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**Responding to Impact Technologies**  
**HEALTHCARE ON THE MOVE – THE FUTURE OF TELEMEDICINE**  
**Panel Discussion**

**JUNE 22, 2012 — 12:00–13:15, Pavilion 4, Hall 4.3**

**St. Petersburg, Russia**  
**2012**

**Moderator:**

**Mark Kurtser**, Chief Obstetrician-Gynaecologist, Moscow Health Care Department

**Panelists:**

**Saeed Amidi**, Chief Executive Officer, Founder, Plug and Play Tech Center

**Jon Fredrik Baksaas**, President, Chief Executive Officer, Telenor Group

**John Chambers**, Chairman, Chief Executive Officer, Cisco Systems

**Frans van Houten**, Chief Executive Officer, Philips

**Joseph Jimenez**, Chief Executive Officer, Novartis AG

**Front row participants:**

**Andrei Dubovskov**, President, MTS Group

**Artyom Kudryavtsev**, President, Company TransTeleCom CJSC

**Christian Morales**, Vice-President, General Manager in Europe, Middle East, Africa, Intel Corporation

**Sergei Polyakov**, First Vice-President, Medsi Group of Companies CJSC

**Grigory Roytberg**, President, MEDICINA JSC

**Rustam Sungatov**, Author of books on the economics of healthcare; General Director, Corporate Information Routine (CIR)

**M. Kurtser:**

This is a panel on innovations in healthcare. We are going to discuss perspectives on the use of computers and telecommunications technology in medicine.

Allow me to introduce myself. I am Mark Kurtser. I see a lot of familiar faces. Thank you for coming. I am the Chief Obstetrician-Gynaecologist for the Moscow Health Care Department, and I have tried to represent myself as a doctor. But my colleagues who are present on the panel were surprised, and I myself was surprised, when I was asked to lead this panel. I suppose I was asked because that I lead one of the Moscow hospitals that has a lot of experience in this area. We are developing a network of hospitals that use various telecommunications systems.

In general, medicine is changing very quickly, and governmental healthcare is also changing quickly. In addition, the problems that stand before every government worldwide are found in even greater concentration in Russia.

Russia does have some potential, but it is difficult to transmit information to the territories where achieving a high level of medical care poses its own challenges. There are many other difficulties on top of this.

At the same time, in recent years it has seemed to me, and not only me, that we are demonstratively and convincingly implementing a programme of healthcare modernization.

It consists of three components. The first is replacing the old stock of technological equipment. The second component is a software solution, software management; and the third is the creation of procedure protocols for the rendering of medical services. The task that the President has set before public health authorities, before medicine, is that no matter where a citizen of ours lives, no matter where a taxpayer lives, he should be able to obtain healthcare of the same level as that provided in the rest of the country.

I would like to note that for the second component, our government has set aside RUB 460 billion. Today our discussion will deal with issues of innovation; issues of computer use and telecommunications technology; and things that can help us as

doctors and as patients, because even doctors find themselves becoming patients sometimes. What are the tasks facing us with regard to those issues?

I would like to address the first question to Mr. John Chambers, the Chairman of the Board and CEO of Cisco Systems, the world leader in the sphere of networking technology.

There is a lot of talk now about the need to move toward digital health. This requires significant investment. It is a situation that has a critical need for logistics modernization. Why invest in information and communications technology? Will the technology be able to overcome the challenges faced by healthcare systems, both in Russia and around the world? Please.

**J. Chambers:**

Mark, thank you very much for the chance to share views with both the people in the room and with our colleagues. Both my parents were doctors, and my brother-in-law runs the North Carolina hospital system, my other brother-in-law is a CEO, my sister is a master nurse. Like you, my father delivered 6,000 babies. This is an industry that I understand very well. Speaking from a business point of view and a productivity point of view, it is an industry that is in a lot of trouble. Both my parents taught me early on that you focus on what the underlying issue is, not what the symptoms are. There are a lot of symptoms that are very troubling. The symptoms are that most of the major health systems in the developed world are going broke. The symptoms are that even though the technology and certain medical capabilities can increase dramatically when you have an illness to get the resolution to that, it is still organized in many ways much like the information flow through the hospital 20, 30, or 40 years ago. As you look at the challenges facing us: the aging population, where we spend a lot more money on our lives as we get older, is going to cause a problem that exasperates what already today is a tremendous issue. When you travel around the world, in the developed world or the emerging world, the frustration of the citizens in terms of the quality of healthcare is actually dramatically increasing. However, when you look at it from a technology perspective, for the first

time there is a chance to change this. I say for the first time because out of all the major industries in the world, the one over the last two decades that has negative productivity growth is healthcare. You have to say what are we going to do differently in the future or what is the tipping point in terms of technology we can take advantage of. Most basic of all, Mark, is what you already referred to: the building of an internet protocol, if you will, for the all devices to come together, and the capability to have a common architecture for each of the applications. The ability is in front of us to be able to bring doctors from all over the world, through concepts such as clouds and sharing of data centre capability, together on an issue and then move on to the next one. The ability to do this not just in very expensive technology, but bringing it all the way to the homes of every citizen in Russia or around the world, either to a TV set or to an Apple device or a Microsoft device powered by Intel in the process. As you travel around the world, this has moved from where it was the top issue with political leaders that would talk about it for five minutes and then they would move away from the issue because they did not have a good answer. Now, in the last year, you have suddenly seen that change in every major government around the world. I was in China and India just two months ago. On this trip, I have been throughout Russia and throughout Israel and the Middle East. Every government leader is focused on it because they understand that if they do not fix it then it is going to have tremendous negative financial effects and instability effects in their country, and they can sense, as any leader can, when there is an elbow of opportunity. You might think the emerging markets would lag in this technology area. They are not going to; they are going to skip a generation. I will tell you two very quick stories. In India, when you look at it, they will not follow what we have done in Europe, or in North America, or Japan. They are going to deliver capabilities for doctor visits for USD 1 per patient to every single citizen in the country. They are going to skip in terms of what was done before and design the process flow, the ability to share information, and open systems in a way that enables that. In China, and I will start with the tough story to tell you how tough things can get and then bring it back home, when they had the terrible earthquake in

Sichuan, where they had literally 60,000 deaths, 400,000 serious injuries, it brought the whole healthcare system to a stall. There was no way to bring expertise in, there was no way to train people, and because of that there was tremendous pain suffered by everybody in the country. Yet the Chinese government said let us skip a generation, let us design for where the future will be and begin to bring these technologies together with a common healthcare system, a common video platform, the ability to train their doctors and nurses. And so the challenge to me is not: "Is now the right time to do it?" The answer is absolutely: "Yes, because we have no choice." But the key is do we have the courage to do this in a very bold way, or are we going to slowly let it evolve with all the undesirable effects of a slow evolution? Let us use Russia as an example. You have the capability, and Mr. Kurtser, your own organization is a great example of it, where you are beginning to build out an infrastructure around the country, but you ought to build out an infrastructure that taps into the broadband capability that the new Minister of Communication clearly understands. And whether it is the Minister of Communication here in Russia or in Israel where I was earlier in the week, or in China, India or the United States, they know that broadband, both wired and wireless, suddenly enables healthcare to be delivered not just to an individual hospital, but to a clinic or even over time to any home. You see the government leaders suddenly coming together on how do we make this happen. Projects such as Skolkovo here in Russia, bringing together entrepreneurship, begin to think about how to do software applications from an open standard that are really designed to work together. And for all of us that have called on any hospitals around the world, almost all of them have 10 or 11 applications that run the hospital, and they are different in each hospital. They need the ability to have common medical records which allow this information to flow between the two. They need the ability to really use these new technologies such as cloud, where you cut down the cost of a data centre by about 75% versus what it used to take, and as video suddenly becomes the way not just to communicate, but the way in which you are going to interface with patients and the ability to bring in a collaborative group using social networking, if you will, to address the issues the patients have is in front

of us. My challenge to this group, Mr. Kurtser, is not: "Is ICT needed to solve the problem?" The answer is: "We have no choice." The question is are we going to be bold and are we going to move and really change things, and in doing so we have to have the cooperation of government, we have to have the cooperation of business and the citizens, and the venture world to really make it happen. So maybe that will start us off, Mr. Kurtser.

**M. Kurtser:**

Thank you very much.

I would like to address my next question to the President and CEO of Royal Philips Electronics, Frans van Houten.

The role of technical support in the treatment process is enormous, and development is moving at a gallop. For instance, at our hospital, we are now installing an open MRI system for our patients. This is especially important in paediatrics and for patients with claustrophobia. Royal Philips Electronics are pioneers in this area, as are the probably thousands or millions of hospitals that work with that company.

Of great importance here are the preservation of signals, interpretations, and the opportunity to get a second opinion, with consultations all over the world.

Here is my question: which trends, Mr. van Houten, are you watching in the development of information and communication technology? What is the worldwide demand for this technology today? Please.

**F. van Houten:**

Thank you, Mr. Kurtser. You are asking me a big question, but Phillips is predominantly a healthcare company these days, and I fully agree that healthcare is not a highly productive environment yet and it is very labour-oriented. At the same time, the world is growing, more people need healthcare and we need to have the competency to do it. Information technology plays a huge role here. However, we need to make it medically-oriented rather than generic. In Phillips, we take the

disease as the starting point and we use the care cycle in order to follow the disease. Obviously, you would like to have early prevention, but once a patient is sick it is about the diagnostics, treatment, and aftercare. Information technology plays a huge role on all these fronts. I would like to talk about four key themes as examples. In order to make the whole intervention and the treatment less costly, faster, and better for the patient, we see this shift from, for example, open-heart surgery to minimally-invasive treatment where the image-guided intervention, or the minimally-invasive intervention becomes possible thanks to information technology and imaging techniques, even where the catheter that goes in through your artery will become smart and will have sensor technology built in. That is then all displayed through a cockpit, like an F16 cockpit, where the doctor has all the information available and within one or two hours does the complete treatment, and the patient actually walks out the next day and can go home. Obviously, that is a far better way to treat cardiac issues, but we see the same happening in cancer treatment and so on. That is one area where systems integration and computing technologies made available to doctors will make them far more productive. You can actually foresee eventually the industrialization of the treatment of certain diseases where highly specialized hospitals focusing on arrhythmia in the heart, for example, will just treat many patients very rapidly, and that will drive productivity and also better outcomes for patients. The second example that I would like to give is in the area of clinical decision support. We need knowledge and information, but there is a lot of it and it is always in the wrong place. This makes procedures lengthy and error-prone. Clinical decision support for us is the application of information technology on the medical level so that it becomes relevant to the nurses and relevant to the doctors wherever they are. Again, a few examples: Mr. Kurtser, you talked about the need for second opinions. We can make high quality images available on your iPad, wherever you are, in order to look at the pathology of what is found or radiology pictures. These high quality images will give you an instant opportunity to react. This also applies, of course, when you have district hospitals where maybe the expertise is not available, but then somebody in a higher level centre can help the regional

doctors to interpret the data and give the right advice. Another example of clinical decision support is where we can monitor what happens with the patient and have predictive algorithms to see what the condition of the patient is. The predictive algorithms can then alert the nurse or the doctor to say there is a problem here, within the next few hours this patient may have a heart attack. By being early, the cost of the healthcare system will actually be less, but it is also better for the patient. Another example of clinical decision support is when the patient is picked up by the ambulance, and the vital signs are already interpreted and sent to the hospital, and then the car arrives and everything is available already to treat the patient faster. This is what information technology can do for you. However, it needs to be relevant to the disease, it needs to be relevant to the function of whether you are a nurse or specialist or an interventionist or doing anaesthesia, and our information technology and software will make that translation work and thereby drive productivity, but also raise the knowledge level available so that people can build on that. The third example has to do with managing transitions. The average life expectancy here in Russia is maybe not yet so high, but it is very clear that in the world people will live longer and they will not die from a disease, but they will have a chronic disease and they will carry that disease for 20 years. Whether that is a cardiopulmonary disease or an oncology disease, or diabetes or a neurological disease, people will have to live with it. If they need to go to the hospital all the time, that is very inefficient and very costly, and it will take up specialists' time in the wrong way. We see a future where people are being monitored, perhaps at home, especially for the multi-pathology patients that are in the most acute part of the stratification, and where people can then get advice remotely. The doctor can be forewarned if something is happening to the patient, but also compliance with the use of medicine can be followed. This, of course, will make it much less costly if you understand the waste in the pharmaceutical world where patients are not following the prescribed treatment, then these are all areas where information technology, provided they are put in the right context for the disease, can actually help a lot. You will hear me talking very passionately about it. It also means that this is a systems integration

business and no longer a business where it is only one product. We need to think holistically, and that brings me to my fourth point: we cannot do this alone. We need partners. We need to have a partnership between the medical domain, the doctors, the specialists, the know-how carriers – doctors have the information – and we need to work together with the technology providers like, for example, Cisco, where you have the information protocol, and we need to apply it and that brings in a company like Phillips. Partnerships are essential, and I think the world has enormous opportunities, but let us work on this together in a very productive manner. Thank you.

**M. Kurtser:**

Thank you very much.

The component that permits the success of the work of any doctor, of any healthcare organization – whether it be a hospital or a clinic – in addition to diagnostic equipment, is good medicine: a wide spectrum of medicines, a range of different sorts of drugs and systems, including oncological, vaccinations, diagnostic systems, and so on.

I am very glad that today we have participating on our panel Joseph Jimenez, the CEO of Novartis AG. I would like address the next question to Mr. Jimenez. What role do computers and other innovative technologies play in the development of contemporary medicines?

**J. Jimenez:**

Thank you. At Novartis, our core mission is to discover and develop new and innovative medicines. If you look at the last ten years, the cost of discovering and developing medicines has skyrocketed, partly because of increased regulatory requirements in terms of what testing has to be done before that drug can come to market. We are looking for ways to reduce the time and the cost to deliver drugs to the market. One initiative that we have at Novartis is a modelling and simulation group that uses mathematical and computer models to – early on in drug

development – allow us to measure the pharmacological properties of the drug as it disperses through the body. We can use that data and that information to make decisions about the appropriate dose, safety considerations, and the effectiveness of those drugs in the body – where we could never do this before – instead of in a clinical setting. This will help us reduce the cost and the time that it takes to bring new drugs to market. We have expanded that group recently to include a Russian team that is now up and running that is contributing to that modelling and simulation group. A second example in terms of how technology is helping us, not just in the development of drugs but also in the delivery of drugs, is a programme that we have in Africa. At Novartis, we have a drug called Coartem which is an antimalarial drug, and we distribute that drug at zero profit to countries in Sub-Saharan Africa, where the disease is very prevalent. We found, however, in many rural clinics there was a high level of clinics that did not have the product at one time or another, so a mother would bring her child into the clinic and 25% of the time, that clinic did not have Coartem in stock. We wanted to think about how we could use technology to solve this problem. This is not a high-tech solution, but mobile phones are prevalent in Africa. Everyone has a mobile phone. We created a programme that we call SMS 4 Life, and at the end of every day the people who run these clinics send an SMS message about inventories of Coartem to a central location that is then fed to distributors who fill those needs. We were able to take the out-of-stock level from 25% down to 1%, so everyone who needed Coartem was able to get it from this clinic. Not a high-tech solution, but using mobile phones in a health clinic setting to be able to drive better patient outcomes. This is what we are focused on in how we can use advanced technology in drug development and less advanced technology, but very powerful solutions, in drug distribution. Thank you.

**M. Kurtser:**

Thank you very much. Now that we have discussed medical technology and medicine, I would like to say that the PC is a compulsory tool in the work of any

doctor. We have here today Mr. Christian Morales, Vice-President of the Intel Corporation, which produces the most important component of these computers.

Mr. Morales, we see that in the integration of information systems, healthcare has certain problems. It is all being implemented more slowly in healthcare organizations than we, the doctors, would like. What do you think are the reasons for this situation, and how can we overcome it?

**C. Morales:**

First of all, thank you, Mr. Kurtser, and thank you to the panelists for your interventions. I would like to say first of all that IT does not only lead to information provisioning and efficiencies. The real benefit lies in the fact that you can allow communications and collaboration in real time, which is very important as in any task you have to perform. We have a lot of initiatives going on with ministries of health, with hospitals, and I want to mention here a couple of examples: one is the doctors of Asklepios, which is a very large hospital chain in Germany. They work very closely with the Nikiforov Center, which belongs to the Ministry of Emergencies here in St. Petersburg. They carry mobile clinical assistance, for example, and they also set up local infrastructures for servers so that you can have access in the hospital, in a very secure way to the kind of information you need to make decisions. I just want to talk about a couple of results on how much more efficient you can be and how you can improve the experience for the patient. For example, staff who have been involved with the technologies and have been working in collaboration with one another in those initiatives – I want to give a couple of numbers here – they have seen an 18% reduction in time spent on administrative activities. That is time not spent on patient care, so they can save time on administration and spend more time with the patients. The laboratory results are available 75% faster and the radiology results, including diagnostic findings, can be viewed 89% faster. Most of the time, when you have to do the diagnostics and then you have to come up with a solution for the patient, what takes a long time is information that is missing (documents that have to go from one place to another),

and it is the mistakes you also get because it is very difficult to read doctors' handwriting. I know the doctors have to write very fast, but one important pattern in doctors is that you cannot read their handwriting. It is very difficult to read, so obviously when you pass a document about a patient from one person to another, reading it is difficult and the likelihood of making a big mistake is high. We also have a very important piece of data here in the emergency room, where the staff can access archive data about the patient's treatment history on their arrival at the hospital. This happens in real time and immediately. Without those devices that they are using now in those hospitals, this could take up to 45 minutes. Forty-five minutes when somebody is in an emergency situation, whether it is a heart issue or any kind of other issue, is really the difference between surviving and not surviving. What we see today is that the technology makes a tremendous contribution to improving the service brought to patients. It makes a tremendous contribution to making it much more competitive and efficient. The issue is that it is still built in islands. There are a lot of technologies now that exist – cloud computing, which Mr. Chambers mentioned; security; privacy, etc. – that allow people to put information wherever they want it. What I think is really important is that people change in the way this industry is managed, and I think there is really a need for strong work between private and public partnerships, and also regulations that will incentivize teamwork so that medicine and healthcare are much more efficient and the service brought to the patients is much better, because those islands of information are not interconnected, and there is not enough cooperation and collaboration going on. The technology exists, but it has to be implemented and used in a much better way. I will stop there for the sake of being brief in this first intervention. Thank you.

**M. Kurtser:**

Thank you very much.

Rostelecom is in charge of the creation of a single governmental information system, a system for healthcare. Here we have the Vice-President of the company, Alexei Nashchekin.

This company has created two fundamental services: single registration and a single medical card. For me personally, perhaps, it would be more accurate if this medical card were called a clinical record. Theoretically, the possibility exists in all medical facilities to universalize this process, so that card could virtually be transferred for the patient from one medical facility to another (and if not virtually, then at least a hard copy). It would be standardized so that the attending physician would be able to get the information without wasting any time.

What questions do we have prepared for Mr. Nashchekin? Do any solutions exist for the modernization and computerization of medicine in the shortest possible time with minimal cost?

**R. Sungatov:**

My surname is Rustam Sungatov. While we are waiting for Mr. Nashchekin, please allow me to answer this question. I had the chance to participate in the development of these systems in cooperation with Rostelecom, so I will attempt to provide a response.

Rostelecom, without question, took on an enormous task: that of how to quickly provide this infrastructure to the entire country. To do this, it used cloud technology. A national cloud platform should be available in all hospitals, for all doctors; all participants in the healthcare system should have the same resources. But these are just opportunities; it is just infrastructure.

Further solutions are needed. Here you mentioned electronic registration and the single electronic medical card, which you justly called by a different name: a clinical record. The object of electronic registration is to provide the patient with the opportunity to gain access to all possible healthcare resources online. And the object of the electronic medical card is to allow the doctor to quickly obtain all information available about a particular patient. And here is the interesting thing. We cannot hold an immediate revolution; we need to combine all contemporary scientific technological approaches, that is, to connect all the devices and receive information automatically. But at the same time, we have collected a large amount

of information that was created from the work of a large number of doctors with different specializations. The task of this universal electronic medical card is to combine this kind of diverse information.

With regard to the proposal and the idea itself, it is a technological breakthrough. It is absolutely clear that it will certainly allow Russia, Russian hospitals, and Russian doctors to reduce the time it takes to implement new technologies by several years.

Thank you, Dr. Kurtser.

**M. Kurtser:**

Thank you very much. We have with us representatives from the Kazan-based company Corporate Information Routines. Rustam Sungatov, a Doctor of Economics and the President and CEO of this company is here. While we are talking right now about the country as a whole, about the possibility of creating a single healthcare system, this company has created a successful information system that works in Kazan. The name of the system is the Dispatch Centre, and it operates based on the Interregional Clinical Diagnostic Centre.

We would like to ask you to share this experience. Tell us, please, what lessons you learned during the implementation of the system and what you can recommend for other regions. Please.

**R. Sungatov:**

Dr. Kurtser, I am rather fortunate, I have the opportunity to answer two questions. This is a long story. While creating the system, which was first ordered by the Republic of Tatarstan, Orenburg Region, and several other regions in Russia, we turned to theoretical evidence which argued that healthcare should be regarded as an industry and that, therefore, an industrial approach should be used. It was a novelty; it was unexpected, but we found brave leaders who agreed to have this kind of system implemented for themselves.

We figured out that we needed to engage with the centralization of healthcare not as an administrative duty (there are already more than enough administrative

systems), but as the coordination of function. For this to take place, all of the medical facilities in the entire region, in the entire territory, were connected to a single system. This allowed us to actually manage the process. Complex problems like cardiac clusters, oncological clusters, working with strokes, routine hospitalizations, and high-tech medical care were solved.

We immediately achieved great results with stroke patients, reducing mortality by tens of percent. As Mr. van Houten already expressed very eloquently, the industrial approach has entered into medical care. That is, they will have already begun work on a patient with an acute stroke in the ambulance, because they would already know all the necessary information, thanks to the directions from the Dispatch Centre.

This kind of Dispatch Centre was first established in the Republic of Tatarstan, and next, in Orenburg Region, and then also in Vladimir and Tambov Regions and Zabaikal Territory. Stavropol Territory also uses this system.

Rostelecom used this as a foundation to provide a quality solution that works on a cloud infrastructure for all regions of the country.

Thank you very much.

**M. Kurtser:**

Thank you very much. I am already getting nervous, but the next speaker is someone I know well, and I am positively certain that Mr. Polyakov is here with us. Sergei Polyakov, the First Vice-President of the Medsi Group of Companies. This is a large private company that has networks in different districts and regions. Now it has integrated with many other clinics. I would like to say that the leadership issues will be very pressing.

I have a question for you, Mr. Polyakov. We have a quite serious task facing us today: the task of connecting these clinics, and not only of connecting them, but of using them effectively. You need to achieve the maximum results in medical care, in diagnostics, with minimal financial expenditures and losses.

In our view, this is only possible if you use the infrastructure of different information systems. Which systems will you use, and how do you plan to begin unifying these clinics?

**S. Polyakov:**

Thank you for your question, Dr. Kurtser.

The unification of our clinics began in April of this year. There was Medsi, which had a network of medical facilities in Moscow and in the rest of the Russian Federation. There were 19 medical facilities in Moscow and 11 in the regions, 80 medical centres, and three wellness clubs. We decided to merge with the former Medical Centre of the Administration of the Mayor and the Moscow government. The state unitary enterprise entered into the merger with three hospitals, a total bed capacity of 1,160, five out-patient facilities, three sanatoriums, and an ambulance service.

At this moment, Medsi Group has in its structure 22 outpatient clinical facilities in Moscow, 11 such facilities in the regions, 80 medical facilities, three hospitals (as I already said, with a total capacity of 1,160 beds), ambulance services, and three sanatoriums: two in Moscow and one in Crimea, in Ukraine. Naturally, there is a question as to how this merged company will function, and naturally, without the use of contemporary telecommunications, the existence of this unification would be impossible.

As our earlier speakers have already said, since we have ambulances, they need to be connected to the hospitals. Since we have long-term medical facilities, they need to be connected with the main facility, so that without leaving the region, you can hold a consultation and then select a specific group of patients.

Naturally, there is a question about the retrofitting and modernization of the stock of medical equipment so that contemporary medical technology can be used. The purpose of this merger and of the Medsi Group is to create a situation in which a patient who comes to Medsi will be able to receive a full range of highly-qualified care and return to us when needed.

For this, we need to use international consulting experience, including tele-consultations with major international partners. Thank you.

**M. Kurtser:**

Thank you very much, Mr. Polyakov.

Before calling up the next speaker, I would like to say that, sitting here, I see a couple of furrowed brows. I would therefore like to (although the organizers did not write it for me) share a little joke about the importance of receiving information in a timely manner. I hope that this joke will cheer us up, and that we will be able to listen to the rest of the speakers with renewed interest.

It goes like this: a woman is pregnant with twins. In the womb, one of the foetuses asks the other, “Do you know if there is life after birth?” And the other foetus answers, “I do not know; nobody has ever returned from there.” Well, that was just a little something to cheer up the audience.

I would like to give the floor to a great friend of mine. He is a well-known researcher, and a wonderful clinical doctor. I am talking about Academician of the Academy of Medical Sciences Professor Grigory Roytberg, who is President of Medicina.

Dr. Roytberg is the author of many textbooks. On Dr. Roytberg’s shoulders lies the burden of training young doctors – new personnel, who will work with medical innovations when we have communications technology, and for whom it will be impossible to enter a patient’s room without an iPad or other tablet device.

The question is as follows: what is a smart clinic? What do we currently imagine a smart hospital to be like?

**G. Roytberg:**

Thank you very much, Dr. Kurtser. After your presentation, I am at a loss and do not know what to say.

The question of what a smart hospital is, is in fact a very complex one. Continuing the humorous theme, I want to remind you of a joke which did the rounds in the 1990s, when they said that New Russians decorate their homes with computers, or

models of computers. And so, it seems to me that today, clinics are equipped in a certain way not because they need it, but just because it is fashionable, because it is considered smart and in style. I would like to proceed with what, in our view, a clinic absolutely needs to have in order for it to be considered smart. That is, what can be of real use to the patient and to the clinic, so that the clinic can carry out its function.

Therefore, I would like to mention a few things that we, as they say, have suffered through and organized, and that have proven their effectiveness.

There is something else I wanted to say. Sometimes it seems unfair to me that the entire burden of creating a smart clinic is borne by the IT department; for some reason they have the responsibility. I think that this is the wrong message and, perhaps, that it leads to there being no agreement and support. If the leadership does not belong to the doctors, then it will not work. This, incidentally, leads to the fact that the effectiveness of implementation in many clinics – not only in Russia, but also abroad – is very low.

I would like to share just one statistic. For example, a lot of clinics now use the CRM system, Customer Relationship Management. But when I took an interest in what the real implementation of this very expensive system is, it turned out that even in the best cases, it is not higher than 30%.

So, I think that we need to focus on the things that the clinics can accept: an electronic clinical record, without a doubt. If it exists in reality, no doctor will write, but only type, because otherwise it is not an electronic clinical record. An electronic clinical record includes the entire chain, from registration to the laboratory, ambulance, pharmacy, etc.

If you enclose it all in a single chain, then you get a very useful tool. And with regard to what Dr. Kurtser said today about the standards and protocols that we should use, without the introduction of clinical records, I cannot imagine how it would be possible to control and organize them.

The second story which I think is very important is the Radiology Information System, RIS, based on PACS or something similar. I think (and here I would also

like to warn the people who are going to be doing this) that PACS or RIS are not just archival systems. I would like to share my own experience: we have found that they can actually alter the clinical judgment of doctors.

If we use a Radiology Information System as an archive only, it is important. If we use it so that doctors – say, radiologists – are able to compare change over time, compare the situation in different stages of the patient's care, it is important. Most important, however, is that today, a clinician can control what is happening right from his office. And here is the gap that exists all over the world. One of the reasons for the ineffectiveness of the therapeutic process (or more accurately, why the therapeutic process is becoming less effective) is that doctors have become hostages to function. I think that the introduction of the Radiology Information System, through which any clinician can have access to data online, completely changes the idea of the therapeutic process. The Radiology Information System, of course, should be completely integrated into and become part of the clinical record.

The next thing that seems very important to me is BI (Business Intelligence). We have implemented this for ourselves. We thought a lot at first about its effectiveness, because it is a very expensive system. There is no quality system of this kind manufactured in Russia. We became convinced that it was necessary, because at any time the leadership, in real time, has the complete details on how the medical treatment is going, where there are delays, where something is not going well, and where standards are not being complied with. Without it, complete control in a real way is impossible.

Again, as I have already said, administration of the Customer Relationship Management client base, I think, is also necessary. It is possible, however, that that is not the number-one priority for a clinic.

For the treatment process, the implementation of smart operating theatres is no less important. We have installed smart beds, but that is a very fancy thing that is not completely necessary. But these smart theatres are a real help to surgeons; they allow them to see what is going on. When you can run a live comparison of what

you have at the moment and what was going on with a patient's blood circulation, say, two hours ago – you cannot overstate the value of that.

Of course, you can never overstate the value of a smart clinic. There is a lot more that I cannot talk about today: smart building management and many other things. But this process, which is not simple to implement and which, more importantly, will take up a lot of the doctors' attention, does not always have an effect.

Thank you very much.

**M. Kurtser:**

Thank you very much, Dr. Roytberg.

I am going to address the next question to the President of MTS Group, Andrei Dubovskov.

Mr. Dubovskov, I have a question for you. I suppose that for this audience, I do not need to introduce you and your company. It is the largest operator in Russia, and the role of operators is increasing in digital health. MTS has already created a special medical service for its subscribers.

The question for you, Mr. Dubovskov, is this: how do you rate the level of telemedicine in Russia? What is your company doing in this area? What are your future plans in this field?

**A. Dubovskov:**

My friends, I hope that nobody will mind if I face the audience and the panel, and, accordingly, show myself to the audience and to my respected colleagues.

Yes, definitely, we are the largest telecommunications operator in Russia and the CIS. The sphere of our interests extends far beyond providing services to our particular subscribers, be they individual or corporate. You know, I believe that the time has already come when it does not serve telecommunications operators to look only at their cut of the industry. We definitely take part in the whole economic life of any state where we are an operator. This includes the financial sphere and various

industrial projects. Of course, this also includes projects in the area of healthcare and telemedicine.

We act, in fact, on two global fronts. Without question, everything that we are talking about is the application of the most advanced software, and the hardware that goes along with it, and applied practice. This is all impossible without spending billions of dollars on the creation of a modern wired and wireless infrastructure, because it is all a part of the common environment, of the common infrastructure. This is the global direction of our activities, which we conduct in the interest of our entire business and for our projects in the area of telemedicine.

There are also other, more local things that we do. They are very concrete: they concern the condition of healthcare in certain specific regions of the Russian Federation, and not only the Russian Federation, but also all of the countries where the MTS brand is present.

This is reflected in our actions, to wit: we have donated software and equipped ambulances with Wi-Fi. With the help of this software, we have the ability, for example, to send the cardiogram of a patient online to a medical facility or clinic directly from the ambulance. We have the ability to provide remote consultation services from a doctor. So, there is a very large range of possibilities, such as dispatching ambulances and so on. We already have specific data and specific projects within the regions of the Federation. As an example, I would to talk about how, from the data from the Komi Republic, from data from the regional Ministry of Health there, deaths from strokes, about which we have already spoken, have gone down by 25%, thanks to the use of exactly this kind of technology (which is not the most complicated).

However, in this case we can only imagine the possibilities, because we are not authorized to implement a comprehensive nationwide project. So, we do some things with our own money; we come to the regional authorities or we come to the federal authorities and say, "We have done this, and we can do it in a certain amount of time: one year, two, or three." But we, of course, are very much waiting

for a federal development programme that will call for our proposals. So, this is the issue, perhaps.

I would like to say that we operate in this manner not only in the Russian Federation, but also in neighbouring countries. We have a very good telemedicine project, for example, in Ukraine. It was implemented jointly with the World Health Organization and the United Nations. The largest Ukrainian companies were equipped with appropriate hardware and software thanks to Mobile Telesystems. Doctors in Kiev can remotely carry out consultations with patients from the Carpathian Mountains to the Crimea and to the eastern regions of Ukraine.

Those are, I suppose, the two main areas that we are developing. So, on the one hand, we are building a contemporary telecommunications network in all the countries in which we operate, and on the other hand, we already have certain business in each particular region, in each particular country, with which we approach regional and federal authorities.

Thank you very much.

**M. Kurtser:**

Thank you very much. I would like to address the next question to the President and CEO of Telenor Group, Mr. Baksaas. Telenor Group is a very large company, and also a very large operator, that also has a lot of experience in mobile healthcare. I have information prepared from a survey by the Boston Consulting Group by request of Telenor Group about how mobile health care can affect the quality of life, mortality, etc. The research of the Boston Consulting Group shows that it drastically lessens, by up to 25%, the utilization of services of various doctors, and from this we can conclude that it improves the condition of health.

The question that I would like to ask Mr. Baksaas is as follows: tell us, please, about your experience in the use of mobile technology in healthcare.

**J. F. Baksaas:**

Thank you. Since time is passing here and I am a bit late in the row of speakers, I feel myself pre-empted on a number of points. What can I add at this time of day sitting between you and lunch? Let us give it a try. I cannot claim, as Mr. Chambers can, to have family connection to the medical sphere, but we have a connection to technology. The connectivity has been mentioned. The connectivity all around us we more or less take for granted. Sitting here we are all connected; you are using your stuff, and if we have an incident in the medical arena, the alarm bells would immediately go. Intel would play a part, connectivity would play a part, Cisco would play a part, so it is a whole ecosystem here that would immediately start to play. From that combination of ingredients, there are great efficiencies to be gained. Let me give you a perspective. Together with the Boston Consulting Group, we have done a socio-economic impact study of health. Mr. Jimenez mentioned the work initiative on SMS 4 Life, and these kinds of initiatives, when you have the ability of reaching out to a high number of people and to also less fortunate people in emerging markets that do not have the access to medical services in practice, it is a phenomenal new functionality, if we can call it that. It is access to information and competence in situations that people generally did not have before. In the Telenor Group, we have more than 140 million customers in Asian countries which are more or less in that situation. At least a huge proportion of them have a long way to go to get access to medical information, whereas with a mobile phone in their hand they have that access, and in some countries we have done similar things. We have created helplines where people in Bangladesh and Pakistan can take their call. The call itself is free, but there is a set up charge in order to not be fully for free because then you end up in a social setting, which we do not want. On the other hand, when you do things like that, you really get into solid metrics. Those metrics can go around infant mortality, for example; young pregnant females in the countryside can get information when they are in need. Also, when you get access to information you also become a lot more careful. The mortality rate can drastically be reduced. In Bangladesh alone it is considered that hundreds of thousands of mothers and infants could be saved each year because the mortality rate is that high. If we

compare the potential of technology in the so-called mature markets as opposed to emerging markets, there are two dimensions. In the less developed countries, the example that I now refer to is, of course, self-explanatory to us here. However, to get the business model to work is more challenging, because who is going to pay? That question also goes over to mature markets, but in the mature markets every one of us in this room would be willing to pay if we were in need of something. If we were either in the after phase of an operation, for example, and we wanted a proper follow-up, or we would be proactive enough to try to avoid things. I felt pre-empted when I heard the MTS example of the EKG in every ambulance. Of course, that is a feature which we have got used to. Those cars, they are connected, and they do carry information about the patient, whether it is from this room or the outer room to the hospital, which is so important for you as an individual if you end up in that ambulance. We would probably have been a lot more willing to pay if the conditions around the business model had been visible for us in the mature markets. Here, I think we have touched on a very important point: there needs to be willingness on the medical side in order to redesign the business processes and the work processes between the public sector funding the healthcare, between private institutions funding the healthcare, and bringing these solutions into play. Then we can achieve phenomenal gains in productivity in the whole process line of medical services in any society. That is my belief. Thank you.

**M. Kurtser:**

Thank you very much. I would like to address the next question to the President of TransTeleCom, Artyom Kudryavtsev.

TransTeleCom is a federal communications company that maintains and operates one of the largest fibre-optic links in Russia, providing access to millions of our patients, and working to close the digital divide. I can share a small extemporaneous example. The first da Vinci robotic surgical systems have already begun to appear in Russia. This is a well-known American model. Currently, the surgeon must be, at most, in the next room. He operates, but does not need to

change into sterile clothes or treat his hands with disinfectant. He operates in emergency situations or in complex operations. In time, surgeons will be able to perform complicated operations from a different city or country. In this case, a single standard of operating equipment alone will allow for the carrying out of such operations in any city, in any village. I am exaggerating a little bit.

What question have I prepared for you, Mr. Kudryavtsev? Can the current penetration level of broadband Internet connections and the development level of cloud computing in Russia support the needs of digital healthcare?

**A. Kudryavtsev:**

Thank you very much, Dr. Kurtser, for your question.

Telecommunications, which is what I am now going to talk about, is a part of a large, complicated, complex problem called telemedicine. Without the level of development of telecommunications infrastructure that is needed, it is impossible to transmit the information of medical experts to remote and sparsely populated areas or to regions where, for some reason, there is no access to quality medical care.

When we talk about telemedicine, we need to split this question into two parts. The first part is the network that covers medical facilities and the flow of information between doctors – an enormous internal corporate network between medical facilities and doctors, in which there is access to information databases on diseases and treatment methods, as well as access to electronic, as we call it, clinical patient records. That is the first major part. In Russia, this part can be brought to fruition in a very short amount of time. Our healthcare system is basically entirely state-run, and the share of private healthcare providers is still very small. They cater to the section of the population that can afford to pay much more than average. All in all, in our country we have tens of thousands of facilities that need to be connected to this kind of network.

The development level of the main networks in this country is very high. The TransTeleCom network alone has nearly 100,000 kilometres across the country and 6,000 connection points. We operate in many medical institutions, and many more

are not a part of this programme, but probably will be at some point. Expanding this system, which is done in conjunction with our colleagues from Rostelecom, who organize the IT portion of this process, is quite simple.

But the second part – namely, access to personal medical care for populations in remote areas – cannot yet be solved, because we do not yet have the required level of Internet penetration, especially in rural areas and small towns. The national average is 40%, but in these regions it actually hovers around 20–30%. This is not enough for people to be able to get access to the information resources or online consultations from doctors that they need from home.

The country's need for these kinds of services is enormous. Our majority shareholder, Russian Railways, has a large network of their own clinics – more than 300 hospitals across the country. They are all connected now, for now it is just an analogue of remote video conferencing. In order for this to work as a system – not just a medical document workflow, but specifically as a system, one that allows for a semi-automatic diagnostic regime or for the identification of problematic situations – more work will be required on the part of specialized health professionals, methodologists, doctors, professors, and the people who make healthcare equipment.

Next, Russian Railways has several medical trains. They consist of several carriages, and they go all over the country to the areas where there is not a satisfactory level of medical care. They come to a place, stop, connect to the communication channels in these places, and can get all of the necessary additional advice for a certain case from specialists from the nearest medical centre who are not part of the staff on the medical train. With a direct connection and the channels that are available, they have improved reliability and improved speed for large, high-resolution transfer of the flow of information and video, where a specialist can quickly understand what is going on, request additional lab work, and so on.

**M. Kurtser:**

Thank you very much. I would like now like to give the floor to a speaker who has requested to be allowed to speak. I am very glad that he is here. He is the founder and CEO of the company Plug and Play, which is an IT company that helped found Google. After June 25, the company will be opening in Moscow. It also works with IT technology in biomedicine.

My question is, from your point of view, what is the role of IT technology, and how do you plan to work in the area of biomedicine? I shall hand over to the CEO of the company, Saeed Amidi.

**S. Amidi:**

It is a real pleasure to be here among such great companies like Cisco and Phillips and the large telcos. Generally, when you want to do a big initiative in medical change, you need the government behind you, you need big companies behind you, but what we do at Plug and Play Tech Center, I believe, is represent the entrepreneurs and the startups. We believe, like many things, great companies like Google and Dropbox started with few entrepreneurs. Some of the big medical changes in information technology would be initiated by a small group of technology people at a university combining medicine and information technology. To give you some examples, we have had the pleasure of being involved with BiancaMed, for which the technology was developed in UCD Nova in Ireland, but they came to Plug and Play Tech Center in California to commercialize that technology and take it to the masses. They can have a little device next to your bed which would measure your vital signs and communicate it to a hospital. You do not have to go to the hospital for sleep apnoea or other diagnostics, and this little company took off and did really well, and then was acquired by a very big medical company. I believe all of us, if you have these mobile devices and the information we receive before going to a doctor, you are much more knowledgeable before you visit your doctor. We have another company called NexBio, which we feel is sort of like a Google search in the medical field. It sort of puts all of the information of different R&D facilities and the information that is available on the web, and it correlates it for personalized

medicine. In conclusion, because it is quite late, we feel the entrepreneurs are in a great position to change the world. Similarly, in the corporate world where initially the corporations took technology and the most amazing technology was first built for a corporation, we feel with these mobile devices and the power of application, some of the technology will be first used by the consumer and then worked backward into the medical platforms that you are building. The last example I use is a company called iExam, which you could examine your eyes with a very small free app. After having over a million downloads, one of the largest insurance companies in America, VSP (Vision Service Plan), which insures over 30 million people, adopted the app so people can first test their eyes, and it says it is not a doctor but then it correlates the doctor, the consumer and it kind of started actually from consumers coming into the platform. I feel that with all of these new mobile devices and tablets the medical world may come from the entrepreneurial part and come to the platform that you guys are building. It is a real pleasure and honour to be here on this panel. Thank you.

**M. Kurtser:**

Thank you very much.

Our time is almost up, and I need to finish. I would like to thank all of our speakers. We have had an interesting discussion, if you can call it a discussion, because everyone agreed with one another.

As we finish, I would like to remind everyone that we are nevertheless at an Economic Forum, and I would like to talk about what kind of future I see, because everyone agrees, but action in this area has stalled for some reason.

It has stalled because sometimes there are leaders of an older generation who cannot use this technology; there are doctors who are lazy and cannot understand the role of the preservation – not the transmission, but even the preservation – of information. As an organizer, I have come up against this.

Nevertheless, today reform for the financing of healthcare is in the works. This reform will lead to what should be the creation of a single source of funding. It will

merge different branches together: health insurance, the budget, etc. The idea of the reform is that the money should follow the patient. The corporate medical group or the medical hospital that delivers the best information and communication technology will win the fight for the patient. The patient will choose this hospital, or that medical system. If the economic reform goes forward, it will be an engine for leading reform in digital medicine as well.

Thank you, everyone, for your attention.