS CAPITALS
ISTC PROJECTS LOCATED IN MOSCOW REGION
Lytkarino
Lysbertsy
Lyubuchany
Mendeleevo
Mytischi
Nemchinovka-1
Obolensk
Podolsk
Protvino
Puschino
Sergiev Posad
Serpukhov
Stupino
Troitsk
Zelenograd
Zhukovsky,
Bolshie Vyazemy
Chernogolovka
Dolgoprudny
Dubna
Dzerzhinsky
Elektrogorsk
Elektrostal
Fryazino
Istra-2
Khimki
Klimovsk
Korolev

Our Objectives

- **Redirection through support of research projects and institutes**
- **Assistance in commercialization of research results**
- **Promotion of sustainability of priority institutes**
- **Integration of researchers into worldwide scientific community**

Results to Date

-More than 70,000 scientists engaged

-980 institutes

-2,600 projects funded

-$ 785 million USD of overall funding

ISTC as an Implementing Mechanism

-Matchmaking and partnering mechanism

-Research funding agency, managing funds from many sources

- Resource Center for companies and institutes

- Vehicle for international scientific collaboration and networking

- Worldwide model for redirection activities

Aligned with International Priorities

-Nuclear sector

-Counter Terrorism and Global Security

- Non-nuclear energy

- Biotechnology/new medical diagnoses

- Environment

- Contributes to fundamental science

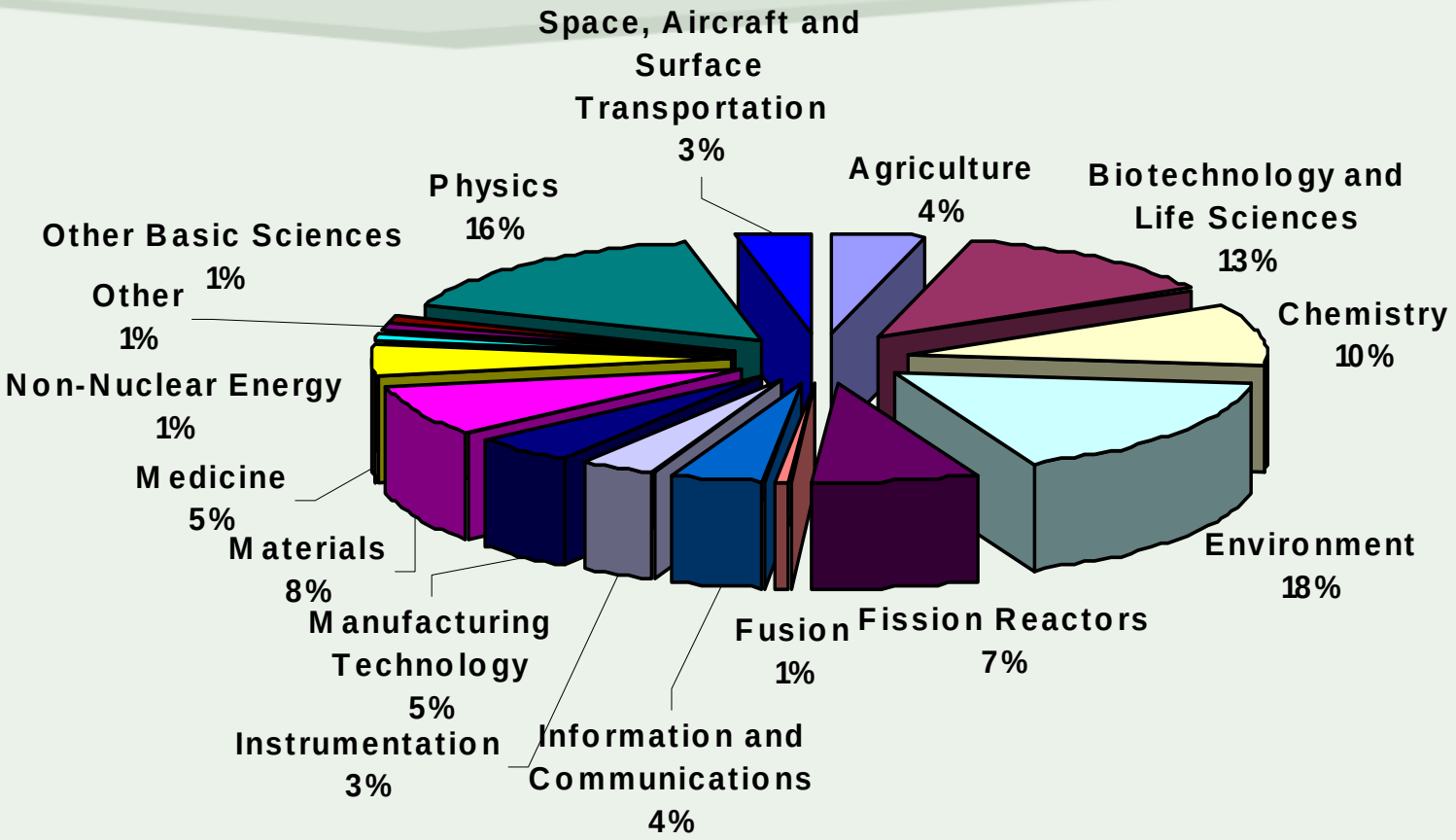
- Economic diversification through innovation and job creation

Center of Know-How

Knowledge is available ‘in-house’ in many disciplines

- **Agriculture**
- **Biotechnology and Life Sciences**
- **Chemistry**
- **Environment**
- **Fission Reactors**
- **Fusion**
- **Information and Communications**
- **Instrumentation**
- **Manufacturing Technology**
- **Materials**
- **Medicine**
- **Non-Nuclear Energy**
- **Physics**
- **Space, Aircraft and Surface Transportation**

ISTC Technology Areas (2008)



ISTC Core Activities

-Regular Project Program

-Partner Project Program

-Sustainability Program

-Innovation/Commercialization Support Program (ComSP)

-Communication Support Program (CSP)

-Targeted Initiatives (TI's)

-Patenting Support Program

-Partner Promotion Program (Advanced Matchmaking Support)

-Science Marketing Program

-Competency Building Program

-Seminars and Workshops

-Travel Grants through the Mobility Fund

Has ISTC done its job well?

- **Provided the CIS weapons experts the opportunity to redirect their talents to peaceful activities**
- **Contributed to the solution of national and international science and technology problems**
- **Reinforced the transition to market economies**
- **Supported basic and applied research**
- **Integrated CIS scientists into global scientific community**

Reactions to ISTC activities

- “***Thanks to ISTC funding, we could continue working but for a different purpose”***

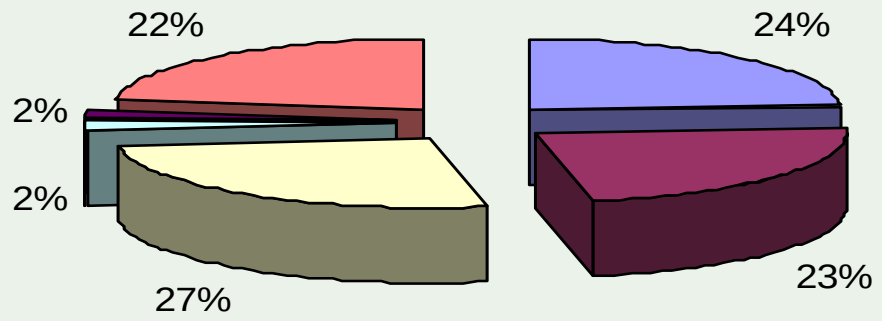
Global Security Department (GS)

In 2005, ISTC established the Department of Global Security and Strategic Planning

The new GS department redirects former weapons scientists, and utilizes their scientific expertise to address global security issues with respect to CBRN in terms of:

- **Safety & security of facilities and materials**
- **Transportation and containment technologies**
- **Destruction and conversion technologies**
- **Materials and process controls**
- **Detection and enforcement technologies**

Projects Funded To Date in Global Security (229)



GS Funding by Thematic Area

DESTRUCTION AND CONVERSION	**$ 20,195,857**
DETECTION AND ENFORCEMENT	**$ 19,222,401**
SAFETY AND SECURITY	**$ 22,248,819**
MATERIAL AND PROCESS CONTROL	**$ 1,865,997**
TRANSPORTATION AND CONTAINER SECURITY	**$ 1,612,315**
PUBLIC HEALTH	**$ 18,803,683**
Total	**$ 83,949,072**

Some Current ISTC Activities Focused on Nuclear Forensics

ISTC Nuclear Forensics Projects Funded

#2637
Developing the Experimental Model of the Device for Nuclear Material Detection by Photoneuton Technology, Optimization of Device Detection Parameters to Meet the Solution of Non-Proliferation Problems

Participating Institute - Kurchatov Research Center, Moscow, Russia

The **goals** are as follows:

– Experimental demonstration of nuclear material detection by photoneuton technology as applied to the physical protection of nuclear objects;
– Getting the required information and working-out the proposals for development of the pilot device available for physical protection of the nuclear object.

ISTC Nuclear Forensics Projects Funded

#2978
Digital Technology for the Detection and Control of Fissile Materials in Devices with Pulsed Neutron Sources

Participating Institutes - MIFI, Moscow, Russia
VNIIA, Moscow, Russia
NIIIT (Pulse Techniques), Moscow, Russia

The **goal** is the development of physical methods and facilities for the detection and non-destructive control of fissile materials with use of pulsed neutron sources in combination with various neutron moderators. Creation of these devices is required due to problems of non-proliferation of nuclear weapons or their components, non-authorized transportation of uranium or plutonium across the state frontiers, assay of the nuclear waste composition, and also nuclear material control and account at the sites of its manufacture and storage.

ISTC Nuclear Forensics Projects Funded

#3534

Creation of a Device for Detection of Explosives, Nuclear and other Hazardous Materials in Cargo Containers and Luggage

Participating Institute - Khlopin Radium Institute, St Petersburg, Russia

The **goal** is to develop, build and demonstrate a device for detection of explosive substances (ES) and fissioning nuclear materials in cargo containers and luggage

ISTC Nuclear Forensics Projects Funded

#3304 (Partner)

Development and Analysis of Indicators Aimed to Detect a Possible Proliferation of Nuclear Fuel Cycle Technologies

Participating Institute - FEI (IPPE), Obninsk, Kaluga reg., Russia

The **goal** is to analyze proliferation activity* indicators (PAI), namely:

-to analyze a hypothetical process of obtaining special nuclear fission material(s) (uranium/plutonium), aimed to be used in a secret state program of nuclear weaponization;

-to analyze the approaches used in the world now for the system analysis of the nonproliferation problem and to estimate efficiencies of indicators from point of view of nuclear proliferation risks.

*Proliferation activity - the features that indicate secret weaponization activities in a state.

ISTC Nuclear Forensics Proposals (Not Funded Yet)

#2918
Development of Concept and Methodology for Assessing Risk of Nuclear Weapon Proliferation through Civilian Nuclear Power Systems

Participating Institutes - VNIITF, Snezhinsk, Chelyabinsk reg., Russia
FEI (IPPE), Obninsk, Kaluga reg., Russia
Kurchatov Research Center, Moscow, Russia

The **objective** of the project is to develop conceptual approaches to the methodology of assessing risk of weapon-usable nuclear material proliferation through civilian nuclear energy systems.

The results can be used to:

- develop methodology of proliferation risk assessment;
- assess effectiveness of institutional and technical means of proliferation resistance for nuclear material reprocessing technology; and
- identify ways of strengthening the non-proliferation regime.

ISTC Nuclear Forensics Proposals (Not Funded Yet)

#2985
Compilation of a Systematic Manual on the Issues of Export Control and Licensing in Russia: Legislation and Regulatory Bases, Infrastructural Provision for Control and Licensing, Licensing Practice

Participating Institute - International Center for Environmental Safety of Rosatom, Moscow, Russia

The **goal** is to develop a systematic bi-lingual Manual on the export controls and licensing of export contracts in Russia. The manual should provide a comprehensive information on the Russian export control and licensing system in a reader-friendly format.

The Manual is be dedicated to description and analysis of the state-of-the-art in Russian export controls with in-depth consideration of namely licensing order and procedures as provided for by the Russian legislation for different cases of export.

ISTC Nuclear Forensics Proposals (Not Funded Yet)

#2961

Development and Investigation of Biometric System Aimed to Control Access to Nuclear Facilities and Provide Personnel Identification and Radiation Exposure Survey

Participating Institutes - Central Research Institute "Electron", St Petersburg, Russia
State Unitary Enterprise NPP "Electron", St Petersburg, Russia
Vavilov State Optical Institute (GOI)

The **goal** is to solve a problem of total safety of nuclear facilities including access control, personnel radiation safety monitoring and health care.

The results can be used to develop biometric systems comprising universal biometrical identity determination that would combine functions of identification document (ID), access control, and a detector, e.g. personal dosimeter, as well as information read-out device.

ISTC New Project Proposal on Nuclear Forensics

ISTC New Nuclear Forensics Proposal (Not Funded Yet)

#3957
Development of the Concept on Improving the Normative and Legal Regulation on Combating Illicit Trafficking of Nuclear and Radioactive Material in the Russian Federation

Participating Institute –
MIFI, Moscow, Russia
All-Russian Research Institute of Automatics, Moscow, Russia
All-Russian Scientific Research Institute of Non-Organic Materials named after A. Bochvar, Moscow, Russia

ISTC New NF Proposal #3957

Background:

Three authorities are engaged in Russia's governmental control over operations involving nuclear and radioactive materials (NRM) nowadays:

1. State Atomic Energy Corporation "Rosatom" (ROSATOM) and its enterprises (circulation of the NRM inside of the industrial zones);
2. Ministry of Internal Affairs of RF (the NRM illegal circulation on territories of RF);
3. Federal Customs Service of RF (NRM illegal circulation on the borders of RF).

Goal:

The **main goal** of the project is to develop a holistic system of statutory acts, which would provide effective interaction of federal executive authorities in illegal trafficking of NRM.

The object of the project is to create a legislative basis to ensure reliable protection against any possible terrorist use of NRM.

ISTC Activities on Nuclear Forensics

- Nuclear Forensics is a new topic among the ISTC activities

- ISTC is strongly interested in continuing to advance this topic

ISTC Activities on Nuclear Forensics
The First Steps

2007

• The first ISTC WS on NF was organized in Dushanbe.

2008

In December 2008 the second ISTC WS on NF was organized in Karlsruhe, Germany, in cooperation with US DOS and Institute of Transuranium Elements.

Currently:

All the corresponding ISTC recipients are informed about the new approach NF – so new project proposals are expected.

ISTC Nuclear Forensics Suggestions

To define priority NF areas

- what NF areas the FPs/Partners are mostly interested in
- what proposals we expect from our recipients;

(Both for ISTC and STCU)

To define term "Nuclear Forensics“

-at least for our recipients;

AND

TO DISCUSS WITH STCU POSSIBLE JOINT PROGRAM OR TARGETTED INITIATIVE ON NUCLEAR FORENSICS

We are open to discuss this matter

Information Resource

http://www.istc.ru

Thank you for your attention!