



Safety: can technology do everything?

Complete transcript of the debate

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Patricia DELHOMME, Director of the Laboratory for Driver Psychology at INRETS

Michel VIMONT, Director of Renault's Research, Advanced Studies and Materials Engineering (DREAM)

The debate is moderated by Anette BURGDORF, a European journalist.

Thierry MORIN

Madam Interministerial Delegate, Minister, your Excellence, Cabinet Directors, Chairwomen and chairmen, ladies and gentlemen. Good evening and welcome to this second Valeo Forum. The Valeo Forum is dedicated to free expression and frank discussion for everyone interested in contributing ideas towards a better automotive world. The Forum is intended to highlight Valeo's commitment to the environment and road safety, and we wish to help move the debate forward by contributing as an independent equipment supplier. The first Forum was held in this same place on March 11 and focused on the role of cars in the city. I would like to thank the speakers from that Forum who were

prepared to return tonight, and all our guests who are here with us again. I would also like to welcome the many new faces who are with us today.

This evening, we shall discuss the extremely serious topic of "*Safety: can technology do everything?*" As an equipment supplier, we provide safety–support technologies such as blind spot detection systems, better headlights, lane departure warning systems, and so on. I'm naturally leaving out a lot. Society today quite understandably refuses to accept that road accidents are inevitable. Yet there are still 4,000 deaths on the roads in France. You can, of course, say that only eight years ago there were 8,000, and this would demonstrate the kind of progress we are helping to achieve. But we know that we cannot accept these 4,000 deaths. Safety is a priority not only for the automotive industry, but also for governments and society as a whole. A few years ago, technology helped *reduce* the impact of accidents – I'm thinking of course about devices such as seat belts and airbags. Today, it is helping to *prevent* such accidents, through active safety initiatives. I would like to mention here the Secretary of State for Transport, Mr. Bussereau, who was unable to be with us today. I would like to thank the Interministerial Delegate for Road Safety, Ms. Merli, for agreeing to join us. As I have said, the government has a key role to play, as does Europe. Some technologies should also be made mandatory. Ms. Merli, I believe you have a message for us.

Michèle MERLI

Ladies and gentlemen, Mr. Chairman, thank you for your introduction. The Minister cannot be with you tonight and he deeply regrets it. He asked me to say how much he would have liked to be here because for him, technology, vehicle equipment, and the way vehicles can be fitted out and move research forward, are all fundamental to safety, and he is deeply attached to it. It gives me great pleasure to be with you to open this Forum organized by Valeo on road safety and technological progress. This is a Forum that starts with a question, and we know that any question begs a range of different answers, so we must address these questions in all their dimensions.

Let me first underline how important it is for the government - as you said Mr. Morin - to improve road safety. The President of the Republic has set a target of less than 3,000 deaths by 2012, and we still have a long way to go to reach this figure, even though much progress has been made, as you pointed out. Unfortunately, in 2007 there were not 4,000 deaths but 4,620 and that means 4,620 deaths too many. Is technology responsible for these deaths? Can it prevent 4,620 deaths today? The Interministerial Committee which met in February has clearly stated that to achieve this target we should focus on the three key levers of technology, driving behavior and infrastructure. This goal can only be achieved if all stakeholders in civil society are mobilized to tackle road safety, and that includes drivers, infrastructure managers, automakers and suppliers. Valeo is one of these suppliers who over the years has been a source of many discoveries and technology innovations that improve road safety.

In terms of technology, let me begin by talking about the importance of the equipment used by manufacturers to provide both active and passive safety. These include systems for braking, road holding, driving aid, lighting, signaling, and speed control in the case of active safety, and airbags, the use of flexible materials and pedestrian crash protection modules for passive safety. I know that new equipment is constantly being developed and it saves lives. So thank you for this, but we must go even further. Several measures have

been proposed and implemented by the Interministerial Committee for Road Safety, which aims to promote and generalize equipment that can lower the number of fatalities and the gravity of accidents, and reduce the number of injured people. This is especially true in the case of transporting children in buses, which are now fitted with safety belts. Work is also underway to systematically install approved ignition-prevention breathalyzers on buses that carry children, starting in 2009. This innovation effort must be continued, and research and development for new technologies are major challenges for the future of road safety. This is why PREDIT 3, the third research and innovation program in road transport, has been working on a dozen research projects dedicated to the perception of the vehicle's environment, driver alert devices, and devices for anticipating the presence of accidents or obstacles. This research has really helped to introduce a "systemic" approach to road safety, encompassing the three key constituents of road, car equipment and driver behavior. To further move this integrated approach forward, PREDIT 4's mission is precisely to make these three fundamental pillars of road safety work harmoniously together. Let me mention some of the research agendas that have been suggested: first, research into consistency between on-board, road, and embedded information systems, and research into devices to support controls on speed limits. PREDIT 4 will also carry out research on all kinds of driver support devices. Ultimately, PREDIT 4 is about the dialogue between man and machine, between machine and road, and between the road and human beings. This is the more coordinated approach that we need to work towards today.

I would add that to make these technological developments and their accompanying regulations fully effective, they must be carried out at both European and global level. This is the role of the World Forum for Harmonization of Vehicle Regulations, where French experts are actively working in Geneva to harmonize global technical regulations for vehicles and equipment. This work is necessary because trade in vehicles is truly global, and we should not forget that throughout the world 2 million people lose their lives in road accidents and 50 million people are injured every year. In Brussels, this work has led recently to improved protection for pedestrians in accidents involving light vehicles. Violence of impact can be reduced by modifying the fronts of vehicles and reinforcing active safety systems and emergency braking. This work will later extend such protection to other vulnerable road users and to the development of pre-crash systems. The European Commission has also recently taken the initiative of regulating the introduction of new vehicle safety systems, such as advanced automatic emergency braking systems, electronic stability control, vehicle drift detection systems, pre-crash sensors and tire pressure sensors. The French Presidency of the European Union, in conjunction with the European Parliament, is making every effort to ensure that this new regulation is completed as soon as possible. I would remind you that the clauses in these regulations result from ideas initiated by the European Commission, member states and automotive industry partners. The French Presidency of the European Union is also addressing future CO₂ regulations for vehicles, and other provisions for environmental technologies, thereby demonstrating that road safety and sustainable development have the same overriding goal. All these regulatory innovations highlight the important role that equipment plays in the fight to improve road safety. But in our view, technological advances alone cannot reduce the 4,620 deaths that occurred in 2007. It is essential that we act on driver behavior and driver responsibility. After all, the safest vehicle can turn into a dangerous weapon if it is misused as the through inappropriate driving behavior. Indeed, the 43% drop in the number of people killed on the roads between 2002 and 2007 is mainly due to changes in the behavior of French drivers, in tandem with the introduction of radar technology, and the obligation to enforce the regulations. Road checks and sanctions also form part of the overall road safety system. This is why we shall continue with the radar policy by introducing 500 radars a year, this year and next. This will involve not only

conventional radar systems but also systems for monitoring at traffic lights and observing limits on the distance between vehicles - in other words, using technology to find and penalize the entire range of contraventions, in addition to strictly speed offences.

We also hope to change behavior regarding alcohol consumption. In fact, since the decline in driving speeds, drink-driving has become the leading cause of road death, causing 28% of all deaths on French roads in 2007. These lives could have been saved if all drivers had observed the legal limit of 0.5 grams of alcohol per liter of blood. We are relying on the personal commitment of all French people and we shall encourage self administered breathalyzers ("blow and you'll know") pending the upcoming introduction of ignition-prevention breathalyzers on all new vehicles in a few years. In addition, electronic breathalyzer terminals will be installed in nightclubs to deter people from driving home at the end of a rather boozy night. Finally, with respect to checking people driving under the influence of drugs, saliva tests are now available and are being disseminated. They represent a new method of screening that can easily be used by police forces.

As a final point about changing behavior, it is essential to improve training for future drivers. This is one reason why our Ministry is committed to reforming the driving license and making all young drivers understand that car use must be a responsible activity. Cars have more and more technology and this means that there are things that must be learnt and understood for anyone to become a good driver. It is important to introduce these concepts when learning to drive. There is a third component in the equation that I will not broach tonight, and that is the road. This has something to do with technology, because the tragedies we see every day prompt us to improve safety at level crossings and black spots. Accidents still happen, and I think that there are also links to be made between new technologies and the improvements we make to roads, by using these new technologies to ameliorate the road network.

To leave time for the debate, let me end by saying that progress in road safety depends partly on more efficient equipment and on the efforts of manufacturers to offer safe and environmentally friendly vehicles. But this alone is not enough. Safety also depends on making the infrastructure safe and most importantly, these technological advances should not give drivers the impression that because they have a car that can be driven with one finger, it is not a potentially lethal machine. Technology certainly improves things and brings a lot of positive support, but it should not make us any the less attentive. Ultimately, everything depends on the human capacity to be in control of a vehicle at all times. Technology gives us a lot but not everything, and in this dialogue between man and machine, we must discover those elements that enable people to remain constantly alert. A moment's inattention, and a journey can end in death. Thank you.

Thierry MORIN

Thank you Ms. Merli, I think that this excellent introduction puts the subject well into perspective. I will now hand over to Anette Burgdorf. Anette Burgdorf is a well known European journalist who works on France 2, Arte and La 5 (TV stations) and participates in the new TV channel with Philippe Gildas. She also works in radio. Anette, you will be moderating the debate tonight, so over to you.

Anette BURGDORF

Thank you very much, Mr. Morin. Hello and welcome to you all. I am delighted to be with you tonight to moderate this debate on road safety. I suggest we begin immediately with a short film that shows what motorists think about driving safety.

A film report based on street interviews is shown.

Thank you very much. Our invited experts have just sat down, so a round of applause please. Hello, and thank you for taking part in our debate today. Mr. Pottier, I'll start with you. You are President of the French Road Safety Association. The first European Road Safety Day was held in April 2007. What progress has been made since the idea of road safety emerged in the 1970s?

Bernard POTTIER

It began even earlier. France was the first to get mobilized on this issue in 1949 at the initiative of insurers, car manufacturers and road transporters. Road safety then evolved into a social concern, and became an institution in 1972, at the same time as the creation of the Interministerial Committee on Road Safety. After that came the ruling on special equipment for cars – I'm referring of course to the introduction of seat belts. Then more recently, Jacques Chirac expressed his political determination on July 14, 2002 to make road safety a priority for his five-year term. I think this marked the real beginning of the fall in road deaths. It has radically changed the situation.

Anette BURGDORF

Where exactly do you play a role?

Bernard POTTIER

We have no power of authority, although we are in favor of the controls that have been established – and I have no scruples about saying this. Our role is to raise awareness and work through education – we work with 1,400,000 children every year. We run "driver for the night" operations in discos for young people, and we offer courses for seniors. We are also involved in issuing a manual to 253,000 doctors to encourage them to talk about road safety with their patients.

Anette BURGDORF

So you are active in a number of areas. Sylvain Haon, you are director of the Polis network. What, briefly, is Polis?

Sylvain HAON

Polis is a network of European cities and regions who work together to implement new solutions for sustainable transport - 70 cities in 17 countries.

Anette BURGDORF

Could you give us an example or two of successful road safety policies in Europe?

Sylvain HAON

We know who the good pupils are: Northern European countries such as the Netherlands, Sweden and the UK. They have developed an integrated strategy and work on the three bases of technology, behavior and infrastructure mentioned by Ms. Merli. Even so, France is nevertheless a champion, with its 40% improvement in recent years. In terms of absolute results, the three countries I mentioned are ahead but France has made considerable progress.

Anette BURGDORF

We can see that significant progress has been made but there is still room for improvement...

There are still more than 1.4 million accidents in Europe, and 42,000 deaths on the road each year. Mr. Lauterwasser is the director of the Allianz Centre for Technology. What are the main reasons for car and truck accidents in Europe?

Christoph LAUTERWASSER

Motorization has increased by 300% since the 1970s. The mileage has also increased. Motorized vehicles are the dominant mode of transporting passengers and goods. Fatalities have been reduced at the same time. For example, they have declined in Germany by a factor of four. Therefore, that is a success. However, it must also be noted that 3,000 people are killed worldwide every day in road accidents. That is not an acceptable situation, and it has to change. The problem is that we will see even more fatalities and road accidents in Asian and Eastern countries due to increasing motorization.

Despite improved technology and safety in cars, the main problem is the driver. Driver inattention is the leading cause of traffic accidents. About 70% of crashes and near-crashes have driver inattention as a contributing factor.

Anette BURGDORF

We can see clearly that people are the weak link. Mr. Pottier, how can technology innovations reduce this risk of inattention?

Bernard POTTIER

I think Mrs. Merli was right when she spoke a moment ago. No one can deny that technology has helped reduce the number of road accident victims. But in some cases, technology can interfere with a driver's concentration and I believe that this is the main problem. It is good to improve roads and braking systems and monitor the distance

between vehicles. But this is not so useful when someone starts tapping on their laptop or GPS.

Anette BURGDORF

Yes, we realize that mobile phones are a problem for human behavior. Patricia Delhomme, you are Director of the Laboratory for Driver Psychology at INRETS. What is really important for improving driver attention?

Patricia DELHOMME

To improve driver attention, it is important to teach motorists to focus more on the driving task and less on themselves. This is not easy to achieve. What we need to do is to try and prevent motorists from focusing on what we call intrusive thoughts – intrusive, that is, to the task of driving. This can be achieved through training, information and learning how to drive. Examples include helping drivers think less about their personal concerns and less about their happy memories when they are driving.

Anette BURGDORF

But how can this be done?

Patricia DELHOMME

It forms part of what we call transitional factors, and I don't think we have taken these factors sufficiently into account in the field of road safety. How can we do it? Through learning. This is especially important as motorists learn to drive during the first six months, but after the first year of driving, phenomena associated with overconfidence begin to emerge. And drivers just let themselves go.

Anette BURGDORF

Who tends to be affected by this overconfidence? Men more than women? Young people more than the elderly?

Bernard POTTIER

I think this phenomenon affects men more than women. And young people, particularly young males, are tend to be overconfident. At the same time, there are different types of overconfidence. Young people who want to impress their boyfriends or girlfriends behave differently from overconfident elderly motorists who have not yet realized that they are losing their reflexes.

Anette BURGDORF

Because when you drive for thirty years, you feel confident about your driving.

Bernard POTTIER

Yes, even though things have changed. We have a small brochure that we update every year about what has changed in the previous five years. Some of these are really important. For example, elderly people do not know how to handle a roundabout, since no one ever taught them. There really are new things. We must also think about the ergonomics for seniors.

Anette BURGDORF

You work a lot with school children. You said earlier that you also do training courses for seniors. What are the proportions between the two age groups?

Bernard POTTIER

First, it must be said that young people represent a truly frightening risk factor. The 15-24 age group accounts for one in eight of the population but more than one in four road deaths and nearly one in three serious injuries. So there is a real problem. Seniors, on the other hand, do not represent much of a danger for other people, or in any case much less than younger people. Yet they are obviously far more vulnerable to accidents. So to answer your question, we pay far more attention to young people than to the elderly; last year we trained 1,400 000 children compared to 25,000 seniors.

Anette BURGDORF

Mr. Vimont, you are Director of Renault's Research, Advanced Studies and Materials Engineering. How do you use your technology to help improve safety? What are the major trends?

Michel VIMONT

I shall probably not answer your question directly by talking about technology. I could talk about airbags, seat belts, anti-submarining, inertia and many other technologies, but I believe that safety and Renault go back a very long way. I would also like to take this opportunity to say that the Koleos is the tenth Renault model to obtain the score of five stars in **EuroNCAP** crash tests. Apart from that, as regards safety as it is today, and as was mentioned in the introductions and the first part of the debate, I think we have a lot of work to do on human-vehicle interactions. This is also true in aviation, for example, where human factors cause almost 80% of serious accidents. So the human factor is important, even though in the case of aviation, we are talking about a population of trained professionals. There are multiple factors at work in this area. The primary factor is visibility and luminosity, etc. - the vehicle's architecture. The second factor is the interaction between the way the vehicle is controlled and the way it responds, i.e. with the driver in the loop. This closes the operating loop between a more or less complex vehicle and a very complex human being. This is the second point. The third key factor is the safety of the systems we put in the vehicle. In addition to the technology that manufacturers are constantly developing, they are also trying to optimize this feedback loop between the machine, the car and the user.

Anette BURGDORF

Car makers have shifted from passive to active safety.

Michel VIMONT

To make things clear, I'd like to look at two areas. First what we call normal use. What does normal use of a vehicle mean when you have a range of different users? Let's say that everyday practice means ensuring that the vehicle operates comprehensively and intuitively; that someone is comfortable with this product. It must also adapt to the user - young or older, with a certain background and sociocultural level. As a result of Renault's process of globalization, we have been led to reflect deeply on a user's relationship with their car. In this relationship, we see for example that the approach to road safety in India is not necessarily the same as elsewhere. This is the behavioral aspect. The second aspect is what I call extreme use, i.e. when drivers are faced with a critical situation. Behavior comes into play again. I am not sure that everyone in this room knows how to use their vehicle's road holding capacity effectively when they have to brake in an emergency. On a test circuit, we find that many users do not dare push their vehicle's road holding capability to the limit because they have never had the opportunity to, and because it's a fairly impressive experience. Avoidance maneuvers are not always instinctive and even when they are performed, a second accident very often occurs. A driver can avoid one accident, but cannot recover from the maneuver they have just made. I think that the job of intelligent systems is to help out with the very comfortable first type of usage, and if this fails, to give the user the best chance of escaping.

Anette BURGDORF

Christoph Lauterwasser, it will be interesting to hear your point of view on active safety systems. Will they have an increasing importance for road safety in the future?

Christoph LAUTERWASSER

Yes, I think there will be a big shift. There have been a lot of passive safety improvements in cars in the last 30 to 40 years. That has helped greatly in reducing the severity of the accidents. However, we are now moving into a new era in which we have to prevent the accidents from happening in the first place. There are quite a few interesting systems that will help to reduce the accident rate. However, this will depend greatly on the market penetration of these systems. It does not help to have a system if it is not used in cars. It should be used not only in luxury cars. It should be used in everyday cars and small cars, as one of the speakers in the film pointed out.

Anette BURGDORF

Do you think that all car manufacturers and equipment suppliers should focus their efforts on active safety systems?

Christoph LAUTERWASSER

We do think so. We do accident investigations at our centre, for example. We select thousands of claims files and do an in-depth analysis of them to discover the potential of the different systems. For example, you can see very good potential for ESP, electronic stability control. Active braking can reduce the potential of serious accidents by 20%. Therefore, we see our role as helping the manufacturer as well as the equipment suppliers to focus their attention.

Anette BURGDORF

Patricia Delhomme, do you think that drivers can find an active safety system suited to their needs?

Patricia DELHOMME

To answer this question, we need more research into driver behavior.

Anette BURGDORF

Don't you think there is enough?

Patricia DELHOMME

Not yet – neither for me nor for many other people, I believe. In my opinion, we must keep developing support systems that can adapt to specific needs. For example, what should we do to help young people? Perhaps more systems that adapt to inexperienced drivers, overcome their shortcomings, and the phenomenon of overconfidence I mentioned earlier, which turns very quickly into a habit. These systems could also adapt more to the specific needs of seniors, who are known to be heavily involved in going the wrong way at junctions. We should develop systems that adapt to these needs that cause accidents among certain types of people. So we need more research into driver behavior. This is one of the goals of the Mov'eo competitiveness cluster that has been developing strongly in recent months.

Anette BURGDORF

This is one of your goals. Mr. Pottier. Would you like to add anything? Do you have any messages for the car makers and automotive equipment suppliers here?

Bernard POTTIER

I think the message is primarily that they should continue with their efforts. Car makers and equipment suppliers have clearly contributed to greater road safety and this must continue. That is my first message, and I don't think it will be hard to convince them. The second message is to not ask too much from drivers. This is where I would make a difference between using radar to measure the distance between vehicles, and using GPS systems or mobile phones. I think that while these devices can sometimes be intrusive, to

use the idea put forward just now by Patricia Delhomme, their ergonomics must be perfect. For example, people prefer voice-driven to visual GPS systems. We should also think about seniors because there are more and more seniors on the roads - it is unavoidable. Finally - and this concerns car makers or rather dealers – there absolutely must be real training when a new owner takes possession of a car. Although this is recommended, it is rarely carried out as much as it should, and I think many accidents are due to the misuse of equipment due to lack of training.

Anette BURGDORF

Mr. Morin, would you like to react to what has just been said?

Thierry MORIN

I totally agree with what has been said. But I would like to add one thing. There is one way to achieve better security, and that is to make traditional automotive products operate more intuitively. I'm thinking about automatically light switches, automatic wipers and many other devices that precisely allow drivers to concentrate on driving. Drivers should not have to fiddle with things such as radios or other equipment that can be controlled by speech. You have mentioned phones several times and I do not see any problem today with voice dialing. On the other hand, I heard someone talk just now about the negative effect of electronics, but it is our behavior - not electronics - that is having a negative impact.

Anette BURGDORF

We keep coming back to this Mr. Pottier?

Bernard POTTIER

I'd simply like to say that even with a hands-free kit, telephones can be a distraction. They reduce both concentration and the visual field. So even with voice control, we are strongly opposed to phones.

Anette BURGDORF

Would you like to say something?

Sylvain HAON

We talk a lot about vehicles and the kinds of improvements that can be made, and about the behavior of drivers, but only in the human, behavioral dimension. There are other road users and in the vehicle/behavior equation what is missing is the infrastructure dimension. There are solutions in terms of urban planning, the management of public space, and the segregation of different modes of transport, or conversely, the absence of any segregation to encourage greater vigilance. We must find the right relationship between vehicles and this space so that drivers are as careful as possible.

Anette BURGDORF

I would like to come back a moment to technology. Mr. Migus, you are Managing Director of CNRS, and I would like to know in practice how you are involved in intelligent systems that adapt to different needs.

Arnold MIGUS, Managing Director, CNRS

I represent the CNRS and more generally, the academic community. So I have rather modest ambitions compared to what I have just heard. In this field, the leaders are predominantly manufacturers and special organizations. I am not an expert, but I have done a little analysis of what the laboratories are doing, or at least what CNRS is seeing in university laboratories. I note that one major area is information technology and IT-driven safety. I agree with what has been said. The same laboratories in this field are also involved in aviation, although we know that the software is more complicated in this case. There was an unfortunate rocket test a few years ago that failed due to a computer error. Computer testing is extremely important. That is my first point. The second is that materials are vital, and although universities still play a relatively modest role, this is expanding due to the rise of competitiveness clusters – as mentioned by Ms. Merli. I believe this is the first time in France that we have developed "clusters" where manufacturers, laboratories, the economic environment and those needing results can come together. I also notice that most contracts for laboratories now emerge from these clusters. Another remark that comes from listening is that I believe that we must make progress in the human-machine interface, and the behavioral sciences and cognition have made great strides in this respect. Behavioral modeling is being carried out and I don't think we should let the INRETS psychological laboratory work alone in this field. There is plenty to do.

Patricia DELHOMME

Our laboratory works with many CNRS laboratories.

Anette BURGDORF

Mr. Vimont?

Michel VIMONT

Just a quick "three cheers for the French". In the Mov'eo cluster there is a DAS (Strategic Activity Field) for Safety led by Dr Anne Guillaume, who is responsible for the Biomechanics and Accident Analysis Laboratory (LAB) for the Renault-PSA Economic Interest Group. So we have a very "French car makers" approach and this Safety DAS is operated on behalf of the PSA Economic Interest Group. We have endeavored to develop a safety strategy that involves different manufacturers. For many decades we were fortunate to have this LAB, (Laboratory for Biomechanics and Accident Analysis) as it helped push the agenda from safety theory to safety in practice. We managed to develop the cockpit environments we know today on our vehicles by studying accidents and studying biomechanics - with deformation areas, minimal lesions, and so on. I think this is a major step forward. We have this almost unique opportunity in France, and we should make use of it. In the Mov'eo competitiveness cluster, we intend to leverage these skills.

Anette BURGDORF

What is Renault actually doing with vehicles to make drivers more aware and is it your key priority?

Michel VIMONT

Yes, safety is still a priority and a must-have for Renault - there is no question about that. I was responsible for electronics at Renault for seven years so I know everything we can say about electronics - especially automotive electronics. I think the electronics itself is reliable today and that we have far more problems in the areas of interaction, understanding, intuition, and the readability and visibility of various functions. I think ergonomics should play a role – both traditional and cognitive ergonomics. We have to work on these issues. The systems referred to by Thierry Morin - driving aid systems, drift detection systems, and things like that - are usually very costly. At the outset, these systems are costly because they rely on sensors, embedded electronics, and intelligence, etc.. And very often these systems are introduced in top-of-the-range vehicles. They are first used by specialist car makers, and I think that Renault's strategy in this respect is perfectly clear. We want to deliver safety for everyone – in other words, we want democratize these systems. Once they offer real safety benefits, the idea is to ensure that these systems can be found right across the Renault range from top end to entry level.

Anette BURGDORF

They will not only be expensive for drivers but they must also deliver a return on development investment. Who is going to pay for these costly intelligent systems? Mr. Haon, who is going to pay?

Sylvain HAON

This is the eternal question. As a representative of local authorities, I cannot answer with any accuracy. What I can say is that infrastructure is important in development. People talk about intelligent vehicles but they will be even smarter if they can use an intelligent infrastructure. Which means that the financial effort must be shared by different stakeholders.

Anette BURGDORF

Should insurance companies pay for everything?

Christoph LAUTERWASSER

Insurance companies tend to be seen as having unlimited resources. That is not really the case. We live in a competitive market, so it is not very easy to pay for other things. However, we try to give support to people who buy active safety systems. For example, we sell a lot of policies in Germany through car dealers such as Renault and others. We sell 1.3 million policies per year through car dealers. You get a reduction in insurance premium if you invest in ESP, for example. It is an incentive for the dealer to sell the car with this additional equipment.

Anette BURGDORF

Does it work?

Christoph LAUTERWASSER

Yes, it works.

Anette BURGDORF

Mr. Vimont, you are not the only player in the market. Does competition in this area act as a driver or a brake?

Michel VIMONT

No, in this case, competition is motivating. I think there is a strategy that I tried to explain. Competition is a lever for innovation and so people try to innovate in the field. Innovation involves systems - systems for communicating with the infrastructure, and vehicle to vehicle communication systems that give you information about black spots, traffic, the weather and so on. Navigation information is a powerful aid and not too intrusive cognitively speaking. In fact it is information that is useful for user reactions and user responsibility.

Anette BURGDORF

We have seen that there are highly intelligent systems, able to control speed, to prevent ignition when the breathalyzer is positive, or to stop the engine when the driver falls asleep. Will cars take over from us and drive for us one day? Do you like this idea, Patricia Delhomme?

Patricia DELHOMME

We can certainly hand over responsibility momentarily to the machine if there is a problem, but I am very dubious about letting the car actually drive for us. Why not take the train instead?

Anette BURGDORF

Mr. Pottier?

Bernard POTTIER

There are systems that can prevent driver drowsiness. There are sensors for blind spots and things like that. You mentioned the ignition-prevention breathalyzer and we are very interested in this.

Anette BURGDORF

Does it work?

Bernard POTTIER

Absolutely. We had the system tested for four years by our Haute-Savoie Departmental Committee, with the strong support of a doctor who was enthusiastic about his job. He carried out these tests in terms of alternative punishments, in agreement with the Public Prosecutor for the Haute-Savoie, and observed a remarkable four-fold drop in the rate of repeat offenders. This was then developed further, and an Interministerial Committee decided on two actions in February - the first was to make this device widely available not just as an alternative sentence but also as an additional sentence, which means that the lawmaker has to intervene; and then to equip all school buses with the breathalyzer starting in the 2009 school year. That was one of our demands, and we even petitioned for it, because it would be intolerable if fifty children were to lose their lives due to a drunk driver. Public opinion would not tolerate such a situation, and it would become politically unmanageable. And instead of having a dozen different devices, we shall have several thousand buses equipped in one stroke, which will considerably reduce the cost of this equipment. We'll come back to the cost, as I think it is very important.

Patricia DELHOMME

We're talking about buses, but I think this equipment should be obligatory in all vehicles.

Anette BURGDORF

This has not happened yet. Are the people that use this breathalyzer today the ones who really need it?

Patricia DELHOMME

No, not always, and I think that if it was obligatory in all vehicles, everyone could have one. It would really help boost road safety.

Bernard POTTIER

I obviously agree with what Ms Delhomme has said, but road safety is a behavioral problem. It is about changing behavior and I do not believe in one big revolution. Things change gradually and we must start from what we refuse to tolerate. It must start with school buses, and in fact the Interministerial Committee has gone a step further than us, since the ruling covers all vehicles carrying children. The Swedes wanted the device on all vehicles in Europe, but it was a bit complicated to impose it in Greece and Malta. So Brussels has decided to start with vehicles that carry children. It may also involve trucks carrying hazardous materials. We need to advance step by step in this area.

Patricia DELHOMME

At INRETS, we have several researchers involved in a project aimed at changing behavior - behavior that is often ingrained as behavioral habits. We know it's hard to change these attitudes and that is why, with regard to observing the legislation, I think that introducing such a device in all vehicles would be a really important for road safety.

Anette BURGDORF

Are you adapting your offer to this new context? What is your point of view on the driver's responsibility?

Christoph LAUTERWASSER

The responsibility must remain with the driver. It is laid down in legal terms in the Vienna Convention that the driver always must have control over the vehicle. It is even difficult for the system development and to discuss that issue. But we do believe that the responsibility lies there and must always remain there.

Anette BURGDORF

What does it mean for the mission of an insurance company?

Christoph LAUTERWASSER

We have to address that issue as well. We do some studies on the side of human behavior and traffic. For example the effect of video games on drivers. We are also in contact with universities. They look at the emotional side of driving which should still be under consideration because if a driver is bored but driving, he will go to secondary task. So he will completely do different things. That is another new risk which has to be addressed. He always has to look at this emotional issue when driving. You have to have something to do when driving. Otherwise you cannot be responsible.

Anette BURGDORF

Mr. Vimont, you agree, but someone said earlier that humans are the cause of 80% of all accidents. Does this mean that we should take away human responsibility? If not, how can we make people even more responsible?

Michel VIMONT

We should not take responsibility away from people at all. As for making them more accountable, this has been mentioned several times. There is training, learning and knowing about the consequences of certain situations. Today's automobile is nothing like that of ten or twenty years ago. The contents of that little piece of pink card we keep in our wallets have not changed much, nor has its association with learning and knowing how to drive. I think there is something to be done here. The job of car makers is to integrate the human factor into the way the vehicle works. And we take care of this. But it stops when responsibility shifts to the driver. This responsibility cannot be transferred. This is really a

basic principle, as was said on several occasions. We were at the outer limit of this idea of transferring responsibility with the concept of automatic speed control. It was stated loud and clear that responsibility was not being transferred to the machine. We must ensure that these systems are support systems and not robots. They are aid systems that should allow the user to decide freely, and then we should make any system imaginable to help that user make the right decision.

Anette BURGDORF

I'd like to call on someone who represents motorists, Laurent Hecquet, head of the "40 million car drivers" association. Good evening, do you agree?

Laurent HECQUET, Head of the "40 millions d'automobilistes" association

Yes, there is one tremendous technology behind the wheel, and that is primarily a brain. The brain has to make use of everything that can help it drive perfectly smoothly, while respecting other people and the environment. But technology can also help our brain adapt to this situation in certain cases, such as interpreting the road better and understanding the environment better, especially when a driver feels sleepy. Drowsiness is clearly a major cause of accidents, and we do not talk enough about it. This is perhaps the first area where technology can make progress today. I would also like to respond to Ms. Delhomme and tell her that breathalyzers have been compulsory in all vehicles since 1970 or 1972. The fact is, though, that the ruling has never passed into law, though it is found in the Highway Code. There are things we can improve, and electronics can now help change the way breathalyzers are used. I would also like to clarify one thing we do not talk about much. There is a technological battle that is difficult to win and will have to change, and that is combat between brain technology and radar technology. I'm joking slightly - drivers still tend to interpret the environment and try to adapt their behavior to the nature of the environment. It is still hard to make motorists understand that the rules should be applied 100%. Many of us in this room almost certainly break the rules in a minor way and drive over the speed limit, yet without feeling we are endangering the lives of others or committing a major offense. This is the whole problem with road safety. I think the French understood that they had to change their behavior and they did so. I think that today things are going well, or in any case much better than before. There is still a lot of work to be done, and our concern is to bring motorists in line with road safety policy, and especially not to leave open any loopholes so that a number of reasonable but not always exemplary motorists can sometimes break the rules and then think that the sanctions are too heavy. I am talking about zero tolerance, but this is another matter. In any case, I repeat that there is a brain in the car that is used for driving and being responsible behind the wheel.

Anette BURGDORF

We all agree that we must educate and make people responsible, but I don't think everyone understands what "acting responsibly" means. And we do not all understand the same thing when it comes to "acting responsibly". Should we try and motivate people or should we use repressive measures? Mr. Pottier, what is your opinion?

Bernard POTTIER

I think we should not oppose control or repressive measures, and prevention. We need both. We would never have managed to advance from 8,200 deaths in 2001 to 4,620 in 2007 without radar, I am sorry to say. You might say that what works elsewhere does not work for us because we are Latins. But it just happens to work. So control is essential and this means that the government must assume its responsibilities, as it has since 2002. Human lives depend on it, but at the same time we must also continue with our work of awareness-raising, education and communication. What we are fighting for is road safety education for schools. If we want to shift from a short-term approach and fear of the police, and change behavior, we must sow the seeds of road-sharing behavior at an early age. And that means at school – as we can see. Everyone has heard their child or grandchild say "dad, granddad, you haven't put on your seatbelt," because it seems natural to them. So we must continue with both short-term and long-term actions.

Anette BURGDORF

We have seen that there have been absolutely spectacular results in France, a drop of 40% in six years. Are the results as good in Germany?

Bernard POTTIER

Yes, in terms of the overall population, the Germans are indeed better than us, but there is a contradiction in these statistics. When you measure on the basis of the global population, it is true that the Germans have better results than the French. So certain people say "you can see that speed limits don't work because the Germans do not have them on motorways and Germany comes out better than France." If you look at the results for German built-up areas, this is true, but if you look at the motorways, since 2004, the French have had 20% fewer motorway deaths per billions of miles traveled, compared to Germany. In two specific cases – one in 1991, when the recommended speed of 167 kmh, became the same as the actual speed limit, and the other in 2002 where on a sixty or so kilometer stretch between Berlin and Hamburg there was a fall in the rate of road deaths and accident victims in general. So we fervently hope that this German exception will come to an end one day.

Anette BURGDORF

Would you like to add something to what has just been said?

Christoph LAUTERWASSER

Yes. The general speed limit in Germany is a big emotional issue. When you look at the statistics, the big problem is still rural roads and city streets. People have more accidents on rural roads. However, we have also been pleading for intelligent speed signs that adapt to the intensity of traffic and to weather conditions. That is more sensible than a general speed limit. Another point is that we see a lot of truck accidents on the autobahns. There we come back to active systems which can avoid these very severe truck accidents. These accidents are completely unacceptable.

Anette BURGDORF

I shall now give the floor to Gérard Gachet, Spokesperson for the Ministry of the Interior. We have just seen that radar cameras are very controversial but very effective. Will you continue in this direction in France? Are you going to keep installing new radars, which still represent a policy of repressive measures?

Gérard GACHET, Spokesperson for the Ministry of the Interior

As Ms. Merli said earlier, we shall obviously continue to use radar. There is a plan to introduce 500 new radar cameras a year and this is being implemented. It will be applied not just because repressive measures work (this is true) but because they can eventually lead to changes in behavior and promote in-depth thinking, not just fear of the police. Let me take two examples that cover the two most important factors in road deaths - speed and alcohol. I often drive between Paris and Normandy. Ten years ago, when you drove at 130 kilometers per hour - which was already the speed limit - you were constantly overtaken by other vehicles. Today, there are no radar camera every kilometer (and those that in place are indicated and people know them), yet when you are driving at 130 km/hour today, you can easily count the few vehicles that drive over the speed limit. We can talk about the price of petrol and many other things but I think that once people have taken on board the fact that if they do this journey at 130 kilometers per hour instead of 150, and take ten minutes or a quarter of an hour more to get from Paris to the Normandy coast, but have driven in perfect safety and arrived more relaxed, as they have not had to pay a fine or lost any points from their license, then they will do this. So I think this is in the process of entering people's mindsets. My second example is about alcohol and the ignition-prevention breathalyzers mentioned just now. A few days ago, the head of road protection in the Haute-Savoie came into the courtyard of the Place Beauvau to present Ms Alliot-Marie with copies of ignition-prevention breathalyzers and show her how they work. He said something extremely interesting about the experiment that had been carried out in Haute-Savoie - this alternative penalty of installing a breathalyzer in the vehicle of a motorist stopped with excess alcohol. He told us that because these breathalyzers are quite sensitive, if you drink a lot the night before, the next morning when you want to take your car to work, the car will not start because you'll still have enough alcohol in your blood to prevent it. And then he said that this has radically changed the behavior of the people involved. They started reducing their blood alcohol level and their alcohol consumption the night before and suddenly their relationship with their immediate surroundings, especially with their families, began to change. We saw people who instead of going to a bar after work and having a few drinks, went home to their families and their children and began to have a far more relaxed relationship with their immediate surroundings. So repressive measures can actually induce new behavior and that is why it will continue to be used.

Anette BURGDORF

Thank you, we have certainly seen the radar issue. Ms. Delhomme, are there other arguments that might encourage people to change their behavior, or make them act and drive responsibly?

Patricia DELHOMME

Yes, there is one other argument we have used in our research at the INRETS psychology lab and that is protecting the environment.

Anette BURGDORF

If you drive more slowly, you consume less.

Patricia DELHOMME

Yes, and it is an excellent argument for getting people to drive more slowly. It leads people to consume less fuel and reduce CO₂ emissions.

Anette BURGDORF

And this is beginning to work?

Patricia DELHOMME

Yes, we have carried out six projects and the results all point in the same direction. We can generalize from these conclusions which suggest that it is a genuine effect.

Anette BURGDORF

Mr. Vimont, do vehicles with intelligent systems and more and more electronics bet heavier and therefore use more fuel? How can we become more ecological? I know that Renault is deeply committed to ecology.

Michel VIMONT

I am happy to say that vehicles are not getting heavier, and I have the figures to prove it. If you compare the Laguna 3, which was launched at the end of last year, to the previous Laguna 2, it has not put on weight. In fact it has even lost a little weight. And in terms of safety and cost, this car is making progress. This culture of slimming down is here today. It is true that in the past, for lots of reasons, vehicles tended to take on a little weight, but we have now made a breakthrough. How did this happen? There is no special recipe. It involves optimizing the architecture and hunting down any extra kilos. It means keeping the vehicle's weight in sight throughout the project, through the choice of materials and searching for opportunities for weight reduction. In the case of optimization, we have made significant advances in terms of digital calculations for putting materials in the right place in a car, which brings into focus all the constraints associated with endurance, safety, impact resistance, comfort, vibration, etc.. This has now become a science. There are small invisible linking parts in a vehicle that have a remarkably high level of hidden technicality. Manufacturing cars also means pushing the art of engineering as far as possible so as to make vehicles much lighter in weight.

Anette BURGDORF

I have a statistic on German cars - the Porsche Cayenne, for example, is apparently very heavy. We shall now focus on the European Union. How can the EU help cut down the number of accidents in member countries? Mr. Haon?

Sylvain HAON

There are several things. There are already the initiatives mentioned by Ms. Merli in her keynote. One thing that is becoming very urgent from the point of view of local authorities is to ensure that the maps used by navigators in vehicles provide information on traffic rules and any possible changes to them. This is a real problem because it creates accidents. It ranges from the comic - a large truck that gets stuck in a historic city center – to tragic accidents. There is a real role for the European Union here because it can only be handled at European level. Then there are initiatives that form part of European programme actions on road safety in terms of incentives and communication, such as the European Charter on Road Safety. These are all really interesting and it is possible to communicate about them at the local level. So there is a role for the European Union in this field.

Anette BURGDORF

But can the European Union actually intervene locally?

Sylvain HAON

As with many other policies, we must apply the principle of subsidiarity effectively. There is a role to play at all levels of government - European, national and local. On the one hand we have local politicians who would like the freedom to administrate, especially in traffic management, but do not legally have it. The European Union could provide it. For example in Italy, they want to do things in speed control which are not permitted at national level, so the European Union could play a role here. In other areas too, it is absolutely vital to develop European initiatives. There is currently a proposal for a directive on cross-border legal proceedings for perpetrators of traffic offenses and this is clearly at European level. What this means is that drivers whose car is not registered in the country where the offence is committed are still subject to legal proceedings, even though they return home at night across the border. Today, in general, this does not happen.

Anette BURGDORF

Mr. Pottier, do you agree? What role would you give the European Union?

Bernard POTTIER

In my opinion, this role is twofold. First, it involves emulation. We French would never have taken the bull by the horns if there had been no best-in-class example. We were among the worst, compared to the best who regularly saved lives. When we get all righteous about German motorways, we see there is a vicious circle. As there is no speed limit on German motorways, they make cars that drive at 250 kilometers per hour, and

these arrive on our market and inspire non-German car makers to follow their example. Emulation and trade are very important factors. Moreover, simply because there is a single European market for cars, there have to be certain common rules for equipment and vehicle safety. We are asking for mandatory speed control devices to be fitted to all new vehicles. Why? Because it is unrealistic to say that we will curb the speed of all vehicles and no one can drive at over 150 kilometers per hour - I just do not believe that is possible. However, I would say that every driver must be able to limit the speed of their vehicle if they so wish and to the speed they decide on, so they are not distracted, as easily happens with new vehicles. Every driver must be able to limit their vehicle to a speed that they decide on themselves. We are asking for this to be mandatory on all new vehicles. Another clear example of European level action is the Cross-border Directive. Just as some people do sex tourism in certain countries, others let themselves go on roads in other countries and drive at extreme speeds. While the Dutch are particularly good at road safety, you will often be overtaken by a Dutch car on French motorways. And the French are no better as they do the same thing in other countries. So the European Directive could provide protection against this phenomenon and help solve the problem. The European Commission has drafted a directive and I hope that the French Presidency will help us make further progress.

Anette BURGDORF

We will now expand our viewpoint even further beyond the European Union, with Jack Short, Secretary General of the International Transport Forum. You represent the OECD. Can you give us examples and lessons from international experiments?

Jack SHORT, Secretary General of the International Transport Forum

One very interesting thing about road safety is that we have very good research and very bad implementation. Therefore, one of the things we work on is how to get from good research to good implementation. We will have an event next weekend in which people from 40 countries will be discussing that. It is a very important subject. Therefore, the path from research to implementation is key. However, when you look at the vast majority of countries, there is a very simple formula to make things better.

The first thing you need is a clear vision of what you want. The second thing you need is very strong political support. This is not political support from the transport minister, but from the prime minister, the president, the parliament, from everywhere. France is a good example of that. The third thing is to do all the classic things we know about on speed, alcohol, young drivers, wearing a seat belt, and on motorcyclists. All of those are well known. One of our calculations is that if all the countries did that, we would save almost 100,000 lives. Therefore, doing what we know how to do would save 100,000 lives.

What is also interesting is that the most advanced countries, the ones you have all mentioned, are looking at where they can go next. A lot of interesting things are happening. You did not mention what you all know about, Sweden's Vision Zero, the idea that nobody will be killed on the road. This is almost impossible in practice, but it does lead to very interesting new ideas. It leads to very practical things in relation to infrastructure, such as putting more barriers in the middle of roads. Australia, for example is looking at the institutions. We did not discuss that. Australia is bringing together the bodies dealing with road safety, rail safety, and aviation safety, because there is much

better safety in the other modes. Putting the institutions together could push in the direction of making road transport as safe as rail or aviation.

Regarding financing, a lot of new studies are showing that every pound spent on road safety gives benefits back. Therefore, there is a very strong argument for public financiers to put more money upfront into prevention. That comes back in fewer deaths and fatalities. We are now putting the evidence on that together, and will publish it very shortly.

You had a lot of discussion on technology and whether technology can do everything. The question is whether we will allow technology to do everything. We heard several of the speakers saying that we must use technology, but that the driver must stay in control. My own opinion is that we also have to question that idea in the future. I think everybody is in favor of what are called the informative systems of intelligent speed adaptation. However, the active systems, where there is some intervention, are much more interesting for the future. I know you have the Vienna Convention. I know you have legal difficulties. But we cannot give up studying it, because the numbers are still too high.

Therefore, that is an area we have to look at. I have a last remark regarding the German speed limit. It is an old story and we all know it. However, one thing that is not mentioned very often is the message it gives. German cars are very powerful, and everybody else is obliged to make very powerful cars as well to compete with them. Therefore, the German speed limit sends a bad message to manufacturers as well. That is another reason for them to look at it. I have debated it with them for 20 years, and they have not changed it yet. There are a lot of ideas around.

Anette BURGDORF

Thank you very much for your contribution to this debate. Would you like to make a comment?

Christoph LAUTERWASSER

I will make a short comment. I am not really in charge of the German speed limit. The insurance companies would probably not have a problem in principle with the speed limit. German cars are not only bought in Germany. I have to remind you that we have big markets in China, the US and elsewhere. Therefore, it is a matter of the market as well. It is not just the manufacturers. They obviously want to sell luxury cars, but there is also a market for these cars on a worldwide basis. They are sold everywhere. I am sure some people in this auditorium have big cars.

Michel VIMONT

On the last point concerning technology, and especially anything active in the vehicle, I think that we should not think only in terms of technology. It is not the technologies that make the difference but the benefits that can or do add value for the customer. Customers will buy because they reckon that this service or device delivers a real bonus when it comes to safety. I think the four-wheel steering system launched on the Laguna 3 is worth trying. We can advertise about it, we can explain how it works, but what we really need is

to try and evaluate how it contributes to greater maneuverability, efficiency and also safety. The problem is not whether it is active or not active. What we need is technology that is there to deliver the service and we often gives out a bad sign when we start to talk too much about the technology. We have to forget the actual technology and make sure that it delivers a genuine benefit to users.

Bernard POTTIER

I would just like to mention a point on which I completely agree with the previous speaker - the zero vision in Sweden. It obviously does not mean we will have zero deaths in Sweden as everyone knows. It means that we don't simply say that this problem is solved because a given aspect is under control; we should also look at all the other factors that may play a role in an accident. Let me give an example that will allow me to pay tribute to someone who has invested heavily in road safety in France and who is no longer with us - Jean-Michel Bertrand, who was Deputy Mayor of Bourg-en-Bresse. We were discussing a teaching tool for road safety involving a moped accident. There happened to have been a red light that had not been seen because there was a truck parked in front of it. Jean-Michel Bertrand told me then that in Bourg-en-Bresse, he had decided to systematically site two-wheeler parking places near traffic lights, so that trucks could not park there. No one is supposed to be ignorant of the law and not stop at a red light, but it sometimes happens in spite of everything. That's what the zero vision is - looking at everything that can help improve things.

Anette BURGDORF

Our Forum is unfortunately coming to a close. To bring it to an end I would like to go round the table and ask what your dream is for the future? What would you like to see done? What do you hope for? What message would you like to get over?

My question is about how we should meet the challenge of car safety in the future.

Christoph LAUTERWASSER

It really needs a holistic approach. All the systems have to work together, as has been pointed out. We have to look at infrastructure. We have to look at the drivers. We have to look at the cars. We need to focus the money where it yields the best value. I will give you one example. Motorcycle drivers were mentioned. These have a high death rate in Germany. More than 900 are killed per year. We did a study of ABS on motorcycles which showed it could reduce the death rate by 10%. That is an example of a system which would give good value for money. It is too expensive for many people and they do not want to buy it. However, the drivers who have tested it really like it.

Returning to the overall picture, it is very important to bring all the different partners at the table to discuss these issues. A forum like this is a very good opportunity to discuss these things.

Anette BURGDORF

Mr. Pottier, what is your dream for the future?

Bernard POTTIER

My dream is that sensible driving and road sharing become the norm, and that people understand that good driving means behaving well, respecting other people and anticipating their reactions. For example, there are plenty of people who do not use their indicators, which is completely stupid because it is the root cause of many accidents, including two-wheelers. It really is an act of pure selfishness. As regards car makers, my dream is that manufacturers and suppliers continue to help road users to share the road.

Anette BURGDORF

Thank you. Mr. Haon, a final word?

Sylvain HAON

We are lucky that we know how to improve things in road safety. My dream, then, is that we apply what we know works. This will quickly improve a number of things. Let us trust the developers and manufacturers to help us with technology to achieve marginal gains that bring us gradually closer to the zero vision.

Anette BURGDORF

Very well. Patricia Delhomme?

Patricia DELHOMME

For me, it would be that the various actions really promote road safety and environmental protection, and include all road users - pedestrians, cyclists, motorcyclists, motorists and truck drivers.

Anette BURGDORF

Thank you. Mr. Vimont, a final word?

Michel VIMONT

I think we live in an automotive world in the broad sense that is changing dramatically. As a manufacturer, I believe that one of the keys to the future is to think holistically – as has been said several times. This does not mean thinking in terms of optimizing the vehicle, or the infrastructure, or even optimizing driver training, but to think in terms of the whole interaction. In Renault's electric vehicle strategy, we realized that relationships with cars could change and that the constraints bearing on a car could change as well. We realized that we could rethink the positioning of this car object within the overall automotive environment, rethink the constraints and business models, meaning how to sell mobility as part of a comprehensive transport solution, and not simply as part of an object with four wheels that is sold in a showroom. We are shifting towards a service model, where the automotive object is fully integrated into its broader environment.

Anette BURGDORF

Thank you all, thank you for having participated in this debate. I think we all agree that we must act together. We shall now all have dinner together. You will have an opportunity to ask lots of questions. There will be time to discuss, make comments and ask questions. We really have plenty of time to devote to this. So see you in a moment, and thank you

Questions and Replies

Anette BURGDORF

Luc, tell me, since speed is your business! What do you feel about driving safety?

Luc ALPHAND

I think ... well, first I love speed and that's what makes me live to the full, excites me, and inspires my whole life. At my level as a racing driver, I think that car safety, my safety and that of my co-driver because I drive in rallies with a co-driver, is above all acting as a total professional who prepares his cars, himself, and his project, and knows his own limits.

From what we saw and heard just now in the debate, it always comes back to the human factor. And what is happening, and I'll say that all that is done in France for road safety and accident prevention goes very much in the right direction, especially for alcohol, and for speed unfortunately. So I am not exactly a good pupil, but I practice speed under very professional conditions and in racing cars, but not on roads any longer. So perhaps I am one of those lucky drivers, and here we are talking about behavior, who has been able to get my anger or at least my aggressiveness out of my system, because it is my job, but under the right conditions, and not when I drive on the road. So I make a complete difference between my work and what happens on the road every day: respecting others, respecting the rules, even though I complain as many other people do about zero tolerance, but maybe there is something we should discuss among us about minor speeding offenses and losing points, which may lead to some people not having a license in the future, and that is something that will perhaps raise a problem in the future.

But to return to technologies which are also the debating topic tonight, I think they are positive and that we should build on them, for example Valeo's initiatives. There are many things that can really improve driving without being too distracting for drivers. We need to continue to concentrate on our driving.

Anette BURGDORF

So are you a responsible driver?

Luc ALPHAND

Like everyone else I'm human. Maybe I haven't always been...

Anette BURGDORF

What does that mean?

Luc ALPHAND

I make mistakes. To err is human, and we have seen that it is the underlying cause of many accidents. So, I was young once, and I was perhaps overconfident, but as we grow more experienced we also respect others more, but I can also see that what happens on French roads is going very much in the right direction.

My wife is Swedish, I also drive a lot in northern Europe. So I can tell you things are moving slowly, and it may take some time so that for example on Saturday evenings, there is someone who drives and does not drink and who respects not just the rules but other people as well. And I also think that having good driving manners on the road is important. Simply taking five minutes or more for your journey won't change your life as a whole but it could really change the end result.

Anette BURGDORF

Right. And with regard to what was said earlier, do you agree that "we must all work together"? And what can you add to what has been said?

Luc ALPHAND

There is much to be done, especially in terms of infrastructure as well. And here I shall speak for my own corner of the world. I live in the Hautes-Alpes which is somewhat off the beaten track so the roads and driving conditions are somewhat difficult. So there is a need for infrastructure, rules, signs, and technology in cars, of course.

Anette BURGDORF

Thank you very much. Is there someone who wants to ask Mr. Alphand a question? Just raise your hand. No? You're on the phone but not driving! (*laughs*) Is there someone who wants to ask a question or make a comment on the debate we had before on stage? Comments, questions ... I know you're having a delicious dinner, but as we broached many different topics...

Denis GRIOT, Senior vice president and chairman, Europe, Middle East & Africa (EMEA) region for Freescale Semiconductor

Luc, thank you for showing your confidence in technology. My name is Denis GRIOT, Freescale Semiconductor, supplier to Valeo and vehicle manufacturers particularly in the area driver assistance. I have a question for Luke.

We spoke about the three factors that determine improvements in safety: the technology factor, the driver factor and the infrastructure factor you have just mentioned. I have a question about the driver factor. You've been primarily a master of speed, of downhill racing, and in many others ways, and you have certainly reached the highest level in this area. What have you learned about safety as a racing driver (as you are now) compared with when you were skiing at the highest level? What have you brought from skiing to the way you drive a car?

Luc ALPHAND

You know, you don't have any bodywork when you ski. And what we learn is that you can hurt yourself directly. This is true and unfortunately is what happens afterwards when you have an accident. So we learn to know our limits by experience and more exactly and crudely through the pain caused by a fall. So we must learn to know our limits. And this is the real lesson. For me, sport and speed are ways of striving to perform better, a perfect race or lap. That's how I saw it. Trying to get close to one's limits. Trying to push those limits, because what is always interesting in human nature is to push back the limits.

And now I try to do the same thing in cars, but I only have fifteen years of World Cups behind me. So I know it can hurt and I try to never exceed this limit. So I try to prepare slowly, trying to be as professional as possible, as I said earlier, so I prepare my team, my co-driver, and build up trust in everyone and in the technology, so I can trust everyone who works with us.

So this is how I learned to approach my limits and also to master speed.

Anette BURGDORF

Thank you very much, we have a question. Yes, your turn!

A speaker

After a question on driving, I'd like to ask a question about infrastructure.

Anette BURGDORF

Excuse me. We can't hear you: can you come closer to the mike?

Speaker

Can you hear me? Ah, that's better. So as I said, after talking about the driver, I have a question for the driver but about infrastructure. We have seen that with skiing, safety has changed enormously, especially with down hill racing where there is infrastructure, and on the runs, and protection of the runs – a whole lot of things. So I would like you to make a parallel between what we have seen in skiing, and what we can expect on roads, especially with respect to infrastructure.

Luc ALPHAND

I do not know if I'm really an expert on this aspect. But on the basis of my experience as a driver in the Le Mans 24 Hours race, we can already see what is happening on the track for the active safety of pilots with *harnesses*, and with all the technology now deployed to protect drivers against fire, clothing, impact, and so on. But I don't know if we can apply the same standards found on the tracks to all road safety, especially in terms of clear roads, safety railings, and the removal of anything that can be obstacle to traffic. It is already complicated and this would be an enormous task. When we talk about improving road infrastructure, it already means preventing and removing all the black spots such as

cross-roads without traffic lights, and once again I am not a specialist. But it is true that it would be wonderful to have a road that could look the way a tracks looks from inside a car. That would be absolutely perfect. And in racing, everyone is usually traveling in the same direction, so you wouldn't even need to cross any roads!

Anette BURGDORF

Thank you very much. We will now have dessert. After dessert, you will have an opportunity to ask questions about the debate we had just now, because we touched on many issues and did not have the time to develop certain topics. So it will be a time to ask questions. Perhaps during the dinner, you can think about what you intrigued you or interested you. Thank you very much.

Dessert

Anette BURGDORF

Please let me know if there are any issues concerning the subjects discussed in this forum. We have experts from all over Europe. So let's make use of them. Who has a question? There's a first question. Yes, sir.

Jean-Pierre GIRAUD, Regional Advisor for Ile-de-France, Chairman of the Transport and Traffic Committee

I wanted to point out that there are about 40 million cars in France, and these are replaced very slowly, after seven to ten years, so when efforts are being made in manufacturing, they spread through the whole car population very slowly. On the other hand, I think it only happens through behavior. And I wanted precisely to ask Luc Alphand whether when people drive, they have headphones on, do people read the newspaper? Is the dog sitting next to you? Are we listening to the radio? I think that these sorts of behaviors all make driving difficult.

Anette BURGDORF

Mr. Alphand, would you like to reply? May be this should be the last question for Mr. Alphand because we really ought to let him eat!

Luc ALPHAND

Unfortunately I'm used to driving somewhat faster on a race track, so I have a tendency, as was mentioned among the problems just now, to lose my concentration or at least become less focused when I driver at a slower speed. So I try to be careful about not using the phone, but my thoughts begin to wander from my driving, and I'm sometimes a bit distracted because I am not driving very fast.

It all depends on weather and traffic conditions as well. Someone mentioned earlier that we could have speed limits that are adapted to weather and other conditions, such as a clear roads or type of traffic. Sometimes you feel you have stopped completely when you are driving at 110 on a motorway and there is no one around and the road is empty and

the weather is fine. And sometimes you can be driving at 110, which is very high if it is raining and there are a lot of people, and so on.

So I sometimes get a little distracted.

Anette BURGDORF

Thank you very much. Other questions perhaps for Mr. Pottier, Mr. Lauterwasser, Ms Delhomme, Mr. Vimont or Mr. Morin? Yes, one moment.

Joël KARECKI, Philips France

I wanted to come back to Thierry Morin's comment on a German study that showed we could save just over 1,000 lives by making xenon lamps generally available. So here is an extremely simple measure that does not require infrastructure, I would like to know – it's a very direct question - why we don't make xenon lamps mandatory on cars at European level.

Thierry MORIN

Well that's a good question. Indeed xenon headlights should be mandatory. But what are xenon headlights? A lighting system which has a slightly longer beam than traditional headlights but which makes it possible to light up the road with a color temperature in degrees Kelvin, as they say, which is near to daylight, unlike earlier lights that had a discrepancy of 1,000 to 1,500 degrees, I believe, and caused eye fatigue. So you do not get eye fatigue with xenon headlights and you can see as if it was daytime. And if you could see at night as if it were daytime, this would increase safety levels; in fact, it would mean that you would drive better at night than in daylight if you used xenon headlights. So thank you for your suggestion, these lights should be mandatory, especially if they were mandatory on all cars, as this would solve the problem of customers having to choose a car. *(laughs)*

Anette BURGDORF

Thank you. No other questions? You sir? No. If not, then I will let Mr. Morin wrap up the Forum.

Thierry MORIN

First I will be brief, because you've heard many highly expert people, and I am not one of them. But let us try and draw some conclusions. First I have understood that this is an issue that involves lots of different contributions, I have understood that we need infrastructure, that manufacturers and suppliers must work together and that driver behavior has a role to play, all of which can improve security. I personally like the idea of "zero" as in zero accidents. You know, when we talked about quality at Valeo, about seven or eight years ago – I'm not sure if I should say this- we had a very high PPM rate and we said that our sole ambition was to reach "zero" defective parts per million. We have been successful, reaching ten if not zero PPM. But we are finally getting close. If we had aimed

for a hundred, we would certainly not have reached ten. So I like the idea of setting ourselves extremely high targets. So I think zero accidents is an excellent idea.

Secondly, I have realized that technology is important. Even so, during the debate, I heard perhaps a slightly negative note - Does technology, with all its contributions, all its new systems, in the end distract drivers? I do not agree at all. What distracts drivers is how we use the technology. We never told drivers they could phone while driving. Heh, we never even phoned while we were driving before mobile phones! Just because we have a phone in each pocket, it doesn't mean we have to use a mobile phone while driving, as far as I know. Just because there are a number of illegal things ... we had a few drinks tonight, so I hope you will all use public transport or not drive your cars yourselves if you've come in them. But in any case, it is quite clear that the behavior of individual drivers is also important. Technologies, on the other hand, must be intuitive, and must improve the driver's attention. Just now I used the example of automatic wiper activation, and automatic lighting that allow drivers to concentrate on their vehicle.

And after speaking about freeing up the driver, let me conclude by looking at the car itself. Cars have always been objects that offer freedom. And I heard you say just now, Madam: "If in the end the car manages to drive us automatically, it would be like taking a train." But this is not true at all, because a rail station does not stop at the door of my home. And therein lies the difference: cars are objects of individual freedom, Madam. And on this basis, what is it that makes me not want to let it drive me? I had an opportunity with some Valeo people recently to go in a vehicle that drove me for two miles in traffic. I did nothing, but just sat there with my arms crossed. And it was an extraordinary experience. It was a little less gentle than some of us are when we get behind the wheel. It was a bit of drone technically speaking, but people say that in the next 15 to 20 years, we may well get into a car that takes where we want in complete security.

If we succeed in this, this car will still remain an object of freedom, a person's best friend. If the car continues to cause deaths every year, it will become public enemy number one. It's up to us to choose, and I have made my choice. Thank you. I wish you a great evening, I am very happy that you all came, and above all a *safe* journey home!