Science and Technology Center in Ukraine

Presentation of STCU and Partner Program

2010

Our Mission:
Nonproliferation of WMD Expertise

- **Engagement**: Support multilateral, collaborative, peaceful civilian R&D activities that engage Azeri, Georgian, Ukrainian, and Uzbek scientists and engineers formerly involved WMD and delivery systems, so that their scientific talents contribute to solutions of national/international S&T problems.

- **Sustainable Redirection**: Create opportunities for former WMD scientists and engineers to develop sustainable, civilian research employment that contributes to their country's to market economy transition, to science & technology development, and to deeper integration into the international community.

History of STCU

1991-Ukraine Gains its Independence

1993-STCU is Established as an Inter-Governmental Organization with Four Founding Parties: Ukraine, Canada, Sweden and the United States of America

1997- STCU has launched a Partner Program

1997-Uzbekistan Accedes to STCU

1998-European Union Replaces Sweden as an STCU Governing Party

1998-Georgia Accedes to STCU

2003-STCU Surpasses $100 Million USD in Total Project Funding

2003-Azerbaijan Accedes to STCU

2004-Moldova Accedes to STCU

STCU Membership Includes Five Countries

Over **1,000** Scientific and Technical Institutes

Approximately **20,000** Former Weapons Scientists (based on an estimate -1995)

STCU has engaged over **8,000 former weapons scientists**, plus 5,000 other scientific personnel

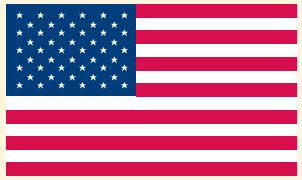
The Financing and Recipient Parties Mechanism

Canada (9%)

Non-Government Partners

E.U. (28%)

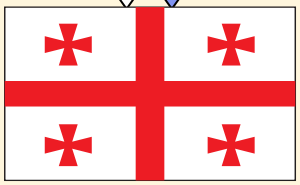
Government Partners



U.S.A. (63%)

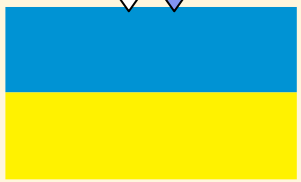
Science & Technology Center in Ukraine

Azerbaijan



Georgia

Moldova



Ukraine

Uzbekistan









STCU has On-Site Presence across its Five Recipient States

- **Headquartered in Kiev, Ukraine**
  with Regional Offices in:
  - *Dnipropetrovsk,*
  - *Kharkiv*
  - *Lviv*

- **Other Country Offices:**
  - *Baku, Azerbaijan*
  - *Tbilisi, Georgia*
  - *Tashkent, Uzbekistan*
  - *Chisinau, Moldova*




Making Progress, Seeing Results

- Over 1229 Projects (approx. $174 Million USD equiv) since 1995
- Over 180 Partner Organizations (approx $60 Million USD equiv)
- Over 200 Patent Applications of STCU Project Results
- Several Targeted Initiatives Addressing Issues of National/International Concern
  - Y2K Remediation Program
  - Various Government Threat Reduction Partner Programs
  - Jointly Financed Targeted Projects w/ Recipient Gov. Agencies
  - Sustainability Assistance

Government Partners:
Making Use of STCU

Main Government Partners

- Max Planck Institute of Plasma Physics
- UK Department of Trade and Industry
- U.S. Department of Energy/Initiatives for Proliferation Prevention (IPP)
- U. S. Environmental Protection Agency
- USAF European Office of Aerospace Research and Development
- U.S. Department of Agriculture/Agricultural Research Service
- U.S. Department of Defense/Defense Threat Reduction Agency

Over 130 Projects = Over $30 Million USD and 980,000 Euros

Non-Government Partners:
Key to Building Self-Sustainability

Over 120 Non-Government Partners including:

- K+S Electron Technologies (California, USA)
- 3M Corporation (Delaware, USA)
- DuPont (Minnesota, USA)
- PPG Industries, Inc (Pittsburgh, USA)
- Boeing (Seattle, USA)
- Intel Corp. (USA)
- AECL Chalk River Laboratories (Ontario, Canada)
- Medteknostics, Inc. (Calgary, Canada)
- Airbus (UK)
- Atofina (Paris, France)
- Michelin (Clermont-Ferrand, France)

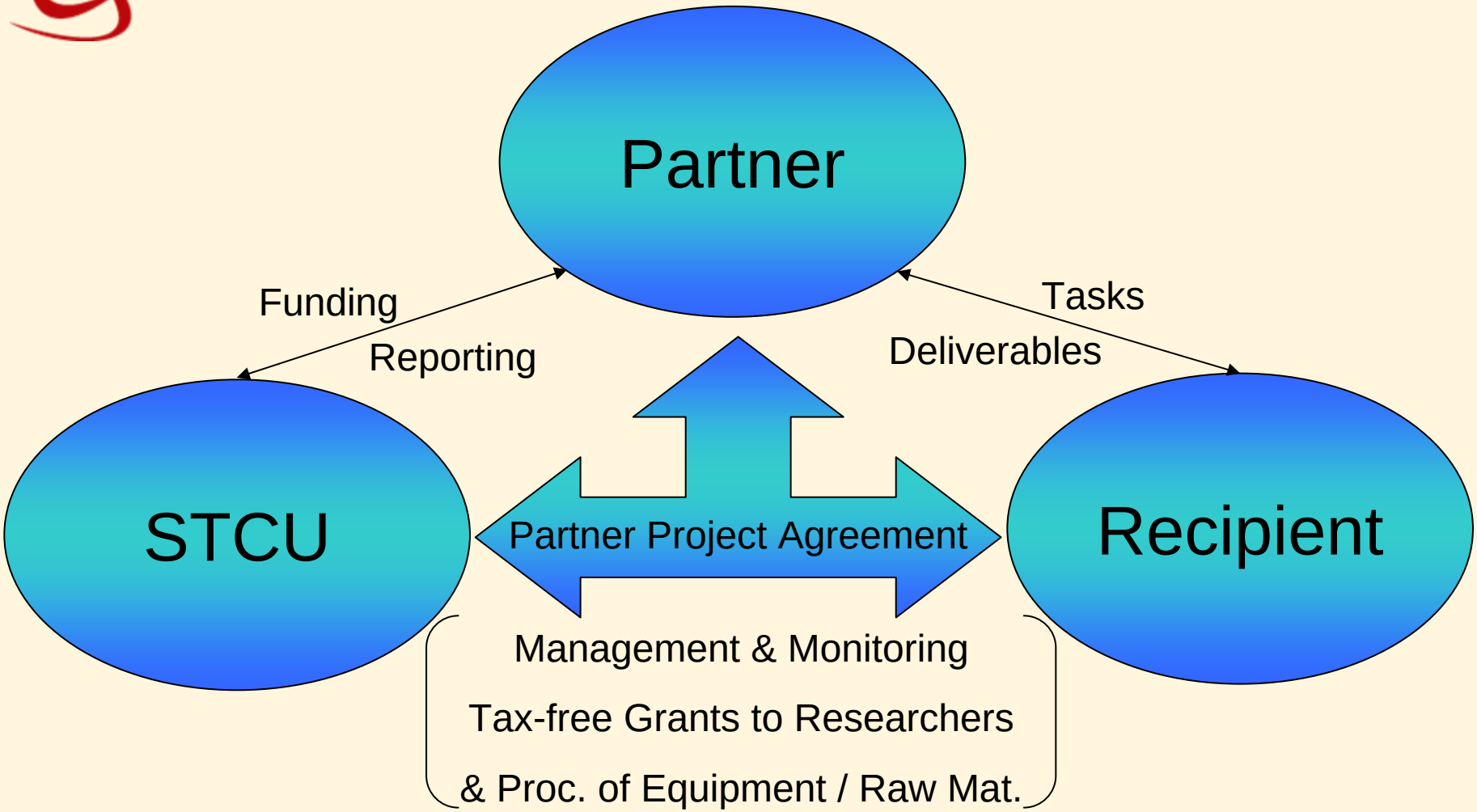
Over 146 Projects = $17 Million USD and 1,6 Million Euros

STCU Core Programs and Services

- **Regular Project Program**
- **Partner Project Program**
- Institute Sustainability Program
- Patenting Program
- Partner Promotion Program
- Workshops and Scientific Seminars
- Travel Grants
- Communication Support Program

Partner Project Agreement

http://www.stcu.int/documents/partner/

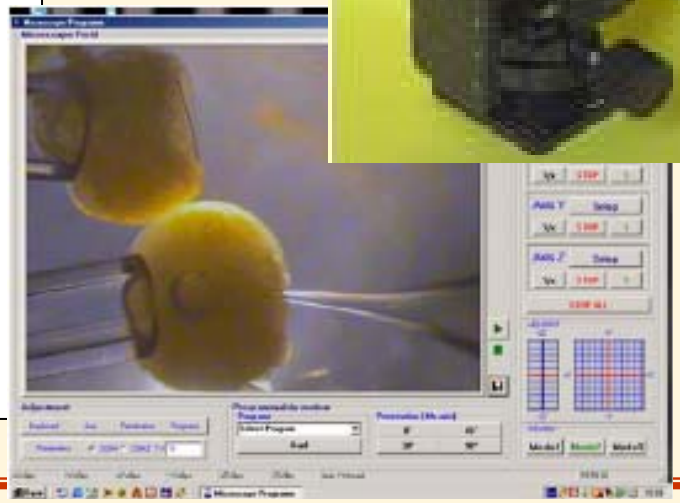


Advantages of Working with STCU

- Direct, tax-free payments (grants) to researchers' personal bank accounts.
- Customs clearance assistance provided; procurement of equipment and materials free of duties and taxes.
- Host government concurrence and security review.
- Professional project management, including technical and financial monitoring.
- Knowledge of Recipient Parties' R&D communities and their capabilities.
- Support for peaceful, civilian research.

Ukrainian Robotic Micro-manipulators take the smallest step in the world!

- **Accurate & reproducible half-nano-meter steps (world-record!)**
- **Used for demanding bio-tech applications such as:**
  - *Patch Clamp (holding & positioning cells),*
  - *IVF (in-vitro fertilization), and*
  - *Cell cloning,*
- As well as in semiconductor integrated circuits industry – all growing markets.



PLANT GROWTH REGULATORS

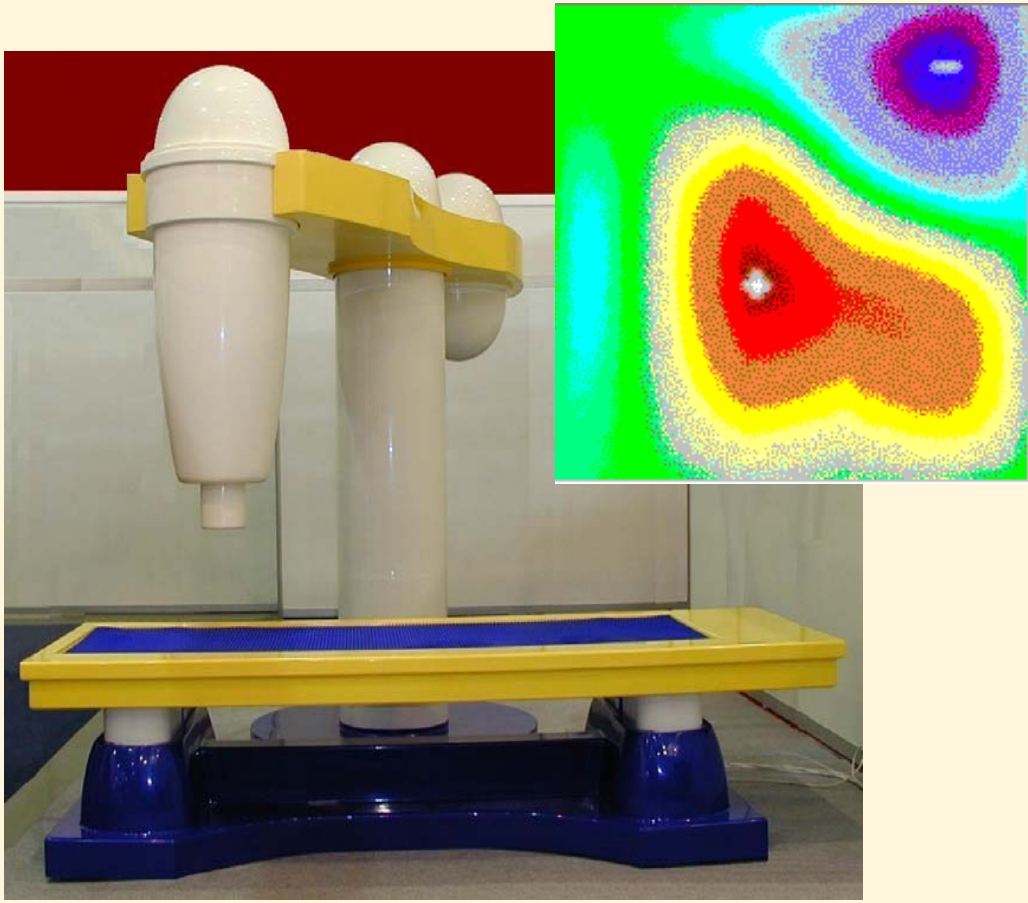
25% GROWTH IMPROVEMENT FOR MANY AGRICULTURAL CROPS

Based on Biotechnology of micromycetes cultivation from root system of herbs

Agrostimulin Biosil	for cereals, leguminous and perennial herbs
Biomax Betastimulin	for sugar beet
Zeastimulin	for corn
Radostim	for seed treatment
Treptolem	for sunflower, rape
Charcor	for root system development

Non-Invasive, Risk-Free Magneto-Cardio System for Early-Diagnosis of Heart Diseases

- Measures the tiny magnetic fields emitted by the human heart
- Risk-free diagnosis of ischemia, ventricular arrhythmias, & other heart ailments through imaging & quantitative analysis
- Non-invasive clinical evaluation of new drugs & therapies.



STCU Support Activities

- ISP program
- CTCO program
- IPR Support Program
- Association of Technology Professionals of Ukraine
- Prof. P. Tsybulyov, IPR Institute
  - Analysis – Barriers to commercialization in Ukraine report/article
  - Analysis – Overcoming barriers to commercialization in Ukraine (being prepared)
  - Training at IRE
  - Moldova institutes review (could be done in Ukraine)
- Prof. Gusiv, Kharkiv Technologies
  - Article on issues of commercialization
  - Training at IRE
- Technology Agreements – Translations into Ukrainian and Russian
- TPF's & IPF's – Technology Profile and Institute Profile's booklets
- Technology Audit program, V. Kholodyazhny
- United Flower Network of High Technology SME's
- Nerac Market Analysis Reports
- Scientific delegations to global technology exhibitions & scientific conferences

IPR Support Program

- The goal is to encourage both institutes and FWS scientists to utilize STCU's IPR system for its main intent – to gain income from creative products.
- Hundreds of patent applications supported by STCU.

Brief summary highlighting 2009 patenting

1. Yu. Milman et al -- Cast Piston Alloy Based On Ternary Al-mg-si System For Automobile Industry
2. Olexiy KLISHYN et al -- Plunger Pair
3. Olexiy KLISHYN et al -- A Plant For Producing The Oxygen-containing Additive As An Ecologically Beneficial Component For Liquid Motor Fuels
4. V. Danchenko -- Aeration In-Silo Dryer For Grain And Seed
5. O.M.Ivasishin -- Method for Manufacturing Titanium Alloy Articles

ISP program

STCU initiated Institute Sustainability Program in order to help selected R&D Institutes to gain sustainability (Institutes wrote their sustainability plans to receive financial support)

List of Institutes that were selected for Program

1. V. Lashkarev Institute of Semiconductors Physics, Kyiv
2. Palladin Institute of Biochemistry, Kyiv
3. Institute of Radiophysics Electronics, Kharkiv
4. Frantsevich Institute of Problems of Material Science, Kyiv
5. Institute of Technical Mechanics, NASU and NSAU, Dnipropetrovsk
6. Institute of Physics, Kyiv

CTCO program in Ukraine and CIS

In 2007 STCU helped create the first 10 Tech Transfer officers in Ukraine at NASU institutes. STCU created a Tech Transfer training course. It can be a model for institutes and universities.

List of institutes:

1. Instutute of Space research (Kyiv)
2. Institute of Metal Physics (Kyiv)
3. Institute of Molecular biology and genetics (Kyiv)
4. Instutute of Organic Chemistry (Kyiv)
5. Institute for Problems of Machine building (Kharkiv)
6. Institute of Radiophysics and Electronics (Kharkiv)
7. Kharkiv Institute of Physics and Technology – KIPT (Kharkiv)
8. Institute of physics (Kyiv)
9. Institute of physics of semiconductors (Kyiv)
10. Lviv R&D Institute of epidemiology and hygiene (Lviv)
11. Institute for Problems of Material Science (Kyiv)
12. National Technical University of Ukraine "Kyiv Polytechnic Institute“-- KPI (Kyiv)

Association of Technology Professionals of Ukraine

Association of Professionals of Commercialization of Ukraine (APCU) was created. On January 15th 2009 during constituent assembly statute was approved, management was elected. On April 14th 20009 Association was registered by state.

The main aims of the Association are:

1. Assist in development of R&D commercialization in Ukraine;
2. Promote interests and rights of technology transfer specialists and professionals.

President– Dr. Vadym Mitin, Institute of Semiconductor Physics, Kyiv, NASU mitin@microsensor.com.ua

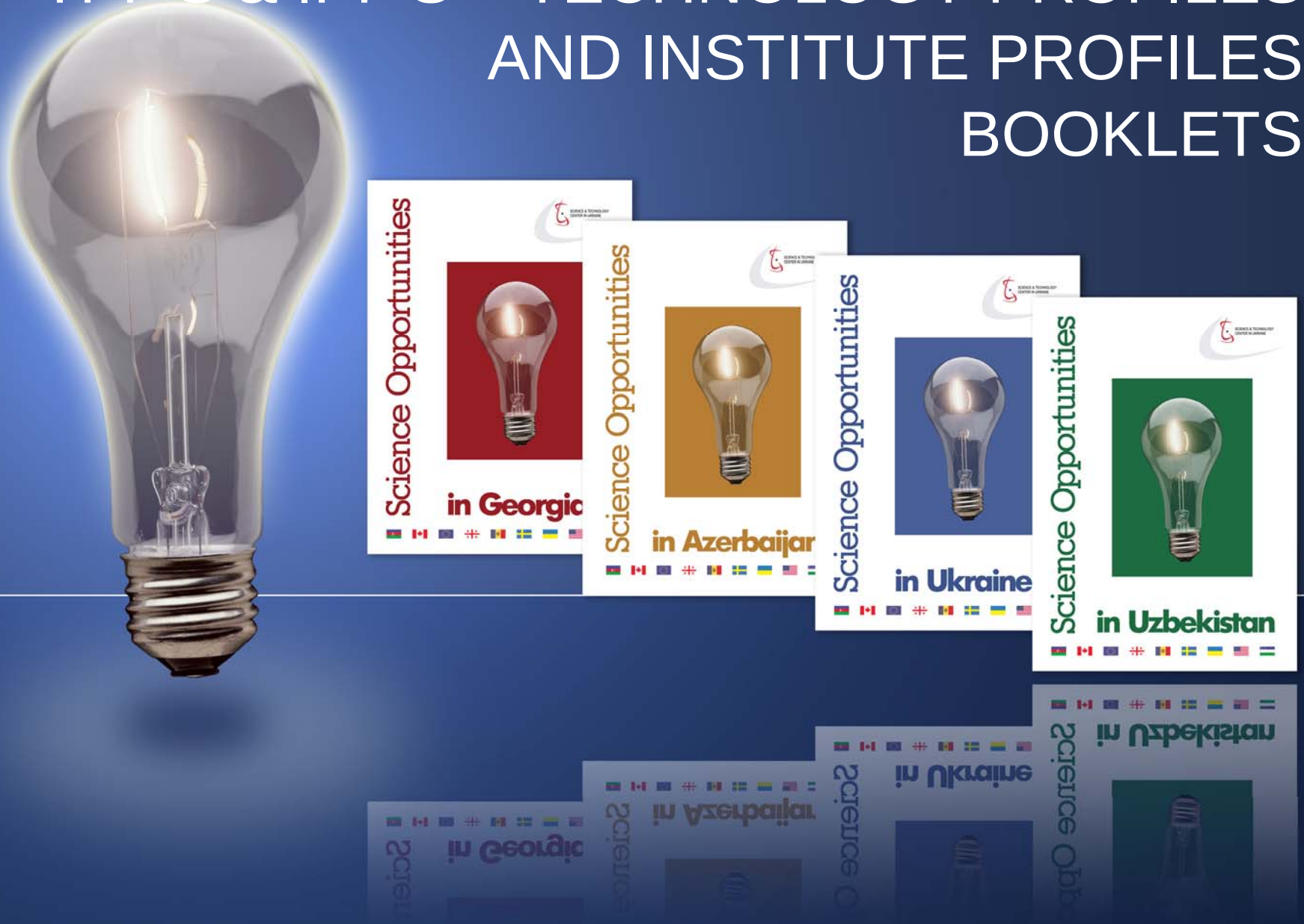
Secretary – Mr. Andriy Martyshko, State Agency of Ukraine for Investments and Innovations, Tel 8050 925 65 64, e-mail a.martyshko@gmail.com

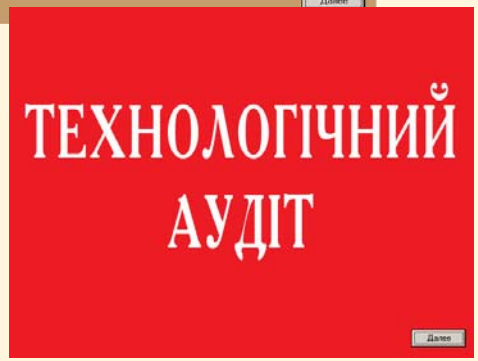
Vise-president – Dr. Oleksandr Kogut, Institute of Radio Physics and Electronics, Kharkiv, NASU kogut@ire.kharkov.ua

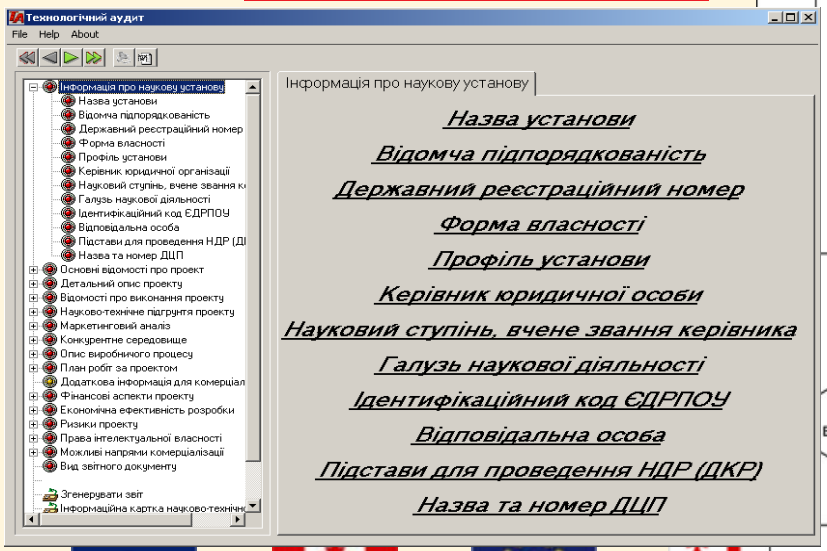
Examples of Technology Agreements – Translated into Ukrainian and Russian

-- Booklets and electronic CD's

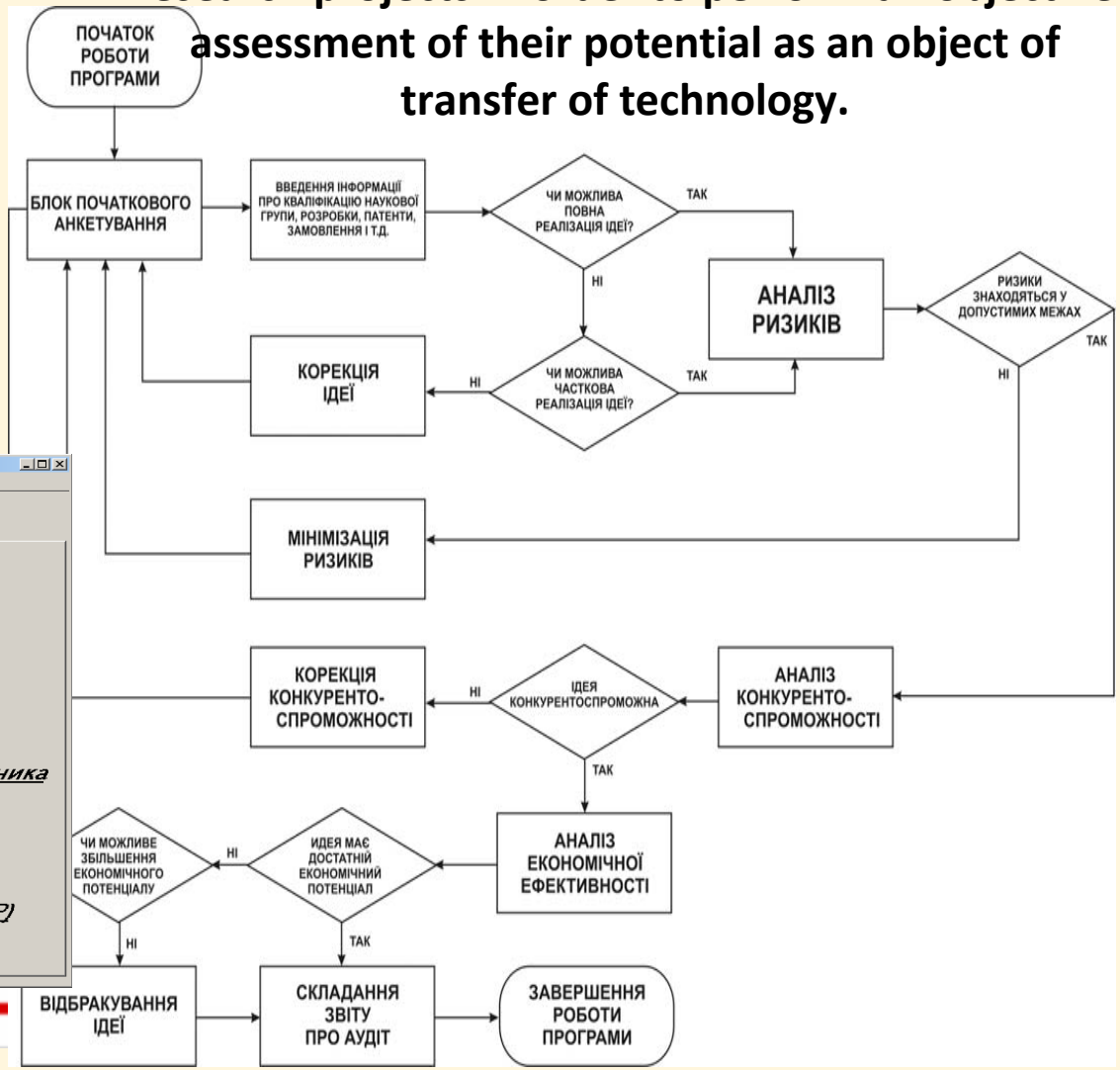
TPF'S & IPF'S – TECHNOLOGY PROFILES AND INSTITUTE PROFILES BOOKLETS



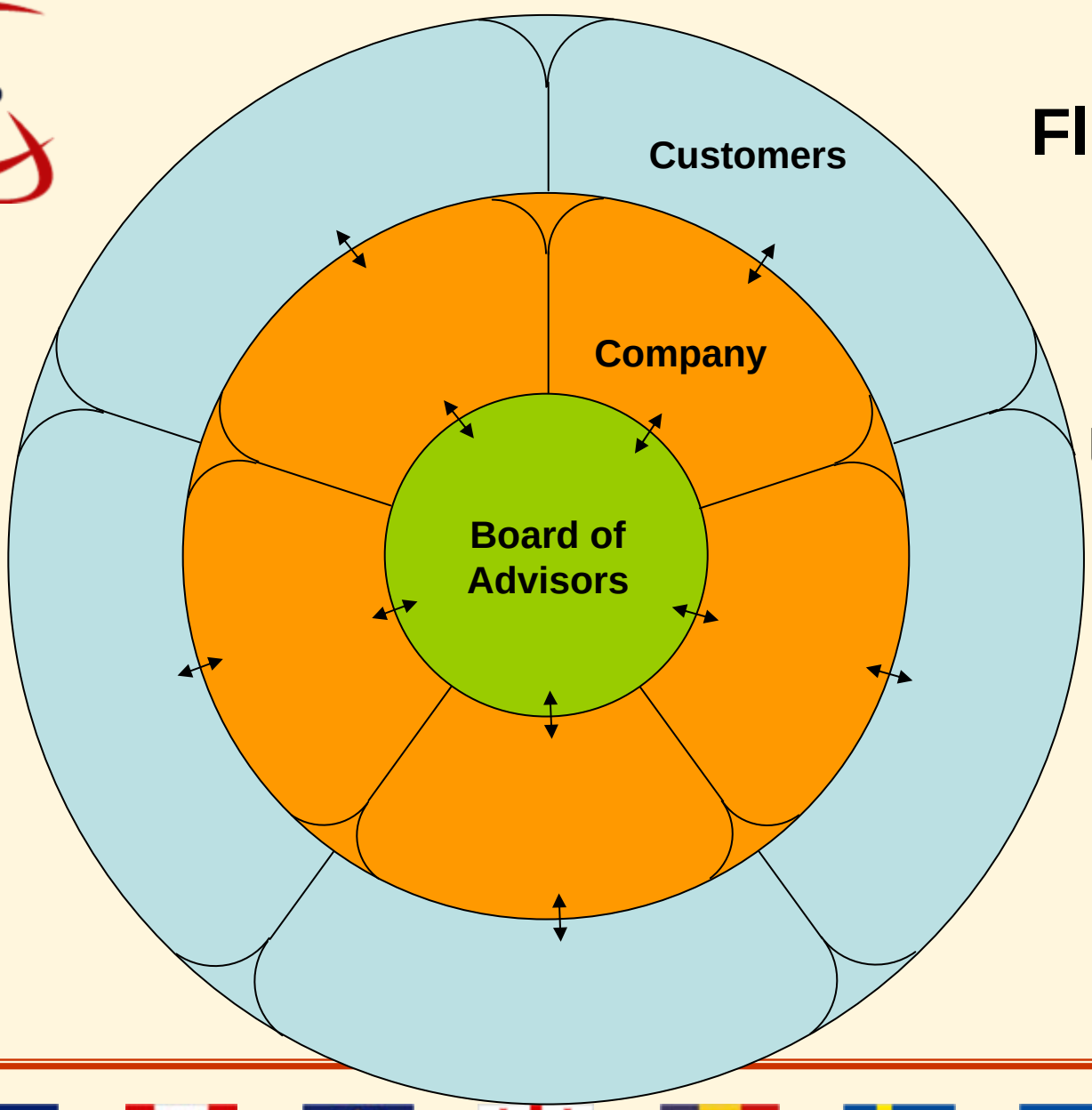




Technology Audit Program –
Ministry of Education & Science
Manager – V. Kholodyazhny
An algorithmic system to survey institute research projects in order to perform an objective assessment of their potential as an object of transfer of technology.



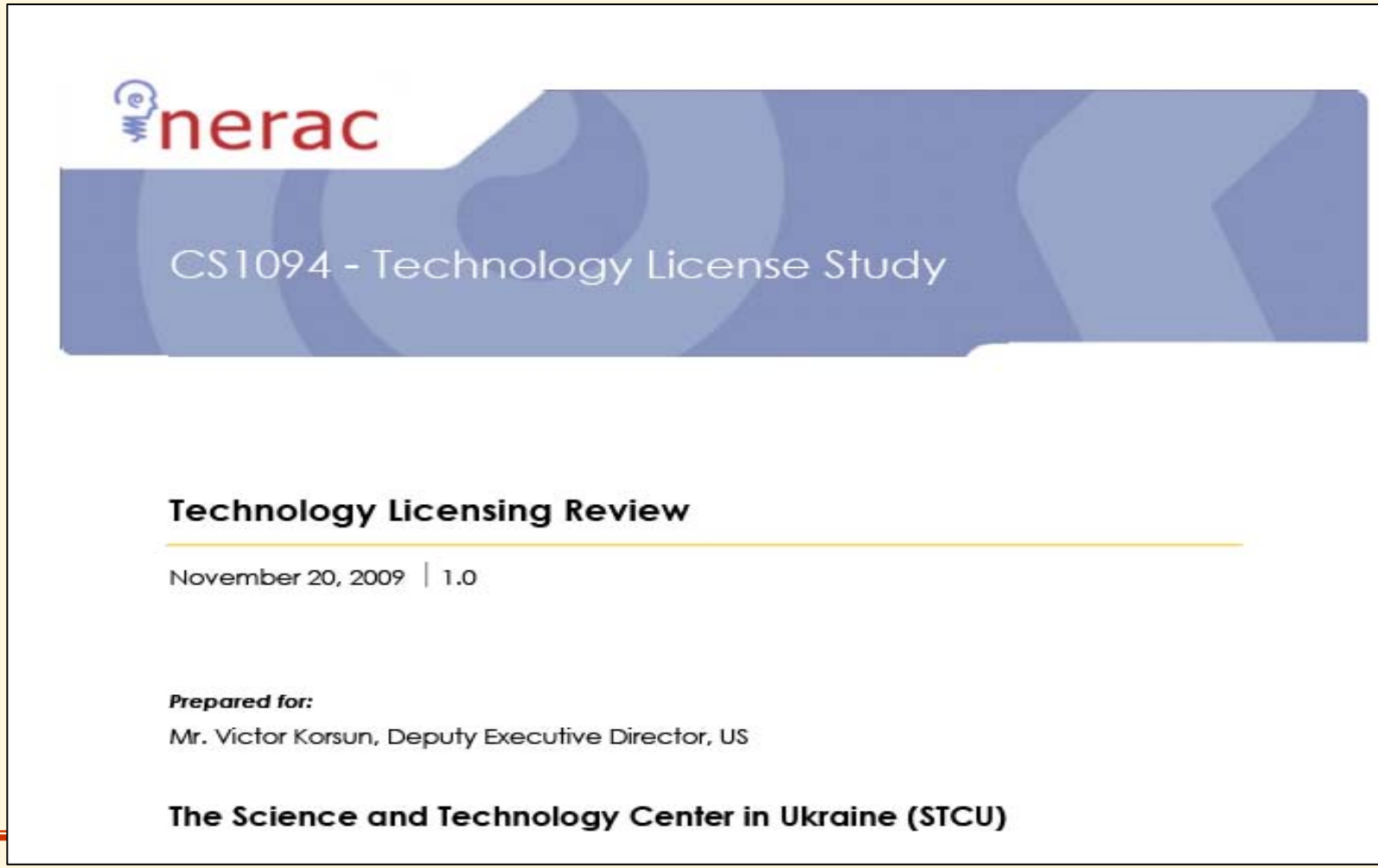
United Flower Network Of High Technology SME's in Ukraine and CIS



SME-Companies of United Flower Network

Company	Director	Products
Dnipro	Dr. Mostytsky	Medical Freezers
Lileya	Dr. Petrenko	Piezo Micro-manipulators
Avante	Dr. Favorsky	Wind & renewable energy
AgroBioTech	Dr. Ponomarenko	Plant growth regulators
Vision Aid	Dr. Pekaryk	Macular degeneration
Microwave Technologies	Dr. Bedjukh	Tires & gas energy
MagnetoCardio	Dr. Sosnytsky	Heart diagnostic
Elevator	Dr. Danchenko	Grain drying in silos
Motor Resources	Dr. Drachko	Engines & helicopters
Clean Service	Dr. Klishyn	Clean engines
BioMass	Dr. Geletukha	Renewable bio-energy

Market Analysis Reports



nerac

CS1094 - Technology License Study

Technology Licensing Review

November 20, 2009 | 1.0

Prepared for:

Mr. Victor Korsun, Deputy Executive Director, US

The Science and Technology Center in Ukraine (STCU)

Some Scientific delegations to Global Technology Exhibitions & Conferences

		Where	Event description
2/3/10	GP Partner promo	Washington, DC	Renewable Energy Technology Conference and Exhibition (RETECH 2010),
2/10/10	CTCO+ISP	Kyiv Politechnic Institute	Marketing communications with Martin Nuun, ”White Communications” February
3/1/10	IPR	Baku	IPR/Business Planning round tables
3/15/10	NGP Partner promo	Kyiv	Pitch training for Seed Forum
4/20/10	IPR	Kharkiv	IPR/Business Planning round tables
4/27/10	NGP Partner promo	Kyiv	Seed Forum (UK)
5/17/10	CTCO+ISP	Kyiv	INTERNATIONAL CONFERENCE ON INNOVATION AND KNOWLEDGE-BASED BUSINESS DEVELOPMENT Together with Technology Opportunity Exhibition and Venture Forum, jointly with KPI
6/21/10	NGP Partner promo	Anaheim, CA	TechConnect World
6/25/10	CTCO+ISP	Kharkiv	Consulting and training services from the Oxford office to assist selected CTCOs and ISPs in commercialization
7/15/10	IPR	Tbilisi	IPR/Business Planning round tables
9/13/10	NGP Partner promo	Kyiv	Pitch training for Seed Forum (UK)
9/23/10	NGP Partner promo	Calgary, Canada	Banff Venture Forum
10/20/10	IPR	Chishinau	IPR/Business Planning round tables
11/24/10	NGP Partner promo	Kyiv	Seed Forum (UK)
12/1/10	NGP Partner promo	Washington DC,	University Startups Conference

STCU Partner Program









STCU Partner Project

Outsourcing R&D project for western organization

Main criteria

1. Peaceful purpose of project
2. R&D project
3. Not less than 30% of project participants are Former weapon scientists (during 1980-1990 they worked for the USSR military-industrial complex)

- Whole process until signing takes 3-4 months

Becoming an STCU Partner

- Western organization (company, national lab, governmental entity, etc.) from USA, EU and Canada can apply for STCU Partner status
- **What is required from potential partner:**

1. To write a letter-application (find sample at): http://www.stcu.int/offer/commercialcontrres/applyps/
2. To finalize work plan, project duration, project cost and terms of delivery
3. To sign 3-party project agreement: http://www.stcu.int/documents/projects/partner/Non-Governmental_Partner_Project_Agreement/
4. To wire-transfer project funds in accordance with STCU invoice

Model Project Agreement

1. Commercial Partner can download Project Agreement from: http://www.stcu.int/documents/projects/partner/Non-Governmental_Partner_Project_Agreement/ -
2. Governmental Partner can download Project Agreement from http://www.stcu.int/documents/projects/partner/Governmental_Partner_Project_Agreement/









IP Rights

The allocation of intellectual property arising from Partner project and the responsibilities for protecting and exploiting such intellectual property should be negotiated between the Recipient(s) and the Partner under a separate agreement.









STCU contacts:

- Elena Taberko – Partner Program manager (Governmental Partners) elena.taberko@stcu.int (044) 4907150 (ext 730)
- Peter Melnik-Melnikov – Partner Program manager (Commercial Partners) peter.melnik-melnikov@stcu.int (044)4907150 (ext 754)

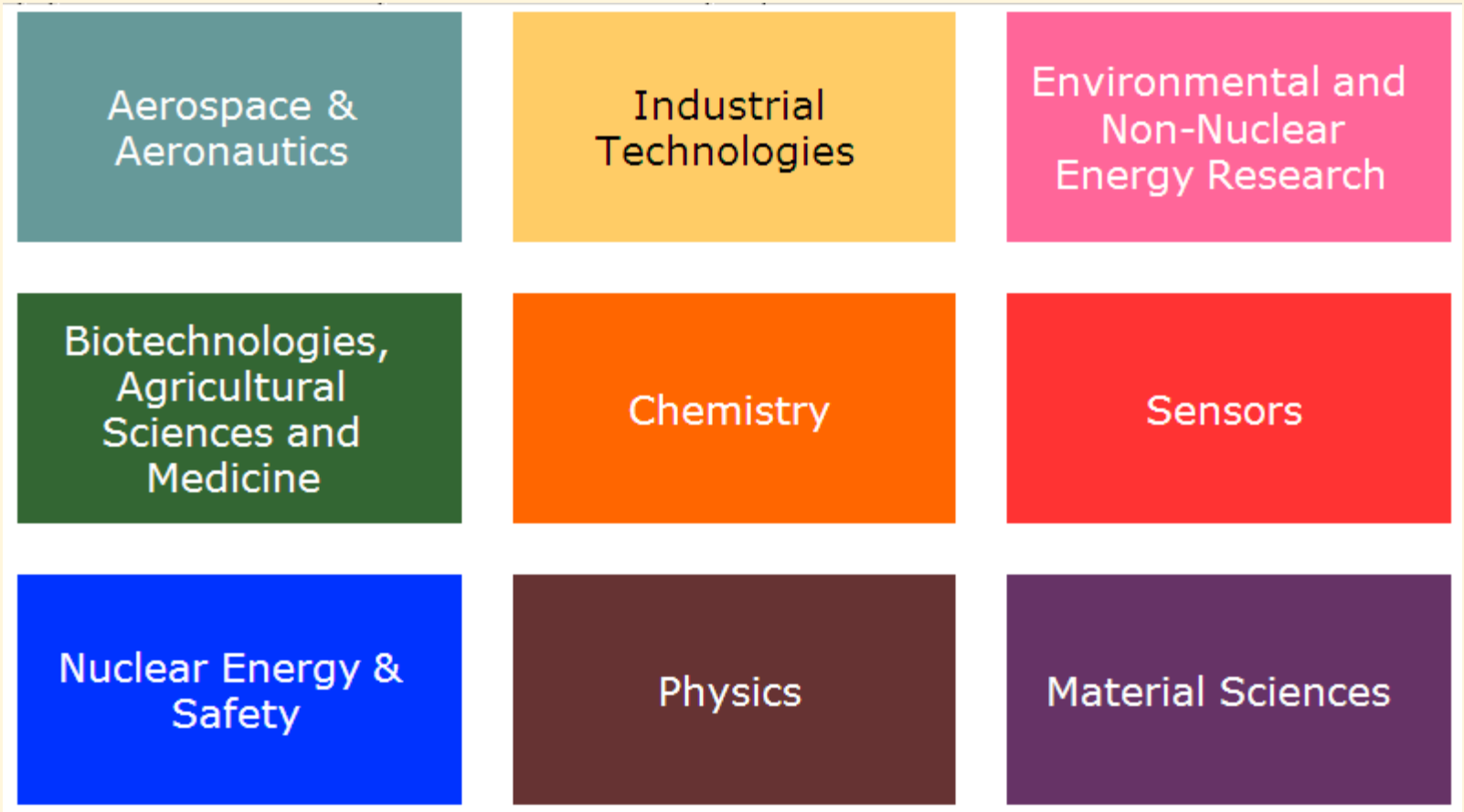
On-Line Technology Marketplace

http://www.stcu.int/offer/techmatching/index.php

On-Line Technology Marketplace

- Virtual space for the dissemination of information, knowledge and technology.
- Online technology marketplace offer to the research institutions the ability to extract tremendous value from the intellectual property they are willing to share.
- Free on-line service for research and technical development results and innovative business opportunities on emerging technologies

9 STCU Subject Areas



Technology Profiles

information about the research result, the contributing organization, the type of collaboration sought, prototype availability, commercial potential, contact point information

In 9 Technology Areas:

- Aerospace
- Biotechnologies and Medicine
- Material science
- Chemistry
- Environment Research
- Industrial Technologies
- Sensors
- Nuclear Energy and Safety
- Physics

AEROSPACE TECHNOLOGIES

LIGHT MULTI-PURPOSE 5-SEATED HELICOPTER OF THE CATEGORY A WITH 2 INTERNAL COMBUSTION TURBINES (ICT)

Description
The main aircraft performance characteristics of the helicopter:

Maximal take off weight	1400 kg
Weight of empty helicopter	750 kg
Maximal airspeed	220 km/h
Cruising speed (for maximum range)	180 km/h
Economical speed (for maximum time of flight)	100 km/h
Fuel consumption per 1 km	0,28 kg/km
Fuel consumption per 1 hour	33 kg/h
Maximum range ability	600 km
Maximum flight endurance	5 h
Static altitude	2500 m
Dynamic altitude	5000 m
Crew	1 man (90 kg)
Maximum seating capacity	4 men. (4x90 kg)
Commercial cargo weight in cargo variant of helicopter	330 kg

Length of helicopter with revolving screws	11,45 m
Height of helicopter up to center of main rotor head	2,72 m
Main rotor diameter	10,0 m
Antitorque propeller diameter	1,6 m

Innovative Aspect and Main Advantages
The helicopter has 2 ICT (a new rotary engines) with power 180 h.p. which has weight of 42 kg of our own development. According to JAR-27, the helicopters with 2 engines are permitted to fly above built-up area. There are no such light helicopters at the world market, because all light helicopters have only one heavy piston engine now.
The main advantages:
- A light helicopter of the category A with a price of

Stage of Development
Feasibility study.

Contact Details
Research and DevelopmentEnterprise "TechnoRe-

Institute Profiles

- Introducing the strenghts of organisation
- Capabilities of the Institutions
- Linkage to scientific experience
- Research activity areas
- Reference projects
- Co-operation partners
- Main achievements

Institute of Cell Biology and Genetic Engineering (ICBGE)

The Institute of Cell Biology and Genetic Engineering (ICBGE), established in 1998, is the leading scientific center in the field of plant cell and molecular biology, biotechnology and genomics in Ukraine. ICBGE employs 140 scientists, including 12 Doctors of Science, 64 with the designation of Academician, and 48 Ph.D.s. Together with other highly experienced engineers, they are grouped into 12 departments and labs.

R&D Highlights at ICBGE:

In the area of **plant cell and genetic engineering**, researchers at the Institute discovered the phenomenon of biparental inheritance of cytoplasmic genes as a result of protoplast somatic hybridization. This phenomenon created the basis for the development of new technologies for the production of plant hybrids, and original approaches of plastome transformation. The efforts are also centered on the development of plant molecular biotechnology. The Institute has pioneered the development of transgenic plants with the traits of many agricultural species for cultivation.

Research in the field of **cell biology and structural bioinformatics** focuses on the investigation of cytoskeletal proteins as new biotechnological approaches for the improvement of plant resistance to biotic and abiotic stresses. Plant mutants have been created and the genes of microtubule proteins (tubulin) responsible for the resistance to herbicides and fungicides have been isolated and used for the production of cell lines resistant to these substances. The Institute identifies new microtubule proteins and cytoskeletal features of plant origin. A biological approach for the creation of a three-dimensional model of plant tubulin has been developed. These models are used for identifying the interaction of antimicrotubular compounds with different biological activities (antiprotozoan & anthelmintic, herbicides, fungicides) for chemical designing new drugs.

The Institute specializes in the **saturation of the products of plant genetic engineering**. Vertical gene flow from transgenic plants to their wild relatives has been studied (rapeseed, sugarbeet and flax), and methods for the detection and measurement of genetically modified components in seeds, feed and food have been developed.

ICBGE research groups also focus on **plant biophysics and radiobiology**, including the role of molecular recognition in the processes of cell repair, investigation of molecular processes induced by chronic irradiation, methods of phyto-microbial decontamination of radionuclides from study of protective signal systems of plants, and the investigation of structural and functional organization of the cell wall of higher fungi to develop new sorption materials for medicine and industry.

To further R&D and commercialization efforts, the Institute has created one of world's largest banks of plant germplasm from world flora. This bank is recognized as a National Scientific Dignity of Ukraine. It includes about 5000 specimens in the seed bank and 2000 cell lines in the in vitro bank.

Opportunities for commercialization and collaborative production:

- Creation of transgenic plants with traits of interest based on agrobacterium-mediated and biolistic genetic transformation
- New gene marker systems for the selection of transgenic plant cell lines;
- Recombinant pharmacological protein production via transient expression in plant systems;
- Chemical design and screening of new antimicrotubule substances with herbicide or fungicide activity;
- PCR based techniques of qualitative and quantitative detection of genetically modified components in plant raw material and food products;
- Technologies for phytoremediation of ecosystems from radionuclides and
- Sorbents of heavy metals and radionuclides using cell wall components of higher fungi.

The Institute welcomes collaborative efforts with Western industry in the above-mentioned areas.

Aseptically grown explants and callus lines of different plant species from the gene plant bank of world flora

Plant regeneration from energetically perspicuous Arabidopsis explants

molecule of alpha-tubulin with docked trifluralin molecule (green – atoms and residues of binding site, yellow – amino acid residues involved in tubulin dimer formation

Contact Information

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