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WORLD AS INDUSTRY



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ПРИСОЕДИНЯЙТЕСЬ К НАМ:



Journal strategy

Founder and publisher

Alliance Media Strategy LLC
as part of ACIG Group of Companies

Address of editorial stuff and publisher:

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Moscow, Russia

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Distribution: pr@strategyjournal.ru

Advertisement: adv@strategyjournal.ru

Strategy Journal No. 2 (23)

Age limit: 16+

Signed to print: 21.06.2016

Printing date: 24.06.2016

Publishing date: 30.06.2016

Printer: TalerPrint!

Address: 2/1, 1st Frezernaya st.,

109202, Moscow

Circulation: 15 000

Cover: SHUTTERSTOCK.COM

Distributed free of charge

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Sverdlov, Vladimir Rodionov.

Distribution in public authorities: the Russian Government, the State Duma of the Russian Federation, Ministry of Justice of the Russian Federation, Ministry of Healthcare of the Russian Federation, Ministry of Culture of the Russian Federation, Ministry of Education and Science of the Russian Federation, Ministry of Natural Resources and Environment of the Russian Federation, Ministry of Industry and Trade of the Russian Federation, Ministry of the Development of the Russian Far East, Ministry of Communications and Mass Media of the Russian Federation, Ministry of Agriculture of the Russian Federation, Ministry of Labour and Social Protection of the Russian Federation, Ministry of Finance of the Russian Federation, Ministry of Economic Development of the Russian Federation, Ministry of Energy of the Russian Federation, Federal Space Agency, Federal Taxation Service, Government of the Republic of Bashkortostan, Government of the Republic of Mordovia, Government of the Republic of Tatarstan, Government of Altai Krai, Government of Krasnoyarsk Krai, Government of Perm Krai, Government of the Irkutsk Region, Government of the Kaluga Region, Administration of the Lipetsk Region, Government of the Moscow Region, Government of the Novosibirsk Region, Government of the Samara Region, Government of the Samara Region, Government of the Tyumen Region, Government of the Ulyanovsk Region, Government of St. Petersburg, the Central Bank of the Russian Federation.

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ПРОДВИЖЕНИЕ
МЕРОПРИЯТИЯ
ИЗДАТЕЛЬСТВО



“World as industry” is an issue of the Strategy Journal in which we tried to cover today’s Russian industry from different sides. The real state of things is behind bare statistics and experts’ statements that often radically differ from what has been informed and published. Industry is not only a contribution to GDP, but also the image of our country, comfort of townspeople, as well as art.

Economists, environmentalists, industrial designers and other experts commented on the reasons why our high potential country failed to use its full capacity. They explained the readership what should be done to develop exports, improve competitiveness of Russian products in order to see our country among the leaders in various ratings.

We have tried to present from different viewpoints those things that officials avoid explaining. Sometimes irreconcilable ideological opponents came to the same conclusions independently during the preparation of the articles. As always, columnists of the Strategy Journal presented a retrospective review of the industrial world and discussed what place Russia may have on the global industrial arena in future. We hope that indifferent authors and participants of the latest issue will contribute to the development of domestic industry and tell readers a lot of new things that had been unknown earlier.

Dmitry Mikhailov,
Chief Editor

ДИЗАЙН
DIGITAL
ФОТО И ВИДЕО



Find Your Niche

What is behind bare statistics relating to the industrial production in Russia? When should we expect an increase in rates and an entry of domestic products into the international markets?
Alexander Maslennikov, Director of the Department for the Development of Economic Sectors, told Strategy Journal.

How would you describe the economic situation in industrial sectors? Where is state of things more optimistic and where should we solve major problems?

The state of things is different in each individual sector. For example, good dynamics are obvious in food and agricultural sectors, as well as chemical complex, a number of machine building segments (equipment and machinery building). The latter ones have increased by 4.4% in four months. The production of construction materials is among obvious outsiders due to a decline of 13.6%. According to forecasts, we should expect a decline of 10-12.5%. In general, the situation is quite good in the energy sector.

The light industry is one of our priorities now. Could you tell about the situation in this sector?

A new sectoral program has been developed and launched for the sector this year. We are in a constant dialogue with the Ministry of Industry relating to financing instruments for the sector, as we are often faced with the difficulty of obtaining loans for enterprises of the light industry. Certainly, difficulties with a loan for working assents are partially solved by the current measures. Enterprises obtain loans, but the situation is not so simple from the viewpoint of investment projects. We discussed it with Sberbank and other credit organizations — they all have extremely high risks on pledges. Banks have a very high assessment risk and the rate is much higher in comparison with other sectors. Although now we are trying to change these assessments, as both objective conditions and the industry have changed, and there are interesting projects. About 30 investment projects in the sphere of the light industry, which are ready to be launched in the near future. Indices have increased by 2.8% during four months. We expect an increase of 2.5–3% during the year and even up to 4% in 2017.

It is reported weekly that due to lack of orders one or another automobile plant starts shortening working hours. How do you describe the situation in the automobile and engineering industries in general?

The situation is really complicated. The number of passenger cars have declined by 25% following the results of four months. It is expected that the situation is to improve by the end of the year, but we will fail to reach positive growth. Manufacturers also

abstain from giving optimistic forecasts. According to Sollers, the decline may reach 10%.

AvtoVAZ gives a more optimistic forecast — around a 5% decline. According to the Ministry of Economic Development, it is expected a decline from 8% to 10% during the year.

Today the truck production also reflects good dynamics of 10%. The situation is a bit inert in the field of production of cars picture little, but “living” contracts began to appear. And we expect that the measures that had been taken in the industry will play a positive role and form a growth of 2.5-4%.

The machine tool construction industry shows a decline, but new long-term projects start appearing in the market. For example, Stan Group produces really top-class machines. They are not inferior in respect of design than those that were produced by world’s leading manufacturers. I have recently seen them on exhibition at Expocentre and it is a product of very high quality.

I am sure that the industry is on the right way. So, if a galloping growth doesn’t take place in the medium term, it will be later. Our market is also becoming interesting from the viewpoint of demand. The potential of the Russian market proves the fact that the world’s leading manufacturers such as DMG are being localized now. We are “palpating” our producers for export potential. In principle, they are not inferior to the competitiveness of foreign producers. Another matter is that it is too difficult to enter the markets. It is necessary to bring a machine, which should work for up to 8 years. After that they should receive all the necessary certificates and start selling the machine in this country. It takes a long time. Therefore, our manufacturers are primarily oriented to the domestic market. It is clearer, more accessible and easier for them.

We carried out a special analysis of export in the field of engineering. The engineering sphere was divided into four groups from the viewpoint of their export potential. We are interested in two of them. The first is increasing exports in the growing markets. The second is increasing exports in the declining markets. A growth of exports is obvious in the following sectors: farm machinery, cars, turbojet engines of all kinds, centrifuges, accessories, memory storage devices and TV cameras. The situation is more difficult in aviation due to tight conditions in the world market. Although, growth is also possible in this sector.

“The industry saw a decline of 0.1% in the last four months. We expect that during this year performance will remain at the level of the previous one”

What sector is dealing with the most difficult problems?

According to indices, the most serious decline is in the industry of building materials now. But it is a derivative of construction. The recovery of the construction industry will revive the whole sector. I am not sure that we faced some deep and unsolvable problems. Moreover, we and the Ministry of Construction are expecting that next year the construction sphere will show positive dynamics. It means that the production of construction materials will show an increase. But there are serious and systemic problems — a lot of obsolete equipment, inefficient production and non-innovative products. Even the EUROCEMENT group starts using new facilities that have been created or bought in recent years instead of old ones. In general, we expect a decline of minus 10-11% during the year.

The industrial production increased by 47.7% in Russia from 2002 to 2012. This figure has considerably increased in a number of the CIS countries: Azerbaijan — 179.8%, Belarus — 129.8%, Uzbekistan — 125.9%. Russia is behind Poland (84.7%), Korea (83.6%), Turkey (64.3%). Why does Russia have such relatively low figures?

According to statistics from the EEC, our CIS partners had significantly lower initial level of industrial production. If a new factory is launched in the industry with minimal performances it would lead to a double growth in percent. As for Korea, it has already won a reputation as a high tech country and declared about it. We also have been trying to diversify since 2007-2008. In my opinion, the current conditions allow us to reach the goal. Competitive factors were unfavorable during the high rate of the national currency. We were not competitive in basic factors — from high level of salaries up to the cost of energy resources. As a result, the cost of electric power exceeded this rate in the USA and some other countries in Western Europe by a certain time in 2012-2014. In principle, there were no prerequisites for rapid growth of the industry. The situation has changed and there are good examples in the chemical industry now. We also expect good cases in the sphere of engineering.

How do you think when we should expect the recovery of industry and its growth? What measures are being taken to achieve this goal?

In our opinion, the industry will start restoring next year. We expect a positive growth around 2-3% in 2017. There are

undistributed profits and economic conditions for the creation of new capacities in the economy. According to our expectations, current idle capacities will be launched next year due to the overall macro-economic recovery.

Is the Russian industry to “explore” new market niches?

The process always requires a lot of time and resources. In our opinion, it worth “exploring” new niches only if they have the export potential. Narrow niche markets, in particular high value-added product markets, are extremely specific that is why it is difficult to enter them. On the other hand, it is quite simple to anchor if you already work there. However, it requires a lot of time. A long period of time, high financial costs for certification and the necessity to receive permits for export financing are the main disadvantages.

Good export potential is obvious this year in the agricultural sector, as well in the individual segments of food and chemical industries.

What external barriers may prevent the Russian industry from entering international markets?

External barriers are natural obstacles that are associated with the market protection. In spite of the WTO and liberal trade rhetoric, the national markets are strongly protected particularly in the sectors related to engineering and agriculture. For example, if you are going to enter the Chinese market you will have to make great efforts for the certification of products. Above all, you efforts will be at obtaining protective regulations in foreign countries. This is the most significant obstacle and a fierce competition with foreign producers. The latter reason is contradictions — high logistic expenses and lack of export financing. Certainly, our Western partners propose higher enough volumes of export support and more attractive conditions. For example, now we intend to sell carriages in the Egyptian market, but there is a very fierce competition among foreign producers (Hungarian and Chinese). We expect that the contract will signed in the near future, but this process is always very difficult.

The determination of niches is a way to success. We definitely cannot integrate into the production chain. It is necessary to select segments with a certain background in order to become competitive.

“In our opinion, the industry will start restoring next year. We expect a positive growth around 2–3% in 2017”

What Obstacles Russian Exporters Face?

In May, Deputy Prime Minister Arkady Dvorkovich stated the position of the Russian Government in respect of non-resource exports, emphasizing the bet placed on the products of the machinery industry. He said that the first achievements are already there, but much more needs to be done. At this time, some experts blame the crisis on the orientation of the Russia's economy towards export of crude materials, and see no way to break the impasse at low prices thereof.

According to the Russian Export Center, every ruble invested in projects aimed to support exports in 2014, returned eight rubles. Relentless statistics, though, show drop in investments by \$108.6 billion both in the resource and non-resource sectors in the first eight months of 2015 as compared to the same period in 2014. In addition, export volumes of non-resource products fell during that period from \$175 billion to \$127 billion. So what kind of progress does the Government keep talking about?

Global GDP is 21% non-resource and only 2.9% of resource products. Russia's balance is about equal —

13.9% and 12.8%, respectively. At the same time, more than a third of non-resource exports are petrochemicals and electricity, and another 12% account for metallurgy, i.e. the ratio of exported "complex" products is quite a bit. Meanwhile, such a developed economy as Germany ensures 38.7% of GDP is represented by non-resource exports and only 0.5% is based on resource exports.

One may argue that Germany barely possesses such natural resources that neighboring countries could buy unprocessed. Germany does rely on raw material imports, but processing it into value-added products, the German economy could become the largest



exporter following the United States with 11% of world exports. There is no need to explain how it affects the quality of life within the country.

"Everybody seems to be struggling today. The Government does not shift responsibility of resuming economic growth and increasing the non-resource share of the state product, we're working on it," recently said Dmitry Medvedev, Chairman of the Russian Government.

As an outcome, the Russian Export Center was created. REC General Director Petr Fradkov is convinced that

the restrictions of the past two years, such as the sanctions, do not affect exports directly.

"Presently there exist all conditions to build-up non-resource exports, but some objective economic factors limit export growth to the undesirable level. Yet, non-resources exports increased in volume — the 2015 export volume index totaled 6.3% against 4% in 2014. This is a positive indicator, and we hope the trend continues. As for the drive for import substitution, it must be export-oriented. This is the only way to ensure the successful growth of the Russian economy.

Once businesses manufacture export-oriented goods, it will drive competitiveness and increase the quality of the goods in demand both outside and within the country,” believes Petr Fradkov.

According to the Unified Public Register of Legal Entities, over 4 million enterprises are present in the market as of 2015. All of them manufacture some sort of goods or provide services. Of these, only 0.5% export something.

Traditionally, exporters are more resilient market players. Foreign partners trade primarily with large businesses, since small and medium businesses constantly face obstructions of different nature. Moreover, it is not the proverbial bad tools to blame. Entrepreneurs admit the state to interfere greatly.

“We have a very complicated system of accepting exchange payments. Whenever a Russian company exports production more than on \$5,000, it must provide a stack of documents to a bank specifying what it sold, in what volume and why. These documents must be translated into Russian and certified exclusively for the bank. Such practice discourages from exporting from Russia and encourages to register a legal entity overseas. Until you file a complete report on the transaction, the bank keeps the money untransferred, and the report delay will be fined. That is why numerous accountants simply refuse to work with exporters. Russian vendors find it very difficult to compete with the Chinese, who offer free shipping facilitated by the state subsidies,” explains Pavel Frolov, ScratchDuino producer.

Polls show that entrepreneurs mostly lack the simplification of customs procedures to improve exports. Businessmen also ask to reduce the tax burden (abolish 18% VAT in favor of reinvestment of the residual funds in the company’s turnover, incentives for workers, purchase of advanced equipment), to establish a uniform approach to the interpretation and the resolution of disputes over export VAT and return of foreign exchange earnings, improve and simplify the procedures for obtaining legal protection of intellectual property, both domestically and internationally.



According to the ITC, in the first half of 2015, the main importers of Russian steel were Netherlands – \$13.4 billion, China – \$5.6 billion, Italy – \$5.5 billion, Turkey – \$5.3 billion

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“Our currency legislation involves obligatory control of foreign currency inflow (its necessity is a separate issue). It ignores the point that there may be contracts with no final amount and term: partner lists items as he sells them, and so every month. The legislation focuses solely on contracts characterized as “money – goods across the border – a contract is executed,” complains Mikhail Filippenko, General Director of Fast Reports.

Alexey Ulyukaev, Minister of Economic Development of the Russian Federation, mentioned these problems in one of his recent speeches, and, as he said, the situation had started to change.

According to the Unified Public Register of Legal Entities, over 4 million enterprises are present in the market as of 2015. Of these, only 0.5% export something.



According to the Unified Public Register of Legal Entities, over 4 million enterprises are present in the market as of 2015. Of these, only 0.5% export their commodities



“It is essential to relieve not only fiscal, but also administrative pressure. Now we have completed a draft bill on the supervisory activities, a bill, gained through long suffering. It is ready and reported to the president, and expected to be introduced in the State Duma in this session. Obviously, small and medium businesses benefit entirely from procedures involving scheduled and unscheduled inspections that would place tasks and target KPIs of relevant structures to reduce their number. Such would provide a quality registry of inspections and form a risk-oriented oversight mechanism focused on risk profiles. This mechanism could be implemented, where it is comprehensible, palpable and face no risk, thus, tight pressure on business through supervisory agencies would be redundant,” reported the head of the MED.



However, if you go back to the proverb about bad workman, who always blames his tools, another factor hampering the development of Russian exports must be mentioned. It is about the quality of domestic products, which does not meet the criteria of the international market. This complicates the process of certification.

“In order to enter any market, you need to get certified, get your portfolios of technical solutions translated, logistic chains established and a lot more,” explains Kirill Ivanov, Commercial Director of Penoplex.

Despite these problems, the Government optimistically expects high foreign demand for Russian non-resource goods. Arkady Dvorkovich confirms that current economic growth does not depend on domestic demand, but rather on unlocking this potential.

Petr Fradkov names industries, which contain this potential:

“Our main clients represent such industries as machine-building, agriculture and IT sector. However, it is not entirely correct to say that some industries have export potential, while others do not. Any product demanded in foreign markets has real export potential. Some countries may demand agricultural products; others need products of heavy machinery; third countries are interested in IT programs. We stand for proactive development of exports, bearing in mind demand in target markets.

This will strengthen the position of Russian exporters, and on the other hand, REC will stand ready to provide all necessary support to accomplish such proactive work.

International Trade Center statistics distinguish some non-resource exports growth points. They include such products as microprocessors, polyester fibers, artificial joints, x-ray equipment, and washing machines. Exports between 2012 and 2015 had increment in these products ranging from 450% to 102% each. For example, the supply volume of microprocessors to Germany and Finland amounted to about \$29 million.

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Besides, the basic plan the Ministry of Economic Development states that up to the year 2020 non-resources exports of the Russian Federation will reach \$467 billion and the number of exporters will triple. The Ministry has a more optimistic scenario, suggesting the volume of export to reach \$513 billion, and the number of exporters will increase fourfold. In the short term, that is, by the next year, the main factors of economic growth will go back to recovery.

Besides, this will entail growth in exports.

“Also, exports must keep positive trend. The forecast is based on the assumption that in 2017 exports will grow by 0.8%; real wages by 1.2%. Other nearly corresponding values: retail turnover growth by 1.1%, positive growth of industry by 1.1% and total GDP growth by 0.8%,” Alexey Ulyukaev reports data.

As he says, the dynamics will improve in subsequent years and the values of all these indicators will align 2-3%. In particular, after three years GDP will grow by 2.2% in 2019; exports will grow by 1.7%, investing will resume in 2017 and grow by 3.3% in 2019.



Besides, the basic plan the Ministry of Economic Development states that up to the year 2020 non-resources exports of the Russian Federation will reach **\$467 billion** and the number of exporters will triple

Russian Industrial Design

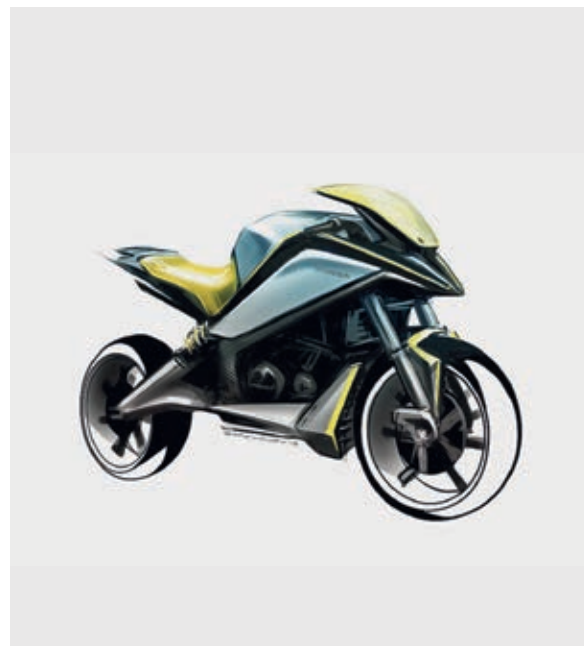
The Irkut MC-21 aircraft was unveiled in early June. It seems as if it was the first impressive presentation of the Russian product. As a rule, Russian products are hardly advertised on the world stage. Russian inventors are more popular in small circles and at home rather than beyond their native country's boundaries. The situation in the field of industrial design looks quite similar. Strategy Journal collected cases worth being told.

Peculiar Inventions

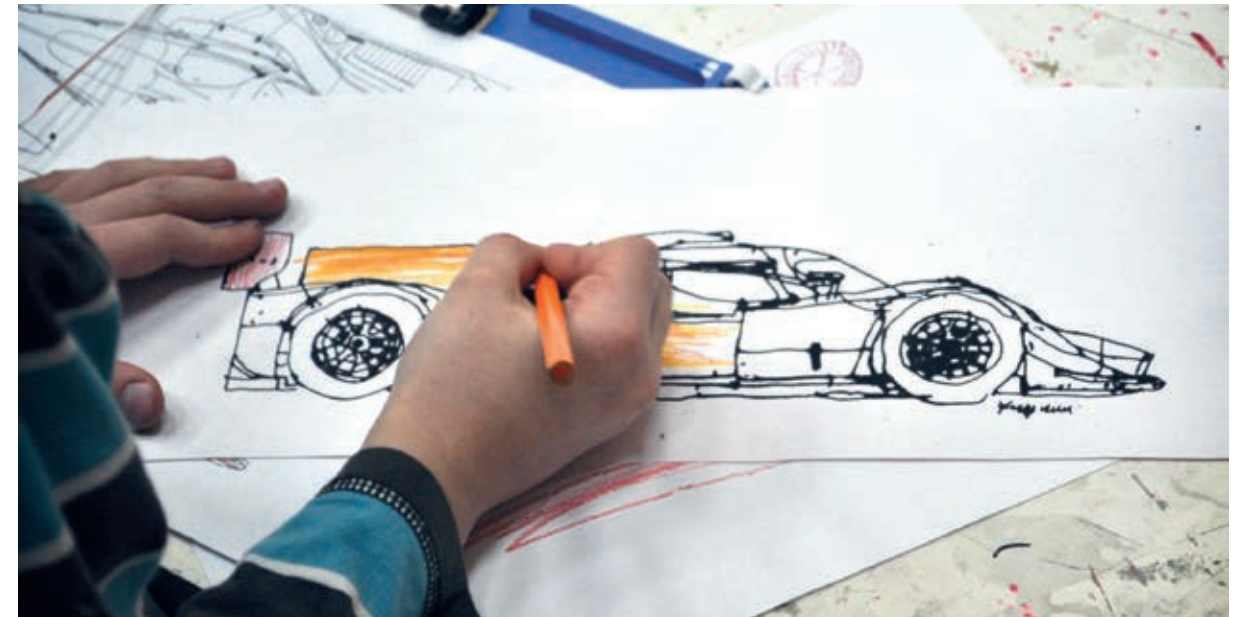
People's sense of pride often prevails when realizing the successful result of their activity. A similar situation occurred to Alexander Syachinov, a motorcycle designer and one of the founders at It Means Moto.

Once he saw his invention on the shelves of one of the large chain stores. Despite the fact that his invention was a toilet brush, the designer pointed out with no hint of sarcasm in his voice that he had been waiting for this "meeting" for four years. Now he is awaiting to see his works at moto showrooms of the largest companies.

The industrial design involves the whole subject area, from aircrafts up to such peculiar things as toilet brushes. The whole notion of this term includes a lot



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of areas. Russian professionals have significantly succeeded in the field of transport design. However, there are not so many legendary Russian projects.

"A designer is a person who works for a company and makes a product. During long-term economic stagnation, designers had no chance to put their skills into practice. However, some people developed concepts. After a while, several studios appeared in Moscow. They managed to make the most part of products when demand began to increase. At present, the production is on the rise that is why it is necessary to hire more designers. It is likely 10 years later we will consider that the vector of the Russian design is taking shape," Alexander Syachinov says.

Alexander Syachinov, CEO at It Means Moto, graduated from Moscow State University of Mechanical Engineering (MAMI), worked at an autostudio and even taught design to children. One day, he disappointed in cars and decided to engage in the product design, but his great interest in vehicles forced him to come back to his previous activity and form a design studio that deals with modernization and maintenance of motorcycles and bicycles.

Alexander Syachinov tells about his past experience with enthusiasm, but at the same not without regret. Mainly, about Marussia, the first sportcar project in Russia. Due to insufficient funding the realization of the project stopped at the stage of the ready prototype that was manufactured in accordance with serial technologies.

"The project was worthwhile. It was one of the projects that aroused Europeans partners' interest. We can proudly say that it was the highest degree of recognition. Many people were ready to buy the invention. Moreover, the design was exclusively Russian and the majority of designers were also our compatriots," he pointed out.

Alexander personally worked out the interior of the Marussia sportcar. According to him, the unrealized project means a failure of the Russian business.

The designer was involved in the creation of Vintage, another small-scale exclusive car by Bilenkin Classic Car based on BMW. Alexander designed the major volume of work. He was responsible both for the exterior, and comfort inside the vehicle.

Russian cars raise doubts due to the representation as a product of the solely Russian car industry.

An Englishman was a chief designer of LADA Vesta. A French specialist was a graphic designee. The interior design was worked out by our compatriot. The exterior of LADA XRAY was worked out by my classmate," Alexander Syachinov added.

Motocabriolet. Luxury

Now Alexander Syachinov works as a designer of motorcycles. There is an old Ural in his studio that will be modernized soon in addition to clients' motorcycles. According to the designer, he has a proposal for producers how to integrate the motorcycle into the modern world.

The Ural motorcycle is a "legacy" from the Soviet military industry. So, one of its main benefits is a reliable and maintainable engine. The only

disadvantage is ergonomics. However, it is possible to change a steering wheel, seats, and control units now by making them lighter and more comfortable. The old engine will give the invention a unique charm," the designer shares his opinion.

IMZ-Ural is an old Russian motorcycle plant. It is the only company in Russia that continues to produce motorcycles now. The Izhmoto plant was shut down in the late 2000s. IMZ-Ural has produced more than 3.2 million motorcycles since the 1940s. However, almost all modern production is exported.

Around 300 motorcycles are sold in Europe annually. Europeans associate Ural motorcycles with the symbol of friendship. This is the reason why they smile and take photos when meeting them.

At present, the production is private that is why the owners can give freedom to their imagination and start doing business in accordance with their own models.



"It was the only serial motorcycle with a sidecar in 1990s. That's why those who were interested in old motorcycles focused their attention on the Ural motorcycle. After some time, the community of fans began to increase and even appeared in other countries. However, nobody is interested in these motorcycles in our country," the designer says.

At the same time, the expert considers that people will continue to take interest in the Ural motorcycles abroad, but it is a matter of scale. Components of poor quality were replaced with parts of famous brands. However, there are no serious prospects for an increase in demand.

"The development has come to a stop, as the same models were "modified" by repainting and installing solar batteries. Moreover, it is not a "limited edition" if the producer attaches an oar to a sidecar, which is painted like an ice breaker," Alexander Syachinov explains his viewpoint.

The price of the Retro model is around 700,000 rubles in Russia. A person of moderate means and Soviet habits will prefer a car to the motorcycle. This is why 99% of motorcycles are exported.

Russian Metro

The Moscow government intends to replace all old carriages in the Moscow metro by 2020. The carriage fleet primarily consists of the model 81-717/714 and its modifications. According to Anton Kuzhilny, a designer at the Atom experimental design bureau, who worked out the R1 modern tram project, this carriage design met requirements in 70s, corresponding to relevant technologies and materials forty years ago.

"Today's requirements set new tasks – to reduce noise and vibrations, as well as increase comfort. In addition, it is relevant to adapt carriages for certain routes. It worth





Why reinvent the wheel?

Everybody knows about such national design schools as Dutch, German and French. There is no Russian schools among them, but it is not so bad, as it might seem.

“Speaking about the industrial design, a company usually uses various services if there is no such department in the company that deals with the visual aspect. When I was an intern at KISKA, there were people from all over the world: America, Europe and Asia,” Alexander Syachinov says.

Not many companies are ready to make an individual product, mostly, for ideological reasons. Vladimir Pirozhkov, one of the most well-known industrial designers in the world who worked out popular models of Toyota and Citroen, refused to design the presidential limousine, noting that he was not ready

to spend 5-7 years to create the safest car only for one person.

Designers think big. His company AstraRossa has already worked out helicopters for Sukhoi Superjet 100 and the Kamov Design Bureau. At present, Vladimir Pirozhkov is involved in designing an air vehicle that will go beyond one plane. In general, it may be a technological breakthrough.

There is only one way from Irkutsk to Novosibirsk and only one way from Tyumen to Moscow – the so-called Siberian Route that was used to lead the Decembrists. Nothing has changed essentially since then,” Head of AstraRossa says.

According to designer Vladimir Pirozhkov, the transport sector needs a completely new impetus, taking into account its numerous problems.

installing a greater number of seats, as the carriage were designed for long trips. The others need more standing room,” an expert in the field of transport carriages says.

According to Anton Kuzhilny, the exterior of 81-720/721 (Yauza) is quite interesting, as it has a reality-oriented high quality design.

“It is a well-designed invention that has become a trademark of the Moscow Metro. Such stylish solutions as interior lighting, the form and elements of fastening handrails and seats. Now we cannot use this type of design due to old technologies and materials. After upgrading the interior of the car lost all its attractiveness,” Anton Kuzhilny points out.

The original version of the carriage was equipped with comfortable seats that followed the shape of the back, which gave passengers a high level of comfort. However, they were replaced with anti-vandal in order to avoid stealing and accidental scratching. In general, the Yauza carriage failed to justify founders’ hopes.

It took them five years to re-invent the carriage since the first presentation. The train began to run on the line only in 1998. Metrovagonmash produces almost all carriages that are used by thousands of people daily. The company also exports its production to the neighboring countries. According to the designer of project R1, the most intelligent solution was an individual approach for dealing with the global market.

“It seems to me that metro carriages are a part of the metro system that includes a lot of factors: a track rail, width, height, passenger traffic. It makes no sense to put a universal carriage into operation, as it is necessary to offer a solution for a specific city. If we offer a solution then things will depend on the technology and materials. Russian manufacturer have their own weaknesses and strengths. However, Russian manufacturers rarely have full technical specifications, not all technologies are available. Tasks often require local and gradual solutions. A design project aimed at creating a new and modern car is a rare thing,” Anton Kuzhilny concludes.

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Rescue Startups

Russian major industry today is divided in two: plants with modern production lines that require no permanent modernization on one part; and obsolete industries becoming extremely inefficient without implementation of new technical solutions on the other. Strategy Journal in collaboration with Russian Venture Company has selected the most attractive startups powered by accelerator GenerationS.

Single Sample

Nail Yakupov is employed both in Ufa Engine-Building Production Association and in Technopark of Aviation Technologies engaged in manufacturing systems engineering. He knows firsthand how badly companies need low-cost equipment, and, therefore, proposes cheaper way of making single unique molds. Making cast parts requires equipment.

Now a lot of time and money is spent on such production. Nail Yakupov believes that investment casting wax composition and 3D printing can significantly reduce budget expenditures of enterprises and speed up their work. The project’s founder and his teammates offer technology and hardware-software complex (industrial printer) able to print out any parts regardless of size and complexity.

After the company qualified to the GenerationS finals organized by RVC, Rybinsk-based Research and Production Association “Saturn” showed interest to the



Industrial 3D printers used to print out wax models for investment casting expect demand from businesses within the United Engine Corporation. Machinery companies have a strong stake in this kind of equipment. There are at least 100 large and about 1,000 small and medium-sized organizations with such need in our country.

Nail Yakupov,
Director of LLC “Research and Production Enterprise “Neowax”



Most large companies are reserved regarding innovations. Needless to say that leading companies need new technologies. However, when it comes to creating new products or upgrading existing production, corporations often use designs of subordinate research institutes, R&D departments or conventional suppliers. It is easier, more intuitive and obliges no additional arguments for such implementation. Now there is little cooperation between industrial giants and small startups. They are essentially limited to sporadic pilot projects that are hard to evolve into systematic collaboration. This requires great organizational transformations within corporations and management support from the bottom up.

Gulnara Bikkulova,
Business Development Director, RVC

solution, apart from the local UEBPA. The plant awaits the test prototype, which as Nail Yakupov says will be ready by the end of 2016. To date, the project has plenty of resources: the Small Research and Technology Enterprise Assistance Fund granted additional funding of 2 million rubles under the program “Start”.

Although American and German companies offer comparable technology, the project’s spokesman sees the access to the Russian market to be very hopeful. The developer is sure his technology will significantly outperform others in economic terms and be more convenient for Russian manufacturers. Besides, the team continuously uncovers and fixes flaws identical to the ones that exist in products from abroad.

Robotic Harvester

Scientists at the Institute of Informatics and Problems of Regional Management of Kabardino-Balkaria Scientific Center of the Russian Academy of Sciences introduce robotics to the Russian agro-industry. The authors unveil an exclusive technology for harvesting cucumbers. Unmanned robotic combine harvester



“Granat” moves across a field without damaging plants, and picks fruits with multisection mechanical arms without missing any. Then it fills a transport robot’s reservoir with cucumbers.

According to one of the project’s founders Yuri Hamukov, one robotic harvester equipped with twelve mechanical arms can replace six field workers. The estimated cost of “Granat” is around 2-2.5 million rubles. Despite the harvester’s cost, AgroMultiBot will enable farmers to save resources and increase cost-effectiveness tangibly.

Now we are refining the highly sensitive mechanical arms that can identify fruits and gently separate them from stems. Regular mechanical arms cannot conduct such a delicate task because each fruit has different shape, position, and is barely distinguishable from leaves by color. When collecting cucumbers the harvester instantly makes decisions on how to pick a particular fruit without damaging it.



The main obstacle to innovations is rigidity in any system, in other words, reluctance and inability to reshape, and absence of any leadership ambitions. It is no wonder the best results are observed in regions or corporations, where innovations are upheld at the highest level and where they constitute an instrument addressing specific social or business problems, such as leadership in relevant segment, economy diversification, etc. For example, one of the drivers of industrial and service robotics in Japan is the demographics of increasing life expectancy, population ageing and declining birth rates.

Gulnara Bikkulova,
Business Development Director, RVC

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Russian consumers do not believe in “a prophet in his own hometown”; unless a technology arrives to us from the West, it is rendered dubious. However, such views are uncommon through availability of western clients. We are confident that the biggest challenges are behind, today our product has no alternatives in the world, and we steadily approach cost recovery. The main secret lies in our expertise in electric vehicle production, along with passionate and dedicated team.

Evgeny Titus,
Energy8 Project Director

To protect plants from harm the wheels could cause, engineers equipped “Granat” with very big ultra-low pressure wheels with elastic treads. Therefore, it can operate in a field without damaging stems and leaves.

The robotic harvester is assembled from modules and comes customized depending on clearance and terrain.

Mister Capacity

The project Energy8 proposed a way to improve warehouse equipment performance simply by swapping lead batteries with lithium ones.

The company earlier known in the public transport sector of the lithium-ion battery market, supplied for electric buses in particular. Retailers began requesting the company’s management to manufacture such batteries for warehouse equipment.

In 2007, the project commenced and in 2014 the company displayed the world’s first use of lithium-titanate energy storage for electric vehicles, a “smartphone battery” installed in a warehouse forklift.

Electro Drive solution helps reduce energy costs by 30%.

One of the biggest Energy8 advantages is its compatibility with all warehouse equipment: from electric carts to reach trucks used in hypermarkets, factories, industrial premises and airports.

Batteries fully adapt to equipment of any international manufacturer.

Energy8 outperform lead-acid batteries on energy equivalent by average 1.7 times, which allows using new batteries of smaller nominal voltage.

Innovative project became a finalist of the 2014-2015 GenerationS.

The product gains growing interest every year. A large share of demand is generated by companies that can afford to pay more now to save in a long run. These are primarily big ones and include Russian businesses.



The lithium-ion batteries are consumed the most where maintenance-free batteries are in demand. The company now opens up to global market. In 2015, Energy8 entered the top 5 innovative projects in the exhibition CeMAT in Hannover.

Project out of Closet

Developing company Innovative Transportation Technologies encountered the idea of the Green Drive technology in a thesis collecting dust in a closet. Redesigned, bench- and field-tested, and publicly presented, the idea received a warm welcome.

Molecular fuel modifier helps reduce fuel consumption by 5-15% and improves its qualitative characteristics due to the effect of an alternating electric field changing properties of carbonized compounds. MFM is suitable for all types of liquid fuel: diesel, gasoline, heavy fuel oil. The creators claim that the device damps engine vibration and noise, and reduces emissions by half.

The modifier does not affect engines. Precisely prior to the injection into the engine, molecular bonds dissociate under the influence of alternating electric current. Complex fuel molecules change structure and properties, partly break up and partly ionize.

Intermolecular forces and surface tension in fuel molecular chains lessen.

Octane number and fractional composition of fuel vary for a brief moment after processing. This decreases its viscosity, ignition point, and increases combustion heat and efficiency.

When an engine runs, about 60% of developed densifications are released into the air unburned. Energy Drive breaks up and absorbs 98% of such densifications, so that engines no longer pose a danger to the environment.

Ecological and economic effects are hardly noticeable in private vehicle engines due to



Industrial startups have unenviable fate. A successful development trajectory for such companies is merging at some point into a large corporation to become part of its product. Only a handful of startups grow into large independent businesses. I would like to illustrate such case by referring to the startups that list Russian and international corporations among their clients and partners. For example, Perfobur company with a technology of multilateral drilling of oil and gas wells is a new startup from Ufa, whose founders came from BashNIPIneft, a Bashneft subsidiary. ECM company founded by scientists from the Ufa Aviation University, produces electrochemical machines sold worldwide. Krasnodar-based NanoServ company owns a technology for cleaning pipes with dairy fermentation bacteria and supplies its services to multiple Russian industrial companies. Cinofer company producing corrosion-resistant coating was also founded by professionals from the oil industry.

Gulnara Bikkulova,
Business Development Director, RVC

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limited fuel consumption, so the modifier's domain is trucks, buses, boilers, special machinery, and railway transport.

Freshness and Sustainability

Businesses in the Middle East take interest in Tesso industrial air conditioners, and these countries are known to value money since cooling and humidifying the air costs billions of dollars.

Three partners promote new solution for freon-free and compressor-free air conditioners. The path-breaking air conditioners use the air to warm up water-soaked plates.

Evaporated water cools the plates and the air, and as a result, Tesso air cons neither dry the air indoors, nor pollute the environment.

Comparable freon-free air conditioners exist in the market, but it is Tesso modification that demonstrates an optimal efficiency model, for it uses indirect regeneration.

The company joined the accelerator GenerationS in 2015 as a member of the Smart City program. Tesso ranked among 5 best companies selected from 450 applications. Today the company's air conditioners are installed in Moscow Metro, Russian Railways and Aeroexpress cars, as well as Magnitogorsk Iron and Steel Works.

Contracted with industrial and transportation customers Tesso's market capitalization is \$50 million. The initiators aim to bring production capacity from 100 up to 1,000 units per year.

The developers expect that Tesso will become demanded worldwide and believe it will reduce the global energy consumption by 15%.



Industrial Landscape

How to speed up the process of implementing innovative technologies in industrial production? The Ministry of Industry and Trade of the Russian Federation believes that the answer lies in promoting successful practices. The National Industrial Award “Industry” was established in 2014 to pursue this goal. Since then, it has been awarded at the exhibition INNOPROM annually held in Ekaterinburg and enables dissemination of successful solutions.

Russian companies that have developed a project with a potential for industrial implementation, can become an Industry winner. Although winners receive an unpretentious statuette and a memorable diploma, ever-growing reputation of the Award helps their innovative solutions find wider application, including abroad.

Intelligence in the wires

In 2015, the only diploma winner was Tavrida Electric that designs and manufactures innovative vacuum switching equipment, switchgears, automatic emergency control systems and distribution automation units. The Russian company exports to 80 countries. Engineers of the holding devised a way to improve reliability of power supply to residential communities while keeping the operating costs of substations unchanged.



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The Ministry of Industry and Trade of the Russian Federation established the National Industrial Award “Industry” in 2014 to facilitate the introduction of advanced technologies in industrial production and to increase public acknowledgement of the best practices Russian companies implement for industrial development

This enables so-called “Smart networks”: intelligent switching devices with plug and play capability. A pilot project has been implemented in the Kaliningrad Oblast. There the network integrates “smart” devices that allow unsupervised detection of a failure and disconnection of a damaged section, while retaining power supply to most consumers. General Director of JSC “Yantarenergo” Igor Makovsky calls this system an innovative solution.

“We can monitor objects and manage power supply in case of failures. For the first time we succeeded to create fully monitored, automated and remotely managed 15 kV networks within two power distribution areas. Nothing like this has ever happened before,” explains Igor Makovsky.

Ownership cost of such network is 20% cheaper than usual.



Stronger than Armor

The Industry Award nominees have to submit a project that already has an influence on the industrial development and an undeniable economic benefit. Last year this was a non-winning but a diploma awarded nominee “Optogard Nanotech”, a Skolkovo resident. This company designs industry-oriented laser-plasma technology to greatly enhance durability, impact resistance, chemical and corrosion resistance of mechanisms.

Optogard Nanotech specialists designed parts and mechanisms coating material that considerably exceeds armor of an armored vehicle in strength. Such coatings are laid at a speed of about 100 square centimeters per second. It is hundreds of times faster and five times cheaper than producing according to the conventional scheme. This result was achieved through igniting laser plasma with unique features directly over the surface of a workpiece.

Another important criterion for Industry Award winners selection proved essential. This is company’s focus on the global market. Optograd Nanotech signed a contract with Chinese Shandong Trustpipe Industry to manufacture a laser-plasma production line “Eternal Pipe”.

“Our aim goes beyond simply selling the equipment. In the short term, we expect technology transfers to enable us to produce similar equipment, including in China,” said Pavel Smirnov, General Director of Optograd Nanotech.

Automatic Minerals

The actual demand for produce is another indicator benchmarked by the Industry Award jury. Russia as a mining country is in great need for technologies that would make mining cheaper and safer. VIST Group, an IT company in metallurgy and energy sectors,

proposed a solution. It called it “Smart Quarry”. Its idea is that unattended open-pit extraction of solid minerals is now possible. This technology is new to Russia and to the CIS, and today similar work is underway in Australia, Canada, Chile, and Africa, however, as a mining country, Russia has a real chance to take the lead in efficiency. Experts report that “Smart Quarry” enables 15-20% performance increase in this sector. Besides, this will open up the opportunity to work in remote regions with harsh climatic conditions. Safety will increase manifold. Earthmoving machinery control is based on GLONASS satellite navigation system. It can automate the whole process, from extracting to transporting raw materials. Thus, another industry problem — the lack of qualified personnel — is solved. Over time, this system may be transferred to other industries, as well as be introduced to the global market.



In 2015,
the Industry Award
obtained the
government status.
It aims to promote the
strategic priorities
of the state industrial policy
of the Russian Federation,
both domestically and internationally



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Hoping for iProm

Today we are making all efforts to promote innovations. In recent years, our grant support has begun to play a significant role for young people. Projects implemented by young innovators bring economic benefits in the industrial sector. This attracts new talents to core forums.



"The new electronic diagnostic system of the internal combustion engine" is one of these projects. The concept was developed during several years by scientists of the Institute of Mechanical Engineering at Togliatti State University (TSU). However, real economic prospects appeared only thanks to Ildar Galiev, who presented his project with the help of several youth platforms. Ildar Galiev and his team of researchers have managed to improve the current diagnostic system of vehicles in order to make it three times faster, twice as cheaper and at the same time more reliable than analogues on the market.

"The main idea is to launch mass production. Certainly, it won't affect the final price, as a car is a multi-component invention. However, a saving of 500 rubles from each sensor may bring several million rubles of profit for manufacturers that produce hundreds of thousands of cars annually. It is extremely relevant to automobile plants, Ildar Galiev says.

Both projects by the young scientist are focused on diagnosing and controlling the fuel combustion process. Together with the team of Togliatti State University, Ildar Galiev developed a smart sensor that allows to improve performances of the boiler unit. They have managed



to finance and implement these ideas through the participation in various competitions and forums such as U.M.N.I.K, iVolga, Territory of Senses, The Young Scientist and GenerationS. The total amount of the grant is several hundreds of thousands of rubles.

This grant is enough to complete projects, create prototypes and solve a number of scientific tasks. The projects implemented by TSU scientists are only a small part of what is possible to be launched with the help of the grant support from various youth innovation platforms such as iVolga. The grant fund of the Forum is 14 million rubles in 2016.

"The financial component consists of several sources. The first is the Civil Society Development Foundation, a partner of the Plenipotentiary Representative of RF President in the Volga Federal District. It was formed on the basis of various commercial structures that share the principles of corporate social responsibility. The second source is a grant fund of the Federal Agency for Youth Affairs," the organizers pointed out.

In addition to grants, participants have an opportunity to visit the Baikonur Cosmodrome or join an international training. The Innovations and Technical Creativity has become the much-in-demand forum session among nine others dedicated to different areas – from patriotism to politics. And this fact cannot help encouraging us. The organizers received around one thousand projects in the field of IT, biomedicine, engineering, aerospace and the oil industry.

"On the one hand, these are narrowly focused projects aimed at solving specific problems. On the other hand, these projects are extremely relevant for the Volga region. The ideas of building wastewater treatment plants are especially relevant for the oil industry. We have a large-scale project related to robotics and artificial leather. Projects in the field of biomedicine related to bionics are also promising," the iVolga experts say.

In addition to financial assistance, young innovators will have an opportunity to acquire new skills that can help to implement their ideas, as well as meet



with representatives of the business community and receive advice from potential investors.

Organizers of the iVolga 2015 forum prepared a strong educational program and created a possibility for a direct dialogue with well-known businessmen, government officials and scientists. As a result, the idea turned into a step by step guide on how to create a high-tech company. So I am convinced that the participation of young scientists and engineers in such events are reasonable," Ildar Galiev says.

Each forum offers its own possibilities. In particular, participants of iVolga 2016 will have access to 30 printers and scanners. Representatives of Rostec will deliver lectures and hold training sessions. They will also teach young scientists to "pilot" unmanned aerial vehicles and share their experience in the field of aeromodeling.

"The TIPS masterclasses will extend the limits and help to find new tools for the inventive

problem solving. Robotics is a very popular area of development in the field of technical creativity among the youth. In this regard, master classes will be held in this field. A special feature of this year is cognitive technologies, which are increasingly used in robotics, including neurointerface," the organizers specified.

Participants of the Russian-Chinese Forum on Youth Friendship and Cooperation will be told about the latest achievements of Russian and Chinese scientists. It is planned to hold five major forums in 2016 under the auspices of Rosmolodezh: Tavrida, Territory of Senses, Baltic Artek, Iturup and Arctic. In addition, about 50 youth platforms will take place at the regional level. The participation in one of them is a step on the way of implementing their own projects.

It is possible to receive a grant at almost all forums after defending their ideas in front of colleagues and experts. The amount of funding depends on scales of projects from 5,000 up to 500,000 rubles. The overall fund of all forums is several tens of millions of rubles.

ТФН

ПРАВИЛЬНЫЙ РАСЧЕТ - ГАРАНТИРОВАННЫЙ ДОХОД



ПРОДАЖА ОПТОМ СЕЛЮЛЯРНЫХ ТЕЛЕФОНОВ, СМАРТФОНОВ И ПЛАНШЕТОВ

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Lion's Share: German Will and Russian Breadth

Russia has always been viewed as a country of unlimited possibilities, especially for businessmen from Germany. Strategy Journal columnist Ksenia Drugoveyko writes about the “Cotton King” of the Russian Empire, Ludwig (Leo Gerasimovich) Knoop, a businessman, for whom national borders were irrelevant.

Human Capital

As once German writer Thomas Niederreiter joked, “Britons invented sports, but Germans invented physical culture.” This universal aphorism precisely reflects the approach of Britons and Germans to business management and industrial production. The activity of Ludwig Knoop, who modernized the Russian cotton industry using British machines, illustrates the essence of the German strategy in details. All these national nuances, however, could not make any difference for the history of German-English-Russian Knoop family, if it was not them who marked the beginning, the excellence, and the

end of eight decades of the family's international achievements.

Ludwig Knoop, born in 1821 in Bremen, was the fourth of eight children in a Lutheran merchant family, illustrious from the late 16th century for trading. Not the least reason of its success was the Knoop family cohesion — not one of those Buddenbrooks — they supported each other for centuries: when, for example, Ludwig's father's tobacco business (traditional for Bremen) became unprofitable, he could liquidate it with minimal losses due to financial assistance of his brothers and sister-in-law.



The “Cotton King” of the Russian Empire, Ludwig (Leo Gerasimovich) Knoop

Meanwhile, upon finishing a commercial college Ludwig went to Rochdale, England in 1838, where he grew familiar with the textile manufacturing in factories of de Jersey Company, one of the founders and owners of which was his uncle Andreas Frerichs. The enterprise exported yarn mostly to Russia. Therefore, 18-year-old Ludwig ended up in Moscow as a representative of the local branch of the company. Housed in the Baltic-German family of Johann Christoph Hoyer, Knoop soon married his daughter Louise in 1843. Thus, he became a member of another influential family with strong bonds: for many years the Hoyers and the Knoops lived under the same roof in a shared house on Bolshaya Lubyanka Street, where domestic rooms were merged with offices creating a common space for private and work live.

Strong Stomach and Clear Head

Moscow Germans, ever since Catherine the Great's rule (and especially in the mid-19th century), constituted one of the most influential city's groups, distinguished by specific business style. The majority of Ludwig Knoop's fellow-countrymen, when arriving in Russia, relied upon such competences as knowledge of international commerce, manufacturing experience, cross-cultural communication and foreign languages, whereas the Bremen youngster first chose to head down a path towards full immersion in the inherent Russian merchant environment. Economist and Russian industry analyst, Gerhart von Schulze-Gävernitz described this path very eloquently: “He could behave casual with Russian merchants, drink champagne and vodka with them and gypsy women in taverns. Not a safe thing to do — manners were utterly savage, and glasses, bottles and mirrors were quite often thrown across rooms.” Soon reputed as an insider among Moscow merchants, Knoop met famed manufacturer Savva Morozov, whose family was engaged in the cotton business since the French invasion of Russia in 1812 and long sought to establish its own manufacturing.

A number of circumstances hindered the discharge of the plan. Equipment of the factories required huge costs: spinning equipment (withal fairly outdated) was bought in France and Belgium, since the imports from England, the largest machine knitted yarn manufacturer, were banned by the Parliament until 1842. Lifting the ban helped reduce yarn procurement and increased imports of raw materials, but the industry made no headway: Britain, of course, had no interest in emerging Russian competitors. The British were reluctant to lend large equipment loans for Russian factories and demanded cash payment, which, in the absence of government support, posed an insoluble problem for Russian manufacturers — in those years credit relations were underdeveloped in Russia. Ludwig Knoop, however, soon found a solution and got to help Morozov establish his later world-renowned Nikolskaya Factory.

With the support of his younger brother Julius, based in Manchester, Ludwig Knoop persuaded de Jersey Company to obtain an equipment loan against future profits. This deal brought impressive benefits to all participants: De Jersey Company became Knoop's first and largest foreign partner, and soon turned from a provincial almost-gone-bankrupt office to a thriving business. Knoop himself received a string of new orders. Russian industrialists realized that there was not anybody who could be better suited for the role of the importer able to accumulate the trade of yarn and raw materials, delivery of machinery and supplies to industrialists, crediting them, as well as hiring best British foremen and employees.

After concluding agreements with Platt Brothers and Hick Hargreaves, the largest English manufacturers of spinning machines and steam engines, Knoop succeeded as a mediator between Russian and British business communities, obtained Russian citizenship in 1852, and opened his own company's head office in Moscow, and branches in Saint Petersburg and Reval (Tallinn).

Omnipresent Knoop Factories

The trading house "Ludwig Knoop" equipped 187 factories and supplied most of them with cotton. Cotton imports reached the peak in 1865 following successful replacement of American cotton with imports from Egypt: this year Knoop delivered 9,000 tons of cotton (49.1% of all cotton imported into the Russian Empire). Between 1863 and 1876 the entrepreneur's share in the market never dropped below 35%. He secured monopolistic position in imports of textile machinery. Modernization of weaving engaged Knoop to participate in reorganization of some related industries: bleaching, dyeing, filling, i.e. all the processes were to be put in place to get going everywhere from Ivanovo and Vladimir to remote places. No wonder Knoop soon started turnkey construction of entire textile plants, in particular, Danilovskaya and Izmaylovskaya Factories in Moscow.

As it was routinely practiced in his family before, almost all of its adult members became owners, co-owners or shareholders of one or several companies of the Knoop business. For example, newly thriving de Jersey Company was now managed by Julius Knoop, who married the only daughter of Johann Heinrich Frerichs (Knoop's relative through his mother). In the 1880's his sons Andreas and Ludwig Karl took control of it. Since the beginning of the 1870's one of Ludwig's sons Johann Knoop began controlling the London trading house Wm. Berkefeld & Co. The same de Jersey Company held shares in it. In 1864, during the American Civil War, Ludwig Knoop founded a branch in Bombay. The cotton crisis the war caused turned Knoop into one of the most powerful figures in the Empire. At the same time, de Jersey Company and Knoop acquired shares in the Alexandria

Ludwig Knoop and his sons (from left to right: Andreas, Theodor and Johann)



branch of the company Julius Amburger and began exporting Egyptian cotton to the Russian market. The Knoops firmly controlled the US trading house branches in New Orleans and New York. Even one of the directors of Platt Brothers for a long time was E.W. Gromme, the son of one of Ludwig Knoop's sisters. The entrepreneur himself called this practice "family friendly guardianship."

Just like the Rockefellers, to whom contemporaries often compared the Knoops, they did not disdain to make deals with themselves through dummy companies, and Ludwig Knoop developed a system, which provided loans and profits for many years and allowed him to maintain direct influence on the management of enterprises, even such major players of the market as the Morozovs. The increased equity capital and newly issued shares, which served as a means of payment, stimulated delivery of equipment for factories and soon turned Knoop into a banker for a certain circle of trusted clients, for whom he opened current accounts and whose promissory notes he accepted.

Shares of companies equipped by the Knoop's trading house allowed him to participate in their management through supervisory boards, personally or through proxies. In the case of the Morozov enterprises, their high profitability allowed the owners to form reserve funds, which availed to purchase new spindles, as Knoop received new shares for earlier granted credits. Knoop's omnipresence quickly became the talk of the town: "Whatever church there's a pope, whatever factory, there's a Knoop," people chanted in Moscow.

As Knoop's company built production facilities for new cotton manufacturers, they won Russian, European and Asian markets. No surprise the adventurous dealmaker desired to lead the trade of both English and Russian yarn. To pursue this, Knoop founded the Krenholm Factory in the province of Estonia, on the banks of the River Narva. Co-founders were Aleksey and Gerasim Khludov, Kozma Soldatenkov, as well as Ernst Kolbe and Richard Barlov.



In 1877, Alexander II created Ludwig Knoop a Baron of the Russian Empire for service to the national industry

Cheap energy of river falls, coupled with cutting edge technical equipment, turned it into a highly profitable enterprise. Moderate production costs guaranteed extraordinarily low prices of the Krenholm yarn, the quality of which remained as high.

Made from the finest American and Egyptian cotton, it featured distinctive thinness, due to which in 1861 the factory was authorized to use the coat of arms of the Russian Empire on its products and signs. A number of Russian and European exhibitions validated this right with multiple awards.

Since the early 1860's Ludwig Knoop spent most of his time in the Muhlental estate outside his hometown, Bremen, still shuttling between Narva and Moscow.

Since a telegraph was brought to his house, he was constantly in touch with international partners, whose number only grew over the years. His primary activity remained regular reinvestment in Russian enterprises. The Bremen merchant was a shareholder of more than two hundred enterprises and earned a fortune of several million German marks. In 1877, Alexander II made Knoop a Baron of the Russian Empire for service to the national industry.

Following the death of the “Cotton King” in 1894, the trading house was taken over Ivan Prove (naturally, a Ludwig Knoop’s relative: they were married to full sisters). Co-owners of the company were also Knoop’s sons Theodore (Fedor Lvovich) and Andreas (Andrey Lvovich). Ones of the most reputable dealmakers in Moscow in the beginning of the 20th century, they had their vision of the development of the family business.

The Knoops relinquished attempts to maintain the monopoly under the impact of a new generation of young Russian entrepreneurs and increasingly agreed

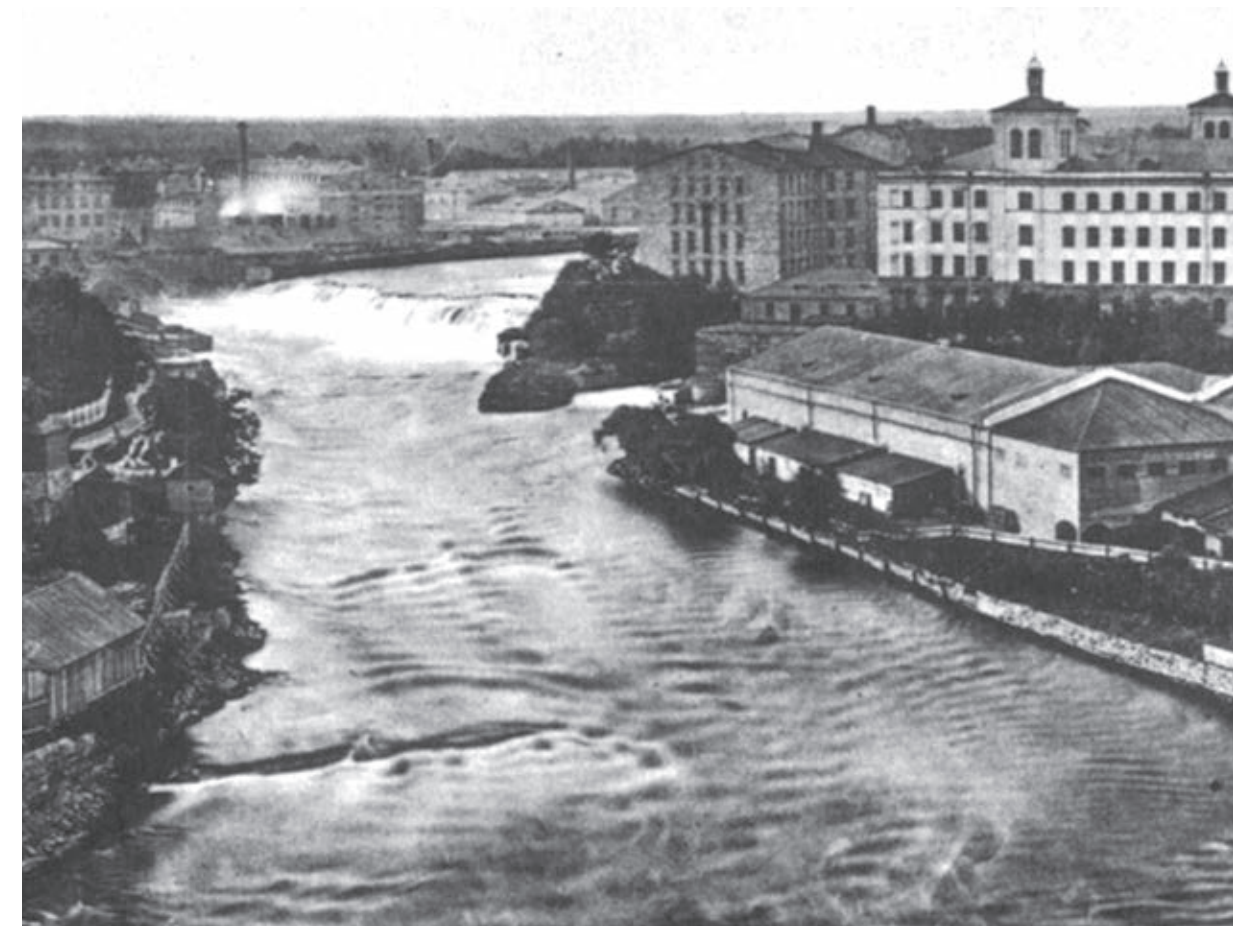
on mutually beneficial oligopoly, and at the same time expanded the funding base of their industrial group. Being members in councils of several major Moscow banks and taking part in their management, the Knoops ever enjoyed crediting on soft terms, which allowed creating new enterprises. Hence, while maintaining the role of a creditor, the company itself extensively utilized the services of the foreign exchange market.

The Knoops enterprise marked the boost of cotton production in Central Asia as the brothers began supplying Central Asia cotton for Moscow industrialists. At that time, it was greatly inferior in quality to the American and Egyptian cotton, but due to cheapness it rapidly began winning over Russian entrepreneurs.

The World War I forced the end of the Russian chapter in the history of the Knoop family: the government officially initiated the “fight with German domination” that affected Moscow Germans. Despite the renaming of the trading house “Ludwig Knoop” in JSC Volokno in 1916, the Charter of which emphasized Russian nationality of all shareholders, as a German company it was brought under Government control that eventually prompted the Knoops to terminate business and, soon after the October revolution, to withdraw all the capital from Russia.

Meanwhile, in Germany, this remarkably international family was similarly persecuted: the Government of Prussia assumed control over the Muhlental estate, justified by the fact that one of the owners of the estate permanently resided in London, and his wife, who dwelled in the estate, was an American of German ancestry. In a nutshell, the Russian authorities blamed the Knoops for the German origin, and the German authorities blamed them for their business and family ties with the countries of the Entente.

Anyway, the descendants of this largely prolific family can be found in many countries in Europe (by the way, the current German defence minister and the first woman



The Krenholm Factory (1886)

to hold that office, Ursula von der Leyen is also a relative of Ludwig Knoop). However, they all left Russia forever.

Traces of Heritage

Every major merchant has talent to atone for sins through profit, but the descendants will certainly debate for decades over the fairness of the price of redemption. These controversies about Ludwig Knoop rage to this day.

Following rapid modernization of the Russian cotton industry, Knoop, as almost every monopolist, singlehandedly halted its independent progress for years.

The new generation of industrialists, who decided to develop international links and prepare Russian technicians without mediators (instead of whole teams of British engineers and workers brought over by Knoop), had no way to bypass the beaten paths carefully patrolled by the members of the Knoop family. The subtlety, however, is that the Knoops, being foreigners, unlike most other Western businessmen in the Russian Empire, very soon became a part of the Russian economic establishment and were as dependent on established business laws as all of its members. Grievances are habitually sent in the past to Ludwig (Lev Gerasimovich) Knoop. However, it would not go amiss to send them to many other addresses.

The Muhlental estate



Helicopters. War and Peace

Russia is one of the leading countries in the global market of heavy helicopters. Our country exports 32% of all helicopters in the world. In recent days, consumers have started showing great interest in simplified and inexpensive helicopters. Will the Russian defense-oriented helicopter industry manage to reset priorities and remain competitive in the market?

Russian Helicopters is the only company in Russia that designs and manufactures civilian and military helicopters. The holding works as a part of five core enterprises. Russian Helicopters have exported 8,400 helicopters to 100 countries under this brand name, controlling about 10% of the foreign market. As a rule, the holding manufactures heavy and mid-size helicopters both for military and civil purposes, making up around 94% of the domestic market. However, Helicopters of Russia manufactures inexpensive technological helicopters mainly for the domestic market. Will the industry manage to overcome this imbalance? Is there a necessity for it in our country?

There is a reduction in the number of domestic helicopters in Russia. At the same time, it is easy to notice a trend towards renewal of helicopters in the country. For example, the Mil Mi 8T model is being replaced with upgraded Mil Mi-8MTB. Unfortunately, this measure has been taken not due to operators' unwillingness to use latest aircrafts, but maintenance



Only 948 of 1,828 domestically manufactured helicopters are regularly used in Russia. The percentage of heavy helicopters is 68%, mid-size helicopters – 25%, light helicopters – below 4%



difficulties. “Despite reduction in domestically manufactured helicopters, the number of foreign helicopters continue to increase. The fleet is continuing to be simplified,” head of the analytical service at AviaPort Oleg Panteleev points out.

Today consumers are interested in simplification of helicopter fleets and reduction in the cost of production. The manufacturer should realize that new modifications of helicopters have to be cost-efficient for customers. Instead, the Russian Helicopters holding designed such heavy modes as the Mi-38 and Mi-8 that unavoidably made them put their prices up. On the one hand, large orders bring tremendous profitability. But on the other hand, heavy helicopters oversaturate the market very quickly. Traditional customers clearly understand that the so-called ‘update cycles’ have already come to an end. Therefore, there is nothing for the manufacturer but to offer new technologies, introduce new specifications, or earn on after-sales service. These measures may reduce revenues, but after some time they will bring greater profitability.

“Competitive helicopters with better specifications

at lower prices appear every year in the market. I wish the Russian manufacturer would draw its attention to this trend. For example, the Mi 8 helicopters were extremely good despite a reduction in costs. We will see how the Mi 171A2 works. In terms of operational performance, this model is considered to be more attractive in comparison with previous generations. However, the price of components is too high due to inflation, therefore, all efforts to improve maintainability and lower maintenance costs may be easily brought to naught due to these circumstances,” Oleg Panteleev adds.

According to Paulo Menegusso, Director of Market Analysis Department at Honeywell Aerospace, some companies show interest in Russian manufactured helicopters despite the fact that their prices among competitors are lower, but maintenance costs are higher.

Today, South and North America are the most promising markets for helicopter manufacturers. Single-engine vessels are also in demand there, but Russia can neither manufacture the necessary quantity nor meet the required quality to become a competitive player in

the market. The reason is quite banal: it is necessary to invest significant funds for research and development projects in order to develop new models of helicopters.

In terms of fierce competition with Western developers, Russian helicopter manufacturers take risks when rolling out a new model, as they have no consolidated and guaranteed order from government agencies. These circumstances make operators prefer foreign helicopters to the domestically manufactured Mi 8 at a cheaper price. The main benefit is that it is easier to predict maintenance costs after purchase of Western helicopters, the exchange rate cannot affect it.

"Some manufacturers of spare parts and assemblies decided to continue their activity beyond Russia, some others shut down their companies in Russia due to unfavorable economic conditions. Sometimes it is extremely difficult to find parts to provide helicopter maintenance. Fortunately, the Mi-10 model has no tail rotors, whose lifespan is not so long due to wooden components. We cannot use these helicopters now, as tail rotors are not produced anymore. Although they

might be still in operation. Moreover, even now they continue to be in demand," Oleg Panteleev points out.

According to some facts, we can assume that the government is well aware of these problems and even tries to change the habit of considering Russia as the absolute leader in the Russian market. Core enterprises have recollected the potential of the two models of light helicopters – the Kazan Ansat and the Kamov Ka-266 – manufactured exclusively for the domestic market.

The above-mentioned aircrafts and another two projects on the establishment of service centers and support for regional carriers may be included in the 'Sanitary Aviation' program. It will attract funds to promote light helicopters, but only in the domestic market.

"Global markets are a more distant prospect for us. The domestic market can easily consume all our products. As for other prospects, in particular the Kazan Ansat helicopter, it is planned to certify the invention in accordance with EASA standards and then export it to



the European markets. It is quite a complex and long-term process. This is why it may become a real challenge for us. However, this model was designed in accordance with EASA standards, so we have all preconditions for reaching this goal. Asian markets are also interesting for us. We are holding negotiations with the countries that are traditionally our customers in the aviation industry," chairman of the Helicopter Industry Association of the Board Mikhail Kazatchkov says.

Meanwhile, analysts are involved in accessing the potential of Russian traditional manufacturers: defense procurement, supply the oil and gas sector and export of heavy machinery.

"The state defense order is being preserved at the moment, but the peak of funding will come to an end soon. After that, the volume of orders will be reduce without a new state armaments program. Despite limited budget resources, Russian authorities will not save on the defense industry. The current cost of a barrel and the current rate prevent the oil and gas sector from

becoming a customer of helicopters. In principle, our success in the Syrian campaign gives a reason to expect a significant increase in export supplies in the medium term. According to forecasts, good times will hardly come soon, but reactivation of export deliveries is possible. This would give us hope for recovery in the sphere of oil and gas sector," Oleg Panteleev notes.



At the end of 2015,
Helicopters of Russia received
494 firm orders
amounted to
396.1 billion rubles



It worth noting that the state always invests in this sector. When budget funds are stable they allow to conduct advanced scientific researches, receive a neutral point of view, and then start carrying out design works.

"The main problem is systemic distortions. If a player participates in high-risk business with a long term return on investment he will not achieve commercial success with the loan rate of 15-18%. The preparation, manufacturing and development of new products may take 5 years before investors receive their money back. As for research and development works, they may take us more than 10 years before the payback period. Manufacturers have risks that something may go wrong at any moment. A short payback period at the current interest rate will lead to extremely high prices," Oleg Panteleev shares his viewpoint.

The state can solve this issue by encouraging investors. The government is working out special mechanisms to attract investments to high-tech industries. Earlier, irretrievable financing was provided in accordance with

Federal Target Program. But for now, money allocation is one of the main things for competitive conditions. In other words, potential private entrepreneurs should attract loans on acceptable terms. Moreover, they should be similar to Western, or even better, in order to narrow the gap.

"There are no such enterprises in Russia that could continue their activity without state support. It is especially obvious when we realize how much money Western manufacturers have and what risks they can take at the time of launching new products," an Aviaport representative says.

In addition, the RF Ministry for Industry and Trade is about to implement a program of creating conditions for financing Russian companies providing helicopter services. It is also planned to allocate loan subsidies for such players in order to compensate a part of their interest rate. In fact, it is a good opportunity to obtain affordable loans. As you know, it is a very serious problem now that prevents from implementing any projects, in particular in high-tech industries.



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Industrial Zone as Habitat

Modern Russia has inherited from the great Soviet past many factories that worked on restoring the country's economy in the postwar years and during the period of manufacturing boom. Today, the residential development swallowed up industrial zones so that they became an integral part of the urban landscape and life of the population.



Black Snow

In May, residents of the Chinese city of Longkou staged a massive protest. People learned about plans of the local authorities to build a petrochemical plant off the city's coast and took to the streets. More than 10,000 people demanded the authorities to reverse the decision. In Russia such walkouts are seldom and in most cases occur in the capital or in the administrative centers of major regions, where the population has high legal literacy. In remote areas, everything ends with a small headline in the local newspapers and indifference of the officials.

Attempts to raise a storm of protests against the construction of a manganese mining plant in Kemerovo oblast have failed so far. The Kuznetsk Basin (Kuzbas), as well as Southern Ural, holds the record of industrial pollution.

Novokuznetsk is a center of Siberian coal and steel manufacturing. There operate open-cut and



Extractive industry is well developed in Russia: examples range from Norilsk Nickel to many oil companies. Processing and production are concentrated mainly in China, India and other countries of South-East Asia.

Dmitry Artamonov,
head of the Greenpeace Toxics campaign

underground coal mines, metal plants, aluminum and ferroalloy plants, and processing factories. Most of them are located right in the city.

A Garden-City, which Novokuznetsk was supposed to become, as poet Vladimir Mayakovsky envisioned, does not leave the top ten most polluted cities in Russia. Russian Federal Service for Hydrometeorology and

Environmental Monitoring (Roshydromet) conducted environmental monitoring in the first quarter of 2016 and on five occasions recorded exceeding of the maximum permissible concentration of harmful substances, and the maximum dose was exceeded 29 times.

Novokuznetsk residents joke that one to see how many times it snowed over the winter. If you cut vertically through a snowdrift, stacked snow layers can be counted: white snow alternating black soot.

"The city is unsuited to the modern requirements. During the construction of the Novokuznetsk Metal Plant, the neighboring residential communities were developed in close proximity. Moreover, during the war the city accepted many evacuated industrial plants. No one paid attention to where they were located, so the industrial development adversely impacted the living conditions," said Aleksey Pobozhiy, Honored Builder of the Russian Federation, Technical Director of TechnoProgress R&D Center.

Industrial location policies developed in the Soviet era took all the requirements into account as far as possible, however, complete construction projects were unalterable. So the new district of Novokuznetsk,

Novobadaevka, is located across the Tom River from the West-Siberian Metal Plant owned by EVRAZ Group.

Aleksey Pobozhiy believes that industrial zones located outside or within city limits affect more than just the level of air pollution. They place a heavy burden on territories due to increased traffic, mostly industrial. They also generate adverse noise impacts and wastewater disposal problems.

Legislative Loopholes

Environmentalists claim that the best way to deal with industrial hazards is to abandon the industrial zones for good, leaving respirators behind. Those who do not have such possibility should travel more to places where the air is cleaner.

In Kemerovo oblast 40 km away from a city lies taiga, where you can take a chestful of fresh air, however, Moscow will drive you much further away. Nonetheless,



according to Dmitry Artamonov, head of the toxic program at Greenpeace Russia, the capital gets less adverse impact. The expensive real estate benefits Moscow, so the industry is less developed within the city limits.

The proportion of such zones, however, is 16%, more than 15 hectares, which can be called environmentally friendly. At the same time, countries of Central and Northern Europe use sustainable technologies that enable closed water circulation, along with reducing or eliminating harmful emissions.

For example, the British Sugar factory in Norfolk reutilizes all by-products. The output of processing the remains of sugar beet are bioethanol and fodder; the remaining heat warms up tomato greenhouses, and carbon dioxide feeds the plants. This approach, above all things, has effect on business.

“Different European companies that come to Russia already have approved environmental policy.

Consumers demand it as a kind of producer’s responsibility. The entrepreneurs recognize that double standards can affect demand from European customers. Therefore, the companies follow this strategy in all countries where they run business, but this does not constitute a trend in Russia,” said Dmitry Artamonov.

In the case of developing countries the trend is reversing where polluting industries are on the rise. Environmentalists claims that this is due to the low cost of such production. This is because third world countries have different legislations with fewer requirements and the people are willing to tolerate violations. In addition, developed nations try to contribute to “clean” industries. Not necessarily with money; there are different types of benefits and preferences.

“In our country there is no such thing. If you run a large company, and are economically affiliated with the authorities, you can ignore the law, and release emissions. Such business does not face anything serious, except to

be condemned or fined 20,000 rubles. Entrepreneurs feel no real threat. In the cases when “clean” productions emerge in Russia it is, rather, an initiative of the companies themselves,” said Dmitry Artamonov.

The solution to the problem of industrial zones, operating within residential areas, can be moving production out of cities. However, according to Ilya Mukosey, architect, co-owner of PlanAR architectural firm – and this requires careful thought – when moved too far the territory becomes a monotown; when too close, transportation issues come up.

Redevelopment as a way to get rid of old industrial enterprises is used to the possible extent in this country. The success rate, though, is so small that it goes unnoticeable among working plants. In addition, this method functions mostly in the central region of Russia, where the government somehow is still open to the views of the population and is strongly influenced by the media.



Beautiful Ruins

Old inactive industrial enterprises are a real burden on the city authorities, especially in Russia. Funds are rarely allocated from the budget for reconstruction due to developers' unwillingness to invest. When creating new spaces businesspeople are going not only to make profits, but also become famous. We bring to your attention a few commercial and non commercial projects that breathed a new cultural life into the 'ruins'.



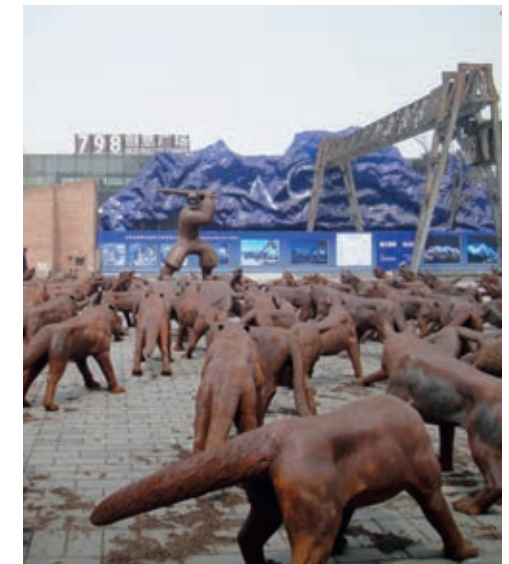
In my own experience, investors of art territories are interested more in designing a business center, rather than receiving profits from centers of culture and arts. The Bolshevik Business Center may serve as a good example of this trend. The matter is that centers of culture and arts are non commercial projects sponsored by indoor cafes and bars. It is possible to reconstruct deserted industrial buildings even in poor condition quickly without significant expenses. It worth noting that open floor planning is a huge advantage, but at the same time we should not forget that these buildings are our cultural value with admirable history. People started using the most innovative approaches when cities were appearing near the so-called industry centers. There are many examples of art centers in old buildings in Europe. One of them is an ex chocolate factory in Dublin that turned into a great business territory with an excellent cafe, a huge open hall for filming, master classes and parties. These events cover all costs of inexpensive studios located in the upper floors of the building. Another good example: a deserted flour milling plant in Manchester has become a good venue for workshops. One of the events during the days of the EASA annual meeting was attended by 500 architecture students in 2010.

Oksana Lastovetskaya,
Architecture at John McAslan + Partners, Director
at MAGNAPARTE, architectural visualizations

Mains d'Oeuvres Saint-Ouen, Paris, France

Mains d'Oeuvres (Manpower) is a not-for-profit arts organization located in a refurbished car factory. It is one of the first creative clusters in the world that gave birth to the 'New Territories of Art' concept. In 1991, Valeo, the owner of the car factory, sold the building and its territory. In 1998, Mains d'Oeuvres was formed by the four organizations: Usines Ephemeres, Trans Europe Halles Network, Vecam and Europe 99. One of the main functions of the center was to establish cultural co-operation between government and non-governmental organizations.

Mains d'Oeuvres provides the following services: technical base, logistics, managerial and professional support to the people of art. For example, Melkweg Amsterdam is designed for big live performances and social events.



Plant No. 798 ArtZone Beijing, China

The plant is one of 156 enterprises that manufactured military equipment for the People's Liberation Army of China. Moreover, the plant No. 798 is one of the two plants that produced electronics. It is also noteworthy that the German Democratic Republic was directly involved in formation of the enterprise, the largest project of the country in China.

China spent 140 million yuan on building a range of plants in 1954. It was a significant amount at that period of time.

There are studios, galleries, exhibition halls, as well as modern offices, parking lots and a cafe-restaurant on the one-square-kilometer art territory. As a rule, exhibitions of contemporary Chinese and foreign art take place here. Today, some parts of the plant continue to manufacture and supply products to the Chinese market, but in much smaller quantities.



Melkweg Amsterdam, the Netherlands

Once upon a time, actors found a deserted dairy farm in the center of Amsterdam and decided to make a show for hippies there. The city municipality supported this idea. Thanks to a 11,000 gulden investment the former dairy plant turned from the industrial chaos into a cult place for creative meetings during one summer. Melkweg Amsterdam brings together musicians, actors, photographers and many other people related to arts and media spheres. In recent years, Melkweg has become a leading musical platform that attracts many music lovers.

At present, Milkweg consists of two music halls, a theater, a gallery, a small theater, a restaurant and two tea rooms. Despite the fact that Dutch people can hardly find Melkweg dairy products on sale, they are still proud of one of the most recognizable cultural cluster of the world. It is likely that it compensates their losses in the range of local products.



Krasny Oktyabr Moscow, Russia

Krasny Oktyabr became an art space in 2007 soon after equipment of the confectionery factory was taken to another place – Konditersky Kontsern Babayevsky.

Initially, it was planned to build premium class properties, mostly for housing, but developers failed to implement the project.

There are about a hundred of companies and organizations in the building: offices, restaurants, art galleries and exhibition halls. According to the owner's opinion, Krasny Oktyabr is a large art community.

Offices of the Dozhd TV channel, Zemfira's studio, the Paradise club and Education Center Art-Strelka also located on the territory of the former factory.

Rizzordi Art Foundation Saint Petersburg, Russia

This loft project started from establishing the Rizzordi Art Foundation in 2009. Without hesitation, the founders chose the same name for the art cluster that opened in 2011 after reconstruction. It was located on the two upper floors of the brewery within a facility complex of the Kalininsky plant. People used to call it as a 'malt-house' when the factory was working. Today it consists of two huge halls of about 4,000 square meters. Different exhibitions, presentations, film screenings and performances are organized here. There is also a bookstore and cafe. The foundation is a charity organization that actively supports gifted young people.



In Europe, owners of 'ruins' are welcoming this tendency. The matter is that they clearly understand how it can improve the image of these territories. As a rule, owners agree to provide reasonable lease terms if the lessee is ready to be responsible for garbage removal, payment for utilities, as well as keeping property in good condition. Lease terms are revised from time to time in accordance with the level of commercialization and success of the cluster. It is difficult to imagine that representative of art clusters can rent premises at reduced prices in Russia. On the contrary, the owner prefers warehouses to artists and art galleries, as he is well aware of all ups and downs.

Olga Gracheva,
Head of Clients' Relationship Department
at Spectrum Group of Companies



Zarya Center for Contemporary Art Vladivostok, Russia

The Zarya Center was opened in Vladivostok in the building of old sewing factory in 2013. It continues to be the latest center for contemporary art in Russia so far. The sewing factory was shut down in 90s after cheap products from China appeared in the Russian market. The factory premises were leased as warehouses, offices of construction companies, car services and similar small business. The Zarya Center turned into the art cluster thanks to Sinergia, which supported local young artists. Since 2014, the company has been supported program for artists from all over the world in order to they could work in Vladivostok during two weeks or even a month. They are given a place to stay, a workshop and a little allowance for the necessary work materials.

Big Cycle Theory

Senior researcher of the Institute of Complex Systems

Mathematical Research of the Moscow State University, foreign

members of the Russian Academy of Sciences Askar Akaev, and

rector of the St. Petersburg Polytechnic University, corresponding

member of the RAS Andrey Rudskoy report on how the new

technological revolution will see the global economy blossom.

The slowdown in the world economy, that has been underway for decades, is traditionally credited to the turning point of the next Kondratieff wave, a supercycle of alternating growth and subsequent recession in the world economy that lasts about 50 years. We are now at the end of the fifth Kondratiev supercycle (KSC) defined by the development of microelectronics, robotics, computer and telecommunication equipment. We are looking forward to the start of the sixth technological paradigm that will be formed by NBIC technologies (Nano-Bio-Info-Cogno).

The slowdown trend may persist throughout the sixth supercycle (2018-2050). Gloomy predictions are compounded by the data on the depression dominant in developed economies after the crisis of 2008. The matter of fact is that all the basic technology breakthroughs of the forthcoming Kondratiev cycle are the evolutionary consequences of the previous ones; they do not offer epoch-making technologies, unlike in the fourth post-war technological paradigm (1945-1982), when the most powerful economic Kondratiev wave witnessed the average annual world economic growth rate of 5%.



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New High-Tech Industry

Observing the entire aggregate NBIC industry, we can say that it currently develops with the annual growth rate of 24%. The US National Science Foundation forecasts the potential world nanomaterials and nanotechnology market to hit 1.1 trillion dollars in 2015. The biggest contributors are nanomaterials (31%), nanoelectronics (28%) and pharmaceuticals (17%). The recently developed knowledge economy has created 2 million highly skilled jobs in the world. One can argue, then, that developed economies saw revival in 2014-2015, and in 2017-2018 the sixth "long wave" of the economic development will start climbing, powered by the influence of the technological paradigm, with NBIC convergence technologies at the core. Therefore, the governments of developed countries, as key actors in this particular area, should focus all resources and efforts on the practical development of NBIC technologies shaping the sixth TP, the new structure of the world economy. The period from 2016 to 2020 is the most favorable time to develop and disseminate basic innovations produced by the new wave backed by NBIC technologies.

We believe, however, that the emerging technological revolution can fundamentally change the trend and lead to rapid economic growth instead of recession. The driving force of the coming upward movement in the world economic recovery will be the most developed countries: United States, Germany and Japan — recognized leaders in research and development of NBIC technologies. They can be joined by Russia, which ranks sixth in the world in terms of NBIC investments.

In 2013, for the first time since the financial crisis of 2008-2009, some developed countries reported economic resurgence. The incipient recovery of the world economy is a prelude to sustainable growth, which will begin, as we project, approximately in 2017-2018 with the sixth KSC and continue up to 2040, unless any global disasters or wars happen. The current revival is attributed to the start of the development of innovative products based on nano-, bio-, info-, and cognitive technologies that will be the core of the forthcoming sixth technological paradigm (TP). Moreover, innovative products are expected to be produced primarily using additive processes (3D printing).



Basic innovations of the fourth KSC were a landmark achievement of the 20th century technological revolution: nuclear energy, quantum electronics and laser technologies; electronic computers and production automation; jet and rocket engines; global satellite communication and television. All of these technologies were elaborated and widely adopted for the first time in the history of mankind. Not surprisingly, the fourth TP led to the fastest growth rate of the world economy in the history of mankind; 4.9% in the period from 1948 to 1973 year. The core of the fifth TP were microelectronics, personal computers, information technologies and biotechnologies, all of which were derived from the epoch-defining innovations of the previous period. It is, therefore, only natural that the economic efficiency of the fifth TP was much lower: the growth rate of the world economy fell to 3.1%. The core of the sixth TP will be nanotechnologies and nanoelectronics; biotechnology and genetic engineering; information and communication

technologies; cognitive technologies (intelligent robots and intelligent computers); alternative energy and ultra-high performance materials, as well as 3D printing. They are derived from the previous cycle, but their originality lies in the possibility of creating the ultimate synergy through convergence of these technologies.

NBIC technologies, unlike “classical”, penetrate each other and interact to a much greater extent. For example, computer technologies will be revolutionized with the help of nanoelectronics and quantum computers. Prototypes of nanoelectronic devices have already been created and are continually improved using carbon nanotubes and graphene. Quantum computers have already been demonstrated. The first quantum computer was introduced to the market in 2015. If this paradigm goes on and follows the natural trend, quantum computers will be commercially available to users in about 2020. Markets expect nanochips around this time.

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In turn, computer technologies will play a key role in the design and development of innovative products based on nanotechnologies. A clustering of the basic technologies of the sixth technological paradigm can be observed today. For example, a very promising application of nanobiotechnology (NBT) is linked to biological components and their self-organization in nanosystems and, by contrast, bionanotechnologies (BNT) use nanosystems to optimize biological and biotechnological processes.

Nanomaterials and nanocatalysts are already subject to commercialization as well. It is expected that the venture capital opportunities will open for post-genomic era business in the next few years, prior to 2018.

Regenerative medicine, also known as tissue engineering, is rapidly evolving. The widespread use of bioprotheses, grown from a patient’s own stem cells and therefore not causing transplant rejection, will be clinically available in the 2020s.

It is noteworthy that owing to self-organization mechanism, various basic innovations form a cluster and come as a group during the depression stage. In other words, the depression stage forces businesses to seek opportunities for survival, and the innovation process can provide them, i.e. the depression stage starts the innovation process. Clusters of basic technologies cause new industries to emerge and this, in turn, triggers the next Kondratyev supercycle.

The synergistic effect uses interaction of innovations within a cluster to impart powerful cumulative growth to the economy. So it is the innovations that are the main drivers of economic growth. Formulated by great German economist Gerhard Wave the principle “innovations overcome depression” always works.

All the sixth paradigm technologies are on the verge of commercialization, and it means that it now begins intensive diffusion of innovative products to markets and, therefore, starts the sixth Kondradiev supercycle with long-term sustainable growth in 2020-2030.

Thanks to the powerful synergistic effect NBIC technologies engender convergence of nano-, bio-, info- and cognitive technologies. They will accelerate technological progress and undoubtedly exceed the rates achieved in the upward wave in the previous fifth KSC (1982-2006). Thus, the slowing world economy experienced throughout the fifth KSC (1982-2013) will be replaced with the upward trend.

The synergistic effect may be so strong that its contribution to raising aggregate productivity of the factors will be crucial, and the world economic growth rate will again align with the record values (around 4.9%) reached during the fourth KSC (1948-1973).



Liftoff

This year Russia and France celebrate 50 years of space cooperation. This demonstrates keen interest of both countries. Experts of KSP non-profit partnership present another article for the Journal Strategy, focusing on the way Russia and France have gone hand in hand.



Bilateral agreement “On the Soviet-French cooperation in peaceful space exploration and research” was signed during the official visit of the president of the French Republic Charles de Gaulle in the USSR in 1966. De Gaulle’s visit was one of the most important events in the world politics for many reasons. First, it took place in the context of France’s withdrawal from NATO, which significantly changed the alignment of power in the global security. Secondly, it was the first visit to the Soviet Union of a leader of a major capitalist country to initiate a period of so-called détente, mitigation of strained international relations after many years of the Cold War. During the visit, the Soviet-French intergovernmental Commission came into existence, taking cooperation to a new level.

The long-standing Russian-French strategic partnership began. As the agreement stipulated, the Soviet Union and France not only relied on development of bilateral cooperation in a large sense, but also presumed that “...such cooperation in space would be an important step in promoting the European technical and scientific cooperation”.

Historically, the Russian-French cooperation in space activities can be divided into three periods: the Soviet, the market and the 21st century.



Russian and European colleagues speak one “industrial language”. What regards project management standards, Russian colleagues face more difficulties with them. Commercial customers worldwide are accustomed to work under international standards; the Russian standards slightly deviate from them, so the Russian peers have to adapt. But given the large amount of already implemented joint projects, this problem, though it exists, is still not crucial. Our typical cooperation priorities include innovative component. We are now riding on a surge of changes that are adjustments to business models in our region. There come up new highly competitive players in launch services, new types of space services, new technologies in the satellite segment. Eventually, all these innovations will drive change in the existing structure of the space business; see departure of some players and emergence of new ones. In order to maintain its market and technological sustainability, one should be able to benefit more in the existing situation, i.e. to expand its international market share and to optimize its own cost structure and properly invest in new products and technologies, including startups.

Vladimir Terekhov,
Head of Airbus Defense and Space in Russia

The first period (the 60-80’s) was outlined by the timely political initiative that defined principles of the long-term bilateral cooperation and made possible the implementation of the most advanced projects at that time.

The conclusion of the Agreement was promptly followed by contacts established between the International Scientific and Technical Council for Space Research under the USSR Academy of Sciences (Intercosmos) and the French National

Center for Space Studies. This scheduled collaboration in astrophysics, space communications via artificial orbiting satellites, space meteorology and aeronomy, along with the exchange of scientific information, trainees, and scientific delegations. Then the cooperation extended to space biology, space medicine, and space materials. Between 1966 and 1973, more than a dozen joint research projects were conducted.

The cooperation focused on the research on the transmission of television signals with accompanying sound via satellite links. The research aimed to develop and improve television transmission via satellite channel, and enhance accompanying audio signals transmitted between Moscow and Paris via the Soviet sputnik Molniya-1, designed by Energia Scientific Production Association (now Rocket and Space Corporation Energia JSC). Similar experiments were also carried out to sustain transmission between Moscow and Paris via the communication sputnik Molniya-2 and satellite Symphonie. The Soviet Molniya-2 were highly elliptical orbiting sputniks, whereas the French-German experimental satellite Symphonie was geostationary. The conducted experiments provided high-definition color television programs.

In 1975, complete live coverage of Paris Air Show in Le Bourget produced by the Soviet television was broadcasted via the Symphonie-1 satellite communication channel. According to the viewer feedback, the broadcast quality was excellent. At the same time, specialists in both countries began to explore different methods for transmission of combined picture and accompanying sound in one channel.

The 80’s were marked with increased cooperation in manned space exploration. This period saw a number of joint Soviet-French manned flights and scientific programs. Most notably, the spaceflight of the first French astronaut Jean-Loup Chrétien within the Soyuz T-6 mission launched on 24 June 1982. Six years later, he repeated his flight. The launch

at Baikonur was attended by the French President Francois Mitterrand.

Among notable joint research projects are Arcad-3 (magnetosphere-ionosphere coupling, 1981–1986), Vega (exploration of Venus and Halley’s Comet, 1985–1986).

Space collaboration between Moscow and Paris in the 60–80’s laid the foundations of modern scientific and applied cooperation. Sensible political decisions, clear objectives and accurate study of details, multiplied by careful attitude to the results of the collaboration allowed the Russian space community to hold out in the period of unrestricted reforms of the 90’s.

The second period of the relationship (the 90’s) was represented not so much by the development of market relations in Russia, as the integration of the Russian space industry to the global space economy.

Despite the difficult political and social changes, the cooperation with France expanded and acquired a new quality and application, primarily in space launch services and space communications. This period saw continuation of previously initiated research projects and start of new ones (e.g., the Interbol project aimed to study the physics of the Earth’s magnetosphere and solar wind, 1995-2001).

In the mid 90’s the joint ventures Starsem and Eurockot were established to promote Russian rocket carriers Soyuz and Rokot in the world market for space launch services. To provide communications over a very large geographical coverage area SESAT (Siberia Europe SATellite) was launched.

The third period was marked by the launch of the largest program “Soyuz in Kourou” or “Soyuz in GSC” (Guiana Space Center) in 2007, as well as the formation of a series of Russian-French joint ventures and entry to a whole new level of cooperation between satellite operators (Russian Satellite Communications Company – Eutelsat).



For over 20 years, Eutelsat and Russia cooperate in many ways. The last notable event in the history of our relationship with Russia fell on 25 December 2015 with powerful satellite “Express-AMU1” successfully put into the orbit; it will play an important role in the development of digital broadcasting networks and enhanced access to the Internet in the European part of the Russian Federation. Over the past 15 years, many Russian-French programs and initiatives entered the space industry. One of the key successes for consumers was the launch of highly technical satellite infrastructure that enabled digital broadcasting throughout the territory of the Russian Federation from three points in outer space (36°, 56° and 140° East longitude). Our satellites also facilitated broadcasting of Russian channels worldwide and helped shift from analog to digital television, including high definition. We are already contemplating ultra-high definition television: it will help us make a huge leap in image quality. We collaborate with Russian broadcasters to brace this step. In recent years, the Russian television image quality has improved dramatically, making it easier to run joint programs.

Michel de Rosen,
Chairman of the Board of Eutelsat Communications

Between 2004 and 2015, several joint ventures developing spacecrafts and technologies were established; the first one featured 51% share of JSC “Russian Space Systems” and 49% share divided equally between Space Electronics, a branch of Airbus Space Systems (France), and TESAT Spacecom GmbH, a subsidiary of Airbus Space Systems.

In 2013, JSC RSC Energia (51%) and Airbus Space Systems (49%) established joint venture Energy – Satellite Technologies (LLC Energia SAT). The same



year JSC Reshetnev Information Satellite Systems (ISS) from Zheleznogorsk (Krasnoyarsk Krai) and French Thales Alenia Space (TAS) established Krasnoyarsk-based Universum Space Technologies, a joint venture designing and manufacturing spacecraft payload components.

Continuous emergences of Russian-French joint ventures can serve as a good example of industrial cooperation moving “from substance to form”, therefore institutionalizing long-term and multi-level cooperation experience in specific projects.

Among recent significant developments, the June 2015 contract between Roskosmos and French Arianespace delivered the unprecedented 21 Soyuz rocket launches.

“Thanks to the cooperation in scientific, industrial and commercial levels of space research, France and Russia will continue optimizing the use of valuable resources, crucial for growth and development throughout the world. Such cooperation requires mutual trust, technical accuracy, long-term planning, investment and highly developed market. Equally important is purely human side, development of relationships not limited to business, and this is where France and Russia have more than succeeded,” said Michel de Rosen, Chairman of the Board of Eutelsat Communications.

Further Russian-French collaboration in space science seems sustainable. The collaboration evolves, despite the tense international context and political pressure attempts, often pursuing lobby’s interests. According to Vladimir Terekhov, Head of Airbus Defense and Space in Russia, the simultaneous lack of political support and interest of business communities will prevent any cooperation from deploying in full force.

“The Russian-French agreement prompted a number of remarkable scientific and business projects: joint manned program, scientific and practical experiments and industrial cooperation between enterprises. On the other hand, if it hadn’t been for mutual economic needs for technology and business expansion, the cooperation would have been limited exclusively to intergovernmental programs and bounded solely to public financing. I believe that at the moment there is the right balance of state support and market demand for cooperation, which allows to further develop the already established “space” ties,” added Vladimir Terekhov.

Thus, the objectives set by the leaderships of the Soviet Union and France for their governments back in 1966 to promote European scientific and technological cooperation, are manageable today. Nothing is left to do but to use most carefully the solid achievements of the past years, focused on cooperative experience in hostile political climate and highly qualified workforce.



New Opportunities

Eugeny Buydinov, Deputy General Director of Innovative Development at Russian Satellite Communications Company, told in an interview with a Strategy Journal correspondent about the world record in the field of satellite communications and breakthrough projects that helped Russia to hold the leading position in the international market.

What opportunities have opened thanks to RSCC?

The company works in the B2B segment but the main activity is conducted in the interests of the Russian people. The matter is that it is necessary to eliminate so-called 'digital gaps' in order to all people could have access to information resources on the whole territory of Russia. Now we are working on a number of innovative projects, mainly for private users. The development of satellite system was completed in May. It provides users with high-speed access within the Ka band frequency ranges [26.5–40 GHz, – translator's note]. The coverage area of 7,000 km is a new world record. The system functionality is provided by the two spacecrafts – SBA Express and Express AM5. There is also ground infrastructure that connects the two space communications centers – in Dubna and Khabarovsk. Technical capabilities allow to provide services for 200,000 users on the territory of the Kaliningrad region, Central and South Ural regions of Russia, Siberia and the Far East, including Kamchatka, Sakhalin and South Kurils. Its main feature is the availability of services both for individual users and small businesses. The user terminal is equipped with a 74-cm-aerial. The cost of the equipment is comparable with the cost of a modern smartphone. At the same time it provides Internet access at the speed up to 10 Mbit/s. It was impossible a few years ago. Today we attract commercial operators to implement the project. The new market of services started forming in our country services after commissioning of the project, which allowed to satisfy the growing demand for affordable satellite Internet services.

The second noteworthy project was launched in 2012. This is a satellite communications network for ships and remote northern areas. We have confirmed our possibility to provide telecommunications services in most parts of the Northern Sea Route with the use of geostationary satellites. Today, the network consists of more than 50 vessels equipped with marine satellite stations. The network service area covers all the waters of the seas that wash Russia.

Airbus produced a satellite that was launched at the beginning of the year. Are Russian-made satellites competitive in the market? What are their disadvantages in comparison with foreign analogues?

There are 11 domestically manufactured spacecrafts and 2 foreign manufactured satellites in RSCC. Domestic satellites

are equipped with foreign-made payload modules that receive and transmit signals. From the viewpoint of our customers' technical specifications, components of spacecrafts are the same, whoever manufactures them. On the one hand, the statistics of failures says that the result is not in favor of domestic manufacturers, but on the other hand, good specifications on-board transponders allow us not only to compete with foreign operators in the international markets of Europe, Middle East, North Africa, Asia, but also enter new regions of Latin America, Central and Southern Africa.

What projects may make a breakthrough in future? Does Russia have an opportunity to be at the vanguard?

For sure, we are involved in elaborating satellite communication system with the spacecraft on highly elliptical orbits (HEO). The implementation of this project will allow Russia to hold a leading position in the field of satellite communications, as there is no such civilian communications satellites in the world now. It is not always possible to establish communication with a spacecraft in geostationary orbit where the equatorial plane is located. Mainly, due to the geographical location of our country and its northern territories, Arctic area and the water area of the Arctic Ocean. The best way out of this situation is to create a communication system with satellites on HEO in order to provide reliable communications in the Arctic zone along the entire Northern Sea Route, as well as create a new market for communications and broadcasting services for mobile objects (trains, planes, ships, public and commercial vehicles). This project is extremely important for Russia due to the fact that more than half the people in the world who live beyond the Arctic circle are citizens of our country. Implementation of this project will give impetus for developing the domestic space industry.

According to reports announced by various analytical agencies, even an investment in the satellite manufacturing sector in the amount of \$1 will bring a multiplicative effect – from \$6 to \$13 of the total increase in income of the satellite industry sector. It might happen mainly due to the development of satellite services and equipment. It is also worth noting that the socio-economic impact from additional development opportunities in the Northern territory can be measured not only in terms of price.

“According to many analytical agencies, even a one-dollar-investment in satellite manufacturing will give a multiplicative effect from \$6 to \$13”



Entering the Market

Analytical Credit Rating Agency (ACRA) has been established in Russia since July 2015. It is expected that the agency will start working by summer. Ekaterina Trofimova, General Director of ACRA, told a Strategy Journal correspondent about organization plans and explained what steps the agency was going to take soon.

**What goals are you going to achieve during the first months?
When first ratings will be announced? What they will be about?**

During the first months, we managed to solve a large number of tasks, starting from staffing (hiring key employees) up to the office planning. A number of methodology projects and first analyzes are already available at our newly launched website: www.acra-ratings.ru.

In addition, one of the most important steps during the first months was the submission of an application to the Central Bank for inclusion in the register of credit rating agencies. ACRA is the first rating agency that submitted the required documents and filed a statement in accordance with the requirements of the Federal Law No. 222 FZ as of July 13, 2007. According to the law, the Central Bank shall make the appropriate decision within six months since the submission date of the application. The inclusion in the Central Bank's register of credit rating agencies is a prerequisite for the agency. We hope that our knowledge, experience and preparatory work will help to reach our goal. ACRA plans to assign credit ratings on a national scale to such categories as financial institutions, corporate sector organizations, regional and municipal authorities of the Russian Federation, as well as structured financial instruments.

Political commitment of rating agencies from the Big Three led to the adoption of restrictive measures in the work of these organizations in Russia. Does the new agency have all the necessary things to become independent and completely replace the Big Three ratings?

I fundamentally disagree with the thesis. No restrictive measures were taken in respect of international rating agencies. Firstly, the discussion of the bill on the regulation of rating agencies had begun long before Russia's sovereign rating started declining. Secondly, the regulation of the rating industry is not the Russian know-how. In many countries financial authorities use this instrument for control and supervisory. If you look at costs of the load regulatory that was formed as a result of development of regulatory agencies in the US and Europe you will realize that actions of the Russian regulator were not abnormal. Will it significantly affect the regulation of the industry? Yes, for sure. However, it will also affect all market participants without exception. National agencies faced with even greater challenges due to a number of requirements.

As for ACRA, from the very beginning we have worked out the project in accordance with legal requirements and international best practices of the rating business. The agency's independence is ensured at all organizational levels – from the shareholder structure (27 shareholders with minority stakes) and the board of directors (everybody is independent, except for CEO) up to a clear separation of commercial and analytical functions, even at the logistics level.

The agency has no task to replace other agencies. Our main goal is to ensure compliance with regulatory requirements and provide users with independent ratings, accurate assessment of the credit quality of a wide range of issuers and financial instruments. We invest in people, help them to become well educated in this field, improve their skills, as well as work out a strong technology platform of rating activities. It is obviously that after some time we will create our own statistics of defaults in individual sectors and a ratings transition matrix. It is inevitable for the new agency.

According to Vladimir Putin's statement, ACRA should be recognized by all participants of the market. When and how it can be assessed in full measure?

A rating agency is generally recognized when any market participants use its assessment of credit risks. For this purpose, we should receive a certain critical volume of credit ratings at least. It will allow stakeholders to assess distribution of marks in accordance with the scale and determine the necessary cut-off levels for themselves. At the same time ACRA should be constantly 'in the market', providing investors with a transparent and clear view of the current and future creditworthiness for rated entities. I think that we will be able to appreciate it in full measure in 2017.

According to representatives of the Big Three, growth of Russian ratings is limited by structural problems and lack of reforms. Are you agree with it? What actions should be primarily taken to improve the situation?

As CEO of the rating agency, I would refrain from commenting on specific analytical assessments by our colleagues from other companies.

Speaking about ACRA's role in the Russian economy, there should be incentives to increase efficiency in many areas when no growth

“From the very beginning we have worked out the project in accordance with legal requirements and international best practices of the rating business”

is expected by increasing the available resources. The reform may become a catalyst for these changes. I would like to underline that consequences of these changes, including economic growth, may become visible in a long-term perspective at best.

What is the probability that the Finance Ministry and the Central Bank will use only these ratings?

According to the law on the activities of credit rating agencies, only credit ratings assigned by agencies in accordance with a national scale and included in the register of credit rating agencies of the Bank of Russia can be used after a transition period for regulatory purposes. I do not know how many agencies will be included in the register. The exact number of agencies will be determined by the Bank of Russia and colleagues who are involved in taking business decisions. We are doing our best to meet the requirements of the regulator in full measure.

If an organization uses assessments of rating agencies it has the right to set its own individual requirements, thereby reducing the list of agencies in the register. Therefore, it is very difficult to predict today how credit ratings will be used in the second half of 2017.

How do you plan to assess the performance of the rating agency? How much time will it take you to reach the necessary achievements?

Shareholders and the investment community will access the agency activity. Our shareholders are interested in maximizing the rating coverage, as well as break-even activity. Investments are aimed not only at building reputation, but also receiving profits. The management was also involved in defining goals in the form of key performance indicators. They are cascaded down the agency organizational structure. The system consists of many peculiarities of the rating business, the so-called 'Chinese wall' between analytical and commercial functions of the agency, especially the regulation and development phases that we overcame when we were a very young company. The best assessment of the investment community is the recognition of our ratings. As professionals, we will be satisfied with our work if the content of our press releases on ratings actions becomes a trigger for a careful analysis of the situation in a bank, a company or a region, not spam in an e-mail. The recognition of the professional community is ACRA's main long-term goal.



V ЕЖЕГОДНАЯ ПРЕМИЯ

**ЗА ВКЛАД В РАЗВИТИЕ И ПРОДВИЖЕНИЕ
СОЦИАЛЬНОГО ПРЕДПРИНИМАТЕЛЬСТВА
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Post-sanctions Era in Iran

It was announced this year about lifting economic sanctions from the Islamic Republic of Iran. Experts of Moscow State University of Foreign Affairs and the Institute of Oriental Studies of the Russian Academy of Sciences shared how this event may influence relations between Russian and Iran, as well as what the world community should expect from Iran.



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Recall that sanctions against Iran were imposed due to accusations of developing nuclear weapon. The corresponding decree was signed by Barack Obama shortly after the European Union gave the required instructions.

As long as Iran has fulfilled its obligations in accordance with the Joint Comprehensive Plan of Action, multilateral economic and financial sanctions related to the Iranian nuclear program are being lifted," the media cites the joint statement of EU Foreign Affairs Representative, Federica Mogherini, and Iranian Foreign Minister, Mohammad Zarif, as saying.

It is necessary to know how the sanctions affected the economic situation in Iran in order to understand the scale of this event not only for a single country, but also for many of its partners. The country lost significant amounts of money after sales of oil and gas were stopped. In comparison with 2012, Iran's revenues reduced twice in March 2013 – the year of imposing



In comparison with 2012, Iran's revenues reduced twice after sales of oil and gas were stopped in March 2013 – the year of imposing restrictions on the supply of hydrocarbons to the EU. Now Iran can use its frozen foreign assets again, but it is about \$100 billion.



There are a lot of potential Russian-Iranian projects. For example, transport projects. Despite the fact that some of these projects are temporarily frozen, they are still important for the two countries. Both Russia and Iran are interested in the "New Silk Road" project. This topic is constantly discussed in Iran at all levels. Thanks to these projects we can work in various areas in Iran. In my opinion, one of the most important vectors of cooperation is construction and modernization of thermal power plants (TPP). We have built a lot of TPPs in Iran. Certainly, we have planes to works together in the field of space. It is also an extremely promising area for us. We have already cooperated and now we can return to our interaction again. I cannot help noting our the importance of our joint participation in the construction of exit routes in the gas market. It is reasonable for our companies, Gazprom, and its subsidiaries to participate in the development of gas fields, and, most importantly, in the transportation of gas, thereby determining routes that would not prevent Russia to deliver gas to the world markets. In principle, Iran is interested in expanding the number of nuclear power plants.

Nina Mamedova,
Associate Professor of the Department
of World Economy at Moscow State Institute
of International Relations, Candidate of Economic
Sciences at the URSK Center

restrictions on the supply of hydrocarbons to the EU. In 2014, the amount declined by another 10%. Since 2012, thus, the exporter lost about \$160 billion due to the imposition of sanctions. The country's GDP decreased by 9% in 2014 compared to the previous years before the introduction of restrictions. The rate of the Iranian rial decreased by almost twice against the US dollar. According to the US forecasts, the economy could grow by 15-20%, but instead of this, the country saw a fall in indicators and high inflation.

Associate Professor of the Department of World Economy at Moscow State University of Foreign Affairs, a candidate of economic sciences, Nina Mamedova noted that the absence of foreign exchange earnings has seriously affected many sectors of the economy of Iran.

"The peculiarity of the Iranian economy is that foreign exchange receipts to the budget were mainly based on the export of crude oil. It is the biggest problem because a significant share of Iran's imports consisted of the so-called semi-finished products for different sectors of industry. The reduction in hydrocarbon sales directly affected the sectors that were about to become export industries. Above all, it affected the car industry, as some car components were produced beyond Iran. There were some problems in the petrochemical industry due to the necessity to modernize production facilities. Those purchases were banned, as they had been regarded as dual-use products there. And what



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actions did Iran taken? The country did its best to carry out a series of reforms to create the initiative of domestic business, attract significant amount of foreign capital in order to increase the country's export potential with the help of non-oil exports. And Iran succeeded in it. The volume significantly increased, although it did not reach the volume of oil," Nina Mamedova points out.

Now Iran can again use its 'unfrozen' foreign assets, which are about \$100 billion, sell hydrocarbons

to Europe, use the Swift system and rely on foreign aid if it is needed. In addition, it is allowed to supply equipment and technologies to the oil sector and use foreign investments. It means that we should expect a real competitive struggle for Iran among its former and true partners.

"It should be noted that the struggle for Iran begun in 2014-2015 when it became clear that the Iranian nuclear problem would be solved. The Western European countries, including India, South Korea and Japan actively started to show interest. Russia was not an exception. During the two years, Russian-Iranian intergovernmental commissions met a lot of times and accepted a huge number of agreements of intent in almost all areas. But, unfortunately, only a small number contracts were signed," says Professor Vladimir Sazhin, senior researcher at the Center for Middle and Near East Studies at the Institute of Oriental Studies of the Russian Academy of Sciences, Doctor of Historical Sciences.

The competitive struggle promises to be severe. Iran's favorable geographical location (between the West and East, North and South, access to the ocean) makes the country an attractive partner. In addition, it is the center of the transport corridors from the North to the South and from the West to the East. The country has a rather developed industrial infrastructure, a highly educated population. There are the largest number of students per 1,000 people than in any other country in the world.

"What does Iran need now when the sanctions period is over? The two main things are huge foreign investments in all branches of the economy, and high technologies," Vladimir Sazhin notes. It is clear that Russia cannot fully provide Iran with these things. However, we can successfully compete with Western countries, as well Japan and China in some areas."

According to Professor Sazhin, among the competitive industries are some areas of the oil and petrochemical industry, transport, but, above all, the railway industry. Iran needs to modernize and electrify the railway system in the near future. In addition, the energy sector



Russia holds one of the leading positions in the field of nuclear power among other industry leaders. The successful completion of the construction and commissioning of the first stage of the Bushehr nuclear power plant in Iran predetermined further cooperation between Rosatom and the National Agency for the Development of Atomic Energy of Iran, including the construction of the second stage of the station. As for Iran's nuclear program, its implementation has been suspended in accordance with international decisions through limiting uranium enrichment. In addition to energy and the military-industrial complex and other promising areas of cooperation, I would highlight the supply of Russian grain to Iran and its transit to the Maghreb countries, as well as cooperation in the field of transport and heavy engineering. Iran tries to deserve the reputation as a reliable and future-oriented partner, regardless of what areas of cooperation we consider.

Vasily Venikov,
Chairman of the MCCI Commission on Foreign
Economic Cooperation with partners in Iran

is also attractive. Russia traditionally built TPPs in Iran, constructed the first nuclear power plant in Iran. Today were are involved in constructing another two blocks in Bushehr.

"I cannot help highlighting possible cooperation in the field of space because Iran has plans to send an astronaut by 2020, and Russia is already ready to support Iran. In addition, Iran is interested in launching geostationary satellites. It is also a very promising area," the expert at the Institute of Oriental Studies adds.

According to experts, the lifting of Iranian sanctions will be beneficial for the automotive and pharmaceutical industries. The export potential of Iran in these areas is estimated at \$2 billion per year. The volume of foreign investment in Iran in the next few years might reach \$3.5 billion a year. However, it is still unclear whether Russia is be able to take direct participation.

"Investment climate in Iran is extremely favorable for foreign companies. A new procedure for the participation of companies has now been established in the oil industry. We hope that it will be more favorable for us than the one that had been before," Nina Mamedova points out.

She also added that it would be beneficial for Russian investors, including large companies related to infrastructure, oil and gas projects if Iran participates in the Chinese project "The New Silk Road".

"China considers Iran as an extremely important branch of the southern route. When we discussed the "New



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Silk Road" project, we focused on Central Asia, but now this is the southern zone near Pakistan. It can combine different types of transport routes: rail, road, and sea transport," the expert says.

Vladimir Sazhin does not believe in the prospects of Russian investors.

"The investment climate is very favorable now in Iran, but Russia does not have enough means to support the projects that have already been discussed. It is a very disputable issue. As I understand, Russia has not enough spare funds. Iran needs huge investments, at least \$200 billion only in the oil industry. Will Russia have enough funds to support the current projects?" he notes.

Another anxious moment for Russia: Iran plans to increase oil supplies by about a million barrels in six months. And it will contribute to a further drop in prices. According to the World Bank, they will decrease by 14% in 2016.

Thus, during the crisis, Russia should foresee not only how it will compete with the EU and Asia for partnership with Iran, but also take into account the fact that Iran will become another competitor in the hydrocarbon market. According to experts, the cooperation between Russia and Iran is promising only in the defense sphere.

"We were convinced after Iranian Defense Minister, Hossein Dehgan, paid his visit to Moscow. According to specialists, the Iranian arms market is estimated at around \$13 billion, and Russia can sell military equipment and weapons in this market. Properly arranged work with Iran can help Russia to successfully compete with other countries," Vladimir Sazhin concludes.

Nina Mammadova adds that before the lifting of sanctions Iran was one of the largest customer of Russian defense products. That is why Russia should set this target and work out various types of cooperation.



Indian Horizons

One of the first Russian trade houses abroad opens in India. Russia also intends to link to India via free-trade zone and overland route. Therefore, the Republic of India will rank in the top ten partners of the Russian Federation. The Strategy Journal interviews Suren Vardanyan, international relations specialist and vice-president of the Moscow Chamber of Commerce, about the prospects of this situation.

Lately, it has been noted that India may become one of Russia’s ten largest partners. What are the underlying causes of such trend? What are the pros and cons of the orientation towards Russian-Indian cooperation?

Historically Russia and India are strategic partners. Not only India consumes Russian industrial goods (machinery, equipment, vehicles), but it also supplies chemical products, food products and agricultural raw materials. Both countries work effectively in pharmaceuticals, aviation and space. Capacity-building in trade and economic cooperation also encourages interaction between business communities of Russia and India, including the BRICS group. All this suggests that India may become one of Russia’s ten largest partners.

Russian and Moscow Chambers of Commerce and Industry made a notable contribution to the development of this trend with such important international trade tools, as the Business Council for Cooperation with India and the MCCI Commission on foreign economic cooperation with Indian partners. The root causes of this trend lie, primarily, in the favorable geopolitical position of our country linking Asia and Europe. This is a big advantage for consolidating our cooperation in economy, for building logistics and developing natural resources. At every level Russia and India hold frank discussions, including poignant questions. In this open dialogue both sides always seek and find mutually acceptable solutions. I see no cons here, since both Russia and India are not limited to one another, and pursue diversified policies and develop win-win cooperation with many countries.

From the point of view of logistics, India is not very convenient yet. How can shortcomings in this part be compensated?

I believe logistics should be seen not only as a convenient and cost-effective way to move goods from one point to another; it is necessary to form mutually beneficial logistics, taking into account the regional development challenges in both countries. This is the way our nations build relationships.

I would point out two projects that make solving logistical problems possible. First, it is the North-South transport corridor project. Despite some difficulties, the further development of the international North-South transport corridor remains promising.

Presently, intensive discussions are revolving around another project within the Shanghai Cooperation Organization and

Eurasian Economic Union — “New Silk Road”, an oversea and overland route linking the East and the West.

India is known in Russia primarily as a supplier of pharmaceutical products. Can we assume that it will come to invest in new ventures within this sector? Will India benefit?

Yes, I assume that India will continue to collaborate actively with Russia in this sector, since we have agreements fixed under the intergovernmental memorandum on cooperation in pharmaceuticals and biopharmaceuticals signed on 18 November 2011. India, on its part, is seriously considering to take part in arranging pharmaceutical clusters in Russia because, first of all, it is seeking to enter new markets and, secondly, the economic situation is favorable (ruble devaluation), and Russia passes measures to attract investment and localize production. This is especially perceptible in Moscow.

India has already launched a reusable space shuttle prototype into space. What are the prospects for space cooperation with Russia? Can it turn out that the great space nation will have to catch up with the third world country in space?

The question makes no sense in this context. Space exploration is a joint undertaking of many countries, which is illustrated by the International Space Station. It is the interaction of the international team of scientists and engineers that produces a synergistic effect. That is why we cooperate with NASA, ESA, China, India and many others. I reckon fair competition in this sector is a fine incentive for the development of our space industry.

What does Russia bring to India today? How does the focus shift in the commodity circulation of the two countries?

Today, Russia addresses proposals for closer cooperation in the energy sector, particularly in energy saving; establishment of freight logistics chains, and development of products with high added value. The partnership in construction and production of construction materials, recycling of household and industrial waste still remains relevant.

What are the other promising areas of cooperation that exist between the two countries?

Chemical industry, metallurgy, power generation, energy efficiency and IT.

“India is seriously considering to take part in arranging pharmaceutical clusters in Russia because, first of all, it is seeking to enter new markets and, secondly, Russian economic situation is favorable”

Bridge over to Switzerland

70 years have passed this year since Russian-Swiss relations were first established. The Strategy Journal columnist Natalya Maslakova-Klauberg, PhD in political science (Diplomatic Academy of the Ministry of Foreign Affairs of the Russian Federation), describes how two countries defy foreign-policy influence and remain good partners.



In 1946, when the world was plunged into the Cold War, the Soviet Union restored diplomatic ties with Switzerland. Relations between the two countries were uneasy since then: they experienced highs and lows depending on the geopolitical situation. However, despite pressure from the United States and other countries of the capitalist camp, Switzerland was intent to normalize relations, since it adhered to the policy of protecting national economic interests, and sought to establish trade relations with the Soviet Union. In 1948, the Soviet Union and Switzerland signed the relevant agreement reputed as a breakthrough moment in building bilateral ties. 70 years have passed since then. Many international media outlets started to speculate about the beginning of a Second Cold War. The ongoing Russia-EU confrontational course imposes a maturation test of relations between Russia and Switzerland. The second Russian-Swiss Innovation Day forum that took place in Samara built “economic bridge” between the countries. Politicians, leading innovators, representatives of more than 300 Russian and Swiss

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companies were present. Among the Swiss were such major companies as Schwabe Nanotech, Ferring Pharmaceuticals, CSEM, Swissmem, Mikron SA Agno, EPFL and the University of Neuchâtel.

The forum was a testament that Russian and Swiss business elites increasingly demonstrate willingness to cooperate and implement projects.

The choice of location is not accidental. Samara oblast shows the most dynamic growth and attractiveness among Russian regions. It ranks in top ten for industrial output, innovative capacity and retail turnover.

Samara is known for its strong science base and large manufacturing enterprises. In addition, Samara and the Swiss canton of Neuchâtel sustain economic ties and implement humanitarian projects. A large Swiss delegation headed by the president of the canton of Neuchâtel, Jean-Nathanaël Karakash, attended the forum.

Swiss Ambassador to Russia, Pierre Helg, who was also present, stressed the importance of cooperation of Swiss companies with the Samara oblast, which is famous for its strong science base and technological production. In recent years, Samara hosted various economic and business missions of companies; joint scientific and business projects financially assisted by the canton of Neuchâtel.

“Our countries are well known for their scientific achievements, so education and science are a framework for innovation development. Switzerland invests in education up to 6% of its GDP, and about 3% in research and development. Over the past 10 years Switzerland prioritized Russia in the field of scientific and technical cooperation and innovation,” the ambassador said. As he says, Swiss robust science needs strong partnership.

Swiss Parliament representatives, member of the Cantonal Council, co-chairman of the parliamentary

Russia–Switzerland friendship group Filippo Lombardi and member of the National Council, co-chairman of the parliamentary Russia–Switzerland friendship group Jean-Francois Steiert expressed their opinion about strengthening Russian-Swiss economic relations via video call. They believe that it is necessary to change the current state of affairs and get out of difficult situations driven by the political situation. The legislators also believe that Switzerland could not sustain the economic development of the country without good relations with the largest country in Europe – Russia.

Frederik Paulsen, Honorary Consul General of Russia in Lausanne and chairman of Ferring Pharmaceuticals, noted that Swiss business is based on creative search, continuous research and innovation. Technology development is a critical side of the Swiss economy. In his opinion, the potential of Swiss innovation and the Russian power can have noticeable economic effect.

Deputy of the State Duma of the Russian Federation, coordinator of the parliamentary Russia–Switzerland friendship group, first deputy chairman of the State Duma Committee on industry Vladimir Gutenev opened plenary session “Partnership between Russia and Switzerland. Demand for innovation”. The legislator noted that the forum is an example of how technological, educational, economic, cultural and other cooperation develop in the current environment, despite the sanctions.

According to Vladimir Gutenev, the partnership between Russia and Switzerland is critical because in recent years the Swiss national innovation system is recognized as the best in Europe, this country is distinguished by high level of high-tech industry development ensuring social protection of the population. The experience Switzerland possesses is also attractive in the field of development of innovative small businesses.

The deputy explained that, despite the decline in turnover from \$6.9 billion to \$4.7 billion in 2015, economic ties have tends to grow. Today 600

companies registered in Russia have Swiss capital. Around 200 of them have offices that employ more than 80 thousand people.

Forum discussion also revolved around the issues of advanced innovative approaches to industrial and household waste, the prospects for development of renewable energy in Russia, the problem of introduction of water treatment and air purification systems. Debate about the fourth technological revolution and hybrid metal processing technologies were held. A special topic was introduction of modern technologies in medicine and pharmaceuticals. Swiss and Russian participants of the forum showed interest to staff training for innovative industries, inter-university cooperation and joint innovation research.

Despite the EU countries are disposed to maintain sanctions against Russia, Switzerland remains faithful to the policy of economic priorities in its foreign policy.



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Global Therapy

Over the last decades, the Russian pharmaceutical industry has come a long way from the crisis of 1990s to the rapid increase in production volumes and the tendency towards export orientation. Today, the Russian pharmaceutical market is one of the ten largest markets in the world.



In 2015, the Russian pharma market was estimated at about \$20 billion. The market continues to be on the rise even in crisis times: the production volume increases and becomes more competitive in the market, consumers improve their opinions towards domestically manufactured products. The state, in its turn, supports such initiatives. As a result, the market has become one of the most attractive areas for investment.

State support and incentives aimed at launching our own production in Russia played a decisive role. Foreign companies remain in the market even in crisis times. The role of international cooperation in the pharmaceutical industry is also extremely high. There are many tools to reach these goals. For example, foreign and Russian companies implement common projects on technology transferring, contract

manufacturing, building their own plants, thereby receiving the status and preferences of the domestic manufacturer.

Russian and foreign companies, which have their own production sites in Russia, operate in accordance with international standards and, as a rule, ready for various types of cooperation. They prove the fact that there are no 'your' and 'our' patients in the pharmaceutical industry. All market participants have the only goal – they want to provide their patients with high quality, effective and affordable products. Cooperation among countries is one of the essential steps on the way of reaching the goal. We recommend familiarizing yourself with experience of the companies that operate in the field of pharmaceuticals at the international level.

Sanofi: Localization and Contracts

For many years, foreign companies are involved in localization of pharmaceutical manufacturing in Russia, taking fundamental steps towards development of the pharmaceutical industry. Sanofi is the first company that launched its own production of modern full cycle insulin in Russia. Production localization in 2010 was a logical step to continue development of the company in Russia.

"One of the key goals of Sanofi is to develop and produce innovative pharmaceuticals, as well as make them available to Russian patients. Sanofi Aventis Vostok is our own plant in Russia that produces full cycle insulin. In addition, we are actively developing projects on localization, transfer of innovative technologies for the production of our medicines and vaccines at the facilities of the leading Russian pharmaceutical companies," Director General Group of Companies Sanofi in Eurasia, Naira Adamyan points out.

The plant in the Oryol region is the second largest plant after the plant in Frankfurt, the main insulin producing



Pharmacological support is a humanitarian and social sphere that helps people to improve their health and quality living. We, representatives of the pharmaceutical business, and regulators need to understand that health is a category with no boundaries. These are our common problems and we should solve them together. Our joint projects are aimed not only at improving the health system and medical therapy, but also elements of the so-called 'people's diplomacy' that helps professionals to interact closer with each other.

Victor Dmitriev,
General Director at Association of the Russian pharmaceutical manufacturers

facility in the world. The production of the Russian plant is identical to the German one. The engine power is enough to satisfy demand in the markets of Russia and CIS countries.

Independent experts confirmed the high international production level of the company. In 2015, the Sanofi plant in the Orel region was successfully inspected by the European commission and then certified by the European Medicines Agency (EMA). The facility is ready to start exporting insulin to the EU in 2016. In addition, some production stages of oncological pharmaceuticals have already been localized at the Sanofi-Aventis Vostok plant.

Sanofi develops contract manufacturing in Russia. The company shares technology, knowledge and competence with the Russian partners in the field of vaccine production in particular. The localization of the pentavalent vaccine was launched in 2015 at the Nanolek factory in Russia. It was the first experience to

localize a combination vaccine in Russia. Since January 2016, Sanofi has been localizing a pharmaceutical together with Pharmstandard for the treatment of cardiovascular diseases and Gaucher disease. This is the first localization of the pharmaceutical for the treatment of rare diseases in Russia.

“Joint projects on localization contribute to increasing the availability of innovative pharmaceuticals for the treatment of Russian patients with socially significant diseases. Thus, Sanofi contributed to the implementation of the state program “Development of the Pharmaceutical and Medical Industry in Russia for 2013-2020,” Naira Adamyan says.

Polysan: Moving Production

Polysan has a wealth of experience in contract manufacturing.

It is among Top 10 largest Russian producers of pharmaceuticals and among Top 3 exporters of finished pharmaceutical products. In addition, Polysan is an active participant of the federal program Pharma 2020 on import substitution, increase in export potential, and development of the Russian market of pharmaceutical substances. The company is also implementing a number of international projects on the production of finished pharmaceutical product.

In July 2015, Polysan and Bayer signed a joint agreement on strategic partnership. That step allowed Bayer to launch production of pharmaceuticals at facilities of the Polysan company. In accordance with the agreement, Polysan used Bayer will manufacture contrast media for diagnostic purposes in computer and magnetic resonance imaging. Bayer shared technology, production experience, as well as provided active pharmaceutical ingredients (API) and the necessary consulting services for the project. It gave an additional impetus to the development of the Russian pharmaceutical industry. After signing the agreement in 2016, Polysan and Pfizer started producing three pharmaceuticals in accordance with Pfizer's



In 2015, the volume of the Russian pharmaceutical market was estimated at about \$20 billion

technology at facilities of the Polysan company. The original medicine for reducing cholesterol and risk of cardiovascular complications, a new tablet medicine for rheumatoid arthritis, plaque psoriasis and an antibacterial medicine for the treatment of hospital infections will be localized after implementing the process of technology transfer in Russia.

“This project is a part of Pfizer's investment “more than production” strategy aimed at developing the Russian pharmaceutical market. In our opinion, a joint project

of Pfizer with Polysan, one of the most modern and high-tech pharmaceutical companies in Russia, will make high quality original medicines for diseases more available to Russian patients,” Danil Blinov, General Director at Pfizer in Russia.

“The production capacity of Polysan will fully satisfy demand of Russian patients in localized forms of Pfizer. The project of technology transfer is implemented by a team of highly qualified specialists from Pfizer and Polysan. Quality control of the products after the transfer of technology will be carried out jointly by specialists of Pfizer Inc. and Polysan,” General Director of Polysan, Aleksandr Borisov says.

R-Pharm: Transfer of Technologies

Modern pharmaceutical business is impossible without the joint participation of companies in international research programs and activity in the technology transfer market.

According to R-Pharm, this is one of the company's priorities. It produces finished dosage forms, active pharmaceutical ingredients of chemical nature and biotechnological substances, conducts research and development of innovative drugs and technologies, introduces modern medicines to the market, and trains specialists for the pharmaceutical industry and public health. At present, the plant is being constructed in order to launch the production of high-technology pharmaceutical substances, and, therefore, medicine for treating socially significant diseases. R Pharm has also invested in the production of full cycle biopharmaceuticals based on monoclonal antibodies. It will help to produce innovative medicine for many socially important diseases.

The company has created its own research and development base in order to carry out research and development works with leading Russian and foreign academic institutions. The company's portfolio includes medicines from various pharmaceutical groups.

Technology transfer, production of patented life-saving and essential medicinal preparations, as well as production of their own highly effective medicines at the enterprises of R Pharm are successfully implemented in accordance with the Federal Program Pharma 2020 in cooperation with the largest international pharmaceutical companies.

It was signed agreements on the localization of production, technology transfer, licensing agreements with the world's leading pharmaceutical companies. The firm implements strategic partnerships in the fields of development and production of innovative pharmaceuticals with the largest pharmaceutical companies from the US, Switzerland, Germany, France, Japan, India, and China. Among the partners of R-Pharm are such international companies as AbbVie, Astellas, Bristol-Myers Squibb, Eli Lilly, Roche, Merck, Novartis and others.



Doping of Science

It has always been difficult to find a fresh topic for discussion.

However, no special purpose platform was created for discussing

our achievements in the field of sport science to improve that

state of things for the better. Why? It is likely due to the absence

of sports science in our country. At least, this thesis formed the

basis of the 1st International Forum “Big Science for Big Sport.”

What consequences may this disadvantage bring on the threshold

of the Olympic Games in Rio?



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Major universities of Cambridge, Milan, Shanghai, Philadelphia, Edinburgh are launching programs in sports medicine, biochemistry and biomechanics. Today, the top 20 list of world's leading universities consists of thirteen American universities, two Canadian, two Australian, two European and one Brazilian. According to a study conducted by Far Eastern Federal University, no research teams were included in the top 100.

According to statistics reported by Director of School of Arts, Culture and Sports at Far Eastern Federal University, Victoria Proshkina, Russia holds only 49th place in the ranking of the publishing articles activity and studies in reputable international journals related to sports medicine. The first five places are occupied by the United States, Great Britain, Germany, China and Australia.

Among reasons for the current situation, Deputy Minister of Sports, Yuri Nagornykh highlighted disintegration of sports science and a lack of coordination and continuity of scientific researches in the country.

“Competence centers operate as different departments and organizations, which carry out certain work without any clear goals. Studies are carried out separately, without continuity in the use of results. This coordination is not enough to conduct this work. There is also no single center for forecasting promising scientific research in sports,” Yuri Nagornykh points out.

Indeed, should we expect any significant achievements if the scientific specialty ‘sports medicine’ was removed more than 15 years ago? It worth also noting that there was not a single word about sports in the federal state educational standard of sports medicine and physiotherapy exercises.

“It contains information how to treat infectious diseases, determine the duration of pregnancy, but it contains not a single word about sports and athletes, the doping and anti-doping systems, and achievement of high sports results,” General Director at the Federal Scientific Center for Physical Culture and Sports Elena Yashina points out.



No foreign research centers will share these really important results with us. It is clear even on the example of countries that we considered as friendly. The situation with meldonium showed that as soon as we face the problem, our colleagues do not share relevant information with us. We should recognize that there is no stable integration of Russian sport researches with our foreign colleagues. The low or irrelevant level of researches in the country and the absence of rapid development are the main reason why our own researches and developments are uninteresting for data exchange. Not all issues are solved with the help of funding. The main goal is to restore our research system and improve coordination among all participants for the development of sports.

Yuri Nagornykh,
Deputy Minister of Sport

Is the game worth the candle? Sport and science do not overlap with each other. Success in sports always depend on physical condition of athletes. The only science that traditionally helps us is medicine.

Firstly, experts believe that athletes will not succeed in achieving significant results in sport without effective scientific and methodological support for training. Secondly, it is impossible to predict without researches what areas will become relevant in a few years and where may appear the so called bottlenecks or breakthrough that allow athletes to win. Thirdly, the decline in the international prestige of domestic researches in the field of sports science is intensifying from year to year. The most news headlines were dedicated to this during the past few months.

The Summer Olympics will start soon, but a couple of dozen Russian potential participants were suspended after substances from the WADA Prohibited List were found in their blood. Meldonium is the best of a bad



bunch. On May 8, CBS showed the film The Dark Mystery of Russia dedicated to the use of stimulants and strength-building substances by Russian athletes. On May 12, The New York Times published an article with the statements of former head of the Moscow Anti-Doping Laboratory Grigory Rodchenkov. He accused 15 Russian athletes who won medals at the Winter Olympics in Sochi of taking doping. It was the trigger for starting a re-examination of the doping tests. The investigation of the International Olympic Committee will set the record straight, but all athletes have already been suspended from international competitions. It seems that a pharmaceutical war against Russian athletes have begun. We would have avoided those problems if there had been scientific researches on meldonium alike medicine in Russia.

“Should we publish works of our scientists?” It is necessary to be well-known in the world. Actually, today we have not a single scientist who could act as an international expert in this field and whose opinion



In September 2015, WADA added meldonium to the list of banned medicine. It has been revealed 172 positive doping tests since then. At present, 40 Russian athletes are under investigation.

would be accepted in the community of anti-doping specialists. We need to bring up our own category of professionals and lawyers who accompany our activities. But there is a very a large gap,” said Deputy Minister of Sports, Yuri Nagornykh.

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Undoubtedly, the science of sports is multidisciplinary. Today special attention is paid to the development of hybrid bioinformational technologies. Tomorrow is rapidly approaching, so if we do not begin to develop breakthrough directions we will not achieve success. There must be a point for collecting complete information. In this case, researches will be complete and science start to perform prognostic functions instead of solving problems on the fact of problems that have already arisen.

Elena Yashina,
General Director of the Federal Scientific Center for Physical Culture and Sports



Andrey Sereda, Director of the Federal Scientific Clinical Center for Sports Medicine and Rehabilitation of the Federal Medical and Biological Agency of Russia, shared interesting information at the forum “Big Science for Big Sport.” He noted that only China carried out researches on meldonium over the past few years.

Foreign colleagues will hardly share their research experience with us. It is naive to rely on our friendly relations. Moreover, our scientists have nothing to offer in return. But first steps have already been taken. Yuri Nagornykh told during his speech at the forum “Big science for big sport” how import to find technologies for non-doping enhancement of athletes’ skill.

“We revert to what theorists of physical education taught us, but at the same time we use modern knowledge,” Yuri Nagornykh notes.

It is necessary to get physicians, teachers, physiologists, and psychologists involved in creating the system of sport knowledge. Only joint efforts together with the experience of Soviet scientists will lead Russian athletes to great victories in sport.

Our first large-scale joint work was a research dedicated to peculiarities of chronobiological processes, the physical adaptation of athletes during their participation in the Olympic Games in Rio de Janeiro. During 2015, specialists observed athletes engaged in cycling, rowing, rowing slalom, archery, taekwondo and martial arts. They were under the constant observation of scientists. Sometimes blood samples were taken at the airport and even on board the aircraft. The researches resulted in two volumes containing practical recommendations on the adaptation of athletes and a training program at the final stage of training. Acute desynchronization, disturbance of biological rhythms, changes in the functioning of basic life support systems are some of the issues that were specified in the course of the research.

It is not allowed to disclose more detailed information about our scientific work till the end of the Olympics in Rio de Janeiro. However a month later, you will be able to see the results of our athletes at the main competition and come to conclusions.

Charity for Good Cause

The Strategy Magazine is a traditional broadcast partner for the Force for Good award promoting social entrepreneurship. The annual award ceremony was held in May 2016 for the fifth time. 305 bids from 57 Russian regions competed in 7 nominations. 9 bids won. Some of them are reported here.

Personal contribution

Ilya Kovalyov took the first place in the category "Personal contribution in social entrepreneurship development". He created a social enterprise development agency engaged in modernization of the social infrastructure in the regions.

In particular, it implements the initiative "New ambulance and emergency care", which helped update 400 ambulance vehicles in seven regions of the Russian Federation from 2013 to 2016. The project has improved working conditions of more than 1,300 drivers and provided quality health services to 4,000,000 people.

Ilya Kovalev has launched the project "Football Russia" that inspired construction of an indoor football facility in the Omsk oblast. Up to a hundred such facilities will be in place in other regions before 2018. Total investment will amount to 300 million rubles.

Ekaterina Belyak's education project "Laboratorium Interactive Science Museum" based in Rostov-on-Don won her the second place in the same category. Interactive tours and workshops give Laboratorium visitors the opportunity to get familiar with such sciences as physics, mathematics, biology and cultural studies.

Professors of leading universities helped Ekaterina develop a system of modern

interactive programs, including scientific shows, master classes, workshops, quest competitions and conferences. The Rostov-on-Don museum welcomed some 140,000 visitors in two years.

Actor Konstantin Khabensky was awarded for the charitable project "Mowgli Generation", a unique musical, played by talented children from different regions of Russia, along with famous actors and musicians.

Money raised by the project are used to treat cancer in children. To date, Generation Mowgli collected 14 million rubles. This amount allowed to cover treatment of 21 children.



The Prize value is hard to overestimate, as today it is the largest event for the Russian social business. Now we have the opportunity to see the evolution of social entrepreneurship over the past years, meet new innovative projects and groundbreaking ideas, make new friends and partners. Over the years the Award really served as a real force for good and creativity. To start a business, especially in such difficult economic conditions like today, is challenging, and requires personal courage. I am sure that those positive examples that became known due to the Award will encourage many to embark on the social entrepreneurial way.

Vagit Alekperov,
founder of the foundation "Our Future"

Regions and leaders

Alexander Shokhin, the president of the Russian Union of Industrialists and Entrepreneurs, received the award in the category "Leadership in promoting social entrepreneurship". The Russian Union of Industrialists and Entrepreneurs under the leadership of Shokhin is engaged in systematic support of social entrepreneurship, which becomes part of the corporate social responsibility programs implemented by large businesses and government agencies. First Deputy Chairwoman of the Federation Council Committee on Social Policy Lyudmila Kostkina and Russian State Duma Deputy Mikhail Terentiev awarded the prize.

The awardee in the category "The best regional program to support social entrepreneurship" became Khanty-Mansi Autonomous Okrug — Yugra. Development of social entrepreneurship is one of the priorities for the region. In 2015, KMAO held over 100 educational, informational and advisory activities; more than 10,000 people consumed goods and services produced by social businesses.



The foundation "Our Future" established the award "Force for Good" in the year 2011.

For five years,

58 award winners

were defined. The prize money in

2016 totaled

1.65 million rubles



УСТОЙЧИВОЕ БУДУЩЕЕ РОССИИ
МОЛОДЕЖНАЯ КАДРОВАЯ ПЛАТФОРМА

**ИТОГИ I ЭТАПА
ВСЕРОССИЙСКОГО ОТБОРА
ПРОЕКТОВ СРЕДИ СТУДЕНТОВ,
АСПИРАНТОВ И МОЛОДЫХ УЧЕНЫХ.**

Systematic approach

The prize “The best corporate social entrepreneurship development program” was awarded to the mining and metallurgical company Norilsk Nickel. The comprehensive program “Development of social entrepreneurship in the Arctic” implemented by the company seeks to establish new life scenarios for residents of single-industry towns, enabling business environment, as well as attracting investors and partners.

The prize “Systematic approach to social entrepreneurship” was awarded to Siberian Coal Energy Company, a pioneer developing and supporting social entrepreneurship initiatives in the territories of its presence.

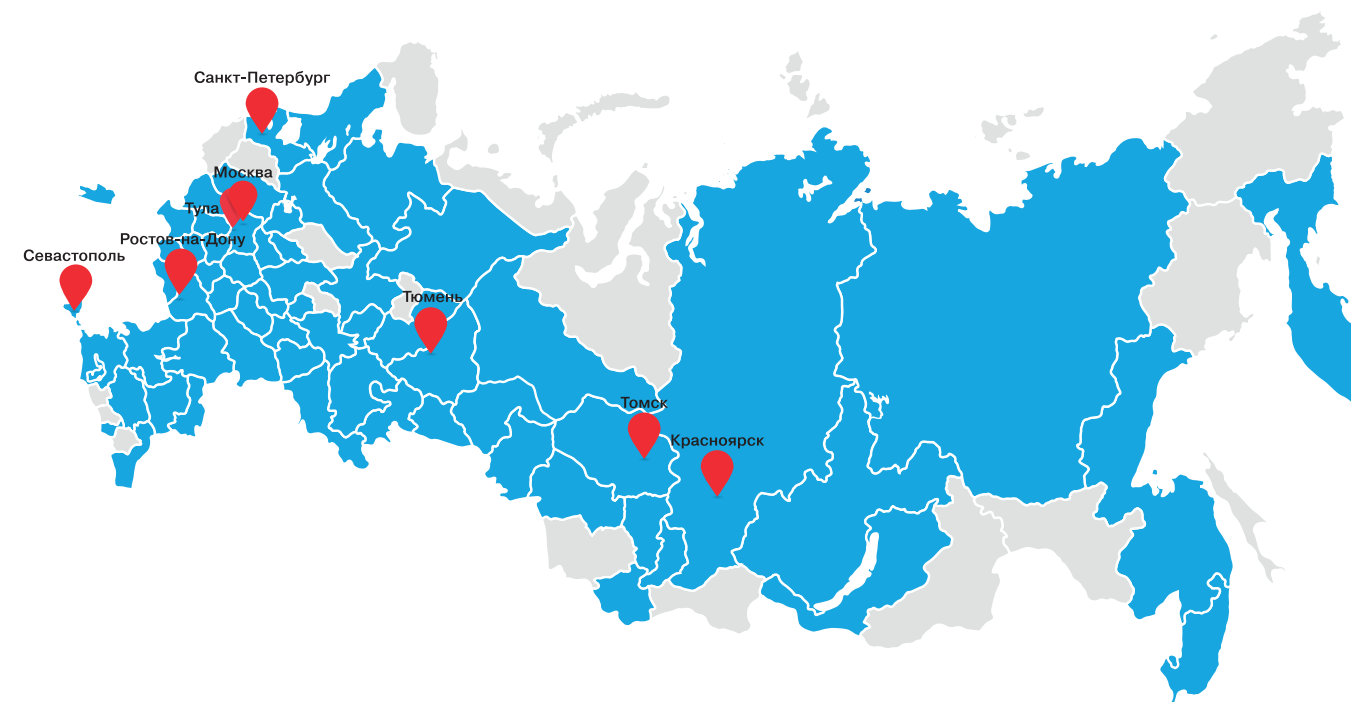
The company started more than 80 socially oriented businesses. Starting from 2012 SCEC has been running the project “School of social entrepreneurship”, which supports new entrepreneurs, and the “School of trainers on social entrepreneurship” opened in 2014 in the Kemerovo oblast.

“Like many large companies that are present today in the Russian market, we regard socially responsible business as the essential basis of all our activities. We are continually trying to implement social projects that enable development of the territories, and our entire country in general, to be progressive, sustainable and able to give hope that the future to come will be even better,” commented Deputy Director General, HR and Administration Director of Siberian Coal Energy Company Dmitry Syromyatnikov.

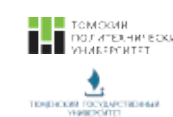


Our work together has really led to such great results that we can appreciate and see the number of good deeds made by our social entrepreneurs. We have observed plenty of interesting, innovative and breakthrough ideas from participants. The potential they contain is immense.

Natalia Zvereva,
director of the foundation for regional social programs “Our Future”



ПЛОЩАДКИ ОЧНЫХ
РЕГИОНАЛЬНЫХ ОТБОРОВ



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What Constitutes Blood Donation?

Blood donation level in Russia has steadied. Now blood collection services are changing strategy of attracting loyal repeat customers.

The blood center of the Federal Biomedical Agency stores 56,000 bags of plasma. If we lived in a perfect world, each of 56,000 people would get a portion of 300 milliliters. In fact, less cell-free blood will reach medical institutions, so someone will fail to get life-saving plasma. Part of the rejected blood will be discarded, another part will be processed using a method so expensive that, according to the chief doctor of the blood center Sofia Golosova, the institution's annual budget will hardly be enough to inactivate viruses in all plasma available.

After blood is collected, laboratories identify the blood group, Rh factor, blood phenotype, and then conduct biochemical studies and screening of markers for hemotransmissible viral infections, namely the components are tested for HIV, hepatitis B, hepatitis C and syphilis.

In this case, the plasma still is not administered to a patient. The plasma must undergo quarantine and storing at a temperature of -30°C for six months, and then the donor must confirm that his organism is free of viruses with a re-test or new donation. If the person does not show up within three years, the plasma is either disposed or undergoes virus inactivation. Methylene blue is used to stain liquid blood. It identifies viruses, to which an organism has not yet developed antibodies, and provides additional safety for a patient. It is clear that not all plasma is inactivated.



The work health and safety regulations for blood collection services have a requirement: everything that comes into contact with a donor must be disposable

The practice all over the world is to attract recurring donors. The main motivation is safety for the patient. This does not mean that newly registered donors are unnecessary. The challenge is to motivate them to return. "The person who comes constantly knows the rules and requirements and prepares himself for blood donation in a different way. Those people monitor their health. This builds another psychology," says Sofia Golosova.

The image of donors has changed over the past few years. Now more young and active people attend blood bank facilities. The motivation has changed too. In the 90's the struggling people were forced to donate blood for money, whereas today voluntary unpaid blood donation is popular.

It is unpaid only to the donor, though. Expenditures of the medical institutions carrying out collection of blood and blood components are much more impressive than the value of the donation money. Apart from disposable

materials, special storage conditions, material disposal and equipment used in both cases, unpaid blood donation costs include promoting, major campaigns and gifts for donors. In 2015, the blood center budget of the Federal Biomedical Agency, which is also responsible for the federal program promoting blood donations, was cut by 10%, and in 2016, this happened once again. In addition, the government reduced expenditures on promotion. However, in such circumstances, the blood center remains one of the best equipped institutions in the country. High-tech machines only take blood components: thrombocytes (platelets) and plasma. Whole blood is only collected by away teams that conduct mass blood donation hosted by commercial companies. According to the chief doctor of the blood center, the trend of cooperation with businesses has been emerging only in recent years. The blood is then sent to a lab for analysis; blood is filtered of leukocytes and thrombocytes, then fractionated in centrifuges at 4,200 rpm, and then separated into pure plasma and erythrocytes. Afterwards,



good for five days, so we can't take it in bulk volumes. Thrombocytes transfusion is highly effective for patients, but collection and storage of materials is quite expensive. Earlier in order to collect a portion of thrombocytes, six donors with the same blood group and Rh factor had to be sought. Now the same amount is collected from a single donor using a special device. Risks of contamination are minimal," explained the director of the blood collection and fractionation department, transfusiologist of the Federal Biomedical Agency blood center Yaroslav Glazov.

The work health and safety regulations for blood collection services have a requirement: everything that comes into contact with a donor must be disposable. Starting from blood lancets used to prick a finger for blood sampling to blood collection systems. Transfusiologists claim that donors are 100% safe.

"It is not about donors, it's about employees. They work with potentially infected blood, so contacts must be excluded whatsoever", explained Sofia Golosova.

Infections in HIV patients, the physician says, are to do with the human factor at the stage of transfusion: failure to comply with regulations, carelessness and negligence.

the plasma is stored and red blood is frozen in cryobank. Rare blood groups with Rh negative can be stored for up to 10 years. The storage life of red blood cell mass of common groups is as little as 42 days. Thrombocytes, donated by donors, require a different approach.

"Thrombocytopheresis is a high-tech process. The procedure takes 1.5-2 hours depending on the donor's physiology, his blood analysis and the initial number of thrombocytes in the blood. We take a portion that is only



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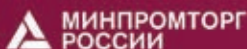
МЕЖДУНАРОДНАЯ ПРОМЫШЛЕННАЯ ВЫСТАВКА

Тема: «Промышленные сети»

Екатеринбург, Россия

16+

Организаторы:

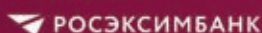


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