



*For a Safer and Better World,  
Supporting the Transition of Weapon  
of Mass Destruction Research into  
Peaceful Civilian Application*

YEAR IN REVIEW

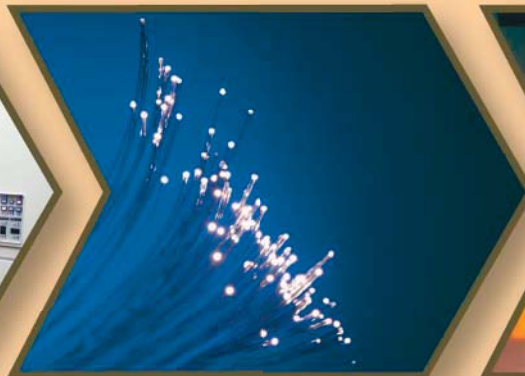
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# ANNUAL REPORT

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# 2008

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## WELCOME FROM THE CHAIRPERSON OF THE STCU GOVERNING BOARD



**ANNELI PAULI**, Chairperson of the STCU Governing Board

The year 2008 marked the 13 year since the first STCU Governing Board meeting was held in December 1995, and the 10th year anniversary since the European Communities joined the STCU. Keeping up with its long tradition, STCU provided high quality service to the former weapon scientists from Azerbaijan, Georgia, Moldova, Ukraine, and Uzbekistan while supporting the non-proliferation and international S&T cooperation policies of its Funding Parties. The STCU provided this service despite the difficulties it recently faced for securing a proper building to relocate its headquarters.

The support and follow-up of research projects remained the core activity of the Centre in 2008. Similarly to the previous year, a broad spectrum of thematic fields was addressed through the STCU grants, with a particular focus on Biotechnologies, Agricultural Sciences and Medicine, Material Sciences, and Industrial Technologies, where the supported institutes demonstrate a competitive edge. The project proposals received also show that issues of global concern, such as climate change and energy, appear to be of interest for the former weapon scientists. Addressing such issues requires a constant and common effort at the international level. The collaboration of scientists from Canada, the European Union, and the United States therefore not only contributes to creating bridges from west to east in order to better integrate the former weapon scientists into the international scientific community, but also helps pooling efforts and resources to find solutions to today's and tomorrow's challenges.

Consistent with its main objective, the STCU inter-

vened in a number of ways complementing the support to research projects. Of particular importance are the supplemental activities aimed at helping those scientists linking with their peers at the international level on one hand, and on the other hand, at supporting them and their institutions in diversifying and increasing their sources of funding.

Promoting an entrepreneurial mindset in scientists or bringing R&D institutes closer to market realities is not an easy task. Therefore, it is the objective of the Chief Technology Commercialisation Officers program (CTCO), and of a new STCU Institute Sustainability Program (ISP). It is worth noting that the STCU has now trained 50 Chief Technology Commercialisation Officers in Azerbaijan, Georgia, Moldova and Ukraine who will support their institutes in building their capacity to attract additional sources of funding.

Besides the traditional support from Funding Parties, a number of governmental and non-governmental partner organisations have funded additional research and development projects. The Partner Programme allows former weapon scientists to carry out civilian S&T research of specific interest to public or private organisations. Such mechanisms allow scientists to commercialise their R&D services, Partners to benefit from the STCU services and from the significant S&T knowledge and experience accumulated in the CIS, and the Parties to further leverage their overall support in fulfilling the STCU mission. The level of partner funding has decreased in 2008 but, given the global economic and financial crisis, the amount recorded shows that the interest from external private and public organisations remains solid.

The STCU has a very good track record and continues to perform its mission by regularly adapting to a rapidly evolving environment. In this general context, the Governing Board started reviewing the possible strategic orientations that will shape the future of this organisation. The possible orientations being considered build upon the main strengths of the STCU while taking into account the shifting situation in terms of budgetary means as well as changing priorities, and the current condition of the STCU recipient countries' economy and scientific and technological infrastructure. The STCU, as a well-established multilateral organisation having a diplomatic status, developed a solid network within Azerbaijan, Georgia, Moldova, Ukraine and Uzbekistan, making it very suitable to foster international scientific cooperation. Its strict Governmental oversight, documented and transparent procedures, as well as its experience in dealing with sensitive knowledge and former weapon institutes places it also as a possible facilitator as regards addressing security and regional stability concerns of scientific and technological relevance. In guiding the STCU towards its future, the Governing Board will strive to make this organisation even more efficient while maintaining the core values and principles that made its success.

To conclude, I would like to take this opportunity to express my appreciation, on behalf of the Governing Board members, to the STCU Executive Director and the STCU Management team, the Parties' delegations and science advisors, and all STCU staff in Kiev and the

Branch Offices for their commitment and professional output.

Finally, I would like to underline the contribution of CIS scientists in seeking scientific advances which serve to underpin peace and stability.



## WELCOME FROM THE STCU EXECUTIVE DIRECTOR



ANDREW HOOD, Executive Director

The STCU went through a year of uncertainty in 2008, marked by the turmoil surrounding the STCU headquarter office premises in Kyiv. STCU also experienced another decline in overall business activity, with the number and funding amounts of new projects falling for a second straight year. There was also a significant reduction in financing from governmental agencies working through the STCU Partners Program, which caused the overall Partner funding to fall approximately 26% from the previous year.

However, there also were several bright spots for STCU during 2008. STCU received strong statements of political support from its Governing Parties, which helped STCU to persevere in this troubled year and helped to re-establish stable operations by early 2009. Throughout the year 2008, STCU managed to maintain its normal level of service and program implementation, continued to develop its Targeted R&D Initiatives Program, kicked-off its new Institute Sustainability Program, introduced a new supplemental bio-safety/bio-security program, and accepted eleven new Partner organizations.

We would be remiss in not admitting that for most of 2008, the STCU Secretariat confronted a difficult period that adversely impacted its operations. Due to delays in the Ukrainian government renewing the lease for STCU headquarters, STCU faced increasing uncertainty from the start of 2008. This period culminated when utility services were cut to the STCU offices in early April, triggering a regrettable force majeure suspension of all STCU headquarter office operations and all STCU project activity in Ukraine. This suspension lasted until mid-June

when a lease renewal was finally signed by the Ukrainian government. A period of relative stability lasted until the last quarter of 2008, during which time the Ukrainian government and the STCU Governing Board debated a Ukrainian proposal to relocate STCU offices to temporary, state-controlled spaces on the campus of Kyiv Polytechnic Institute by the start of 2009. By the time of the 27th Governing Board Meeting in November, when the Governing Board reluctantly accepted the Ukrainian relocation proposal, less than one month remained to prepare STCU for major office relocation.

In spite of it all, the STCU Secretariat managed to work its way through these difficult times, which is a tribute to the professionalism of the STCU staff. During the suspension of STCU headquarter office activities, STCU's Regional Offices continued operating and serving the needs of the former weapon scientists in Azerbaijan, Georgia, Moldova, Uzbekistan, and in the Ukrainian regions outside of Kyiv. Even within Kyiv, STCU staff worked from home or otherwise continued program activities that did not require the STCU office infrastructure. Finally, once STCU emerged from its force majeure suspension period, STCU staff quickly re-started office operations and resolved all delayed project, administrative, and financial transactions within weeks of the re-start.

While new project funding in 2008 was lower, STCU still saw a steady amount of current project activity, engaging over 4860 scientists in collaborative research projects that totaled over \$18 million (USD equivalent) in project expenditures. STCU project activity continued to

increase in Moldova, where 53 former weapon scientists became STCU grant recipients and engaged their peers in Canada, Europe, and the United States. Also, several key WMD threat reduction projects continued through the STCU Partners Program, including an extension of a high-to-low enriched uranium conversion project at the Kharkiv Institute of Physics and Technology that is financed by the U.S. Energy Department's Global Threat Reduction Initiative.

STCU successfully completed the 2008 cycles of its Targeted R&D Initiatives Program. A total of 27 projects equaling over \$717,160 USD and €282,490 were approved the Governing Board. STCU financing for all these Targeted Initiative projects were matched by co-financing from the Azerbaijan National Academy of Sciences (\$350,000 USD), the Georgian National Science Foundation (\$200,000 USD), and the National Academy of Sciences of Ukraine (\$600,000 USD). STCU and its Targeted Initiative partners also discussed ways to modify the Targeted Initiatives process so that it encouraged a deeper and more active engagement of former weapon scientists with their Canadian, American, and European scientific collaborators.

Under its Sustainability Promotion activities, STCU started its new Institute Sustainability Program, focusing on a pilot group of ten Ukrainian institutes. The program start was delayed by the April-June suspension of STCU operations, but began in earnest in the latter half of 2008. This new program will add a new tool for implementing the STCU mission, by assisting institutes that employ significant numbers of former weapon scientists in developing strategic plans to grow their capacity to be successful and self-reliant. By making the institutes themselves stronger, STCU hopes that these institutes will be better positioned to weather economic downturns and thus be able to keep their scientists (including their former weapon scientists) employed and engaged in peaceful civilian work—a critical objective of the STCU's WMD nonproliferation mission.

The STCU Partners Program continued to add new Partner organizations, although new Partner Project funding

fell below STCU expectations. STCU also continued to host delegations of former weapon scientists to a variety of international business trade events, including sending a delegation to the Hannover Messe technology trade show in Germany.

STCU also continued to be active in sponsoring and participating in seminars and workshops, so as to promote the capabilities of the STCU recipient former weapon scientists and to introduce these scientists to new collaborative opportunities for their research work. STCU organized two European-focused workshops, one at the Josef Stefan Institute in Ljubljana, Slovenia and the other at the INSERM biotechnology consortium in Lyon, France. STCU also had a major role in a Canadian-Ukrainian business summit in March, and STCU participated in U.S.-organized workshops on global nuclear smuggling issues. Finally, STCU joined as a co-organizer of an international material science seminar held in the Crimea, Ukraine, and organized one session of that seminar devoted to STCU project presentations.

Thus, STCU managed to engage in many of its planned 2008 activities, and even added a few new activities. For 2009, STCU anticipates settling into its new temporary offices at Kyiv Polytechnic Institute and will work with the Ukrainian government to prepare for the brand new office facility being constructed for STCU, which should be ready for occupancy by 2012. STCU also continues to support the Governing Board strategic planning discussions that will guide the transformation of STCU toward new programs and new initiatives in the field of global security, global cooperative threat reduction, and global WMD nonproliferation.

STCU Secretariat looks forward to a better 2009 and to a new future, grounded in the strong support received from all the STCU Parties.



## 2008 HIGHLIGHTS AND ACCOMPLISHMENTS

### STCU PRESENTATION TO THE NATIONAL ACADEMY OF SCIENCES OF UKRAINE



On 29 January 2008 Vic Korsun, STCU Deputy Executive Director (USA) presented "CTCO: Chief Technology Commercialization Officer in Ukraine (Technology Transfer & Commercialization in Ukraine through International Cooperation)" to a meeting of the Editorial Board of "Science and Innovations" magazine of National Academy of Sciences of Ukraine. President of the Academy Boris Paton, STCU Governing Board member Yaroslav Yatskiv, and other Academicians of NASU participated at meeting.

### AZERI AND GEORGIAN CTCO CANDIDATES GRADUATION

STCU hosted certificate award ceremonies for Azeri and Georgian participants who successfully completed the Chief Technology Commercialization Officer (CTCO) training program. On 12-13 February in Baku (Azerbaijan), Academician Makhmud Kerim oğly Kerimov (President, Azerbaijan National Academy of Sciences) presented certificates to 23 newly appointed Azeri CTCOs. On 15-16 February in Tbilisi (Georgia), 20 Georgian CTCO candidates received their certificates from Natia Jokhadze (Director, Georgian National Scientific Foundation). Also attending the ceremony were Aleksandr Gongadze (Advisor to the President of Georgia), Zurab Neparidze (Deputy Director, Georgian National Intellectual Property Center), and Irina Khomeriki (Head, Georgian Branch Office of International Science and Technology Center).



### INTERNATIONAL CONFERENCE ON BIO-, NANO- AND SPACE TECHNOLOGIES



On 10-12 March at the Jožef Stefan Institute in Ljubljana, STCU organized this conference on science, the EU, and the Science Centers, on the occasion of the Slovenian EU Presidency. The conference was organized in partnership with STCU's sister center, the International Science & Technology Center (ISTC, Moscow). European Union Commissioner for Research and Science, Mr. Janez Potočnik, presented the opening speech, followed by 60 presentations and speeches showcasing the scientific activities in STCU-ISTC Recipient Countries as well as in Slovenia. Other participants included representatives from the Slovenian Ministry of Higher Education, Science and Technology, the Slovenian Research Agency, and Jožef Stefan Institute.

## CANADA – UKRAINE BUSINESS SUMMIT

The first Canada-Ukraine Business Summit, organised by the Canadian Embassy in Kiev, the STCU and the Canadian Department of Foreign Affairs and International Trade, took place from 12 – 14 March 2008. There were approximately 350 participants participating in working sessions in Dnipropetrovsk and Kyiv, and more than 250 Canadian and Ukrainian businesses were represented. Canadian Ambassador to Ukraine Abina Dann opened the Summit by stressing the opportunities for organizations in both Ukraine and Canada to pursue partnership and business linkages.



## THE 26TH STCU GOVERNING BOARD MEETING



The 26th Meeting of the STCU Governing Board convened on 19 June, 2008 at the Embassy of Canada (Kyiv, Ukraine). The Board discussed the STCU headquarters office situation, bade farewell to its outgoing Chairman Zoran Stančić, and approved 23 regular projects (including continuations) totaling approximately \$1,419,637 million USD and €1,500,920. Among these were 8 STCU-Georgian Targeted Initiative projects for a total STCU contribution of \$162,375 USD and €24,034, and 12 STCU-Ukrainian Targeted Initiative projects for a total STCU contribution of \$258,964 USD and €219,626. The Board also approved 15 new Partner Projects (totaling \$2,848,775 USD and €318,947) and 7 Partner Project contract extensions (totaling \$1,084,356 USD and €42,900).

## STCU HOLDS SUSTAINABILITY PROGRAM MEETINGS

On 8-9 September at Kyiv Polytechnic Institute, STCU hosted meetings that advanced two of its flagship sustainability development programs: the Institute Sustainability Program and the Chief Technology Commercialization Officer Program. At these meetings, STCU launched the pilot phase of its Institute Sustainability Program, which will assist selected institutes in better achieving long-term self-sustainability through strategic planning and organizational improvements. Also, at a meeting of STCU-trained Chief Technology Commercialization Officers (CTCOs), the group initiated plans to establish a new Ukrainian CTCO Association.



## 2008 HIGHLIGHTS AND ACCOMPLISHMENTS

### EUROPEAN UNION SCIENCE ADVISORS MEETING



On 28 October, 2008, a one-day meeting of EU Science Advisors was held at STCU headquarters. Professor Andre Syrota (General Director of INSERM in Lyon, France), Dr. Helmut Holtbecker, Mrs. Estelle Emeriau, and Mr. Jurgen Sanders (of the European Commission Directorate General for Research) discussed STCU project proposals for the 27th STCU Governing Board Meeting, as well as thematic priorities for possible future STCU programmatic focus. Outside of the meeting, the EU Science Advisors held meetings with the STCU Management, the National Academy of Sciences of Ukraine, and made several visits to Ukrainian institutes involved in STCU activities.

### STCU ROUND-TABLES ON COMMERCIALIZATION OF R&D

On 21 October, STCU held a round-table event, "Commercialization of R&D, STCU Programs and Initiatives" in Chisinau. Dr. Ion Tiginyanu (Vice-President, Academy of Sciences of Moldova) and Dr. Chenadie Cernei (General Director, Agency for Innovation and Technology Transfer, Academy of Sciences of Moldova) opened the event. STCU DED (US) Vic Korsun and other STCU staff gave presentations on technology transfer, patenting, IPR, and commercialization of science research. Also presented was information on STCU supplemental programs that help participating scientists in protecting and exploiting their research results.



### THE INTERNATIONAL CONFERENCE ON "SCIENCE AND EDUCATION POLICIES"



On 18–21 September, the International Conference for Central and Eastern Europe, Balkans, Caucasus and Baltic States on "Science and Education Policies" was held in Chisinau, at the Academy of Sciences of Moldova and organized by the Academy and the Ministry of Education and Youth of the Republic of Moldova. The European Commission Deputy Director-General for Research Zoran Stančič (also a former STCU Governing Board Chairman) and STCU Deputy Executive Director (Canada) Landis Henry participated in the conference, which brought together leaders and policy makers at the highest levels in science and education from across the region.

## THE 27TH STCU GOVERNING BOARD MEETING

The 27th Meeting of the STCU Governing Board convened on 20 November at the Ministry of Education & Science of Ukraine. The Board welcomed its new Chairperson, Dr. Anneli Pauli, discussed the relocation of the STCU headquarter office, approved the 2009 STCU budget, and approved 17 regular science projects (including continuations) totaling \$877,075 USD and €1,695,033. The Governing Board also approved 9 new Partner Projects and 12 Partner Project extensions, all totaling approximately \$2,101,189 USD and €292,800. The Board also approved 7 STCU-Azeri Targeted Initiative projects, contributing \$295,824 USD and €38,838, with \$350,000 USD in matching funds provided by the Azerbaijan National Academy of Sciences.



## EU-CIS SEMINAR - NEW TRENDS IN INFECTIOUS DISEASES



On 26-28 November 2008, STCU co-organized the EU-CIS Seminar - New Trends in Infectious Diseases in Lyon, France, on the occasion of the French EU Presidency. The event was attended by over 70 Scientists, and included participants from the International Science and Technology Center as well as a representation of French, European, and international experts (e.g., World Health Organization).

## STCU ATTENDS NUCLEAR FORENSICS WORKSHOP

On 2-4 December, STCU participated in a workshop on "Nuclear Forensics and Law Enforcement" for Caucasus countries, held in Karlsruhe, Germany. The event was organized by the U.S. Department of State in collaboration with the Institute of Transuranium Elements (Karlsruhe) and the International Science and Technology Center (ISTC). Approximately 80 participants from 9 countries attended this workshop, including scientific delegations from STCU-Recipient countries Azerbaijan and Georgia.



# FINANCIAL ACTIVITY

The year 2008 saw a further reduction in the amount of new STCU project funding, compared with the record-setting funding year recorded in 2006. In 2008, the STCU Governing Board approved over \$15.1 million (USD equivalent) in new projects, a decrease of approximately \$1.7 million (USD equivalent) in total new project funding compared with 2007, and a decrease of approximately \$4.7 million (USD equivalent) compared with the record year of 2006.

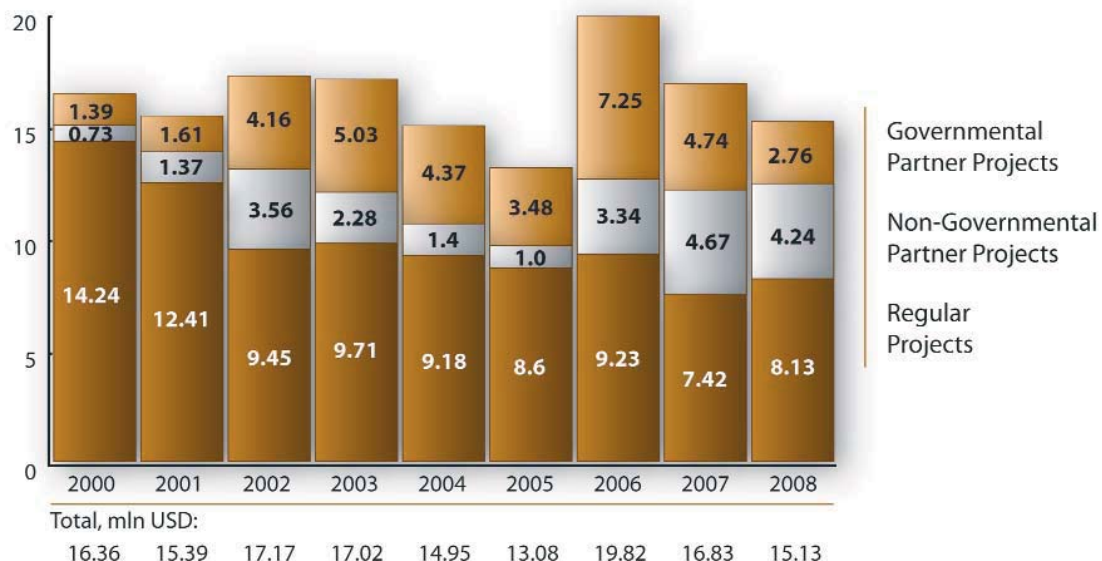
New Partnership Project funding in 2008 also saw a decrease in levels as compared to that achieved in 2006 and 2007. The \$7.0 million (USD equivalent) in total new Partnership Project funding that was approved by the STCU Governing Board in 2008 was similar to amounts that were recorded in the early 2000s (2002 and 2003). New project funding from all Partner organizations represented 46.3% of the total amount of new STCU project funding approved in 2008. This was the first time since 2005 that the percentage of Partner funding was less than half of all project funding provided by STCU Funding Parties.

As in previous years, external auditors from both Lubbock Fine and the Defense Contract Audit Agency audited the financial management and accounting systems, as well as the system of internal controls for both the operations of the STCU administration and STCU-funded projects. Lubbock Fine Chartered Accountants audited the December 31, 2008 financial statements, a copy of which may be obtained in the Document Center of the STCU website at:

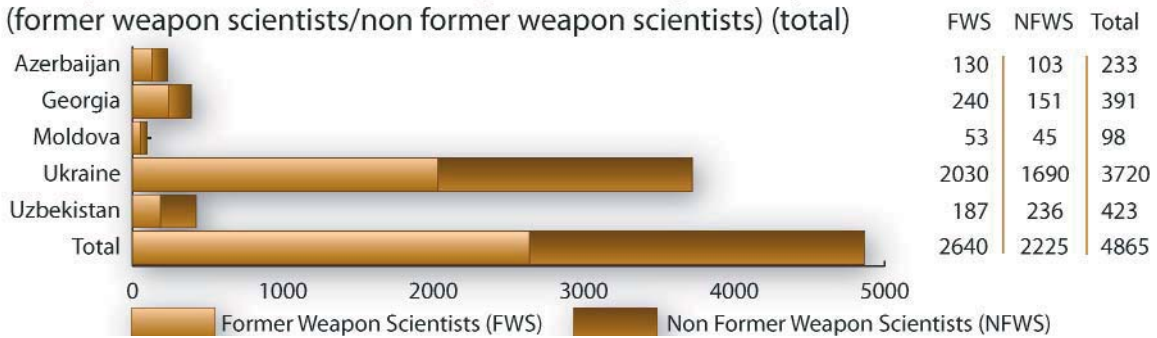
[www.stcu.int/documents/stcu\\_inf/reports/audit/2008/](http://www.stcu.int/documents/stcu_inf/reports/audit/2008/). Some weaknesses were identified in conjunction with the December 31, 2008 financial statement audit and will be corrected during the course of 2009.

The Defense Contract Audit Agency audited eight (8) projects during 2008, and worked closely with technical auditors from various organizations (e.g., the U.S. Department of Agriculture and the U.S. Department of Energy) on most of these audits to produce both financial and technical audit findings. The project audits performed by DCAA and the technical auditors identified only minor weaknesses which also will be corrected during 2009.

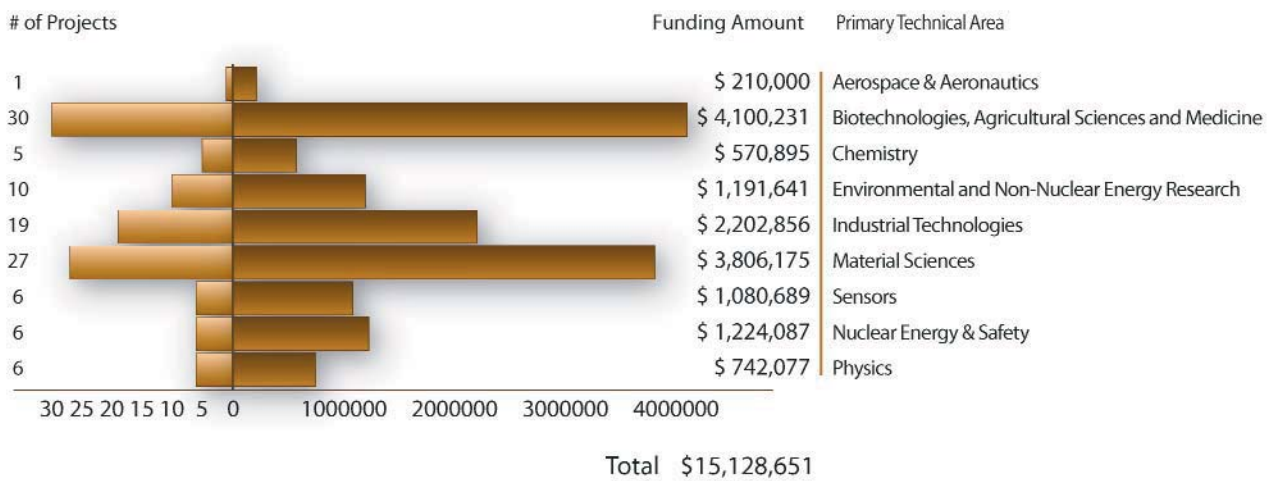
New Regular/Partnership Projects Approved for Funding, 2000-2008 (funding in millions USD):



Participants Redirected on STCU Projects in 2008 by Country:  
(former weapon scientists/non former weapon scientists) (total)



New Project Funding in 2008 by PRIMARY TECHNICAL AREA:



New Project Funding in 2008 by LOCATION OF RECIENT ORGANIZATION:



# STCU PROGRAM PERFORMANCE ASSESSMENTS

Beginning with the 2004 STCU reorganization, STCU established a dedicated Performance Evaluation Officer to organize and conduct evaluations of STCU's overall program performance and effectiveness, as well as assess the performance and impact of individual STCU supplemental programs. With such internal evaluations, STCU management can report to its Parties on the cost-effectiveness of supplemental program activities, as well as make informed decisions about program and budgetary planning.

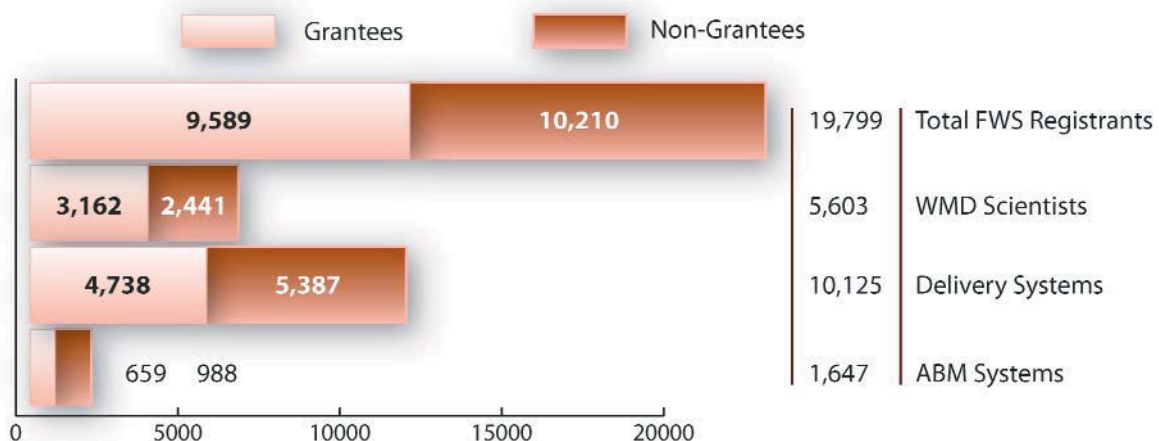
It is difficult to assign meaningful performance metrics that directly correlate to the STCU mission of deterring the spread of WMD expert know-how from former Soviet WMD scientists and technicians. However, STCU has attempted to identify performance metrics that measure the impact of STCU activities on its strategic objectives: engaging these ex-WMD specialists, and redirecting them into self-sustaining, civilian research work. If STCU programs result in measurable progress toward these objectives, then this should indirectly indicate the rate of progress toward fulfilling the STCU WMD non-proliferation mandate.

The primary tool of scientist engagement is the STCU collaborative science project activity. Since its inception, STCU has received over 3600 research proposals that include the identities of each individual former weapon and non-weapon scientist on the project team. Because each proposal and its project team members are recorded in the STCU internal project and financial databases, STCU can perform data mining exercises to show the number of ex-weapon scientists registered with STCU, the type of WMD or advanced weapons work each scientist performed in the Soviet times, and whether that former weapon scientist ever worked on an STCU project and received STCU project grant funds.

The following chart shows that, from first proposals received in 1995 and through 2008, STCU was able to engage 48% of the 19,799 ex-weapon scientists in at least one funded project. More importantly, of the Category 1 FWS (i.e., scientists that worked on Soviet nuclear, chemical, or biological weapon programs), STCU has managed to engage nearly two-thirds of those scientists known to STCU.

What do these measures say about the effectiveness of STCU engagement of former weapon scientists? The first limitation is that STCU has no reliable esti-

Former Weapon Scientists Registered by STCU (1995-2008):



mate of the total size of the former weapon scientist population. The best estimates given in the mid-1990s suggest that perhaps there were 20,000-30,000 former weapon scientists in Ukraine, Azerbaijan, Georgia, Moldova, and Uzbekistan. If this is accurate, then the 19,799 individually identified former weapon scientists in the STCU databases would suggest that STCU knows most of the former weapon scientist population in these countries.

A second limitation is that the STCU databases give us only snapshots in time. The project databases cannot show the changes in the former weapon scientist population over the 1995-2008 period. With the march of time, one can assume that many of the 19,799 ex-weapon scientists registered in the STCU databases may have immigrated to other countries, passed away, changed to non-science careers, etc. Thus, while STCU continues to engage newly identified ex-weapon scientists on new projects, having already engaged 48% of the known registrants may actually represent a reasonable amount of progress toward fulfilling the STCU engagement objective.

In measuring the progress toward redirecting former weapon scientists, STCU makes use of an annual survey developed in partnership with the Dobrov Center for Scientific and Technological Potential and Sci-

ence History Studies (Ukraine). Every project manager of an active STCU project is sent a specially designed questionnaire, amounting to roughly 200 questionnaires sent each year. From the responses to the questionnaire, STCU evaluates the state of the “technical unit” (the division, department, or laboratory where the STCU project and its former weapon scientists work) and the influence that STCU activities has on that “technical unit”. The aggregate of the technical unit responses helps to form an overall picture of the former weapon scientists’ employment situation in the Recipient countries, and of the overall STCU impact on the scientific communities in those countries.

Two measures from the STCU Annual Surveys are the evaluated level of self-sustainability of the recipient technical units, and the diversity of their budgetary funding sources. Questions related to the type of research performed in the unit (basic science, applied science, etc.), the number of external research contracts, the number of internationally-published science papers, the percentage of income received from the national government or commercial sources, etc., are used to evaluate the underlying ability of a technical unit to survive variations in state budgets and to independently attract contract research work.



STCU ROUND-TABLES ON  
COMMERCIALIZATION OF  
R&D (UKRAINE)

# STCU PROGRAM PERFORMANCE ASSESSMENTS

Since the first full survey conducted in 2006, there has been a slow but steady improvement in the aggregate level of technical unit sustainability, with some of that improvement attributable to the focused STCU sustainability improvement programs. The aggregate percentage of responding technical units evaluated as “sustainable”, grew from 36% of respondents in 2006 up to 40% in the 2008 survey. The survey data also shows that the underlying strength of technical unit self-sustainability has been growing steadily.

Similarly, there have been slight shifts in the aggregate diversification of technical unit budgetary sources. In general, technical units receive almost 50% of their budget funds from their national governments, and this (in part) is because the majority of the technical units with former weapon scientists are still within state-funded institutes. However, there have been positive changes in the growth of commercial and other non-national government funding sources, meaning that the core budgetary funding

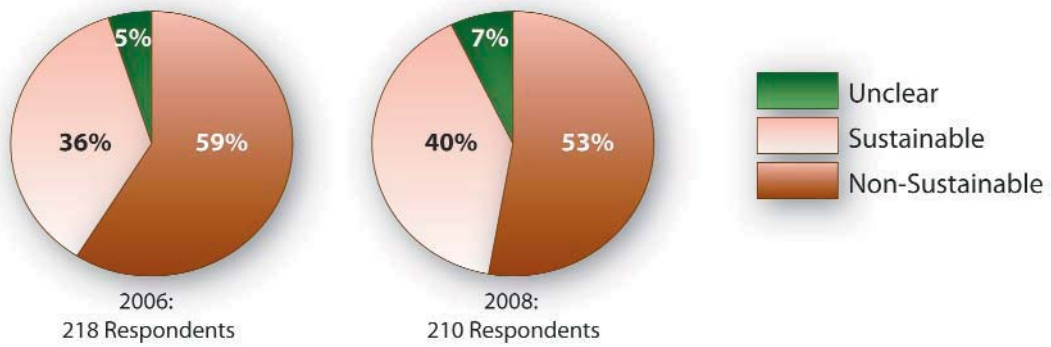
from the Recipient governments is slowly being supplemented by an increasing number of diverse, external funding sources. At roughly 33% of their annual funding, STCU project funding continues to play a large role in the budgets of these technical units. But the STCU supplemental programs on intellectual property protection, commercialization, technology transfer, and science partnering should ultimately grow the non-STCU portions—and shrink the STCU portion—of the technical unit annual income pie.

The annual surveys also show that STCU projects, travel support grants, and sponsorship of seminars and workshops have served as a catalyst for the former weapon scientists to engage their peers in the international science and business communities. On their own initiative (and with less direct STCU support), a growing number of these scientists are engaging in joint research projects, co-authoring papers with foreign colleagues, and promoting their research around the world.

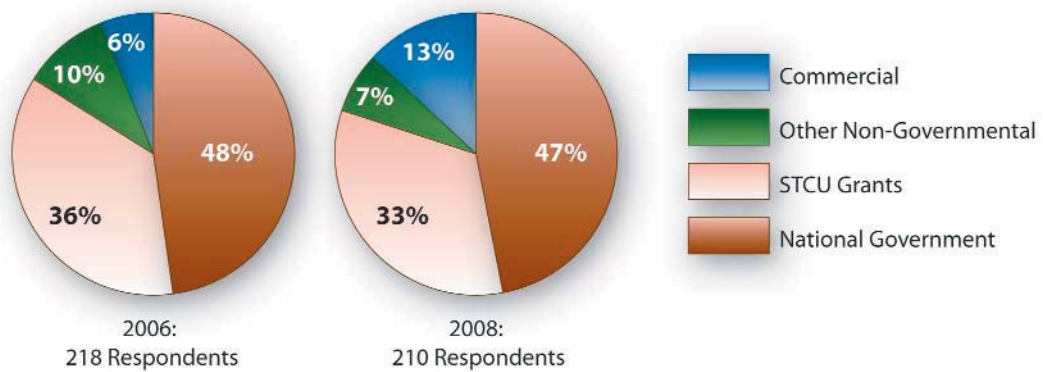


STCU ADVERTISING MATERIALS ON HANNOVER MESSE 2008

Evaluation of STCU Recipient Unit Self-Sustainability (2006 and 2008 Surveys):



Sources of Budgetary Income for STCU Recipient Units (2006 and 2008 Surveys):



## PROJECT ACTIVITY

Collaborative science research projects continued to be the dominant STCU programmatic activity for 2008, as in previous years. Even so, the total amount of funding for new projects declined in 2008 compared to 2007 (see Financial Section for details). Further, there was a modest decline in the total number of new 2008 STCU projects compared to the 2007 total, with the increase in the number of approved 2008 Targeted Initiative projects being offset by decreases in the number of approved Partner Projects.

Still in 2008, the STCU Governing Board approved and financed 110 new projects, engaging 886 former weapon scientists (along with 751 non-weapon scientists). The \$15.1 million (USD equivalent) in new project funding is the third highest annual total in the past 5 years, and there was an additional \$1.15 million USD in co-financing contributed to 2008 Targeted Initiative projects by the STCU Recipient Parties of Ukraine, Azerbaijan, and Georgia. Thus, STCU engagement of former weapon scientists remained strong in 2008, contributing to the STCU objectives of providing WMD nonproliferation incentives to these ex-WMD scientists and permanently redirecting them into peaceful, self-sustaining research within the international S&T community.

### REGULAR PROJECT ACTIVITY

The 40 Regular Projects approved in 2008 covered numerous scientific research areas, with the primary interest reflected in biotechnology/agricultural/medical sciences, material sciences, and industrial technologies. All together, these 40 Regular Projects engaged 356 former weapon scientists, bringing these scientists into peaceful research collaboration with their science colleagues in Canada, Europe, and the United States.

Of the many examples of Regular Projects approved in 2008, two projects are highlighted below:

- In STCU Project #4588 (financed by the European Union, €114,683), two former nuclear weapon scientists, one former ballistic missile scientist, and one former anti-ballistic missile system scientist at the Institute for Nuclear Research (Ukraine) are part of a

7-member project team, focusing their talents on theoretical investigations of phenomena associated with energetic ions in plasmas of toroidal fusion devices. The project, entitled “High-energy Ions in Tokamaks and Stellarators: Physics Issues, Diagnostics and Plasma Heating” continues the partnership of these former weapon scientists with their colleagues from Max-Planck-Institut for Plasmaphysics (Germany), ENEA Research Center (Italy), UKAEA Culham Science Center (UK), Princeton University and the University of California-Irvine (US).

- In STCU Project #4610 (financed by the United States, \$249,900 USD), three former ballistic missile scientists and four former anti-ballistic missile system scientists at three Moldovan institutes (led by the Institute of Applied Physics in Chisinau) are working with four other Moldovan scientists on the development of fabrication technologies for optoelectronic and photonic devices based on light-emitting semiconductor and polymer composite optical films. This project includes collaborators from Clemson University (US), the University of Cagliari (Italy), Ecole de Mines CNRS (France), and the National Institute for R&D of Electrochemistry and Condensed Matter (Romania).

### NEW BIOSAFETY TRAINING CENTER CREATED IN UKRAINE

STCU Project #4440 “Ukrainian Biosafety and Biodefense Training Center Organization” is a \$360,000 USD project financed by the Global Partnership Program of the Department of Foreign Affairs and International Trades (DFAIT) of Canada. The project, started in September 2008, will establish a modern biosafety training center on the territory of the I. I. Mechnikov Ukrainian Research Anti-Plague Institute (URAPI) in Odessa, Ukraine. Fourteen former biological weapon scientists are among the 19-member project team at the Odessa institute, directing their former weapons expertise to this important project in public safety.

The Ukrainian project members worked closely with Canadian biosafety experts to design the Biosafety

**PARTNER PROJECT ACTIVITY**

STCU Partner activity started off well in the first half of 2008, but declined in the second half of the year (see Financial Section for details). For all of 2008, 43 in new Partner Projects and Partner Project extensions were approved by the STCU Governing Board (totaling \$7 million USD equivalent). More importantly, these 43 Partner Projects engaged 364 former weapon scientists in contracted research directed toward specific interests of the Partners. Working with Partners gives these former weapon scientists valuable experience and confidence in exploiting their scientific capabilities and expanding the clientele for their research work.

Ten new Partners (3 Governmental and 7 Non-Governmental) joined STCU in 2008, raising the total number of STCU Partner organizations to 188: 23 Governmental Partners and 165 Non-Governmental Partners.

Among the new Partner Projects approved in 2008 were these:

- As part of the U.S. Cooperative Threat Reduction



Scientists from the Lviv Research Institute of Epidemiology and Hygiene Ministry of Health of Ukraine work out of the Clinical Protocol as a part in Training program Good Clinical Practice Education conducted by Project Partner from USAMRIID.

program, the Defense Threat Reduction Agency of the U.S. Defense Department is financing STCU Partner Project #P364, a \$125,000 USD project engaging ten Ukrainian former biological weapon scientists from the Lviv Research Institute of Epidemiology and Hygiene,



Training Center, where Ukrainian specialists working with especially dangerous infections will be trained using newly developed programs that combine the best experience and methodological approaches of the former Soviet Union anti-plague system with modern international biosafety standards. The Center will be equipped with the modern biosafety cabinets, computers, and other facilities to train the staff. The Biosafety Training Center will contribute to decreasing the level of biological risks in Ukrainian laboratories and preventing dangerous infections from escaping from the laboratories. The Center also will help to bring Ukrainian laboratory biosafety standards up to international standards and integrate Ukrainian specialists into the international biosafety community.

## PROJECT ACTIVITY

the I. I. Mechnikov Ukrainian Research Anti-Plague Institute in Odessa and the Central Sanitary-Epidemiologic Station in Kyiv. This project will develop a U.S./Ukrainian investigative foundation for future projects to explore occurrences of arthropod-borne diseases in Ukraine (tick-borne encephalitis, mosquito-borne diseases, tularemia), as well as understand associated risk factors, clinical course, and human immune responses to both exposure and infection. Over time,

this effort will establish a consortium of Ukrainian scientists and institutes that use modern molecular techniques for enhanced public health surveillance and long-term assessment of arthropod-borne diseases and risks to the Ukrainian population.

- STCU Partner Project #P362 is a €87,570 project financed by the Italian Instituzione MuMA (Musei del Mare e della Navigazione) in Genoa, and which brings

### GEMSTONE COLORATION BY NEUTRON AND GAMMA-IRRADIATION



Nine former nuclear weapon scientists, well as other scientists and technicians at the Institute of Nuclear Physics in Uzbekistan (Tashkent), completed work on STCU Partner Project #P264, a \$105,500 USD project financed by the United Kingdom's Closed Nuclear Centres Program to develop a commercial production capability for gemstone coloration via nuclear irradiation. With the expert assistance of European wholesale jewelry companies, the Uzbek scientists have obtained good technical results and commercial success from this Partner Project.

Gemstone irradiation is a procedure by which natural precious stones can be given different permanent colors, thus vastly increasing their end-user value. For example, the value of a colorless natural topaz is about \$2 USD per gram, but when it is properly colored and cut this can reach \$60 USD per gram. Based on technology first patented in



1988 by the Institute of Nuclear Physics, this Partner Project developed an improved industrial technology for coloration of white topaz into light, medium and



deep blue colors using the fast neutrons and gamma radiation created inside the institute's nuclear research reactor and other apparatus. Also, the project developed technology for coloration of pale beryl stones using the gamma radiation. Depending on the irradiation conditions and chemical composition of raw gemstones, it is possible to obtain a variety of yellow, green, blue hues.

The institute's capability in both neutron and gamma-irradiation, and its central location close to Asian gemstone deposits and markets, gives the Institute of Nuclear Physics some advantages in commercial gemstone production. The Institute has secured a commercial contract with a European gemstone company on treatment of 6 tons of topaz, and 30 sustainable jobs at the Institute have been created as a result.



six former weapon scientists and other scientists of the Ukrainian Institute of Biology of the South Seas Hydrology into the European “4 Seas” consortium. The 4 Seas consortium involves scientific centers and museums located in close proximity to the 4 different European basins (Mediterranean Sea, Atlantic Ocean/North Sea, Baltic Sea and the Black Sea). The STCU Partner Project #P362 will create a network and IT-based virtual marine science expositions based

current and historical Black Sea research performed by the Ukrainian institute. This will become a single module within a European network, to increase the perception of marine science in the modern society, and to share the knowledge and experience of marine scientists with society at large on common problems of the European countries located on the 4 Sea Coasts. The STCU Partner Project is the part of a larger project entitled Synergies Between Science And Society For A

**MARKETING RESEARCH FOR PAYLOAD CAPABILITIES OF A NEW LIGHT CLASS LAUNCH VEHICLE**



STCU Partner Project #P353 between Orbital Sciences Corporation (USA) and the Ukrainian Design Office “Yuzhnoe” ran for 9 months in 2008, and performed market research and technical analysis to identify optimal payload capabilities for the Taurus-II launch vehicle in commercial and governmental markets worldwide. Global space markets and U.S. governmental space markets were analyzed during the project for further Taurus-II launch vehicle positioning at the market. Eighteen former missile scientists were included in the 31-member Yuzhnoe project team.

Currently, Taurus II launch system is developed by Orbital Sciences Corporation to demonstrate commercial re-supply of the International Space Station under a NASA Commercial Orbital Transportation Services contract. Taurus II is a two-stage launch vehicle designed to provide responsive, low-cost, and reliable access to space for medium-class payloads weighing up to 5750 kg. The inaugural launch of Taurus-II is planned in 2010 from Wallops Launch Site, USA.

In addition to NASA missions, Taurus II is considered to provide cost-effective access to a variety of orbits for civil, commercial and governmental class payloads.



# PROJECT ACTIVITY

Shared Approach To European Seas (4SEAS) financed under the European Commission's 7th Framework Program.

## TARGETED R&D INITIATIVES ACTIVITY

The Targeted R&D Initiatives Program completed its fourth year and continued apace in 2008, and STCU efforts to expand the program to Moldova were on track for the inaugural STCU-Moldovan Targeted Initiatives program to start in early 2009.

Targeted Initiative project cycles for Ukraine, Azerbaijan, and Georgia were successfully completed in 2008, with 27 new projects approved and co-financed between STCU Funding Parties and individual state agencies of the Ukrainian, Azeri, and Georgian Parties. The highlights of these cycles included:

- For Ukraine, 12 new Targeted Initiative projects were approved out of 25 proposals evaluated in the solicited research areas of nanomaterials/nanotechnologies, information technologies, industrial power facility safety/new energy resources, and biotechnologies for health care and environmental protection. The total amount of STCU funding for these 12 projects was \$258,964 USD and €219,626, with a matching \$600,000 USD provided by the National Academy of Sciences of Ukraine.

- For Georgia, the 2008 cycle was expanded to a target goal of \$400,000 USD in total project funding, compared to the 2007 funding goal of \$300,000 USD. In the 2008 cycle, 8 Georgian Targeted Initiative projects were approved out of 26 proposals evaluated in the solicited research areas of biotechnologies and life sciences, energy efficiency, and information and communications technologies. The total amount of STCU funding for

## OPTIMIZED TECHNOLOGY AND TECHNICAL CONDITIONS FOR NEW MATERIALS

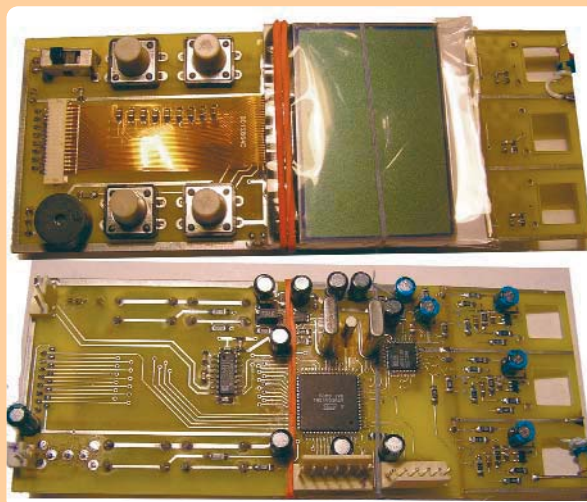


Targeted Initiative project #4115 was a collaborative effort between the Institute of Single Crystal (Kharkiv) and the Research Institute of Microdevices (Kyiv) both of the National Academy of Sciences of Ukraine (NASU). The project budget was \$100,000 USD with the Funding Parties and the NASU each contributing \$50,000 USD. The project engaged 11 former weapon scientists.

Technologies were developed for the growth, testing and fabrication of unique ZnSe materials with specified scintillation and optoelectronic characteristics. On the basis of these scintillators, Schottky diodes and nano-dispersed materials were produced which has led to the development of highly efficient detectors of UV and X-ray radiation.

The development of UV dosimeters is of importance for ecological and medical monitoring, including diagnosis of skin tumours. The development of a new generation of scintillation detectors is of commercial interest because of the need for more sensitive X-ray scan-

ners by custom officials at passenger and transportation terminals. In addition, these improved scintillation devices provide enhanced multi-energy X-ray tomography. The results of these investigations have triggered interest from the private sector.



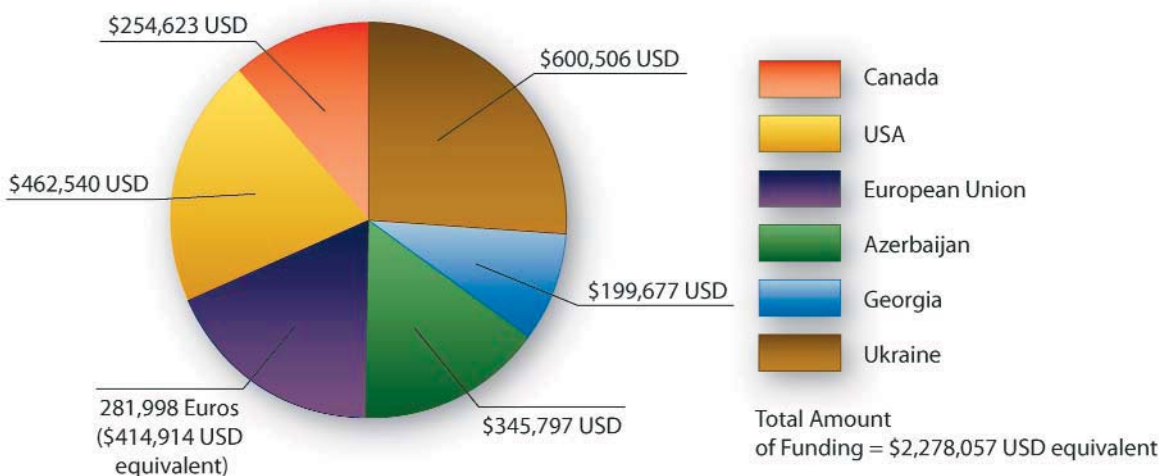
these 8 projects was \$162,375 USD and €24,034, with matching \$200,000 USD provided by the Georgian National Science Foundation.

- Like Georgia, the Azerbaijan Targeted Initiative program was expanded in 2008 to a target goal of \$700,000 USD in total project funding, compared to the 2007 funding goal of \$300,000. In the 2008 cycle, 7 Azeri Targeted Initiative projects were approved out of 12 proposals evaluated in the solicited research areas of nano-technology and material design, bio-chemistry technology, and geo-informatics. The total amount of STCU funding for these 7 projects was \$295,824 USD and €38,838, with \$350,000 USD provided by the Azerbaijan National Academy of Sciences.

All told, the 2008 Ukrainian, Azeri, and Georgian Targeted Initiative cycles engaged a total of 166 former weapon scientists in the 27 new collaborative science

projects. But more important than the numbers is the cooperative achievement of Funding and Recipient Parties, working in partnership, to support and finance the nonproliferation engagement of these former weapon scientists. In 2009, the STCU looks to expand on this foundation of equal partnership by incorporating the Regular Project process more fully into the Targeted Initiative process.

Funding Sources for 2008 Targeted Initiative Projects:



Targeted Initiatives Projects in:

- Ukraine - 12
- Azerbaijan - 7
- Georgia - 8
- Total - 27

## SUSTAINABILITY PROGRAM ACTIVITY

In 2008, STCU supplemental programs continued to facilitate permanent redirection of former weapon scientists, using existing programs such as Patent Support Grants, organizing promotional missions to commercial technology trade fairs, and continuing the Chief Technology Commercialization Officer training program. In addition, STCU initiated a new Institute Sustainability Program, which will take a major role in STCU programmatic activities to build self-reliance in peaceful, civilian employment among large groupings of former weapon scientists.

### INSTITUTE SUSTAINABILITY PROGRAM

The Institute Sustainability Program (ISP), was initiated in 2008 to focus STCU programmatic tools on building the sustainability of institutes that employ large numbers of former weapon scientists. The program aims to facilitate a further transition of these institutes towards becoming more self-sustaining by improving their organizational capacity to be competitive in an international civilian research community and market economy.

ISP is designed to use preliminary round-table meetings and external consultant assessments to help institutes develop their own "institute sustainability projects" that focus on addressing the sustainability goals and needs of the specific institute. Together with the cooperation (and partnership) of the institutes and national agencies, the ISP uses the existing STCU pro-

grammatic tools (such as standard project proposal formats and review processes) to develop the institute sustainability project proposals and to have those proposals reviewed for financial support from the STCU Funding Parties.

In September, 2008, the ISP program started its pilot phase with 7 Ukrainian institutes that were selected to participate. This first meeting included presentations and discussions with institute directors, vice-directors and technology officers (25 participants in all). Program consultants from the University of Missouri-Columbia and University of New York-Binghamton met with the 7 institute representatives to assess potential for strategic growth for the institutes and diversification of funding sources for institutes.

By the end of 2008, the institutes were preparing ISP proposals for submission to STCU Parties for consideration. These proposals will be reviewed for possible funding in 2009.

### THE CHIEF TECHNOLOGY COMMERCIALIZATION OFFICER

The Chief Technology Commercialization Officer (CTCO) program expanded to institutes in Moldova in 2008, and now has established CTCOs in approximately 50 selected institutes in Ukraine, Georgia, Azerbaijan and Moldova. The program continues to provide Technology Transfer and IPR training courses, and additional training is provided to groups of CTCOs by



CTCO training course in Chishinau, Moldova in 2008

sending them to various technology transfer meetings in Canada, the United States, and Europe.

The CTCO program is modeled after Technology Transfer Offices at universities and national labs in other countries, to allow the beneficial transfer of knowledge into the commercial marketplace and for the betterment of their communities. The CTCO's help their former weapon R&D institutes to better integrate into the global scientific community, bringing new income to the institutes, and helping their countries to encourage small- to medium enterprise development and create local high-technology jobs that strengthens their competitiveness in the global marketplace.

During 2008, STCU began to encourage follow-on development of the CTCOs by sponsoring their travel

to foreign industry trade shows and other experience-gaining events. Further, the CTCOs in each of the countries started planning to form their own Technology Transfer Associations, similar to AUTM (Association of University Technology Managers) in North America and ASTP (Association of Science and Technology Professionals) in Europe. Such local associations will greatly increase the visibility of the CTCO's work in their own countries and aid the CTCOs in learning from each other as they meet regularly to discuss problems and lessons-learned. With time, the local associations can run annual meetings and join forces with other established technology transfer associations.

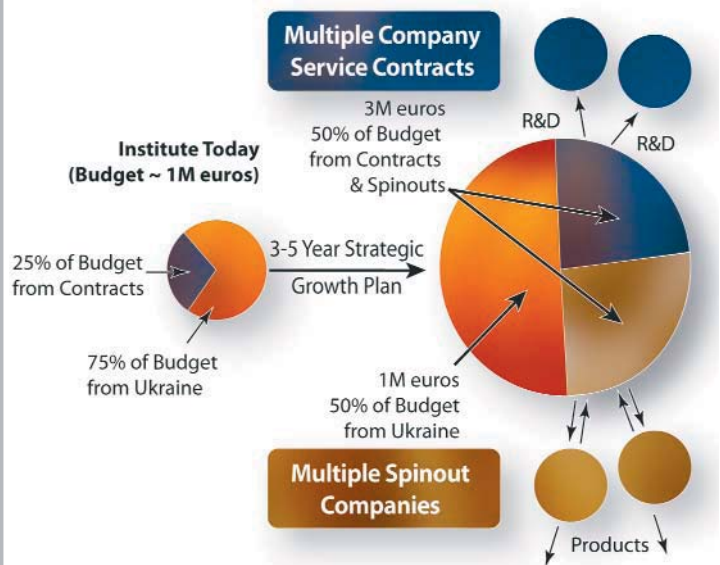
**EXAMPLE OF A POSSIBLE INSTITUTE GROWTH MODEL**

One example of a model for institute growth, modernization and sustainability is this 5-year Strategic Growth Plan based on 3 key elements:

- a) Build upon scientific strengths with existing programs and projects;
- b) Use those strengths to develop scientific services and skills needed by external parties, through contracts and partner activities at STCU; and
- c) Assess and use existing developed technologies at the institutes to form start-up companies that can be spun-out through licensing to businesses and investors.

Such a Strategic Growth Plan would give the former WMD institutes a conceptual roadmap for expanding their scientific skills, renovate and modernize their laboratory facilities, diversify their revenues, and, most importantly, attract young scientists to continue the long-term viability of the institute and its work. Such growth and expansion will allow the institutes to create sustainable employment and help integrate the institutes and the former WMD scientists into the national and global scientific community.

**Example of Possible Institute Growth Model from 1M euros to 2 - 4M euros in 3-5 years**



## SEMINARS/WORKSHOPS ACTIVITY

STCU succeeded in organizing several seminar and workshop events in 2008, and also continued to sponsor the travel and participation of former weapon scientists in large trade shows and commercial technology events in Canada, Europe, and the United States. Through such events, STCU seeks to further integrate the former weapon scientists into the international science communities, and to provide them direct experience in promoting their civilian research & development capabilities and technology offerings.

### EU-SPECIFIC WORKSHOPS

On 10-12 March 2008, STCU jointly organized a thematic science conference in Ljubljana, Slovenia, in partnership with the International Science and Technology Center (ISTC) and the Jožef Stefan Institute. The conference was held on the occasion of the Slovenian EU Presidency, and focused on science research and accomplishments in Bio, Nano, and Space Technologies. European Union Commissioner for Science and Research, Mr. Janez Potočnik, opened the conference and 60 presentations and speeches were delivered, including presentations from 8 STCU former weapon scientists. The conference also included participation from the Slovenian Ministry of Higher Education, Science and Technology, the Slovenian Research Agency, and departments within the Jožef Stefan Institute.

On 26-28 November 2008, STCU co-organized the EU-CIS Seminar “New Trends in Infectious Diseases” in Lyon, France, on the occasion of the French EU Presidency. The event was attended by over 70 scientists, and included participation from the ISTC as well as a representation of French, European, and international experts (e.g., World Health Organization). Seven STCU project presentations were made by 7 former weapon scientists from Azerbaijan, Georgia and Ukraine. Also during the conference, these STCU former weapon scientist teams made a group visit to the biotechnology cluster, Lyon Biopole, to network and discuss potential research partnership.

### CANADA – UKRAINE BUSINESS SUMMIT

STCU worked with the Canadian Embassy in Ukraine and the Canadian Department of Foreign Affairs and International Trade (DFAIT) in organizing the first-ever Canada-Ukraine Business Summit (12-14 March 2008). There were approximately 350 participants in working sessions in Dnipropetrovsk and Kyiv, and more than 250 Canadian and Ukrainian businesses were represented. Canadian Ambassador to Ukraine Abina Dann opened the Summit by stressing the opportunities for organizations in both Ukraine and Canada to aggressively pursue partnership and business linkages. Also attending were Ambassador Ihor Ostash (Ukrainian Ambassador to Canada), Victor Bondar (Governor of the Dnepropetrovsk State Administration), Ivan Lazarenko (First Deputy Head of Dnepropetrovsk Oblast Council), and Michael Reshitnyk (Senior Trade Commissioner, Department of Foreign Affairs, Canada).

For its part, STCU organized 43 technology presentations, 34 of which were based on STCU-funded projects which represented the work of 625 former weapon scientists. STCU Deputy Executive Director (Canada) Dr. Landis Henry chaired a session on “Partnering & Commercialization”.

### CRIMEA WORKSHOP

On 22-26 September 2008, STCU co-organized the International Conference on “Materials and Coatings for Extreme Performances” in Crimea (Ukraine), along with the Ukrainian Materials Research Society and the Frantsevich Institute for Problems of Materials Science of the National Academy of Sciences of Ukraine. Approximately 400 top materials research scientists and engineers from the Commonwealth of Independent States, Europe and North America attended the week-long scientific conference. The event focused on materials science and technology (including nano and “smart” materials) under severe service conditions (high and cryogenic temperatures), aggressive environments, complex and alternating loads, thermal cycling, enhanced pressure, micro-gravitation, vacuum, etc. Special attention was paid to materials for aerospace application.



Michel Zayet, Andrew Hood, Janez Potočnik, and Zoran Stančič, at the European Union & Science Centers Thematic International Conference on Bio-, Nano- and Space Technologies, in Ljubljana, Slovenia

Twenty nine former weapon scientists participated in the conference, and 28 of these made technical presentations showing the results of STCU-funded projects (projects that, in total, represented the research of 340 former weapon scientists). In addition, the international audience at this meeting provided opportunities to establish connections and interactions between the scientific communities of former weapon scientists in STCU Recipient States and scientists in the STCU Party countries. The conference succeeded in demonstrating to the international experts the STCU recipient scientists' ability to perform "cutting edge" research and technology development in this increasingly important area of science.

#### PARTNERSHIP PROMOTION MISSIONS

On 12-14 March 2008, a delegation of 12 former weapon scientists from Ukraine and Georgia participated in the 10th Biennial Trade Fair and Conference on Business and Environment "Globe 2008" held in Vancouver, Canada. STCU and ISTC organized a booth at the exhibition where scientists could meet with attendees to discuss their technology opportunities and to learn what Canadian companies are doing in this important area related the environment. For example, STCU exhibited folding solar cells and thermo-electrical modules which caused interest and attracted many visitors.

STCU helped 18 former weapon scientists on STCU projects to prepare 15 Intellectual Property descriptions and 3 Executive Summaries of business plans to the

TechConnect Summit in Boston, USA (3-5 June) for possible participation. STCU financial support also helped former weapon scientists from Ukraine to take part in this global event. The TechConnect Summit focused on bringing together the world's top technology transfer offices, companies, and investors (business angels and venture capitalists) to identify promising technologies and early stage companies from across the globe. Three STCU scientists (pre-selected by organizers) took part in this event with their pitch presentations. From this event, the scientists learned how western investors and businesses enhance their innovation pipeline and create an environment for technology matchmaking and relationship-building amongst many groups related to technology research, development, and commercialization.

Finally, in December an STCU delegation of 7 former weapon scientists from Azerbaijan and Georgia participated in an international nuclear forensics workshop at the Institute of Transuranium Elements in Karlsruhe, Germany. This workshop, organized by the Office of WMD Terrorism of the U.S. Department of State, brought together 80 participants from regional law enforcement, nuclear regulatory officials and nuclear scientists, and provided an opportunity for these experts to discuss the basic principles of nuclear forensics, its application in national response plans to nuclear material smuggling, and development of research projects related to improving nuclear forensic capabilities. From this workshop, the 4 Georgian and Azeri former weapon scientists were encouraged to develop R&D proposals in the nuclear forensics area, for funding consideration by the U.S. State Department's Office of WMD Terrorism.

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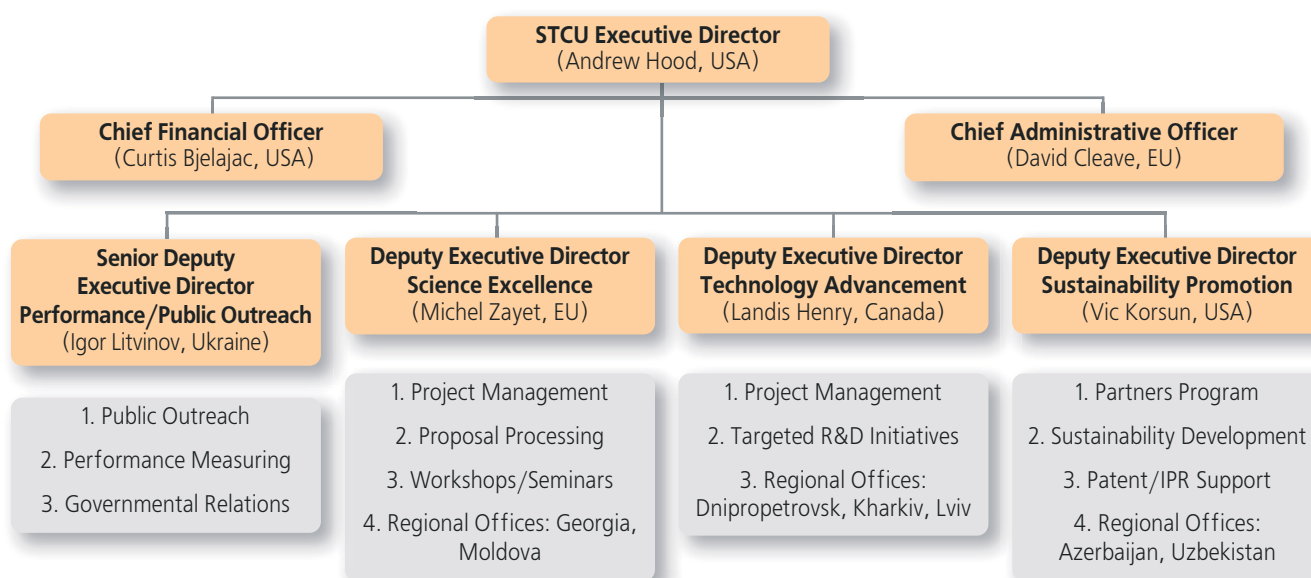
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