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XIIth SAINT-PETERSBURG  
INTERNATIONAL ECONOMIC FORUM

CONFERENCE

**«THE KNOWLEDGE ECONOMY. EDUCATION AND KEY  
COMPETENCIES. COMPETING FOR LABOUR RESOURCES»**

June 8, 2008

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## CONTENTS

Konstantin Remchukov.....	3
Andrey Fursenko.....	5
Vladimir Mau.....	11
Wilfried Vanhonacker.....	15
Maxim Topilin.....	19
Michael Bair.....	23
Yaroslav Kuzminov.....	26
Robert Dudley.....	32
Pier Ugo Calzolari.....	36
George Ben.....	40
Andrey Fursenko .....	41
Maria Artamonova.....	42
Maxim Topilin .....	43
Oxana Kozlovskaya.....	44
Andrey Fursenko .....	45
Oleg Kharkhordin .....	46
Yaroslav Kuzminov .....	47
Vladimir Mau .....	48
Andrey Fursenko .....	49
Julia Julina.....	50
Konstantin Remchukov.....	52

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MODERATOR - Konstantin REMCHUKOV, General Director and Editor-in-chief, Nezavisimaya Gazeta

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***Konstantin REMCHUKOV***

I welcome everybody who has come to this hall to discuss with our panelists a very interesting topic: “The knowledge economy, education and key competencies. Competing for labour resources”. In the strict sense the term “knowledge economy” includes all the previous “i”s, that are discussed in various forms, because every “i” whether it be infrastructure, innovation, information is included in the term economy, which is based on knowledge, and knowledge economy. In the strict sense problems being spoken of in other halls of Saint-Petersburg Forum cannot be solved without human being.

There are four key and interdependent elements, and each of them is based on knowledge. First is a creation of proper economic conditions, inducements and institutions that encourage wide and effective use of global and personal knowledge in all economy sectors strengthening business and supporting education in the area of knowledge economy. Second is a creation of society of qualified, active and creative people with opportunities of getting high-quality education and opportunities of renewing their knowledge during all their life. In

this society financial resources of either public or private industry must be flexibly combined. Third is a construction of dynamic infrastructure and certain.... upgrading of efficiency and competitiveness of telecommunication services for all economy sectors. And such a form must include not only so-called high-end forms of communication connected with Internet and mobile phones, but also such elements of information society or informational reach society, that are typical for developed countries, namely countrywide radio, television, computers, and other hardware to keep, process and use information and telecommunication services. And finally forth is creation of efficient innovation systems consisting of firms, companies, research and development companies, universities, and other organizations both connected with global knowledge markets and able to adapt this knowledge to local requirements for development of new products, services and ways of running business.

These elements being most common features characterizing knowledge economy are expected to be built in our country. And in our today's discussion we point out one aspect concerned with education, key competencies for people whom it is necessary for us to have and for whom it is necessary to make our economy attractive.

I suggest holding our discussion in the following way: 5 minutes for a speech then possible answer for a question. Thus to let all panelists be able to answer all the questions in two hours. Certainly answers will be shortened, but they will be able to outline prospects of Russia on this very important area of transformation of our society. This is not only economy but all Russian society.

That is why now I want to ask a question to Andrey Fursenko, Minister of Education and Science: how Russian government is going to assist the establishing of Russian economy based on knowledge, if to bear in mind a widely known contradiction between universal line to decrease the role of state in economy and

evident demands in efforts of the state for establishing this elements of economy based on knowledge. Andrey, you are welcome.

### ***Andrey FURSENKO***

Thank you. I have heard about five minutes but I ask you to give me a little more time, because I will try to directly answer your question, but not to make it unfounded, I would like to tell a little not only about our plans but about what we already have done for now.

Probably I should begin with the incontestable statement that today the main force moving our society forward and holding it down is a presence or absence of qualified specialists. This is typical both for Russia and for the whole world.

In today's world we have a society of economies which lacks qualified specialists. It is this problem that we should solve.

There are some problems in Russia, we do know that. There is a shortage of qualified specialists not only in management, as it is accepted to say, but also in technological area, in area of engineering. And incidentally we don't have enough specialists not with university education, but with professional education.

It has already been done a lot. I think we have passed the return point. We have entered the path of modernization of our educational system. In this context I would like to say that most of the things done - concerning double level education, evaluation system of qualification, introduction of Universal State exam – were necessary not only as rational instruments in themselves, but also as steps making improvement of educational system imperative, and making impossible to keep things we are having today limited with small improvements. In this context I want to emphasize one thing that seems evident for me, but nevertheless is likely to require every time repetition. There is no talk about saving soviet system of education, because there has been no such system for a long time, it is destroyed. It was destroyed for the last 10-15 years, destroyed (I outbrave this word) forever,

because the state where we (majority of persons being present here) got our education is destroyed. And new state, new country requires new education. Steps that were made make impossible an adjustment of fragments of old education to those new conditions we are having now. There is a goal to make new education of high quality that satisfies challenges of the time

I think that actions taken began to bring results. We have received a number of programs for development of leading universities. Salaries of some categories of scientists and engineers are on the quite reasonable level, it also concerns salaries of number of university professors. But in addition I want to emphasize: these high salaries are paid only to those who deserve them. May be Yaroslav Ivanovich Kuzminov who sits next to me will tell something about it. He is Rector of the Higher School of Economics, one of the leaders of our education today, and which has highly experienced professors in its staff, and if I am not mistaken about 30% of them has high salaries.

It influenced changes in young people's mentality. Young people feel real changes in this sphere. And during last several years (according to our polls and our information) scientist is included by our young people in the list of attractive professions together with such nearby and disparate ones of professor or for example lawyer or manager. Today the profession scientist is in this shot-list.

Meanwhile answering your question I can say: state support for development of human potential is needed as before, and may be more than before, and it should cover all the period of formation of young person – from senior school, then high education, then may be postgraduate education. And after that a person should choose his own pathway.

The solution is in providing of main infrastructure elements in terms of leading scientific-study centers (scientific-study, I emphasize). Study centers cannot exist without science, we cannot create a system for education, upbringing, development of economy, society based on knowledge, if it would be rend away

from creation of knowledge itself. Which is to say a student or may be a pupil must take part in this process from the very beginning, must feel it. It is then that the process becomes efficient. For all this it is necessary to form efficient, viable research teams, and support with resources must be provided in terms of competitive financing for progressive scientific and educational projects. We must place our stake on leaders. Today Igor Ivanovich Shuvalov has said that we must revive a taste to victory. The taste to victory is revived and showed exactly by leaders. And it is those leaders who must be that locomotive which will bring economy and society to an absolutely new level.

Competitiveness of national intellectual assets is also directly connected with integration in world scientific innovation sphere. And in this context I would like to say that we must encourage mobility of scientific manpower. And first of all we must encourage mobility inside the country. We must offer to scientific and highbrow people, including young ones, an opportunity to work not only in Moscow and Saint-Petersburg. And moreover we mustn't be afraid of mobility on a wider scale – on an international scale.

I consider incorrect the talks about danger of our countrymen leaving the country in case of adoption of some or other international standards. Those talks are consequences of the logic of those catching up, logic of those who don't believe in their own forces.

It is absolutely clear that Russia becomes one of the most attractive countries in the world in terms of development of business. And I am absolutely sure that if we make maximum opportunities for mobility this won't lead to people leave Russia, but will lead to people arrive in Russia, and not only our countrymen but people from other countries, other nationalities, because Russia is very attractive country. Today it is already attractive in terms of science and business. I hope it will be the same in terms of education.

What concrete steps are taken. I think everybody knows about development programs for leading innovation universities support contest. Serious money was put up in it. And I can say that it has changed not only magisterial staff's attitude but also attitude of students studying in these universities. Passing scores are getting higher in these universities and people are proud of studying in universities – winners of the contest organized by state. It means that not only material but moral factors too play a huge role. I see the governor of Tomsk region. The contest has showed that it is the third university center in order of importance in our country, because three universities from Tomsk (not very big city) drew the winners. Attraction of education in these universities was always high but now it has grown higher on account of this contest.

For now we have finished preparation of the program “Scientific and scientific-pedagogic human resources of innovative Russia during the period 2009-2013”. It is supposed to put noticeable amount of money into this program (up to 80 billions rubles in this period). This money first will let us build dormitories, moreover not only for students but hostels for professors in different regions of Russia. Then it will help to provide our universities with good equipment and to support groups of young specialists, young professors. Besides to a large extend it will let us attract our countrymen who worked for a certain time abroad to come back to Russia in order to head such groups. We have our first experience. We consider this money being enough to attract those people to work in Russia.

To finish my a little bit prolonged presentation I would like to say that if to talk about education, about what we should do with education, I think we should state three main directions of operation.

First. Education is a most important social institute. It is not only social lifts, about which Igor Ivanovich Shuvalov has talked today, an opportunity to locate yourself regularly, to achieve advance and approve yourself, but moreover an

opportunity to support those people who because of some or other reasons appeared to be not ready to this advance. It is the most efficient instrument to support both Russian people and emigrants. Namely it is very important social instrument. It is the first direction where national role is very high.

Second direction is education, primarily basic education. It is an instrument to construct future. Basic education must be based not on following standards but on setting those standards, because professional education is got for 4,5,6 years and it is absolutely clear that we should plan person's knowledge not on the assumption of today's needs, but on the basis of economy present in these 5,6,7 years.

And finally the third – education must give adequate answer on the demands of current economy. And for it we need to build a system of continuing education quite new for Russia, which could on line respond to challenges of time.

All three directions are put in federal program carried out by our ministry. All three directions are described with concrete actions in the project of concept of long-term development up to 2020. I consider all three directions quite cashable. Thank you.

### ***Konstantin REMCHUKOV***

Thank you, Mr. Fursenko. I think you have told us in rather detailed manner about intentions of state and government represented by your face. Many things sound like being from Tommazo Campanella's novel, but we hope that this bright future, when education becomes as it is meaningful value for young Russians, will really let us transform our society to that wonderful condition.

Now I would like to ask Vladimir Mau, Rector of The Academy of National Economy under the Government of the Russian Federation, to tell us what steps we need to take to provide adaptation of a specialist to constantly changing

demands of labour market, and hence to specify the work of such big educational center in the context of matters spoken by Mr. Fursenko.

### ***Vladimir MAU***

Thank you very much. But assuming what has already been said by the chairman, I certainly must say that Kampanella wrote his novel being in prison. And as far as we are not in prison, we have more opportunities to realize things that we are going to talk over.

Generally stages of development of society (if to think in terms of economic history) can be characterized also by those deficits that are principle at some or other moment of development. We passed quite a long period of deficit – it is most part of XX century, in 90-s we passed a period of money deficit, financial recourses deficit and now approached to the most interesting and most productive period (I wonder how long it will last) of labour resources deficit, cadres deficit. It really transforms our comprehension of all the logic of economic development, of economic reforms in the country. At any rate, things that we are discussing today and during last years, especially in the period when Andrey Alexandrovich became a minister, are a great turn – discussion about “what is your priority” – electronics, computer, shipping industry, aircraft industry or human being. And a turn to understanding that regarding all importance of branches, education and public health service are real priorities in post-industrial society is a very important achievement of last years. I repeat, about 4-5 years ago this question was impossible to raise, discussion about priorities was carried out in terms of industrial policy.

We also understand that problem of cadres deficit is not a problem of money, because the main thing is creation of new functioning mechanisms of educational institutions, discussion about reforms. If for example to compare with problems of public health service, we must admit that situation in educational

sphere is better. Anyway, in education we have some reformative consensus: there are people who believe that soviet education is the best not discussing whether we can return to it, and there are other ones who think that we need serious rational changes, and behaviour of changes is already quite consentaneous. There is a discussion about details, but it strongly differentiates the situation in public health service, where there are those who find soviet public health service the best, and many points of view about how to go away from it. This is quite an improvement too. By the way, yesterday Khorst Zibert reported at plenary meeting, and arguing about development of our education, I cannot but cite his words from the book "Effect Kobri" quite popular in Russia, where he writes: I would like to get results of the search about how many sons and daughters of German politicians who really defend status-quo of our system of high education enrolled in elite universities in USA and Great Britain. This universal question is very interesting for every country which is proud of its high education.

We can discuss change points in different ways, for example, structural challenges, connected with changes, institutional changes, but one of the first decrees of the President Medvedev mentions federal university. Actually, we can begin with this model. The logic of changes can be different but then we must ask a question about what university is. And I think it is very important to say, especially in the presence of Minister of Education and Science, that the problem of federal university, in my opinion, must be a subject of public discussion. What is federal university, who enters into federal university, is this list closed or there is a Yuriev Day every five years to enter and leave the sphere of federal university? This question is very important and requires an answer.

I will try to choose a number of criteria, which to my opinion are important for considering an educational institution to be federal university. First of all and most commonly, we talk about presence of scientific schools. This is really very important, because all universities certainly must be scientific-educational

complexes. But here we have one problem, which has not been talked yet. The thing is that in some instances our scientific schools are a light of dead star - it has already died but because of big distance, she continues to shine. And in some instances (not talking definitely, it is very delicate question) we must realize that often a school that is considered to be scientific, is only remains of the school which was once and was wonderful. I intimate nobody here, just want to draw your attention to the problem of scientific school – this problem must move looking ahead and not looking back.

Second – university as a social lift, today Igor Ivanovich Shuvalov has talked about it, is very important too. How big a role of university pretending to be federal as a social lift is. I know that Higher School of Economics is a perfect example and in many ways on account of early change in enrollment on the basis of Universal State Exam, that certainly allows to take young people from other regions, despite natural limitation in dormitory, and it is very important and strong criteria. To my opinion, this must be a ground for exercising and implementation of new pedagogic technologies. We haven't talked about pedagogic schools for a long time, we talk only about scientific schools, but transfer of knowledge in modern world is something very different from such transferring in XX century. That is we need new pedagogic technologies, allowing to realize competent approach in very compact period of time, i.e. not lectures, but something new. It is not computerization, not networks as they are (networks are only instruments), it is really new technologies, simulators and everything concerned with it.

International character of a university is extremely important too, and at both sides – attractiveness for foreign students as well as ability to send our students and young professors abroad. And here I must draw your attention to one nuance. Igor Ivanovich Shuvalov has said today that they will come back, but we must realize that when we talk about quite broad range of young specialists, which must be taught to work in business and technologies, then possibility of return is

very high in case of favourable economy in the period of it's revival. It is much harder with professors and lecturers. If you are offered a place of B.P. in London or in Russia, there is a big chance of Russia to be chosen. But if you are offered a Moscow university, let it be the best, and Stanford or Harvard, then the choice is more difficult for a young person. And this has to be taken into account too.

I suppose that creation of federal university must become an instrument for development of students' and professors' mobility, and in this sense all the ideas of Bologna process appears to be extremely important. And if there is a chance federal university must be a school materializing innovative business that has business hatching units and longs to it.

And finally the last thing is a creation of modern campuses that are important to get around problems mentioned before. Thank you.

### ***Konstantin REMCHUKOV***

Thank you for conceptual seeing of the problem. Well and paying attention to the last word "campuses" I would like to ask Wilfried Vanhonacker, dean of Skolkovo MSM, to tell us about his project of management school Skolkovo, what is business education, and as far as I understand, differential peculiarity of this business school will be it's location in campus and that it will be almost the first campus similar to the best international campuses of prestigious universities. You are welcome.

### ***Wilfried Vanhonacker***

I'll be a good academic and avoid the question for a while.

For the last 22 years before I came to Russia I worked in China and I arrived in China on Christmas '85. At that time China's educational system was absolute chaos. The country was beginning to develop, all the good people left educational system. Good students were leaving China. Nobody wanted to come back to China. If you look at what has happened today in 20 years and if I hear some of

the concerns about changing the system, how we are going to bring Russians back to Russia, the good people are leaving. What's the talent? Don't worry! Things will change. And I've seen it happen with my own eyes. As I was fortunately part of the team which built a business school in China as one of the leading schools of the world. And there is no reason not to believe that Russia cannot do the same. Having only spent six months in Russia I'm absolutely convinced that this is the place to do it course there is a lot of things that I can do here that I could not do in China and I might not be able to do for a long time.

Skolkovo is a good example of what can be done in Russia at a global level because I think that the educational system in Russia and the talent that Russia needs faces a double challenge. One is a challenge of change from the Soviet Union era to the new world, new environment, whatever you call it. The other thing is that the whole world is changing. If you look at all that managerial talents and where we are going to put it in terms of the business school that environment is globalizing very fast and the globalization that we are seeing today and that you will see in next decade in many ways is very different in terms of context, scale and depth that we've seen in the last 20 years. So we have a challenge and this is a challenge at Skolkovo also of developing a managerial talent for the new Russia but also for the new world. And the role that Russia and Russian companies will play in the world and the role that foreign companies will play in the development of Russia. So we are not changing only at the local level we are also changing at the global level. So at Skolkovo we have carved out one objective: we want to develop what we call the entrepreneurial leaders for fast moving economies. It is already a big enough challenge.

There is no business school in the world that prepares managerial leadership for environments like Russia, India and China where you have lack of institution, legal infrastructure underdeveloped, lack of talents, uneven talents, but enormous growth rate. How do you lead in an environment like that? There is no business

school in the world that prepares people for that. But we are going to do that. We are going to try to do that. So the focus is very much on leadership, because as for the managerial talent Russia has people that are very well educated that have depth of knowledge but that often lack what we call “soft skills”. So building leadership talent is more focusing on the soft skill, we’ll build basis in terms of knowledge but we believe that the leadership that is needed in a market like Russia is have to have a bit of entrepreneurial flare. Whether this is a leadership in the government or in a commercial sector or starting own company this is the same thing: you have to be confident, you can not be to scared course in the environment like Russia, like in every rapidly changing market, like China, India, if you look for trouble you’ll see trouble, if you look for problems, you’ll see problems. The challenge is to find out where the opportunities are and not to be scared of them, grab them and run with it and be able to coach and develop the talent around that runs with you, because we have a lot of good ideas that takes good people, a good team of good people to do it. That’s a joint partnership. And our focus is very much on developing this kind of people. And we believe that the only way to do it is to take than outside of the traditional classroom. I thing we are talking too much these days about the traditional classroom environment and I think we have to innovate the learning process. And certainly in terms of developing of the managerial skills you have to put I’ll cal them “the kids” with their noses in the reality. You are going to put them in project work in Russia, India and China. We’ll take them to North America so that they would have a benchmark of what things would look like at equilibrium if we can call that equilibrium? Because it is very important that they can see the reality, they relate to it that they learn and interpret the knowledge they had at the basis and the context of the reality and they grow with that reality, develop networks in the process and also are confronted with role models.

I think one of the big problems in Russia, India and China – these fast moving economies is to find who the good role models are. And I think we have a role to play there as well. So we very much believe in developing of the entrepreneurial leadership using an experiential learning, which is kind of the pedagogical approach, and doing it in a very innovative ways not in a traditional classroom setting, not in the traditional context of working with faculty, the traditional professor but bringing in an entrepreneurs and business people, government leaders, everybody has to be involved in the process, otherwise it will just not be going to work. You can not just delegate education just to professors and you should probably not do it anyway. And that is where the school fit in and what we are going to do and the contribution we have to make.

***Konstantin REMCHUKOV***

Thank you, Mr. Vanhonacker. I would like to make a little correction. Your aspect is based on entrepreneurial knowledge, management knowledge. Entrepreneurial. Don't you think there is a sort of other measurement of demands, for example of great corporations in management, in manager, who will be sent to you for education. You will teach him entrepreneurship and he will leave you in order to found his own business, being satiated with entrepreneurial air. But we need a person that has for example high management knowledge in financial or strategic planning.

***Wilfried Vanhonacker***

There is a misunderstanding of what we mean by entrepreneurial, I did not say we develop entrepreneurs I said we develop entrepreneurial leaders. So what you also need if you look at big Russian conglomerates, financial institutions, government context, you need what we call corporate entrepreneurship – the people who think out of the box, who can challenge the system, question the assumptions on which

the institutions are built and so on. So the entrepreneurial leadership is not just starting something new, although it's important for Russia as well to diversify its economy, but that's also important that in existing organizations people are thinking in the entrepreneurial way. That does not mean they lead these organizations or start something new. The question is where they are. Because the best innovations sometimes can be done from the inside and they have the talent to do that.

***Konstantin REMCHUKOV***

Thank you. Those nuances of using the same terms are very interesting. I think Vladimir Mau wanted to say something.

***Vladimir MAU***

Only few words if you please. Mr. Remchukov has caught very exact question. When we were only working out the projects of Skolkovo and were dreaming of them, where we had no money for it, we based on a criteria that the best business schools are proud of number of their graduates who go to Mackenzie, to Pricewaterhouse, this is an experience. We want to build a school in which the worst ones go to Mackenzie, and the best ones found their own business. And in this sense you have asked very exact question.

***Konstantin REMCHUKOV***

Thank you. Anyway, whoever we train, people go to the market.

In this context I have a question to Maxim Topilin, Head of Federal Service on Labour and Employment. What are business priorities of the state concerning creation and development of flexible labour market in Russia?

***Maxim TOPILIN***

Thank you for the question. I would like to examine the subject connected with competition for labour resources and development of competence, from the different side. Now we are really in such situation when the problem of deficit of labour resources is often set, and in this context the state makes quite serious efforts for development of strategic projects, as for example, demographic evolution on long-term outlook program.

Estimating the situation that will take place during 10-15 years, we see that 10 millions of people will go out of labour market. That is if today we are having about 70 millions of employees, then in 10 years we will have about 60 millions of them. From the other side we have quite serious rates of growth and rely at least upon their conservation. And today we make a lot of efforts for development of special economic zones, and different national projects. And investments in Russian Federation take up a serious meaning, and give hope that we will develop with fast paces. And this contradiction between what is happening in economy, and what is happening with labour resources, often makes us to talk about some deficit.

To my opinion, now there is no need to talk about this, and I think we have forgotten a little the situation when we were facing with products deficit at the end of 80s – beginning of 90s. At that time we were simply dealing with goods of poor quality. Quality products were missing. Besides, the government of that economy controlled prices very strongly. Prices were adjusted almost for all products. In fact, it seems to me there is no deficit, but only very ineffective, poor use of labour resources that our country has. We have to make a serious choice: we are taking intensive or extensive path, deciding particularly problems and as you know, engaging quite a big amount of foreign employees and migrants in low classified jobs.

Here as I suppose there are three matters to deal with, and first of them connected with standards set by the state on labour market. Talking about prices

being adjusted at the beginning of 90s – end of 80s I meant that in many ways it was the reason of products deficit.

On today's labour market the state controls salary for public sector workers. One would think how it is connected with the quality of personnel training? To my opinion the connection is direct. If we in the manner of state for 15 millions of employees (this is almost  $\frac{1}{4}$  of labour market) set the salary that is 30-40% lower than in real economy sector (even in real economy sector salaries are not high enough), then we seriously deform the behavior which then influence the choice of university, profession and so on. Unfortunately today by setting such salaries we do not stimulate people and repulse them from professions they want to choose – teachers, doctors. Hence the state seriously deforms all, if possible to say, behavioral moods, and we are having endless circle. And we will have it in 10 years and in 15 years too.

That's why I would like to say that if we want to have good situation in the future it is very important for our young people to choose some or other professions and to have a proper knowledge level in the future and proper salary. We must clearly realize that when being a state (as I am a public officer I talk from this point of view) we set very low salaries on a serious labour market, we won't achieve any results in normal educational area.

Second point which I consider extremely important is what we are going to do with insurance system – and first of all, as I suppose, medical insurance, pension insurance and social insurance. To my opinion it influences very much everything connected with quality of labour power and processes taking place on our today's labour market. When carrying out proper investigations, we found that nowadays there was no such system. If to take labour market, we often call upon different figures – there are expert advice, estimation figures by Federal State Statistic Service, estimates by Federal Service on Labour and Employment, by other agencies – about how many employees work legally, illegally, how many of

them are wallflowers or have secondary employment. And those figures are absolutely different. To my mind there are some instruments which help us to estimate efficiency and inefficiency of labour. And here we have absence of real dependences between contributions to pension, insurance, medical funds and efficiency of health service and pension system (real efficiency). Since there is no such relationship now it will be very difficult for us to conduct normal policy stimulating people to work normally, normally legalize their labour relations, and thereafter upgrade their education, their competence and so on.

All those factors are correlated and it seems to me that having built good medical and pension system first of all we will be able to increase a quality of working places. And talking about lack of labour resources (and such myth exists), as I think very important thing is to raise a quality of working places, which will stimulate our people and young people to get during all their life the education mentioned by minister on education. It is almost impossible to explain a person and make him upgrade his knowledge and study during all his life. Only when we will be able to create economic incentives for constant increase of quality of working places and employers will be economically responsible for them, then incentives will be created to make employees study during all their life. Those processes are highly correlated. Thank you.

***Konstantin REMCHUKOV***

Thank you very much, Mr. Topilin, for your report.

Now I would like to give the floor to Michael Bair, Vice President, Business Strategy & Marketing, Boeing Commercial Airplanes. I would like him to tell us how Boeing, that surely produces innovative product, uses working power of high quality in Russia and what this using give both to Russia and such international corporation as Boeing.

***Michael BAIR***

Thank you very much. As you know, we build airplanes. And a lot of people look at the airplanes and look at them as products. However in reality the airplanes are the result of intellectual capital in a lot of cases of tens of thousands of engineers. If you look at the five to ten billions of dollars that it takes to bring a new airplane into the market place, about 80% of that is the cost of salaries for engineers. So this is the intellectual capital that is transformed into a product. And this is all about knowledge and the use of knowledge. I would like to give a couple of examples of how we have used some very unique capability here in Russia in order to put into the market place our newest airplane - the 787 "Dreamliner".

The first one is a combination of 10 years of efforts to stand up a design center in Moscow. It started with 12 engineers and its up to 1400-1500 engineers at anyone time. And I think it is very important to look at that we did not come to Russia to hire Russian engineers to take them back to the United States to employ them. We set up the design center here in Russia, so they could stay here in country, be part of the local economy, live where they grew up and live where they were trained. And the export that we get is the designs and ideas that they create here inside Russia. So we are not looking to take the talent out of the country, we are looking to take their ideas and a work product and take them back and turn it into the products in our factories. That has several advantages for us. And a great example is a really difficult situation which we had on 787 on a particular design detail. It was a very complicated join where we attach the wing to the body of the airplane. We ran expertise in the United States to come up with innovative designs and we also gave the same task to a design bureau here in Russia. And because the engineers were resident in Russia and had their extended networks here in Russia intact, they were able to turn to colleagues outside their design bureau and bring in the other ideas and in fact to come up with the design that in the end we melded with the ideas that were generated in the United States and came up with

satisfactory design. We would not be able to do that if all we had done was hiring of Russian engineers, bringing them to Seattle and made them part of our design team.

The really unique capability that Russia has and I think all of you know that Russia has probably unparalleled heritage in aeronautics. And that is a very crucial resource that is very beneficial for us. The work that is being done at the design bureau is also beneficial for Russian airspace industry because those engineers don't stay in the design bureau, they come to work for us, they go back into the market place, they go back to Sukhoi, some of the engineers, that have worked in our design bureau were part of the design team on the Sukhoi's SuperJet so the transfer of knowledge go back and forward here in Russia because the engineers stay resident here in Russia.

The second example of similar process is titanium. Titanium to most people most like will look like raw material. It is obviously a metal. And we didn't come to Russia for titanium. We came to Russia for unique capabilities that Russian metallurgists have in transforming titanium into specialty alloys in metal forms. And those specialty alloys in metal forms is what we export. So while we are buying titanium from Russia what we are really after is the intellectual capital that is unique here in Russia to transform titanium into the special forms of titanium that we cannot get anywhere else in a world. So we are not after people we are after their ideas and we are looking for innovative ways to allow them to stay here, to stay with their families, to be a part of the Russian economy and at the same time rather than exporting furniture or TV's they are exporting their intellectual capital for us to put into airplanes that will serve airlines around the world.

And finally I'd like to make just one observation, in a plenary session this morning there was some comments about concerns about maybe the demise of the Russian educational system and this was a little bit alarming because that is why we partnered with Russia. We partnered with Russia because of the intellectual capital

and really smart people that live here, that can help us to build world class airplanes. And I am heartened by the amount of attention that is being paid here to make sure that this doesn't happen and I would just encourage Russia and Russian government to just continue to do what Russia has always done well and that is to educate people probably better than anywhere else in a world. Thank you.

***Konstantin REMCHUKOV***

Thank you. Could you please tell how many Russians are more or less involved in Boeing business on our territory?

***Michael BAIR***

If you look at people in our design center and then you look at VSMPO which is the titanium manufacturer. We have some work been done in a couple of IT houses. It's probably 2500 people, something around that.

***Konstantin REMCHUKOV***

Thank you. Now I call upon Yaroslav Kuzminov, Rector of the Higher School of Economics. It would be interesting to hear his opinion about the role of universities in forming of new view on human capital in conditions of transit to knowledge economy and how do you consider the ways of development of employees training system.

***Yaroslav KUZMINOV***

Thank you, Konstantin. If you please I won't speak about management of our universities like Andrey Alexandrovich, Vladimir Alexandrovich and other colleagues. I absolutely agree that we need to follow Chinese example, may be with 20 years delay, and save those 25-30 scientific universities that still have

schools. But I want to draw your attention to the fact that nowadays Russia has inconsistent and differently treated massive advantage in the area of human assets.

Nowadays in Russia there are 510 students among 10 thousands of people, it is three times more than in the Soviet Union. In this term we share 1-3 places with United States and Finland. But in United States students that study in so called two-year colleges are included in statistics. It is logical for us to include here students of our colleges, at least those who have senior secondary education, and then we will have 630 students among 10 thousand people. Moreover, take into account that it is in the period of demographic recession, i.e. it is a part in age cohort which evidently exceeds the demands on professionals in high education, that economy gives and will be giving in the nearest 10 years. I emphasize – on professionals in high education.

What is supposed to do on account of this? Different receipts can be heard. The simplest one – lets limit the enrollment in universities, lets suggest people who don't show enough knowledge, who don't show enough competence during learning school subjects, continuing nevertheless their education in vocational schools, becoming professional workers, because still service and material production industries lacks them. We have to import them. This is very tempting receipt. But unfortunately when offering such receipt we don't look back on the recent history. And recent history tells us that after the abolition of serfdom we can't dispose on the national level of person's behaviour regarding his education and career. It succeeded under comrade Stalin, but human expenses were so big that we are unlikely to propose returning to this model of national dirigism. It is better to follow the paths well-trodden by others. And those well-trodden paths are the following. It is the sixth year that we are doing mass sociologic surveys of families' moods, of education participants' moods under order by Andrey Alexandrovich. And we have 88% of families sure that they must give their child high education. You can't find such percentage anywhere else in the world.

We can discuss for a long time why it is so. Again this situation appeared not today. It developed at the turn of 70-80s, when already in Soviet Union a career through fabric-plant education, career through technical school stopped to be prestigious, and in these schools became to gather those students who did not want to study. After several iteration of such game we gained a steady attitude to vocational and technical schools, at least in big cities, as to schools with low career opportunities, with low social capital. We can and we must deal with it, but in a short period we are unlikely to get over this public prejudice.

That is why may be it is sensible to put on other alternative, to put on universal or at list widely accessible alternative of high education, to broaden the frames of understanding of high education. In fact people go to universities for social capital and not for professional competences. And it is perfectly normal. Moreover, it is perfectly normal for Russia, where we have schools for 10-11 years, to years less on the average than in other countries. We can see it in curriculums of our universities and technical schools, where there are many lessons for foreign language, which is taught poorly at school, where there is higher mathematics which is taught poorly at school too, where we have to repeat history and basics of Russian language in recent times, because school does not give basic social competences to our people, and certainly, because there is neither economics nor law at school. That is Russian school still does not give those social and instrumental subjects as obligatory.

At the beginning of work of Vladimir Mikhailovich Fillipov, who was Minister of Education before Andrey Alexandrovich, a serious effort was made by the government – to offer our society 12-years school education. And our society almost unanimously rejected 12-years education (there was a tempestuous public discussion), because for various reasons people were simply afraid of the school that had form to that moment, they were afraid to extend for one more year the school being in such condition.

That is why we need to realize that general education de facto continues on the level of Bachelor's program. And by giving our people an opportunity to study Bachelor's program, we create real potential to advance our competitors for brig at 100% and to 2020 take the similar level with such countries as United States, Scandinavian countries, where presumably about 65-70% of people will continue Bachelor's program. We can come to this level too. Another thing is that our Bachelor's program must only partially resemble the one that is offered by our universities now. And first of all most part of it must be applied Bachelor's program, students Bachelor's program, which exists in many countries and inside universities allows people to acquire competences of technical education. It is very important that psychologically people see themselves as university students, they don't have that kind of rejection – someone has entered university but I have to go at technical school. And they have simpler way – be credits offset come back to academic path, pass into Academic Bachelor's program and Master's program. And a big part of Bachelor's programs can be unusual for us – Bachelor's program in free art, Bachelor's program that a person studies just for cultural education, not meaning that he is not going to work, but may be he simply he has not yet found the work of his life and he wants to raise his cultural level.

So, to such kind of challenge we can answer once more asymmetrically by essential extension of high education frames, availability of high education. By doing this we can overcome our nowadays weakness, and the fact that we are having 630 people among 10 thousands is a weakness. If you still don't believe I can give some examples. 49% of our students are part-time students. No one country in the world has such situation. Even in Mexico they are 34% or 37%. In Soviet Union there were 25%. The last is for those who say that our country is big, but the Soviet Union was bigger.

A big part of people that are itemized as university students, either quit studying on the last years, because of the work, or don't get basic competencies –

so this is pseudo-education. I will give one more example: we have about 300 thousands of people per year who graduate with Diploma on Economics or Diploma on Management and less than thousand of them know econometrics. This is the same as to produce an engineer who does not know Theory of Strength of Materials. We are unlikely to buy an apartment in the building made by such engineer, or to fly by the planes which he serves. But for some reason we need some economists.

It is evident that our high education (lets not deny it's effect), but I fully support those effects which are by the way attacked by many of my colleagues nowadays, despite Volodya's word consensus. Now Fursenko is attacked most of all for his desire to liquidate a part of subjects that don't house into five years instead of four.

For my colleagues who sincerely fight for engineering and scientific schools, it is honestly useful to look at the part of students that attends lectures at 4-5<sup>th</sup> courses, and at the part of students that then go to labour market with proper competencies. Today's change to 4 + 2 is not a reaction to Bologna process; it is a natural process of adaptation of our educational system to our reality, to our own challenges, an effort to somehow restrict resources in order to find resources for development. Thank you.

### ***Konstantin REMCHUKOV***

Thank you Mr. Kuzminov for interesting report. In some sense it is inspiring, because despite marked problems, the fact that 88% of Russian families has high education as dominating value says that our aims becomes more exact – to convert this value in reality, to make this people get education appropriate for labour market, because at the other ways of our transformations we say that there is lack of values, lack of competition values, lack of labour ethics, lack of some or

other values. And here a value of education exists in 9 out of 10 families. Excellent figure.

Now I would like to give a word to Robert Dudley, President and Chief Executive Officer TNK-BP, and ask him a question: how do you manage to achieve proper balance in managing of the company between Russian and foreign managers, because one of the aspects (as far as I understand) is in practical use of knowledge got by some or other managers in their schools. And what is the role of foreign managers in development and investment in Russian personnel, particularly, in developing of leadership qualities, about which as we had heard spoke the dean of Skolkovo School. Thank you.

***Robert DUDLEY***

Mr. Chairman, the distinguished guests, thank you very much. You've asked me to comment on the knowledge economy investing into the human capital with some points around the balance and the roles of foreign managers in Russian company. Well, the balance and the roles these are two very important and interrelated questions. Of course I will not be able to address them in full on a short time we have but I can offer some initial thoughts and some experience given that the subject and a role of foreign managers and workers in TNK-BP has become a public matter lately. Let me take these questions in reverse order which I think is more important to the relative importance to us, which is first: how do we develop and invest in Russian staff and leadership and what role do our international managers play in that process? TNK-BP employs more than 60 000 staff and more than 99% of them are Russian and naturally there is a very strong Russian representation on all levels of leadership. Of course the shareholding at TNK-BP is also known as unique in the sector and I think it gives us access to a strategic international human expertise in capability. I think the foreign expertise which is a set of small but very richly experienced oilmen are deployed in strategic

businesses and technical functions throughout the company where they have the greatest chance of leveraging their experience. And they spend a great deal of time developing the skills of our emerging Russian leaders as well. This direct transfusion of knowledge and hands on expertise in TNK-BP comes really through two channels.

The first through a very limited number of experienced senior international managers who are from the global market place or originally left BP to work at TNK-BP in Russia and there is a second set of so-called temporary BP specialists. In the context of solving real life problems and business and technical challenges this did work very well over the past five years. This worked as actually the bridge between people of different cultures, backgrounds and skills that experience above their soon being merged into effectively to achieve whatever result and whatever project they have been working on. Of course the reality is more complex than this learning flows both ways which of course is even better. Having been with TNK-BP since the beginning more than 5 years ago I witnessed first hand the strength of knowledge of our Russian staff and I greatly respect the Russian leadership and the management. So the smart people acquire and assimilate their learning indiscriminately wherever they find it, whether it is from the Russian leadership or from the global staff. And I believe this is exactly what shareholders set out to do when the company was formed at the very beginning. In my view the shareholder design at TNK-BP was right there was real power and productivity in developing of new Russian managers, oil and gas people, the sound basis of Russian know-how and resourcefulness blended with global skills and expertise. This seems like common sense to me that in industry that is short on experience and people that is high on technology. This is good for our company. This is good for the sector and must be good for Russian firms as we compete for international business.

One of the peasant surprises for me at TNK-BP has been the almost incredible appetite for such training, continuous training that you spoke about

earlier, and development of all levels of the company, particularly among young Russian staff, they have jumped at these opportunities. I believe they have seen value in what the company offered. They understand that their personal development has boosted their career prospects and helps them become more valuable employees. It's my belief that this has been a strong driver behind the company's consistently strong results.

We understand the value of people and we are increasing the targeted investments into the capability of our staff at all levels. One aspect of this investment is our in-house training system that brings together corporate programs for technical and functional skill enhancement, leadership development, implementation of the new programs, processes and a number of our in-house programs available to staff has increased from 45 in 2004 to 250 last year. And since we commenced the company we have trained more than 300 000 man/ days of training of our staff. To complement these we have formal training programs with international mentors inside the company they are meant for outstanding Russian staff. Most of our senior managers wherever they are from have Russian executive assistants to development roles to learn much about the oil business daily. We send people abroad, back into one of our shareholders BP to various locations around the world, sometimes for several years, so they can build their international experiences and bring them back into Russia. We have identified more than a hundred young Russian potential leaders of tomorrow and included each of them in individually mentored program supported by a senior international and Russian manager. And we've graduated now 250 Russian executives through tailored programs with NCR, the business school they are working on three of their campuses in Moscow, in Fontainebleau in France and in Singapore. These models include visits to leading companies around the world. We are also supporting leading Russian institutions, many of them, eight ones that we have partnerships directly. An example would be the geosciences masters program at

the Tyumen Gas and Oil University and at Skolkovo we are one of the founding members.

As to the second issue, and I'll be brief about how to strait the right balance between Russian and international management. The short answer is we only want what we have time for and it is fortunate for us to have this choice as a company. We are in a global industry that is short on people, the average age of petroleum engineers and drilling engineers in Russia and globally is 47 to 48 years old. This is a good sort of problem for our company to have to be able to tap in to global expertise. The exact balance of it has been caused by differences of opinion and that seems to be playing out in the press right now. But I'm sure there are many other companies who would like to have this dilemma and these choices. Our current workload is greater than it has ever been. The number of foreign specialists on our company has fallen by 50% since we started. But the amount of capital investments that we are putting into the company is 5 times greater than it was when we started, which is a reflection of a greater workload. Our results are as distinctive as the make up of our company, and I think the two are linked.

We certainly have invested and I believe invested deeply and effectively into development of Russian staff. Our international staff and our senior managers play key roles in it and have objectives daily to participate in that and make it as effective as possible. We do these things because we see there is value in them, we do them because it helps our business today and in future and also because in a long term I'm certainly will clearly benefit Russia's oil and gas sector. Thank you Mr. Chairman.

***Konstantin REMCHUKOV***

Thank you very much for your interesting and open as a day report. Indeed, the topic of TNK-BP and collaboration, and competition of Russian and foreign parts of management is discussed recently. And certainly it is evident that in the

process of training, retraining, getting of education there is one very important aspect of education which must be given to people – how to find the ways of corporate solution of difficult matters in order not to submit them for public discussion with possible reputational damage for the company. So, it is some cultural aspect that must be put in the process of training and retraining. Those 300 thousands of man-days that you have mentioned mustn't pass for nothing for future generations of personnel and managers.

And now I would like to give a word to Pier Ugo Calzolari, Rector of University of Bologna, and ask him to tell us about direct and inverse correlation between economy and education. How education influences economy, and what signals in terms of demands for education, are being sent by economy itself. You are welcome.

***Pier Ugo CALZOLARI***

I am representative of the traditional University and I shall try to expose you to illustrate the point of view, the perspective of the traditional University. I'll start with the generally accepted statement: height education institutions are respected to sustain critical and larger role in supporting the growth of the knowledge driven economy. Then the first question arises: is this ability of education to fuel the transformation of economies automatic effect? Does the investment into research and education guarantees positive returns on economic growth? We have to be frank – not always. Experience of numerous countries including large ones shows that it is not always the case. Major efforts in creating high capacities in science and technology is often failed to produce significant returns. It happens because investment in education and science exhibits all its innovation potential only in societies where efficient interaction exists between a lot of factors, which are inexplicably intertwined such as highly skilled people availability, advanced research institutions, innovative firms, improved infrastructure, adequate

communication facilities, intense competitive pressure, trade policies, market condition that favor innovation and support technology diffusion. Improving competitiveness is a special difficult challenge because no single policy or grand step can isolated besides many other factors which favor competitiveness are deeply routed in the national institutions, people and culture. However some studies on drivers of national innovative capacities show that countries that have located their higher share in research and development activity in the educational sector have been able to achieve significant progress in innovation. Broadly speaking no one disputes the long term return in growth of economy and competitiveness of investment in education. However establishing a direct connection is not a banal task. Being conscious it might just have served the simultaneity of two events. Countries with best economic performance also exhibit the highest investment in higher education and research. A crude correlation can be attempted between for example global competitiveness index according to the evaluation of the world economic forum.

But the landscape of higher education is probably changing; new competitors of the traditional universities have appeared in many countries: virtual universities, corporate universities, franchise institutions and so on. High education institutions feel to be under scrutiny. There are still objects of hopes and also of growing concerns. Planned within the seen absent by the ICT revolution, threatened by the effects of globalization, beseeched by the progressive decay in governmental subsidies the universities feel for the first time in their millennial history that the crisis of unprecedented depth is illuming at the horizon of their familiar, their dear campuses. Maybe the most radical view in this subject is to be found in the report by the American National Center of Educational Economy and titled "tough choices, tough times". The commission asserts that the core problem is that educational and training systems were built for the different technological era, and we can get where must go only by changing the system itself. A collective

sense is developing and the need to reconsider the high education system from its very roots and to do more than simply trying to ride out of storm ends in the dilemma: what has to be changed? And secondly what has to be maintained? There is a new pattern of educational demands and of competitive challenges the universities have to respond to. First of all the universities are expected to respond to the demand of efficiency through reliable accountability, accreditation assessment systems, measuring institutional effectiveness. The evaluation process has to penetrate the whole body of university, education, research, but also organization and management with the special emphasis on the student learning outcomes. There is a growing awareness that the future discussions of quality will include more specific output measures rather than reputation rankings based on inputs and resources. The traditional universities have to adopt more flexible mode of organization and operation starting with new pedagogical approaches which move the focus from teaching to learning. The learning tailored to the needs of individuals. Besides just to mention the affordability, the hindering of minority, low income students, the attractiveness, the internationalization, the student mobility and so on. Finally a new partnership between the state and higher education is needed in many countries, and this pact with include obligation to define the institutional effectiveness. What has to be maintained? The generally accepted statement again: the real driving force of the knowledge economy is the creativity. In global knowledge economy the ability to compete and to prosper will be increasingly fueled by the ability to attract and retain and develop creative people. The creativity can also be cultivated in one of the most fertile environment, which is the research community. And I think this is where the unique role of traditional high education institution stands out. Creative innovation stems from the ground is fertilized by critical thinking. The creativity takes its roots in the practice of free and critical thinking and in its turn this addresses the source itself or the modern European thought - the awareness of problematic

nature of knowledge. For centuries the universities have completed the task to create, to preserve, to transmit knowledge but first of all to “problematize” knowledge. Universities are respected for a long time head to keeping the focus of economy where knowledge is the main engine of growth on the condition however that they are able to respond to the new educational paradigm, on the condition that they are ready to change their pedagogical system almost completely. There is a paradox of the great Italian writer Tomaso Pelampeduso who said “everything has to change if you want to leave all things unchanged”. Thank you.

### ***Konstantin REMCHUKOV***

Thank you mister Calzolari for very interesting report in terms of position of traditional university about how it should respond to the problems connected with creativeness of people and with knowledge that must be generated in survival conditions of educational system and economics.

All panelists were much disciplined, that’s why we have time to first of all answer your questions to our reporters, if you have them, and second if someone of the reporters has some thoughts arisen as the discussion has progressed, they have too an opportunity draws auditorium’s attention for a minute.

So, the first part. Any questions to panelists? You are welcome to microphone.

### ***Georg BENA***

My name is Georg Bena. I am supporting a billion Euro company in Germany. But in my former life it was a UN conveyer for education and content on one hand. And at one time I was heading five different companies improving e-learning and e-education, which is more important part. My first question is a short one. In Russia is there a goal to keep the guidance for the schools in one hand. If answer

to this is, “Yes”, then you have the possibility to overtake such countries as United States or most of the countries on the planet. Why?

There is a change from an old system to a new system. Having three children I see that my children are prepared for the past, but not for the future. And it is not only technology, it is also how to handle knowledge. Lets say, before Christ knowledge was 2000 years, now it is 1500 years. My question to you is how to handle this paradigm shift in education which has to take place. And if you can do it from one hand, as I said you have a huge chance to do it. Be aware that the old system which is now working, might strike back. But this is the draw back you should not look at, you should take a chance to make the best and if you do it today you can be a benchmark of the planet. For example, you can look at Malaysia, on what they did.

Thank you.

### ***Andrey FURSENKO***

In Russia we have opportunity to influence the system of school education, moreover in two hypostasis – in the areas of hardway and softway.

If to talk about material part, despite schools being municipal organizations, there are programs that are realized directly from federal center on development of more modern conditions of teaching, aiming supply of new equipment, new teacher editions. One of the biggest projects of the last two years is installation of quick internet in all Russian schools. It is 60 thousands schools. And payment for account of federal budget for internet traffic at least for the first two years in order to start the process of knowing and using internet by children.

Second part which is non-material influence: we have passed a law on new structure of educational standards, according to which school, pupils’ parents, who partly choose educational program, play a great role. But there exists federal standard worked out by federal center (one for all schools). Today this standard

pay attention not to what to learn everyday, but what every pupil should know and be able to do, ending up some or other course. It is very difficult matter, because to learn pupils move that pathway, we need at first to understand that pathway ourselves. By anyway today representatives of society, representatives of teachers and parents take part in this process together with scientists and teachers. With careful optimism we treat the idea of standards essentially changing for as it has been said before developing namely creative atmosphere in schools.

And finally the third thing is also very important instrument – we need to teach correctly our teachers. In this context we have made a quite a big program to attract more qualified people for writing manuals both for pupils and teachers. Also this program expects public discussion and examination of these manuals. Besides, nowadays our ministry's main concern is to change substance and approaches to pedagogic education. Unfortunately, this matter cannot be solved at once, it requires quite long time. I think that continuance of changes is 5-7 years, though certainly it will be changing constantly.

***Konstantin REMCHUKOV***

Thank you very much.

***Maria ARTAMONOVA***, Director General, MTI Company.

The area of our work is in giving managers those skills which helps them to be leaders in future epoch. In this context I would like to return to the topic of the conference one more time, because it seems to me extremely current, and ask to exactly explain (because may be I have not heard) the two following questions.

The first question – still what are key competencies necessary on the country level to be competitive?

And the second question – how dear reporters see integration of these competencies, how do they plan to realize them step-by-step? Thank you.

***Konstantin REMCHUKOV***

Who would like to answer?

***Maxim TOPILIN***

You know, this is a very good question, it requires an answer for at least 20 minutes, which I do not have. It seems to me that even risking to be blamed in superficial approach, I would say this way. The first set of competencies which must be formed by general education school and which now it forms worse than we would like to, includes skills of individual search and assessment of information, individual work, skills of group and project working, and also competencies in the area of learning foreign languages, which our mass secondary schools unfortunately do not give, shifting it to universities.

Talking about competencies that professional school must give, the answer to this question would take too much time because professional school embraces very different specializations. But first of all professional school must give people basic competency, taking part in research, ability to see critically any knowledge, any said and enforced idea. This means research competency. This is the biggest challenge. Today we have not mentioned miserable figure: 16% of professors take part in researches today (there announced to be more, but as other researches find out, it is teacher editions that they call research). And certainly it is a big challenge for us. It is a very low base to renovate research competencies in university society. We won't find solution to the problem of renewal of these competencies in mass high school without broad involvement of business experts, of research experts from leading research centers.

***Konstantin REMCHUKOV***

Thank you very much. Your question, please.

***Oxana KOZLOVSKAYA***

I have a question to Andrey Alexandrovich Fursenko.

First of all thank you very much for high appraisal of universities in Tomsk. You know very well that we have been working on developing of system innovative sphere, because we think that if problems of creation of regional innovative systems won't be solved, then to speak of development of Russia through innovative way is difficult and problematic. And here for several years we have a problem: universities are prohibited to act as founders of innovative company around them. This is a first question.

And the second one. About what has happened during last two years when the decision was made by administration to include scientific-research institutes in multiversity. For example we can see it in Tomsk, Krasnoyarsk and in South Federal University. Talking in general, from our point of view, this situation leads to decrease of efficiency of researches for concrete practical economy. I would like to know your point of view – what will be done about this situation and do you plan to make changes in the nearest future. Thank you.

***Andrey FURSENKO***

Thank you. I can not help but add to previous question. Talking about competencies I would like to say that two basic competencies are: to know native language, despite that to know foreign language is very good, but it would be good to also learn your own language, and to know basic mathematics. I want to say that unfortunately the results of universal state exam, no matter how they are treated, show really objective picture. 20 % of pupils (or may be even more) knows neither one nor other.

Recently, we have conducted attestation of candidates on the place of rector of one of republic, and on the question – which language do you use when

teaching – he answered that in native language of republic, because part of people entering university don't know Russian. It was absolutely honest and dreadful answer, which shows that beyond competencies which we must require, there must be minimum knowledge of native language and basic knowledge in mathematics, because without mathematics it is almost impossible to study natural science in our century of figures. I am sorry, I just added some words.

Regarding the question asked. We have prepared a concept of the law (our ministry, I mean), under which the state would permit to open small innovative enterprises in universities and scientific government institutions, basing on the condition that from the university side intellectual property will be tendered. We certainly have signed this law and got a moral support from Ministry of economic development and naturally we got a hard opposition from Ministry of finances. But because of the situation being more than usual, I think we will move further this way, and I suppose that those innovative enterprises around government institutions, which will allow us to start innovation process, will be opened; I think we will succeed in starting this process.

Anyway we clearly realize that this contradicts today's budget codex. We also understand that innovations require quite fundamental principal steps. We consider this to be one of those steps.

I think it was an answer for everything, because the way which we see proper to go is clear. I think that with your support also this law can be passed, and this means changes in psychology of development of innovation activity in the country.

**Oleg KHARKHORDIN**, European university in Saint-Petersburg.

I would like to ask a question to Mr. Mau, Mr. Kuzminov, and to Mr. Fursenko. There is an idea and I would like to hear your opinion.

Having been born during debates with Sergey Guriev the idea is about where our public sciences go and how it integrates in knowledge economy. Knowledge economy gives economy of knowledge production. It is that the country suffers from what do we call in English resources, kerls. We produce too many raw data. In general all social scientists export them somewhere to the West. And there sit people who make semi-finished products, retreat all this and then introduce it as knowledge about Russia. Some universities and firms are quite successful in import substitution. And only a little part, the third stage of any developing economy, is export oriented. May be the “VISHKA”(pet name for High School of economy) began to do that, as for ANKH I do not know. We send away from the country exactly because we are generally export oriented according to English ratings, for example, by publications.

***Konstantin REMCHUKOV***

I am sorry but our genre is question now and not a report, simply because we have 9 minutes left.

***Oleg KHARKHORDIN***

A question: how will you take the fact that in 19<sup>th</sup> century Russia exported opera, ballet and literature, in 20<sup>th</sup> century – physics, chemistry, military force based on it, but in 21<sup>st</sup> century unfortunately there is no place for physics, chemistry and biology, because we don't have proper equipment, and we will export what we are able to – people with papers, pens and brains, i.e. social sciences. 21<sup>st</sup> century will be a century of social sciences export. What do you think about it? Thank you.

***Yaroslav KUZMINOV***

I think your statement contradicts your question. You began with the thought that we have very poor methodological and analytical base for social sciences, and it is true. Both our scientists and researches have to either bank on importer data, for example on data of Economic research bureau in USA and so on, (not to analyze oneself, there are such honorable people) or they try to be concurrently theoretics and empirics, i.e. make also empiric researches, like some people from this auditorium. It is objective disadvantage and it can be explained. We are not going to change because of it. But I do not exactly understand how it is correlated with the idea of export of specialists on social sciences. Or may be you mean scholars who have only values? This is not clear for me.

If talking seriously, yes we have a chance to export intellectual services, and not only intellectual labour force. Yesterday I was talking to our constructors who were preparing to meet the president, and they told me that they are engaged in engineer services, i.e. they sell services of engineer consulting, engineer support to almost a hundred of big foreign firms, not exporting any workers, they work on they base. The only remote caunding center as you know, there are the biggest centers on development of software. Such service can really be sold, though we must realize that it is unlikely to exceed 5-7% of world GDP by 2050. I think that Russia may continue export of its traditional products, increasing the degree of its treatment, and certainly we must increase export of such intellectual services, but I don't think brains. Not brains, I think.

***Konstantin REMCHUKOV***

Mister Mau, you are welcome.

***Vladimir MAU***

Really, there is such determination for American university that it is a place where immigrants from Russia teach Chinese mathematics. But nevertheless this is a temporary phenomenon.

First of all, nobody knows it. There is no tendency – 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup> century and now it will be like that, and that's why nothing is known. The second. Our liberal education is really in crisis. There is fundamental problem, that it is formed such way that liberal education is something for either poor or very rich, who don't need money. This is really very serious problem. We don't have good liberal university which teaches successful people, because it is widely known that managers of big international companies are not graduates from MBI, they are simply people with very good education, either physical or liberal. So the main point (I plead on Yaroslav Ivanovich, who created very good economical school) is a creation of strong liberal school. This is such challenge that stands before our country. Actually for now I see neither demand nor readiness. But as economist I believe that demand waits for offer, and being no demand there is no offer.

***Konstantin REMCHUKOV***

Mister Fursenko, have you got anything to add?

***Andrey FURSENKO***

I want to say that certainly the most profitable is the export of standards. It is really the most successful thing. We do not succeed in it, neither did earlier. In general, we live in the country of myths and compare great achievements of distant years with medium level today. We had unique people in terms of cultural export in 18<sup>th</sup> and 19<sup>th</sup> centuries. But we still export unique people – Bilan has won Eurovision, it is also export if I may say (Laugh). But we really have talented writers, artists, who are today accepted in the world. That's why it is incorrect to

compare medium level of today educational quality with such giants of culture as of 19<sup>th</sup> century.

I agree with Yaroslav Ivanovich that we can export engineering. Actually our country is inclined to engineering (not to mass assembling, not to conveyor, but to engineering services).

As for export for example in technical sciences, which as you say were in 20<sup>th</sup> century, you know, probably we imported more. We should not forget that our research and technology sphere was created in Soviet Union. Exactly because of great import we created automobile industry first on account of Ford, and then on account of Fiat; we created metallurgy industry on great account of Croup and Tilsen, but we were so much creative and so strong in engineering, that then when converting those knowledge, we gave a lot for the culture, back for panhuman culture. I think that today we have the same chances, but we need to remember, that sector of high education in Soviet Union if talking towards the quantity of graduates, was 20-25% maximum, and today we have global high education. Choose 15-20% from those students and believe me, they are enough strong people with the same potential.

***Konstantin REMCHUKOV***

Thank you. And the last question please.

***Julia JULINA***, agency «Interfax»

I have a question to Robert Dudly. There was some difficult situation in TNK-BP with foreign members. How do you solve them, and how big is economic damage.

***Konstantin REMCHUKOV***

I am sorry but I think this question has nothing to do with knowledge economy. By the end of the conference may be Mr. Dudley will answer you, if he wants.

***Julia JULINA***

Mister Dudley has said that company prepares both Russian and....

***Konstantin REMCHUKOV***

I repeat: I don't object to this question, but we do not have time left. And the question about TNK-BP conflicts really has nothing with knowledge economy.

***Julia JULINA***

This is not a conflict, I would just like to know whether company is able to replace foreign staff by Russian specialists of the same quality or the company have not yet managed to grow them? Thank you.

***Konstantin REMCHUKOV***

As far as I cut the question, it remains aloft.

It is 16:00 p.m. We are finishing our conference. Thanks to all the participants. I think we have found some important moments. Thank you.