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New Catalysts for Change

BRINGING INNOVATION TO LIFE: THE DEATH AND RESURRECTION OF FUNDING THE NEXT NEW IDEA

Panel

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Moderator:

Alexandra Johnson, Managing Director, DFJ VTB Capital Aurora

Panellists:

Igor Agamirzyan, Chief Executive Officer, RVC

Andrey Fursenko, Aide to the President of the Russian Federation

Alexander Galitsky, Co-Founder, Managing Partner, Almaz Capital Partners

Vadim Makhov, Chairman of the Board of Directors, JSC OMZ

Leonid Melamed, Chairman of the Board of Directors, Team Drive; Chief Executive Officer, RusnanoMedInvest

Nikolay Pryanishnikov, President, Microsoft Rus

Joel Schwartz, Senior Vice-President, EMC Corporation

Pekka Viljakainen, Chairman, AII Capital

A. Johnson:

Today we have a very complex topic, but our discussion, I hope, will go smoothly, because the people who are here in the auditorium know everything there is to know about innovation and technology. We will have everyone here briefly introduce themselves, and then we will get to our discussion. Audience members, please prepare your questions and comments; you may participate in our discussion at any time. We will start with Nikolay.

N. Pryanishnikov:

Thank you, Alexandra. Nikolay Pryanishnikov, President of Microsoft Russia. I would like to put special emphasis on a start-up support plan. I am sure that it is going to be the young companies that are going to move innovation forward in Russia. We support those companies throughout the world, and we see that the biggest potential is here in our country: many talented, creative people and fantastic schooling in mathematics. There is a whole array of programmes for young people, including the Imagine Cup, a contest for technology projects developed and presented by student teams. Incidentally, two weeks from now, in St. Petersburg, we will be hosting the international finals of that contest, with teams from 100 countries around the world demonstrating their work.

But in order for start-ups to become real economic movers, a lot remains to be done. We have investment ideas; we have talent, but how do we transform an idea into a project, and then into a business, to later assist some bigger Russian company or emerge onto the international level? That is what we need to learn.

A. Johnson:

Thank you. Vadim, go ahead.

V. Makhov:

Thank you very much. I am the Chairman of the Board of Directors of JSC OMZ. One of our goals is to bring new ideas and projects into the machine-building

business, and we have quite a few examples of that. Previously, I worked at a direct investment fund specializing in green technologies – biofuels, wind energy, electric vehicles, and so on – and before that, I worked for 14 years at Severstal, where I was responsible for international business and strategy. Now, in addition to everything else, I am a professor at the Skolkovo School of Management, where I teach a course on the history of innovation and a course on business planning. It is great that around 25% of entrepreneurs, usually within a year and a half, create new companies and products. The central issue for an innovation policy is how to insert ideas and capital into a specific infrastructure. Thank you.

A. Johnson:

Thank you. Alexander.

A. Galitsky:

Alexander Galitsky. I used to build observation satellites, working on communications and directional systems for the Mir space station, and then I founded companies in the Wi-Fi and VPN sector, and now I am an investor. Over a short period of time, we have managed to prove that work coming out of Russia can succeed on the international market. The world has become a global one, and if national companies are not built for the global market, they will not be competitive. We started a company called Qik and sold it to Skype; we started one other company and sold it, too. We also have well-known companies like Parallels and others in our portfolio. We see enormous potential in this area; we have increased the size of our fund, and we hope that everything is going to go very well.

A. Johnson:

Thank you, Alexander. Leonid.

L. Melamed:

Thank you, Alexandra. I am Leonid Melamed, a doctor by training. I have worked in insurance, communications, private equity, finance, and many other fields. In cooperation with the Team Drive company, we manage RosnanoMedInvest, the biggest venture fund in the life sciences field, created jointly by Rosnano and one of the most well-known American life sciences venture companies, Domain Associates. Our goal is to develop the industry and its infrastructure using Western and Russian government money. We want to create attractive conditions for investment in Russian life sciences for venture companies and prove how beneficial that sort of investment can be. We are trying to give Russian developers a push to offer their services and products to venture capitalists. And, on the other hand, we are trying to follow the example of the new company NovaMedika to show how to implement new research results and use them to create a great deal of added value here in Russia.

A. Johnson:

Thank you, Leonid.

P. Viljakainen:

Ladies and gentlemen, it is nice to be here. I have been an entrepreneur all my life. I started my business 28 years ago, when I was 13, close to the Russian border, on the Finnish side. I later went on to run a business in 26 countries with about 20,000 people. Three years ago, I retired and came to Russia to be an advisor for Mr. Vekselberg, and now I am also working on some other projects. I think the common denominator is that I am only interested in startups; I am only interested in entrepreneurship culture. Education, coaching, and mentoring are needed to create a real no-fear attitude. Entrepreneurs should be so proud of their work that they do not accept being the best in St. Petersburg, or in Astrakhan, or in Russia, but try to be the best in the world, as every single industry and entrepreneur wants to be. That will generate such a culture and such companies that it will also change the path of economic development here in Russia. I know, after touring 16 cities just a month

ago and meeting 7,000 startups and people, that there is an extremely good baseline. There is a much better baseline than most people overseas, or in Russia, think there is. I think that will also be my perspective in this discussion.

A. Johnson:

Thank you, Pekka. Mr. Fursenko.

A. Fursenko:

Andrey Fursenko, Aide to the President of the Russian Federation. This session's name has changed many times, and now it sounds different in Russian than it does in English. In Russian, it is 'Successful Innovation: Where to Find the Ideas, Capital, and People?' I have tried to find an answer to that question as I worked in different places and in different positions. As of today, it seems to me that the central part of the question is where to find the people. There has never been a problem with capital. There have been some problems with ideas and those remain, but they can be solved. People are the most difficult part. The key problem is that people are insufficiently prepared for change. If we have the time, I will try to develop that topic when I speak next.

A. Johnson:

Thank you, Andrey. Igor?

I. Agamirzyan:

Thank you. My name is Igor Agamirzyan. I am the Chief Executive Officer of the Russian Venture Company, or RVC. For the first half of my professional career, I was an active programmer, and for the second, a manager. While in those early days I was interested in specific technology projects, and I do work in the technology innovation business, later I became interested in technology start-ups and entrepreneurship within big corporations. For the last few years, I have been interested most of all in launching new industries. For our country, venture

investment in technology start-ups is a new industry. I am very glad to be taking part so directly in its formation. It has already covered quite a lot of ground, but not nearly enough to occupy a meaningful position in the Russian economy. But what worries me most of all is the question that is posed in the name of today's session: where will we find people capable of building new industries? The future of our economy lies in new markets. Who will be the first to move in?

A. Johnson:

Thank you, Igor. Joel?

J. Schwartz:

My name is Joel Schwartz. I am a Senior Vice-President at EMC Corporation. For those of you who may not know EMC, we are a Massachusetts-based high-tech IT company. I have been there for 13 years. When I joined, our revenues were about USD 6 billion; today our revenues are approximately USD 23 billion. The technologies that we focus on are some of the buzzwords you all know. Our core business was originally storage. Today we are into cloud computing, big data, security, and virtualization – some of you may know VMware, which is one of our divisions.

When I initially joined EMC, I ran several divisions of the company. However, over the last few years, my area has been global business development. I have opened up pretty much every R&D activity that EMC has outside of the United States: India, Russia, China, Brazil, Israel, Singapore, and a few others. In addition to that, I am the sponsor for most of the M&A activity that EMC has outside of the United States. We spend about USD 2 billion a year on R&D and about another USD 2 billion on M&A. Although we have done a small amount here, we are very encouraged by the possibilities. Over the next few years, we are going to have a number of activities taking place in Russia.

A. Johnson:

Thank you, Joel.

Since the Russian topic is not the same as the English one, we will rename our panel. Let us call it ‘What? Where? When?’ What is innovation? Where will we find it? And when will we see a discovery come about that is going to be transformed into a world-class company with the help of our panellists here?

So, what is innovation? Alexander.

A. Galitsky:

I have been saying for a long time now that we must separate two processes. There is science, which is the formation of knowledge, and then there is innovation, which is, crudely speaking, the transformation of knowledge into money, the use of scientific discoveries for the good of society.

A. Johnson:

Would anybody like to add to that answer? Yes, Vadim, go ahead.

V. Makhov:

To be a bit crude, one could say that innovation is the commercialization of discovery. At the Skolkovo School of Management, I often mention this example. Nikola Tesla spent huge sums making his discoveries. After he moved to the US, he sold them to Westinghouse for big money. His discoveries were implemented in practice, meaning they became innovations.

A. Galitsky:

That is also the process of transforming knowledge into money.

A. Johnson:

Leonid?

L. Melamed:

This is a very important question, and all sorts of organizations, state agencies, and academics are always returning to it. Yesterday we had a discussion on a closely related theme on a panel that I had the pleasure of leading, on economic knowledge: what is an innovative product, and how do we calculate the innovation economy? There is no perfect definition, but it is fairly simple. The process of creating intellectual value in a patent, a licence, or some other form that can be priced: that is the innovation sector of the economy. Everything that begins beyond that watershed belongs to a different sector of the economy. The volume of innovation in an economy is equal to how much production it creates under the aegis of intellectual property rights.

A. Johnson:

Yes, that is probably true. Pekka?

P. Viljakainen:

My grandfather was one of the founders of the company called Nokia. I was born in 1972 and we got our first mobile phone in 1978. It weighed about 250 kilogrammes. My grandfather was very scientifically oriented; he was an engineering, scientific person. He said to me: “Pekka, remember: innovation is to make money”. What he meant was that there are so many innovations and patents where the commercialization is missing: ultimately, the purpose and the measurement of entrepreneurs is how they make money. I think there is some sort of misunderstanding in the Russian innovation system – and I am not referring to Skolkovo – that you have to have an idea that is completely unique, something that no one else has ever invented. But the fact of the matter is that most money-making innovations are not new inventions. They are fast to market, they combine talent, they build good teams, and that is what leads to economic development. That is why here in Russia, I would not say that the gaming industry and the IT industry are irrelevant just because we are not winning a Nobel Prize. We are making billions here. The purpose is to make money.

N. Pryanishnikov:

If the innovation in Pekka's family can help us – we had his father, grandfather, and now his son – we can only be in favour of that. So please give us some innovative ideas!

A. Johnson:

Well, we have worked out an understanding of the term 'innovation'. Or have we? Igor, I know you cannot help expressing your opinion about this.

I. Agamirzyan:

My point of view is closest to Pekka's. I would put it even more directly: innovation is the creation of new markets. Not just of new products, but new industries that genuinely determine economic development. Over the course of my own professional career, this has happened in at least four or five different areas.

A. Johnson:

Joel, I think that you may be able to provide us a definition of innovation that is accepted on the other side of the ocean.

J. Schwartz:

Probably the biggest innovation that I have personally been responsible for was after deciding to open up an R&D centre in St. Petersburg six years ago. I asked Igor to come and head it up. That meant so much to us in terms of getting started, because Igor's presence in the high-tech, scientific, and engineering community here made all the difference to us. Fast-forwarding to today, I will give you a very interesting fact, which I just discovered myself this morning when I was doing a little mental maths. Our revenues in Russia represent about 0.5% of EMC's total revenues. The number of engineers we have here represents 5% of all our engineers.

A. Johnson:

So what does that mean?

J. Schwartz:

You see where the value is? The value is clearly in the quality of the talent we have here. We depend on this organization for innovation in ways that we hardly depend on any other of our engineering operations around the world.

A. Johnson:

Mr. Fursenko, I wanted to ask you to think back to the time when you were not yet minister. Could you tell us what you worked on then?

A. Fursenko:

First I would like to think back to that famous Russian joke, when one man offers, “Vodka? Whiskey? Cognac?” and the other answers, “And beer too, please.” There is still something to be added to the definitions of innovation we have heard here. But what Leonid said is nearest of all to the goal of our round table. Innovation is the commercialization of an intellectual product that yields a genuine economic effect. Outside the bounds of our panel, that definition would probably be too narrow and a bit one-sided. We cannot talk about innovation without talking about money, and whether that means new markets or some sort of rationalizing decisions within the boundaries of existing markets, it is always a question of who can manage to grow into what.

A. Johnson:

As a venture capitalist from Silicon Valley, that definition suits me. We invest in companies to make a return on our investment in the form of more capital than we put in. Therefore, Mr. Fursenko was correct to specify that we have defined innovation for the purpose of today’s discussion.

The next question is: where is innovation born? Can it be cultivated? Can entrepreneurship be taught? Nikolay, we turn to you.

N. Pryanishnikov:

I believe that entrepreneurship can be taught. Some people are born expert entrepreneurs and can make their own way, but many need help. A great many talented young people today are in a position of uncertainty. They have ideas; they have enormous potential, but they still do not know how to create a product and bring it onto the market so that it makes money for them. This is both a technical and political question. Right now, Russians are afraid of running their own businesses. A project like No Fear, of which Pekka is the author, could help us a great deal.

A. Johnson:

And why are they afraid?

N. Pryanishnikov:

They think the risk is too high, that they would be worn down by various expenses, and that it would be easier to go work in some sort of government office. These attitudes may certainly be reversed. One motivating force for young entrepreneurs could be the examples of successful cases represented here on our panel.

A. Johnson:

Now we will move on to a discussion of achievements. Pekka first, please, then Igor.

P. Viljakainen:

Let us be practical with this fear factor. When we are meeting talented young people – and let us imagine that we are in Astrakhan, like we were six weeks ago, and there are 250 local entrepreneurs – of course we can talk about general topics, like

societal development and so on. But if you are a young talent, you are not really thinking about that. When I say ‘fear’ what I mean is this: you are all in Astrakhan and when I ask who knows whom – you are all from the same city – it comes out that nobody knows anybody else. And you are all entrepreneurs of the same age! There are, of course, exceptions. But in the startup community, there is an important social aspect in learning from others. If the startups in Astrakhan do not all know each other, how can they possibly know what is happening around the world and in the rest of Russia? That is why we are investing money and, more than money, a lot of effort to make sure that this social aspect – people getting to know each other – is strengthened. When I ask young entrepreneurs from Astrakhan why they do not know the other entrepreneurs, they say “my teacher told me that they might steal my idea”. That was the story also in Finland before Nokia collapsed. What I mean is that you need to learn from others because if you do everything by yourself, you will never become a good entrepreneur. That is why I was talking about fear. It is a very practical matter, even when you go abroad.

A. Johnson:

Thank you. Igor?

I. Agamirzyan:

Over the past 30 or 40 years, the world has radically changed, and in that, innovation has played a great role. After all, the map of the world today is defined by the technology revolution that took place within the memory of my generation. Russia also has had some shining success stories. In the post-Soviet period, the country saw the birth and establishment of the IT industry. That is the only new technological industry in which we in this country have reached a world-class level. Today, software exports are one of the biggest money-makers outside of raw materials exports in Russia. Around the world, among professionals, Russia is seen as a centre of competence in that field. It took almost 20 years to establish the IT

industry, but it has happened, and the same thing is in store for markets that will be opening up in the future.

A. Johnson:

Alexander, you had a hand in creating the IT industry. Could you comment on that for us?

A. Galitsky:

In the 1990s, entrepreneurs were still tied to their old scientific research work and did not know how to do the most important thing: transform a prototype into a product and a product into a business. We underestimated the most complex part of commercialization, which makes up about 75% of its costs. Then the second generation grew up – and I would classify Belousov and David Yang as part of that generation – and they built companies that were completely removed from the old background inherited from the Soviet Union. Today, the third generation of entrepreneurs has arrived. Thanks to the internet, that generation has access to all possible types of information, and it has been thinking on the international scale from the very start.

These kids are much braver than we are, but Russia has still not learned to capitalize even on their efforts. One entrepreneur with whom we are concluding a deal right now sold his product on the international market for USD 3 million, all while sitting in a wheelchair. He has put a team together and is working on building a new one, because he understands that further growth can only come from international markets.

We have not yet realized how much everything has changed and how rich the possibilities are opening up before us in these information technologies. Why is Joel here? Because the world highly values Russian mathematics instruction. Moscow State University is probably the only Russian university in the top twenty universities in the world for mathematics. Today, with the development of the internet and

globalization processes, Russian mathematics and technology schools have new prospects, and they demand thorough analysis.

A. Johnson:

Thank you. Leonid, would you like to say a few words on other industries developing in Russia?

L. Melamed:

A lot of new things have been done in recent decades. Before my eyes, and even with my own modest involvement, the high-tech communications industry has developed, offering services used by everyone sitting here. But we need to recognize that a majority of the innovations in that field have not come from Russia. Finding emigrants from the former Soviet Union among the people whose patents are being used to create mobile and land-line communications technologies is a different matter. There are dozens of them. The heroes of that industry studied in the same schools and universities that we did. If you take a look, for example, at the Hirsch index for biotechnology, you will see masses of people there who once lived in Russia or the Soviet Union. Today practically 95% of those people live in neither the Russian Federation nor the CIS countries. For some reason we are exporting heroes, instead of importing them or nurturing our own. This is a problem that goes above industry. It cannot be solved by the efforts of the RVC, Rosnano, or Team Drive. It can only be solved at the national policy level. For people to work here and serve as examples, they must be supported and recognized as the heroes they actually are.

A. Johnson:

We should talk about the role of big corporations, since we have Microsoft, EMC, and OMZ here. Vadim, tell us a little about your corporation and about why you came to speak on our panel. What innovation processes are taking place where you are?

V. Makhov:

Thank you. Machine building is a sector that owes its existence to innovation. Overall in the manufacturing industry – and that is about 16% of worldwide GDP – exports account for about 70%, and that is about the percentage of private money in financing R&D work. Russian heavy machine building is all the more important in that 51% of all imports to Russia go into machine equipment, reaching USD 300 billion per year. This is the reverse side of oil dependency. The future of the Russian economy, at least in the medium term, depends, among other things, on whether we will create competitive technologies for extracting, processing, and transporting natural resources.

Our corporation has launched a whole array of programmes to strengthen innovation work, including the Innovation Factory. We hold contests that are open to other corporations and universities, and award people grants. We have developed a joint programme with the RVC in which we run the machine-building cluster, and we are grateful to our partners for that cooperation. There has been a whole array of R&D developments. Too few people know that a year ago we built one of the biggest petrochemical reactors in the world, ordered by Rosneft, and delivered it to Tuapse.

A. Johnson:

That is very interesting. I would like draw a parallel with programmes run by American corporations. Joel, how does EMC work with entrepreneurs?

J. Schwartz:

Typically, the first thing we do after we find a leader, when we establish ourselves in a country, is go out and talk to the universities. They represent the core of where the research is being done. We talk to the professors and ask them who their good students are and what they are working on. That is the beginning of the chain. I was here about two months ago and there was this ‘tech tour’ that started in Moscow,

then went to Kazan, etc. In two or three days, we saw maybe hundreds of young entrepreneurs. Anyone who feels that there is not an entrepreneurial spirit in Russia should go on one of these tours. They should have seen the energy of these young entrepreneurs as they stood in front of a group of venture capitalists and private equity guys and had three minutes to tell them their idea, explain why it was going to be successful, and ask for their support. There was tremendous enthusiasm. So you have to get into the community and spend time here; you cannot sit back in Massachusetts and read PowerPoint presentations.

A. Johnson:

We have mentioned the topic of universities several times now.

Mr. Fursenko, may we have your opinion on the previous question?

A. Fursenko:

Alexandra, you asked us to move from IT to other industries. There is a whole array of areas in which Russia is also innovative, although people talk about them less often. First, we have metallurgy. Today that sector is absolutely competitive, and a good portion of research developments are Russian. Atomic energy is in good shape, and new materials and approaches are emerging for constructing reactors. Aviation is in extremely good condition, not just military, but also civilian aviation.

Where do these sectors fall short when held up against IT? They have a longer innovation cycle. We started developing the necessary infrastructure and preparing personnel in the first years of the 21st century, and only now can we start to expect results.

But still, we must not concentrate exclusively on software issues. Metallurgy gives us more, from the point of view of exports: almost as much as oil. One very high-tech sort of product is new composites. For example, building new pipelines requires an absolutely new approach: the use of nanotechnology. Materials science is changing. I would say that the software being developed in India is a significantly

less high-tech product than the metals produced by a whole array of Russian companies.

A. Johnson:

We will not start criticizing people who are not here in the room, because they cannot defend themselves. But if even innovative companies as big as Apple have nothing against the hardware, that is probably an indication that innovation is proceeding in all sectors.

Before we go on to the next question, I would like to know who is here today in our audience. Do we have entrepreneurs, investors, academics here? Raise your hands, please.

Thank you. Now we will talk a bit about education. There are many aspects to this question. Nikolay, you may start with any of them.

N. Pryanishnikov:

Naturally, it all starts in primary school. We support all kinds of initiatives about new schools and individual education, and we are prepared to share in the international experience.

There are already innovation centres in our universities that stimulate ideas and help to put them into action. Both our own employees and university employees do that sort of work. There are competitions among student teams, and the goal of those contests is not just to support young people, but also to train them. But the efforts of a single company are not enough. We need systemic work in the long term.

A. Johnson:

I would like to hear which universities and institutes are the sources of the most original ideas that have potential for commercialization. For instance, in Silicon Valley, a venture capitalist who is not too lazy, who behaves like a good investor should, goes to Stanford, to Berkeley, and looks to see what kind of student

discoveries he might get his hands on. Where does an investor go in Russia? Alexander, you know where to go. Tell us!

A. Galitsky:

I will talk just briefly about education. My partner Charlie Ryan said this: “Russia has a lot of money, but not much capital.” For education, we can say that Russia has a lot of knowledge, but not much expertise. What do I mean? For the first four years, education is really great. But training for specialists is weak here. The loss of the scientific research institutes has led to a situation where there are no core departments. This problem has got to be eliminated in Russia.

A few Russian universities used to do scientific research. An instructor’s work lies elsewhere: teaching. An investor will go where there is an industrial section. You said yourself that Rostelecom hires professors to teach their subjects of expertise to its employees, because in Russia, industry knowledge is taught ten years too late. And in order for knowledge and skills to develop, one more problem will have to be solved. We have a great many ideas, some fantastic ideas. But people are not familiar with the modern international production industry. The customs issue plays a significant role in this. In order to have good things appear in hardware, we need to make it simpler to get them through customs. That is the key problem for biotechnology and for all technology in general.

A. Johnson:

Alexander, some people might argue with you.

L. Melamed:

Some people here in the audience, with whom I have the honour of being acquainted, know about my passion for KPIs, Key Performance Indicators. Today it was just music to my ears to hear the President of the Russian Federation speak about establishing firm KPIs for government agencies. We also need to set KPIs for the Ministry of Education and Science, so that with time at least some Russian

universities will make it into the top 100 in the world. I am sorry to share negative statistics, but here before me I have three rankings, and Moscow State University is on only one of them: and not overall, but just for a few specialties. Until our universities start to figure among the 100 best, no matter how much money you pour in, no matter how much you support them, no field is going to emerge for finding and recruiting experts. This will not be achieved in one year or two, but if things proceed successfully, we will have achieved a very important integral indicator. I do not know whether the Soviet Union was on the list of the countries with the best universities; most likely they did not do that kind of analysis behind the Iron Curtain. But in practical terms, dozens of Soviet universities achieved worldwide recognition, and they were the breeding ground in which the Soviet Union's famous scientific and technical potential grew. Then that potential was exported, and it continues to be exported to this day. And it is not yet being reproduced at the level that we need.

A. Johnson:

Pekka cannot wait to comment.

P. Viljakainen:

I do not want to dilute anything that was said about education. What I want to say is that Russia loves all kinds of ratings. I have, in one year, given about 250 interviews to TV and other media here in Russia. I have been asked to rate governors, cities, regions, ministries, institutions. Everyone wants to know who is the best and who is the worst, so to speak. This is a bit of a funny thing.

A typical question – once again, I am talking about very down-to-earth, practical matters – many entrepreneurs here in Russia are asking directly is: "I have an idea. I have a basic concept. I have a university education. Should I now pursue an international MBA education? Should I go to Stanford Business School? What would be the right step?" This comes up very often. When I started my business as a teenager, I never had a chance to go to business school. We had a big mortgage

to finance and every single piece of our land would have been needed to finance my loans to go to a university for five years, which my mother and father would not have agreed to. I think, honestly speaking, that to create experts and entrepreneurs, the shortcut for the Russian Federation is to really strengthen the concept of learning from others. We must build entrepreneurship societies, regional and local, and connect Russian entrepreneurship societies. The Finnish border is only 22 minutes away by helicopter; Germany is an hour and a half away by plane; in Vladivostok entrepreneurs can connect with South Korea and so forth. This is what is needed for short-term learning. Of course it is important to develop university education. Of course it is important to talk about entrepreneurship in primary school. But Russia needs tens of thousands of new entrepreneurs in five years. We cannot send every talented young Russian to have MBA training overseas.

As an example of best practice, in Helsinki, Finland, we merged the industrial university, industrial arts, technical school, and business school together in Aalto University. It went well, even though there was a lot of bureaucracy and hassle. The best part, however, was an organization called Startup Sauna, meaning an informal team that connects people and investors. We even started it in a sauna, because we are from Finland. In the beginning it brought together 20 people; now it connects 20,000 people.

A. Johnson:

They travel to Silicon Valley and around the world all the time.

P. Viljakainen:

Yes, but my point is that this is precisely what I think Russia should do. We are actually doing it, but we should accelerate it at all levels.

A. Johnson:

What do our respected panellists think about online education? Take Khan Academy or Coursera, for instance: they issue certificates, and many experts are

saying the future may lie there. A diploma is not so important; what is important is not what you have read, but what you know. Joel, what is your opinion about online education?

J. Schwartz:

We have an acronym for them in English: MOOC (massive online open courses). My alma mater is experimenting with it, as many universities are. I am from Boston and I know that MIT and Harvard have a programme using that. Education costs have risen way out of line with inflation. If you look back over thirty years, the cost of higher education now is at an all-time high, even superseding the cost of healthcare, which in the United States is not the cheapest. Whenever that happens, disruption takes place. We have already seen professors teaching computer science classes to over 150,000 students participating in a course. I am sure you can all think of courses that you took when you were in school where you could have done fine just by listening to the lecture. This is what is coming. If I was the president of a university and I was approached by one of the department heads to talk about building a new building, I would think about slowing that down. I do not think on-campus higher education is going away, but online education is going to really disrupt things. Thank you.

A. Johnson:

Mr. Fursenko, Igor, do you have any comments about this?

I. Agamirzyan:

Online education is a tool, and educational tools have always been in the process of progressing. The main question is not how to study, but what to learn. Yesterday, working with the Ministry of Economic Development, we delivered a report on the implementation of Russia’s innovative development strategy. A fairly large expert panel was convened, and expert opinions were polled. The section for competencies in innovative activity ended up in the red zone, and it was the

representatives of the science and education sectors who received the very lowest marks. Teaching can be done in different ways – in classes, in groups, online, over the television – but there is nobody to teach. There are not enough people capable of facilitating the education process at a modern level, within the framework of a modern economy.

A few hours ago, Vadim and I were talking about how to train engineers. That has become an enormous problem. And while technical, fundamental training in Russian engineering institutes has always been high-quality, the institutes are not teaching processes for managing engineering work, implementation, and systems integration. But in a modern technological economy, the process of systems integration and implementing solutions using various manufacturers' products is a very important component, and no computer-aided manufacturing can be built without it. That means that we must rebuild our whole approach to teaching engineering expertise. The fundamentals must be maintained, but brought into line with how the modern economy operates. There are development engineers, implementation engineers, and operations engineers replacing workers at modern plants. That means that the manufacturing process is facilitated by engineering personnel.

A. Johnson:

This is truly a very complex process, worthy of a separate conversation. I am sure that Mr. Fursenko has something to add.

A. Fursenko:

A rating is a fairly artificial thing. Spokesmen for the people who make the university rankings have said directly that we must understand that 80 out of the 100 rankings are held in an iron grip by the famous universities, and nobody is going to nudge them out of there, so we are fighting over the last 20 places.

You can say what you like about rankings, but graduates of the Moscow Institute of Physics and Technology, the Moscow Engineering Physics Institute, Bauman

Moscow State Technical University, certain departments of Moscow State University and St. Petersburg State University, and a few other institutes, have always been and are going to remain in demand regardless of their school's place in the rankings. Moreover, students are being picked up by recruiters as early as their third year. It is another matter that (here I agree with Alexander) these students are still raw material, well-formed intellectual gems that still need to be cut. But here is the thing: they are not being turned into diamonds here. In this sense, preserving the fundamental engineering education that Igor was talking about is a dangerous thing. We cannot understand what fundamental engineering education is today without understanding what an engineer is today. And an engineer today is a designer, an innovator, actually. It is hard to overcome the psychological barrier and understand that we ourselves must prepare for other areas of expertise and train other sorts of experts.

A. Johnson:

We have talked about ideas, and we have talked about people. It remains for us to answer the question of where entrepreneurs can get capital. Vadim, we can begin with you. How do you support young companies? In what form do you give them money, or do you perhaps buy them right away?

V. Makhov:

Most of all we develop internal entrepreneurship. Our employees regularly put forward initiatives thanks to which, over the past year, we have managed to save 2.5% of our revenues. We have received over 2,000 proposals, and we allot resources to the supervisors, workers, and engineers who have done well for us. This is a very big tool for empowerment.

Around 800 employees in our company work in fundamental and applied research and development. During the crisis that began in the first decade of this century, we spent practically nothing on innovation, but today we invest about 2% of our sales volume in it.

A. Johnson:

Once you give money to your own entrepreneur, are you in fact buying his idea, or do you allow him to use it to build a business?

V. Makhov:

In most cases, the ideas belong to the company and are implemented within the company. Of course, we consider buying other companies, start-ups, but that happens much more rarely. Mainly, we rely on internal sources.

A. Johnson:

Nikolay, do you have funds remaining?

N. Pryanishnikov:

We made the unprecedented decision to create a Seed Financing Fund in Russia, because that is the stage at which beginning entrepreneurs have few opportunities. We have already issued more than 30 grants. As a rule, the sums are not very large – from USD 30,000 to USD 100,000 – but they are just enough to go from an idea to a prototype and to move forward. The programme is working very well, and we are getting a lot of applications.

Furthermore, we are cooperating very effectively with Igor and with other members of this panel. First we support a company, and then investors put money into it. We end up with a win–win system.

A. Johnson:

Pekka, does Skolkovo invest money or give grants? How would you describe your investment process?

P. Viljakainen:

Yes, of course Skolkovo is giving grants, even though, based on my own observations, I have been an advocate of changing the grant policy so that we would use it to fund only the early phase. It does not make sense for entrepreneurs to take grants for four or five years in a row. If you cannot convince investors such as Alexander and myself here that this is a good idea during all that time, why should we use government funding for such projects? I also want to add a word of encouragement. I believe that in Russia, and in Europe, and in other places, in the next five years it is going to be easier to get investors and venture funds to invest in your idea than it was five years ago, if you have an international leadership team. This does not mean that you have to move anywhere, but that Russian startups need to use exchange students here and build subsidiaries in other places in order to learn. I have been checking about 50 companies and, when I have rejected something, I have almost always rejected it because I do not believe in the team dynamics, in the leadership.

A. Johnson:

We can talk about this later.

P. Viljakainen:

OK, then coming back to the investment part. If this happens, there is so much money available, in Russia as well, that there will be capital available if the leadership is there.

A. Johnson:

I promised to take four questions, and we have two minutes left. So these questions need to be short.

From the audience:

Hello. In your experience, have you met with any success stories in the area of open data? Do you consider that topic to be innovative, to have a future? Thank you.

A. Galitsky:

Open data is not so much a new topic as a developing one. Backdate projects fall into this category, since there is more and more data every day. This topic is a very interesting one, because different sorts of data can be integrated. Even the Russian Postal Service problem could be solved by way of integrating the data that exists in different agencies.

N. Pryanishnikov:

I agree. This is a topic with a great deal of potential. Many countries have already gone down this path; for example, London has opened its data. Igor and I also are combining our efforts in this area. The first initiatives emerged within the Moscow City Government. I think that there are big possibilities here for young companies.

A. Johnson:

Pekka promises to keep it to 30 seconds.

P. Viljakainen:

If open data is available (or when it becomes available), there should be several companies fighting over how to commercialize the data – that way it would be healthy. It has happened in so many places, where map data or other kinds of data have been opened. If that is not happening, then something is wrong. Open data without application is nothing.

A. Johnson:

Our panellists have agreed to stay for an additional 5 to 10 minutes. Igor, go ahead.

I. Agamirzyan:

In 2001, at the G8 summit, Russia signed the Genoa Plan of Action for the development of information systems. According to one item in that plan, all G8 member states recognize that data collected with taxpayer money should be publicly accessible and free (with the exception, naturally, of personal and confidential data). So the process of opening data was started long ago. For the state, data collection is a cost of doing business, and taxpayers finance it. In doing so, they are facilitating the moral principle of not making a double payment for the same work, because if the data are not open, but are for sale instead, the taxpayer pays twice: first for the data to be collected, and then to obtain them. For good data aggregation, on a structured platform, as Pekka said, you can build additional services that will provide new quality. And that will be a good business.

A. Johnson:

To the person who asked this question: keep going; people are going to give you money. The second question, please.

V. Manukyan:

Hello. Vaagn Manukyan, Heidrick & Struggles. As a professional headhunter, I have had experience with several processes in innovation and with the fates of many companies. There is an important factor called leadership and management. Many Russian companies – Kaspersky Lab, for example – are very well known on the global arena, but nevertheless remain family companies. We have still not learned how to use individual cells to build big international corporations that could be passed down from generation to generation, as Steve Jobs did. We had a modest part in forming Google. That company was probably created in the same way that Kaspersky Lab was, but look at where Kaspersky is and where Google is!

I want to ask how, in your view, we should be accumulating leadership and management capability in this country. Right now this is the weak link in forming an innovation economy.

A. Johnson:

I think that we did not talk about leaders because with them, everything is better understood. Leonid, go ahead.

L. Melamed:

There is nothing special that needs to be done in this regard for the innovation industry. The culture of forming and nurturing leaders has its national traits, but it is the same for different areas of activity. This process is manageable, and time, money, and effort need to be invested in it. Actually, it will go ahead one way or another, but assessing its efficacy in today's Russia is definitely not a job for our panel.

A. Johnson:

I personally believe that we are going to have companies that will survive for 100 years, like IBM and many others. It is just that we have only recently begun.

Next question.

V. Barinov:

Good afternoon. Vladimir Barinov, Commission on Economics, Innovation, and Tourism of the Governor of St. Petersburg's Youth Collegium.

As the highly respected participants in today's discussion have already said, Russia has strength in the military-industrial complex, medicine, and IT. But do you think it might be possible, in the next 10 years, that we might see our prime minister holding not an Apple tablet, but a Russian product instead? Thank you.

A. Johnson:

Who wants to answer? Alexander.

A. Galitsky:

At this point, all products have become multinational. What is important is something else: will we see in the hands of our leaders a product for which a Russian company is built into the value chain? Within Apple, there is a multitude of companies from different countries, but none from Russia. But in the GLONASS chip, there is already a small part that is Russian.

A. Johnson:
Yandex is a part of that.

I. Agamirzyan:
The Falcon chip is in there, which has GLONASS. But Apple has nothing to do with that. I am just joking, but to speak seriously, I completely agree with Alexander. Dozens of countries and hundreds of manufacturers take part in building a product such as a smart phone, whether it is Apple or Samsung.

A. Johnson:
Pekka wants to say something.

P. Viljakainen:
I just want to say that based on my non-academic studies, I can guarantee that a lot of people in the government today are already using a lot of applications and gadgets made in Russia.

A. Galitsky:
Here are some interesting statistics. In America there are only four million highly skilled immigrants: that is to say, 1%. So in the larger scheme of things not too much of Russia’s talent has gone to America. But of the 25 leading companies in America, 15 were created and are managed by first- or second-wave emigrants. So we need to create the kind of conditions in Russia to attract highly qualified

specialists, and to make it so that with time our leading companies will also have founders from the first and second line of immigration. Then we will be successful.

A. Johnson:

And the last question.

V. Samokhvalov:

Vladimir Samokhvalov, entrepreneur. Innovation is a complex idea. We can talk about innovation in big companies, when we are talking about development, new products, and new technologies. On the other hand, we can talk about entrepreneurs. Innovation is taking place in IT, in metallurgy, in machine building, in chemistry, and so on. Do we need a government policy in the area of innovation? If not, then why not? If so, then what should it include, and who should be responsible for it?

A. Johnson:

Leonid, please go ahead.

L. Melamed:

We constantly hear the question of whether there will be innovation in Russia. I always want to answer with the famous Bulgakov quote that ‘Annushka has already spilled the oil’, or in other words, the wheels have already been set in motion. Russia has already joined the WTO. That means that either we will shut ourselves off again, which is not about to happen in the near future, or Russian companies will make use of all possible Russian and foreign innovations at will in order to meet the competition. If they do not do that, then they will be bought up en masse by the Western companies that are using those innovations. That scenario would be extremely unfortunate for Russia: almost as unfortunate as closing Russian markets to competition.

In order to make sure that it is Russian companies, ones that pay taxes here and create high-paying jobs, that develop and take part in that value chain – creating profit – on the international market and bring capital back from there, and taxes and quality jobs, the government and the state must play an organizing role. The government and the state are doing that right now, but really they could be doing it even better.

A. Johnson:

Time to hear a government official's perspective.

A. Fursenko:

We have already joined the WTO, and now we are joining the OECD, the Organization for Economic Cooperation and Development. I spoke at an OECD session two years ago. The OECD experts devoted a separate report to science and innovation in Russia. That report has been published, and it gives fairly high marks to the policy being implemented in the country.

In terms of government money involved in innovation, we are among the leaders. The problem is that we have a completely abnormal ratio of governmental to non-governmental investment. For comparison, in Europe, it is 40% government money and 60% non-governmental. In Japan, that ratio is one to four. We have the opposite situation.

Grants often interfere with our approach to innovation. Researchers set themselves the goal of getting one grant after another. Government money becomes relatively easy to get. As a counterweight to that, new tools are being developed, such as Order No. 218, according to which money is given not to researchers but to industry, so that it can contract work out to universities and academic research institutes on a co-financing basis.

I repeat: the most important barrier is psychological. It is not enough to train people. We need to motivate them. When government money is too cheap, there is no motivation to fight for more expensive private money. One task of government policy

is to invest more technological and organizational responsibility in the contractor and the client and, at the same time, to create the legal foundations to allow a person to come into his own as an entrepreneur. Certain steps have been taken to secure intellectual property rights for developers, and the possibility is being discussed of developers creating small enterprises within the institutes, within the universities. But that is a long process, not because of bureaucratic difficulties, but because it is hard to change people's brains. Favourable conditions and concrete success stories should help with that.

A. Johnson:

Sorry, but whose brain needs to be changed?

A. Fursenko:

Everyone's, but developers' brains, first and foremost. Today we have a lack of real entrepreneurial ambition. Many innovations grind to a halt as soon as a company's sales volume reaches RUB 200 or 300 million a year. They have satisfied their everyday needs, and there is no demand to be champions. Probably both Igor and Alexandra have run up against the situation more than once where you offer to invest in a person who could potentially be a very successful entrepreneur, and he says, "What do I need that for?"

A. Johnson:

That could be the topic of another discussion.

I. Agamirzyan:

I completely agree with Mr. Fursenko. I would add that 18 months ago the Government of the Russian Federation adopted a document called 'The Strategy for Innovative Development in the Russian Federation to 2020', where all this is written out and which is not at all a secret document. Look it up on the Ministry of Economic Development website.

A. Fursenko:

It seems to me that after our discussion here, aside from our conclusions, we have some new metaphors: ‘Everyone needs to change their brains’ and ‘You can open a start-up in a sauna’. I think they will be remembered.

A. Johnson:

Do you have the strength for one more question? Go ahead, but quickly, please.

V. Barinov:

Despite the adoption of the federal programme you just mentioned, there is still no clear definition in the legislation of what innovative activity is, or an innovative organization. The St. Petersburg legislation does not have this either. As for supporting innovation, in a number of regions, small and medium-sized businesses simply cannot participate in subsidies.

A. Johnson:

I do not think we are going to have time to discuss that. We still have one more question. If it is a good one, we will answer, and if not, we will close our discussion.

M. Kozlov:

Mikhail Kozlov, from the magazine *CIO* and The Untitled Venture Company. If I am not mistaken, Pekka said that Russia needs to immediately find 25,000 entrepreneurs. My gut feeling is that we will need 250,000 start-ups for that, because 1:10 is a good ratio for development. So this is a question for any panellist. What, in your opinion, needs to be done, item by item, to have 250,000 new start-ups appear in Russia? Thank you.

A. Johnson:

And the second question, please.

From the audience:

We all know that even with the law, many of its provisions are being observed only as a formality. How can we stimulate large and small industry to put in place not big, ambitious projects, but applied solutions, as they are doing all over Europe, especially in Germany? How can we interest industry in implementing niche start-ups and innovative ideas?

A. Johnson:

Thank you. Who wants to answer?

A. Fursenko:

You need to have a client or access to a niche market. Russian clients are poorly motivated to use innovative solutions. Creating technology platforms, launching projects like Order No. 218, where the client is given money to make him take responsibility, programmes for innovative development in big companies: that is exactly the path we are taking. Unfortunately, it still needs time.

A. Johnson:

If anybody would like to offer some words of wisdom...

A. Galitsky:

I have an answer to the question about 250,000 start-ups. I have 10 new business plans come across my desk every day. A year ago there were six. That is an indicator of growth. The important thing is not to stop and not to be afraid. Here, Russia needs to be steadfast.

A. Johnson:

I see that Pekka has turned on his microphone.

P. Viljakainen:

I just want to say that the calculation is absolutely correct. If you are a journalist, then my congratulations for making the correct calculation. We need many more than 250,000. The only point I would like to make is to reinforce what Alexander said: five years ago, at this very forum, there was not a single word about startups or entrepreneurship, and now there are a lot of startups. There are also investors will arrive in the next five years. We are much further ahead in this process. Spasibo.

A. Johnson:

Joel, Igor, Andrei, Pekka, Leonid, Alexander, Vadim, Nikolay.

You have been a great audience. Thank you.