



Development of engineering entrepreneurship in National Research Tomsk Polytechnic University

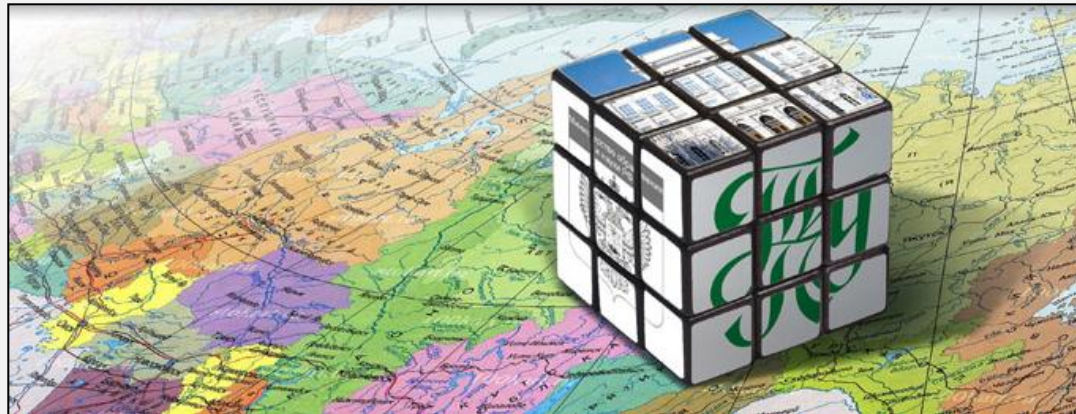
Director of IEE TPU
Stepan V. Khachin

“Development of Centers for Entrepreneurship
and Innovation in Universities” Conference.
Moscow, 21-22 February 2012

TPU today

Students and faculty staff

22 309	Students
678	Postgraduate students
53	Doctor's Degree Seekers
2 136	faculty including:
1 068	Doctors of Science
220	Professors



TPU today

Degree programs

28	Bachelor Degree Programs
95	Qualified Specialists
112	Master Degree Programs
75	Postgraduates
22	Doctors

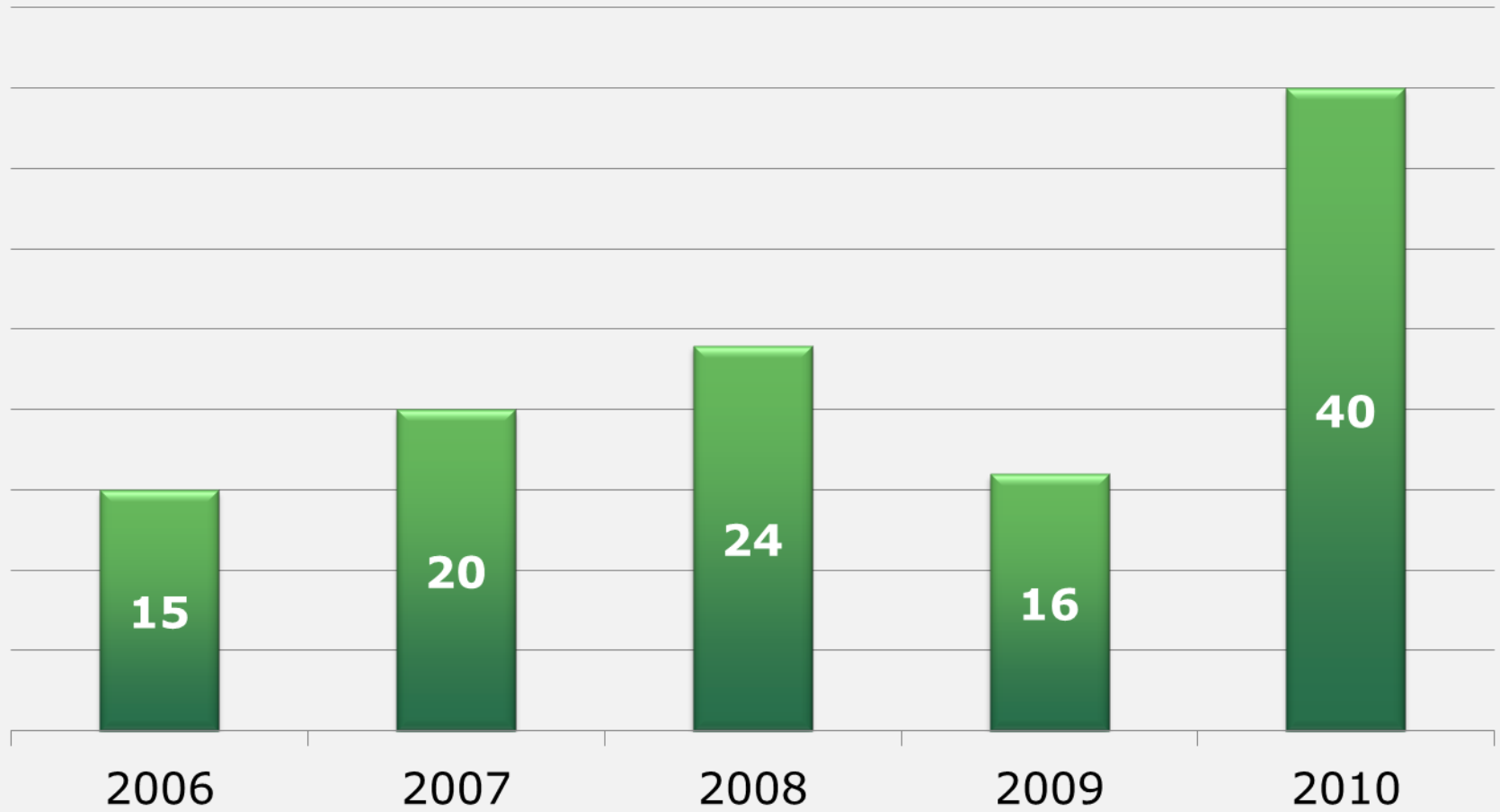


TPU Priority research fields

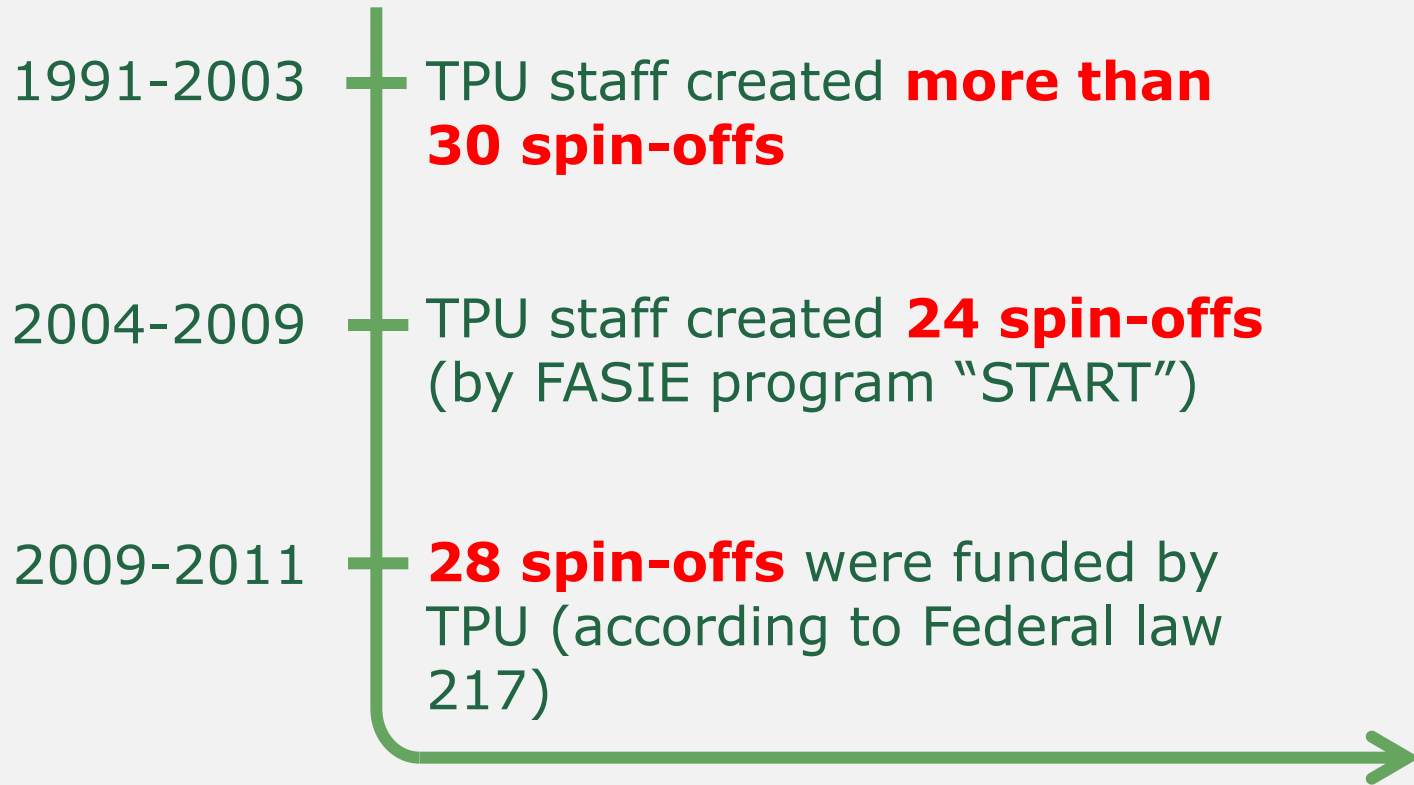
- Rational Management and Advanced Processing of Natural Resources
- Conventional and Nuclear Power Engineering, Alternative Technologies of Energy Generation
- Nanotechnologies and Plasma-Beam Technologies of Materials Generation with Defined Properties
- Intelligent Information-Telecommunication Monitoring and Control Systems
- Non-destructive Testing and Diagnostics in Manufacturing and Social Sectors



TPU R&D, mil \$



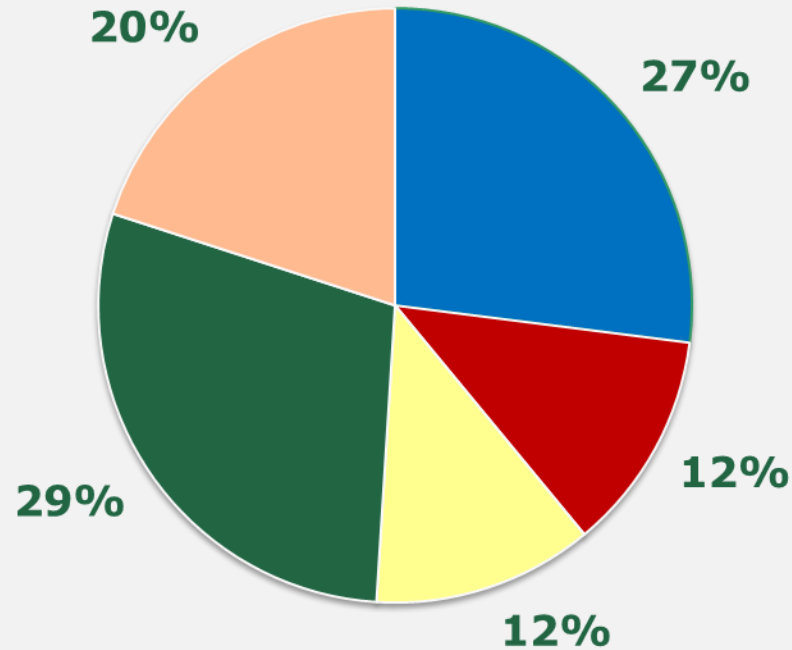
TPU Innovation belt



Today TPU Innovation belt consists of more than **70** companies
The whole turnover of spin-off companies* amounts 40 mln.
rubles. These companies provide 86 workplaces.

*according to Federal law 217

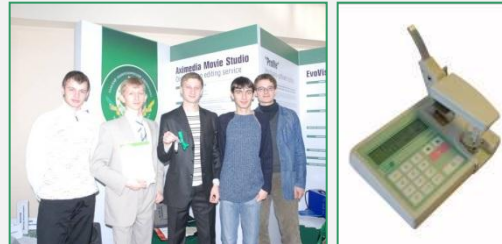
TPU Innovation belt



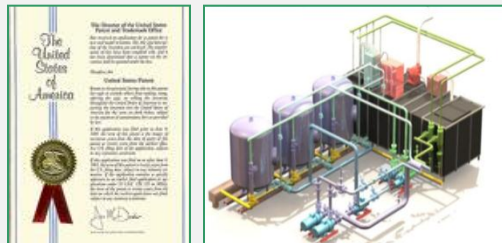
- Rational Management of Natural Resources
- Power Engineering
- Nanotechnologies and Plasma-Beam Technologies
- Non-destructive Testing and Diagnostics
- IT

TPU Innovation infrastructure

Department
of Innovation
and Production
Activities



Technology
Transfer
Center



Drawing
and designing
department

Student's
Technological
Business
Incubator

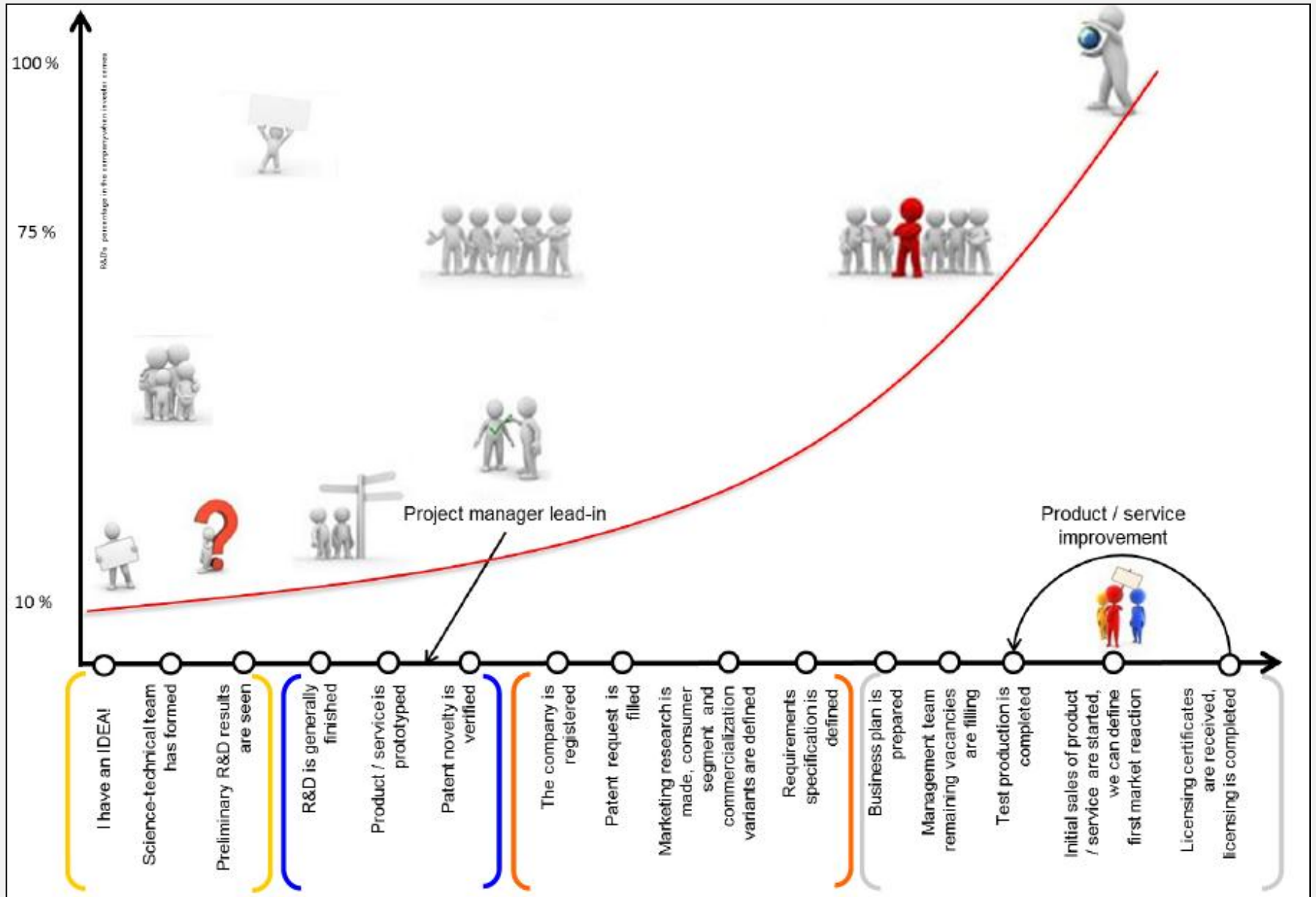
Tasks of TPU Innovation infrastructure

Infrastructure was created in 2010 but it doesn't activate the broad process of commercialization

Challenges:

- Staff shortage (serial engineering entrepreneurs)
- The shortage of seed-funding
- Informational channels between departments, which are responsible for commercialization, operate not correctly

TPU Innovation Escalator



Development of engineering entrepreneur

Attraction

37 annual events

Education

Leveled system of education

The system of getting practice skills

Real projects

Formation and support of entrepreneurship teams

Table of events for involving students in entrepreneurial and innovation activities

Target group		Attraction		Support	
		Competition	Workshops/ Trainings	Programs/Communities	Consulting/ Mentoring
School leavers		Competition of inventor solving problems for Tomsk school leavers form		School "Upiter" (young entrepreneur and innovator), school «Teaching firm»	
Entrepreneurs	Students	Coordination of all-Russian competition "Young Russian Entrepreneur" in Tomsk Region since 2011	Business travel of students to "Seliger", "TIM – Birusa", "ATR", Tomsk business camp	Coordination of RosMolodezh program of «You are Entrepreneur»	Polygon of Engineering Entrepreneurship IEE TPU
		TPU{10K} competition	Workshops with RPA NEPA	Regional program of engaging youth in entrepreneurship with Department of entrepreneurship and real-sector economy development of Tomsk Region. Project NMP, field «Innovation» With Department of youth policy, PE and sport of Tomsk Region	SIFE TPU Students team
			School «Entrepreneurship Challenge»	Coordination of SIFE program "Students in free enterprise"	TPU Students Center of Entrepreneurship
			Open meetings with practicing businessmen		Community of mentor-entrepreneurs
	Employees		Workshops with RPA NEPA		
Inventors	Students	TPU competition for problem solving by TRIZ technology	Business travel of students to "Seliger", "TIM – Birusa", "Interra", Tomsk business camp	Coordination of RosMolodezh "Zvorikin's project" by IEE since 2009	Elite Engineering Education
		TRIZ competition with MA TRIZ (among TPU, MEPHI, Bauman MSTU, MSU)	Workshops with MA TRIZ		Community of intellectual and technical art of students
		TPU{10K} competition	Open meetings with practicing implementators		TPU Community of business angels
	Employees		Workshops with MA TRIZ		

Educational and Motivation programs of department

The Concept of Educational program about "Engineering Entrepreneurship" is created in TPU. It consists of following educational programs:

- Long-term
- Short-term "informational"
(for all university students)
- Short-term "blaze"
- Short-term "level up"
- Support

There are 15 programs. (today 13 is developed)

The Concept of Educational program “Engineering Entrepreneurship”

Target group	Long-term	Short-term			Support
		“Informational”	“Blaze”	“Level up”	
School leavers	Bachelor’s program 220600 «Innovation»	Short-term management, finance, TRIZ courses	Training programmes: School “Upiter” (young entrepreneur and innovator), school «Teaching firm»		
Students, creates or have their own business		“Engineering entrepreneurship” 72 hours	Educational and motivated program «Entrepreneurship Challenge» 24 hours	Short-term program of training managers for Enterprises of the National Economy of the Russian Federation	
Students, Participate in innovation and entrepreneurial teams (STBI, EEE)			Elective course in curriculum of “Elite Engineering Education” “Engineering entrepreneurship” 72 hours		“Engineering entrepreneurship” 500 hours for STBI
Students of engineering fields (PWD1-5)	Master’s programs: “Entrepreneurship in innovation business”, “Innovation management” with FTE RPANEPА	“Engineering entrepreneurship” 72 hours. Course is evaluated on INR students. Need to add in curriculum. Systematic realization.			
TPU employees, interested in management and entrepreneurship	MBA programmes	Семинары по Commercialization, marketing, quality management workshops (RPANEPА, MA TRIZ)		Program of training managers for Enterprises of the National Economy of the Russian Federation	
TPU employees & students, Interested in inventions		Short-term TRIZ and ASA courses 24 hours		TRIZ Workshops (MA TRIZ)	

Educational program “Engineering Entrepreneurship”

- consists of 10 Modulus
- based on TPU Innovation Escalator (from Idea to Mass production)
- Practicing businessmen as lecturers
- Cross-science teams
- real projects (from private business, TPU STBI, SEZ JSC residents)

What should we do

- Create “Transparent system of project support” where the input of any departments is obvious (for successful creation of innovative eco-system in TPU)
- Create “Entrepreneurial culture”, encourage risk!
- Create “Motivation field” (comfortable for “growing” innovation projects)



Thank you for your attention

Director of IEE TPU
Stepan V. Khachin