

Technology Transfer and Commercialization in Russia

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History and Trends of Technology Transfer in Russia

- ❖ *Set up and Development of Science and Technology Parks;*
- ❖ *Foundation for Assistance To Small Innovative Enterprises;*
- ❖ *Union of Innovation Technology Centers;*
- ❖ *Set up of Special Economy Zones (for High Technology).*

Set up and Development of Science and Technology Parks

Major Milestones

Date	Event/Action
1989	1-st Seminar for Technoparks and Incubators
1990	Association “Technopark”
1990-1991	10 University – related Technoparks set-up
1993-1996	International Training Projects of Association “Technopark” (Fund “Know-How”, TACIS-BISTRO etc)
1997-present	Development of infrastructure, Technology Projects, Law Initiatives

Today's Achievements

- ❖ **Innovative Environment in Significant Number of Universities – 20 – 25% Universities Encourage Innovations;**
- ❖ **12 University Technoparks grew as Efficient Infrastructures;**
- ❖ **On the Base of University-Related Technoparks It has been developed Innovation Technology Centers that now is an Independent Sector of Innovative Business Support.**

Best Technoparks Major Parameters

<u>Parameter</u>	<u>Size</u>
Occupied Land	0,21 – 3,2 ha
Facilities	4,0 – 60,0 sq.m.
Job Created	360 – 2 700
Cumulative Sales	18 – 180 mln.\$
Number of Tenants	6 – 55 Average - 12

Foundation for Assistance To Small Innovative Enterprises

Foundation Goals:

- ❖ **Small Innovative Enterprises
Development;**
- ❖ **Competition Encouragement Through
Finance Support of Efficient High-Tech
Projects**

Foundation Major Milestones:

Date	Event/Action
1994	<i>Foundation Established by the Decree of Russian Government</i>
1994 – present	<i>Encouragement (Support) of Innovative Companies, (after Start-up phase)</i>
2004 – present	<i>“START” Program – Support of Start-up Companies</i>
2005 – present	<i>“PUSK/TEMP” Program – cooperation between Innovative Companies and Universities</i>
2006 – present	<i>“UMNIK” Program – Encouragement of Young Researchers to involve them in to Technology Transfer</i>

Today's Foundation Priorities

- ❖ *Scale-up Foundation Programs;*
- ❖ *Support of Innovative Companies Sell Product Abroad (Export – Oriented);*
- ❖ *Innovation Cycle Infrastructure Development.*

Union of Innovation Technology Centers

Goals:

- ❖ **System of Support to Small Innovative Enterprises;**
- ❖ **Increasing of Innovative Business Efficiency.**

Set-up at 2000. Participants – Innovation Technology Centers and Foundation for Assistance To Small Innovative Enterprises

Major Results of Union of Innovation Technology Centers (ITC) (present)

<u>Parameter</u>	<u>Total</u>	<u>Average for ITC</u>
Number of ITC	30	
Tenants	962	32
Job Created	17 820	594

Small Innovative Enterprises Scope by Infrastructure Support (Technoparks and ITC)

- ❖ **By Number of Companies** - < 4%
- ❖ **By Sales** - < 15%
- ❖ **By Job Created** - < 10%

Special Economy Zones (for High Technology)

- **Moscow – Zelenograd**
- **Sant-Petersburg**
- **Moscow Region – Dubna**
- **Siberia – Novosibirsk**

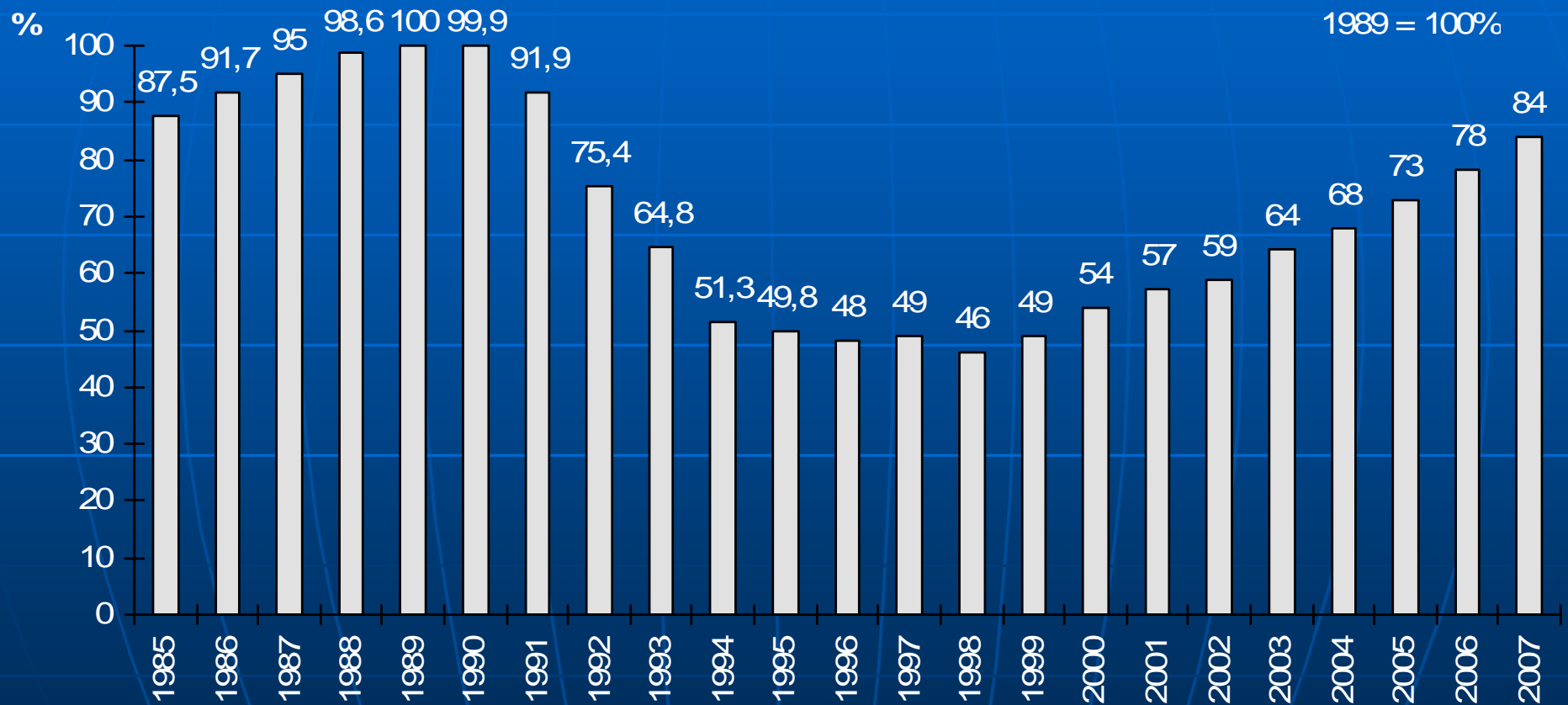
- Just Beginning

Major Issues of Technology Transfer in Russia

- ❖ *Macroeconomics Variables;*
- ❖ *Fiscal and Tax Policy to
Encouragement Innovations;*
- ❖ *Intellectual Property Challenges;*
- ❖ *Science (Universities and Research
Centers) and Innovative Companies
Collaboration.*

Macroeconomic Variables

Gross Domestic Product



Source: Government Statistics

Investment Major Sector in Russian Federation

- *Development, Retailing, Transport, Telecommunications – 90%;*

The rest of

- *Equipment and Technology Manufacturing – < 10%;*
- *No Long Loans (Low Cost of Capital and Long Term of Loan – 5%, 10 years).*

*Source: A.Kudrin, Vice-Primer of Government of RF
Minister of Finance, Presidium of State Counsel RF,
April 18, 2008, Moscow Region – Dubna*

Tax Policy

<i>Tax</i>	<i>Before 2004</i>	<i>After 2004</i>
<i>Value Added Tax (VAT)</i>	<i>No VAT for R&D Contracts and Patent-licenses transactions to Research Organizations and Universities</i>	<i>Privilege only for R&D (Federal Budget and Industry Contracts)</i>
<i>Corporate Income Tax</i>	<i>Privilege (reduced Tax) for R&D Contracts</i> <i>Privilege (no Tax) for the equipment for R&D</i>	<i>No Privilege</i>
<i>Enterprise Property Tax</i>	<i>No Tax for R&D Contracts to Research Institutions and Universities as well as Enterprises, with R&D budget more than 70% of total income</i>	<i>Privilege only for State Research Centers with Special Status</i>
<i>Tax to ground</i>	<i>Privilege for State Research Institutes and State Universities</i>	<i>No Privilege</i>

Legislative Environment for Intellectual Property and Technology Commercialization

- ❖ *Uncertainty (great number) of Definitions in Intellectual Property Conceptual Vocabulary*
- ❖ *Imperfection of Legislative Base for Innovation, the Rights to Apply Intellectual Property*
- ❖ *Imperfection of Government Policy to Encourage (stimulate) Technology Commercialization*
- ❖ *Prohibition for State Universities to Set-Up (spin-off) Innovative Companies*

Barriers of Cooperation between Science (Universities and Research Centers) and

Innovative Companies

Universities on Research Centers

- ❖ *Less Focus and Understanding of Innovations for University-Traditional Focus on Education and Research;*
- ❖ *Imperfection of Intellectual Property Mechanisms for Creation, Protection and Application;*
- ❖ *Obsolete Equipment for Research & Technology Development ;*
- ❖ *Human Capital (Age, Low motivation to Commercialize Technology.*

Small Innovative Companies

- ❖ *Restricted Resources and Access to Them (support from Government, Loans, Human Resources)*
- ❖ *R&D and Product Development GAP (R&D – proof of concept – manufacturing)*
- ❖ *Low Interest To Universities Research and It's Involvement*

New Product Development Steps

Comprehensive Product Development Process (Advanced countries):



Non-Comprehensive Product Development Process (Russia):



**1 – Idea; 2 – Idea Evolution; 3 – Pre Marketing Research;
4 – Technology Analysis; 5 – Market Research; 6 – Business
Analysis (SWOT); 7 – Product Development; 8 – a- test;
9 – b - test; 10 – First Sales; 11 – Small manufacturing; 12 – Final
Business Plan; 13 – large manufacturing; 14 – market entering**

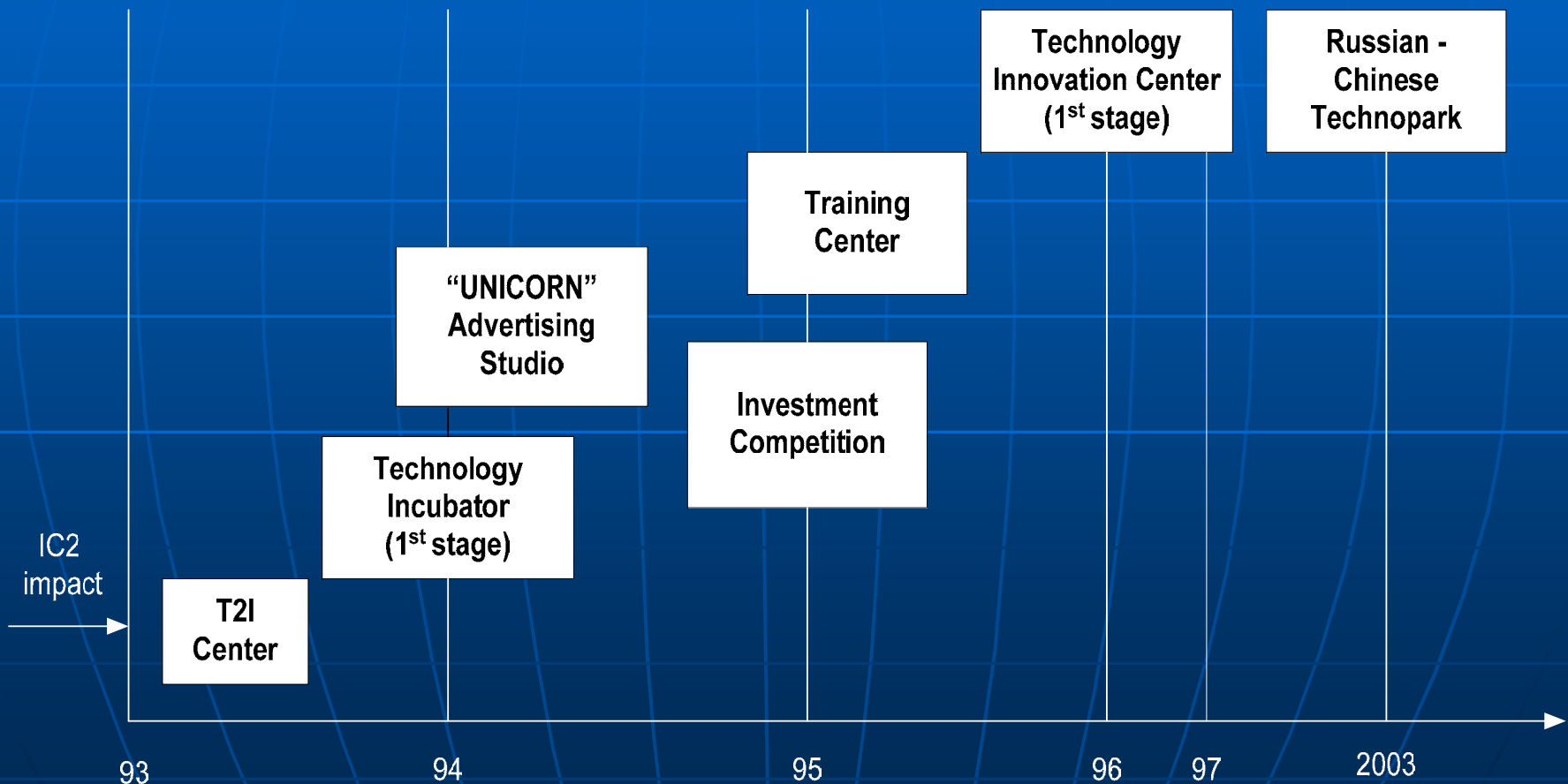
Major Difficulties for Company Growth (“very important” + “important” factors)

Factor	Author study, 1997.	Studies of other researchers, 2004-2008.
1. Cost of capital and term of loan	> 60%	> 30%
2. Personal skill	> 55%	> 12%
3. Search for finance sources, lack of the own money	> 80%	> 50%
4. Investments to manufacturing	> 50%	> 25%
5. High cost of innovation development to market	> 50%	> 50%

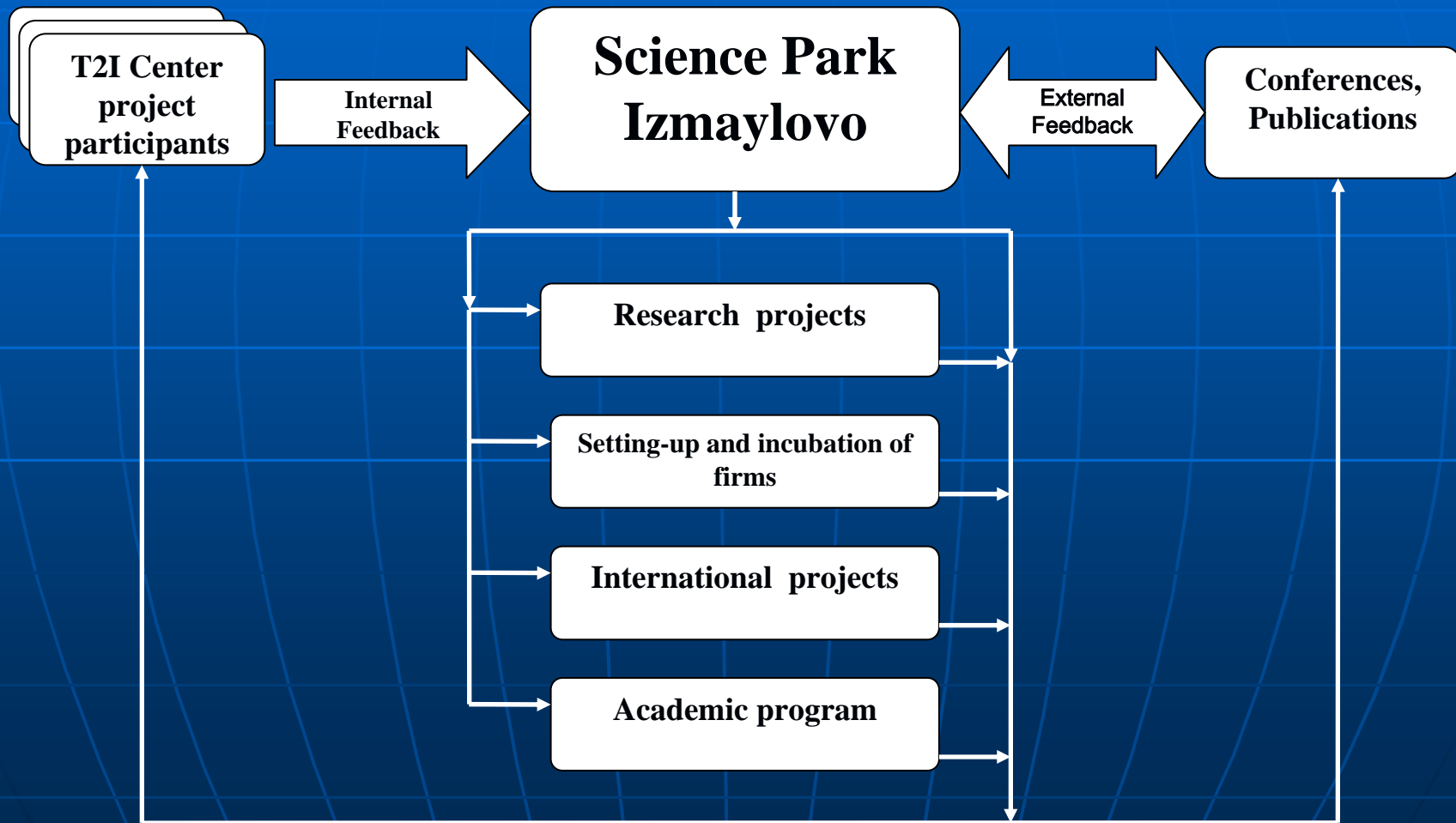
Technology Transfer Modeling (The Case of MPEI Science Park)

- ❖ *Infrastructure Development;*
- ❖ *Companies Growth Encouragement and Nurturing;*
- ❖ *Cooperation Encouragement between Companies (business) and Universities (Academia);*
- ❖ *Significant Projects of Technology Transfer.*

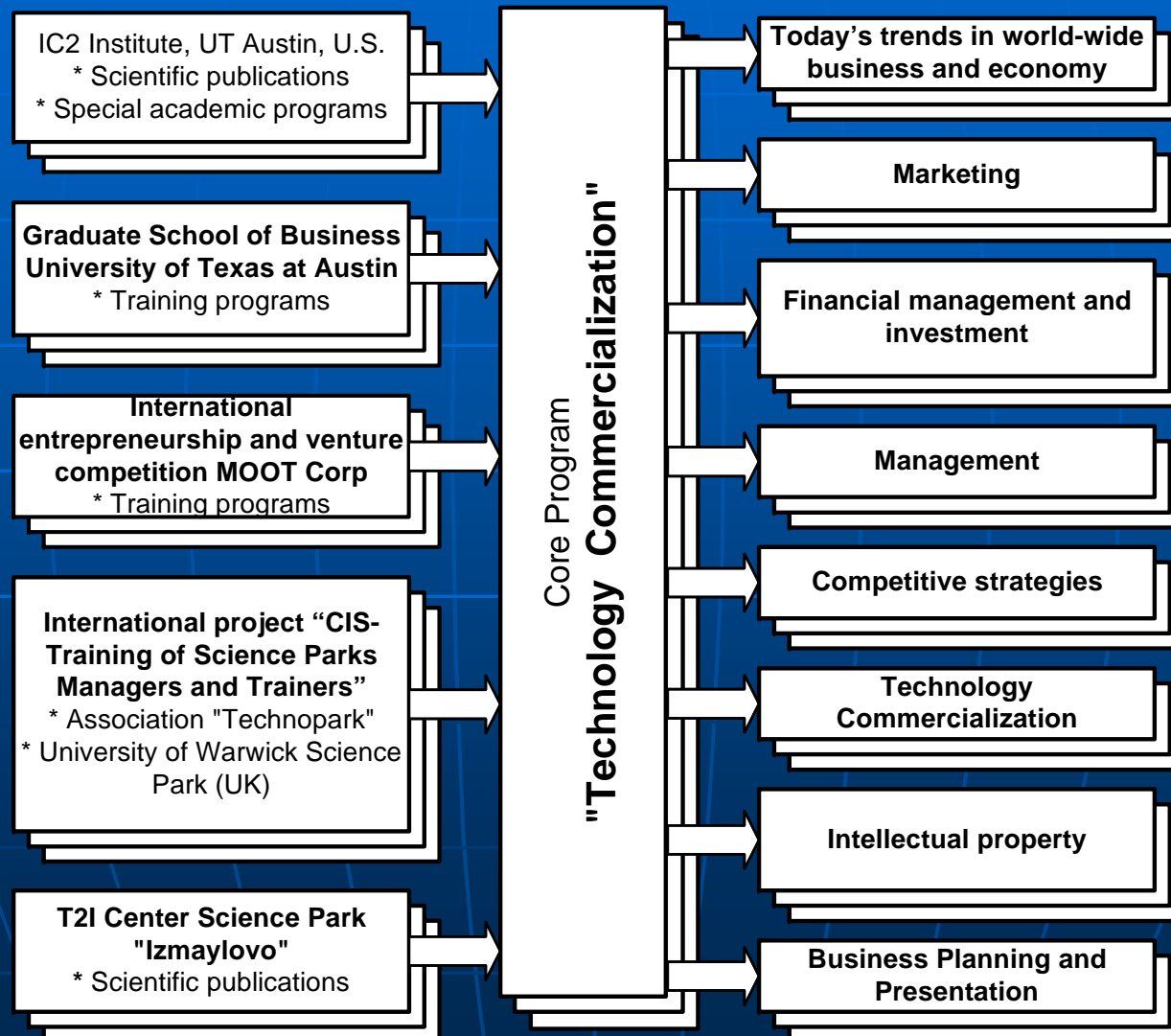
Science Park MPEI “Izmaylovo” Development



T²I Project Coordination



Sources and Modules of Core Technology Commercialization Program



Russian – Chinese Technopark “Druzba” (Initiative of Russian and Chinese Governments)

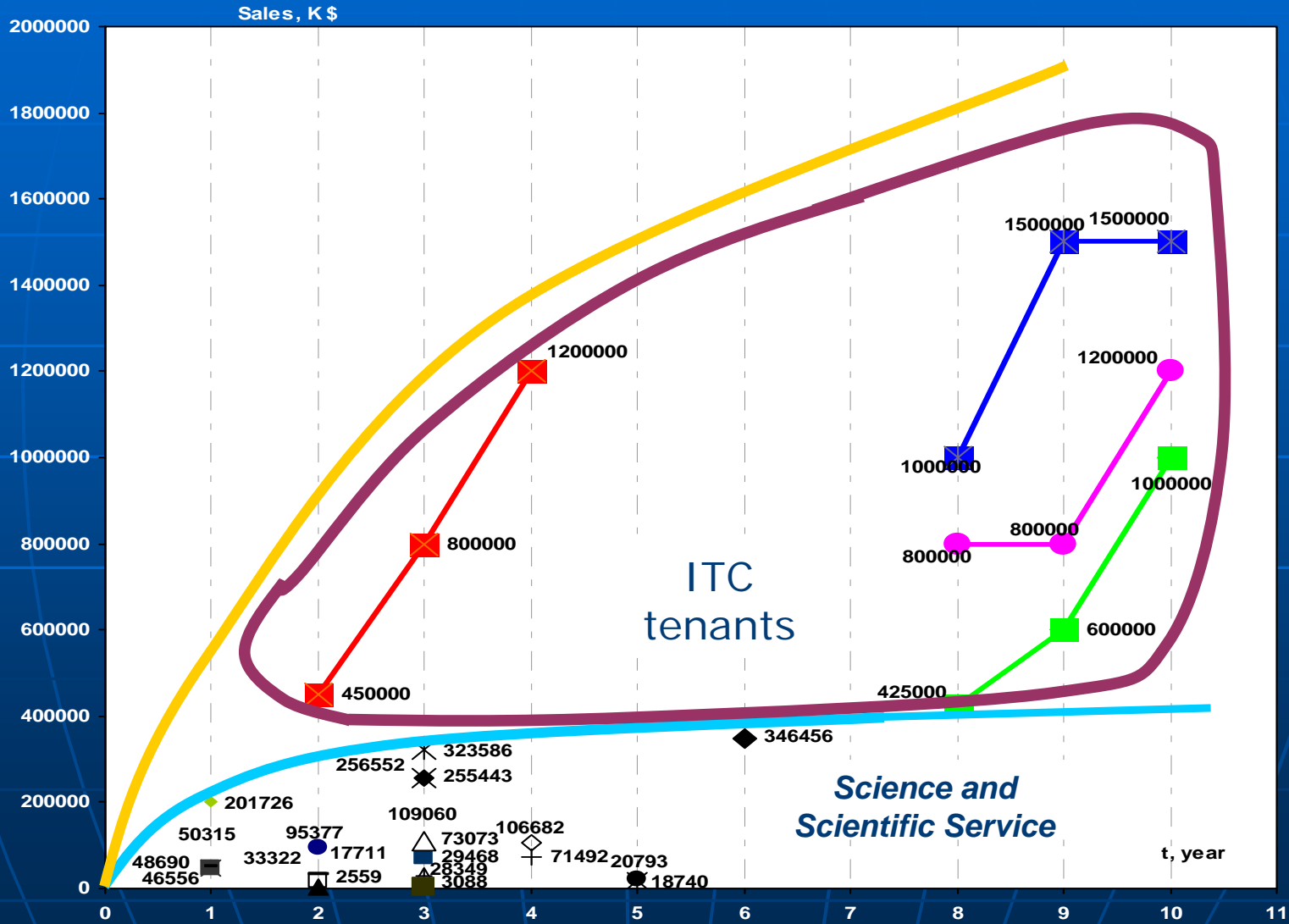
Major Goals:

- ❖ Assistance to Science and Technology Collaboration Growth and Efficiency of;
- ❖ Science and Technology Exchange;
- ❖ Information Platform for Cooperation;
- ❖ Joint Projects, Joint Ventures to R&D Commercialization.

RESULTS

- ❖ *Marketing and Information System (Partnership Matching, Interactive Collaboration, Videoconference);*
- ❖ *Date Base and Matching services (R&D – Product, Joint Venture): 600 concepts, 120 Chinese Partners, 300 negotiations, 48 Agreements;*
- ❖ *17 International Fairs;*
- ❖ *Agreement for Education Platform;*
- ❖ *4 Large R&D Projects (> 1 M \$) on the Base of Joint Priorities.*

Companies Growth Nurturing



Program of Cooperation between Innovative Companies and University Departments

Areas of Cooperation

- ❖ Part time and full-time job for Students and Faculty to work for Companies;
- ❖ Training in Innovations and Technology Commercialization;
- ❖ R & D for the Companies;
- ❖ Special Projects of Cooperation.

Annual Results

- ❖ **180-220 University Faculty work for the Companies;**
- ❖ **20-25 Graduates from University join Companies;**
- ❖ **20-30 Company Personal and Graduates join Training Program;**
- ❖ **8 Stipends for Students and Ph.D. Students at MPEI;**
- ❖ **1 Research Grant for the Faculty;**
- ❖ **3 University Labs use Equipment (products) of the Technoparks Tenants;**
- ❖ **Total Finance Support for the University 1,4 – 1,6 mln.\$/year (9-12% of Total Sales).**

Companies that have been created as the Result of Technology Transfer

Energy Saving and Energy Efficiency

- *“Intechenergo M” – Energy audit;*
- *IVK «SAYANY» - Energy Resources Measurement Devices;*
- *NPP CYCLE+ COMPANY - electronic converters for an electric drive of different types;*
- *“EscoTech” – Project Design Equipment Assembling and adjusting of Energy Resources Supply;*
- *“InTesco”– Service, Billing, Repairing of Equipment.*

RESULTS

- ❖ *Two new Innovative Companies have been Incubated (153 jobs);*
- ❖ *Involved to Cooperation – 9 Companies;*
- ❖ *17 Energy Efficient Zones Developed in Moscow, that include 900 building, 35 000 inhabitants;*
- ❖ *Energy Resources Supply is Adjusted at 214 organizations;*
- ❖ *Russian Government PRIZE in Science and Technology awarded in 2008 (Energy and Energy Saving).*

Major Challenges of Russia for Innovation

Overcoming Consequences of the World Finance Crisis, and Then:

- ❖ *Increasing R & D Budget up to 2.5% of GDP by 2015 and Involve non Federal Budget (Business Community money) up to 70% of Total R & D Budget;*
- ❖ *Increase significantly number of Innovative Enterprises (Today is less than 3 – 9% of Total);*
- ❖ *Reforming and Upgrading R & D Institutions towards Innovation Economy;*
- ❖ *Energy Business (Oil and Gas) is so Attractive, that not Encourage to Focus on other Industries;*
- ❖ *Desire Trend to Coordinate and Take Control Grows Faster than Number of Innovative Enterprises.*

Government of Russia Policy for Innovation Evaluation (by International Experts)

- 2005. Joint Project of the Ministry of Education and Science (Russia) and Federal Ministry of Economics and Labor (Germany)
Approval of the Strategy of Russia in Science and Innovations up to 2010, need Improvement.
- 2006 OECD
Huge Potential, but it is Necessary Restructuring of R&D Sector for Successful Science and Technology Commercialization.
- 2006 World Bank
Government looks positive to new (innovation) Economy, but Results of Efforts Contradictive.
Shift from Oil and Gas to Knowledge Economy not Happens .

Policy Evaluation by Author (last 10 years)

- ❖ *Innovative Sector of Economy was Developing, However did not Grew as Visible or Dominant;*
- ❖ *Understanding of new Economy, Based on Knowledge Grew up, but Government Efforts to Focus on it and to Develop were not Enough;*
- ❖ *Major Challenges of Innovative Economy Still Have not Solved (Infrastructure, Laws, Stimulation, Major Challenges of Innovative Companies Growth).*

WHAT TO DO ?

(Education)

- ❖ *Moving from Traditional Model of Education (Teacher to Students) to the Model “Learn to Learn” (Teach To Learn) and the System of Continuous Education through all Carrier Path.*
- ❖ *Protect The Best from the “Soviet” and Russian Education System and Adopt the Best from the West and Asia.*

(Science and Research)

- ❖ *Focus on R & D Priorities, Crucial for Russia and the World;*
- ❖ *Clarify Intellectual Property Laws and Procedures for Efficient Science and Technology Commercialization.*

Innovations

- ❖ *Building Alliance between Innovative Business and Universities;*
- ❖ *Shift from Developed Elements to The Integral National Innovation System.*

Thank YOU!