

The International Science and Technology Center (ISTC): Supporting of Nuclear Knowledge Progress through Ten Years International Cooperation (Information Review)

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The ISTC is an unique international organisation created more than ten years ago by Russia, USA, EU and Japan in Moscow. Numerous science and technology projects are realised with the ISTC support in different areas, from biotechnologies and environmental problems to all aspects of nuclear studies, including those focused on the development of effective innovative concepts and technologies in the nuclear field, in general, and for improvement of nuclear safety, in particular. Indeed, the concern of the international nuclear community about keeping information and skills is reasonable, and assistance to preservation of nuclear knowledge is important and relevant task rightly undertaken under the IAEA auspices.

The presentation addresses some results of the ISTC projects as well as methods and approaches employed by the ISTC to foster close international collaboration and manage projects towards fruitful results.

1. ISTC – history, state-of-the-art, potential and perspectives

The basic idea behind establishing the ISTC was to support non-proliferation of the mass destruction weapons technologies by re-directing former Soviet weapons scientists to peaceful research thus preventing the drain of dangerous knowledge and expertise from Russia and other CIS countries.

The Agreement on the ISTC creation as an intergovernmental organisation was signed in November 1992 on behalf of the European Union, Japan, Russia, and the United States of America.

It was declared that the ISTC would pursue the following objectives:

- Give weapons experts in the CIS the opportunity to redirect their talents to peaceful activities
- Contribute to the solution of national and international science and technology problems
- Reinforce the transition to market economies
- Support basic and applied research
- Promote integration of CIS scientists into global scientific community

Thus, the ISTC motto is “Nonproliferation through Science Cooperation”.

The ISTC is registered with the Russian Ministry of Foreign Affairs and enjoys the status equal to that of a diplomatic mission. The Center began its operations in Moscow in March 1994. Since then, the initial parties to the ISTC Agreement have been joined by Norway, the Republic of Korea, and Canada, as well as by Armenia, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, and Tajikistan.

1.1. Principles of ISTC Operations

- The ISTC solicits, approves, finances, and monitors peaceful science and technology research conducted by Russia and CIS weapons scientists
- Projects are carried out at research institutes and facilities located in Russia and other CIS countries
- In the process of project implementation, collaboration with Western scientists and science organizations is highly encouraged

1.2. ISTC Science Project Program

The Science Project Program is the most comprehensive nonproliferation activity conducted by the ISTC. Through this program, the ISTC solicits scientific project proposals from institutes throughout the CIS and provides funding and logistic support to project teams. Project teams receive written concurrence from the host country on whose territory their research will be conducted, and then develop and execute their project with foreign collaborating organizations. Foreign collaborators ensure that the project goals contribute to the state-of-the-art in the field, and results will find applications to real problems in basic and applied research.

At present, the ISTC is looking to introduce a more programmatic approach towards meeting its goals and, continuing to support individual projects, plans to launch large scale international programs. An example of such a program is the establishment of the International Science Laboratory – a long-term cooperative science facility that would enjoy both the expertise of the hosting science staff and the experience of visiting collaborators.

1.3. ISTC Partner Program

To better contribute to the solution of national and international science and technology problems, and to match Russia and CIS scientific potential and expertise to the needs of the world science, industries and businesses, since 1997 the ISTC has been pursuing its Partner program.

Presently, the ISTC Partner list includes over 180 organizations and leading industrial companies from all ISTC parties.

1.4. ISTC Activities to Date

- Over 4300 project proposals registered
- About 30 new proposals received each month
- As of April 2004, about 2000 projects have been approved for funding

- Total funding of the ISTC projects exceeds US \$600 million with over US \$160 million provided by the ISTC Partners
- Partner contribution to the annual ISTC project funding approaches 50 percent
- More than 600 institutions and 52,000 specialists have received grants through the ISTC

1.5. Other ISTC Programs

- *Seminar Program*: the ISTC organizes and conducts seminars toward heightening the awareness of CIS scientific potential, maintaining strong international scientific cooperation between foreign and CIS scientists, linking scientific potential with technology markets, and establishing cooperation with other international organizations and programs. Seminar topics are of broad technical and global interest and support the objectives of the Center and of other international nonproliferation initiatives.
- *The Business Management Training Program* is conducted to assist ISTC project managers in developing their general business knowledge, presentation skills, and understanding of intellectual property rights. The training complements the technical aspects of the ISTC project, toward helping the project manager in future commercialization of the project results and in securing funding from sources beyond the ISTC.
- *Technologies Database Program*: through its contacts with hundreds of research institutes and centers throughout the CIS, the ISTC has uncovered many innovative technical projects either planned or now underway which conform to the nonproliferation objectives of the ISTC. The ISTC established the Technologies Database Program to establish and expand information exchange infrastructure concerning research activities, toward promoting the expertise of CIS research institutes and cooperation between CIS and foreign technical experts.
- *The Travel Support program* fosters collaboration by reimbursing travel and related expenses for CIS scientists who wish to begin or continue technical consultations on the proposals they submit to the ISTC.
- *Communication Support, Patenting Support, and other supporting Programs*

1.6. Main Topics, fit with nuclear knowledge management

Among four thousand projects submitted to ISTC, there are above five hundred funded and as of yet non-funded projects related to different aspects of nucleare science, reactor physics and modelling, and NFC - Nuclear Fuel Cycle, including actinide transmutation and Plutonium disposition.

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These aspects are:

- Publishing of monographs (in English and in Russian):
 - Nuclear reactors;
 - Materials and material science;
 - Theory, mathematical and computer modelling;
 - Lasers, plasma physics, accelerators;
 - Measurement and record technique;
 - Generators, etc.

- Plutonium disposition, including general technical and economical analysis of NFC.
- Experimental and computer benchmarking.
- Severe accident analysis.
- Radioecological information (nuclear accidents, radiation legacy, etc.).
- Nuclear data – measurements and evaluation.
- Critical and other integral experiments.
- Nuclear power for Space exploration.
- Medical nuclear physics (radiotherapy, diagnostics).
- Decommissioning of nuclear reactors, including nuclear submarines.
- RAW management and burial.
- NFC simulators and training centers, etc.

- *Forms of ISTC activity*

The ISTC favours the co-ordination of the project flow through participation at joint project workshops, seminars, topical committees, etc.

- *The ISTC SAC Seminar*

A set of Seminars of the ISTC Scientific Advisory Committee includes presentations of leaders of Russian and international and ISTC project managers.

- *Contact Experts Groups*

Several CEGs have been established by ISTC and foreign collaborator institutions, which co-ordinate group of projects related to definite problems, e.g., “MOX and utilisation of Plutonium as reactor fuel”, “GT-MHR project”, “Transmutation technologists”, “Severe accidents and corium management”. Hopefully expected, some new CEGs are to be created soon – for Reactor Materials Study and Space Exploration.

- *Steering Committees*

Within some projects the coordination functions are fulfilled by the Steering Committee, established by both Recipient institute, ISTC and foreign collaborators. Regular meetings, workshops and active information exchange help to effective project fulfilment.

SCs have been organised for the projects on “Economics of plutonium fuel cycle in Russia”, “HTGR project concept”, and so on.

- *Relations with Organisations*

The ISTC maintains close contact with international and national nuclear organisations, such as IAEA, OECD/ NEA, International Nuclear Safety Center (Moscow), International Radiation Safety Center (Moscow), and so on. The goal of this activity is use of available information, concentrated in these institutions, for effective realisation of the projects and for incorporation of its personnel, installations and results into international programs.

- *Information Exchange*

General information on the ISTC activity, procedures, project summaries, events is available on the ISTC web-site. To get the Final reports or/and project detailed information it is necessary to contact with both project Recipient institute and the ISTC Secretariate.

- *Conclusion*

The goals of this presentation are to introduce the ISTC programmes, particularly those, related to integration and keeping of nuclear knowledge, and making it accessible to international nuclear community, and to establish partnership between project recipients, foreign organisations and the ISTC, in order to define areas and forms of possible collaboration in future.

[1] The ISTC Annual Reports - ISTC, Moscow, 1996 - 2004.

[2] The ISTC Web-site: [http:// www.istc.ru](http://www.istc.ru)