

# Challenges and solutions: business incubators and technoparks in Russia



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## Terms and definitions

**Business Incubator** is defined as an organization created to support companies at the early stage of their development by providing the necessary space, equipment, services and assistance in establishing contacts, as well as by the creation of an ecosystem to foster entrepreneurship.

**Technopark** is defined as an organization created to provide companies with an equipped production, experiment, informational and infrastructural base.

**Resident [of a business incubator/technopark]** is defined as a legal or natural person who has successfully passed the project assessment procedure and who gets proprietary and/or consulting support from the business incubator/technopark.

**Expert council** is defined as a collegiate advisory body consisting of business and scientific experts with experience relevant to the field of specialization of the business incubator or technopark.

**Resident** is a status for companies applying qualifiers having applied, qualified and signed agreements to use the space of the incubator/technopark and its services.

## Research methodology

### The purpose of the study

In order to analyze the Russian system of business incubators and technology parks (the objects of study) and to identify the most urgent challenges and the approaches to finding solutions, RVC selected EY, which conducted an independent study of Russian business-incubators in 2010.

### Sources

- ▶ Charts and quantitative indicators are based on data obtained through an online survey conducted by EY with the leaders and representatives of incubators and technology parks in Russia.
- ▶ The problems and solutions were identified through in-depth interviews conducted by EY with representatives of incubators and technology parks in Russia.
- ▶ When using data from other sources, the text gives relevant references.

### Methodology

Our study was conducted in two stages:

- ▶ **Stage 1:** the online survey of executives and representatives of business incubators and technology parks in Russia was conducted in November 2013.
- ▶ **Stage 2:** in-depth interviews with leaders, residents, investors, business incubators and technology parks in Russia, specifically selected for more detailed analysis. Most interviews were conducted in November-December 2013.

### Limited Liability

The report on the study was put together based on the original data and information received electronically and verbally from respondents. In the course of analysis, EY specialists considered this data and information to be true and did not take any measures to independently verify their accuracy or completeness. EY is not responsible for any inaccuracy of the information provided by the aforementioned sources.

# General characteristics of the sample

## Total number of incubators and technology parks

### Business incubators

- ▶ According to several estimates, the number of business incubators currently operating in Russia differs from over 100 (according to the Higher School of Economics) to over 200 (according to the information listed on the official websites of federal districts of Russia).
- ▶ The potential respondents were drawn from a list of 110 business incubators (based on the list jointly prepared by EY and RVC, which also includes innovation infrastructure facilities that participated in the EY study conducted in 2010).
- ▶ Once the invitations and phone calls reached the respondents, the online application was completely or partially filled out by the representatives of 53 business incubators (almost 50% of the total number of potential respondents).

### Technoparks

- ▶ According to data from the HSE and NP presented in *Association of technology parks in the sphere of high technologies*, there are about 80 to 90 industrial parks in Russia – both functioning and at various stages of construction and design.
- ▶ The selection was based on a list of 35 industrial parks (based on the list jointly prepared by EY and RVC).
- ▶ The online application was completely or partially filled out by representatives of 17 industrial parks (about 50% of the total number of potential respondents).

## Geographic and socio-economic characteristics

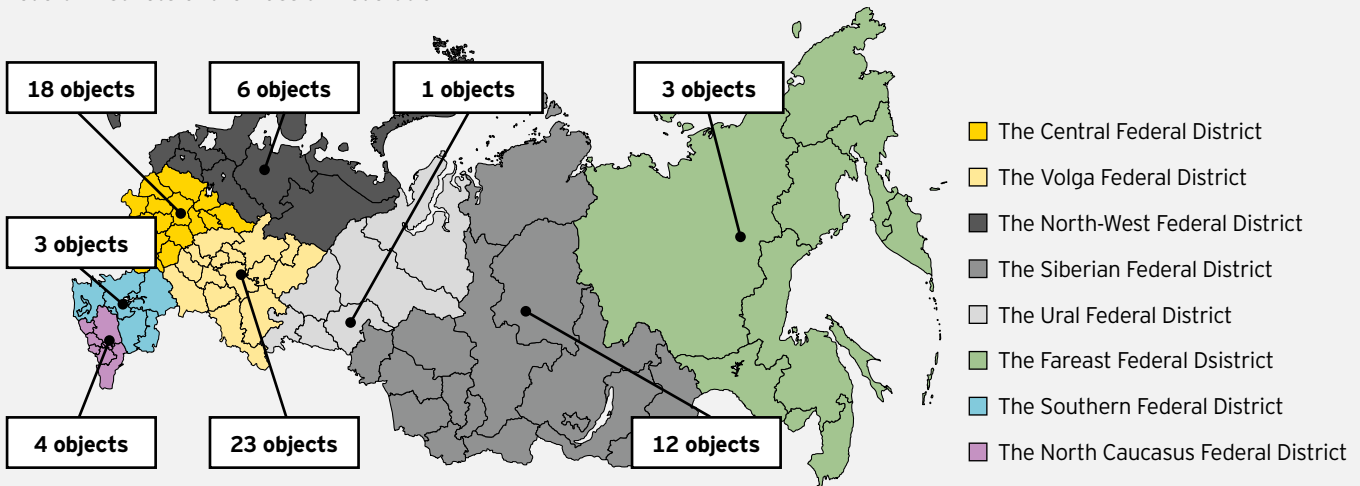
Based on the characteristics of business incubators and technology parks that provided quantitative data in the online survey and/or through in-depth interviews, the study covered:

- ▶ All the federal districts of the Russian Federation
- ▶ Most time zones and climates:
  - ▶ From St. Petersburg to Vladivostok
  - ▶ From Murmansk to Grozny
- ▶ A significant part of the various municipalities: objects of study include both cities with a population of over 12 million people and villages where the population is less than 5,000.

Furthermore, the sample includes:

- ▶ Objects of regional and municipal property; objects functioning in the structure of higher education institutions and private facilities
- ▶ Objects of different scale:
  - ▶ Industrial parks with the number of residents from 4 to 105
  - ▶ Business incubators with the number of residents from 4 to 80
- ▶ Long operating objects (over 18 years in the market), and those established in the year of the survey. The average “age” of business incubators that took part in the study was 4.5 years. The average “age” of industrial parks was 5.7 years

### Federal Districts of the Russian Federation



*RVC is a government fund of funds and is one of the key government tools for establishing a national innovation system. RVC plays an integral part in the development of the venture market in Russia. It is a kind of a coordinator of the innovation development process and a discussion platform for all members of the innovation process: the Government (in its capacity as the regulator of the modernization process in Russia and as the founder of RVC), R&D organizations (including Skolkovo), venture funds, investors, business angels, innovation start-ups and the relevant infrastructure providers. RVC is widely recognized as the trigger that set off the Russian venture market.*

*Since 2007, RVC has been facilitating the money supply within public-private partnership projects. By March 2014, the number of public-private funds formed with the aid of the RVC has reached 15 (including two funds incorporated outside Russia). The total volume of these funds is RUB25.4b.*

*RVC believes that its efforts in building the venture ecosystem have provided an outcome for the Russian economy that is no less significant than other investment vehicles. Currently, RVC considers its initial mission to be completed and is shifting its focus to non-financial vehicles crucial for VC environment, such as developing "smart money" investors and infrastructure, endorsing the innovations and supporting the global expansion of Russia's innovations industry. This change is reflected in RVC's current main objectives and mission.*

## **Initial objectives and mission**

*RVC's main objectives include the promotion of a VC industry in Russia and a substantial increase in financing available through venture funds. The company acts as a government fund of venture funds by means of which the Government creates incentives for venture investment and provides financial support to the high-tech sector in general. It also acts as a government development institution in the venture investment sector of the Russian Federation.*

*RVC's mission is to ensure the development of an effective national innovation system that will be competitive in the international market. It aims to do this through the establishment of a self-developing venture industry – in cooperation with other development institutions – by mobilizing private VC, developing innovative entrepreneurship and hi-tech business expertise, and by using Russia's human potential.*

## **New objectives and mission**

*RVC feels that it has achieved its initial goal of establishing a Russian venture market and is thus expanding its focus to include non-financial investment vehicles. RVC's new goals are: increasing volume, encouraging growth and adjusting the development lines of Russia's venture market, subject to such government priorities as greater competitiveness of Russia's innovation sector in the international market.*

*As of 2014, RVC's main objective will be to provide, on the basis of an effective public private partnership, a balanced structure of Russia's venture market, broken down by stages and industries, and its sustainable growth and globalization, subject to government priorities.*



# Results of the online survey

## Common indicators: ownership and specialization

The specialization of research objects was determined based on the data submitted by residents. Specialization in IT means that more than two-thirds of residents are involved in such activities. Specialization in high technology means that the object does not specialize in IT, whereby more than 50% of its residents work in areas such as instrumentation, nanotechnology, biotechnology, laser technology, etc. In other cases, the response given was, "Another specialization or no specialization."

Figure 1: Distribution of incubators by the form of ownership

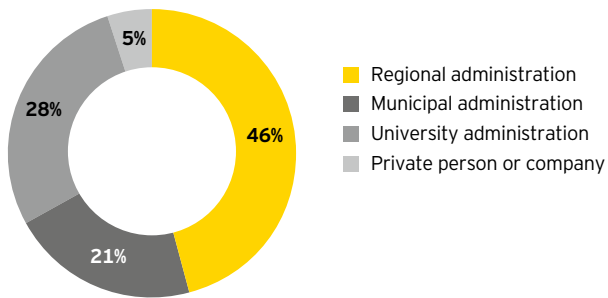


Figure 3: Distribution of technoparks by the form of ownership

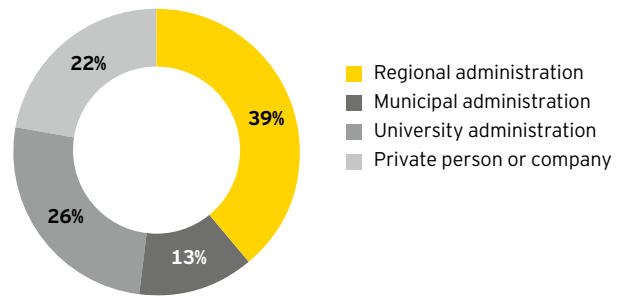


Figure 2: Distribution of incubators by the main areas of specialization

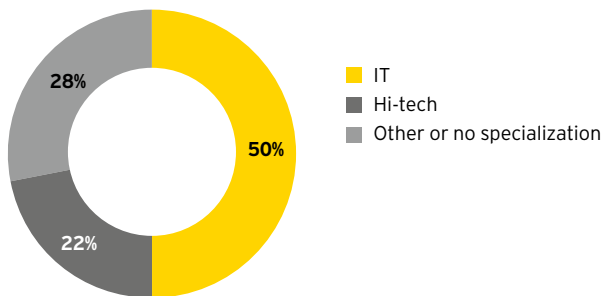
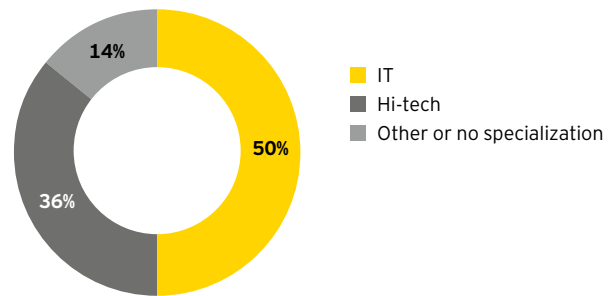


Figure 4: Distribution of technoparks by the main areas of specialization



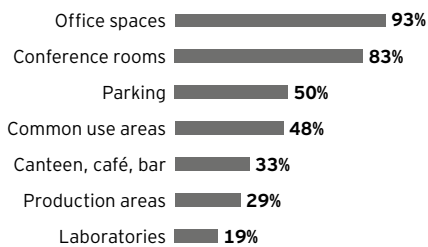
## Common indicators: floor space and rent rates in business incubators

Most business incubators provide office space and conference rooms. Generally, the office space is equipped with a basic set of furniture and equipment, the use of which is included in the rent.

Less than half of business incubators have a shared seating or public space, and only one-third of the objects have a dining area, cafe or bar. The lack of such facilities may adversely affect the ability of incubators to develop an ecosystem providing opportunities for informal communication to entrepreneurs.

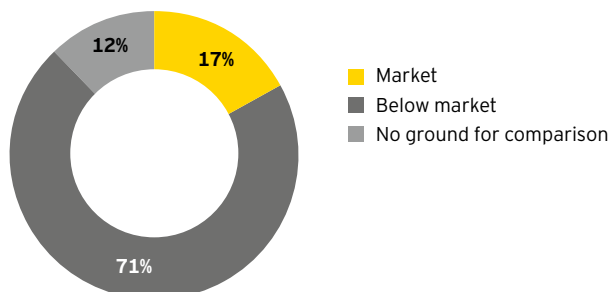
Laboratories and production facilities exist only in a small number of incubators (19% and 29% of the objects, respectively). This figure is broadly in line with the proportion of residents specializing in high-tech industries.

**Figure 5: Distribution of incubators by the premises provided**



Many business incubators provide space for rent at a rate below the market level. Nevertheless, some objects, both private and regional/local, lease the premises at market rates. The absence of rates above market value can testify to the existing legislative restrictions and the low probability that the provision of services free of charge would in any way encourage start-ups to pay rent at a higher rate.

**Figure 6: Distribution of incubators by the level of rental rates**



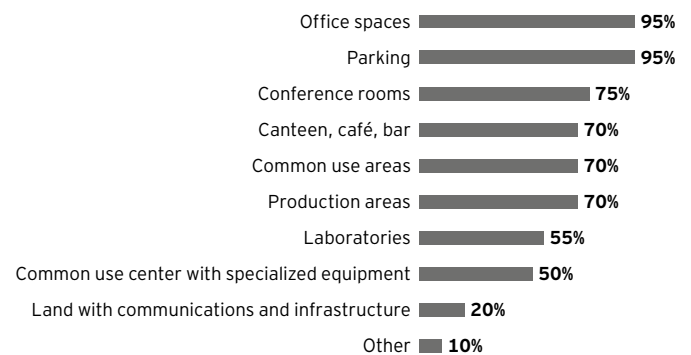
A comparison with the average market rate is not in place for incubators at universities, as the premises they provide are usually free of charge.

## Common indicators: floor space and rent rates in technoparks

Most industrial parks provide office space as well as meeting and conference rooms.

Many communities have a shared public space as well as food stands that potentially contribute to the more active engagement of residents and the development of an ecosystem in industrial parks.

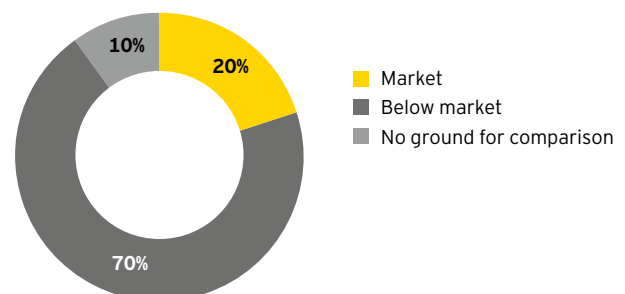
**Figure 7: Distribution of technoparks by the premises provided**



Laboratories and shared centers of excellence with specialized equipment exist in about half the industrial parks, which generally corresponds to the share of high-tech companies among residents.

Many technology parks provide space at a rate below the market value. Nevertheless, some industrial parks, both private and public, lease the premises at market rates. The absence of rates above market value may indicate legislative restrictions and high competition among technology parks and business centers that can host companies that do not require laboratories or production facilities for development.

**Figure 8: Distribution of technoparks by the level of rental rates**





## Indicators of success: resident survival

One important indicator of the success of an innovation infrastructure facility, which is used in Europe and North America, is the so-called resident survival rate. This figure reflects the number of companies received by the incubator that develop according to the plan during the period of incubation and then successfully implement the project outside the ecosystem of support.

As part of the online survey, respondents answered a question about the number, and the motives, of residents leaving each incubator over the entire period of its operation. After analyzing the responses of about 1,500 residents on the question of why companies complete program of incubation, we divided these factors into three groups:

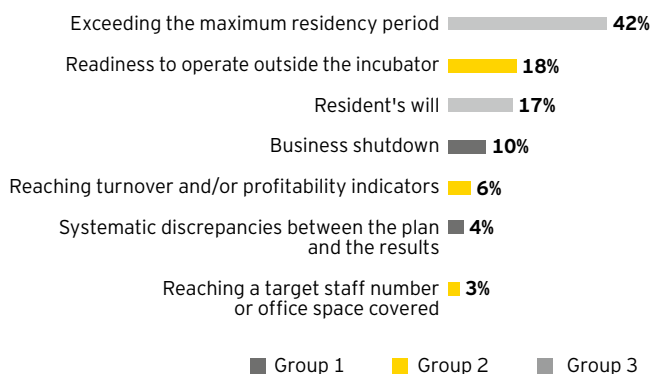
**Group 1.** For 14% of residents the stay in the incubator was completed with unsatisfactory results.

**Group 2.** Twenty-seven percent of residents completed the program successfully; these companies have achieved the necessary indicators to exit the incubator. They will likely be able to survive outside the ecosystem of support.

**Group 3.** For 59% of residents the incubation ended with uncertain results. On the one hand, these companies survived and evolved within an ecosystem of support. On the other hand, their future outside of this ecosystem is in question because they have not reached the indicators necessary to successfully leave the incubator.

The data obtained can be used as indicators of the survival of companies. In particular, it can be assumed that survival of residents within the ecosystem of support is 86% (the sum of Group 2 and Group 3), and after completion of the incubation – 27% (Group 2)<sup>1</sup>.

**Figure 9: Share of the incubators residents, that terminated the incubation period due to a corresponding reason**



<sup>1</sup> Figures given are indicative, as the share of residents that will survive after successful incubation may increase (for example, due to Group 3 companies that managed to survive after incubation program) or decline (for example, due to part of Group 2 companies that shut down their business after incubation).

## Basic comparison of resident survival

Respondents	European business innovation centers	American business incubators
86%	93%	–
Resident survival during incubation		
27%	88%	87%
Resident survival upon incubation completion		
Source: online survey, EY analysis	Source: report of the European business innovation centre network (European BIC Network), 2012	Source: National Business Association (www.nbia.org)

Based on the above figures, we can conclude that the Russian business incubators operate at the level of their Western counterparts in terms of ensuring the survival of residents within a support ecosystem. However, they are far behind in terms of residents achieving the indicators that in the future will allow the company to survive outside of this ecosystem following the incubation period.

However, the following must be considered:

- ▶ A direct comparison of the results would be misleading because the methodologies (e.g., the methodology used for surveys) and coverage are different for the studies showing the figures given above. For example, data on European business innovation centers are not presented for all the EU incubators, but rather on those that are members of the EBN network, i.e., they have successfully undergone the audit procedure with the involvement of EBN network experts.
- ▶ Russian incubators are quite heterogeneous. According to information received in the course of the survey, the best Russian incubators operate at a level comparable with Western counterparts.

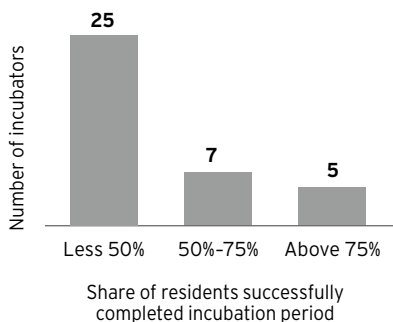
Despite these limitations, the use of these indicators as indicators of real problems helps identify some challenges for Russian business incubators and suggest solutions.

## Identifying the most successful Russian incubators in terms of survival

Based on the survey results, there are business incubators operating within the Russian system of innovation that show rates of survival on a European level.

In a sample of 37 objects in which 5 or more start-ups completed their program, 5 business incubators saw the share of successfully incubated residents amount to over 75%. This is comparable with results obtained in Europe or in the US.

**Figure 10: The most successful Russian incubators in terms of the “viability” indicator**



It should be noted that these five incubators are virtually impossible to distinguish from the other objects of study based on any external parameters:

- ▶ Among the five objects, both public incubators and incubators at universities are present.
- ▶ The facilities are located in the capital and in regional centers in different federal districts.
- ▶ The average “age” of objects is about 3 years (whereas the average “age” of all surveyed incubators is 4.5 years).
- ▶ The number of residents in facilities ranges from 8 to 80 (the range for all incubators is from 4 to 80 residents).
- ▶ The five objects include incubators of all three types of specialization identified in this study.

This raises the question of identifying the internal factors of success of these five. Certainly, there are external, exogenous factors (e.g., regional specifics) that the incubator management has no control over. However, in this study we focused on potentially solvable problems. Therefore we will address the key internal factors that, combined, can have a significant impact on the relative success of these five business incubators in terms of the survival of their residents.

## Success factors

### Strict selection of applications

One of the factors that may affect the survival of residents is the quality of companies’ initial projects, those that receive approval from the incubator’s management, allowing the companies to become residents. Quality largely depends on the competition for participating in the incubator and how carefully the selection is conducted. The strictness of selection is, among other things, characterized by including the share of those company projects that were successful in helping attain residency in the business incubator.

	Successful applications	Comment
European data	11%	An average innovation business center in 2012 converted 263 applications into 28 start-ups
Russia's most successful incubators	9%	Incubators processed a total of 1880 applications; with 178 start-ups becoming residents
The rest of Russia's incubators	37%	Incubators processed a total of 974 applications; with 363 start-ups becoming residents

Source: EIBN Report (2012), online survey data, EY analysis

Based on data provided by the objects of study, the following becomes clear:

- ▶ The five most successful objects went through almost twice as many applications as the other objects combined over the past year.
- ▶ In the most successful Russian incubators, the share of companies admitted as residents reaches the European level, while in other objects this share can be as much as four times higher.

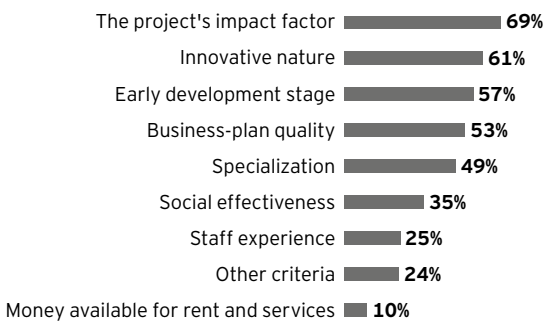
Thus, the most successful business incubators in Russia carried out a much more rigorous selection process for residents. The higher quality of residents has a positive effect on their survival, both within the incubator and upon completion.

## Relevant selection criteria

### General observations

- ▶ The quality of selected projects depends on the criteria used for their selection.
- ▶ As the results of the survey indicate, many respondents apply criteria that are either relatively blurred or not directly related to the potential success of the project, such as relevance, innovation component and the early stage of development.
- ▶ Only every second incubator draws attention to indicators such as the quality of the proposal/business plan and compliance of the nature of the start-up with the specialization of the object.
- ▶ In their selection of residents only a quarter of the objects are guided by criteria that could potentially be a more appropriate indicator of future success: in particular, the experience of the project staff and the availability of funds for payment of rent and services.

**Figure 11: Share of incubators using the corresponding criteria for admission**



## Russia's most successful incubators

Most successful objects use criteria such as employee experience or the compliance of the team with the tasks that are expected to be addressed at the initial stage of the project.

All these objects assess the quality of the business plan and/or introduce the following additional criteria for the selection of applications:

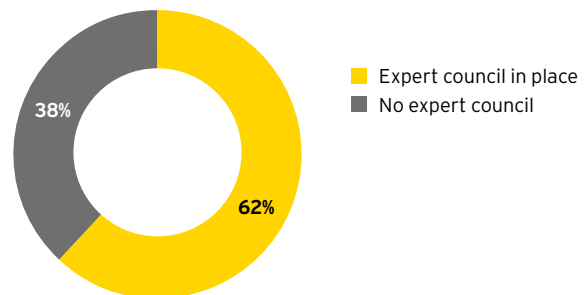
- ▶ Presence of a market
- ▶ Economic feasibility
- ▶ Feasibility of technical implementation
- ▶ Scalability
- ▶ Investment attractiveness
- ▶ Competitive advantage
- ▶ Quality of the proposed marketing strategy

## Expert council<sup>2</sup>

In the sample an average of almost 40% of business incubators have no expert council. Meanwhile:

- ▶ An expert council exists in each of the five most successful incubators (100%).
- ▶ An expert council only functions in 58% of other incubators.

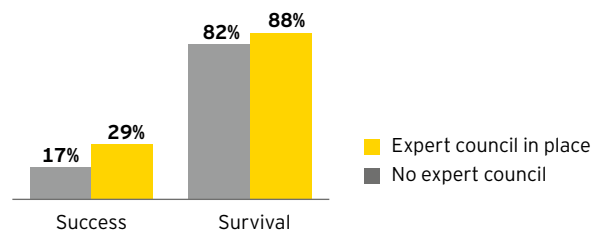
**Figure 12: Availability of the expert council in incubators**



Thus, an important factor in the success of incubators may be the presence of the expert council, whose members provide real help, for example, in the selection of start-ups and the decisions on the withdrawal of resident status or leaving the incubator.

This observation is confirmed by the analysis of the results: the companies within those objects where an expert council exists have higher survival rates both during and at the end of the incubation period.

**Figure 13: Dependence of success and expert council availability**



Based on international experience, it is necessary to further stress the importance of not only the availability of an expert council, but also its composition. In particular, the framework of the American study points to a positive effect on the results of the operation of a business incubator in the presence of an expert council composed of the following members:

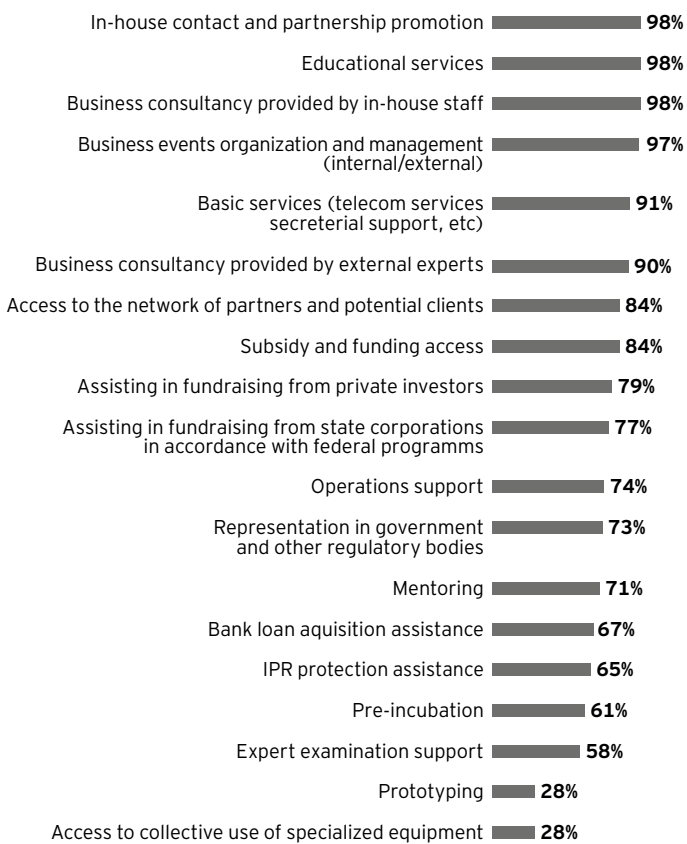
- ▶ Representative of a successful 'graduate' company of this incubator
- ▶ A specialist on technology transfer
- ▶ Experts in the field of finance, law and intellectual property
- ▶ Representatives of state bodies and economic development agencies

<sup>2</sup> *Incubating Success. Incubation best practices that lead to successful new ventures.* Lewis et al, 2011.

## List of services

The vast majority of surveyed incubators provide a wide range of services to their residents. The graph shows the services offered by the respondents, both free and paid. Regardless of the quality of services provided, the assessment of which requires a separate study, it should be noted that current resident needs can be satisfied with the existing range of services.

**Figure 14: Share of incubators, that render the corresponding services for free or on the paid basis**

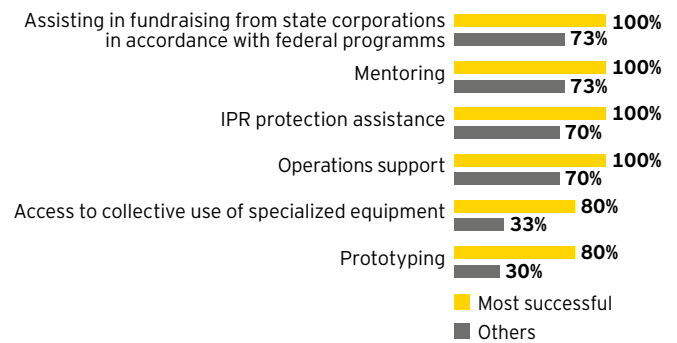


At the same time, it should be noted that Russia's most successful business incubators differ greatly from the rest based on the services they provide:

First, each of the five most successful incubators can provide its residents almost all the services from the list in Fig. 14 on its own, or assist in their provision through a network of contacts with relevant partners.

Second, Russia's most successful incubators show a significant discrepancy with the rest of them in terms of certain service availability. Figure 15 illustrates those services that all, or nearly all, of the most successful incubators have, but many of the other incubators do not provide.

**Figure 15: Services comparison: the most successful incubators and other incubators**



## Findings

Using online survey data to determine the indicative degree of success of Russian incubators in terms of improving the survival rate of start-ups allows the selection of multiple leaders and permits the following assumptions to be made about the three key internal factors that enable them to achieve good results:

- ▶ Strict selection and use of appropriate criteria therein. Assigning resident status only to companies or projects that initially demonstrate high potential.
- ▶ Functioning of the expert council and the involvement of its members in the process of solving the widest possible range of issues, including the definition of the criteria for the selection of projects as residents, holding the procedure of selection, adjustment of services provided, as well as other strategic and tactical goals. The expert council should be formed in a way that the work does not become a mere formality. The expert council is to provide real help to the management of the incubator or technopark and their residents.
- ▶ A wide range of services, including those that may be impossible or difficult to provide for the team that operates the facility (including mentoring, work with intellectual property, prototyping and other services). It is not necessary to provide these services free of charge. The most successful incubators negotiate such provisions with partners and provide the resident companies added incentive to develop rapidly.

These assumptions are put forward based on an external analysis of the data provided by the objects of study. For a more complete picture of the industry, in the next section we present views of the heads of the objects of research, their residents and investors about the most pressing current issues and challenges, as well as their possible solutions.

# Results of the in-depth interviews: pending challenges and solutions

## Education and human resources

### Respondents' opinions

**“Not all the attracted employees understand the content and principles of business processes. In addition, a business incubator can't always provide quality advice and training. We [the start-up representatives] have to train them ourselves or seek other professionals instead of focusing on our project.”**

**“The most important support for business incubators and their residents is training and mentoring from practicing professionals and experienced entrepreneurs.”**

**“Some start-ups have grown tired of going to Moscow: events are monotonous, with unclear objectives and emphases, it's hard to justify the time and money spent on them.”**

### Pending challenges

Most of the necessary educational services are provided by incubator employees, who do not have sufficient experience in business, or during occasional events with guest speakers. Experienced entrepreneurs, available to start-ups on a permanent basis – the so-called “mentors in residence” – do not exist within the ecosystem. Moreover, in most cases, external mentors work according to models that do not imply deeper involvement, constant contact with the start-ups and continuous monitoring of KPI.

Lack of technical specialists at almost all skill levels and/or their high cost reduces the incoming stream of start-ups and limits the ability of incubator residents to recruit for development.

Due to the lack of education and experience of young entrepreneurs, considerable difficulties arise in the process of collaboration with foreign partners and investors, which severely limits the ability to do business globally. For the most part, the causes are as follows:

- ▶ Poor English
- ▶ Lack of presentation skills
- ▶ Poor understanding of business principles specific to international markets
- ▶ Lack of understanding of venture capital market principles

Educational activities at the federal level that, thanks to the quality of content, could help with solving the problem of attracting more people to the technical professions are primarily held in Moscow, which limits the number of potential visitors. For example, most of the potential entrepreneurs among students and scholars of regional universities cannot come to Moscow. In addition to that, the Moscow-based events are often “too general” and do not have a clear focus or specialization. This makes the attendance questionable both for start-ups and for potential entrepreneurs.

## Respondents' opinions

**"We need to provide not only space, but advice and an effective system of interaction with internal and external experts, allowing the development of business – this is the essence of the business incubator."**

**"We need to use the cooperation with Russian and foreign universities to teach students and young professionals to analyze the market."**

**"We need to create a comprehensive educational program on the most urgent issues, to organize 'introductory courses' in business development at the stages of the project conception and the pre-incubation stage."**

**"We need to organize workshops and seminars, as well as provide advice on business issues, business development, training and mentoring from practitioners."**

## Suggested Solutions

The framework of business incubators and technoparks has to provide continuous training of personnel using existing educational programs (e. g., RVC programs), and by studying the best international and Russian practices.

Incubators develop the skills of their residents and their staff to work in the international market. They attract English-speaking professionals to conduct pitch sessions, provide opportunities for internships and traveling abroad, and cooperate with foreign universities on issues such as the analysis of international markets. To solve this systemic problem, establishing a federal level competence center is advised.

Due to the shortage of technical specialists, it is reasonable to provide private courses within incubators that will train entry-level programmers in a few months. The course may last several months. The training is paid and it may be held by an instructor from the local university or by incubator resident specialists.

To address the shortage of technical experts and people with entrepreneurial potential in a longer-term perspective, it is necessary to organize the Centers for Innovative Creativity of the Youth within the ecosystem of technoparks and incubators. They will heighten the interest in technical creativity and attract pupils and students to solve real-life problems using modern technical equipment. The Centers may be established based on a PPP model where the private investments are paid back by means of fulfilling orders.

It is necessary to carry out federal scale events in the regions involving the best experts, both national and international, but within a narrow subject area or a declared trend. Such activities should be carried out in the best incubators and technoparks in order to further position these objects as centers for innovative activity embedded in the Russian innovation ecosystem.

# Infrastructure

## Respondents' opinions

**"Technological equipment owned by resident companies is idle 60% to 70% of the time."**

**"The chain from concept to preproduction does exist, but the organization of high-tech innovative production is a big problem."**

**"We do not want to leave the technopark. The fact that our company is located here increases the level of trust from both the investors and customers. The technopark is a brand in itself. It is necessary to maintain its infrastructure."**

**"Old computers and office equipment provided by the business incubator are things we [the start-up representatives] had to replace at our own expense. It is impossible to solve contemporary issues using equipment that was released a decade ago."**

## Pending challenges

Lack of laboratories and production facilities or lack of technological equipment in an incubator prevents or slows down the development or the creation of start-ups. Entrepreneurs have to buy expensive equipment, search for opportunities to rent office space and equipment outside the incubator or move to incubators or technoparks where the problem has already been solved. All this, at least, draws time and money away from solving the basic issues of business development.

No less serious is the systematic underutilization of the available equipment and specialized facilities that have already been purchased. The tasks, which require the residents to buy equipment, do not require constant use of it even during the working day. Equipment and facilities in some incubators and technoparks are also not used extensively due to the lack of sufficient local demand.

The infrastructure provided is not conducive to the creation of an ecosystem of communication and information exchange between start-ups. In many of the objects, there is no special space for public events and socialization in an informal atmosphere. In those incubators where such spaces are nominally present, or where the dining areas are intended as such, these areas are often organized in a conceptually incorrect way – people do not want to stay and converse there.

For some incubators the problem of providing residents with basic office equipment at the level necessary to address contemporary problems is still relevant. Sometimes the computers provided are quite modern, but they do not have the basic software. Consequently, residents lose time and/or money adapting to new operating systems and applications, or purchasing the more familiar software.



## Respondents' opinions

**"It is necessary to inform a wide range of entrepreneurs and developers of the possibilities offered by incubators and their residents in order to develop other companies and speed up the payback on equipment."**

**"We need to supply the business incubator as a resource center with basic technological equipment, creating engineering centers built around external providers of services and equipment."**

**"We need not only to control the occupancy and operation of technoparks, but also to take into account individual peculiarities of production, particularly innovative production, and support them."**

## Suggested solutions

Active participation of incubators and technoparks in all regional and federal programs would allow the use of funds for the purchase of equipment, and cooperation with private partners. Cooperation with leading software vendors is a logical solution, for they can often provide the necessary software at a significant discount as part of their initiative in supporting entrepreneurship and strategic development programs.

As a measure that would partially correct the shortage of high-tech equipment and laboratory/production areas in some incubators, and underutilization of the infrastructure in the others, it is sensible to establish an information system of high-tech infrastructure. It would allow entrepreneurs to find the necessary equipment or space at minimal cost.

A significant role in addressing the issue of granting resident companies the required infrastructure is played by a 'tailored' program of work with each individual company. This makes it possible to monitor, anticipate and meet effective demand for different types of areas and volumes. In addition, this program allows for the most efficient allocation of existing resources of a Technopark so that companies see business growth.

It is a reasonable measure to create private engineering centers (or PPP-based centers) with high-tech equipment and services for both start-ups and external users, preferably on-site within the incubator. Such centers can be organized within the framework of the initiatives on Centers for Innovative Creativity of the Youth. Another good option for the center is the close cooperation of an incubator with a high-tech corporate partner, the use of equipment and expertise of the company in exchange for rent, the project office load and innovative solutions.

Providing public areas in the incubator and equipping them in accordance with the basic principles of creating a comfortable and cozy space for informal communication is also important. For example, re-conceptualizing from a "canteen" (i.e., "food spot" aimed at providing rapid nutrition to a maximum number of visitors), to a 'café' format (i.e., "communication spot" aimed at inducing people to stay for a longer time, meet and work inside the cafe). For a higher workload, social and educational activities can be moved into this area of the incubator.

# Demand

## Respondents' opinions

**"The biggest problem for us is the lack of demand for innovative products. We cannot create a system for generating orders for innovation, which is crucial."**

**"Large companies are not very active in providing small businesses with orders for components or different types of services because of the low quality of work compared to foreign producers."**

**"Many start-ups create already existing projects. Few investors come to the regions; there is no clarity on what is of interest for them. No information on what is necessary to develop..."**

**"The already developed innovative products are not in demand due to the fact that it is often impossible to include them in existing projects."**

## Pending challenges

For several reasons, the level of demand for innovative solutions from large and medium-sized Russian companies remains generally low. Lack of customers for new solutions that are even more effective than those currently used is the main problem for the residents of incubators and technoparks.

Local authorities in most regions do not provide support to residents, as they do not create motivation for large potential customers, including state-owned, to meet with the management of incubators and look through prospective projects in relevant industries.

Entrepreneurs focus on solving the "fashionable" tasks, ignoring problems that require solutions and have an effective demand. Typically, this is a consequence of the lack of information about the real problems, especially given the wide advertising of successful start-ups in areas such as tourism, social networks, consumer-oriented mobile applications, etc.

Selling solutions in a particular industry often requires not only the experience and understanding of how it works, which can be provided by a mentor, but a license for a particular activity, or even international certification. In particular, some licenses are issued only when experienced, accredited professionals are part of the company staff. This situation often presents a significant obstacle for start-ups to sell their solutions.

Major potential customers do not consider residence in an incubator an advantage in terms of the potential supplier's reputation. That is, the fact of passing the selection process by the start-up, the presence of experts around it, the financial and business ecosystem support, and constant monitoring of the development process by the administration of the incubator are not seen as significant advantages by large customers.

Most technology parks and incubators do not support international contacts, do not interact with foreign counterparts and representatives of the business environment. This limits the ability of residents to promote themselves on international markets.

## Suggested solutions

Organizing events to facilitate communication between entrepreneurs and potential customers for innovative solutions is recommended. Despite the low direct conversion, (the deals based on such meetings are still quite rare), entrepreneurs receive valuable advice on further development of their products or services. The very fact of such communication at an early stage of project development allows for the timely adjustment, or even a complete change, of the business model for the start-up.

Creating a system for tracking and formulating topical problems in various fields of industry, preferably at the federal level. The system should be based on the monitoring of not only Russian, but also global trends, with the aim to increase the number of start-ups with international potential. This will enable the organization of themed educational events, conferences and exhibitions, and attract the attention of entrepreneurs and technicians to problems' solutions that will have solvent demand.

Another approach, which allows these problems to be partially solved, is the formation of a strong Expert Council, whose members are motivated to assist with their knowledge on an ongoing basis. However, it should be noted that the creation of the expert council of an appropriate level needs strong professionals, who are hardly present in the ecosystem of each object.

Promotion among large companies of the substantial benefits of working with residents of the incubators/technoparks compared to the non-resident small companies, which lack such support is also important. To do this it is necessary to develop or adapt objective metrics from the existing (including foreign) practice, which help demonstrate how the cooperation with residents of incubators reduces the risks of the customer.

Some of the necessary licenses or certificates may be obtained by the entrepreneurs, with the assistance of business incubators and financing coming from respective programs. However, formalized solutions for more complex issues do not exist yet. The solution partially comes from personal interactions between the management of an incubator with large enterprises and local authorities. In some cases, to obtain international certifications, a company has to register its business outside of Russia. If the government maintains the priority of building an innovative economy, these problems need to be addressed in a systematic way.

Forging partnerships with foreign innovation infrastructure objects, as well as joining foreign networks and associations may increase the chances of residents successfully developing business in international markets. This is facilitated by providing residents opportunities to participate in soft landing programs carried out jointly with foreign partners.

# Investment

## Respondents' opinions

**"Start-ups very rarely get seed investment. There are no funds to create more serious sample products. Funds tend to invest in already developed companies and projects. Investments at the pre-seed and seed stages are not common."**

**"In order to sow something, one needs grain – and these grains are also worth something."**

**"Investments are concentrated in Moscow, investors are not willing to go to the periphery and it is crucial to be in a position of control, especially at the stage when the business model is changing every day. Arranging a primary meeting is hard and costly for a small start-up."**

**"Despite the existence of country-level institutions to support the development of entrepreneurship and innovation, the relationship between them is virtually non-existent, and their activities are fragmented."**

## Pending challenges

Lack of pre-seed funding for companies is a key development constraint, especially for high-tech, non-IT start-ups. As a safeguard against risks, existing venture capital funds and the few active business angels tend to invest at a later stage or finance IT start-ups. Grants that might be claimed by start-ups at an early stage are scarce and limited (e.g., the program of the Fund for Assistance to Small Innovative Enterprises in Science and Technology).

Another key factor is the lack of "smart money" at an early stage. For many entrepreneurs, the problem is not the lack of money as such, but the absence of experienced investors strongly supporting the project team through their competencies and extended business contacts. This criterion does not fit many companies and individuals who are trying to invest in start-ups: misunderstanding the nature of the start-up business leads to potential investors sometimes requiring a guaranteed return on their investment.

In the regions, the aforementioned factors are compounded by the fact that a large proportion of the few experienced investors is concentrated in Moscow. This increases the difficulty of obtaining "smart money" by regional start-ups. Some businesspeople are forced to move to Moscow or get by without investor support in cases when relocation is not possible due to personal or business reasons. This, at the very least, has a negative impact on the pace of business development.

The actions of state institutions, which could partially bridge the gaps of start-up funding, are not coordinated. Standards vary greatly depending on the region, and the processes are overly bureaucratized. As a result, the process of obtaining financing requires a significant amount of time during the most difficult and uncertain period of a company's existence.

Residents of incubators are often perceived by investors as weak companies that are not able to generate cash and are entirely dependent on the support of grants. Investors believe that this is due to the fact that incubators do not aspire to business objectives, cannot provide quality services, do not have the necessary experience in their respective industries and are not able to attract experts. The approach of the incubator management to their work can be described as formal.

## Respondents' opinions

**“To help young companies attract investment, a business incubator should establish a scheme of interaction with business angels, venture capital funds and regional programs.”**

**“We need to be given opportunities for investment at the earliest stages of company development. We need regional funds; Bortnik Fund is insufficient. Many projects already exist, but there are not enough funds for their implementation.”**

**“We expect smart money – beside the ‘infusion’ of funds, it is necessary to attract people with connections, business angels, venture capitalists and representatives of international corporations.”**

## Suggested solutions

Creation of regional funds, or those within the framework of incubators, targeted at financing projects at the early stages of development is essential. To reduce investment risks, it is advised to use the mechanism of co-investment with private donors, as well as to focus on the financing of residents of those incubators that have already proven themselves as reliable partners. Attracting private investors will not only increase the amount of funds available to start-ups, but will also make money “smarter” as a result of the participation of successful entrepreneurs in the recipient companies.

It is recommended to educate potential private investors (“business angels”) on the specifics of the creation and development of innovative business, as well as provide training opportunities in particular areas of science and technology. Harnessing the power of online education, including existing international platforms is a sustainable strategy. To increase the demand for such education among investors one can, in particular, stipulate that such, or a similar, level of education be one of the mandatory conditions for participation in the co-investment program. For quality control purposes, it is desirable to organize education at the federal level.

Systematization of resources for financial support of innovative entrepreneurship, forming convenient integrated information systems (ideally a single system) for the entire range of programs operating at the federal and regional levels, and helping to promote it is also important. As an interim measure, one can use the successful experience of some incubators to create a coordinator position to work with the authorities. This coordinator should monitor relevant programs, contests and events to notify entrepreneurs about them and help with the preparation of applications.

Another key recommendation is creating a system of key performance indicators for incubators, not based on formal criteria, but rather on the success rate of residents. This will help stimulate management to perform a more careful selection of projects to attract the necessary expertise, looking for opportunities to provide quality service, as well as to the real, and not the formal, establishment of such an ecosystem of support that will systematically promote companies attractive for investment.

# Goals and key performance indicators: pending challenges and solutions

## Respondents' opinions

**“To date, the target indicators are ill-formulated – the development of a business incubator is evaluated by the number of residents or people trained under the program of business and entrepreneurship. The current emphasis is on formal requirements, i.e., the amount of conferences and events that were attended. Qualitative indicators, such as the number of projects that have reached the expected results for the investor, do not count.”**

**“There are no common KPI, no prioritizing system, no performance criteria, no evaluation mechanisms and calculations that would reflect what the state expects to receive from the objects of innovation infrastructure and when. For example: setting up businesses, attracting external funding, etc.”**

**“We need a unification of criteria and the evaluation of the system of technology parks and business incubator development. A good practice would be to provide bonuses for exceeding the level of KPI for specific criteria. Control should be implemented on a regular basis, e.g., once a quarter.”**

**“We need to collaborate more with commercial entities to jointly develop requirements and evaluate the results of work.”**

There is not a single, properly structured system of key performance indicators (KPI) for business incubators and technoparks established and operated primarily via public funds. The current situation:

- ▶ Does not allow for the evaluation of the work, does not objectively determine the most successful business models and eliminate the others, or distribute funding based on these estimates
- ▶ Prevents negotiating with funding and regulatory agencies as well as investors and partners, considering the progress made
- ▶ Interferes with work planning and goal setting

The KPI system should be based on existing international analogues and the experiences of the most successful Russian functioning objects.

The KPI system should be established taking into account the different role of innovation infrastructure objects. In particular, there are at least two basic options as incubators for which KPIs cannot be identical:

- ▶ Incubators as a tool for rapid development of start-ups with potential for explosive growth, initially focused on the creation of major international brands with venture capital involvement; or
- ▶ Incubators as a tool to support small innovative companies with the potential for sustainable growth, which are then integrated into the existing (at the first stages usually regional or federal) value chain

A broad discussion of the above issues is required, involving all stakeholders of the business incubation system to reach a consensus on the role of business incubators, development of a single KPI system (“the rules of the game”) for the incubation system, and changing the control system and the distribution of funding in accordance with KPI.

## Final remarks and recommendations

A previous large-scale study of business incubators in Russia was conducted by EY in 2010. Over the past four years, the Russian system of business incubation and technoparks has been on a steady development path. The incubators and technoparks that took part in our survey are organizations where entrepreneurs come to access infrastructure and attain education, quality business services, contacts and help in obtaining finances. The best objects foster an ecosystem of support for innovative entrepreneurs.

At the same time, members of the incubator ecosystem have come to understand that some key issues remain unresolved, among those are some systemic challenges. Their decisions now depend on how quickly and efficiently the business incubation system and technoparks will develop in Russia. The approaches used in the study can be briefly summarized in the following recommendations:

### Incubation policy

Development of more appropriate criteria for the selection and presentation of more stringent requirements; creation of an advisory council and/or expanding its functionality and influence; quality additional services that are important for successful business development of resident companies (paid services advisable)

### Education and human resources

Creation of educational centers (for all ages) based on PPP; creation of a federal center of international competencies; conducting federal events on specific topics and trends in regional incubators

### Infrastructure

Development of an information system of high-tech infrastructure; creation of private (or PPP) engineering centers, including those based on the capacities of large enterprises; creation of comfortable space for communication between residents

### Supply and demand

Arranging meetings with entrepreneurs and customers; identification and promotion of problems solvable by innovation; the use of metrics to convince customers of the benefits of working with the residents of the incubator; working on a systemic solution for licenses

### Investment

The creation of regional funds, aimed at pre-seed financing with private capital; training of private investors; organizing resources for financial support of innovative entrepreneurship; implementing a KPI system

### Goals and KPI

Development and implementation of KPIs for business incubators and technology parks, based on best international practices and experiences on the functioning of the most successful Russian objects; binding state funding to KPI

# Appendix: objects of study

## Objects of study: business incubators

Region	Location	Name of object
<b>Central Federal District</b>		
Belgorod Region	Belgorod	Innovative business incubator Belgorod RRITS
Bryansk Region	Bryansk	GAU Bryansk Regional Business Incubator
Voronezh Region	Voronezh	Innovative business incubator VSU InSight
Moscow Region	Dubna	Innovation and Technology Incubator Naukograd Dubna
Moscow	Moscow	Project business incubator MSTU. NE Bauman
Moscow	Moscow	Business incubator HSE
Moscow	Moscow	Business incubator MSU. MV Lomonosov
Moscow	Moscow	Business incubator (University) MFA Russia
Moscow	Moscow	Business incubator Technopark Strogino
Belgorod Region	Severniy-Perviy	Manufacturing business incubator of energy-saving technologies
Moscow Region	Troitsk	Innovative business incubator Troitsk
Tver Region	Tver	GAU Tver Regional Business Incubator
Tver Region	Tver	Business incubator Tver City Fund for Small Business Support
Yaroslavl Region	Yaroslavl	State institution Yaroslavl Region Business Incubator
<b>Volga Federal District</b>		
Volgograd Region	Volga	GAU VO Volgograd Regional Business Incubator
Nizhny Novgorod Region	Dzerzhinsk	MBU Business Incubator Dzerzhinsk
Penza Region	Zarechnyj	Business incubator Impulse
Udmurtia	Izhevsk	Business incubator IzhSTU behalf MT Kalashnikov
The Republic of Tatarstan	Kazan	Business incubator IT park
The Republic of Tatarstan	Naberezhnye Chelny	Business incubator Naberezhnye Chelny
The Republic of Tatarstan	Naberezhnye Chelny	Business incubator second site Kazan IT-Park
Republic of Bashkortostan	Octyabrskiy	Regional Business Incubator
Orenburg Region	Orenburg	Orenburg Regional Business Incubator

Region	Location	Name of object
Perm Krai	Perm	Business incubator Navigator Opportunities at HSE Perm
Republic of Bashkortostan	Salavat	ANO Business Center South Bashkortostan
Samara Region	Samara	Innovative business incubator JSC Technopark
Saratov Region	Saratov	Business incubator Saratov GSEU
Saratov Region	Saratov	Business incubator Saratov State University
Nizhny Novgorod Region	Tonshaevo	MU Tonshaevsky business incubator
Chuvash Republic	Cheboksary	Republican business incubator to support small and medium businesses and promote employment
<b>Northwestern Federal District</b>		
Arkhangelsk Region	Arkhangelsk	GAU JSC Arkhangelsk Regional Business Incubator
Vologda Region	Vologda	Budgetary institution of the Vologda region in supporting small and medium enterprises Business Incubator
Murmansk Region	Murmansk	Business incubator Polar Star
St. Petersburg	St. Petersburg	Business incubator Ingria
Komi Republic	Syktyvkar	SUE Republican Enterprise Business Incubator
Republic of Karelia	Petrozavodsk	Student business incubator PSU
<b>Siberian Federal District</b>		
Altay Region	Barnaul	KGBU Altai business incubator
Altay Region	Bijsk	Business incubator innovative type
Irkutsk Region	Irkutsk	Business incubator Irkutsk State Technical University
Kemerovo Region	Kemerovo	Business Incubator Municipal nonprofit Small Business Support Fund Kemerovo
Novosibirsk Region	Novosibirsk	Business incubator Center City Enterprise Development
Novosibirsk Region	Novosibirsk	Business incubator Academpark
Omsk Region	Omsk	Omsk Regional Business Incubator
Tomsk Region	Tomsk	Intercollegiate Student Business Incubator Druzhba
Tomsk Region	Tomsk	Technology incubator Tomsk Polytechnic University



## Objects of study: technoparks

Region	Location	Name of object
<b>Far Eastern Federal District</b>		
Vladivostok	Vladivostok	Business incubator Terra Creativity
The Republic of Sakha (Yakutia)	Nyurba	Business incubator Nyurba
The Republic of Sakha (Yakutia)	Yakutsk	Business incubator of the Republic of Sakha (Yakutia)
<b>The North Caucasus Federal District</b>		
The Chechen Republic	Grozny	Technopark business incubator High Technology CSU
Stavropol Region	Stavropol	Business incubator of Stavropol
The Chechen Republic	Chatou	Shatoyski business center (incubator)
<b>Southern Federal District</b>		
Astrakhan Region	Astrakhan	Business incubator LIFT
Krasnodar Region	Krasnodar	Student business incubator Krasnodar branch REU named after G.V. Plekhanov

Region	Location	Name of object
<b>Central Federal District</b>		
Moscow	Moscow	Technopolis Moscow
Moscow	Moscow	Science and technology park MATI New Technology
Moscow	Moscow	Technopark STROGINO
Moscow	Moscow	Technopark Slava
<b>Volga Federal District</b>		
Republic of Tatarstan	Kazan	Innovative technopark Idea
Republic of Tatarstan	Leninogorsk	Innovative technopark Idea-South-East
Republic of Tatarstan	Naberezhnye Chelny	The second technopark of Kazan IT Park in the city of Naberezhnye Chelny
Penza Region	Penza	Technopark Yablochkov
Republic of Mordovia	Saransk	Technopark-Mordovia
Samara region	Togliatti	Technopark in high-tech Zhygulevskaya Valley
<b>Siberian Federal District</b>		
Irkutsk Region	Irkutsk	Technopark Irkutsk State Technical University
Kemerovo Region	Kemerovo	Kuzbass technopark
Novosibirsk Region	Novosibirsk	Technopark Academpark
<b>Ural Federal District</b>		
Tyumen Region	Tyumen	Tyumen West Siberian Innovation Center (Tyumen Technopark)
<b>Southern Federal District</b>		
Astrakhan Region	Astrakhan	IT-park FABRIKA
Rostov Region	Novocherkassk	Technopark NRZ-INTOR
<b>North Caucasus Federal District</b>		
Chechen Republic	Grozny	Technopark High Technology CSU

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