



**WE INVITE YOU TO PARTICIPATE IN
THE INTERNATIONAL FORUM OF
TECHNOLOGICAL DEVELOPMENT
«TECHNOPROM» AND IN THE
SCIENCE. TECHNOLOGIES.
INNOVATIONS EXPO.
RUSSIA, NOVOSIBIRSK,
JUNE 20-22 2017**

**ON JUNE 20-22, 2017,
THE FIFTH LANDMARK ANNUAL INTERNATIONAL
FORUM OF TECHNOLOGICAL DEVELOPMENT
«TECHNOPROM» WILL TAKE PLACE IN
NOVOSIBIRSK.**



The Forum's organizing committee is headed by Deputy Chairman of the Government of the Russian Federation, Dmitry Rogozin.

**THE THEME OF TECHNOPROM 2017 –
THE NEW INDUSTRIAL REVOLUTION.
STRATEGIC CHALLENGES.**

The 2017 Business Program will include:

- diversification: import substitution and new markets
- technologies: from their inception to application
- leaders of the new industrial revolution
- education: engineers, managers, entrepreneurs
- territories and infrastructure

The Forum's strategy is facilitating the global technological leadership of the Russian economy.

The Forum's aim is to develop proposals to raise the competitiveness of the Russian economy in the «new industrial revolution».

THE FORUM'S OBJECTIVES:

- Developing proposals to integrate the main outcomes of the «new industrial revolution» into Russian industry.
- Facilitating in-depth cooperation between leading representatives in science, industry and business innovation.
- Developing international scientific, technological and innovation cooperation.
- Promoting investment in high-tech and innovative start-ups and «national champions».
- Popularizing scientific, technological and innovation activities in Russia

THE FORUM'S PARTICIPATING PARTNERS:

- The Government of the Russian Federation,
- The Board of the Military-Industrial Commission of the Russian Federation,
- Russian academy of sciences
- The Siberian Branch of Russian academy of sciences,
- The Siberian Venture Fair, which is a annual platform for 50 high-tech businesses,
- The Russian Science Foundation.
- The Foundation for Advanced Research Projects.
- The Foundation for Infrastructure and Educational Programs.
- The Technological Development Agency.
- The Industrial Development Fund.
- The Skolkovo Foundation.
- The Russian Venture Company.
- SC «Vnesheconombank».
- SC «Rosatom».
- SC «Rostec».
- SC «Roskosmos».



The Forum's Target Audience: Technology and innovation entrepreneurs, scientists and researchers, engineers, and chief designers, investors in technology (including venture capital), representatives of government bodies, young people (students, graduate students, young researchers).

On average, the Forum is visited by more than 4,500 participants annually from over 20 countries and half of the Russian regions.

Every year, as a result of the forum practical recommendations are drawn up for public authorities concerning the realization of the Forum's strategy.

IN 2017, THE FORUM WILL HOST THE SCIENCE. TECHNOLOGIES. INNOVATIONS EXPO FOR THE FIRST TIME. SHORT VERSION: STI EXPO.



The exhibition grounds cover 20,000 sq. m.

The Exhibition's Aim – Developing the Leading Organizations of the Sixth Wave of Innovation.

THE EXHIBITION'S OBJECTIVES:

- Presenting breakthroughs in science, technology and innovation.
- Promoting investment in science, technology and innovation projects.
- Stimulating demand for the exhibited products, technologies, solutions.
- Supporting the commercialization of the exhibited products, technologies, solutions.
- Promoting technological entrepreneurship and innovation.



EVENT FORMATS AT THE EXHIBITION:

- Presentation of global breakthrough technologies and innovative solutions.
- Presentation of the exhibition's participating companies.
- Subcontracting Exchange.
- Seminars led by development institutions in the field of science, technology and innovation.
- Competitions.
- Lectures and master classes.
- Informal closed «no ties» meetings
- Industry-specific working breakfasts and business lunches.



STI EXPO's operator:

Art Show Center
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TECHNOPROM

FOURTH INTERNATIONAL FORUM
OF TECHNOLOGICAL DEVELOPMENT

NEW REALITY.
SYNERGY OF TECHNOLOGIES
AND ENVIRONMENT

FORUM SUMMARY

Novosibirsk
9–10 JUNE 2016



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TECHNOPROM





NOVOSIBIRSK
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DEPUTY PRIME MINISTER OF THE RUSSIAN FEDERATION D.O. ROGOZIN



Dear organizers, participants and attendees of the IV International technological development forum “Technoprom-2016”!

As a large-scale professional event, bringing together scientists, businessmen and representatives of the authorities, the International technological development forum “Technoprom” has always had a relevant agenda. I am confident that the 2016 Forum will be a platform for constructive dialogue and promising agreements, successful projects and business ties strengthening.

The leading topic of this year is scientific and technological aspects of Russian’s objectives in Arctic. Arctic zone development is one of the priorities of the national security strategy and Russia’s long-term social and economic development concept. Harmonious exploitation strategy in Arctic, Northern marine passage development, science and technical as well as industrial facilities for the Extreme North exploration – are only some of important questions to be considers by “Technoprom-2016” experts.

Apart from Arctic zone development the experts will also consider basic aspects of Russia’s scientific and technological development strategy for the period of up to 2035. Welcome to the IV International technological development forum “Technoprom” and wish you all good luck and efficient work during the upcoming forum!

**Deputy Prime Minister
of the Russian Federation
D.O. Rogozin**

GOVERNOR OF NOVOSIBIRSK REGION V.F. GORODETSKY



Dear partners and colleagues! The IV International technological development forum “Technoprom-2016” will take place on June 9–10, 2016 under the auspices of the Government of the Russian Federation. And we’re glad to welcome all innovation technologies and knowledge-intensive industries market participants in Novosibirsk!

The leading topic of this year is scientific and technological development strategy development in Russia and securing the technological leadership of our country on world markets. The special forum’s agenda covers the Russia’s strategic goals fulfillment in Arctic.

Throughout its existence “Technoprom” became one of the largest and distinguished discussion platforms. It was recognized as one of the most important technological and industrial event in the world. Its main partners are the Government of the Russian Federation, Military-industrial committee board of the Russian Federation, Siberian department of the Russian academy of sciences. Traditionally development institutions in the field of science, innovation and technologies took active part in the Forums’ work. The experts annually summarize the results of the Forum and propose practical guidelines to state authorities which ensure the agenda’s implementation.

More than 150 companies engaged in innovation technologies and inventions take part in the Forum. One of the Forum’s traditional events is the Siberian venture fair – this year it celebrates its 10th anniversary. The fair is expected to represent at least 50 high-tech businesses.

The technological leadership of the Russian Federation is our global goal which will give rise to discussion events representing innovation technologies by scientific and technological development leaders. The experts will also address the problems of the national technologic initiative and possibility of another industrial revolution.

Use of exploration and mineral recourses extraction techniques, prompt adaptation of a human to climatographical features, new constructions and materials development, infrastructure formation of the Northern marine passage – these problems will be addressed in an agenda’s part related to Russian’s strategic goals implementation in Arctic.

I’m sure that “Technoprom-2016” will become a significant event in the world of high-tech and Novosibirsk region will properly present its scientific and industrial capacities as a center of breakthrough development of the country. The offered guidelines and solutions will be a recipe for successful implementation of Russia’s scientific and technological development strategy.

**Governor of Novosibirsk region
V.F. Gorodetsky**

PLENARY SESSION “THE RUSSIAN ARCTIC. TECHNOLOGY AND STRATEGY OF DEVELOPMENT”

The key event of the first day of the forum “Technoprom-2016” was the plenary session devoted to issues of scientific and technological support and development of the Arctic.

Almost a third of the area of our country is occupied by the Arctic regions, so the development of the Arctic will always remain in focus of the Russian state policy.



The meeting was attended by the Deputy Chairman of the Russian Government Dmitry Rogozin, the Authorized Representative of the President in the Siberian federal district Nikolai Rogozhkin, Novosibirsk Region Governor Vladimir Gorodetsky, the President of the Presidium of the Expert Council under the Military-Industrial Commission of the Russian Federation Mikhail Remizov, the President of the Interregional public organization “Polar explorers Association” Artur Chilingarov, the leading Russian scientists, representatives of the business community.

For the plenary session, a special report was prepared by the expert council under the Military-Industrial Commission of the Russian Federation, a summary of which was made by Dmitry Rogozin. According to him, development of the Arctic was “the aim within the scope of abilities of a great people,” noting that the Far East and the North “were not colonized and degraded until the 1990s.”

“Plans for the Arctic zone development, recorded in strategic and program documents of the Russian Federation – is the most complex project of all proposed in recent years”, – said the Authorized Representative of the Russian President in the Siberian Federal District Nikolai Rogozhkin. Among the targets which, according to the authorized representative, need to be delivered – is strengthening of the industrial, scientific and technological potential and the social sphere, as well as development of competitive advantages of Russia in the Arctic region.

The Plenary session standees discussed the “issues of uncertainty” facing the development of the Arctic. The first of them is the impact of Western sanctions on the supply of specific and special technologies, the second is climate change, area and density of the ice cover and permafrost, and the third one is the sharp fluctuations in oil prices, which make it difficult to forecast and launch projects with long-term payback periods.

“This concentration of oil and gas reserves in the Arctic as in the Yamal-Nenets Autonomous District, is unparalleled”, – says the scientific director of the Institute



PLENARY SESSION “THE RUSSIAN ARCTIC. TECHNOLOGY AND STRATEGY OF DEVELOPMENT”

In addition, the plenary session experts discussed the development of the Northern Sea Route, construction of new icebreakers with nuclear power plant, updating of the aircraft fleet for the uninterrupted victualing of Arctic cities and towns. The topics for discussion were also the development of the Arctic resources and the required domestic technologies, the use of renewable energy sources.

“One of the major issues of the Russian Arctic development –



is the use of renewable energy sources and energy efficiency of economic entities in the Arctic, – stressed Dmitry Rogozin. – Novosibirsk region of Siberia and other regions are quite reasonable and decent places to discuss the Arctic issues.” He stressed that the Novosibirsk science campus has developed breakthrough marine technology, new methods of field exploration, ultra-deep-water drilling, strap down exploration, remotely operated deep-water device for the diagnosis and repair of offshore equipment, floating gas liquefaction plants directly on the sea. Such technology, according to the Deputy Prime Minister, minimize human presence on the objects, and therefore very are relevant in the Arctic conditions.



Governor Vladimir Gorodetsky, speaking at the plenary session, pointed out that although the Novosibirsk region does not border directly with the Arctic zone, the scientists of the SB RAS are a number of designs for the search and development of hydrocarbon fields, work on human adaptation to extreme climatic conditions. *“I hope that with the help of scientific developments made by the Siberian scientists, we will arrive at the comprehensive development level of the Arctic regions”, – stated the Governor.*



ARCTIC DEVELOPMENT STATE COMMITTEE MEETING

The questions of fate, prospects and strategy development of the Arctic region of Russia were discussed by the participants of the Arctic development state committee meeting. The State Committee meeting was chaired by the Deputy Chairman of the Russian Government Dmitry Rogozin.

At the meeting, progress reports were made of Industry and Trade executives, heads of the Ministry of Energy, the Ministry of Environment and the Ministry of Transport of Russia. It was attended by representatives of the federal executive authorities, heads of subjects of the Arctic, representatives of business and scientific organizations.

The participants discussed the prospects for innovation and production of new materials for the regions of the Arctic, stimulation and use of renewable energy, improvement of the energy efficiency and development of communication systems in the Arctic.

In addition, the experts have taken vital decisions in preparation for large-scale development of the region. For example, the beginning of the development of a special Arctic GOST. *“On the State Committee meeting for the comprehensive development of the Arctic, we have agreed to start work on a special GOST, Arctic GOST – Dmitry Rogozin said after the meeting, – now any technique, if it passes through the test in the Arctic regions, is suitable not only in the Arctic, but for any other region. The Arctic will now be tested for the*

highest quality of all technologies, from clothing to complex mechanical devices!”.



At the moment we are working on making changes to the state standards in the field of R & D for which every product should be introduced. Rogozin also commissioned a number of federal departments to submit relevant proposals for the establishment of the state-term development of the system of means and instruments for marine research and development of “modern Arctic, oceanographic instruments, respectively, related to international standards and surpassing these international standards.”

Branches of Russian oil and gas engineering was put the task of reducing dependence on foreign technologies and products, implementation of efficient import substitution and elimination of the gap in the offshore technologies and special drilling. *“At the moment, due to lower oil and gas prices, the development of the Arctic shelf area is postponed worldwide. This gives Russia a certain margin of time to eliminate the gap,” – Dmitry Rogozin said.*

The experts laid a special emphasis on the importance of the development of the Arctic specific control mechanisms



ARCTIC DEVELOPMENT STATE COMMITTEE MEETING

to coordinate the actions of many participants, combine infrastructure construction and maintain national security and national interests are taken into account within the framework of international cooperation.



“Nationwide scale and importance of the Arctic zone problems require not only controlled performance, but also organization of a number of actions to ensure achievement of maximal effect on the economy of the country”, – the Permanent Representative of the Russian President in the Siberian Federal District Nikolai Rogozhkin

Dmitry Rogozin appealed to active developing and implementation of renewable energy sources in the Far North. He stressed that in this matter it is necessary to organize large-scale interaction with the Arctic regions, Siberia.

The stand alone power generated areas welcome up to 6–8 tons of fuel, gas and lubricants and up to 20–25 tons of coal. At that the use of fossil fuels does not only negatively affects the region’s ecology, but also its economy as the fuel price gets two or even three times higher.

“One of the ways to make fuel supply to the distant regions of the Arctic zone as well as energy safety cheaper is to use renewable resources”, – deputy chairman said.

Also, according to him, stand-alone power generation be-

comes significantly important as the majority of power consumers live outside of populated places – indigenous population of the north, tourists, geologists, fishermen, hunters. *“Thanks to these consumers production of light and well-knit energy storage systems become a relevant issue”, Dmitry Rogozin said.*

Supervisor of the Institute of Petroleum Geology and Geophysics, Siberian Branch of the Russian Academy of Sciences, Alexey Kontorovich believes that it is necessary to develop the tight oil extraction industry in Russia as in 25–30 years production of conventional oil will be halved. He recalled that the first prediction for oil was made in 1961 in Novosibirsk, and the first shale oil in the Soviet Union was obtained in 1968. The richest source of alternative oil on the territory of Russia is the Bazhenov formation. According to the estimates of experts, it contains not less than 20 billion tons of renewable oil. Alexey Kontorovich believes that the Bazhenov Formation contains another 40–60 billion tons of shale oil. But the technology of its production in Russia is “almost absent”.



We have only 10–12 years to solve this problem, scientists believe. *“Powerful state program with the involvement of business should be established. This is how Russia will be provided with energy raw materials to the end of the XXI century. I have no doubt that this problem will be solved”, – Alexey Kontorovich said.*

BRAINSTORM “TECHNOLOGY OF EXPLORATION AND DEVELOPMENT OF MINERAL DEPOSITS OF THE ARCTIC SEAS”

Moderator: Mikhail Epov, academician, Director, Trofimuk Institute of Petroleum Geology and Geophysics

Co-moderator: Victor Litvienko, the head of the project group the Foundation for Advanced Studies

Compact nuclear reactor systems will help to solve one of the main problems of development of the Arctic region – the high cost of electricity due to the high cost of fuel delivery.

The Nuclear power is most suited to the Arctic zone, said the chief designer of JSC “Experimental Mechanical Engineering Design Bureau “Africantov” Vladimir Doronkov.

For infrastructure development of the Arctic ocean shelf it is necessary to solve the main issue, how to ensure the efficient energy supply for the underwater operations. Experimental Mechanical Engineering Design Bureau “Africantov” proposes to develop a project of compact nuclear reactor installations.



According to Vladimir Doronkov this installation is mobile enough (it weighs about 900 tons), which makes it possible to transport it to the place of production in a completely assembled and ready-to-use condition. In addition, it has a fully autonomous independence from external and internal environmental factors and can be under water for along time (diving depth – several hundred meters).



The Director of Trofimuk Institute of Petroleum Geology and Geophysics Mikhail on application security that the use of nuclear facilities would be appropriate from the point of view of environmental safety, but Vladimir Doronkov assured that, when properly handled the nuclear power is a sufficiently clean energy source. The energy production occurs in the total absence of emissions to the external environment. Moreover, the reactor installations meet all the safety requirements that apply to this type of objects.

The chief designer of JSC “the Central Design Bureau “Rubin” Evgeniy Toropov suggested that for the environmental insurance of risks in the operation of a compact nuclear reactor installations it is possible to use the analog security of nuclear icebreakers.

BRAINSTORM “NEW CONSTRUCTION, THERMAL AND FUNCTIONAL MATERIALS ENSURING THE CREATION OF NEW MILITARY EQUIPMENT”

Moderator: Vyacheslav Shtyrov, a member of the Defense and Security Committee, the Council of Federation

Co-moderator: Sergei Alexeyev, the head of the project group, the Foundation for Advanced Studies

The task of the development of polymeric and metallic materials capable of withstanding the conditions of the Arctic – part of the program of development of the region. So far, the materials science, according to experts, is not paid enough attention.

“Research and development of the Arctic is important not only in terms of scientific research, but also in terms of the practical application of these studies,” – stated the Deputy Director General of the Promising Research Foundation Alexander Pamfilov. According to him, the work on these problems is even more critical if the technology and materials can be used in the defense industry. Here, the special requirements shall be applied to the drafting.

Advisor to the Director General of the Federal State Unitary Enterprise “All-Russian Research Institute of aviation materials” (VIAM) Vyacheslav Bouznik outlined the main challenges facing the researchers, not only in the weather conditions of



the region under study, or geographical distance from places of mass residence of people, but also in the lack of development of the production market of already developed materials and unsystematic studies. In this case it is impossible to observe the Arctic without new equipment. The most vulnerable to corrosion and cold are steel, polymeric materials and composites. *“In Yakutia, the main causes of technical deficiency are small rubber pads.”* Another example: in the construction of “Burana” the experts found that the materials absorb moisture which leads to their destruction in freezing temperatures. The solution to this problem may be photopolymers currently studied by VIAM, showing high water repellency. Vyacheslav Bouznik proposed the Arctic researchers to join forces, perhaps highlighting a special state program.

The brainstorm experts stressed that the State program has already been adopted in 2014, but there is still no unified concept for its implementation. However they endorsed the idea of uniting the efforts of all researchers in the Arctic, holding the joint discussions at conferences and publications of VIAM, noting that the first issue of the magazine devoted to scientific research in the field of Arctic exploration has already appeared in press.



BRAIN STORM “PROMPT ADAPTATION TECHNOLOGY TO THE ADVERSE CLIMATIC CONDITIONS OF THE ARCTIC”

Moderator: Lubomir Aftanas, deputy chairman of the Siberian Branch of Russian Academy of Sciences

Co-moderator: Anatoly Kovtun, director of the project group the Foundation for Advanced Studies

Human factors and health issues, emergency medical care in the arctic conditions were the main topics of the brainstorming.



Freeze burns, infectious diseases, CVD – these are so-called Arctic diseases frequent among people working beyond the Arctic Circle. However medicines which are used on the “continent” are not effective in low temperatures. *“A pill is a good thing, but how to wash it down. A unit-dose syringe is not effective in low temperatures as well. A respirator is also needed in such conditions. A mask can freeze, joints can loose their elastic properties. This is why a new class of medicines is required. A binder does not work too”*, – deputy scientific work director of “Special and medical equipment” Alexandr Grebenuk from Saint-Petersburg.

There is another problem addressed by the scientists in Novosibirsk – destruction of human genes, working beyond the Arctic Circle. Shift work method, work in low temperature conditions, polar night can lead to jetlag, desynchronizes. The consequences of such a violation are the most severe: depression, weakening of the body, oncologi-

cal diseases, accumulated toxins that could affect the genetic structure of cells. Head of the laboratory of personalized medicine, ANO “TSNMT in Akademgorodok” Galina Livshits believes that it is necessary to create drugs that can help the body to adequately process toxic xenobiotics – chemicals that enter the body in the Arctic, especially in enterprises of Oil Industry. Xenobiotics result in mutation of genes, and as a result, people who work in enterprises for over 15 years risk not only their health, but also their lives.

“In the Novosibirsk Institute of Chemical Biology, the laboratory of personalized medicine after several years of basic and clinical research for the information of the Foundation for Advanced Studies has developed a ready product, ready program, for which is already used on patients, this is a great nutrigenetics program that includes many aspects of the study of genetic markers, which can be used to examine people who



BRAIN STORM “PROMPT ADAPTATION TECHNOLOGY TO THE ADVERSE CLIMATIC CONDITIONS OF THE ARCTIC”

plan to work in the Arctic”, – Galina Livshits said. A large segment of the program is dedicated to testing of genes, which provide the processing of xenobiotics.

“Today FASO (Federal Agency of scientific organizations of the Russian Federation) organized four or five centers that have arctic or polar research in their titles which makes it’s difficult to work a little bit. You can certainly imagine a geographical fixation of those parts of the territories, which are projected on these or other subjects of the federation, starting from Arkhangelsk and ending at the east of the country. But the coordinator must still be the same” – Ljubomir Aftanas, member of the Presidium of the Russian Academy of Sciences, Director of the Scientific-Research Institute of physiology and basic medicine. Everything that concerns the man and his adaptation, it is the prerogative of the Scientific-Research Institute of physiology and basic medicine, it is proposed to make the academy a single coordinating unit. The president of the Russian Academy of Sciences, with the heads of regional separated ministries have already held talks on this issue.



The experts also noted that the changing requirements of the International Union for Circumpolar medicine, the leading organization in this area shall create an authoritative public organization in Russia engaged in the popularization of circumpolar medicine studies using a press organ and the official site with a bilingual version.



ROUND TABLE “HYDROLOGICAL AND ECOLOGICAL MONITORING OF ESTUARIES IN THE RUSSIAN ARCTIC”

Moderator: Vladimir Degtyarev, Vice-Rector, Novosibirsk State Architectural University

The development of the Arctic increases, and the Northern Sea Route are facing new challenges, which will be solved with the help of the massive update of the Russian nuclear icebreaker fleet.

The Round Table Experts noted that after the start of the state program the Arctic development, the region has become the strategic direction of economic and political development of the country. The development takes place in three directions. The first one is the natural resources, the development of existing fields and the opening of new ones. The second – is national security and the third one is transportation. According to Yuri Marchenko, the head of the Department of Natural Resources and Environment Defence of Novosibirsk region, *“Behind the scenes, a great number of processes in this region are developing, despite the information that a lot of industries there are in decline, in fact, the turnover of goods in*



the Arctic today is close to the best performance of the Soviet Union... In 2015 more than 5 million tons of cargos were transported on the Arctic sea route.”

The roundtable participants discussed the other areas in the development of the Arctic which have already shown the real results. The energy supply system, worked through a program of floating nuclear power plants, is being developed. The fundamentally new models of aircraft were designed to replace the old equipment.



The experts noted that the improvement of the transport chassis of the most important task of the Arctic development. The Northern Sea Route and the Trans-Siberian railway should be connected by hard meridional transport communications. The first issue to be solved is the development of water bodies.



PLENARY SESSION “CHALLENGES FOR RUSSIA – CHALLENGES FOR SCIENCE”

Moderator: Vladimir Knyagin, chairman of the board of the CSR “North-West” Foundation

The new role of science, technology, business process at present and in the future was discussed by the plenary session participants.

Opening the session, the Deputy Minister of Education and Science of the Russian Federation Lyudmila Ogorodova noted that the new version of the strategy shows a different approach to innovation: *“Today we talk about the transition to a knowledge-based economy, where the science is the source of economic and social development, and speed is its major factor, – said Deputy Minister. – It is important to involve powerful regions in the development of science, their work should be reflected in STD Strategy”.*

In the framework of three tracks of the session the heads of the working groups, established in the framework of the strategy, spoke. Among the concerns of state scientific and technological policy they identified: the differences in the level and structure of the financing of Russian science and education, compared with world leaders, low diversification of sources of science financing (business support of leading scientific institutions is growing, but not more than 7–10% of the total allocations), unstable and uneven funding of scientific personnel and active scientists, low prestige and reputation of scientific organizations and academic career, the lack of media attention, the outdated regulatory base regulating labor relations of researchers and teaching staff, the slow transformation of scientific ideas and scientific hypothesis into a useful product, especially in small innovative enterprises of universities.

According to participants of the discussion, it is necessary to form a public system for monitoring the trends, global and country challenges, changing landscape of global research and development, society requests, the situation in the infrastructure of domestic research and development. Scientists, graduate students and staff of the institutions need their own platform for generation and regular upgrade of scientific and technological priorities on the basis of a consensus of stakeholders and the scientific com-

munity, with the involvement of the authoritative Russian and international experts, including representatives of the humane and social and science disciplines. Moreover, for the monitoring system, as well as for the platform it is necessary to develop transparent financing mechanisms – both from the government and the business community.

The Governor of the Novosibirsk Region Vladimir Gorodetsky proposed to continue to strengthen the communication between science and society: for example, to support long-term projects in the field of science, in every possible way to motivate scientists to promote educational projects. As an example of successful scientific growth stimulating the Rector of the National Research Nuclear University “MEPhI” Michail Strikhanov called a program “TOP 5–100” on promotion of Russian universities in the international ratings. *“I think that the powerful system results have been achieved in three years: the science became for the project participants a mandatory activity and universities have become recognized by international platforms”, – he said.*



It was decided to take note of the findings of the working groups and the expert community and take into account the subsequent finalization of the text of the Russian STR Strategy until 2035. The discussion was summarized by Alexander Aseev: *“When you talk about the separation of science from the real sector of the economy, from the private sector – pass to next room and look at the exhibition of “Tekhnoprom”. It is necessary to talk not about the breaking of the system but the establishment of centers of excellence in Siberia”, – according to the academician.*

SYMPOSIUM “HORIZONS OF THE NEW INDUSTRIAL REVOLUTION: RUSSIA AND THE WORLD”

Moderator: Vladimir Suprun, Director, Fund for socio-prognostic research

Opening the Symposium, Vladimir Suprun said: *“The New industrial revolution is one of the development trends of the modern economy, when on the basis of modernization and new technological developments “return” of industrial production in the new economic reality as an important player along with high-tech and materials sector occurs. This new trend of economy and society development has been actively discussed by the expert community for the last 4–5 years and implies an adjustment of the old paradigm as a model of development of “postindustrial society.”*

The Deputy Governor of Novosibirsk region Anatoly Sobolev said: *“The government of the Novosibirsk region shows great interest in new ideas and conceptual vision that can be attributed to a new model of socio-economic development under the name of “New industrial revolution”. The return of the role of industrial production on the basis of modernization and innovation, which have prepared enough for it soil, is a long-term perspective”.*

First Deputy Director of The Institute of World Economy and International Relations n.a. Yevgeny Primakov, Natalia Ivanova made a prognostic conclusion: *“Still, developed countries will retain a huge advantage in terms of quality*



of life... developing countries will grow rapidly, and social changes occur very fast, they cannot “digest” them and try to cross the border of the gap in income levels, so they form completely their own agenda”.

Director of the Institute of Economics Elena Lenchuk identified six of the most important threats, which are the reasons of technological backwardness of Russia:

- large-scale de-industrialization and primitivization of the Russian economy;
- aging of the industrial base, fall of the competitiveness of Russian industry on world markets;
- high dependence on imports of foreign materials, products and technologies;
- degradation of scientific and technical potential in the industry, since we have lost applied science;
- low efficiency of national innovation system due to the insufficient development of industrial policy.

Deputy Director of the Institute for US and Canadian studies, Victor Supyan said: *“the United States is, of course, in*



SYMPOSIUM “HORIZONS OF THE NEW INDUSTRIAL REVOLUTION: RUSSIA AND THE WORLD”

first place in R&D activities. In 2015 497 billion dollars were spent on scientific researches. In Russia the amount was just over 50 billion. We may hold a good place in the world ranking according to the amount of research, but it is only the 8th place... it is necessary to bring back the situation when the Soviet Union occupied the key positions and competed with the United States almost equally in fundamental science... We need to create a diversified economy, because while only the materials sector or the service sector dominates, prospective development is out of question”.

The Director of the Institute for catalysis n.a. Georgy Boreskov, Valentin Parmon said: *“The raw materials basis of chemical and energetic part of the economy is changing... This change is very serious, it makes it urgent to change the technology. The main requirement is the ability to, without major economic losses, re-configure the production base, the foundation of which has already been set, either to new raw materials or to new products, and large companies begin to understand that.”*

Deputy Director of the Industrial Development Fund Yury Shamkov has focused on the activities of the Industrial Development Fund: *“As of today, 1438 application are made for the total sum of 477 billion rubles, 89 applications for 27 billion roubles have been approved, loans in the amount of*



21 billion rubles have been given to 62 projects. This money is targeted, it cannot participate in the speculative market.”

According to him, businesses can use the IDF’s money to develop a new product, purchase equipment, develop feasibility studies, buy intellectual property rights for the new development, and use engineering services. The expert also stressed that the industry needs cheap competitive money *“and the industry will solve 50% of its problems.”*

At the forum the monograph “New industrialization: drivers and prospects” was presented.

Many of the ideas expressed at the symposiums and “Tehno-prom” over the years, have formed the basis of this international collective monograph “New industrialization: drivers and prospects.”

The authors of publication took part in the presentation of the book: Director of the Fund for Socio-prognostic Research “Trends” V. Suprun, Director of the Institute of Economics E. Lenchuk, Dean of the Higher school of television of Moscow State University V. T. Tretyakov, the rector of Novosibirsk State University of Economics and Management A. Novikov, the Vice-President of RAS V. Ivanov and President of the Analytical center “Project of-fice” A. Yurtaev.

PLENARY SESSION “THE RE-INDUSTRIALIZATION OF NOVOSIBIRSK REGION ECONOMICS”

Moderator: Aleksey Bezprozvanykh, Director of the Regional Industrial Policy Department, the Ministry of Industry and Trade of the Russian Federation

Governor Vladimir Gorodetsky, presented a Program of reindustrialization of the economy of Novosibirsk region. The Plenary discussed the mechanisms of inclusion of re-industrialization programs of the region to the Strategy for Scientific and Technological Development of Russia and the National Technology Initiative.

At the event the presentation of a number of flagman projects within the framework of re-industrialization of the economy of the Novosibirsk Region took place – they, in particular, relate to the production technology of single-walled nanotubes, production of enzyme preparations for feed, creating a comprehensive innovation infrastructure for the development of innovative projects in the field of medicine and public health on the territory of the Novosibirsk region, formation of Russian industrial platform of automation processes in different sectors and a number of other areas.

“The Novosibirsk region with the support of the Government of the country has the potential to become a Russian pilot region of reindustrialization and a model example of development of Russia and Siberia for “non-primary” path, – said the Governor Vladimir Gorodetsky, speaking at the event. – Currently we have submitted to the Russian Government a “roadmap” for the implementation of the re-industrialization of the economy program. It is essential that, on the eve of “Technoprom” we presented our achievements to the Chairman of the Russian Government Dmitry Medvedev and received his approval”.

The Head of the region said that the priority associated with the implementation of re-industrialization program now is the development of optimal management and coordination system, as well as the search for the new points of economic growth, which can enter the program as the new projects. *“All the projects of the re-industrialization program of the Novosibirsk region’s economy will get the priority state support under existing programs through the federal ministries. The support will only be provided on a competitive basis with transparent for potential participants of the program terms and conditions”, – said Vladimir Gorodetsky.*

The program for reindustrialization of the economy of the Novosibirsk region can become an example for other Russian regions. This was stated by first Deputy Chairman of the State Duma of the Federal Assembly of the Russian Federation Alexander Zhukov at the plenary session “The re-industrialization of the economy of Novosibirsk region”. Prior to the forum the program was presented to Prime Minister Dmitry Medvedev. He got acquainted with and supported it. According to Alexander Zhukov, it is important because the implementation of scientific developments into production is impossible without state support. He noted that the flagship projects affect key technological directions of the region development, shaping a new economy, enhancing competitive positions. The program will be a success, as it incorporates a comprehensive approach.



As noted during the event, all the achievements of the plenary session of the forum “Technoprom-2016” will be taken into account in further work by the implementation of the roadmap of the program for the re-industrialization of the economy of Novosibirsk region.

ROUND TABLE “REGIONAL INNOVATION POLICY: IN FOCUS – NOVOSIBIRSK REGION”

Moderators: Anatoliy Sobolev, Deputy Governor of the Novosibirsk Region
Al'bina Nikkonen, Executive Director, Russian Venture Capital Association

Within the framework of the 10th Siberian Venture Fair was held an event dedicated to issues of innovative development of regions.

The key speaker of the event was Deputy Governor of the Novosibirsk Region Anatoliy Sobolev, who said that the re-industrialization program in the region according to experts “from the point of view of the need for the federal resources” needs the federal support in the amount of 15 billion rubles. At the same time of the 10 major projects of the program, only two need the budget co-financing at the federal level. All other projects are funded by private investors in the regional support.



“In developing the program, we interacted with our Siberian science and our education and innovation system. Our industrial parks are connected. By the development extra attention was paid to the breakthrough projects based on the potential that really exists in the Novosibirsk region. They form a new image of the economy. For us the re-industrialization program is a support of projects that can give a quick economic impact,” – Anatoliy Sobolev said.

Among projects of technological development the program includes a number of strategic initiatives related to the

spatial development of the region: Aerocity and Siberian Naukopolis.

On the scientific support of Re-industrialization of the economy program of the Novosibirsk region spoke Vyacheslav Seliverstov, Deputy Director for Science, Institute of Economics and Industrial Engineering, Siberian Branch of the Russian Academy of Sciences. Dmitriy Verkhovod, Director General of “Technopark of Novosibirsk Akademgorodok” shared the experience of creating industrial parks. And Vladimir Koxhevnikov, Director General of “Science and Technology Park in biotechnology” announced the details of the development of the biotechnopark Koltsovo and its place in the formation and implementation of the project “Siberian biotechnological initiative”.

The experts highlighted the importance of the principle of openness of the Program for re-industrialization of the economy of Novosibirsk region that allows to include new projects, makes necessary the formation of a permanent system of selection of the most promising projects and their “cultivation”.



BRAIN STORM “FORECAST OF SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF RUSSIA FOR THE PERIOD UP TO 2040: KEY ISSUES AND NEW CHALLENGES”

Moderator: Alexander Chulok, Deputy Director, Foresight Centre of ISSEK, National Research University “Higher school of Economics”

In 2014, a forecast of scientific and technological development of the Russian Federation for the period up to 2030 was approved. The main results were used in developing the forecast of long-term socio-economic development of the Russian Federation for the period up to 2030, in forming development programs for innovation of territorial clusters, strategic research programs, technological platforms, programs of innovative development of Russian companies and universities.

In accordance with the law “On strategic planning in the Russian Federation”, defining the central role of the forecast in the system of technological forecasting, in 2017 the development of its new cycle will begin. The goal is to find answers to new global challenges facing Russia, given the geopolitical factors.

However, speaking of long-term forecasts for decades ahead, many experts mention the non-linearity of real processes and events in scientific and technological development. *“In 40 years we will live in a completely different world, not like the one we live in today,”* said one of the participants, General Director of JSC “Russian venture company” Igor Ag-



amirzyan. He exemplified it by a sharp jump in the development of microelectronics in the twentieth century, which greatly changed the path of development of all mankind.

“Reality evolves nonlinearly. About 45 years ago the path of development of all mankind in the technological production of nonlinear suddenly shifted from industrial development to

information technologies,” Igor Agamirzyan said.

By the results of the event, the majority of the participants agreed that such meetings enable to form professional recommendations for the development of a new forecast of scientific-technological development of the country.



ROUND TABLE “CONCEPTS AND NEW FORMS OF INTERDISCIPLINARY INTEGRATED PROGRAMS OF DEVELOPMENT OF MODERN TECHNOLOGIES”

Moderator: Sergey Salikhov, Director, Department of science and technology, Ministry of education and science of the Russian Federation

The potential of interdisciplinary integration in science, acceptability and efficiency of its forms were discussed by the experts of the round table.

Sergey Salikhov, starting the discussion, was named the space project the most outstanding interdisciplinary one. It embodied in metal achievements of almost all sciences and technologies of its time.

“Federal and industry integrated interdisciplinary programs enable scientists to make discoveries”, – expressed his opinion the Chairman of the Siberian branch of RAS Alexander Aseev. He noted that most discoveries occur at the interconnection of sciences: “Today, we moved from the integration process to the integration program, which resulted in 47 books dedicated to all fields of science. There are practical results: Russian development of the sequencer; the new archaeological discoveries; tomography in the study of gesture in languages”. Alexander Aseev said, “the Arctic is also an example of integration. Almost all the institutes of the Siberian branch participate in the development”.

Vice-President of the Foundation “Center for strategic research” Vladimir Knyagin stressed that the traditional and stable research teams cannot realize problem-based approach, when a specific task requires the best team of specialists to solve it. In his opinion, *“the whole science becomes translational... In 2020–2030 by efforts of problem-oriented groups, a complex of technologies that resemble nature shall appear”.*

First Deputy Director of the National research centre n.a. Nikolay Zhukovsky, Kirill Sypalo outlined the corporate principle: *“We don’t subordinate Institutes legally included in our center, we unite them by common goal setting”.*

Andrey Svinarenko, Deputy Chairman of the Board of LLC “UK “ROSNANO”, General Director of the Fund for infrastructure and educational programs, shared all interdisciplinary researches into two streams: the “administrative” and “initiative”.

“The Russian scientific Fund is required to maintain world-class projects”, said Deputy General Director of the Foundation Yury Simachev, “and therefore relies on groups that are open for scientists of various branches... RSF is implementing the project approach and do not pay extra for work on editorial calendar, which is not itself bad”.



ROUND TABLE “MEGASCIENCE – THE BASIS OF INNOVATIVE DEVELOPMENT”

Moderator: Sergey Salikhov, Director, Department of science and technology, Ministry of education and science of the Russian Federation

Continuing the theme of development of science, in the framework of the round table six projects of “megascience” were discussed, which are planned to launch in Russia.

The Director of the Department of science and technology of the Ministry of education and science of Russia Sergey Salikhov reported that the Minister of education and science Dmitry Livanov had signed an agreement with the Joint Institute for Nuclear Research on the creation and implementation of a superconducting Collider NICA in Dubna. This is one of the six international Megascience projects in Russia with international regulations and a science Council. The construction of a nuclear research neutron reactor is being completed in the territory of the Petersburg Nuclear Physics Institute in Gatchina, the launch of the reactor is expected.

Sergey Salikhov also said that they received approval of the Russian Government on detailed design of the fourth generation synchrotron. *“It is sensible to build it in Gatchina. Because then we get a completely unique system for the study of materials and biological objects, having at hand both a neutron reactor and a synchrotron literally in the same campus of the Petersburg Nuclear Physics Institute. We can organize a truly international centre for diffraction and radiation research,”* he says.

According to Sergey Salikhov, Russia remains the leader in the development of Megascience projects. In particular, the construction and operation of the Large hadron Collider would not have been possible without the achievements of the Russian scientists. He believes that the country needs to develop its own infrastructure of Megascience.



ROUND TABLE “ELECTRON-BEAM TECHNOLOGY”

Moderator: Valentin Smirnov, Deputy Director General – scientific director of electro-physical block, JSC “Science and innovations”

Prospects for the use of radiation in the area of agricultural technologies and various methods of using electron beam technology of food processing, in particular by means of industrial electron accelerators were the center of attention of the Siberian experts.

The Chairman of the board JSC “UK “Biotechnopark” Andrey Bekarev told about positive experience of the park located in the town of Koltsovo, Novosibirsk region, on the use of accelerators for food processing, including sterilization. *“The experience is interesting; we’re ready to share it. Together with the Institute of Nuclear Physics, we have developments and our own projects of decisions”,* – he said.

According to Bekarev, such food processing provides not only an increase in terms of their storage, but expands markets for manufacturers, because it gives additional time for transfer and consequently production volume increase. In addition. He said that the technology for the sterilization of food products is currently being tested on semi-finished products.

In turn, Director of the Science of nuclear technologies



cluster of “Skolkovo” Aleksandr Fertman noticed that radiation processing of products and the use of irradiation technology in agriculture could be of interest to business and make a profit.

Since 2016 the Interstate standard of radiation processing of food products came into force, resulting in a significantly increased demand for the use of industrial electron accelerators in the food industry and agriculture on the territory of the EEU countries. At the same time the world’s leading manufacturer of industrial accelerators is the Novosibirsk Institute of Nuclear Physics SB RAS.

ROUND TABLE “INSTRUMENTS AND SUPPORT INFRASTRUCTURE FOR SCIENTIFIC – TECHNICAL AND TECHNOLOGICAL PARTNERSHIPS”

Moderator: Yuri Bernadsky, President, Novosibirsk town Chamber of Commerce and Industry

Participants of the discussion tried to answer the question about the ways to make more efficient the supporting instruments for the technological transfer and international cooperation and discussed the successful experiences of cooperation with innovation companies in reaching the foreign markets.

The Novosibirsk town Chamber of Commerce and Industry held a conference “Instruments and support infrastructure for scientific-technical and technological partnerships of the Russian and the foreign companies”.

The President of Novosibirsk town Chamber of Commerce and Industry, Head of Novosibirsk Regional Integrated Center Yury Bernadky underlined, that the Conference opens the additional possibilities for the entrepreneurs in searching of the new partners, the new solutions and instruments for their business development.

The executive director of the Fund “Academgorodok Technopark” – partner of Novosibirsk Regional Integrated center, Alexey Logvinsky spoke about the activity of the Academic park as the subject of the innovation entrepreneurship support. He mentioned that the key supported directions of the “Academgorodok Technopark” are the information technologies, scientific instrumentation, biotechnologies, nanotechnologies and new materials. The support infrastructure comprises provision of office and specialized working places and equipment, instructional



and expert support by the subject specialists; wide range of consultancy services. Services for arrangement and holding of group trainings and seminars on the development of business and special competences; arrangement of dossiers to get the investment financing; business plans, arrangement of participation of the resident companies in exhibitions, fairs, competitions; for processing of the materials for production of product prototypes, for prototyping and testing of the program products.

Head of international relations and technology transfer department of ANO “Innovation Center Koltsovo” being part of the regional consortium of the Regional Integrated Center of Novosibirsk Region, Maria Pelipas, introduced the participants of the conference to the experience of development of international cooperation for enterprises and search of the foreign partners with assistance of EEN, technology transfer networks and other instruments.



MEETING OF THE COUNCIL FOR SCIENTIFIC AND TECHNOLOGICAL AND INNOVATION COOPERATION IN BRICS

Moderator: Ludmila Ogorodova, Deputy Minister of education and science of the Russian Federation

Deputy Minister of education and science of Russia Lyudmila Ogorodova urged the Russian regions to engage in the work of the Council for scientific-technological and innovation cooperation in BRICS.

“My goal is to inform the regions about what entry points you may find interesting,” she said, speaking at the meeting of the Council for scientific-technological and innovation cooperation in BRICS, noting that scientific organizations and individual scientists can participate in the work of the Council.

BRICS created a platform for scientific, technological and innovative cooperation, defining four vectors: coordination of existing programs for scientific and technological cooperation of States; the establishment of a framework Protocol BRICS to Fund joint projects; infrastructure sharing; establishment of joint research and innovation platform.

The Deputy Minister said that uniting the efforts of Russian scientific centers with Chinese and Indian centers will help to obtain a competitive advantage over scientific centres in other regions of the world.

ROUND TABLE “INNOVATIVE CLUSTER OF INFORMATION AND BIOPHARMACEUTICAL TECHNOLOGIES OF NOVOSIBIRSK REGION: THE VECTORS OF DEVELOPMENT”

Moderator: Artem Shadrin, Director, Department of social development and innovation, Ministry of economic development of the Russian Federation

The Roundtable experts discussed the results of implementation of projects of the Novosibirsk combined cluster of IT and biotechnology in Tomsk special economic zone, as well as the prospects for the development of clusters based on synergy, IT and Biotechnology and Siberian biotechnological initiative, which involved the representatives of seven regions of Siberia. This approach allows to identify points of growth in new directions, ideas for new products and technologies, and to reach a new level of interregional and international cooperation.

In addition, Artem Shadrin declared that the Ministry is preparing to support the transition of clusters to the model 2.0 and in late July will announce a competition for clusters, allowing them to reach the standards of control quality. *“We want to do this to raise the scale of projects: not to reproduce the current activities of companies with rate of growth and to reach a new level of ambition. This means new niche*

markets from the point of view of products and services that are exported, and new levels from the point of view of the role of clusters in the regional economy,” Artem Shadrin said and urged the leaders of the cluster to immediately begin developing programs for the transition to the 2.0 model.

INTERNATIONAL FORUM “DEVELOPMENT AND PRODUCTION OF NEW MEDICAL PRODUCTS AND MATERIALS IN THE FRAMEWORK OF IMPORT SUBSTITUTION”

Moderator: Ekaterina Mamonova, Director General, JSC “Innovative Medical Technology Center (Medical technopark)”

Co-moderator: Mikhail Sadovoy, Director, FSBI “Tsiyvan Research and Development Establishment of trauma and orthopedic surgery”

First Deputy Chairman of Russian State Duma Aleksandr Zhukov noted that the theme of innovation in the Novosibirsk region has received a great development. He called the region “smart” and noted the development of science in many different directions, including medicine. *“A medical cluster is created in the region, a large number of hospitals and research institutions are running, – said Aleksandr Zhukov. – It is worth noting medical technopark created, in the shortest time and which is one of the flagship projects in the field of medical research. The Novosibirsk region is actively working within the framework of import substitution, a number of developments almost completely displaces imported products and a number of developments can be presented for export. In the future, the question of opening of the sports medicine center in the region is considered – not simple but very promising project which may be one of the engines in the development and use of innovative and advanced technologies and materials and treatment methods. Medicine is the nation’s health, and development of this sector is a priority.”*



Sergey Kraevoy, Deputy Minister of Health of the Russian Federation, noted that innovation in the health sector is among the main tasks in the development of science in the world: *“The project aimed at solving problems of varying complexity, successfully implemented in the Novosibirsk region in the form of the Medical Industrial Park – a unique production, opening a new page in the development of Russian health care. It is important to notice that the project is implemented on public-private partnership platform, which enables the government to provide a quality care to the population at saving the state budget”.*



According to Yaroslav Frolov, the Deputy Minister of Health of the Novosibirsk region, due to the success of health care and the introduction of innovative technologies, 97% of the population of Novosibirsk region received a high-tech medical care without having to travel outside the region.

During the meeting the participants addressed such topical issues as the prospects of import substitution in healthcare, aspects of the medical industry, new rules for registration and examination of safety, quality and efficacy of medical devices in the system of the Eurasian economic Commission, as well as the topic “Industrial-medical cluster of the Novosibirsk region as a flagship project of the program of re-industrialization of the economy of Novosibirsk region”.

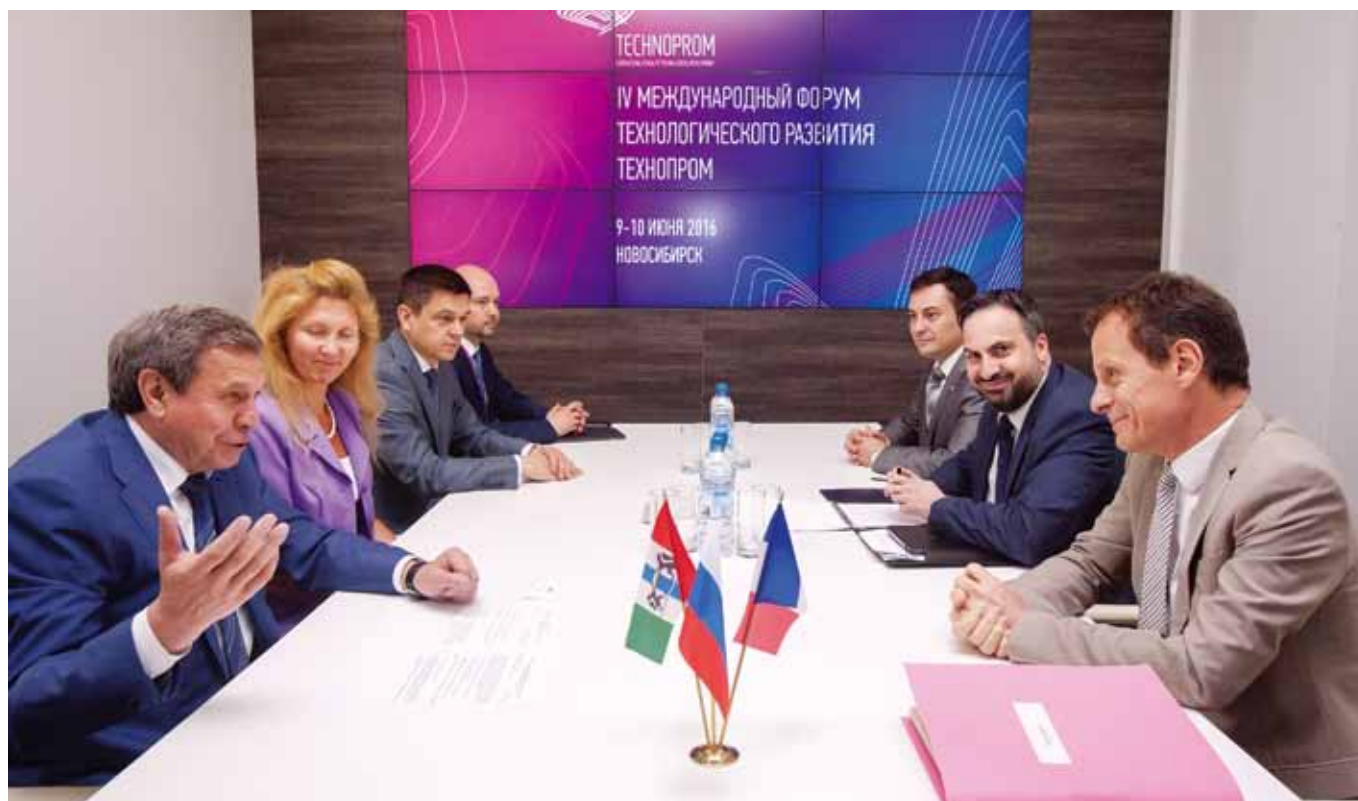
MEETING OF GOVERNOR VLADIMIR GORODETSKY WITH THE FRENCH DELEGATION

Prospects of cooperation of the Novosibirsk region with France were discussed at the meeting of Governor Vladimir Gorodetsky with the French delegation.

The Governor thanked the members of the foreign delegations for participation in the events of the forum. *"I am glad that we met in such a creative working environment – the forum, where for the fourth time issues of strategic development, including the program of re-industrialization of the economy of Novosibirsk region, are discussed. One of the important components of this program is a more efficient implementation of international cooperation. Our region has long existed in close cooperation with French partners, and our mission for the near future in this direction is to create conditions for further productive cooperation",* Vladimir Gorodetsky said.

The head of the delegation, the General Consul of France in Moscow Mark Sedille at the meeting expressed confidence in further strengthening of international relations: *"We are pleased to see that the interest in mutually beneficial cooperation between France and the Novosibirsk region is on top level. This, in particular, cooperation in the field of education and science. In the region is showing great interest in the development of innovative technologies. I am sure that our mutual cooperation will continue to develop successfully,"* Mark Sedille said.

During the visit to the Novosibirsk region the delegation of the French Republic attended a series of events of the forum "Technoprom-2016", including the Siberian venture fair.



MARINET AND TECHNET

For the first time at the forum “Technoprom” the presentation sessions of the STI projects MariNet and TechNet were held.

Moderator of the MariNet presentation site Alexander Pinsky, Director of marketing GC “Transas”, Deputy head of the MariNet working group stressed that the roadmap has been approved, and three markets have been identified: the e-navigation, ocean resources exploration, underwater robotics. The experts discussed the four selected projects in the stated areas, which demonstrate the possibility of using technology MariNet.



The experts noted, unmanned navigation means real-time exchange of cartographic information, in fact, an evolutionary continuation of the automatic navigation. According to experts, in 10–20 years there will be the first unmanned vessel. Next comes a network of smart vessels connected to the network of sensors at different depths to create a flow of marine data. Then groups of surface and underwater robotic platforms, unmanned autonomous submersibles shall appear designed on the principles of buoyancy, capable of plunging and floating, like fish, of travelling quite large distances. To use them effectively underwater infrastructure is undoubtedly necessary, the growth of which is proportionate to the demand and supply of robotic systems.

Experts highlighted that MariNet is open to new ideas and



projects.

Moderator of the TechNet presentation site Vladimir Knyagin, Vice-President of the Fund “Centre for strategic research”, said: “Literally smart factories. An attempt was made to systematize factories of the future”. First of all, this is digital design and simulation, additive technology and new materials.

The platform experts presented their own vision of the TechNet project, discussed topical issues of its implementation, conducted a comparison with the concept “Industry 4.0” that is being realized in Germany. During the discussion it was stressed that it is important to have a smart model which has all the data about materials, production processes, and to continue focusing on expanding of global platforms of factories of the future as an industrial network designed for production of globally competitive products of the new generation.

As the result a proposal was made to create a network of 20–30 intersectoral experimental digital centers, connected to the clusters as centers of competence that are interested in reducing the time for certification.

At both sites experts made proposals on cooperation with regions and regional companies.

SKOLTECH SESSION

Moderators:

Alexey Ponomarev, Vice-President for strategy and relations with industry, Skolkovo institute of science and technologies, Pavel Dorozhkin, Chief Researcher, Center of photonics and quantal materials, Skolkovo institute of science and technologies, Vladimir Drachev, professor, Center of photonics and quantal materials, Skolkovo institute of science and technologies, Albert Asibulin, professor, Center of photonics and quantal materials, Skolkovo institute of science and technologies, Kleman Fortin, professor, center of design, industrial technologies and materials, Skolkovo institute of science and technologies, Alexander Safonov, Chief Researcher, center of design, industrial technologies and materials, Skolkovo institute of science and technologies

The industrial technologies model has changed, as was announced during the session of Skoltech by the professor of the Center of design, industrial technologies and materials of Skolkovo center of Science and Technologies, Kleman Fortin. The above changed that much, that he considers himself of right to declare the start of the 4th industrial revolution. *“During the last 20 years the products become more advanced. More and more electronics is embodied into machines. The main aspect is the engineering manufacturing. There are many technologies invented but not brought to market, as they are too expensive economically. As well as their manufacturing, development and the technologies themselves”* – reported the speaker. *“To solve this problem we need the manufacturing lines to be more flexible and functional. For example in automobile manufacturing the whole production line will stop in case of the model change. The solution of this problem is already found.”*

One of the successful manufacturing development indicators is its efficiency: the number of details produced in a minute. For this the exact prototype should be done with detailed description even if we speak about an ordinary screw.

At the stage of the new technological development study many companies die. Kleman Fortin called this stage the “death valley”: *“When you develop the project you answer the “What?” question. The drawings, the specifications, the models, than the workshop production. One of the key mo*



SKOLTECH SESSION

ments to answer this question is to set up the process of constant changes. This is the industrial reality. How many times can each part of the product change? For example any spare of a plain can be changed up to 7 times. These are about 1 million 600 thousand variations for the whole plane. In cosmic sphere – development of all details up to serial production takes 16 years. In air-cosmic sphere the documentation for a plane has a size to fill in the body of a plane”.

The reporter called the appearance of the PLM (product lifecycle management) management the key takeaway of the 4th industrial revolution. This is an applied software for management of the product life cycle. Among the rest this system allows to analyze the changes in expectations of the end users and to bring this data to the producers, as Kleman Fortin says: *“If you look at the manufacturing cycle, you can see the needs of the consumers. Nowadays thanks to sensors the consumer can get more data about the products. The PLM system is based on the calibration model technology. We can correlate all this to the 3D model. That is not a limit for the revolution; we need to invent the new approaches to modeling. The PLM structure has a virtual model, virtual pro-*

totypes, the virtual manufacturing is adjusted. The system can also provide an assembly line.”

The speaker is sure: the future belongs to people able to set up the feedback between technologies and scientific research.



ROUND TABLE “INNOVATION DEVELOPMENT PROGRAMS OF STATE COMPANIES: RESULTS AND PROSPECTS OF IMPLEMENTATION IN THE DETERIORATING EXTERNAL ECONOMIC AND POLITICAL CONDITIONS”

Moderator: Pavel Svistunov, Deputy Director, Department of Social Development and Innovation, Ministry of Economic Development

The roundtable participants tried to answer questions, to what extent it was able to implement the planned measures in the program, what is the real place of innovative development programs in strategic planning of companies and how programs and the role of innovation in companies in the current economic situation change.

Up to 10% of the total production volume of purchases state corporations acquire in small and medium-sized businesses. According to the participants of the round table. For example, representatives from Rosatom said that they are always open to suggestions from the small and medium-sized businesses. According to them, at the auction with the participation of representatives of small and medium-sized businesses the corporation has saved hundreds of billions of rubles since 2009. The annual rate of the economy is up to 10 billion rubles.

In addition, the corporation is interested in startups. On working with small businesses in detail spoke the chief specialist of the Department of the innovative development of control over FTP and innovative development of



the state corporation “Rosatom” Dmitry Zmienko during the company’s innovative development program presentation. According to him, the development and introduction of new products depends on the development of elements of the innovation environment, such as various types of partnership with small and medium-sized businesses, clusters, technological platforms. “Rosatom” pays considerable attention to the development of partnership with small and medium-sized businesses; it is believed that their key advantage is the flexibility and speed of development and implementation of innovative solutions. Since 2012 the corporation has introduced tools such as innovative platform and one-stop shop system for small business. This year, the road map is formed, which will further expand the access of small and medium-sized businesses to procurement in the nuclear industry.

PANEL DISCUSSION “INTERACTION OF UNIVERSITIES WITH TECHNOLOGICAL LEADERS: ON THE WAY FOR GLOBAL DEVELOPMENT” AND AN EXPERT WORKSHOP “TRAINING PERSONNEL FOR INNOVATION SPHERE”

Two events of the Forum were brought together by the theme of formation of the human potential effectiveness. Interprofessional approach of human capital drivers was embodied in past discussions.

The importance of discussing the theme of education is conditioned by the urgency of a new professional training development and modernization of the entire engineering education. S. Lozinski, a partner at the SPG, moderator of the expert workshop on “Training personnel for innovation sphere” proposed to *“focus on the engineering education, because if we talk about the innovation sector, the engineering approach here is the most important and meaningful. We know how to train very good researchers, but do we know how to train very good engineers?”*

Deputy Minister of Education and Science of Russia, Alexander Klimov, drew attention to the multifactorial nature of the solution to the problem: *“We are moving in three directions from the point of view of the creation of programs that respond to the challenges of time and meet the requirements of the innovation sphere and the requirements of companies engaged in high-tech developments. This combination of practice and educational activities, the formation in the framework of of the new federal state educational standards of a common understanding of what is called soft skills or metasubject competence and individualization”.*



Assistant Governor of the Novosibirsk Region Marina Ananich noted that there are many current initiatives, but there is no system and invited to combine the change of the technology lesson, the introduction of technological entrepreneurship and the development of additional classes and competitions of engineering STI. The interaction of school, university, college and high-tech business must be built on a system of technical promotion and creation of teams around the high-tech projects, including a program of re-industrialization of the region and the National Technology Initiative.

S. Mardanov, manager for the development of technology transfer of “RVC”, moderator of the panel discussion “Interaction of universities with technological leaders: on the way for global development”, said: *“The last ten years we have been actively building the innovative ecosystem of universities, research organizations, working with better ways for them to deal with technology transfer, to build connection with industry”.*

Executive Director of the non-profit partnership “Club of Directors of Science and Innovation” V. Costeev emphasized the cooperation of leading universities and key industrial companies, in particular, on the basis of formation of engineering companies and engineering centers.

X ANNIVERSARY SIBERIAN VENTURE FAIR

Anniversary Fair again became a platform for a discussion of the most important aspects for the creation of a favorable investment climate in the regions of Siberia in the current economic conditions.

Congress block of Anniversary Fair had a very full agenda, a number of events which carried a strategic character. At the plenary session of the “Niches for Russia in the global technology markets,” the experts discussed the opportunity of Russian companies to expand into international technology and venture capital markets, their competitiveness in global value chains. The discussion was attended by CEO of Russian Venture Company Igor Agamirzyan, vice president, executive director of Cluster of space technologies and telecommunications of “Skolkovo” Foundation Alexey Belyakov, vice president of government programs and cooperation with industry of Skolkovo Institute of Science and Technology Alexey Ponomarev. According to participants of the discussion, it is now necessary to focus on new high value-added markets, look for the niches in which it is possible to achieve maximum business margins.

Base session of congress block were directed mainly at solving specific applied problems. So, in an open debate “Corporation & Investor & Entrepreneur: Open innovation tools” experts discussed the issues of attracting investments and building relationships with strategic partners. Section “New Horizons. Financial fork technology for early stage companies” was devoted to such an indispensable element of the innovation ecosystem as a business angel investments.

Deputy Director General for Development, a member of the Board of RVC Gulnara Bikkulova, president of the National Business Angels Association Vitaly Polehin, managing partner Starta Capital Fund Lyudmila Golubkova, President of NP “Business angels of Ural” Valentina Slavina, CEO seed fund early stages of i-Accelerator Yuri Fedotkin discussed the development prospects of Russia’s Institute of business angels. Experts pointed out that the system of “Investors vs Projects” is “a great variety of options” and the availability of business angels in project is welcome by everyone and private, public venture funds and institutions engaged in grant support, so it is very important to increase funding for the program “state money + business

angel”.

The fair organized special contact events where representatives of the investment community met with representatives of the regional authorities responsible for the establishment in the region favorable atmosphere for investment and with the management of innovative companies-exhibitors.

The culmination of the X Siberian Venture Fair has become a solemn ceremony of awarding the winners of the Fair. Bronze Diploma received the Novosibirsk company “Noten”, producing peak power compensators for benzo / diesel generators to customers in need of any independent power supply systems (size of the market in Russia is estimated at \$ 200 million). Silver medalist was the company “Optipleyn Unmanned Systems”, which develops and manufactures unmanned aircraft as well as renders services associated with the use of drones. Finally, the first place was taken by Tomsk’s company “Spinor” presented a project for the modernization, expansion of production and promotion of commercially available apparatus physiotherapy “SPINOR” for use in the rehabilitation of cancer patients in the inpatient and outpatient settings.



VISIT OF THE EXHIBITION FORUM “TECHNOPROM-2016” BY DMITRY MEDVEDEV

Before the official opening of the exhibition, held in the framework of the forum “Tehnoprom-2016”, it was visited by the Prime Minister Dmitry Medvedev.



Breakthrough high technologies in the region were shown to the Prime Minister Dmitry Medvedev as a single project – a program of re-industrialization of the economy of the Novosibirsk region. 10 flagship projects at the crossroads of science and industry were presented in specific instances products at the exhibition forum “Tehnoprom”. The head of the region Vladimir Gorodetsky presented the program.

As a living example of the program the head of the government was demonstrated a powerful software package for industrial enterprises, which saves up to 70% of the cost of imported analogues of such equipment. The work of first domestic 3D-printers for metal and special “ink” for it in the form of powders of metals, oxides, and ceramics were shown. *“The idea is very good. I hope that on the basis of all that has been done in the Novosibirsk region, and the potential of science, production and business – all this will give its tangible results”,* – said Dmitry Medvedev and wished good luck in the project.

The re-industrialization program of the region economy includes not only the development of innovation infrastructure of diversified industry, but also the support of scientific schools, small and medium businesses, focused on high technology. Among the projects of the program:

“Creation and development of a cluster of high-tech medicine in the Novosibirsk region”, “Creation and development of clusters and micro-, nano- and bioelectronics”, “Development of a national industrial automation platform”, “BioFarmPolis: development and production of original biopharmaceuticals and antibiotics”, “Siberian metallurgy and machine-building cluster of digital technologies and additive manufacturing”, “Prombiotech: production of enzymes for agriculture”, “Smart region”.

Alexander Zhukov, Deputy Chairman of the State Duma, said: *“There are specific projects based on modern scientific domestic developments. Therefore, the Chairman of the Government Dmitry Medvedev has instructed the government to create a working group headed by Deputy Prime Minister, who would coordinate the implementation of this program, and to prepare, in shortest possible time a schedule of implementation of the program. In fact, the program is approved by the Prime Minister. The government is instructed to assist in its implementation”.*

In terms of the geography of the involved scientific and business structures the program will affect all regions of Siberia. It may be called a pilot project, which will show the whole country a new, non-oil economic path.



FORUM EXHIBITION “TECHNOPROM-2016”

In total, the exhibition was attended by about 250 companies, institutes of science, universities, technology parks, which have demonstrated innovation and technology in the areas of: biotechnology, IT-technologies, renewable energy and others, including powerful unit of practical solutions especially designed for the development of Arctic regions Russia.

The exhibition brings together the leading companies that presented the latest equipment, technology and innovation. The exposition has been deployed by more than on 5,000 square meters of exhibition space. The exhibition had a specialized area for technological presentations and master classes – TECHNO View, where the participants and guests of the event conducted presentations and workshops.

On the day of opening of the forum the exposition was visited by Russian Deputy Prime Minister Dmitry Rogozin and First Deputy Chairman of the Assembly of the State Duma Alexander Zhukov.



Dmitry Rogozin stressed the relevance of technologies intended for the development of the Arctic. According to him, the Far North will be the testing ground for all technologies – from clothing to complex mechanical devices. While the priority is in the military developing, civilian technologies must keep pace. It's time to check immediately new developments in extreme conditions.

The Arctic is waiting for new clothes and shoes, building materials, mobile equipment, ships, planes, ATVs and communications.

Alexander Zhukov noted that the presented innovations are willing not only to replace imported products, but also to bring Russia into the international market.

AWARDS CEREMONY OF THE COMPETITION OF CCI OF THE RUSSIAN FEDERATION “GOLD MERCURY”

The forum presented the awards to the winners of the regional stage of the competition “Gold Mercury”. In 2016, just two Novosibirsk companies reached the final and became winners of the federal stage of the competition. National Award “Gold Mercury” is a patented and registered competition of Russian business enterprises.

It is an important part of the Federal program of state support of small business and conducted by CCI, regional CCI with the support of the Federation Council, the Ministry of Economic Development and Trade, the Ministry of Regional Development and the Foundation for Promotion of regions.

Congratulating the winners of the regional stage of the federal competition “Gold Mercury”, Yuri Bernadsky, president of the Novosibirsk City Chamber of Commerce, wanted to continue to find something new and unique, which makes the company a leader in its segment. *“Today those succeed who quickly orients in changing circumstances, who finds new solutions, who knows how to take risks and move toward the goal”.*

The fifth year in a row Novosibirsk enterprises become winners and laureates of the federal stage of the competition “Gold Mercury”, which, according to Yuri Bernadskii, promotes the formation of a favorable image of Novosibirsk region and Novosibirsk business at a national level.

In 2016, two companies from Novosibirsk came through to



the final and became the winners of the federal stage of the competition “Gold Mercury”. The winner in the field of innovation was recognized the LLC “EPOS-engineering”. In the construction sector the winner of the competition was a group of “Hotel Development” companies. The awards ceremony was held in Moscow on May 26, the Day of the Russian business.

In 2016 Novosibirsk City Chamber of Commerce is recognized as one of the best organizers of the regional stage of the competition “Gold Mercury” and received the diploma of the CCI of the Russian Federation “For active participation and contribution to the popularization of the National Chamber of Commerce Prize of Russia in the field of business “Gold Mercury”.

SIGNING OF AGREEMENT BETWEEN THE MINISTRY OF EDUCATION AND SCIENCE AND THE STATE CORPORATION “ROSATOM”

Knowledge Management System, developed in the framework of the state corporation “Rosatom”, will be introduced in the leading universities of Russia.

The Ministry of Education and Science of the Russian Federation and the State Atomic Energy Corporation “Rosatom” have signed a license agreement granting the right to use the second version of Knowledge Management Systems of Rosatom (KMS) for the introduction in the country’s universities.

Knowledge Management System (KMS) is developed by Rosatom and is a unique product that allows the user to manage knowledge and intellectual property by using advanced techniques and information systems developed in the nuclear state corporation.

Lyudmila Ogorodova noted that knowledge management system developed by specialists of Rosatom, is popular. *“Its users are primarily universities, and now an additional 30 universities expressed their desire to connect to the system”*, – said the deputy minister.



Vyacheslav Pershukov said in turn that Rosatom has become one of the first major Russian companies, who solved the problem of intellectual property involving in trade turnover. *“This property needs to sell, redistribute, to put on the balance and take into account. An intangible asset*



is difficult to consider and even to describe. For this asset a separate control system is required, and Rosatom has created it, calling KMS. Under the agreement signed today, we have transferred to the Ministry the new version of CPS 2.0, as we are the state company we give our best management of state assets developments to the government”, – said Deputy General Director.

SIGNING OF THE AGREEMENT WITHIN THE PROGRAM “BIOTECHNOLOGICAL SIBERIAN INITIATIVE”

IV International Forum of technological development “Tehnoprom-2016” has become a platform where the dialogue between the government, academia and business contributed to the conclusion of important agreements that will impact not only the development of the Novosibirsk Region and the Arctic region, but throughout Russia.

One of the most ambitious agreements was a document on cooperation in the framework of the project of national importance “Siberian Biotechnology Initiative” (SBI). The signing of the document was attended by the Governor of the Novosibirsk Region Vladimir Gorodetsky, the Governor of Altai Territory Alexander Karlin, the Governor of Krasnoyarskiy Krai Viktor Tolokonkiy, the Governor of the Irkutsk region Sergey Levchenko, the Governor of the Omsk region Viktor Nazarov, the Governor of Tomsk region Sergey Zhvachkin and the First Deputy Governor of Kemerovo Region Maxim Makin.

Deputy Governor, Chairman of the “Siberian biotechnology initiative” Council Sergei Syomka recalled that the SBI interregional program was formed a year ago at the international forum “Tehnoprom-2015.”

The main objective of “Siberian Initiative” is to achieve

the objectives for the development of biotechnology as one of the areas of high technology, identified by the Russian Federation Government in the past year.

“The restoration of the old cooperative relations, the promotion on the basis of new developments of biotechnology products in various fields of national economy of the Russian Federation – are the main issues that will solve the Agreement”, – said Sergey Syomka.

The subject of the Agreement was the interaction and collaboration of seven Siberian Federal District regions in the framework of the interregional program “Siberian biotechnology initiative”, it will bring together regions in the creation and joint development of the biotechnology industry in Russia in the following areas: biotechnology for agriculture, pharmaceuticals, food industry, biomedicine, forestry economy, energy, environment and housing and communal services.

Nikolai Rogozhkin stressed that the project of “Siberian biotechnology initiative” aimed at the restoration and upgrading of the biotechnology industry in Russia based on the Siberian regions potential. To solve this global problem is only possible by combining the efforts of several subjects of the Federation.



TECHNOPROM-2016. SIGNED AGREEMENTS

At the forum “Tehnoprom-2016” Vladimir Gorodetsky and the president of the Inter-regional public organization “Association of polar explorers” Artur Chilingarov signed a number of documents: agreement on cooperation between the Inter-regional public organization “Association of polar explorers” and the Government of the Novosibirsk region, the agreement on cooperation between the All-Russian public organization “Russian geographical society” and the government of the Novosibirsk region, a memorandum on cooperation in social development in the consolidation of the development of the Arctic zone of the Russian Federation and associated infrastructure between the International forum “The Arctic: present and future” and the International forum of technological development “Tehnoprom”.



The agreement with the Association of Polar Explorers is aimed at cooperation of the parties to improve the legislative base of the Russian Federation in the development of the Russian Arctic, the social protection of explorers, the environmental protection, the realization of the basic directions of the state policy of Russian Federation in the Arctic and Antarctic regions, the investment in projects in priority areas of the state Russia's policy in the Arctic and Antarctic.

According to the Governor, the agreement on cooperation between the All-Russian public organization “Russian Geographical Society” and the Government of the Novosibirsk

region aimed at patriotic education of youth through the study of the geography of the region and the country.

Vladimir Gorodetsky and academician, the chairman of the State Organization “Russian Foundation for Basic Research” Council, Vladislav Panchenko signed an agreement between the Novosibirsk region and the Russian Foundation for Basic Research (RFBR) to conduct regional competitions of fundamental scientific research projects. According to the text of the agreement, the parties will jointly hold competitions of fundamental scientific research on an equal basis by providing their funding. The subjects of conducted regional competitions will be determined on 23 fields of basic research, including energy saving and alternative energy, micro-, nano- and bioelectronics, new technologies in the development of agro-industrial complex, etc.

“We hope that the cooperation with the Fund will support basic research, the results of which will contribute to the development of unique scientific potential, maintaining industrial competitiveness and national security of the Russian Federation as a whole and may be the basis for solving of practical problems facing the Novosibirsk region in the framework of re-industrialization programs of Novosibirsk region economy and the creation on the territory of the Novosibirsk region of advancing social and economic development,” – said the Governor.



TECHNOPROM-2016. EVENTS, FACTS, RESULTS

IV International Forum of technological development “Tehnprom-2016” took place!

The forum was attended by over **6000 people** from **28 Russian regions and 15 countries**, including Germany, France, Great Britain, Switzerland, Ukraine, Kazakhstan, Belarus, Venezuela, Congo, Thailand, the People’s Republic of China, India and South Korea.

The main agenda of the forum includes discussions on strategy and technology development of the Arctic zone of the Russian Federation and the Strategy of the Russian Federation scientific and technological development in the long term (until 2035). The event number of forum connected all events in a single unit.

In the iconic events of the forum took part more than 500 representatives of government, business and expert communities, specialists on the development of industry, science and education.

The topical addition to the business program was the “Tehnprom” exhibition, which was attended by about **250 companies, universities, institutes of science**, presented **70 stands**.

Particular attention is paid to the program re-industrialization of the economy of the Novosibirsk region supported by Dmitry Medvedev: *“The idea is very good. I hope that on the basis of all that has been done in the Novosibirsk region, the potential of science, production and business, – all these will give their tangible results,”*– said the head of government.

Within the framework of the general program of the forum more than **50 events** were held in the format of two plenary meetings of the “Russian Arctic. Strategy and development technology” and “Niche for Russia in the global technology markets”, “Re-industrialization of the economy of the Novosibirsk Region” plenary session and various round tables, symposia, meetings, special sessions, etc.

Within the forum “Tehnprom-2016” the discussion was held of the further development of science, technology,

training, development of industrial parks, the strategic development of the regions, innovative development of state-owned companies, Russian Technologies access to international markets and a variety of other.

Synthesis of analytical and expert discussions with the consideration of practical actions in the field of industry, science, education and medicine, the prospects for development of the Arctic as the most important mega region, as well as a concrete demonstration of the achievements of Russian science and industry have created an attractive image of the forum “Tehnprom-2016” as the brand of theory and practice.

According to the Governor of the Novosibirsk Region Vladimir Gorodetsky: *“Tehnprom” has become a key international forum for discussion of proposals on the definition of the state policy strategic priorities, which are able to provide the technological leadership of Russia. Each year, the work on the Forum helps its participants to find solutions not only of general issues, but also the targets.”*

The fourth time the forum has become an important platform for professional dialogue between the authorities, the scientific community and business.





TECHNOPROM

FOURTH INTERNATIONAL FORUM
OF TECHNOLOGICAL DEVELOPMENT

**NEW REALITY.
SYNERGY OF TECHNOLOGIES
AND ENVIRONMENT**

9–10 JUNE 2016

FORUM SUMMARY