PANELISTS DEBATE

Jim HOAGLAND

I have a couple of quick questions for each of you, but I wanted to see if there were any questions for you from the other panellists. Francois, the car has been both an instrument and a symbol of national power in the world. We are entering new times and new equations for cars. Are there countries or regions with particular advantages, which are likely to emerge at the head of the line for driverless and electric cars? Specifically, will the driverless, electric car of the future be a European or a national product?

Francois BARRAULT

That is a good question. When you look at the world dynamic right now, the country pushing most is China, which has the technology and the scale, and it has a big issue because it is building the infrastructure for the country and they do not want their economy to depend upon the price of oil. Yesterday, Elon Musk signed a huge agreement to build another Gigafactory, to build not only the Model 3, which will be a mid-range car, but also the battery. By 2021, they want to have at least 25% of electric cars. It is a political, regulatory position driven by the state. If you go to the US, there is a different equation. The US has won the battle of the Internet, the Cloud, and they are winning the data battle. There are two main things that gather data.First, the car, because when the car is connected, it gathers everything about your life. The time you go to work. How you drive. They can also hear you, so you need to be careful. Secondly, at home. That is why you have all those personal assistants popping up everywhere, because they will know the time you go to bed, if you have a cat and how many kids, what you watch on television and talk about. All the information will go into the Cloud and today, the US is definitely pushing very hard, but in terms of technology. The US game is to build an infrastructure in the Cloud, which is mutualised, and the rest of the world will try to connect to it. They are very, very advanced right now. Europe is late and has a me-too attitude and they tried and failed to create intelligence. On the Cloud, I was Chairman of Cloud research industry group for Neelie Kroes and after three months I told her that we had lost the battle. After data, they want to be part of the game in regulating and putting rules around privacy. However, if you close your world, you will not have access to the services. The more you open up, the more access you get, and the better service. Coming back to what my two colleagues said, I am very bullish for the future, because with all the technology progress right now, with the power of the chips and the Cloud, where you have a trillion lines of code that can be used everywhere in the world, as well as the power of our R&D, you will see exponential progress in this industry very soon. I think that the future will be sooner than expected.

Jim HOAGLAND

I was stunned to learn the other day that China now manufactures more electrical vehicles than the rest of the world put together. It sounds as if we are in for a repeat of what happened with the digital information revolution, where the United States exploited, China decided to compete and capture and Europe decided to accept and regulate. We may be back there.

Francois BARRAULT

Me too.

Jim HOAGLAND

Patrick, how well-prepared are governments to begin to regulate this coming world of swarms of drones delivering packages - I am using journalistic hyperbole, but you will put me in order - and helicopter-borne taxis? Is it at a point where they are already falling behind?

Patrick de CASTELBAJAC

It very much depends on which authorities we are talking about. Obviously, in aviation, the traditional ones, like the FAA in the US and the EASA in Europe, are very cautious, and we believe rightly so. They are very cautious because they have a wealth of experience and for many years they have been certifying commercial aircraft and helicopter aircraft manufacturers, to carry people at very high altitude and high speed, so they have to be careful. In younger economies, people are more bullish. Some are still a little bit in me-too mode, for example, in Singapore on the one hand they are pushing hard to get a solution very fast and early. On the other hand, when you talk with them, they say that they are waiting to see what the FAA does and then they will kind of copy/paste the decision. Then, there are the Gulf countries and the Middle East, which are pushing the hardest today. They really want a solution and to be the first ones to have flying cars in their cities. It is a question of national pride for them, so they are pushing hard. Here the regulators are almost asking the industries how they can accelerate and what they can do. So the dynamic is a little bit different from the normal one, where the industry is pushing and the authorities calming us down and making sure that everything is done by the book. Of course, China is a key player as the biggest manufacturer of drones today; about 80% of the drones flying. There are companies doing drones today that employ 5,000 people, with research centres in Europe and the US, and believe me, it is cutting-edge technology; what they do is extremely impressive. I was in Shenzhen a couple weeks ago to meet with them, and it is absolutely fascinating. The question on China is whether they are going to leapfrog to helicopters, because there are very few in China. Will they jump directly from having almost no helicopters, to having flying cars and electrical ones? As we said, we all know that certain countries are really pushing very hard for environmental matters for various reasons. The Chinese do have a huge pollution issue in large cities, so there is a huge push on electrical, but also to try to resolve their traffic issues. That could be a solution and either the Gulf or China is likely to be the first place where it will be used. The regulators will be the limiting factor and the people who decide the timing, not the industrials.

Jim HOAGLAND

Jean-Yves, my question for you comes on the governance side. So much of our communications today pass through space, and there is a certain dependence on command and control systems for our nuclear forces and communications with our military, from my own and other countries. It seems to me that satellites are quite vulnerable to space attack, but perhaps you can enlighten us on that? Are governments beginning to figure out how to offer protection for the satellites in space? How would they do that?

Jean-Yves LE GALL

In fact, you have a number of different satellites and most of them are completely protected against this type of attack, but, of course, after that it is a race. You have some protection and people invent something else, etc. However, I am sure that if someone really wanted to attack a satellite system, it is probably easier to attack the software on the ground than the hardware in space. We know that there are numerous cyber-attacks and it is probably easier than to attack satellites. Our satellites are protected, and I do not know of any example where a satellite has been attacked from the ground. It could happen in years to come, but there is a lot of protection and I can tell you that it is not easy to attack a satellite.

Jim HOAGLAND

I gather that in some countries, of which China is one, there is quite an effort underway to develop systems that can attack satellites?

Jean-Yves LE GALL

Yes, they are trying to develop systems, but like I said, it is much easier to do it on the ground than in space, because, without going into detail, there are some countries that have developed counter measures to handle such attacks.

Jim HOAGLAND

I want to thank the panel for a really invigorating discussion, which has given you some inkling of what lies in wait for you and the advantages and dangers that technology brings to our modern world.