MINISTRY OF ECONOMIC DEVELOPMENT
OF THE RUSSIAN FEDERATION

RVC

HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

CLUSTER POLICY IN RUSSIA:

REACHING GLOBAL COMPETITIVENESS

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Moscow 2018

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Cluster Policy in Russia: Reaching Global Competitiveness / V. Abashkin, S. Artemov, A. Gusev et al.; Ministry of Economic Development of the Russian Federation; RVC JSC; National Research University Higher School of Economics. – Moscow: HSE, 2018. – 328 p..

The report presents a review of the results achieved by the first ten years of cluster policy in Russia. It summarises the outcomes of three cluster support programmes: for pilot innovation clusters, leading clusters, and industrial clusters. The programmes are analysed in terms of the selection process and geographic distribution of their beneficiaries, key performance indicators, and areas of federal support.

The edition also offers a structured description of the leading clusters in the following categories: general information (mission, industry specialisation areas, products and services, key members, contacts); activities of the cluster management organisation; success stories, and invitation to cooperation. Leading cluster profiles have been designed in line with the European Cluster Collaboration Platform (ECCP) questionnaire.

The report is of practical interest to government agencies, cluster management organisations, companies, universities, research organisations, and to anyone else interested in innovative, industrial and cluster policies.

This publication was prepared under contract № 17/18 dated February 7, 2018 to provide services for organisational, expert and analytical support within the project "Promoting Development of Innovation Clusters – Global Leaders in Attracting Investment".

ACKNOWLEDGMENTS

The authors gratefully acknowledge significant contributions to the report provided by the following distinguished experts:

Leysan Abzalilova, Andrey Antonov, Alexander Balakirev, Diana Beylina, Ivan Blinov, Andrey Bricheev, Elena Burlakova, Dmitry Chagin, Svetlana Chirko, Oleg Egin, Olga Elaksina, Aleksei Fedorov, Oksana Galinskaya, Albert Gataullin, Natalia Gavrilicheva, Evgeniy Getz, Evgeniy Golosov, Dmitriy Gomer, Anastasya Gorina, Lira Ishkildina, Nikita Kalincev, Iuliia Kaneva, Yakov Kapitanets, Alfiia Khaibullina, Irina Khaletskaya, Sergey Klimov, Tatyana Koltsova, Sergei Kornilov, Ksenya Korobeynikova, Alexander Korznikov, Galina Kozachkova, Artem Kritsyn, Maria Kurtysheva, Maksim Lanskikh, Vasily Lopushenko, Tatyana Magala, Valentin Makarov, Galina Malyazina, Maxim Morozov, Ekaterina Morozova, Olga Morozova, Ilshat Nigmatullin, Olga Nikitina, Aleksey Nizkovskiy, Irina Novikova, Alexander Osadchenko, Nikita Paravatov, Veronika Parshina, Maria Pelipas, Vladimir Puchkov, Alexander Rats, Lev Reshetnikov, Albina Salimgareeva, Irina Selezneva, Aleksey Sergeev, Konstantin Serov, Evgeniya Shabanova, Pavel Shelegeda, Margarita Shirokova, Svetlana Shumai, Mikhail Skachkov, Irina Skorodumova, Maria Sokolova, Elshad Teliashev, Ekaterina Timofeeva, Andrey Tingaev, Evgeniy Titov, Maksim Tomskih, Anastasia Tumanova, William Wescott, Marina Zinina.

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INTRODUCTION

The Russian cluster landscape is becoming increasingly varied. Since the approval in 2008 of the Long-Term Socio-Economic Development Concept for the Russian Federation through 2020 [Government of the Russian Federation, 2008], which established the basic principles of the cluster policy, more than 110 cluster initiatives[1] have emerged, bringing together more than 3,000 organisations and providing about 1.3 million jobs. Over the past ten years, the cluster policy agenda has occupied an important position in the Russian Government's action plans. Today, half of the cluster initiatives receive various kinds of public support.

Cluster policy in Russia is implemented by two nationwide agencies: the Ministry of Economic Development and the Ministry of Industry and Trade (figure 1). Since 2010, the Ministry of Economic Development has provided subsidies to regional authorities for establishing and supporting cluster development centres (CDCs) [Government of the Russian Federation, 2014]. The programme's budget from 2010 to 2016 amounted to 1.06 billion roubles (US$ 25.55 million)[2]. As a result, 34 CDCs were established in 33 Russian regions by 2016. They support cluster initiatives by providing consulting and organisational services (such as market research, organising educational and information-sharing events, trade fairs and exhibitions, publicity campaigns, assisting in the development of business plans, strategic documents, etc.) to the small and medium-sized companies that are cluster members.

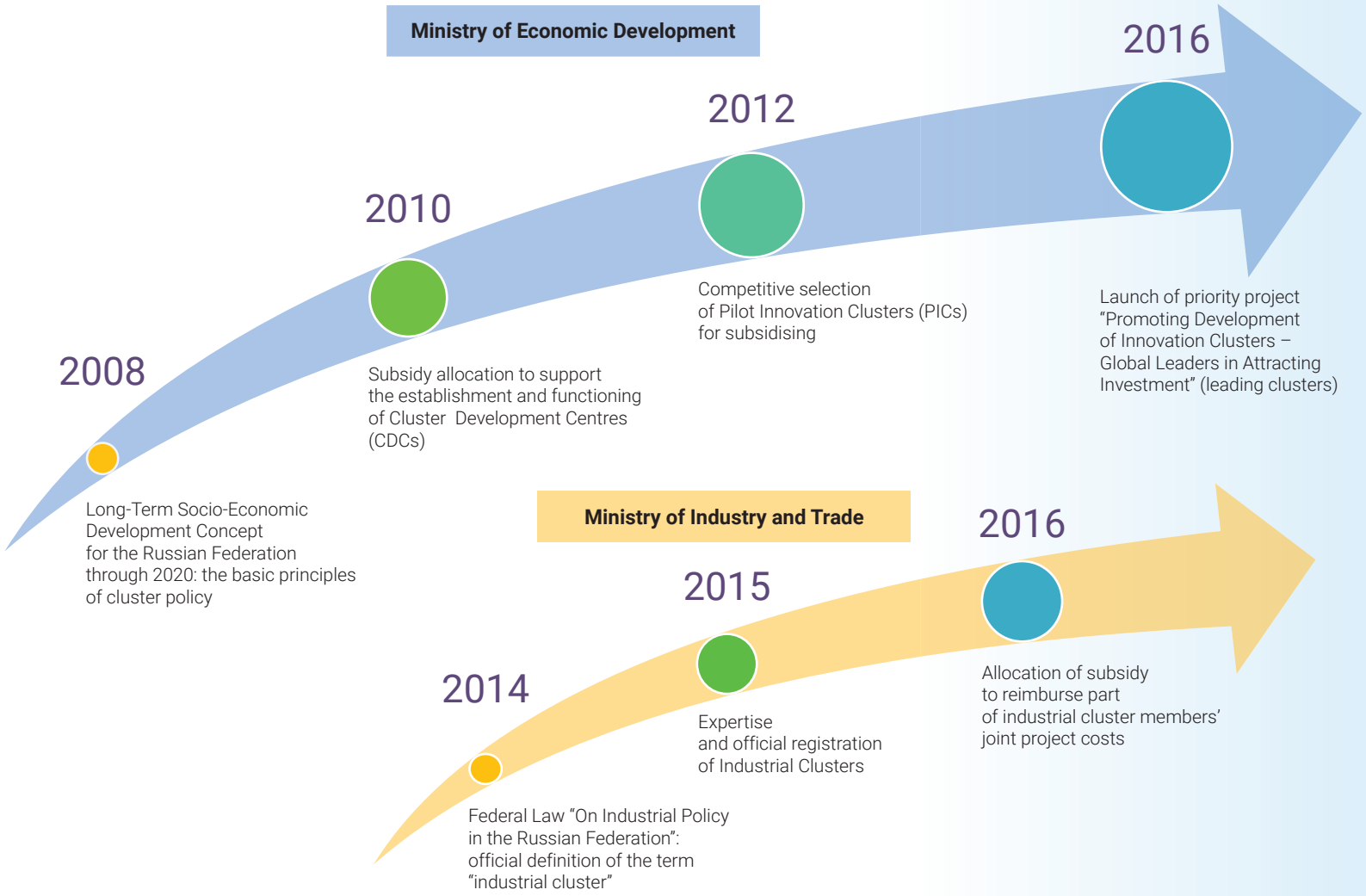
In 2012, the Ministry of Economic Development launched the first (and so far the largest) programme to support pilot innovation clusters (PICs); from 2013 through 2015, its total budget is in excess of 5 billion roubles (US$ 112.51 million). The programme was targeted to enhance the cooperation among enterprises, research and educational organisations of clusters, and foster the development of their home regions.

In 2016, the Ministry of Economic Development has moved on to supporting clusters on the basis of project management principles. The new priority project "Promoting Development of Innovation Clusters – Global Leaders in Attracting Investment" (the priority project; leading clusters) was aimed at achieving accelerated growth rates

[1] A cluster initiative is defined as "organised efforts to increase the growth and competitiveness of a cluster within a region involving cluster firms, government and/or research community" (Sölvell et al., 2003, p. 31). Hereinafter, the terms "cluster" and "cluster initiative" are used as full synonyms, as the term "cluster" is most frequently applied in federal support programmes.

[2] For all currency equivalents (roubles – US dollars), the annual average exchange rate of the Central Bank of the Russian Federation was used for the respective year. For multiannual periods, each year's annual average exchange rates were summed, and then the arithmetic average was calculated. In 2010–2016, the exchange rate was 41.48 roubles per US$ 1; in 2013–2015, the exchange rate was 44.44 roubles per US$ 1; in 2015, the exchange rate was 62 roubles per US$ 1; in 2016, the exchange rate was 66.35 roubles per US$ 1; in 2017, the exchange rate was 58.09 roubles per US$ 1; in 2016–2017, the exchange rate was 62.22 roubles per US$ 1.

Figure 1. Cluster policy evolution in Russia



Source: compiled by the authors

by using more efficient mechanisms to support innovation, while promoting integration of Russian companies into global chains of added value.

A new cluster policy vector was set in 2014 with the adoption of the Federal Law dated December 31, 2014 № 488-FZ "On Industrial Policy in the Russian Federation". For the first time in Russian practice, the law provided an official definition of the term "industrial cluster" and described various steps to further the activities of such clusters. Beginning in late 2015, the Ministry of Industry and Trade has implemented a programme to support industrial clusters. The participating clusters that meet the Ministry's criteria may claim subsidies to recover part of their joint project expenses incurred producing products that replace imported ones.

The report presents a review of the results achieved by the first ten years of cluster policy in Russia.

The first section summarises the outcomes of three cluster support programmes: for pilot innovation clusters, leading clusters, and industrial clusters. The emphasis is on analysing the design and results of the priority project and on outlining the key performance indicators for the leading clusters, and the main forms of support extended to them.

The second section offers a structured description of the leading clusters. Data about each cluster is presented in the following categories: general information (mission, industry specialisation areas, key members, products and services, contact information); activities of the cluster management organisation; success stories and invitation to cooperation. Leading cluster profiles have been designed in line with the European Cluster Collaboration Platform (ECCP) questionnaire.

The authors hope this report will be useful to to government agencies, cluster management organisations, companies, universities, research organisations, and to anyone else interested in innovative, industrial and cluster policies.

ABBREVIATIONS

CDC	Cluster Development Centre
CT	Closed Territory
ECCP	European Cluster Collaboration Platform
EPCM	Engineering, Procurement, Construction Management
GIS	Geographic Information System
GLP	Good Laboratory Practice
GMP	Good Manufacturing Practice
HSE	National Research University Higher School of Economics
IAEA	International Atomic Energy Agency
ICT	Information and Communication Technology
ISSEK	Institute for Statistical Studies and Economics of Knowledge
JSC	Joint-stock Company
LLC	Limited Liability Company
OECD	Organisation for Economic Co-operation and Development
PIC	Pilot Innovation Cluster
R&D	Research and Development
RAS	Russian Academy of Science
RCO	Russian Cluster Observatory
RVC	Russian Venture Company
S&T	Science and Technology
SEZ	Special Economic Zone
SME	Small and Medium-sized Enterprise
SOE	State-owned Enterprise
TCI	The Competitiveness Institute-Asociación Competitividad
UAV	Unmanned Aerial Vehicle

SHORTENED AND FULL OFFICIAL NAMES OF LEADING CLUSTERS

Shortened Cluster Name Used in the Text	Full Official Cluster Name
Kaluga Pharmaceutical Cluster	Innovation Cluster "Pharmaceutics, Biotechnologies and Biomedicine" of the Kaluga Region
Yenisei Technopolis Cluster of Krasnoyarsk	Innovation Cluster of the Krasnoyarsk Region "Yenisei Technopolis"
Valley of Machine-Building Lipetsk Cluster	Innovative Territorial Cluster for Machinery-Building and Metalworking of Lipetsk Region "Valley of Machine-Building"
Moscow Region Consortium of Innovation Clusters	Moscow Region Consortium of Innovation Clusters
Siberian Scientopolis Cluster of Novosibirsk	Siberian Science Polis Research and Production Cluster
Bashkortostan Petrochemical Cluster	Petrochemical Territorial Cluster Republic of Bashkortostan
BRIGHT CITY Lighting and Optoelectronic Instrumentation Cluster of Mordovia	Innovation Cluster of the Republic of Mordovia "Lighting and Optoelectronic Instrumentation" (BRIGHT CITY)
INNOKAM Cluster of Tatarstan	Kama Innovative Territorial Production Cluster of the Republic of Tatarstan
Samara Aerospace Cluster	Aerospace Innovation Territorial Cluster of the Samara Region
Smart Technologies Tomsk Cluster	Regional Innovation Cluster "Smart Technologies Tomsk"
Ulyanovsk Aviation and Nuclear Technologies Cluster	Innovation Cluster of the Ulyanovsk Region
InnoCity Cluster of Saint Petersburg	Science and Technology InnoCity Integrated Innovation Cluster

1

Russian Cluster Policy: Results of the First Ten Years

1.1. NATIONAL SUPPORT PROGRAMMES FOR INNOVATION AND INDUSTRIAL CLUSTERS

Pilot Innovation Clusters Support Programme

The first Russian national cluster support programme was launched by the Ministry of Economic Development in 2012. Its purpose was to improve cooperation between enterprises and the R&D and educational organisations of pilot innovation clusters; and also to encourage development of territories with the highest potential in science and technology (S&T) and in production.

The programme was designed with the experience derived from the previous support of cluster development centres and also the best international practices [OECD, 2007, 2011; Pro Inno Europe, 2009, Christensen et al., 2012].

In particular, the following programmes were used as benchmarks:

- the German "Spitzencluster-Wettbewerb" (leading-edge clusters). The programme's focus is bridging the gap between science and industry by supporting the strategic development of advanced clusters in knowledge-intensive sectors and the environments in which they are located [BMBF, 2006];
- the French "Pôles de Compétitivité" (competitiveness clusters). The programme aims at building synergies and assisting the best nationwide collaborative public-private R&D projects as well as commercialisation and marketing of their results [DGCIS, 2011].

Both programmes employ a competitive selection process for the cluster projects that will receive subsidies. The clusters benefit from public support over a five-year period. Fifteen German clusters are recognised as leading-edge, and 71 French clusters are designated "Pôles de Compétitivité".

Pilot innovation clusters were selected by tender: there were 25 winning clusters out of 94 applicants. Subsequently their number grew to 27 (map 1). All of them were located in the regions, which feature science towns, special economic zones (SEZs), and closed territories (CTs) among other factors. PICs specialise in the following areas: nuclear and radiation technologies; aircraft and spacecraft construction, shipbuilding; pharmaceuticals, biotechnology and the

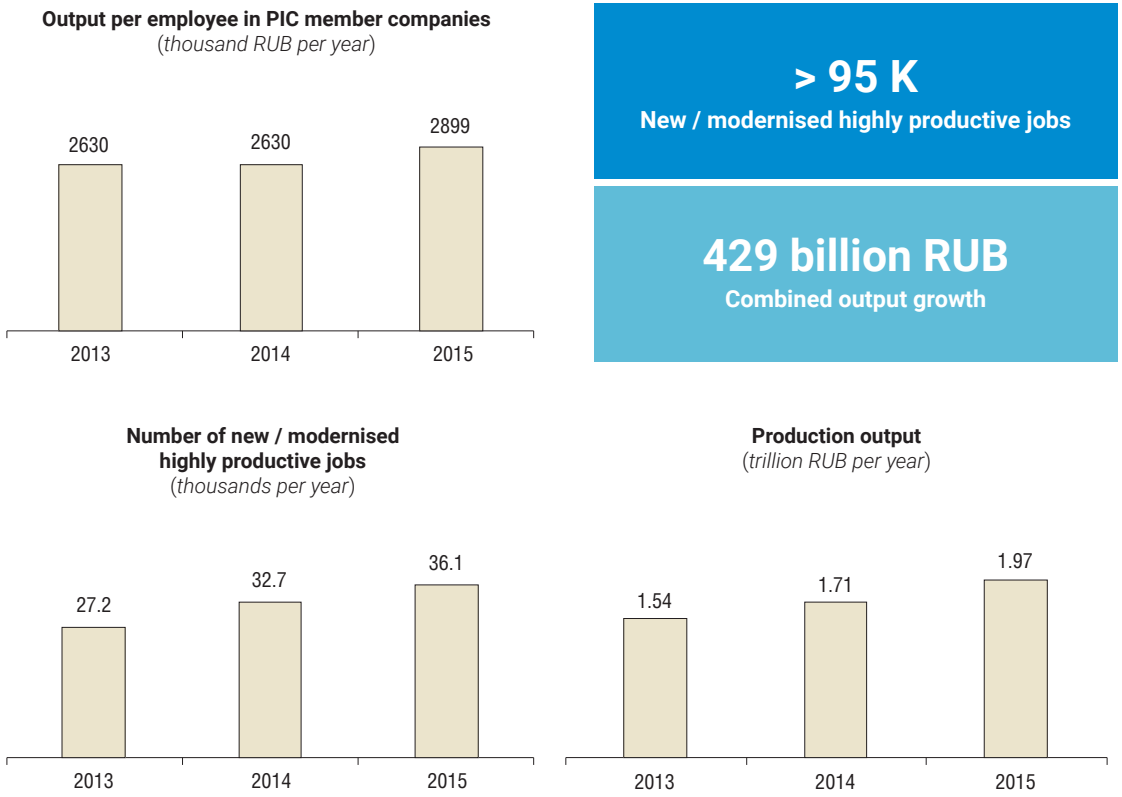
medical industry; new materials; chemistry and petrochemistry; information technology and electronics [HSE, 2013].

From 2013 to 2015, the regions hosting pilot innovation clusters received federal budget subsidies totalling 5.05 billion roubles (US$ 113.64 million). The funding was provided for the following activities:

- developing innovation and educational infrastructure;
- strengthening cooperation, promoting cluster member products, including in external markets (business missions, fairs, exhibitions, publicity events);
- staff training, upgrading qualifications and retraining, and provision of methodological, organisational, expert, and informational services;
- developing engineering and social infrastructure.

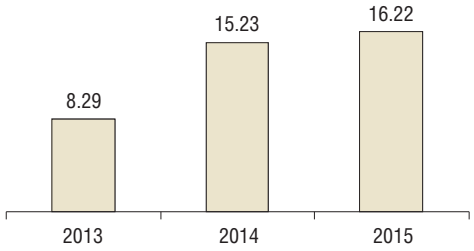
The pilot innovation clusters support programme did contribute to increased cluster member activities (figure 2). According to the Ministry of Economic Development, from 2013 to 2015 the clusters' **combined output** grew by 429 billion roubles, to almost 2 trillion roubles (US$ 32.26 billion).

Figure 2. Pilot innovation clusters' progress in 2013–2015



Source: compiled by the authors based on the Ministry of Economic Development data

PIC members' employees who upgraded their qualifications
(*thousands of people per year*)



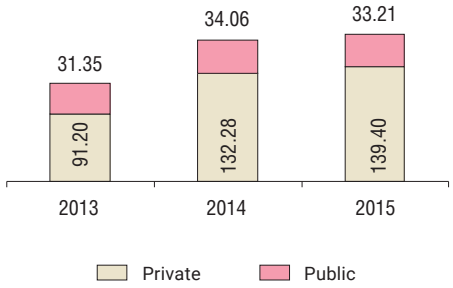
40 K employees
Benefited from staff training

> 75 billion RUB
Total expenditures on joint R&D projects

> 98 billion RUB
Public investment

> 360 billion RUB
Private investment

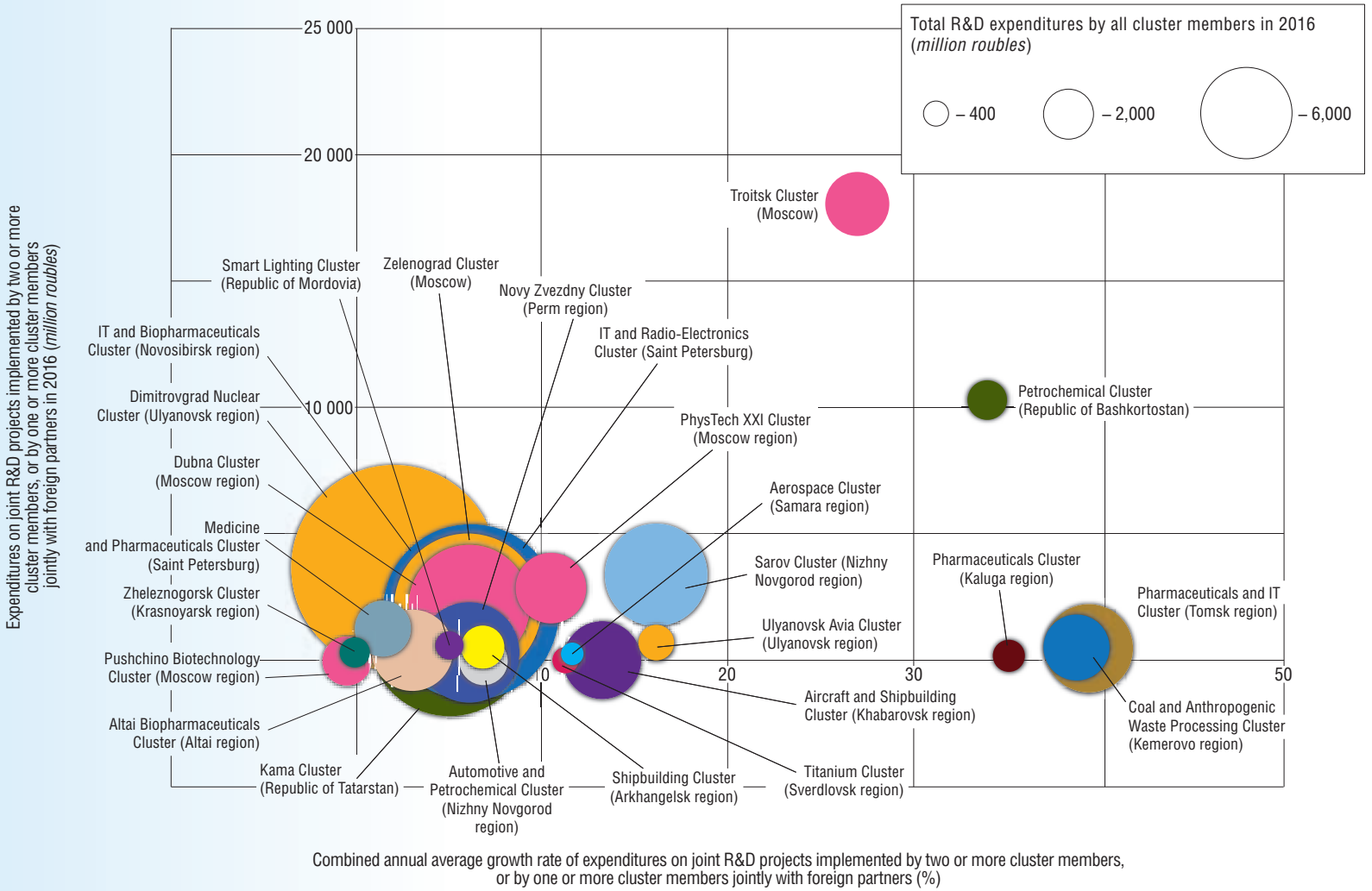
Total investments in PIC development
(*billion RUB per year*)



Against a background of negative economic trends, these companies showed increases in various performance indicators: the number of **new highly productive jobs** grew by more than a third (from 27.2 thousand in 2013 to 36.1 thousand in 2015); 40,000 workers benefited from **staff training** or upgraded their professional qualifications. Development of pilot innovative clusters provided a significant boost to **investment activity:** in just three years public and private investments exceeded 98 and 360 billion roubles (US$ 2.2 and 8.1 billion), respectively. The PIC's main performance indicators are significantly higher than the average ones in their home regions. Specifically, cluster member **export revenues** on average are 20% higher, and **shipment of innovative products** manufactured in-house and provision of innovative services are 60–90% higher [HSE, 2017a].

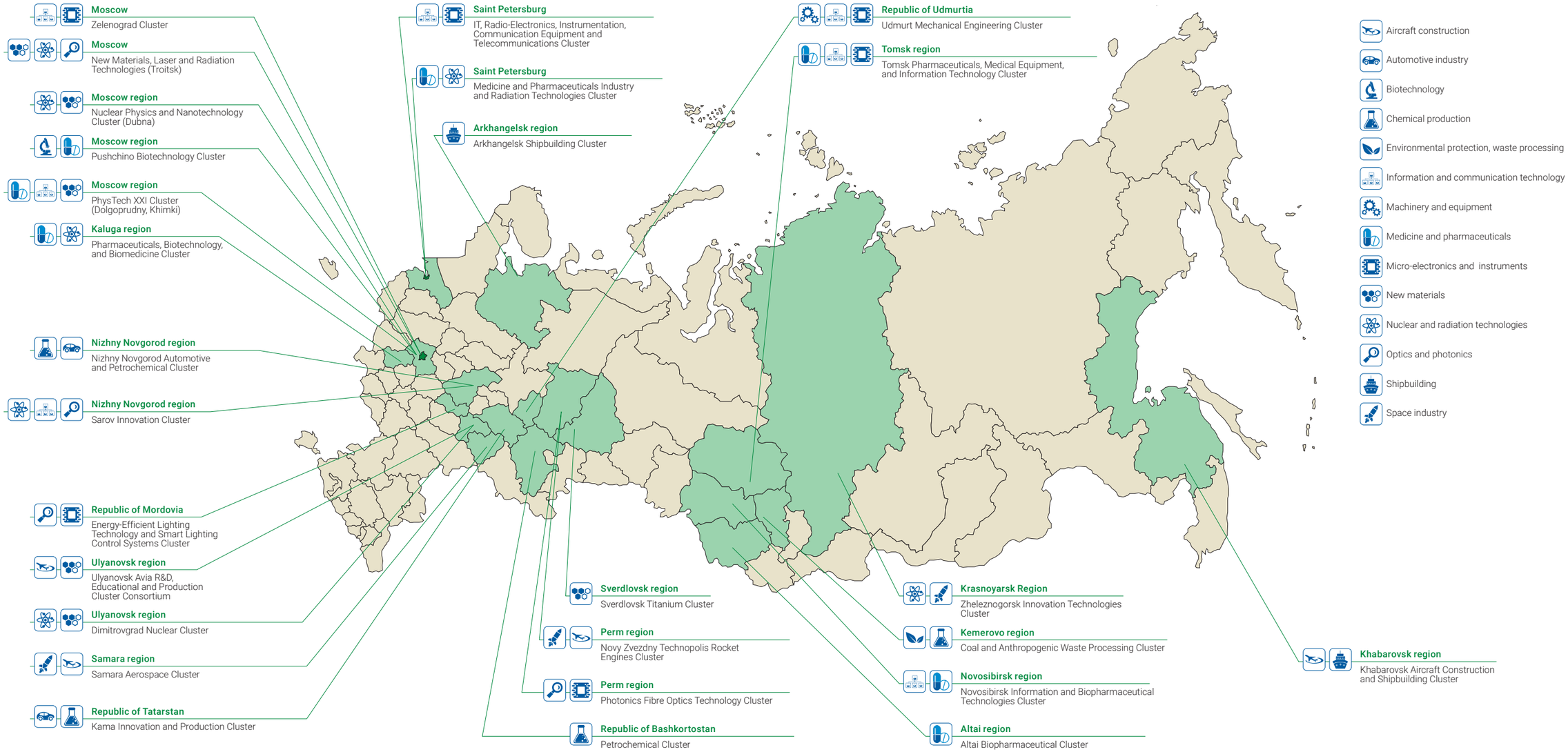
A key indicator of pilot innovation clusters' performance is their **total R&D expenditures**. An increase of R&D cooperation was noted during the implementation of the PIC support programme: total expenditures by all cluster members on joint R&D projects exceeded 75 billion roubles (US$ 1.69 billion) (figure 3).

Figure 3. R&D projects implemented by pilot innovation cluster members



Source: compiled by the authors based on the Ministry of Economic Development data

Map 1. Map of Pilot Innovation Clusters (2015)

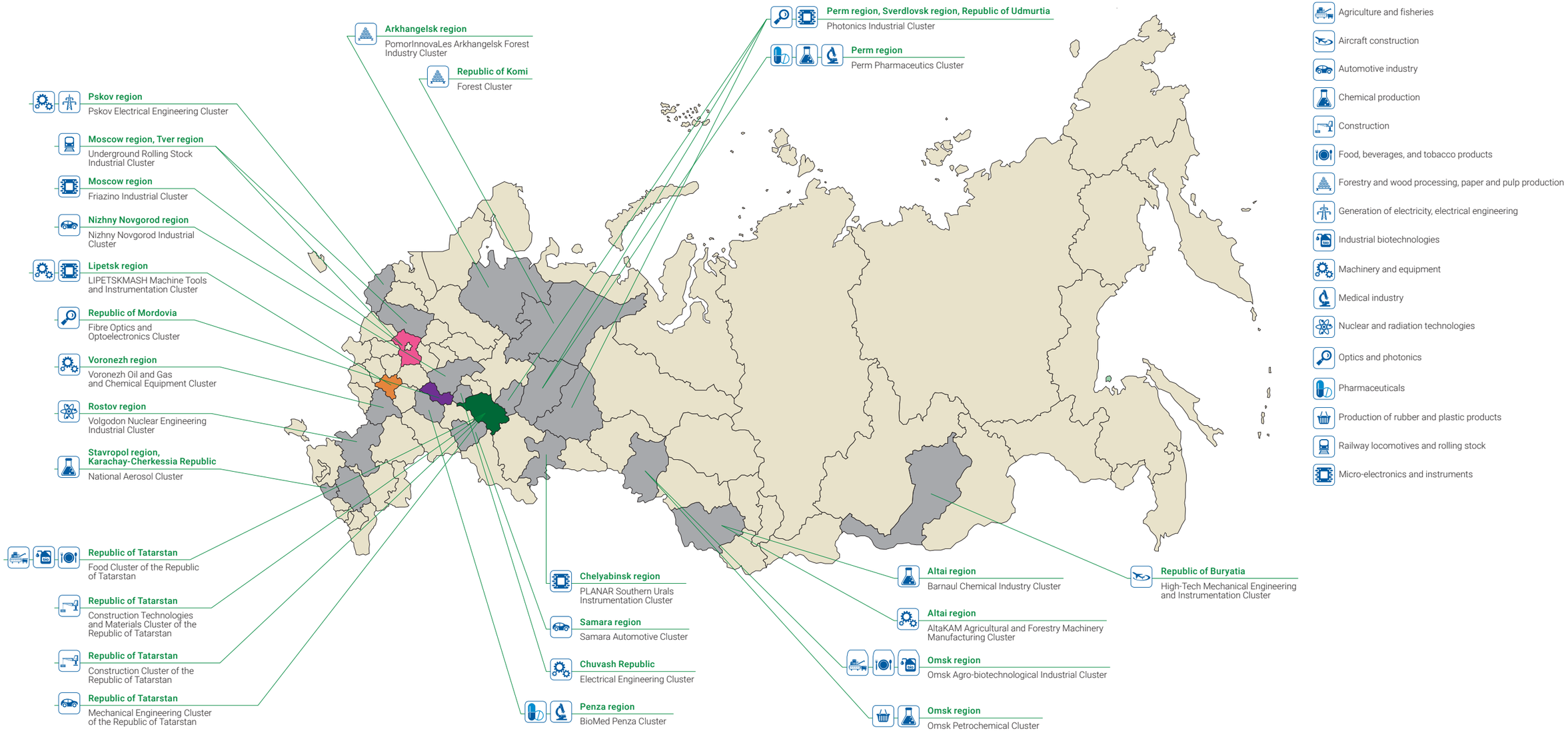


Source: [HSE, 2017a]

Map 2. Map of Leading Clusters (2018)

Source: [HSE, 2017a]

Map 3. Map of Industrial Clusters (2018)



Source: Compiled by the authors based on the Ministry of Industry and Trade data

Priority Project "Promoting Development of Innovation Clusters – Global Leaders in Attracting Investment"

In 2016, the Ministry of Economic Development switched to supporting clusters on the basis of project management principles, launching the priority project "Promoting Development of Innovation Clusters – Global Leaders in Attracting Investment". Its goal was advancing growth points, promoting innovation-based development and export of high technology products, technology commercialisation, productivity growth, creation of highly productive jobs, and strengthening national competitiveness [HSE, 2017a].

The support to leading clusters in Russia was launched simultaneously with the Canadian national cluster programme known as «Innovation Superclusters». The mission was to concentrate efforts on areas of growth nearing critical mass with potential for international visibility, and this is quite similar to the purpose and principles of the Russian priority project. Five Canadian superclusters have been selected to receive assistance in commercialising their platform technologies, launching joint R&D projects, and strengthening the position of national firms in emerging global markets [Government of Canada, 2018].

Russian leading clusters were selected by tender, just as the PICs had been: the 11 clusters that became participants in this priority project were selected out of 22 applicants from 21 Russian regions. In 2017, the number grew to 12 clusters (map 2). The clusters qualified to apply had to belong to one of the following groups: (1) world-class R&D and educational centres working toward utilisation of the full potential of research institutes and universities; and (2) alliances of medium-sized and large innovative companies in which high technology businesses play a leading role.

This priority project benefits from the experience of the pilot innovation clusters support programme, but places the accent on the following key areas:

- achieving technological leadership;
- maintaining an efficient system for commercialising technology;
- supporting fast-growing medium-sized companies ("gazelles");
- promoting modernisation of core companies;
- creating a system for attracting investment from international sources;
- adapting the education and training system to meet cluster member requirements;
- establishing an efficient cluster management system [HSE, 2017b].

The project implementation began with setting down roadmaps through 2020 for use in detecting at an early stage any deviations from the development strategies of the leading clusters and then taking appropriate corrective steps. The roadmaps specify in detail the actions planned at intervals no longer than two weeks. Performance targets, funding sources, and responsible staff members are specified for each of the planned steps [HSE, 2017b].

An important objective of the project is promoting integration into global chains of added value. In 2016, cluster member **exports, excluding raw materials,** reached US$ 5.6 billion and by 2020 are expected to increase by 52%. More than 24,000 **highly productive jobs** were created by cluster members in 2016. By 2020, this figure is expected to increase by 88%. In 2016, their expenditures on **joint R&D projects** amounted to more than 12.2 billion roubles (US$ 183.9 million), but by 2020 this figure

is expected to double. In 2016, leading cluster members received 100 **international patents for inventions;** by 2020 the number of these patents is expected to increase 2.3 times [HSE, 2017a].

A key performance indicator of the investment attractiveness of leading clusters is the **amount of private investments** they have received. In 2016, this figure was 163.9 billion roubles (US$ 2.47 billion), and a 69% growth is planned by 2020 (see figure 4).

Industrial Clusters Support Programme

In 2015, the Ministry of Industry and Trade launched its own cluster support programme. Its main goal was promoting import substitution by fostering development of industrial cluster added value chains.

Those clusters that met the Ministry's criteria and were officially registered would receive support. During 2016 and on through April of 2018, 44 applications were submitted. Following the expertise, 26 clusters were found to meet the criteria (map 3). The selected clusters specialise in the following industries: aircraft construction; automotive industry; forestry and wood processing; micro-electronics and instruments; optics and photonics; the food industry; machinery and equipment; construction; pharmaceuticals and the medical industry; chemistry and petrochemistry.

Companies in the selected clusters may claim federal budget subsidies to recover part of their joint project costs. A necessary condition is that the projects be approved by a tender commission [Government of the Russian Federation, 2017]. The programmes' budget from 2016 and through 2020 is planned to amount to 3.24 billion roubles (US$ 55.78 million). The most common categories of costs specified in subsidy applications included the following:

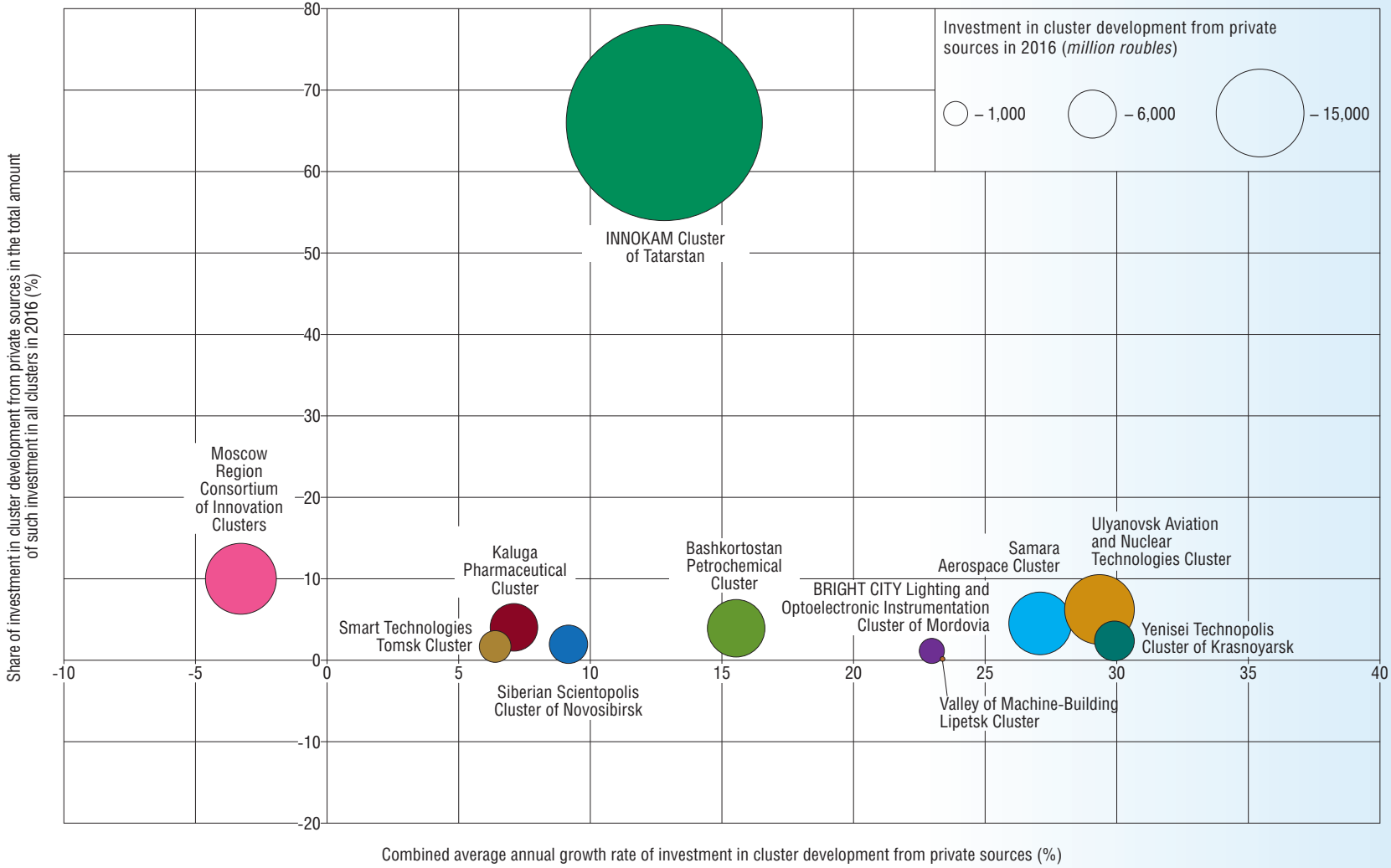
- product control, measurement, and testing; making prototypes, samples, and trial runs;
- preparing design documentation;
- paying interest on loans;
- procurement of necessary production tools for equipment;
- procurement of software;
- licensing and certification costs;
- engineering staff training and upgrading professional qualifications;
- preparing procedural and methodological documentation.

In 2016, the **total number of jobs** at all industrial cluster member companies amounted to about 150,000. In 2018, this figure is expected to increase by 9% for 26 clusters. **Exports** of 19 industrial clusters in 2016 amounted to 94.4 billion roubles (US$ 1.42 billion). In 2018, this figure is expected to increase by 40%. In 2016, companies in the industrial clusters **imported** approximately 96 billion roubles' worth of raw and other materials and finished products (US$ 1.45 billion), which amounts to 27% of their total expenditures on such procurement. By 2018, companies in the industrial clusters expect to increase their import expenditures by just 1.5%.

A major indicator of industrial clusters' performance is the **total volume of shipped products** manufactured in-house and services provided. According to the development programmes of the 26 clusters included in the Ministry of Industry and Trade registry, in 2016 this figure reached 597.7 billion roubles (US$ 9.01 billion). In 2018, it is expected to increase by 30% (figure 5).

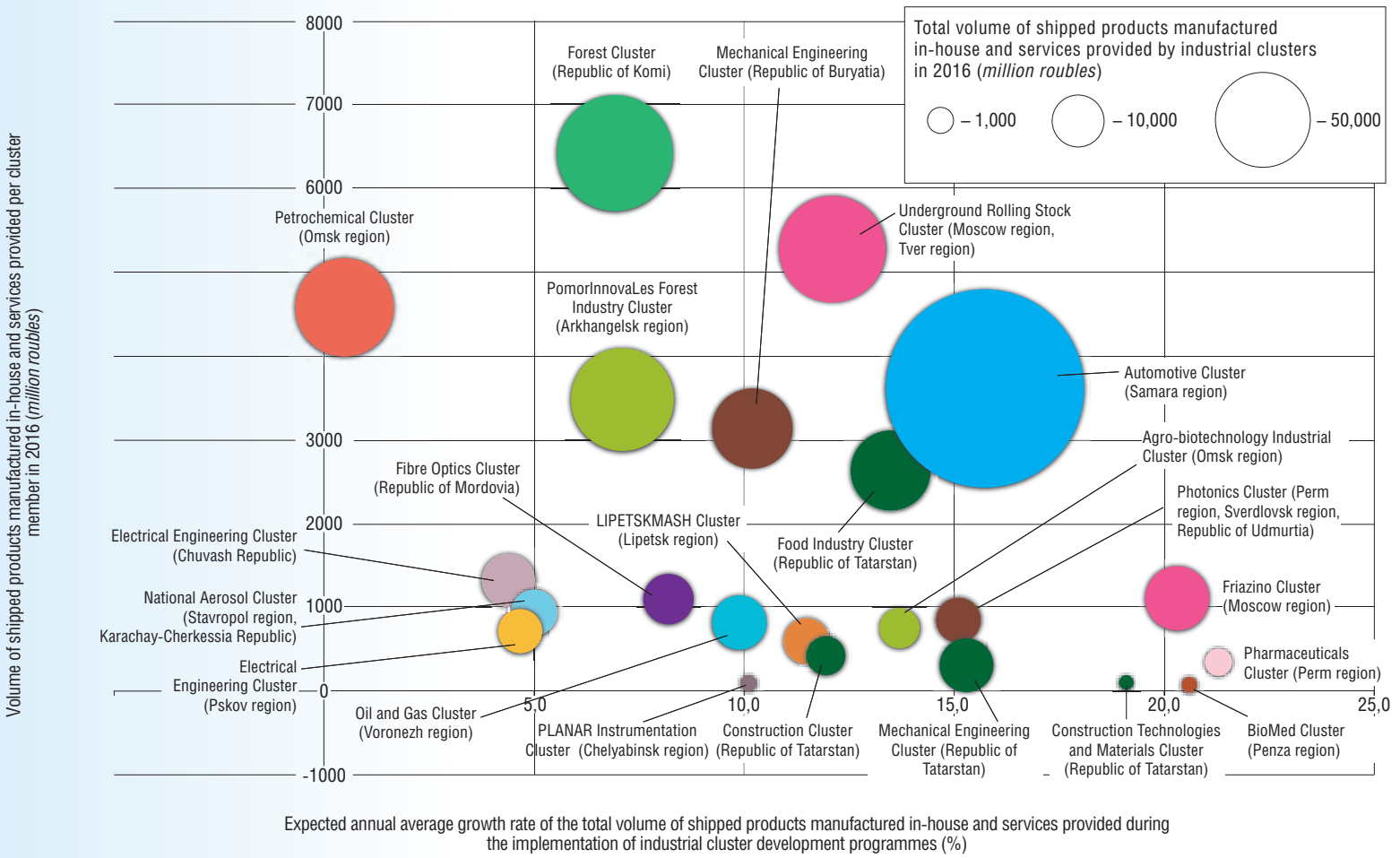
The cluster support programmes are compared in Table 1.

Figure 4. Private investment in the development of leading clusters



Source: [HSE, 2017a]

Figure 5. Volume of shipped products manufactured in-house and services provided by industrial clusters



Source: compiled by the authors based on industrial clusters' development programmes

Table 1. Comparison of Russian cluster support programmes

Criteria for comparison / Clusters that receive support	Pilot Innovation Clusters	Leading Clusters	Industrial Clusters
Supervisor	Ministry of Economic Development		Ministry of Industry and Trade
Term of the programme	Since 2012	Since 2016	Since 2015
Type of support	Federal subsidies to Russian regions for co-funding activities indicated in cluster programmes. Total funds of 5.05 billion roubles (US$ 113.64 million) in 2013–2015	Comprehensive assistance in cluster development (export, attraction of investments, commercialisation of technology, modernisation of core companies, training cluster managers, etc.)	Federal subsidies to cluster members to recover up to 50% of joint project costs. Current funds of 3.24 billion roubles (US$ 55.78 million) from 2016 through 2020
Key support goals	Innovation infrastructure development	o Increase of export volumes o Attraction of investments	o Enhancement of industrial cooperation o Import substitution
Number of clusters that benefit from the support	27 (2015)	12 (2017)	26 (April 2018)
Requirements for cluster members	Not restricted. Pilot Innovation Clusters basically include: – enterprises – universities – R&D organisations	Minimum of 40 organisations, including: – export-oriented enterprises – universities – R&D organisations	Minimum of 13 organisations, including: – 10 industrial enterprises – 1 educational organisation – 2 infrastructure units
Requirements for cluster management organisation	(Co-)established by a regional/ municipal authority	Legal entity with a minimum staff of 5 people	Cluster management organisation is composed of representatives from at least half of the cluster members
Cluster management organisation eligible to be a support recipient	Yes (funding was provided for staff training, and methodological, organisational, expert, and informational services)	No (cluster management organisation is funded either by cluster members, or regional authorities)	
Cluster selection approach	Clusters were selected once. Procedure for updating the cluster short list is not determined.		The Industrial Clusters registry is updated continuously.
Funding allocation procedure	Annual competition of applications for funding among Pilot Innovation Clusters	No federal funding	A contract between the Ministry of Industry and Trade and a cluster project initiator for a 5-year period maximum

Source: compiled by the authors

1.2. PRIORITY PROJECT "PROMOTING DEVELOPMENT OF INNOVATION CLUSTERS – GLOBAL LEADERS IN ATTRACTING INVESTMENT"

Selection of Leading Clusters by Tender

As Russia's cluster policy is refined, its focus is shifting from testing (pilot innovative clusters) and seeding (cluster development centres) formats towards project-based ones. In particular, the standard that innovation clusters are expected to meet is to become global leaders in attracting investment. Applying a project-based approach to shaping and implementing cluster policy is expected to accomplish the following objectives:

- reduce the time required to get results;
- use resources more efficiently;
- improve the transparency, validity, and timeliness of decision-making;
- increase the effectiveness of cooperation across governmental agencies and administrative levels.

The priority project "Promoting Development of Innovation Clusters – Global Leaders in Attracting Investment" is scheduled to end in 2020 and comprises the following stages:

1) preparing and circulating a tender to select the Russian regions where leading clusters are located;
2) designing a cluster management system meeting international standards (in particular, the requirements of the European Secretariat for Cluster Analysis);
3) providing project participants access to available support initiatives (at the national and regional levels);
4) assisting with design of regional programmes for attracting investment and encouraging innovation and economic development;
5) facilitating entry into global markets (including promotion of innovative product exports) and attracting investment;
6) fostering cooperation with international partners.

The following results are expected by the end of 2020 when the project is completed:

- per employee output to increase by at least 20% compared with 2016;
- at least 100,000 highly productive jobs created directly or through modernisation;
- at least 300 billion roubles (US$ 4.52 billion) of investment to be received;
- joint (Russian and international) R&D projects to receive at least 100 billion roubles (US$ 1.51 billion) in funding;
- the number of patents for inventions obtained by cluster members to increase threefold;

- at least 300 technology startup companies to be established with investment put into them;
- cluster members' combined revenues from exports excluding raw materials to double compared with 2016;
- the average share of added value in cluster members' revenues to increase by at least 20% compared with 2016.

In the first stage of the priority project, innovation clusters were selected by tender for inclusion in the list of leading clusters. A Project Board with members from government authorities, development institutes, state-owned companies, leading R&D and educational centres, and business associations was established to select the clusters. The project strategy was elaborated, along with procedures for a tender-based selection of applications and methodological materials for designing leading cluster strategies and roadmaps. The Board received 22 applications from 21 Russian regions.

The clusters were selected through a two-stage process. In the first (distance) stage, the documents submitted were evaluated and expert opinions prepared; in the second (face-to-face) stage, cluster strategies were presented and defended in person. A cluster's current development level, expected growth in performance indicators, and the level of detail and practicality of the steps specified in its development programmes were considered in relation to meeting the project targets.

Each cluster presented several integrated core projects within their development strategies, which were designed to produce a multiplier effect, increase the cluster's ability to attract investment, and enhance its visibility in fast-growing global markets (see Box 1 below).

Box 1. Examples of core projects suggested by participants in the leading clusters tender

Smart Technologies Tomsk Cluster forged six project alliances: active biopharmaceutical substances, technological vision for unmanned aerial vehicles, multifunctional ICT systems for application in regions with extreme climates, industrial robotics, intelligent urban solutions, and digital medicine.

An open innovation R&D centre specialising in oil and gas processing, oil and gas chemistry, and the automotive industry is expected to become a key project of **INNOKAM Cluster of Tatarstan**.

Ulyanovsk Aviation and Nuclear Technologies Cluster launched a series of projects to create companies specialising in new materials, advanced production technologies, transportation of the future, and renewable energy based on the accumulated potential of the region's traditional high technology industries–nuclear technologies and aircraft construction.

BRIGHT CITY Lighting and Optoelectronic Instrumentation Cluster of Mordovia will augment technological competence and enter international markets for fibre optic and photonic products by expanding the engineering centres recently established in those fields.

Moscow Region Consortium of Innovation Clusters merges the S&T potential of the PhysTech XXI and Dubna clusters with the engineering and production facilities of the aerospace centres located in Zhukovsky and Korolev, and biotechnology centres located in Pushchino and Chernogolovka.

In the course of assessing applications, clusters combining global competitiveness and high output growth of member companies with significant S&T potential in local R&D and educational organisations were given preference. Accordingly, 11 such clusters were selected, and one more was added in 2017 – InnoCity Cluster of Saint Petersburg.

Development Targets of Leading Clusters, and Relevant Support Areas

The Ministry of Economic Development's priority project stipulates that the efforts of innovation clusters be aimed at achieving global leadership in terms of attracting investment. Consequently, their performance is assessed primarily on the basis of the amount of **private investment** they receive. According to innovation cluster support agreements signed by the Russian Ministry of Economic Development and by governments of the regions where leading clusters are based, in 2016 the total amount of such investment was 163.9 billion roubles (US$ 2.47 billion). By 2020 it is expected to increase by 69%. The leader here is INNOKAM Cluster of Tatarstan, which is far ahead of all others with more than 109 billion roubles (US$ 1.64 billion). Also worthy of note are Moscow Region Consortium of Innovation Clusters, and Ulyanovsk Aviation and Nuclear Technologies Cluster (both exceeded the 10 billion roubles (US$ 151 million) threshold).

A key objective of the priority project is promoting integration of the leading clusters into global chains of added value. Accordingly, the second major indicator of cluster performance is their exports excluding raw materials. In 2016, these **exports** amounted to US$ 5.6 billion, and by 2020 are expected to increase by 52%. The main contributor here is INNOKAM Cluster of Tatarstan with more than US$ 5.03 billion, or more than 90% of all leading clusters' combined export revenues. Relevant figures for other clusters vary from US$ 4 million (Smart Technologies Tomsk Cluster) to US$ 138 million (Bashkortostan Petrochemical Cluster).

More than 24,000 **highly productive jobs** were created directly or through modernisation in the leading clusters. By 2020, this number is expected to grow by 88%. The leaders here are Samara Aerospace Cluster and INNOKAM Cluster of Tatarstan (more than 4,000 and 6,000 new jobs, respectively).

Leading clusters concentrate on adding to **joint R&D projects**. In 2016, the expenditures on such projects were estimated at approximately 12.2 billion roubles (US$ 184 million), but by 2020 they should increase by 120%. The Moscow Region Consortium of Innovation Clusters is the undisputed leader in terms of expenditures on joint R&D projects – 4.6 billion roubles (US$ 69.33 million). The figures for Siberian Scientopolis Cluster of Novosibirsk, and Bashkortostan Petrochemical Cluster are 1.2 and 2.3 billion roubles (US$ 18.08 and 34.66 million), respectively. Other clusters' R&D expenditures vary between 0.2 and 0.8 billion roubles (US$ 3.01 and 12.05 million).

In 2016, there were 175 **technology startup companies** that belonged to the leading clusters. By 2020, this number is expected to increase by 168%. Currently, about 60% of these companies are registered in Bashkortostan Petrochemical Cluster and in Moscow Region Consortium of Innovation Clusters. No other cluster has more than 15 such firms.

In 2016, organisations within leading clusters received a total of 100 **foreign patents for inventions**. This number is expected

Table 2. Development objectives for leading clusters to be achieved by 2020

Kaluga Pharmaceutical Cluster
Leadership in radiation medicine Increased volume of pharmaceutical production Encouraging global pharmaceutical companies to open R&D centres in the region; launching an S&T park Increasing the potential of the Kaluga State University and the Kaluga branch of MEPhI
Yenisei Technopolis Cluster of Krasnoyarsk
Strengthening positions in fast-growing markets: → next-generation satellites and UAVs → nuclear technologies (back-end) → new production technologies
Valley of Machine-Building Lipetsk Cluster
Developing an innovation ecosystem consisting of universities and small and medium-sized enterprises to serve core companies Achieving an advanced level of technological production, improving product quality, entering international markets
Moscow Region Consortium of Innovation Clusters
Encouraging and supporting cooperation between clusters and science towns, focusing on the National Technology Initiative markets Establishing and enhancing technology application platforms to promote the development of small and medium-sized enterprises Establishing centres for certifying and promoting, exports and engineering
Siberian Scientopolis Cluster of Novosibirsk
Business acceleration, promoting development of high technology companies by expanding successful industrial parks Improving international and inter-regional cooperation, in particular as part of the Siberian Biotechnology Initiative
Bashkortostan Petrochemical Cluster
Upgrading existing petrochemical and high conversion production facilities (plastics, polymers, etc.) and setting up new ones Establishing a petrochemical engineering centre Creating the ChemTerra and Ufimsky industrial zones as infrastructure for new industrial production facilities

(continued)

BRIGHT CITY Lighting and Optoelectronic Instrumentation Cluster of Mordovia
Creating world-class innovation infrastructure
Transfer of technology and attracting high technology investors from abroad
Developing the urban environment, including by testing and application of the cluster's products
Attracting gifted young people
INNOKAM Cluster of Tatarstan
Increasing the share of petrochemical products with high added value
Increasing exports of high conversion products
Expediting joint R&D projects
Samara Aerospace Cluster
Transforming the engineering centre's laboratories into high technology small innovative companies and R&D centres as part of the Gagarin Centre Technopolis
Restructuring production, promoting outsourcing, integrating into global supply chains and recently developing market segments
Implementing key projects, developing new products such as UAV complexes for remote exploration of the earth, delivery systems for bulky cargo, pseudo-satellite groups
Smart Technologies Tomsk Cluster
Scaling up business, increasing exports using the potential of established project alliances: → active pharmaceutical substances → technological vision for UAVs → intelligent urban solutions → digital medicine → industrial robotics → multifunctional ICT systems for regions with extreme climates
Ulyanovsk Aviation and Nuclear Technologies Cluster
Territorial development projects: → Technocampus 2.0 (new type of university) → Technology Valley 2.0 (new industry) → Innovators' and investors' village (new quality of life)
Supporting the emergence of companies specialising in new industries, including aircraft construction and nuclear technologies: new materials, new production technologies, unmanned vehicles, renewable energy

Source: [HSE, 2017a]

Table 3. Main objectives in developing leading clusters and the necessary public support mechanisms

Cluster Development Objectives	Public Support Mechanisms
Clusters formed around core high technology companies	
Developing innovation, production, transport, and energy infrastructure Finding new markets and applications for existing competences; reducing concentration on traditional markets with low growth rates Overcoming dependence on state orders and outdated technology; implementing an open innovation model	Promoting emergence of an "innovation belt" around large enterprises, comprising small and medium-sized companies, universities, and R&D organisations Applying advanced organisational techniques, encouraging outsourcing, creating a system of suppliers Improving existing technology chains by providing support for "optimisation"
Clusters formed around leading R&D centres	
Facilitating "project flows" – emergence of high technology startup companies established by graduates of universities associated with cluster companies Promoting innovation entrepreneurship among young people Achieving world-class competitiveness in education and research, in part by increasing cooperation with leading international universities and R&D centres Increasing the share of breakthrough world-class R&D results Strengthening cooperation with industrial companies	Encouraging large Russian and international companies to set up high technology production that utilises existing human potential and R&D infrastructure Facilitating "serial" innovative entrepreneurship through commercialisation of newly developed technologies Staff training, promoting emergence and development of new research areas Launching advanced cutting-edge high technology production facilities
Clusters formed around small and medium-sized innovative companies	
Developing human potential, attracting highly skilled professionals Encouraging innovation entrepreneurship (including at the early stages) Establishing consortia and joint projects to enter new markets, including orders from large companies and public procurement	Promoting emergence of an innovation ecosystem and shared services, including innovation infrastructure Promoting demand for innovative products of small and medium-sized companies Encouraging intra-cluster cooperation, in particular with R&D and educational organisations

Source: [HSE, 2017b]

to increase 2.3 times by 2020. INNOKAM Cluster of Tatarstan is the champion here (with 35 patents). The Kaluga, Moscow, and Novosibirsk regional clusters each have between 10 and 18 foreign patents, while the others have no more than 6. In most cases leading clusters expect to achieve a quite significant average annual growth rate for this indicator by 2020 (by more than 25%, and even by more than 50% in some cases).

Development objectives for leading clusters to be achieved by 2020 are presented in table 2.

Notably, each cluster came up with a specific set of means to reach their objectives.

The ambitious goals of the leading clusters are to be achieved with the help of various public support mechanisms and in cooperation with companies with state participation, development institutes, and foreign partners. The priority project specifies a number of mechanisms to support leading clusters (see table 3).

The best results from the cluster support mechanisms should be achieved by the inter-cluster projects that involve shared use of equipment and infrastructure, joint procurement and promotion of products in foreign markets, and enhancing the skills of leading cluster management teams. A major factor in expediting cluster development will be ongoing sharing of the best cooperation practices from the clusters, such as in attracting investment, developing innovation infrastructure and mechanisms for commercialisation, promoting exports, and devising advanced R&D projects.

One of the conditions for successfully implementing the full range of planned steps is that the regions in which the leading clusters are located carry out project management synchronised with the Ministry of Economic Development's priority project roadmap, particularly through operational monitoring of the leading clusters.

2

Profiles of Leading Clusters

PCK

Nonprofit
partnership

Kaluga Pharmaceutical Cluster

PCK
Nonprofit partnership

SILVER Cluster Management Excellence

Anatoly Sotnikov

General Director,
Kaluga Regional Innovation Development Agency – Cluster Development Centre

Pavel Grankov

Deputy General Director; Director of the Cluster Initiatives and Project Development Department, Kaluga Regional Innovation Development Agency – Cluster Development Centre

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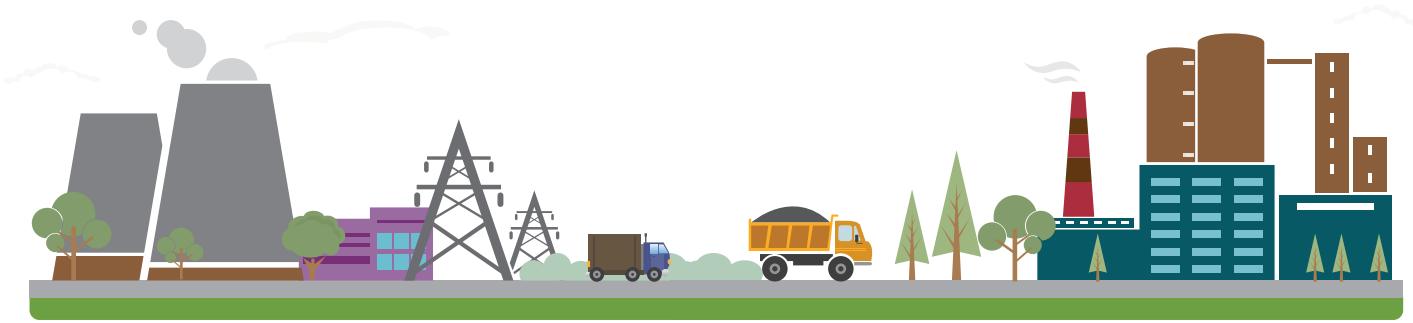
www.airko.org
www.airko.org/en/
E-mail: grankov@airko.org

GENERAL INFORMATION

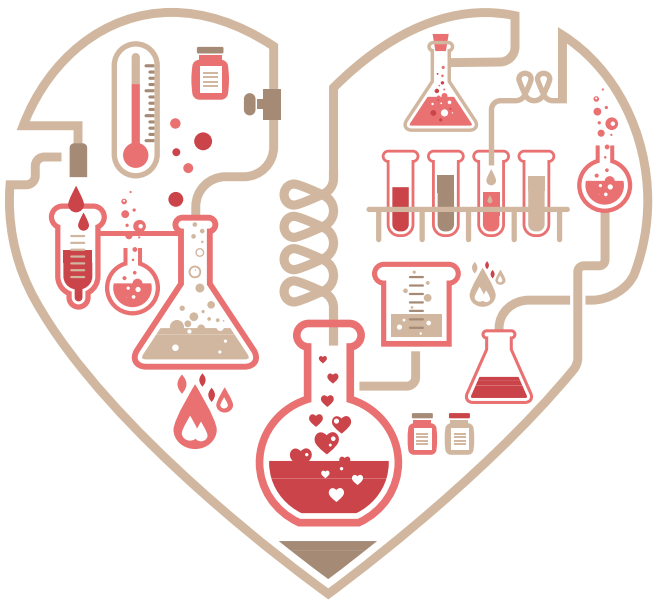
Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters – Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	+
Gold Label of the European Cluster Excellence Initiative	–



Cluster Mission

To create a network of integrated high technology production facilities and infrastructure in the Kaluga Region for developing, manufacturing, and marketing next-generation medical preparations, pharmaceutical substances, and medical products that meet GMP standards.



Cluster Objectives

- Supporting projects that increase the competitiveness of pharmaceutical, biotechnological, and biomedical organisations by establishing and upgrading innovation infrastructure, and other measures
- By 2020 becoming one of the top three clusters in terms of pharmaceutical product output
- Promoting cluster member investment projects, including those aimed at increasing value added locally (production localisation)
- Encouraging cooperation between cluster members, and supporting their joint projects
- Promoting cluster member products in new regional and international markets

Strategic Development Plan

Development Strategy for the Kaluga Pharmaceutical Cluster dated September 19, 2016.

Industry Specialisation

- Biopharmaceuticals
- Medical services
- Development and production of ready-to-use drug preparations and pharmaceutical substances
- Nuclear medicine, production of radio-pharmaceuticals
- Biotechnology
- Production of medical equipment and products

Membership

44 small enterprises

13 medium and large enterprises

6 other participants

63 organisations

S&T Specialisation

Synthesising active pharmaceutical substances

- Development of biotargets, combinatorial chemistry, library synthesis
- New formulations of pharmaceutical substances with specified parameters
- Development of new drug delivery systems

Technological engineering

- Development of laboratory and experimental (prototype) technologies for industrial production of pharmaceutical substances using chemical methods in line with GMP standards
- Development of laboratory and experimental (prototype) procedures, adjustment (improvement) of technologies
- Quality control and identification of structures

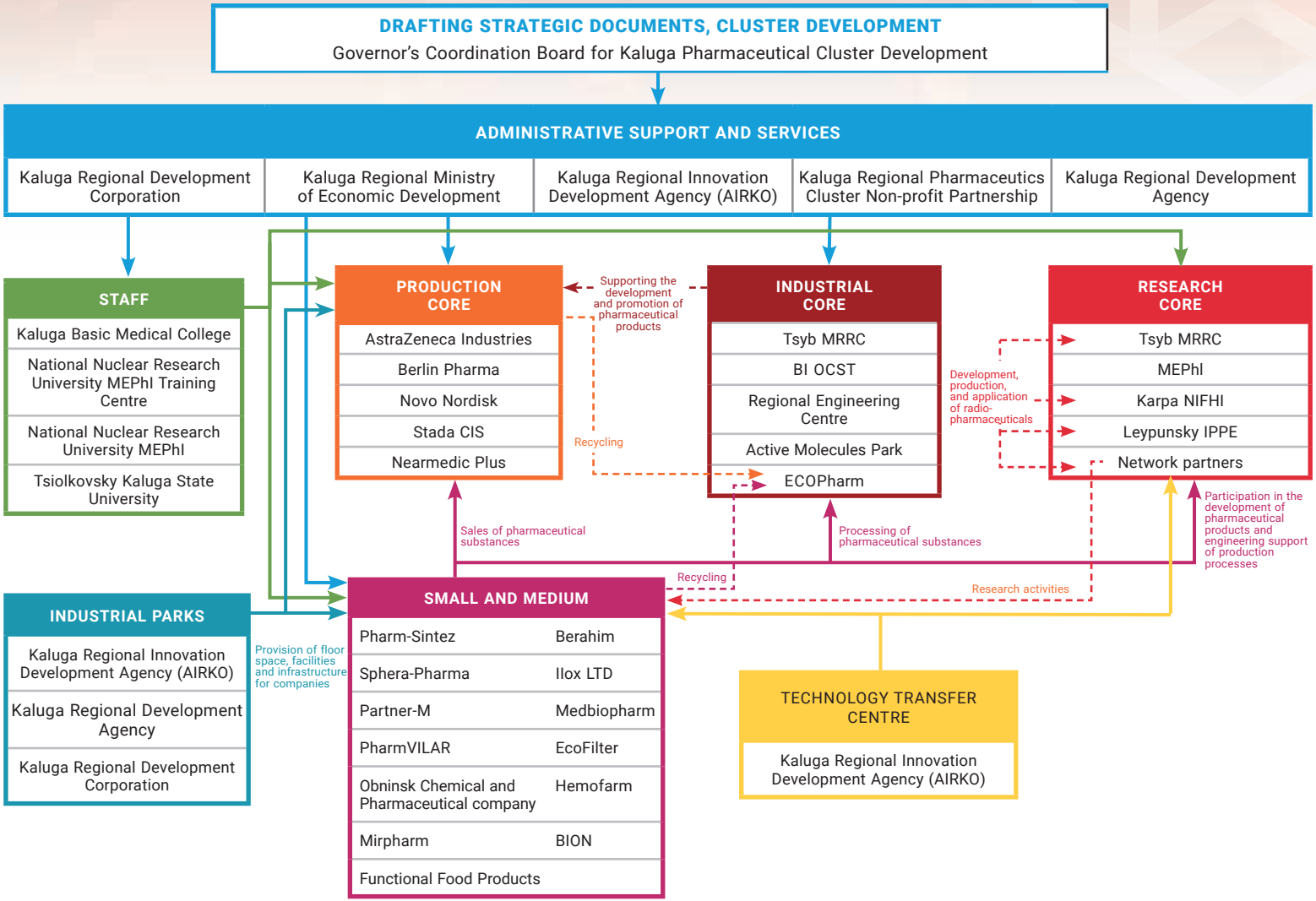
Nuclear medicine

- High technology diagnostics
- Radiation biophysics, molecular and cellular radiobiology
- Pharmacy and radio-pharmacology
- Physical and biological dosimetry

Biotechnology

- Production of textured vegetable proteins
- Development of functional combined products based on protein mixtures
- Further development of technologies for production of milk proteins, starches, phosphates, and gums

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Nearmedic Plus, LLC
www.nearmedic.ru
Novo Nordisk, LLC
www.novonordisk.ru
Berlin Pharma, JSC
www.berlin-chemie.ru
PharmVILAR, LLC
www.pharmvilar.ru
AstraZeneca Industries, LLC
www.astrazeneca.ru
Stada CIS, LLC
www.stada.ru

Small Enterprises (1–250 employees)

Hemofarm, LLC (STADA Group)
www.stada.ru
Obninsk Chemical and Pharmaceutical Company, JSC
www.mirpharm.ru
BION, LLC
www.bion.ru
Pharm-Sintez, LLC
www.pharm-sintez.ru
Sphera-Pharm, LLC
www.sphera-pharma.com
Mirpharm, LLC
www.mirpharm.ru

R&D Organisations

Leypunsky Institute for Physics and Power Engineering (IPPE), National Research Centre
www.ippe.ru
Tsyb Medical Radiological Research Centre (MRRC), a subsidiary of the National Medical Radiological Research Centre of the Russian Ministry of Health
www.mrrc-obninsk.ru
Karpov Institute of Physical Chemistry (NIFHI)
www.nifhi.ru

Educational Organisations

Obninsk Nuclear Energy Institute (subsidiary of the National Nuclear Research University MEPhI)
www.iate.obninsk.ru

Locations of Key Cluster Members

- Nearmedic Plus, LLC
- Mirpharm, LLC
- Obninsk Nuclear Energy Institute (subsidiary of the National Nuclear Research University MEPhI)
- Leypunsky Institute for Physics and Power Engineering (IPPE)
- Tsyb Medical Radiological Research Centre (MRRC)
- Karpov Institute of Physical Chemistry (NIFHI)
- Stada CIS, LLC
- PharmVILAR, LLC
- Obninsk Chemical and Pharmaceutical Company, JSC
- BION, LLC
- Active Molecules Park Competency Alliance

- Sphera-Pharm, LLC
- Pharm-Sintez, LLC
- AstraZeneca Industries, LLC

- Novo Nordisk, LLC
- Berlin Pharma, JSC

Products and Services

- Pre-clinical and clinical research
- Development, synthesis, and production of ready-to-use drug preparations, pharmaceutical substances, and radio-pharmaceuticals
- Industrial production of ready-to-use medical preparations and pharmaceutical substances for application in medical fields in demand, such as oncology, cardiology, and rare (orphan) diseases
- Production of radio-pharmaceutical preparations, infusion solutions, and parenteral nutrition

Membership in Professional Associations

The cluster is the founder of the non-profit partnership Alliance of Russian Pharmaceutical and Biomedical Clusters

http://farmunion.ru/

154 varieties
of ready-to-use medical preparations

More than **90** tons of pharmaceutical substances produced per year

CLUSTER MANAGEMENT ORGANISATION

Official name:

Kaluga Regional Innovation Development Agency – Cluster Development Centre

Legal status: Joint-stock company

Established: 2010

Number of staff: 9

Anatoly Sotnikov

General Director

Тел.: +7 (910) 913-33-52

E-mail: sotnikov@airko.org

Pavel Grankov

Deputy General Director, Director of the Cluster Initiatives and Projects Development Department

Phone: +7 (916) 121-18-65

E-mail: grankov@airko.org

Svetlana Shumay

Special Projects Manager (international relations)

Phone: +7 (905) 640-23-45

E-mail: shumay@airko.org

http://www.airko.org/about/

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	–
Periodic information dissemination	+
Promotion of activities (marketing/ visibility)	+
Support of knowledge transfer	–
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	+
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- Supporting joint cluster projects to produce at least two new pharmaceutical preparations a year (*i.e.* expert evaluation, assistance in attracting funds)
- Representing the cluster at commissions and expert councils convened by Russian federal authorities
- Hosting regular regional and international events related to pharmaceuticals
- Organising annual thematic meetings to discuss various aspects of cluster development (education, production, R&D, etc.)
- Preparing materials about the cluster's activities and disseminating them via federal and regional media
- Hosting the cluster website (www.pharmclusterkaluga.ru)

CLUSTER SUCCESS STORIES

Project: Development of preparations that replace imported ones, transfer of production technologies

Project type: Research and development of new products and services; development (transfer) of production technologies

Participants: Mirpharm LLC, Obninsk Chemical and Pharmaceutical Company JSC, Stada CIS LLC

The project resulted in significant reduction of time required to supply the Russian market with preparations that replace imported ones in critical categories of treatment. This was accomplished by establishing an efficient cooperation network of key Russian pharmaceutical companies, and helping them to acquire additional competences. Several preparations replacing imports were developed and supplied to the Russian market as part of the project, specifically:

- Prucalopride (equivalent to Resolor produced by Janssen Cilag S.p.A., Italy) – the first Russian replacement preparation used for a radically new treatment of chronic constipation;
- Cabergoline (equivalent to Dostinex produced by Pfizer S.r.L., Italy) – an infertility treatment for women;
- Valproic acid (equivalent to of Depakine Chrono, France; Valproic acid, Slovenia; Convulex, Austria; Encorate Chrono and Valparine XR, India) – an antiepileptic drug;
- a preparation under the international non-proprietary name Mitotane (trademark Lysodren, held in the US by Bristol-Mayers Squibb, in the EU by Laboratoire HRA Pharma, France); in 2002 the European Commission for Health and Food Safety approved it as a basic drug for treating adrenocortical carcinomas.

Project: Developing technology for, and launching production of an installation for highly efficient proton beam-based radiation therapy

Project type: Production design, design of new products, services, and production techniques

Participants: Leypunsky Institute for Physics and Power Engineering, Tsyb Medical Radiological Research Centre, Karpov Institute of Physical Chemistry

The first Russian proton therapy complex for highly effective treatment of oncological patients was created as part of the project. There are plans for supplying such complexes to other Russian regions and for exporting them abroad. Because of the relatively low cost of services, this unique system is more economical to use than existing foreign-made equivalents.

Its capacity is 200–300 patients each year per synchrotron with potential to increase this number to 1,500 patients.

A thin computer-controlled proton beam permits scanning targets and performing precision irradiation with almost no damage to healthy tissues.

INTERNATIONAL COOPERATION

Partner Clusters

Eurobiomed (France)
http://www.eurobiomed.org/

C.H.I.C.H.O (Italy)
http://www.clusterchico.eu/

ChemieCluster Bayern (Germany)
http://www.chemiecluster-bayern.de/

BIOTURKU (Finland)
http://www.turkusciencepark.com/about-science-park/bioturku/

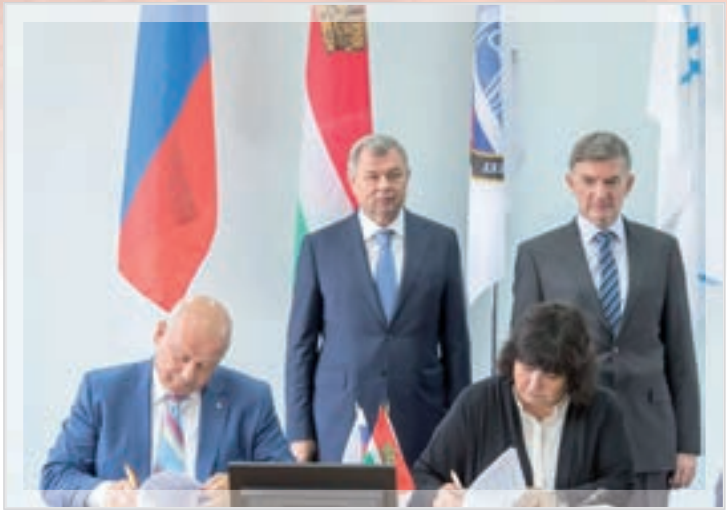
Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

We invite partners to conduct joint pre-clinical and clinical studies and research using unique high technology equipment:

- the TANDETRON charged particles accelerator, which is the best in its class;
- the unique synchrotron at the medical proton complex of the Tsyb Medical Radiological Research Centre;
- the technetium generator production facility at the Karpov Institute of Physical Chemistry (the only one in the country certified to match GMP standards).



Possible cooperation areas:

- producing medical preparations on a contractual basis at full-cycle production facilities meeting GMP standards;
- sharing practical experience in applying unique oncological disease treatments such as brachytherapy;
- technology transfer in areas such as development and application of targeted preparations;
- joint production of radio-pharmaceuticals meeting GMP standards (including full-cycle production).

Cooperation Proposals

Project: Developing a line of innovative medical products for osteoanagenetic application based on native unreconstructed collagen technology

The project is being implemented by Nearmedic Plus LLC jointly with the Mitochondrial Engineering Research Institute of the Moscow State University and the Centre for Toxicology and Hygienic Regulation of Biopreparation Research of the Russian Federal Medical and Biological Agency. The objective is to develop, and introduce into common medical practice in Russia, the CIS, and the EU countries a line of medical products for regeneration of bone tissue with a high osteoanagenetic potential, and physical and mechanical properties comparable with those of native bones.

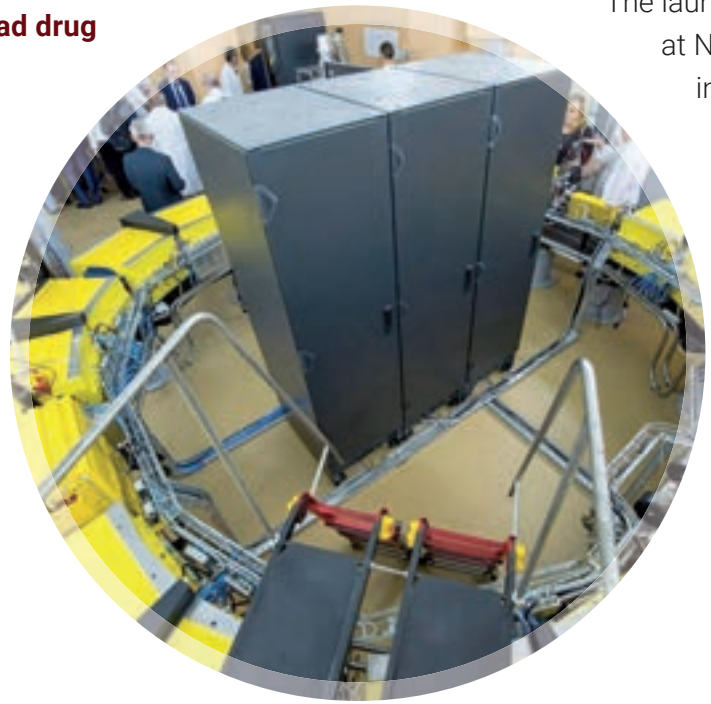
The product line will comprise bone matrix, crumb, and paste (active components—biological collagen matrix with fully preserved 3D structure; amorphous nano-sized hydroxyapatite; and a set of growth factors). All products have a high osteoconductive and osteoinductive potential and can be used individually or in combination with each other. The developed products are superior to foreign-made equivalents in terms of safety and have lower production costs.

The following cooperation areas are envisaged:

- joint research;
- obtaining licences for application in the Eurasian Economic Union countries;
- market promotion of finished medical products;
- attracting investment in medical production in Russia and abroad.

Project: Development and application of a new molecular-genetic testing system for detecting multiple and broad drug resistance to anti-tuberculous drugs in clinical samples

The project is being implemented by Nearmedic Plus LLC and Engentics LLC. At the first stage, a testing system was developed to detect multiple drug resistance. Clinical trials showed a high degree of reliability: specificity for rifampicin 98.84%, and for isoniazid 95.38%. Unlike the competing products currently available on the market, the system can detect not only known, but also new types of drug resistance that are impossible to discover with existing molecular-genetic testing systems.



During subsequent project stages a trademark for the testing system will be designed and registered, and a license for its production will be obtained from the Federal Service for Healthcare Supervision.

The launch of production is planned at Nearmedic Pharma LLC facilities in Obninsk.

The following cooperation areas are envisaged:

- promoting the testing system in European markets;
- joint research to increase the number of antituberculous drug resistance markers.

ASSOCIATION
OF ECONOMIC
COOPERATION
"CLUSTER OF
INNOVATIVE
TECHNOLOGIES
ZATO ZHELEZNOGORSK"

Yenisei Technopolis Cluster of Krasnoyarsk


ПРОМПАРК

ASSOCIATION
OF ECONOMIC
COOPERATION
"CLUSTER OF
INNOVATIVE
TECHNOLOGIES
ZATO ZHELEZNOGORSK"

Evgeny Titov

General Director,
Zheleznogorsk Innovation
Technology Cluster
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GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development Project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	–
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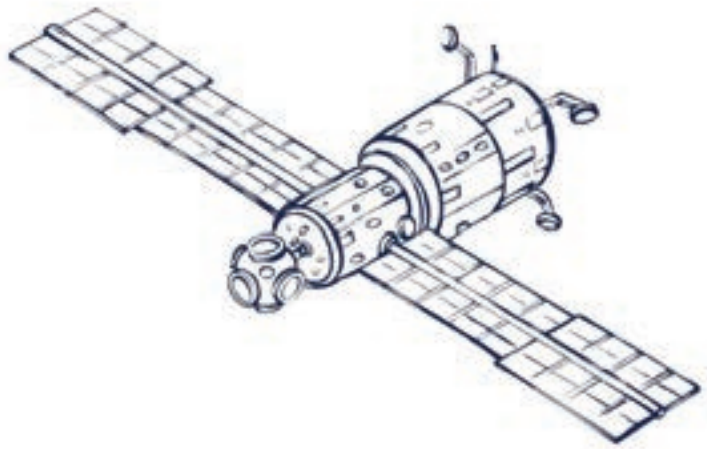
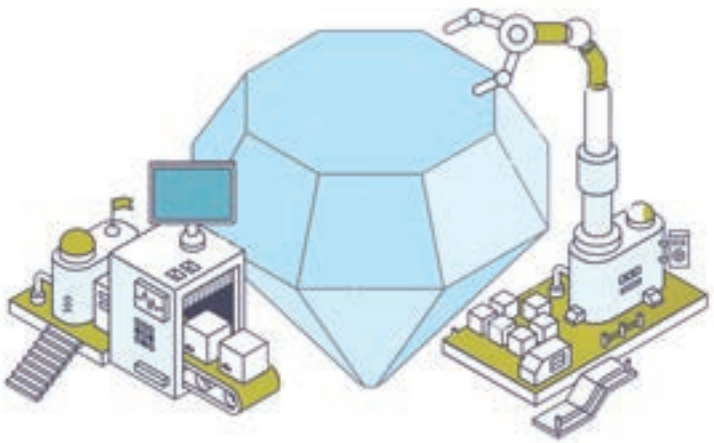
Gold Label of the European Cluster Excellence Initiative	–



Cluster Mission

To make the cluster more competitive by achieving global leadership in designing satellite communication and nuclear safety systems, and by contributing to the development of a new national industrial platform aligned with the priorities of the National Technology Initiative.



Cluster Objectives

- Extending the range of the cluster's technological specialisation
- Ensuring an adequate scale and a balanced structure for growth based on investment and innovation
- Creating value-added chains, which cover all product cycle stages from R&D to mass production, and being supported by appropriate infrastructure and services
- Establishing an effective legal and investment support system to facilitate cooperation between large technology companies and small and medium-sized businesses for joint R&D projects via public-private partnerships
- Advancing an STI ecosystem to promote the development of entrepreneurship and growth of high technology companies
- Concentrating federal funds on the projects to establish the "new economy" in the Krasnoyarsk Region
- Involving children and young people in engineering and innovation activities

ASSOCIATION OF ECONOMIC COOPERATION "CLUSTER OF INNOVATIVE TECHNOLOGIES ZATO ZHELEZNOGORSK"

Strategic Development Plan

Development Strategy for the Yenisei Technopolis Cluster of Krasnoyarsk dated September 22, 2016.

Membership

32 small enterprises

14 medium and large enterprises

13 other participants

59 organisations

Industry Specialisation

- Handling depleted nuclear fuel, closed nuclear fuel cycle (back-end technologies)
- Satellite construction
- Information technologies
- Additive technologies
- New materials
- Smart energy
- Active pharmaceutical ingredients and biopharmaceutical substance
- Technical vision: line of cross market products for air, land and sea unmanned vehicles, industrial and educational robotics
- Multifunction integrated information and communication systems for the regions with extreme climatic conditions
- Robotic systems and educational robotics, including local navigation systems, distributed control system of drive devices, systems of data exchange, smart servo drives and touch environment

S&T Specialisation

Electronics, microelectronics

- Automation, robotics control systems
- Digital systems, digital representations
- Micro- and nanotechnology related to electronics and microelectronics
- 3D printing
- Electronic engineering
- Nanotechnologies related to electronics and microelectronics
- Smart cards and access systems

Information processing and systems, workflow

- Data processing / Data interchange, middleware
- Data protection, storage, cryptography, security
- Databases, database management, data mining
- Information technology / Informatics
- Internet technologies / Communication (wireless, bluetooth)
- User interfaces, usability
- Building automation software
- Remote control

Design and modeling / Prototypes

- Cleaning (sandblasting, brushing)
- Drying
- Erosion, removal (spark erosion, flame cutting, laser)
- Forming (rolling, forging, pressing, drawing)
- Hardening, heat treatment
- Joining techniques (riveting, screw driving, gluing)
- Jointing (soldering, welding, sticking)
- Machine tools

- Machining (turning, drilling, moulding, planning, cutting)
- Machining, fine (grinding lapping)
- Mixing (powder, etc.), separation (sorting, filtering)
- Moulding, injection moulding, sintering
- Extrusion
- Surface treatment (painting, galvano, polishing, CVD)
- Microengineering and nanoengineering

Processing control and logistics

- Process automation
- Air transport
- Intermodal transport
- Railway transport
- Road transport
- Water transport

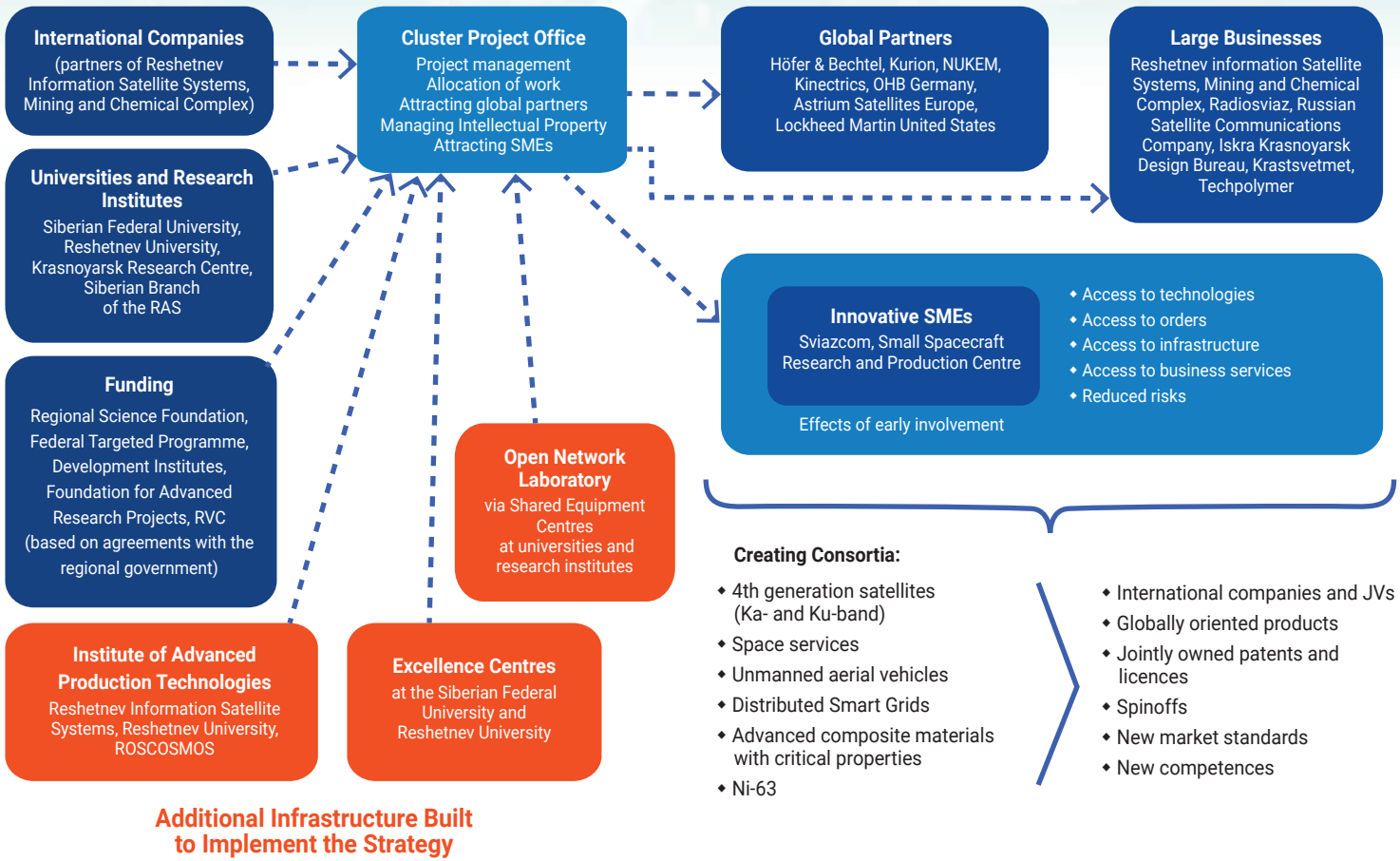
Medicine, human health

- Clinical research, trials
- Cytology, cancerology, oncology
- Dentistry / Odontology, stomatology
- Diagnostics
- Heart and blood circulation illnesses
- Medical research
- Pharmaceutical products / Drugs
- Physiology
- Physiotherapy, orthopaedic technology
- Single use products and consumer goods

eHealth

- Sensors and wireless products
- Health information management
- Remote diagnostics

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Reshetnev Information Satellite Systems, JSC
www.iss-reshetnev.ru/

Mining and Chemical Complex, SOE
www.sibghk.ru/

Krastsvetmet, JSC
www.krastsvetmet.com

Rostelecom, PJSC (Krasnoyarsk Branch)
www.rostelecom.ru

Iskra Krasnoyarsk Design Bureau, JSC
www.iskrakb.ru

Radiosviaz Research and Production Enterprise, JSC
www.krtz.su

Small Enterprises (1–250 employees)

Small Design Bureau Research and Production Association, OJSC
www.npopm-mkb.ru/

SibIT Projects, LLC
www.sibit.ru/

Radius Research and Implementation Engineering Centre, JSC
www.radius-nvic.ru/

Small Spacecraft Research and Production Centre, JSC
www.npc-mka.ru/

Educational Organisations

Siberian Federal University
www.sfu-kras.ru

Reshetnev Siberian State University of Science and Technology (Reshetnev University)
www.sibsau.ru

Krasnoyarsk Research Centre, the Siberian Branch of the RAS
http://ksc.krasn.ru/

Siberian Fire Rescue Academy, the Russian Ministry of Emergencies
www.sibpsa.ru

Other Organisations

Krasnoyarsk Regional Foundation for Supporting Research and S&T Activities
www.sf-kras.ru

Krasnoyarsk Regional Innovation and Technology Business Incubator
www.kritbi.ru/

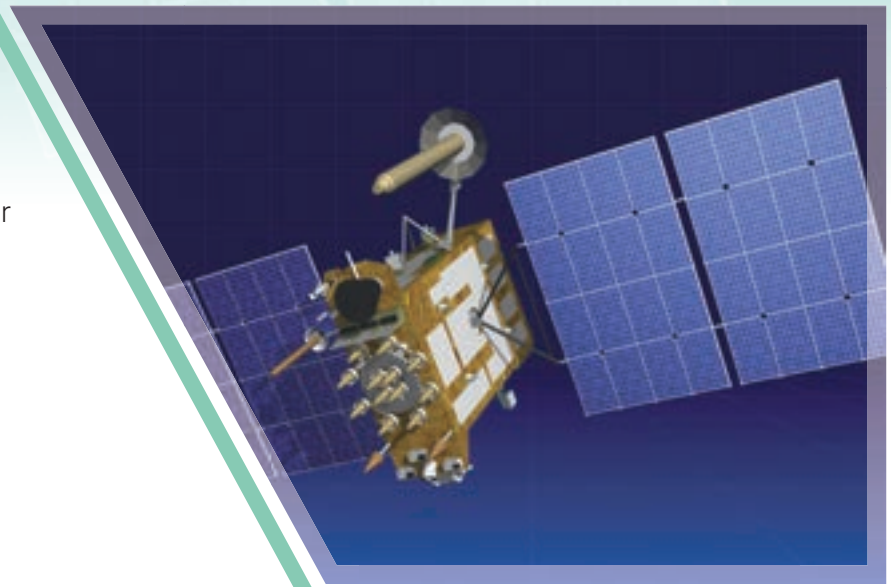
Locations of Key Cluster Members

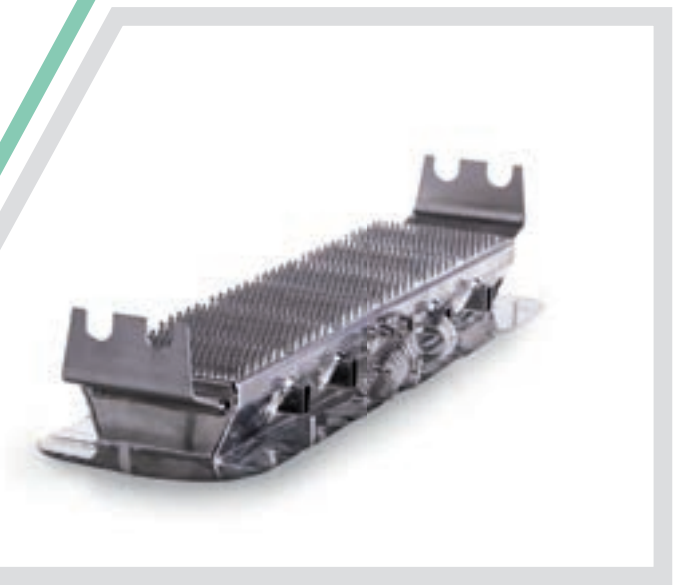
- Krastsvetmet, JSC
- Rostelecom, PJSC (Krasnoyarsk Branch)
- Iskra Krasnoyarsk Design Bureau, JSC
- Radiosviaz Research and Production Enterprise, JSC
- SibIT Projects, LLC
- Radius Research and Implementation Engineering Centre, JSC
- Siberian Federal University
- Krasnoyarsk Regional Foundation for Supporting Research and S&T Activities
- Krasnoyarsk Regional Innovation and Technology Business Incubator
- Reshetnev Siberian State University of Science and Technology (Reshetnev University)
- TechPolimer Group
- Siberian Fire Rescue Academy, the Russian Ministry of Emergencies
- Krasnoyarsk Research Centre, the Siberian Branch of the RAS

- Academician M.F. Reshetnev Information Satellite Systems, JSC
- Mining and Chemical Complex, SOE
- Small Design Bureau Research and Production Association, OJSC
- Small Spacecraft Research and Production Centre, JSC

Products and Services

- Spacecraft, space-based complexes and systems for application in national defence
- Supporting the GLONASS system and its further development
- Geodetic satellites
- Complexes and systems for communication, retransmission and television broadcasting
- Repeaters
- Space-based equipment
- Full range of technologies and equipment for handling depleted nuclear fuel from energy reactors; closed nuclear fuel cycle
- Satellite communication stations and digital interference-proof tropospheric communication stations; navigation equipment for GLONASS/GPS users
- Precious metals in bars, granules, powder, and in the form of chemical compounds; machine-woven chains and bracelets
- Catalytic systems, glass-melting devices, thermo electrode wire





CLUSTER MANAGEMENT ORGANISATION

Official name:
Zheleznogorsk Innovation Technology Cluster
Legal status: Economic cooperation association
Established: 2014
Number of staff: 9

http://cluster24.ru/team/

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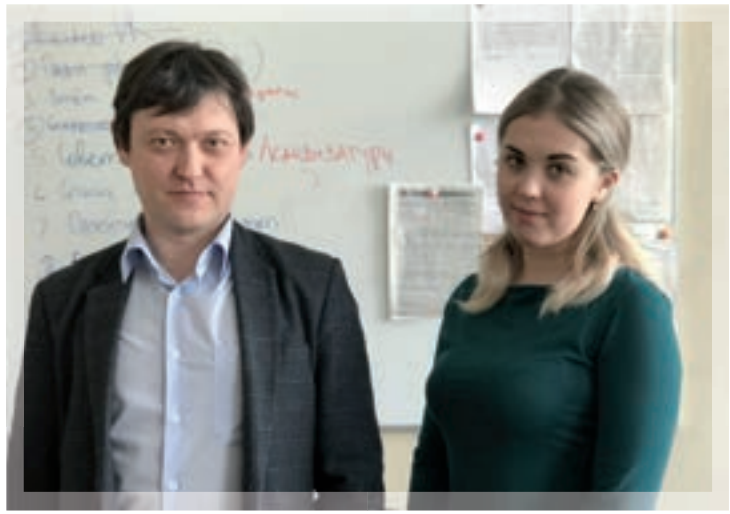
E-mail: evt26@yandex.ru

Evgeny Getz
Deputy General Director; Head of the National Technology Initiative Project Office
Phone: +7 (923) 354-21-08
E-mail: eugengetz@gmail.com

Vasily Lopushenko
Deputy General Director (Economics)
Phone: +7 (904) 895-70-60
E-mail: lvv70@mail.ru



Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	–
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	–
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	–
Staff mobility	–
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- Facilitating cooperation between cluster members
- Fostering international and inter-regional cooperation by hosting and taking part in major international exhibitions, fairs, and other communication events along with other activities
- Providing assistance in preparing the documentation required to take part in regional and federal cluster-related programmes

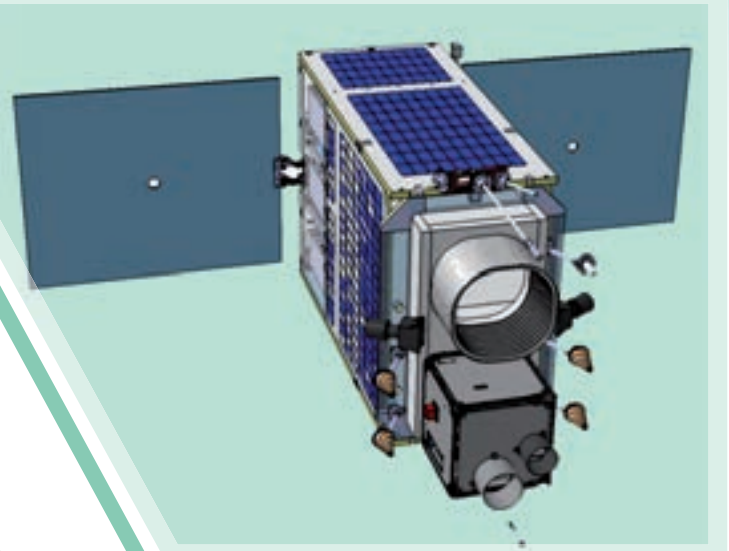
CLUSTER SUCCESS STORIES

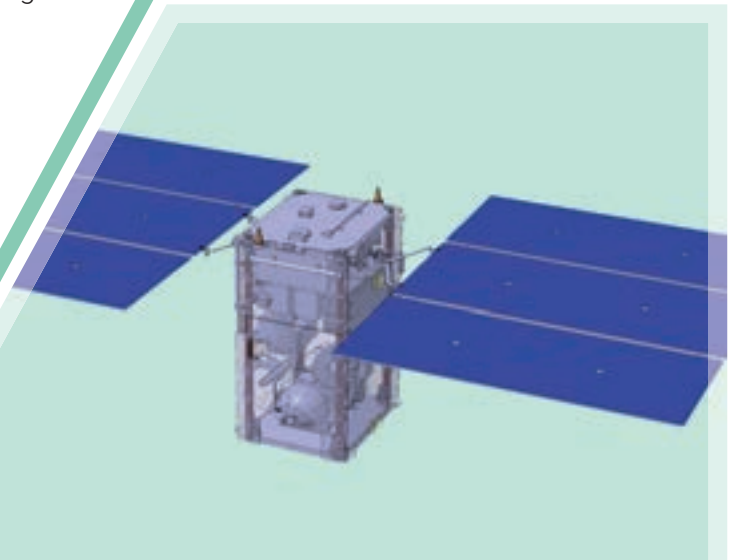
Project: Developing a modular platform for designing small spacecraft

Project type: Research

Participants: Small Spacecraft Research and Production Centre JSC; Reshetnev Information Satellite Systems, JSC; Reshetnev Siberian State University of Science and Technology (Reshetnev University)

The project aimed at developing a modular platform with specific interfaces (energy, heat, information, and construction) for designing small spacecraft. The platform is applied to manufacture multifunctional satellite groups and develop tailored solutions for satellite constellations with characteristics similar to those of the OneWeb system.





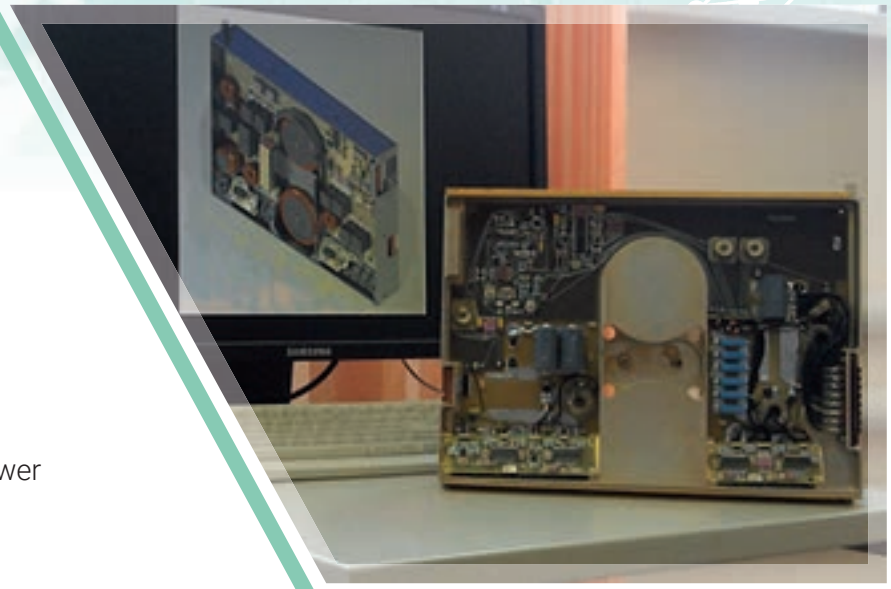
Project: Development of a next-generation energy conversion technology

Project type: Research

Participants: Reshetnev Information Satellite Systems JSC

A new energy conversion EPA NP technology was developed based on the circuitry of bridge resonant converters. This energy conversion solution allows switching power transistors at zero-current or zero-voltage times. Accordingly, power transistor dynamic load at switching times can be decreased by more than an order of magnitude, thus radically increasing the overall reliability of the device.

The proposed technology offers obvious advantages in terms of efficiency and heat emission. The “old” uninterrupted power source technologies currently available on the market as offered by FSP have an efficiency of 81–83%, and their energy conversion in charging and discharging devices drops to 60–70%. Devices based on EPA NP technology have an energy conversion efficiency factor of at least 98%.



INTERNATIONAL COOPERATION

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Yenisei Technopolis Cluster of Krasnoyarsk brings together global leaders in nuclear and space technologies, and world-class research and education centres. They offer partnership opportunities in the following areas:

- launching a high technology production of next-generation satellites and communications, navigation and geo-information systems, and smart energy grids;
- developing telecommunication services (broadband data transfer, mobile satellite communications, remote sensing, and meteorology), infrastructure and equipment for processing depleted nuclear fuel and radioactive waste;
- establishing a world-class R&D and educational core as a source of projects flow based on the cluster members' relevant capacities.

Foreign companies are invited to explore a Territory of Advanced Socio-Economic Development in Zheleznogorsk with its special tax incentives.

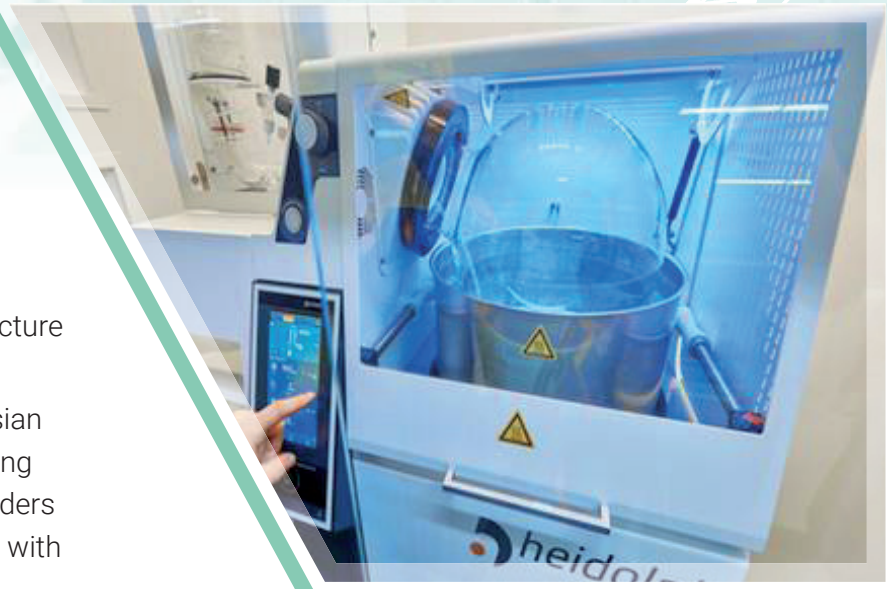

ЖЕЛЕЗНОГОРСК-2017
ЦИФРОВАЯ
VI ФОРУМ

Cooperation Proposals

Project: Establishment of a Prototyping and Additive Technologies Centre

The project aims at creating a production platform for the development of 3D printing technologies. New materials will be applied to manufacture various products that take advantage of the existing infrastructure of the precious metals industry.

Establishment of this Centre would promote the Russian additive technologies market, and contribute to meeting the rapidly growing demand for nano- and micro-powders of precious metals and products made by 3D printing with precious metals.



Project: Launching the production of mobile road surfaces made of nanocomposite materials

The project aims at launching the production of mobile road surfaces made of nano-composite materials, which are based on polyethylene and ultra-high-molecular-weight polyethylene (UHMWPE). This would allow to take a major domestic market share of temporary roads and construction sites in the oil and gas, energy, and mining industries, as well as for managing natural disasters and for military bases in the Arctic, Siberian, and the Far Eastern regions.

Project: Developing a line of terrestrial C-, Ku-, and Ka-band satellite communication complexes

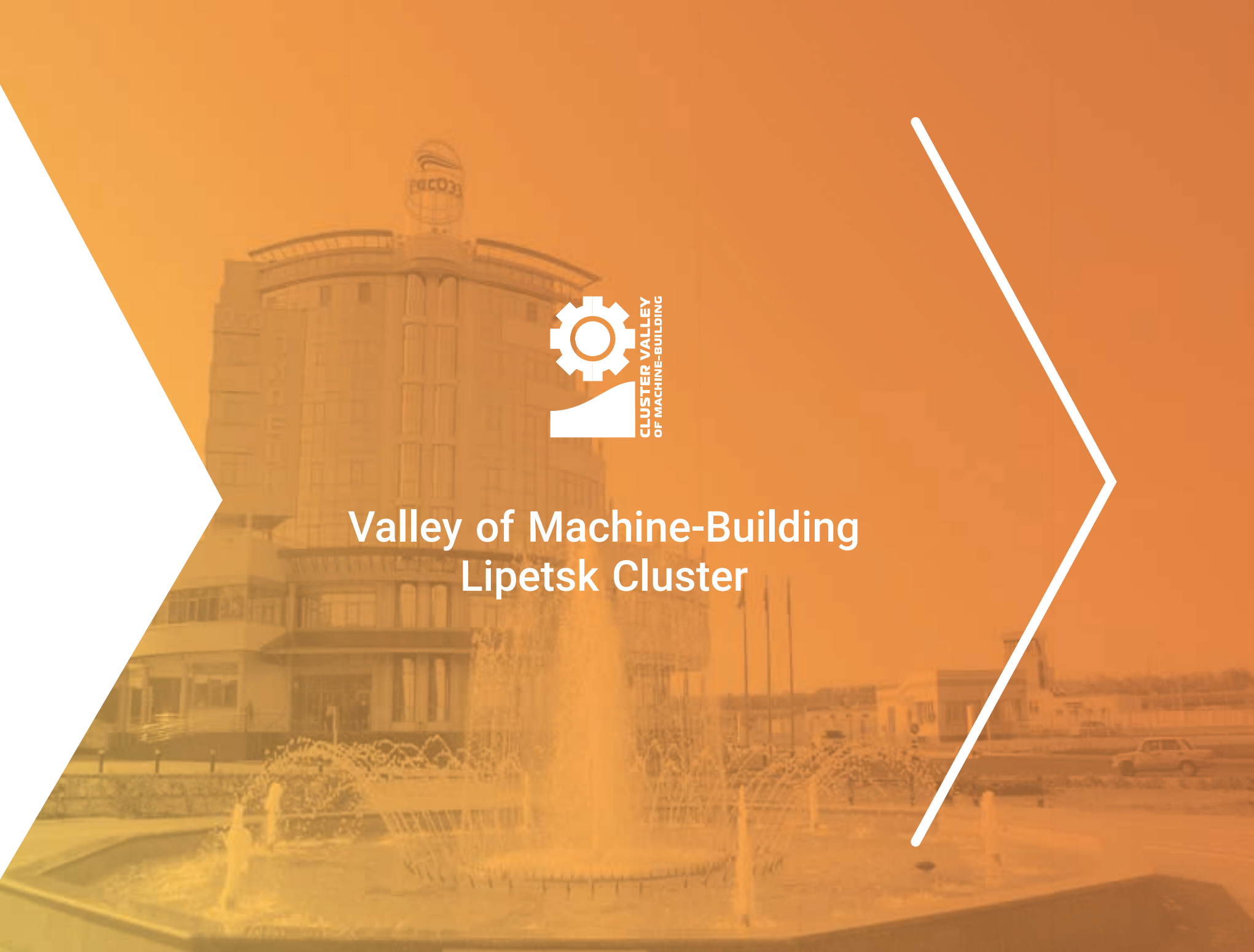
The project objective is to design a line of antenna systems and channel-forming equipment for application under Russian climatic conditions that also provide for security of information. The project calls for designing Russian secure satellite communication hardware and firmware to be competitive with similar international products in price and specifications.

Project: Development of beta-voltaic power sources based on the nickel-63 isotope

The project aims at launching the production of power sources with extremely long service life (50 years) and with properties superior to those of existing international equivalents.

The new power sources will be based on the beta-voltaic effect — formation of electron-hole pairs in the p-n junction under the influence of beta particles. At the same time the isotope source must be biologically safe, and its half-life period sufficient to ensure a long service life. The nickel-63 isotope does have these unique properties, which permit the development of next-generation, energy-saving, autonomous power sources with the potential to radically change the principles of electronic devices design.

The effect of applying such power sources will be particularly tangible in hybrid electronics, in medicine and health, the space industry, telecommunications, and manufacturing.



CLUSTER VALLEY
OF MACHINE-BUILDING

Valley of Machine-Building
Lipetsk Cluster

CLUSTER VALLEY OF MACHINE-BUILDING

Andrey Bricheev
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Lipetsk Cluster
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Development Section,
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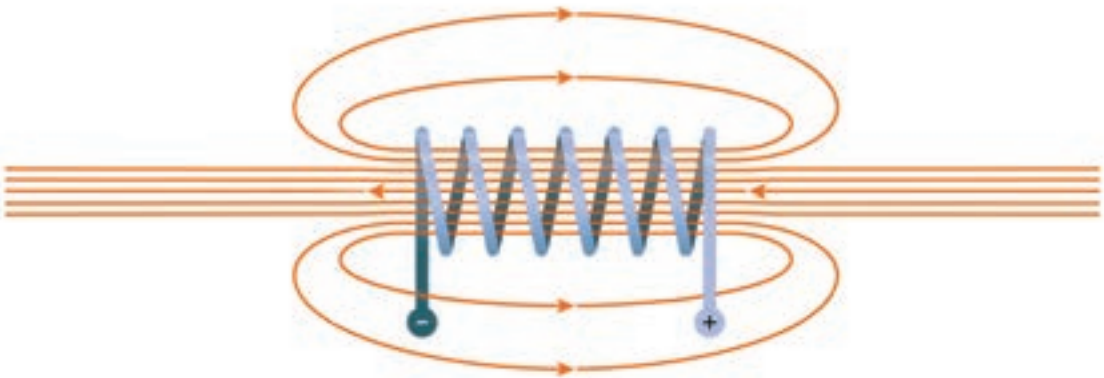
E-mail: ckr@lipetsk.ru

GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	–
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–



Cluster Mission

To scale up the cluster members' activities and promote their innovation-based growth by reaching global competitiveness in the machine-tool industry and thereby becoming more attractive to investment.

Cluster Objectives

- Scaling up cluster member operations
- Promoting the cluster's innovation-based growth
- Enhancing the competitiveness of the cluster member products, including in international markets
- Setting up integrated production and technological chains within the cluster by the necessary infrastructure and services
- Promoting effective cooperation between production companies, R&D and educational organisations to commercialise the results of their activities
- Developing the system of training and upgrading professional qualifications of the cluster members' staff
- Involving young people in innovation processes by establishing an integrated system for training innovation-oriented personnel
- Improving the quality of life, developing the cluster infrastructure

Strategic Development Plan

Development Strategy for Valley of Machine Building Lipetsk Cluster through 2020, and Prospects for 2025 dated September 15, 2016.

Industry Specialisation

- Automotive industry
- Machine tools
- Agricultural machinery

Membership

66 small enterprises

19 medium and large enterprises

33 other participants

118 organisations

S&T Specialisation

Electronics, microelectronics

- Electronic circuits, components and equipment
- Magnetic and superconductor materials/devices

Industrial manufacture

- Cleaning (sandblasting, brushing)
- Coatings
- Drying
- Erosion, removal (spark erosion, flame cutting, laser)
- Forming (rolling, forging, pressing, drawing)
- Hardening, heat treatment
- Joining techniques (riveting, screw driving, gluing)
- Jointing (soldering, welding, sticking)
- Machine tools
- Machining (turning, drilling, moulding, planning, cutting)
- Machining, fine (grinding lapping)
- Mixing (powder, etc.), separation (sorting, filtering)
- Moulding, injection moulding, sintering
- Extrusion
- Surface treatment (painting, galvano, polishing, CVD)

Processing control and logistics

- Packaging for machines
- Plastics bags

Materials technology

- Composite materials
- Iron and steel, steelworks
- Materials handling technology (solids, fluids, gases)
- Metals and alloys
- Plastics, polymers

Transport and shipping technologies

- Road vehicles
- Sensors for cars and transport
- Automotive electrical and electronics

Other industrial technologies

- Process plant engineering

Cooperation Links

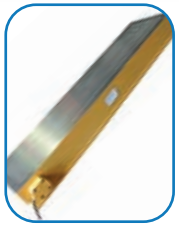
COOPERATING GROUPS IN VALLEY OF MACHINE-BUILDING LIPETSK CLUSTER

MACHINE TOOLS AND THEIR PARTS

- Gidroprivod, JSC
- Svobodny Sokol Lipetsk Pipe Company, LLC
- YuVEM-1, JSC
- Lipetsk Machine Tool Plant, JSC
- Vozrozhdenie Lipetsk Machine Tool Plant, CJCS
- Genborg, LLC
- Magnetic Plate Factory, LLC
- Penoplast Factory, LLC
- STP – Lipetsk Machine Tool Enterprise, JSC
- INTERMASH, LLC
- GidroLiga, LLC
- ABB Electrical Equipment, LLC
- Innovative Industrial Equipment Plant, LLC

END PRODUCTS

Flat & cylindrical grinding machinery
CNC machines
Test stands
Magnetic and electromagnetic lits
Turning, drilling, milling machines
High-precision casting
Electric motors
Hydraulic equipment

AUTOMOTIVE AND AGRICULTURAL MACHINERY, AND THEIR PARTS

- Gidroprivod, JSC
- YeletsGidroAgregat, PLC
- GidroLiga, LLC
- Lifan Automotive Rus, LLC
- Metalit Rus, LLC
- Yokohama R.P.Z., LLC
- Bekart Lipetsk, LLC
- LANXESS Lipetsk, LLC
- Motorinvest, LLC
- Lipetskagromash, LLC
- Lipetsk Small Machine Co-op, LLC
- Horsh Rus, LLC
- Ropa Rus, LLC
- Kverneland Group Manufacturing Lipetsk, LLC
- Gryazinsky Cultivator Plant, OJSC

END PRODUCTS

LIFAN automobiles
Changan automobiles
Municipal road machinery
Sowing and beet harvesting technology
Soil cultivating and plant protecting machinery
Hydro-allocators and hydraulic boosters
Automobile wheels, brake discs, steel cord
Chemical products for the automotive industry




Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Indesit International, JSC
http://www.indesit.ru

YeletsGidroAgregat, PLC
http://gidroagregat.ru/

Svobodny Sokol Lipetsk Pipe Company, LLC
http://ltk.svsokol.ru/ru

Small Enterprises (1–250 employees)

INTERMASH, LLC
http://intermash.su/

Vozrozhdenie Lipetsk Machine Tool Plant, CJSC
http://www.lipstanok.lipetsk.ru

Lipetsk Machine Tool Plant, JSC
http://lssp.ru/

STP – Lipetsk Machine Tool Enterprise, JSC
http://lipstan.ru/

Genborg, LLC
http://www.genborg.ru/

R&D Organisations

NLMK Engineering, Inc.
https://engineering.nlmk.com/ru/

Research Institute, Lipetsk State Technical University
http://niilgtu.ru

Educational Organisations

Lipetsk State Technical University
http://www.stu.lipetsk.ru/

Other Organisations

Lipetsk Regional Association of Industrial Enterprises
http://app-lip.ru

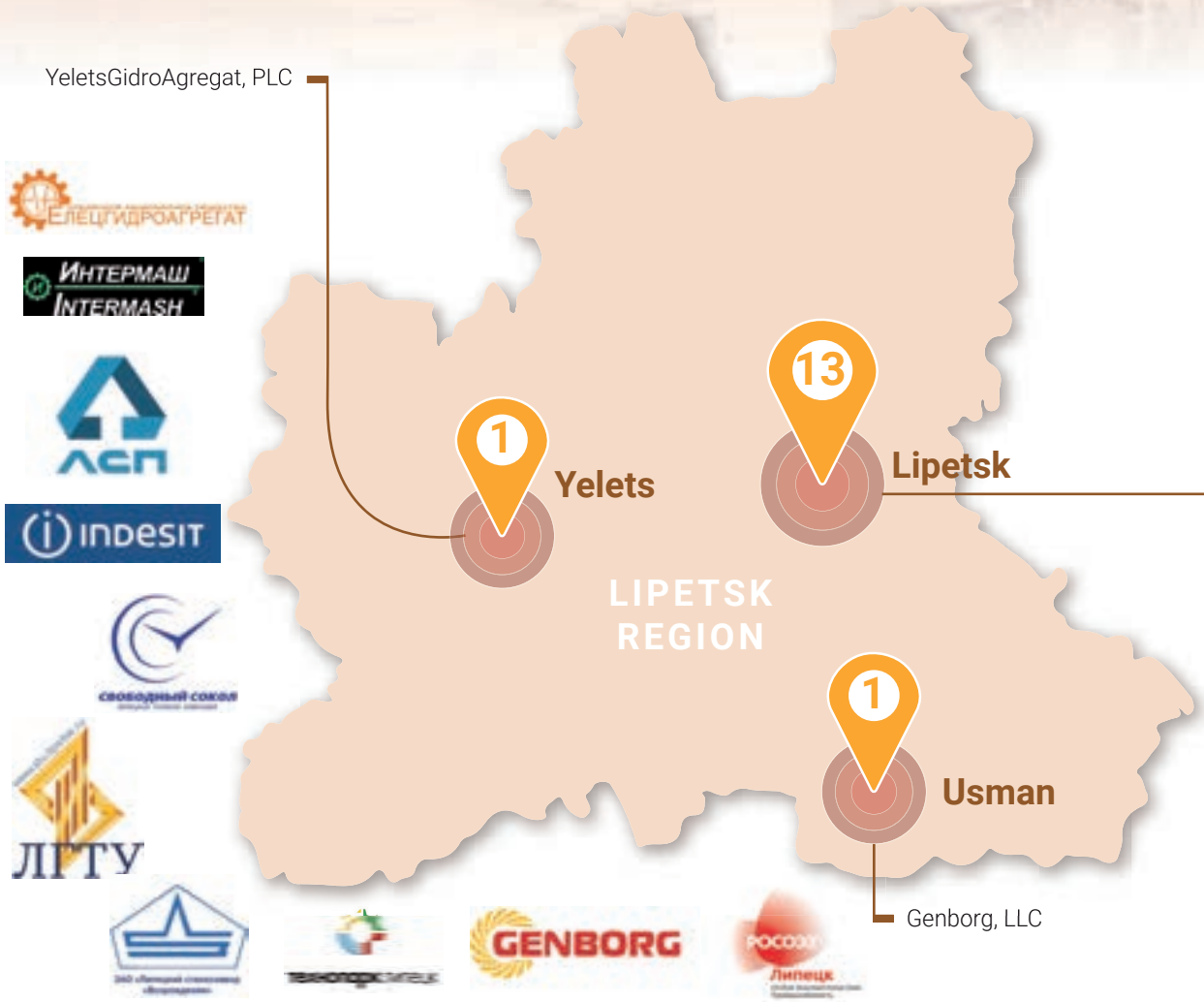
Regional Engineering Centre, LLC
http://rci48.ru/

Lipetsk Special Economic Zone
https://sezlipetsk.ru

Lipetsk Industrial Park
http://www.technopark48.ru/

Lipetsk Regional Innovation and Industrial Policy Department
http://lipetskprom.ru/

Locations of Key Cluster Members



- Indesit International, JSC
- Svobodny Sokol Lipetsk Pipe Company, LLC
- INTERMASH, LLC
- Vozrozhdenie Lipetsk Machine Tool Plant, CJSC
- Lipetsk Machine Tool Plant, JSC
- STP – Lipetsk Machine Tool Enterprise, JSC
- NLMK Engineering, Inc.
- Lipetsk State Technical University
- Lipetsk Regional Association of Industrial Enterprises
- Regional Engineering Centre, LLC
- Lipetsk Special Economic Zone, JSC
- Lipetsk Industrial Park
- Lipetsk Regional Innovation and Industrial Policy Department

Products and Services

- Automobiles, agricultural machinery, components, and parts
- Metalworking, precision casting

CLUSTER MANAGEMENT ORGANISATION

Official name:
Lipetsk Cluster Development Centre

Legal status:
Regional autonomous institution

Established: 2013

Number of staff: 6

www.ckr48.ru

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Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	–
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	–
Support for IPR	+
Location promotion/attraction of foreign direct investment	–

Key Support Services

- Designing cluster projects and investment programmes
- Monitoring the cluster's innovation, R&D, and production activities
- Developing and facilitating joint projects of cluster members, R&D and educational organisations, and other parties
- Assisting cluster members in obtaining public support
- Promoting new products and services offered by cluster members
- Organising staff training and upgrading professional qualification
- Hiring and personnel selection services
- Brand design and promotion services for cluster members
- Marketing research to promote cluster members products
- Legal services for cluster members
- Advertising services for cluster members
- Hosting conferences and workshops relevant for cluster members
- Organising publicity campaigns to promote the cluster activities and future projects
- Publishing and printing services

CLUSTER SUCCESS STORIES

Genborg Project

Project type: Production design, development of new products, services, and production techniques

Participants: Genborg LLC

The project was aimed at opening a low-voltage electric motor plant. Its main product is three-phase asynchronous and synchronous motors in the 2.2–400 kW power range for general industrial production purposes, application in railway transport and underground trains, and for specialised uses (such as in the chemical, petrochemical, mining, cement, steel industries, and in shipbuilding, including explosion-proof engines, engines for ventilation and smoke removal systems), and also in harsh climates. Genborg LLC is projecting a 5–8% share of the Russian machine tools market. The plant produced 334 asynchronous motors in 2017. Several batches of motors in different series are being manufactured at the same time; specialised state-of-the-art equipment has been procured and installed for these purposes.

INTERMASH Project

Project type: Production design, development of new products, services, and production techniques

Participants: INTERMASH LLC

The project was aimed at launching the production of innovative machining centres equipped with their own computerised numerical control systems (CNC) for turning, vertical turning, vertical milling, five-axis milling, as well as counter-spindle and two-turret machining centres.
Products never before manufactured in Russia are to be produced within the project. All these machine tools will be equipped with unique specially designed high-pressure ionised air cooling systems. This will significantly increase their service cycle when cutting heat-resistant steels and alloys. A new CNC system with characteristics on a par with top international equivalents, such as Siemens 840Dsl and Heidehain TNC 640, is being developed jointly with the Bauman Moscow State Technical University.

INTERNATIONAL COOPERATION

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Valley of Machine-Building Lipetsk Cluster is on a par with leading international clusters. It enjoys advanced energy, engineering, social and transport infrastructure in the Lipetsk Region (a network of highways and railroads, and Lipetsk International Airport), as well as the region's favourable economic environment and geographic position. For many years the Lipetsk Region ranks among top-20 Russian regions in the National Regional Investment Climate Ranking. In 2017, the respected *fDi Intelligence* publication, which maintains an international ranking of special economic zones, again rated Lipetsk Special Economic Zone as one of the best investment platforms in the world.

The cluster conforms to the Industry 4.0 Concept, particularly in the development of additive technologies. Major Russian and Western European companies that manufacture machine tools and production equipment are principal consumers of cluster member products.


indesit

Cooperation Proposals

Project: Bedplate

The project aims at setting up a production complex to manufacture castings from grey and high-strength cast iron, steel, and composite materials for use in the machine-tool and mechanical engineering industries. The projected output is between 10,000 and 12,000 tons of billets a year. Advanced equipment made by leading international manufacturers such as FAT (Germany), IMF (Italy), Omega (UK) and AIT (China) will be used.
The output of cast iron and steel castings will have the following breakdown:

- 8,000 tons per year for the machine tool industry;
- 4,000 tons per year for the mechanical engineering industry.

Possible areas for cooperation include research, finding international high technology equipment suppliers, manufacturing bedplates and machine-tool castings, supplying products to machine-tool and industrial companies within the cluster and in international markets, and staff training.

Project: Electrospindle production

The main objectives of the project include engineering, design, production, marketing, sales, and servicing of high-speed complete electrospindles with control cabinets for metal- and wood-working equipment. The products will be supplied to the Russian market, as well as to the CIS and EU countries among others.

The goal is to localise production of complete electrospindles in the Lipetsk Region at the Genborg LLC facilities (in the town of Usman). The plan is to conduct a significant amount of the required R&D in-house while also making use of international designs and know-how. Possible cooperation areas include R&D, supplying components and parts, and staff training.

Moscow Region Consortium of Innovation Clusters

Aleksey Sergeev

Deputy Head of the Innovation Infrastructure Department, Ministry of Investment and Innovation of the Moscow Region

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Krasnogorsk, Moscow Region 143407

Phone: +7 (495) 668-00-99

http://mii.mosreg.ru

E-mail: Sergeevalev@mosregco.ru

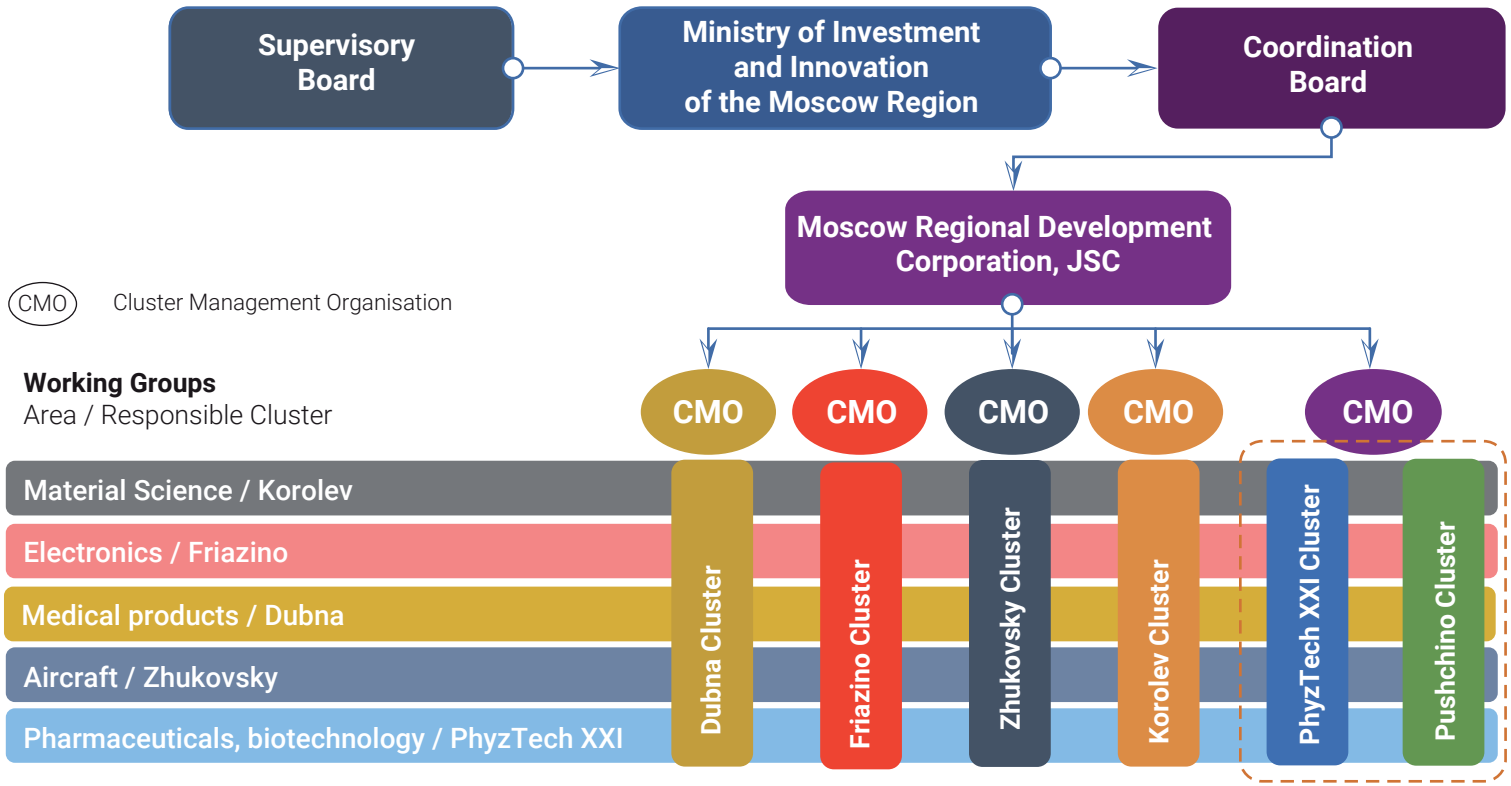
Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	+
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–

Cluster Mission

To develop and promote world-class microwave electronics, aircraft, medical and pharmaceutical products for global markets.

Consortium Management Structure



Cluster Objectives

- Fostering commercialisation of technologies developed by cluster members
- Promoting cluster members products and services
- Facilitating internationalisation of cluster members

Strategic Development Plan

Development Strategy for the Moscow Region Consortium of Innovation Clusters dated October 19, 2016.

Industry Specialisation

- Aerospace vehicles and defence
- Appliances
- Biopharmaceuticals
- Downstream chemical products
- Downstream metal products
- Education and knowledge creation
- Electric power generation and transmission
- Food processing and manufacturing
- Forestry
- Informational technology and analytical instruments
- Lighting and electrical equipment
- Medical services
- Metalworking technologies
- Light and ultralight aircraft
- Robotic systems
- New materials
- Medical products

Membership

118 small enterprises

105 medium and large enterprises

15 other participants

238 organisations

S&T Specialisation

Electronics, microelectronics

- Automation, robotics control systems
- Digital systems, digital representations
- Electronic circuits, components and equipment
- Micro- and nanotechnology related to electronics and microelectronics
- 3D printing
- Electronic engineering
- Embedded systems and real time systems
- High frequency technology, microwaves
- Magnetic and superconductor materials / Devices
- Nanotechnologies related to electronics and microelectronics
- Optical networks and systems
- Peripherals technologies (mass data storage, displays)
- Printed circuits and integrated circuits
- Quantum informatics
- Semiconductors
- Smart cards and access systems

Information processing and systems, workflow

- Archivistics, documentation, technical documentation
- Artificial intelligence
- Computer games
- Computer hardware
- Computer software
- Computer technology / Graphics, meta computing
- Data processing / Data interchange, middleware
- Data protection, storage, cryptography, security
- Databases, database management, data mining
- Electronic commerce, electronic payment and signature
- Information technology / Informatics
- Internet technologies / Communication (wireless, bluetooth)
- Simulation
- User interfaces, usability
- Electronic signature

- Building automation software
- Remote control
- Smart appliances
- Environmental and biometrics sensors, actuators
- Cloud technologies
- Internet of things

IT and telematics applications

- Applications for health
- Applications for transport and logistics
- GIS
- CRM

Multimedia

- E-learning
- E-publishing, digital content
- Visualisation, virtual reality

Telecommunications, networking

- Audiovisual equipment and communication
- Mobile communications
- Research networking, GRID
- Satellite technology / Positioning / Communication in GPS
- Signal processing

Design and modeling

- 3D printings

Processing control and logistics

- Process automation
- Manufacturing plants networks
- Component integration

Construction technology

- Materials, components and systems for constitution
- Construction methods and equipment

Materials technology

- Adhesives
- Building materials
- Ceramics materials and powders
- Composite materials
- Glass
- Optical materials
- Plastics, polymers

- Stone
- Biobased technologies
- Carbon nanotubes
- Hybrid materials
- Nanomaterials

Transport and shipping technologies

- Hybrid and electric vehicles
- Railway vehicles
- Traction / Propulsion systems
- Navigation and embedded systems
- Sensors for cars and transport
- Lightweight construction
- Charging system
- Electrical supply system
- Switches and wiring
- Security systems
- Energy supply system
- Aircraft vehicles, including unmanned
- Aeronautical technology / Avionics
- Aircraft
- Satellite navigation and technology
- Propulsion
- Guidance and control

Other industrial technologies

- Chemical technology and engineering
- Footwear / Leather technology

Energy storage and transport

- Heat transport and supply, district heating
- Storage of electricity, batteries

Energy production, transmission and conversion

- Fuel cells
- Generators, electric engines and power converters
- Cooling technologies
- Smart grids

Renewable sources of energy

- Liquid biofuels
- Solar / Thermal energy
- Solid biomass
- Waste to energy

Energy efficiency

- Lighting, illumination

Other energy topics

- Combustion, flames
- Micro- and nanotechnology related to energy

Chemistry

- Analytical chemistry
- Inorganic chemistry
- Organic chemistry

Meteorology / Climatology

- Biosensor

Physics

- Optics
- Vacuum

Separation technologies

- Filtration and membrane processes

Medicine, human health

- Clinical research, trials
- Cytology, cancerology, oncology
- Diagnostics
- Emergency medicine
- Gerontology and geriatrics
- Medical research
- Medical technology / Biomedical engineering
- Neurology, brain research
- Pharmaceutical products / Drugs
- Virus, virology / Antibiotics / Bacteriology
- Stem cell technologies
- Medical textiles
- Medical furniture

Biology / Biotechnology

- Biochemistry / Biophysics
- Cellular and molecular biology
- Enzyme technology
- Protein engineering
- Genetic engineering
- Synthetic biology
- In vitro testing, trials
- Microbiology
- Molecular design
- Toxicology

Genome research

- Bioinformatics
- Gene expression, proteome research
- Population genetics

eHealth

- Sensors and wireless products
- Remote diagnostics

Industrial biotechnology

- Biobased materials
- Bioplastics
- Biopolymers
- Biological nanomaterials
- Fermentation
- Bioprocesses

Agriculture

- Biocontrol
- Crop production
- Horticulture
- Pesticides
- Seed coating
- Veterinary medicine
- Micro- and nanotechnology related to agriculture

Silviculture, forestry, forest technology

- Forest technology
- Silviculture, forestry
- Wood products

Technologies for the food industry

- Food additives / Ingredients / Functional food
- Food processing
- Food technology

Food quality and safety

- Detection and analysis methods
- Food microbiology / Toxicology / Quality control
- Safe production methods
- Traceability of food
- Micro- and nanotechnology related to agrofood

Measurement tools

- Analyses / Test facilities and methods
- Chemical material testing
- Mechanical technology related to measurement
- Optical technology related to measurement
- Sensor technology related to measurement
- Thermal material testing

Amplifier, A/D transducer

- Electronic measurement systems
- Recording devices

Safety

- Fire safety technology
- Radiation protection

Environment

- Environmental engineering / Technology
- Clean production / Green technologies

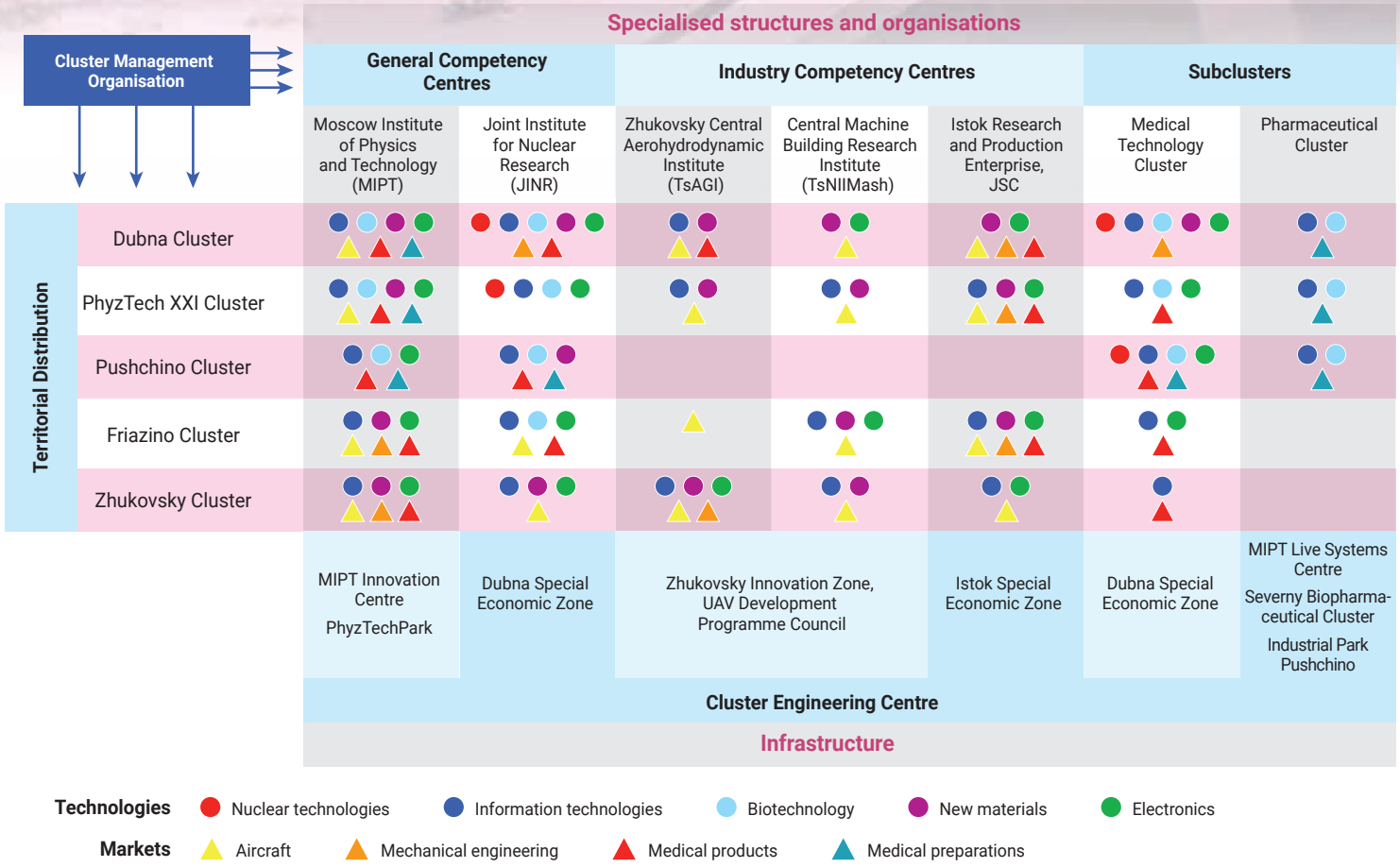
Waste management

- Biotreatment / Compost / Bioconversion
- Recycling, recovery

Social and economic concerns

- Education and training

Cooperation Links



Technologies Nuclear technologies · Information technologies · Biotechnology · New materials · Electronics

Markets Aircraft · Mechanical engineering · Medical products · Medical preparations

Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Fedorov Dubna Machine Building Plant, OJSC
www.dmzdubna.ru

Berezniak Raduga State Machine-Building Design Bureau, JSC
www.ktrv.ru

PROMTECH-Dubna, CJSC
http://dubna-cluster.ru/participants/44.htm

Sviaz Engineering Design Bureau, LLC
www.si-pcb.ru

Tenzor Instruments Plant, OJSC
www.tenzor.net

Valenta Pharm, PLC
www.valentapharm.com

Shokin Istok Research and Production Enterprise, JSC
www.istokmw.ru

KhimRar High Technology Centre, Non-profit Partnership
www.chemrar.ru

Yandex, LLC
www.company.yandex.ru

R&D Organisations

Joint Institute for Nuclear Research (JINR)
www.jinr.ru

Zhukovsky Central Aerohydrodynamic Institute (TsAGI), SOE
www.tsagi.com

Institute of Problems of Chemical Physics of the RAS (ICPP)
www.icp.ac.ru/

Branch of the Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry of the RAS (BIBCh)
www.ibch.ru/branch

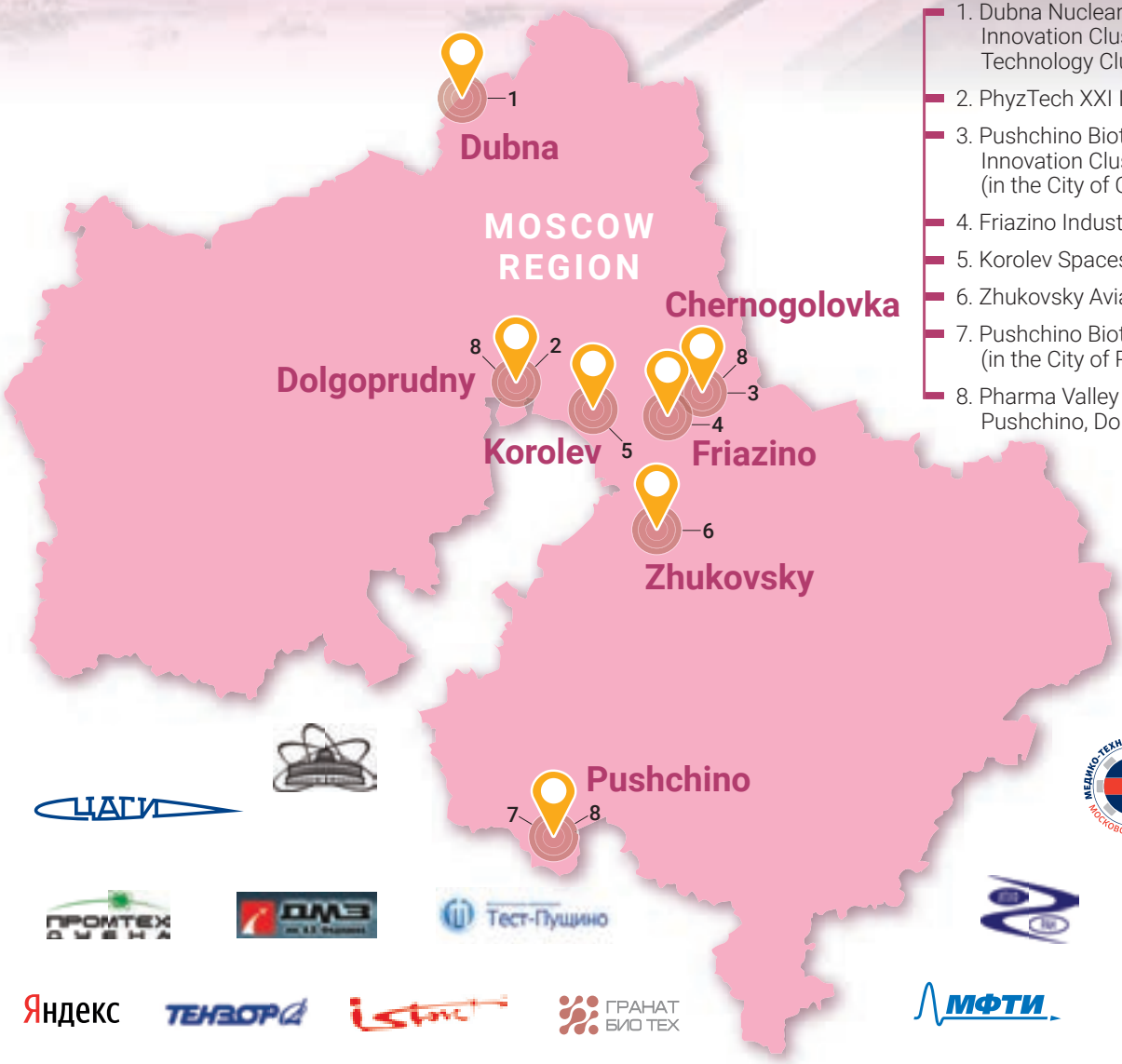
Development Centre, Severny Biopharmaceutical Cluster, Non-profit Partnership
www.pharmcluster.ru

Educational Organisations

Dubna State University
www.uni-dubna.ru

Moscow Institute of Physics and Technology (MIPT)
www.mipt.ru

Locations of Key Cluster Members



1. Dubna Nuclear Physics and Nanotechnology Innovation Cluster; Moscow Region Medical Technology Cluster
2. PhyzTech XXI Innovation Cluster
3. Pushchino Biotechnology Innovation Cluster (in the City of Chernogolovka)
4. Friazino Industrial Cluster
5. Korolev Spaceships Technology Cluster
6. Zhukovsky Aviation Technology Cluster
7. Pushchino Biotechnology Innovation Cluster (in the City of Pushchino)
8. Pharma Valley Cluster (in the cities of Pushchino, Dolgoprudny, Chernogolovka)

Products and Services

Pharmaceuticals

- Pharmaceutical development of methods for the synthesis and drug design of API`s and FDF`s
- Preclinical safety and efficacy studies on SPF rodents, SPF rabbits, NH primates OECD GLP-grade
- Phase I–IV and Bioequivalence clinical trials and MoH regulatory support
- Pharmacokinetic and stability studies
- Patent research

Medical and biotechnology devices, biotechnology products and related services

- R&D
- Engineering prototyping
- Serial production
- Certification

Composite and new materials

Energy generation and storage systems

Nuclear and aviation technologies

Digital and microwave electronics

CLUSTER MANAGEMENT ORGANISATION







Official name:

Moscow Regional Development Corporation

Legal status: Joint-stock company

Established: 2013

Number of staff: 7

www.mosregco.ru

Aleksey Sergeev

Deputy Head of the Innovation Infrastructure Department, Ministry of Investments and Innovation of the Moscow Region

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Deputy Head of the Prospective Development Complex, Zhukovsky Central Aerohydrodynamic Institute

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Dmitriy Zubtsov

Analytics Director, Moscow Institute of Physics and Technology

Phone: +7 (495) 408-40-66

E-mail: zubtsov@phystech.edu

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	–
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- Market promotion of new products and services
- Provision of R&D and educational services by the Thin Film Coatings and Composite Materials Laboratory established within the cluster
- Competitive selection and co-financing projects to develop new technologies and/or technological equipment by the Engineering Incubator LLC
- Development of electronic devices in Dubna State University Prototyping Centre
- Provision of automated work places and advanced cloud-based software to cluster members to assist them in R&D and staff training
- Enabling the emergence of new facilities to manufacture medical products and develop the existing ones
- Organisation of internships, and staff training for cluster members employees
- Provision of consulting services to cluster members
- Hosting and organising fairs, exhibitions, nation-wide academic and practical conferences, and schools for employee candidates to induce students and graduates to apply for jobs at cluster member companies

CLUSTER SUCCESS STORIES

Joint venture projects in Dubna Special Economic Zone

Arkray LLC

Arkray LLC (a subsidiary of ARKRUS LLC) makes glucometers, provides maintenance services, and supplies equipment and consumables all over Russia. The company is planning to step up production, and start exporting. One of Arkray's founders is the Japanese company ARKRAY LLC. Its glucometers are leaders in the domestic market and are sold all over the world. For example, Walmart sells them in the USA under its own ReliOn brand.

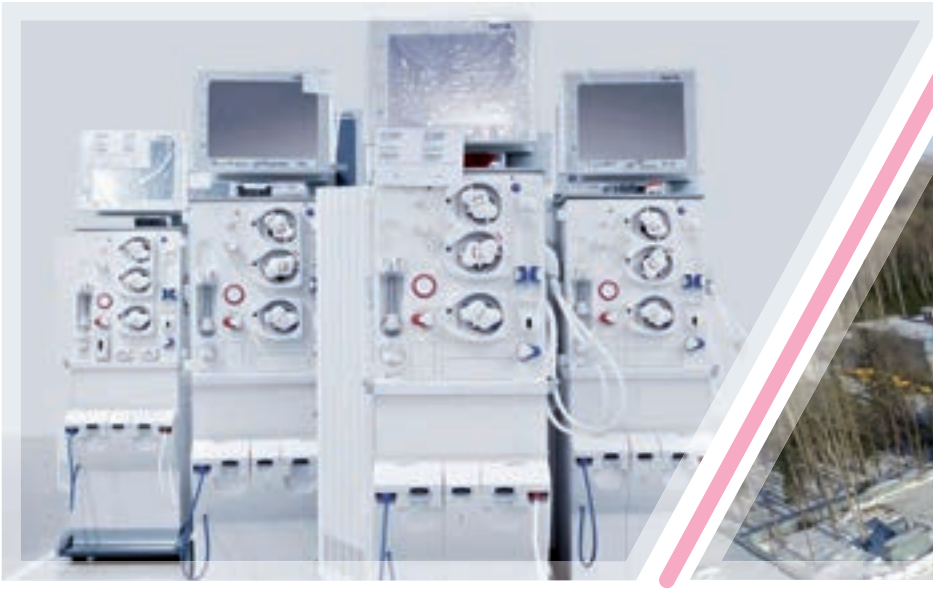
Aquanova Rus JSC

Aquanova Rus JSC jointly with the German company AQUANOVA AG (developer of technology to form micelles) and RUSNANO OJSC develops and sells unique micelle solutions using the patented NovaSOL® technology. NovaSOL® products include innovative multipurpose chemical compounds containing alimentary, cosmetic, and pharmaceutical ingredients and nutrients.

FRERUS LLC

FRERUS LLC develops and manufactures capillary filters, equipment for haemodialysis and other extracorporeal blood cleansing techniques. Dialysis remains the main treatment for patients suffering from chronic renal insufficiency. The German company Fresenius Medical Care, world leader in haemodialysis technologies, has been meeting the challenge of providing a high quality of life to patients with chronic kidney diseases for decades.

Fresenius Medical Care



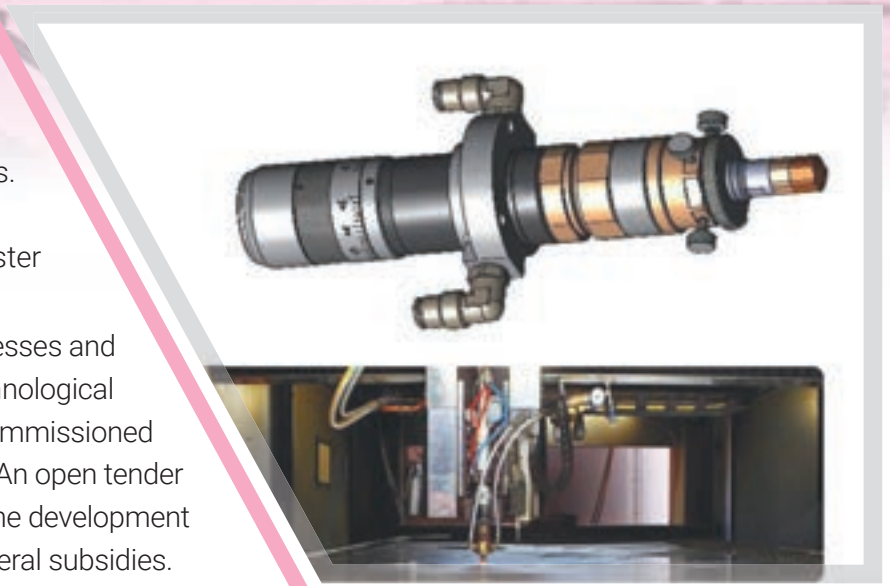
Project: Engineering Incubator in Dubna

The Engineering Incubator LLC serves as an R&D platform for university research teams, startups, and industrial enterprises applying innovative technologies. It provides opportunities to jointly develop and/or upgrade technologies for subsequent application by cluster member companies.

The main activity is designing specific production processes and technologies, including machinery, equipment, and technological systems (and the necessary design documentation) commissioned by cluster members to increase their competitiveness. An open tender was held in 2016 among cluster members to support the development of technological processes and equipment with the federal subsidies.

The tender yielded 11 projects for developing new materials, new technologies for mobile and diagnostic medicine, and nanotechnologies. Total federal subsidies for implementing these projects amounted to 37.2 million roubles (US$ 0.6 million). The total output of high technology products from companies benefiting from the tender is expected to reach 1,983.5 million roubles over the period from 2017 to 2020 (US$ 34.14 million).

The Engineering Incubator is based at Dubna State University with cutting-edge facilities and equipment. It comprises the Thin Film Coatings and Composite Materials Laboratory and the Data Processing Centre; both participate in the NIKA Collider project and offer opportunities for R&D in aircraft construction, transportation, and development of new composite materials.



Project: Joint R&D and Educational Centres in Pushchino and Chernogolovka

The R&D and Educational Centres were opened in 2016. The project was implemented jointly by the Moscow State Regional University, the Institute of Problems of Chemical Physics of the RAS, the Institute of Active Substance Physiology of the RAS, and the Institute of Biological Instrumentation of the RAS. The Centres are the home for advanced laboratories with cutting-edge equipment and facilities. They develop new pharmaceuticals and medical products, pharmaceutical preparations, environmental monitoring and protection technologies. In addition, they conduct cellular technology research to design and apply new diagnostic techniques. The establishment of these Centres has enabled combined and coordinated efforts in basic and applied research that were also integrated with the educational process to improve the quality of training for students and researchers, and to engage graduate and post-graduate students and young professionals in R&D.

INTERNATIONAL COOPERATION

Partner Clusters

Oberösterreich clusters (Austria)

www.medizintechnik-cluster.at

www.kunststoff-cluster.at

www.mechatronik-cluster.at

www.gesundheits-cluster.at

Saxony and Thuringia clusters – SILICON SAXONY (Germany)

www.maicom-quarz.de

www.efds.org

CLIB 2021 (Germany)

www.clib2021.de

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Moscow Region Consortium of Innovation Clusters offers an opportunity to find partners for cooperation, and opens an effective gateway to the Russian market. Most of the cluster members are located in the Dubna or the Istok special economic zones, along with eight other industrial areas that are ready to host high technology companies.

The cluster joins the RAS research institutes, educational organisations, industrial companies, and suppliers of equipment and specialised services. Their competitiveness has significantly strengthened because of the synergy that naturally arises in a compact territorial agglomeration with its transfers of technology, the steady flow of knowledge, material, personnel, and financing. All these factors open up opportunities for carrying out projects with any degree of complexity.


ДУБНА

Cooperation Proposals

Partnerships in Pharma Valley Cluster

The Pharma Valley Cluster was established on March 22, 2017 to integrate the members' capabilities so that they can handle a full range of operations (R&D, preclinical and clinical research, preparing registration dossiers and registering new products, synthesising pharmaceutical substances, developing ready-to-use forms of medicine) required to create medical products in line with international standards for best practices (GLP, GCP, and GMP). Today, there are 12 cluster members, the core ones being the branch of the Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry of the RAS in Pushchino, the Institute of Problems of Chemical Physics of the RAS in Chernogolovka, the Moscow Institute of Physics and Technology in Dolgoprudny, and the hospitals of the RAS Research Centres in Chernogolovka and Pushchino. The Preclinical Trials Centre provides specialised support services to members of the Pharma Valley Cluster. The cluster can provide the full range of preclinical research services. Clinical trials and production of pharmaceuticals are currently being developed. Russian and international pharmaceutical companies interested in preclinical trials are invited to cooperate.

Partnerships in Dubna Special Economic Zone

The Dubna Special Economic Zone has functioned since 2005. Its objective is to promote competitive innovation-based territories.

The Dubna Special Economic Zone is located on two plots of land with a total area of 187.7 ha. It has a well-developed engineering, transport, and customs infrastructure. Companies located there are granted various tax and customs exemptions, specifically: payments to social insurance foundations at 14.2%; property tax exemptions for 10 years, land tax exemptions for 5 years; reduced land rent (at about $1,000 per hectare per year); zero transport tax for 5 years; profit tax at 2 % for 8 years, 7% for the next 6 years, and 15.5% after 14 years; and exemption from customs duties and VAT when importing goods. Also, residents may lease plots of land with complete engineering infrastructure and access roads without extra charges for connection. Workers from other regions can rent housing at subsidised rates. Staff training opportunities are available at Dubna State University.

Currently the Dubna Special Economic Zone hosts 137 resident companies.

International partners are invited to set up new production facilities in Dubna Special Economic Zone.

Dubna Special Economic Zone residents with foreign participation	Parent companies
FRERUS, LLC	**Fresenius Medical Care** *(Germany)*
NanoBrachiTech, CJSC	**IBt Bebig** *(Germany)*
AQUANOVA RUS, CJSC	**AQUANOVA** *(Germany)*
Arkray, LLC	**ARKRAY** *(Japan)*
Ridiko, LLC	**Kear Ing Co., Ltd** *(South Korea)*

Partnerships in Zhukovsky Aviation Technology Cluster

The main activities of Zhukovsky Aviation Technology Cluster include aviation and space systems, aviation equipment, information and communication technologies, new materials, energy efficiency and energy conservation.

The Cluster's target markets are:

- large aircraft technologies;
- light and ultralight aircraft;
- unmanned aerial systems;
- aviation trainers and simulators;
- new aviation materials and technologies;
- spacecraft R&D and equipment.

Siberian Scientopolis
Cluster of Novosibirsk

Aleksey Nizkovskiy

Head of the Novosibirsk Regional Cluster Development Centre

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Novosibirsk 630011

Phone: +7 (383) 223-27-64

http://icnso.ru/

E-mail: info@cluster-nso.ru

GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	–
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–

Cluster Mission

To enhance the global technological leadership and investment attractiveness of the cluster members, and to use their advanced capacities for greater economic growth and improving the quality of life in the Novosibirsk Region.

Cluster Objectives

- Achieve technological leadership in key areas of activity
- Promote cooperation among innovative companies, R&D organisations, and universities
- Develop the cluster's innovation and production infrastructure
- Expand international cooperation, promote cluster members export-oriented products
- Create a favourable investment climate in the region
- Develop practice-oriented educational programmes
- Develop a system for training personnel and upgrading their qualifications to meet cluster members requirements
- Refine the cluster's management system

Strategic Development Plan

Development Strategy for the Siberian Scientopolis Cluster of Novosibirsk through 2020 dated September 22, 2016.

Industry Specialisation

- Biopharmaceuticals and biotechnology
- Telecom equipment and services
- Food processing and manufacturing
- Informational technology and analytical instruments
- Medical services

Membership

170 small enterprises

40 medium and large enterprises

36 other participants

246 organisations

S&T Specialisation

Synthesis of active pharmaceutical substances

- Development of biotargets, combinatorial chemistry, library synthesis
- New formulations of pharmaceutical substances with specific properties
- New drug delivery systems

Technological engineering

- Development of laboratory and experimental (prototype) technologies for industrial production of pharmaceutical substances using chemical methods in line with GMP standards
- Development of laboratory and experimental (prototype) procedures, adjustment (improvement) of technologies
- Quality control, and identification of structures

Nuclear medicine

- High technology diagnostics
- Radiation biophysics, molecular and cellular radiobiology
- Pharmacy and radiopharmacology
- Physical and biological dosimetry

Biotechnology

- Production of textured vegetable proteins
- Development of functional combined products based on protein mixtures
- Further development of technologies for production of milk proteins, starches, phosphates, and gums

Electronics, microelectronics

- Automation, robotics control systems
- Micro- and nanotechnology related to electronics and microelectronics
- Peripherals technologies (mass data storage, displays)

Information processing and systems, workflow

- Computer games
- Computer hardware
- Computer software
- Computer technology / Graphics, meta computing
- Data processing / Data interchange, middleware
- Data protection, storage, cryptography, security
- Databases, database management, data mining
- Information technology / Informatics
- Internet technologies / Communication (wireless, bluetooth)
- Simulation
- Cloud technologies

IT and telematics applications

- Applications for health
- Applications for tourism

- Applications for transport and logistics
- GIS

Multimedia

- Visualization, virtual reality

Telecommunications, networking

- Mobile communications
- Network technology, network security
- Satellite technology / Positioning / Communication in GPS

Fossil energy sources

- Mining and extraction

Separation technologies

- Extraction
- Adsorption

Medicine, human health

- Biostatistics, epidemiology
- Clinical research, trials
- Cytology, cancerology, oncology
- Diagnostics
- Human vaccines
- Emergency medicine
- Gene – DNA therapy
- Gerontology and geriatrics
- Heart and blood circulation illnesses
- Medical research
- Medical technology / Biomedical engineering
- Neurology, brain research
- Pharmaceutical products / Drugs
- Physiology
- Surgery
- Virus, virology / Antibiotics / Bacteriology
- Physiotherapy, orthopaedic technology
- Medical biomaterials

Biology/Biotechnology

- Biochemistry/Biophysics
- Cellular and molecular biology
- Enzyme technology
- In vitro testing, trials
- Microbiology

Genome research

- Bioinformatics
- Population genetics

Industrial biotechnology

- Biobased materials
- Biopolymers
- Biological nanomaterials
- Fermentation

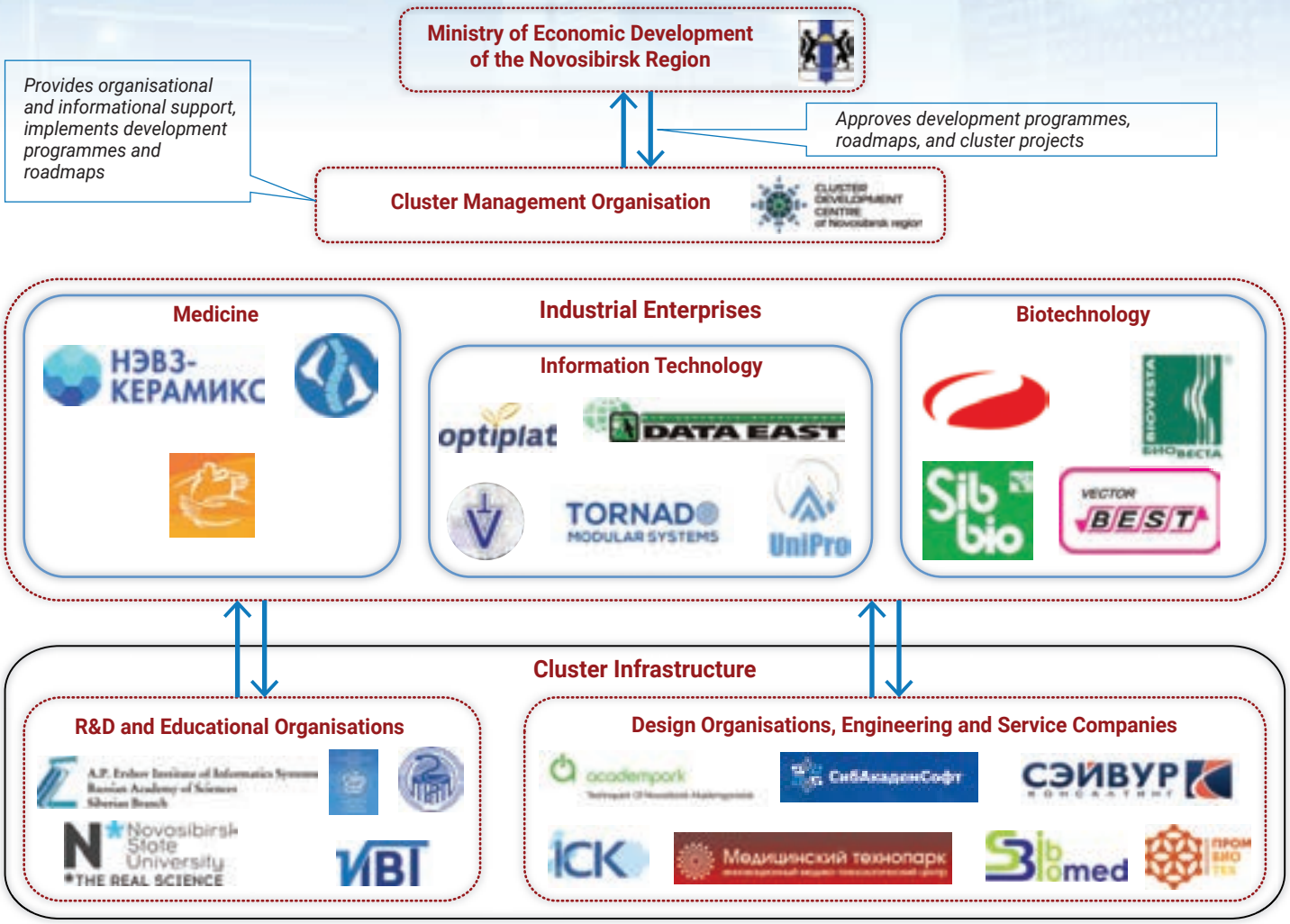
Technologies for the food industry

- Food Additives / Ingredients / Functional Food

Social and economic concerns

- Education and training

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

NEVZ-CERAMICS, JSC
http://www.nevz-ceramics.com/ru/

Sibbiopharm, LLC
http://www.sibbio.ru/

Vector-Best, JSC
http://vector-best.ru/

Small Enterprises (1–250 employees)

Vector-BiAlgam, JSC
http://www.bialgam.ru

Epigene, LLC
http://www.epigene.ru/

Ortos Neuro-orthopedic Centre, LLC
http://www.ortos.ru

Angioline, JSC
http://www.angioline.ru/

Bio-Vesta, LLC
http://biovesta.ru/

Data East, LLC
http://www.dataeast.ru/

Tornado Modular Systems, LLC
http://tornado.nsk.ru/

R&D Organisations

Meshalkin National Medical Research Centre of the Russian Ministry of Health (federal state institution)
https://meshalkin.ru/

S&T Biotechnology Park Management Company, JSC (BioTechnoPark Koltsovo)
http://www.btp-nso.ru/

Educational Organisation

Novosibirsk State University (National Research University)
http://nsu.ru/

Novosibirsk State Medical University of the Russian Ministry of Health (NSMU)
http://www.ngmu.ru/

Other Organisations

Medical Technology Innovation Centre (Medical Technology Park), JSC
http://imtcenter.ru

Medical Industrial Park
http://imtcenter.ru/medprompark.php

Technopark of Novosibirsk Akademgorodok, JSC (Academpark)
http://www.academpark.com

Locations of Key Cluster Members

Products and Services

Information technology

- Research and modelling software
- Software for mobile devices
- Geo-information systems (GIS)
- Virtual reality systems
- Computer simulators, games
- Software for genetics, biology and medicine
- Telecom equipment
- Production and technological process automation systems, high-performance computing

Biotechnology and biopharmaceuticals

- Pharmaceuticals and vaccines
- Medical diagnostic kits
- Functional food
- Industrial enzymes
- Fodders agents

- Veterinary diagnostic kits
- Pest killers (bioproducts for agriculture and plant protection; veterinary feed; biotech equipment; cells regenerating cosmetics; medical devices, including microdrainage for eye surgery)
- Oil deactivators

High technology medical equipment

- Endoprosthesis and immersion constructions applicable traumatology, orthopaedics and neurosurgery; exoprosthesis
- Biocompatible materials for surgery: tissue-substituting materials, bioresorbable stents, vascular prosthesis, artificial heart valves

Membership in Professional Associations

Association of Innovative Regions of Russia

http://www.i-regions.org/

Association of Clusters and Technology Parks

http://akitrf.ru/

CLUSTER MANAGEMENT ORGANISATION

Official name:
Novosibirsk Regional Cluster Development Centre

Legal status: Division of the Regional Development Centre, a Novosibirsk Regional Institution

Established: 2015

Number of staff: 5

Aleksey Nizkovskiy
Head of the Novosibirsk Regional Cluster Development Centre
Phone: +7 (383) 286-99-49
E-mail: info@cluster-nso.ru

Karina Kaymina
Leading Economist
Phone: +7 (383) 286-99-49
E-mail: kakv@nso.ru

http://icnso.ru/about.html

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	–
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	–
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	–
Staff mobility	–
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- Facilitating cluster member cooperation, coordinating their activities
- Designing and implementing joint projects with participation of cluster members, R&D and educational organisations, and other interested parties
- Providing methodological, organisational, and informational support to cluster member projects
- Increasing the effectiveness of management systems and establishing specialised cluster infrastructure
- Monitoring R&D innovation, production, financial and economic potential, updating and adjusting cluster development strategies (programmes)
- Promoting cluster members' new products and services
- Assisting cluster members to obtain public support
- Organising conferences, round table discussions, workshops, and webinars with cluster members
- Arranging participation of cluster members in major Russian and international conferences, exhibitions, and business missions
- Organising publicity campaigns to promote the cluster's activities and development prospects
- Promoting cluster member exports other than raw materials and energy


Межведомственный проектный офис ФАНО России и ГК «Роскосмос»
«Перспективные материалы, технологии и конструкции»
Основная цель
Основные задачи
Базовые организации
Институт физики прочности и материаловедения СО РАН
ЭНЕРГИЯ
пром-2017
Новосибирск. 20.06.2017
МЕЖДУНАРОДНАЯ ВЫСТАВКА
НТИ ЭКСПО
НАУКА ТЕХНОЛОГИИ ИННОВАЦИИ
Новосибирск
20–22 июня 2017 г.

CLUSTER SUCCESS STORIES

Technopark of Novosibirsk Akademgorodok, JSC (Academpark)

The Academpark offers the following facilities:

- the largest Technology Incubator in Russia (a complex of business incubators specialising in four areas: information technologies, instrumentation, biotechnologies and medicine, nanotechnologies and new materials);
- Technological Support Centre;
- Engineering Centre offering integrated cross-platform software and hardware testing services;
- Backup Data Processing Centre of the Novosibirsk Regional Government;
- PromBioTech Industrial Biotechnology Centre;
- SWCNT-based Products Engineering and Prototyping Centre;
- SIGMA Nanotechnology Centre.

The Academpark's unique S&T and business infrastructure offers ideal conditions for creating new innovative companies, and successfully developing existing high technology firms by converting R&D results into functional industrial technologies.

BioTechnoPark Koltsovo Infrastructural Complex

The BioTechnoPark Koltsovo is an S&T park specialising in biotechnology and biopharmaceuticals. It comprises a shared equipment centre (SEC), and a testing laboratory centre (TLC). The SEC is designed to accelerate technological fine-tuning and development, and also to expedite marketing of new Russian biotechnology and biopharmaceutical products. The TLC provides versatile laboratory facilities sufficient to conduct a wide range of chemical, biochemical, microbiological, and toxicological tests.

Medical Technology Innovation Centre (Medical Technology Park), JSC

The Medical Technology Park is the first Russian facility to promote innovative health and medical projects using a public-private partnership model. It aims to create a continuous innovation cycle for developing new medical products and integrating them into existing medical technologies, in particular in such areas as traumatology, orthopaedics, neurosurgery, etc.

Meshalkin National Medical Research Centre of the Russian Ministry of Health

One of the largest multidisciplinary R&D, clinical, and educational medical centres of the Russian Ministry of Health. Proximity to research organisations (the RAS institutes) and universities (Novosibirsk State University and Novosibirsk State Medical University) increases the effectiveness of the whole cluster structure.

INTERNATIONAL COOPERATION

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

The Novosibirsk Region has taken the necessary legal and regulatory steps to support a wide range of development institutes and a fully elaborated innovation infrastructure: three technology parks and four industrial parks; business incubators; research and production, innovation and engineering centres; shared equipment and prototyping centres. In terms of the concentration and capacity of its technology and industrial parks, the Novosibirsk Region is among the leaders in Russia, and most of the infrastructure facilities are members of the cluster.

Participation of the best Siberian universities sets a high standard of education in basic disciplines and in professions relevant to the cluster's areas of specialisation.

Cluster members actively cooperate with international companies and successfully implement joint projects with them.

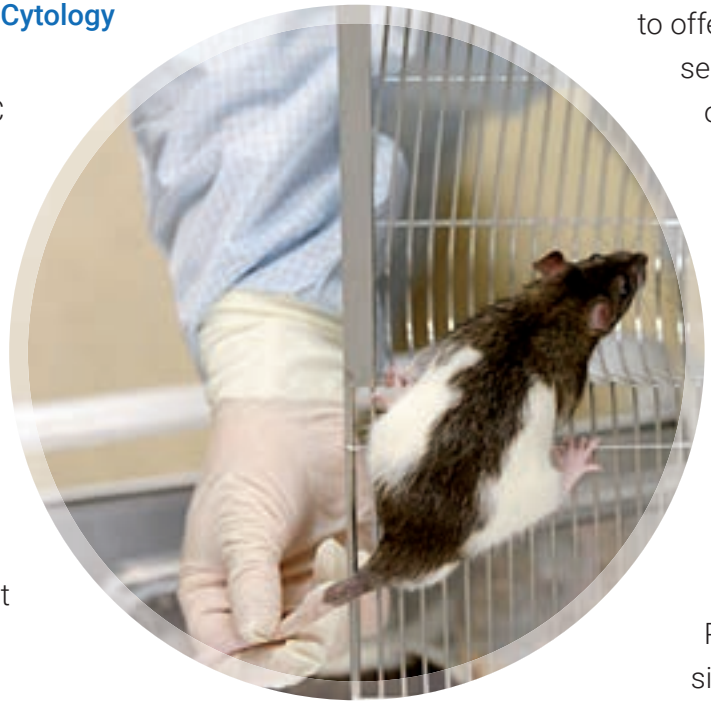
Cooperation Proposals

Project: Western Siberian Plant Breeding Centre

A project to set up an integrated selection centre is in the planning stage. It is to be equipped with the necessary specialised experimental, diagnostic, metrological, S&T, and production equipment. The project's payback period is estimated at 2–3 years, and the internal rate of return at 24%.

Project: Laboratory Animal Genetic Resources Centre (GRC) of the Institute of Cytology and Genetics SB RAS

In its technical capacity, the GRC is on a par with top international collection centres such as the Jackson Laboratory (USA) and the RIKEN BioResource Center (Japan). It annually supplies more than 20,000 SPF animals for testing purposes to all regions of Russia and conducts about 10 preclinical drug preparation trials each year. The GRC development programme envisages creating a farm to breed SPF-class pigs for preclinical trials of new surgical techniques, invasive technologies, and medical preparations.



Project: Biopolymer Factory Pilot Industrial Biopharmaceutical Production Facility

The Biopolymer Factory is an innovation infrastructure facility of the Novosibirsk Akademgorodok. Its specialised equipment in full compliance with international certification standards lends itself to almost project for creating stable monoclonal antibodies. This enables the factory to offer high technology production services for commercialisation of advanced biotechnologies and R&D results, as well as for increasing production of biopharmaceuticals and active pharmaceutical substances.

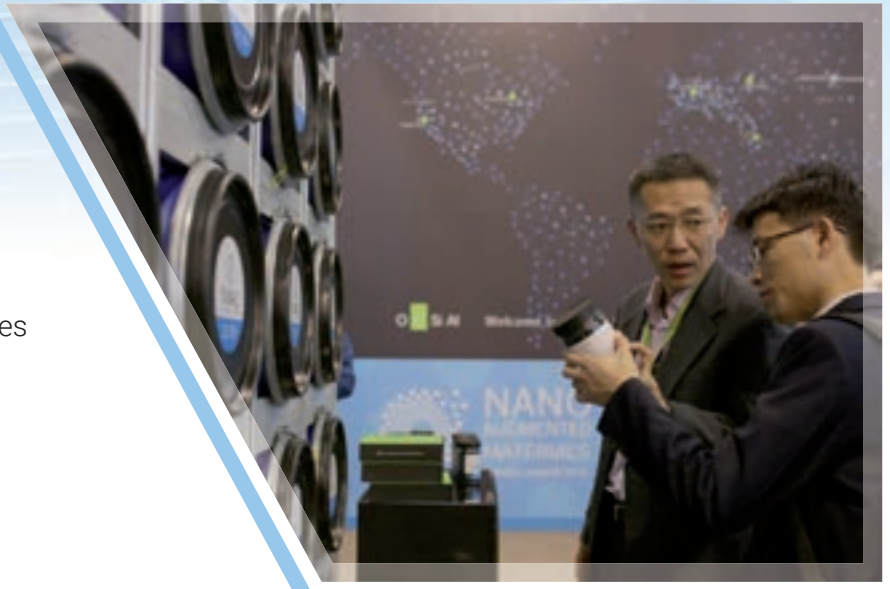
Project: Cellular Technology Centre

The project has been operating within the facilities Meshalkin National Medical Research Centre of the Russian Ministry of Health since 2016. Its purpose is

to create a specialised S&T platform for prototyping biocompatible materials and cellular technologies such as tissue-substituting materials, bioresorbable stents, vascular prostheses, artificial heart valves, etc., and then introducing them into medical practices.
The centre will enable rapid launching of production of high technology products that replace imported ones for cardiovascular surgery purposes.

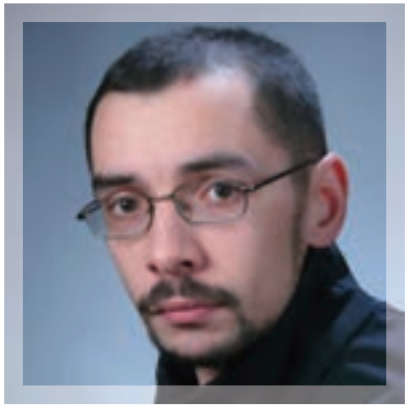
* * *

Specific information about investment terms and the above projects will be provided to interested partners upon request.



Bashkortostan Petrochemical Cluster

PETROCHEMICAL
TERRITORIAL CLUSTER
REPUBLIC OF BASHKORTOSTAN



Elshad Telyashev

Director, Institute of Petroleum Refining and Petrochemistry Processing of the Republic of Bashkortostan

Ilshat Nigmatullin

Head of the Cluster Development Department of the Institute of Petroleum Refining and Petrochemistry Processing of the Republic of Bashkortostan

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GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	–
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–

Cluster Mission

To create a horizontally integrated production network that unites the region's entire industrial potential for oil and gas production, and to facilitate cooperation between different sectors of the economy (oil and gas production and transportation, R&D and education, engineering, construction, etc.).

Cluster Objectives

- Promoting inter-cluster cooperation
- Replacing imported products, equipment, and services
- Establishing and upgrading innovation infrastructure
- Enhancing competitiveness by improving the energy efficiency of production facilities and processes
- Developing world-class competitive technologies
- Providing support to small and medium-sized companies
- Expanding inter-regional and international cooperation

Strategic Development Plan

Development Strategy for the Bashkortostan Petrochemical Cluster dated September 22, 2016.

Industry Specialisation

- Appliances
- Communications equipment and services
- Downstream chemical products
- Education and knowledge creation
- Oil and gas production and transportation
- EPCM
- Geophysical industry and geophysical service
- Development of technologies for oil refining and petrochemistry

Membership

100 small enterprises

30 medium and large enterprises

70 other participants

200 organisations

S&T Specialisation

Processing control and logistics

- Process automation
- Information processing and systems, workflow
- Prototypes, trials and pilot schemes
- Plant design and maintenance

Construction technology

- Construction methods and equipment
- Construction engineering (design, simulation)
- Management of construction process and life

Materials technology

- Colours and varnish
- Fine chemicals, dyes and inks
- Materials handling technology (solids, fluids, gases)
- Plastics, polymers
- Rubber

Transport and shipping technologies

- Measurement devices

Traffic, mobility

- Engineering

Other industrial technologies

- Cleaning technology
- Process plant engineering
- Apparatus engineering
- Chemical technology and engineering

Energy storage and transport

- Transport and storage of gas and liquid fuels

Chemistry

- Analytical chemistry
- Computational chemistry and modelling
- Inorganic chemistry
- Organic chemistry
- Petrochemistry, petroleum engineering

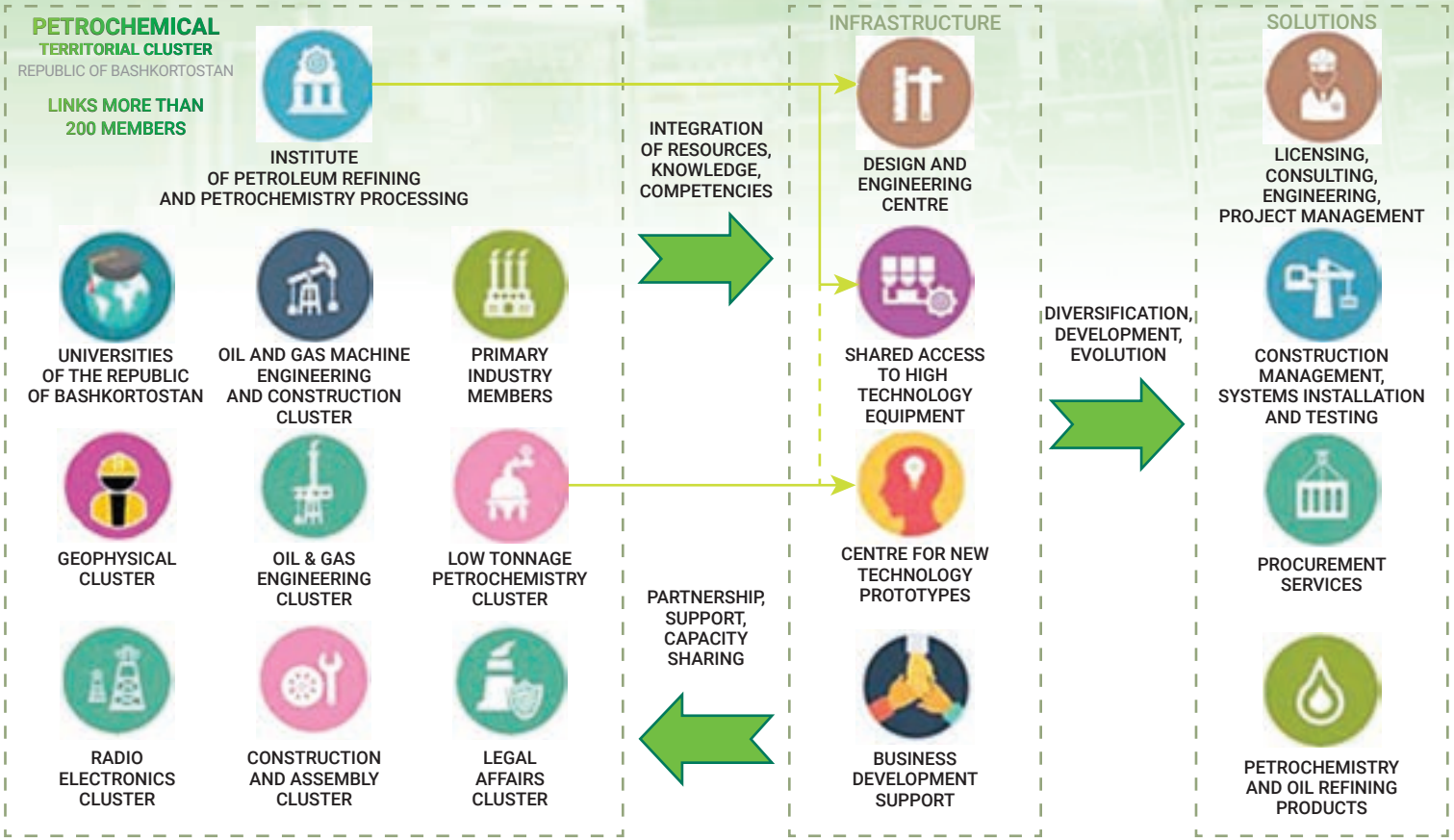
Measurement tools

- Analyses / Test facilities and methods
- Chemical material testing

Safety

- Assessment of environmental risk and Impact
- Fire safety technology

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Bashkir Soda Company, JSC
www.soda.ru/

Sterlitamak Petrochemical Plant, OJSC
www.snhz.ru/

Sintez-Kauchuk, OJSC
www.kauchuk-str.ru/

Blagoveshchensk Valves Plant, JSC
www.omk.ru/baz/

OZNA Engineering, LLC
www.ozna.ru/company/structure/ozna_engineering.php

Alternativa Plastic Products Plant, LLC
www.alternat.ru

Small Enterprises (1–250 employees)

Neftepromavtomatika, LLC
www.npaufa.ru

Sintez-TNP, LLC
www.sintez-tnp.ru

UralTechProm, LLC
www.utp-ufa.ru

Ufaneftegazmash, LLC
www.ungm.ru

R&D Organisations

Institute of Petroleum Refining and Petrochemistry of the Republic of Bashkortostan, SOE
www.inhp.ru/

Bashkir State Oil Refining and Petrochemical Plants Design Institute (Bashgiproneftechim), LLC
www.bgnhgup.ru/

Educational Organisations

Ufa State Petroleum Technical University
www.rusoil.net/

Bashkir State University
www.bashedu.ru/

Ufa State Aviation Technical University
www.ugatu.ac.ru/

Locations of Key Cluster Members

Blagoveshchensk Valves Plant, JSC

- OZNA-Engineering, LLC
- Neftepromavtomatika, LLC
- Sintez-TNP, LLC
- Ufaneftegazmash, LLC
- Institute of Petroleum Refining and Petrochemistry of the Republic of Bashkortostan, SOE (coordinator of the Oil and Gas Machine Engineering Cluster and Low-Tonnage Petrochemistry Cluster)
- Bashkir State Oil Refining and Petrochemical Plants Design Institute (Bashgipronefteckim), LLC
- Ufa State Petroleum Technical University
- Bashkir State University
- Kvant Management Company, LLC (coordinator of the Geophysical Cluster)
- Centre of Information and Communication Technologies of the Republic of Bashkortostan (coordinator of the Radioelectronics Cluster)
- Uraltechnostroy Corporation, LLC (coordinator of Oil and Gas Machine Engineering and Construction Cluster)
- Vostokneftezavodmontazh, PLC (coordinator of the Construction and Assembly Cluster)

- Alternativa Plastic Products Plant, LLC
- UralTechProm, LLC

- Bashkir Soda Company, JSC
- Sterlitamak Petrochemical Plant, OJSC
- Sintez-Kauchuk, OJSC

Products and Services

- Oil and gas production
- High-tonnage petrochemical products
- Low-tonnage petrochemical products
- Transportation of raw materials and end products
- Engineering services
- Construction and installation services
- Oil and gas mechanical engineering
- Geophysical services
- Support services

CLUSTER MANAGEMENT ORGANISATION

Official name:
Institute of Petroleum Refining and Petrochemistry Processing of the Republic of Bashkortostan

Legal status: State-owned enterprise

Established: 2015

Number of staff: 16

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http://inhp.ru/ob-institute/rukovodstvo/rukovodstvo-instuta/index.php

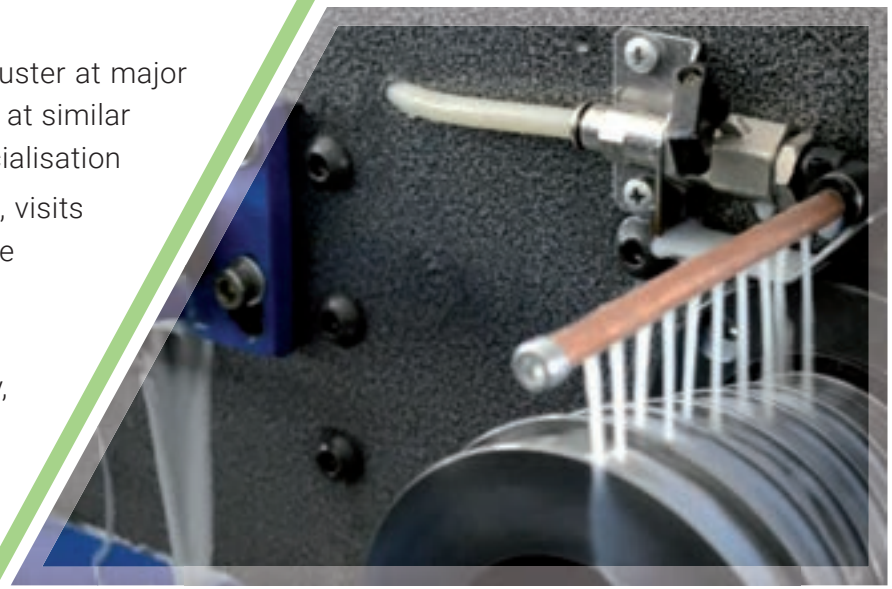
Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	+
Support for IPR	+
Location promotion/attraction of foreign direct investment	+


БВК
Российский Нефтегазохими
XXV международная юбилейная
Газ. Нефть. Технологии
25 лет успеха!
Газ. Нефть. Технологии
МЕЖДУНАРОДНАЯ ЮБИЛЕЙНАЯ ВЫСТАВКА
Виктор Иванович Семенихин
Дмитрий Владимирович Токарев

Key Support Services

- Regular thematic meetings to discuss various aspects of cluster development
- Strategic planning session bringing together clusters members, officials of the Republic of Bashkortostan, leading Russian and foreign experts
- Providing organisational, informational and analytical support for the cluster's top management
- Updating the "competency chart" for cluster members
- Involving cluster representatives in working groups under federal and regional executive agencies and local authorities
- Staff training and upgrading professional qualification for cluster members
- Preparing information stands to promote the cluster at major Russian and international fairs, exhibitions, and at similar events related to the cluster technological specialisation
- Organising round table discussions, workshops, visits to cluster member organisations to facilitate the cluster's development
- Participation in international fairs, exhibitions, and similar events in related fields of technology, or devoted to promoting innovation-based development, finding potential partners for S&T and innovation cooperation, and promoting the cluster's products in international markets



CLUSTER SUCCESS STORIES

Project: General Oil Refinery Design

Project type: Design

Participants: Institute of Petroleum Refining and Petrochemical Processing of the Republic of Bashkortostan, NefteKhimEngineering LLC, TechArs LLC

The project implementation required the design of various facilities: an elemental sulphur production plant (employing proprietary technology from the Institute of Petroleum Refining and Petrochemical Processing); a hydrogen production plant; an ELOU-AT-3 oil refinery complex (an electrical desalting plant and a single-flash pipe still, a diesel fuel hydrorefining plant, general support facilities, and infrastructure).
The project's unique feature was a radically new approach to production based on cutting-edge, clean hydrocarbon processing technologies.

Project: Design and practical application of lubricants for dry and wet drawing of alloyed, carbon, and galvanised steel wire

Project type: Investment

Participants: UralTechProm LLC

The project resulted in launching mass production of the following low-tonnage chemical products to replace imported ones: Uralan-3C (equivalent to TKT Group's TECNOLUBRE series), Uralan-3M (equivalent to Sintek FL/29 lubricant), cordage oils Uralan-1 and Torsiol-55U (equivalent to Torsiol-35 and Torsiol-55, and Nirosten, respectively).

Companies that had previously purchased imported lubricants are increasingly switching to the Russian equivalents, thus promoting development of new, higher-quality brands with excellent sales prospects. Sales to major metallurgical and mechanical engineering companies amount to 60–80 tons per month.

INTERNATIONAL COOPERATION

Partner Clusters

Klaster Badań, i Rozwoju oraz Innowacji (Poland)
http://klasterbri.pl/

Chemie Cluster Bayern GmbH (Germany)
http://chemiecluster-bayern.de/

Omsk Regional Petrochemical Industry Cluster (Russia)
http://npk-omsk.ru/

INNOKAM Cluster of Tatarstan (Russia)
http://innokam.ru/

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Cluster members are open to cooperation with Russian and international partners (R&D organisations, industrial companies, universities) in the fields of petrochemistry, gas and oil refining.
The cluster's unique feature is an integrated approach covering a wide range of activities and competences, from designing petrochemical and gas processing facilities to supplying high-quality equipment, construction, installation, and maintenance services.
The cluster's high production capacity, its advanced S&T and human potential are the key factors ensuring successful international cooperation.

Cooperation Proposals

Project: Production of plastic consumer goods

The project was launched by Alternativa Plastic Products Plant LLC in 2017 and is scheduled to be completed in 2020. The expected results include production of higher-quality end products and additives applied in manufacturing plastic consumer goods and reduced costs. Suppliers of the following raw materials are invited to take part in the project: polypropylene, low-pressure polyethylene, high-pressure polyethylene, polystyrene, polyvinylchloride, industrial lubricants, nucleators, concentrates for processing of secondary polymers, UV stabilisers, colourants, talc-filled compounds.

Project: Launching mass production of energy-efficient multifunctional ring roller pumps to replace imported ones

This investment project is being implemented by UralTechProm LLC and is set to run from 2017 to 2021. A business plan for launching the advanced production of multifunctional ring roller pumps in Ufa has been developed. The technological solutions applied in their manufacture will reduce energy consumption through higher overall efficiency, and offer an alternative to expensive imported pumps and compressors.

UralTechProm LLC invites foreign suppliers of pump equipment and organisations specialising in oilfield chemistry to take part in the project. We have prior experience with such kind of cooperation: a contract has been signed with Global Resources and Industries (Luxembourg) to launch joint production of pump equipment in Asian and North African countries and to cooperate in areas related to oilfield chemistry.

**INNOVATION CLUSTER
OF THE REPUBLIC OF MORDOVIA**
«LIGHTING AND OPTOELECTRONIC
INSTRUMENTATION»

BRIGHT CITY Lighting and Optoelectronic Instrumentation Cluster of Mordovia


ТЕХНОПАРК
МОРДОВИЯ
ТЕХНОПАРК
МОРДОВИЯ

BRIGHT CITY

INNOVATION CLUSTER
OF THE REPUBLIC OF MORDOVIA
«LIGHTING AND OPTOELECTRONIC INSTRUMENTATION»

Victor Yakuba
General Director,
Technopark-Mordovia

Andrey Zizin
Development Director,
Technopark-Mordovia

Andrey Tingaev
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Director,
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http://www.technopark-mordovia.ru
http://www.iclaster.ru
E-mail: tpm-13@yandex.ru,
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GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters – Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	–
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Bronze Label of the European Cluster Excellence Initiative	–
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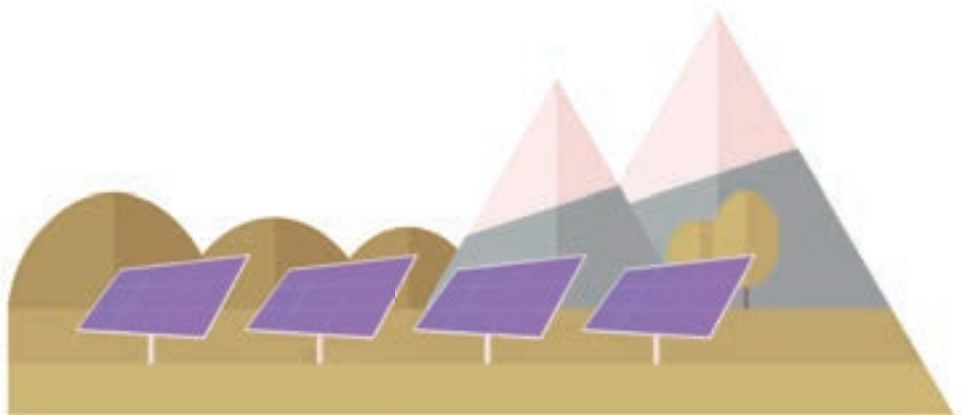
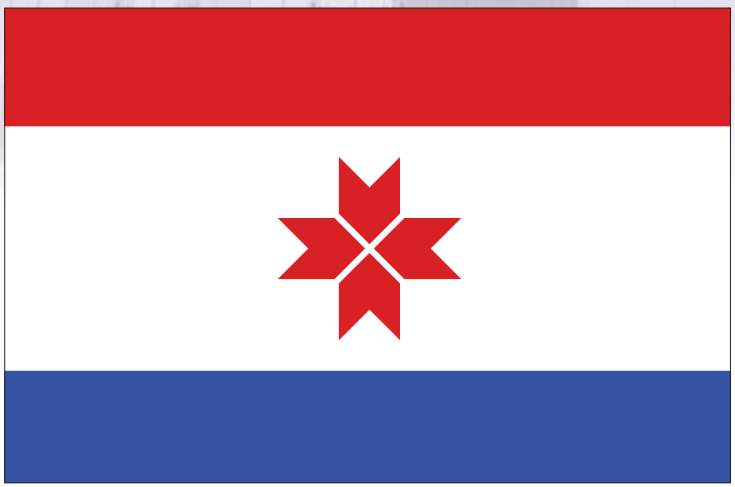




Cluster mission

To foster regional socio-economic development by enhancing the competitiveness of the cluster members and expanding their market share.

Cluster Objectives

- Attracting investments in the cluster members capital assets
- Increasing exports of the cluster members products and services
- Increasing output of the cluster members innovative products and services
- Expanding the cluster members R&D
- Facilitating the cluster members participation in joint projects
- Enabling the emergence and development of innovative SMEs within the cluster location
- Developing the cluster's innovation and education infrastructure

BRIGHT CITY
INNOVATION CLUSTER OF THE REPUBLIC OF MORDOVIA «LIGHTING AND OPTOELECTRONIC INSTRUMENTATION»

Strategic Development Plan

Development Strategy for the Bright city lighting and optoelectronic instrumentation cluster of Mordovia until 2020.

Membership

23 small enterprises

10 medium and large enterprises

17 other participants

50 organisations

Industry Specialisation

- Lighting engineering and lighting control systems
- Fibre optics and optoelectronics
- Instrumentation

S&T Specialisation

Electronics, microelectronics

- Optical networks and systems

Materials technology

- Optical materials

Energy production, transmission and conversion

- Smart grids

Renewable sources of energy

- Solar/Thermal energy

Energy efficiency

- Lighting, illumination

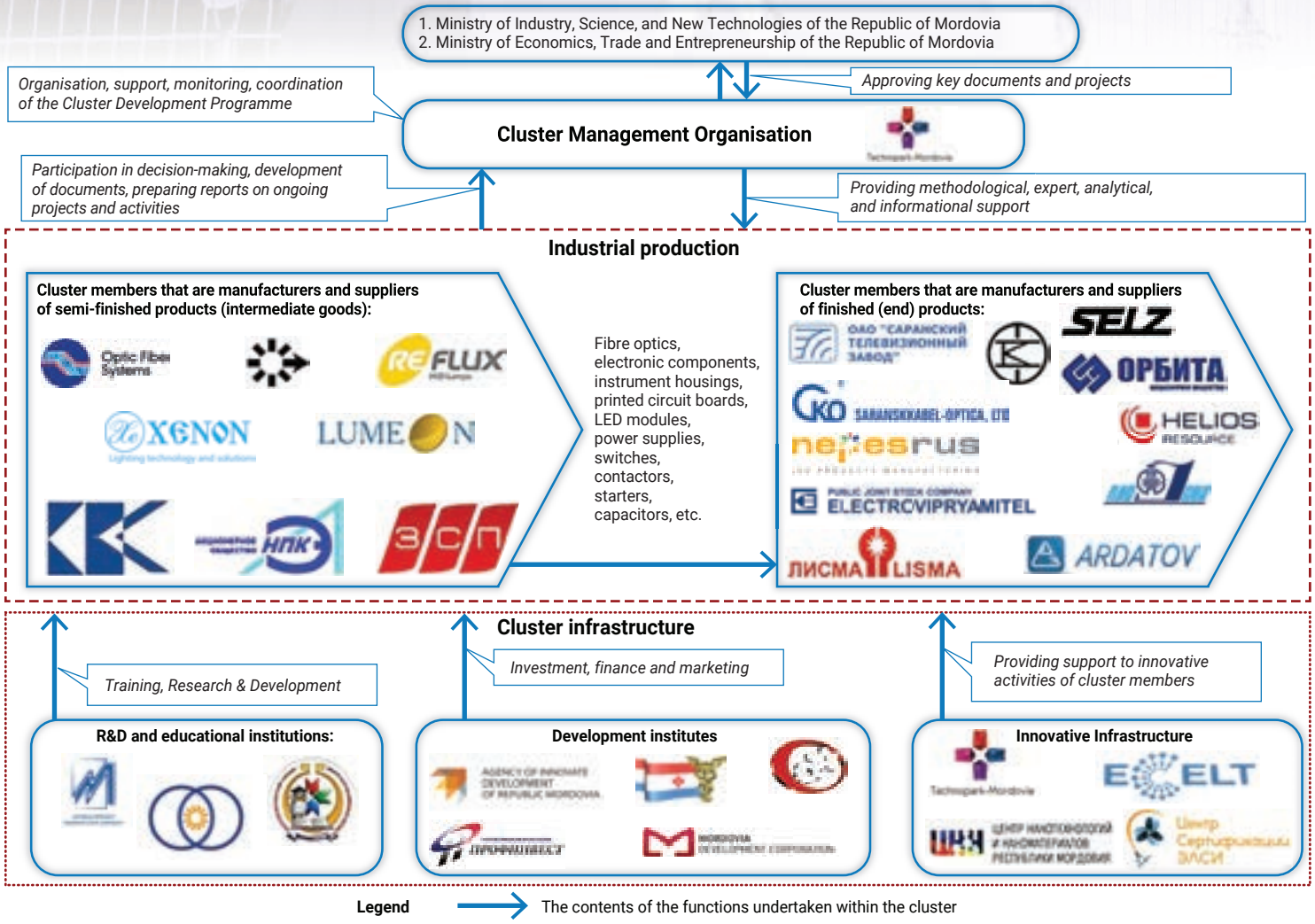
Physics

- Optics

Measurement tools

- Optical material testing
- Optical technology related to measurement

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Electrovipryamitel, PJSC
http://www.elvpr.ru
Lisma, LLC
http://www.lisma-guprm.ru
Orbita, JSC
http://www.orbita.su
Saranskkabel-Optica, LTD
http://www.sarko.ru
Ardatov Lighting Engineering Plant, OJSC
http://www.astz.ru
Kadoshkinsky Electrotechnical Plant, JSC
http://www.ketz13.narod.ru
Xenon, LLC
http://www.xnn.ru
Saransk Television Plant, JSC
http://www.saransktv.ru
Saransk Instruments Making Plant, PJSC
http://www.saranskpribor.ru

Small Enterprises (1–250 employees)

Optic Fiber Systems, JSC
http://www.rusfiber.ru
Helios Resource, LLC
http://www.helios-resource.ru
NEPES RUS, LLC
http://www.nepes.ru
Reflux-S, LLC
http://www.reflux.ru
Lighting Devices Plant, LLC
http://www.zsp-lighting.ru

R&D Organisations

Scientific Research Institute of Light Sources Named A.N. Lodygin, LLC
http://www.vniiis.su

Educational Organisations

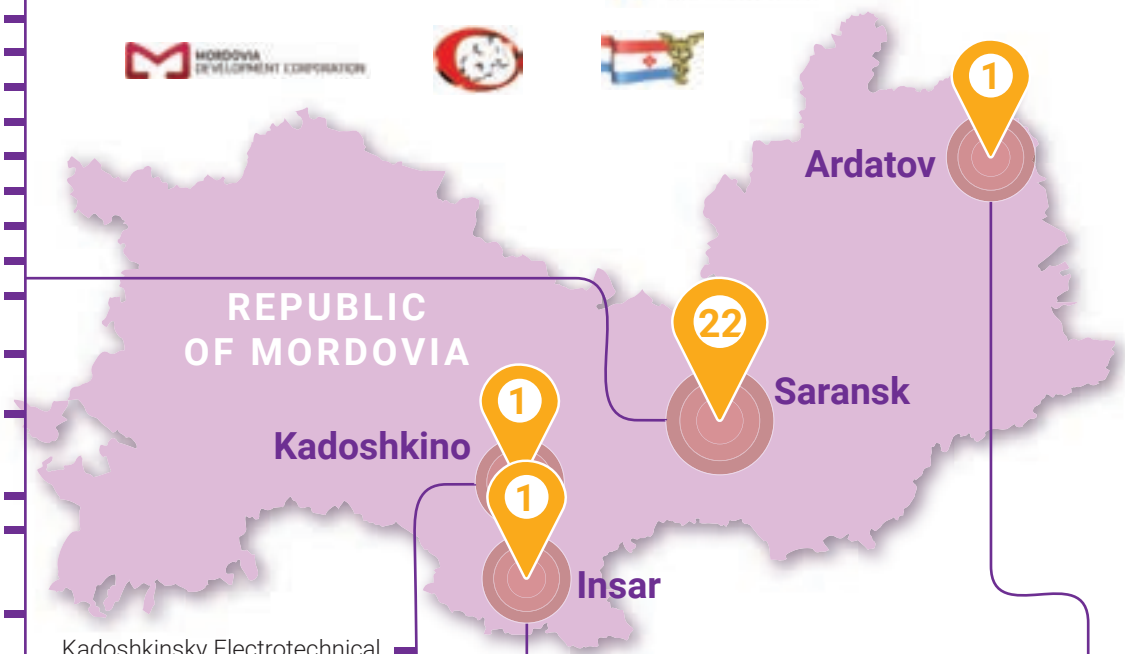
National Research Mordovia State University
http://www.mrsu.ru
Mordovia Republic School for Gifted Children
http://www.rlc.edurm.ru

Other Organisations

Technopark-Mordovia (Autonomous institution)
http://www.technopark-mordovia.ru
Engineering Center of Energy-Saving Lighting Technology, LLC
http://www.ecelt.ru
Centre of Nanotechnology and Nanomaterials of the Republic of Mordovia, LLC
http://www.cnnrm.ru
Fiber Optics Engineering Center, JSC
http://www.technopark-mordovia.ru
Agency for Innovation Development of the Republic of Mordovia (Autonomous institution)
http://www.i-mordovia.ru
Mordovia Development Corporation, LLC
http://www.investrm.ru
Chamber of Commerce and Industry of the Republic of Mordovia (Alliance)
http://www.tpprm.ru
Association of Lighting Devices Producers "Russian Light"
http://www.lta.ru/index.php/rossvet

Locations of Key Cluster Members

- Technopark-Mordovia (Autonomous institution)
- National Research Mordovia State University
- Scientific Research Institute of Light Sources Named A.N. Lodygin, LLC
- Mordovia Republic School for Gifted Children
- Electrovipryamitel, PJSC
- Orbita, JSC
- Optic Fiber Systems, JSC
- Saranskkabel-Optica, LTD
- Lisma, LLC
- NEPES RUS, LLC
- Reflux-S, LLC
- Saransk Television Plant, JSC
- Lighting Devices Plant, LLC
- Helios Resource, LLC
- Saransk Instruments Making Plant, PJSC
- Engineering Center of Energy-Saving Lighting Technology, LLC
- Centre of Nanotechnology and Nanomaterials of the Republic of Mordovia, LLC
- Fiber Optics Engineering Center, JSC
- Agency for Innovation Development of the Republic of Mordovia (Autonomous institution)
- Mordovia Development Corporation, LLC
- Association of Lighting Devices Producers "Russian Light"
- Chamber of Commerce and Industry of the Republic of Mordovia (Alliance)



Products and Services

Lighting products

- Light sources
- Lighting devices
- Electronic components
- Automated lighting control systems

Fibre optics

- Telecommunication and technical optical fibres
- Special optical fibres
- Optical cables

Optoelectronic instruments

- Fibre lasers and amplifiers
- Fibre-optic sensors
- Monitoring systems for extended objects

Membership in Professional Associations

Association of Clusters and Technology Parks

http://akitrf.ru/en

Association of Lighting Devices Producers “Russian Light”

http://www.lta.ru/index.php/rossvet

Association for Manufacturers of LEDs and LED-based Systems

http://www.nprpss.ru

CLUSTER MANAGEMENT ORGANISATION

Official name:
Technopark-Mordovia

Legal status: Autonomous institution

Established: 2009

Number of staff: 91

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http://www.technopark-mordovia.ru/contact-information/phone.php

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	+
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

Technology services

- Designing lighting devices and systems (developing integrated lighting projects, designing light sources and lighting instruments, preparing design and technological documentation)
- Product modelling and prototyping (modelling heating mode and light flow distribution of devices, creating digital 3D models, 3D scanning, 3D printing)
- Reverse engineering
- Broadside printing (scanning, copying)
- Metal-working (technological processes to change the shape, size, and quality of metals and alloys (turning, electric welding), machining (multipurpose milling machining centre), and sheet metal painting)
- SMD and DIP installation
- Casting plastics

Fairs, exhibitions, communication services

- All-Russian lighting forum with international participation. The audience in excess of 450 people (representing practically all Russian regions), plus managers and experts from China, South Korea, Finland, Germany, the USA, Kazakhstan, and Belarus

- ENES 2016 exhibition (more than 15,000 visitors, including representatives of RZD JSC, Gazprom PLC, Sberbank PLC, ROSATOM State Corporation, etc.)
- Business missions to establish contacts and cooperation with clusters in the similar fields. The participants include officials from the regional authorities, Technopark-Mordovia, Scientific Research Institute of Light Sources Named A.N. Lodygin LLC, NEPES RUS LLC, and National Research Mordovia State University

Educational activities

- Organising staff training, retraining, and upgrading qualifications on such topics as commercialisation of technology transfers, advanced technologies and materials for optics, fibre optics and optoelectronic instruments, and industrial design, etc. The main partner is National Research Mordovia State University

CLUSTER SUCCESS STORIES

Project: Research laboratory for synthesising and processing silicon carbide monocrystals

Project type: Development and production of new products and services

Participants: Technopark-Mordovia, National Research Mordovia State University, Electrovipryamitel PJSC, PVA TePla (Germany)

The project was launched in 2014. The objective is to replace imported power electronic components and become a world leader in synthesising crystals for semiconductor-based instruments.
A technology for growing silicon carbide monocrystals based on the Czochralski process was developed and perfected. Development of a technology to grow bulk 4P polytype silicon carbide monocrystals 4 inches in diameter for use in advanced power semiconductor instruments has been completed. The monocrystals are grown using PVA TePla equipment (Germany).
The project will enable launching a major integrated production facility in the Republic of Mordovia that will be the largest of its kind in Russia and capable of making anything from basic elements to end products and power modules.

Project: Production of optical fibre for telecommunication purposes

Project type: New production

Participants: Optic Fiber Systems JSC, Gazprombank JSC, RUSNANO JSC

The project resulted in the launch of the first factory in Russia to make telecommunication optical fibre for application in communication cables, for medical purposes, in the defence industry, oil and gas production, and maintenance of complex engineering facilities such as bridges, pipelines, flyovers, etc. The factory's capacity is 2.4 million km of optical fibre a year, with the potential to increase that to 4.5 million km.

Project: Joint Russian-African venture TLLINNO

Project type: Joint venture

Participants: Lisma LLC, the Burundi Government

In 2016, Lisma LLC and the Government of the Republic of Burundi established a joint venture TLLINNO to make street light sources and fixtures. The project includes delivery and installation of the necessary equipment and components. As a result, Lisma LLC has begun to operate and secured a position in the international market.

Project: Joint Russian-Korean production of LED light fixtures based on NEPES RUS, LLC CapLED™ technology

Project type: Joint venture

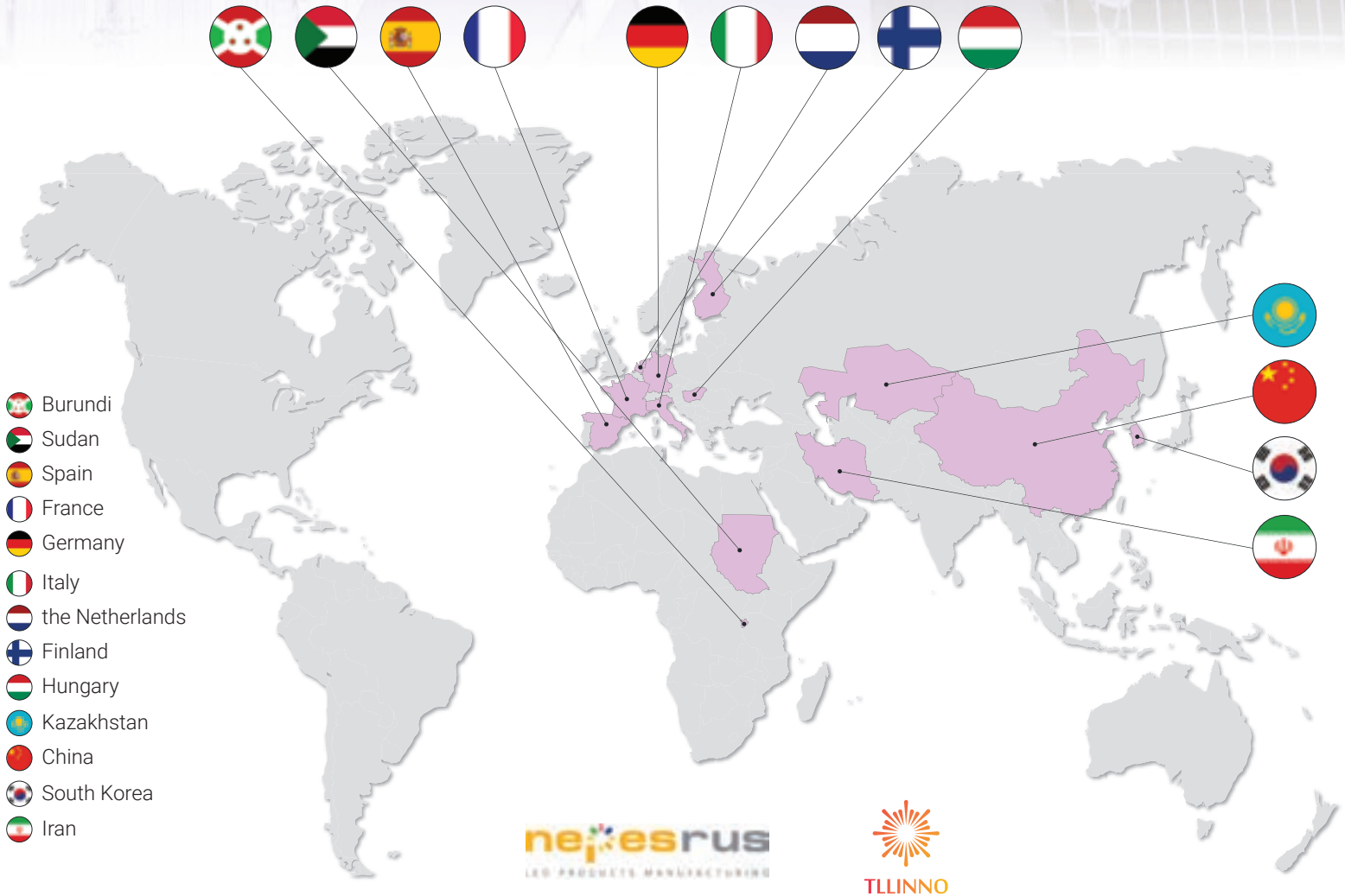
Participants: Mordovia Development Corporation LLC, NEPES LED Co Ltd

NEPES RUS LLC was established in March 2012 in Mordovia following the transfer of the unique remote phosphor technology developed by the South Korean NEPES Corporation, which makes next-generation LEDs and light fixtures based on CapLED™ remote phosphor technology.

All projects are supported by the Government of the Republic of Mordovia.


Технопарк-Мордовия
BRIGHT CITY

INTERNATIONAL COOPERATION



nanesrus
LED PRODUCTS MANUFACTURING

TLLINNO

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to cooperation

The cluster strategy includes four long-term initiatives to make Saransk a centre for advancing and consolidating knowledge; a platform for projects; a hub for attracting investment; and a city of sports and a healthy lifestyle. These initiatives are directly connected with the cluster's strengths.

→ Developed innovation infrastructure:
  – Technopark-Mordovia included in the group of leaders (A+) with the highest efficiency level in the Third Russian National Technology Parks Ranking. Technopark-Mordovia has two main divisions: Information and Computing Complex (the first data centre in Russia to receive TIER IV Design Documents from the Uptime Institute), and Innovation Production Complex, which is an integrated network of facilities including the main building, the Fiber Optics Engineering Center, Innovation Design Center, Engineering Center of Energy-Saving Lighting Technology LLC, and Experimental Production Center. These divisions cover the whole production chain from generating ideas to their implementation;
  – The Agency for Innovation Development of the Republic of Mordovia includes Molodezhny Business Incubator with more than 2,600 sq.m. of floor space, three co-working areas with more than 120 work places. Export Promotion Center of the Republic of Mordovia was established to facilitate SMEs development and exports of their products
→ High R&D and educational potential:
  – National Research Mordovia State University is the largest institution of higher education of the region;

- Mordovia Republic School for Gifted Children has unique competences in the development of talented young people (2nd place in the Best Russian Schools 2017 ranking);
- Kvantorium Tech Park for Children is a new state-of-the-art venue for extracurricular S&T education with a teaching capacity of about 1,000 children per year;
- Scientific Research Institute of Light Sources Named A.N. Lodygin LLC is a leading Russian lighting technology centre. Over 90% of all light sources made in Russia were designed by the Institute and introduced into the work of lighting companies;
- Fibre optics and photonics competences (in cooperation with ITMO University, the RAS Fibre Optics Research Centre (FORC RAS), the Devyatykh Institute of High-Purity Substance Chemistry (ICHPS RAS), the Kotelnikov Institute of Radio-engineering and Electronics (IRE RAS), and National Research Mordovia State University)

→ Investment attractiveness:

- Mordovia Development Corporation is a regional development institute established to ensure favourable business environment and attract investment in the regional economy;
- Ruzayevka Priority Socio-Economic Development Zone provides complete exemption from land and property tax, reduction of insurance payments to state non-budgetary foundations to 7.6% and the profit tax to 5%;
- Successful experience in setting up joint ventures: Russian-African joint venture TLLINNO; Russian-South Korean joint venture NEPES RUS LLC;
- Svetotekhnika Industrial Park offers advantages for the companies: property tax 0%; profit tax 13.5%; transport tax 0%; investment venues with developed infrastructure (1,000 ha);
- Saransk is one of the 2018 FIFA World Cup venues, and cluster members are involved in arrangement activities. For example, NEPES RUS LLC equips Mordovia-Arena stadium with lighting systems, and National Research Mordovia State University runs the Volunteer Centre.

Cooperation Proposals

Project: Fiber Optics Engineering Centre

The project was started in 2011 by Technopark-Mordovia jointly with the Russian Ministry of Industry and Trade, ITMO University, FORC RAS, ICHPS RAS, IRE RAS, and National Research Mordovia State University. The Fiber Optics Engineering Center is an inter-regional technology platform for developing production technologies and manufacturing specialised fibre optic light guides with specific properties along with subsequent development of devices and systems based on them. The first stage of construction was completed in April 2015. In the next stage two production lines to manufacture special fibre optic light guides will be put into operation.
Proposals to foreign partners: special optical fibres and devices that apply them.

Project: The establishment of Energy-efficient Lighting Center

Energy-efficient Lighting Center was established on the basis of Technopark-Mordovia to foster the cooperation among cluster members. The Center provides the following services: design and construction of lighting systems, simulation and prototyping, reverse engineering, large format printing, metalworking, SMD-and DIP-mounting, plastic moulding. These services help cluster members to reduce costs and save

time on the creation of new products and their market launch.
One of the latest products created in the Center is Sunlight luminaire of combined light series. It is the first luminaire of such type in Russia, which provides high-quality lighting and compensates the lack of sunlight and vitamin D. The Sunlight luminaire of combined light series was created by the Scientific Research Institute of Light Sources named A.N. Lodygin LLC.

Project: Innovation Design Center (stage 2)

This project has been undertaken by Technopark-Mordovia jointly with the RM Innovation Technology Center LLC beginning in 2012. The first stage was completed in December 2014. The objective is application of distributed innovation product design technology based on network integration of CAD hardware and software for testing purposes, which allows construction of physical and digital mock-ups for use by lighting technology and electronic instrument companies, including those specialising in defence-related areas.
Proposals to foreign partners: modelling and design services, programming of embedded systems, testing products for resistance to climatic, mechanical and electromagnetic factors.

Project: Crystalline and Fiber Optics Center

Technopark-Mordovia's Crystalline and Fiber Optics Center is aimed at development and production of precision optical components for a wide range of applications. The project implementation will enable production of various optical elements such as prisms, plates, and mirrors with dimensions suitable for use in fibre-optics.
Proposals to foreign partners: development and production of fibre optic physical parameter sensors; inscribing fibre Bragg gratings; development and manufacturing of physical parameter sensors and monitoring systems; testing of fibre optic instruments and devices.

Project: Svetotekhnika Industrial Park (state-owned enterprise)

The state-owned enterprise Svetotekhnika Industrial Park offers advanced production infrastructure to support dynamic growth of competitive companies and creation of new jobs.
International partners will be given access to venues for setting up production facilities. Companies located in the industrial park receive the following tax benefits: property tax– 0%; profit tax – 13.5%; transport tax – 0%.

All projects are supported by the Government of the Republic of Mordovia.


innokam
INNOKAM Cluster
of Tatarstan

innokam

SILVER Cluster Management Excellence

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GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	+
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–
TCI Network member	+

Cluster Mission

To promote high technology and high value-added production, and to ensure that the cluster members' industrial capacity contributes to a higher quality of life throughout the Republic of Tatarstan.

Cluster Objectives

To consolidate world-class oil refinery, petrochemistry, and automotive industry competences, and to encourage cooperation in R&D and production.

The following objectives are being implemented via:

- achieving global technology leadership;
- attaining worldwide recognition in technological entrepreneurship;
- establishing a system that conforms to international standards for attracting investment;
- creating a green technology centre.

Steps to significantly strengthen cooperation between universities, R&D organisations, and industrial companies are envisaged as part of these objectives to reach strategic S&T development goals in the cluster's areas of specialisation.

Strategic Development Plan

Development Strategy for INNOKAM Cluster
of Tatarstan through 2020 dated September 23, 2016.

Membership

176 small enterprises

36 medium and large enterprises

70 other participants

282 organisations

Industry Specialisation

- Automotive
- Automotive components manufacturing
- Downstream chemical products
- Major organic goods production
- Metalworking technologies
- Information technology and analytical instruments
- Downstream metal products

S&T Specialisation

Transport and shipping technologies

- Design of vehicles
- Artificial intelligence applications for cars and transport
- Automotive engineering
- Body and main parts
- Automotive electrical and electronics
- Hybrid and electric vehicles
- Powertrain and chassis
- Braking system
- Transmission systems

Materials technology

- Plastics, polymers
- Rubber
- Composite materials
- Fine chemicals, dyes and inks
- Nanomaterials
- Carbon nanotubes
- Advanced textile materials
- Materials handling technology (solids, fluids, gases)
- Hybrid materials
- Glass
- Adhesives

Industrial manufacture

- Erosion, removal (spark erosion, flame cutting, laser)
- Forming (rolling, forging, pressing, drawing)
- Hardening, heat treatment
- Joining techniques (riveting, screw driving, gluing)
- Machining (turning, drilling, moulding, planning, cutting)
- Machining, fine (grinding lapping)
- Surface treatment (painting, galvano, polishing, CVD)
- Microengineering and nanoengineering

Electronics, microelectronics

- Automation, robotics control systems
- Artificial intelligence
- Building automation software
- Operation planning and scheduler system
- 3D printing

Other industrial technologies

- Cleaning technology
- Chemical technology and engineering

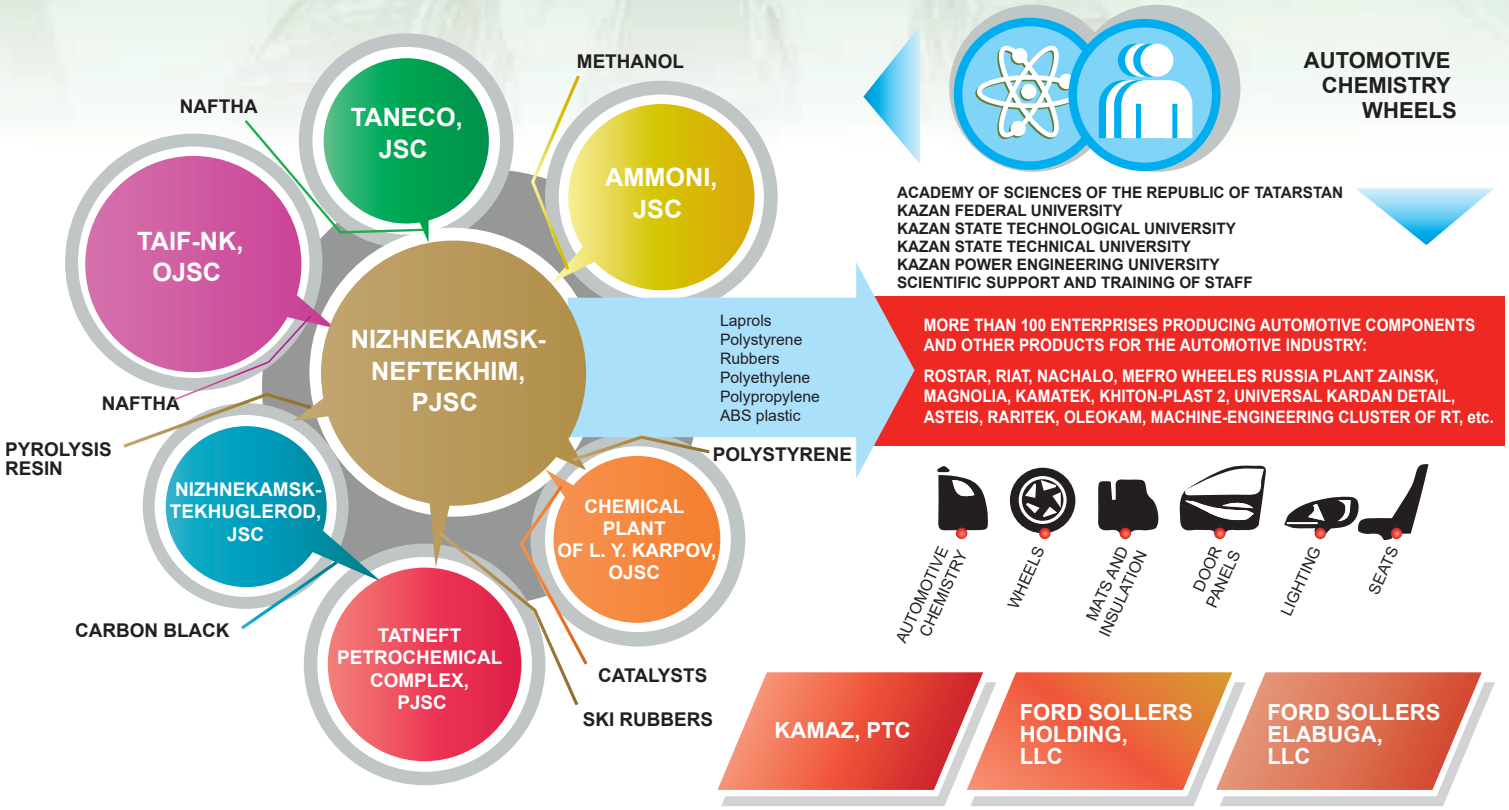
Energy production, transmission and conversion

- Transport and storage of gas and liquid fuels
- Smart grids

Processing control and logistics

- Process automation
- Information processing and systems, workflow
- Prototypes, trials and pilot schemes
- Plant design and maintenance
- Packaging for materials

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

KAMAZ, PTC
www.kamaz.ru

Ford Sollers Holding, LLC
http://www.fordsollers.com/en/

Nizhnekamskneftekhim, PJSC
www.nknh.ru

Tatneft-Neftekhim Holding, LLC
www.neftehim.tatneft.ru

IPLAST, LLC
www.iplast.com

ROSTAR Research and Production Association, LLC
www.rostar.biz

RIAT, PLC
www.riat.ru

KER Holding, LLC
http://ker-holding.com

Small Enterprises (1–250 employees)

KAMATEK, LLC
www.kamatek.ru

Eidos Group
www.oooeidos.ru

Educational Organisations

Kazan Federal University (Volga Region)
www.kpfu.ru

Tupolev Kazan National Research Technical University (KAI)
www.kai.ru

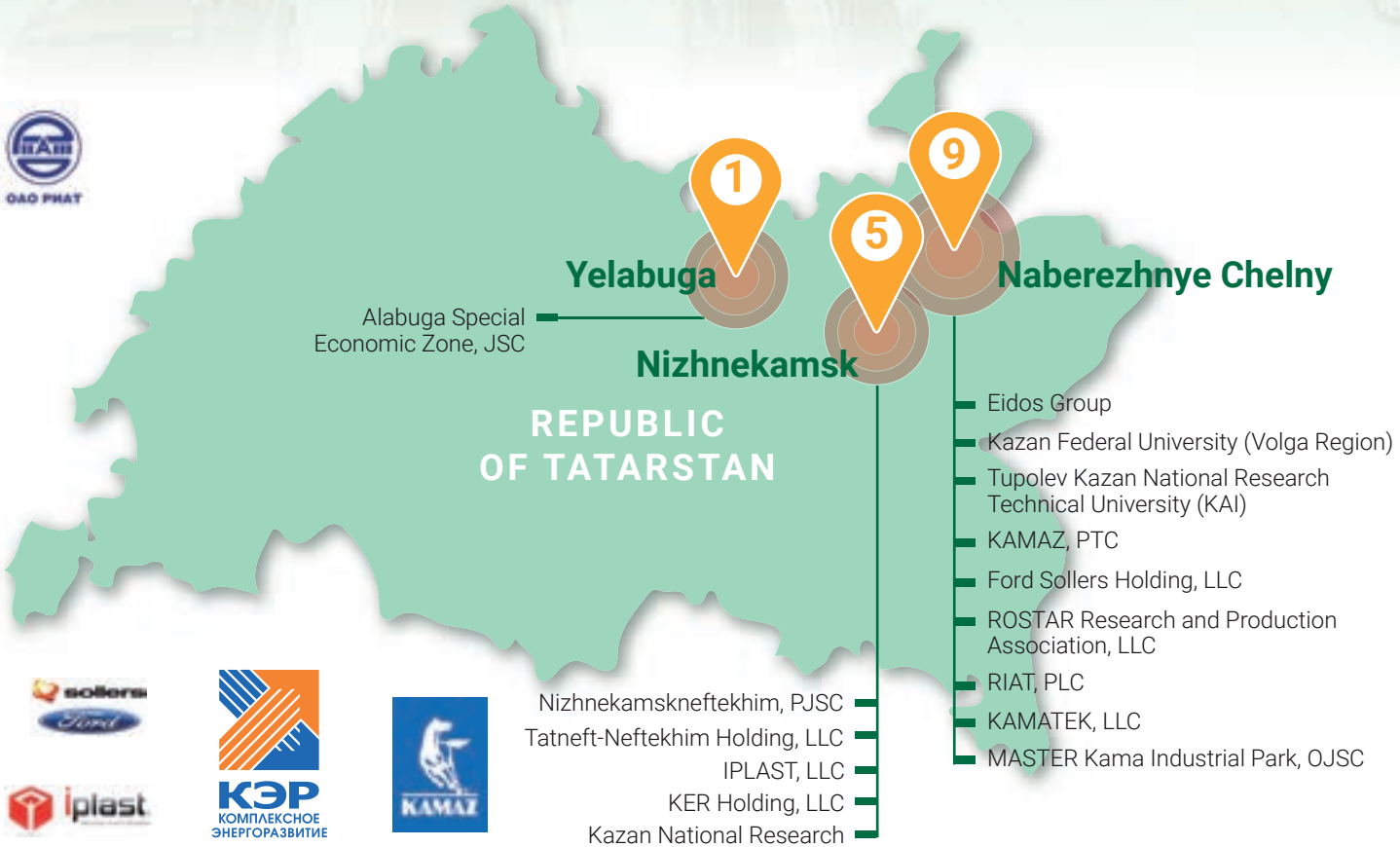
Kazan National Research Technological University
www.kstu.ru

Other Organisations

MASTER Kama Industrial Park, OJSC
www.kipmaster.ru

Alabuga Special Economic Zone, JSC
www.alabuga.ru

Location of Key Cluster Members



Products and Services

- Lorries with gross weight between 8–40 tons
- Special automotive vehicles and superstructures
- Bus chassis, small and large buses
- Heavy vehicle trailers
- Automobiles
- Tires (for lorries, cars, agricultural and industrial vehicles)
- Rubber, plastics, monomers, and other petrochemical products
- Petroleum products
- Fertilisers and nitrogen compounds
- Chemical products suitable for technical, reagent, and pharmacopeial applications
- Materials for construction, road-building, and heat insulation
- Specialised products made of synthetic sapphire
- Fibreglass products
- Composite materials
- Automotive parts
- Plastic products
- Lubricating and coolant liquids, and technological additives
- Mechanical processing of metals, casting, blanking
- Aluminium profiles and parts of any complexity
- Die and foundry tooling
- A wide range of mechanical engineering products
- Engineering and prototyping services
- Energy efficiency services

Membership in Professional Associations

TCI, a global network to advance competitiveness, innovation and cluster development

www.tci-network.org

European Cluster Observatory

http://www.clusterobservatory.eu/

Russian Cluster Map

http://map.cluster.hse.ru/

Russian Cluster Observatory

http://cluster.hse.ru/

Association of Innovative Regions of Russia

http://www.i-regions.org/

Geoinformation System of the Russian Ministry of Industry and Trade

https://www.gisip.ru/

CLUSTER MANAGEMENT ORGANISATION

Official name: INNOKAM Association

Legal status: Non-profit partnership

Established: 2012

Number of staff: 12

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http://www.innokam.ru/contacts/staff

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	–
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic Information dissemination	+
Promotion of activities (marketing/ visibility)	+
Support of knowledge transfer	+
Support of technology transfer	–
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	+
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- **Development and promotion of cluster members' projects**

  Joint innovative projects to manufacture new types of products and develop technologies are implemented with the support of cluster management organisation and the participation of cluster member companies, universities, and R&D organisations.

- **Development of staff training and qualifications upgrading system to meet the cluster members' requirements**

  Supplier Days are organised for cluster members to present and promote their products and to inform them about the procurement practices of state-sponsored corporations and large companies. Minutes are issued following the meetings to specify the next steps for establishing mutually beneficial relations with cluster members regarding supply, audits, and product quality control.

- **Promotion of cluster member production and S&T cooperation with Russian and international organisations**

  Various business missions are organised with the participation of employees from cluster member companies. The missions result in signing cooperation agreements, protocols of intent, supply contracts, and more.

- **Organisation of fairs, exhibitions, and other publicity events; and arrangement for the cluster members to be part of similar nationwide and international events**


SIA
AM"
THE REPUBLIC OF TATARSTAN
REGIONAL INDUSTRIAL CLUSTER
TATNEFT
ACE CHEMTECH
complex of industrial manufacture and industrial laboratories
TEHSTROI
Republic of Tatarstan
innokam

CLUSTER SUCCESS STORIES

Project: Developing and marketing a third-generation multifunctional medical and industrial robotic complex

Project type: Innovative cluster project

Participants: KAMAZ PTC, Tupolev Kazan National Research Technical University (KAI), Eidos Group

This project, which ran from 2013 to 2015, employed a unique third-generation technology to develop a sighted robotic complex for application in the automotive industry (specifically, for metal quenching and surfacing). A prototype robot capable of recognising dies, detecting faults, and carrying out repair programmes was produced. The robot operates by means of specially designed software and visual technology.

The KAI-Laser Regional Engineering Centre for Industrial Laser Technologies developed a strengthening technology, which was successfully tested using the KAMAZ stamping equipment.

The complex has already been applied at the Russian Robotics Prototyping and Application Centre in Naberezhnye Chelny (the Republic of Tatarstan). There are plans to install it at various cluster member companies, and negotiations are also under way with AUTOVAZ PJSC (the Samara Region).

Project: Development of Russian innovative green transport systems

Project type: Innovation cluster project

Participants: KAMAZ PTC, ROSTAR Group, KORA

A project to develop electrical buses in both the large and very small classes was implemented from 2014 to 2016. These vehicles are radically new and conform to international environmental, safety, and energy and resource conservation standards.

The buses are ready for small-scale production: prototypes successfully passed operational tests in Innopolis University (the Republic of Tatarstan) and were handed over for controlled operation to potential customers (in Moscow, the Moscow Region, and Saint Petersburg). Widespread application is expected to begin in the near future.

Project: Advanced relay inter-city cargo transportation system based on replaceable KAMATAINER bodies and vehicles manufactured by cluster members

Project type: Innovation cluster project

Participants: KAMAZ PTC, INTELLOS, Tupolev Kazan National Research Technical University (KAI), etc.

The pilot project was aimed at designing an efficient prototype long-distance relay cargo transportation system, along with the development of terminals and information support systems, on the basis of concessions and with state participation.

This system implementation would double or even triple the speed of moving cargo, reduce transportation costs (at least by half), and increase the cluster's transit potential by 3–4 times. There would also be significant opportunities for replacing imported products (tractors, containers, services), along with a boost to development of road infrastructure.

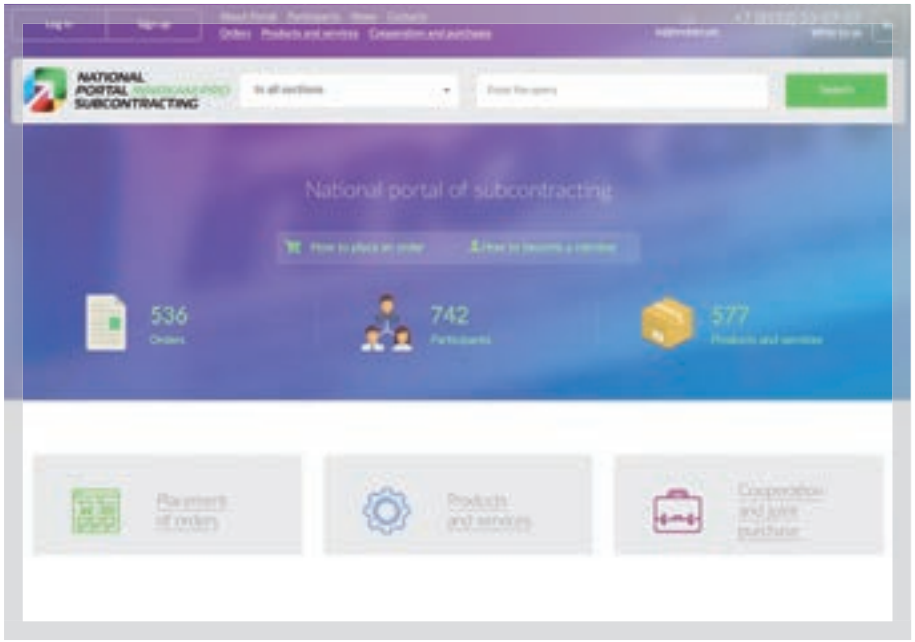
Negotiations are under way with companies in the EU, China, and Kazakhstan concerning pilot implementation of a relay system for transporting cargo from Europe to China as a part of the New Silk Road international project. A 4PL operator is being established at KAMAZ PTC to coordinate further work in this area. The feasibility of making new type removable containers for the system is being assessed. Various options for positioning relay stations at KAMAZ service stations outside the Republic of Tatarstan are being considered.

Project: Innokam.Pro – National Subcontracting Portal

Project type: Cluster project/cooperation and innovative product development

Participants: all cluster members

The project was aimed at setting up a communication portal for the cluster, encouraging cooperation, and supporting joint R&D projects and innovative product development.



The development of ***Innokam.pro*** was coordinated by the cluster management organisation jointly with the cluster members.

Now, cluster members can directly place their orders for advanced technological products at ***Innokam.pro*** and choose among reliable suppliers.

The portal's main objectives include promoting cluster members' products, securing orders from large companies, enabling cluster members' cooperation to carry out orders, implement joint projects, organise joint procurement, and more fully utilise idle capacity.

Currently, ***Innokam.pro*** has National Subcontracting Portal status, and brings together companies specialising in the following industries:

– mechanical engineering;

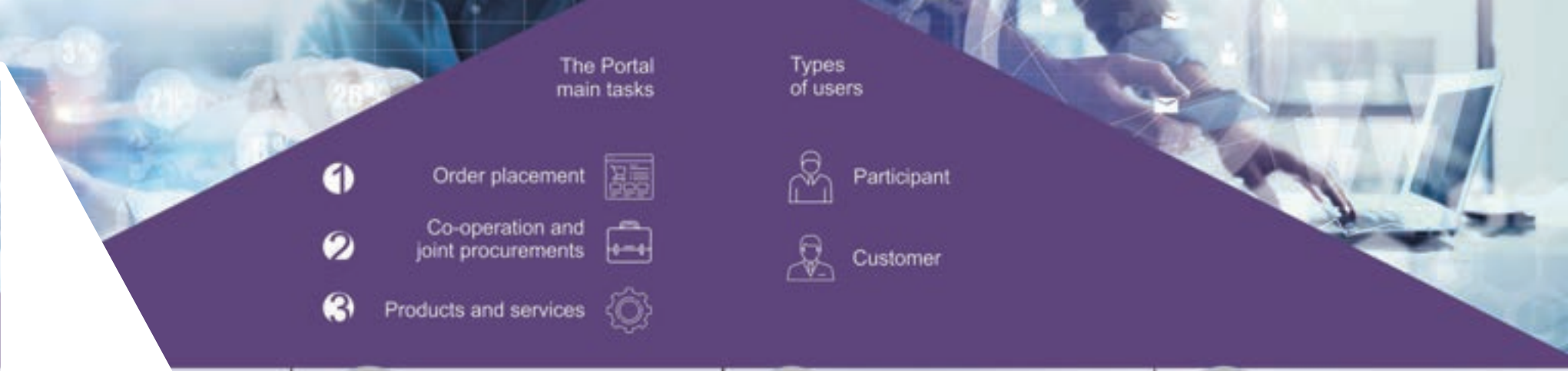
– polymer products;

– information technology;

– oil and gas processing and petrochemistry;

– R&D and engineering services.

More than 700 participants are registered at the portal, including international companies from 12 countries: Austria, Belgium, Bulgaria, Germany, Luxembourg, Czech Republic, Switzerland, Turkey, South Korea, Belarus, Kazakhstan, and Kyrgyzstan.



The Portal main tasks

1. Order placement
2. Co-operation and joint procurements
3. Products and services

Types of users

- Participant
- Customer

1 Order placement

- Selection of suppliers and order placement (free for all signed-up users of the Portal)
- Participation in execution of placed orders
- Tracking of order fulfillment

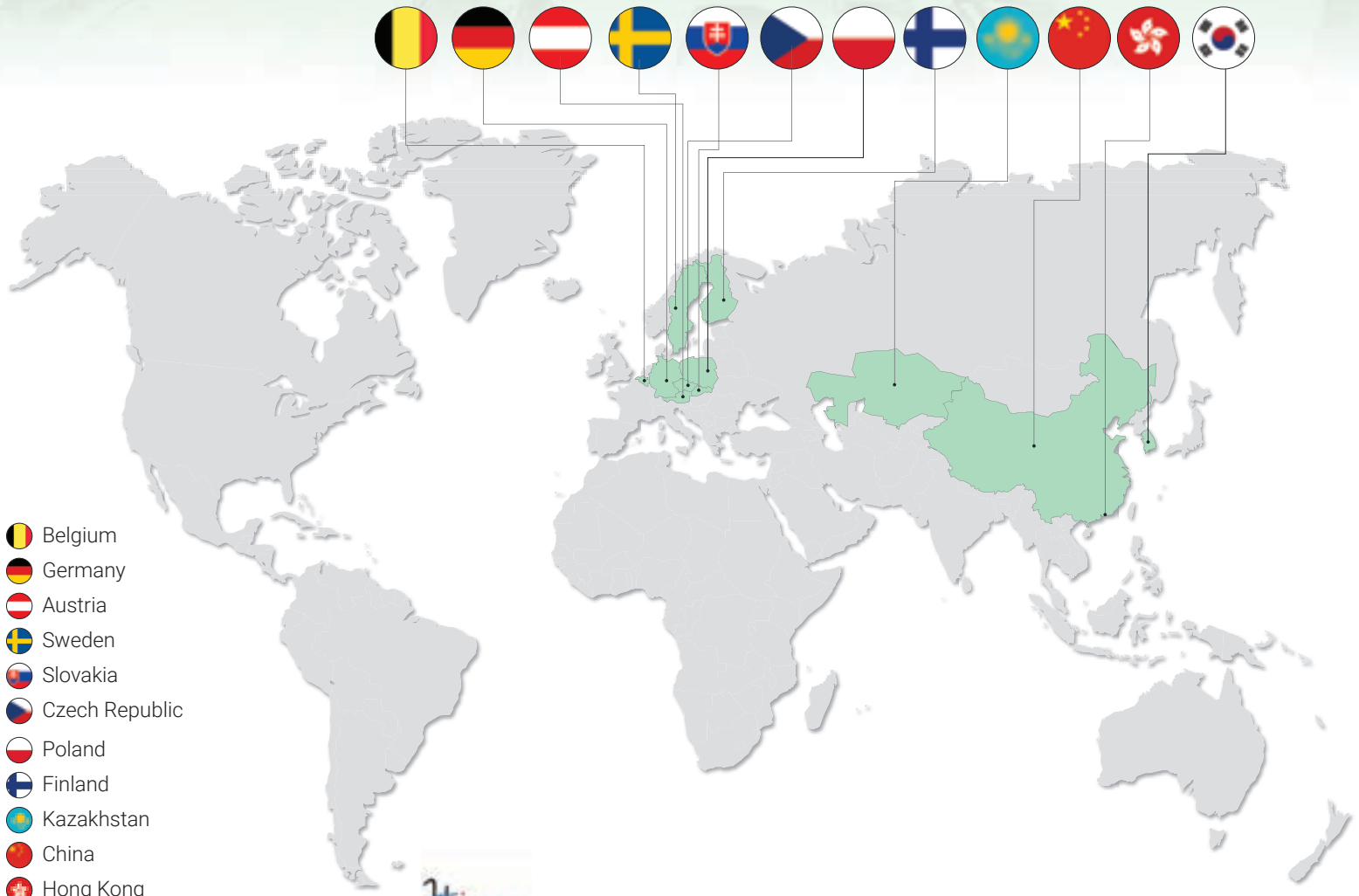
2 Cooperation and joint procurements

- Joint projects implementation
- Cooperation for a joint order execution
- Joint purchases of raw materials and components

3 Products and services

- Promotion of products and services of the Portal users
- Display of information about goods produced and services performed by the Portal users

INTERNATIONAL COOPERATION



Partner Clusters

ChemSite-Initiative (Germany)
http://www.emscher-lippe.de/chemsite/

German Association of the Automotive Industry – VDA (Germany)
www.vda.de/en

AMAPLAST (Italy)
www.assocomaplast.org/en/

Plastics Industry Association (USA)
www.plasticsindustry.org/

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Foreign investors are actively involved in the cluster's large-scale projects. The Republic of Tatarstan has established joint ventures with leading global producers such as Ford, Rockwool, the Hayat Group, Daimler, 3M, Bosch, Schneider Electric, Air Liquide, etc. These ventures are mostly concentrated in the Alabuga Special Economic Zone, and the Naberezhnye Chelny Territory of Accelerated Socio-Economic Development. Resident companies enjoy tax exemptions and many other benefits. International clusters and companies in oil refining, petrochemistry, and the automotive industries are invited to cooperative ventures and joint R&D projects in INNOKAM Cluster of Tatarstan.

Cooperation Proposals

Project: R&D Open Innovation Centre for oil-and-gas processing, petrochemistry, gas chemistry, and automotive industry

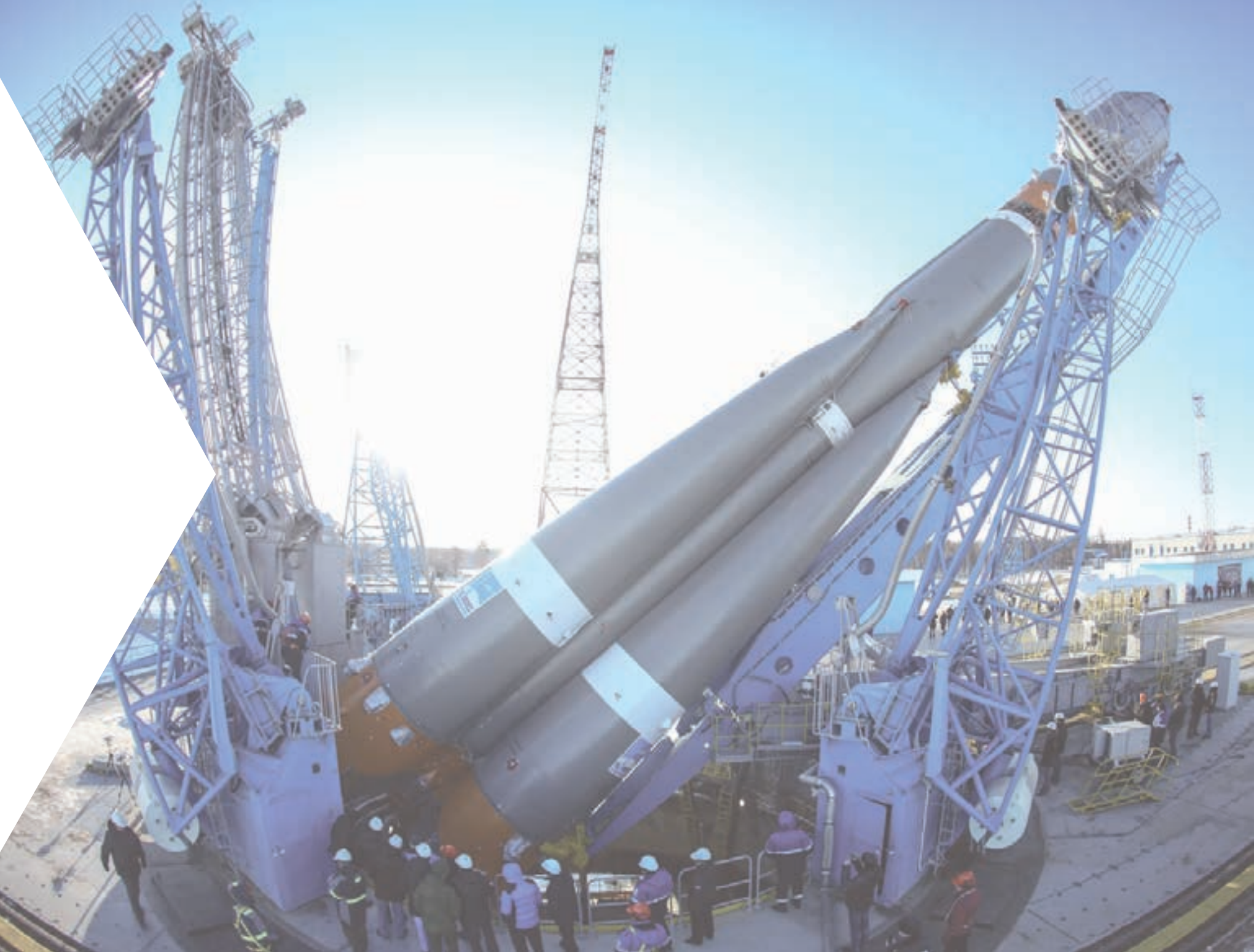
A world-class centre is planned to be established by 2020 to support the cluster's S&T development in relevant areas, by conducting R&D in line with the strategic development programme. The Centre is expected to be an efficient intellectual property creation tool.

International clusters with successful experience of setting up similar centres specialising in oil-and-gas processing, petrochemistry, gas chemistry, and automotive industry, are invited to cooperate.

Project: Olefin complex EP-1200

A joint project by Nizhnekamskneftekhim PJSC, TANEKO JSC, TAIF-NK PSC, and foreign partners (Chevron Lummus Global (CLG), Linde AG, Technip FMC plc), to construct an olefin complex. The envisaged timeframe is 2017–2025. Two stages are planned, each resulting in the construction of facilities to produce 600 thousand tons of ethylene a year. The first stage (2017–2020) includes construction of new polyolefin, polystyrene, and simple polyethers production facilities, and increasing the rate of utilising existing polyethylene and polypropylene derivatives production capacities. Straight-run gasoline is planned to be used as the main raw material for the pyrolysis complexes.

Samara Aerospace Cluster



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Margarita Shirokova

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www.cik63.ru/uslugi-centra/o-centre//aerospace-cluster/

www.cecsr.aero

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Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	+
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–

Cluster Mission

To contribute to the global leadership of the Russian Federation, and the Samara Region in particular, in the development, production and sales of advanced aerospace technology and equipment.

Cluster Objectives

- Facilitating the modernisation of existing production facilities and the emergence of new competitive ones
- Developing the cluster's infrastructure
- Providing support in securing resources, information and personnel to projects that are developing new technologies and materials
- Facilitating the development of cluster members' S&T and physical assets
- Supporting cluster members joint projects
- Increasing the share of cluster members products in international markets for research-intensive high technology products
- Encouraging the diversification of cluster members products
- Facilitating cooperation with Russian and international aerospace companies
- Coordinating cluster members activities in technology transfer, entering new markets, and efficient networking
- Facilitating the development of SMEs
- Helping to locate highly skilled personnel for aerospace companies

Strategic Development Plan

Development Strategy for the Samara Aerospace Cluster dated September 23, 2016.

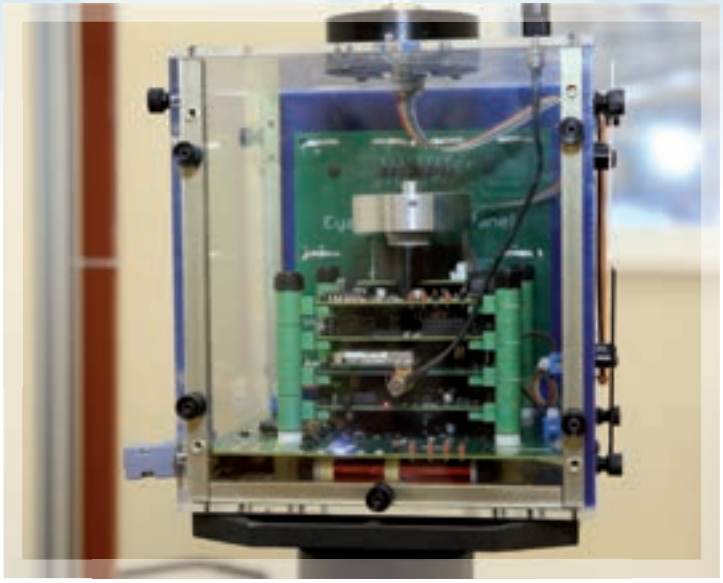
Membership

26 small enterprises

16 medium and large enterprises

25 other participants

67 organisations



Industry Specialisation

- Production of aerospace equipment, machinery and components
- Defence industry
- Propulsion engineering

S&T Specialisation

Electronics, microelectronics

- Automation, robotics control systems
- Electronic circuits, components and equipment
- Micro- and nanotechnology related to electronics and microelectronics
- Electronic engineering
- Nanotechnologies related to electronics and microelectronics
- Optical networks and systems

Information processing and systems, workflow

- Computer software
- Computer technology / Graphics, meta computing
- Data protection, storage, cryptography, security
- Information technology
- Knowledge management, processing management
- Simulation
- Remote control
- Smart appliances
- Environmental and biometrics sensors, actuators

IT and telematics applications

- Applications for transport and logistics
- e-Government
- GIS
- ERP
- Quality management systems
- Maintenance management system
- Operation planning and scheduler system

Telecommunications, networking

- Research networking, GRID
- Satellite technology / Positioning / Communication in GPS

Design and modeling

- 3D printing

Industrial manufacture

- Machine tools
- Machining (turning, drilling, moulding, planning, cutting)
- Machining, fine (grinding lapping)
- Microengineering and nanoengineering

Processing control and logistics

- Process automation
- Manufacturing plants networks
- Supply chain

Construction technology

- Construction methods and equipment
- Construction maintenance, monitoring methods and equipment
- Construction engineering (design, simulation)
- Management of construction process and life

Materials technology

- Ceramics materials and powders
- Iron and steel, steelworks
- Metals and alloys
- Optical materials
- Plastics, polymers
- Carbon nanotubes
- Hybrid materials
- Nanomaterials

Transport infrastructure

- Air transport
- Logistics
- Water transport

Aerospace technology

- Aeronautical technology / Avionics
- Aircraft
- Satellite navigation and technology
- Propulsion
- Guidance and control
- Thermal insulation for space applications

Energy storage and transport

- Storage of electricity, batteries
- Power to gas technology

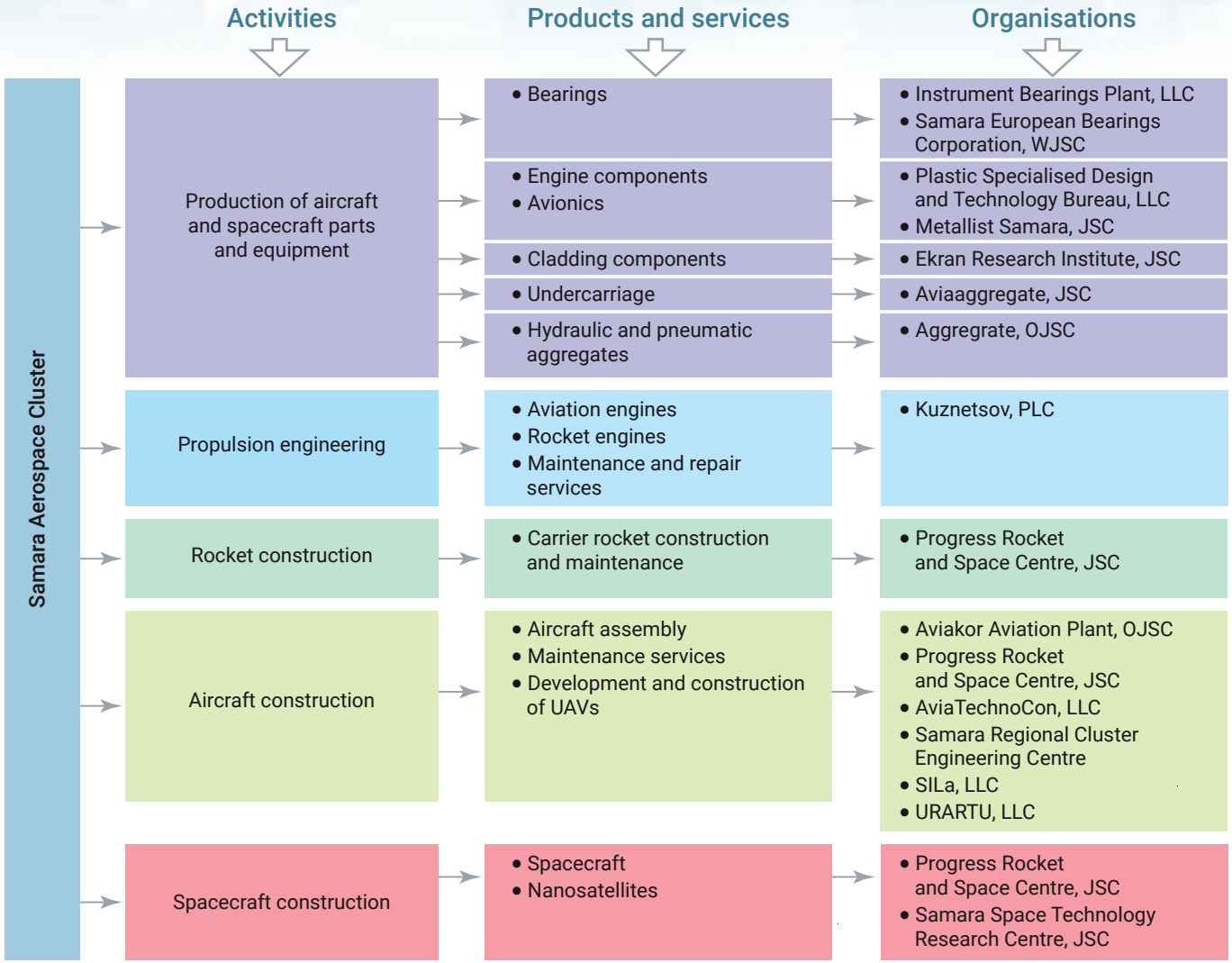
Energy production, transmission and conversion

- Generators, electric engines and power converters
- Turbines
- Smart grids

Renewable sources of energy

- Wind energy

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Progress Rocket and Space Centre, JSC
www.samspace.ru

Kuznetsov, PLC
http://www.kuznetsov-motors.ru/

Aviaaggregate, JSC
http://aviaagregat-samara.com/

Aviakor Aviation Plant, OJSC
http://www.aviacor.ru/

Metallist Samara, JSC
http://www.metallist-s.ru/

Saliut, PLC
http://www.salut-samara.ru/

Tupolev Design Bureau, PLC (Samara Branch)
http://www.tupolev.ru/

Technodynamika Holding Company
http://www.technodinamika.ru/

R&D Organisations

Korolev Samara University (National Research University)
www.ssau.ru

Samara State Technology University (Samara Polytech)
https://samgtu.ru/

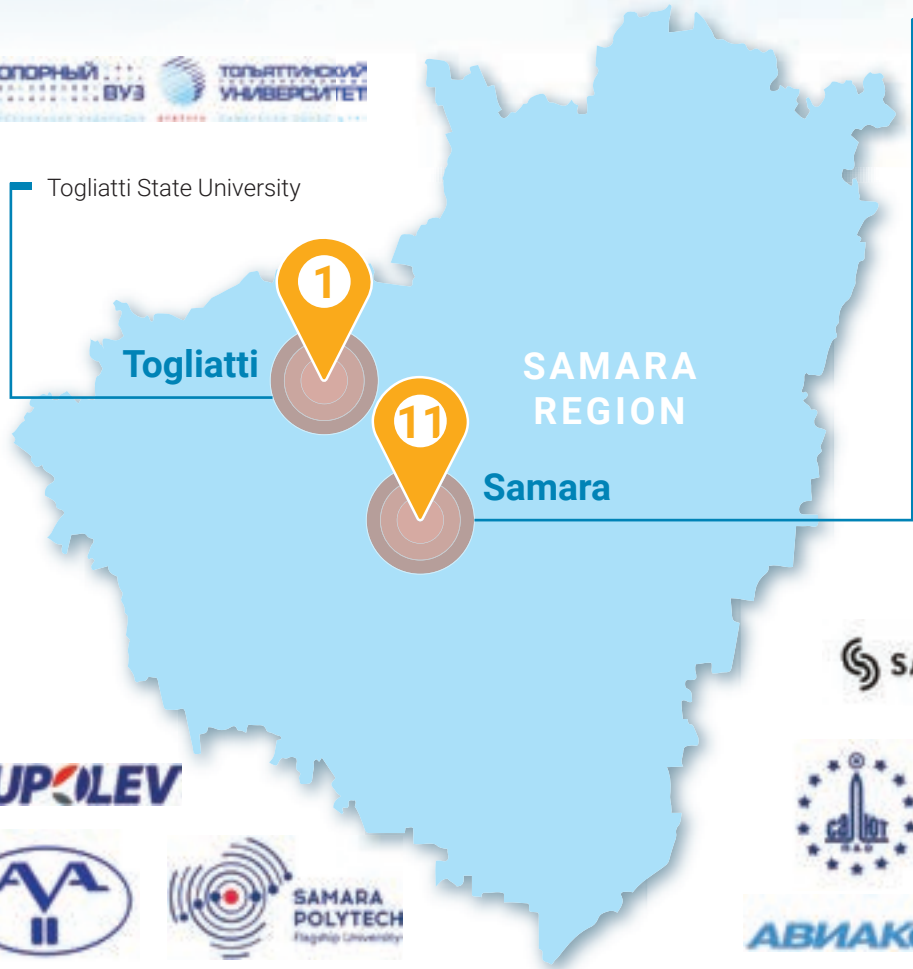
Togliatti State University
https://www.tltsu.ru/»

Other Organisations

Samara Regional Cluster Engineering Centre

www.cecsr.aero

Locations of Key Cluster Members

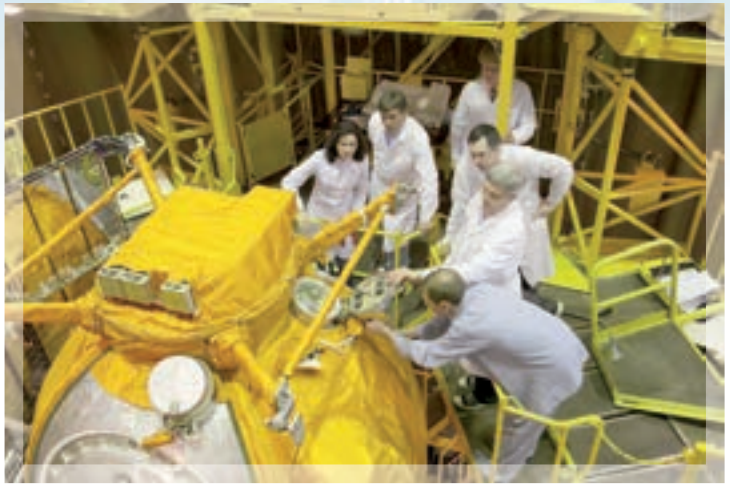


- Togliatti State University

- Progress Rocket and Space Centre, JSC
- Kuznetsov, PLC
- Aviaaggregate, JSC
- Aviakor Aviation Plant, JSC
- Metallist Samara, JSC
- Saliut, PLC
- Tupolev Design Bureau, PLC (Samara Branch)
- Technodynamika Holding Company
- Korolev Samara University (National Research University)
- Samara Regional Cluster Engineering Centre
- Samara State Technology University (Samara Polytech)

Products and Services

- Spacecraft
- Aviation and rocket engines
- Aircraft aggregates, components and parts
- Maintenance and repair of aircraft and power units



Membership in Professional Associations

National Partnership of Russian Aerospace Clusters

Eurasian Aerospace Cluster Partnership

www.eac.aero

CLUSTER MANAGEMENT ORGANISATION

Official name:
Samara Regional Innovation Development and Cluster Initiatives Centre

Legal status:
State autonomous institution

Established: 2010

Number of staff: 75

www.cik63.ru

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First Deputy Director
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E-mail: serov@cik63.ru

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Head of the Engineering Centre of Innovation Aerospace Cluster
Phone: +7 (927) 653-89-91
E-mail: Sergei.kornilov@cecsr.org

Evgeniya Shabanova
Deputy Head, Center for Cluster Development
Phone: +7 (846) 993-86-00, ext. 111
E-mail: shabanova@cik63.ru

Margarita Shirokova
Specialist of the Engineering Centre of Innovation Aerospace Cluster
Phone: +7 (846) 205-70-39
E-mail: shirokova@cik63.ru, info@cecsr.org

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	–
Facilitation of cross-sectoral cooperation	–
Trend-scouting (ideas for innovative projects)	–
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	–
Support for IPR	–
Location promotion/attraction of foreign direct investment	–

Key Support Services

- Organising cluster members cooperation in developing production processes and technologies
- Applying computer and information technology to:
  - measuring products, tooling, calibration;
  - preparing product design and technological documentation;
  - developing 3D models and photorealistic imagery from blueprints, sketches, and samples;
  - conducting spectroscopic analysis to determine chemical composition of products made of aluminium and its alloys;
  - quick prototyping with additive technologies;
  - making 2D and 3D plans for production facilities;
  - developing and optimising logistical models for production facilities
- Providing consulting services to facilitate the development of business plans and quality management systems and their diagnostics, including calculation of technology readiness indices and audits of enterprise management systems
- Arranging staff training and upgrading qualifications for cluster members, in particular for the skills required to improve existing mechanical engineering technologies and to apply new ones


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CLUSTER SUCCESS STORIES

Project: Multilevel Online System for Earth Remote Sensing

A pilot project implemented by cluster members in the Samara Region, comprising:

- building an integrated group of UAVs for online remote monitoring of the Earth's surface including ground-based, water and underwater objects (Space – Air – Earth – Water);
- creating a regional database containing the remote sensing data;
- developing a system of ground-based stationary and mobile monitoring laboratories;
- developing software for operating the integrated group of UAVs and processing the monitoring data.

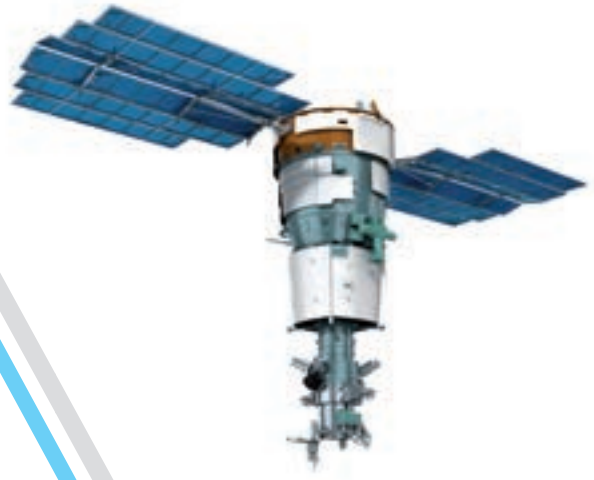
The monitoring system includes space, aerial, and ground segments.

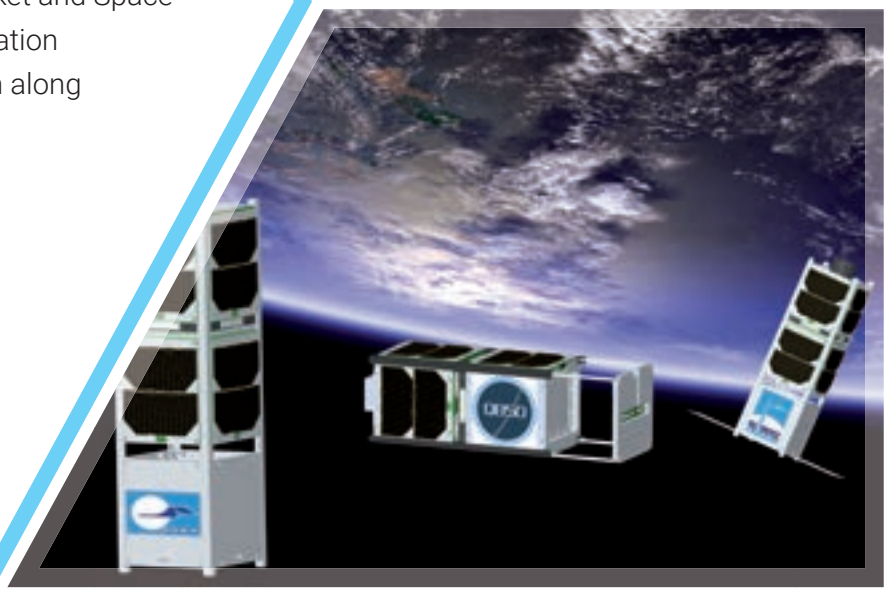
The Progress Rocket and Space Centre JSC, Korolev Samara University, and Samara Regional Cluster Engineering Centre are responsible for space monitoring. Today, the Earth remote sensing uses Resurs-P and AIST-2D spacecrafts.

In 2016, the SamSat nanosatellite was launched into orbit in testing mode, and it captured remote sensing images.

Aerial monitoring is conducted by the Samara Regional Cluster Engineering Centre, Samara Engineering Laboratories, URARTU, and Korolev Samara University. Prototype UAVs designed for application for various purposes were assembled and tested, and a prototype aviation hyperspectrometer was developed.

Remote monitoring of ground objects is conducted by the Laboratory of Hyperspectral Analysis, Samara State Technology University, the Samara Regional Cluster Engineering Centre, Samara-Informsputnik, and the Progress Rocket and Space Centre JSC. This collaboration has resulted in compilation of the first signature databases of the Samara Region along with development of the necessary data processing software.





Project: Nanosatellite Centre

SamSat-218 and SamSat-QB50 nanosatellites were developed and ground-tested in 2015–2016.

A Soyuz-2.1a carrier rocket (built by the Progress Rocket and Space Centre JSC) launched in April 2016 from the new Vostochny Spaceport, put a SamSat-218D nanosatellite into orbit.

The nanosatellites were designed by Korolev Samara University Inter-University Department of Space Research.
The SamSat-218 subsystem was tested using the advanced facilities of the Centre for Testing and Integrated Development of Nanosatellite Systems.
The Centre was established in 2014 under the Development Programme for the Samara Aerospace Cluster.

The SamSat-QB50 satellite is being prepared for use in a major international project under the aegis of the Theodore von Karman Institute for Fluid Dynamics (Belgium) with financial support by the European Union.
The objective of the QB50 project is to build and study a space-time model of the Earth's thermosphere — the lower layers of the upper atmosphere.

INTERNATIONAL COOPERATION

Partner Clusters

Campania Aerospace District – DAC (Italy)
http://www.daccampania.com/

Hélice Andalusian Aerospace Cluster (Spain)
http://helicecluster.com/

Skywin Aerospace Cluster of Wallonia (Belgium)
http://www.skywin.be/

Eurasian Aerospace Cluster Partnership (Russia, France)
http://www.eac.aero/

Hungarian Aerospace Cluster (Hungary)
http://www.haif.org/

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Samara Aerospace Cluster brings together leading companies and related R&D organisations working in rocket and space engineering, aircraft construction, propulsion and aggregate engineering. The cluster's particular strength is that it encompasses the complete aerospace production cycle within a single region. Cluster member combined annual output reaches over US$1 billion. The total workforce is 45,000, out of which more 21,000 people are engaged in R&D. The cluster has unique competences in aerospace technologies.

Cooperation Proposals

Project: Physical Modelling of Space Factors

The project aims at establishing a laboratory to make multifactorial models of the space environment effect on the structural elements and radio-electronic equipment of a spacecraft, in particular:

- vacuum testing (0.75×10^{-6} to 750 mmHg);
- formation of heat fluxes ranging from -100 to + 100 °C;
- generation of electrostatic discharge;
- generation of low-temperature plasma flows;
- generation of electron fluxes;
- generation of a stream of dust and anthropogenic particles;
- generation of ultraviolet radiation.

Project: Unified Production of Aerospace Instruments

The objective is to launch the production of tools and instruments for the aerospace industry. Gradual creation of production facilities to make technical equipment, cutting and measuring tools, pilot products and parts for mainline production is envisaged, along with facilities for heat treatment of parts.

Project: Integrated Systems for Unmanned Remote Sensing of the Earth

The plan is to develop a highly mobile group of unmanned aerial complexes for round-the-clock online remote sensing of the Earth under various weather conditions. In addition to the group of UAVs, there are plans to create:

- regional databases containing the monitoring data;
- ground-based stationary and mobile monitoring laboratories;
- software required to control the UAV groups and to receive, transmit, and process the sensing data.

* * *

Small and medium companies, R&D organisations, and universities are invited to cooperate within the above projects via:

- establishing joint ventures;
- launching the production of jointly designed products for distribution in developing countries;
- conducting joint R&D projects.

SMART
TECHNOLOGIES TOMSK

Smart Technologies Tomsk Cluster

SMART
TECHNOLOGIES TOMSK

Andrey Antonov
Deputy Governor (Economy) of the Tomsk Region; Director of the Smart Technologies Tomsk Innovation Cluster

Sergey Klimov
Director,
Tomsk Regional Cluster Development Centre, LLC

Contacts:
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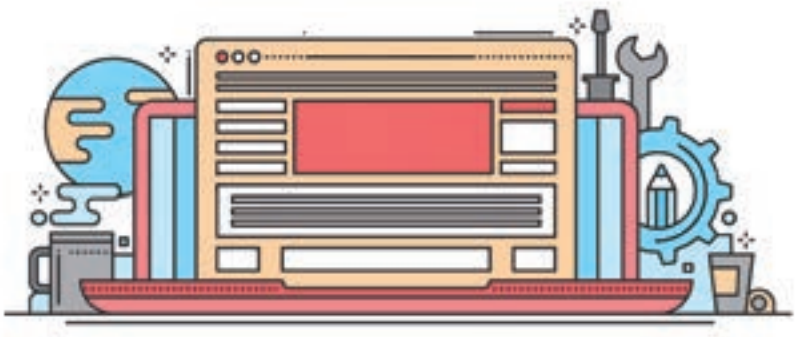
Tomsk 634009
Phone: + 7 (3822) 70-58-95
www.innoclusters.ru
E-mail: info@innoclusters.ru
https://www.facebook.com/ckrto/

GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development Project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–



Cluster Mission

To ensure the development of science and education in the Tomsk Region in key technological areas and to scale up joint projects of the cluster members that facilitate high technology businesses.

Cluster Objectives

- Facilitating cluster members cooperation
- Increasing international S&T cooperation, in particular by attracting the R&D centres of transnational corporations to the Tomsk Region
- Establishing and developing competency and excellence centres that are based at leading R&D and educational organisations and that will concentrate on the cluster's key areas of specialisation
- Developing a shared R&D infrastructure in areas that cluster members demand
- Improving the quality of services, upgrading infrastructure facilities to meet international standards, and increasing their efficiency to qualify for inclusion in leading international rankings
- Expanding the scope of activities and increasing the number of companies (together with their Russian and international partners) that are consumers of technological services provided by the innovation infrastructure facilities
- Obtaining international certificates (accreditation) for innovation infrastructure facilities (*e.g.* to meet EU-BIC standards)
- Upgrading the management system of the cluster's innovation infrastructure facilities to achieve world-class competitiveness

SMART
TECHNOLOGIES TOMSK

Strategic Development Plan

Development Strategy for the Smart Technologies Tomsk Cluster dated September 20, 2016.

Industry Specialisation

- Biopharmaceuticals
- Education and knowledge creation
- Fishing and fishing products
- Forestry
- Creation of active pharmaceutical ingredients and biopharmaceutical substances
- Technical vision
- Integrated information and communication systems for regions with extreme climate conditions

Membership

165 small enterprises

6 medium and large enterprises

12 other participants

183 organisations

S&T Specialisation

Electronics, microelectronics

- Automation, robotics control systems
- Digital systems, digital representations
- Micro and nanotechnology related to electronics and microelectronics
- 3D printing
- Electronic engineering
- Nanotechnologies related to electronics and microelectronics
- Smart cards and access systems

Information processing and systems, workflow

- Data processing / Data interchange, middleware
- Data protection, storage, cryptography, security
- Databases, database management, data mining
- Information technology / Informatics
- Internet technologies / Communication (wireless, bluetooth)
- User interfaces, usability
- Building automation software
- Remote control

Design and modeling

- Cleaning (sandblasting, brushing)
- Drying
- Erosion, removal (spark erosion, flame cutting, laser)
- Forming (rolling, forging, pressing, drawing)
- Hardening, heat treatment
- Joining techniques (riveting, screw driving, gluing)
- Jointing (soldering, welding, sticking)
- Machine tools
- Machining (turning, drilling, moulding, planning, cutting)
- Machining, fine (grinding lapping)
- Mixing (powder, etc.), separation (sorting, filtering)
- Moulding, injection moulding, sintering
- Extrusion
- Surface treatment (painting, galvano, polishing, CVD)
- Microengineering and nanoengineering

Processing control and logistics

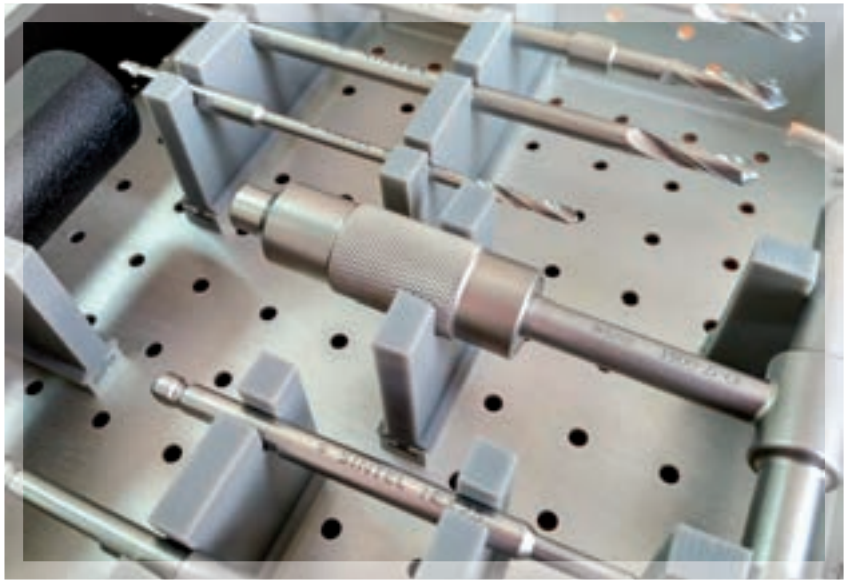
- Process automation

Medicine, human health

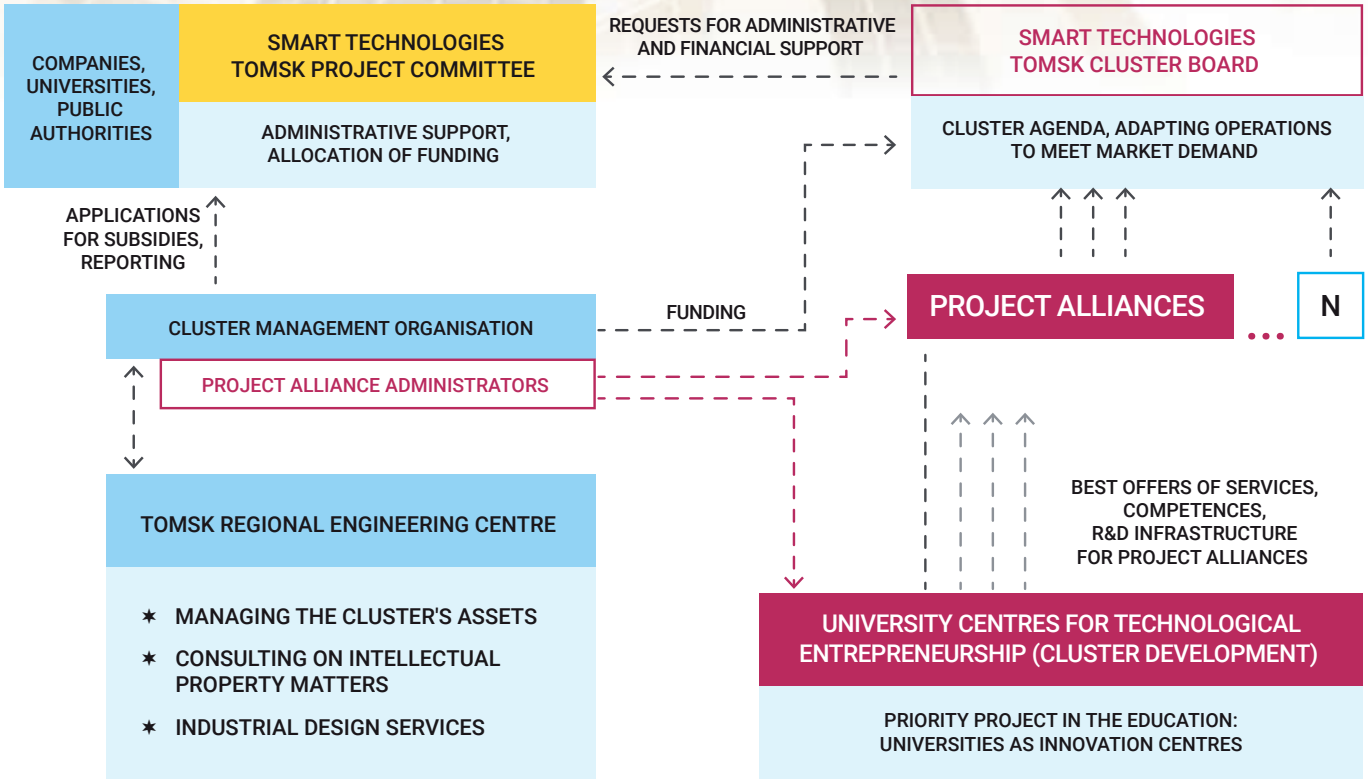
- Clinical research, trials
- Cytology, cancerology, oncology
- Dentistry / Odontology, stomatology
- Diagnostics
- Heart and blood circulation illnesses
- Medical research
- Pharmaceutical products / Drugs
- Physiology
- Physiotherapy, orthopaedic technology
- Single use products and consumer goods

eHealth

- Sensors and wireless products
- Health information management
- Remote diagnostics



Cooperation Links



SMART
TECHNOLOGIES TOMSK

Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Pharmstandard – TomskChemPharm, LLC
http://pharmstd.ru/

EleSy Company, JSC
http://elesy.ru/

Micran, JSC
http://www.micran.ru/

Artlife, JSC
http://www.artlife.ru/

Elkomplus, LLC
http://www.elcomplus.ru

Small Enterprises (1–250 employees)

IPHAR, LLC
http://www.iphar.ru/

Elecard Devices, CJSC
http://www.elecard.com/

Inkom, LLC
http://incom.tomsk.ru/

AquaVallis, LLC
http://www.aquavallis.com/

Arctic Medical Training, LLC
http://amt-t.ru/

Educational Organisations

Tomsk State University (National Research University)
http://tsu.ru/

Siberian State Medical University of the Russian Ministry of Health
http://www.ssmu.ru/

Tomsk Polytechnic University (National Research University)
http://tpu.ru/

Tomsk State University of Control Systems and Radioelectronics
http://www.tusur.ru/

Tomsk State Pedagogical University
http://tspu.edu.ru/

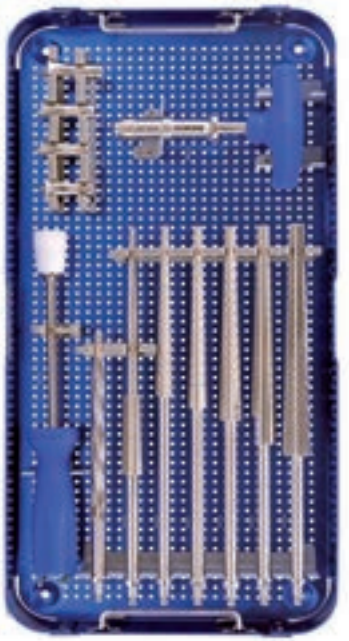
Locations of Key Cluster Members

- Pharmstandard – TomskChemPharm, LLC
- EleSy, JSC
- Micran, JSC
- Artlife, JSC
- Elkomplus, LLC
- Innovative Pharmacological Development, LLC
- Elecard Devices, CJSC
- Inkom, LLC
- AquaVallis, LLC
- Arctic Medical Training, LLC
- Tomsk State University (National Research University)
- Siberian State Medical University of the Russian Ministry of Health
- Tomsk Polytechnic University (National Research University)
- Tomsk State University of Control Systems and Radioelectronics
- Tomsk State Pedagogical University

SMART
TECHNOLOGIES TOMSK

Products and Services

- Development, production, maintenance, and modernisation of aircraft equipment
- Applied R&D for designing aircraft subassemblies
- Production of short-lived isotopes
- Development of new materials and technological processes for nuclear energy
- Air transportation
- Training of highly skilled personnel
- Technology transfer



CLUSTER MANAGEMENT ORGANISATION

Official name:
Tomsk Regional Cluster Development Centre

Legal status:
Limited liability company

Established: 2013

Number of staff: 16

http://innoclusters.ru/kadrovaya-struktura/

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E-mail: info@innoclusters.ru

Irina Khaletskaya
Supervisor, Communication Events
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E-mail: info@innoclusters.ru

SMART
TECHNOLOGIES TOMSK

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	−
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	−
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	−
Support for IPR	−
Location promotion/attraction of foreign direct investment	−
GR support to cluster members	+

Key Support Services

- Preparing and supporting cluster development projects, including identification of worthwhile ideas and technologies, providing methodological and informational support, communicating with expert groups, and organising meetings with potential partners and investors
- Organising educational and training events and internships
- Providing consulting services in the following areas:
  - legal support, marketing, advertising;
  - publicity campaigns in the media to promote the cluster, its activities and products;
  - marketing research;
  - promoting cluster members S&T cooperation, including with overseas partners;
  - communicating with public authorities regarding cluster policy issues
- Organising/hosting fairs, exhibitions, and publicity events


ные направления Кластера
2
3
96
ИННОВАЦИОННЫЙ ТЕРРИТОРИАЛЬНЫЙ КЛАСТЕР
ФАРМАЦЕВТИКА, МЕДИЦИНСКАЯ ТЕХНИКА
И ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ
ТОМСКОЙ ОБЛАСТИ
синергия
172
участника объединенного Кластера, из них 153 предприятия малого и среднего
4 якорных предприятия, 8 Научно-исследовательских институтов, 7 ВУЗов
23
компании являются резидентами Особой экономической зоны
технико-внедренческого типа "Томск"
(ОЭЗ ТВТ "Томск")
43
проекта, входящих в портфель Кластера,
в т.ч. 32 проекта признаны экспертным
Советом Кластера приоритетными
70
мероприятий, в которых приняли
участие организации, входящие
в состав Кластера в 2015 году
125
высокопроизводительных рабочих
мест создано организациями
Кластера в 2015 году
50
созданных
инновационных
продуктов
90
заключенных
соглашений,
договоров в 2015 году
20
продуктов,
выведенных на
внешние рынки
4
634009, г. Томск, ул. Карла Маркса, д. 7, оф. 411

CLUSTER SUCCESS STORIES

Project: Registration, certification, production, and sales of a set of instruments for minimally invasive endovideosurgical operations on the bladder using a pneumovescioscopy technique

Project type: Innovation

Participants: Tomsk Medical Instruments LLC, the Siberian State Medical University

The set of instruments developed within the project uses endoscopic intervention for bladder surgery and achieves the same results as in open surgical operations. This treatment causes significantly less trauma of tissues and reduces both the risk of postoperative complications and the length of postoperative convalescence.
The instruments provide reliable access to the bladder for surgical treatment of children's vesicoureteral reflux using a pneumovescioscopy technique. They also enable surgical interventions in the bladder cavity of adult patients, including minimally invasive operations to remove stones and treat urethrocele.
The product was tested in several clinics for treatment of vesicoureteral reflux; the tests proved that the design was adequate and that the minimally invasive operations appropriate and efficient.

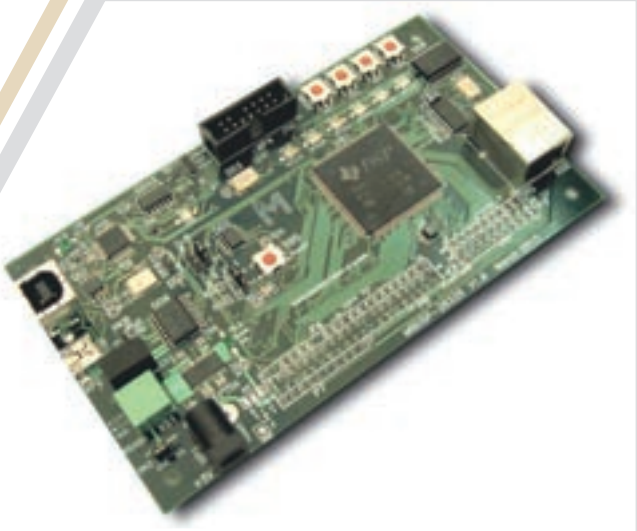
SMART
TECHNOLOGIES TOMSK

Project: Commercialisation of MexBIOS mechatronics and robotics software

Project type: Innovation

Participants: Mechatronics-Pro LLC, Tomsk Polytechnic University (National Research University), Mechatronics-Soft LLC

The project aims at promoting the MexBIOS brand as an integrated Russian software platform for the development and installation into the electronic control modules of electric motors, and to establish a competency centre specialising in mechatronics and automation of technological processes. The line of products developed with MexBIOS technology is suitable for developers of control systems of electric motors and mechatronic systems because it enables fast prototyping, simulation, and debugging of control processes.
Eleven MexBIOS training centres were established as part of the project, and 24 workshops were held in 14 Russian cities with more than 700 people attending. A database of potential MexBIOS environment users was developed (comprising more than 400 companies and 80 Russian universities). The user community now includes more than 800 members.



SMART
TECHNOLOGIES TOMSK

INTERNATIONAL COOPERATION

SMART
TECHNOLOGIES TOMSK

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

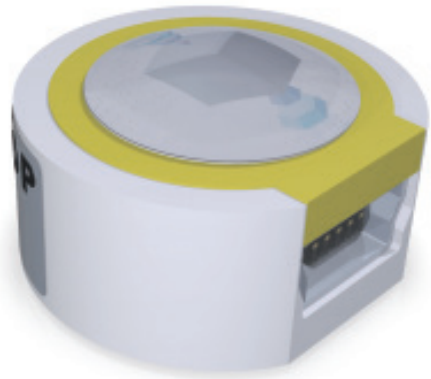
The cluster's competitive advantages include:

- prevalence of R&D and educational organisations, especially the leading universities embedded in a highly effective innovation infrastructure;
- a high proportion of students and skilled young people in the region, creating a favourable environment for further innovation;
- thriving small and medium-sized businesses along with an absence of large corporations. Several high technology companies generate revenues in excess of 1 billion roubles a year (US$ 16.13 million). This has encouraged horizontal integration in the Tomsk Region, which is becoming an excellent environment for growing future champions.

Cooperation Proposals

Project: Development and production of equipment for concomitant treatment and rehabilitation of cancer patients

This long-term innovation project being implemented by SPINOR LLC, the Oncological Research Institute of the Siberian Branch of the Russian Academy of Medical Science (RAMS), and the Siberian State Medical University. It is aimed at modernisation of the mass-produced physical therapeutic device that SPINOR designed for rehabilitation of oncological patients in hospitals and on an outpatient basis. The basic model has Russian, EU and UK certificates, but further improvement and additional clinical research are required to extend its functionality and meet the necessary oncological standards. After those modifications, the device will reduce the time patients have to spend in hospitals, reduce the dosage of painkillers, and be applicable for the niche market in rehabilitation on an outpatient basis. Nothing similar exists in Russia or anywhere else.



Technical documentation for the device is being prepared by SPINOR, and clinical studies are being conducted by the Oncological Research Institute of the Siberian Branch of the RAMS, while consultants are being trained by the Siberian State Medical University. An international consulting centre is to be established as part of the project. The foreign partners include

the Quantum Health Foundation & Institute (France), SALONMAXIMUM (TianJin) Technology Co., Ltd (China), Val Kost SAC Management (Peru, Colombia), AZAL Group Management (UAE), UAB Fama Bona (Lithuania), Global Medical Quantum S.R.L. (Italy), and Deutsche Gesellschaft für Energie und Informationsmedizin (Germany).

International partners are invited to take part in establishing a franchise of private clinics and medical offices.

Project: A simulation centre for training medical and non-medical personnel to work in extreme conditions

The project has the following distinctions:

- training techniques certified to meet international standards including ALS, ACLS, ITLS, TTT, etc.;
- a unique original methodology for teaching the basics of first (pre-medical) and emergency medical care to employees of industrial enterprises and organisations operating in extreme conditions;
- highly skilled medical, training, engineering, and support personnel with personal experience in working in hard-to-reach facilities in extreme conditions, specifically in the Russian Arctic zone.

International partners are invited to take part in exchanges of experience and technology and to order staff training at the simulation centre.

Ulyanovsk Aviation and Nuclear Technologies Cluster

ЦКР
ЦЕНТР КЛАСТЕРНОГО РАЗВИТИЯ УЛЬЯНОВСКОЙ ОБЛАСТИ

Автономная некоммерческая организация «Центр развития ядерного инновационного кластера города Димитровграда Ульяновской области»

Vadim Pavlov
General Director,
Ulyanovsk Regional Cluster Development Centre

Albert Gataullin
Director, Dimitrovgrad Cluster Development Centre,
the Ulyanovsk Region

Contacts:
3 Spasskaya St.
Ulyanovsk 432017
Phone: +7 (8422) 58-60-73
E-mail: avia-klaster@mail.ru

GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters — Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–

Cluster Mission

To contribute to the regional economy transition from an outdated industry-based model with large companies focused on public procurement contracts and slowly growing traditional markets to an innovation-based model with high technology SMEs seeking global emerging markets, including those of the National Technology Initiative.

Cluster Objectives

- Encouraging cluster members multifold cooperation
- Developing and improving the cluster's infrastructure, especially the innovation-specific
- Conducting R&D to meet both the urgent and long-range S&T challenges the cluster faces
- Developing the cluster's production potential, increasing the market share of members' products and services
- Promoting the cluster's common brand, increasing its visibility and recognition in Russia and worldwide
- Expanding international cooperation
- Developing human potential of cluster members

Strategic Development Plan

Development Strategy for the Aviation and Nuclear Technologies Cluster of Ulyanovsk dated September 21, 2016.

Industry Specialisation

- Aerospace, defence
- Alternative energy
- Nuclear energy and radiological medicine
- Education and research

Membership

93 small enterprises

8 medium and large enterprises

24 other participants

125 organisations

S&T Specialisation

Design and modeling

- 3D printings

Industrial manufacture

- Forming (rolling, forging, pressing, drawing)
- Hardening, heat treatment
- Joining techniques (riveting, screw driving, gluing)
- Jointing (soldering, welding, sticking)
- Machine tools
- Machining (turning, drilling, moulding, planning, cutting)
- Machining, fine (grinding lapping)
- Moulding, injection moulding, sintering
- Surface treatment (painting, galvano, polishing, CVD)

Processing control and logistics

- Process automation
- Supply chain
- Information processing and systems, workflow
- Prototypes, trials and pilot schemes
- Plant design and maintenance

Construction technology

- Materials, components and systems for constitution
- Fire resistance / Safety

Materials technology

- Building materials
- Ceramics materials and powders
- Composite materials
- Iron and steel, steelworks

- Materials handling technology (solids, fluids, gases)
- Metals and alloys
- Biobased technologies
- Carbon nanotubes
- Hybrid materials
- Nanomaterials

Transport infrastructure

- Air transport
- Logistics

Aerospace technology

- Aeronautical technology / Avionics
- Aircraft
- Helicopter

Nuclear fission / Nuclear fusion

Wind energy

Other energy topics

- Micro- and nanotechnology related to energy

Medicine, human health

- Clinical research, trials
- Cytology, cancerology, oncology
- Environmental medicine, social medicine, sports medicine
- Medical research
- Medical biomaterials

Biology / Biotechnology

- Cellular and molecular biology
- Genetic engineering
- In vitro testing, trials

Genome Research

- Bioinformatics
- Population genetics

eHealth

- Sensors and wireless products
- Health information management
- Remote diagnostics

Safety

- Radiation protection

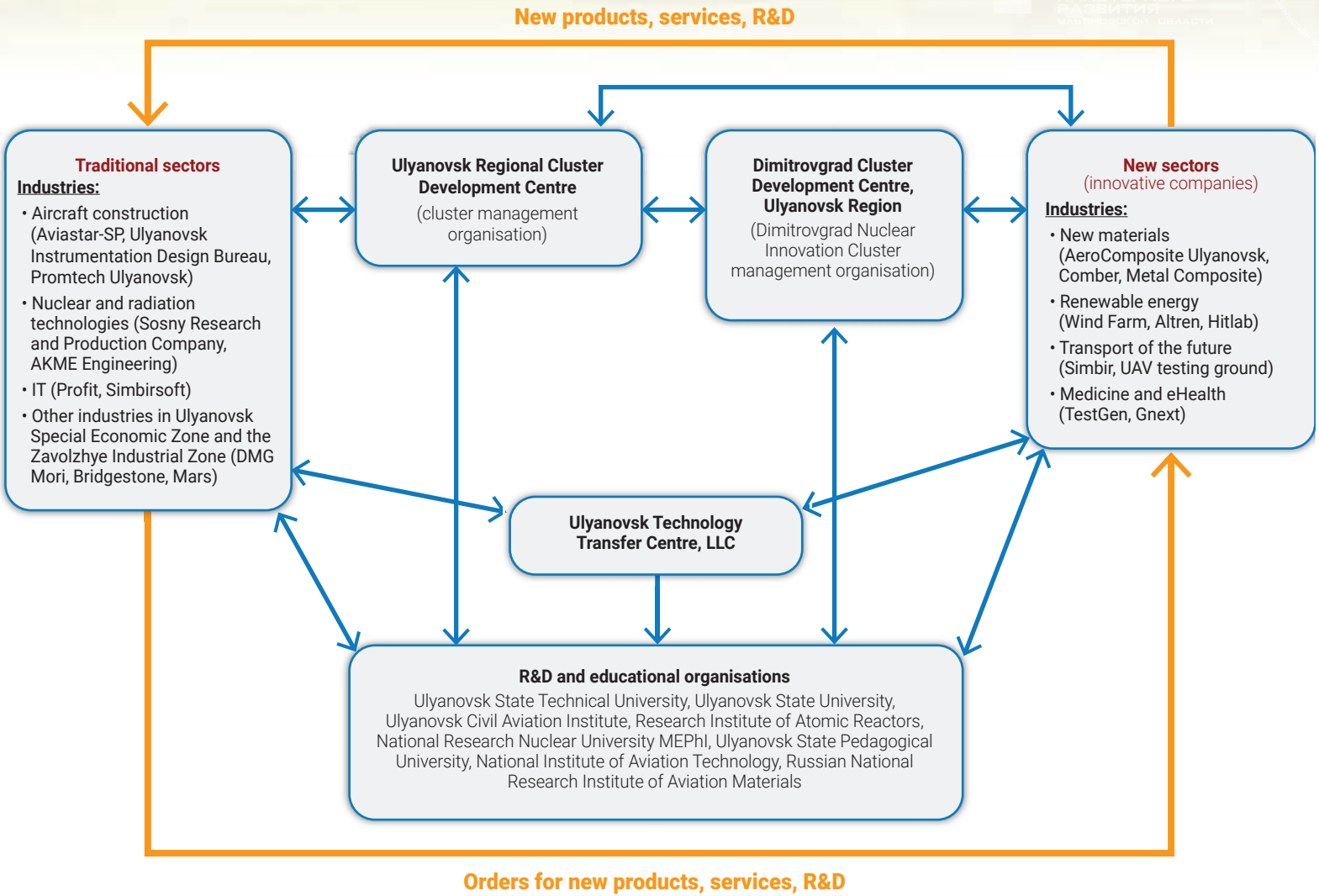
Waste management

- Recycling, recovery
- Radioactive waste

Social and economic concerns

- Education and training

Cooperation Links



Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Aviastar-SP, JSC
http://www.aviastar-sp.ru

AeroComposite Ulyanovsk, CJSC
http://aerocomposit.ru

Sosny Research and Development Company, LLC
http://sosny.ru/

Small Enterprises (1–250 employees)

Promtech Ulyanovsk, CJSC
http://russindustrialpark.ru/residents/zao-promteh-ulyanovsk

TestGene, LLC
http://testgen.ru/ru/o-kompanii/o-nas.html

Educational Organisations

Ulyanovsk State University
http://www.ulsu.ru

Ulyanovsk State Technical University
http://www.ulstu.ru

Dimitrovgrad Technical College
http://dim-spo.ru/

R&D Organisations

Ulyanovsk Instrumentation Design Bureau, JSC
http://www.ukbp.ru

Ulyanovsk Research Institute of Aviation Technology and Production Organisation, JSC
http://www.ulniat.ru

Research Institute of Atomic Reactors, JSC
http://www.niiar.ru/

Other Organisations

Ulyanovsk Technology Transfer Centre, LLC (ULNANOTECH Ulyanovsk Nanocentre)
http://www.ulnanotech.com/ru/

Ulyanovsk S&T Centre (Russian National Research Institute of Aviation Materials), SOE
http://untc.viam.ru

Ulyanovsk Special Economic Zone, JSC
http://www.ulsez.ru

Clinical Hospital No. 172 of the Federal Medical Biological Agency
http://kb172.ru/2015-03-25-11-05-55.html

Locations of Key Cluster Members

- Aviastar-SP, JSC
- AeroComposite Ulyanovsk, CJSC
- Ulyanovsk Instrumentation Design Bureau, JSC
- Promtech Ulyanovsk, CJSC
- TestGene, LLC
- Ulyanovsk State University
- Ulyanovsk State Technical University
- Ulyanovsk Research Institute of Aviation Technology and Production Organisation, JSC
- Ulyanovsk Technology Transfer Centre, LLC (ULNANOTECH Ulyanovsk Nanocentre)
- Ulyanovsk S&T Centre (Russian National Research Institute of Aviation Materials), SOE
- Ulyanovsk Special Economic Zone, JSC

- Sosny Research and Development Company, LLC
- Dimitrovgrad Technical College
- Research Institute of Atomic Reactors, JSC
- Clinical Hospital No. 172 of the Federal Medical Biological Agency

Products and Services

- Development, production, maintenance, and modernisation of aircraft equipment
- Applied R&D for design of aircraft subassemblies
- Production of short-lived isotopes
- Development of new materials and technological processes for the nuclear energy industry
- Air transportation
- Training of highly skilled personnel
- Technology transfer

Membership in Professional Associations

European Aerospace Cluster Partnership (EACP)

http://www.eacp-aero.eu/

Association of Clusters and Technology Parks

http://akitrf.ru/en

CLUSTER MANAGEMENT ORGANISATION

Official name:
Ulyanovsk Regional Cluster Development Centre

Legal status: Autonomous non-profit organisation for ongoing education

Established: 2009

Number of staff: 5

Vadim Pavlov

General Director, Ulyanovsk Regional Cluster Development Centre

Phone: +7 (8422) 58-60-73

E-mail: avia-klaster@mail.ru

Albert Gataullin

Director, Dimitrovgrad Cluster Development Centre, the Ulyanovsk Region

Phone: +7 (8423) 54-82-46,
+7 (902) 356-96-22

E-mail: agataullin@yandex.ru

Support Services Provided by the Organisation to Cluster Members

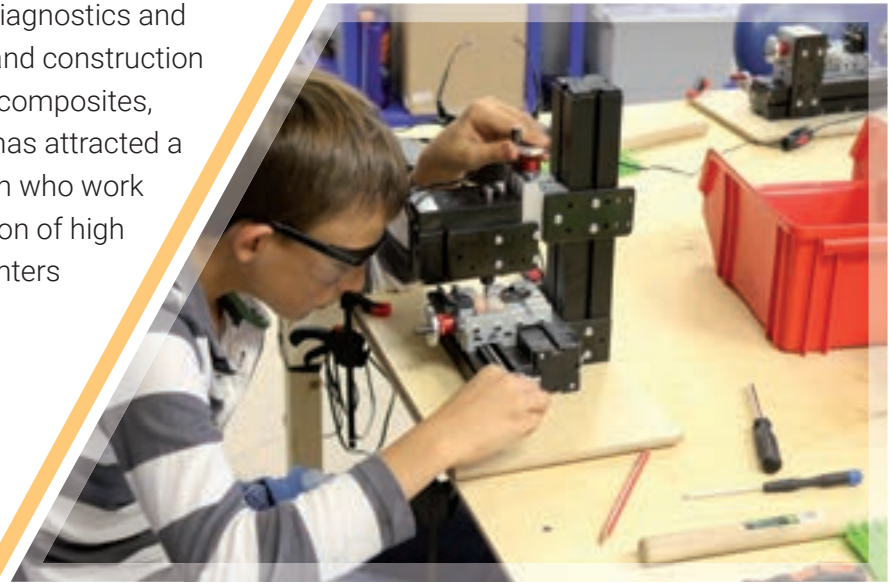
Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	+
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- Facilitating cluster members cooperation
- Promoting cluster members' products in Russian and international markets
- Establishing industrial clusters
- Assisting cluster members to obtain public support for their projects (*i.a.* the Russian Ministry of Economic Development's competitive award of SMEs projects)
- Hosting the International Air Transport Forum


144Ce
75Se
177mSn
153Gd
89Sr
99Mo

CLUSTER SUCCESS STORIES



Project: ULNANOTECH Ulyanovsk Nanocenter

Project type: Infrastructure Development

Participants: Government of the Ulyanovsk Region, Ulyanovsk Technology Transfer Centre LLC, Capital Holding, Ulyanovsk Region Development Corporation, Ulyanovsk Regional Cluster Development Centre

ULNANOTECH Ulyanovsk Nanocenter is an area for launching new technology startups. It is designed as an engineering complex that incorporates startup offices, laboratory buildings and a pilot production facility. It houses laboratories for molecular-genetic diagnostics and new tests development, high performance concrete and construction materials, functional thin-film coatings, metal-matrix composites, and electronic devices development. ULNANOTECH has attracted a significant pool of technical experts and businessmen who work jointly on implementing projects. It enables the creation of high technology startups, development of competence centers in emerging industries.

Project: Kvantorium Tech Park for Children

Project type: Infrastructure Development, Education

Participants: Government of the Ulyanovsk Region, Agency for Strategic Initiatives, Ulyanovsk Regional Cluster Development Centre

Kvantorium Tech Park for Children is a regional base, where children from the preschool age grasp the basics of scientific and technical thinking, acquire the ability to work in a team, and master project management skills. Kvantorium is a site with high technology equipment, aimed at training new generation of engineers, eager to develop, test and implement innovative ideas. More than 1,000 children have been trained in ROBO-, IT-, BIO-, NANO-, and AERO-related disciplines.

Project: Top 100 Engineers Forum

Project type: Education

Participants: Volga-Dnieper Airlines, Aviastar-SP, the Ilyushin Aviation Complex, NONSTOP AGENCY, AeroComposite Ulyanovsk, the local branch of the Russian National Institute of Aviation Materials, GoodLines, GC TOOLS, the Signal Plant, the Ulyanovsk Regional Government, the Ulyanovsk Regional Aviation Cluster Development Centre, Rubicon, Ulyanovsk State Technical University, Ulyanovsk State University, the Ulyanovsk Heavy and Specialised Machine Tools Plant, the Ulyanovsk Machine Tool Plant, the Ulyanovsk Instrumentation Design Bureau, IPK Haltech, the Ulyanovsk Regional Cluster Development Centre.

The Top 100 Engineers Forum and a competition of the same name were held in from 2014 to 2016.

The forum consolidates the practical experience and theoretical knowledge of leading researchers from R&D and educational organisations and state associations, as well as managers of industrial companies, and top national-level officials specialising in digital design, testing technologies and additive production technologies.

It is the largest national competition in the field of design, engineering graphics, and software development for CNC machine tools that is conducted in real time on a single technological platform.

Project: International Air Transport Forum

Project type: Marketing

Participants: Volga-Dnieper Airlines, Aviakomplektatsia, AviaPort, Aviastar-SP, the Personnel Solutions Agency, Ankor Avia, Art-Profi, AeroComposite Ulyanovsk, the local branch of the Russian National Institute of Aviation Materials, the Ulyanovsk Regional Development Corporation, Ulyanovsk Vostochny International Airport, the Ulyanovsk Port Special Economic Zone, the Ulyanovsk Regional Government, the Ulyanovsk Regional Aviation Cluster Development Centre, Region-Vector, Spektr Avia, Ulyanovsk State Technical University, Ulyanovsk State University, the Ulyanovsk Machine Tool Plant, IPK Haltech, the Ulyanovsk Regional Cluster Development Centre.

The International Air Transport Forum is a platform for experts to discuss major issues in the development of Russian air transport and civil aviation industry, air cargo logistics, innovation, operations of the Ulyanovsk Special Economic Zone, regional air transportation, and training of pilots and technical support personnel.

INTERNATIONAL COOPERATION

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

The Ulyanovsk Region has a substantial S&T potential, which can assist in the development of almost any kind of high technology industry. Ulyanovsk Aviation and Nuclear Technologies Cluster brings together Russian aircraft construction, aviation instrumentation, automotive and machine tool companies, and research institutes specialising in nuclear energy and aviation industry. It also comprises two major international airports, the Special Economic Zone (home to one of the world's leading air cargo companies Volga-Dnieper), and one of the largest assembly plants of Russia's United Aircraft Corporation.
The Research Institute of Atomic Reactors (the world's largest nuclear industry R&D centre and one designated an International Research Centre by the IAEA) is a prominent participant of the cluster's activities. The cluster also includes vocational training organisations for secondary and higher education.

The cluster incorporates the two pilot innovation clusters of the Ulyanovsk region:

- Ulyanovsk-Avia Research, Educational, and Production Cluster Consortium

specialising in aircraft and spacecraft production and new materials;

- Dimitrovgrad Nuclear Innovation Cluster specialising in nuclear and radiation technologies and new materials.

The cluster's key feature is that it brings together:

- large industrial companies, which have relocated in the region during the last ten years;
- innovative, high technology small and medium-sized firms and startups operating in IT, new materials, transportation of the future, renewable energy, and eHealth.

Cooperation Proposals

Project: Aviation Technology Engineering Centre

The project aims at setting up a centre, which provides services to Russian aircraft construction companies.

International organisations are invited to cooperation in upgrading the energy grid and infrastructure of production facilities, including heating, water supply, and sewage systems, capital repairs of production and administrative buildings, and designing and modernising metalworking shops and production areas.

Set of projects: Technocampus 2.0, Technology Valley 2.0, Santor

Technocampus 2.0 comprises various educational, R&D, and business resources concentrated in a relatively small area. It will feature engineering centres, prototype production facilities, and a range of advanced educational and training institutions.

The resident companies of Technology Valley 2.0 that are large industrial companies will become Technocampus 2.0 customers placing orders with its R&D and startup firms.

Santor is a comfortable living environment for professionals and innovators from Russian regions and abroad who will come to work at Technocampus 2.0 and Technology Valley 2.0.

High skilled specialists in nuclear and aviation industries are invited to the Ulyanovsk region

to join the cluster activities and enjoy its innovation and social infrastructure.

Project: Ulyanovsk Multipurpose Helicopter Centre

Project participants: Avia Stolitsa, the Ulyanovsk Regional Government, SimAvia, Heliport Ulyanovsk

The project will provide aviation-related maintenance and other services. In addition to being a base for aircraft, it will supply spare parts, consumables, and accessories. It will also train new pilots and retrain or enhance the qualifications of already licensed pilots. International partners are invited for cooperation in infrastructure development.

Project: InterAvionics Production and Service Centre

The project is implemented by the Ulyanovsk Special Economic Zone and the Ulyanovsk Instrumentation Design Bureau, with the support of the Ulyanovsk Regional Government. The goal is to establish a production and service centre specialising in manufacturing on-board radio electronic equipment for aircraft, and providing the necessary maintenance and repair services. International partners are invited to take part in joint development of new technologies.


InnoCity Cluster
of Saint Petersburg


КЕЛУН-КАЗФАРМ
Кластер медицинской,
фармацевтической промышленности,
радиационных технологий Санкт-Петербурга
Глобальный проект для здоровья региона

SAINT PETERSBURG TECHNOPARK

Andrey Sokolov
General Director,
Saint Petersburg Technopark

Marina Zinina
Director of the Cluster
Development Centre,
Saint Petersburg Technopark

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Saint Petersburg 197022
Phone: +7 (812) 670-10-85
www.ingria-park.ru
www.spbcluster.ru
E-mail: referent@ingria-park.ru
spbcluster@ingria-park.ru

GENERAL INFORMATION

Cluster Status

Participant in the Russian Ministry of Economic Development project “Innovation Clusters – Global Leaders in Attracting Investment”	+
Recognised as a Pilot Innovation Cluster by the Russian Ministry of Economic Development	+
Supported by the Cluster Development Centre of the Small and Medium-Sized Business Support Programme of the Russian Ministry of Economic Development	+
Approved by the Russian Ministry of Industry and Trade for inclusion in the Industrial Cluster Registry	–
Bronze Label of the European Cluster Excellence Initiative	–
Silver Label of the European Cluster Excellence Initiative	–
Gold Label of the European Cluster Excellence Initiative	–

Cluster Mission

To enhance regional cooperation, R&D and production capacities of the cluster members as well as to develop innovation infrastructure for increasing the global competitiveness of Saint Petersburg's core industries.

Cluster Objectives

- Creating new markets for products, facilitating development of applied research to meet existing demand, and encouraging replacement of imported products
- Creating a world-class regional education infrastructure with the participation of Russia and other countries from the EEU and BRICS groups
- Encouraging technology transfer from R&D sector to businesses. Creating a full-fledged platform for development of technology entrepreneurship, upgrading various types of innovation infrastructure, and creating a large number of new highly skilled jobs
- Creating new R&D fields at the intersection of existing areas of knowledge and promoting interdisciplinary development
- Strengthening cluster members' competitiveness, promoting their integration into global supply chains
- Matching the international level of commercialisation of technology, promoting development of technology entrepreneurship and innovation infrastructure
- Increasing exports and international cooperation
- Encouraging the modernisation and growth of core cluster members

SAINT PETERSBURG TECHNOPARK

Strategic Development Plan

Development Strategy for the InnoCity Cluster of Saint Petersburg dated July 13, 2017.

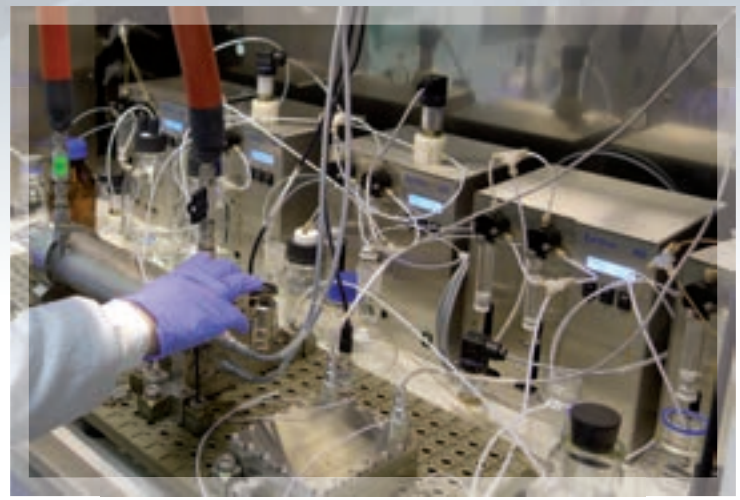
Membership

144 small enterprises

80 medium and large enterprises

36 other participants

260 organisations



Industry Specialisation

- Appliances
- Biopharmaceuticals
- Communications equipment and services
- Education and knowledge creation
- Information technology and analytical instruments
- Medical services
- Radionics
- Telecommunications
- Biomedicine
- Pharmaceuticals
- Scientific research activities
- Marine robotics

S&T Specialisation

Electronics, microelectronics

- Automation, robotics control systems
- Digital systems, digital representations
- Electronic circuits, components and equipment
- Electronic engineering
- Embedded systems and real time systems
- High-frequency technology, microwaves
- Magnetic and superconductor materials / Devices
- Nanotechnologies related to electronics and microelectronics
- Optical networks and systems
- Peripherals technologies (mass data storage, displays)
- Printed circuits and integrated circuits
- Quantum informatics
- Semiconductors
- Smart cards and access systems

Information processing and systems, workflow

- Advanced systems architecture
- Technical documentation
- Artificial intelligence
- Computer games
- Computer hardware
- Computer software
- Computer technology / Graphics, meta computing
- Data processing / Data interchange, middleware
- Data protection, storage, cryptography, security
- Databases, database management, data mining
- Electronic commerce and payment
- Imaging processing, pattern recognition
- Information technology / Informatics
- Internet technologies / Communication (wireless, bluetooth)
- Knowledge management, processing management
- Simulation
- Speech processing technology
- User interfaces, usability
- Electronic signature
- Building automation software
- Remote control
- Smart appliances
- Environmental and biometrics sensors, actuators
- Cloud technologies
- Internet of things

IT and telematics applications

- Applications for transport and logistics
- GIS

Multimedia

- E-learning
- E-publishing, digital content
- Visualisation, virtual reality

Telecommunications, networking

- Audiovisual equipment and communication
- Broadband technologies
- Mobile communications

- Narrow band technologies
- Network technology, network security
- Radar
- Satellite technology / Positioning / GPS
- Signal processing
- VoIP technology, remote access

Design and modeling

- 3D printings

Industrial manufacture

- Cleaning (sandblasting, brushing)
- Coatings
- Drying
- Erosion, removal (spark erosion, flame cutting, laser)
- Hardening, heat treatment
- Moulding, injection moulding, sintering

Processing control and logistics

- Process automation
- Information processing and systems, workflow

Traffic, mobility

- Planning and security
- Engineering
- System and transportation

Energy production, transmission and conversion

- Smart grids

Medicine, human health

- Biostatistics, epidemiology
- Clinical research, trials
- Cytology, cancerology, oncology
- Human vaccines
- Gerontology and geriatrics
- Heart and blood circulation illnesses
- Medical research
- Medical technology / Biomedical engineering
- Neurology, brain research
- Pharmaceutical products / Drugs
- Virus, virology / Antibiotics / Bacteriology
- Medical biomaterials

Biology / Biotechnology

- Biochemistry / Biophysics
- Cellular and molecular biology
- Enzyme technology
- Protein engineering
- Genetic engineering
- In vitro testing, trials
- Molecular design

Genome research

- Gene expression, proteome research

Industrial biotechnology

- Biobased chemical building blocks
- Biopolymers
- Bio-composites
- Fermentation
- Bioprocesses

Measurement Tools

- Acoustic technology related to measurements

Cooperation Links

Saint Petersburg Government

SAINT PETERSBURG TECHNOPARK — Cluster Management Organisation

CLUSTER INFRASTRUCTURE

Industry Associations

Education and Science

Engineering centres of Saint Petersburg Technopark, JSC

PRODUCTION

Information Technology, Radio-electronics

Pharmaceuticals, Biomedicine

Key Cluster Members

Medium and Large Enterprises (over 250 employees)

Avangard, OJSC
http://ru.avangard.org

Active Component, JSC
www.acticomp.ru

GEROPHARM, LLC
www.gerophar m.ru

BIOCAD, CJSC
www.biocad.ru

VERTEX, JSC
www.vertex.spb.ru

Telros, CJSC
www.telros.ru

Luxoft Professional, LLC
www.luxoft.com

Samson-Med, LLC
www.samsonmed.ru

POLYSAN Scientific & Technological Pharmaceutical Company
www.polysan.ru

Small Enterprises (1–250 employees)

Positron Research and Production Complex, LLC
www.positron.ru

RAIDIX, LLC
www.raidix.ru

Robbo, JSC
www.robbo.ru

Supertel, OJSC
www.supertel.ru

Educational Organisations

Saint Petersburg National Research University of Information Technology, Mechanics and Optics (ITMO UNIVERSITY) (state public institution)
www.ifmo.ru

Peter The Great Saint Petersburg Polytechnic University (state public institution)
www.spbstu.ru

Saint Petersburg State Chemical Pharmaceutical University (state public institution)
www.spcpa.ru

Bonch-Bruevich Saint Petersburg State University of Telecommunications (state public institution)
www.sut.ru

R&D Organisations

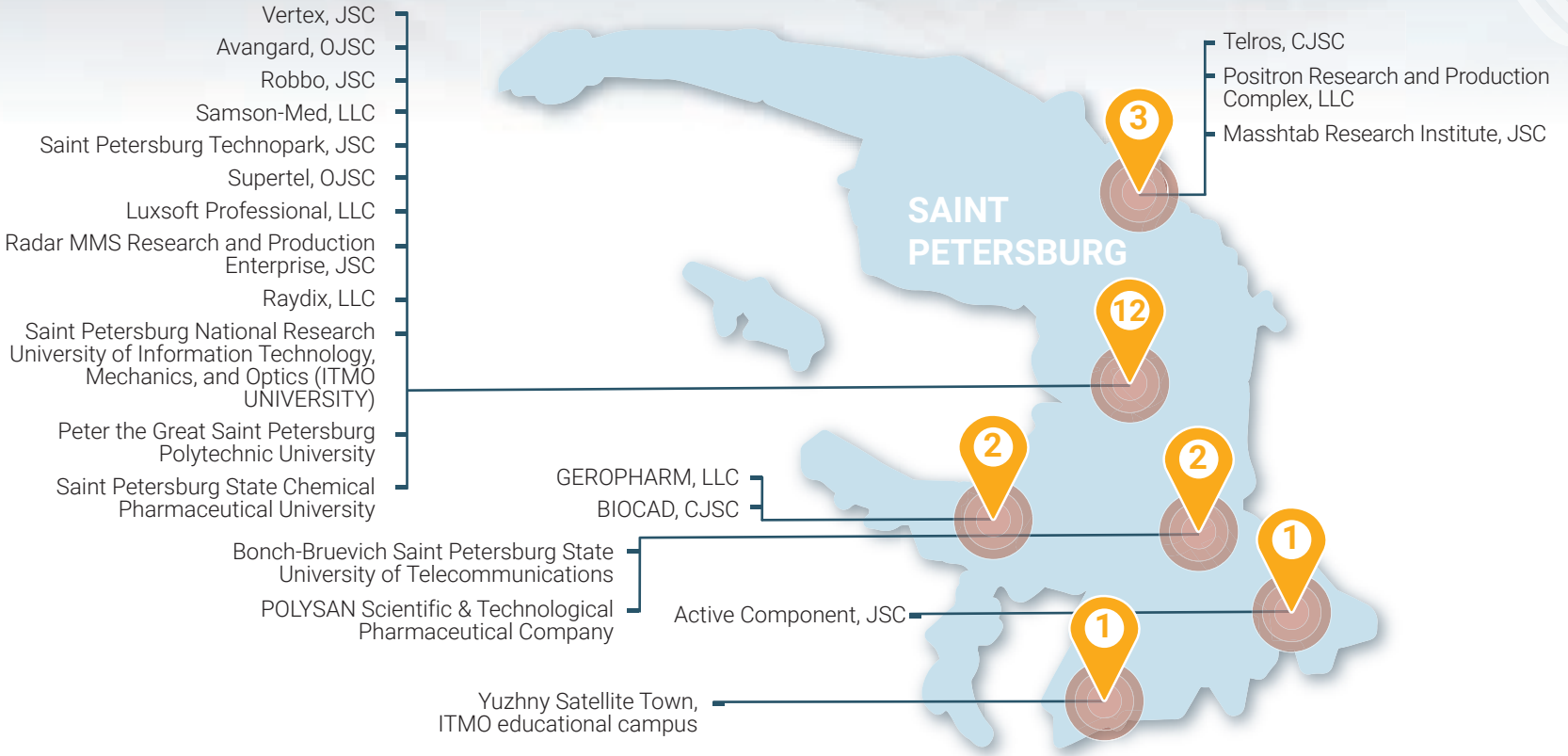
Radar MMS Research and Production Enterprise, JSC
www.radar-mms.com

Masshtab Research Institute, JSC
www.mashtab.org

Other Organisations

Saint Petersburg Technopark, JSC
www.ingria-park.ru

Locations of Key Cluster Members



Products and Services

- Automated integrated security and energy efficiency systems for industrial and municipal facilities
- Radio-electronic systems for monitoring and controlling the weight of special transport vehicles and urban passenger transport
- Vehicle identification systems
- Sea and river vessel navigation systems
- Data protection systems
- Development and production of radio frequency identification systems
- Development and production of support systems based on space-time coordinates
- Secure telecommunication and information systems for application in management and administration
- Development of military and special-purpose electronic components and radio-electronics
- Development and production of digital TV equipment
- Development and industrial production of more than 100 varieties of ready-to-use medical preparations and pharmaceutical

substances in the following treatment groups: bacterial infection, cardiovascular and psychoneurological diseases, pain management, antipyretic agents, anti-inflammatory agents, vitamins, etc.

- Setting up technology platforms to manufacture innovative Russian peptide-structure active pharmaceutical substances and gestagenic drugs using biotechnological processes
- Conducting R&D to develop innovative medical preparations and medical products

Membership in Professional Associations

RUSSOFT Nonprofit Partnership

http://www.russoft.ru/

XXI Century Medical and Pharmaceutical Projects Alliance

http://21mpp.ru/

Saint Petersburg Associations of Radio-electronic Enterprises

http://www.eltech.ru/ru/partneram/associaciya-predpriyatiy-radioelektroniki-priborostroeniya-sredstv-svyazi-i-infotelekommunikaciy

CLUSTER MANAGEMENT ORGANISATION

Official name:
Saint Petersburg Technopark

Legal status:
Joint-stock company

Established: 2007

Number of staff: 5

http://spbcluster.ru/en/cdc_spb/team/

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SAINT PETERSBURG TECHNOPARK

Support Services Provided by the Organisation to Cluster Members

Internationalisation support (access to third countries markets)	+
Access to public support (regional/national programmes, innovation vouchers, etc.)	+
Access to private funding (connecting to investors, seed-capital, venture-capital, crowd-funding, strategic investors, connecting to technology investment funds, etc.)	+
Access to technology services	+
Direct advisory services	+
Facilitation of collaboration between members	+
Enabling facilities sharing	+
Facilitation of cross-sectoral cooperation	+
Trend-scouting (ideas for innovative projects)	+
Periodic Information dissemination	+
Promotion of activities (marketing/visibility)	+
Support of knowledge transfer	+
Support of technology transfer	+
Provision and/or facilitation of access to training for members	+
Innovation management/supporting innovation processes (internal, external)	+
Staff mobility	+
Support for IPR	+
Location promotion/attraction of foreign direct investment	+

Key Support Services

- Developing an efficient cluster management system
- Building and developing innovation infrastructure for the cluster
- Facilitating cluster members cooperation
- Facilitating inter-regional and international cooperation; market promotion of cluster members' new products and services
- Helping cluster members to obtain public support via participation in regional and federal development programmes, and from development foundations and institutes
- Monitoring the cluster's innovation, R&D, production, financial, and economic potential; updating and adjusting cluster development strategies and programmes
- Providing methodological, organisational, and informational support to cluster members' projects
- Helping cluster members to develop their human potential
- Organising and hosting conferences, workshops, and webinars, including international ones, on cluster development and cooperation

- Organising cluster member contacts with Saint Petersburg executive authorities, including by making arrangements to involve the cluster's representatives in coordinating, expert, consultative, and S&T bodies that provide support to executive authorities
- Maintaining relations and contacts with development institutes and state-owned corporations
- Organising inter-departmental cooperation to promote cluster members' innovative products
- Contributing to drafting of regional legislation and regulations

CLUSTER SUCCESS STORIES

Project: Regional Engineering Centre specialising in microreactor synthesis of active pharmaceutical substances

Project type: Development and production of innovative products and services

Participants: Saint Petersburg State Chemical Pharmaceutical University; Saint Petersburg Technopark, XXI Century Medical and Pharmaceutical Projects Alliance; BALTPHARMA, GEROPHARM

The project objective was to develop advanced modular pharmaceutical production, implement breakthrough technologies (intensive microreactor-based synthesis of active pharmaceutical substances), and encourage growth for Saint Petersburg companies.

The project resulted in reduction by half of the time required to bring new products to market through application of breakthrough technologies and reduction of operating costs. An active substances plant is being built within the new technology platform in the Novoorlovskaya Special Economic Zone.

Project: Security Systems for Information and Cyber-physical Systems Regional Engineering Centre

Project type: Innovative cluster project

Participants: Saint Petersburg Technopark, ITMO University, Russian Software Developers Association (RUSSOFT), STC Group, SMARTS company

The project was aimed at building a technology and business infrastructure to help companies in radio-electronics, communication systems, and information technology bring non-military products to high technology SafeNet markets.

The project resulted in:

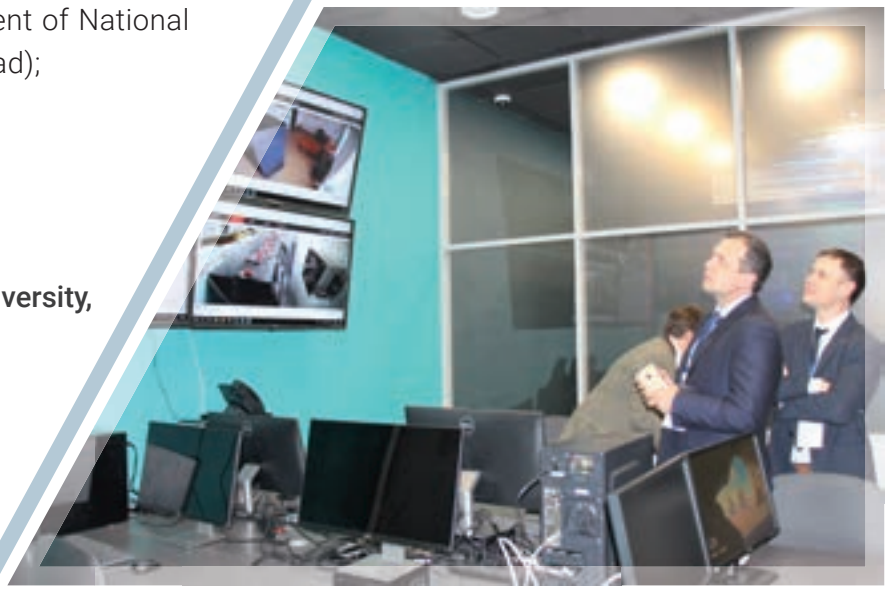
- → provision of technical equipment for prototyping new solutions for trusted execution environments and products based on geographically distributed data processing centre with quantum protection;
- → supporting participation in major related projects (Development of National Bio-identification System, Beijing-Helsinki Great Quantum Road);
- → shortening the R&D operational cycle by up to 2.5 times;
- → promoting investments, reducing operational costs.

Project: PharmInnoTech International Crowdsourcing Platform

Project type: Education, communications

Participants: Saint Petersburg State Chemical Pharmaceutical University, BALTPHARMA, GEROPHARM

The project objective was to develop medical and pharmaceutical curricula and training programmes in practical applications; to select gifted participants for involvement in appropriate projects; and to develop useful industry-specific competences and motivation during training.



The project will help to provide adequate personnel for the cluster's pharmaceutical companies and for the whole industry through cooperation with all schools in Russia engaged in teaching medico-biological, chemical and biological, and natural sciences. Nine projects were implemented via the platform in 2017; 2,600 participants from 7 Russian regions were registered and made 13 industry-specific tours. In addition, 50 participants received awards. Online competitions are held through the Russian Schoolchildren Chemical Tournament in which schoolchildren from 20 Russian regions participate.

INTERNATIONAL COOPERATION

Activities of the Cluster Management Organisation to Promote International Cooperation

Promotional activities	+
Participation at missions / events / study visits / fairs	+
Support to collaborative activities	+

Invitation to Cooperation

Key partnership destinations

Australia, Belarus, Brazil, Canada, China, Czech Republic, Finland, Germany, India, Israel, Kazakhstan, South Korea, the Philippines, Sri Lanka, Thailand, Turkey, UK, USA, Vietnam

Invitation to cooperation

Saint Petersburg is not just a major multimodal transport hub and a leading Russian industrial centre. More than 10% of the national R&D potential is concentrated here: more than 300 research organisations, 70 of which belong to the RAS and other state academies. There are 10 state R&D centres, and more than 160 non-military tertiary and secondary vocational educational organisations.

Saint Petersburg's highly sustainable R&D and human potential creates a favourable environment for high technology businesses. Numerous Saint Petersburg companies are included in the Top 100 in the Russian National Ranking of Emerging Technology Companies, and they are leaders in industries such as pharmaceuticals, medical equipment, electronics and instruments, information technology, mechanical engineering, industrial production equipment, and advanced materials.

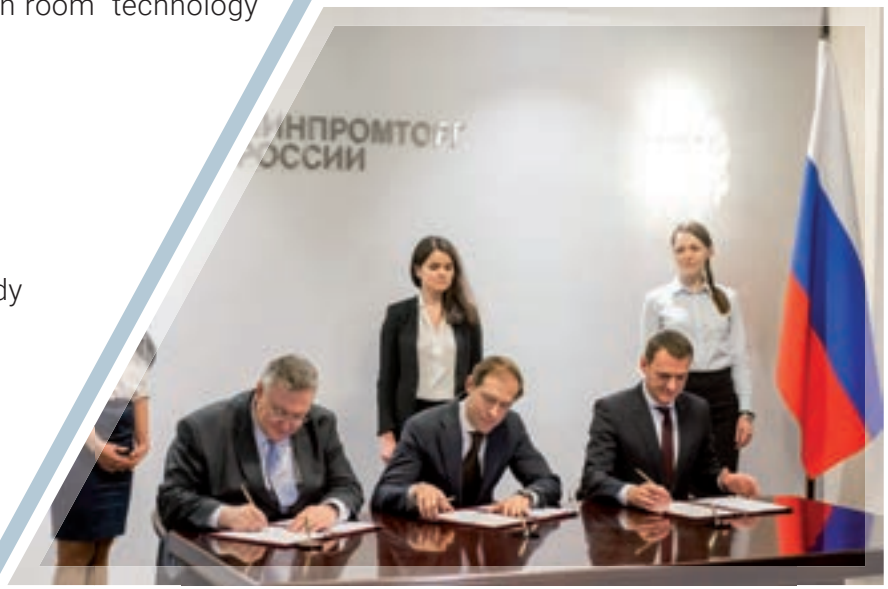
A high concentration of unique resources, R&D, technological and commercial competences, and project management experience in the city provided the basis for establishing InnoCity Cluster of Saint Petersburg. Its core members include industrial enterprises, and R&D and educational organisations that are leaders in advanced production technologies, IT, R&D, and the National Technology Initiative.

The projects implemented within the Cluster have the potential to become drivers of the Russian knowledge and innovation-based economy, and to help the country advance to a leading position in high technology and innovative product markets.

Cooperation Proposals

Producers of pharmaceutical ingredients, companies specialising in production and distribution of drug preparations, research institutes active in pharmaceuticals and biotechnology areas are invited to cooperation, as well as companies specialising in the following industries:

- Production of pharmaceutical end products
- Production and distribution of components, parts, and equipment for the pharmaceutical industry
- Production of ready dosage forms of pharmaceuticals
- Disinfection of pharmaceutical facilities, production of sterilisation equipment, development of “clean room” technology
- Biotechnology
- Packing and storage of medical preparations
- Logistics
- Application of new pharmaceutical production technologies
- Procurement of equipment, packaging, and ready dosage forms for pharmaceutical production
- R&D
- Education and training
- Provision of medical services
- Drugstore networks
- Financial services, investments



RUSSIAN VENTURE COMPANY

The Russian Venture Company (RVC) is the biggest venture fund in Russia, with capital of approximately US$ 1 billion. Besides being a venture fund it is also a "development institution" responsible for the enhancement of the national innovation ecosystem. RVC is the main driver for the National Technology Initiative, a public-private partnership aimed at developing emerging technologies. High technology sectors supported by RVC include unmanned transportation, advanced manufacturing, new materials, smart grids, neuroscience, and digital healthcare.

RVC is actively engaged in the development of innovative infrastructure, providing support to technology universities, innovative clusters and business incubators. RVC also develops educational programmes, aimed at increasing the number of technology entrepreneurs among students.

Since 2014, RVC has been involved in cluster policy design and implementation acting as the Ministry of Economic Development Project Office. The company's key cluster-related activities include:

- expertise of cluster programmes, and their KPIs monitoring;
- issue of analytical reports, methodical guidelines on cluster development, as well as cluster promotion content;
- arrangement of strategic sessions and matchmaking events aimed at fostering cluster advancement, improving the quality of cluster management, enhancing cooperation among cluster members, and increasing Russian clusters' internationalisation.

HSE ISSEK RUSSIAN CLUSTER OBSERVATORY

The Russian Cluster Observatory (RCO) was founded in 2012 as a part of the Institute for Statistical Studies and Economics of Knowledge at the National Research University Higher School of Economics.

Key facts about RCO:

- leading cluster-specific research and consulting centre;
- comprehensive expertise in cluster excellence, regional studies, innovation and industry-related policy design;
- a wide-range offer of services from legal acts drafting to cluster management training, and from policy makers consulting to cluster evaluation;
- single access point to data on clusters and cluster organisations throughout the country – Cluster Map of Russia;
- TCI Network member.

Since 2012, RCO actively contributes to governmental cluster-related efforts.

The Observatory provides methodological assistance and expertise to the Ministry of Economic Development and the Ministry of Industry and Trade. RCO has been involved in the analytical work dedicated to performance evaluation of innovation

clusters, engineering centres and technological platforms, and drafting the recommendations for their development. The Observatory experts are also engaged in the development of legal framework regulating the launch and activity arrangements of industrial clusters.

One of the priority activities for RCO is the annual edition of Russian Regional Innovation Ranking, which provides individual regional profiles and a complex overview of innovation processes based on a multistage evaluation system.

The Observatory also hosts Cluster Map of Russia (https://map.cluster.hse.ru/), which is a national online, free and user-friendly platform that accumulates all the up-to-date information about clusters and their members, specialisation, management, products and services, cooperation proposals, strategic documents and contacts. At the moment, more than 110 clusters are registered on the map.

All relevant information about clusters, federal cluster policy and support measures, as well as the latest academic papers, cluster policy reviews, and legal acts is available at the official web-site of Russian Cluster Observatory (https://cluster.hse.ru/).

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Cluster Policy in Russia: Reaching Global Competitiveness

Edited by *W. Wescott*
Translated by *V. Korolev*
Proofread by *T. Magala*
Design by *P. Shelegeda*
Desk-top publishing by *O. Egin, T. Koltsova, V. Parshina* and *V. Puchkov*

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