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# Best Practice Report

## Technology Park of St. Petersburg State Electrotechnical University *"LETI"*

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| Final approval | Name | Partner |
|---|---|---|
| Reviewer | | |
| | | |

## 1. Best Practice Title

Technology Park of St. Petersburg State Electrotechnical University "LETI" (**TPEU**)

## 2. Location of Best Practice

*Country, region, town*

Russia, St. Petersburg

## 3. Best Practice Executive Summary

*Describe briefly (max 10 lines) the GP context (partnership, funding, objectives, approach followed, results)*

TPEU was created in 1991. The purpose of the Technology Park is to create conditions favorable first of all for the organization, development and activity of small innovation structures (small firms), secondly for the accelerated industrial development of scientific research and design works, inventions and discoveries made by scientists, teachers, postgraduates and students of LETI, and at last for creation of competitive technologies, products and services and bringing them to consumers on a commercial basis.

## 4. Best Practice Classification

Best Practice Theme

□ *Research Transformed to Innovative Product*
□ *Research Transformed to Innovative Service*
□ *Research Transformed to Innovative Methodology*
□ *Research Transformed to Innovative Production Process*
☑ *Financial Mechanism for Transformation of Research to Innovation*
☑ *Support Mechanism for Transformation of Research to Innovation*
□ *Other (describe)*

Best Practice Research / Application Areas

☑ *Industrial / Manufacturing Systems*
- ☑ *Industrial Informatics and Communications*
- ☑ *Intelligent Devices*
- □ *Distributed Control Systems*
- ☑ *Flexible Manufacturing Systems*

☑ *Embedded Systems*
- ☑ *Industrial Embedded Systems*
- □ *Nomadic Environments*
- □ *Private Spaces*
- ☑ *Public Infrastructures*

## 5. Description of Best Practice

### 5.1 Best Practice Context

*Overall background of the Best Practice. Location, socio-economic, technical & policy background of the BP (max 10 lines)*

In the early 90's in the countries of the former Soviet Union searching and implementation of new methods and tools for promoting scientific development in the new market conditions began. One of the most successful projects in this area was the creation of TPEU.

The main stages of development TPEU in the context of a general policy of the former USSR

**1. 1988 - 1992 Generation of Technopark**

- formation of zones of small enterprises and scientific-technical co-operatives at the universities;
- emergence of organizational and economic prerequisites for creation of industrial parks;
- development of the first industrial parks;

- beginning of state support for innovation through industry research and technical programs.

**2. 1993 - 1997 - intensive development of industrial park**

- establishment of innovation infrastructure;
- integrated project support;
- expansion of international contacts;
- a new level of communication capabilities, the creation of mass media, databases;
- training of a skilled team of managers.

**3. 1998 - 2001 - Crisis, "testing the strength"**

- crisis in consumer demand for scientific and technical products;
- reducing the budgetary financing;
- search for new forms of innovation, strengthening ties with strategic partners;
- reducing the number of small businesses within the industrial park;
- formation a unified educational, research and innovation complex of the university.

4. 2002 - 2011 - systematic development of industrial park

- integration of scientific and educational activities;
- strategic partnership;
- implementation of youth innovation policy;
- profound study of questions of normative and methodological support;
- international cooperation.

Currently, the distribution of resources of TPEU according to the directions of innovation has the following form


FORGROUND LINES OF TPEU ACTIVITY:

involvement in the process of creating and disseminating scientific and technological products of scientific staff of high qualification;

creation of new jobs for the scientific and engineering personnel in the field of knowledge-intensive business;

transfer of technology from the university sector of science in the industrial sector;

raising funds for the development of innovation;

promotion of international scientific cooperation and technology transfer in the internal and external markets;

development of innovation infrastructure of the University;
creation of a unified information support system of for all participants of innovation;
education and training of entrepreneurs in the field of economics, management and marketing;
formation of territorial innovation system, focused on the effective use of scientific and technological potential of the region.
TPEU Activity Sphere:
Technology and life support systems and protection of a person in extreme conditions;
Transfer technology, facilities and equipment;
Increasing of innovative activity in the sphere of science and technology;
Innovation of higher education and the introduction of intellectual property into economic circulation;
State support of integration of higher education and fundamental science for 1997-2000;
Advanced Information Technologies;
Informational support of Russia;
Development of Education in Russia;
High-temperature superconductivity.

### 5.1.1 Policy Elements

*What are the policy initiatives that have influenced the contextual environment of BP: innovation promotion policies, research funding policies, certification ect as well as relevant tools (max 10 lines)*

In accordance with the main directions of development of scientific and innovation activities of the Russian Federation the task of the transition to innovation-oriented basic and exploratory research has been set. This means that it is needed to plan the results of basic research with a view to their further use in applied research and development stages.
Federal Agency for Science and Innovation (FASI) began to establish technology transfer centers (TTCs) under the Federal Program "Research and development on priority directions of scientific-technological complex of Russia for 2007 - 2021 years." Since 2006 a network technology transfer centers of higher education were founded on the initiative of the Federal Agency for Science and Innovation in Russia to support the creation and commercialization of high technology products.
In accordance with the development strategy TPRU "LETI" for 2006-2010 the development of the University's fundamental and applied science should be considered as a basis for the creation of a competitive engineering and technology. To solve the problem of competitive engineering and technology it was needed to create a Center for Commercialization and Technology Transfer (TSKTT) within the structure of the university.

### 5.1.2 Socio-economic & Other factors

*Other contextual factors such as customer / target market addressed, international validity, customer density, economic conditions, customer values, research area addressed (max 10 lines)*

Russia's techno parks have their own niche in the innovation sector of the country, they create an environment to support innovative entrepreneurship and provide a good level of functioning. They have established strong relationships with partners, authorities and government, founders and foundations to support small innovative enterprises, they also have staff specially trained in the field of innovative entrepreneurship, commercialization and technology transfer, and they are involved in solving of socio-economic problems of regions.

Russian university technology parks are creating new jobs for those who wish to develop their innovative business in the techno park. Thus, the TPEU has a number of employees - 360 persons.

The volume of manufactured products and services offered to the public by small companies of TPEU is 0.45 billion rubles.

University technology parks - is a catalyst for the formation of innovation zones around the universities. They help the universities to create small innovative firms as both by the teachers and graduates as well as by the students of the universities, allowed by federal law.

That technology parks should ensure finding the best way for fast transfer of new scientific knowledge,

intellectual property rights in the country's economy in the region.

## 5.2 Objectives

*Aim of the project, specific objectives & strategies to achieve these objectives (max 10 lines)*

TPEU created to enhance the implementation and commercialization of research and innovation activities of the university at all stages of the innovation cycle.
Specific objectives:
• logistics and support of small innovative companies that are members of the “Association of Technopark PEU";
• Ensuring the effective development of cooperation between the university and SMEs;
• Implementation of innovative youth policies of the University to develop students’, graduate students’ and young scientists’ innovative entrepreneurship;
• Creating new work places;
• Promoting innovation infrastructure of the University;
• Ensure the cooperation between Russian and foreign innovation centers and Technoparks

## 6. Process

*Describe the project including key concepts and the overall approach followed. Indicate project end users, target market, main project phases, problems encountered and solutions, problem resolution (max 10 lines)*

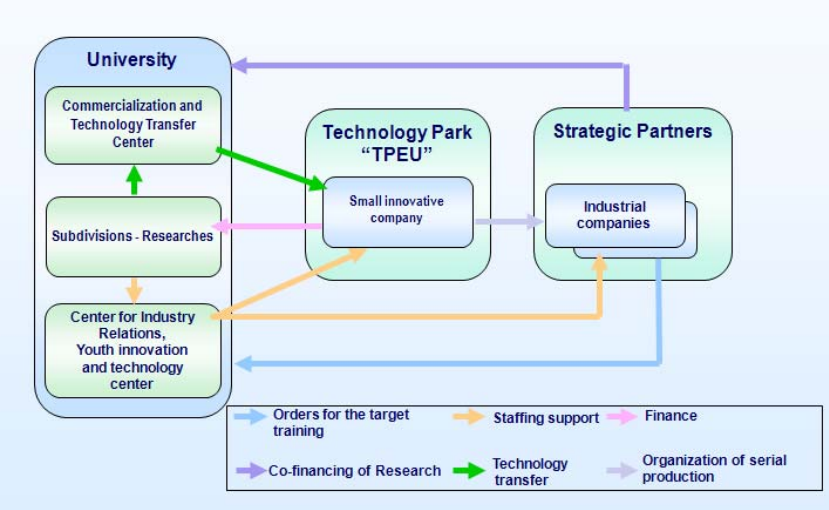
Feature of the scheme of interaction between TPEU and technology park is to include a small business industrial park in the chain of cooperation between the university and big companies - strategic partners of the university. During the implementation of these interactions university receives orders for research while the enterprise gets the intellectual property and skilled staff for implementation and maintenance of the projects.

An important condition is mandatory personnel support of the process of technology transfer, including training and joint task training of a new technology.

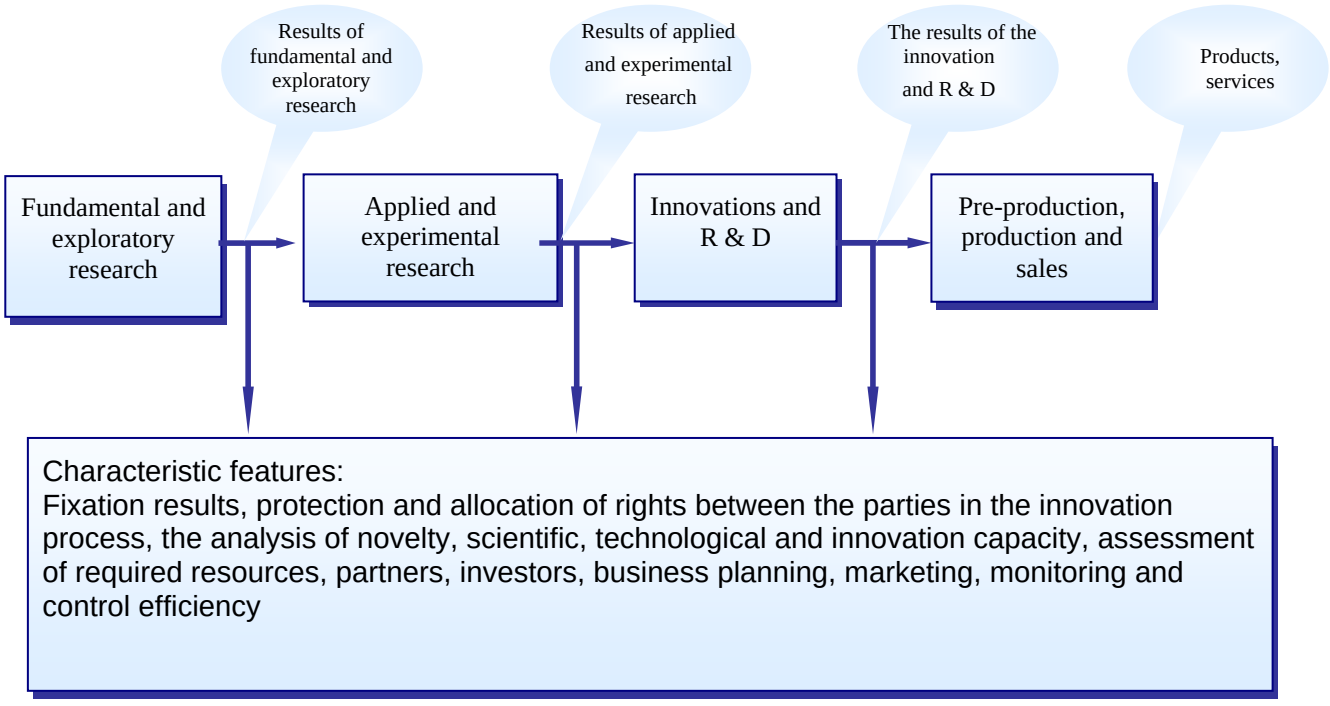
During the commercialization process different actors of innovation process are being involved: higher education, small businesses and large manufacturing companies.

At different phases of the innovation cycle different sources of investment are involved. These investments are assigned to the realization of individual stages of the innovation process and to the development of the individual elements of the innovation cluster: High school - SE - Manufacturing Company.

The results of university research are transferred to small businesses to bring development to the prototype or small series as well as for the marketing researches. Created a small business prototype or technology then transferred to the big industry company for the implementation and commercialization.




Key stages of management of R & D are described in the scheme below. The figure highlights the main processes, results and described the characteristic features.




## 6.1 Project Design

*Project design based on targeted market complete understanding, project structure, policies and procedures, management and implementation actions (max 10 lines)*

TPEU provides a range of services for the universities' research teams on the creation and promotion of a competitive scientific and technological products, including innovative consulting during the preparation and implementation stages of innovative projects (preparation of business plan, assessing of the competitive advantages and risks, marketing strategy development), TPEU is organizing and conducting competitions for innovative projects.

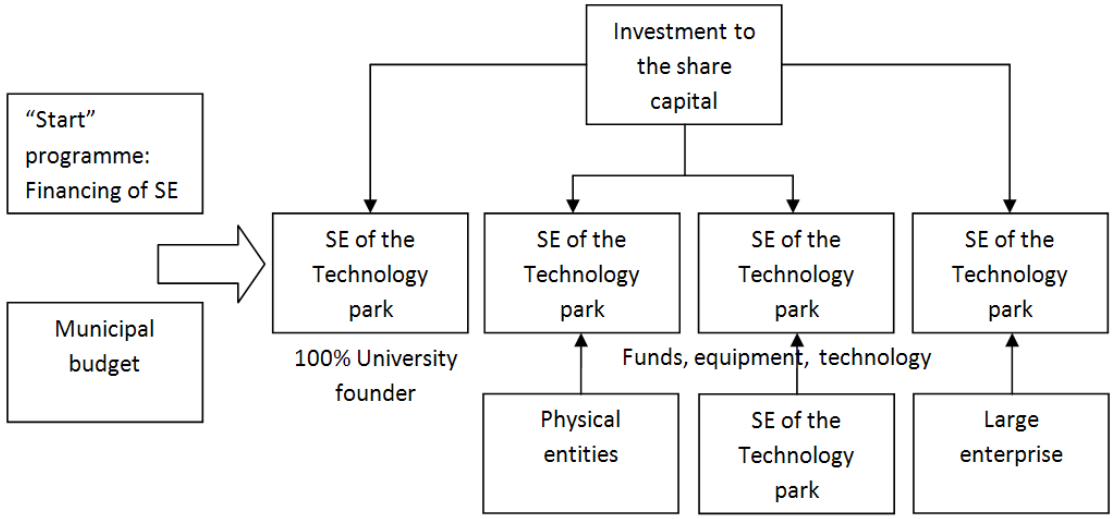
Testing of the model and mechanisms of creation and development of TPEU was performed in the course of university scientific, technical and teaching projects within the government and international contracts.

Mechanisms of Industrial park:
International Projects

- "Promoting entrepreneurship and transfer of technology in higher education system of the Republic of Moldova in September 2003 - October 2005, TEMPUS-TACIS JEP-23194-2002, «PROMETHEUS»
- "The system of business support for Higher Education: Central Asian pilot model" January 2006 - August 2007, UM_JEP-25085-2004, «SEASCAPE»
- "Promotion of technology transfer and entrepreneurship in Ukrainian Universities" September 2007 - February 2009 UM_JEP-27199-2006 (RU, UA), «PROTECT»
- "Improvement of intellectual property management in the EU and BRIC countries to develop ties of higher education, business and transfer of technology to promote economic and technological cooperation,"November 2008 - November 2010, 145553-EM-1-2008-1-ES-ERA, MUNDUS-EM4EA
- "On the way to research and entrepreneurial university model to the Russian, Ukrainian and Moldavian Higher Education" January 2009 - January 2012, 144,855 - TEMPUS2008 - DE - JPHES, «MERCURY»

One of the main stages of the TPEU activity (implementation) is creation of the new Innovative Start-up Enterprises (SMEs) in the framework of the innovative process of the techno park.

Here is the structure of the process of creation of such Innovative Start-up Enterprise.




## 6.2 Project Management

*Activities relevant to project coordination and management, project documentation and reporting, quality control, validation and verification (max 10 lines)*

TPEU's activities are carried out in the frames of the available material and technical resources through budgetary allocations, budgetary funds received from the commercialization of scientific and technical products, as well as trust funds transferred to TPEU by the organizations, institutions and individuals.

The current work is being done as well as by the staff members of TPEU and by involved experts;

To carry out some individual projects TPEU can create temporary creative, scientific and technical teams (groups).

## 6.3 Project Implementation

*Main elements associated with the project implementation. Realization of new idea, or new technological*

*realization or improvement / novelty to known technology and means to achieve this. Innovation associated with the project realization in terms of new products, services, methodologies. Marketing, advertising and customer service. (max 10 lines)*

This structure is quite effective for countries with transitional economy (Russia, Ukraine and other post-Soviet countries)

For example, for the BP during the years of functioning of the TPEU the following companies were established and effectively operate

1. Ltd. Laboratory of X-ray Systems

Activities:

- research
- **research and development engineering**
- small-scale production of x-ray radiographic equipment for industrial and medical diagnostics

2. Ltd. “LETINTEH”

Activities:

- research, development and production of information support for immunobiotechnology.

3. Ltd. “INERTEH”

Activities:

• experimental development

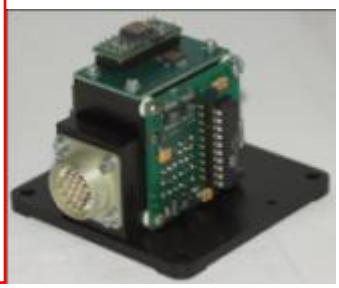
- small-scale production of measuring systems (automated high-precision angle measurement tools, test benches, inertial navigation systems and complexes)

Contribution ETU - Intellectual Property:

• Russian patent for utility model number 68134 on 11/10/2007.

Contributions made by other shareholders:

• funds

4. "Resonance-M” Ltd.

Activities:

- experimental development
- small-scale production of magnetic resonance equipment for scientific research, monitoring technology, and biomedical applications

Contribution ETU - Intellectual Property:

• Russian patent for utility model number 92961 “The device for stabilization of the magnetic field”, the priority 24.11.2009,

Contributions made by other shareholders:

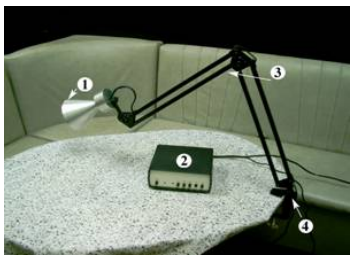
• funds

5. JSC "TRANSFER"

Major Developments:

- Medical and therapeutic portable apparatus "IR-Dipole".
- Installation for terahertz and far infrared therapy “Infrateratron”.
- Journal “Innovations”.



6. JSC "Spin"
Major Developments:
- Miniature spectrometers of electron spin resonance (ESR).
- Contactless magnetically sensitive sensors of mechanical and electrical parameters.

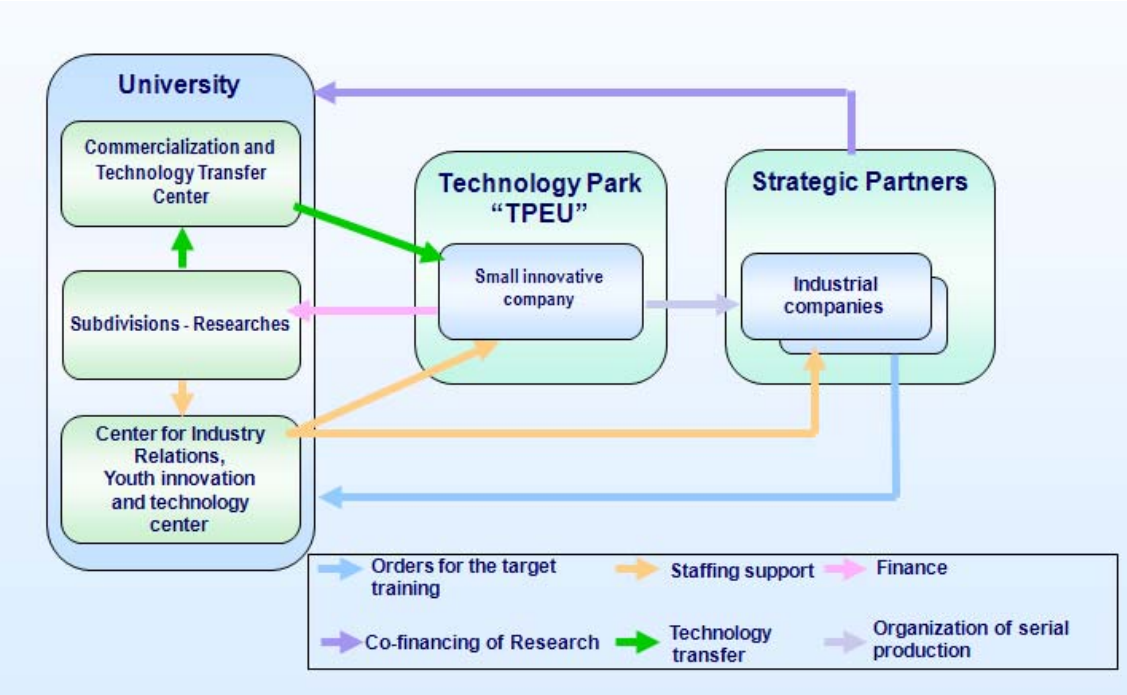

7. CJSC “Elteh-Med”
Major Developments:
- X-ray panoramic dental unit intra-oral type PARDUS-01.
- Microfocus X-ray apparatus "PARDUS-100.
- Sighting and panoramic dental device “PARDUS-02”

All of the above mentioned companies were created as a start-up R & D firms. They have a different legal status (LLC, JSC, JSC, etc.) but due to their activities, they are certainly innovative.

## 6.4 Project Evaluation

*Project feedback mechanisms and evaluation mechanisms. (max 10 lines)*

Project feedback mechanisms and evaluation mechanisms are presented in the figure shown below. The effectiveness of this model, feedback and evaluation is confirmed by more than 15 years of positive experience in industrial park.



It should be noted that all the processes of interaction, as reflected in the scheme are regulated by the relevant documents developed by TPEU. (see Section 11.), which ensures their replicability and high quality dissemination of this BP.

## 7. Description of Research team/Institution

*Short description of R&D team and institution (max. 10 lines)*

At present the TPEU includes:

- 45 small firms working in the field of knowledge-intensive business and innovative business support;
- Scientific and Production Centre (SPC) which carries out functions of business incubators;
- Innovative Technology Centre (ITC);

TPEU includes the following structures of innovative business support:

- Regional office of the SME promotion Fund in the scientific field – “Innovations of Leningrad Institutes and Enterprises” (funding) the North-West Branch of the centre which promotes scientific and technological entrepreneurship in universities (coordination, information network in the region, companies database, products, services, technology);
- North-West Scientific and Methodological Centre (development of regulations and procedures);
- The Regional Centre of scientific and technical examination (examination of scientific and technological projects);
- JSC "Transfer" (transfer of technology, the publication of the journal "Innovations");

Fund of innovative programs support "Transfer-Launch” (facilitating the implementation of innovative projects).

A list of the most active small business members of the association Industrial park “LETI”

| | | |
|---|---|---|
| 1. CJSC “ILIP” | 10. Ltd. "Kepstrum" | 19. ELN "Infocom” |
| 2. JSC “Transfer” | 11. CJSC “EVP” | 20. Ltd. “Metromedia” |
| 3. JSC “SIC EGS” | 12. Ltd. “ART DPA” | 21. Ltd. “Labterminal” |
| 4. JSC “Spin” | 13. CJSC NPO ”Perseus” | 22. Ltd. “Systems Analysis” |
| 5. CJSC “Elteh-Med” | 14. Ltd. “Interm” | 23. Ltd. “Dipole Structures” |
| 6. JSC “Desmo” | 15. CJSC "SPC EM” | 24. Ltd. “LETINTEH” |
| 7. JSC “Desmo” | 16. JSC “SIC SPbETU” | 25. Ltd. “Laboratory of RDS”" |
| 8. CJSC NPP “IT IS” | 17. Ltd. “Toksikon” | |
| 9. JSC “TSTM” | 18. Ltd. “Echo Marine | |

## 8. Applied Financial Mechanism

*Describe financial mechanisms applied in transformation of research into innovation within BP, as well as means of connecting scientific research team and financiers (max. 1000 char.)*

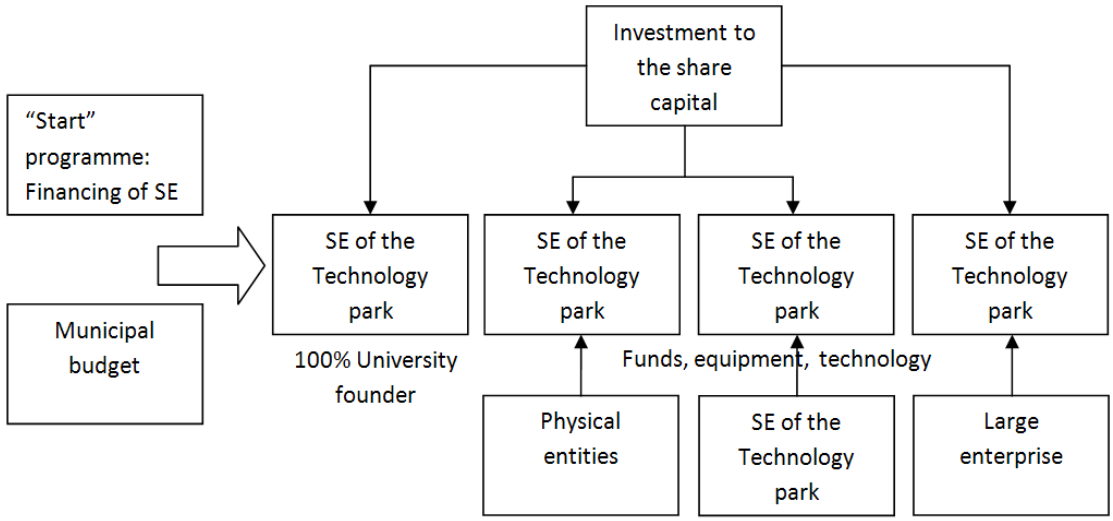
TPEU attracts financial investors' funds, international grants, customers for innovative products and technologies and also it is partially financed by state funds allocated for targeted federal programs of RF.

**Federal target programs:**

State support of integration of higher education and fundamental science for 1997-2000;
Advanced Information Technologies;
Informational support of Russia;
Development of Russian education;

High-temperature superconductivity.

Funding scheme at different stages of the innovation process is given below:




## 9. Impact and benefits

*Describe achieved benefits of R&D team and/or enterprise implemented innovation, as well as impacts on institutional and policy levels. (max. 1000 char.)*

TPEU benefits for investors and developers is the ability to attract a university and to make use of its capacity for innovation.

Another advantage of TPEU is the availability of advanced network structure and coordination of several Universities in the region during the formation of development teams.

## 10. Sustainability

*Provide information on sustainability of innovation after financial aid within implemented financial mechanisms, and some multiplier effects as replication and extension of the action performed in BP. Expected use of Best Practice and lifecycle considerations. (max. 1000 char.)*

The sustainability of the GP is provided by state financial support and a broad partnership with Russian and foreign organizations.

TPEU actively cooperates with many foreign companies:

joint works are carried out on ecological monitoring and environmental monitoring with companies and technology parks in Finland, Germany, China;

in the sphere of innovation with companies that specialize in promoting new technologies: SITRANS (Finland), "Baltic Shipping GmbH" (Germany), "Pina GmbH" (Germany), C. Barnett and Associates "(England) and others;

in the sphere of training works with the leading academic centres: Centre of Training and Development LUT (Finland), DAR (Germany).

TPEU coordinates the development of innovative activity in the region with the Ministry of General and Professional Education of Russian Federation and State Committee on Science and Technology RF, with the Committee of Economy and Industrial Policy of St. Petersburg Administration.

Also stability is ensured by the following factors:

The growth of quantitative indicators

- The number of MPs, including the establishment of the university
- Volume of products sold
- Number of jobs

Development and improvement of infrastructure

- Creation of University Business Incubator
- Development of the Youth Innovation Centre

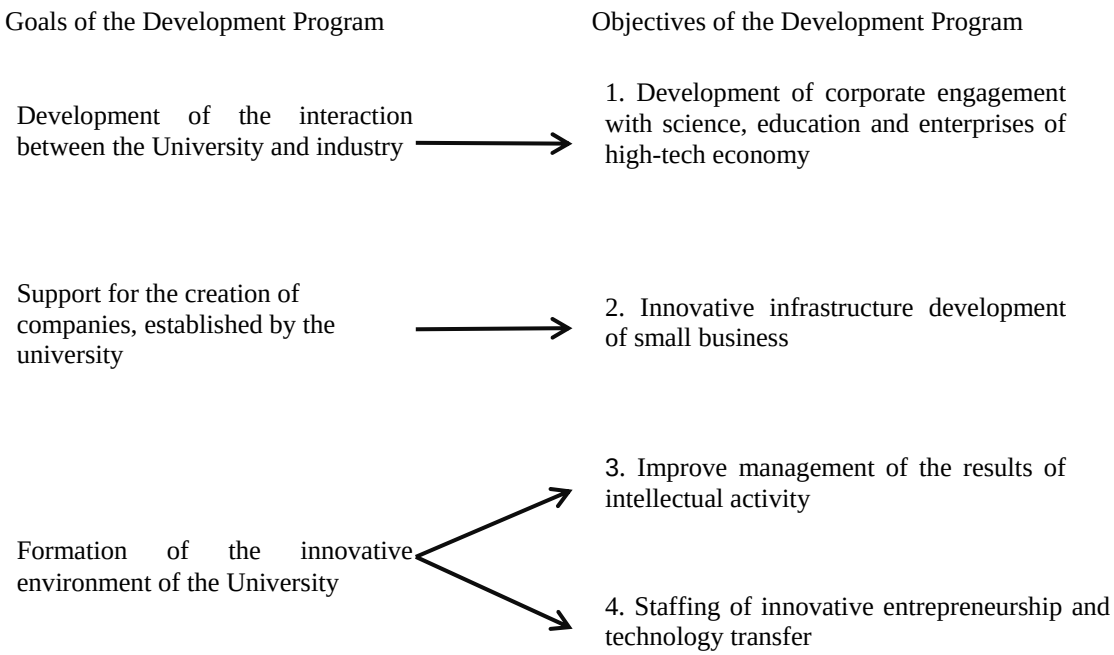
Staffing

- An additional training on the basics of entrepreneurship
- Development of educational programs in entrepreneurship

- Organization of competitions of innovative projects
  Development of youth innovation activity
- Provision of resources of the MIC
- Contests of youth innovative projects
- Conducting training schools and seminars for undergraduate and postgraduate
  International cooperation
- Participation in the international networking of business support structures
- Participation in international projects to promote technological entrepreneurship (EU, BRIC, CIS)
  Methodical provision
  - Development of methodological support for the establishment of university IP
  - Participation in the teaching project on strengthening entrepreneurship in higher education

The developed program strategy TPEU has also provided stability of the BP.
It is:

- The structure of the Programme “Forming of the technology-innovative zone of the development of high-technology entrepreneurship in SPB Technical University” is shown below:




## 11. Repeatability and transferability

*Lessons learned from the project implementation team. Repeatability and transferability of the project. (max. 1000 char.)*

Repeatability and transferability of the project is ensured by a sufficiently complete package of educational materials on the structure TPEU, for its individual units, as well as clearly described and regulated procedures for interaction between different subjects of industrial park.
Indicative list of documents, manuals, regulations and internal standards is listed below.

1. Normative and methodological support of the strategic partnership in innovation (16 samples of documents and manuals).
2. Normative and methodological support of the implementation of innovative youth policies at the university (12 samples of documents and manuals).
3. Commercialization of the assessment and registration of intellectual property (8 samples of documents and manuals), etc.

In total there are 16 TPEU collections of normative and methodological materials, which are annually replenished and updated, taking into account European and world development trends.
Given approximately the same conditions and trends in the development of innovative processes in Russia and Ukraine, as well as the fact that the Russian Federation in the direction of such reforms is ahead of Ukraine in 2-3 years so BP can be successfully transferred and replicated in Ukraine.

## 12. Evaluation

*Describe reasons and evaluation criteria why the described example is a best practice. (max. 1000 char.)*

The main factors of GP attractiveness are:

- creation of a unified system of information support for all participants of innovation;
- availability of a regional fund of innovative programs support "Transfer-start";
- the development of innovation infrastructure of universities;
- involvement of scientific and technical products of university academic staff of high qualification in the process of creating and disseminating;

the possibility of selecting the best students to bring to the process of implementation of innovative products (development, marketing, introduction with the use of technology project management).

| 13. Contact of research team/institution | 14.Contact of financial mechanism facilitator |
|---|---|
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