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>> Good evening, everyone. I think -- the pitch yesterday was good because we almost have a full house. I have a lot of people compacting as during the cocktail yesterday to discuss whether they're coming tomorrow or today to discuss here with us. Thank you very much for being here. As you already understood, our moment here will be very forward. The idea here is not the stage momentum or the target momentum. We are here to do workshop. It's very important that everybody will be contributing with us and discussing the projects that we have here.

To start, we are just trying to frame a little bit better what we have started yesterday. Me and Alex. To give you an overview about what -- what will be the methodologies that we're going to be using here to describe what you understand this month's CD project and the AI apply CDs.

>> Yes. Welcome, everybody.

>> Can you hear as well?

>> Do we need -- maybe forever the video. Okay. So welcome, everybody. It's a pleasure to be with all of you today. Again we'll just start this quick presentation to bootstrap the morning. The whole idea of today is to try design projects that through AI impact CDs and communities. So we do CDs beautiful room as kind of a safe room for all of us to try and test idea, design projects and try and

see what problems we want to solve first. So we will start with a quick presentation beforehand.

>> I think we can put -- the first one is already there. No? So we're discussing about -- first one we're not doing Alex. We started discussing about some -- some key problems that we have -- we have framed for these discussion here and how to use the Artificial Intelligence. Let's see if you got there. The last one.

>> By the time we start the 44 seconds left to the presentation, all of you might have received a paper that we'll detail real quickly. It will be a way for us to introduce a real quick methodology so that all of us can have some kind of background to work on the same area today seeing how AI can impact the different subjects and sub-tracks that we prepared for you. And the idea in here will be all the session will last an hour and a half. We'll have less than half an however presentation every time from the different panelists and then an hour discussion with all of you to see how you can contribute to the problem design, mission design it will have. And then try and figure out tests some ideas as if we're kind of a big safe room or simulator in here.

>> Just back to our discussion from yesterday. We understand as mark at least under five main components. As I said yesterday, first it was in the capacity and it will be more and more about technology. We are not just talking about ICT, but we are also talking about where you're calling now IOE internet of everything. Everything will be connected in a very near future and will be generating data and we can use this data to enhance and to foster and to power the projects. Second, projects should be centered to systems. Third one. If there is a big reason to ice mark cities it's to make better the life quality in our cities. We should understand all of these companies under the perspective of the new economies and we're going to be talking a lot about these economies. Many of one called sharing economy which is really shaping the new society we have and the last one we are looking for technology to promote resilience for our cities. Been working with a methodology called the CDs mark top. Idea is to put it together all the -- to accelerate the projects under the perspective, under the mindset of I start top. We need -- we have changed radically the way we're managing companies and we can use this to change the way we are managing governments and cities. Just big numbers for you topped how deep is this problem and how beneficial can be if we start solving. Just in the states, there is an estimation that we spend every year $121 billion due to traffic congestion. Just by solving this problem, we already have budget enough to address the problem. We don't need to wait for the budget. The budget is already in the solution. If you come to health and if you have a session, special section today just for health according to the land set reporting, 95% of the world's population has at least one type of disease in a very broad way. If you are 100 people here

now, at least 1 of five of us has a disease. You took something here, you spread it around the world in just -- I'm coming back to Barcelona tomorrow and Sunday flying to Brazil. I can contaminate two continents in one week.

And last but not least may be the most important one that is talking about the future, according to UNESCO, 64 million were out of school in 2017. All of these three problems, what they have in common is we need to change the matrix to solve the problem. In my country, we have some very remote regions like Amazonia that we have one kid far more than 10 kilometers than the other kid. It is exactly using technology. So we put it together the methodology called SmartCitys plus. The mindset of start top and basically we have four tools or four steps that we use to teach two cities in order to make faster the process of the SmartCity. First of all, our six sense, us, we don't want the new city. We want the better city to leave. The DNA of the city, the history of the city is what attached us to the city into our communities. Our city must start learning how to pitch themselves like elevator pitch five minutes to sell their ideas or their concept to systems and to investors. Politicians should stop acting -- stop top CEO. And DNA about when we come to new projects and green feud operation around the world, the biggest concern and the big issue that we have here is that these new CDs don't have DNA. And it's very difficult to attract people to these cities. Have the example of some in Korea been there a fantastic place, but they're supposed to have 300,000 people living there. They have 70,000 and it's ready. So one of these smartest cities in the world being done.

Second one, keep it simple. Before talking about master planning, change your CD, doing billionaire projects, start solving the problems and that's why you are here with us. That's why we should support cities to solve problem. Address problem by problem. Measure first what will be the real impact of solving that problem. Keep it simple. Solve this. The results will be the sum of all these solutions, then probably we get a SmartCity faster part of them 10 years planning to do something when it comes to implementation. It is already gone.

The third one and very important one, find partners. I have an example of my CD reel. When we -- we started to put a common center for 3 big events that we are doing there. The Pope was coming in 2013 and 2014. We had the word cop 2016 the olympics games. Time to start with the common center. IBM, what I can do for you the state of the art of common sense is fantastic. IBM came. When they switched it on, in just five months where you had 900 cameras on this strip, they could never control anything with 900 cameras. To give you an idea, London has 16,000, the largest one in Europe. Moscow has 140,000 cameras. We know it has the broader city. What you did distribute more than 900 cameras would cost the same price as doing the command center. They want to choose San Francisco and a company

called ways social network for GPS, it was very popular interest we're using ways when the police was checking stopping people that was drinking. Collaborative, sharing economy, ways came and started to mull all the data to solve the traffic -- to mitigate the problem with traffic. At the end of the day, we from night to day got 1 million users, cocreating solution for traffic and ways got that fantastic final product to sell to CDs and was in Malaysia last year. They had already bought this solution from ways. And the last one that we're going to be discussing a lot here the two that we're using now to do mark cities to put the private money inside public projects is through PPPs. Public private partnership. What you are proposing now and we have our colleagues from Amazon that will be discussing with us with what they did in Amsterdam is a four piece. Why not bring the people with the new concept of co-creation and crowd founding to make our new CDs for us. Don't get me wrong. It is not asking money for people because we pay our taxes, but it really put people in important steak hold in the process. So my big idea to start the day, I have a romantic definition for SmartCity before going to the technical one that SmartCity for me under the perspective of the systems are places where everything conspires to make your life better. You even don't understand what has been made or what technologies are behind, but you feel like everything is there to make your life better. Am

>> thank you, Renato. I will surprise you. I the try and talk about an ideal city. The trap we don't want to fall into today is tech for tech having the impression with this kind of acceleration of an IO and so fort. Make sure we can use the technology not just to basically solve everyday problem that we see, but also to imagine and anticipate a better future for a soul. So we don't want to fall in the trap of talking about SmartCity as a kind of place in which you want to Connect everything to everything. You want to from smart to intelligence to ideal. I want to reboot the concept. You may continue is a concept from the 15th century back in Italy during the Renaissance. You had this idea with the amazing images paintings by the Foley Benem. Where we try to imagine at this time, what would be the perfect harmony between humans and architecture. Today we're talking about another kind of architecture which is basically IT, AI, everything and what we will have to do today is find the proper collaboration between humans and machines for the future of cities.

So I really want us here to try and imagine, try and picture an ideal city might look like and maybe we might find inspiration from the past and are the ways in the near future and I think this one might be one of them. When we talk about an ideal city and we look at the opportunities that we have today, we discussed a little yesterday about the few opportunities that AI brings to the city. So we see a lot of different opportunities with IOT and so fort so I wouldn't get into the details, but what is really interesting is

we see with more powerful AI, the mobility to bring simulators to bringing virtual CD that will look just alike the city we own and test a lot of things. Kind of, you know, doing crush tests with like fake passengers for everything within the city that I think is really amazing and interesting. We also see the convergence between the simulators and video games. We ourselves have been working a lot on this idea with my company and this idea of working in friends for different cities that we make sure that we can basically copy in the virtual world the first CD that we and know make sure we can test everything we want within the city to find the right solution before we implement it in the real world. So from simulators to city builders video game and we have here the example of SmartCity -- I'm sorry. Sin city where we can basically have set this kind of example. We want to go to ITU to this room C2 in which we want to try and set this idea of a safe room in which we can simulate different ideas in which you will be able to try and help the different project that will be presented, try and help them frame the problem that basically they're tackling and try solutions because at the end of the day, we will try to see which solutions we want to imply, we want to impact and imply in the real world. So imagine this place not as a video game for sure, but kind of a safe room to try ideas and try solutions.

Then I want to insist on two last ideas. The first one is collaboration. How to make sure that this safe room works properly during the day. Yesterday a lot of people talked about the necessity of basically finding common ground in interdisciplinary fields for the different projects we are tangling today in the different sessions. Within this session on SmartCitys and communities, it is so important to make sure that everybody in the audience is available basically involved to speak whatever the disciplines, whatever kind of field he represents in the role he has in society. We can see a miniature of the world and we want to make sure that everybody can be involved no matter the kind of stakeholders also that can be involved in the city.

And last, we've been discussing yesterday a little about the possible to find some solutions in one city that could be really relevant to another city in the world. We don't want to be just talking about developed cities that have look-alikes and all of them in the same manner in the next few years convergence. We want to see how maybe developing countries find solutions that can be relevant else where and how we find solutions in developed cities that might be relevant to other parts of the world today. So this connection in CDs is something we can build today because we're lucky to have panelists from 11 countries and examples that can be really relevant to try and figure connections between them.

And lasts, what we wanted to do today is really to design AI projects to impact SmartCitys and communities. So what we will do today is try and set two roles so that everyone as soon as they

want to basically be part of this will find themselves as a role or mission designer meaning going from a problem owner, having the knowledge of a specific thing around the SmartCity to try and help us frame a problem, frame a specific X to solve, if you may.

And another part you may want to play and you can play both sides during the day is a solution designer because we want to make sure that we go for radical solution for everything using AI and we are sure that within this audience we have a lot of opportunity to try and design solutions together. Our purpose today is to make sure that by the end of the day we have at least one, two, 3, four projects for four panels that could impact the world even better and maybe scale thanks to you.

>> Okay. Time to start. I would like to invite our guests from the first panel Professor Nakao, Dr. Lee, Andrejs and Brian to join us here on the stage. For each panel, we have four speakers and one of the speakers will be the moderator to interact with the audience for the questions. I will give the word to professor Nakao is the mode rater today and we will start with the first speech we have professor Nakao will be from Brian. Okay?

>> I will add real quick. I'm sorry. You just received the paper that can be an inspiration for you to try and take notes on the different projects you have here. During the discussion we all have together for you to try and help us frame the problem find better solutions and if you want to address the audience and the panelists about specific questions that can be interesting to this kind of conversation, please do talk.

>> You don't have it?

>> Okay.

>> If you want to use the -- I don't use because it is almost the same size of me. So nobody can see me, but yeah.

>> AKIHIRO NAKAO: Hi. Good morning, all. Can you hear me okay? I am Akihiro Nakao and I am the moderator for this session. Thank you, Renato and Alex for this morning.

Okay. So I'm going first and pass the microphone to the three speakers. So my quick talk is about the communication infrastructure for future SmartCitys. And I'm playing the role of chairman of fifth generation mobile network architecture. And I'm going to touch a little bit on what is going on in this era. And Dr. Lee may have a detailed opinion about this too.

So if you don't know what is going on in the University of Tokyo, surprisingly, our president put this new Tokyo future society initiative in a top page of the university with Tokyo web page. And so we put this SDGs is a very, very important issue. The purpose of this initiative is to closely work with the industry partners and we have 170 projects registered in the web page, the top page. You go to that web page, you can look up all the projects related to SDGs. And we divide the 170 projects into 70 goals. As you may know, SDGs

have 17 goals. When the industry people look at this encyclopedia of this project, they exactly know which project is related in the story of projects. So it is easy to find a partner as Alex pointed out, we need to collaborate together and this is the two that we created.

One of the project that I'm running as a PI together with the professor (inaudible) and out of the university of Finland is about a 5G mobile network. And so as Renato said, we have the goal 11, but together with 11, we think that the goal 9 is very important because it's a part of infrastructure. We strengthen the infrastructure to support all this mobile communication. I think many of you here cannot do without the mobile phones anymore because every day you have to communicate with people in a society, your friends, your families and all these people that are close to you and this is about a next generation of the mobile communication. And those who are not familiar with the 5G mobile network or KPI, I can just introduce a little bit about this new infrastructure. We can achieve 10 gigabit per sec bandwidth in this five -- maybe more than 10G. That is running a 20G and this means that you can get the 4K and 8K video on your Smartphone real time. So it's good. It has mobile broadband acronym is EMBB. So it means that you can realtime broadcast the very large content to your friends and your family members.

So one of the projects that I'm running where the KDDI is a 4K and 8K realtime surveillance using 5G sellers. It is not available in Japan yet, but in year 2020, we have olympics and probably pick games and we're pushing this service in of 5G mobile network in Japan. One of the applications that we are looking into is a video surveillance because for SmartCitys, public safety is very important. And also as you may be surprised to hear this, but the university campus is not the safe place anymore. So we see lots of rundown instance happening on campus. So while we try to achieve is the realtime radio surveillance using 5G seller. Look at my happy face there to have this silent drone. We can load the 5G mobile device on to this giant drone and shoot the realtime video from up in the sky. And this is a recorded one. I'll negotiate it with the vice president of the school for six months to shoot this video because it is considered not safe to fly this giant drone in the sky. If you look at this movie, you can spot every man, every human and also we go from the sky because this is 4K video can stream. But unfortunately, this is recorded not the realtime yet. But with the 5G, you can do this realtime and you can watch what's going on the ground in realtime precisely and then if some random thing happening on the ground, we can report to the police or in security guard on campus.

Okay. I don't have much time to go into the detail, but so let me talk about another aspect of the KPI of the 5G mobile network. This is called Atro load communication. So it's a very low Legacy

that you can achieve in this communication. It's going below 1 millisec. One (inaudible) of a second you can do -- you can transfer data to visual. So the project that I'm running here is that they're using this very low latency communication. So using a deep learning, we can do realtime obviously recognition using a deep neuro network. So I'm running a camera in my lab and using this GPU, it's a very small one. You can load this app in the drone, not the giant one, but the small one. You can put it on the drone and from the sky, at the same time as you're shooting the realtime video, you can on the fly analyze what is going on on the ground by this recognition. So this is me working in the lab and then is a webcam, but at the same time, GPU cam analyze this video feed and recognize our (inaudible) here. Okay? So I am recognized as a person, remote, table and chairs and I am holding a cell phone and I'm actually trying to deceive this deep neuron network. If you put the phone near the laptop, it is recognized as a mouse. But if you're holding them on the cell phone, so then it is recognized on the cell phone. But this is two frames per second. It is too slow, but if you change the model of the recognition like at 15 frames per second, it is enough for recognizing object from the sky.

So as I said, it has mobile broadband and ultraliable latency communication. You can use these technologies for SmartCitys especially public safety. Okay? But for that, we can do the AI for (inaudible) recognition, but also there's another element here so if you use the 5G mobile network for enhanced mobile broadband and load latency, so allow the same pipe we have to send this very different kind of traffic over the air. So this means that you have to be able to recognize application in a traffic and there we have another opportunity for applying AI too.

So this is the video that we recognize from the traffic how to identify the application kind. Imagine that this is the realtime video feed and -- and recognition at the same time. So I'm showing that I'm operating the smarter phones, but my network can instantly recognize what kind of application is flowing on the pipe. Okay.

So I'm stopping here. And later we can discuss with all these experts. I'm talking about a little bit of challenges here. So this is the prediction that (inaudible) presented in a predictions article. 50% of our citizens share data by the year 2019 and so there's an issue of privacy. For example, people don't want to get their debtor analyzed. For example, open a video feed, faces are recorded and analyzed and in this report, it says that 50% of the citizens can and will entirely share their personal data for benefits, for example, public safety. I would like to ask all the panelists later that -- is this going to be really true. 50% by year 2019, are we ready to give out all the data to be analyzed or not? We have several mobile IG data being used and I don't have time to cover all this, but later you can check out my slides about all these

companies using data for benefits for SmartCitys. Okay? So challenges, communication, infrastructure, network machine learning and it's computing, sensing and without privacy violation and viable use cases for SmartCitys. And this is my conclusion for my talk.

So AI and machine learning already started to play a significant role in communication, as I said. And the investment in 9 and 11 necessarily for smarter cities. We actually started a study group among academia industry and ministry and I am taking the lead on this activity how to use AI and machine learning in the telecommunication infrastructure. Okay. That's my talk. And Brian maybe. Thank you very much.

[APPLAUSE]

>> BRIAN MARKWALTER: Hey, good morning. Should I -- they on? Okay. Almost there? All right. Good morning. Thanks for coming. Thanks for inviting me to be here at this important summit. I am Brian Markwalter. I am the consultant with trade association. We are based in the U.S. We represent about 2,000 of the state of the art technology companies. I run our mart research and our standards department. So it is exciting to be here. I'm going to talk from a really high level perspective about what we see going on in a market place in terms of consumer technology and its relationship to AI and SmartCitys. We're probably best known for running the biggest technology trade show in the world called CES held every January in Las Vegas. You might see it on the news. It sort of sets the stage for the technology calendar for the year, if you will. And also gives us a unique perspective on what companies are rolling out and so what we're starting to see is congruent with what's happening at this summit. We had our first SmartCitys market place this year. We have self-driving vehicles. We basically have every car manufacturer in the world, or at least the top ten where they're demonstrating latest Connective vehicle. Lots of health and fitness and AI was one of the top themes this year. We have something like 4,000 exhibitors and 900 start ups there.

So as I was thinking about what to say for this presentation, it occurred to me that, of course, IOT is related to SmartCitys. These are -- IOT is happening and I thought about these 3 topics. AI and SmartCitys are the two topics that are the name and theme. IOT is part of making SmartCitys. What is there for us to work on? I think there are quite a few challenges. This growth is automatic because of what's happening either demographically or otherwise, but does not mean it will happen in an intelligent or most productive way. We had some references yesterday to the growth of iO/T. So I'm going to put up -- this is in part to show there is a wide range of estimations of the growth of IOT, but it's pretty easy to say we will have between 30 to 50 million connected devices in the next three years or so. They already outnumber people. So we have more devices that are smart and connected than ever before. We also have had

references to the transing globalization. These are UN's numbers. You can find UN's estimates on urbanization -- I'm sorry. Urbanization. These are world wide. So by 2050, 2/3rds of the world's population is going to be in urban environment. What might be more important -- this does not show the regional distinctions and I think we need to consider these distinctions as we think about those projects for AI and SmartCitys. 90% of this urbanization is going to be in Africa and Asia. So you'll see it not equally distributed around the world. AI. AI has been a fascinating subject. If you are a practitioner of AI, you know we have been working on this. There was a mention yesterday of the 1950s sort of get together at a university in the U.S. where the professors thought they could knock out like a 3-month project. They could solve AI. Give them grad students in there three months and they have AI taken care of. So now 70 years later or so, I think now we can finally say that AI is truly happening in a commercial way if you're studied AI, we have what we call AI winters and have the peeks of research. We had one -- of course there was one in the 50s and '60s and late '90.S. Those necessary to really solve practical problems. I worked on some of this, but what we see and we can see this at CES and everyday lives and especially in the U.S. So I don't know our smart speakers. How many are familiar with smart speakers like Amazon, echo and those devices? In the U.S., they are very popular. I know it is not a universal thing. But we well 300% growth in smart speaker sales and that was a very competitive environment between Amazon, Google, Apple and others. Apple is a more receipt addition. But you can buy these devices for about $30 around Christmas time. So they're very popular devices. But we also see these smart -- these are driven by AI. Whether the average person knows it or not, they are using AI today and have been using it with Syrian other interfaces. But we see it finding its way inside automobiles, inside appliances and inside the home. So the one point I want to make with respect to these smart speakers and digital assistance is I think people are already experiencing -- I forgot how Renato put it, but in their home, they're experiencing technology coming to meet them and make their lives better. And we should -- we should expect that people will expect that same thing of their city. So if their home sort of responds to them in an intelligent way, I would think that it's not going to be so unnatural for them to see that within their city. I want to make one point here. I am happy to share my slides. We did some study. We looked at a bunch of other states including McKenzie. We're really just at the friend end. If you look at -- front end. Even though we're spending quite a bit on AI, the companies still feel they're doing that as RND. It is being implemented in many ways, but I think we're at the front of a big wave of commercial implementation. The leading sectors. So it's not surprising that financial and sort of in the tech world or

the leading, I find the ones I circled in the blue to be more interesting for SmartCitys discussion. Energy and resources, those are the ones that are super impactful for SmartCitys and they're the next in the way of AI applications. per we've talked about barriers to grow. We have done two different studies. The study I mentioned on AI where we talked to a bunch of different experts. There are some understood barriers to growth. Some of these are related and there's a set of barriers that are tied up in privacy. So this -- the question you teed up earlier about privacy and willingness to share data. Those affect AI and smart cities. So there's a whole other track as you're aware of. Cost is a big issue. Cost for people and return on investment for both government and private. So we have to see a return on investment. In the SmartCitys area, there are also some other kind of specialized barriers depending on how your governments are structured. At least in the U.S., there are often many different jurisdictions that are involved in a city. So it is not necessarily just a city that gets to make a decision about deploying smart technology.

So I do not have a specific project proposal. As a trade association, we really represent our members and try to help them succeed. I do have some ideas on things that will make good project proposals. I'm going to go past this and we'll save those discussions for later perhaps. Thank you.

[APPLAUSE]

>> okay. Thanks, Brian. Maybe Chaesub.

>> CHAESUB LEE: Good morning. My name is Lee. I am one of the editors of this. I welcome you as one of hosts.

Today, I want to talk about some of these smarter cities. I'm trying to bring you this activities in I2 briefly, very briefly. As a (inaudible), I want to tell you some subject. Title was a little -- okay. Let me (inaudible). In I2, we started this study from year 2008. Maybe you know of this IOT. We started a study on this WSN. So we have a sensor network year 2005, '06. Having (inaudible) a little bit of a long-term study, we realize IUT will be getting more critical used approaches. It was very nice in the beginning stage, but we recognize problems like something need of this collaborations. How we can handle that. So we -- we organize our study group called the study (inaudible) on IOT and the smart (inaudible) of the cities. So we started this study together this IOT to support our smarter cities that is a study (inaudible). It develops a standard inquiring a smarter city KPIs. (inaudible) developed our KPIs. Smarter city KPIs around the 78 items. We already applied these KPIs. The first city was Dubai. Very happy. Dubai had quite haven't with us. We took one and a half year on site studies. All these our KPIs we collect the data from Dubai city and analyze, evaluate what is the status of the smart auto buy.

With that, I am very happy Dubai city recognize 10 missing points.

So they organize the new project based on this KPIs. Second city study was finished with a single poll. So it took around a year and this is one (inaudible) how single (inaudible) is satisfied with our KPIs. And around 50 cities trying to apply our KPIs. Our KPIs adopted by united nations collaborating with the UNEC and UN habitat. We organized called united smart sustainable cities. They utilize the KPI as basic. You may find this document from our website like our KPIs that applies the 50 cities. You can find these KPIs.

And also our group is continued on study. We can utilize and facilitate the smarter cities and also the U for (inaudible), they also have address of this AI issue. So they study continuously and the reports you can find them from our website. So I2 website, you can find those documents.

Then from now, I challenge with you. We say smarter city. Smart is a nice word. But let me think about how we become smart. If you can talk about smart to the person, it may be possible, but we want to make city smart. How? Smartphone is relatively easy, but we don't know why we call this a Smartphone. We call this phone as a Smartphone. And something it was a little bit better understanding, better reactions. How can we make the cities being smart. This is very high level abstract architect to show layers, models. Someone you follow a family with the ICT domains very easy. Infrastructure on top of this, many devices connected. They produce data. Data should be collected on platforms. Platforming (inaudible) some capabilities to develop Soviets and applications, those service and applications should be applied or provided to the customers or citizens based on operational principles or regulations. Infrastructure and Connectivity being used many different technologies. They might need intake gritty and if you have a compatibility different service application with people and operations -- operational regulation and policy will be supported by collaborated knowledge. It will be very nice. (inaudible) those areas from the bottom (inaudible) (sound cutting in and out) it might be good to support better convenience. Might be a little difficult to say this is really helping for being smart. If you can focus on top of this from the data to the top, it might be good to say improve our quality of smart. If you can make of this, I'm pretty much sure it's not complete, but it's good enough to say being smart. Whether we challenge city or community or a nation or a global, you do not forget of this those elements. If I want to make of this smart something, we needed those approaches. But unfortunately, you caught up the situation. Today's situation is if based on this abstract model, everything is (inaudible). It is individual in industry domains. One of the typical domain is the (inaudible) industry separated. Inside (inaudible) industry, there are many different articles. Housing industry particularized. All

information is now separated. This might be our difficulties because of this fragmented. So our knowledge is very restricted and even operational wise efficient in effectiveness. It might be difficult being smart.

So based on this, if you can challenge from technical side, my bureau has a (inaudible) of the technical standard of development. The communities or all those technical communities bring all those each layers, each areas with those features. It would be not the complete solutions, but might be we may (inaudible) something more consolidated frameworks for each domains rather than fully (inaudible). If you can say that, it would be good to say SmartCitys or smart communities. Just -- from now on, I have to challenge.

Let me ask you. When you heard about this smarter cities, what is your understanding? This looks like smarter city. Not bad. This much better? Looks real smarter cities? What about this. Oh, that's a smarter city. What about this? Hmm. Those are your feelings? But don't forget city has been built and change it based on the geographical locations. There were history, cities behavior, all this culture. Our goal is not to make every city same equal unified. No. This is big challenge. I want to bring you in this challenge because each city different. We do not expect (inaudible) of any smarter cities to find such (inaudible) very famous popular frank ice coffee shops or pizza house. That's awful. We do not want. This is important message. City has their own culture. Cities is their own cultures and behaviors. So now we are trying out this city, the smarter cities between the physical space to the cyber space. But we have to take into account this boundary is the point take into account the city priorities. Cultures, geographicals all environment. So our challenge is if in the case, it is time to think about our AI as well as centralized or distributed. Until today, we expect or we send out data to the central AI motion or platforms and then process and this you come to my device rather than continue it can take into account of each city, they're all specific things. We may think about -- we can't keep our data, AI process or (inaudible) come to me process and (inaudible). If you can say this, this should be enough to say distributed to AI. And also this AI would be rather than generalized tailored for each cities, country environment developing much better. So this is my challenge how we can address this AI learning for smarter cities. Thank you very much.

[APPLAUSE]

>> Thank you, Chaesub. Andrejs?

>> ANDREJS VASILJEVS: I am Andrejs Vasiljevs. Thank you for the previous presentation. It gives me a good transition to the topic that I want to address that every city is different. We cannot come as this unified universal solutions that would fit all. And one important aspect that should be taken into account into building and

solutions for SmartCitys I like the language diversity. Languages that are spoken by citizens in the cities and all these cities are increasingly multilingual migration, mobility of work force, tourism that increase as diverse landscape of different languages and cultures with mixing in cities. And some cities are multilingual historically like (inaudible) or home city. Some built on immigration. Some new multi-lingualism. Some bilingual by nature, but almost all the cities have this diversity of languages and what needs to have solutions would address all the communities, all the language communities and all the visitors and the people who want to benefit from SmartCity solutions. That actually deflects the situation on the global world. They currently look on the language scale they're like 15 dominating languages without (inaudible) major developments and technologies and including AI but our focus of the global players and development but the other half of the planet and many other different languages and a way of disadvantaging them with AI and technology and all together close to a thousand languages spoken. Of course not all of them economically viable, but still few hundred languages are spoken by millionaire speaker communities.

So this is important to embrace the developments of AI to create multilingual AI solutions for SmartCitys and for smart multilingual communities to make inclusive societies to enable everybody, access information in public tone and creating in participating in the digital developments. This is the mission of our company to enable languages in the digital world by using AI technologies by developing machine translation and virtual assistant technologies for different applications. But I would say that AI developments have had significant push and then impact on language and knowledge development making services like machine translation approaching the quality of human translation. If you have ever been in some foreign city or a language community, but you do not comprehend, you can be easily lost in translation situation where technologies could be essential to help you and to dealing with your needs.

AI developments in our company have helped us to advance for smaller and complex and diverse languages and what was proven by the first place with regarding the global competition in machine translation and beating other players including Google. And that shows that technologies are ready to support all communities, not just the biggest one. We just need the real end commitment to deploy and use these benefits. I want to show you few examples how some -- how these language (inaudible) are used to break language barriers and enable multi-lingual communication. One of these examples is machine translation service deployed by Latin government that state language official languages Latin are still quite a big other language communities. For the government, it's impossible to provide those services in the languages by human translation. It will be by far too expensive and also our big time lag in the nation. So machine

translation is efficient solution to enable multi-lingual E-government services to integrate machine systems through API and other services so that people can choose the language of what might differ in communication with using government services. You have some examples like this machine translation services is integrated in the (inaudible) and there will be platform of eGovernment services. And it greatly had helped to make eGovernment services accessible to these multilingual communities by politicians.

Another important show case is application of machine translation in a European union work. Every half a year, some EU country takes our precedency in European counsel with thousands of people came to (inaudible) for large political events. Bulgaria and organizing hundreds for all European representatives, politicians, business people, journalists and next half of the year, they will be organizing in Austria. So in Europe, we do have 24 official languages from European unions. This is a big challenge. And again, machine translation has proven to be efficient way how to tackle this challenge and to provide real translation of information between these languages. And this is just a snap shot of the digital summit for leaders of European countries gathered to discuss digital future of Europe and the enabler of this large summit and communication by providing translations to different means on computers and mobile phones and are integrating into environment of professional translators. This is also screen shot of Bulgarian presidency and machine translation is integrated into empty service.

We'll skip that. I should mention that we are happy now to work this ITU on the pilot project. IT also has a multi-lingual challenge where our six official languages should be supported by ITU. Hundreds and thousands of documents had to be translated and machine translation significantly can speed up translation process and (inaudible) cause of translation. And the final example how smart governments and also smart politics can do that make services more friendly and usable. I open to our citizens application of virtual assistance and chat box to access to make -- to service citizens and to make access to services more easy. And the example here. (inaudible) is virtual assistant. Unais the newest employee of business register in Latvia that helps small and larger businesses and start ups to set up company to follow the documentation workflow. Actually to remove barriers in starting and doing business in (inaudible) by providing 24/7 service to help provide guidance and support with what people need.

To conclude this, (inaudible) opportunities to make AI too inclusive and multilingual. We just hear today when the question was asked about smart speakers, but only few of people who have those. I think one of the major reason for that is language reason. With smart speakers are very good for English speaking people, but they are not good where you cannot use those for my language, for Latvia

and many other languages you cannot use the devices. So I believe by committing to make the AI services multi-lingual, we will make AI much more inclusive and accessible. Thank you very much.

[APPLAUSE]

>> Okay. Thank you very much. We have about 20 minutes for discussion. Could you, Marie, pull up our (inaudible) slide. I took introduction by slides and the representation approach today. We have including me four speakers. I will represent (inaudible) and Chaesub is standardization. He's the director of TSP. And Andrejs just spoke about he's a founder of (inaudible) and (inaudible) spoke about multilingual and Brian is representing consumer technologies. And everyone put their expertise. They have -- each one of us has a special field to be applied to SmartCitys. I like to ask everyone one of us, including me, how you extent your specialty to others so that we can scale your expertise to better or smarter cities? For example, hearing other presentations, I thought about, for example, multi-lingual technology that Andrejs has. I am specialized in telecommunication area. I do a lot of standardization activity too, but combining this multilingual technology with the telecomcommunication, the future in telecomcommunication infrastructure, we can do something like a simultaneous communication. Both directions over time. We don't have that kind of service yet, but that's how we combine to special fields together to scale individual field and standardization. So we have a very good message from our individual speakers that Chaesub said every city is very different and we have to think about how to standardize technology, for example. We don't have our single standard available for everyone of the individuals. And a consumer technology. There are various kinds of technology available. Let's have opportunities to apply those technologies to smarter cities. But where to start is a question. Brian said transportation and energy is the low hang fruit to attack now. But we can elaborate more. So who wants to go first?

>> Okay. If I start? Point is (inaudible) telecommunication union. So when you think about this telecommunication, you immediately think that all telephone system based. So we are not just (inaudible) all Legacy telephone. So I2 try to extend our collaboration space with many other articles. For example, we have (inaudible) industry has become our members. And financial institutions become our members. And the many secretary communities, they become our members.

So we try to extend even -- I am very happy with this project. I attended this two times and the last this January, I contacted the president of CES and invited him to come here to join this AI. We recognize customer (inaudible) is very relevance with ICT. So when they are present with seven take away from CS2018, almost all of them -- almost all in line with all of our activities. So we try

to extend it. We have collaborations and we have certain standards. We have to take this opportunity to express certain difficult Is. Each community, each one has their own ecosystems, their own administrations. They have their own particles. They gave us some difficulties. So we try to extend our collaborations, but we need even higher level some discussions how to facilitate these collaborations. And also it's a good time to think about international standard. Standard means single technology apply everyone. That would be very difficult at the moment. It was because we need this Connectivity and (inaudible). So single standard is more desirable. We did, but as you can (inaudible), all standard organizations they focus on specific technologies, but not limited one single technologies. More important is how we can (inaudible) interoperability, compatibility, and something like that. ITO is welcome to open up our space and adopt other technologies and bring up the (inaudible) operability space. That is what we are trying now.

>> My reflection is that forums like this, we summit play very important role in putting different stakeholders together and raising awareness about opportunities and challenges of AI and building collaborations and igniting practical projects and development and in particular in our field, I believe that it's important to embed multi-lingual from the beginning of designing new solutions multi-lingual by design should be the monitoring development. I believe that in developing new standards and guidelines, it's important to include multilingual aspect in these developments.

>> So I think about the topic of the summit and even the things we have heard so far. So one important thing comes to mind and that's the multidisciplinary nature of the participants here today. This was brought up yesterday. So I think that's critical that we apply that as we go home and look at projects. So think about how diverse this audiences conference is. All the disciplines involved and take that home with you and make sure you have all those disciplines. So the things we talked about like including the culture, including different ways to solve problems so that we're most creating. So I belong to a particular segment of the industry around consumer technology, but there are many other things that need to be incorporated including languages, cultural aspects and the personality of the cities. And I also say that we really need to involve stakeholders including the people from the beginning in defining the problems and then defining projects and working on solutions. I guess one other thought comes to mind as we talk about defining projects because we talked about applying AI out of SmartCitys. As I've talked to companies who are implementing AI today, especially ones who helped others do that so the things we hear are the companies say I am ready to apply AI. Help me go

do an AI project. And the answer is not the right way to think about it. You need a problem to solve first. I do hope what we will do as we work on these is figure out the problems we're trying to solve and then apply AI where appropriate. I know it's appropriate because the data sets, the capabilities of AI are the right fit at this point in time, but we don't want to come at it from a here's a solution. Help me find a problem to fit the solution.

>> thank you. So you talked about, Brian, you talked about smart speakers and we have some element of translation in it. It could be (inaudible) to a product like that. Two may have that. I think consumer technology probably is the closest to people and I think you see that at the same time as I pointed out, the data, the people's data for example speakers, there is the new hard code app is addressing this. They are hearing what you say in your family. So do you have any, you know, proposal for this tackling what this data in a privacy issue and consumer product would like to start from you and go back again and data privacy issue here very quickly.

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>> BRIAN MARKWALTER: I know we don't have a lot of time. Privacy is a complicated policy topic. So varies by region, sometimes by state. So I won't get into the details. I do think what's important is that people understand the -- what's being done with their data. So different areas have different tolerance for the amount of sharing. We are already sharing data to receive some benefits. I think that's a given. For most of us, we're perfectly willing. Many people have adverse reaction when the data is used for other purposes that they don't understand or haven't agreed to upfront. So that's probably the biggest problem. As long as we can deal with that and be very clear. I hope one of the outcomes as we work through this current point in time around privacy and data is the consumers have a much greater awareness and the companies in governments are very clear on what data is being required and why.

>> then is really a major issue. It is important that people can make informative decisions and should understand what kind of information do they expose by using services and to be in control of that information. This is exactly the intention of European union by implementing general data protection or regulation to enable people to be in control of the private data.

>> As Brian said, without sharing the data, we may forget (inaudible). It's impossible. Data is important, but without sharing the data also the value is very decreased. But also even I catch myself. I use Smartphone. How many data I share. Do I have any idea? I use my Smartphone just to click accept, accept and then upgrade. I don't know how many security programs implemented in my mobile phone. So actually, someone asked me how many data you share with others. My answer is no idea because our technical development of this our product is not (inaudible) to the customer, to the normal

citizens. Basically those citizens or those people who are not enough educated on this specific domain. So with that environment, there is data privacy, data ownership. It is really challenging. What I answered to that, I have a responsibility of this standard, but it's a good time to think about end users, customers view point. We need clear guidance. At least better guidance. How, what level of data should be shared but shared doesn't mean from one end to the other end. Or from bottom to top. Could be differentiated which level of data should be my device or my network provider, which data should be shared with my service provider, which data should be shared with my application operators or governors, but we don't have such a classification of data. It would be good to challenge classify the data. It would be one of those solutions not just to leave based on the device systems, even my home of this DSL gate way I have no way to control my gateway. I'm an expert, but it is gets more and more trouble when I upgrade. I just say yes. If not the case, any point is not agreed. It never happened. So this is -- I don't have any options. We have more user friendly approaches. If you really think about this, data should be shared with privacy. We need such approaches. That's my view.

>> Thank you. I think smart C is very important, but it's very hard problem to tackle, deal with. I asked this question about a data privacy because if we share a common problem, maybe that may accelerate collaboration or co-creation, how to scale the articulate of AI in SmartCitys. As you said, data has to be shared and you get the benefit. But at the same time, we have to carefully think about our privacy. I think every state of the art that expert individual, individual expert introduced today may share this problem. I think that's the way we meet together and think about, you know, the SmartCity problem.

So we are running out of time. And Renato and Alex, do we have any questions to experts or maybe we can ask the floor if you have any specific questions to ask now and to experts. We can take some.

>> Just a brief introduction. Thank you very much, Mr. Nakao and colleagues. This is exactly -- every one of us in the same level of the discussion, what are we expects and we had sick speakers. So it was -- six speakers. For the next ones, we will have more and will be much more open for the audience. Professor Nakao said, the idea was to create the basis for the co-creation. But we really want to start the process with you interacting with us for the next sessions. Okay. So we are going now for the break half an hour break. At 11 o'clock, we will be back with the first technical solution and if you still have any questions for one of our speakers, you can reach us here outside or during the next session also. We are going to be here all of us the whole day. So thank you very much and see you at 11 o'clock sharp here. Thank you.

[APPLAUSE]

(half hour break taken)
(half hour break taken)