



modis

AUTONOMOUS
VEHICLES

DISRUPTION
OF MOBILITY

SHARING
CONCEPTS

ARTIFICIAL
INTELLIGENCE

AUTONOMOUS
REVOLUTION

E-BIKES

Modis talks future

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The changes are not yet obvious on streets everywhere, but soon the mobility market will be changed beyond all recognition.



As a consequence of climate change and the concomitant end of the internal combustion engine, thanks to the spread of sharing concepts and the launch of self-driving vehicles, the world is facing not only the effects of ongoing digitalisation, but also the disruption of familiar mobility concepts. 'All these trends are changing not only our perception of vehicles, but also the concept of mobility itself', says Sebastiaan Krol, Managing Director of Modis Engineering.

But what exactly lies ahead for our industry segment? On what must we set our focus? What problems will have to be solved?

'To be able to manage this progress in the future, we need the right capabilities in the right place', says Yves-Marie Boissonnet, Head of Modis Northern Europe. To address this challenge, Modis invited leading industry experts to participate in a discussion about the electric and autonomous urban mobility of tomorrow at an event on the fringes of the Formula E race in Berlin.

This event summary provides insights into the key topics of discussions at the event.

The electric revolution in major cities

Why Berlin has become a role-model for sustainable mobility



Berlin is not only a venue of the FIA Formula E series, the city is also a pioneer of the electric revolution. For years now, the capital city has been a key playing field for innovative enterprises in the various areas of sustainable mobility. No other city in Europe unites such an active ecosystem of new mobility concepts.

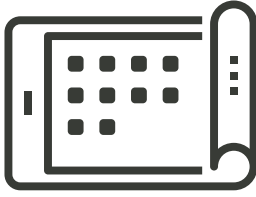
At present, there are 10,000 electric vehicles on the streets of Berlin, of these, 450 are in the E-sharing segment and, according to the Berlin Agency for Electromobility, another 2,000 will be joining them over the next two months. Two years ago, there wasn't a single e-scooter in the capital city. Today there are 2,300. On top of this, there are 250,000 e-bikes, of which around 1,000 are accessible to the public via e-bike sharing concepts.

'As a city state, we are certain that future mobility will be more tightly networked', says Conrad Hammer, Project Manager at the Berlin Agency for Electromobility. 'Mobility will be automated. It will be diversified. It will be more sustainable.'

It will have to be, too. Because, although the majority of large-scale emitters have registered a reduction in CO2 emissions, one area remains in which emissions continue to rise: in traffic. In view of the ongoing development at Berlin's periphery and the inability of public transport to keep pace with the growth of new residential communities, many people have no other options than to use their own cars. This is why the Berlin Agency for Electromobility is working not only on new forms of mobility, but also on topics

'As a city and a state, we wish to join forces with research and industry as a motor for innovation in the mobility sector.'

Conrad Hammer, Project Manager at the Berlin Agency for Electromobility



such as urban logistics and the expansion of smart infrastructures.

But the capital city continues to encounter obstacles. By offering car owners living in Charlottenburg a chance to experience multimodality at first hand, its 'Sommerflotte' (Summer Fleet) project gives them the opportunity to give up their car for a month and take advantage of all sharing offers free of charge for that month. Sadly, only 18 of the 500 households invited to take part took up the offer.

'We can talk about innovation and new mobility models in glowing tones,' says Conrad Hammer. 'But the "Sommerflotte" shows that we must always keep the customer's point of view in the back of our minds. After all, when people have their own cars and are used to the convenience, the sharing debate very soon becomes a debate about sacrificing creature comforts.'

This is where David Thiel, General Manager of JUMP Berlin (UBER Germany), intervened in the early May of 2019 by bringing around a thousand e-bikes to Berlin to establish his sharing service. He supports the argument that there should be a one-stop shop for mobility, in other words, the bundling of a variety of sharing options in a single app that would lead to greater acceptance in the community.

As David Thiel says, 'What's important is that we find offers that are affordable for everyone. Another important factor is that we have numerous providers that cover all utilisation scenarios, and not only one.' The UBER App in Berlin plays a pioneering role in this. People who use it will not only find JUMP bikes and UBER vehicles displayed, but also public transport services. 'Because, only when each individual in the city can find a transportation option for each of the usage scenarios can it be possible to make the decision: I don't need my car', says David Thiel.

'In San Francisco, we tested the acceptance of adding a further modality like the JUMP to our app. And what effects it has on our core business. We saw that there was a general increase in rides of 15 per cent. This is a great signal on our way to a platform that offers our customers options that motivate them to leave their car at home and, as a next step, to do without owning a car altogether.'

David Thiel, General Manager JUMP Berlin (UBER Germany)

A matter of image

Why safety issues must be more offensively addressed

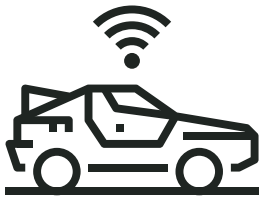


What, however, is the strongest argument for digitalisation in the automobile industry? What concrete benefits does the automation of vehicles bring for individuals? These are questions that Walter Brenner, Professor for information management at the University of St. Gallen, has explored and led to his formulation of the following clear answer: Safety.

Around the world, 1.35 million people are killed in traffic-related accidents every year. Along with each fatality, there are also around 50 persons with minor or major injuries. Human error is the cause in the overwhelming majority of these accidents. Self-driving vehicles do not make these errors. Even partially automated driving creates enormous benefits for

‘Fatalities and suffering as a result of traffic accidents are taboos in the automobile industry. If at all, communication of this topic is handled with extreme care. Although there are commercials on TV that show cars braking safely for a child, the situations rarely reflect real life. In the case of autonomous vehicles, what we have is a technology that needs explaining. It needs aggressive communication.’

Professor Walter Brenner, Head of the faculty of information management, industrial services, design thinking and digital consumer business at the University of St. Gallen



the community. According to the European Union, emergency braking assistance systems could save 1,000 lives a year in the EU alone.

Nevertheless, autonomous driving has an image problem. 'In the eyes of the community, one death caused by a robot is much worse than the deaths of numerous persons who lose their lives as a result of negligence, alcohol or speeding etc.', says Professor Walter Brenner.

Why? One reason for this could be that there are conflicting messages in the media with regard to autonomous driving. On the one hand, people tend to equate fast and self-determined driving with personal freedom. According to Professor Walter Brenner, many people he spoke to in the course of the research for his book 'Autonomous Driving' reject self-driving vehicles for precisely this reason.

On the other hand, accidents occurring in the context of autonomous vehicles tests are reported with disproportionate regularity in the media. With the exception of major accidents with numerous fatalities, most accidents caused by human error remain unmentioned. This illustrates the fundamental distrust of robots.

Positive reports are few and far between. Autonomous driving is seen as an instrument for the reduction of traffic accidents and as a means for saving time. Up until now, automotive suppliers and the automobile industry have treated the issue of traffic-related fatalities defensively and very carefully in their public relations activities. This, in turn, leads to a

misbalanced dialogue with respect to the actual benefits of autonomous systems. For Professor Walter Brenner, one solution to this lies in offensive public relations activities on the part of the companies involved.

However, history shows that the number of traffic fatalities cannot be reduced solely by technical measures. 'External intervention is needed', says Professor Walter Brenner. Since the beginning of the automotive era, the number of traffic accidents with fatalities in Germany has risen continuously and, in 1970, reached a historic peak of 21,332 deaths (source: Federal Statistical Office). The turnaround was only achieved by determined intervention not only on the part of the concerns by the development of improved technologies such as airbags, but also at a political level with the introduction of compulsory wearing of seat belts and driving alcohol limits.

For Professor Walter Brenner, there are two other trends that hold the potential for further significant reduction of future traffic-related fatalities. On the one hand, a central unit and numerous sensors are installed in digital cars. 'I believe that it could be extremely advantageous to develop new generations of sensor systems that could, for example, even, enable cars to identify a critical health problem such as a heart attack at the wheel. Or that the car could tell when a person is not in a fit state to drive.'

According to Sebastiaan Krol, Managing Director der Modis Engineering, 'Automated driving offers considerably more



benefits than risks, for both safety on the roads and individual mobility. Despite this, the emphasis in all future innovations must be placed on the preservation of self-determination, safety and the privacy of information.' For Krol, it is important that the interaction of autonomous vehicles is conceived in a way that ensures that the exchange of data with the environment and other autonomous vehicles prevents dilemmas and accident situations before they can arise.

The risks of autonomous driving are primarily found in the brief moment in which

responsibility for the vehicle passes from the machine to the human being. In view of this, binding standards must be defined before the introduction of such systems to ensure that precise role-sharing between driver and technology is guaranteed at every level of automation. 'Our specialists at Modis can draw on comprehensive expertise in the development of realisation of autonomous mobility concepts. As advisors and experts, we actively contribute this knowledge to the benefit of the community and politics,' says Sebastiaan Krol, Managing Director of Modis Engineering.

'Our specialists develop utilisation concepts for autonomous vehicles that combine cost-effectiveness with maximum safety. Intelligent utilisation concepts with new and more efficient vehicles must establish themselves to enable a transportation revolution that fulfils the needs of sustainable mobility. These include autonomous vehicles in fleet operations within spatially delimited zones as well as potential perspectives for taxi operators or car-sharing providers.'

Sebastiaan Krol, Managing Director of Modis Engineering

An entire industry in a state of radical change

Why we need to rethink



The demands on us as an employer as a consequence of disruption within our industry also require us to reinvent the way we work, says Parham A. Vasailey, Business Unit Director Autonomous Driving OEM Programs at Aptiv. He currently identifies three mega-trends that together will lead to radical changes in the automotive industry.

Firstly, the complexity of our products will increase to fulfil the needs of ongoing au-

tomation, electrification and connectivity and will, as a result of this, become more dependent on one another. In future, this requires that different technologies must exchange information and data with each other more often.

Secondly, new competitors conquering the market, tighter and changing demand will create an entirely new ecosystem. 'If we look at the demands of generation Y', explains Parham A. Vasailey, 'we see

'We want to create a whole new way of working. But to do this, we have to let go of our old behaviour patterns. We must leave direct control behind us and enable the creation of autonomous teams. We must not fear the risks we may face. We cross-disciplinary collaboration instead of bunker mentality. We need constant customer orientation instead of concentration solely on margins.'

Parham A. Vasailey, Business Unit Director Autonomous Driving OEM Programs at Aptiv



that their expectations are directed not only at our product portfolio, as in other generations, but also at our company. They demand considerably more sustainability and inclusiveness in the way we work.'

The third mega-trend is the permanent acceleration of technological progress. Most recent technological developments in the driving forces behind this acceleration, such as algorithms, artificial intelligence and computing, take their toll. The human race is no longer able to adapt to the technical revolution. Surveys show that only 13 per cent of employees around the globe feel fulfilled by their work and are motivated to engage proactively. Symptoms of stress are increasing. As are those of depression.

Parham A. Vasailey also considers the lack of adaptability on the part of humanity to be the key obstacle that must be overcome in order to successfully address disruption in the automotive industry. He says, 'The problem is that people reject technological progress.' Here, he is not referring only to customers, but also to employees in the automobile segment. 'Over 75 per cent of all digital transformation projects fail due to lack of acceptance of the need to achieve Total Shareholder Value by employees within the company.'

How can this problem be solved? Parham A. Vasailey suggests an agile work model: vertically organised teams that work with an output-oriented and continuous feedback-driven approach bear responsibility for every aspect of a product.

'I think there will be three big challenges to overcome. The first is regulation, as technology is developing much faster than we and our governments can comprehend. The second challenge is the development of the infrastructure we need to change our ecosystem. The last big challenge is the achievement of fundamental acceptance of new technologies in the hearts and minds of the populace.'

Yves-Marie Boissonnet, Head of Modis Northern Europe



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Technological progress meets the fascination of motorsport

We are proud to be an official partner of the ABB FIA Formula E series. Anyone engaged in cutting-edge innovation has to think and act on a global scale. In the development of new technologies, we connect the best talents and companies around the world. And this connects us with Formulas E. As the world's first purely electric racing series. Today, the ABB FIA Formula E is already

making a decisive contribution to combining sustainability, efficiency and technical progress with the fascination of motorsport. As a leading global partner for professional solutions in the areas of engineering, IT and life sciences, we are especially pleased that our brightest minds and our expertise are helping to write the next exciting chapters in the history of motor racing.

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