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SIDE EVENT ON E-HEALTH

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>> BILEL JAMOUSSI: Good evening. Welcome to the e-health side event. Please put your head sets on. We will be using the usual system.

My name is Bilel Jamoussi, I'm with the ITU and I will be moderating this session. I will move now back to my Chair and continue from there.

Welcome to the panel on e-health. The side events are open to all. This is a tradition that we have had in the previous WTSA and we are hoping to continue in this WTSA and future ones as many members found it to be quite useful in looking at emerging technologies and emerging topics of interest. We note, for example, that in this WTSA there is a proposed new resolution on e-health submitted by the Arab Group. The side event format is a continuation of similar events. E-health is recognized as an important topic and the lack of interoperability between proprietary systems in emerging countries has been an issue that was raised in the e-health workshop we hosted in April, along with WHO. That was stressed as a major issue, standards in interoperability are a big impediment to deploying e-health solutions.

So the idea in this e-health workshop today is really to hear from the experts on the topic. We have a very distinguished panel with us. First we have Dr. Najeeb Al Shorbaji. Some of you may have heard him in the GSS earlier this week on Monday. Dr. Najeeb agreed to stay with us for the e-health workshop given the importance of the topic, to share with us what WHO is actively pursuing. Najeeb is Director of the WHO Department of Knowledge Management and Sharing. Najeeb's current portfolio covers WHO publishing activities and programmes, library services, knowledge networks, e-health, knowledge translation and WHO collaboration centers. And translation, of course, is a very important aspect that was brought up during GSS because if the information is not available in the languages that people need, it is not very useful.

I think that's where the U.N. agencies with their strength in working in the six U.N. official languages can have a much broader reach with recommendations and with documents that are published in the six languages.

So Dr. Shorbaji will highlight the initiatives and will talk to us about the efforts in WHO. Dr. Shorbaji, you have the choice whether you want to lecture from here or at your seat, whatever is more comfortable for you.

(There is no audio.)

>> NAJEEB AL SHORBAJI: -- especially the collaboration and need for standardization and interoperability.

So the title for the session, this particular presentation, interoperability is crucial to e-health adoption and acceptance. It has been actually identified as one of the areas that we have to tackle in terms of making sure that e-health is deployed in the right sort of framework and in the right way.

Why in particular health information systems or health systems are actually more sort of in need for interoperability and standardization. There has been a number of issues and the health information systems in particular are a little bit unique in the way that they manage information in the health sector in particular.

One of the things that we are traditionally paper-based in healthcare. We believe more in paper rather than in electronics. And traditionally we have been documenting everything on paper.

The health sector came a little bit late into the ICT. So the adoption is slower and there is a lot of promise and potential. The health is an information intensive sector which means that everything that we do is actually based on information. The high volume of data in the health sector is much more actually than any other sector. We produce a lot of data, being personal data or clinical data or public health data or else.

The issue of confidentiality, privacy, the structure of the data, the ethical aspects, the legal aspects are very prominent in the health sector. The public health information which we built on uses data from personal and from clinical environmental climate and natural and manmade disasters, which means we have to bring so many elements together with for healthcare. That means diversity. That means no standard sort of applied across all these sectors. Of course, there are multiple systems that we have to use when we provide healthcare. These can be clinical systems, administrative systems, public health systems and so on.

And the data itself actually comes in different formats. Some of it is numeric data, numbers. This is the temperature. This is the height. This is the weight of the individual.

Some of it is in graphics. Some of it is in text. The diagnosis of certain disease, so on. Some of it is images, ECG or radiology. Some of it is the sound, like echo. And so on.

Some of the data is structured. Some of it is not structured. And that brings actually of more complexity to the area of trying to standardize and to make systems that are using these data or generating these data more compatible.

Just to emphasize the value of interoperability, this is a code actually taken from the global strategy for woman's and children's health in which the Secretary General and the commission say it will be critical to agree on standard and to ensure interoperability of systems. Health information systems must comply with these standards at all levels.

That has been put as a prerequisite, actually, if we want to achieve the health for women's and children's health. And this is a major strategy actually in WHO and at a global level. So it is very important to make sure that we are actually complying with these standards and following the standards as they emerge.

The e-health as we see it, as we know it, we believe strongly and there is enough evidence that we have been able to generate actually, that it can improve quality of life, quality of health services. It can improve the equity and access to healthcare services, which means vulnerable groups, remote areas, the poor, the rich can all be accessible to provide health services. It can reduce the cost of healthcare services, which means making it more affordable, especially if we reduce the cost of the operations and the services that will provide more services to more people.

Then it would allow for innovation in support of patients using the different technologies that we are familiar with.

WHO sees standards as the creation of accepted specifications, definitions, norms, units, rules, that establish a common language as a basis for understanding and exchange of information between different parties. The exchange of information is actually the most important component of all that. So we have to provide these norms. We have to provide these definitions and that's how we see the importance of standardization.

We see the improvement of healthcare through standardization as a way to reduce medical errors and improve patient safety. We see it to improve access to medical records and their content, and we can imagine if, for example, a patient, a woman or a man or a child, they come to the hospital to the emergency centre, emergency room, and then there is no access to the medical record. There is no access to the data to see whether that patient, for example, has some kind of allergy to one of the medicines, allergy to certain treatment or if that woman is pregnant or that woman has specific type of disease, and so on. Access to the medical record in a standard way is really important and is an integral part of healthcare delivery.

To support what we call patient-centered care which is opposite to what has been discussed as system-centreed. If the patient is the centre of the healthcare, everything has to come around that patient, which means that data on the patient coming from multiple sources, since the patient himself is the centre of all that. And then standardization can provide ability to extract information from multiple sources for health research, surveillance, forecast, public data, clinical data and so on.

Unless we have a standardized way of presenting data and providing information, we wouldn't be able to extract and generate information and then generate the knowledge needed to improve healthcare services at the community and global level.

To achieve interoperability, we have been sort of working with a number of agencies, institutions, and centres and all that to identify the types of standards which will enable interoperability. And for these systems we have what we describe, we call semantic standards which indicate what piece of information needs to its use and syntactic standards, the way the language is presented. Then what we describe as the metadata. I will explain very briefly.

The semantic interoperability that we are working with is the ability of informing systems to exchange information on a basis, on the basis of shared preestablished and negotiated meaning of terms and expressions.

So in a healthcare system or in a medical record we need to clearly identify what we mean by each term so that if a doctor or a nurse has received or has written a diagnosis or a terminology, then that patient is going to another centre. We want to make sure that the two doctors or the two nurses in different places, they understand the same language. So terminology is very important. The semantic interoperability entails coordination of meaning. What do we mean by each term or by each concept that we present?

And if there is uses for multiple controlled vocabularies, which means having different sets of languages, different sets of vocabularies to help in understanding.

Among the terminology vocabulary systems that we use and we apply, of course, there are dictionaries, the thesaurus, the terminology data banks, the information, the NOMAD and the -- used for the laboratory, the unified medical language systems, all these actually are used to help the healthcare provider and the patients, of course, to understand and to communicate health data, health information using the health information systems.

The second type is the syntactic interoperability which is refers to the ability of two systems to interpret the syntax of the data between them. And there are some examples of that.

And then the metadata, which is data describing data in computer systems and there are some examples of that.

I mentioned two days ago in the symposium the GUI and the most important thing to say is that apart from these two standards, which is the international classification of diseases and HL7, the rest of all the standards are used by less than 50 percent of the countries of the world according to the survey and this is not a good thing.

The barriers that we have identified and we are working on relate to finance, which means the money that is spent to develop and to adapt the standards and to implement them, technically they are too complicated. This morning during the discussion there was a lot of discussion on how we can help countries through guidance, through training, through awareness and education to implement the standards. The nonparticipation in development, especially from developing countries and the lack of coordination by the standard development organizations.

The report from the ITU which was titled e-health standards and interoperability identified five prerequisites for transforming healthcare with ICT standards. I fully subscribe to that and we were part of the development of that through the different workshops and the different exercise that we had with the ITU. Number one, emphasizing greater interoperability between systems and systems can be machines, can be software, can be applications and so on. Increasing coordination over e-health standardization. Ensuring privacy, security and safety for the patients and for the systems. Reducing the standardization gap in the developing world.

And then leveraging the existing ICT, ICT's like mobile devices and others especially the social media and the rest of it.

With that I finish my presentation and if there's any discussion, any questions, I will be happy to reply. Thank you so much.

(Applause.)

>> BILEL JAMOUSSI: Thank you very much, Dr. Najeeb. I would like to see if there are any questions from the audience.

(There is no response.)

>> BILEL JAMOUSSI: If not, thank you. Maybe we can take questions toward the end after all the speakers have completed their presentations as well and have some discussion at that point in time.

Our next speaker is Mr. Bright Simons. He is President of mPedigree Network, where he pioneered the system that allows consumers to instantly check whether their medicines are counterfeit, by sending free text message.

Bright is Director of Development and Senior Fellow for the Imani Centre for Policy and Development in Ghana. He is a member of the World Economic Forum's Network of Global Agenda Councils and Technology Pioneers Community. And many of you may have seen his TED talk. He is a contributor to BBC Business and Harvard Business Review, and he is regularly cited in many of the world's leading news media.

Bright, the floor is yours.

>> BRIGHT SIMONS: Thank you. I'm delighted to be here. This is an extremely important subject. I'm glad that I am able to share my views and perspectives with you, particularly as it concerns Africa and innovations in mHealth and big data. The transformations happening are completely amazing.

I want to start off with a case study of our own work which started in Ghana and now has extended to seven African countries, and most recently extended to India and Bangladesh. We are seeing the group of solutions that can cross barriers and borders of medical and health use. Our problem is actually straightforward. There are increasingly great number of medicines that are being produced that look like real medicines but in actual fact are not real medicines. People buy these medicines expecting to get well, expecting to be managed for their diseases, and they end up getting worse. In many instances people have died from taking these kind of medicines. If you look at the two pills on the screen in front of you, it's obvious if you are in the pharmacy and you're confronted with the choice between these two medicines you are just as likely to choose the wrong one as you are in choosing the right one. So for many patients around the developing world this is a major dilemma that they face every day.

Even more problematic is the fact that these medicines, apart from the fact that they are produced to deceive by convincing people they are real medicines, are produced under horrific conditions that I wager most of you here if you were asked to buy paint or any chemical made in this place you wouldn't do so. To then consider the fact that medicines are being produced under conditions like this is heart-wrenching.

This is an actual factory of a counterfeit drug trafficking ring that was uncovered in the Philippines, and reproductive health medicines were being produced there as well diabetes medicines, hypertension medicines, et cetera.

The health conditions have been dramatized in many African countries where we have seen mass fatalities. The medicine that you're looking here is normally administered to children who are about to develop teeth and are experiencing fevers. Unfortunately, in Nigeria two years ago some counterfeiters decided instead of getting centrifuges for their manufacturing process, they would put in anti-freeze; the same chemical found in refrigerators. One hundred young infants died as a result of this particular incident in Nigeria.

You also are looking on the screen at Chloroquine, one of the most widely prescribed anti-malarials in the world manufactured by a reputable company, Novartis. In 2010 we had to withdraw this medicine because counterfeiters had faked so many of the packs that it was almost impossible to trust the supply chain in that particular city. This problem of counterfeit, fake and falsified medicines is not an abstraction. It is a major danger to people in many nations around the world.

As far as pharmaceutical companies are concerned, the sheer impacts on their finances is beginning to prompt actions and some experts suggest that $75 billion is lost to the legitimate industry as a result of the action of counterfeiters who are successfully copying these medicines through the use of technologies that are now more widely available than they have ever been. Counterfeiters are able to invest in packaging that looks real.

And they put in active ingredients. That means when a chemical test is administered to determine whether the medicine is true or not, there is enough ingredient in the drug, it takes longer and takes many tests to establish that the medicine is counterfeit. Because there's a little bit of active ingredient in it, the microorganisms are exposed and develop a resistance for it, and new strains of disease emerge. These new strains of disease are harder to treat and to manage, to the extent where good medicines become less effective. It becomes not just a factor of counterfeit medicines, but it affects the medicines generally and their ability to do their job.

What we tried to do and what we have succeeded in doing in a number of countries in Africa, Kenya, Ghana, Tanzania and others, it allows the consumer now to become the primary stakeholder in this fight against counterfeit medicines. We ID every pack of medicine. Unlike a bar code which is the same across different boxes, in our system the technologies are provided to the manufacturer to enable the manufacturer to individually put an ID on each pack of medicine that is different from each and every other pack in the supply chain. This allows the consumer and the pharmacy to unveil that unique ID and send it in a text message to a free number, free hotline and get in return a message back from that hotline in about two or three seconds confirming that this product is genuine on three grounds: One, it is the original pack as intended by the manufacturer. Two, it is certified and regulated by the competent national regulator. Three, that since it left the factory, nothing has happened to that medicine being blacklisted. If these three conditions are satisfied, the computer responds back to the consumer confirming to the consumer that they have the right medicine in hand.

What is interesting, though, is that because of the fact that this is a computer system on the back end, every single query and every single authentication is also uploaded into a central cloud computing platform for the system to develop an oversight mechanism. Every time that somebody is checking, the system is building a profile of that market, of that environment, of that context. That in our view is an amazing solution for beginning to advise and to counsel public health officials about the emerging trends in medical use. If somebody is changing medications, or a doctor is prescribing new medicines in a particular locality whereas previously a different medicine was prescribed, that can give you a leading indicator as to what type of disease patterns are emerging. When one medicine was less effective in malaria, public systems were the last to realize it. You will see the transition to chloroquine to more powerful anti-malarials being prescribed. It is a powerful system and clearly indicated by the number of partners that have joined. Most of the major telecom companies are on board, like the governments of Nigeria and Kenya are now on board.

That is one case study. I would like now to talk about the general link.

Powerful tools are available to two-tenths of the world's population. Four billion people now have a phone. Not only does that mean that 4 billion people have access to computing power, it means that 4 billion people have access to an identity. That phone number provides them with a unique identity. As these people transact with various systems, the data that is collected can provide amazing insights into the changing patterns of disease and to the changing patterns of patient behavior across the world. However, to be able to benefit from all these data that is coming into the system, our technology systems obviously have improved. And as this slide demonstrates, as we move away from the gigabyte range and into the petabyte ranges, some of the ways in which we query representation and represent data have to change.

We need complexities around the way that interconnections between the data and what they can teach us allows our practice to evolve. And that is very important.

The other point that we have to note also is that whereas some data like what I was describing to you can be structured at the very lowest level, so if you take, for instance, the data associated with child malnutrition or antimalarials the child takes at a certain age, that is structured data. If you have 10 billion children and 10 billion data points, you can slice them and take 100,000 of them and you have what is called self-similarity. There isn't much difference in that sense; the scale doesn't vary in that sense.

However, there are complex data forms, unstructured data forms. For instance, how flu is correlated with movement in slums. That kind of data, unstructured as it is, has a certain dynamic around the scale effects, which means that as the data increases in size, the structure of the data essentially becomes different. And so the scale itself begins to matter. If you have 10 billion data points, what you can drive with the data points, it is not the same as you can take with a million. You cannot take a slice of the properties and consider them the same as a billion. That's where we are moving. Structured data dynamics is extremely important.

As countries develop the capacity to understand what this means, we see researchers leading the way particularly in biopharma, where we are talking about data to better develop drugs. This requires the analysis of large volumes of data and the construction of insights that order structured data will not provide because you are using machine learning. You are using automated processing. Traditional processing does not permit you to achieve these results. Kibera, perhaps one of the largest slums in the world, was profiled because of the fact that the researcher, Lester, had access to phone data, not subscriber identification information. He had access to the cell data. He knew when a phone was in a particular area. And using computing technology that allowed him to aggregate hundreds of thousands of these phone numbers, it gave him an idea of how people were moving into the slum, out of the slum, what time of day, et cetera. This was overlaid with caller data. It began to acquire epidemiological data. The ability to predict cholera through the slum was amazing.

If you track epidemics and imagine disease patterns, using cellular phone data because it approximates the movement of people, it tells you what else we can do. Can we begin to ask everybody in the world to respond to surveys on their mobile phones? Possible. This company that I talked to you about, called Jana has 3.8 billion phone numbers in their database. They have systems that allow them to incentivize each subscriber, each owner of that phone, giving them free air time because they are logged into the billion platforms of the telecom come companies that these people are subscribed to. They give free air time in return for that person answering a call in their local language. You receive a call on your phone. If you are opting you get free air time and you answer a few questions in your native language, maybe related to your health in one form or another. This is put into a central cloud application that allows dynamic processing of that information. Maybe it is to do with your health, it is to do with your diet, et cetera.

What does that mean in principle? This means in principle that this patient-centeredness that we have been talking about, the ability to move beyond the system or below the system becomes more and more practical over time. Our ability to focus on noncommunicable disease, infectious disease driven by lifestyle, generative factors, complex, multi-dynamic systems become more and more possible over time.

Of course it has risks. Already I have mentioned privacy. There are risks to do with portability. Who owns that data? Is it your personal data? Is it in a corporate vault? Today for instance many people do not realize how much information the social media networks and the search engines collect about you. You have absolutely no idea. Most people have no idea how much data Google has about them. As the systems become more powerful, they are able to correlate actions you take inside that space to develop personalized profiles of you that they sell to the advertisers. Are you entitled to have a share in that? Should you be paid for that? Should there be transparency, so that when you move into a domain or part of the Internet you are told that certain data is collected about you? What are the principles that will guide us in this new world where there is complete transparency from a cyber space point of view? As everybody becomes connected in a new hyper-connected world where everything is connected, what are the safeguards and new institutional protections that ensure that human rights, patient rights, individual rights remain at the centre of the ecosystem. This is a very important question and we don't see enough thinking along that direction by health practitioners and health policies, et cetera. This is really critical in my view as we move into a world where the health system is not based on privileged information dispensed by doctors and by participatory healthcare in which everybody, everybody's circumstances become relevant. We've got to a new stage of history in the evolution of mankind as far as healthcare is concerned where the data is collected at the personal level and the individual may retain control. And the technologies that maintain the programme has data at the apex. From now on all of us in this room will give much more thoughts to this issue of data and the interconnectivity and design systems and how that affects the design of healthcare systems around the world. Thank you very much.

(Applause.)

>> BILEL JAMOUSSI: Thank you very much indeed, Bright. That was an excellent presentation.

Any questions from the audience? Somalia, you have the floor.

>> SOMALIA: Thank you very much. I want to make a quick comment and that might lead us to a question. I can wait even later on, but the last presentation was amazing. I just want to commend you. Really, that was an amazing project.

But I want to make a quick comment. We started with fighting counterfeit using mobiles and we went all the way to the meaning of life and solving the whole world's problem.

I'm wondering whether -- I'm not criticizing, really. This is positive feedback. But perhaps remaining with the theme, just focusing on the controversy of counterfeits, that alone is a huge project. Maybe 20 companies can make a difference. Maybe remaining with the counterfeiting and doing some data mining, maybe that would be good. I'm just giving a suggestion.

>> BRIGHT SIMONS: Thank you very much. Actually our company does focus on counterfeit medicines. We are beginning to look at the data coming in from patients which can help us predict changing patterns in disease. If you look at how people are consuming medicines, how many medicines they are consuming, you can begin to advise patients and give them advice about their medicine.

Before somebody takes a medicine, they send you a piece of information saying I bought this medicine. It is a good time to remind that person about certain cautions, if they opt into a system where they are provided additional information. You can tell them about the whole range of allergies that can be developed, et cetera.

What I wanted to show, starting from very basic ground, how the data flows into the ecosystem, at that place we might begin to use that data for even better reconfiguration of the health system. It is not necessarily one company providing these services. It is the system becoming viable and people drive that data to drive new applications. Thank you for your feedback.

>> BILEL JAMOUSSI: Thank you, Bright, for your response; and thank you, Somalia, for your feedback.

I don't see any other requests for the floor. I suggest -- sorry. Please, go ahead. Can you press the button so the technicians can enable it? South Africa, please.

>> SOUTH AFRICA: I just want to also echo the words that were said. The presentation is great and I think you are doing a great job.

My question relates to the size of the data as you have mentioned that you are going into the peta scale and getting bigger and bigger.

As you move from the data that we can use to the bigger data, normally the companies then start to make sure that the data is reliable. And people are getting used to this. It is becoming addictive. They will always be using that. That is why people, really in the end we don't care about the amount of data that they are giving Google because they can't really live without giving data to Google.

So what are the things that you are putting in place to make sure that this service will always be reliable? Will always be available even with the increasing number of people using the service and the number of data in there?

>> BRIGHT SIMONS: So a part of that is a technical challenge which is that, as I mentioned earlier on the size of the data set increases dramatically, and your ability to mine that data, to process that data, to make relevant instructions and to respond in time and within budgets becomes a technical challenge. Some of the data structure like MySQL and the rest are no longer relevant. We are moving to an unstructured database and the rest. The technical dynamics begin to come into play.

Your question is more profound. You are raising the political and social dynamics of this. We need much more thinking within ITU and other allied agencies around what we mean when we say personal data is truly personal. How are we going to empower patients? I want to give a lot of my data to Google but I want to benefit beyond the service. If Google is making hundreds of billions of dollars because my data makes it possible for them to provide better service to advertisers, I deserve a share. We don't get to the point where we treat our personal data as an asset class. Then we think of a new economy where not just the byproduct of my service is a service, but my giving away my data is relevant. Our service itself has not gotten to that stage but other services are already there. Yourself, other members in the ITU and other thinkers should be thinking dynamically about these matters. Thank you.

>> BILEL JAMOUSSI: Thank you very much. I would like to now move to our next presentation. Our next speaker is Dr. Oliver Harrison. He is Director of Strategy at the Health Authority Abu Dhabi, HAAD, where he is managing capacity, health economics, healthcare regulation and e-health development. Before joining HUD, he worked on healthcare reform with McKinsey. He is a Doctor in psychiatry with a Master's in Public Health from John Hopkins University, Foundation Scholar at Jesus College, Cambridge; and Honorary Lecturer at Imperial College, London; and member of the World Economic Forum Global Agenda Council on the Brain and Cognitive Science.

The floor is yours.

>> OLIVER HARRISON: Salaam Alaikum. Welcome to the United Arab Emirates. I didn't travel as far as you did. I came by car from the Abu Dhabi just up the way.

We heard some very interesting talks so far. It's fair to say now that there is consensus on the challenges posed by noncommunicable disease. The United Nations meeting last year I think achieved that consensus. The announcement on the 7th of November that the World Health Organization created a monitoring framework with specific targets is another step in the journey.

I would like in my presentation to take a slightly different tack that builds on what we have heard today and those areas of consensus and to propose a practical approach for creating a scalable data platform for health which meets many of the technical challenges around security and data aggregation, looks at the technical challenges around the scale of data and making sure that data is available for a variety of uses.

So my summary is that the World Health Organization and ITU have agreed to a pilot programme in eight countries which is enabling data exchange and tackling noncommunicable disease. The WHO as I mentioned published on the 7th of November a global monitoring framework including 25 indicators. So the work we have been able to do in Abu Dhabi and I will talk a little bit about this in my talk built and implemented a simple very low cost scalable e-health solution which is being used to support a range of transaction types which under pin the entire health system.

The data systems themselves have then been used to create a programme we called Weqaya, in Arabic, which is studying our biggest health burdens, vascular disease and diabetes.

This of the 25 indicators included in the global monitoring framework, 12 are flowing routinely, low cost through the data system and have been for a number of years and further eight of those indicators are rolling out in the first quarter of 2013. The remaining five indicators are input variables which can be collected simply. So in addition to monitoring the Abu Dhabi data platform is also used to launch individual interventions at scale in a way that allows push-pull functionality, the aggregation of data around effectiveness and cost effectiveness realtime.

The Emirate is interested in understanding with WHO and ITU and other partner countries how these solutions could be adapted for other health systems. So I shan't go through this wordy slide in detail but this is a quote from WHO ITU cooperation agreed signed here in Dubai. There are overall goals of the programme. There are country level goals for participating pilot countries and then global goals which are learning through those pilots how a system can be developed which could be rolled out transnationally. There are many challenges for data in health and for use in noncommunicable disease programmes. I shan't try to run through all of them now. Four of them are the siloing of data so we know that today there is data available in hospitals and clinics, data available where it exists in healths in databases. There is data available in a range of other sources. The question is how do you put it all together? Consolidation, how do we consolidate data which could be coded in nonstandardized forms and how do you develop a system which is able to put all of those silos together in a way that is usable?

The third topic that Bright touched on is analysis. And I think we believe that there are some technical solutions to avoid this ever increasing scale from petabytes to exabytes and who knows what is less to manage the scale so that meaningful analysis can be formed on relatively small data sets.

In addition, of course, there are legal, regulatory and ethical challenges around privacy, but I think there's increasingly consensus that the nonuse of data, the failure to use the insight in data to help individuals and to advance the state of the science is just as ethically challenging as the more traditional concerns around privacy and confidentiality and clearly there needs to be a significant improvement in the ability to collect and use data to improve health whilst also maintaining privacy and confidentiality. So why Abu Dhabi? So Abu Dhabi is an ideal environment to look at e-health innovation and tackling chronic disease. It brings together a range of factors. The population is 2.4 million people including nationals and nonnationals.

As we say it is big enough to matter and small enough to manage. The government is highly strategically minded and able to take a 20 to 30 year view of how to tackle societal challenges. And it has broad based popular trust. There has been in this region, as you are all aware, an extreme pace of socioeconomic development from the development of petro chemicals and that had a result in a high burden of non-communicable disease. There is a burning platform in the Middle East and particularly in the Gulf to tackle diseases at that scale. The system we work on in Abu Dhabi is plural, we have payers and providers. It is not a simple place to collect data and begin to use it. It is, the system is well resourced. We have been able to be fund innovation.

So the Abu Dhabi case study, I shan't run through this wordy slide. I'm happy to share the slides if anyone wants to go through in more detail. What I will say is that we have created a data exchange platform. There is a technical slide which I'll just touch on, but that platform has been used to drive this programme Weqaya which has two headline outcomes. The first is that through the use of data systems, if you structure it in the right way everybody can know their numbers. Everyone can know if they have diabetes or not, or if they are at high risk of developing diabetes. Everyone can know if they have hypertension or dyslipidemia. Everyone can know that they have high risk of cardiovascular outcomes and critically that knowledge can be used both by the individual and also by the health system and stakeholders within the health system to improve outcomes. Within the first two years of launching this project, the clinical care increased by 24 percent. However, a significant increase in the control of diabetes and a very significant increase in the control of dyslipidemia. In our population, 35 percent of people do not know that they had diabetes the around 50 percent of people did not know that they had high blood pressure and at least two-thirds of people did not know that they had high cholesterol. This is the starting point for affirmative action.

So the system is very simple. And we spent a long time thinking with experts around the world how to structure it. And critically, we developed the system from industry standard very low cost elements. Today the entire architecture continues to run off just two standard 2009 specification, Microsoft-compliant stack servers. We are moving on to a cloud architecture. This was certainly by no means created in the Rolls Royce garage. This was created using simplicity, stackable modular elements right from the start.

So we believe that the system which has been developed in Abu Dhabi could be implemented at a very low cost in a full range of countries, low, middle income as well as high income countries, clearly with local adaptations.

So why do we believe that this solution could be of interest to this group? Firstly, it's standards-based. That touches on the first talk. We use WHO standards. So ICD, link the CPT codes and the others to code the interactions and flow within the health system. This is then coded into a simple XML script that can be encrypted using very cheap low cost industry standard technologies. And that helps us to tackle the privacy and confidentiality challenge.

So data can be aggregated. So large numbers of patient encounters actually crunch down to megabytes and gigabytes rather than building petabytes and exabytes which means that simple applications such as Excel and access can be used alongside any more complex applications that scientists or industry may choose to use.

Many of the components of what we have done are today open source. And we very warmly welcome others using what we've been able to put together and in this brief talk I'm only able to just touch on some of the elements and be very happy to continue those conversations.

When you look at the global monitoring framework on NC developments, again apologies for the busy slide. I've color coded here in green the 12 elements that are flowing in a standard way through the system today. The standard system is an e-health platform and the primary form of data exchange is between providers of care and payers of care, both government and private sector insurers.

The data platform is being expanded right now. The project has just started with a mobile integration module. So very interested to hear what Chuck has to say from Continua. A mobile data platform that can collect lots of usable data around behaviors. And one of the benefits of the research in noncommunicable disease, we know that behaviors in just four domains is what drives the large majority of, we look at tobacco and alcohol consumption, physical activity and nutrition.

We are building the platform to be able to use a range of mobile devices and applications to collect data ubiquitously across the entire population and render that down to a syntax which we can use to drive analysis and drive interventions back to the individual.

So there are I think five areas of potential support that can be explored. The first is creating the technical data standards and technical interoperability standards. The second is thinking through this very interesting challenge of governance both in a legal sense, regulatory sense and also at the ethical and reciprocal obligation sense.

There is enough in place today to be able to say this is a schema that could be built or adapted for build-out in a range of other countries. There is some interest I know in aggregating data transnationally between countries, anonymized and in accordance with local laws, but putting data together so that the evidence base can be developed using the transnational data set.

Also I have been able to make significant advances in analytics in extracting utility from the data that has been collected. So there are several criteria for success. I named four here. The standards need to be agreed by the appropriate transnational bodies and we need to select the right countries for the pilots. Pilot countries and those interested in expanding e-health clearly need to be willing to adopt a data standard for their systems, offer elements within their systems and a technical infrastructure is required for the roll-out of the agreed solution.

There are a range of ways that this kind of support could be provided. And because the systems have been developed and pressure tested over the past five years, it is possible to move forward with the implementation relatively quickly and we have some initial thoughts about how all of this could fit together.

Just a couple of concluding remarks. And maybe it's a little presumptuous to jump straight to a proposal for how we can move this forward. The big question is no longer is there a problem in healthcare, a problem in noncommunicable diseases and how to tackle them. The problem is no longer that we lack a framework or targets to deliver improvements in health and reductions in mortality. The problem that faces main health ministers around the world and governments around the world is: What do I do to actually begin making some progress against this?

We have certainly a lesson to share are in terms of actions that will deliver impact from the unusual case of Abu Dhabi, but I think we also believe now that there are some lessons that can be learned that are applicable to other health systems as well. Thank you.

(Applause.)

>> BILEL JAMOUSSI: Thank you very much, Oliver. That was an excellent presentation and certainly we see that -- you probably can't hear? You can? Okay.

Certainly there is a lot of interesting ideas and proposals. I think there is an offer on the table for WHO and ITU to work with the experience that you have had in the platform that you have developed. As we embark on trying to implement some of these solutions in the agreement that was signed between WHO and ITU.

So thank you for that. Let's see if there are any questions from the audience.

South Africa, please?

>> SOUTH AFRICA: I am tempted to delay this question to the time when everybody is finished presenting, but the question really is in the case of Abu Dhabi, is it the health ministry that is behind the project? Or is it the minister responsible for communications and the applications in the communications? How has that been sorted out in that particular case?

>> OLIVER HARRISON: Yes. So in Abu Dhabi, the prime ministry leading this is the health ministry, or the local health authority. But we recognize that many of the causes of chronic disease sit outside the health domain. They sit in the domains that drive and influence nutrition, physical activity, tobacco smoking and alcohol consumption. We've created a Committee of the Ministers and the responsible government offices in each of those domains to work with hard targets for implementation of quick wins and evidence-based interventions to help steer behavior change.

What we are able to do because we have this integrated data platform is we are able to coordinate individual interventions which could be SMS. They could be websites, they could be a telephone call or a meeting with a doctor or nurse with population level interventions, for example changing the labeling of food or the pricing of tobacco with group level interventions as well which could be driven through local government, through employers, schools, and others.

And critically what we can do is measure the impact across the population realtime to see who is winning in driving a particular domain and who has lessons that they can share with other stakeholders within the system.

>> BILEL JAMOUSSI: Thank you, Oliver.

You know, there is a saying in Arabic that says (foreign words) which means in English prevention is better than treatment. It is interesting that HAAD has chosen to name its initiative as Weqaya. There is a lot of wisdom behind trying to prevent the disease instead of having to treat it.

So thank you for that. Our next speaker is Chuck Parker. He is Executive Director of the Continua Health Alliance. He has over 20 years of experience in healthcare policy and the strategic design and measurement of strategies. He has led national programmes for practice, transformation and has served on national committees for assessing adoption requirements. Today Chuck leads the many working groups and day-to-day operation of the alliance. And I want to note that the Continua Health Alliance has recently become a sector member of the ITUT, ITUR and ITUD as a decision of Council in its last meeting.

Chuck, welcome; and welcome to Continua.

>> CHUCK PARKER: Thank you very much. What I want to do is take you through what Continua is all about. We are a not-for-profit organisation out of the U.S. We have offices in Brussels, Tokyo and now in India. It is where industry comes together to focus on how do we address the problems that we heard about the standardization effort. We are working closely with ITU now in understanding how to implement those technologies. Continua has been around for six years and is taking a look at personal connected health and how do we instill that activity of the individual and ensuring that we can protect and provide for the individual with the healthcare technologies.

So today it is really taking us beyond the four walls of traditional healthcare space. Healthcare today is delivered in the hospital or in the physician's office. The reality is that most individuals are, 99.6 percent of the time don't visit these facilities, aren't in these facilities. As a result of that we have to find new ways to reach out and communicate and connect with them.

The primary use of this technology is to limit the post acute recovery along with aging in place and ensure that we can keep the individual well and at home. Ultimately the long-term goal is personal health and wellness. How do we keep the individual from having to go into the healthcare system in total? It is a longer term goal but it is our objective over the lifetime of what we are trying to accomplish here. We want to make sure that the personal information is connected not only with the healthcare systems that we're involved in but also with the extended caregivers that may be treating us and individually for us we can tailor the data so it will have meaning to us as an individual.

Currently there are limited trials showing this flowing into the medical records. With the trials in place today, with one large implementation we have shown demonstrated improvement with the overall healthcare delivered to these individuals. So we take a look at here today in this particular case, the chart is showing that hypertension has the highest cost to national payers on a global basis. It is very expensive to manage and an unmanaged person with hypertension in the longer term of their life span. Left unmanaged, individuals develop kidney disease, but heart diseases and strokes and are at risk for other healthcare activities and actions as well in the long-term. These are longer and more costly medical conditions if we can't manage the disease state early. We have simple tools today to be able to capture and understand how the individual is living and to provide a way to monitor the individual so that they get the feedback they need to be able to bring this disease state under control relatively easily. With that said this is not the only disease state that lends itself to using personal care. We know that diabetes when provided with the right type of measurements is relatively easy to manage as well. COPD and some of the other noncommunicable diseases you heard a little bit in discussions today.

We want to ensure that we provide some of these opportunities. In addition to that we can take a look at some of the cancers that are out there as well which are in essence acute diseases that typically have sometime in a two to three year recovery period. We can use these tools as well to manage those disease states.

So what are some of the other areas that we are taking a look at here beyond the four walls? Our mission as we were created was to establish an ecosystem of interoperable communication devices. That ecosystem is more than a technology. It is not just bits and bytes of data and the technology, the hardware itself. The ecosystem incorporates how do we engage with the healthcare systems? How do we bring forward the right regulatory frameworks? Not only at an international level but also at an individual and localized level? How do we understand the workflow implications that need to be changed in the overall environments?

And the last is the reimbursement. How do we get paid or use these technologies effectively in a reimbursable way across the spectrum here as well. Ecosystem itself has a broader text in this understanding as we begin to shift from that inside the hopped to an outside the hospital type of delivery mechanism. Why is this important? Because we know that disease states today are controllable. If you can provide the right level of information back to an individual who is a diabetic, 91 percent of that is actually controllable with lifestyle management that they can, the individual can take control of. So providing them the tool sets first just at least the ability to measure where they are to be understand what their condition is doing, and then secondarily the alert system on the back end; and the last part of that is that we can tie that to physicians or nurses who can interact with the individual. For example, diabetic educator to provide the teachable moments to the individual to help them manage their lifestyle. This is 91 percent of what is actually taking place in diabetes today. We see that as well in other areas where it's a high degree of individual self management. If provided the right tools, you can eliminate a significant portion of that risk.

I am not going to go through the full detailed of this slide. What we are showing here, there are reports already on this data and these elements that we have seen in place today. So what we are seeing is that through pilots, through testing, through the activity and use of these technologies we are already seeing significant improvement in healthcare where these are deployed in overall markets throughout the globe.

So what does that actually mean? What are we trying to accomplish here today within the alliance itself? So we focus on how to bring standards together in a way that can create an interoperable end-to-end chain of that data. We go from the device itself using an IEEE standard, and transport mechanism into a hub, a cell phone or a PC and in the future we will see widgets built into a TV that will handle that. We put that into a consumable format by the health systems today in a secure and highly customized fashion. It is actually delivered per the requirements of the individual healthcare systems in that sense. But we build this on international standards so that we don't have to go back and create it country by country by country, allowing economies of scale then in this place and being able to deliver this. We talk about the security. We've gone and researched the international standards for this and find that when the U.S. and also in the EU that the security standards are high. We need to make sure we meet those requirements. By building a system that meets the highest level of functioning requirements means we don't have to go back and recreate that and create the country specific solutions.

What we are doing today at this time is that we now have 12 device classes that now have been defined through the process. These are things such as blood pressure cuffs, spirometers, activity monitors, and other activities that we are going on. But with that said, as member organisations begin to see other areas of improvement we continue to ad additional devices. We have 12 today. We probably have another six in the pipeline for the next two years with overall 12 over the next three to five years that are going to continue to increase these opportunities. Some of the things that are coming are 3DGCD. Glucose monitoring, the infusion pumps. What we look at doing is not only be able to solve a diabetic's need in the immediate sense of being able to measure them but ultimately create an artificial pancreas as part of that as well.

The communication structures are built upon the international standards. What we do continually is create a set of guidelines that can strain down those standards. When you get to interoperability as industry, we have to make tough choices. Some companies are going to lose out on their existing ways they are doing things. In order to drive to interoperability, you have to have one way of doing it, not seven to 12 different ways of doing it. It means using a particular kind of radio, a particular type of language on the back end to ensure that the interoperability is met.

We define down through a set of guidelines that interoperability and requirements that ultimately we then create a certification around. There is a continuous certification then. We use seven international testing houses that are throughout the globe, one of those being underwriters laboratories to certify the devices to ensure that those devices met that interoperability requirement.

So we are now creating a logo device and logo to ensure that now you can as a consumer can know that that device met those interoperability requirements.

This is a little bit more about the block diagram here. It shows where we are. This takes you through some of the ways that we look at how we communicate and connect to the individual.

Here again just another slightly different way of looking at this and how we work with IHE closely to integrate the data on the back end so that as we hand it off, it's already in a consumable format. So the majority of the health systems today can use that data immediately in a prepackaged set of data elements.

We are working towards, with Oliver, we are working to well shrink that data down so that you can actually use this system even in a 2G network on the cellular side today. Our data packets are measured in the kilobits range because we want to ensure that we can collect this data effectively and easily and use existing rough systems in the networks today.

So here is some examples of solutions that already have been implemented today. The Veterans Administration as you heard me talk about, this is the largest deployment in the world using this technology. They have more than 75,000 end users of this technology in deployment in the U.S.

It has led to over 400,000 episodes of care and over a million points of interaction with that data, with those data elements. It's important to note. This is scale. In order to achieve that scale they had to use standards to be able to implement that. You can't use proprietary networks or tools and back end systems to reset level of scale. No single company can provide that entire solution in that case.

Again last year during the Japan earthquake and tsunami, one of the things demonstrated with this technology is how quick you can use tonight a plug and play environment. If you have certified technology you can roll it out relatively quickly. After the earthquake and the refugee camps were established, the individuals with medical conditions, most of them over 55, had to receive treatment services. There were no facilities because they had been damaged or they were relocate to do a location that didn't have them. We were able to establish using the companies there along with the university hospital system and deploy these technologies in less than ten days. It's another important factor about the interoperability is that it now doesn't require you to create custom code. It doesn't require you to have custom solutions in this case as well. Now you can deploy relatively easily and quickly in the network overall.

We were able to deploy these solutions in ten days. What we measured against in this particular camp where they were measured, 400 individuals were using the systems. We saw 14 percent improvement compared to other camps in the time frame over the year period that this was implemented in this case.

Not only can you use this technology from simple day-to-day measurement, this can be deployable rather rapidly in a disaster management system as well. Not only for longer term use but also at hour one so you can use it as a triage mechanism.

So one thing I do want to note is that Continua is working across the globe with other organisations. Bilel mentioned that we are a sector member in this case. We strongly believe, how do we share this data with industry? How do we share the data and create the acceptance of these so we have an easier way to deploy these devices and gain economies of scale. We use other industry and work with other trade groups that represent like industries such as the GSMA on the cellular side. We work with regional adoption operations as well as global certification and global adoption organisations as well in this case.

So I just want to end up here and talk a little bit more about interoperability is a key driver for adoption for health. It has robust data exchange. It reaches large scale, simplified data sources as well. We have a single common way of actually representing the data. It is ease of use promotes positive experience as well. The consumer now can implement these technologies. It doesn't require a technician to implement these technologies.

It introduces new flexibility in how for launching home health and other patient-centered or patient-connected health side of the issues. When you have standards I can now take a device that I was using, for example, a weight scale and a blood pressure cuff for an individual with hypertension. If I own that as a healthcare systemic re-purpose that to use it again with somebody who might be a diabetic in that case or someone I'm following post heart surgery follow-up. It allows use to reconfigure the systems. Or if I have an individual that now suddenly shows up in a long-term care facility with diabetes I can actually add additional devices to continue to monitor the individual without changing all the other devices around it at that time.

It also provides a way to be flexible on the backwards compatibility of these devices as well. You can continue to use devices that you've purchased or are entered into the system itself along with newer devices and not having to create those custom solutions here over and over.

So that's it. I want to say thank you very much for your attention to this particular matter. We are certainly an organisation that is active across the globe. We are very active in not only the policy side here but also in the regional deployments and understanding the different activities and networking activities going on. We bring industry to those solutions and as a safe haven for these activities it's industry coming together to solve problems together under the Continua Health Alliance banner. Thank you very much.

(Applause.)

>> BILEL JAMOUSSI: Thank you very much, Chuck, for your presentation. Ladies and gentlemen, do you have any questions to Chuck or to any of the other panelists? Please press the button in front of you if you have a question.

I see Trinidad and Tobago.

>> TRINIDAD AND TOBAGO: Can everyone here me? They question is for Dr. Harrison, the question that the African Delegate was trying to ask you, in implementing the system that you implemented in Abu Dhabi, did you have an IT group within the ministry of health? Did you have a separate IT group from another ministry completely that came into the ministry of health to help implement the system? It was a way to find out which way is politically more expedient within countries to get something like that implemented.

>> OLIVER HARRISON: Yes, thank you. We had an IT group within the ministry of health. I imagine it would also work if you were partnering with a communications or informatics group within the government. This was led by the Ministry of Health in close collaboration with the informatics and communication regulator in the Emirate.

>> BILEL JAMOUSSI: Okay. Thank you. Somalia, you have the floor.

>> SOMALIA: Thank you very much. I enjoyed and I thank all the panelists for the amazing information. I guess my question is how do we measure all these technologies? How do we measure the impact of these technologies on the patient? The reason I'm asking this, I want to be a bit provocative as well. It's the end of a long day. The question is all this technology. The bottom line, we are trying to make a patient better.

So if I were to ask you after all the discussions we had and all the technologies you talked about, has the patient survived? How many people didn't die in the hospital bed? And I guess just to elaborate a bit, the issue is here, for example, if you are trying to figure out whether a drug is counterfeit or not, to me really that is good, but what is more important is if a patient or someone uses that drug, what do we do? How do we save that patient? If Abu Dhabi introduces a system, how many people do we know with diabetes A or B? What do we do about it? The literature and research, I leave for WHO. Those people are good at that. The other people, I want to make sure that we make the patient better.

The interaction here between medicine and technology is the interesting part. We know that medicine can do its job better with heavily institutionalized medical institutions, what can ICT do? How do we influence the doctors and say technology is not the enemy but it is there to help the field.

>> BILEL JAMOUSSI: Thanks, Somalia. Perhaps I take another question from Austria.

>> AUSTRIA: Thank you, Chairman. Very important issue with maybe different aspects depending on the world regions. However, what we are touching here are direct and indirect human rights. My experience in Europe in relation to sufficient e-health project are in such a way that the implementing of such projects is very often opposed by doctors itself. This seems to me of great interest. One argument of the doctor is that for the time being they have only a short time for a diagnosis or a talk with the patient. But maybe behind such discussions are all the different other interests. Sometimes politicians also. Nevertheless, patients themselves are uncertain but are in principle not opposing e-health projects best of your recollection have fundamental concerns. What about data security? What about the security of privacy? How to give the patients a guarantee that their data will not be used for other purposes as it is necessary in relation to to his own health. This to me is a key point in all this project.

Thank you, Chairman.

>> BILEL JAMOUSSI: Thank you very much, Austria. Perhaps I can turn to the panel and see if there are any volunteers to answer the first or second questions? Chuck?

>> CHUCK PARKER: Sure. I think that toward the first question, how do you ensure good outcomes for the patient themselves? I think is this a beneficial use for the patient? That becomes an issue of understanding what it is you are trying to achieve overall. I want to tie it to what we heard from the gentleman from Austria here. How do we ensure that we are getting at an effective system overall?

We ...

(Audio cut out. Attempting to reestablish audio.)

>> CHUCK PARKER: -- reach out to individuals to engage the healthcare system in a more effective way meaning we can enable nursing, we can now enable educators who are specially trained in these particular fields to continue to engage or now become engaged in this process of managing the disease states themselves. We allow now a different level of interaction. You know, from the physician perspective, we simply don't have enough physicians. So whether they try to stand up and block this as a protection in some cases of their field, the reality is they are overburdened today. There is not a country where the physicians are not overburdened with more patients than they can see on a regular basis. We have to find as governments a political way to solve that issue or a practical way to solve that issue in this case in providing these levels of technologies.

Ultimately it does result in additional features that we have to be concerned with and technology wise how we link them together. That's with the healthcare fields it's bringing in new partners. Bringing in partners such as cellular providers and organisations such as the broadband communication technologies as well. You have to find new ways to integrate these technologies into the overall healthcare system. These organisations are built to scale. They understand how to deliver these solutions and with securities, many of them are delivering banking solutions with these technologies as well.

We have the security defined. We understand how that should be managed from a privacy and security component. Ultimately to the last point, that ensuring that they are not using this data for other purposes, that's something that you have two side of the fence on. There are going to be organizational activity to protect the individual rights. But ultimately for the good of humanity you want to know what is happening across the globe or what is happening regionally and there's a need for some of that data to be fed into systems to manage the disease population as a whole in that case. There has to be an effective balance in the way that disease state is actually managed. Ultimately there are two camp insurance that field that say it is to the greater benefit of all mankind to know when we have a developing solution such as SARS in a Middle East Asia country and have early warnings and alert toss that before it becomes a worldwide crisis in that case.

>> BILEL JAMOUSSI: Thank you, Chuck.

Dr. Al Shorbaji?

>> NAJEEB AL SHORBAJI: Thank you very much. These are great questions. I wish the day was earlier so one could expand and talk more.

Just two or three points to really try to make. Number one, when we talk about e-health and the use of ICT for health actually we are talking about using them as tools to transmit, to collect and disseminate and share data. There are never a replacement of the doctor or nurse or any of that. They are to enable the doctor, the nurse and the patient actually and they are to complement what they are doing.

The other point I think we have enough evidence that use of ICT, which means using of data managed by ICT properly, collected properly, communicated properly and analyzed properly, utilized, can save lives. If you read the last issue of the world health bulletin talking about polio in Pakistan, it is about knowledge, actually. The polio in Pakistan can only be eliminated only, and only if knowledge is spread among the people. One way of spreading the knowledge is using mobile phones, using the IT, using the TV, using whatever technology we have.

The other hypothesis and the other evidence actually that we have, using ICT can reduce the cost of healthcare delivery. So if you manage to reduce the cost of delivery of medicines, for example, you will end up having more medicines, having more people to serve, which means saving more lives.

The last point about using data for purposes other than what it was meant for actually, I think it is an ethical aspect and as my colleague Chuck said, I think some of the data should be aggregated without reference to a specific individual. Of course, you have to take consent on that. You have to make sure that the patient hill self or herself is in agreement to using or reusing some of that data without having to disclose the name of the patient or the location or any of the identity that relates to that patient. Thank you.

>> BILEL JAMOUSSI: Thank you, Dr. Shorbaji.

Oliver?

>> OLIVER HARRISON: Thank you. These are two very fundamental questions. I think none of this is meaningful unless it delivers impact. The philosophy starting point has to be how can we improve human health? How can we reduce mortality and morbidity? One of the key dimensions of assessing success or failure is looking at the ability of these systems to deliver measurable impact.

Of course, one of the benefits of IT systems is that you can measure that impact in a scalable way using 2G, 3G mobile communications, networks, network and Internet and other technologies. That thinking has to be built in right from the beginning. Equally important is the ethical concerns which may have regional flavors or new answer, but which are -- nuance but which are also considered fundamental human rights. I think really around the world. Clearly they are a starting point for fundamental human rights is the right to life. But the right to privacy and to confidentiality and avoiding exploitation are equally important.

Again, the solutions that we roll out have to address these topics head-on because the path to delivering impact is partly through ensuring that there is widespread acceptability of solutions and that people trust and want to use those solutions. That cannot be achieved unless we square the challenges of balancing the use and the aggregation of data with genuine concerns about privacy and confidentiality.

There are a number of global organisations which are looking at this issue and Bright mentioned a piece of work, I think, the world economic forum is looking at on rethinking personal data. One of the aspects of that conversation is looking at exactly these challenges. There are, as I say, regional nuances and there may be parts of the world which are able to innovate more quickly than certain other areas for ar variety of reasons. I think those concerns are universal.

>> BILEL JAMOUSSI: Thank you, Dr. Harrison. Bright?

>> BRIGHT SIMONS: Thank you. So to be provocative to Somalia, Voltaire said the art of medicine is the art of entertaining the patient as nature takes its course. That's an interesting way to look at it.

If we question our cultural appreciation of medicine and how it evolved over time it gives us insights. Take education, for instance. Nobody worries that the students will continue to educate themselves for life. They will do it inside the classroom and outside the classroom.

In the area of health, we have more worries because health in the early stages was very much a monastery based industry, healthcare delivery, I mean. It created a fortress around healthcare that we must now begin to unravel and patients are beginning to feel they may be central to that whole process. The question about human rights is fundamental.

The other question is whether we use the semantics properly or not. For instance, when we say control, does somebody have control of your data? That does not mean exclusive access. That means there must be transparency how the data is being collected and shared and how the data is being processed. That control entails participation. And part of that process may be technical in terms of concrete infrastructure that is truly participatory. Part of it is cultural and ethical and social and I want to point out the patient empowerment and physician acceptance of these tools, I think the evidence is slowly becoming a matter of self evidence. If we go to Nigeria, for instance, the government after three years of working with us on this programme now made it mandatory for anti-malarials be used. There is additional you will packet on the processes with respect to counterfeiting of medicine. Once it becomes obvious, the government cease how to reform the process itself. Don't forget in all of this the fundamental insight is that the change must emerge and must be sustainable. If it is not, it, there is no impact and there is no evidence, it cannot be sustainable.

>> BILEL JAMOUSSI: Thank you very much, Bright. Thanks to all the panelists. We are getting very close to the end of this session. Allow me to do a quick wrap-up before we close.

Just to reiterate some of the themes that have been recurring in a number of presentations and discussion. I guess the topic of big data and how do you treat and knew the data and private data and perhaps at the same time while protecting the privacy being able to generate knowledge through the big data mining. If there are trends and issues that are common in the region or country, the treatment of that data without knowing the person behind it could be very useful.

And the need for early standardizing on the format of the data, having a framework around the privacy and how to make that data anonymous. Perhaps there is technical standard works around that theme.

Also the issue of using SMS as a way to interact with the patients. Some of you may know that SMS is using SS7, and that's why it scales to so many people. It is certainly at the basis of e-health solutions without us knows. The ITU has been evolving since 1965 with technologies and we continue to do that and that is behind the theme of today's e-health side event is really to look at what other standards the Assembly should look at the various study groups should look at so that we can take platforms like the one that was developed in HAAD joint by with WHO and look at what standards are missing, work with Continua Health Alliance on providing profiles and taking some of the profiles that have been developed by Continua and its 200 members and make that available to the world through the ITU organisations.

Chuck promised me there will be contributions to study group 16 that has an e-health question. So that we can start looking at some of the output from Continua health alliance. Dr. Harrison has an offer on the table for WHO and ITU to work jointly with HAAD on the platform you have developed for Abu Dhabi and see how we can bring that to the rest of the world.

Bright also has a solution that has been proven to scale and is now mandatory in verifying the counterfeit medication in some countries in Africa. Perhaps we can look at the best practice and what aspects of standardization could be improved or documented to make that go forward.

I hope I didn't miss any key messages or key topics. And we will work, continue to work with WHO, with Continua, with HAAD and with bright innovators in Africa and elsewhere to drive the standards process and ensure that the ICTs and telecommunications as they intersect with other sectors like e-health that provide value for humanity.

With that, thank you very much. Have a good evening.

(Applause.)

(The session concluded at 19:40.)

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