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     >> FRITS BUSSEMAKER: Ladies and Gentlemen, may I have your
attention please? We would like to get started with the session
on Smart Cities and Communities. And I would like to invite the
speakers and panel members to get on stage. Thank you very much.
   All right. I want to start off with a question to the
audience. Who thinks Artificial Intelligence is disruptive?
Good.
   Anybody wants to raise their hand which thinks not disruptive?
Good. Because we want to be as congruent in this session and
want to be as disruptive as AI is. We are going to start with
the end in mind. After the next hour and a half we want to have
at least two, three guidelines that we want to take back to the
Plenary session and have some kind of consensus of what we are
going to do here. Now I want to actually start with another
question to the audience. And what do you want to get out of
this session? Anybody volunteer?
   Why are you in the room? What do you want to get out of this?
     >> I would like to hear about what people are doing in
cities right now and especially what the needs are. We are a

startup and we would like to be able to help people.

>> FRITS BUSSEMAKER: Thank you. Anybody else?

>> I would like to see if we could start a C40 for AI.

>> FRITS BUSSEMAKER: Okay. Good. Now I assume everyone has downloaded the app, AI for Good conference. So we should know who is on stage because the pictures are in there and our bios are in there. So we don't have to introduce yourselves. I ask the panels to tell us what they want to bring to this talk.

>> KYLE NEL: I'm Kyle. I work for Lowe's Home Improvement. We have a vested interest in how people are going to live and making those things better. As a personal side my academic background is in neuroscience but on the data modeling and machine learning and deep neural net. So applying those stuff for behavior change. Applying those two is why I am here.

>> FRITS BUSSEMAKER: Our first speaker.

>> OKAN GERAY: My name is Okan Geray. I work in the Smart Dubai office and I am a strategic planning consultant. And for me the important thing is to understand the applications of AI and how we can improve our services, enhance our services to make the city better, the applications of AI. In the valuation we have a very specific objective of making the happiest city on earth. It is not about technology but I would love to understand how AI can help us to achieve our ultimate vision of making the city the happiest one in the world. Thank you.

>> FRITS BUSSEMAKER: Very quickly.

>> IGOR VAN GEMERT: My name is Igor Van Gemert. I will keep it short. My goal is to learn a bit about resiliency by design and how we can use AI to make this a reality today.

>> FRITS BUSSEMAKER: Thank you.

>> ANTOINE BORDES: Antoine Bordes. I am a basic AI researcher and I have been doing basic research in AI for 15 years now. But while doing that in the AI research level Facebook. So I also can also talk about what the -- what is Facebook doing in terms of building communities.

>> FRITS BUSSEMAKER: Thank you. Here we have a new face not on the lab. I am going to allow you, Peter, to tell who you are and where you come from.

>> PETER MARX: My name is Peter Marx. I am the vice-president for a little company, General Electric. And then before going to GE I was actually the first chief technology officer for the city of Los Angeles in which I handle such a (inaudible). Putting things like and C40 (cutting out). And then before that I handled all the -- writing software. And using AI (cutting out).

>> FRITS BUSSEMAKER: Thank you.

>> THOMAS WIEGAND: Yeah, for those of you who have been -- have nice work during the previous sessions, my name is

Thomas Wiegand. I am the executive director for Fraunhofer
Heinrich and professor for the TU Berlin. Coming from the
telecommunications side, we have seen that communications and
computations are converging areas. And we have started to tackle
those together and we are also creating sensors. So we are
creating -- we are -- we have transformed things to switch from
being a telecommunications institute in to a digital
transforming institute where we create using sensors,
communication and computation, a digital trend of the real world
and try to bring all these benefits that come with that.
     >> FRITS BUSSEMAKER: Thank you. And by the way these two
gentlemen are our Rapporteurs for today. Right. Now I'm going
to hand over to Kyle, going to set the scene of today's session.
     >> KYLE NEL: All right. And now bring on the slides. These
are the jokes you can expect in today's session. Not all at
once. We are going to give some spark talks here in a second to
spark our ideas. Before we get in to that and talk about all
this amazing stuff we are going to talk about stories. Lowe's is
a Fortune 50 company. I'm a behavioral scientist. That
paralyzes people. And I think we have seen some of that over the
last two days. These ideas are too big and too gnarly. That's a
really weird thing that humans do. It is something that we will
trade shelter and medicine for to receive and communicate that
way. Because we at Lowe's and they tell us short stories
probably convergence and that's how we have been able to build
the first autonomous robots, stores in space, international
space station and XO execs that are in the real world. And we
started with a story and we worked backwards to figure out how
to make that work. For the disruptive part of this we thought it
might be interesting to start looking at a story, a future state
that we all want to live in and then figuring out how we would
work backwards in order to make that happen. This is kind of the
state that most of AI kind -- will lead to in most people's
minds.
   This is a factory just being run by robots. And then in this
perfect utopian state we get to lay by a green pool and hold a
miniature panda. What happens in the short term in my view you
go to get something out of the refridge I am out of this, this
and this for dinner and AI has figured out what you are out of
and through the Smart Cities it starts to deliver stuff to you
before you know you need it.
   And other things when it comes to farming, in city vertical
farming now but you are able to take Artificial Intelligence and
other things to be able to make that farm more efficient and
predictive. This is a farmer in Guatemala doing far more
efficient production that's tied to a market without the middle
man and that farmer is able to produce things at the market once

and then able to earn a living for his family. Frits brought
this up earlier, this is from 1900?
     >> FRITS BUSSEMAKER: 1899.
     >> KYLE NEL: This was the belief of modern farming in the
year 2000. And if you look at this the instruments are old but
the idea is right on. This is a farmer autonomously pretty much
directing his farm. We are working on that right now. They
weren't so far off. So if you believe that story
dictates -- there so much that's built in to this that you can
start to build on. If you are an AI, machine person, Government,
you can see how you play a role in making that happen. For us
the question what future do we want to collectively work
towards. Not is Artificial Intelligence important. It will be
disruptive but what future do we want to live in and what
policies do we want to and what seeds do we want to plant. Now
we are going to go backwards and we are going to go to these
spark talk. I hope you prepared your spark talk. It is going to
be amazing.
     >> OKAN GERAY: Thank you. I hope all of you can hear me at
the back also. Good evening. It is an honor and pleasure to be
part of the conference. This is an excellent Summit and it is
being done at the right time. And I am sure most sessions
between yesterday and today you will see applications of AI in
different areas and cities with no exception at the end of the
day. If you look at cities, they are actually dense and complex
structures that house the majority of the human population today
and the economic activities. If you think about the cities
today, they take up only 3% of the earth's land. Only 3% of the
earth's land.
   And this year it has indicated that about 55% of the human
beings live in cities today. And the same number in 1990 was
only 30%. And it is projected to go up to 60% by year 2030. So
you can understand the dense and the complex structure of the
cities. And this complex and dense structure intrinsically
imposed some constraints on the cities. If you put all these
people together how can we ensure that people go from point A to
point B within these cities. So mobility becomes an issue. And
given that we have billions of people living in cities, how do
we provide resources to the people. How do we provide water,
energy. These are actually real issues. I remember when I was
doing my undergraduate and graduate degrees to me Internet
networks were -- were the state of the art things. I always
thought that water networks, energies were so solved in the last
century but as it turns out we still have issues in terms of
basic infrastructures in the cities.
   So they are still pending today as major challenges for all of
us. But the cities have all these challenges. They also have

lots of opportunities on the other hand. So we can look at it from two sides of the coin. We have this incredible opportunity ahead of us as the latest trends and technologies. Smart and sustainable cities have alternatives based on technology, based on information. And communication technologies address these challenges and turn them in to opportunities for us. So if you look at Smart Cities they aim to enhance the quality of life and try to address the present and future generations' expectations addressing social, economic and environmental problems that the cities face today.

So this is Smart Cities and more recently we had the United Nations promoting sustainable development through the SDGs. So is what we have seen coming in to reality recently.

But then if you look at today in terms of technologies, AI probably sits in a very sweet spot in terms of what we can do. It is right in the concludes of three main factors. One of them is computation technologies that we have. And we have achieved exponential results in terms of computation. So I'm not going to go through that. We are way advanced in terms of computation and all of you are experts in AI.

The second factor would be the algorithms and the models that we have in AI to address the challenges that we have. And the third one which is probably more interesting is the data. Today if you look at cities the cities are built on physical infrastructures. So we have buildings, physical assets in the cities, all these distribution systems, networks, physical structures, assets, buildings, roads, transportation and all of those. What we have done is humanity we have almost built a parallel infrastructure which is the digital or the virtual one on top of the physical infrastructure. So what we are doing today is actually probably placing these sensors ICT-based equipments in the city, in the physical infrastructure to understand various issues and data points regarding various city operations. So it is quite interesting actually. We started doing that and this is the direction that we are taking. So data is becoming a major enabler to apply AI for us. And as we put these -- deploy these systems, sensors, IoT devices as they are called in our cities, the volume of the data is also increasing. So we hear this term called Big Data which is also in the direction of exponentially increase. So not only in terms of computation, not only in terms of our work but also in terms of data we have these exponential opportunities ahead of us.

And IT, I'm sorry, AI can be a major, a major problem solver in terms of addressing city challenges, by utilizing these three factors and at the end AI can be used retrospectively and prospectively. And we can understand, analyze and build models and start predicting the future. Prospecting out in to the

future in terms of solving these challenges and not every city is the same. The spectrum of development varies from city to city. We have basic challenges in developing cities and we have also advanced challenges in developed cities in terms of smartness. So we don't have a single spectrum when it comes to cities today in terms of challenges and opportunities.

   And I want to conclude by saying that at the end of the day we only have one earth. We headed this earth, this world that we live in. It is now best to address the city challenges that we have. And most of them are either common or we have at least clusters of cities with common challenges. So if we can use AI techniques, AI models, technologies, to address the common challenges of the cities or at least the common challenges of the clusters of the cities I think that's going to help the entire humanity at the end. Thank you.

   (Applause.)
      >> FRITS BUSSEMAKER: Quick question. Anybody -- reaction from anyone in the room on this presentation?
      >> Do you have any particular problems that you'd like to address?
      >> OKAN GERAY: I think today we can have a long list of issues for the cities. It is not just one problem, but if you look at almost each and every area or domain as they say within the cities in terms of smartness, whether they are social services or once we get in to social we have health, education, community services, social services, if we get in to environment, we have issues around carbon dioxide emissions and issues around providing water and energy. If we get in to governance we have digital transformation in the public sector. In terms of public services being available electronically, we have issues in terms of data sharing in the public sector. And if we look at economy we have all these vertical centers in the economy which are being transformed today as we speak in terms of digitization, in terms of IoT, industry technologies, Industry 4.0.

   So I think the spectrum is very wide and as I said not every city has the same challenges. The context and the landscape varies from city to city. Probably most of us are coming from developed countries. If you look at least developed ones it is not probably around digitization but it is all about access to basic electricity. It is about eradicating poverty and eradicating slums. It is a long list of issues that we have globally. Real challenges that we all face.
      >> FRITS BUSSEMAKER: Okay. Quick question.
      >> It is more of a comment. Hi. It is not hard for anybody to see that there is a voice missing on the panel right now. There is no woman on the panel talking about Smart Cities. I

would love if all of you could think about women's security and how AI can increase that in Smart Cities.

>> FRITS BUSSEMAKER: You come up on the stage then.

>> I'm not prepared for a panel.

>> FRITS BUSSEMAKER: Okay. No. It is very much noted. I agree. Okay. Move on to our second speaker Igor Van Gemert, founder and CEO of SIM-CI.

>> IGOR VAN GEMERT: Okay. Okay. Yes. Thank you very much. And very glad to be here. Yeah. Superman can save the world. Having witnessed the aftermath of Fukushima and Hurricane Sandy firsthand. We as humans are very, very fragile and the cities we live in are very fragile. We have a mega trend going on like change in weather and affects on cyber attacks and so forth. If you look at how those cities are engineered from scratch it is always based in silos. Water and power infrastructure and so forth. They are not designed on a wholistic way. So I got this idea in 2014, what -- how can we create a city resilient by design, by looking at the entire design process of building a city. Our world is getting too complex for us humans to comprehend and manage. We have a lot of centers. And if we look at Smart Cities today it is like drinking out of a fire hose and you need to have kind of context. So to overcome this hyper complexity and let's say tsunami of data you need to set the stage in the right conditions to use super intelligence and AI.

   As super powers we need to be found in super computing power and Artificial Intelligence. What we do within SIM-CI enables us to create a tools and strategies to overcome this hyper complexity fast. Someone was already mentioning the term Twin Cities. We created a twin city of the entire region of the Netherlands. And it is so much data. You are talking about pentabytes of data. What is the soil infrastructure? Because we have a map in the Netherlands, 35 meters deep where you can actually see cables drifting in the ground. And that's logical because we as Dutchmen we fight against the water. And sometimes this water is so high that the cables are drifting. And if you have a power cable drifting it snaps and you have a power outage. We have more things, more challenges than others.

   So how can we actually make our cities more resilient by design? In order to test and assess the resilience of cities and infrastructure we started our day to build those ones and created a digital copy. And we create a forecast of how the next day would look like. So what is the amount of water that people need? What is the amount of power that people need but also to come up with other issues, the affect of energy transition. And a lot of people are putting PV on their roofs and the power infrastructure is used completely differently. So it was a generator and a generator distributing power to the substation

and substation distributing power to your house. In the end right now everyone is generating power. So this power is put back in to the grid and as a result the deterioration aspects of the substation is much faster.

As a secondary result you get an outage faster, and we had a major power outage in the northern part of Netherlands where the substation failed and it was only four years old. Within utilities you design the substation for lifespan of at least 30 years or more. So we need AI also to comprehend how those patterns actually will work because reality is something completely different than when we are expecting to buy a product.

So we want to step up to create a better world. The challenges we face are eminent and should be addressed on a global scale. 100 cities program and AI for good are crucial steppingstones needed to build a resilient society. And we need to take it to the next level. Deep learning technologies and cloud-based computer power can help to design strategies for a better world. Aggregating and connecting all available data, environmental data, sensor data and data processing are generated by industries, cities. And people we will be able to create a deeper understanding of what's going on in a city and underlying processes. The impact of our choices and interdependencies enables us to bring super computing power to the globe regardless of the location. Internet connection and ordinary PC or mobile will simply do. Combined with open source tooling and toolkits to step in easy and take advantage of community efforts. Huge investments are no longer needed since all tools can be made available through the cloud and are settled.

Today I call upon you all to take it to the next level, team up to help spread the technology and connect with Institutes and industries and governments to make resilient by design a global movement to improve our societies.

One recommendation for the Summit, let's skip the paper part and take action. Build a global AI repository which maximizes the use of human intelligence so we can evolve as a species. Think exponential and maybe we will become Superman after all. Thank you very much.

(Applause.)

>> FRITS BUSSEMAKER: Questions? Any questions from the audience? Any reaction? Sir.

>> Yes. I'm Professor Tuchi of the University of Japan and you mentioned a question about do you know about Japanese case. We are now facing the smart mega city issue, not Smart Cities in Asia. Half of the populations world is engaged in -- and we have the 10 million crowd. That means Tokyo has 30 million

populations now. And Beijing and Shanghai in China is more than 20 million. Bangkok, Jakarta and they have more than 10 million peoples living in one city.

   We are thinking about the Amsterdam in your countries is the best Smart Cities to put in to our epic. Tell me about the future of the AI for mega city issues. 30 million people living in one place. How the Smart City can be applied for such huge populations.

>> FRITS BUSSEMAKER: Yes.

>> IGOR VAN GEMERT: I understand your question. So in my opinion we should simulate first before we actually build. Because right now we live in a really super cool time where we have access to all those data and sensors and really gain insights of how people work with and, et cetera. And if you look at let's say all the cities you mentioned Amsterdam, Amsterdam is not so resilient. Because if you look at Amsterdam it is like a star and the star has some power lines. And if one substation dies basically the entire region of Amsterdam is without power which is not very resilient. By creating let's say those mega cities these become subcities in cities. Where those cities operate as a cell like a big elephant. So the cell can be sick. You clear the cell. But the system is self-healing and self-restoring. Create less devastation in case of a cyber attack. Cyber security is a big thing to cope with. If you look at the Internet of Things attack, basically bad advice. If you use them well and say the attack of the fridge and you tack in to one thousand switches and you try to create a power surge, this is enough to create a blackout in Manhattan. I can talk for ages.

>> FRITS BUSSEMAKER: I know you can talk for ages. Thanks for your question. And thank you for the reply and thanks for pointing out that we should not only look at AI but you brought in cloud allowing us to use technology on a global level and also for those cities in underdeveloped countries. I am going to hand it over to you, Kyle, and see what the panelists have to think about this.

>> KYLE NEL: We want active participation from the group, too. This is a collective thing.

>> THOMAS WIEGAND: Yeah. I would like to maybe try to add some structure to our discussion. And I view things in this context in at least three categories. And I would like to remark about safety. That's very -- that's one of those categories. So I think you can build something in the safety or security area that is like an airbag. It is kind of, you know -- and it is undisputed that this thing will help your safety but it may need people to not fasten the seat belts. If you as a person had some localization detector and when you cross the street the car

stops automatically because it knows you are there or the car sees you through its vision, it may have you cross the street carelessly in the future. So these are undeveloped. But I think the strong point is on the side of yeah, let's build it. Makes lots of sense.

   Then there is the next category of things, terror prevention, crime prevention, that involve a very serious and not clear tradeoff between losing your privacy, having security cameras everywhere and also the technology that can also be misused. And there needs to be an open discussion on where to draw the line. And for instance Great Britain is one of the countries that has the most security cameras of all countries on the planet and see what happens. So that's the second category.

   And then there -- and these two categories are really on safety and security. And I think these are areas that we have to really work on and can have real benefits with these new technologies, Internet of Things, Artificial Intelligence, communication, sensors, those are all being used there. Then there is a third category that people quite often talk about which is energy efficiency or making things more efficient. And I would like to remind you and I have made a very particular experience myself in this. I have been doing video compression. And I thought I must have -- I'm just the biggest carbon footprint person because I saved all those bits on the Internet. Well, the Internet actually grew because of the vehicle -- I might be the worst person for the planet. It is called Jaran's paradox and it says -- the increase of the efficiency by which resource is used increases overall consumption. That means that no matter what we do if we build a car that uses less fuel the overall fuel consumption is increased until such a ration is reached. And if the world economy stays the way it is with capitalism, and I'm not debating that I'm an engineer; I am out of that, for a different group, then no matter what we do in this third category if we make things more efficient we will use more energy on this planet. We probably will rule quite a bit until such a ration is reached.

   So I would like to -- my suggestion would be and if people have another category to add to those maybe we can have a more structured discussion and not mix everything together. Investments are usually the last things to change. Roads and buildings have not changed in my lifetime. With AI and Facebook that has changed multiple things. We have those two juxtapositions. Somebody who was a CTO for LA how do you see those things come together? I don't want to derail you from what you were saying before.

        >> PETER MARX: I am happy to talk about all these things. I did -- I had the LAPD which I am sure that everyone has heard

of and the LA fire department. And in terms of resilience, Los
Angeles in California. Everything from flood, fire, typhoon, LA
gets 11 of them, earthquakes. So I spent a lot of time dealing
with resiliency and cyber security. We set up a cyber intrusion
center. A very personal sort of note, first time I walked in to
a meeting when we were originally setting up the cyber intrusion
center every single person in the room was wearing a firearm
except for me. I have to admit and I was looking at all these
firearms going I don't think that's going to work against the
computer issues.
   I think there is a fourth issue that we should deal with and
my friend from Dubai covered a lot of the positive aspects for
things like AI within cities. And he mentioned that cities, more
people living in cities than are living outside of cities. This
is very much true. And the reason why it is cities are platforms
for what? Let's use sort of the engineering and computer term.
They are a platform for families to raise their children and
people to get jobs and get health care and get educated.
   If you think about AI, AI is -- I'm going to be very proactive
here, AI is an existential threat to cities in the following
way. Robotics, you know, when you get in to self-driving cars,
connected autonomous vehicles, for example, you start to get in
to all of the more efficient delivery of services. There is a
missing aspect of (inaudible) which I have grown up in, always
forgotten to mention which is labor displacements. We are going
to effectively put out of work most of the people in cities. And
I would be really curious to know how we will all deal with the
benefits that come from AI at the same time that they are
actually attacking the very structure of cities that are there
which is free and economic development.
      >> ANTOINE BORDES: Yeah, I mean -- I am speaking -- yes.
So it -- city, especially AI, so maybe about trying to out
what's going to happen next. So a couple of points. One is that
I think which is pretty -- covers everything, I think the role
of us we are developing good deployment and education in terms
of basically having the startups or the policymakers, all the
regulators, have -- basically -- where it is going. And because
I think there are sometimes a mix between what people think is
possible and what is actually possible, in both ways. Sometimes
it can be better or worse. And depending on how it is applied.
So I think this is very important. And to go back to the comment
of diversity, actually if we are able to put the AI tools in
your hands, be able to give this knowledge to more people, I
think we would maybe come up with more solutions, which is very
important.
   And because AI I mean it requires like computers. People
would like -- computer and pretty good actor. A lot of good

stuff. So that's an important point. But the second point is about the way we see the impact on jobs, or how it is going to happen in the future. I think that's more like -- we have Facebook and Internet collaborator, we collaborate right now and say that different times. Maybe we should try to think about new ways of purpose in terms of actually having like people trying to define the purpose in terms of capabilities and putting together the community can be within actual cities and can be online and defining the way we want to get together and share things. This is very collected to what Facebook tries to do. But it does not mean it should be only Facebook. It is also another way of trying to see how we could actually try to have a purpose later.

>> KYLE NEL: Thank you.

>> Hi. My name is Patrick. I have a comment about an additional category that is built on quite a bit of what has been said and that is the role of people not as passive data providers but as agents of Smart Cities. Cities are emergent and the discussion of capitalism is another panel. We need to talk about the ways that citizens are engaged democratically through participatory urbanism, through anything from crowdsourcing to owning their data, et cetera, et cetera.

>> FRITS BUSSEMAKER: Thomas, I want to get back to your remark about some guidance for the discussion. We do have some questions from the ITU express organization we want to get answered in this panel. First of all, will AI resolve the issue about transport and have autonomous driving? Is that something we want to and how do we organize that?

  Urban farming, that in combination with we are going to move away from centralized production, centralized industry to decentralized in the city. So we have to say cohabitate as a citizen with the farmers and the Smart City. Third one is infrastructure, critical infrastructure. Make sure that infrastructure is still going to cope with the amount of people making use of cities because it was never designed for that many people in the first place.

>> THOMAS WIEGAND: Autonomous driving, this is one of the biggest discussed subjects but this is a very simple idea that some nutcase puts some explosives in to armored cars and have them explode in the city at the same time as an attack. It is pretty clear that this can happen. And given what we have seen this has to be prevented. So as long as the real safety aspects of autonomous driving are resolved, are not resolved this will just not happen period. It is -- I just can't see a city mayor of a city being in his mind allowing cars driving on their own without an ability to have security checks on these autonomous systems.

>> FRITS BUSSEMAKER: I have a question in the back.

>> Just a quick response. I am representing Pittsburgh where we do have three different companies that are driving their autonomous vehicles. And our mayor has embraced it but there is all sorts of different considerations based on the responsible or irresponsible rollout of such technologies. Initial embracing of Uber and some repercussions coming through more based off of their adherence to promises that were initially made, but I think, you know, the main one that I want to put out is, you know, across the U.S., and, you know, internationally, of course, as well, the way that most of these kinds of systems have been rolled out have been direct company to municipality kinds of conversations. Fighting it out in very specific cases and I think additional cities would be well served by having some means of a playbook by which to refer to so that they know what can be done. So yeah, I was curious about any thoughts on --

>> PETER MARX: I think the Uber rollout in Pittsburgh because the issue is around economic development which was the issue of local jobs that were promised and I worked on the deals for Uber and Lyft in Los Angeles that allowed them to do pickups at the airport. And LAX is the single largest No. 1 dropoff for Uber and Lyft in the United States, full stop. And in fact, six months after we did that deal 40% of the vehicles going in to the airport were TNCs, transportation network companies, ride share. There is a huge amount of demand. And what's interesting is that the -- in the TNCs talk about them because they are a good proxy for connected autonomous vehicles. We essentially are seeing, if you will, look at -- everyone in this room probably has a car or most of us have a car. What are your cars doing right now? Anything? Yeah, they are parked. Right? And so I have a car. And I look at the thing and I use it 5% of the time. And if I didn't have to -- if it drove itself, utilization would still remain 5% of the cycle, but I would be able to send it off and have it do something useful for somebody else. At least in LA the average driver provides rides to 30 other people every month or so. And 60% of them work ten hours a week or less.

I will just say I did an interesting panel at the Miliken conference with the CEO of Didi Kuaidi, which is the Chinese TNC, the Uber equivalent. She was asked what do they think of them. Uber has publically stated I can't speak on behalf of Uber, but publicly stated they want to do self-driving vehicles because they want to get rid of the driver. And then the lady from Didi Kuaidi had a different point of view. It would relieve the load of the drivers and the driver could focus on customer service to the passenger. And the vehicle would have a human being from the company as a service provider much the same way

that your airliner has three auto pilots and two human pilots in the cabin. They think of it as being a service and connect autonomous vehicles and safety.

  Interesting thinking around this stuff. Is it going to destroy labor or improve labor? Is it going to increase safety? Safety for automobiles in the United States, automobiles in Europe, automobiles compete with handguns for the number of people they kill in the United States. It is not acceptable for transportation sake.

    >> KYLE NEL: Transportation is something that I think a lot of people talked a lot about and I -- it is very important. If you look at the map of the highest -- the professionals with the highest employ in state by state all of them are some sort of driver. And the other thing we haven't talked much about is food. Food is a highly wasteful thing. Someone had a question?

    >> FRITS BUSSEMAKER: Two questions here. One in the back here and then in the front.

    >> I'm sorry, for all the self-driving car friends, there is a lot of discussion of self-driving cars and I would be interested to go back to the subject of the colleague, the idea of governance in cities. There is a lot to be said about that and with sensors all over the city. We feel more in touch with our government but we are still a great distance away. And having transparency about the data and idea of budgets, we are talking about disruption here, but this is something to disrupt and a great place for AI. So if the panelists have something to say about that.

    >> PETER MARX: LA all 4500 intersections are connected to a computer and deliver their data every four minutes. Every four minutes they told the city that was reported by ways users and ways is an amazing large population of people. So they will tell you about the potholes, et cetera, et cetera. These are good examples of open data. And we get in to the proprietary companies. They simply refuse to share data and this is where I hate to say it, regulated industries like the taxi cabs where you get data, allows for more opportunity to understand the city like New York but TNCs actually become opaque.

    >> If we are talking about Smart Cities, the data is presumably public and belongs to the citizens of the city. There is no longer that issue of proprietorship. As citizens we can be made aware of that, understand city's budget and understand the motive of management and see where things go. More efficient and cheaper for the city and gets us more involved.

    >> PETER MARX: The data is the most magical ever. And we put a couple thousand datasets up for LA to cover, you name it. When you run in to Governments actually at least in the U.S. data comes from the Government to the rest of the world. In

other parts of the world there is different regimes. AI is enabled by data but we are going to get in to issues where the data is segregated. And it is going to make it harder and harder for all of us to get access to that data, especially as robotics and CAVs and everything else evolves.

>> FRITS BUSSEMAKER: Gentlemen, thank you for the discussion. Actually I want to move to this question.

>> It is more of a comment or encouraging the panel or even the audience to think about what can AI do. Because I think we are rabbit holing a bit. In the past 20 years we have been working and seeing how cities could be greener or more people friendly, et cetera, and I think what's really the golden opportunity for AI is to serve the citizens. And we know that there are data ownership issues. And as we just mentioned with the Uber versus ways, for example. But I think that if we create the regulatory incentive, it might be possible for cities to start actually crawling back on that and owning the data in favor of the citizen. It we can do that and that's why I propose this idea of AI 40 because we need to create that framework. Mayors should have the authority as they have for power and water and waste management, et cetera, they should have that for data management to create greater transparency within data frameworks. And then in such empower the citizens for participatory place making. Because it is from that desire that we will probably create the best opportunities for let's say circular economics. So that's just an encouragement that I want to put out.

>> FRITS BUSSEMAKER: Thank you.

>> Just real quick. I would like to see that also. Because I'm very in favor of the Governments being completely transparent in their privacy. And I hope that the individuals will be opaque so that the individuals can maintain their privacy.

>> PETER MARX: Curious to know what you think about police warn body cameras.

>> I think it is good. Police are members of the state. I used to live in LA and I thought it was healthy when it came out. When -- I think it is a good thing. Because that means that the police can't beat up on people without being known. So then different citizens can monitor this and this puts the power in the hands of the citizens as opposed to being in the hands of the Government and that's where it belongs.

>> THOMAS WIEGAND: I think we are having a circling issue about the same core issue all the time which is how to characterize data in terms of privacy and accessibility. And I think as a generic term we need a new view, a new approach towards data. Meaning how they can be accessed. How anonymous

they are with regards to the individual and how can beneficially be used and help to prevent misuse of the data. So -- and that is a technical question, of course. And it is also a regulatory question with laws and stuff. And I don't see politics having caught up with the issue. And -- something that we have in Germany started now are kind of living labs where in some areas technical things have just been tried. And then people start to see what the tradeoffs are and how these recharacterization of what data are and what are the characteristics should be is happening and then you learn about it. So we may need to learn about learning systems.

     >> IGOR VAN GEMERT: Okay. A lot of data, which is not publicly available can be generated by a couple of data points. That's quite simple. We had a challenge in engineering department to be a simulation of a water network but the Government doesn't want to give U.S. the data. So we created an algorithm based on efforts used and we generate it within AI out of a topology of what the water network would look like. And it was presented to the CEO of the company and he said where did you get the data from because it is 98% correct. There are other ways to generate this data. So it is about accessibility also but we have to keep in mind that using AI and if you know how the pattern works, you can also misuse it. That's a fact of life. By creating a legal framework which is actually repressing publication of data, let's say the fantasy tools which are on the Internet which is easy-to-use. Can use a scatter system and hack a nuclear power plant and download it for free. That's completely nuts. They need to change something and to set the right terms and conditions for that.

     >> ANTOINE BORDES: Actually I want to comment on this. It was a bit misleading what we see the power of Big Data, any commission because the patterns are not known. Not able to detect patterns but you will see complex database. So I think the fact that you can reconstitute data, I think it is more a tricky case. You need it to -- so I think it is better if you have the data basically. And the second part having looked at pictures, if they are a 14-year-old kid can -- a security team, also have the data. So I think it is about everyone being able to share and doing the research beyond closed doors and be open to what's possible and what are the codes and what it is capable of doing. And if everyone tends to be up to date as possible, yeah, if the 14-year-old kid is smart you want him.

     >> OKAN GERAY: I don't hire this guy. Why? Because he is a guy who downloads the program.

     >> KYLE NEL: Go ahead.

     >> Thank you. I'm all the way from UNIDO. I want to ask or more or less push you a little towards thinking about what the

average city dweller will be in 2050 and also in 2030 but these are first world problems. We have to think about the average city dweller who lives in a developing country and lives in a populous area that does not have access to a city and sewage systems, et cetera, et cetera. We think it would be necessary to talk about what AI systems can add to development of these cities and turn them in to basic infrastructure cities as we can depart from already quite developed cities.

>> PETER MARX: I don't know her name, the lady in the second row over there, but you brought up women's safety as an example. That seems like a perfect example where AI can be used for good. Roughly 5 billion people have no first responder who they can call. As an example, you know, there is a lot of crowdsourcing that's like CPR, an app called Multi Point. It ties in to the emergency system. If somebody calls about somebody having a cardiac alert and it calls out to everyone who registered on the system and whoever is nearby can render assistance. There is college student apps that are doing -- is walking home at night, for example, and they have overwatch somebody that can keep an eye on them going home. But those sort of technologies feel like they would lead perfectly in to the AI world to allow us to have a personal umbrella of safety where we don't have first responders. There is no rescue and all the rest of it and that's an example I would think of where AI coupled with mobile and data and crowdsourcing of participants could actually have a huge impact in providing personal safety within the system.

>> OKAN GERAY: Can I just make one comment? I think for us as a panel, I don't want -- I know I am asking for the impossible, but if we can decouple data from AI, it might have personal discussions. We are leading a bit towards the data area and I'm not disputing the importance of it. We can recouple the data on these issues from AI. In fact, if you look at the world today we are not using AI so much but we have data. We have quite a bit of data. This is the reality. AI is now coming in to the picture. So we can treat data a bit separate from the AI. The question for us is probably should we use AI with the data that we have. And the second question might be a potential question, should we even relax some of our data governance issues, add more to the data to make better use of AI. This I see it coming in up the future. But at least with the data that we have we can utilize AI today. Because if you look at cities we come to a point now where we have generated so much data that human beings cannot manipulate the data we have. It is so huge. It applies certain techniques to make use of the data. And there are certain scenarios where we have to make realtime decisions to improve things in the city.

Imagine you are building a management system that detects
there is no one in a certain room in the building. We have a
data sensor. The AI system can turn off the light when there is
no one in the room. This is just efficiency. It is saving
energy and imagine applying this at the city level in the
buildings that we have. These numbers are not small numbers. So
there are obvious things that we can do with even the data we
have which does not necessarily pose some risks to in terms of
privacy, in terms of security. But I think it would be good to
decouple these issues and address AI separately.

   It might come to a point where we might say no AI versus AI,
two scenarios and two alternatives and have a dialogue of
engaging the stakeholders in the city and make these decisions.
At that point and I'm -- we had some of these discussions in
Dubai. Both private and public sector and are more flexible to
accept AI than they see the value of it. People get concerned
when they don't see the way that things are -- but if we can
engage the people, have this dialogue, show the value, I think
that's going to bring positive results and AI for good for the
cities that we have.

      >> ANTOINE BORDES: I just had a quick comment, between data
and AI I agree that basically usually don't mix Big Data and AI.
This looks like the same thing. Whereas AI should not -- maybe
application cases of data. That said right now we don't have any
AI system that does work with very few examples. In a sense that
we can't have something that works well with very few -- that
you will know. Basically you can't couple them today. It is a
failure. But that's the point today. If I say I remove the data
from the question and I look at the algorithm, that's it. The
nice cases we see, the development are a lot of data and privacy
(inaudible)

      >> FRITS BUSSEMAKER: I see a lot of hands raised. The
gentleman in the front and the lady in the back.

      >> I will be quick. Two comments. So the first one was
with regard to reinforcing the statement that I think it is
going to be very difficult to decouple Big Data from AI because
the use cases don't allow for it. One of the things I would like
to suggest or propose that we consider is how can we use a block
chain to react prior, creates a commons of that for cities. We
might be able to create a public budget for public purchase of
data such that it can be allowed to be used in the interest of
the city and Governments may not like that idea of cities, may
not like the idea of spending money for public data. If you can
create a marketplace of public data.

   The second comment very quickly, I think that's a very
important one around how we can accelerate the development of
cities that are not developed yet through AI as a parallel

infrastructure. At least we need some data. So using drones and sensing whether it is security, whether it is infrastructure failures and water scarcity or sanitation, waste management, these things are all things that we can do using drone fleets. And I think that's something we should create some elements of recitation. How we can leapfrog certain cities very quickly.

>> ANTOINE BORDES: Maybe cities could share more in terms of -- I think this is infrastructure, so this is the -- you have data and you have a lot of like data center to do communication. And this actually could be shared, could have more resources. Canada is very good of having that cluster of shared at the national level and all the cities. And then cities are going -- I don't think cities in the U.S., I am pretty sure it doesn't exist in Europe, for instance, and this is a way that you can accelerate more.

>> FRITS BUSSEMAKER: Thank you. First in the back, question.

>> Hi. My name is Inka and I work with ITU. I just want to make a quick comment of how AI could perhaps aid infrastructure development and cities within Developing Countries. Because you mentioned some of the benefits with regards to health care but I feel like AI may not be able to aid infrastructure with regards to driverless cars when you have poor networks and electricity. You can't do it because the infrastructure is not there in the first place.

>> FRITS BUSSEMAKER: Peter, you have infrastructure background. Any feedback on that?

>> PETER MARX: No.

>> FRITS BUSSEMAKER: Sometimes AI is not the mother of all solutions.

>> PETER MARX: We are using, General Electric, we handle the majority of the world's infrastructure. We are using machine learning quite a bit for a number of different things. Around enabling infrastructure, for example, we are using drones for inspecting power lines. We are using drones in manufacturing. We are doing a lot of stuff for manufacturing and we are doing a lot of stuff with block chain to be real clear about it. There is a lot of applications for using machine learning and AI for infrastructure, but somebody brought up much earlier here there is a basic disconnect which is that infrastructure, physical infrastructure changes very, very slowly and digital infrastructure, digital techniques and data and everything else happens very, very quickly. And in that time match is very much the difficulty we all have. Infrastructure has managed by folks who are not necessarily data scientists, if you will.

>> IGOR VAN GEMERT: This is changing quite fast. We are looking at deterioration substations in cities. To come back to

your previous question, we actually engineered several so-called powerhouses for Developing Countries which is actually a container with a power unit inside and how to grow their own food. And AI I really think would benefit amenities due to the fact that you can create algorithms which predict when the tomatoes are ripe or support.

>> PETER MARX: Give me a hint as to what percentage of the world's managers of infrastructure have adopted these techniques.

>> IGOR VAN GEMERT: Less than 1%.

>> PETER MARX: It is evolving rapidly from a very low basis.

>> IGOR VAN GEMERT: The public don't accept the rich cost for critical infrastructure and there is something else going on which I pointed to in my first introduction. It is the energy transition because a lot of people are generating power and don't have access to clean water. If you have enough power you can generate water out of the atmosphere. Don't need other stuff and this means people are really self-sufficient. They cut off the grid. They create their own power and create their own water. And that's the future I think for a lot of cities and Developing Countries will grow even faster in this part. And to harness safety in these areas, AI will be used as a social fabric to connect it all.

>> THOMAS WIEGAND: I am worried that we are not answering the questions that we could be given. Could we focus and have quick answers on the questions? Just answer them and stop making statements. Can -- that's my suggestion but I could shut up.

>> Digital infrastructure is going to be key. We need fiber.

>> PETER MARX: Do we need fiber or fiber plus good wireless?

>> Both.

>> PETER MARX: I think we all agree.

>> KYLE NEL: We had some other questions in the audience, too.

>> FRITS BUSSEMAKER: In the back a question right there.

>> Thank you. Putting my local government hat on. I guess also looking through the lens of Federal Government. At the end of the day you can talk all you want from the technological side of things. But unless local Governments are equipped to employ these technologies nothing is ever going to happen. And so usually that's a slow, difficult, laborious, political driven process that requires leadership, public awareness, budget procurement as well as the measurement and accountability of which we don't even have a core standard by which those Smart City KPIs are determined. I mean we have got ISO and ISE,

Rockefeller 100, but no course standard by which people are working.

   And so if I can offer a proposal it might be to create or start the means of aggregating whether it is data or companies or case studies, best practices that cities are using, break them down in to even kind of like a menu of things that can happen. Demystify that process because many mayors and municipal leaders are also not very literate on these particular issues. And they need to then convince their populations and their demographics that this is a good idea as well. And if we want to have broad adoption of Smart Cities legislation within the next generation by 2040 or so, those barriers to entry need to be lowered in a step wise function.

   Something that's comprehensive enough for leadership to kind of take out and customize for their particular place within their budget. That's also simple and sexy enough for a -- the general public to be willing to get behind.

      >> KYLE NEL: That argument is great. Can I ask you a question? I was recently in Pittsburgh and made use of the autonomous Ubers and was pretty amazed. And I like the whole structure of Pittsburgh. So let me ask you a question. So you talked about open sourcing, what's working and what's not working. For you what would be an ideal state of Pittsburgh in 2050? I hear a lot of Smart Cities. From one political spectrum to the next could mean different things. There is food and all kinds of things we haven't really talked about yet, social services and that sort of thing. Could you give a two minute what you would see as like ideal 2050 in Pittsburgh?

      >> Pittsburgh in the context of post industrial collapse in 1979 and 30, 40 years of reinventing itself with biorobotics, Artificial Intelligence, et cetera, it still has a lot of problems around disinvestment in different kinds of neighborhoods. 23% of the 423 bridges in the city are structurally deficient. It takes close to a trillion dollars of the state to renovate those things. There are things outside the reasonable budgetary universe for the whole space. But what is already being employed is smart streetlights, smart street lamps that are covering crime. There are smart traffic lights that are reducing the amount of stalling time for traffic and whatnot. We have got the rollout of three, I think four autonomous vehicle companies. The latest of which will be 2021 that gets its vehicles on the road.

   And I think if those kinds of things can be paired with better public transit, the availability of more optimized fresh food delivery so that, you know, food deserts and access to healthy lifestyles can be covered, then even if our infrastructure is still not the best, food, health care, transportation, and

perhaps an education pipeline that is preparing that local talent and the various strata of the people that live there to be able to thrive within the next generation or two.

>> KYLE NEL: That's great. And so that -- we are talking about all these particular things. Those are the goals to identify with these things are and use AI or other methods to be able to serve those in the best possible things. I thought it was interesting.

>> I hope you understand the -- aging, population, growing, growing. I am a member of the digital inclusion of United Nations expert group and we are talking about the aging people's involvement in the Smart City. Some time ago the German friend came to my office in Tokyo, five years ago with 20 researchers and they made a very interesting comprehensive research in next stage Japan, China, India for Smart City issues. I don't know the outcome of the project. But Japan is the No. 1 super aging society in the world. We have almost 30% of the population is over 65 years old. And that's increased to 40%. That means Smart City has a real issue on the super innovations. How we can support them.

   And my question is any of your expertise, are you making some AI research on the cost of the aging people living in the city or their expenditure for life, creating life in these Smart Cities? That's really important because I'm the Chair of the OECD Committee on the smart economy.

>> FRITS BUSSEMAKER: Hand it to the panel that question. Maybe somebody else is working on that. Anybody want to comment on that?

>> PETER MARX: Three different quick snaps. One is that AI is obviously what we are doing resource deployment for emergency responders and health providers. So if you think about paramedics and emergency medicine, the folks who are on call to provide health care to an aging population. Second thing that comes to mind is obviously health aid and robotics. There is no question that we need a better system today for people to age in place. Right now aging in place is scarey quite frankly for both a person who is aging in place and for their families. So having, if you will, robotics and/or intelligent sensor network in place that allows to monitor falls is a huge thing.

   The third thing with regards to transportation. Transportation is something that's come up a number of times before, but machine learning for using, you know, really anticipating the needs for the elderly is a big issue. The single biggest expense of transportation in the city in the United States is paratransit. You call up the paratransit agency and you go in a three hour window and someone shows up and they help you get to your doctor's appointment. And you have another

three hour window to get back from your doctor's appointment. It
is a really poor quality experience. Those are the sorts of
things, you know, and as you see ride sharing is a huge issue.
Benefit this in AI and techniques around that would benefit.
Those are three little things.
     >> ANTOINE BORDES: Can I say a fourth which is
accessibility and communication. Smartphone for visually
impaired persons and this is, of course, as people are aging
their view is getting worse and worse. So basically we go to get
access to this information or at least part of it. People are
actually -- can't see or visually impaired or hearing impaired
is also important but AI is already helping and going to get
better and better.
     >> Great.
     >> Thank you so much. Oh, sorry. One last one and we have
a little --
     >> FRITS BUSSEMAKER: Very last question because we have to
wrap up. We got a grace period. But I am going to end with one
question and then get to the panel for some take-aways.
     >> Thank you very much. My name is Philip Cousins. I'm
with Sophisystems based in Boston and now here in Amsterdam. Our
focus in working with Smart Cities, started with Miami Beach
where I was a resident for 20 years, starting in 2005. And there
are two comments and then a question that I would like to put to
the panel. One person remarked about the role of participation
of citizens' input and involvement. For the Miami Beach project
this was key and it started by engaging in this case the members
of this group called the leadership academy. In other words, a
constituency of people that were educated already about civic
life. And the key there was in devising a way to take the city
budget and go from use of rule based analysis where we are
taking collections of AI rules and essentially do what might be
called model driven AI rather than rule based AI. And I'm
talking about this because creating a model of the budget and
then a model of the city you might call a mini version of the
city on a dynamic modeling environment, this proved to be
extremely powerful to get buy-in, to get budget, to get
resources, have the first WiFi network I believe in the entire
city which happened to be done by IBM at the time where I worked
for five years.
   This adds to up two key questions. The first I would love to
hear anyone comment about the role of behavioral analytics. The
key question at the time neighborhoods are fighting each other.
And once we set up a parametric model showing that the
neighborhood interests could coincide and played it back to the
neighbors. This was a huge breakthrough in getting the funding
to build a WiFi network which is a city owned infrastructure

which extends to facilitators and to buildings and it was the
catalyst for bringing in Art Basel to Miami Beach which is a
multi-million dollar economic boom. That's an example of a city
being on desolation row to being an entertainment venue for
people.
    I would love to hear any experience that you folks are having
with model driven AI. Second the notion of behavioral analytics
involved and most importantly something I believe GE is deep in
to is the role of human consent. Essentially the people part.
If you could please comment.
       >> FRITS BUSSEMAKER: Given the time very briefly yes or no.
You can continue offline. We need to -- yep, yep. Yes or no?
We are going to take it offline.
       >> Great.
       >> FRITS BUSSEMAKER: Actually I would like to -- okay. I
haven't synchronized ourselves here. But I would like to suggest
we get back to the panel and hear your take-aways. We have a lot
of comments, feedbacks, discussions on AI, how it is going to
help cities and it would be interesting to see what's going to
be your pin out on the panel based on what you heard and shared
today.
       >> KYLE NEL: For me it is radical transparency.
       >> OKAN GERAY: Linkages between data and AI and we should
be seeing these in cities and trying to find good cases for
applying AI for city problems would be my take -way.
       >> IGOR VAN GEMERT: My take-away would be that all those
cities, so different, that still a global repository is needed.
Why reinvent the wheel. Why not share the insights.
       >> ANTOINE BORDES: Yes. So I would say that transparency
is important. And I would say that we should actually make AI
education more important in the maybe budget, maybe other
registries so that at least people actually have an idea about
what AI agrees are and how they operate. Whether they
are -- what this avenue but at least be able to see what they
are doing. The second part is push all the AI actors for open
sourcing, what they are doing.
       >> PETER MARX: I would like to say quite frankly the AI use
cases get much more real. And also put in a point which is that
I do think that the -- there are very, very many diverse users
of what we are talking about. Yet I will agree with you that I
think this panel is quite diverse.
       >> THOMAS WIEGAND: I think there are a number of low
hanging fruits and we can start with making cities less stupid.
And then turning them to be smart. There have been good
suggestions made providing access to data. That would allow also
citizens to begin active and come up with solutions themselves
and then provide examples across cities. Maybe ignore the

competitiveness between the cities and allow the smart traffic, smart trash empty system of Barcelona and Berlin, for example, and Barcelona are opening up their system so that they can import their smart trash pickup system, for example. And this thing I share it has to be managed and has to be reinterpreted. And by the low hanging fruit by the way I mean actually not so much the efficiency because this Pittsburgh example if traffic lights go more better, you will have more traffic. People are more likely to drive in the city. The tradeoffs are not clear when you do these things. When you lose your child in a motor accident that tradeoff is clear. Increase the safety of children and everyone else in the city. That is something there is no tradeoff. That should be done. And I think that is doable.

   And the last thing that has been mentioned yeah, you can have lots of data. You can have lots of AI models and lots of computer simulations. If there is nothing you can do with the results, that is a problem. And lots of cities the traffic lights are not smart. They are stupid. They have induction loops in front of them and you can't switch them on/off remotely and lots of things. The streetlights are not smart. And lots of things that are not actually actionable. You can't do anything about them even if you know they should be but can't. Those are one of the major things. I am not sure how smart things can be at the end.

        >> KYLE NEL: Thank you so much. The race will be won by those that do. Everyone plays a role in that. And I am excited to have people focus on. Thank you so much and we will see you back in the room at 10, 9 minutes. Thank you very much.

        >> You would like to see digital markets for jobs, for food and for commerce.

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