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>> ALEXANDRE CADAIN: Hi, again. Hi, everybody. We will start this afternoon session now. Just to let you know, this morning we had panels with four people each time. This afternoon we have three. And make sure in each panel, to move into a phase in which you will be able to build on the project that are propose. We invite you to really see how you could help on the different things that we will present. We have the problem owners but also the solutions that are proposed in design. Don't hesitate to ask any question as you need to make sure you get the use case.

Then with different background that you have, different experience from various cities that you come from, please help us to build on this.

Also we understood that a lot of you had sometimes projects that you would like to share within the audience to the panelists and so forth. We invite you to do it. When you do it, it will be amazing that you spend an minute or two to precisely explain the use case, how it relates. And the

different discussions that have been going on. What we suggest, because we will have every time a seven-minute pitch from the different panelists, we will have a bit more than 20 minutes presentation. Then it is good if we can go into a 40-minute discussion between all of us. Afterwards, the 30 last minutes on the hour and a half that we have together we would like to get into this kind of augmenting design of the projects to make sure that after each session we go further with the project that were projects presented and at the last moment of the day we know how far we went with the projects that were proposed and help you in these directions.

So let me now give the mic to Frans-Anton who will introduce the first session of the afternoon, AI Fostering Smart Government.

>> FRANS-ANTON VERMAST: Thank you, Alexandre.

Good afternoon, everyone, I want to call Renato and Carla on stage. That is already happening, so that's good. I'm Frans-Anton Vermast from Smart City and I hope to guide you through this afternoon session. I will start off by presenting a little thing, what we are doing in Amsterdam, in Amsterdam Smart City. I'll just walk over there.

You keep time, hmm? Thank you.

So basically Amsterdam Smart City is a not for profit organisation outside of the government and we were founded in 2008. One of the reasons we were put outside of government is that we were dealing with a financial crisis in 2008. We figured out that getting money from the private sector was a huge challenge as a lot of people from the private sector do not like the bureaucracy and the red tape of local governments.

So there was one reason we put Amsterdam Smart City outside of government. The other reason, we wanted to do a pilot, wanted to do a project and be able to fill projects. And when you put something within government, when a project fails it could have immediate political consequences. That's basically the other reason why we put it outside of government so we could fail a project and learn from projects.

The City of Amsterdam is one of the 13 partners, strategic partners within Amsterdam Smart City. The other partners are from the private sector, institutions and citizen engagements organisations.

In the past we were talking about the liveability of the city. How can we increase the quality of life for the people who live, work, and play within the city through the quadruple, which is the public-private-people partnership and people are even now talking about the quintuple limitations and exceptions by adding the NGOs in the equation. That was the past. We are focusing much more now on digital transformation, digital and

social inclusion and especially social inclusion. We figured out that we were doing a lot of work on, for example, reducing congestion on the ring route in Amsterdam. But we forgot about people who could not even afford a car. We think it is really important to engage the citizens and have that social inclusion. The other thing we are focusing on these days is how can we gain the trust of our citizens? It is funny that a lot of our citizens are willing to share all their information with Google and Facebook and other organisations, but they don't want to share their data with the local government. So that is another issue we want to work on.

The other thing is, Google, Facebook, other companies are there to earn money, which is absolutely fine. But as a local government you have a responsibility to put ethics into the equation as well and make sure that you achieve that social inclusion. If we take one step back from artificial intelligence and how we can use that for Smart Cities and for the benefit of citizens, you have to think about data and you have to redefine how you are going to use data. Basically we took these six steps and put them in a manifesto. The digital city is inclusive. So we need to take into account the differences between individuals and groups. It is not a one size fits all. And data and technologies should contribute to the freedom of the citizens and not be a boundary for the citizens. Data and technology should also be tailored to the people. So they have the final say. They have to decide what is going to happen with the data and the people have the right to be digitally forgotten. So that is something you have to bear in mind as well.

Citizens and users have control over the design of our digital city. The government, Civil Society organisations and companies facilitate this. Open, that is probably one of the most important characteristics of Amsterdam Smart City. We are an open data, open source and last but not least open algorithms, which I'll come back to.

It is from everyone, for everyone. When cities say we own the data and we can earn a lot of money with the data, we totally disagree with that because in the end, it is the data of the citizens. And the citizens should in the end benefit from the data. So when big companies come on board, for example, Google and Tom-Tom did a study a parking spaces, they can use the open data from the City of Amsterdam, but they have to give back the information for free to the Amsterdam citizens. They can't charge directly for that information.

(Bell ringing.)

>> FRANS-ANTON VERMAST: It is already seven minutes? One minute.

We, open demystifying tech by algorithms. We had a competition in the past. We invited developers to come up with apps. That was a competition. And the people could choose which apps was the best. Now we are going into a next phase which is the algorithms for Amsterdam. So opening up algorithms and opens up the choices and gives insight in the way our city is governed.

So we are going to put the next proposal into the City Hall to see if we can make this competition to open up those algorithms.

One of the open algorithms we have now is for the school choice for people who go to secondary school or to high school. They put in a preference list and the algorithms in the end decide in a fair way which children go to which school and to give the example, the daughter of our late mayor, she was not placed into the top three preferences she put in, but due to a fair system based on algorithms, she was put into the fourth, in the school of the fourth choice.

I'll skip this one. Then one of the other things we did is, we can decide as a city what algorithms we want to use. We can work on algorithms. But that doesn't mean it is still fair. So we asked a big consult antsy, accountancy firm to do a risk analysis on the central framework of these algorithms. We started off with this school algorithm to see if that's really fair, if it is really according to the values and the core principles the City of Amsterdam is using.

Then if you have not made any travel plans between the 20th and 24th of June, we have our we make the city festival, a new Smart City festival that we are not doing in one venue but we divided it over 100 venues within the city. So we have the citizens participation as well. It is not like experts or people who have a huge interest in Smart City talking with each other, but we want to get the citizens involved and have the discussion with the citizens.

This was very briefly what we have been doing in Amsterdam and what we are trying to take one step further. If you want to be kept updated on the development, please join our international community, Smart City community via Amsterdam Smart City.com/register and we can continue the conversation virtually or in person. Thank you very much.

(Applause.)

>> FRANS-ANTON VERMAST: Now I would like to invite to do her presentation all the way from Diademe in City Hall in Brazil, she is leading the transformation through innovation technology and intelligence and one thing we share is that we are very much in favor of the end user approach about citizens engagement. That is what she is going to do in her capacity as

secretary of communication and press office. So I would like to ask your attention for Carla Dualib. The floor is yours.

(Applause.)

>> CARLA DUALIB: Well, thank you very much for being here today. It is an honor to be here representing Diademe. For sure it is an honor to be representing women in government by Latin American. And thank you, Hani for inviting me.

As the communication secretary of Diademe di decided to create an area of innovation in IOT to make a difference. So I will start the presentation. As you see, Diademe is big. We have the second largest population city. This is the most population in Sao Paulo state and the second in Brazil. We are small. If Diademe were Switzerland it would be the biggest city here in the country. We have as you see 400,000 residents. So we don't have nonrural population. We think big, of course. We want to trigger the evolution. And why we think big? At this moment we are working to encourage other Brazilian cities to focus on sharing IOT, AI and Smart Cities. As I told you, Franz not only Smart City but smart people, I believe. First of all we believe in smart people. After all, this is for us the Smart City. The Smart City experience towards experience and urban policies. It will show in awhile, as you see.

And this is the way to avoid the people, a way to -- the people's time to -- with the time and money, how would you do this? Towards artificial intelligence means much more than IoT things. What does it mean for us? It means a way to people, a way to avoid wasting people's time and money to get better our city. What methods may fit our needs? For us may fit the life quality of our citizens. This is the reason that we are here. We are really worried about our citizens, about their lives.

How do we expect to achieve this? How could we go so far? We can recreate a repository, as we will show you, with our DNA. And so this repository will go far with the citizens lives, called the Diademe open evolution. This world means in Portuguese, give. Diademe open evolution means give. And why it means give? Because it is a way to share and get ideas for Diademe. Artificial ideas for customized solutions. We know that it is not a new idea to create a repository but for us in Diademe, a repository of artificial intelligence with customized solutions, it is for us about learning. It is about cities that will be able to download and upload the projects that we may learn from such another environment. It is about protecting our finance. As you know, we have problems in Brazil with finance. We may learn together how to spend less, earn more and how to use AI to become efficient.

We can learn with you, as I told you.

We have this project in the cities and we will present you - it is about learning, as I told you. We have this project in the city called Casa Batulobo, it is a project that exists since 1991. During the last 27 years, almost -- yes, 27 years. It is a house which offers care and protection to women under violence. And what do you get with this project in Diademe? We have some data. We have very good quality of data. How we know, we know who. We know where. As you see here. I am going a little bit fast and I'm worried about the time.

We have this data from all of these years and we have to transform this data in AI.

As you see, most of this man's, do this kind of terrible things with this woman. They used drugs. They stay all parts of our cities. I will come back a little bit. As you see. They are husband or boyfriends. I will go again.

And how could AI to have helped us? We have a course to treat this man to not only the woman. We can help this man too. We are doing this. And how could AI help us to predict these crimes? Transforming this digital data, this digital into data into AI? How could we turn this project into AIs? More than this, we can understand that we can engage this woman online too. Why not?

What are these tools that we can use? We don't know. Should be a foundation like FAGE, our partner, for example.

(Bell ringing.)

>> CARLA DUALIB: Could we work together for good works? We are looking for a partner here that could help us to do this better than we are doing. I'm sure that Diademe is the right city to test all projects in Latin America because of the similarities we have for 100,000 people. We have excellent localization. We are near from the airports. We are near from the ports. We have the same problems that we have in Brazil with all Latin America. And for sure we will impact the communities, the collaborating partners and involving all the cities.

Absolutely we can scale the project for all of Latin America.

At this time, we are building our new master plan in order to meet the sustainable development goals. We are defining the new focus in IoT innovation, AI, because they are in the top of the list of our goals. We understand too the innovation is a social process of transformation. As a communication secretary, I understand that we have to work first of all talking with the people, engaging the people. This is the difference. We have to take care of the people, talking with them, but using AI.

So that's it. I hope you like a little bit Diademe. It is a nice city. We are poor but we are looking for high technology

to become bigger than we are in terms of good solutions because we have, I think, the more difficult things: Passion to work with. And this makes a lot of difference in our job. The passion, the passion of the Brazilian people. That's it. Thank you.

(Applause.)

>> FRANS-ANTON VERMAST: Thank you very much, Carla. I hope to visit Diademe soon. We can exchange some experiences and knowledge.

Unfortunately, James Noakes from the City of Liverpool has let us know that he couldn't make it in time. So I would like to jump to the man who barely needs any introduction anymore. He is a thought leader globally on Smart City and we bump into each other anyplace on the globe and collaborate a lot. I would like to give the floor now to my good friend, Renato de Castro.

(Applause.)

>> RENATO de CASTRO: Thank you, thank you. I think there are just two people who fly more than me. They are here. So we have been yeah, several places. Actually, the idea of me being on this panel is much more than to be discussing about what is happening in the world and interacting with you. I will be very fast.

I would like to for us, it is important to keep examples, understanding that benchmarking is important. But it is very difficult when we talk about cities because culture, the matrix is different.

But I would like to give two examples how we should change our mindset when we talk about Smart City projects and how we should change our political mindset also when we try to understand ourselves the city and to position ourselves. Most part of the people think that Smart Cities are big cities. We have maybe, you know, 15, 20 maximum big metropolises in the world and I was checking the number. 5,000 cities in the world with more than 150,000 people. The world is made up of small cities, villages.

I would like to address two projects that I had the pleasure to be part of, trying to connect with what I spoke in the morning. The first steps. So the first one, keep it simple. It was very funny, I'm back to Brazil with these projects. I was supporting a very interesting project in the countryside, in the northeast area of Brazil. Carla is crying that she is poor. They are nothing compared to these really, really poor areas of Brazil. They have a lot of problems with drought and so on. The day we were supposed to have the meeting with the mayor by Skype, the secretary of development said I'm so sorry, but there is a big problem that is a good solution for us. Tell me?

Well, it has been a long time we didn't have rain in our city and today we got the storm. What happened is, well, we have flooded the streets and our mayor is on the street now talking to people and trying to solve problems. It would be fantastic if we started drafting Smart Cities for us with this problem. I said it is very easy. IoT is here for that. There are a lot of sensors very cheap now. We can put it not only to alert when they have a problem but also to forecast. He said Renato, yeah, we know about it, but two problems. First of all, maybe buying new technology like hardware is not our first priority in a city that we still have problems with poverty, education, and health.

Second, even if it was like this, to put it together, the politicians and the legislative parliament, to vote for budget would take us a long time. So it is not a solution.

I said come on, your mayor is on the street now. They are complaining to the mayor because the water is inside their houses let's keep it simple. Let's call these citizens, a sensor. He is connected. He will be the one sending the alert. For us working with artificial intelligence, it will be with a sensor but with much better quality. This guy can send not just an alert but a lot of quality information.

Second, find partners. Same situation, I was living in Italy in a small City of 4,000 inhabitants. One of the biggest reality of the world: Security. The mayor went to Rome for a security budget. They gave her nine cameras. Come on, forget it, I have more than nine cameras in my house.

I was working at that time with a company developing a very nice project in the states, San Francisco. Artificial intelligence supplies visions of fighting in the jails. Cameras, computer vision, machine learning, what was the situation? That there be a riot or there will be fighting. I invited these guys, let's do something different. They started entering in the public server, 400, let's propose something completely different. You are much more worried about computers analyzing images and not the image itself. We must change the way we do surveillance. Most schools cannot have 140,000 people looking in the monitor for 140,000 cameras. Let's apply artificial intelligence. And let's invite the citizens to buy at least one camera for their backyard and with the image that is not their business, the public image, they donate these images to City Hall. The company builds to the City Hall a common center, one computer, no one taking care of the images, but the computer sending triggers when they have a problem. From night to day in a 4,000 inhabitant cities we got 300 cameras totally sponsored by the citizens, they were sponsoring

nothing because they were buying it for themselves in their houses with a very good price, by the way.

This is what we have been working and talking about the PPP, public private people partnership. It is not asking for money for people because they pay taxes. It is asking them to cocreate with you. When I pitched this to the company, what I told them, you get to make it happen in a 4,000 citizen population, you can sell these around the world. If you go to pilot something in Barcelona or Sao Paolo or New York, you are going to kill with another supply that one should be piloting or developing projects there.

That is the way we start rethinking how much is the budget that we have to do the Smart Cities and asking what our city can give back to the partners that partner with us. So I think Franz more or less, I am finished. I would like to warm up a little bit the audience. I think we should start building on it with the questions. The idea here again is to leave with some concrete call to, as that we can bring back home and start using.

>> FRANS-ANTON VERMAST: Thank you very much, Renato.

(Applause.)

>> RENATO de CASTRO: Thank you. Seven seconds to finish.

>> FRANS-ANTON VERMAST: Very well done.

I think there is an app that we use for questions.

>> RENATO de CASTRO: The floor is open also.

>> FRANS-ANTON VERMAST: Of course, the floor is open to you to ask questions in person. But let's see if we can have some questions first.

Please state your name.

>> AUDIENCE: I'm Olga from the United Nations industrial development organisation. I was listening the first and second panel and now the third. Unfortunately we didn't have time to reflect following the first panel when you set the stage. You jumped to the second one. There are concrete specific issues that different organisations, institutions have focused on.

But since I come from the United Nations and we are dealing with Marco big issues, I would like to ask you from your perspective, because all of you have been dealing with the practical issues, what would you be your recommendations for the United Nations in terms of Smart Cities initiatives? I can speak also and give you the examples what we have done in UNIDO, but it would be also good to hear from you, what do you think as a practitioners, what are the suggestions very practical examples? You gave a example, which is a good one. If I translate at the U.N. level, what would be the recommendation?

>> FRANS-ANTON VERMAST: Carla, would you like to start off? Did you understand the question?

>> CARLA DUALIB: I think the first recommendation is engage the citizens. I think it is the first of all, listen to the citizens. Do like Franz recommends, follow with the citizens, engage them. Tell them all the problems that the city has and do like a kind of not a hackathon but bigger than a hackathon. How can I tell? It is a kind of -- challenge, a big challenge with all the secretaries like with health, with education, with mobility, just to understand what are the real problems of the city after this, decide what to do with the government. I think that is the first step. Engage the city and then cocreate with the citizens. I think before the Smart Cities we have to understand what is the smart people. You know, the smart people I think is the first step to go ahead to this Smart City. Smart people, then Smart City, is my personal opinion. I understand that if you have the people engaged, for sure you will have the Smart City consequences.

>> I think that is a very, very good start. That would be my answer as well. Secondly, I would encourage to open up an open innovation platform globally so because there's so much knowledge and experience out there and as I mentioned, especially when we are talking about cities, not rural areas in this case, but most cities have like the human body, the same anatomy. All cities have to deal with waste, all cities have to deal with energy and mobility. So solutions in one city, no matter what the size of the city is, could be easily implemented or copied to another city.

So in my opinion you should create an international global open innovation platform where people can ask questions, moderate it very, very well and build up that community to collaborate. And exchange city to city experience and knowledge. We can always hire very, very expensive consultants. No offense hopefully here in the room. But the experience and the knowledge that is present within both the knowledge institutions and within cities could be copied so easily to other cities.

I would encourage that. And on top of that, I think there should be political leadership or -- not political, but leadership within the U.N. and that one person is not leading but orchestrating all of the projects that could be tagged as smart. Renato?

>> RENATO de CASTRO: Yes, I would complement the comments of Frans-Anton.

The U.N. is not my background. I have been working for governmental organisations from South Korea, promoting eGovernment and sustainable cities. Connected with the public policies and public support, but it was surprising to me to discover how many different agents we have within the U.N.

Again I work very close to what is happening in the world, but it is not so well, I don't know -- it was my thought not to go so different. And we got a surprise at the end. We didn't get to manage these because of the schedule, but UNICEF from the office of the UNICEF with San Francisco, they were supposed to be with us talking about the future of children under the future of smart citizens, so complementing what Frans-Anton said, at the U.N., it is very good to have something global and open, but each of the agents should also address the topic under their perspective, refugees, UNICEF for children, health organisations. So I think that Smart Cities, it is much more a label to understand of the shift that we are doing in our society to go, to evolve to a different way to coexist. So I think it is really a need that the agencies take a very proactive role in promoting this and educating. We need a lot of reeducation for our politicians in this level of decision makers to see in a different way.

>> FRANS-ANTON VERMAST: Could I please add to that? The way we set it up in Amsterdam as a not for profit organisation outside of government, we run the whole show in Amsterdam with three full-time equivalents. So if you extrapolate that on a U.N. level, it wouldn't cost millions of dollars or Euros. But it should be relatively cheap and the impact on the quality of life of citizens can be huge on that one.

The gentleman here at the front.

>> AUDIENCE: Good afternoon. My name is Denis, also from the U.N. Department of economic and social affairs. We are the division who is working on eGovernment. We have a publication called United Nations eGovernment survey, where we assess the national portals of all 193 U.N. Member States.

The 2018 edition will be out this summer and for the first time this year we have also assessed 40 cities, portals around the world, regionally balanced also from developed and Developing Countries. Our city is not there, unfortunately, but we have others.

So my question is around how we can assess or maybe how we can better assess local eGovernment development initially we were planning to call that section as we had some title that includes Smart City for resilient and sustainable societies. But then we thought that like the definition of or the meaning of smart will probably be very different across the countries.

So we went with the local title, but my main question is what would you recommend for defining smart government and more importantly how we can assess or do you know of any assessment frameworks that could be applied across these?

>> RENATO de CASTRO: I have been doing this for awhile, let me start. First of all, it is still quite new for a lot of

countries and the beginning of the process in the country is much more a political advertisement rather than real actions.

I would start by trying to frame the best practices that we already have in the world. What is happening, I had the opportunity to be traveling. I saw fantastic, for example, eGovernment project in Kazakhstan. We never heard about this. I have been around. Most, I also question myself a lot, least, because rankings, we know there are different ways to make it, but most going on was listed as the second, most developed data driven city in the world after New York. We have done also a lot of implementations since five years ago when the mayor, this new mayor took place and they claim to have been digitalizing more than 100 governmental services.

So I would start from this. What are the best practices known now in the world. From this you go down to the level that you start also educating your governments how to do this. I'm sure that all regions, however they are not publishing, but we met I think two years ago in Australia, remember. Fantastic projects in Melbourne, but I never heard about these projects because they are very local, there, not publishing.

That could be a very good start. List what are the best practices, what we can find.

>> CARLA DUALIB: I think -- okay? I think some very, very good ideas in terms of -- it's okay?

I think some very good idea in terms of communication for sure and as was told, if you can put all of this information in one platform, it should be excellent. And I think we could work together on this. All of the initiatives of each country. Then we could merge all of these initiatives. Should be a good idea.

It is not easy because I understand that first of all they are political, but after this we can put it like a repository of two or five years.

>> FRANS-ANTON VERMAST: If I may add to that, what Renato was mentioning, don't put only your best practices into search and innovation platform, but more importantly put also your lessons learned. Just to give you the idea, in Amsterdam we about 70 -- seven-0 percent of all the projects have failed or were not ready to scale. And they were not ready to scale because of all types of reasons, wrong governance structure, wrong time cycle, wrong structure. We created something called the innovation graveyard. We put all the innovations not ready to scale at that time we put in the innovation graveyard and reassessed every six months to see if they are ready to scale. Nine out of ten, if you put two, three, sometimes four projects together in one new project, it is suddenly ready to scale.

That is what I'm emphasizing, why I'm emphasizing the lessons learned are so so important. I had a discussion earlier

on today about oh, why does Amsterdam not have a bike sharing programme? First of all, we have 2.7 bikes per person in Amsterdam. That's the ratio. But the reason why we failed with that project is we allowed two companies in with the bike sharing programme and we didn't make the right agreement with them and we figured out in the end the only reason these companies wanted to put bikes in the City of Amsterdam, because they were interested in the data of the people who were renting these bikes by credit cards. So excuse my French, they put in shitty bikes and didn't take any responsibility. That is a lesson learned that hopefully other cities will make the same mistake. So best practices, lessons learned, in an open international community platform, I think that could help to improve the quality of the lives of the citizens.

I would like to go to the question with the most votes at this time from Mr. Or Mrs. KG from Nairobi. Are there any best practices you know in data management and data ownership? As governments would want in the spirit of protecting their people to own data management and that is privately mined.

Would you like to elaborate on that, Carla?

>> CARLA DUALIB: I'll try. I think it is true. The government has the spirit to protect the people. It is really, really true. It is a hard problem that we have in Diademe. We already talked about last time communication already fights with IT because we want to work with the data in IT sometimes. Don't give me the data to work. Why? Because they are protecting the citizens. Until, what is the reasonable to protect. They really have to protect, is my question. I think they have to protect the numbers, of course. But they pay for the government, what the companies pay, what the people pay, but for sure I don't know if they have to protect the other data. I think we must use these data for communication, for example. And the government and I think this question is very delicate because I work with communication and we need these data to work with.

So my person opinion and in Diademe, I am fighting with to work with these data. So I think we have to work with the data but protect the numbers and the payments to the government and the taxes.

>> FRANS-ANTON VERMAST: Renato, any thoughts on that one?

>> RENATO de CASTRO: Yes, there is a lot of thought and a long answer and everything can change next week with the new regulations from the European Union for data. So we are very excited from one side and also very cautious from the other side how it will promote more progress or not.

I say that the best practice I see, I have been seeing would be using data from the government is to promote

entrepreneurship. They are taking public data. They are putting these data available for companies that want to build from these data solutions and, of course, as company monetize on the solution. To some extent, these monetization returns also should the government as taxes or even as royalties for the project.

So we have these big projects in New York called links New York. The Consortium got the right to replace all the cab booths of New York, replace it with the internet that were also an advertisement display and they won offering for free the technology to New York and also offering New York royalties on the money or the business that they do there.

There are a lot of questions about they are collecting data not only from the citizens but also from the tourists that are in New York. So well, it is very delicate. We need regulation at certain extent that these regulations will not block innovation. So I think that is a paradigm that we are living now. And if you leave data part and go to a higher level with artificial intelligence, it is the same. How to regulate it but in a sense that we don't block new developing technologies or evolving technologies.

>> FRANS-ANTON VERMAST: One of the things we did in Amsterdam is data sets are open by default and that caused a lot of trouble the first two, three months.

The best example there is that the vice mayor of Amsterdam responsible for the finance, he put his profit and loss realtime on the internet. So every expense, every income was shared with the public. That was a lot of fun for journalists for two to three months.

After a month and a half also the people from the Amsterdam community who are not related to the city professionally but simply because they are inhabitants of the City of Amsterdam, they started to give their advice and sharing their expertise and sharing their knowledge. That improved the data sets. It improved the profit and loss presentation. It improves the data sets enormously now in Amsterdam.

How do we measure the quality of the data sets that are open and available for everyone? Very simple. If a data set is hardly used, there must be something wrong with it. That is when you go and look into it.

And of course, you want to use data, artificial intelligence, algorithms to prevent things going wrong. So there it is really important that if you have data from some people that could possibly be let to an individual, there is this mechanism, I think it is invented by Google which is called differential privacy. They blow up the data to a million. Then

they reduce it back. So you can't lead it back to an individual anymore.

So for a lot of companies, for a lot of even departments, it is really scary to open up the data. But if you start, for example, within local government, start to share your data between two departments within that same local government and see what goes right and what goes wrong and don't do it all at once. Learn from it. And, for example, from within if you want to open up from a City Hall, just start to open up the data for people that are attending the City Hall to get a driver's license, to register a birth or death or something. So make sure you start very, very small but learn quickly from it. And in the end, the ownership of data in case of local government is the ownership is with the citizens and it is not with the government in our perspective.

Does that answer your question, Mr. Or Mrs. KG from Nairobi? Thank you from your question.

>> RENATO de CASTRO: Anyone want to add on that? That is the raw material for us to discuss artificial intelligence. Not only discuss, but other contributions, if you have any experience to share, we are glad to listen.

>> AUDIENCE: How was the decision made to make the data open in your case?

>> FRANS-ANTON VERMAST: We just put a proposal to the City Council.

>> AUDIENCE: They were in agreement?

>> FRANS-ANTON VERMAST: Open by default and there were some courageous City Councillors. That is one of the lessons learned. We had in Amsterdam, do this in the beginning of the political lifecycle. If there is a new City Council elected, do it in the first year, not in the third year. Then they are starting to chicken out, et cetera.

(Chuckles.)

>> FRANS-ANTON VERMAST: It is basically, somebody came up with a proposal. Of course, after doing quite a bit of studies. We want to have the data set open by default. Then, of course, you look into security issues and safety securities. So you want to open that one. But we learned at the very, very hard way. The public transportation company in Amsterdam, which is fully owned by the local government, there were two guys who didn't want to open up their data. Why? We couldn't figure out why.

So we had to take a really, really bold measurement. I think the polite way to say is to say we had to find a new professional challenge for them. We sacked them. We figured out that the reason they didn't want to open up their data, those data sets, because there was everything wrong with them.

So sometimes you have to take bold measurements. A take the decision within the highest level within the local community.

>> AUDIENCE: Thank you.

>> FRANS-ANTON VERMAST: Anyone else?

>> RENATO de CASTRO: I'm okay with this.

>> FRANS-ANTON VERMAST: Oh, yes? Could you switch on the mic, please and tell me your name?

>> AUDIENCE: I'm Juan, part of the ACM. I think a lot of the questions when it comes to technologies for cities or even just development, a big factor that is dealing with infrastructure to scale and obviously different cities and different towns and even countries have different regulations, different conditions for developing infrastructure. I was wondering from your individual experiences what were the hardest things to deal with outside of the monetary issue?

>> FRANS-ANTON VERMAST: Yes, I can keep on talking for hours. Can you switch on the mic, please? Thank you.

>> RENATO de CASTRO: I'll start and I give to you. I still believe that PPP is the best tool that we have now when it comes to infrastructure or attracting investment or bringing private money to public investment in infrastructure. It is also complements one of the, it is correlated to one of the questions there. The only problem is that when we have a global players in the sense of running tenders for PPPs, we must be careful that we are all talking about the same thing. I give you an example. We are running now, actually it has just finished one of the largest PPP projects in the world in terms of value, smart value for lighting, smart lighting in the sense that they need to modernise all the lighting in the parks in Sao Paolo. We are talking about 800,000 lights in Sao Paolo.

But it started this process like three years ago, two years ago. And they got so many proposals in the time there that they decided to stop and understand why everybody was proposing something that basically the return of investment was really bad. And then they figured out that the companies were not interested just in the lighting but to own the poles because the next generation of technology, Uber technology were depending on putting new hardware on the street and the pole was the best, for example, the best place to put the 5G antennas and so so.

So it would be a very profitable piece of land to be landed, to be rented. So I think that is the big deal. That probably you cannot do direct comparison because as you said, regulations are different, rules are different, cultural aspects are different.

But now Smart Cities and technology are applying to urban problems. It's global. Big players are playing this game

around the world. So that would be in my opinion one of our main concerns about it.

>> FRANS-ANTON VERMAST: Would you like to add something to that, Carla? Just copy paste Diademe?

(Laughter.)

>> CARLA DUALIB: Diademe, we are doing the same. We have in the region of ABC in Sao Paulo the first illumination, the public lighting. We will run next three months and it is the same. Really the same.

>> RENATO de CASTRO: Let me complement, what happened there in Brazil, the Brazilian development bank is granting money for the companies that win, they will finance it for the companies. What they decided to do after this big problem in Sao Paulo, they canceled the PPP and the National Bank of Brazil is started sponsoring financing, the City Halls to hire consultant company to do the project for the PPP, for them this project is well framed, be as a tender. So it took like a year and a half for Sao Paulo to have the real project, thinking all the aspects. So they ran two months ago. They have a winner. This winner will start now. We are talking now 20 years of public light concession. So it is a long-term contract, you know.

>> FRANS-ANTON VERMAST: So one of the things we abolished basically in our vocabulary in 2010 is the word subsidy because you have to work together, you have to partner. Like Renato and Carla say. We shifted from CapEx to op ex-. If people want to sell something in Amsterdam, smart lightbulbs, infrastructure, they have to come up with 75 percent of the financing themselves. Then we can possibly lease those from that company and that is also one of the conditions for this partnership to make sure that it is not only a one-off transaction. And due to European regulations, market distortion, we were not allowed to deploy our own fiber network in Amsterdam but we were able to did that via a minority shareholder position within that Consortium. I think that is the importance of the role of the, the natural role of local government is to be a Facilitator on one hand, on one side. They are Facilitator and they have to give the direction and then inspire the partners to come and and invest. And mind you, the return on investment for local government does not always need to be financially. It could be reduction of CO2 emission, it could be reduction of unemployment.

The second role, the local government had with this fiber infrastructure is to guarantee that it will always be an open access network so that you don't have the vertical integration. Like with roads, with airports, with ports, the local government or the government guarantees that everybody has access to those infrastructures. But it is important to get the private sector

involved and that they eventually come up with the money in our perspective.

I had a question there about algorithms. As machine learning is not easily creatable or readable, how do you guarantee citizens have access?

The thing we are doing now is to open up these algorithms and not as much the bits and bytes we are trying to open up, but more the framework and the conditions and the risk analysis that we put into those algorithms. And open those up and that's why we asked the community within the Amsterdam metropolitan region to come up with expertise, to come up with other solutions. But also we want to open up those algorithms to see how the city is actually making decisions on certain issues. And to present that, if that is fair. And in some perspectives from a local government perspective you think it's fair, but from a citizen perspective it is not fair. That is what we want to know.

It is not as much like the data sets we present. That is also, I can't read them. But there are a lot of people who have all kind of tools that can make them readable, then translate those data into information. That is how we treat algorithms as well.

>> RENATO de CASTRO: I think this question comes to the core discussion about scolding anyway. We have a lot of problems in security in software because security is not embedded during the development of the software. What we do now, we create something and then we start tracking the possibilities of breaking this thing, to create the safety that it needs.

In my opinion we should start with the designing thinking in the process of creating the algorithm. Then we should come to what we have been talking about this morning, to multistakeholder process, in the process of co-creation that is not just the coder that is defining how the algorithm will work but also the ones that will be using these final solutions and if we get bad safety during this process we don't need to be looking for the bridge in the future. It is complicated because a lot of things are already done, but I think these -- this is what is happening now, for example, with the Facebook problems and so on. Everything was created, even with the good faith that it was for good. But it was created under an old matrix that is not what we have now. So we really must start from 0, mainly if you are talking about the public thing. If you are talking about public interaction with the city with the citizens. We must step back, create from zero, try to avoid adaptations. You know, oh, let's take these and work it there, work it here. Otherwise we are going to face this problem forever.

Again, there is no safe place in the world. There will never -- and in the digital world, even worse. So what we can try to do is to forecast and to mitigate the possibilities of problems.

>> FRANS-ANTON VERMAST: Carla, anything to add to that?

>> CARLA DUALIB: No, I don't want to -- I don't know how to add. I would like to know if we are going to finish with these questions before we ought to finish our --

>> FRANS-ANTON VERMAST: We have 20 minutes.

>> AUDIENCE: Could I add one question?

>> I am coming back on the code problem and on the idea of trying to get a global solution, to not reinvent the wheel every time. I think one important solution is to use open source and free software. That has to be a common ground for the code bases that have to be used, especially in public solutions. And I would like to know what the awareness of the free software today within the general public and communities and administrations.

>> FRANS-ANTON VERMAST: For us it is just key because it is one of these lessons learned. It is not as much software, but it was the electrical carrying points for vehicles for electrical vehicles. We didn't do that open source. We had to take them all down and when we awarded the contract to another company. So from that point on, everything you do open source, whether it is software or whether it is assets, I fully agree on your statement that free software and open source software, that is also accessible for the less fortunate on this globe. I think it is really, really important if you want to improve the quality of life of citizens.

>> RENATO de CASTRO: I think that we are spinning in the cycle of development and coming back again and it is a good sign, back to the academy and to the university.

I think universities in the last years lost a little bit the sense of impact, real impact for society. The science was very high level of development but it was not applied. Now universities are getting more involved in this process. The experience that I have now in Barcelona, the government is starting to partner with the local universities to be developing the new solutions for tomorrow. It is not the solutions for the next decade but solutions that we need now. I think that we still have a lot of ethics and a lot of methodology behind the academic development. So that could be a very good solution in partnering with the academy, but again not for the sake of the art but for real impact projects and solutions.

Next panel we are going to be discussing some points about citizenship and we have one of our guests that is Professor what keen from Barcelona and I think he has some examples there what

they are doing in the department, the development department in order to bring solutions that can be applied and thereafter.

>> FRANS-ANTON VERMAST: Anything to add, Carla?

>> CARLA DUALIB: No.

>> FRANS-ANTON VERMAST: Just to make a bold statement towards that, if it is not open, you can't own it, in my perspective.

>> AUDIENCE: Thank you very much. I think also if we want to do something together, open and free software is the only solution to solve the problems. What would be nice to imagine a common ground base on which we can invest funds to develop software together. That would be able to give acceleration also to existing platforms to improve also the security because, of course, if we have open source we can also improve the security. And there are some business models which are very interesting that already exist today that could be inspiring to try to apply on a wider scale.

That would be I think something interesting to consider and to try and get started all together again.

>> FRANS-ANTON VERMAST: That is maybe one of the things we want to give to the two people raising early questions for the United Nations for the applications with free and open software.

>> AUDIENCE: I am a Professor here in Switzerland he land at the university. Talking about the state-of-the-art and algorithms, there is an active community on something in computer science called FACT, fairness, accountability and transparency. We need to learn how to embed fairness and other dimensions within algorithms.

I wonder what could be good ways of accelerating transferring this knowledge directly from, as you were saying, academic institutions to cities because the level of complexity to some degree, the level of literacy that is necessary to make full use of these algorithms is quite high.

>> FRANS-ANTON VERMAST: Yes, I totally agree with you.

>> AUDIENCE: What could be good ways of accelerating this transfer of knowledge from the city perspective?

>> RENATO de CASTRO: This is the work for the whole academy. I told in the morning that a romantic definition of Smart Cities, everything con expires to make your life better. Citizens don't need to understand what is happening truly but they need to feel that everything is smart. So yeah, translating this very high technological language to real impact projects that we feel, don't even need to understand, that is the big challenge. When you put it together, the main stakeholders of the Smart Cities, we have this project called living cities in Boston. We are connecting cities around the world, one city per country, to try to create a little bit of

common sense about what has been doing. The first humble work that needs to be done is to get at least five stakeholders: Universities, citizens, NGOs, public and private sectors. The leadership of these group of stakeholders will be changing along the time. Of course, government is the one that will be always structured to make things happen. If government doesn't want, we don't even need to push. But most part of the time who is leading the methodology behind the development is the academy. You know how to do it and do it in a deep and complex way. The problem is, when you transfer these back to cities it should be packed already as a solution to be used and not to -- I think air has this very particular -- artificial intelligence has this very particular characteristics. It is complicated on the back end but should be very friendly in the front end. Very user or citizen experience oriented. So definitely this is a challenge. Definitely this is sometimes why keep us so far from Harvard or from MIT or from other top universities in the world. Development is the state-of-the-art of the science, but when it comes to how we influences my life tomorrow sometimes is not so easy to pitch.

>> FRANS-ANTON VERMAST: I agree. For me, you have to make that translation. I think academia are really good source for both to invest and research on it and translate it to normal language.

Another question from our pigeon hole. Given how much is still unknown about the trajectories and impacts of emerging technologies, what kind of policies, regulations, PPP partnerships and proactive strategies should governments pursue?

Any thoughts on that, Carla? First go to the other Brazilian, Renato.

>> RENATO de CASTRO: We have been discussing along these two days a lot of projects. It is very, very grateful for me to so the proactiveness of Saudi Arabia now in being here part of the event and also to be developing Smart Cities, mainly green field operation cities in their area.

We see the Middle East is growing very fast, Qatar, Oman, Arab, United Arab Emirates. They face the same problems we face in whatever we do in Smart Cities. The most important thing is take all the tools you need to regulate and to have policies, but it must be made based in what is your codes in your city. PPPs, the same way. And mainly the strategies should be always focusing and making it happen.

For example, I mentioned Sundu, we are trying to get people already with 70,000 people. It is considered a success. Sundu management is not because they are expecting 300,000. They are in the heart of the rich Asian area. They are in Korea, very close to China, in the back of Japan. And why they don't get to

attract people? When it comes to the Middle East, we have a different matrix of thoughts and the way we develop things. So cities there or projects there should be really focusing in keeping the DNA. I was invited last year to speak at the American University in the United Arab Emirates. I was so amazed first of all with the structure they have there. Then mainly the gender balance that I found there inside the classroom with a lot of participation from the female students, they are doing -- but who was the female students there? Who they are attracting to study there? People that share the same matrix. So it is like, it would be very difficult to apply what -- the PPP of New York, fantastic. To give you an idea, it is estimated you have half a billion dollars in royalties for New York with the PPPs of e-link New York. Can it be applied in other places? Well, the model yes. Maybe that solution, no.

So can I -- yes, I think it is that you have the example of Pittsburgh there also doing a the look of things, a lot of nice things. We are supposed to have your mayor here but we had some problems to attend. But what exactly does this mean? I mean, basically most part of the great successes we see in the projects, they original because they took into consideration their own DNA.

>> FRANS-ANTON VERMAST: I just.

>> AUDIENCE: I just want to add a component to this as well. Building a lot of off of Wendell Wallach's work and his perspective on the boundaries of what government is able to fulfill and facilitate. They need to be more agile but that is not reflective of current policy structures. Part of this question that I wasn't able to fit into the character limit was not just what should governments pursue but what might be the boundaries of what is a government's responsibility? In other words, what shouldn't perhaps governments be enacting policy and legislation on an perhaps take the lead, allow the lead to come from industry or Civil Society, but to be there as the necessary support function there. I'm curious where you put the boxes and domains of appropriate action from government in these cases. Thanks.

>> FRANS-ANTON VERMAST: If I may comment on that one, it is, as soon as it improves inequality, the government should be one of the organisations that should put a hold to that. One of the practical solutions we do in Amsterdam, if we have a new project and we think it is going to push the regulatory boundaries, we invite the regulatory people in that project and ask for temporary and locally exemption for. We invite them to come over and learn from the project.

One of the things we are facing and probably a lot of countries are facing, it is very, very difficult for both

reasons and financial reasons to deliver the electricity back to the grid. It is one direction and we have a lot of problems.

A regulatory guy came up with a good solution. As you know, Netherlands has quite a few windmills from centuries ago. Regulatory guy came up and said if you have a wind mill on your premises and you want to deliver electricity directly to your company or household, just give it a post box and put a door and two windows and a door in there and it is a house. Then you are allowed to deliver the electricity you generate back to your own premises.

If we wouldn't have invited this regulatory guy we would never come up to that solution. So it is also from that perspective that you have to engage them proactively. And again the role in my perspective, the natural role of government is to facilitate and promote that social inclusion instead of widening the gap between the haves and have-nots. Carla, anything to add?

>> CARLA DUALIB: No, just to complement and state the same. I think the government must always help and be the same way, helping to give to the companies, the citizens, all the opportunity to do the best business, the best things for, to find the best way for, to put a best business, to find the best way to the life for the, in the way of the citizens that they feel good, they feel happy for the companies. For them to stay working there to getting more employees and things like this.

So that is the way. They must feel happy, comfortable there.

>> RENATO de CASTRO: The problem of some of the, going back to Korea, they are a free trade area to attract foreign investors, but they can not offer the same thing for local companies. Otherwise, they would damage the competition. So that was manage that they couldn't figure out when they started the project. Then it became a big problem to bring Korean companies inside the project.

>> FRANS-ANTON VERMAST: I saw another hand there from Mr. KG from Nairobi.

>> AUDIENCE: That is me. Thank you very much. Actually my reaction is to the question by Kenny Chan. And you mentioned something and my joinder to the question is: Are governments going to be reduced to just facilitation in this new age? Our country has just gone through a process of enacting a computer and cyber crimes bill. And the bill is, in itself it is very advanced. Looking at the bill you realize in the next six months it will need to be reviewed because of the pace at which technology is advancing.

To add the issue of artificial intelligence to governments that are only catching up with digital advancements creates an

even bigger problem. What I'm seeing in places like Kenya, the government has retired to the position where you say the government becomes a Facilitator. In the effort to facilitate, they still cannot even keep up. For example, the government now has a new policy where they are instituting innovation hubs in the design of innovation hubs that have been started privately. But now government wants to go into the business of starting its own innovation hubs in every constituency.

You can imagine as it is, private innovation hub in itself is an entire enterprise. Now, to bring that to become a government enterprise, you know, you can't even tell the kind of management that will go into that.

My question is: Are governments really relevant in this digital age? And the age of artificial intelligence? They are always trying to play catch-up. I speak as a legislator, as a member of parliament sitting in the information and communications and innovation Committee of the Kenya parliament.

>> RENATO de CASTRO: This is a fantastic question. It reminds me when we had the failure in artificial intelligence running a company last year, the end of 2016, two weeks ago -- two weeks later I was speaking in a conclave of mayors in Romania. My question was, can artificial intelligence replace the mayors? It was really a big debate that we had there in the sense that well, there are some -- well, the role of government should be the role of putting together, and as governments in a democracy they are, it is the representation of people. These guys are supposed to be there to make thinking happen in order to make decisions better. That's why the role we would never be a subrole and the other way around. Leadership from then should be in a way that they are not just putting top-down. They must listen. At least the other stakeholders representatives. So I don't believe that we are going to reach so fast these self management, self managed societies, but I think that governments are evolving to the way that they can use technology to listen better how people think or what citizens want, but they need to take their position or their leadership and making things happen and facilitating as Frans-Anton said.

>> FRANS-ANTON VERMAST: I think we come to an end of this session, but the lady who asked the first question is also allowed to ask the last question. Could you switch on the mic please?

>> AUDIENCE: I wanted to comment on the governments in this age of technological progress. This is raising the question, what is the role of private sector, of private sector, what is the role of market and government. Those have been eternal questions always when new technology comes to the fore. It is not new to ask this question.

It is also the core question, what is the role of policy today. It is a matter of public policy, public economics, put it that way. What is important to understand, in this era of exponential technological progress we are witnessing there will be, of course, a change in this differentiation, what is the role of the public sector, what is the role of private sector, market, government, because of technology is blurring the differences between the sectors, between the traditional socioeconomic models. We will witness a lot of changes.

Maybe if you are emphasizing too much on PPP. I could say that better is to use collective actions. Collective actions are also mechanisms for that. They are also material gains, how you solve the conflicting situations and there are Facilitators for that. How you mobilize resources in certain circumstances, so on and so on.

When you use collective actions you deal with some unforeseen circumstances, externalities caused by these processes. What is the role of international organisations? Because government in some Developing Countries and particularly in the LDCs are not capable of addressing those issues. Simply they need capacity building for that.

This is happening also in Developed Countries, they are facing this challenge. If you need capacity building in Developing Countries, as you rightly put it, different sorts of platforms are needed for that. Best practices, sharing the knowledge, maybe collectively if we can work to use some of these artificial intelligence and other tools to help solve this problem, that would be really a good solution for the international community.

But we are just now discussing it. That is something that we should do more in a fast track. That is my worries. Listening to you, there are incidences here and there. There are technological solutions. We heard Marco issues. Today in the morning we heard business companies are more interested in the industry and manufacturing but not providing solution on the city level. Why the IBM, Siemens, they have solutions for the city level. If you put everything to the in market, of course it is not going to happen on the city level.

The reality is that urbanization, agglomeration, in Africa it is so fast that if we do not address that in fast track model we will have migrations, peace and the world will be questioned because these people, they have to have a job in the cities. Cities should make a decent life for them.

Who is going to solve this problem?

(Laughter.)

>> AUDIENCE: Of course not their government because it is not possible at this fast track mode.

>> FRANS-ANTON VERMAST: That is what I -- I totally agree on your point of collaboration between the several organisations, public, private, knowledge institutions. It is also to empower citizens to engage citizens. So from the U.N. perspective I would never, ever do this as a top-down project but try to identify these little projects on the ground and try to facilitate them and empower those people.

What I would also like to add to the previous speakers and to you is, you have to allow for uncertainty and you have to allow for failure because of the rapid developments in these days, both in a policy, both from a policy perspective, both from a technological perspective. I think if you will be able to address that and to design policy, to design solutions, that allow for failure and allow for uncertainty, you can adapt much quicker to all kinds of changes.

I think that is it for us. Can I just do a few conclusions? That I've picked up?

I think we have to have the openness, the open source, the open community approach. For the future also, open data for as much as possible and open algorithms.

On that open innovation platform or community platform, we can share our best practices and lessons learned. I think that's the main take-away I would like to give, and the summary of this session.

Back to you, Alexandre.

>> ALEXANDRE CADAIN: Thank you so much, Carla and Renato and Frans-Anton. Thank you also to the audience. We are going to stop here and start again at 4 sharp and start the last session on AI Empowering Smart Citizens. So we will have the last panel for an hour and a half again and we hope to see you back here in half an hour. Thank you.

(The session AI Fostering Smart Government concluded at 1735 CET.)

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