

FINISHED FILE
AI FOR GOOD GLOBAL SUMMIT
JUNE 9, 2017
10:30 A.M. CST
BREAKTHROUGH GROUP ON CAPACITY BUILDING
EDUCATION

Services Provided By:

Caption First, Inc.
P.O Box 3066
Monument, CO 80132
1-877-825-5234
+001-719-481-9835
Www.Captionfirst.com

This is being provided in a rough-draft format. Communication Access Realtime Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings.

>> ALEX MEJIA: Is the microphone on? Ms. Kim? Is the microphone on? This one. Good morning. Good morning, everyone. It is 10:35. So we have to begin. One of my main tasks is time management. So allow me to welcome you to this breakthrough session on capacity building. We are going to cover the issue or attempt to cover the issue of education which is rather important for applications of Artificial Intelligence and for our society as a whole looking in to the future.

My name is Alex Mejia. I am a senior manager with a company called UNITAR based here in Geneva. We specialize in capacity building, training, that part of education and normally for professionals, adults. Last year we were pleased to have trained more than 54,000 Government officials, Diplomats and Civil Society representatives. In introducing myself allow me to introduce Fengchun Miao, chief of ICT in education of UNESCO who has led the preparations. Dr. Fengchun Miao will give you a short presentation after this introduction.

In the documents that you have received and in the agenda that is in the program that I am sure you read, you saw that we are

postulating, we are hoping to approach this breakthrough session from the following vantage point, education from work, Artificial Intelligence promises to boost all forms of education enabling the personalization of education at scale. That's the main premise. Wider access to networks and knowledge, peer learning capabilities, crowdsourcing, new content and machine learning are driving significant advances in online learning and have enabled teachers in K-12 schools and higher education and capacity building initiatives to multiply the size of the classrooms while addressing individual students' unique learning pace, needs and styles. A good combination.

The continued improvement of Artificial Intelligence however may render current education systems obsolete calling for dialogue and guidelines around global inclusion access to skills, most relevant to the human experience of the future. We have been debating before coming here on how society can leverage, create a better use of Artificial Intelligence as a whole and in doing so using Artificial Intelligence in education, of course, is at the center of the road. So to have a better global citizen, it is inherently something that goes back to education. Education at the classroom outside the classroom. Development, the fight against poverty. One of our speakers is going to focus on that. How Artificial Intelligence can help us as you saw in the previous session the tackling poverty, reducing disparities and inequalities with education, with leveraging access to knowledge. With that introduction now I have the pleasure of calling my colleague Dr. Fengchun Miao from UNESCO. Thank you.

(Applause.)

>> FENGCHUN MIAO: Good morning, everyone. My name is Fengchun Miao. I'm the chief of ICT education in UNESCO. UNESCO and UNITAR are entrusted to colead this session for education. I think we would like to suggest that the discussion of this session be focused on how AI could be harnessed to achieve education 2030. Education is at the heart of the 2030 Agenda for sustainable development. And it is essential for the success of all the SDGs not only for education for 2030. And I believe that AI for education is AI for a better future for all. For this we must do everything we can to ensure that AI will not further widen the learning divide and the intelligence divide by 2030.

In 2008 I went in to the schools of Pakistan and the schools of career and within two weeks of standing in front of these kids I had very deep conviction that if we want to prove AI for good we need to think how AI can be used to serve these underserved groups. Unless we can use AI to serve them we cannot prove AI is for good.

I think based on the same conviction UNESCO presents this

vision for education 2030 which is to ensure inclusive, equitable and quality education and promote lifelong learning for all. Given the fact that many Developing Countries and all the Least Developed Countries have not achieved the six-year basic education for all goals by 2015 this further stretched targets for education 2030 presents a huge challenge for many countries. Because we are talking about a 12-year education and within them nine-year compulsory education. And we are talking about inclusions and equity, especially for people with a disability and for the poor people and for the people living in the remote region. And we want to promote the gender equality. And we want to ensure that no matter how many years we provide to children in the education area we should have the basic equality control. And this challenge also presents a lot of needs and a lot of demands for the use of digital innovation including AI.

With this in mind I want to present some of the questions I think we should debate around before we make the proposal about the guidelines. And I'm sorry the slides were not completely presented. So I think that my first question is that where the millions of U.S. dollars spent on machine learning make return to the 61 billion out of school children and youths. When I say here we are talking about how we can trend machine learning, but we have 61 million people -- children are out of schools, and nobody caring about how we can educate them. I think we need to think how we can return, invest in AI to the education especially for the out-of-school children and youths.

Relating to this we need to think when AI boosted education emergency and crisis. Just to summarize very simple number. Today one in every 113 people on the world has been displaced due to conflict. And the natural disaster simply in 2015 displaced almost 20 million people across more than 100 countries. And all these kind of internationally displaced people either we call it educational disadvantage group. So how AI can help them. How AI can track the education of refugees and provide the relevant education to them I think is the needs and it is also a question for all of us. And when we can actually use AI to reach this group of people that are waiting there, they are on the move and they need our help.

And my next question is that can we use the machine learning to really improve the quality of human learning. We are talking about the quality of machine learning. But actually we have the big problem in the quality of learning in the classroom. Actually we have a statistical thing that 30% of the students staying in the classroom learn lasting in 40 minutes is more like the 30 participants are not listening to this discussion. It is the same. So I think we should take two approaches. The

first one is the forward looking approach to think what's the next generation of use of ICT in education of using AI in education. I call it the generation 3 e-learning system. I have a thing that in a few countries that they are testing to use AI to enhance the e-learning system, but on the other end what we need to think of the leapfrog AI which means how we can use AI to really, really to help Least Developed Countries, to leapfrog the education problem they are facing.

We have a project in Africa. I am working with Mozambique. I have been there three times. One of the major issues they are facing is teachers. The teachers are paid with a Government salary, but they are not coming to the classroom. And it is really difficult to reach each corner -- and to ensure that at least the teachers are functioning and are delivering the lessons to the children. I think this kind of needs is really in the field and in need of discussion.

And the next question is that how can we provide evidence base and best practice to really convince the large scale deployment of AI. UNESCO is working with ministries especially education ministries. I have been working with education ministries of more than 50 countries in developing their national ICT education policy and master plans. But when I promote some new technology and new idea to the ministries the Minister often ask me a question. Any successful stories and then they will ask have any United States or OECD countries adopted AI or this technology in their K through 12 schools. I need to provide examples to the Minister officials. Unfortunately I have found very limited number of examples to use to convince education, to convince Ministers that AI works for them and you should adopt AI systematically.

And at the same time UNESCO connected more than 100 Member States in 2015 to talk about how we can leverage ICT in achieving education 2030. We adopted the Qingdao declaration and all Governments committed that they should provide girls and boys to connect the digital devices and relevant and responsive digital learning environment by 2030. And I think they are willing to adopt AI if AI is made available, accessible and affordable. But unfortunately it is not the case. AI is not available yet. And the AI application is not accessible. For many countries it is not affordable. So it is a question for us. And I believe that all the AI needs education, more than education needs AI. 15 years ago when I was in China I was in charge of the ICT curriculum for primary and secondary schools. And we developed for ICT curriculum for upper secondary schools in China. We introduced AI as one of the five we call the required elective courses which means all the students need to choose one subject from these five subjects and AI is one of

them. But the biggest challenge we were facing 15 years ago is most of the schools are short of AI teachers and AI tools, AI applications. After 15 years I think the situation remains almost the same. And at the same time yesterday we are talking about the gender equality in AI. And also in the STEM in general. Actually UNESCO is promoting the gender equality in STEM. And we think that the gender equality in AI should start from AI in STEM and start from the early stage, from the primary and secondary education.

And having said all these kind of challenges I want to present the two points of guidelines we have made from this group about how we can promote AI, AI education and capacity building. The first one is to commit that how we can make AI deployed across the curriculum for primary and secondary school and also for the training program. We need to deploy AI in the learning systems that the countries are building for their education system in a systematic way.

So I propose these two points for guidelines. Unfortunately they are not completed but we will present them later probably for further discussion. Thank you for your attention to these questions. It is nothing to do with AI. It is all about education. I want to thank all the speakers and the panelists for joining us, given very short notice once again. I appreciate your cooperation. I look forward to launching some cooperation between your organizations and UNESCO in the future. Thank you.

(Applause.)

>> ALEX MEJIA: Thank you, Dr. Fengchun Miao. Very well. The first speaker in the agenda after Fengchun that will help us set the tone and look at the horizon with these probing questions is Dr. Francois Taddei. He is a UNESCO Chair on learning science towards learning planet report, breakthrough report that some of you will know. He has a Ph.D. from the University of Paris Descartes. He received his doctor degree in 1995. He went on to post doc training and received direct research in 1999 from the same youth but perhaps as important since 2000 he heads the evolutionary systems biology research team at the university. And he is the head of the center for interdisciplinary research based in Paris. It is quite an honor for us that he has come to visit us in Geneva.

(Applause.)

>> FRANCOIS TADDEI: So thank you for inviting me and for all of you for your will to learn more on this amazing subjects that are going to be very disruptive I think for our education system. And I am an evolutionary biologist as you mentioned. In a world that's changing very rapidly if you are not evolving just as fast as everyone you are going to be obsolete as you know it. Education has to be evolving much faster than it ever

had in the past and given the acceleration of technology that's really a must. It is not only that we have to optimize under the current system of education with AI which I think AI can contribute to, and I guess some of the speakers will come back to these points. I think what we have to think about is what can we do to think of the future of education in the age of AI. So there is two dimensions that were mentioned. AI can help us improve what exists and we have to educate people to understand AI. And the main question for me is what do we want to learn in the AI age. If machines are able to do so many things so perfectly they can already memorize and compute more than us and do more of the things that used to be specific to us, then, you know, I think the more progress the machines make the more we have to become human.

And so what is human, I think is one of the key questions for the future. And how do we train our very children, how do we train any one of us about those questions because those technologies are coming so fast. It is not initial education that matters. It is really, you know, learning from the cradle to the grave and beyond or whatever. And I think we have to think about those issues much more deeply. So you can think of different dimensions of intelligence. The first one and that's education focuses a lot upon is to know yesterday's answers. And yesterday's answers are accessible through technology very easily.

Should we spend so much time memorizing them or should we do something else. The second dimensions of intelligence is the ability to solve problems that are well set and you are being tasked to solve. This is not so widespread in the education system but some of the most advanced schools certainly do it. And I think we should do more of this.

The third dimension is to ask yourself the right question. Because the first two things machines and AI can contribute to. But asking the right questions, what is meaningful that's a notion that's at least so far AI cannot answer. And certainly what is meaningful for humans, what is meaningful for every one of us is probably very personal. And for us to be able to answer those questions and if you ask yourselves those questions, go back to the SDGs because as you rightly pointed UNESCO and the SDGs, the SDG 4 is to all the other SDGs. What I mean by this is by 2030 I guess we won't have solved any of the SDGs if we don't train the next generation to think about them.

Because we don't have enough resources to solve all of those problems and we don't have the current solutions. So it is not just, you know, adding the next generation thing of yesterday solution. They have to come up with bright, creative solutions and they have to work collectively on this. We have to invite

them to build tomorrow's solutions. And by doing this we will train them to have all 21st Century skills and global citizenship education. And they will be trained to cooperate critically, think, communicate, and, you know, do things together that are creative enough to come up with solutions that we could not come up with before.

So I think that, you know, of course, AI can contribute to do these things, especially if we think of quality intelligence as the collective of humans coming from different gender, different disciplines, countries, from culture but also the collective of man and machines. And I think, you know, at least in the chess world since Kasparov lost against Deep Blue. Organized competition of man and machines playing together against machines and man. And what they could show is that man and machine together are doing better than machine alone and man alone and that's going to be very true in many activities. This is called center, combination of man and machine. Even in the Greek old time, in the mythology the centers were not all good. So the ethics is going to be a key dimension. And I don't think that ethics will come from the machines. I think the ethics is for every one of us to work on.

And I started to mention some of the ancient Greece and I am sure many other engines wisdom from different culture can be invited to discuss and people can do that better than me, but to go back to some of the Greek ancient times, Aristotle, free times, gave verse to science and it grew a lot since Aristotle. The second dimension is technique and how do you act on the world and clearly technology grew exponentially since that time.

The third dimension is called phronesis. Thank you. Raise your hands. It is an interesting concept because it is the ethics of action. And so we've grown a science and technology exponentially since the reinvention of the enlightenment and so on. But have we grown ethics and I think that the ethics should be at the center of our education in today's age. And, you know, very close to here we have the corporate technique and some friends told me something that is quite troubling. They say that if you measure the ethical understanding of students when they enter and go out of the University, actually their ethical understanding goes down with the number of years of education and apparently true of many places where people took the time to measure those things. So we have to be very aware of it.

Ethics can go down if we are not nurturing it. In the age of machines we will need more and more ethics. We have to think deeply about those issues. And obviously the ethics, the science and the technology have to coevolve, but unless we train our best minds that are designing those we will face maybe even more problems than AI will be solving. Thank you.

(Applause.)

>> ALEX MEJIA: I can only say in my mother tongue muchas gracias. It is about quality of education, impact. And as I said in the beginning of society we run in the future and that does not happen without taking in to consideration ethics. Thank you very much.

Our second speaker I'm sure is as inspiring. Dr. Cynthia Breazeal. She directs the personal robots group at the media lab she is the founder and chief scientist at Jibo, Inc. And the non-profit Curious Learning. She has authored the book Designing Sociable Robots and has published over peer-reviewed Articles and is an award winning innovator, designer and entrepreneur. And she worked at the MIT lab and received her doctorate in 2000 in electrical engineering and computer science from the same University. Welcome to the podium Dr. Cynthia Breazeal.

(Applause.)

>> CYNTHIA BREAZEAL: All right. So it is a pleasure to be here. So I'm a technologist. I specialize in Artificial Intelligence and robotics. But over the last several years I have been focusing my efforts towards personalized education including how can we harness technology and AI to bring education to children such as these dramatically underserved communities. We have heard a lot about the importance of education, all kinds of education. I want to speak about the importance and the fundamentals of literacy. Many of us, of course, in the room understand how much of a cornerstone this really is. If you can learn to read you can read to learn, all aspects of knowledge become available to you. But unfortunately there is about a billion people worldwide who are functionally illiterate. They can't read or write. Roughly 2 million are children who will never become functionally literate, but the literacy addresses many important aspects of life and peace, gender equality, health, many aspects. It is a truly critical area for us to think when we think about education to underserved communities.

So what's different now? Well, there has been tremendous advances in a number of areas. They are going to allow us to fundamentally rethink how we bring education truly to everyone and how Artificial Intelligence can be a part of that. As it turns out there has been tremendous advancements in the cognitive neuroscience of understanding how the brain learns to read. We have a lot of insight in to the process. So it is really prime areas for us to focus on.

We have all heard about the power of data driven iteration. We have all heard about professors, academics, researchers who have been able to develop AI of all kinds but tremendous research in the design of personalized learning systems as well.

These many -- these are all artesianal. Early stage, I would call pilot stages but we know how to make these systems work if presented with enough data. And we heard a lot about the power and reach on mobile computing.

On the first day we heard children may not have access to toilets or shoes but have access to Smartphones. We have seen this to be the case and with these mobile devices not only do children and families have access to these AI powered solutions it also provides the ability for data capture, for over the air updates, for harnessing developer app ecosystems and for building a global community that can work together to address these problems. And this is becoming the vehicle for how AI can make a difference here in the shorter term and not longer term.

So next slide, so when we think about the history of technology and education for underserved communities this is not new. Even starting in 2005 OLPC really was pioneering this area with the development of \$100 laptop. Back then the primary challenge they thought they had to solve was hardware and access. There was not a lot of attention paid to curricula and what the children were supposed to learn. It was really an attitude, build it, leave it and they will learn and, of course, that resulted in mixed results as been learned by the community again and again. You can never develop an innovative solution and expect it to work and leave it.

You have a lot you can learn from them to develop technologies that are effective. I would say the second generation happened around 2012 and I was involved in this pioneering deployment where now we had the advent and proliferation of mobile devices and with that app ecosystems. And so our team who has experts in literacy thought can we tackle this literacy problem, specialize our learning -- technology based learning interventions around that and can we go to the most aster situation we can possibly imagine. We identified two remote locations in Ethiopia where the entire community is illiterate. No adults who can help children to learn how to read and the children have no access to school. It is the situation where if everything the children learned on who you read came from the intervention with our technology and understanding how children in these context learned how to learn and the results were quite astounding.

In one of the promises outcomes of that is the XPRIZE on education you see now. But part of the team decided this was not enough. It was not enough to show that we could show some promise in this kind of extreme situation. We wanted to show that you could repeat these results in a radically different environment around the world. And if it did work we wanted to understand why and how you could create more advanced technologies, leveraging Artificial Intelligence to make it

scaleable and affordable for all.

So next slide. So, you know, one thing we have to recognize is if we are going to tackle the solution there are many, many different kinds of learning context we have to understand. And we have very little knowledge within the Artificial Intelligence community in particular about what are the nature of these learning environments. We are talking about no school such as Ethiopia and highly underresourced schools and teacher absenteeism and talking about schools with trained teachers but with such severe student/teacher ratio up to 100 students to one educator. So what all these have in common is, first of all, there is no one shot fits all solution. You have to figure and understand each. These context to figure out what kind of technology is truly going to fit in to these systems and the children's natural learning processes to support that capacity to learn.

The other thing that you have to recognize is much of this learning is going to be child -- driven by the children themselves because they don't have enough access to teachers who can teach them. So it really flips the learning technology question on its head. Next slide. Next slide. Okay. So I just want to show you this in action. So this is the Ethiopia population.

(Video).

>> CYNTHIA BREAZEAL: Different from the traditional classroom, right? We have heard earlier there is different cultural context. In western culture we expect the child is going to have a personal device that they use and here we see something different. These tablets are used as an community resource. They are freely shared across the children. You can notice how profoundly social and collaborative this learning process is. It is not a question of designing a curriculum that's personalized that's going to step a child through a learning process. It is about how do you create this curated sandbox that presents an opportunity for choice that drives and nourishes children's only curiosity such that they discover and explore the content and tablet together. And it is through the conversations they have with one another that they discover things. They discover fundamentally literacy skills and they share that across their friends.

So we have to understand how to design AI systems that support this kind of learning process and we have very little familiarity with what this looks like. So this is a huge opportunity to capture this kind of data and understand this from the ground up and think about how we can democratize that data. And when a community that leverages app developers worldwide and engage all of them in partnership. So I just want

to make one kind of final closing statement which is the metapoint, if I can get the next slide, which is that what we don't need a solution. We don't need to figure out the one literacy intervention that's going to work. What we need to do is to build an innovation engine and I would say it needs to be an open AI innovation engine that powers this data driven iteration and discovery which is a worldwide community of stakeholders from the developers to the technologies to the adopters of the technology in order to figure out the solutions that actually work because they are all going to be different for every community. And because of this you can see why AI can play such a critical role. Why this data driven discovery can play such a critical role. I am going to end my comments there. Great. Thank you

(Applause.)

>> ALEX MEJIA: Just say fascinating views. It is embedded in human nature. You saw those kids, everyone wants to learn and learn indeed. Something powerful to see. Thank you, Dr. Cynthia Breazeal, for reminding us indeed there is a lot to still discuss. When you work at the UN you see it is difficult because most of the things and topics that we get to hear are exposed. You go back to the same thing. It is a terrible thing. It is called governance. We are still debating how we are going to govern this. It is going to be open. The Member States, not the UN. This is going to be ideal or not. Issues of security sometimes take too much precedence.

Continuing with the session I would like -- we have to say some of the other speakers will be speaking sitting down but I think it will be better if you come here if you feel comfortable. The next speaker is Dr. Mark Nelson. Another fascinating value because of time I won't read in its entirety, but these are the highlights. He is an executive director for the Computer Science Teachers Association with more than 26,000 members committed to empowering to do better their jobs. Dr. Nelson received -- he was selected by his peers as the most innovative association executives which is nobody -- it is quite an achievement. Congratulations and has more than a hundred initiatives on technology that he has developed or participated in and more than a thousand hours of education on this particular topic of innovation and emerging technology management.

He has a Ph.D. in information science and an MBA in computer science and is a certified association executive as well. Quite interesting. Just to conclude his impressive bio he was raised in a rural community. It gives you a different mindset and has grown up in a multi-generational family business. Welcome to the podium, Dr. Nelson.

>> MARK NELSON: So allow me to thank the UN and ITU for the invitation to be here today to represent the teacher voice. I am the executive director for the computer science teachers association. CSTA is a non-profit with more than 25,000 teacher members across 145 countries. And we primarily teach computer science to children in K-12. Mostly kids aged 4 to 18. And CSTA was founded by the Association of Computing Machinery, ACM back in 2004. So there are many reasons why AI applications in K-12 education have largely failed to meet the expectations, whether we want to talk about intelligent tutoring systems, personalized learning systems or adaptive learning technologies. Accessibility in the context of disabilities is a primary example of the challenges facing adoption of AI in education.

People with disabilities represent 15% of the world's population. In designing -- it can include physical challenges such as vision, hearing, or mobility as well as cognitive impairment such as reading, memory and attention deficits.

Accessibility also has other implications for computer science and Artificial Intelligence education beyond the important category of children with disabilities. Accessibility issues exist relative to race, gender, geography, community urbanization, socioeconomic status and many other dimensions. Accessibility becomes a basis for many forms of institutionalized inequity and access to economic prosperity, a multi-generational level. And if you want to read a really fantastic book on this topic a book by Jane Margolis entitled *Stuck in the Shallow End, Education, Race and Computing*. That I highly recommend.

Computer science is one of the least diverse of the STEM disciplines and this leads us to solving as white male problems within AI. For example, in the U.S. we have entire states where not a single woman, not a single African American, single Latino will take the computer science placement exam in high school. That's not acceptable. It represents 26% of the K-12 population.

Yet they have been particularly underserved by computer science education. And fewer of them will go on to computing related fields. And this is due to issues of access which are connected to other issues which are based in financial, technical, cultural and other systemic factors.

So when we think about accessibility it is really not about 15% of the world's population with disability alone. It is about 100% of the world's population. Resist the adoption of AI in education, solutions that do not address accessibility for all are really not acceptable solutions for adoption in public education. And not doing so will keep these solutions for more widespread adoption and success.

At CSTA we are looking at what all kids should know about

computer science, Artificial Intelligence, robotics, cyber security, data analytics. And at the same time what do teachers need to know in order to teach computer science in AI. Proven strategies to improve both teacher retention and student success outcomes. But in most countries including the United States more than 90% of teachers who teach computer science may have no formal higher training in computer science let alone Artificial Intelligence.

How can AI help retrain the global education workforce that being teachers as much as teach students? Finally CS education is a blue sky of possibility for leading change in global education. That blue sky is more likely to be realized if we include teachers as both smart partners and beneficiaries for educational change. So I encourage the AI community and the UN to include the teacher voice in solutions which are developed for education. This can improve equity, access, adoption of new solutions in the K-12 education context. Prepare today's children for a future AI economy. Thank you very much.

(Applause.)

>> ALEX MEJIA: Thank you, Dr. Nelson. Yes, indeed perhaps the most important audience out there and the one that can be better influenced with the use of AI. Happy to hear that there is a priority at least in your country on the inclusiveness. The minority groups of populations are no one left behind. Thank you for that.

Dr. Robin Murphy, Dr. Murphy is a Professor of Computer Science and Engineering at Texas A & M University and the director of the TEES Center for Robot-assisted Search and Rescue. She has over 150 publications and an award winning book on disaster robotics and an IEEE fellow, a TED speaker and founder of Robotics Without Borders, she has deployed ground, air and marine robots to over 24 disasters. Welcome to the podium, Dr. Murphy. Yes, you can stay there if you want.

>> ROBIN MURPHY: Thank you. Well, thank you for having me here. And everything is adaptive, isn't it? So I want to change the -- and accentuate and add to the dialogue to talk about lifelong learning even though I am a Professor of Computer Science and do traditional training. What we have seen going out to over 25 disasters working and training over a thousand formal responders, urban search and rescue teams and city specialists and the thing we keep hearing from them the training knowledge is incredibly important.

So before a disaster happens the biggest barrier to the adoption of technology such as unmanned systems, these GIS software packages, all of these things is the cost of training. They have to take off time. They have to go pay for expensive training and they have to replace people and have to keep up. So

that starts out as a problem. And during a disaster these things don't happen to your community every year.

What is all the knowledge that you have. Now you have got to remember it. And, of course, this provides incredible opportunities for Artificial Intelligence which we are looking at. So, of course, we have got the impact of what can we do for before. What is the impact of distance learning? What's the customization of each type of disaster or type of impact? Stage roled simulation, be able to teleoperate and work with equipment but remotely. And then during a disaster some of the great advances in AI decision support tools, things like reminder systems and case based reasoning to help the person through to make that decision so that the right information gets to the right person at the right time. So that both lives are saved but people aren't displaced for decades. And that we can accelerate, exhibit recovery. So I would like to throw that in to the pile as one of the many challenges that AI can help with us and poses for us for education. Thank you.

>> ALEX MEJIA: Thank you very much.
(Applause.)

>> ALEX MEJIA: Thank you very much. We asked our new Secretary-General Mr. Anthony Guterres what was in one of our first meetings his views on what could actually derail Agenda 2030 and the development process of developing nations and so on and it was eye opening for me in his opinion and his long experience he didn't hesitate he said four. But the first one he said was disasters, manmade and natural and so on. Thank you for pointing that out and indeed to the importance of Artificial Intelligence to deal with them.

Now next in our agenda is Dr. Adam Klaptocz. I say it because I didn't know how to pronounce it. But Dr. Adam Klaptocz who is an expert on civilian drones and potential to do good on our planet. And he founded a new type of NGO called WeRobotics which is to transfer the latest robotics to the developing world and apply to the social good. He has been working on research and development, development of the latest drones for GIS and mapping sectors. He received his Ph.D. at EPFL near Geneva where he designed a flying robot. His goal is to bring drones out of the lab and in to the hands of people that need it the most, whether it is in Humanitarian Aid, conservation or industry. Welcome to the podium, Dr. Adam Klaptocz.

>> ADAM KLAPTOCZ: Thank you very much for having me. I think I might have had a couple of slides somewhere that are on their way up. But thank you for the introduction. I do work for an organization now called WeRobotics. Our goal is to provide or to give access to the latest robotics and also AI and other technologies to local communities for the use of social good.

I don't know if I can flip through the slides here. I can. Perfect. And how does this fit with education? So we are not in a K-12 education. We are more in capacity building and continued education. And we see in developing at risk countries where we work formal education is often expensive and hard to access and the teacher side local expertise and especially leading edge technologies is often not available.

We do see Internet access -- so how do we provide access to AI and robotics training in developing at risk countries? We have been experimenting with a few different ways as was said previously. There is not one perfect way of doing this. We have to look at the context and find adaptive ways for providing this training. What we try to do as WeRobotics is create local capacity that addresses local problems using global technologies. We have regional labs in different parts of the world. And I think there is a few ways that we try to bring technology to communities. One of them that I think is really important is getting technology companies involved. Getting industry involved as well through the CSR program, through not only provides tools that are developed maybe in Silicon Valley or in Developed Countries, providing them, making them accessible to Developing Countries and also making the type of training professional, engineers and researchers available to problems that are faced by developing and at risk countries.

These are some of the partners that we work with but this the role of industry is important to speak about when we talk about this. There is a lot of great ways of getting experts knowledge localized such as webinars by international experts that can be freely shared through the Internet. There is also the other way around, is local actors. Here we see one of our staff in Tanzania talking about their experience and engineering around the world can try to address these issues that are faced locally. We also think there is in-person training that can be done. So local training by international experts not only in AI and technology but also in business. So that AI can be applied locally to local problems and sustainable businesses can be created out of this.

So here we see business training that we are doing in Nepal. To try to apply drones and robotics as a service. We can also spread this a little bit further and have -- skip back. Have regional training by local experts. So here we see actually what I thought was really great is Tanzania nationals on the right, from the back. We see Kadega who was trained by international experts in robotics and a few months later leading robotics training to other East African attendees. So having that localized knowledge that can then be shared locally as well. And sharing that international Forums is also important.

Getting people from different countries together. Here we see some of the staff that we had at a conference last week from Tanzania, Nepal and Peru sharing their local problems together. And all of these new -- just one last thing I can say, I think all of these new technologies being able to have a lot of people through the Internet learning and sharing together are important. But we should always not forget the local human interaction and also community engagement when we are doing any sort of training. Having really being a foot on the ground and being able to teach the next generation as well. That's all I got. Thank you very much.

(Applause.)

>> ALEX MEJIA: In case you are wondering why we decided to yes, indeed cover and focus on education as issue B and then also include robotics we simply want to move your juices. And there is so much potential with so many applications of technology and Artificial Intelligence this being one of them. I do believe there is a lot to talk about robotics, AI and education.

Now our last speaker but not for the least is Dr. Michael Hopkins, CEO of MHC International. Dr. Hopkins I happen to know very well and consider him a friend. He is one of the senior mentors. And the reason we have invited him to do so for for several years in a row, first he is a member of the UN family. He served with senior positions at ILO for 14 years and has continued to support at the beginning -- sorry in the first phase the MDGs, national consultations and implementation and now the SDGs.

Dr. Hopkins is a big partner for the United Nations. He has been a professor at Middlesex University, Brunel and he is a Ph.D. economist with a strong focus on measurement and employment issues and executive education.

Since leaving the UN he has been a part of MHCI, a global consulting company on issues of CSR. And he works with the likes of IBM, AT&T ITT, BPA and so on. Perhaps as important he has authored 13 books on sustainability and CSR. And the UN is rather honored to have him as a senior fellow. He received in addition to his formal doctorate two honorary doctors from London Metropolitan University and from Delhi University in the last two years. Welcome to the podium. You can stay there if you want.

>> MICHAEL HOPKINS: Thank you. I'm going to take the opportunity as the last speaker if you don't mind, Alex, because he invited me yesterday and I turned up this morning and I thought what I would do is make some observations on what's being said, if I may. The reason that I can do that is because I have never really worked on Artificial Intelligence. The only

claim I was working out how many times I have passed this building. And I worked out between 5 and 6,000 times. And this is my first time ever in this building. So after listening to what has just gone on I realized that was a huge mistake not to have stopped at least many times. I always had an apartment down the road.

I wanted to make some comments on some of the issues that were raised, and I am going to try and cover everyone if I may. I don't know if I got the time, Alex, but I know you are polite enough to -- but do stop me if I tend to go on too much.

First of all, let me talk about Artificial Intelligence and education and the issue of capacity building. And I would like to address that. We have a professor, Ms. or Professor Cynthia Breazeal who heads the MIT media lab. Many years ago I was with a district attorney giving a speech. After him and he changed from being district attorney because he lost the case against OJ Simpson, if anybody remembers that and turned in to a photographer. And we were talking about capacity building and I said one of the big problems is how do you film it. You see I see pictures of Angelina Jolie in Africa, but how do you achieve education amongst so many people and you don't do it by showing Angelina Jolie talking to people.

My challenge to the media how do you film that and I thought what you showed on the kids playing with laptops was absolutely marvelous and I thought even then that's fine but how do you measure what they are learning. And then it turns me on to the issue of the SDGs which Alex did ask me to talk about. But I won't talk very much. I can see a very interesting graphic in ITU building of various SDG issues and what ITU is doing about them. My big worry about SDGs I'm not against development. I love the UN and what they are doing, but it is not a systems approach to looking at development. So how do we know it has got everything in there. And here I'm sure being in ITU we are full of systems thinkers as, in fact, my own education at IBM was about systems theory and systems thinking. My worry about SDGs is that they are a systems approach. Have we got everything? I won't go in to too much detail on it, but one thing I actually looked at the SDGs and separated them in to processes and targets. And the ultimate target in the end was achieving well-being, maximizing well-being and what's wrong with that. So SDGs are about maximizing well-being.

Now let me now go on to a very interesting point that Professor Francois Taddei mentioned was what do we want to learn in the future. And something that was mentioned but not mentioned directly by my two colleagues working on robotics, Adam Klaptocz and Robin Murphy, the big issue of the how is robotics going to affect jobs and what sort of jobs are there.

We need jobs in order to get income and in order to survive.

Going back to the '30s Burton Russell wrote this wonderful paper on -- in praise of idleness. You can Google it. And he says with all this technology around why do we need to work. So another question that we could perhaps look at. I was also interested and reference to Aristotle from Professor Francois Taddei. What intrigued me about Aristotle and I went to where he died, 50 miles away from Athens. How did Aristotle get so damn famous? There was no social media. He would walk around the quadrangle and there would be 12 students behind him.

Now terrorism, it is a country I know well is Somalia. 60% of the population are illiterate and even more for the girls and al-Shabab which is linked to Al-Qaeda is supposed illiterate kids. My task is to try and create jobs to provide skills.

Different levels of learning but terrorism can be defeated through skills and education. On the other hand, Artificial Intelligence has also been used for terrorism with terrorists looking on the website for all the nasty things that they do. The last three days I have been at the London bridge quite near to that awful incident. And all the people who are perpetrators of that awful attack, three of them were reasonably educated. And they alleged to getting their information off the web. And now there is a move to controlling that. If we put too much information on the Web, how do we control it is not going to be misused, and how do we make sure it is going to be used properly in order in the end along with the SDGs to create well-being.

On hardware, wow, I was particularly struck by Professor Mark Nelson with 25,000 members. When I was a boy in the '60s I wanted to learn computer science. There was no course except for hardware, how to put the electrical cables together. I went to Alberta where they had the biggest computer in the world and I used a terminal to solve probability theorems using APL, if you guys know that. So all my life I have been involved in computers and interested in this application.

And let me just finish because I have got other things to say but I am conscious of taking too much time. These are some of the things that I noticed from the talk this morning. And I think how to achieve well-being through Artificial Intelligence I think it is a wonderful, wonderful topic. And I'm really, really pleased and I'm happy to be here to learn much more and about all these things.

Perhaps I just finish with one thing, the question of robotics and employment. I have written a few papers on that and will be happy to share that with people on thinking on that. And like all people who write things I have been strongly attacked and criticized on that. Wonderful, I love that sort of criticism. Alex, thank you for inviting me and wonderful to listen to you

people.

(Applause.)

>> ALEX MEJIA: Thank you very much, Dr. Hopkins. We were just confiding that perhaps this is a time to go to the floor. We still have 18, 19 minutes, but before we do so let me just try to portray in a wholistic manner what is it that we are trying to attempt here. Artificial Intelligence, but this morning has been devoted to how do we fight extreme poverty using Artificial Intelligence and how do we leverage education to do so. From that bigger realm to what you just heard now and in the previous session I think it is important to say two things. One, we were debating yesterday in a dinner or lunch that Artificial Intelligence should not be seen as a replacer of anything. It is an enabler, an enhancer. It will help us get to this next level of efficiency when it comes to a tool to fight extreme poverty, but there are certain misunderstandings against social media help, but it sometimes doesn't help that we are going to have teachers that are going to be 100% robotics and I don't see that going forward.

I have three daughters. And the younger one is 11. And I'm telling you in addition to that the formal curriculum that a teacher teaches and I am sure you went through that and I went through that, the most important part is human interaction. We have yes, we can use technology and leverage education in that way and enhance it, but this is not to replace anything. It is simply to focus on how to fight poverty by literacy and skills development.

The second thing is exactly on that, and I mentioned at the beginning we capture perhaps some proposals even if it is only ideas and we have Rapporteurs attempting to do so sitting there, but I wanted to go back to that because if you have an idea based on what you heard or based on what you believe you can give us, there will be an outcome report of this conference that will be globally debated and it will be a good idea now if you want to suggest something. Make it short. Let me wrap up this part. We have now 16 minutes and we will open the floor. Should anyone have a comment or question, please. Welcome.

>> I would like to bring up one of the Professor Hopkins points about measurement and if we don't know the types of skills we'd like to view in young people and things we like to teach them if it is not memorization based or just maybe each of the panel speakers could identify some concrete things we can measure in terms of things that -- metrics that would be indicative of success in applying AI in an educational setting. Thank you very much.

>> ALEX MEJIA: Thank you. Now Dr. Hopkins was just echoing Dr. Cynthia Breazeal and I saw you nodding. Can you give us the

first comment and then you Professor Hopkins?

>> CYNTHIA BREAZEAL: For areas such as literacy there can be many, many measures that we can apply. And we do. We work with collaborators to assist how the children are progressing and also developing our own digital literacy methods that are framed as interactive experiences on the tablet themselves. So children continuously play these apps. And in doing so we can also assess how they are engaging these apps. We need the traditional measure to validate the other measures. When you talk about the more innovative aspects how do you measure that, I could only give you anecdotes from a place like the media where this is what we try to teach our students. A lot of it is posing project based classes where you have a provocative topic and the students break in to teams and they work together to try to define a problem they want to tackle and approach they want to find to tackle it. Prototype something, deploy it, and whatever way makes sense and measure the outcome to determine how successful they are. It involves a lot of iteration and a lot of real world data to assess if you are being successful or not. That's how we do it at the media lab.

>> ALEX MEJIA: Use the same microphone.

>> FRANCOIS TADDEI: On a complimentary note the -- I think one of the big challenges to come is we have already AI for transports. Optimization of time it takes you to go from here to the airport and you can have different routes. Can we do the same thing for knowledge where you would know where you are in the knowledge sphere? You know where are job opportunities and ways to treat your little sister if that's what you care about. And you would be able to go from what you know to what you would want to know and you would be indicated roots, you know, what are the short -- is there shortcuts you can take. What are the easy routes. What are the harsh ones, but bring you one step further that you would need really to know if you are deeply interested in something. And I think that you know these sorts of AI and measurements we still have to build it collectively, but I think, you know, we need basically tools for collective intelligence.

Because on one of those things you can have you maybe know blank which is one of the French startups that help people travel together. We need to find people that want to travel the same road and be able to find peers and find mentors. It is not just identifying knowledge on that map but also people that can be your fellow travellers in that knowledge adventure, that is where you want to make a difference.

>> ALEX MEJIA: Thank you. Yes.

>> MARK NELSON: So when you talk about measurement this is one of the roles that teaching associations often get very

involved with. And typically when we think about education we think about three types of standards. We have content standards, pedagogy standards and assessment standards. And this is an area where computer science education broadly really is at a great disadvantage. When math came out with a math teaching standard for the first time in the late '80s and we had researchers who had been, you know, they were all trained in mathematics education, they have been teaching math, we have been teaching math for some period of time and a lot of people were researching the teaching of mathematics for a great time. We don't have that in computer science. There are many areas we don't know and particularly in the area of measurement and assessment we have very, very little empirical data to show that, you know, what actually works and how do we measure computer science knowledge. And that affects how we figure out what's the right progression of knowledge and what concepts should be taught before other concepts and what's age appropriate for content. That for us is one of our high priority areas is trying to figure out how do we solve that problem.

>> ALEX MEJIA: I need to do some homework here. We have used some proposed guidelines that we prepared between UNITAR and UNESCO. And this is a moment to read them because the Rapporteur is leveraging these guidelines while we are listening and discussing. Access to and knowledge on Artificial Intelligence tools and technology should be employed in school curriculum and adult training conversion and accessible with -- my suggestion is that we add these monitoring and evaluation and especially the assessment that we are discussing here to this first one. I will read the second one later on. We will go to the next question over here. Yes. You were first and then we will -- I think you were after.

>> Thank you. Philip from G4, greater Geneva for global goals. The idea is to provide the life global goal No. 7 in the greater Geneva. I will invite every one of you on the stage to actually see Geneva as a lab where we want to implement all the changes. We have implemented living labs and all the public and private organizations are doing it, but the University of Geneva is ready and we want to transform the curriculum. We want to leverage AI for good. We want to leverage everything you have said. So we invite you to come and join us. Please let us know when and how we can actually engrain, implement embody, make it happen. Because we have been hearing all these topics for way too long. How do we make it happen in a city region and let's take Geneva as one of the lighthouses to make it happen. You all come here often. We want to work with the UN SDG labs. So everything we do here is leveraged worldwide by other city regions and Universities and education systems. And we want

Geneva to actually take the best of what is being done somewhere else. But before we -- we need to really embody it. And that's the whole challenge. How can you come and help us to do this in the University and the education system of greater Geneva?

>> ALEX MEJIA: Thank you very much indeed because the whole point this is a society endeavor. It was not a University endeavor and UN endeavor. I have been living in the city and I do have that general spirit. This is one of the few opportunities that I can attest to that has grasped these things. And it is making it. And I hope you can contribute. One reaction and then we go to the next question.

>> FRANCOIS TADDEI: Thank you. I think that you know we need every city to have a similar behavior and actually many cities are interested in doing this and many communities are interested in having such initiative. Among the initiatives that I can support here, students are interested in initiatives. We need to involve them more because they care about this issue. There was a poll largest student association in the world, 65% of them care about SDG. Want to be involved with SDG, especially SDG 4. And we are about to launch an international competition for students that care about SDGs. And you told about redesigning curricula. We are trying to do this in Paris. We are trying to build what we call wide curricula where students that -- it is not prewritten what they should be doing. It is for them to write what this will be doing. There will be an open portfolio and say I follow this MOOC and I found a group. And we work together and we are engaged. And here is what we have done.

We have not solved the world problem but we contributed in this hummingbird spirit if you know the story I am talking about. We contributed or dropped to this huge fire that we all face. And if you invite them to document what they do, you can build this learning plan that we were leading to in that report where every time someone learns something, someone else on the planet can learn it more easily. Because the first one I have documented what they have done and there is enough data and enough information and enough knowledge and wisdom to be transferred from there.

So being able to build this learning planet where every time someone innovates and learns and someone can learn more easily because we share and we share instantly and we share globally and you need to build this in an open source spirit. Otherwise you put this behind walls and it is still useless. We have to benefit from this technology and to invite the students to contribute to. And they are asking us to do these sorts of things. And I think the more we redesign Universities together with students the better it will be. I mean this is one of the places that evolved the least. Researchers make them evolve but

the academia, curricula are not evolving at the late pace. We have to redesign these things. And if we can build a University that keeps improving every time students pass, they contribute to the collective intelligence. And we build a network of such Universities then we can really invite them to contribute to the global change that are needed. And we can network with communities and schools. And we can build what we tend to call open fee, which is the open faculty for open innovation, open science, open art and open society.

>> ALEX MEJIA: Thank you. Because there are many hands up and time is running out this is what I am going to suggest and Dr. Hopkins wanted to react, you were next and you were there and then I see all these hands. So let's do the following. Can you give the question to the point and immediately after you also and then we take two reactions. And then we go back to the floor. Please.

>> Thank you very much. My question is to Cynthia and Adam. Do the technology solutions which you show that are very interesting and innovative, did they leverage on public school delivery mechanism? Or were these parallel initiatives this one? And how does the cost benefit work out? What's about the scalability of models? India, 40% of the population is below the age of 18. We need solutions that are scaleable at a very fast rate.

>> CYNTHIA BREAZEAL: We spun out a non-profit that is responsible for reaching out to communities and managing the deployments. We are in seven countries and different characteristics of learning environments. So some of them are in schools and are distributed by schools. I gave the example of South Africa that experiences significant student/teacher ratios. We reach out to other communities. Like we have deployment in Uganda in an underserved urban area where it is a local woman who basically allows children to come to her home as kind of an improved daycare. And she was very interested in trying to offer some sort of educational ability, content for these children. So we get -- people reach out to us. People are finding and reaching out to us. In some cases it has been the Government. We have a new deployment in Australia. I would say we are in the proving out stage right now. We are trying to walk before we can run but we are now collaborating with large organizations in India. Also now looking at deploying it through parents mobile devices. That non-profit goal the content is free. We have ten million dollars in apps that have been donated to the project because we have had our team of experts reach out to all of these for-profit app developers and saying your content is quite good. Will you allow us to distribute it for free to these underserved populations? They have all agreed.

The economics in the big picture have become that -- one of them.

If you are accessing content for public good the data can be free as well. So I think there is a lot of innovation happening in different parts of the world around this, but I think a lot of this is getting solved kind of just organically. And we are riding on that wave. But the intention is for the service to be free.

>> ALEX MEJIA: Thank you. Very succinct please.

>> Hi.

>> ALEX MEJIA: You need to unbutton yours because you are capturing the voice behind. Just tell us. Yeah. You see the light in front of you?

>> Yes.

>> Okay.

>> ALEX MEJIA: She goes first.

>> Thank you.

>> ALEX MEJIA: Push it again please. Thank you.

>> My name is Cheryl and I'm a benefactor and donor for the XPRIZE literacy initiatives, education initiatives. So I have been involved with the 30 million dollar prize, 50 million dollar prize purse for global literacy. My question is two-fold. One to Dr. Cynthia Breazeal. How do you -- what do you think would be an approach to scale and really expand the ability to reach underdeveloped nations to help get global literacy? And my second question would be to the other panelists from Paris, about customized learning in education. I was a high school teacher and I saw kids fall through the cracks. And I became a University administrator and the system is not much better. We are not developing learning systems to prepare people for the 21st Century. What do you see are some critical approaches or frameworks to help bring education to our modern and developed nations to better prepare not just children but --

>> ALEX MEJIA: Thank you.

>> CYNTHIA BREAZEAL: So I can share some ongoing work. So I talked about the importance of creating an open AI platform. So that's the crux of it is we are creating a digital platform by which you can distribute the content over the air to mobile devices. We have started looking at creating a particular app on say the Google Play store that parents can go to their own mobile device and download. How do you harness the infrastructure that's already being created for distribution channels. We work again with schools and other channels as well but the bottom harness, the Android devices which are becoming increasing prolific and we are scaling to potentially hundreds of thousands and beyond that we want to try to reach millions. It is a work -- work in progress.

>> FRANCOIS TADDEI: I think we have to involve more the students themselves. That's what I was saying before but there is many ways of doing this. And I think we -- to go back one step on what you were saying, we need not only an open AI, we need an open R&D for education and open R&D for SDGs. Let's start maybe in this panel, open R&D for SDG 4. And that means you have to have open AI, open software and open platforms and also open content. And you have to have a design that is learner centric. And I think we can develop a citizen science of learning and you probably notice in science it is very powerful for many things. There are many other things including in health where personalized medicine together with science for health, for Parkinson's disease but don't let -- we have very little research on education compared to say health. It is 20 to 30 to 1 compared to health R&D. Whereas the budget for health and the budget (inaudible) are more or less the same. Lifelong learning at all ages and for every citizen anywhere any time.

How do we do this? I think we have to involve the learners themselves which means every one of us and we all learn differently than we were, you know, 20 years ago. And so this 21st Century learning opportunities can we all document where are learning. Can we say when it has been learning how to learn. We work with the prize winners in medicine. Inviting people to say what is the ah-ha moment that they were learning something so exciting that makes their country's life interesting. Was it during a lecture or with a mentor or with other peers and so on.

Can we document these things. Can we document what the most relevant learning adventures that we went through, and I think if we start documenting this and sharing it and if we start using the best possible technology. We need data and software. And we also need the human input to know what's meaningful. So I think we have to have this coevolution, but I mean this is really a call for this open R&D for the SDG 4 where we will do this certainly with every learners and every technologies that care.

>> ALEX MEJIA: Thank you. There is another session right here where we are sitting at 12. And it is 12:04. So let me do something with your permission to finalize and this is to the Rapporteur because again there will be the report from the session. And thank you for the ones that contributed. You can continue doing so, but it will be on a personal basis after we step down. This was the second guideline and then I will go to the three speakers that haven't been able to say something final. So you can give us a very short final comment. This is the postulate. Artificial Intelligence or application should be -- inform the learning needs and behavior and to improve the provision of quality learning for all, main premise. In this

context policies and systems should be developed to ensure transparent and audible, adaptive, audit use of data including safeguard privacy, confidentiality, personally identifiable information. It is a big conundrum and a big task ahead. And we are initiating a discussion that has been waiting for a long time. So let's conclude with small comments if you have. If not we are fine. Doctor.

>> ROBIN MURPHY: I think the biggest take-away, the exciting possibilities of AI it is such a tool. That we have to define the problems and use this new set of tools to attack them and then develop our toolkit as we go. And I'm really proud to be part of that.

>> ALEX MEJIA: Thanks.

>> Thank you. Can you hear me okay?

>> ALEX MEJIA: Yes.

>> MICHAEL HOPKINS: Thank you very much. Just two points. One on measurement again is that in the old days the World Bank used to measure the success of education through the rate of return method which was what salary do you get for your education. A lot of us criticized them and say hang on, it is far more complicated than that. However the World Bank under a chap called Jorge Saropolis went on for 40 years with that methodology. And there has been a huge investment in primary and secondary education, but skilled training has been missed because it wasn't included. And the rate of return was very, very low. Today because of the experience of the Asian tigers and Germany with dual training session, skilled training has become incredibly important. And we measure it poorly through using the mismatch method, demand for the skills. We do that rather badly. And we need to improve on that.

My last comment would be on the Geneva itself, all of you probably came here by bus or many of you did. Actually I didn't. But you will notice that the buses run to the nearest second. It is absolutely amazing. This is an application of Artificial Intelligence. I spent half my time in Kenya where the buses bash in to each other and they don't run on time and pollute the atmosphere and they create all sorts of accidents. They can learn a lot from Artificial Intelligence in Geneva. And I think it would be wonderful if Geneva could collaborate with Kenya and Nairobi.

>> ALEX MEJIA: We appreciate all opinions, yes. I heard you. And I invite you to talk with Dr. Hopkins. He lives there in Nairobi.

Let me do two things, first and most important to thank you for taking the time and sharing and engaging and if possible, I invite you to actually engage directly with the speakers. And it is terrible to do this job, I have to do it. There is another

Plenary session right here.

Last but not least we remain open to see any proposals, any comments also via e-mail, electronically. You have seen in the program -- yes, you wanted to say something. Let's just be fair.

>> Okay. I will be very short. Thank you very much for the whole organization. I just want to come back to Francois Taddei. We do have in our group, we are presenting a workshop next week with children of 17 years old from a college in Geneva and a five-year-old girl.

>> ALEX MEJIA: Excellent.

>> And the topic is human digital rights and responsibilities. And one more comment is that everything is great for these three days. I just think that maybe we should have had some kids around.

>> ALEX MEJIA: Oh, I couldn't agree more. And there is one that I will conclude. If one lesson learned from this day here is that we have to engage youth, not only think we know what they need and I speak as a parent. Thank you very, very much for your time and for accepting the invitation.

(Applause.)

This is being provided in rough-draft format. Communication Access Realtime Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings.
