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«БОЛЬШИЕ ДАННЫЕ» И МОБИЛЬНЫЕ ТЕХНОЛОГИИ: НОВЫЕ ВОЗМОЖНОСТИ ДЛЯ ПРИНЯТИЯ РЕШЕНИЙ НА ХОДУ

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D. Schlesinger:

Good morning, ladies and gentlemen, and welcome to this panel: ‘Mobility Meets Big Data.’ Certainly these are two of the most disruptive forces today in the world. Mobility is eliminating the lines of life, the lines between work and play, between home and office, between friends and colleagues, between uptime and downtime. Big data is eliminating the lines between public and private. Together they are making our lives, actions, and predilections more knowable than ever before, by more actors: known by ourselves, by our friends, by our families, by marketers, and by governments. Our lives are everywhere and available everywhere. Our lives and actions are in the instant, observed immediately, analysed immediately, and acted on immediately. Making sense of all this is key. The amount of data produced every second by people on the move: pictures, tweets, updates, location check-ins, shopping decisions, map queries, service lookups; it is overwhelming, illuminating, frustrating, shocking, and mesmerizing. There is a gold mine in this for companies who want to understand their customers; there is a paradise for those customers who want to be understood. But the privacy issues are real; with the public and private shared, analysed and acted upon, is there any place just to be oneself? Government, which traditionally has made and enforced the rules around privacy, has been shown to be one of the biggest users and analysers of data around. What does all this mean?

With us today to discuss these issues is a wonderful panel: we are very, very pleased to have these people here. From the right: Luis Martinez Amago, President in Europe for Alcatel-Lucent; Michael Kleinemeier, President at SAP for Middle and Eastern Europe; Jon Fredrik Baksaas, President and CEO of Telenor; Wan Biao, Member of the Board of Directors of Huawei and President of Huawei Russia; Jo Macri, Vice President of EMEA Public Sector for Microsoft; Christian Morales, VP and General Manager of EMEA for Intel; and David La Rose, General Manager for Central and Eastern Europe for IBM.

In the front row, we have some respondents: Alla Morrison, Programme Officer, Open Finances for the World Bank; Aleksey Komissarov, Moscow Government Minister and Head of the Department of Science, Industrial Policy and Entrepreneurship with the Moscow City Government; and Sergey Fedorinov, CEO and Co-Founder of Ulmart.

Thank you very much for joining us today. I would like to start just by asking for some specific examples that you see as most emblematic of these new trends in your company, or with your industry, or with your customers. Let us start with Luis Martinez Amago.

L.M. Amago:

Thank you, David. Before giving you the example, I will give you the relevance of the example: the importance of networks for big data. There are different families of big data, and normally the owners of these big data are partial, depending on the applications they use, and they sit in a data centre. But to get there, they need a powerful network, and there is a second family of big data which is what happens in the network, not only the information in transit but how this information is combined, gathered and transferred by these networks. The big thing is that this big data needs powerful networks, and the powerful networks need big data to really keep them developing, and they need collaboration between them. Today there is a sort of competition between telcos and application providers, and this should be a kind of development of this collaboration.

The example is, with the tools we are providing to the service providers to run analytics on the big data, the traffic of the network, we detected recently that, in the new version of Facebook, the incidence of signalling the network was increased by 10%, just by the new application. Facebook was not aware of this. This provoked an increase in demand in the particular network, and much more consumption of battery life in the terminals of the users. Several operators with

this tool informed Facebook of this anomaly. They corrected the application to bring it to the normal status. This collaboration, in that case, was win-win, and in a number of cases that can be converted into a business proposition.

D. Schlesinger:

Fantastic. Michael, you gave me an example earlier which also speaks directly to this point.

M. Kleinemeier:

Thank you, David, for the question here. This is also true with our networks: we cannot communicate. The question of big data is where is this entire data coming from? Today, I think we are doubling the data every 18 months, but we are just in the beginning of selecting all that data. If you look at where the source of the data is, it is clear that sometimes we have this transaction data, but I would say that this is in the minority. You mentioned all this data coming out and uploading photos or whatever, but I would also say we have this mobile world. Today you have more mobile phones on this planet than toothbrushes; we have 6 billion people on this planet and 4.8 billion have mobile phones, and they produce data every day.

And it is not just mobile phones, I would say we are going into the next century of the Internet of Things, where everything is connected with anything. In the future you will also be connected to your products via sensors. I thought of the example of Pirelli, where we had a project to build sensors into tires. Now we can measure temperature, pressure, vibration and so on, and we can give the driver more, then, because we can now analyse this big data in real time, in a memory database. We can now say to the driver, “It is best if you stop in the next parking space and change your wheel. Otherwise you will run into serious issues.” When everything is connected to anything, this gives a lot of new possibilities, and also a lot of new business models.

D. Schlesinger:

Thank you for that. Jon Fredrik, you are right at the centre of this with Telenor. What are the examples that you see?

J.F. Baksaas:

Thank you, and thank you for the introduction here. Having heard colleagues from the ecosystem that is enabling this to happen, such as SAP from their perspective on data, and also from the side of the network, of course we are the third party to what you all bring, in order to tie it all together. And yes, there is a phenomenal development out here, and it is probably too early to say how it will eventually play out, but I think that everyone who executes business in one form or fashion will have to ask himself or herself what will the world going digital mean for his and her activities. I think it is ongoing, it is happening fast, and those that do not act fast will probably lag behind others that are acting faster. So that is the upside potential on this. You said it: it is about the network, it is about handsets and it is about services, because it is really the service side that drives this phenomenon where the world is going digital.

A couple of examples were already briefly mentioned. The signalling storms that the new generation of smartphones created hit the regional network in 2011, and we were out for 11 hours on a national scale. It was a signalling storm which completely underestimated the data volumes that the active handsets themselves produce in a network while they are active. Maybe customers like that? Not at all! This was like a doomsday for us, having connectivity as the prime delivery to the market, and we learned that exercise at that point in time. So there is also greater complexity.

Number two, as another example at the other end, and more on the benefits of this: in February this year, we launched something we call Capture in Norway. It is an automatic upload of your photo taken by mobile phone to storage in the

cloud. It does not play in the same way as Dropbox or other offers on customer data storage. It is a more sheltered storage with more of a security dimension to it. And 100,000 customers, without any marketing, subscribed to the service in two months, having already uploaded 50 million pictures, which is not very much if you think about the huge population of Russia, but if you think about it in a smaller country with the 3 million customers that we have in Norway, then it becomes quite substantial by volumes.

The big potential here is how we utilize the knowledge about customers' preferences and behaviour and turn it into commercial usage, both we as a telco player, when we offer our services, and also the fact that we are potentially enabling everyone who has something to sell in the digital world.

D. Schlesinger:

That is a great introduction. I will hold you right there, and then we can probably come back to these points, that is terrific.

J.F. Baksaas:

It is a teaser, at least.

D. Schlesinger:

A wonderful teaser. Wan Biao, as an equipment manufacturer, you must have concerns about how you actually access some of the spectrum and how you can continue to develop in all this exponential growth that we have been talking about.

W. Biao:

Yes, thank you, David. In the future, we do believe there will be thousands of billions of things becoming active, so then it is a matter of how we channel the huge amount of big data. The problem is how to make this kind of big data

profitable and affordable; those are big questions. It is obvious that in order to support this big data, the investment will be huge. At first, the spectrum will be quite limited to support such huge amounts of big data. The first thing is how to utilize, highly efficiently, this kind of spectrum of resources. The second is how to reduce the cost of site acquisition, because in order to support such huge amounts of data, there will be many, many sites, both mobile access sites and fixed access sites. The cost is quite huge: how do you save on the cost? The third is the network evolution. You probably know that formerly we made calls based on a 2G network, right? But today, there is the 3G network to support data services, and now 4G is coming, and in the future, 5G will come as well. So the investment is quite huge. How do we save on this cost? It should be based on very, very innovative ideas and solutions to support big data affordably and profitably.

D. Schlesinger:

That is great. Thank you for that. Christian, you are with Intel, powering a lot of this. What is your perspective and some specific examples?

C. Morales:

Thank you very much. I just want to comment, but not reiterate what has already been said. We are in a more and more multi-device environment, particularly with the millions of new users and the new generations of people who are 15 to 25 years old, who have always worked with two, three, or four devices. I also want to mention that 10 years ago we thought that by 2015 there would be 10 to 15 billion devices connected, and now we are talking about 15 to 20 billion. By 2020, we are talking about 40 to 50 billion devices. All of this, in the end, is a lot of information that has to be stored, but also analysed, because if you have so much information and you cannot do anything with it, it is not really worth it. It is

very important that you have analytic capabilities to get you exactly the right amount of information and the quality of information you need to make decisions.
Also, we ought to mention that a car, for example, which until very recently was a device with embedded applications, is now becoming an Internet of Things, because it is connected to the cloud and to the Internet. Cars are going to become big data and mobile devices, so there are new devices that are going to be joining mobility. There is an absolute exponential growth of the amount of content that is uploaded every day onto the Internet, and we are going to be seeing even more of this taking place with worldwide connectivity improving, and all this collaboration and innovation taking place from people across any place in the world, collaborating and innovating with each other. This is just as an introduction, and then there will be some more comments to follow.

D. Schlesinger:
Fantastic. Joe, Microsoft is going on quite a journey from powering the PC to now their handsets.

J. Macri:
And the cloud behind it, yes. Thank you for the opportunity to contribute. We are really operating in a cloud-first and mobile-first world. There is no question about that. I would like to pose probably three challenges for the discussion, and then I will give one example; we have got many examples, but I will give one example to hopefully illustrate some of the solutions to those challenges.
The first is that the innovation of touch and the mobile device is great for consumption. It is great to read, to browse, to do limited typing. But if you want to get stuff done, if you want to work and create, you still need a keyboard or you still need a pen, and so we are still evolving, I think, in the technology on that front.

The second is, although companies like Microsoft would love you to use our devices, what we are clear about is users actually do not care about the operating system. They care about the app, and they care about the service and the data behind that service. It is not uncommon that people in this room have at least two, if not three, different devices: a Windows device, or an Android device, or an Apple device. It is very, very clear to us.

The third and most important issue, which you have already raised, David, is the issue of trust. Do we trust where companies at this table and other companies store the data? Do we trust what they do with the data? More importantly, do we trust them not to do things with the data? An example that I would like to give is about what I think is a very progressive city, which really thinks about this data culture and turning data into insight: the city of Barcelona. In the city of Barcelona, the Mayor there has a dashboard. The dashboard is updated in real time using open data. That data is coming from structured data feeds, from reports, from insights, and it is also using unstructured and streaming data from traffic management systems and energy systems. He is able to view, on a good old dashboard of red, green, and amber, what is going on in his city, and how he and his leadership can really take action in a very mobile way and in a very data, cloud-driven way.

D. Schlesinger:

Fantastic, thank you for that. David, I do not feel very old, yet I put myself through college, in fact, through high school, programming on an IBM 1130, which was about half the size of this room, with less power than I carry in my pocket now. So you have gone on quite a journey.

D. La Rose:

We have. I think, we passed a hundred years last year. Look, obviously I pick up on a couple of points that the panel has already made: data is there, it is there

now, and it is going to continue to be generated at a rate that we probably still do not even understand. The question is, and I think Joe touched on it a little bit, how do we take that data and how do we use it for insight? That is our job, in my view, in IBM's view and our point of view. It is our job because we have this convergence going on right now between big data, mobility, engagements which are connecting people through social media, and the ease of getting that information and the movement of that information through the mobility.

I will give you one example, which is actually an example here in Russia. VimpelCom, the third-largest telecommunications firm here, actually engaged us very deliberately to help them with two things: one, they were losing clients, so they had customer loyalty issues; and number two, they were not getting a return on the campaign investments that they were making. What we looked at doing is to provide analytics that use the data available to them, which were being provided by mobile technology, to then analyse that data and allow them in real time, through their campaign management, to actually very specifically get to what we call a Segment of One. We are a Segment of One. This is about what is relevant to you, David, in terms of how you use your mobile phone and what services you want, and use analytics around that to actually provide them with the ability to do that on the phone, live, in real time. This created a 300% return in terms of their campaign investment and a 9% increase in their market share.

I think it is our job, and I think I would pose a question to the panel that says, not only does mobility need big data, but big data needs mobility, and it is all entwined.

D. Schlesinger:

Fantastic, thank you. Aleksey, I just want to turn to you, because Joe mentioned Barcelona. Could you talk about, from the Moscow perspective, using data for policy?

А. Комиссаров:

«Большие данные» сейчас приобретают большое значение для всех мегаполисов, и Москва здесь не исключение. В декабре прошлого года в Москве проходил урбанистический форум, где впервые был представлен доклад, посвященный использованию Big Data для развития города. Я бы хотел остановиться на трех преимуществах Big Data в этом контексте. Во-первых, это очень высокая скорость измерений по сравнению с социологическими опросами и традиционными замерами. Во-вторых, это возможность не только получения фактов, но и прогнозирования ситуации. В-третьих, возможность оценки не только районов, но и микротерриторий, вплоть до небольших дворов.

Возможности использования Big Data для городских нужд безграничны. Прежде всего, это внутригородская миграция: в центр Москвы каждый день въезжает и выезжает из него около двух миллионов человек. Далее, это возможность планирования городских территорий с точки зрения не только транспортной системы, но и размещения жилья, офисов, мест, где создаются рабочие места. Кроме того, это возможность очень быстрой оценки проектов городских властей — не только по передвижениям жителей и гостей города, которые отслеживаются по мобильным телефонам, но и, например, по тому, какова популярность фотографий тех или иных городских объектов, которые размещаются в сети. Я думаю, что в плане развития городских территорий это только первые шаги в использовании Big Data, и нас ждет большое будущее.

Д. Шлезингер:

Thank you. Sergey, we've heard from providers, from network designers, from equipment manufacturers. Being an entrepreneur, from an entrepreneur's point of view who's build a new Internet business, how do you see the mobility and big data question?

С. Федоринов:

«Юлмарт» — относительно молодой проект, он появился в 2008 году; тем не менее термин «большие данные» сформировался немного позже. При этом изначально именно феномен «больших данных» позволил компании создать тот продукт, который сейчас помогает нам быть лидерами на рынке. Мы изначально придерживались установки на то, что надо создать хороший продукт, хороший розничный бизнес, хорошо услышать, каковы потребности покупателя, и посмотреть, чем он будет пользоваться в ближайшие два-три года. Мы сразу поняли, что Интернет — это прежде всего платформа, с помощью которой можно приблизить ритейл к пользователю, сформировать новую культуру покупок, когда витрина будет всегда рядом — на мобильном устройстве. Одновременно это рождает возможность с помощью обратной связи создавать формат нового уровня, который будет находить отклик в сердцах покупателей. Таким образом, мы сделали сочетание наиболее удачного интерфейса, в котором уже сейчас с помощью «больших данных» мы применяем интеллектуальные системы при выборе товара: человек может через наш сайт сделать такой запрос, как, например, «ноутбук, наиболее удобный для поездок». Даже с таким неформализованным запросом с помощью больших статистических данных мы можем помочь ему выйти на нужный ответ. Причем искать он будет сам — на витрине, которая находится на мобильном устройстве. Имея возможность, оперируя «большими данными», контактировать с каждым покупателем, мы сформировали схему логистики таким образом, чтобы клиент получал товар так, как ему удобно, и тогда, когда ему удобно. Возник гибридный формат, который сейчас, по итогам пятилетнего развития, является лидером интернет-торговли в России.

D. Schlesinger:

Thank you. Alla, let us finish with you, because we have heard really from the world of commerce and the world of business, but the World Bank, I know, sees lots of potential here for doing good for society and raising development issues, so from your perspective, and I think you also have a challenge for the panel as well.

A. Morrison:

Absolutely. Thank you, David. It is a pleasure being here. At the World Bank, we are very interested in data: big data and open data. We are actually one of the pioneers of open data. We opened up our own data, the World Bank Economic Indicators, which are actually very widely used by the private sector for market analysis and for all kinds of macroeconomic indicators. We used to sell them, but we now offer them for free to the private sector and everyone. We have also been encouraging governments to open up their data. We are seeing an incredible amount of innovation that is happening in emerging markets by start-ups and small enterprises coming up with very interesting solutions, and also solutions with a social impact.

We are very interested at the World Bank in looking into new big data and big mobile data as a platform for delivery of important social services in an innovative way, and that ranges from delivery of maternal health services in India to delivery of services in Africa, to disaster relief and disease tracking, and all of that has an important big data and mobility component, in fact. Data is also very important for us because it allows us to do development-related research in new and less expensive ways, where we can use mobile data as a less expensive proxy to field surveys. Examples are using mobile data account information and patterns as a proxy for poverty levels and economic indicators in Africa, for example, or using mobile call records data to map traffic flows and passenger flows for transport projects.

Big data is very important to us, and we see a lot of potential. What we would like to do more as a development aid agency is to collaborate with the data holders, companies like yours. We have had some great examples of collaboration. For example, in Mexico, we worked with Telefonica and they released their call detailed records (CDR) for a transportation project. We also had examples where mobile operators in Egypt and Armenia were willing to provide data for specific projects, but then ultimately were not able to do that because of the local regulators. My question for you is: how can we, the public sector and private sector, work together? You hold data that can have great social impact. Are your companies interested in sharing that data, and if so, what would be your incentives, what do you see as barriers, and what models for cooperation could there be?

D. Schlesinger:

I think that is a fascinating question that I would like people's view on. We have this whole dichotomy between openness and proprietary trust and privacy. All these are very complex, and I know some of the companies here are very much under the gun in terms of regulation and scrutiny. So who would like to pick up on this?

L.M. Amago:

David, going back to the point that you were making and that I made at the beginning, we need collaboration between the different actors. The most important one, which may be the biggest bottleneck that we may suffer in years to come, is the lack of collaboration between the application or the owners of the data flow in the different applications and the network itself.

Let me give you a couple of examples: Ofcom in the UK made an analysis that 10% or 20% of the roads in the UK are not covered by data services. You can imagine the investment that Google, for example, is making in creating the car

without a driver; it is useless if you do not have 100% coverage on the roads that this car can go on. You need to understand that there should be a collaboration between both. There should be a kind of motivation for investment for the service providers to employ enough data coverage for this application and for many others.

Another example where collaboration is needed is where we most need a smartphone: in a big arena or a stadium, watching a music concert or a football team. It is where we like to take pictures or shoot a video and upload it to one of these applications, and normally this is where we have the most difficulties because of the density of the spectators at the event. All these types of unbalanced ecosystems are making difficulties in the moments where this big data is needed most. I think this is where we need regulation in Europe, where we need to open a real debate about net neutrality, meaning the network has a value that has to be commercialized in a fair way, but in order to put in balance the value of the big investment in networks compared to the benefits that these networks will bring to the people that can commercialize big data. I think we need to find this balanced ecosystem that will be good for everybody.

D. Schlesinger:

Jon Fredrik, you must deal with this with your customers every day.

J. F. Baksaas:

Yes, a comment to that: you say it is a waste if Google creates the self-driving car if there are not sufficient data capacities along the road. First of all, I like driving my car, driving myself, but that is probably not the point here. The point is that then it would be worthless for the operators deploying a lot of equipment to realize that connectivity if the network neutrality concept goes too far. Safe car driving for sure needs traffic management, because think about it: there is a self-driving car coming up to a crossing, and there is a bus coming from the right with

a busload of youths being entertained over the same network. Is it the bus that has the right to the signal, or is it the car that is driving by itself? Which vehicle do you want to be in? I think it ought to be the bus, being entertained, rather than the self-driving car that has a problem with the network quality approaching that crossing. The self-driving car is something that we have been discussing for quite a number of years, and it is not very far away, really, but of course it needs a huge investment on the network side. If we deploy this, and you know this, because you are on the receiving end of that deployment, then of course there needs to be commercialization of the network capacity that you throw in. Here, the balancing act has not been discussed properly as yet.

To one aspect from the World Bank: yes, we are willing to work on social aspects of mobile telephone systems and mobile communications services. Yes, of course. Telenor in the emerging markets in Asia, countries that you mentioned, is doing exactly things like that, but in cooperation with governments and in cooperation with partners that have the necessary knowledge to do things like the ones you alluded to.

D. Schlesinger:

Thank you. David?

D. La Rose:

I do not think this is a new thought, to be honest. Joe and I just participated for 90 minutes in an earlier panel about exactly that: how business and government is collaborating around technology to provide smarter services to a community. From an IBM perspective, at least, we launched Smart Cities ten years ago, so what does that mean? What it means is how do we cooperate with government through the use of technology to bring services both integrated and closer to the citizens of the city?

I will give you an example that I gave in the previous panel: Rio de Janeiro. Eduardo Paes, who is the Mayor of Rio de Janeiro, had to effectively tell his citizens in his first year as Mayor that they could not commute to work because of the floods that were happening. He decided at that point that he needed to have a smarter solution to be able to predict and then deal with problems, as opposed to dealing with the consequences of problems. And so, with our help and the help of some of our partners, to Jon's earlier point, we have established an effectively operating control centre where we integrate services and provide that back to the citizens; for example, weather forecasting and emergency services, providing over 150 Facebook posts and tweets every day to provide people with information on which way to go to work and which way is most effective and what issues are occurring in and around weather, so providing a safer environment to provide their access. I do not think it is a new thought. However, I think we have to accelerate the integration between social and business.

D. Schlesinger:

Thanks. Christian first, and then Joe.

C. Morales:

Thank you, David. Very, very briefly, first of all, I want to recognize the much better bandwidth we have here in St. Petersburg this year compared to last year. We can download 20 or 30 megabits in a couple of seconds, and it works on the smartphone, on the PC and everything, so that is really great. I want to commend Mr. Aleksey for what he has done in Moscow, where you have 300 megabits per second now. Certainly the Smart City strategies that David and Aleksey were talking about are very important.

To Alla, just a quick point: you mentioned several examples in India, Latin America, and Africa. In Kenya, for example, 13% of the GDP now is transacted through the phone, which is the highest percentage in the world, which means

they do not have to walk for a day to go to a bank to do transactions or whatever, because they do not have the transportation. Those are examples where we need more public-private cooperation to really advise on this.

In Smart Cities, certainly there is a lot to be done, as was mentioned by David. There are great examples; as Joe mentioned, Barcelona, London, Dublin, we have Paris now because of the huge pollution they had some weeks ago, Moscow – obviously, a lot of cities. When we think how many people are going to be living in cities, or maybe not, if we can bring them the mobile services at home, that way not everybody has to live in the city to have access to this. I think those are great examples where we need to have this cooperation, because these are very, very complex equations to solve. One part is the technology, but the other part is going to be how this is planned and strategized to anticipate the issues rather than deal with the consequences.

Also, I need to mention the last point: it is still the start of what is going on in mobility. Joe mentioned that we still need keyboards, and yes, we still need the mouse, we still need touch, but this is an age of many ways of interfacing with devices. It is going to move into natural interfaces with voice, with gesture recognition, with eyes, and so on and so forth. Many, many more people will have access to these services thanks to this, which means even more big data and more need for more analytics for this.

J. Macri:

I just wanted to come back to Alla's point. There are actually two sides to what you said, Alla. One was around the public-private partnership, and although I gave Barcelona as an example, we are working with many cities, including the city of Moscow. We have what we call Microsoft Innovation Centres; we have six in Russia, and we have signed a MOU with Moscow specifically. You gave the challenge: I will take the action and check with the local team to make sure we are looking at this topic as well.

The second part that you talked about was around opening up data and the regulators, and this is something that Microsoft and many other companies have been grappling with. Very recently we worked very closely with what is called the Article 29 Working Group, which is the agency that represents the 28 EU states on this notion of data protection. There are really three critical things that we have to solve. Firstly, we have to be transparent. As an industry, to get trust from government and from citizens, we have to be transparent in what we do in our data centres. That is number one. Number two is that we have to commit not to have secondary use of personal information. We have to commit to that, and to use personal information to do other things like advertising: personally, I think it is obscene. We have to commit to use personal, identifiable information purely for the purpose that it was intended for, and in that way we get trust.

Then the third thing we need to do is the most difficult, because everybody has a consumer device. Many devices are provided, but many are bought personally, and the most dangerous thing is when an employee of a commercial organization or governmental organization takes a confidential document and puts it on a public cloud consumer service. That is really dangerous, so we need to make sure that we keep those two things separate. We need to get trust so that commercial people and government people can use the public cloud in a very transparent, safe, secure way, and then we need other cloud services, like traffic management, to enable more consumer and more openly available data.

Just to finish on Christian's point, I was just checking the bandwidth and checking the traffic flow, real time, in St. Petersburg, and it is pretty good. I think I am going to make my flight tonight. Thank you for the tip!

D. Schlesinger:

Wan Biao, you wanted to say something?

W. Biao:

I would like to make three comments. First, for sure, all the data, especially the private information and private data, should be respected. Secondly, I think that all the players, including governments, companies, regulators and operators, vendors, and ISPsshould all work together to work out a mechanism and policy for how to use this data. Number three is that we should have technologies to guarantee the security of that information, of that data, when we talk about openness, for example, with the storage solutions and the transmission solutions. Based on that, we should also not forget how to make this data affordable and low-cost as well. Then we should have innovative ideas, because when we get a lot of information, then we have a different way. For example, when we talk about mobile data, all these data are coming from mobile networks, right? How do we reduce the cost of the mobile network – 2G, 3G, 4G, or 5G – for the future? How do we reduce the cost? From Huawei's perspective, our idea is vendors, operators, and state organizations should work together to think about how to find ways to drive the cost of the network deployment down.

D. Schlesinger:

Thanks. I wanted to pick up on this question of privacy, and it struck me, Joe, that what you say makes great sense, but just yesterday we had the story of eBay being hacked. It seems that despite everything, all the precautions they took, they did mix individual employees who had access to the secret data, and somehow it was able to be compromised. With all the good will in the world and all the great statements in the world, how much protection is reasonable to expect? We can maybe talk to Michael here; you come from a place in Germany where people have very strong expectations of privacy. People must be looking with some horror at some of the stories that come through, and yet the world is moving in the direction where the public and private are mixed.

M. Kleinemeier:

Yes, thank you. You may be right, but it is also a question of generations. If you look at the Millenials, they have totally different behaviour in working with data. They are more or less open. Then we have other generations, and I am also part of this generation, where you say, “Okay, I do not want to share all the data with everybody.” So this is a bigger question.

On the other hand, maybe we can also make an example out of the health care area. You see in cancer research that today we are able to analyse DNA and to compare the DNA of one person with another so you can see the pattern of cancer. The question today is, because these are very sensitive personal data they are sharing on that, there is some need here to work together, because there is no privacy in the networks. I met last week with a board member, and he explained to me that his assistant shared all the secret documents via Twitter before they had the shareholder meeting. So you see, 80% of the problem is in front of the screen and not just in the system, because you cannot have 100% security in the system because it would overload the system and you could not use it. Here we have to do a lot of things, but sometimes, as in the example of the cancer research, this question is what we have to open up, because if I have a special kind of cancer, and in Philadelphia someone has the same kind and they have found a solution for that, we can share it. Here, we have to find ways to also open up this data, which is very personal.

A. Morrison:

I agree that trust and transparency are really, really important, and it is a big issue for big data. Last week, the World Economic Forum published a report on a multi-year research project they did engaging high-level leaders from industry, the private sector, academia, and civil society. They basically stated that we are currently in a crisis of trust. We are in a fog of data ignorance, and society is overwhelmed and anxious about moving into this interconnected world that we do not quite understand. Seventy-eight percent of people do not trust companies

that have their data to use the data right. But at the same time, I think it is important to not say that we cannot allow use of data for uses other than what is specifically stated upfront because a lot of innovation in big data actually comes from unexpected uses of data, from uses that could not be anticipated at the time they were collected. I think the key is to strike a balance between the privacy issues and the trust issues, and at the same time not hindering innovation around big data, because a lot of innovation comes from the so-called data exhaust, the transaction data that is captured that the customer just cannot be aware of.

J. Macri:

You are absolutely right, but maybe I was not clear: I was speaking about personally identifiable data, which is different from data that is taken at a macro level around trend analysis for research purposes. I am completely with you. It is striking the right balance.

A. Morrison:

I think what is also very helpful about this research by the World Economic Forum is that they are identifying the need for better data taxonomies, because people are confused about big data, open data, small data, and all sorts of data, and what they are proposing is that we look at data in a more structured way. From a consumer perspective, there are three categories of data: one, data that people share, understanding that they are sharing data, such as job applications or data that they shared somehow with somebody on the understanding that it is identifiable; then there is observed data; and then there is inferred data. Inferred data is assuming something about people and making predictions for credit score ratings and such that have quite an impact on individuals. I think a better understanding of people's sensitivity to different types of data could help drive a solution.

D. La Rose:

I have two comments. The data you provided around the trust element is interesting, and yet most of us, as consumers and users of mobile technology and users of social networks, are very comfortable with providing very personal information into the public domain. So where is the line between our responsibility as to what data we are prepared to offer – because we can make that decision – and the responsibility of the holder of the data to secure that? Obviously there is a requirement to have that secured, and I agree with Joe, that at the macro level, using trends and information, that we can actually get a benefit. But I also think it is naïve to think that we can put a lot of regulations on this thing. I am not sure that regulating the access to data is the right thing to do.

J.F. Baksaas:

Now we are touching on a bit of a problematic side of all of these data being collected about us as people and this and that, but if we try to make the problem a little bit smaller, we can at least begin with letting customers opt in and opt out. That is a good start, at least when you are thinking of using big data for commercial purposes. When we come into St. Petersburg, my being informed if I want to be informed about what is going on in the city for the weekend, where this is and where that is: that could be an opt-in service for me being a visitor to St. Petersburg. But then, of course, if that information is abused to the extent that I, as a visitor, am being put into a kind of business proposition that I do not want to engage in, then the trust factor is gone. Then of course the business idea behind it gradually erodes. But I think the market and customers, if they opt in and opt out, will gradually, in a way, mature this business by itself, by pure behaviour. Those that want to execute this business model of trying to sell me a service locally will gradually understand that mechanism.

Why is it that the telco providers have a certain trust level when it comes to you call me and I call you? And hopefully there is no Mr. Snowden or any others

listening in to us? At least, that was something that we got completely after Snowden. People's response was, "Let's encrypt everything, every form of communication. Let's encrypt it." That is not possible because it would just break down the capacities that are available. It is easy to say for Google, but it is impossible to execute an encrypted standard on Google's kind of communication. Smaller pieces, of course, but not on the whole.

New questions are being raised. Let this be a marketplace. Let this involve some regulation, which will come because there will be overstepping here and there, and cultures will define this differently. In the USA, once a person understands the currency of big data, they are out. In Europe, say, we have a closer relationship to consumers in that respect. The culture will also play a role in what is acceptable.

D. Schlesinger:

Thank you. Sergey, I would ask you, as someone running a B2C business, how do you deal with the privacy expectations of your customers, and has that security been an issue for you?

С. Федоринов:

Безусловно, для нас защита, конфиденциальность и связанные с ними проблемы являются очень актуальными. Я хочу обратить ваше внимание на следующее. Сто лет назад люди обменивались информацией, и это тоже были большие данные. Разница заключается лишь в том, что сейчас эти данные формализованы информационными технологиями, и в разнообразных источниках остается больше информации. В этом, на мой взгляд, проблема.

Интернет, как в том числе коммерческая среда, с одной стороны, предрасполагает к обезличенным и самым разнообразным коммерческим операциям. Многие недобропорядочные пользователи это эксплуатируют.

Мы создаем культуру другого Интернета. Мы давно стерли границу между покупателем и сотрудником: благодаря «большим данным» наши покупатели уже стали нашими сотрудниками. Вопрос в том, чтобы создавать технологию общения с клиентами, в которой будущий покупатель вовлекается в создание формата и тех инструментов информационного общения, которыми он же и пользуется. Я не верю в запретные системы. Вопрос в том, чтобы правильно возглавить это движение. Так, я недавно делал доклад, он назывался «Поколение дисплеев». Ключевой в этом докладе была мысль, что сейчас совсем молодое поколение обучается пользоваться iPad раньше, чем читать и писать. Это данность, хорошо это или плохо — отдельная тема. Эту данность также надо использовать, для того чтобы люди могли совершенствовать общение и принимать участие в создании, в том числе, информационной экосистемы данных вокруг себя, в которой им было бы комфортно и безопасно. В создание системы безопасности нужно вовлекать всех, кто ею пользуется. К этому предрасполагают сами «большие данные» и технологии современного интернет-общения.

D. Schlesinger:

Thank you very much, and I really appreciate your discussion about the younger generation using apps before they can read, because what I wanted to do in the remaining minutes is to ask the people here to spin ahead 20 years from now and really see where things actually are going, because we are clearly on the brink of some fundamental changes in our industry and our society, with a generation that is going a completely different way. Alla, I will start with you. From the development point of view, certainly the demarcation between the developing and developed world is going to look very different because of technology and mobile technology, especially.

A. Morrison:

A very good question. I think what big data is going to allow us is to basically use the limited amount of resources that we have on this planet. We have a growing population, and what we can do with data is use it like knobs. We can turn data knobs to modify the use of resources in the most efficient way. There are very interesting solutions in energy saving already, like the company Opower in the United States. There are interesting solutions in transport and infrastructure uses. I think this is the future, and this is what data can really do for society.

D. Schlesinger:

Fantastic, thank you. David, your crystal ball?

D. La Rose:

For IBM's perspective on this, I will come back to my original point: big data, as Sergey said, has been around a long time. It was around in paper form; it is now around in electronic form and digital form. It is going to continue to explode. Our point of view is that it is not the big data itself but the analytics that you apply to the big data to provide insight, which is to your point around the dials. Where is it going? From our perspective, it is going cognitive. That is the next step. It is systems becoming smarter, systems learning. Then it can be applied to health care or public services. From my perspective, it is cognitive.

J. Macri:

Absolutely, big data has been around for a long time. What is different is the explosion. To make that real, the estimate is that more unique content is going to be created this year than in the last 5,000 years. That is the current estimate. So that is what we are dealing with. I want to come back to a point that Christian actually made, and he is absolutely right: it is going to be about the natural user interface and how one can interact with that data, not just using a keyboard or

even a touch interface, but using voice and gesture. One example of that, as we close, is a technology we developed for gaming called Kinect. It is actually used in health care too for palliative care for people in remote locations in the Nordic countries. They are using body tracking to see what is happening with these patients remotely, and that gesture technology is then reading information back to the clinician and giving them real-time information. That is what we are doing today, so imagine what we could do in the future.

C. Morales:

I would just like to add to everything that has been said here, the technology and the mobility, and add to this big data and analytics: imagine 5 or 10 years from now, when each of us has some extension of the smartphone, the tablet, the PC or whatever device we call it, so that we get some additional pieces of information when we need it. This is going to help us exactly in the direction Alla was commenting on, which is to optimize the usage of everything we have on this Earth. There are going to be 8 or 9 billion people by that time, so this is going to be absolutely critical and key to addressing big issues like energy, health care, climate change, pollution, the environment, and so on; all of those big issues that humanity has got to start thinking really seriously about for the forthcoming years.

W. Biao:

I am quite positive about big data in the future because big data can allow us to share all the information. The world is becoming more flat than ever before, and also, big data can drive innovation much faster than ever before. So for sure, big data can improve quality of life as well.

D. Schlesinger:

Thank you. Alexey, from the perspective of planning a city's growth and planning a city's data, how do you spin it out two decades from now?

Д. Шлезингер:

Alexey, from the perspective of planning a city, planning a city's growth using Big Data, how do you spit it out 2 decades from now?

А. Комиссаров:

Спасибо, Дэвид. Я бы хотел сначала выразить мнение по поводу дискуссии вокруг защиты данных. Мне кажется, что относительно Big Data этот вопрос не является существенным, потому что преимущество «больших данных» — именно в анализе общего массива, а не конкретной информации о конкретном человеке. Когда мы обращаемся к «большим данным» в городе, нам неинтересны данные о перемещении конкретного человека: нам важно смотреть тренды и общие потоки. Я бы хотел воспользоваться возможностью и поблагодарить Дэвида и всех коллег: дискуссия эта лично для меня очень интересна, и я наметил для себя некоторые новые возможности, которые город может использовать в отношении «больших данных». Я также понял, что нам нужно больше работать с теми, кто такими данными обладает, и находить пути для сотрудничества. Спасибо.

D. Schlesinger:

Jon, your crystal ball?

J.F. Baksaas:

You asked about 20 years. That is an enormously long period if you look ahead. But if you look backwards, in 1984, I travelled China with my backpack without a mobile phone. There were no high-rises on the other side of the bridge from Shanghai. There was only a green area. In 2004, Telenor had 20 million customers. We were opting for emerging markets. Today, we have 180 million

customers, and we are deep into data communication in our business models. Twenty years from now, I think we will look back at this kind of debate and say, “Wow, did we really discuss that?” This will become the natural way of living, and the interface will have moved many layers, if you ask me. Will it be in this format or that format? That is difficult to say, but this is really changing the world, as we have seen in other aspects that have changed the world over the last 20 plus years. In that sense, I think we will see a lot of community.

D. Schlesinger:
Thank you for that. Michael.

M. Kleinemeier:
Yes, it is easier to look 20 years back than 20 years ahead, but I think we have some new initiatives coming up: Internet of Things and all that stuff. I think we also had big data in the past. The question was what can we do with big data and how can we analyse this big data. There is also the new so-called in-memory technology, where response time is no longer an issue, and also the amount of data we can analyse in real time already matters today. This will give us totally new opportunities in working on smart cities and smart energies and optimizing our resources in the future. I think we have a lot of stuff to do in a collaborative way in the future, but also optimizing and getting the right conclusions out of this big data will, of course, change the world, hopefully in the right manner.

L.M. Amago:
I think cognitive data has been mentioned already, more intelligence in the raw data that we are gathering today, with an important component, which is more intelligent machine-to-machine communication. As an example, I have come from Israel. I was there at the beginning of the week at a small start-up with an advanced product, which is sound recognition. But not voice and not songs: it is

noise. They are proving that they can supervise machines, coffee machines, air conditioners, industrial machines, etc., just by the pattern of their noise. They can substitute most of the complex electronics that these machines have and replace it with a simple chip that understands the pattern of the noise. It knows whether the machine is working properly or is getting into a complex status, and they can save a lot of money by analysing this pattern of noise. This is just an example of young people out there understanding the world in a completely different way, and I am sure that in the years to come we are going to see this machine-to-machine communication with much more intelligent communication that will provide new types of data.

D. Schlesinger:

Thank you for that. I have found this a very, very stimulating session. I think, for me, when we have been talking about all this innovation, what has made me very hopeful is how often the words ‘trust’ and ‘collaboration’ have come up, moving from a time of pure competition to one where competition is actually framed in very different terms, with much more of a trust element. I think that can only be hopeful. Please join me in thanking these wonderful panellists, and we will see how these years play out. Thank you very much.