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Jim HOAGLAND

We are going to talk first about automobiles and other methods of surface transportation. To do that we are privileged to have Mr François Barrault, who is the Head of DigiWorld, which has put out a series of publications that, as François explained to me, will help you understand what a transformation the digital era has brought to our lives. François, tell us about the Internet of Cars.

François BARRAULT

Thank you very much. This is the last presentation and I know you have seen a lot of concepts about technology. I would like to start with what it means for us, because at the end of the day, we are here to create a better world and make sure that governments fit in with that.

I am going to give you a few dates. In 2006 and 2009, my two boys turned 18 and the nicest day of their lives was to get their driving licence, which they got on the day of their birthday. In 2015, I bought a Tesla, a high-end luxury car, and I bought it on the Internet with my credit card, without any interaction with a salesman. By the way, I could not negotiate because the machine did not let me. For me, this was a great experience. In 2016, I organised a congress, like this on connected cars. I went to see a good friend who is the CEO of a very large car manufacturer and we started to talk about connected cars. It was something I really wanted to do, but in the end, we talked about smart mobility. Why? He told me that he was not sure that we would produce cars or transport people in five years from now. In 2016, my daughter turned 18 and when I asked her about her driving licence, she said she did not really care. In 2017, she turned 19 and when I asked her about her driving licence, she said she did not care about cars and in any case, she had Uber - actually my account, which she uses a lot - or carsharing. In 2017, I sold all my petrol cars and kept only electric and smart cars.

It is worth remembering that the iPhone just appeared in 2008, nine years ago and a lot of things have happened in those nine years. I see five things that have transformed our lives.

The first one is usage; the main thing that the Internet has brought us is community of knowledge. Knowledge was previously in books and universities, and bosses, who did not share their knowledge. Now, with the Internet, knowledge is a commodity shared by everyone. You are not smart because you know better than somebody else, you are smart because you share, and young people and the Internet have put us in the sharing economy. You share picture on Facebook, you share your experience, and everybody shares. Owning something is good, but sharing something is much better, especially for the young generation.

The second one is the development of technology, with the explosion of fibre, 3G and 4G, the power of iPhones and the Cloud, you have access to everything anywhere. Geolocation lets you buy things wherever you are, or order a car, and the technology has dramatically changed the picture of where we are right now.

The third one is sense and symbol. When I talk to my kids, young people, or students when I teach, sense means a lot to them. They do not want to work in an environment that does not care about the planet. I always remember that when my three kids went out in my Range Rover, I was very proud to have a trophy car, but they told me that it used too much fuel and they did not want to travel in it. The other point is that this car no longer celebrates success in life; it is a commodity. I remember when I got my driving licence, my first car was very important to me.

The fourth one is the emergence of new trends. We always spend a lot of time in traffic jams, but there is also the emergence of smart cities, smart cars, and other vehicles. I was in Riyadh last week and there was a big

announcement about NEOM, the USD 500 billion investment in the next generation city. It is around smart cities, eco-power homes, and now everybody talks about smart cities and it is the plan at a state level.

Last, it is ubiquity in terms of the choice of what you want to do. For example, if you want to go from A to B on Google Maps, you can walk, take a train, bike or whatever. When you order Uber, you can take a small or big one, and if you go to London you can have six different categories. In nine years, there has been a huge revolution, driven by technology, sense, as well as the loss of some symbols.

I just want to give you an update on where we are on connected cars. There are three types of connected cars. The most advanced by far is Tesla. Tesla not only has a 3G card, it has intelligence and can drive by itself. Last week I drove 240 kilometres between Brussels and Paris, without touching the steering wheel, and I arrived in Paris as relaxed as my wife. I could send texts, which I know is forbidden, but I was cool. The second type of connected car is the car with some technology, but your smartphone is a kind of modem. The latter uses a smartphone, because it embarks so many technologies with you.

What does the next generation of autonomous cars look like? It will be like a living room, you will sit in it comfortably. There are seven types of autonomous car, and again, Tesla is the most advanced. By 2021, we will start to have lots of autonomous cars, and it is a me-too strategy, driven by most of the car manufacturers.

What does the future look like? There will be different types of connected car. There will be connected cars that are connected together, or smart cars connected with the environment. We have all been to some emerging countries where you have 3 000 different objects in city centres, such as donkeys, bicycles, cars, and trucks, and zero accidents. Why? Because they are all connected to each other. The donkey is connected to the bicycle, the trucks, and the motorbikes. If you take 3 000 connected cars, it is the same. They will have software between themselves, with rules and there will never be an accident. If you have 2 999 cars and one donkey, there will be an accident. You need to connect things with an algorithm, some logic, so that they can live together.

You will see a big acceleration in the near future. You all know what Moore's Law is; last week, the Chairman of Softbank announced the million. The speed of connectivity will be increased by one million; the speed of information treatment by one million; and the capacity to handle information on the Cloud will also increase by one million. That means that all the cars will have a huge software/hardware infrastructure, with real-time access to the Cloud, and in the Cloud, there will be a trillion lines of code that will make us safe when we travel, identify the danger, the quality of the road, or any obstacles.

We are not there yet, but we will be very soon. Thank you.

Jim HOAGLAND

Thank you, François, particularly for guiding us towards an understanding that cars in the future are likely to be a service we employ rather than a product that we buy. That is a major shift for our society. Your confession of wrongdoing nicely sets-up the second part of our topic, which is governance. That is, how do governments react to the astonishing technological changes that we are dealing with here? In the United States for example, there are laws that ensure you have a seatbelt and an airbag, but there is no law on whether you need a driver. Clearly, laws are going to be updated and this is a major topic.