RVC

Technological evolution

Annual report of Russian Venture Company

2018

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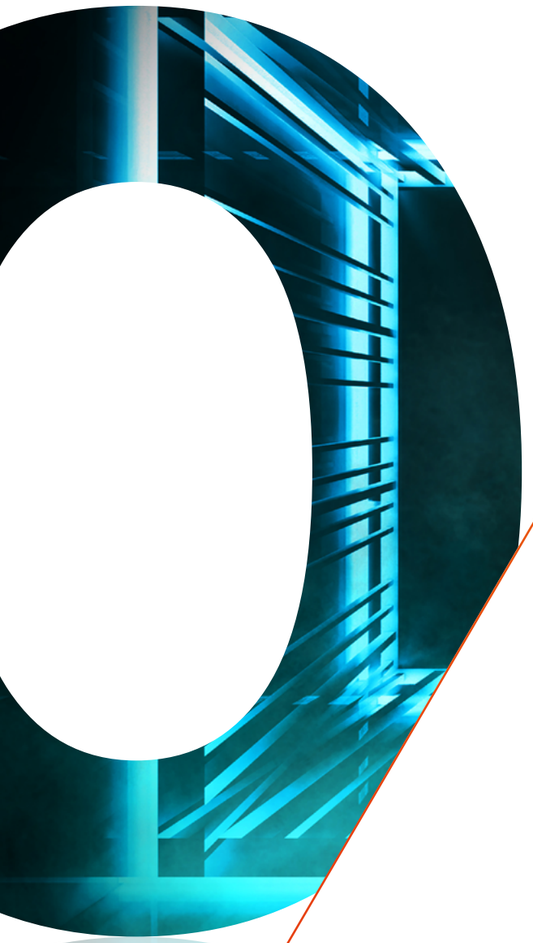
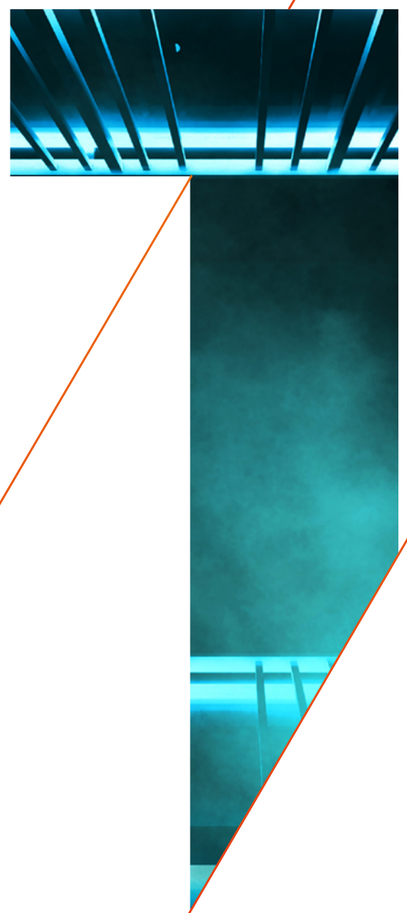
RVC Today





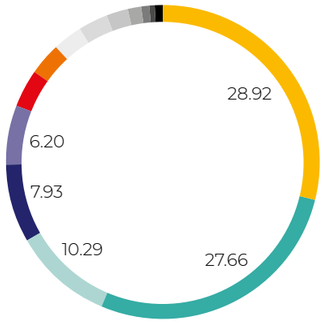
Investment activity as of the end of 2018

RVC is a state fund of funds, a development institute for the venture capital market in the Russian Federation and one of the key state instruments for building a national innovation system.

RVC's mission is to create a mature venture capital market by pooling and developing resources and the competencies and initiatives of investors, portfolio managers and entrepreneurs to create and promote innovative products and technologies in priority technological spheres that ensure Russia's leadership in the global technology market.

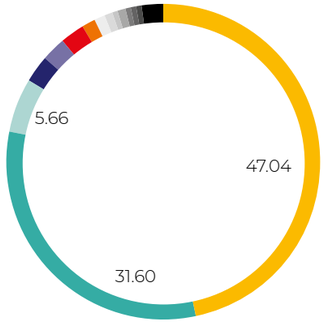
RVC's strategic goal is to become by 2030, a major player in the international venture capital market comparable to European funds of funds in terms of its scope of operations in support of Russian technology entrepreneurs working in priority technological spheres in order to turn, as effectively as possible, their scientific and technological potential into innovative technologies, products and services.

Distribution of RVC-backed investment funds by economic sector for 2007–2018



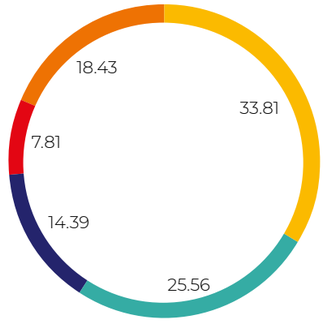
28.92 Medicine/healthcare
27.66 Information technologies, Internet technologies and services
10.29 Energy
7.93 Electronics
6.20 Industrial equipment
3.75 Biotechnologies
3.38 Financial services
3.09 Consulting and education
2.96 Chemicals
2.43 Consumer market
1.26 Construction
0.93 Transport
0.63 Industrial production
0.58 Telecommunications

Distribution of investments through RVC-backed funds by region for the period 2007–2018



47.04 Moscow
31.60 Foreign investments
5.66 St. Petersburg
2.92 Republic of Tatarstan
2.52 Moscow Oblast
2.37 Perm Krai
1.60 Nizhny Novgorod Oblast
0.96 Bryansk Oblast
0.78 Chelyabinsk Oblast
0.77 Kaliningrad Oblast
0.72 Sverdlovsk Oblast
0.58 Lipetsk Oblast
0.50 Tomsk Oblast
0.49 Ivanovo Oblast
2.21 Other

Amount of RVC investments by priority areas for the technological development of the economy (cumulative results for the period 2007-2018)



33.81 Medical equipment and pharmaceuticals
25.56 Strategic computer technologies and software
14.39 Energy Efficiency
7.81 Space and telecommunications
18.43 Other

The cumulative amount of approved investments in portfolio companies
RUB 18.1 bn

RVC's share in the total volume of funds is
RUB 27.4 bn

RUB 48.6 bn
total amount of RVC-backed funds

207
companies in the portfolio of RVC-backed funds

27 funds
in RVC's portfolio

81 exits
from portfolio companies

10 342 employees
in portfolio companies that have received investments from RVC-backed funds

Investment activity in 2018

32
investments approved in portfolio companies

30 exits
from portfolio companies in the amount of RUB 1.7 bn

RUB 2.1 bn
in investments in portfolio companies approved

USD 88.4 mln
export volume of portfolio companies in RVC-backed funds

3 venture funds
created

National Technology Initiative

7
regulatory road maps approved in 2018

3
NTI technology contests launched

6
venture funds focused on NTI support

7
NTI infrastructure centers launched in 2018

44
projects in the general NTI portfolio as of the end of 2018

12
NTI projects approved for implementation in 2018

RUB 2.3 bn
from budgetary funds earmarked for the implementation of NTI projects in 2018

RUB 1 bn
from extrabudgetary funds earmarked for the implementation of NTI projects in 2018

38,000
schoolchildren took part in the NTI Contest

8 agreements
on NTI development signed with subjects of the Russian Federation

Statement from RVC CEO

Dear colleagues and friends!

The world is changing faster and faster every year. Whereas, not so long ago, we used the expression “in our century of new technologies,” the pace of innovation is no longer being measured in decades and sometimes not even in terms of years. New products and new markets are emerging right before our eyes, and we have an opportunity to occupy a respectable position in these markets by investing ahead of time in people, technology and infrastructure.

In 2014, when the words “National Technological Initiative” were first mentioned, only a small group of enthusiasts believed in the success of this undertaking. Today, the concept of a technological breakthrough that is bringing the future ever closer is a clear and universally accepted truth. Thousands of people are now engaged in this work, and RVC, as the NTI Project Office, is called on to provide the organizational, financial and analytical basis for the initiative.

2018 marked an important frontier for the NTI: we completed the establishment of the basic infrastructure that was laid down in the concept for the initiative. Thanks to the RVC team’s collaboration with our partners, the NTI’s anchor projects – Centers of excellence, Up Great technology contests, infrastructure centers – got under way. The Government of the Russian Federation has approved a set of regulatory road maps for the NTI that provide for the gradual elimination of administrative barriers to the launch of breakthrough products on the market. The objective of the next stage of the NTI’s development is ensure that the infrastructure is functioning properly and to create a convenient and understandable interface for attracting new participants to the NTI: entrepreneurs, universities, corporations and scientific and research organizations.

The NTI is a programme about knowledge, talent and energy, which are transformed into technologies and then into competitive products. Therefore, an important development in 2018 was the implementation of educational projects for a wide audience of individuals who are passionate about the technology agenda. This refers to the NTI Contest, which brought together about 40 thousand children all across the country, and the NTI lessons, which are carried out in some two thousand Russian schools. We also expanded considerably the range of projects in the NTI Club Movement last year, which should create a full-fledged social platform for technological growth within the initiative.

The financial basis for the implementation of the NTI and the creation and commercialization of new products is Russia’s venture capital market, which provides the most important source of funding, as an alternative to government-backed grants and subsidies. RVC’s objective is to improve the institutional environment and expand the community of professional players in the venture capital market industry. In 2018, RVC updated its investment strategy: we expanded our line of investment products, optimized the rules for working with management companies and introduced standards for making investment decisions in line with international practice. As of the end of the year, the total of RVC-backed funds had grown by RUB 13.7 billion to RUB 48.6 billion, more than half of which are funds invested by our partners: private investors, corporations and development institutions. Also in 2018, RVC, together with Russia’s Ministry of Economic Development, developed a draft Venture Capital Market Development Strategy until 2030. The document contains more than 40 initiatives aimed at creating a mature venture capital industry in Russia, which implies a thirtyfold increase in the annual volume of transactions to RUB 410 billion.

All projects initiated and implemented by RVC last year contributed to the achievement of our long-term goal: the creation of leading Russian companies, the accelerated introduction of technology into the economy and the social sphere and, as a result, the improvement of the quality of life and well-being of the population. This is what we see as the result of our work. To learn more about the steps we took on this considerable journey in 2018, please read our annual report.

Respectfully,
Alexander Povalko

Russian
Venture Capital Market

Trends in Venture Capital Market in 2018

The Russian Venture Capital Market showed a positive trend in 2018, nearly doubling in volume to USD 440.5 million, up from USD 243.7 million a year earlier. This significant increase (81%) was the result of the continuing improvement in Russia's macroeconomic situation.

The trend in recent years is evidence of a resurgent interest in venture capital market. There were 260 venture funds as of the end of 2018, compared to 194 in 2017 and 177 in 2016. The number of transactions increased for the fourth consecutive year: there were 214 transactions in 2018, 205 in 2017, 184 in 2016 and 180 in 2015.

The average transaction amount also continued to increase, nearly doubling in 2018 to USD 2.7 million (compared to USD 1.5 million in 2017 and USD 1.1 million in 2016). Expansion-stage transactions led the way, with the average investment increasing by 120% from USD 2.8 million to USD 6.1 million. The average size of transactions at the seed stage increased 60% from USD 0.5 million to USD 0.8 million, while increasing by 40% and at early stages from USD 0.8 million to USD 1.1 million. The average size of investments at the start-up stage remained the same at USD 0.8 million in both 2017 and 2018.

The most popular projects among investors were those at a more mature stage of development. In 2018, 77% of all transactions were made at the expansion stage, while this stage accounted for 68% of total investment in 2017 and 53% in 2016.

The role of corporate venture investors has been gaining momentum: the volume of transactions made by corporate investors increased from USD 28.4 million in 2017 (12% of the market) to USD 86.2 million in 2018 (20% of the market). That said, there was only a slight increase in the number of transactions, up from 16 in 2017 to 18 in 2018. Sberbank, Yandex and MTS are the most active corporate investors.

Over the last three years, the market has not seen a single transaction valued at more than USD 100 million. The largest transaction in 2018 was an investment of USD 80 million in WayRay SA, a developer of augmented reality automotive displays, with backing from the RDIF and a consortium of sovereign funds.

The number of grants issued continued to decrease: 3,955 grants were issued in 2018, 4,558 in 2017 and 4,651 in 2016. In monetary terms, however, the volume of grants issued in 2018 increased to USD 99.3 million, up from USD 88.5 million in 2017, but less than the USD 121.4 million issued in 2016.

The most active grant funds continue to be the Foundation for Small Business Support in the Science and Technology Sphere (the Innovation Support Fund or the Bortnik Fund) and the Skolkovo Foundation.

Venture Ecosystem[1]

	2016		2017		2018	
	Number of transactions	Amount of transactions, USD mln	Number of transactions	Amount of transactions, USD mln	Number of transactions	Amount of transactions, USD mln
Venture ecosystem, USD bn		0.41		0.41		0.65
Venture transactions	184*	165.2	205**	243.7	214***	440.5
Exits	30	120.0	15	79.9	19	111.3
Major transactions	0	0.0	0	0.0	0	0.0
Grants	4,651	121.4	4,558	88.5	3,955	99.3

* Including 27 transactions for an unknown amount[2]
** Including 38 transactions for an unknown amount
*** Including 51 transactions for an unknown amount
Sources: RVC, RVCA, PWC

[1] Statistics on venture transactions were calculated using the database of the Russian Venture Capital Association (RVCA), taking into account additions and adjustments made in accordance with PWC's methodology
[2] Not taken into account when calculating the amount of transactions

Market breakdown by sector

In 2018, investor activity was mainly concentrated in the information technology sector: transactions in this segment accounted for 86% of the total number of transactions in the market and 95% of the total amount of all transactions. Some 140 transactions were carried out (an increase of 11% year-on-year), while the total amount of funds invested increased by 105% to USD 420 million. The average transaction amount in the sector increased by 84% compared to 2017, amounting to USD 3.0 million.

The interest of market players in investments in Russian biotechnologies and industrial technologies is waning. While these sectors saw 11 and 30 transactions, respectively, in 2017, these figures decreased to 7 and 16 transactions, respectively, in 2018.

The volume of investments in the biotechnology sector decreased by 9% in 2018 to USD 13.4 million. There was a significant decrease in the volume of investments in the field of industrial technologies of USD 16.6 million, or 70%, to USD 7.1 million.

Major transactions

In 2018, there were six transactions worth more than USD 3 million:

- Ticketland.ru
- Ponominalu.ru
- TimePad
- Vist Group
- Teleport
- Kakprosto.ru and Justlady.ru

Investments in foreign assets

The volume of transactions by Russian investors involving foreign assets decreased by 20% in 2018, amounting to USD 553.4 million. In 2017, on the other hand, this figure soared to USD 695.8 million, up from USD 413.6 million in 2016. At the same time, the size of the average transaction in 2018 decreased 6% compared to the year before, from USD 8.7 million to USD 8.1 million. The number of transactions involving foreign start-ups decreased by 15% to 68 transactions.

The following changes could be observed in 2018 in terms of the preferences of investors in Western projects compared to 2017:

- the share of transactions at the expansion stage increased in value terms to 88.5%, up from 67.7% a year earlier;
- the share of transactions at the seed stage increased from 0.2% to 2.3%;
- the share of transactions at early stages increased from 7.7% to 9.0%;
- interest in investments at the start-up stage decreased significantly, with the share of transactions falling from 24.4% to 0.2%.

Investments in foreign projects were almost entirely concentrated in the information technology sector: in 2018, the share of investments in IT projects accounted for 95.2% of all investments (compared to 66.5% a year earlier).

Distribution of venture investments by sector*

	2016		2017		2018	
	Number of transactions	Amount of transactions, USD mln	Number of transactions	Amount of transactions, USD mln	Number of transactions	Amount of transactions, USD mln
IT	110	149.6	126	205.3	140	420.0
Industrial technology	21	6.1	30	23.7	16	7.1
Biotech	26	9.5	11	14.7	7	13.4
Total	157	165.2	167	243.7	163	440.5

* Not including 27 transactions in 2016, 38 transactions in 2017 and 51 transactions in 2018

Sources: RVC, RVCA, PWC

Transactions on the part of Russian funds involving foreign start-ups, USD million*

	2016		2017		2018	
	Number of transactions	Amount of transactions, USD mln	Number of transactions	Amount of transactions, USD mln	Number of transactions	Amount of transactions, USD mln
Biotech	1	0.2	4	28.6	3	5.5
ICT	70	295.5	68	462.5	60	526.6
Industrial technology	6	117.9	8	204.8	5	21.3
Total	77	413.6	80	695.8	68	553.4

*Excluding 7 transactions in 2016, 14 in 2017 and 7 in 2018

Sources: RVC, RVCA, PWC

Strategy for the Development of the Direct and Venture Capital Market to 2030

In December 2018, RVC, together with Russia's Ministry of Economic Development, presented a draft Strategy for the Development of the Venture and Direct Capital Market to 2030.

The development of the strategy was envisaged by the action plan to stimulate Russia's innovative development approved by an order of the Government of the Russian Federation in June 2017. At the request of Russia's Ministry of Economic Development, the draft Venture Capital Market Development Strategy was produced by RVC in collaboration with PWC.

The goal of the Strategy is to realize Russia's potential for innovation by developing a competitive venture market and creating a mature venture industry.

By 2030, the Venture Capital Market Development Strategy anticipates:

Target quantitative indicators:

- A thirtyfold increase in the annual volume of transactions in the Russian Venture Capital Market to RUB 410 billion a year
- A tenfold increase in the total supply of capital in the Venture Capital Market to RUB 2.7 trillion
- A twofold increase in the number of high-tech projects created annually to 40,000
- A twofold expansion of the sales market for innovative products to RUB 10 trillion

Target qualitative indicators:

- A greater impact from state support
- The organization of a venture ecosystem around leading technical institutions (universities)
- Reinforcing the principle of the globalization of the venture and direct capital market and its participants
- Concentrating efforts on the most competitive technological areas
- A significant expansion of the current circle of investors
- The existence of a multilevel ecosystem in the venture and direct capital market
- Improving Russia's investment attractiveness for venture and direct investment

The Strategy includes more than 40 initiatives aimed at eliminating key barriers to the development of the venture industry in Russia.

The Strategy identifies three types of investors as having the greatest investment potential for the Russian Venture Capital Market: non-state pension funds, corporations and individuals. These investors can, by 2030, increase the volume of capital supply in the venture market by RUB 134 billion, RUB 950 billion and RUB 1 trillion, respectively.

According to the proposals outlined in the Strategy, non-state pension funds may get an opportunity to invest a certain limited amount of funds in venture funds through investment partnership agreements. At the same time, the necessary adjustments would be made to approaches to risk assessment and the methodology used for stress testing. For the first non-state pension funds to enter the Russian Venture Capital Market, a pilot project has been proposed for the participation of non-state pension funds in state-backed investment funds. These funds will apply the principle of the asymmetric distribution of profit, which will allow non-state pension funds to earn higher returns.

In order to attract another important category of investors, i.e., corporations, to invest in the Venture Capital Market, the Strategy proposed a set of tax incentives. This would involve reducing the tax base for income-tax purposes upon the creation of corporate venture funds, the participation of corporations in venture funds as LPs or upon investments on the part of large businesses in technology projects.

Benefits in terms of personal income tax and an increase in the tax deduction limit are designed to stimulate investment in venture projects on the part of private investors and business angels. In addition, the Strategy provides for legislative amendments to allow the participation of individuals in investment partnership agreements, through which most venture funds are structured. In the field of tax regulation, it is also proposed that an initiative be considered to reduce tariffs on social security contributions to 14% for small innovative companies.

In order to increase the flow and quality of projects, the Strategy suggests measures to develop the infrastructure for supporting the technology business. Specifically, the launch of no fewer than 30 centers for the collective use of services for small innovative companies (including customs clearance services, intellectual property registration, joint procurement, etc.), as well as at least 30 testing and prototyping centers where projects will be able to use R&D infrastructure, get mentoring support, etc., is planned by 2030. Initiatives to develop the competencies of the venture community include the launch of educational programmes for technology entrepreneurs and venture capitalists together with global education centers.

For access to advanced international expertise, the Strategy suggests the possibility of tax incentives for foreign companies when they locate R&D centers in Russia and fulfil R&D localization requirements. A programme for the systematic investment of funds with state capital in global venture funds and foreign innovative companies is also planned for launch. For the accelerated entry of Russian companies into foreign markets, the creation of acceleration centers that provide a range of services for finding international partners and promoting products in target markets is proposed.

A separate group of initiatives is devoted to increasing the availability of exchange platforms as the main instrument for attracting investments for companies at later stages. The document proposes measures to revise the rules for fast-growing innovative companies to be listed on stock exchanges, and to create a special methodology to prepare them for listing securities and subsidizing related expenses. In addition, the Strategy proposes the subsidization of bond rates to increase the attractiveness of innovative companies' tools for investors, as well as launching a programme for creating pre-IPO funds. to facilitate work with debt financing for mature companies, the Strategy envisages the introduction of lending mechanisms secured by intellectual property.

The Strategy sets the ambitious goal of radically transforming the landscape of the Russian venture industry, increasing the attractiveness and feel-good factors of our market for all categories of participants and being competitive on a global scale. The initiatives set out in the Strategy were developed by RVC in close cooperation and lively dialogue with representatives of private funds and investors, development institutions, government agencies and corporations. The result is a tool that can be used for the systemic and comprehensive development of the infrastructure of the venture capital market for the next five to ten years.

Alexey Basov,
RVC's Deputy CEO
and Investment Director

Investments

RVC finds both Russian and foreign private innovation-ecosystem investors and market players to invest funds in the priority segments of the Russian economy, while also facilitating the development of new investment instruments in the national venture capital market. to this end, RVC invests in venture funds at the suggestion of market players and also initiates the creation of new funds with the involvement of professional investors and managers.

Results of RVC's investment activities in 2018

In 2018, the total capitalization of RVC-backed funds increased by RUB 13.7 billion to RUB 48.8 billion, RUB 26.6 billion of which was invested by RVC. As of the end of the year, RVC's portfolio included 27 funds, including two funds in foreign jurisdictions.

3 new funds were created in 2018 with a capitalization of RUB 14.2 billion.

- RVC created the National Technology Initiative (NTI) Fund for investments in innovative projects that develop cross-cutting technologies in NTI markets.
- The Far East High-Tech Fund was created by RVC, Rusnano and the Far East Development Fund with a focus on investing in growing Russian companies that are developing technologies, products and services that are of current interest or have a promising future, including NTI projects.
- Together with Da Vinci Capital, RVC created a new fund – the Da Vinci Pre-IPO Tech Fund – for investment in late-stage technology projects. Priority segments for investment include business IT solutions, fintech and blockchain, smart mobility, on-demand economy services, cross-industry B2B solutions based on Internet of things (IoT) and big data technologies, artificial intelligence, AR/VR and cybersecurity.

In addition, Phystech Ventures and North Energy Ventures launched a joint fund called Terra Fund II, with a capitalization of USD 40 million. The fund has 24 investors, including seven new investors and 17 investors who had previously worked with Phystech Ventures and North Energy Ventures. RVC is one of the investors in Terra Fund II.

RVC also began work on the creation of the Education Technologies Development Fund, which was presented at the end of 2018. The fund will be established through the Human Resources and Education action plan as part of the Digital Economy of the Russian Federation programme. The goal of the fund is to develop leading education technologies and ensure a systematic approach to their implementation. The fund's target capitalization will be RUB 7 billion.

Work also got under way on the creation of a fund to support innovative projects in the pharmaceutical and medical industries together with the Ministry of Industry and Trade of the Russian Federation. The fund will be established as part a programme called "Development of the Medical and Pharmaceutical Industry for 2013–2020".

RVC implements best global practices in fund management and provides market participants with consulting support. For example, RVC is involved in the development of a conceptual approach to funds, is engaged in the formation of mechanisms for the selection of the management teams for those funds and provides methodological and expert support for fund operations.

RVC's investment activities in 2018

3
new RVC-backed funds were created with a total capitalization of
RUB 14.2 bn

30
exits from portfolio companies in the amount of
RUB 1.7 bn

Investments worth
RUB 2.1 bn
approved
for 32 portfolio
companies in RVC-backed funds

USD 88.4 mln
export volume of portfolio companies in RVC-backed funds in 2018

RVC is an integral and professional market player, a reliable partner; it is influenced in a certain bureaucratic way by state financing, but it makes up for this through stability, reliability and consistency. Given the increased creation of new funds, RVC has taken on a fundamental role. We are inspired by the emerging trend of moving away from providing information in the direction of investment activities.

Peter Lukyanov,
Managing Partner of the Terra Fund II

Performance of RVC-backed funds as of the end of 2018

27 funds
in RVC's portfolio

USD 48.6 bn
total amount of funds with RVC capital

USD 27.4 bn
RVC's share of total funds

USD 18.1 bn
amount of approved investments in portfolio companies as of the end of 2018

325 projects
approved for investment over the entire lifetime of RVC (as of 31 December 2018, taking into account projects that had already been exited)

207 portfolio companies
RVC fund portfolios as of the end of 2018

81 exits
from portfolio companies as of the end of 2018

705 patents
(including 231 foreign patents) received by portfolio companies in RVC-backed funds as of the end of 2018

10,342 employees
in portfolio companies and their subsidiaries and affiliates that have received investments from RVC-backed funds

Far East Fund for the Development and Implementation of High Technologies

On 25 May 2018, Rusnano, RVC and the Fund for the Development of the Far East and Baikal Regions signed an agreement on the Far East Fund for the Development and Implementation of High Technologies.

The fund was established at the instruction of Russian President Vladimir Putin in order to develop the innovation system in Russia's Far East, to introduce advanced technologies and to increase the share of high-tech products in the gross regional product.

The fund takes the form of an investment partnership; Rusnano and the Far East Development Fund are the founders of the managing partner (GP). The fund's investment focus centres on projects in the field of nanotechnologies, as well as projects in NTI priority markets, including unmanned vehicles, neurotechnologies, advanced production technologies, intelligent energy and other high-tech processes.

Main parameters

- Target volume: RUB 10 billion
- Investment period: four years
- Amount of investment in one project: not more than 10% of the fund (not more than RUB 490 million)

> The fund has an ambitious goal: to create a new cluster in a region with good educational, scientific and technological potential but poor innovation at this point. As our decade of experience building Russia's nanotechnology industry shows, to solve problems on this scale, it's not enough to start up a certain number of companies – even if they're outfitted with state-of-the-art equipment and produce the most advanced products available. What's needed is an integrated approach that, in addition to the establishment of such companies, includes infrastructure, personnel and a regulatory framework. Rusnano is capable of doing all of this, and I am confident that the fund will make a considerable contribution to transforming Russia's Far East into a technologically developed and competitive macro-region.

Anatoly Chubais,
Chairman of Rusnano's Management Board

National Technology Initiative Fund

The National Technology Initiative Fund was created by RVC to support innovative projects that develop cross-cutting technologies that are critical to the formation of new NTI markets. They include technologies for the storage and analyzis of big data, artificial intelligence, blockchain, quantum technologies, new energy sources, robotics, virtual- and augmented-reality technologies and neurotechnology. According to its investment strategy, the NTI Fund invests in Russian projects at the seed and early growth stages.

The fund is managed by the Kama Flow Group. As managing partner, Kama Flow won RUB 600 million in backing from the fund's first private co-investors, including GazServiceComposite and Lomonosov Capital. Kama Flow has also invested RUB 50 million in the fund.

Main parameters

- Size of the fund and the amount of co-investors' investments directly into the equity of the fund's portfolio companies: RUB 3.5 billion, with RUB 1.5 billion in NTI subsidies invested by RVC's InfraFund
- The fund was created as an investment partnership for a period of 10 years;
- Investment period: five years;
- Amount of investments in one portfolio company: no more than 10% of the total investment commitments

> Being selected as the management company for the NTI Venture Fund was an important milestone for us, first, because of serious competition – after all, the strongest teams in the market took part in the competition – and second, because we understand the responsibility that comes with this project. The NTI Fund should become one of the catalysts for the country's technological development, supporting and accelerating the growth of Russian companies that have what it takes to be global leaders. At the same time, the Fund should work according to the logic of classical venture investment and demonstrate solid performance from a commercial point of view. With the expertise and competencies that we have gained over the course of five years of investment in technology start-ups, we are fully capable of meeting these challenges.

Eugene Borisov,
Business Development Director, Kama Flow

Da Vinci Pre-IPO Tech Fund

The Da Vinci Pre-IPO Tech Fund, created by RVC together with Da Vinci Capital, was the first fund created under RVC's renewed investment strategy, and it is the largest fund in the Company's history. It focuses on investments in growing technology companies with potential for global scaling and IPOs. Priority segments for investment include business IT solutions, fintech and blockchain, smart mobility, on-demand economy services, cross-industry B2B solutions based on IoT and big data technologies, artificial intelligence, AR/VR and cybersecurity.

Main parameters

- Target volume: RUB 6 billion
- RVC's share: RUB 1.5 billion
- At least 55% of the fund's equity will be invested in companies at the series C and pre-IPO stages
- The fund aims to develop a portfolio of 10 technology companies within five years
- Period of the fund's operations: 10 years

> The Da Vinci Pre-IPO Tech Fund was the first fund created under the Company's investment strategy that was updated last summer, and it is the largest fund in RVC's history. The fund is focused on investments in mature companies, and it offers us, above all, an opportunity to influence market imbalances associated with the lack of tools to support technology companies in the scaling, international expansion and IPO preparation stages. We are pleased to continue cooperation with the professional team at Da Vinci Capital, one of the leaders in Russia's venture capital market, with a wealth of experience in asset management and a history of successful exits.

Alexey Basov,
RVC's Deputy CEO and Investment Director

Results of the investment activities of RVC-backed funds

RVC-backed funds approved investments in 32 portfolio companies worth a total of more than RUB 2 billion, which exceeded 2017 investments by 40% (RUB 1.4 billion invested in 24 portfolio companies).

- In September 2018, Da Vinci Capital, together with Inventure Partners, invested in Gett, a global ride-sharing app
- The Skolkovo Ventures Industrial Fund, in partnership with Rusnano Sistema SICAR, invested USD 8 million in IVideon, the developer of a cloud-based video surveillance solution
- The RBF Ventures Russian-Belarusian Venture Investment Fund completed a series of transactions, including an investment of RUB 25 million in AgroDroneGroup, a developer of agricultural drones

In 2018, RVC-backed funds made 30 exits from portfolio companies worth a total value of RUB 1.7 billion (compared to six exits in 2017), 21 of which had positive financial results. In September 2018, for example, RBV Capital, established with the financial backing of RVC and R-Pharm, sold Bonti, a developer of botulinum toxins, to the pharmaceutical giant Allergan; the deal's initial payment amounted to USD 195 million. The Leader-Innovations Fund announced the sale of a stake in Platius LLC (the Plazius brand) to Sberbank of Russia).

RVC-backed funds

Fund name	Fund amount as of the end of 2018, RUB mln
Subsidiary funds	
RVC Biofund	1,500.000
RVC Seed Fund	1,982.000
RVC InfraFund	2,600.000
Civil Technologies MIC	500.000
Funds in foreign jurisdictions	
Russian Venture Capital I LP	2,779.633
RVC IVFRT LP	1,454.853
Closed-end venture funds (CE VF)	
Bioprocess Capital Ventures CE VF	3,000.000
VTB – Venture Capital Fund CE VF	3,061.000
Maxwell Biotech CE VF	1,224.400
Innovation Leader CE VF	1,885.800
S-Group Ventures CE VF	1,619.994
IPA funds (sector-specific funds and RBF Ventures)	
RusBio Ventures IPA	2,070.700
Da Vinci Pre-IPO Fund	4,272.914
Da Vinci Pre-IPO Tech Fund	6,000.000
TF II	2,100.000
RBF Ventures (Russian-Belarusian Venture Investment Fund)	1,400.000
Skolkovo Venture Fund – IT I	2,303.030
Skolkovo Venture Fund – Agrotechnological I	955.000
Skolkovo Venture Fund – Industrial I	2,424.242
Far East Fund for the Development and Implementation of High Technologies	4,900.500
National Technology Initiative Venture Fund	1,870.000
Microfunds	
Softline Seed Fund IPA	136.000
High-Tech Seed Fund IPA	133.600
ACP Seed Fund IPA	33.400
Venture Fund Accelerator IPA	133.400
Life Sciences Seed Fund IPA	133.600
Tomsk State University Seed Fund IPA	33.400

RVC investment products

A product line focused on the individual needs and categories of market players

Funds for young managers (first-time GPs)

RVC INVESTMENTS
up to 25% and up to RUB 250 million

SHARE OF COMMERCIAL INVESTORS
up to 50%

Late-stage funds

RVC INVESTMENTS
up to 20% and up to RUB 1.5 billion

SHARE OF COMMERCIAL INVESTORS
up to 30%

Classic venture funds

RVC INVESTMENTS
up to 30% and up to RUB 2 billion

SHARE OF COMMERCIAL INVESTORS
up to 50%

Corporate funds

RVC INVESTMENTS
up to 10% and up to RUB 1 billion

SHARE OF COMMERCIAL INVESTORS
up to 30%

Funds with foreign partners

RVC INVESTMENTS
up to 25% and up to RUB 2 billion

SHARE OF COMMERCIAL INVESTORS
up to 50%

NTI funds

RVC INVESTMENTS
up to 50% and up to RUB 1.5 billion

SHARE OF COMMERCIAL INVESTORS
up to 30%

The RVC's Investment strategy

In order to increase the transparency and efficiency of investment decisions, RVC updated its approach to investment activities in 2018. In July, the Board of Directors approved an updated investment strategy in line with the best market practices for funds of funds, and the line of proposed investment instruments was also expanded.

RVC's product line currently includes classic venture funds; NTI funds; corporate, foreign and special-purpose funds; as well as two new types of funds: funds for young management teams and late-stage funds.

Funds for young management teams are aimed at professionals with successful experience in entrepreneurship, the practices of business angels, direct and venture investments and corporate innovations. Thanks to the commons-sense liberalization of the requirements for managers, the new tool will make it possible to increase the number of management teams active in the Russian venture capital market. RVC's share in such funds is not to be more than 25% and not more than RUB 250 million.

Late-stage funds will focus on investing in companies at the B, C and pre-IPO stages. They will make it possible to develop a system of exits or follow-on rounds for funds at earlier stages, thus filling the existing gap in the investment cycle. RVC's share in such funds will not exceed 20% and will not be more than RUB 1.5 billion.

RVC's new strategy also involves improving the quality of asset management. to this end, new standards for working with funds and management companies are being introduced, and internal corporate procedures are being improved. According to the new strategy, the selection of management teams for new funds is carried out through a selection and open contests with the participation of independent experts and a scoring system. This mechanism makes it possible to stimulate market competition between management teams and to improve the quality of decisions. At the same time, management companies are required to invest in these funds – they should control at least 1% of the fund. to stimulate the flow of private capital into the innovation sector when creating new funds, another prerequisite is the availability of private investment in an amount of at least 50%, and of at least 30% for NTI funds, corporate funds and late-stage funds.

Two important events occurred in RVC's investment activities in 2018. Our investment strategy was updated. We introduced new niche products to the market: funds for young managers and late-stage funds, and we systematized and the procedure for selecting management teams and made it more transparent. The year is ending with a presentation of the long-term market development strategy developed by RVC at the request of the Government. Its task is to radically improve the development performance of the national venture capital industry and to create new catalysts for growth.

Alexey Basov,
RVC's Deputy CEO
and Investment Director

RVC is an anchor investor in the Da Vinci Pre-IPO Fund investment partnership, which aims to invest in growing technology companies in late and pre-IPO growth stages. The Fund has signed a co-investment agreement with an international fund under the management of Da Vinci Capital, forming a structure of parallel funds. By the end of 2018, the Fund's Pre-IPO portfolio was fully formed, and the process of preparing and carrying out exits from transactions is currently under way. Over the past four years, this structure has shown its potential to find international investors for Russian companies, and we are pleased to continue cooperation with RVC in the new Da Vinci Pre-IPO Tech Fund, which is focused on investing in technology companies with the potential to enter international markets and capital markets. The Pre-IPO Tech Fund will invest jointly with Da Vinci Capital's international funds, and we plan to finalize our co-investment agreement in May 2019. The Da Vinci Capital team sees RVC as a professional institutional investor in the Russian market with an opportunity for long-term investment in private companies, which is especially important given the complex macroeconomic agenda. We hope that together we will be able to help developing technology leaders grow and expand in both Russian and international markets.

Oleg Zhelezko,
Managing Partner, Da Vinci Capital

Performance of RVC-backed funds

Subsidiary funds

RVC Seed Fund

Indicator	2013	2014	2015	2016	2017	2018
Number of portfolio companies in the fund	56	64	62	64	58	56
Actual amount of RVC equity in the fund (RUB mln)	1,980	1,980	1,980	1,980	1,980	1,980
Amount of invested funds (RUB mln)	790.00	902.36	1,045.95	1,233.48	1,170.46	1,168.58
Approved investments (RUB mln)	1,311.50	1,496.60	1,545.94	1,618.50	1,415.27	1,375.27
Number of exit transactions from companies invested in previously	5	10	12	13	13	15

RVC Infrastructure Investments Fund (RVC InfraFund)

Indicator	2013	2014	2015	2016	2017	2018
Number of portfolio companies in the fund	15	21	25	29	30	24
Actual amount of RVC equity in the fund (RUB mln)	1,099.00	1,099.00	1,099.00	1,099.00	1,099.00	2,599.00
Amount of invested funds (RUB mln)	212.00	297.00	435.00	496.00	417.38	361.47
Approved investments (RUB mln)	675.00	987.00	1,185.40	969.00	874.28	683,10
Number of exit transactions from companies invested in previously	–	2	5	6	7	14

[1] Taking into account additional capitalisation of RUB 1.5 billion through NTI subsidies

RVC Biopharmaceutical Investments Fund

Indicator	2013	2014	2015	2016	2017	2018
Number of portfolio companies in the fund	8	13	15	18	20	17
Actual amount of RVC equity in the fund (RUB mln)	770.00	770.00	770.00	770.00	770.00	770.00
Amount of invested funds (RUB mln)	112.79	314.86	494.99	610.25	644.54	638.99
Approved investments (RUB mln)	769.11	978.11	724.29	743.7	1,053.68	1,024.31
Number of exit transactions from companies invested in previously	–	–	–	–	1	4

Venture fund for investments in civilian technologies from the military-industrial complex (RVC Civil Technologies)

Indicator	2013	2014	2015	2016	2017	2018
Number of portfolio companies in the fund	–	3	4	7	7	5
Actual amount of RVC equity in the fund (RUB mln)	350	350	350	350	350	350
Amount of invested funds (RUB mln)	–	63.70	88.00	150.005	127.91	127.90
Approved investments (RUB mln)	30.00	215.80	234.68	217.18	189.18	138.90
Number of exit transactions from companies invested in previously	–	–	1	1	1	3

Funds in foreign jurisdictions

Russian Venture Capital I LP

Indicator	2013	2014	2015	2016	2017	2018
Number of portfolio companies in the fund	3	3	3	2	2	2
Actual amount of RVC equity in the fund (RUB mln)	38.35	38.70	45.69	60.795	60.795	60.795
Amount of invested funds (RUB mln)	38	38.35	45.35	60.361	60.361	60.361
Approved investments (RUB mln)	38	38.5	45.35	60.361	60.361	60.361
Number of exit transactions from companies invested in previously	–	–	–	1	1	1

RVC IVFRT LP

Indicator	2013	2014	2015	2016	2017	2018
Number of portfolio companies in the fund	4	4	4	4	4	4
Actual amount of RVC equity in the fund (RUB mln)	12.56	13.84	13.84	13.84	13.84	13.84
Amount of invested funds (RUB mln)	23.90	28.45	32.20	32.70	32.70	32.70
Approved investments (RUB mln)	35.00	35.00	35.00	35.00	35.00	35.00
Number of exit transactions from companies invested in previously	–	–	–	–	–	–

Bioprocess Capital Ventures CE VF

Year established	2007
Purpose of the fund	· Healthcare and technologies for life and health/living systems · New materials and chemical compounds (fine chemistry
Management company	Bioprocess Capital Partners LLC
RVC's share	49.00%
Actual size of the fund as of 31 December 2018 (RUB mln)	3,000.000
Actual amount of invested funds as of 31 December 2018 (RUB mln)	3,000.000
Actual amount of RVC's investment in the fund as of 31 December 2018 (RUB mln)	1,470.000
Number of project companies in the fund as of 31 December 2018	8
Approved investments as of 31 December 2018 (RUB mln)	3,223.14
Amount of funds invested as of 31 December 2018 (RUB mln)	3,218.01

VTB – Venture Capital Fund CE VF

Year established	2007
Purpose of the fund	· New materials and chemical compounds · Information technology · Network technologies and services · Alternative energy · Industrial equipment · Agriculture, forestry and raw materials processing
Management company	VTB Capital Asset Management JSC
RVC's share	49.00%
Actual size of the fund as of 31 December 2018 (RUB mln)	3,061.000
Actual amount of invested funds as of 31 December 2018 (RUB mln)	3,061.000
Actual amount of RVC's investment in the fund as of 31 December 2018 (RUB mln)	1,499.890
Number of project companies in the fund as of 31 December 2018	5
Approved investments as of 31 December 2018 (RUB mln)	1,225.31
Amount of funds invested as of 31 December 2018 (RUB mln)	1,215.91

Maxwell Biotech CE VF

Year established	2008
Purpose of the fund	· Healthcare and technologies for life and health/living systems
Management company	Maxwell Asset Management LLC
RVC's share	49.00%
Actual size of the fund as of 31 December 2018 (RUB mln)	1,224.400
Actual amount of invested funds as of 31 December 2018 (RUB mln)	1,224.400
Actual amount of RVC's investment in the fund as of 31 December 2018 (RUB mln)	599.956
Number of project companies in the fund as of 31 December 2018	5
Approved investments as of 31 December 2018 (RUB mln)	270.87
Amount of funds invested as of 31 December 2018 (RUB mln)	262.91

Innovation Leader CE VF

Year established	2008
Purpose of the fund	· Energy industry and energy conservation · Alternative energy · New materials and chemical compounds · Network technologies and services
Management company	Leader CJSC
RVC's share	49.00%
Actual size of the fund as of 31 December 2018 (RUB mln)	1,885.80
Actual amount of invested funds as of 31 December 2018 (RUB mln)	1,725.507
Actual amount of RVC's investment in the fund as of 31 December 2018 (RUB mln)	845.50
Number of project companies in the fund as of 31 December 2018	11
Approved investments as of 31 December 2018 (RUB mln)	1,806.85
Amount of funds invested as of 31 December 2018 (RUB mln)	1,233.78

S-Group Ventures CE VF

Year established	2008
Purpose of the fund	· Information technology · Alternative energy · Energy industry and energy efficiency · New materials and chemical compounds · Healthcare and technologies for life and health/living systems · Consumer market
Management company	S-Group Capital Management LLC
RVC's share	49.00%
Actual size of the fund as of 31 December 2018 (RUB mln)	1,620.000
Actual amount of invested funds as of 31 December 2018 (RUB mln)	1,620.000
Actual amount of RVC's investment in the fund as of 31 December 2018 (RUB mln)	793.800
Number of project companies in the fund as of 31 December 2018	8
Approved investments as of 31 December 2018 (RUB mln)	1,477.17
Amount of funds invested as of 31 December 2018 (RUB mln)	1,475.45

Investment partnership funds

Fund name	Year established	Purpose of the fund	Management company
Softline Seed Fund IPA	2013	Russian companies that specialize in solutions in the field of cloud technologies, mobile applications, data security systems, digital marketing with Russia as their primary sales market	Softline Internet Projects LLC
High-Tech Seed Fund IPA	2013	Innovative companies in IT, biotechnology, new materials, energy efficiency	TONAP-Venture LLC
RusBio Ventures IPA	2014	Companies in the biomedical industry, including in biomedicine and biomedical services, bioinformatics, biotechnology, medicine and healthcare, pharmaceuticals	RusBio Ventures LLC
ACP Seed Fund IPA	2014	B2B software, hardware and software packages	ACP LLC
Venture Fund Accelerator IPA	2014	Innovative companies in the area of Hardware 2.0: wearable technology, IoT, medical technology	DI Group LLC
Life Sciences Seed Fund IPA	2015	Innovative companies in the field of pharmaceuticals, biotechnology, medical instrumentation, agrobiotechnologies	KSI Ventures LLC
Russian-Belarusian Venture Investment Fund IPA	2016	Special-purpose companies that have a product/service based on innovative technology and that are carrying out the design, development and/or commercialization of the technology independently	RVC InfraFund LLC and Belifond

Fund name	Year established	Purpose of the fund	Management company
Skolkovo Venture Fund – IT I IPA	2017	Innovative IT companies: quantum communications and computations, IoT, operating systems and applications, software and hardware for medicine and pharmacology, engineering software, neural networks and systems based on such software, electronics, robotics, IT security	Skolkovo – Venture Investments LLC, Vzlyot LLC, IBS IT Services JSC
Skolkovo Venture Fund – Agrotechnological I IPA	2017	Innovative companies in the field of agricultural technologies, including digital and unmanned technologies for agribusiness, precision farming, alternative farms, bio-fertilizers and pesticides, innovative feed, storage and processing technologies	Skolkovo – Venture Investments LLC
Skolkovo Venture Fund – Industrial I IPA	2017	Innovative companies in the following areas: engineering software; engineering; energy efficiency; additive and hybrid technologies; control, management and warning systems; technologies and equipment for industrial and medical diagnostics; sensor studies; IoT; clean technologies; software and hardware solutions for infrastructure protection; big data; unmanned systems; navigation; mechanical engineering	Skolkovo – Venture Investments LLC
Tomsk State University Seed Fund IPA	2017	Any innovative companies carrying out activities in accordance with the list of priority areas and/or critical technologies of the Russian Federation	National Research Tomsk State University Federal State Autonomous Educational Institution of Higher Education (TSU RI)
Terra Fund II IPA	2018	Special-purpose, late-stage companies in the field of traditional energy technologies, smart grids, industrial IoT, robotics, artificial intelligence, machine learning	Phystech Ventures LLC

Fund name	Year established	Purpose of the fund	Management company
National Technology Initiative Venture Fund IPA	2018	Investments are made in companies: · in order to implement NTI action plans (road maps), including Aeronet, Autonet, Marinet, Neuronet, Healthnet, Foodnet, Energynet, Safenet, Finnet; · and/or if it is practicable under applicable law · developing cross-cutting technologies related to the following key scientific and technical areas of the NTI: · big data; · artificial Intelligence; · blockchain; · quantum technologies; · new and portable energy sources; · new production technologies; · sensors and robotics components; · wireless communication technologies; · technologies for managing the properties of bio-objects; · virtual- and augmented-reality technologies	KF Ventures LLC
Far East Fund for the Development and Implementation of High Technologies IPA	2018	Investments in growing Russian companies that are developing technologies, products and services that are of current interest or have a promising future: · implementing projects related to the transfer of technologies from abroad, including with a focus on import substitution; · implementing projects to create technology products and services; · implementing projects to expand and modernize the production of technological products and the provision of services in the Russian Federation, including those with export potential; · launching production of new types of high-value-added products; · localization of the production of high-tech equipment; · financing infrastructure projects	Far East High-Tech Fund LLC
Da Vinci Pre-IPO Tech Fund IPA	2018	Information technology, smart mobility, autonomous trucking systems, on-demand economy, financial technologies (fintech and blockchain), cross-industry B2B solutions based on IoT and big data technologies, products/ technologies related to artificial intelligence, AR/VR, cybersecurity with global scalability	Da Vinci Capital Management LLC

Institutional activities

Venture Capital Market Council

Today, the Venture Capital Market Council – created in 2017 at the initiative of RVC under the aegis of the Ministry of Economic Development of the Russian Federation – brings together leaders of the Russian venture capital industry. The Venture Capital Market Council is a permanent advisory body that deals with issues related to effective collaboration with the investment community.

Objectives of the Venture Capital Market Council:

- improving the quality of the preparation of RVC programmes and initiatives on investment policy, setting standards, regulating relations and supporting the interests of venture capital investors in the Russian Federation;
- raising awareness and encouraging venture capital investors to use the best practices of the innovative venture business;
- ensuring effective collaboration between RVC and both existing and potential venture capital investors in the Russian Federation on issues of investment policy and smart money.

Tasks of the Venture Capital Market Council:

- Providing expert recommendations to RVC's managing bodies on
- Investment policy and smart money
- Determining the current needs of professional market players
- Developing initiatives aimed at the implementation of the identified needs of professional market players
- Expert support for RVC programmes and initiatives on setting standards, regulating relations and supporting the interests of venture capital investors in the Russian Federation
- Increasing the transparency of RVC's operations for venture capital investors in the Russian Federation
- Assisting in attracting additional sources of capital to the venture capital market

Composition of the Venture Capital Market Council

Chairman of the Council

Alexander Galitsky, Managing Partner of the Almaz Capital Partners venture capital fund

Members of the Council

- **Alexey Basov**, Deputy CEO and Investment Director at RVC, member of RVC's Management Board
- **Alexey Konov**, Managing Partner of the RBV Capital venture fund
- **Alexander Lupachev**, Director of Russia Partners
- **Vitaly Polekhin**, President of the National Business Angels Association
- **Alexey Solovyov**, Partner, Managing Director of iTech Capital
- **Sergey Kerber**, Head of the Directorate of Investment Projects and Programs and Managing Director, Leader Management Company
- **Valery Krivenko**, Managing Partner, FPI Partners venture fund
- **Albina Nikkonen**, Executive Director of the Russian Venture Capital Association
- **Andrey Romanenko**, CEO and shareholder, Evotor

In 2018:

The Venture Capital Market Council launched three working groups in key areas:

- The Working Group on Attracting Funds from Non-state pension Funds
- The Working Group on the Preparation of a Package of Amendments in Approved Areas of Legal Initiatives
- The Expert Council on the Preparation of the Strategy for the Development of the Market for Venture and Direct Investments in the Russian Federation for the Period up to 2025 and Further Prospects up to 2030

The proposals developed by the working groups were sent to the Ministry of Economic Development of the Russian Federation.

Analytics

To increase the transparency of the Russian Venture Capital Market, RVC implemented a number of analytical projects in 2018:

- Ratings of the most active venture capital investors in Russia: funds, corporations and business angels
- Its annual review "MoneyTreeTM: Venture Market Navigator" in partnership with PWC
- Two infographics in partnership with Inc.: Venture investments in the first half of 2018 and Venture investments in 2018

In addition, RVC acted, for the first time, as the general partner for the independent research report "Venture Barometer" in 2018 and again supported research on the Russian market for direct and venture investments for 2017, which is conducted annually by the Russian Venture Capital Association together with the Venture Innovation Fund.

National Technology Initiative

NTI markets

The National Technology Initiative is a long-term programme aimed at creating new global markets and achieving Russian technological leadership by 2035. The NTI focuses on those markets in which it is possible to create industries based on a new technological paradigm that are crucial in terms of ensuring national security and a high standard of living. Today, the NTI unites thousands of people: technology entrepreneurs, representatives of leading universities and research centers, development institutes, governmental agencies and expert and professional communities.

In 2015, one important internal rule – it wasn't public knowledge – that we followed was that we didn't welcome the participation of large state corporations in the implementation of the NTI, fearing that they would buy up small projects and prevent them from developing. In 2018, however, we could see that this rule could be broken: on the one hand, the NTI remained an independent platform, and, on the other, large corporations – Rosatom, Roscosmos, UAC, Rostec – started to get involved in its implementation, and we started recommending that small companies 'enter world markets on the backs of these giants'. And with their help, we began inculcating global ambitions in participating NTI companies. This wasn't applicable for some market participants, but it remained a priority among those projects that had a global outlook, and we saw the national market as a platform for future global expansion.

Decisions were made in 2018 to decentralize the NTI management model. Infrastructure centers have now started operating with respect to markets that constitute their own particular sort of development institutions with the necessary mandate to support participants. The emergence of infrastructure centers is a serious step towards our goals, and the same can be said about the 14 Centers of excellence that were created with respect to cross-cutting technologies.

A new NTI Platform was launched as part of the Young Professionals ASI in order not to create projects based on organizational forms but to learn how to create the right organizational form based on project objectives. This is an organizational tool of fundamental importance, because one of the most painful lessons that have we learned in our four years with the NTI is that you can't use old methods to make something new no matter how convenient it might seem. Technological development requires new organizational forms and formats.

Dmitry Peskov,
special representative of the President of the Russian Federation on digital and technological development

Criteria for NTI markets

- It will become a crucial, high-profile market on a global scale, with capitalization of more than USD 100 billion by 2035
- There is no market at the moment, or the market lacks generally accepted technological standards
- The market is focused, first and foremost, on the needs of people as end users
- The market is important for Russia in terms of ensuring basic needs and security
- Conditions exist in Russia that would allow it to achieve competitive advantages and occupy a significant market share
- There are technology entrepreneurs in Russia with the ambition of creating leading companies in the market

Elements of NTI Projects

- An innovative product or service (cross-cutting technology, platform, new digital business model)
- Mature project team (experience with R&D and running a business)
- Sound model for product commercialization (strategy aimed at "blue oceans" and nascent markets)

AUTONET

- Telematic transport systems
- Intelligent urban mobility
- Transport and logistics services

PARTICIPATING COMPANIES:
GAZ Group, AvtoVAZ, Avtodor, VEB.RF, Sollers

GOALS for 2035:
USD 242 billion in exports on the part of market companies

AERONET

- Remote sensing of the land and monitoring for agricultural purposes
- Transport of goods and cargo
- Search-and-rescue operations

PARTICIPATING COMPANIES:
Kronshtadt, Copter Express, Finco, KosmoKurs, Kulon, OPDS

GOALS for 2035:
Russian share of USD 35-40 billion in the market for UAVs

MARINET

- Digital navigation and telecommunications
- Innovative shipbuilding
- Development of ocean resources

PARTICIPATING COMPANIES:
Fesco, Skanex, United Shipbuilding Corporation, RusHydro, Micran, SCF

GOALS for 2020:
12% share on the part of Russian companies in the e-navigation market

NEURONET

- Neuro-assistants
- Neuroeducation
- Neural medical equipment and pharmaceuticals
- Neuro-entertainment

PARTICIPATING COMPANIES:
ChemRar, Neurotrend, Factbook, Neurobotics, Neuromatix

GOALS for 2035:
10 National Champions with a capitalization of USD 1 billion each

HEALTHNET

- Preventive medicine
- Clinical genetics
- IT in medicine
- Healthy longevity
- Biomedicine

PARTICIPATING COMPANIES:
R-Pharm, National BioService, SibEnzyme, Healbe

GOALS for 2035:
5 Russian companies in the top 70 in terms of sales volume

ENERGYNET

- Distribution grids
- Distributed power generation
- Personal power generation and services

PARTICIPATING COMPANIES:
Rosseti, Tekhsnabeksport, Tavrida Electric, QIWI

GOALS for 2035:
USD 40 billion in annual revenue for Russia in the global market

TECHNET

- Digital design and modelling
- New materials
- Additive technologies
- Robotics
- Big Data and the industrial IoT

PARTICIPATING COMPANIES:
OAK, UEC Saturn, Volgabus, CompMechLab

GOALS for 2035:
10th place for Russia in the Global Manufacturing Competitiveness Index

CLUB MOVEMENT

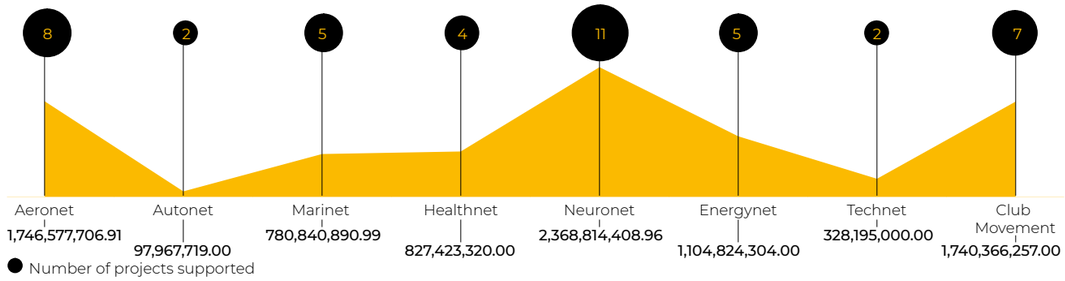
- Digital talent management, mentoring
- Technology competitions
- Project schools, fairs, festivals

PARTICIPATING COMPANIES:
Far Eastern Federal University, Sirius Educational Center, Delovaya Russia, Lift to the Future

GOALS for 2025:
500 thousand Club Movement participants

FINANCIAL SUPPORT for NTI PROJECTS

NTI PROJECT SUPPORT FUND, RUB



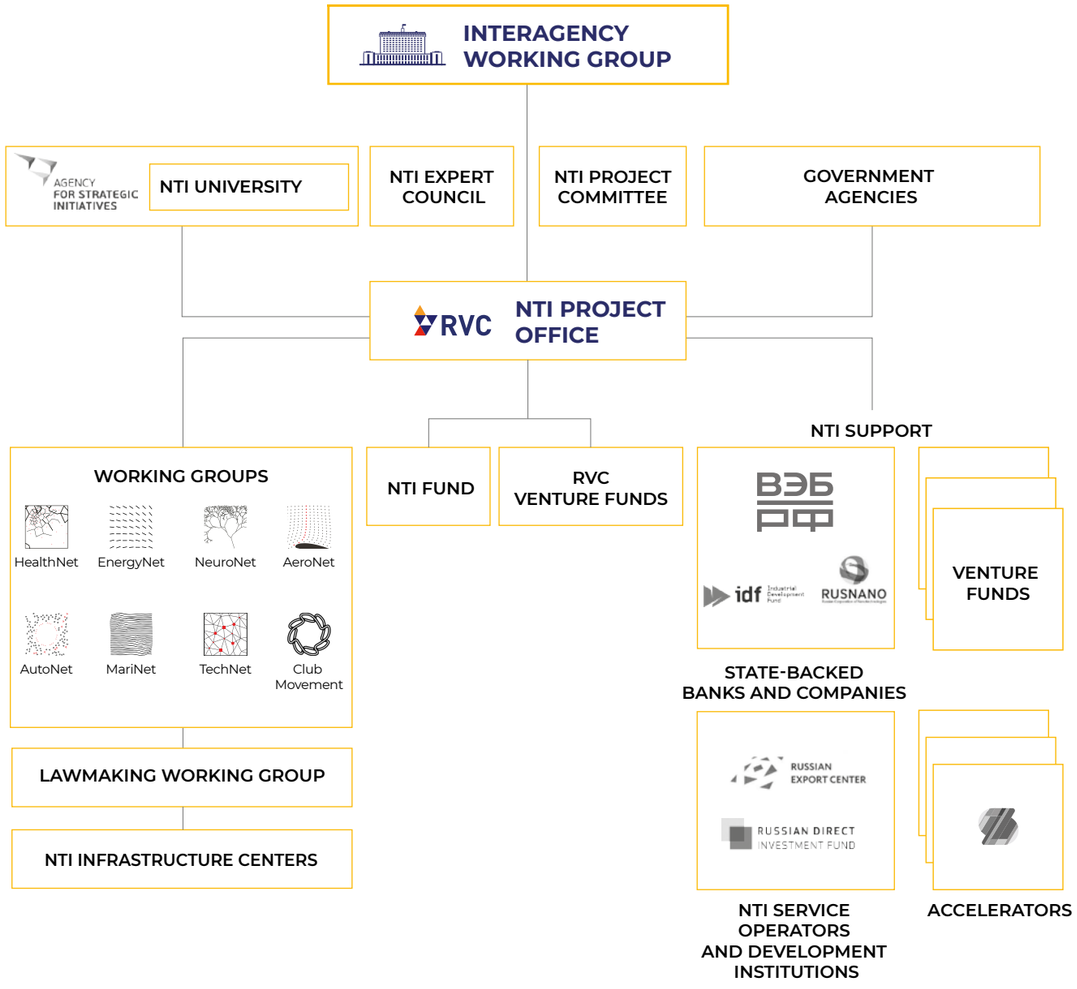
NTI technologies

The NTI has identified key groups of cross-cutting technologies that have a substantial impact on the development of NTI markets. The formation in Russia of scientific and technological capacity in respect of these groups will enable the creation of globally competitive high-tech products and services.

NTI cross-cutting technologies

- Big data
- Artificial intelligence
- Blockchain
- Quantum technologies
- New and portable energy sources
- New production technologies
- Sensors and robotics components
- Wireless communication technologies
- Technologies for managing the properties of bio-objects
- Virtual and augmented-reality technologies

NTI management system



NTI development

In 2018, the creation of the basic NTI infrastructure was completed, the process of updating strategic documents was initiated, and the work of the Project Office was streamlined. Associated anchor projects and programmes were launched: up Great technology contests, NTI Centers of excellence and infrastructure centers.

In July 2018, a long-term NTI implementation plan for the period 2018–2021 was adopted. The plan was developed by RVC with the participation of NTI working groups, the Agency for Strategic Initiatives, government agencies and other stakeholders.

Priority objectives:

- monitoring the implementation and updating of the road map system;
- improving the performance of the current portfolio of NTI projects; the creation of a roster of promising candidates;
- development of NTI financial instruments;
- development of NTI infrastructure: launching a system of infrastructure centers, ensuring the active participation of federal executive bodies and securing their role in regulatory documents, prioritizing the activities of development institutions;
- launching a programme to overcome technological barriers: organizing the work of the NTI Centers of excellence, running technology competitions;
- improvement of the regulatory framework for NTI markets.

The process of updating the NTI road maps began in 2018: in April, an updated version of the AutoNet road map was approved, and the process of updating the NeuroNet roadmap got under way in December.

In order to provide regulatory support for the implementation of the NTI, the Government of the Russian Federation approved seven regulatory road maps in 2018 for the TechNet, MariNet, AutoNet, AeroNet, EnergyNet, HealthNet and NeuroNet markets. These documents contain step-by-step action plans aimed at eliminating regulatory barriers to the development of NTI markets. RVC, as the NTI Project Office, provided expert support for the preparation of the road maps, and it also monitors adopted regulatory acts.

In terms of regulatory and technical regulation in 2018, the Cyber-Physical Systems Technical Committee, created within RVC, initiated, together with market players, more than 30 national standards in the area of cross-cutting technologies, including projects in the interests of the EnergyNet, TechNet and SafeNet NTI markets. One important area of the Committee's work was the promotion of Russian documents at the international level. In October 2018, ISO/IEC experts approved the draft Russian standard on the industrial IoT, and the development of a number of multilingual standards got under way. As of the end of the year, more than 80 organizations had taken part in the Cyber-Physical Systems Technical Committee and its working groups.

> We need to discover new tools in the next two to three years. The goals of the NTI need to be met in a systematic fashion, through cooperation and the involvement of a larger number of players. We have chosen a limited number of goals and will continue to adhere to them. The NTI, as originally planned, is not only about support for individual product projects. Our overarching goal is to achieve global leadership. According to our plans, at least five leading companies should be created by 2035.
>
> **Alexander Povalko,**
> RVC CEO

Results of NTI development in 2018:

3
NTI technology contests launched

38,000
schoolchildren took part in the NTI Contest

7
NTI infrastructure centers launched

14
NTI Centers of excellence started operations in 2018

7
regulatory roadmaps approved

8
agreements on NTI development signed with subjects of the Russian Federation

12
new NTI projects approved by the Interagency Working Group

6
venture funds focused on NTI support

Financial support for NTI projects

RVC provides the procedures for the selection and implementation of NTI projects, and it also establishes the system for managing their life cycle. When selecting new projects to support, priority is given to platform projects that create an ecosystem around themselves, stimulating the emergence of new market niches, start-ups and innovative business projects on the part of established companies or integrated pilot projects that correspond to NTI road maps.

Support for the implementation of NTI projects can be provided in the following forms:

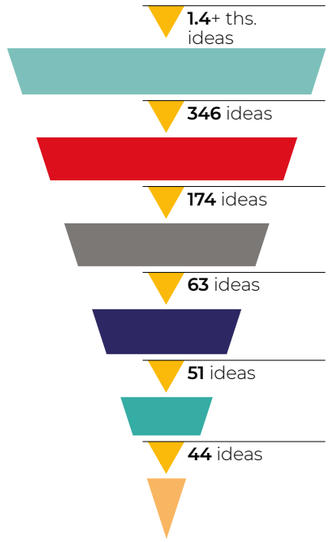
- grants to individuals or legal entities that are participants in an NTI project to carry out research and development;
- payment for contracts for the provision of services in the framework of the implementation of NTI projects;
- payment for additional stock issue or for contributions to the charter capital of business entities that are participants in an NTI project;
- contributions to non-profit organizations that are participants in an NTI project;
- acquisition and granting for use to individuals and legal entities that are participants in an NTI project of scientific and other equipment and/or intellectual rights (technologies, software) that are not accounted for on the Project Office's balance sheet;
- reimbursement of part of the cost of interest on loans received by individuals or legal entities that are participants in an NTI project through Russian credit institutions or VEB.RF.

In 2018, RVC approved new editions of a number of bylaws and operating procedures, which made it possible to streamline the work of the NTI Project Office and simplify the procedure for selecting and monitoring projects. Changes were made to the Project Committee's principles and working procedures, including the Procedure for the Expert Evaluation of NTI Projects, the Regulations on the NTI Expert Council and the Procedure for Monitoring and Managing Changes in NTI Projects.

In 2018, the Interagency Working Group on the Implementation of the NTI under the Government Commission on Modernization of the Economy and Innovative Development in Russia (IWG) approved 12 new NTI projects: Topaz, Aerotomography, Biobank-5 Platform, Spinal Neuroprosthesis, Experimental Digital Certification Platform, Operkit Platform, Mentor Academy, Practices of the Future, VORK, Digital Talent Management Platform, Autodata, on Duty Around the Planet.

As of the end of 2018, the NTI project portfolio approved by the IWG included 44 projects. Based on project data and the NTI road maps, work got under way on the formation of complex NTI projects (meta-projects). Meta-projects provide for the deep integration of community development technologies, tools for development institutions, resources for education and scientific systems into a single network-centric organism that can replace the concept of transnational corporations. At the end of the year, the NTI Project Committee presented the first six meta-projects for launch in 2019. One of them is Artificial Intelligence in Healthcare, for the implementation of which the National Medical Knowledge Base Association was created in 2018 in collaboration with the medical community.

Funnel of NTI projects with cumulative results for 2016–2018



- Screening of ideas by NTI working groups
- Project Committee
- Screening in the process of project development
- Expert Council
- Interagency Working Group
- NTI projects supported in 2016–2018

Key indicators in 2018

RUB 2.3 bn
from budgetary funds earmarked for the implementation of NTI projects

12
NTI projects approved for implementation

RUB 1 bn
from extrabudgetary funds earmarked for the implementation of NTI projects

25 IPRs
received by NTI projects

44
projects in the general NTI portfolio as of the end of 2018

Projects approved by the Interagency Working Group for state support in 2018

Project	Provider	Road map	Purpose of the project
Topaz	InEnergy	EnergyNet	The development of new sources of energy, significantly better batteries. The project involves the development of technology that will be incorporated in a line of four products: · A compact portable power supply unit with a capacity of up to 30 W · A automated low-maintenance power supply unit for distributed power generation with a capacity of up to 300 W · A mobile power supply unit for robotics and unmanned aerial vehicles (UAVs) with a capacity of up to 1,000 W. · A stand for educational institutions called "High-temperature tubular fuel cells"
Aero-tomography	Novosibirsk State University	AeroNet	Development and creation of ground-breaking equipment for remote geophysical prospecting and exploration using UAVs. The innovative measuring technique makes it possible to take a tomographic approach to data processing using high-precision positioning in the depths of diamond pipes, iron ore deposits and accumulations of polymetallic ores. The goal of the project is to create an international company for the provision of geophysical services and to enter Russian and foreign markets
Biobank-5 Platform	National BioService LLC	HealthNet	Creation and scaling of a network of biobanks for tissues, cell lines and other research products in five regions of the Russian Federation. The biobanks will enable the collection, study and analysis of biological markers of tumor development and progression, which, in turn, will help with the discovery of possible treatment combinations. In addition, the biobanks will help determine the effectiveness of individual treatments, which is especially important in connection with the development of personalized treatment
Spinal Neuroprosthesis	Cosima LLC	HealthNet	Development of a neurostimulation device for patients who are able to walk on their own but you suffer from severe movement disorders following a stroke. The device is intended for use not only in the neurological and rehabilitation departments of clinics; it can also be used for in-home rehabilitation. Spinal neuroprostheses will be much cheaper than their closest alternative, i.e., exoskeletons

Project	Provider	Road map	Purpose of the project
Experimental Digital Certification Platform	Tesis LLC	TechNet	Creation of an integrated system of services in the field of accelerated compliance assessment and certification of products made of polymer composite materials (PCMs). Creation of an experimental digital platform whose services will ensure a reduction in the time needed (by up to 3-6 months) and in the material costs (more than 50%) for certifying PCM products and, in the long term, the output from advanced production technologies. Assessment of the new approach and testing of the services created are being performed on products made of PCMs for railway infrastructure, road construction and intermodal transport equipment
Operkit Platform	EC IAS LLC	TechNet	Development of a unified information and analytical online platform for the provision of after-sales service for high-tech products and the creation of a centralized service that unites, in a single information space, all participants in the product life cycle: manufacturers, developers, operating entities and dealers
Mentor Academy	The Skolkovo Foundation	Club Movement	Creating a system for mass training, certification and employment of mentors for children's and youth projects and teams in the technological sphere, stimulating technical creativity and technological entrepreneurship in Russia. Creating a system of educational programmes, contests and mass open online courses in the field of mentoring, as well as launching an online platform that includes various services for mentors. By 2020, the project's creators expect to train no fewer than 6,000 mentors
Practices of the Future	Association of Club Movement Members ANPO	Club Movement	Creation of project schools that should become a space for the involvement of children and adults from various regions of Russia and abroad in the development of projects in current areas of the NTI. The goal of the project is to bridge the gap between the needs of youth teams developing projects on the frontier of technological development and the lack of mechanisms for the formation of such teams in the current educational system. Four formats for project schools are planned: regional, specialized, national and international
VORK	NTI Project Support Fund, RVC is the joint implementing agency	Club Movement	The VORK project is an annual international makers festival in Moscow, as well as a network of group events aimed at developing engineering creativity and establishing a community of technical enthusiasts in Russia. By 2021, the project organizers plan to hold 40 thematic events in 30 Russian cities, which will gather more than 100 thousand participants. Festivals will help increase interest among young people in new technologies, test ideas before the launch of production, and also to build up any deficient skills related to the project and team approach from an early age
Digital Talent Management Platform	Jet Infosystems JSC	Club Movement	Creation of a promising system for managing the individual educational trajectories of talented youth. The platform's audience includes the participants and organizers of the Club Movement, as well as entrepreneurs and corporations with a need for high-tech resources. The Digital Talent Management Platform includes: · An aggregator of information from various open sources about Movement participants · A broker platform for creating a single information space for information exchange · An aggregator of services provided by external education systems · An intellectual service for the formation of an individual development trajectory for Club Movement participants using machine learning techniques and other technologies for working with big data
Autodata	Glonass NP	AutoNet	Collection and aggregation of automobile and transport information from existing digital systems, including data on the physiological state of individuals, the operation of automobiles and the external environment: road quality, weather conditions, geography of use, etc. This information is currently collected separately by many different companies, while the integration of all this information in a single database would be of great value for the creation of new services in the field of urban intellectual mobility.

Project	Provider	Road map	Purpose of the project
On Duty Around the Planet	The Skolkovo Institute of Science and Technology, the Talent and Success educational foundation (Sirius Center), the Foundation for the Promotion of Innovation and Roscosmos	Club Movement	The programme combines technology contests for schoolchildren on the development of satellite equipment, the reception of data from space and the processing of data from space-based imagery. The goal of the programme is to increase the popularity of space research and development among young people in Russia. For this purpose, a state-of-the-art cognitive and educational environment in the field of space research and development is being created. Programme contests include: · Space data (grades 8–11) · Young seals 2019 (grades 8–11) · My School's Satellite (ages 14–18) · CubeSat Satellite (ages 14–18) · Satellite Equipment (ages 14–18 years old)

In 2018, RVC also continued its work aimed at expanding NTI companies' access to venture financing. As of the end of 2018, there were six venture funds with a mandate to invest in NTI projects operating in RVC's portfolio:

- Skolkovo Venture Fund – Industrial I
- Skolkovo Venture Fund – IT I
- Skolkovo Venture Fund – Agrotechnological I
- Terra Fund II
- Far Eastern High-Technology Fund
- NTI Venture Fund

In 2018, two pitch sessions were organized for NTI projects with the participation of leading venture funds and corporate investors, one of which was held as part of the Open Innovations forum. Following the event, the participants continued negotiations on raising funds, and the winners were given an opportunity to take part in acceleration programs for free.

NTI projects completed in 2018

In 2018, the first three NTI projects to receive support within the framework of the AeroNet, MariNet and Club Movement road maps were successfully completed. The project teams ensured the fulfillment of the required targets as stipulated in the project implementation plans

Marinet: a portal for satellite-based geoinformation and services for the maritime industry

About the company
Scanex Group is the only company in Russia and the CIS that receives direct data from remote sensing satellites through its own network of stations, processes satellite information and provides access to satellite imagery.

About the project
During the project, a multi-user platform was created to provide access to more than 15 state-of-the-art geoinformation products and services based on satellite imagery that were developed for the needs of the maritime industry. The developed services include monitoring ice levels in the Arctic (the software enables the processing of radar and optical satellite imagery and predicts ice drift, which makes it possible to reduce the likelihood of ships getting caught in ice traps), as well as a service for detecting oil spills, including the detection of the sources of spills and predictions of how they will spread (making it possible to reduce fines for carriers and mining companies, since it is possible to track the history and source of the spill).

Project results

- A geoinformation portal for the maritime industry was created and put into operation
- More than 70 Russian and international clients are connected, including Rosatomflot, Gazpromneft and Lukoil
- A pilot zone was commissioned
- More than RUB 320 million in revenue from the sale of services

Project financing

RUB 123.2 mln
in public funding

RUB 73.4 mln
in extrabudgetary funding

AeroNet: UAV modular construction kits for schools and institutions offering further education for children

About the company
Copter Express Technologies LLC (COEX) is a developer and manufacturer of UAVs. The multirotor aircraft developed by the company are intended for educational purposes, the autonomous monitoring of territory and the delivery of goods.

Project details
UAV modular construction kits for schools and institutions offering further education for children include:
- More than 50 different elements: electric motors, a computer-vision camera, an FPV camera, a GPS module, a flight controller, etc.
- Tutorials and instructions
- An open educational IT platform with video tutorials and additional materials.

Project funding

RUB 20.7 mln
in public funding

RUB 8.9 mln
in extrabudgetary funding

Project results
- Modules created for the UAV construction kits for schools and institutions offering further education for children
- Educational stands created
- Teaching materials developed
- More than RUB 100 million in revenue from the sale of UAV modular construction kits in 2018
- Over 1,000 drones sold in 2018

Club Movement: Mentoring at Kvantorium children's technology parks

About the operator
The Foundation for the Development of New Forms of Education Federal State Autonomous Institution is implementing a large-scale pilot project to expand access to education in Russia and is developing unique educational techniques. The Foundation has also been named as the project office for a priority Russian Government project in the field of education and science called "Affordable Further Education for Children."

Project details
The idea behind the project is to modernize and evaluate models for the development of humanitarian mentoring technologies in the interests of the NTI in various regions of Russia at Kvantorium children's technology parks. Kvantorium is a unique environment outfitted with high-tech equipment that offers children opportunities for accelerated learning in terms of current research, engineering and technology. Launched in 2015, 80 thousand children are currently studying at Kvantorium children's technology parks on an ongoing basis, and about 600 thousand are involved in events hosted by the federal network.

In accordance with the indicators determined by the Education national project, there will be 245 Kvantorium children's technology parks and 340 mobile Kvantorium technology parks in operation in Russia by 2024. This will allow 2 million children to study on an ongoing basis and to develop engineering skills.

Project funding

RUB 152.5 mln
in public funding

RUB 33.2 mln
in extrabudgetary funding

Project results
- Innovative educational programmes, teaching and scientific materials created for the training of mentors
- A system was created for training Club Movement mentors from the Kvantorium children's technology parks
- 1,245 mentors prepared
- More than 800 thousand children involved in the activities of mentors trained through the project

NTI infrastructure centers

NTI infrastructure centers are special points of attraction created for the expedited creation of new markets. The centers are designed to generate a strategic vision for the development of individual NTI areas, to provide expert and analytical support to working groups and to work with regulatory restrictions. In addition, infrastructure centers are becoming communication platforms for the formation of NTI communities.

NTI infrastructure centers are created in the form of non-profit organizations that bring together representatives of the business community, and they develop as a platform for dialogue between the industry's technological community and the state.

Objectives of NTI infrastructure centers:

- Preparation of changes to the existing NTI road maps, including forecasting the development of the market or the NTI's areas of focus until 2035, as well as the formation of a list of technological and regulatory barriers
- Development of proposals for legal or technical regulations, including draft legislative and regulatory acts, technical standards and regulations
- Organization of expert and analytical activities in the interests of the implementation of the NTI's regulatory road maps
- Development of NTI communities, including thematic events
- Monitoring of draft regulatory legal acts in order to ensure that the NTI's regulatory road maps are implemented in full

What has been done in the NTI within the framework of individual projects that have already implemented is quite a lot. From medical technologies, exoskeletons to NTI developments in the area of AutoNet and drones. Most Russian civilian drones began as NTI designs – this has now become commonplace. This also applies to neural networks and medical technology.

We have never been concerned with the number of projects. What is most important is the quality. The primary result, however, is the establishment of a community. Today, hundreds of thousands of people are involved in these processes, directly or indirectly, in educational institutions, in science, in business – this is the community I am referring to. We are working together closely with this community, which can be found at all of our institutions, and this is a very important story. You could say that we managed to break ground by promoting the first projects. There are three main areas of focus in the NTI's next stage of development. The first is the structuring of the NTI community: for this purpose, special infrastructure centers are being created that will work within the framework of the road maps. The second area of focus is the creation and deployment of specialized financial institutions to support start-ups, because the NTI is basically all about start-ups. The third area of focus is the creation of Centers of excellence, including to support cross-cutting technologies, which is something we also emphasize in the framework of the NTI. These Centers of excellence are established mainly at universities.

Andrey Belousov,
aide to the President of the Russian Federation

In 2018, the following were granted the status of an NTI infrastructure[1]:

NTI area of focus	Winner of the competitive selection
AutoNet	GLONASS/GNSS Forum Association of Designers, Manufacturers and Users of Equipment and Applications Based on Global Navigation Satellite Systems
AeroNet	AeroNet Analytical Center ANPO
NeuroNet	NeuroNet branch association
Healthnet	Novosibirsk Academic Town Science and Technology Park
HealthNet	Technet Association
EnergyNet	North-west Center for Strategic Research Foundation
Club Movement	Association of Members of Technological Clubs

Financing for the development of the infrastructure centers will be provided by budgetary funds during the first three years in an amount up to RUB 682 million, to be completely replaced by extrabudgetary funding starting from the fourth year of the centers' operations.

[1] The infrastructure center programmes got under way in October 2018

NTI Centers of excellence

The NTI Centers of excellence are a network of engineering and educational consortiums based at Russian universities and scientific organizations that are engaged in the development of cross-cutting NTI technologies. The Centers conduct research and educational activities in partnership with major technology companies. Consortium members determine the specific areas of the centers' activities, as well as a set of ongoing projects, taking into account the prospects for their commercialization.

Objectives of the NTI Centers of excellence:

- Translation of the results of fundamental science into engineering applications. Interdisciplinary research programmes ensure the adaptation of fundamental scientific results and ideas through applied research and development into specific technologies
- Technological transfer through cooperation with industry partners. NTI Centers of excellence form a stable link between the academic sphere and commercial customers
- Training of leaders in the development of new technologies through educational programmes. NTI Centers of excellence create and implement educational programmes related to engineering. For students in these programmes, mandatory participation in the Centers' research activities is expected in the form of direct work on projects in teams with representatives of industry partners

State funding in the amount of RUB 10.3 billion has been provided for the support of the NTI centers of excellence up until 2021. At the same time, the centers' financing model provides for the gradual replacement of budgetary grants with co-financing. As instructed by the Government of the Russian Federation, the monitoring and maintenance of the Centers' activities is carried out by RVC. The main indicators of the performance of the NTI Centers of excellence are the number of trained specialists, the amount of revenue and the number of licensed technologies, i.e., direct contributions to the development of the country's economy.

In 2018, RVC conducted a second competitive selection of recipients of grant support for the creation of NTI Centers of excellence with respect to eight cross-cutting technologies. In total, the competition commission, formed by the Ministry of Education and Science of the Russian Federation, reviewed 49 applications

from universities and research organizations, and more than 800 consortium members submitted applications for the additional competitive selection.

As of the end of 2018, following the two competitive selections, 14 NTI Centers of excellence had been established. The Centers employ some 2.2 thousand people, 150 research projects have been launched at the Centers, and the number of consortium members has grown by more than 25%. Today, the Centers' consortiums include more than 300 organizations, 59% of which are commercial companies, including Sberbank, MTS, KUKA, Rosatom, Gazprom Neft, etc. In 2018, 3.8 thousand people took part in educational programmes implemented with the participation of the NTI Centers of excellence.

Key indicators

14
NTI Centers of excellence

300
participating organizations in the consortiums

3,800 people
took part in the Centers' educational programmes in 2018

150
research projects launched by the Centers in 2018

RUB 10.3 bn
in funding until 2021

NTI Centers of excellence were the recipients of grants in 2017–2018

Name of the cross-cutting technology	Winner	Grant year
Storage and analysis of big data	Lomonosov Moscow State University	2018
Technologies to produce components for robotics and mechatronics	Innopolis University	2018
Sensors	MIET National Research University of Electronic Technology	2018
Blockchain	St. Petersburg State University	2018
Quantum communications	MISIS National University of Science and Technology	2018
Transportation of electricity and intelligent power distribution systems	MPEI National Research University	2018
Wireless communications technology and the Internet of things	Skolkovo Institute of Science and Technology	2018
Cognitive technologies	ITMO University	2018
Artificial Intelligence	Moscow Institute of Physics and Technology	2017
Quantum technologies	Lomonosov Moscow State University	2017
New and portable energy sources	Institute of Problems of Chemical Physics of the Russian Academy of Sciences	2017
New and portable energy sources	Peter the Great St. Petersburg Polytechnic University	2017
Technologies for managing the properties of bio-objectsобъектов	Institute of Bioorganic Chemistry of the Russian Academy of Sciences	2017
Neurotechnologies, virtual- and augmented-reality technologies	Far Eastern Federal University	2017

The creation of centers of excellence is one of the main tools for achieving the NTI›s strategic goal – Russia must become one of the leading countries in the most promising new markets. A country that is actively creating new technologies and products, whose leadership will be recognized worldwide and that will make it possible not only to keep talent and capital in the country but also to attract new [talent and financing] from other countries. The idea of making our country a leader certainly requires a systematic approach and the creation of specialized centers of excellence. In my opinion, this is a good decision.

In March 2018, at the Institute of Bioorganic Chemistry of the Russian Academy of Sciences, a structural subdivision of the Institute›s NTI Center was created, the main objective of which is the comprehensive development of cross-cutting NTI technologies, i.e., managing the properties of bio-objects. The Institute of Bioorganic Chemistry NTI Center is responsible for organizing the joint activities of all members of the Bioorganica Consortium – currently 18 organizations from academia, science and industry. We create advanced products and technologies that link the results of fundamental scientific research and the needs of existing NTI markets in order to improve the performance of the country›s economy, increase life expectancy and improve the quality of life of the population.

Due to the ambitiousness of the center's objectives, the organizational, technical and analytical support from RVC, as the NTI Project Office, was excellent, especially at the stage of establishing the center. In particular, when a situation arose after the organization had already been created, the staff began working on their assigned tasks, but, for a long time, there was no funding. RVC solved this problem in the best-possible manner: funding was provided in full; programme goals, deadlines and plans for the reporting period were adjusted; and people continued to work without being distracted by organizational issues.

Alexander Gabibov,
Chairman of the Supervisory Board of the Bioorganic Consortium, NTI Center at the Institute of Bioorganic Chemistry of the Russian Academy of Sciences, Member of the Academy of Sciences

Existing Centers of excellence

Center for Cognitive Technologies, ITMO University, St. Petersburg

Projects
Intelligent technologies for transport of the future. A cognitive assistant for determining driving style and driver support.

Scalable technologies for conversational AI. Constructing problem-oriented chatbots, a platform for building a decision support system using conversational AI.

Intelligent technologies for digital production. Construction and training of digital models of technological processes, a platform for creating a decision support system for digital production management.

Next-generation cognitive learning technologies. Deep-immersion training systems, multimodal systems for measuring professional competencies.

Intelligent telecommunication technologies for smart cities. Process management for global cyberspace.

Business partners
- Mail.ru Group
- Gazprom Neft
- Delovye Linii
- Diakont
- MTS
- Almazov National Medical Research Centre
- Otkrytyi kod
- Speech Technology Center
- ER-Telecom Holding
- Stankin Moscow State Technological University

Artificial Intelligence Center of Excellence, Moscow Institute of Physics and Technology, Moscow

Projects
Technologies for increasing the productivity of scientific labour. A medical decision support system that will help physicians choose the most effective treatment strategy based on an analysis of a large amount of patient data.

Object recognition technology for photos and video. Systems that will not only process but also synthesize visual content.

Smart home technologies. Creation of smart urban transport systems, as well as electrical networks that will analyze, predict and manage electricity consumption.

iPavlov project. A software platform for creating conversational applications, a neural assistant.

Creating a prototype neuromorphic computing device. A processor that works on the principle of the human brain.

Creation of assistive devices and technical means of rehabilitation with the use of neurotechnology for people with physical disabilities.

Business partners
- Sberbank
- ABBYY
- Rostelecom
- Russian Railways
- Almaz-Antey
- Vympel
- Neurobotics
- Milandr

Components of Robotics and Mechatronics Center of Excellence, Innopolis University, Innopolis

Projects
The development of collaborative industrial robots with an intelligent control system, using a state observer and integrating feedback from internal and external measuring systems.

The development of control algorithms and the processing of sensory information for the autonomous control of vehicles in off-road conditions.

The development of robotic platforms for autonomous underground and surface inspection of terrain in conditions of difficult manoeuvrability and poor visibility.

The development of methods for the modelling and control of reconfigurable hybrid cable robots taking into account elastic deformations of mechanical elements and their application to the task of painting large-sized products.

Business partners
- FANUC
- KamAZ
- Sberbank
- Rostelecom
- Aeroflot
- Androidnaya Tekhnika
- Aurora Robotics
- Copter Express Technologies
- Arkodim R&D Center
- Alfa-Intech
- Eidos-Robotics
- Rozum Robotics
- Walter Integratsiya
- Vector Group
- Finco
- RUSAL
- KUKA
- BP-master
- Quantum Systems
- IMT Atlantique

Sensory Technologies Center of Excellence, MIET National Research University of Electronic Technology, Moscow

Projects

The development of a production technology for the sensing elements of sensors for hardware and software systems used for perception, recognition and interaction with the real world.

The development of a production technology for the sensing elements of sensors for inertial hardware and software systems.

The creation and development of integrated optical sensors and systems based on planar technology for microelectronics, optics and microsystem hardware.

The development of a technology for the design and production of actuators and sensors for physical values (pressure, acceleration, temperature, angular velocity, environmental monitoring, etc.).

The development of a technology for the design, manufacturing and testing of sensory systems for perception, recognition and interaction with the real world.

The development of technologies and the adoption of small-scale production of highly integrated 3D microassemblies.

The development of designs, work algorithms and a production technology for state-of-the-art position sensors based on microelectronics and microsystem technologies.

The development of sensory tools for systems for piloting, driver assistance and remote sensing of the earth's surface.

A system for collecting, processing, transmitting, storing and visualising information from disparate detectors, sensors and sensor systems.

The development of digital sensor systems for a line of hardware for robotics and the IoT: sensor systems for UAVs and responsive intelligent robot systems.

The development of a line of personalised telemedicine devices.

The development of interdisciplinary bionic technologies.

Business partners

- ANAKD
- Neurobotics
- KamAZ
- Concern CSRI Electropribor
- Zelenograd Nanotechnology Center
- Molecular Electronics Research Institute
- NIIMA Progress
- GLONASS
- Roselectronics
- Micron
- Optron
- Angstrem
- ELVEES NeoTek
- BIOSS
- ELVEES R&D Center

NTI Center of Excellence for VR/AR, Far Eastern Federal University, Vladivostok

Projects

An open platform for creating VR/AR applications that is accessible to independent developers and that can compete with leading foreign products.

The development of software for the visualisation of reference trajectories and the results of a manual markup of images for training and test samples.

Business partners

- Foundation for New Forms of Education Development (Kvantorium)
- Seoul National University
- MTS
- Mazda Sollers
- DEUS
- MOTI
- BiTronics Lab
- DNS Group
- Nanotech
- Insait
- AR Production
- Ashmanov Neural Networks
- Cyberlite
- One more world
- ROBBO Club
- Cerevrum
- STEM-games
- Far East Virtual Reality Laboratory
- Rubius
- Teslasuit
- Modum Lab
- Motorica
- Fibrum
- Kiber Vostok
- Association of Augmented and Virtual Reality
- Association of Leading Universities in the Asia-Pacific Region

Technologies for the Transport of Electricity and Smart Power Distribution Systems, MPEI National Research University, Moscow

Projects

Digital substation (central production facility)

- Development of a software and hardware suite for the automated synthesis of structural and functional circuits for the relay protection and automation central production facility
- Development and implementation of relay protection and automation central production facilities with various architectures
- Development of a distributed intelligent control system for power system modes for voltage and reactive power

Micro energy systems

- Development of a software and hardware suite for the automated synthesis of micro energy system circuits
- Development of an automated system for calculating the parameters of the operation of the relay protection and automation in the micro energy system online
- Development of an automated planning system for maintenance and repair works based on a risk-based model to reduce operating costs and ensure the operational reliability of micro energy systems
- Development of a distributed intelligent micro energy control system
- Development of basic technical solutions and a project for the introduction of electricity and renewable energy storage devices in the substation's own systems

Business partners

- INBRES
- Hydroelectromontage
- MIET National Research University of Electronic Technology
- National Power Engineering Center
- Skolkovo Institute of Science and Technology
- Tomsk Polytechnic University
- PLC Technology

Technologies for the Storage and Analysis of Big Data Center of Excellence, Lomonosov Moscow State University, Moscow

Projects

Technologies for building intelligent data analysis software systems.

Analytics based on large textual data using linguistic and ontological resources.

Algorithms enabling the development of computer vision for driverless vehicles and mobile robots.

Business partners

- Rosatom
- 1C
- Mail.Ru Group
- Takskom
- Postgres Professional
- UNIS Labs Solutions
- SODIS Lab
- Visiology
- DigitalGlobe

Management of the Properties of Bio-objects Center of Excellence, Institute of Bioorganic Chemistry of the Russian Academy of Sciences, Moscow

Projects

Creation of a biocardiostimulator based on the use of thermosensitive TRP channels (thermogenetics).

Development of techniques for visualizing the transmission of signals in the brain. Development of a bioimaging device that makes it possible to see and "feel" the process of signal transmission and also to visualize the penetration of drug compounds into cells or entire organs.

Creation of original drugs that target cancer or autoimmune cells, allowing them to be selectively suppressed.

Creation of antibiotics for multiresistant microorganisms. This will significantly increase the effectiveness of the treatment of bacterial infections.

Design and development of new animal biomodels of various pathological states of the human body, their verification and validation, and the conduct of preclinical trials.

Business partners

- S-GROUP Corporate Communication Center
- GeneTechnology
- Farmsintez
- Genetico Center for Genetics and Reproductive Medicine

Wireless Communication Technology and the IoT Center of Excellence, Skoltech, Skolkovo

Projects

The development of a system for testing ERA-GLONASS modules for use at state technical inspection stations.

The development of a regulatory framework for testing ERA-GLONASS modules.

The development of a wearable device that remotely measures and processes cardiogram and blood pressure data in a cuffless, non-invasive manner.

The development of an autonomous system for collecting and monitoring medical data within the framework of a scientific and educational infrastructure centre.

The development of a robotic platform (manned or unmanned) for the purposes of automating logical warehouse operations.

The development of a cloud platform for collecting, storing and processing primary medical information and industrial dat.

Business partners

- Sberbank
- ASE
- College of Art Restoration
- Russian Space Systems
- Gazprom Neft R&D Center
- IDGC of the Urals
- GLONASS
- Zelenye linii
- Smartiko
- TsAPK

Center for Quantum Technologies, Faculty of Physics, Lomonosov Moscow State University, Moscow

Projects

Development of scalable quantum registers based on neutral atoms and photonic chips. It is assumed that the results will be able to be used for calculations in a number of tasks: the synthesis of substances with given properties for use in construction, in the production of new types of fuel and drugs, and in the calculation of logistical cycles for the optimization of management tasks.

Development and creation of automated (without an operator) and regenerative quantum communication systems. This solution will be used to protect information during data transmission through government communication lines, space communication systems, and so on.

Business partners

- Infotecs
- Cryptosoft
- Kontsern Avtomatika
- Dukhov Russia Research Institute of Automatics (Rosatom)
- Information Security Association

Center for Quantum Communications, MISIS National University of Science and Technology, Moscow

Projects

Creating standards for information security in the field of quantum communications to ensure the secure transmission of data between IT infrastructure objects.

Academic systems for quantum key distribution and teaching methods in the field of quantum communications.

Studying the vulnerability of quantum communication protocols used in commercial systems and the development of new ones to protect information from hacking in quantum computers, satellite systems, UAVs, IoT devices and blockchain.

Development of network software solutions for quantum networks and quantum-protected data storage with authentication.

Business partners

- MTsKT
- KuReit
- Scontel
- TINFOTONIKA
- T8
- S-Terra CSP
- CRYPTO-PRO

New Production Technologies Center of Excellence, Institute of Advanced Production Technologies, Peter the Great St. Petersburg Polytechnic University, St. Petersburg

Projects

Creation of a Gas Turbine Engine Virtual Test Site.

The development of technology for the low-tonnage synthesis of unique, new, purpose-designed complex-alloyed metal-powder compounds for additive manufacturing machines.

The development of a concept for a promising new amphibious aircraft.

Business partners

- United Engine Corporation
- United Aircraft Corporation
- United Shipbuilding Corporation
- Rosatom
- Roscosmos
- KamAZ
- UAZ
- AvtoVAZ
- UEC Saturn
- Klimov
- Russian Helicopters
- Ilyushin
- Middle Neva Shipbuilding Plant
- China Automotive Technology and Research Center (CATARC)
- Kazan Motor Production Association
- Sibur Holding
- Gazprom Neft
- Lenpoligraphmash
- Diakont
- Biocad
- Computational Mechanics Laboratory
- Kurchatov Institute National Research Center
- Russian State Scientific Center for Robotics and Technical Cybernetics
- All-Russian Research Institute of Experimental Physics
- Center for Strategic Research North-West Foundation

Distributed Ledger Technologies Center, St. Petersburg State University, St. Petersburg

Projects

System for authenticating works of art. Using blockchain to save the confirmed history of a work of art.

Using blockchain for elections. The use of blockchain technology for election procedures at the corporate as well as the state level.

A universal marketplace. A trading platform with an extensive system of logistics and sales.

System of verification of education-related documents. The use of a distributed registry containing authenticated student performance information at each stage and the receipt of education-related documents

Business partners

- T-Systems RUS
- Exon Lab
- Blockchain Developers Community of St. Petersburg
- Isio
- Orbita Center for the Practical Application of Blockchain Technology
- Information Technology Studio
- Deloitte

Technologies for New and Mobile Energy Sources Center of Excellence, Institute of Problems of Chemical Physics of the Russian Academy of Sciences, Chernogolovka

Projects

New energy sources for mobile and transportation applications. Electrochemical, photovoltaic and bioelectrochemical power sources.

Fully electric unmanned aerial vehicles and ground vehicles. Aircraft for agriculture and forestry, automotive platform based on hydrogen fuel cells.

A system for refueling hydrogen vehicles. Using hydrogen as a fuel source will make it possible to increase the time of vehicle autonomy using electric propulsion.

Project training on individual educational trajectories. Development of educational courses, modules, organization of project-based and distance learning, workshops for schoolchildren, students, graduate students, employees and managers of enterprises.

Business partners

- InEnergy
- Electric Vehicle Tech
- Unmanned Systems
- Sarapul Radio Plant
- NPK Morsvyazavtomatica
- Vulya Design Office
- Intelligent Power Systems
- Central Institute of Aviation Motors

Up Great technology contests

Up Great technology contests are open engineering contests in a format that is new to Russia, in which teams are invited to find breakthrough solutions to the most complex technological problems on a global scale. The winner of the contests receives a large cash prize for demonstrating to the expert jury and the general public a clear and repeatable solution to the competition task.

The contests were initiated by RVC, the Skolkovo Foundation and ASI as part of the implementation of the National Technology Initiative. Their goal is to overcome significant technological barriers that impede the emergence of new products in promising NTI markets. The mechanics of the contests were developed in accordance with best practices in global technology contests: XPrize and the Darpa Grand Challenge.

In July 2018, the first three up Great technology contests in the field of driverless vehicles and hydrogen power officially started with a prize fund of RUB 375 million. More than 40 applications from engineering teams from across Russia were submitted to take part in the Winter City, First Element: Earth and First Element: Air competitions. The final contests trials will be held in 2019. Partners for the Up Great contests include Yandex, Sberbank of Russia, KIAT and NAMI.

Key indicators

2
active series of Up Great contests in the field of autonomous transport and hydrogen energy

Over 40
applications from engineering teams from all over Russia

Up to RUB 200 mln
in prizes for each contests

Technology contests are another tool for engaging talented individuals in the National Technology Initiative. The winners will be able to form teams united by the highly complex tasks of overcoming technological barriers that will result in the promotion of their solutions in the global market. Contests will make it possible to attract much more investment in development than the amount spent on prizes.

Dmitry Peskov,
special representative of the President of the Russian Federation on digital and technological development

The requirements for the procedure of organizing and conducting NTI technological contests and the rules for granting subsidies from the federal budget for the needs of the project are stipulated in Decree No. 403 of the Government of the Russian Federation of 3 April 2018. The functions of the operator of NTI technological contests are performed by RVC.

Winter City

The Winter City contests is aimed at creating an autonomous vehicle capable of driving in extreme climatic conditions in cities, without visible road markings, with poor visibility on the roadway and in the presence of other traffic. That said, speed and safety should be similar to that of the average driver.

Under the terms of the competition, within the framework of the final trials, the vehicle must travel autonomously to checkpoints on a track 50 km in length in less than three hours, independently plotting the route while taking into account the presence of other vehicles on the track, observing traffic rules and not causing other participants to commit violations. Yandex is the technology partner for the competition. The prize fund for the competition amounts to RUB 175 million.

In total, more than 30 applications were submitted from engineering teams, commercial companies and universities from all over Russia, and 13 teams participated in qualifying trials at the NAMI track in the Moscow Oblast. Based on the results of the qualifying trials, five teams advanced to the competition finals:

- Nizhny Novgorod State Technical University
- BaseTracK (Moscow)
- Winter City MADI (Moscow Automobile and Road Construction State Technical University)
- StarLine (St. Petersburg)
- AUTO-RTK (a joint team from the Bortovye intellektualnye sistemy Scientific Design Office for Computer Systems and Companies from Taganrog, Southern Federal University and Southwest State University)

The final trials of the Winter City competition will be held in December 2019.

According to Frost & Sullivan, the mass commercialization of driverless vehicles will begin after 2025. By that time, sales of cars equipped with autonomous driving systems will exceed 40% of the global market for new cars. The market for driverless vehicles will increase from the current USD 1.3 billion to USD 84 billion, and sales of autonomous cars in absolute terms will reach 36 million units.

First Element: Air and First Element: Earth

The purpose of these contests is to overcome global technological barriers in the promising segment of hydrogen fuel cells. It is assumed that this barrier can be overcome both in the air and on the ground. Contestants will create power-generating systems for hydrogen fuel cells for vehicles that are comparable in efficiency to traditional energy sources. The competition objectives were developed with the support of the Institute of Problems of Chemical Physics of the Russian Academy of Sciences

The participants in the First Element: Air competition are to develop environmentally friendly and energy-intensive hydrogen fuel cells that will significantly increase the time of operation of UAVs in the air. Drones can now fly continuously for half an hour on average. The objective of the competition is to create a battery with a capacity of 1.3 kW and a specific mass energy capacity of at least 700 Wh/kg, while its mass should not exceed 7 kg. Developers need to mount their power-generating system on a special multi-rotor platform, after which it must remain in the air for at least three hours in cyclic flight mode. The competition prize will amount to RUB 60 million.

The First Element: Earth competition is aimed at creating hydrogen fuel cells for medium-sized land vehicles and water-borne vessels: manned and unmanned motorcycles, automobiles and light boats. The capacity of the power-generating system should be at least 15 kW with a specific energy density of 500 Wh/L, and the volume should not exceed 150 litres. Competition participants will have to mount their power-generating system on the unmanned vehicle platform provided by the organizers and then take part in a race and stay on the track for at least three hours. The competition prize will amount to RUB 140 million.

Twelve teams submitted applications to participate in the First Element series of Up Great competitions. There are seven teams in the running to win the First Element: Air competition. Five more applications were submitted for the First Element: Earth competition. The finals of the First Element contests will be held in July 2019.

Overcoming this barrier will enable the technology to enter new markets. This is primarily about robots and quadcopters. Robotics is developing rapidly, and the energy intensity of the power sources for this industry is extremely important. As for quadcopters, the greater their energy intensity and the less their mass, the longer they will be able to fly. Quadcopters can be used to perform complex assignments, e.g., to solve the ‘last mile’ problem in logistics or to conduct cartographic surveys.

Yuri Dobrovolsky,
leader of the Up Great First Element competition, head of the NTI Center of Excellence for Technologies for New and Mobile Energy Sources at the Institute of Problems of Chemical Physics of the Russian Academy of Science

According to forecasts by Frost & Sullivan, global automakers will bring to market more than 20 new models with hydrogen engines by 2020. By 2030, the total sales of vehicles using hydrogen fuel will reach 583 thousand units per year.

NTI export accelerator

In 2018, RVC, in partnership with PWC, launched the National Technology Initiative Export Accelerator, a unique programme to prepare fast-growing technology companies to enter foreign markets. Participation in the programme gives Russian companies access to fast and efficient tools to promote products in Asian markets. The first accelerator season is focusing on projects in the IoT, AI and big data segments.

More than 60 companies submitted applications to take part in the NTI Export Accelerator. Of these, the 50 applicants that were admitted for further consideration received practical recommendations and structured, detailed feedback on eight assessment criteria: market, product, financial indicators, innovation, motivation, market representation, expertise and corporate culture.

Following an expert evaluation, 15 technology companies move on to the accelerator’s final stage: eight companies specialize in developing globally oriented products in the field of artificial intelligence, four work in the field of the IoT, and the other three work in the field of big data. The companies’ products correspond to the following NTI markets: NeuroNet (10 participants), AutoNet and EnergyNet (two participants each) and SafeNet (one participant). The average annual turnover of the finalists exceeds RUB 600 million. All the participants are focused on sales in Asian markets, especially China.

Accelerator participants have access to fast and efficient tools for developing strategies to reach promising Asian markets. They will be offered a comprehensive set of tools for entering international markets from development institutions that support foreign economic activity.

Around the world, export acceleration programmes are an effective tool for preparing companies to enter new markets, establish business contacts and search for new business partners. Our joint programme, developed on the basis of the experience of the PwC global network in export acceleration, will help Russian technology companies to prepare to enter Asian markets of interest to them as efficiently and quickly as possible.

Oleg Malyshev,
partner, head of transaction support practice at PWC

The following companies took part in the NTI Export Accelerator:

- Addreality, a platform for recognizing customers and managing personalized advertising campaigns at points of sale
- Brain Development, a digital learning system for neuropsychology research
- CDNvideo, a live streaming platform
- ChemRar, clinical research and pharmaceutical testing services
- Heedbook Cloud, a service for analyzing customer satisfaction with a company’s services
- Nanosemantics, voice and text chatbots for contact centers
- NTC, software for managing operations in the oil and gas industry
- Seldon, an information and analytical system for working with contracts and procurement
- Speechpro, development of client technology solutions in the field of speech recognition, biometric analysis and working with data
- Zyfra, a system for monitoring production in heavy industry
- Korus, a cloud-based service for forecasting retail demand and the performance of promotional campaigns
- ASD Tech, a cloud-based solution for storing large amounts of data
- Angara, technology for hydrogen-based cleaning of heat-exchange equipment
- RTSoft, systems for monitoring, forecasting and optimizing processes at energy companies
- Astrosoft, software development for IoT

The TechUp national rating of fast-growing Russian technology companies

The TechUp rating, which RVC has carried out every year since 2012, is aimed at finding, monitoring and promoting promising, fast-growing technology companies that have high potential for leadership in both Russian and global markets. Such companies, the so-called technological gazelles capable of creating fundamentally new technologies and forming new markets, play an important role in the development of the Russian economy. The criteria for the rating include companies' turnover dynamics, the rate of growth of certain indicators and the innovativeness of the products evaluated by the expert council.

Despite the demanding qualification criteria for participating companies, their numbers are increasing every year – there are currently more than 350 companies in the rating database. About 70% of the participants from the previous rating are successfully exporting and selling their products in markets in highly developed countries.

The TechUp rating solves the problem of finding the most successful technology companies and improving the business environment surrounding innovation. RVC interacts closely with all rating participants and provides them with comprehensive support within the NTI framework in terms of their investment activities, interaction with state corporations and development institutions

National Champions

The TechUp rating is the official tool for selecting companies for the Ministry of Economic Development and Trade's priority project "Support for Private High-Tech Leaders" (National Champions). The project supports companies with the potential to make major gains in domestic and foreign markets.

During the selection process, face-to-face expert sessions are held with companies that meet the criteria of the National Champions project that enable an assessment of the companies development potential in 5–10 years.

The selected participants will receive assistance in gaining access to existing government instruments. Leading companies will receive information and consulting support for their own projects in order to develop their operations both domestically and in global markets.

In 2018, the seventh annual TechUp rating had 129 participating companies with total revenue reaching RUB 207 billion.

The most successful participants are identified in the following categories:

- The top five large companies, with revenue from RUB 2 billion to RUB 30 billion
- The top five medium-sized companies, with revenue from RUB 800 million to RUB 2 billion
- The top five small companies, with revenue of up to RUB 800 million
- The top 15 fastest-growing companies in terms of revenue growth
- The top-15 innovative companies producing high-tech products, as well as the top-15 in terms of exports

Top-15 companies in 2018

Company	Geography	Industry
Large (revenue over RUB 2 bn)		
Biocad CJSC	St. Petersburg	Pharmaceutical industry
ELVEES JSC SPC	Moscow	Electronics and instrumentation
Azimut JSC	Moscow	Electronics and instrumentation
PRIMA LLC RP	Nizhny Novgorod Oblast	Electronics and instrumentation
Zavod Premiksov No. 1 CJSC	Belgorod Oblast	Biotechnologies
Medium-sized (revenue from RUB 800 mln to RUB 2 bn)		
Optic Fiber Systems JSC	Republic of Mordovia	Materials and chemicals
Speech Technology Center Grou	St. Petersburg	Information technologies
Laser Systems LLC RPE	St. Petersburg	Electronics and instrumentation
T8 LLC	Moscow	Electronics and instrumentation
Ishimbay Specialized Chemical Plant of Catalysts Ltd.	Republic of Bashkortostan	Materials and chemicals
Small (revenue up to RUB 800 mln)		
Georesonance LLC	Moscow	Engineering
RM Nanotech JSC	Vladimir Oblast	Materials and chemicals
TechnoSpark Group	Moscow	Materials and chemicals
Profotech JSC	Moscow	Energy
Bioamid JSC	Saratov Oblast	Biotech

In 2018, TechUp included 88 new companies, which was 68% of the total number of participants in the rating. At the same time, small high-tech companies showed steady growth: their percentage of the total number of companies taking part in the rating increased by 30% and accounted for more than 55% of the total number of participants. Companies in this segment have become the leaders in terms of the share of revenue earmarked for technological innovations, which has reached at least 30% over the past three years. The average expenditures of all rating participants on technological innovations during this period amounted to at least 10% of revenue.

According to an analysis of these companies, over the past five years, rating participants have brought to the Russian market at least one new or significantly improved product developed on the basis of their own or acquired R&D results. The average share of R&D expenditures in the period from 2015 to 2017 was at least 5% of revenue. In 2018, participating companies had existed for an average of 16 years, which indicates a gradual trend that has seen younger and younger companies entering the rating (the average age was 18 years in 2017 and 21 in 2016). Only a quarter of the rating companies are located in Moscow, with the remaining 75% of the participants from different regions of Russia: St. Petersburg (14%), Nizhny Novgorod (5%), Novosibirsk (5%), etc.

More than 70% of companies participating in the rating export their products to foreign markets (the average share of exports in terms of revenue among large companies is 9%; medium-sized companies, 18%; and among small companies, it is 11%). The main export destinations are the countries of the former Soviet Union, with 69% of exporters supplying those markets. In the next five years, 26% of companies that did not export their products in 2017 are going to enter world markets.

TechUp companies as a whole are rapidly developing various promising NTI technologies. Most companies (70%) are working in the segment of new production technologies, 44% are working in wireless communication technologies and the IoT, and 43% are working in the area of big data. The most promising NTI markets for participants are EnergyNet (42%), HealthNet and MariNet (41%).

TechUp's annual rating has become an effective tool for finding potential leaders in the domestic technology industry. RVC interacts with rating participants, helping them build relationships with reputable research centers, large Russian corporations and development institutions. The percentage of companies founded after the 2008 crisis is increasing in the rating every year. This generational shift increases the chances of success among Russian businesses in competition with world leaders.

Mikhail Antonov,
Deputy CEO and Director for Innovative Infrastructure Development, RVC

Top 15 companies in terms of growth

No	Company	Geography	Industry
1	TermoLazer LLC	Vladimir Oblast	Industrial equipment
2	Optic Fiber Systems JSC	Republic of Mordovia	Materials and chemicals
3	Chislovaya mekhanika JSC	Moscow	Information technologies
4	Georesonance LLC	Moscow	Engineering
5	Tion Umnyi mikroklimat JSC	Novosibirsk Oblast	Engineering
6	SPUTNIX LLC	Moscow	Electronics and instrumentation
7	Tatneft-Presscomposite LLC	Republic of Tatarstan	Materials and chemicals
8	NPO GELAR LLC	Krasnoyarsk Krai	Materials and chemicals
9	LABSOLUT LLC	Moscow	Electronics and instrumentation
10	Center for Marine Research, Lomonosov Moscow State University	Moscow	Engineering
11	RM Nanotech JSC	Vladimir Oblast	Materials and chemicals
12	QuadroCom Group	Moscow	Materials and chemicals
13	Seldon Group	Moscow	Information technologies
14	SPLIT LLC	Moscow	Engineering
15	Metsbytservis LLC	Moscow	Energy

Top 15 innovative companies

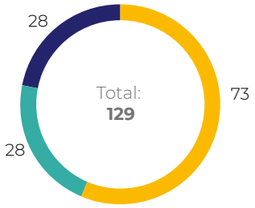
No	Company	Geography	Industry
1	Georesonance LLC	Moscow	Engineering
2	TechnoSpark Group	Moscow	Materials and chemicals
3	SuperOx CJSC	Moscow	Energy
4	T8 LLC	Moscow	Electronics and instrumentation
5	Aerob LLC	Moscow	Electronics and instrumentation
6	ELVEES JSC SPC	Moscow	Electronics and instrumentation
7	LEMZ-T LLC	Tomsk Oblast	Electronics and instrumentation
8	Laser Systems LLC RPE	St. Petersburg	Electronics and instrumentation
9	Engineering and Design Center Kontinuum CJSC	Yaroslavl Oblast	Consumer goods
10	SPUTNIX LLC	Moscow	Electronics and instrumentation
11	RPC Magnetic Hydrodynamics LLC	Krasnoyarsk Krai	Engineering
12	SPC Polus JSC	Tomsk Oblast	Electronics and instrumentation
13	SPLIT LLC	Moscow	Engineering
14	Advanced Technologies Center Group	Moscow	Electronics and instrumentation
15	PRIMA LLC RPE	Nizhny Novgorod Oblast	Electronics and instrumentation

Top 15 exporting companies

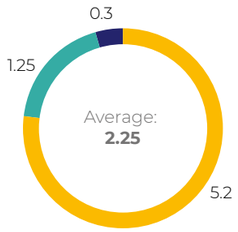
No	Company	Geography	Industry
1	RMT Ltd.	Nizhny Novgorod Oblast	Electronics and instrumentation
2	SKTB Katalizator JSC	Novosibirsk Oblast	Materials, chemicals
3	Optic Fiber Systems JSC	Republic of Mordovia	Materials and chemicals
4	Astrosoft International LLC	St. Petersburg	Information technologies
5	Bioamid JSC	Saratov Oblast	Biotech
6	PROTON-ELECTROTEX JSC	Orel Oblast	Electronics and instrumentation
7	ARGUS SPECTRUM LLC	St. Petersburg	Electronics and instrumentation
8	RM Nanotech JSC	Vladimir Oblast	Materials and chemicals
9	TONK Group LLC	Moscow	Information technologies
10	First Line Software (F-Line Software LLC)	St. Petersburg	Information technologies
11	Rubius Group LLC	Tomsk Oblast	Information technologies
12	Nordinkraft LLC	Vologda Oblast	Industrial equipment
13	CSort LLC	Altai Krai	Engineering
14	SimbirSoft LLC	Ulyanovsk Oblast	Information technologies
15	PRIMA LLC RPE	Nizhny Novgorod Oblast	Electronics and instrumentation

Portrait of Participants in 2018 TechUp Rating

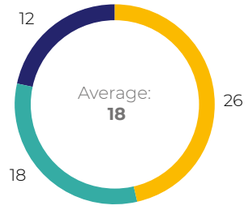
Number of companies rated



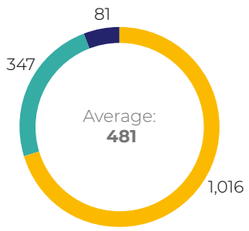
Annual revenue (RUB bn)



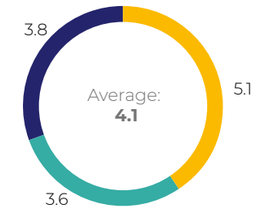
Company age (years)



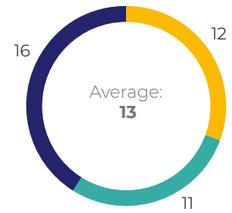
Number of employees



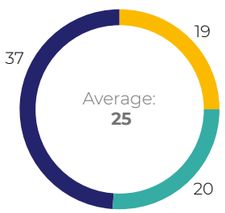
Revenue per employee (RUB mln)



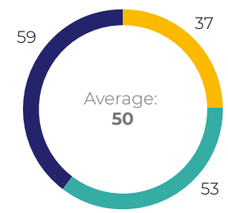
Average share of expenditures spent on R&D (%)



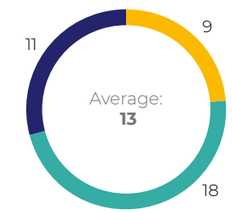
Average share of expenditures spent on innovation (%)



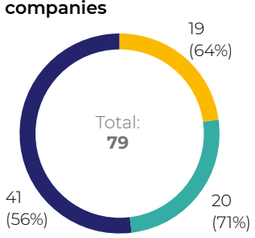
Revenue from newproduction (%)



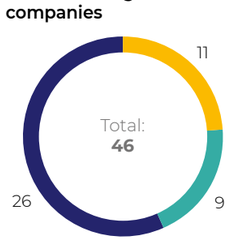
Share of exports (%)



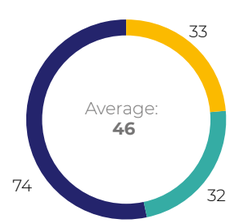
Number of exporting companies



Number of regional companies



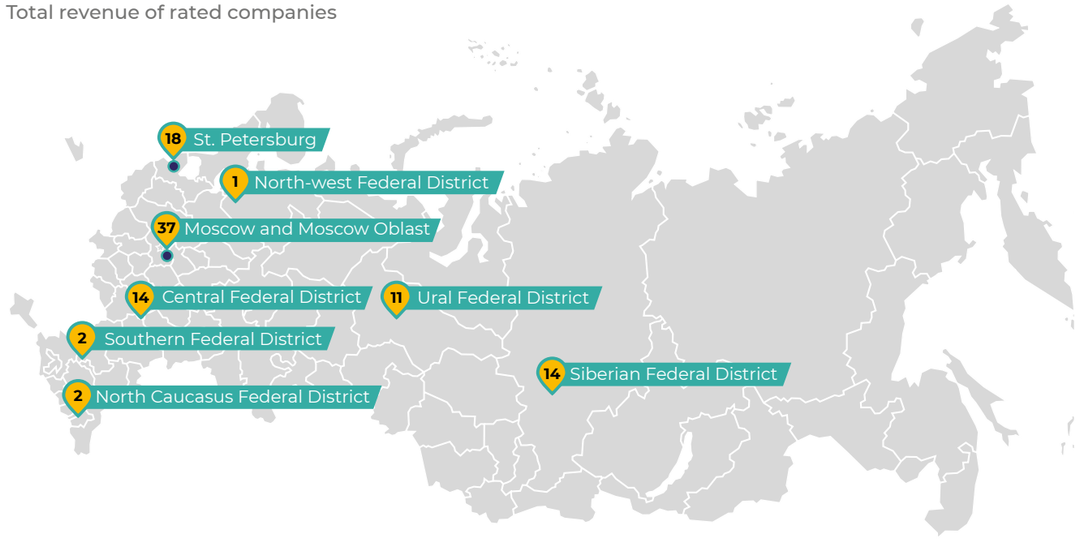
Growth rate (%)



Large companies Medium-sized companies Small companies

Number of companies by federal subject

RUB 207 bn
Total revenue of rated companies



Main indicators by industry

	Biotechnologies, pharmaceuticals, medical equipment	Machine-building, industrial equipment, electronics and instrumentation, engineering	Information technologies	Oil and gas equipment and energy	Materials and chemicals
Number of companies	14	58	26	16	17
Average annual revenue growth (%)	31	56	55	51	76
Revenue for 2017 (RUB bn)	49	81	32	23	18
Share of expenditures spent on R&D (%)	8	22	30	13	9
Share of expenditures spent on technological innovation (%)	8	8	8	8	8

Education

In 2018, the NTI Contest started taking applications for the first time for the student track.

NTI Contest

The NTI Contest is a unique format of engineering contests for students in grades 7–11. Since 2015, the contest has been organized by RVC, the NTI Club Movement and ASI in partnership with leading engineering universities and technology companies.

In the 2018/2019 academic year, more than 38 thousand Russian schoolchildren from 430 Russian cities took part in the NTI Contest. Competitions are held in 19 specializations (driverless vehicles, intelligent energy, small space technology, neuro- and biotechnology, robotics, etc.) that correspond to the sectoral priorities of the National Technology Initiative. The winners of 13 of the 19 specializations receive 100 points on their uniform state exams in physics, mathematics, biology, chemistry, computer science or geography when they enter leading engineering universities.

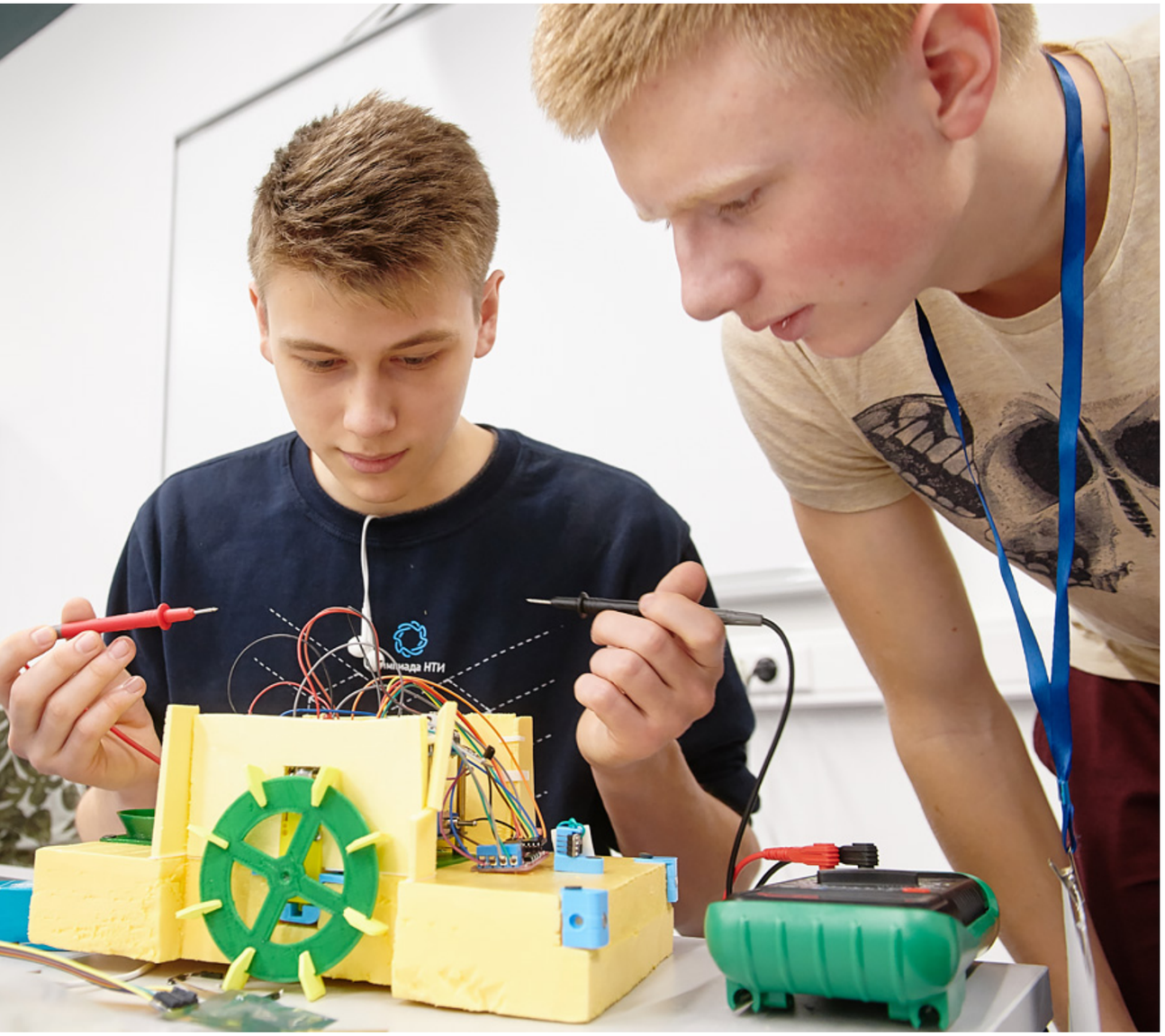
This seasoncompetitions in various specializations are being organized at sites in 10 cities. Finals are held in a hackathon format: participants must find the best solution to a technological problem, for example, an optimal data processing algorithm or the technology for obtaining material with specified properties. The tasks for the schoolchildren have traditionally been assigned by representatives of engineering universities and technology companies: NTI Contest partners include the Rusnano Fund for Infrastructure and Educational Programmes, Aeroflot, the Moscow Institute of Physics and Technology, MTS, ITMO University, the Moscow Aviation Institute, Far Eastern Federal University, Bauman Moscow State Technical University, Innopolis University, Moscow Polytechnic University, Tomsk Polytechnic University and Peter the Great St. Petersburg Polytechnic University.

In 2018, the organizers of the NTI Contest decided to open up an additional track for students. The winners of the student track will be able to enrol in master's programmes for free at five universities in Moscow (Skolkovo Institute of Science and Technology), St. Petersburg (ITMO), Tomsk (Tomsk Polytechnic University), Kazan (Innopolis) and Vladivostok (Far Eastern Federal University). In addition to studying in a master's programme, students will have an opportunity to take part in internships in the laboratories of specialized developers, summer design schools and the offices of partner corporations.

University students compete in six fields, including aerospace systems, virtual and augmented reality, intelligent robotic systems, applied artificial intelligence, wireless communication technologies and smart cities. The organizers did not set an age limit, and the track will be available to students in any area of specialization.

The Club Movement is the NTI's main long-term bet. It is the current generation of club members that will provide Russia with technological leadership in a globalized world. The goal for 2019 is to engage 100,000 talented individuals in the Club Movement. In 2018, the NTI Contest reached a milestone: some 38,349 schoolchildren from 85 regions registered for the qualifying round, which was more than the total for all previous years combined! the Mentor Academy project is developing at a steady pace: 12 schools have already been held with 1,500 participants, and more than 12,000 people have completed the first online courses. They launched a series of project schools called 'Practices of the Future', where children and adults develop projects together in current areas of NTI interest. We have big plans for 2019: the RUKAMI project will get under way – outstanding festivals will be held in 10 cities around the country to popularize technological creativity. We are preparing to launch a digital platform called 'Talent', with the help of which Club Movement members will be able to create their own personal development trajectories. The purpose of the Club Movement is to make the Russian community of technology enthusiasts a magnet for talented individuals from around the world, thus bringing them closer to large international projects.

Dmitry Zemtsov,
leader of the NTI Club Movement working group



NTI Lessons

In September 2018, the NTI Lessons initiative was launched at 1,800 Russian schools in 412 cities. The lessons are designed for students in grades 8-11. The programme includes materials that explain to high school students what the National Technology Initiative is, the challenges it faces and the types of experts who will be required by NTI markets.

Six lesson scenarios have been developed that correspond to the following NTI areas: human beings, information, infrastructure, technology, production and the environment. In the area of human beings, for example, schoolchildren can learn about bionic technologies, genome editing and preventive medicine. In the area of information, they can learn about blockchain, big data, artificial intelligence and quantum technologies. In technology lessons, teachers talk about the development of driverless vehicles and machine vision. Teachers will be able to choose and offer students tasks similar to those solved by students in different NTI Contest specializations. Innovation engineers, businesspeople and young inventors help teachers deliver lessons by means of short interviews that are included in the lesson materials.

NTI University 20.35

NTI University 20.35 was established in November 2017. This is the first university in Russia that provides for professional development in the digital economy. The university is focused on training company leaders, NTI participants and specialists working in new global markets.

The university's objectives up until 2025:

- Training specialists for the implementation of NTI road maps (15,000 people)
- Training teams of chief data officers for regional and federal authorities (30,000 people)

NTI University 20.35 is a new format of education, where the modules that a student needs are individually assembled in various educational institutions with the strongest courses. It is this approach that allows us to call the university a network project. The new format enables us to concentrate the best developments from institutions, universities, the Federal Agency for Scientific Organizations, corporate academies, production facilities and even individual specialists in one platform. The programme takes into account students' current skill level when suggesting the optimal selection of courses. Both full-time and part-time training are available.

NTI University 20.35 launched full-scale educational operations in 2018: it conducted an intensive two-week course and prepared and launched courses and educational modules for participants in NTI markets and for civil servants

- About 100 trainees participated in the first edition for NeuroNet
- In the second edition, 35 teams were trained for NeuroNet
- More than 1,000 people took part in the Island 10-21 workshop

The Island 10–21 workshop was the best event of the year. This is the most complex, but also the most important event in terms of contacts between talented young individuals and NTI participants.

Instead of a diploma for graduating from NTI University 20.35, a digital competency profile (DCP) will be created that reflects actual achievements. The creation of a competency profile as a new form of validation of learning outcomes is incorporated into the Digital Economy programme. It is expected that, by 2020, 20% of students will be using a DCP, and there will be more than 300 thousand graduates of the vocational education system per year with basic digital economy skills.

RVC has provided expert and analytical support for the formation of NTI University 20.35, including:

- creating a regulatory framework for university activities;
- fine-tuning of the educational process, in terms of both content and organization (transition from vertical teaching formats to horizontal ones, solidifying the formats for work involving cooperation between students).

Island 10-21:

1,000+
trainees

1,000+
educational events

250+
experts and trainers

30,000
interested individuals

8,000
specialized participants

71
regions

14–61
participants ranging from 14 to 61 years of age

100
"young talents"

194
participants from various regions concerning the role of chief data officer

Specialized department of RVC at the Moscow Institute of Physics and Technology, called Management of Technology Projects

RVC specialized department of Technology Management has been in operation at the Faculty of Innovation and High Technology in MIPT since 2011.

Over the past eight years, the department has been training specialists capable of managing R&D projects, creating and promoting new products and technologies and launching their own high-tech businesses. The department offers master's programmes for students of bachelor's and specialized programmes in engineering or computer, technical and natural sciences; the programmes also enable students to supplement their studies with business training. The main companies looking to hire department graduates are venture funds and technology companies. The department's graduates become analysts, investment managers at venture funds, technology brokers, heads of services in high-tech companies and create their own innovative enterprises.

Since 2012, the Department has been running a Master's Programme in Venture Investments and Technology Entrepreneurship, which has established itself as an effective source of talent for the venture capital market. During their studies, students learn skills that they can apply in the fields of management, economics and finance, and they discover how to turn a scientific idea into a technology, how to turn a technology into a product, and how to turn that product into something that can be marketed. During their studies, students take part in internships in venture capital funds, technology start-ups and companies focused on innovation both in Russia and abroad. Graduates of the master's programme work in venture funds and technology companies, implement and develop technological innovations, and establish and play key roles in technological start-ups.

In 2018, the department launched a new Master's Programme in Project Management in the Field of Artificial Intelligence Technologies at MIPT to meet the NTI's objectives in the field of artificial intelligence. The programme is implemented in conjunction with the Department of Intelligent Systems at MIPT and the NTI laboratories at MIPT (the Laboratory for Neural Systems and Deep Learning (iPavlov project) and the MIPT-Sberbank Laboratory for Applied Research). The programme is designed for graduates with undergraduate technical specializations who have an idea for a product or a ready-made business project that can be implemented using technologies based on iPavlov, an open platform for developing conversational artificial intelligence, and MIPT-Sberbank technologies. In the process of learning under the guidance of scientific leaders, students can create their own start-up, i.e., develop a product and prepare it for commercialization. In 2018, international internships were organized for RVC students at the venture funds MindRock Capital (USA), Pix Vine Capital (Singapore) and IncuVest Pte Ltd (Singapore). At the moment, there are a total of 114 students who are either enrolled in, or have graduated from, the two master's programmes run by the RVC department: Venture Investments and Technological Entrepreneurship and Project Management in the Field of Artificial Intelligence Technologies. In the near future, the RVC department plans to further expand its range of educational programmes with the aim of creating a network model educational programmes, including those aimed at fulfilling the NTI's objectives.

"Innovative Economics and Technological Entrepreneurship" interuniversity training course

In the 2018 academic year, a course called "Innovative Economics and Technological Entrepreneurship" appeared in Russian universities that was developed by RVC in cooperation with ITMO University and Lomonosov Moscow State University.

The course is designed for students and can be included as a compulsory or optional discipline. The educational programme is based on the elements of project training according to the Lean LaunchPad methodology, which was developed by a technology entrepreneur and lecturer at Stanford University, Steve Blank, and the course assumes that, if necessary, each university can adapt it to the specific features of a particular industry.

The course fulfils one of the most important objectives of modern engineering education: the development, among students of natural sciences and technical specializations, of entrepreneurial thinking, which is essential for graduates to meet the requirements of the current labour market.

The course is practical in nature. As part of the programme, students learn the process of developing high-tech products or services, organizing technology transfer activities and licensing, creating start-ups and implementing commercial R&D, mastering techniques for building a project team and developing an action plan to bring their product to market.

Licensing agreements on the introduction of the course into the curriculum have been concluded with 44 Russian universities, and two training sessions have been held for university lecturers who are conducting the training course. One hundred eight teachers from leading engineering universities have taken part in the training. The number of universities conducting the course is expected to reach 100 by 2020, and about 50 thousand students will be trained.

> A lot of people still think that it's impossible to teach entrepreneurship. And if it is possible, that it's something frivolous and that it can't be part of one's main programme at university. As a development institution, we are convinced that training in technology entrepreneurship is one of the most serious challenges facing the higher education system. Moreover, not only should there be technology entrepreneurship courses at the most advanced universities, but they should be widely available. These are the objectives we have set for ourselves: that, by 2020, tens of thousands of students will take our course every year.

Aleksey Gusev,
Director for Innovative Ecosystem Development RVC

Community development

Tech in Media

Every year, RVC organizes the Tech in Media National Competition in Innovative Journalism. The competition supports the activities of journalists and media involved in the coverage of innovation in Russia, attracts public attention to the venture capital industry and technological development in the country, raises the prestige of scientists and popularizes examples of the successful commercialization of scientific research.

Professional journalists from central and regional media – TV channels, radio stations, print and online media, as well as blogs – participate in the Tech in Media competition. The Tech in Media Expert Council includes industry experts, representatives of innovative companies and well-known journalists, and the jury includes representatives of the media community.

In 2018, the Tech in Media competition was organized in the following categories: “Venture Capital Business,” “Life Sciences,” “Hydrogen Energy” and “Technologies and Philanthropy.” The best works of journalism have traditionally been distributed in the following categories: publication in federal print media, regional print media, online media and best television or radio broadcast.

More than 600 journalists from 33 cities submitted applications for participation in the competition, and the winners shared a prize fund of RUB 2.2 million. Tech in Media partners in 2018 included GE Healthcare Life Sciences and the Rybakov Foundation.

The number of applications from journalists has increased fivefold over the eight years of the competition’s existence. This indicates that the competition is popular and that journalists are paying increasing attention to priority areas of technological development.

RVC supports the development of communities of technology entrepreneurs and enthusiasts and popularizes innovations, venture-capital businesses, scientific and technological developments and educational initiatives in the area of high technologies.

Over the last ten years, we have seen a breakthrough development in the biopharmaceutical industry. We are proud that our company, GE Healthcare Life Sciences, has made a significant contribution to this. We not only offer high-tech solutions to the market, but we have been a reliable partner for the world’s leading companies in the field of biopharmaceutical production for almost 30 years. We are very pleased to see how the state, academia and the pharmaceutical industry work in close cooperation for the benefit of patients in need of state-of-the-art treatment. This needs to be discussed in an open and honest way. In our opinion, the media play an especially important role in the dissemination and popularization of scientific knowledge and achievements in science and modern techniques for the treatment of major diseases. That’s why we consider it important to support scientific and innovative journalism, such as the Tech in Media competition.

Andrei Demurin,
CEO, GE Healthcare Life Sciences in Russia/CIS

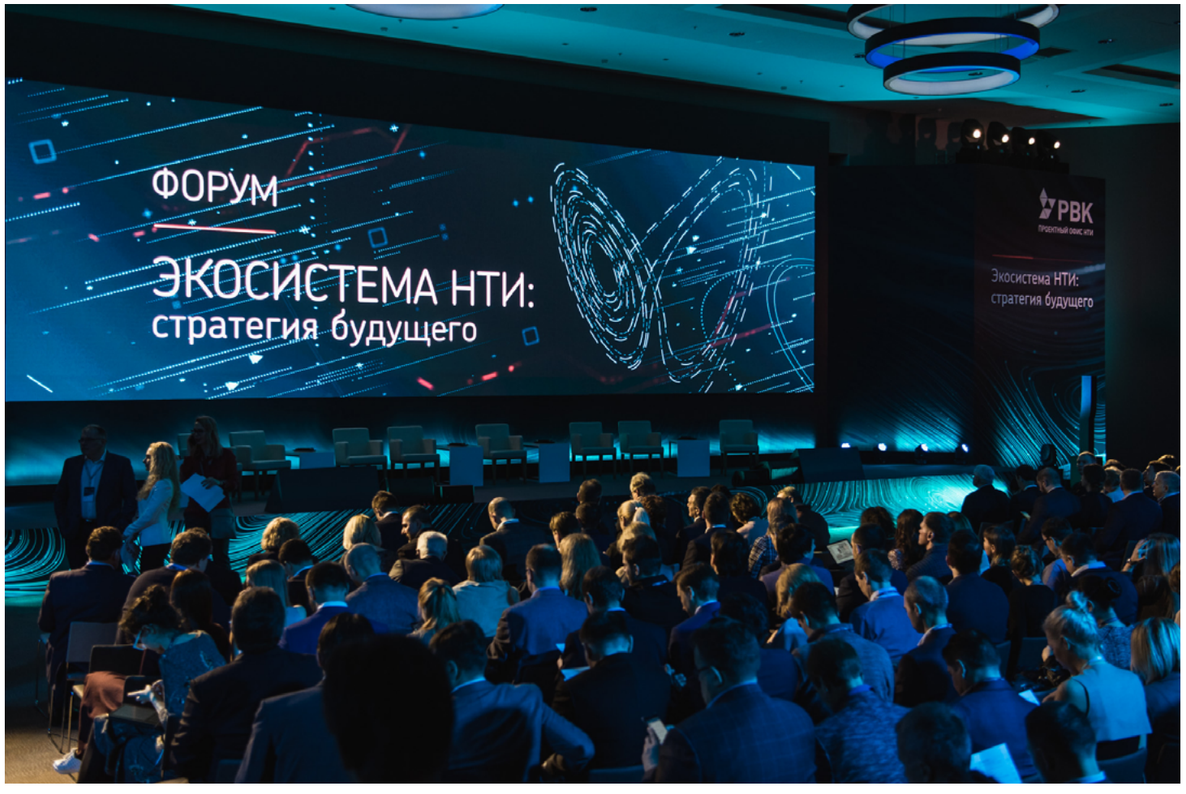
NTI Ecosystem: Strategy of the Future forum

In December 2018, RVC held the first-ever NTI Ecosystem: Strategy of the Future forum in Sochi, bringing together about 500 members of the National Technology Initiative community to sum up the year, develop new initiatives and coordinate joint plans for 2019–2020.

The forum gathered together in one place for the first time representatives of government agencies, development institutions, commercial companies and scientific organizations involved in the implementation of the NTI. An open two-day dialogue made it possible to develop key areas for the development of the NTI in the medium term.

Areas of forum expertise

- NTI road maps and regulatory road maps
- The NTI platform
- Financial instruments supporting NTI projects
- NTI centers of excellence
- NTI infrastructure centers
- New education formats
- Work with talented individuals
- The NTI Export Accelerator



Communication Laboratory

RVC's Communication Laboratory, an educational networking project, is designed to strengthen ties in the following information ecosystem chains: science – education – media – public and science – business.

In June 2018, with the support of the RVC Communication Laboratory, the second Russian Forum of Scientific Communicators was held, during which topical issues were discussed concerning interaction between business and scientists, communication between the academic community and government agencies, and the social responsibility of communicators. More than 200 representatives of universities, research institutes, business and development institutions took part in the discussions. A ceremony was held to give out Communication Laboratory Awards. The winners included communication specialists and teams of scientific and educational organizations that demonstrated outstanding achievements in ensuring dialogue between the scientific sphere and society.

Project goal

The development of common standards for the exchange of information between the research community, the media and the general public, as well as the identification of a new class of specialists: science communicators.

Project mission

- To determine the state of scientific communication in Russia and its priorities for development
- To initiate a dialogue between representatives of the scientific community and the public through the media in order to overcome barriers in communication between them

Open Innovations forum

In 2018, RVC co-organized the Open Innovations forum, the largest event in Russia that demonstrates the latest trends and achievements in terms of the innovative development of the economy. Within the framework of Open Innovations in 2018, RVC held business sessions devoted to the National Technology Initiative, the development of the venture capital industry, and issues related to cooperation between science, universities and businesses in order to create breakthrough technologies.

RVC also organized the third Investing in Innovations Russian-Chinese Forum. Representatives of the largest venture funds and corporations in China discussed prospects for cooperation with Russian partners, and Russian entrepreneurs presented their projects to potential investors from China.

For the first time, an NTI booth was presented at the forum, where lectures and discussions on future technologies, an NTI open lesson and discussions of technology ethics took place.

RVC projects won the following awards in 2018

Event of the Year annual national industry award for special events

- Educational Event of the Year for the project "2018 NTI Contest Finals"
- Finalist for the Best PR Campaign Event for the Project "2018 NTI Contest Finals"
- Finalist for the Expo Event of the Year for the project "Individual RVC Exhibition in the Framework of the 2018 Open Innovations Forum

Silver Archer national award for public relations

- Winner for Promoting Future Technologies for the project "Tech in Media National Contest for Innovative Journalism"

PROBA ICCO Global PR Awards International competition for developing public relations

- Winner in the "Social Project" category for the project "Promotion of the NTI Contest"

GenerationS

05

Corporate accelerators

GenerationS is a federal platform for developing corporate acceleration tools. The main function of GenerationS is to accelerate projects in the interests of corporate investors. GenerationS solves problems related to the targeted scouting of projects and technologies for industrial partners and supports the development of corporate competencies in terms of working with open-innovation projects.

15,000+
start-ups

150+
corporate partners

70%
of start-ups
become successful following an acceleration programme

250+
ecosystem partners

GenerationS engages both federal and regional representatives of the innovation industry, i.e., state corporations, large and medium-sized private businesses, technology entrepreneurs, scientific and academic organizations, technology parks and business incubators. GenerationS participants receive ample opportunities to develop their business and to find investors; they also gain access to the resources and infrastructure of the accelerator's partners.

In April 2018, specialized corporate accelerators were created on the GenerationS platform aimed at introducing innovations to large Russian and foreign companies. Under the new format, corporations establish their own individual selection criteria, and the GenerationS team establishes a programme for the development of projects and approaches to their business integration.

Together with GenerationS, we launched our own Fintech accelerator this year. This is a major joint initiative that takes our partnership to a new level. This is a great opportunity for the Bank to find innovative solutions and to work together to refine them, so that they can be easily embedded within our business processes and client scenarios.

Olga Dergunova,
Deputy President and Chairman of the Management Board of VTB Bank

In 2018, the following corporate customers took part in the new format acceleration programes:

Alrosa

265 teams from 56 cities in Russia, Kazakhstan, Latvia, Germany, Canada and the United States submitted applications to take part in the selection of technology start-ups for Alrosa. The five teams that made it through the competitive selection procedure will have an opportunity to develop proposals to integrate their product within the corporation and to find funding.

VTB Bank

190 applications were received from Russia, the CIS and Europe, 12 of which were selected by VTB Bank for continued cooperation.

During its five years of operations, GenerationS has accumulated extensive experience in working with corporate innovations in both Russian and international markets – accelerator participants have attracted more than RUB 2.5 billion and concluded over 100 deals with corporations. We are grateful for the high opinion of the experts and are especially proud that a Russian accelerator has become a part of the international community.

Ekaterina Petrova,
Managing Director of the GenerationS

The GenerationS corporate accelerator has been recognized as the best in Europe

The GenerationS corporate accelerator was named the Best Corporate Accelerator at the Corporate Startup Summit 2018.

The Corporate Startup Summit sheds light on corporate innovations, the development and commercialization of new technologies and the creation of new tools for international cooperation in the field of innovation. More than 150 international experts, corporate representatives and technology entrepreneurs take part in it every year.

Unilever

Of the 190 projects that applied for participation, 11 were selected. They have ahead of them a three-month development programme, as well as pilot trials of their technological solutions in real business processes.

Ilim Group

Some 170 start-ups from all over the world submitted projects. The list of finalists includes 33 teams from Russia, Canada, the United States, Georgia, Finland and Sweden, among other countries. Individual work on developing each project's business case and partnership format will continue.

Michelin

More than 190 project teams from 54 cities in Russia and the CIS countries applied for participation. The company is considering the possibility of cooperation with two start-ups that took part in the acceleration programme.

Airbus

214 start-ups from 50 cities in Russia, Belarus, Ukraine, Germany, the Czech Republic and Switzerland applied for participation in the Airbus Bizlab acceleration programme. Reynolds, a Russian start-up, was selected as one of the 15 best start-ups from all around the world and completed a six-month acceleration programme in France.

GenerationS regional franchising

RVC faces the challenge of developing innovative projects outside Moscow and St Petersburg, including in the interests of the NTI. In order to meet this challenge, the Company launched a regional franchising programme for the GenerationS corporate accelerator in October 2018. The first pilot regions for franchises were the Republic of Bashkortostan and North Ossetia-Alania. Under the terms of the agreements that were signed, partners that were granted the status of official GenerationS representatives are to develop acceleration mechanisms using RVC's methodology and to help local start-ups finalize projects.

GenerationS on a global scale

To enhance the international status of GenerationS, partnerships are being systematically established with foreign corporations, state agencies, infrastructure facilities and venture funds. In 2018, the international corporations Michelin and Airbus became clients of GenerationS. Project finalists are presented annually at a number of events, including the Singapore Week of Innovation & TeCHnology (SWITCH), SLUSH, Hannover Messe, the Germany Startup Tour and VIVA Technology. Project finalists take part in internships to immerse themselves in the innovation infrastructure in Silicon Valley, Germany and France. #GENSTalks start-up selection events were held abroad for the first time, in Uzbekistan, Belarus and Finland. The share of foreign projects in corporate accelerators ranges from 10% to 70%.

In 2018, GenerationS became the first Russian accelerator to be included in the Global Accelerator Network (GAN) created by Techstars.

The Global Accelerator Network is an independent global association that brings together the largest accelerators from all around the world. The network includes more than 90 accelerators from over 30 countries, and they have now been joined by an accelerator from Russia. The GAN community also includes about 10,000 start-ups, 85% of which became successful following acceleration programmes. GAN's corporate partners include Amazon, Cisco, American Airlines, IBM, Land Rover, Microsoft, Michelin, Mastercard, Universal Music Group and others.

Collaboration with GAN opens up wide-ranging opportunities for participants. GenerationS will get access to best international practices in terms of running acceleration programmes, an opportunity to engage technology start-ups from other countries and assistance in bringing Russian developers to new markets.

In 2018, RVC also established partnerships with the University of Bologna's incubator, Almacube, and with the start-up accelerator DAR Lab from Kazakhstan.

GenerationS and Almacube agreed to exchange technological innovations for the development of technology in Russia and Italy. The purpose of cooperation is to strengthen the links between the Russian and Italian innovation ecosystems: start-ups, corporations, experts; exchange of information on technological trends in both countries; and the participation of start-ups in acceleration programmes. The agreement is designed to improve the quality of projects entering the Russian innovative market and to accelerate their further scaling.

> The participation of GenerationS in GAN is a sign of the international community's recognition of a Russian accelerator. The association includes accelerators from countries with fast-growing economies – the United States, Canada, Japan, China, Australia and various European countries. Through cooperation with them, we will be able to attract foreign investment in Russia, and we will show foreign innovations to Russian corporations.
>
> **Ekaterina Petrova,**
> Managing Director of the GenerationS

Based on an analysis of the projects that took part in the competition, the expert jury, consisting of leading experts on open innovation, recognized GenerationS as one of the top performers based on its methodology and progress, as well as the cases of its corporate customers and start-ups.

Corporate governance

Overview of corporate governance

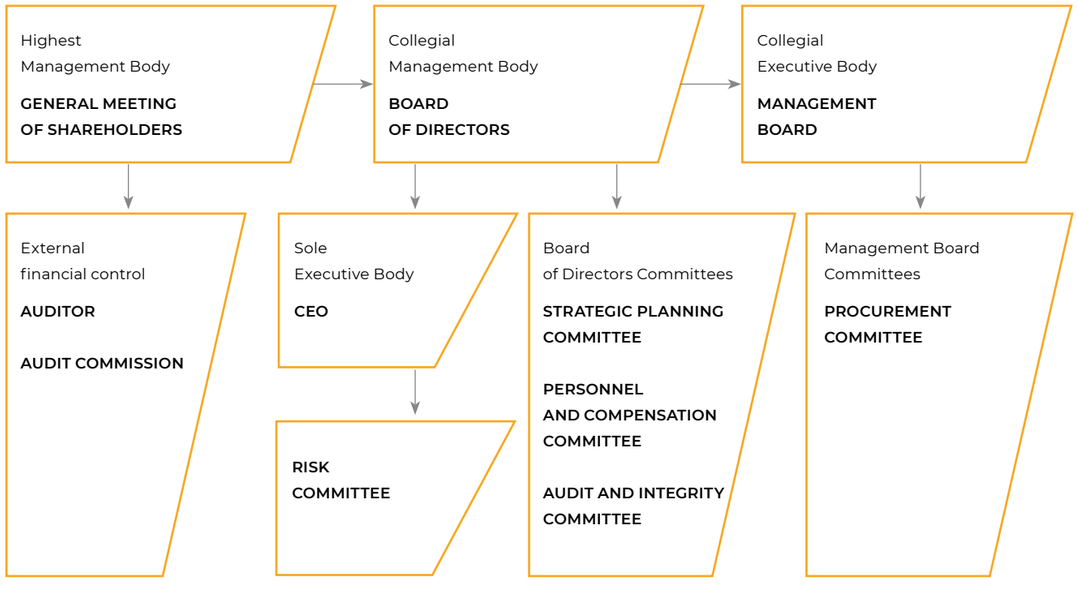
RVC is a state innovation-driven development institution, a fund of funds that performs the functions of the Project Office of the National Technology Initiative (NTI). A wide range of challenges and a variety of activities have a great impact on corporate governance, which plays an important role in ensuring the effective implementation of RVC's strategic goals.

The Russian Federation is RVC's sole shareholder. Shareholder rights on behalf of the Russian Federation are exercised by the Federal Property Management Agency (Rosimushchestvo). In order to have a synergistic impact on the development of Russia's innovation infrastructure and the venture capital industry, the composition of the Board of Directors includes representatives of other Russian development institutions.

RVC's corporate governance is based on the requirements of Russian legislation and Rosimushchestvo's recommendations, and it follows the recommendations of the Bank of Russia's Corporate Governance Code.

RVC is a non-public company, with the highest standards of corporate governance. In 2018, RVC continued its work aimed at increasing transparency and developing information disclosure practices, improving the regulatory framework and improving the performance of risk management and internal control systems, etc.

Corporate governance system



General Meeting of Shareholders

RVC's highest management body is the General Meeting of Shareholders, whose remit includes decisions on key issues, including approval of the Charter, approval of material transactions and the election of the Board of Directors and the collegial and sole executive bodies.

Board of Directors

RVC's Board of Directors is a collegial management body that determines RVC's priority areas of activity and its development strategy, sets the overall direction for RVC's operations (except for issues that fall within the remit of the General Meeting of Shareholders) and supervises the work of the Management Board and of RVC's sole executive body.

Board Committees

For the purpose of preliminary analysis of materials and the preparation of recommendations on key issues, RVC's Board of Directors established the following committees: the Strategic Planning Committee, the Personnel and Compensation Committee and the Audit and Integrity Committee.

Board committees include not only members of the Board of Directors but also representatives of other development institutions, federal ministries and private business, as well as individuals from innovation and venture capital markets. This Board composition ensures that issues in all areas of RVC's activity are analysed in the most effective way possible, enabling the Board to identify optimal solutions that take into account coordination with other development institutions and market players. The committees are headed by members of RVC's Board of Directors.

Management Board

The Management Board is the executive body of RVC in charge of day-to-day operations, as well as strategic management and oversight of the activities of subsidiaries; it ensures the implementation of RVC's key strategic documents and decisions of the General Meeting of Shareholders and the Board of Directors. The Management Board's activities are governed by the Charter and the Regulation on the Management Board of RVC. RVC's Management Board reports to the Board of Directors and the General Meeting of Shareholders.

CEO

Alexander Povalko (elected by decision of an extraordinary General Meeting of Shareholders of 22 December 2016, Order No. 1046-r of Rosimushchestvo). RVC's CEO is elected by the General Meeting of Shareholders. The CEO's term of office is established by the General Meeting of Shareholders and shall not exceed three years.

Auditor

The accuracy of RVC's financial statements is verified by an external independent auditor approved by the General Meeting of Shareholders based on the results of an open tender (conducted in accordance with the legal requirements).

Audit Commission

The Audit Commission controls RVC's financial and economic activities in order to improve efficiency and protect the interests of shareholders. The Commission is elected by RVC's General Meeting of Shareholders.

General Meeting of Shareholders

In 2018, five General Meetings of Shareholders (one annual and four extraordinary) were held. In accordance with Federal Law No. 208-FZ on Joint-Stock Companies and RVC's Charter, the General Meeting of Shareholders adopted decisions on the following issues:

- Approval of the annual report, annual financial statements and the distribution of profits for 2017
- Election of the members of the Board of Directors, members of the Management Board, members of the Audit Commission, as well as payment of remuneration to members of the Board of Directors and the Audit Commission
- The auditor's approval of RVC's financial statements for 2019
- Consent for transactions in accordance with the requirements of applicable legislation and RVC's Charter
- Making amendments to RVC's Charter and approval of regulatory documents governing the activities of RVC's Audit Commission

100%
stock of RVC
belong to the Russian Federation as represented by Rosimushchestvo

Board of Directors

Formation of the Board of Directors

Members of the Board of Directors are elected by the General Meeting of Shareholders for a term until the subsequent Annual General Meeting of Shareholders. The Board of Directors must be made up of no fewer than five people.

The procedure for selecting candidates for the Board of Directors is determined by the sole shareholder, i.e., candidates are selected by a Rosimushchestvo commission. The Board of Directors includes individuals representing the interests of the Russian Federation (state-appointed directors and civil servants) and independent directors.

Independent directors are elected to the Board of Directors in the manner and in accordance with the criteria established by Decree No. 738 of the Government of the Russian Federation of 3 December 2004 on the Management of Federally Owned Shares of Joint-Stock Companies and the Use of the Russia Federation's Special Right to Participate in the Management of Open Joint-Stock Companies ('Golden Share').

RVC's Board of Directors in place as of the end of 2018 was elected at an extraordinary General Meeting of Shareholders on 9 September 2018 (Order No. 651-r of Rosimushchestvo) and included 11 people. Two of the members were independent directors, while the rest were representatives of the interests of the Russian Federation (three civil servants and six state-appointed directors).

The Chairman of the Board of Directors is elected by the members of the Board of Directors by simple majority and can be re-elected at any time.

Members of the Board of Directors do not own shares in RVC.

Board of Directors Report

In 2018, 18 meetings of the Board of Directors were held, 12 of which took place in the form of absentee voting. On average, there were four meetings per quarter, and a total of 115 issues were considered.

Agenda	Number of issues
Determination of the priority lines of RVC's business: approval of strategic documents, including investment activities, the Business Plan and budget, setting key performance indicators (KPIs)	7
Issues related to the creation of venture funds with RVC capital (in the form of investment partnerships)	9
Approval of RVC's bylaws	10
Issues proposed for consideration by Rosimushchestvo pursuant to instructions from the President of the Russian Federation and the Government of the Russian Federation	5
Issues related to the operations of venture funds created with RVC capital	19
Issues related reporting on RVC's operations, the fulfilment of KPIs, the work of the internal audit and risk management system, RVC's procurement activities, etc.	6
Issues related to preparations for the General Meeting of Shareholders	14
Issues related to the implementation of projects under the road maps on the part of the National Technology Initiative approved by Decree No. 317 of the Government of the Russian Federation of 18 April 2016	15
Issues related to the implementation of tasks concerning state support for NTI centers located at institutions of higher learning and within scientific organizations	4
Issues concerning the election of the Chairman of the Board of Directors and members of Board Committees	8
Other issues	18

Key resolutions adopted in 2018

1. Bylaws governing RVC's investment activities (the Regulation on RVC's Investment Activities and the Regulation on the Procedure for Selecting Management Companies to Manage RVC Funds (revision 2)).
2. Resolutions concerning the operations of funds created with RVC capital and also concerning the creation of four new funds (in the form of an investment partnership).
3. Resolutions aimed at achieving the objectives related to state support for the NTI centers located at institutions of higher learning and within academic organizations.
4. Resolutions to implement and finance NTI projects in accordance with NTI road maps.

Board of Directors

The composition of RVC's Board of Directors since 19 September 2018 (elected in accordance with Rosimushchestvo Order No. 651-r of 19 September 2018):

Alexander Auzan

Dean of the Faculty of Economics at Lomonosov Moscow State University, Doctor of Science (Economics), independent director

Sergey Gorkov

Deputy Minister of Economic Development of the Russian Federation;

Vasily Osmakov

Deputy Minister of Industry and Trade of the Russian Federation

Alexander Povalko

CEO of RVC

Evgeny Stolyarov

Head of Rosimushchestvo's Department of Property Affairs and the Privatization of Major Organizations

Yuri Udaltsov

Deputy Chairman of the Management Board, Rusnano MC LLC

Alexander Galitsky

Managing Partner of the Almaz Capital Partners venture capital fund

Igor Drozdov

Chairman of the Skolkovo Foundation's Management Board

Dmitry Peskov

Special Representative of the President of the Russian Federation on Digital and Technological Development

Sergey Polyakov

CEO of the Foundation for Assistance to Small Innovative Enterprises

Oleg Fomichev

Director for Strategic Planning and Development at Renova-Holding Rus LLC

The functions of the Chairman of RVC's Board of Directors are performed by Oleg Fomichev, Director for Strategic Planning and Development at Renova Holding Rus LLC.

The composition of RVC's Board of Directors in the first half of 2018 (from 31 January 2018 to 19 September 2018) consisted of nine people. At an extraordinary General Meeting of Shareholders held on 19 September 2018, Sergey Gorkov, Deputy Minister of Economic Development of the Russian Federation, and Evgeny Stolyarov, Head of Rosimushchestvo's Department of Property Affairs and the Privatization of Major Organizations, were also elected to the Board of Directors.

[1] Position as of the end of 2018

Information about the current composition of the Board of Directors and its members' CVs are available at: https://www.rvc.ru/en/about/governance/directors/

Board of Directors Committees

Strategic Planning Committee

The Strategic Planning Committee assists the Board of the Directors in preparing resolutions on the Company's strategic goals and priority lines of business, as well as preparing RVC's development strategy and annual Business Plans. The Committee also advises the Board of Directors on the adoption of resolutions on RVC's strategic development and on its assessment of RVC's performance in the long term.

Composition of the Strategic Planning Committee

Composition of the Committee as of the end of 2018 (elected by decision of RVC's Board of Directors of 23 October 2018, minutes No. 14)

Chairman of the Committee
Oleg Fomichev, Director for Strategic Planning and Development at Renova-Holding Rus LLC

Members of the Committee
- **Alexander Auzan**, Dean of the Faculty of Economics at Lomonosov Moscow State University, Doctor of Science (Economics), professor, member of RVC's Board of Directors, independent director
- **Alexey Basov**, Deputy CEO, Investment Director at RVC, member of RVC's Management Board
- **Alexander Galitsky**, Managing Partner at the Almaz Capital Partners venture capital fund
- **Pavel Gudkov**, Deputy CEO of the Foundation for Assistance to Small Innovative Enterprises
- **Andrey Ivashchenko**, Chairman of the Board of Directors at ChemRar High-Tech Center
- **Ekaterina Inozemtseva**, Vice President for Strategy and Investments at the Skolkovo Foundation
- **Evgeny Kovnir**, CEO of Digital Economy
- **Alexander Lupachev**, Director of Russia Partners
- **Dmitry Peskov**, Special Representative of the President
- of the Russian Federation on Digital and Technological Development
- **Oleg Teplov**, CEO of VEB Innovations
- **Oleg Khorokhordin**, Deputy Head of the Administrative Service of the Deputy Prime Minister of the Russian Federation
- **Artem Shadrin**, Director of the Strategic Development and Innovation Department at the Ministry of Economic Development of the Russian Federation

Activities of the Strategic Planning Committee in 2018

The Strategic Planning Committee held two in-person meetings in 2018, as well as one meeting in the form of a conference.

During the year, the Committee considered the following issues:
- RVC's Business Plan and budget for 2018 and for the 2019–2020 planning period;
- RVC's key performance indicators for 2018;
- issues related to the operations of the NTI Project Office;
- and other issues.

Personnel and Compensation of Committee

Composition of personnel Personnel and Compensation Committee assists the Board of Directors with the development of systems for staff incentivization (including for members of the Management Board) and bylaws describing the bonus system, as well as recommendations for amending the system.

Composition of the Committee
Composition of the Committee as of the end of 2018 (elected by decision of RVC's Board of Directors of 23 October 2018, minutes No. 14)

Chairman of the Committee
Alexander Auzan, Dean of the Faculty of Economics at Lomonosov Moscow State University, Doctor of Science (Economics), professor, independent director

Members of the Committee
- **Igor Drozdov**, Chairman of the Skolkovo Foundation's Management Board, member of RVC's Board of Directors
- **Alexander Lupachev**, Director of Russia Partners
- **Anton Storozhenko**, Partner at Spencer Stuart

Activities of the Personnel and Compensation Committee in 2018

In 2018, the Personnel and Compensation Committee held two meetings: one in-person meeting and one in the form of absentee voting.

The following issues were considered at the meetings:
- the remuneration system for RVC's Board of Directors;
- the bonus system for RVC employees.

Composition of the Audit and Integrity Committee

Composition of the Committee as of the end of 2018 (elected by decision of RVC's Board of Directors of 23 October 2018, minutes No. 14)

Chairman of the Committee
Yuri Udaltsov, Deputy Chairman of the Management Board, Rusnano MC LLC, member of RVC's Board of Directors

Members of the Committee
- **Sergey Borisov**, Chairman of the Board of Trustees of OPORA RUSSIA
- **Sergey Polyakov**, CEO of the Foundation for Assistance to Small Innovative Enterprises, member of RVC's Board of Directors

Activities of the Audit and Integrity Committee in 2018

In 2018, the Audit and Integrity Committee held three meetings in the form of absentee voting.

During the year, the Committee considered the following issues:
- the results of the implementation of the Business Plan (key performance indicators and budget implementation) in 2017;
- information on the functioning of the internal audit, internal control and risk analysis systems;
- the results of the Audit Commission's audit for 2017 and information on planned measures to implement the Audit Commission's recommendations;
- bylaws governing the work of RVC's risk management systems;
- and other issues.

Management Board

The members of RVC's Management Board are elected from among RVC employees by resolution of the General Meeting of Shareholders on the basis of a recommendation from the Board of Directors. The Management Board must be made up of no fewer than five members. The term of office of members of the Management Board is determined by resolution of the General Meeting of Shareholders and may not exceed three years.

The function of the Chairman of the Management Board is performed by RVC's CEO. The members of the Management Board as of the end of 2018 were elected by Rosimushchestvo Order No. 385-r of 30 June 2017, Order No. 507-r of 20 July 2017, Order No. 727-r of 10 October 2017, Order No. 878-r of 20 November 2017 and Order No. 651-r of 19 September 2018. The Management Board consists of eight members.

Alexander Povalko
CEO

Sergey Abdykerov
Chief Operations Officer at the NTI Project Office

Mikhail Antonov
Deputy CEO and Director for Innovative Infrastructure Development

Alexey Basov
Deputy CEO and Investment Director

Ekaterina Kumanina
Director for Strategic Communications

Elena Mikheeva
Director of the Risk Analysis and Internal Control Department

Anna Romanenko
Deputy CEO and Executive Director

Mikhail Fedotov
Advisor to the Finance Director

Activities of the Management Board in 2018

The Management Board holds in-person meetings twice a month. Meetings may be held more often if needed, including by absentee voting.

During the reporting year, the Management Board held

45 meetings

(19 in the form of absentee voting), where 236 issues were considered

Agenda	Number of issues
Issues related to the implementation of RVC's Business Plan for 2018 and for the 2019–2020 planning period	48
Determination of the position of RVC representatives in the management bodies of funds created with RVC capital	103
Consideration of issues related to the activities of funds created with RVC capital	18
Consideration of issues related to the creation of new venture funds	15
Consideration of reporting issues (on RVC's activities, on the activities of business divisions, etc.)	20
Consideration of draft bylaws and draft strategic planning documents (Business Plan and budget)	16
Other issues	16

The CVs of members of the Management Board are available at:
hhttps://www.rvc.ru/en/about/governance/board/

Control, audit and risk management

RVC's main control, audit and risk management bodies are the Board of Directors, the Audit and Integrity Committee, the Audit Commission, the CEO, the Risk Analysis and Internal Control Department and the Internal Audit Department. RVC's financial statements are audited by an external independent auditor approved by the General Meeting of Shareholders based on the results of an open competitive selection. RVC carries out comprehensive work in line with best corporate governance practices in order to develop its internal control, audit and risk management system.

Internal control and audit

The internal control and audit system is designed to ensure the achievement of RVC's strategic goals and objectives, the implementation of the Company's financial and Business Plans and the preservation and efficient use of its resources and capacity, and also to ensure that RVC and its subsidiaries are in compliance with Russian laws and RVC's bylaws.

During the reporting period, the Company took measures to implement RVC's policies on internal audit and internal control, as well as to improve the organizational and legal framework for the functioning of the internal control and audit system:

- a methodology was developed for carrying out monthly reviews of employees' compliance with the requirements of RVC's bylaws and with the conditions of civil law contracts entered into by the Company when making payments, and informing the CEO about the results of these reviews
- measures were developed to rectify and identified shortcomings, and employees were consulted on improving internal control in the Company's business processes
- procurement documentation was checked on an ongoing basis to identify non-compliance with legal requirements and the Company's bylaws;
- an assessment was conducted of Company bylaws, the operations of the Company's business divisions and the existence of oversight procedures, and also of the application, adequacy and effectiveness of those procedures.

In 2018, the Internal Audit Department carried out 16 audits, including an audit of the quality of corporate governance and planned audits of the financial and business operations of RVC's subsidiaries.

In accordance with RVC's Internal Audit Policy and the International Standards for the Professional Practice of Internal Auditing, RVC's Audit and Integrity Committee regularly reviewed plans for internal audit activities and reports on the results of the internal audit activities within the Company.

Risk Analysis and Internal Control Department

In accordance with the Regulation on the Risk Analysis and Internal Control Department, the functions of RVC's Risk Analysis and Internal Control Department include:

- The development of risk management and internal control policies
- The introduction of elements of a risk management and internal control system into the activities of structural units
- Methodological guidance, analysis of the quality and functioning of the risk management and internal control system
- Coordination and participation in classifying, assessing and responding to risks
- Monitoring the effectiveness of the risk management and internal control system and preparing proposals for the Company's management bodies the improvement thereof

Risk management

Part of RVC's corporate governance practice includes identifying and responding to risks. Risk management is a continuous, systematic process that affects all of RVC's operations.

RVC established and operates a risk management system based on legislative requirements, government standards and best practices in risk management.

The following measures were taken during the reporting period in order to improve the risk management system:

- A permanent Risk Committee was created, and the organizational and legal framework for its activities was developed and approved nine Committee meetings were held to carry out a comprehensive assessment of the risks facing RVC, and measures aimed at minimizing those risks were discussed
- RVC's Risk Register and Risk Map for 2018 were compiled based on the objectives of the Business Plan for 2018 and for the 2019–2020 planning period with subsequent approval by the RVC Board of Directors (minutes No. 18 of 26 December 2018)
- An analysis of the remits of the Company's business divisions was carried out, and the status of "Risk Owner" was assigned to the heads of business divisions responsible for identifying, informing and developing risk management measures
- Risk Management Procedures were introduced at RVC (approved at a meeting of the Audit and Integrity Committee, minutes No. 02 of 20 November 2017 approved by RVC Order No. 119/18 of 12 December 2018)
- The functioning of the risk management and internal control systems was secured, as was their integration into the corporate management processes of NTI projects in order to implement NTI action plans (road maps)
- Company employees received training on the methodology for risk identification and assessment and for the development of risk management measures

An integral element of risk management at RVC is providing methodological assistance for subsidiaries' risk management and internal control systems, as well as monitoring their performance.

Audit Commission

The members of the Audit Commission are elected by the General Meeting of Shareholders. The Commission consists of at least three and no more than five people. Members of the Audit Commission cannot simultaneously be members of the Board of Directors or occupy other positions in RVC's Management Bodies.

The composition of the Audit Commission (elected by decision of the Annual General Meeting of Shareholders of 29 June 2018):

- **Viktor Bovt**, Senior Audit Manager at VimpelCom, independent expert
- **Konstantin Lukoyanov**, Partner in the law firm of Chernyshov, Lukoyanov and Partners (CLP Law Offices), independent expert
- **Alexey Priyatkin**, Vice President at Russia Partners, independent expert
- **Nikolay Starchenko**, member of the Management Board, Deputy Executive Director of the National Association of Corporate Directors, independent expert
- **Alexey Khudyakov**, independent director, member of the Direktorium Professional Association of Directors, independent expert

The functions of the Chairman of the Audit Commission are performed by **Nikolay Starchenko** (elected by Decision No. 1-2018 of the Audit Commission of 28 September 2018).

The tasks of the Audit Commission include:

- Monitoring compliance on the part of the Executive Body and the Board of Directors with the provisions of the Company's Charter and bylaws, and also monitoring the execution of decisions taken by the General Meeting of Shareholders and the Board of Directors
- Verification of the organization and functioning of the internal audit, internal control and risk management systems
- Developing recommendations (proposals) to improve the internal audit, internal control and risk management systems
- Confirmation of the accuracy of the information contained in the Company's annual report and annual financial statements
- Other powers attributed by the current laws of the Russian Federation, the Company's Charter and the Regulation on the Audit Commission

Audit and Integrity Committee

In accordance with the Regulation on the Committees of RVC's Board of Directors, approved by decision of the Board of Directors (minutes No. 21 of 6 December 2017), the Audit and Integrity Committee was established for the preliminary consideration of the most important issues that, according to the Company's Charter, fall within the remit of the Board of the Directors, including consideration of issues concerning the systems of internal control, audit, risk management and ethics.

Remit of the Audit and Integrity Committee:

- Preliminary consideration of policies and other documents (procedures) governing the functioning of the internal audit, internal control and risk management systems
- Assessment of the effectiveness of the risk management, internal control and audit systems
- Consideration of reports on material risks and the management thereof
- Consideration of information on response measures and/or control procedures (action plan) for the prevention of material risks
- Review of the Company's risk register and risk map (or maps)
- Ensuring the effectiveness of risk management and the development of a risk management culture are the responsibility of the Risk Analysis and Internal Control Department, which is directly subordinate to the Company's CEO

External audit

In accordance with the applicable legal requirements, RVC conducts an annual mandatory audit of its financial statements. The auditor is selected on a competitive basis in accordance with the requirements of Federal Law No. 307-FZ of 30 December 2008 on Audit and in the manner prescribed by Federal Law No. 44-FZ of 5 April 2013 on the Contract System for the Procurement of Goods, Works and Services for State and Municipal Needs.

In 2016, Intercom-Audit Limited Liability Company was selected as RVC's auditor for three years.

Fighting Corruption

RVC's Anti-Corruption Policy reflects a commitment to high ethical standards of business conduct, the Company's desire to improve its corporate culture and follow best practices in corporate governance, as well as concern for RVC's business reputation. RVC is included in the Consolidated Register of Participants in the Anti-Corruption Charter of Russian Business. In 2018, RVC once again completed the procedure for declaring its compliance with the provisions of the Anti-Corruption Charter of Russian Business and an assessment of measures to prevent and combat corruption.

In an effort to prevent and combat corruption in 2018, the Company implemented its Anti-Corruption Action Plan, approved by RVC Order No. 02/16 of 19 January 2016.

The Company's main activities aimed at preventing corruption included the following:

- Unifying the corporate Anti-Corruption Policy
- Improving interaction between business divisions
- Maintaining the operation of RVC's hotline
- Improving the procedure for conducting workplace inspections
- Updating the register of persons required to provide information on their interest in transactions concluded by RVC
- Ensuring the inclusion of anti-corruption conditions (reservations) in all contracts with counterparties (when approving draft contracts and when concluding contracts)
- Anti-corruption monitoring (analysis of RVC's statutory and operational activities)
- Analysis of reports and negative publications in the media about RVC's activities

In order to improve the organizational and legal framework for combating corruption, measures were taken in 2018 to improve the risk management, internal control and internal audit systems.

Activities aimed at the formation of common approaches to ensuring work on the prevention and enhancement of the effectiveness of the Company's anti-corruption efforts are carried out on an ongoing basis.

Disclosure

As it is not a public company, RVC discloses information on a voluntary basis. The disclosure procedure is governed by RVC's Regulation on Disclosure, which requires the publication of:

- Annual reports and annual financial statements, including the auditor's opinion
- RVC's Charter and regulations on its Management Bodies
- Lists of affiliates

This information is disclosed on RVC's website: http://www.rvc.ru/about/disclosure/

In addition, RVC, in accordance with legal requirements, discloses information in the Unified Federal Register of Information about the Activities of Legal Entities.

Dividends

In accordance with decrees of the Government of the Russian Federation and the directives of the Federal Agency for State Property Management, RVC allocates 25% of its net profit at year end for the payout of dividends. In the absence of profit, dividends are not paid.

A decision on profit allocation, including dividend payments for 2018, will be made at the Annual General Meeting of Shareholders in June 2019.

Annexes

Financial results for 2018

In 2018, revenues from RVC core activities amounted to **RUB 1.743 mln**

As of 31 December 2018, RVC had capital and reserves amounting to **RUB 35.939 mln**

In 2018, RVC did not take on any borrowings in the form of loans or credits. RVC has no overdue payables, including to budgets and extrabudgetary funds.

Implementation of information technologies

In 2018, RVC fulfilled objectives within the framework of the implementation of its digital strategy 2018–2021, the Digital RVC project, in which the following results and milestones were achieved:

- Studies were carried out and work got under way on the creation of an automated system for monitoring the investment portfolio of RVC-backed funds, the so-called fund of funds. The system is planned to be put into operation in 2019
- Studies were carried out and work got under way on the creation of an automated control system for funnels of companies, projects and teams supported by RVC, the CRM RVC, including the “Register of technology companies” and “NTI projects” modules. The system is planned to be put into operation in 2019
- A number of objectives were met within the framework of the digitization of RVC’s management, accounting and tax reporting, corporate governance, procurement and contractual activities and internal corporate communications

HR management

RVC’s human resources policy is aimed at ensuring the implementation of projects and initiatives, achieving key performance indicators and balancing the Company’s interests with those of its employees. Main areas of RVC’s human resources policy in 2018:

- Ensuring a balance in the processes of updating and optimizing the size and qualitative composition of our workforce in accordance with the organization’s needs on the basis of compliance with the requirements of existing legislation
- Maintaining a high level of professional competence on the part of our workforce
- Maintaining and strengthening the positive working environment within the company

Procurement

When purchasing goods, works and services, RVC is guided by Federal Law of the Russian Federation No. 223-FZ of 18 July 2011 on the Procurement of Goods, Works and Services by Certain Types of Legal Entities and the Provision on Procurement Activities of RVC. Basic principles of procurement include:

- Information transparency related to procurement
- Procurement transparency, the ability to monitor and verify procurement at any stage
- Application of preferential competitive procedures for selecting suppliers, providers and contractors, such as a tenders, auctions, requests for proposals, competitive negotiations, requests for quotations/prices
- Equality, fairness, non-discrimination and the absence of unreasonable restrictions on competition in relation to procurement participants, including a ban on coordination by RVC of the activities of procurement participants and on the creation of preferential conditions for participation
- Cost-effective spending on the acquisition of goods, works and services and the implementation of measures aimed at reducing costs; establishing measurable requirements for procurement participants

In 2018, the volume of purchases amounted to RUB1,106,140.51 thousand, while the volume purchased through competitive procedures amounted to RUB 721,136.83 thousand, or 65%; in 2017, the volume purchased through competitive procedures amounted to RUB 525,942 thousand.

The share of purchases from small and medium-sized businesses in 2018 amounted to RUB 678,135.60 thousand, or 49.85% of the total amount of purchases.

Information on the company’s procurement is available in the unified procurement information system (www.zakupki.gov.ru), on the RVC website (https://www.rvc.ru/about/purchase/), and also on the unified trading system’s electronic trading platform (www.rts-tender.ru), in the case of purchases in electronic form.

About the report

This Annual Report was prepared for the period from 1 January 2018 through 31 December 2018 using information available to the RVC. Financial indicators are based on financial statements audited in accordance with Russian Accounting Standards. Operating indicators are disclosed taking into account the following requirements:

- Bank of Russia Regulation No. 454-P of 30 December 2014 on the Disclosure of Information by Issuers of Equity Securities
- Corporate Governance Code (recommended for use by Letter No. 06-52/2463 of the Central Bank of the Russian Federation of 10 April 2014)

Disclaimer

The present RVC Public Annual Report for 2018 was prepared using information available to the company at the time of its preparation. The report contains information on the results of the company's activities in 2018 and forecast data, statements regarding the intentions, opinions or current expectations of the company regarding the results of its activities, financial position, liquidity, growth prospects, strategy and the development of the industry in which RVC operates.

Such forward-looking statements are characterized by risks and uncertainties, since they depend on circumstances that may change in the future. RVC does not give any direct or implied assurances or guarantees, nor does it bear any responsibility in the event of damages that may be incurred by individuals or legal entities as a result of using the forward-looking statements contained in this report, for any reason, directly or indirectly. These individuals should not fully rely on the forward-looking statements contained in this document, as they are not the only possible scenario that may occur.

With the exception of cases stipulated by the legislation of the Russian Federation, RVC does not undertake obligations to revise or confirm expectations and estimates or to publish updates and changes to the forward-looking statements presented in this report in connection with subsequent events or the receipt of new information.

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