Audi
Stakeholder-Forum 2014

Connected vehicles – how will Audi shape the future of mobility?

Documentation of the event on October 7
at the Representative Office of Baden-Württemberg in Berlin

Digitalization and connectivity of vehicles are two of the major topics that will have a profound influence and change the face of mobility in the years to come. Audi believes it is part of its corporate responsibility to handle the connectivity of vehicles as responsibly as possible, so it made this the topic for discussion at the second Audi Stakeholder Forum.
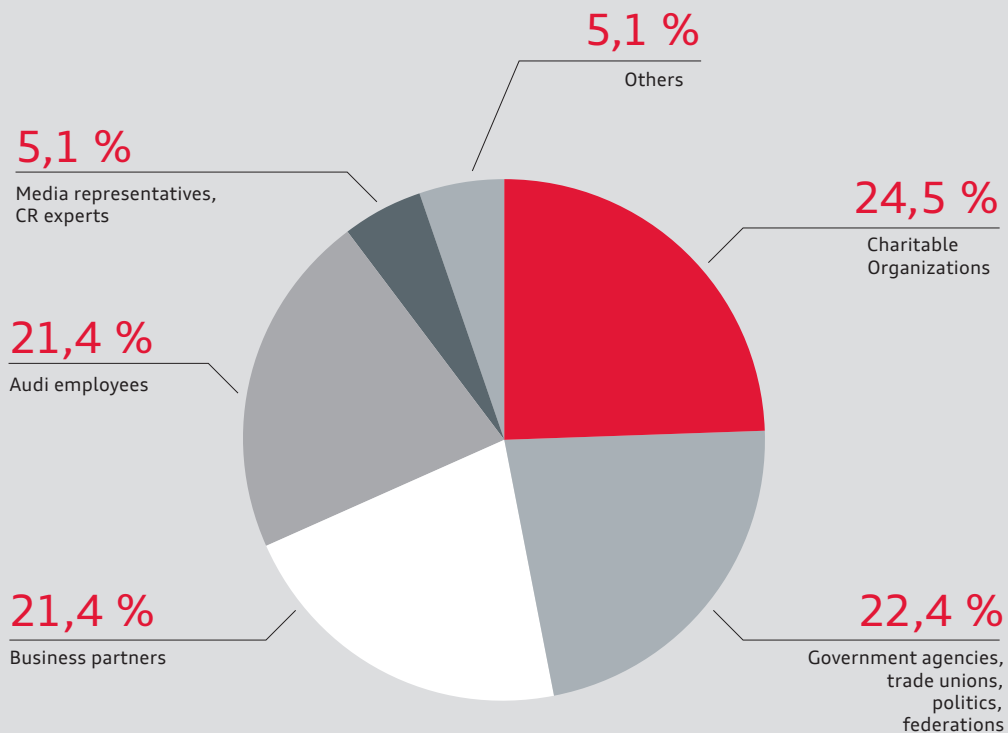
Around 120 participants from business, science, politics and society met representatives of Audi to discuss the future of mobility and the role that digital data flows will play in it. Three aspects of connectivity were in the spotlight: connectivity between individual vehicles, connectivity between vehicles and the infrastructure, and connectivity between driver and vehicle. In the course of the event a key expectation in connection with these topics was laid at Audi's door: As a premium manufacturer Audi must be a role model and assume even greater responsibility for the future shape of mobility.

Important content and findings were documented creatively by an artist on an engine hood during the event.

The participants of the Audi Stakeholder Forum 2014

In order to define the future of mobility and the connected vehicle, partners from widely different sectors need to work together. The challenge is to cooperate across industry and sector boundaries: Representatives of politics, business, science and society all need to do their part. The participants – around 120 specialists – were correspondingly drawn from a broad selection of disciplines.

5,1 %
Others

5,1 %
Media representatives,
CR experts

24,5 %
Charitable
Organizations

21,4 %
Audi employees

21,4 %
Business partners

22,4 %
Government agencies,
trade unions,
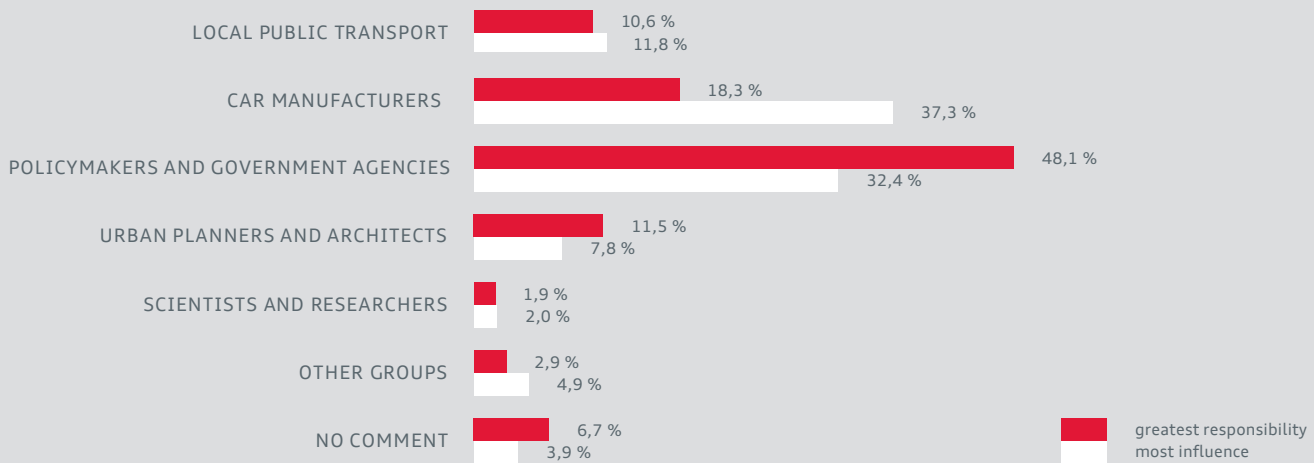politics,
federations

Mood pictures from the participants

Several electronic votes were held during the event. The participants were able to express their opinions on key questions related to connected mobility. The results of the individual surveys were presented live and were then used as starting points for the discussions in the workshops.

Here are some of the main findings:
Two of the questions concerned which group holds the greatest responsibility on the one hand and exercises the most influence for the success of connected mobility on the other. The participants' answers to these questions were as follows:

LOCAL PUBLIC TRANSPORT	10,6 %	
	11,8 %	
CAR MANUFACTURERS	18,3 %	
	37,3 %	
POLICYMAKERS AND GOVERNMENT AGENCIES	48,1 %	
	32,4 %	
URBAN PLANNERS AND ARCHITECTS	11,5 %	
	7,8 %	
SCIENTISTS AND RESEARCHERS	1,9 %	
	2,0 %	
OTHER GROUPS	2,9 %	
	4,9 %	
NO COMMENT	6,7 %	
	3,9 %	

■ greatest responsibility
□ most influence

The result shows that policymakers are perceived to hold the greatest responsibility for the success of connected mobility. On the other hand, the participants perceive car manufacturers as having the most influence over the successful development of connected mobility. They have the technical expertise, the skills and the necessary resources to develop the right innovations – such as piloted driving – and bring them to market.

The program at a glance

The focus of the Audi Stakeholder Forum was on exchanges between representatives of Audi and the experts in attendance. Axel Strotbek, Member of the Board of Management of AUDI AG, gave the event's opening address and talked about the main developments and challenges from Audi's perspective. In their keynote speeches, Taiwan-based technology expert and consultant Sascha Pallenberg and José Castillo – architect, urban planner and Harvard professor – provided further impetus for the discussions that followed in the three workshops. The event was chaired by Frank-Holger Appel, FAZ editor for Technology and Motoring.

As part of a fringe program to the event, the participants were able to view the latest Audi technologies in a variety of vehicles. Alongside the Audi A3 Sportback e-tron and A3 g-tron, the new Audi TT 2.0 TFSI quattro was presented, the recipient of the "Car Connectivity Award"[1] as Germany's best connected automobile.

[1] https://www.audi-mediacenter.com/en/press-releases/audi-tt-is-the-best-networked-car-494

Introduction to the topic
Axel Strotbek, Member of the Board of Management of AUDI AG

" Digitalization and connectivity offer new development opportunities for future mobility, as gateways to greater quality of life. Communication between vehicles and other vehicles, vehicles and infrastructure or vehicles and the Internet can greatly enhance safety on our roads. "

Audi Board Member for Finance Axel Strotbek and Dr.-Ing. Peter F. Tropschuh, Head of Corporate Responsibility

Axel Strotbek opened the event and indicated what Audi understands by connected mobility as an integrated system, what groundwork has already been done and what challenges still lie ahead.

Audi has defined four future areas of activity for connected mobility:

▶ **Connected infotainment**
  This means first and foremost the applications that deliver information and entertainment to the car.
▶ **Assistance systems**
  Systems that help the driver to control the car – all the way to piloted driving.
▶ **Car-2-X**
  The car's connectivity with other road users or with the infrastructure.
▶ **Swarm Intelligence**
  Interactively sharing and using data as part of a large group.

Using specific examples, he illustrated how the idea of connected mobility is already reflected in an array of technical applications in Audi vehicles. For example in Audi connect: The term Audi connect brackets together applications and developments that are gateways to using media in the vehicle and therefore being connected to the world around you. Audi connect enables the vehicle to connect to the Internet, with the driver and with the infrastructure and environment.

Strotbek showed how growing connectivity offers unique development opportunities that extend far beyond mobility. Lower emissions and less stressful traffic, improved safety for all road users, better use of time for each individual and generally a better quality of life. But alongside the opportunities there are also many understandable questions and concerns. These need to be taken seriously and addressed.

Keynote speech: "Global IT trends – the car as network hub"
Sascha Pallenberg, tech blogger and consultant

" *The car will increasingly become a product of the connection and exchange between industries and sectors that still largely work independently of one another today.* "

The first keynote speech was given by Sascha Pallenberg. The technology expert lives in Taiwan and is founder of the blog platform mobilegeeks. As a tech blogger and consultant, he believes that that the car will not disappear from our cities, instead it will evolve into a central network node. In his keynote speech, Pallenberg highlighted how global developments – such as urbanization and digitalization – can revolutionize mobility. He also stressed how the car can itself be the trigger for revolutionary developments, saying that the digitalized vehicle had the potential to become "the next big thing." The onus to act is not just on the automotive industry, however.

He appealed for a bolder approach to the handling of data, especially in Germany. Topics such as digitalization and data connectivity are not new phenomena, they have long been part of our everyday life, as the number and use of smartphones demonstrates.

At the same time, Pallenberg pointed out that customers must retain control over their data and have to actively approve its sharing. That will create transparency and increase trust.

Keynote speech: "Cities, data and the future of mobility"
José Castillo, architect, urban planner and professor at Harvard University

” *The aim is to explore new forms of collaboration between government, business, science and inhabitants in order to enhance mobility in the city of the future in a targeted manner.* "

José Castillo formulated a positive scenario for data usage in his keynote speech. Castillo, who is taking part in this year's Audi Urban Future Award as part of the Mexico City team, presented his vision of a city that gets "out of the permanent jam on the infobahn." Through his contribution he aims to demonstrate that individual mobility can use data intelligently to solve the very problems it has caused. Mexico City, according to the IBM Commuter Pain Index, is the "worst commuter city in the world." With the help of crowdsourcing, a valid database was created there to enable sustainable urban and traffic planning.

Castillo also stressed that in order to solve the problems of megacities, car manufacturers must reconcile mobility more tightly with quality of life. The question is how technological solutions can help relieve the pressure on cities that are choked with traffic. Less noise, cleaner air, more living space, better quality of life – that is our idea of future mobility.

Individual mobility needs to provide answers to the very situation that it has caused. The tool: crowdsourcing. People agree to share data about their traffic movements. That reveals when and where large numbers of people are on the move. Individuals participate and allow knowledge about them to be used, to the benefit of all.

The decisive thing will ultimately be whether this acquired data can be put to use in developing fitting solutions that solve the urban traffic problems. It is a matter that needs to be addressed not just by urban and traffic planners, but also by the business community.

According to Castillo, we need to explore new forms of collaboration between government, businesses, science and inhabitants in order to enhance mobility in the city of the future in a targeted manner.

Podium discussion:
How does the future of connected mobility look?

By way of an opener to the series of workshops that followed, representatives of Audi explained in a podium discussion the areas in which Audi tackles issues of connected mobility. The Audi representatives presented their individual areas of responsibility. Annegret Maier outlined how the interdisciplinary Data Intelligence unit investigates the potential of connected mobility. The areas it covers include potential new services for customers and the question of whether they can be backed by business models, and if so which ones. The focal task of Andreas Reich, from Audi Electronics Venture GmbH, is to clarify relevant technical questions concerning innovations in the context of connected mobility. According to Reich, the key challenge is to look several years into the future and anticipate technical developments well in advance. Dieter Fröhlich, Data Protection officer, pointed out that Audi follows clear principles on data protection and data security.
As well as obviously observing the relevant national and international legislation, Audi strives for maximum transparency towards its customers when dealing with data. This includes allowing the customer to decide for themselves which data to share.

Podium discussion with keynote speakers and Audi representatives (from left): José Castillo, Andreas Reich (Audi Electronics Venture GmbH), Sascha Pallenberg, Dieter Fröhlich (Data Protection and Data Security, AUDI AG), Annegret Maier (Data Intelligence, AUDI AG) and Frank-Holger Appel (Chair).

Three issues. Three workshops. Ideas aplenty.

The participants discussed specific expectations and possible alternative courses of action in three workshops. Each workshop was hosted by experts from the Audi Group. In each case, a brief reflection on the topic indicated the aspects and challenges that Audi is currently addressing. Small groups then discussed with Audi representatives, addressed specific expectations to Audi and drew up topics where action is needed. See pages 9 to 20 for the content and findings of the workshops.

Summary
Dr.-Ing. Peter F. Tropschuh, Head of Corporate Responsibility

At the end of the Stakeholder Forum Dr.-Ing. Peter F. Tropschuh thanked the participants for their plentiful suggestions and ideas. He emphasized that the findings of the work-shops would be collated, processed and their relevance for Audi examined. The technical departments at Audi would then give a detailed presentation of their findings. He also announced a meeting with all the technical departments involved or affected, to reflect together on the findings.

TED survey

76,1 %

of the participants confirmed that their expectations of the Audi Stakeholder Forum were "entirely" or "mostly" met.

▶ Pictures and a film of the Audi Stakeholder Forum
can be found at: **www.audi.de/cr**

Customer needs within the context of connected mobility were the focus of the first workshop. Annegret Maier started by presenting the various areas of potential that arise from data generated by connected vehicles. These include connectivity between the vehicle and the digital world of the customer, optimizing products in line with customer requirements by analyzing their actual patterns of use, and developing new vehicle functions based on swarm intelligence. From Audi's perspective there are various challenges involved in supplying data for these areas of potential and for new services derived from them. For example, a modified in-vehicle technical infrastructure is needed that is more dynamic and flexible. Then new hardware and application levels will be required.

Top recommendations to Audi

1.1   Connected vehicles can and must lead to better road safety and greater efficiency.

1.2   Increasing connectivity also requires greater transparency toward customers and society.

1.3   The customer must remain in control of how their data is used. They must be able to decide for themselves what data they wish to use or share in the future.

1.4   The integration or even fusion of different modes of transport and forms of mobility will increase. Audi must define its role here.

Workshop 2
Connected city – What opportunities and challenges are presented by the connection of vehicles and urban infrastructure?

Audi representative: Andreas Reich, Audi Electronics Venture GmbH
Chair: Christiane Stöhr, Scholz & Friends Reputation

The second workshop was devoted to the interplay between connected mobility and urban space. Andreas Reich opened proceedings by pointing out various challenges for which Audi believes new solutions could be found: By integrating parking areas and vehicles, the shortage of parking spaces in cities can be addressed – the first pilot projects are already under way. Connecting vehicles to other vehicles and vehicles to the infrastructure can help optimize the traffic flow. Piloted driving can reduce the driver's workload in traffic congestion. In addition, street lighting in quiet roads can be controlled better to save energy and costs. Andreas Reich stressed that partnerships between players in different sectors are needed if potential in cities is to be utilized.

Top recommendations to Audi

2.1   An independent operating platform for sharing ideas and collaborating must be created. A platform on which all players involved and affected come together to work on joint solutions to the mobility problems encountered in cities. Audi could or should be a prime mover here.

2.2   Audi must overcome system limits and increasingly think in an integrated way. Because one car manufacturer on its own will not find the solution to future mobility.

2.3   Quality of life and mobility must increasingly be meshed. The development of cars must integrate both topics.

2.4   Cities and car manufacturers must join forces in working on future mobility.

Workshop 3
**Connected data – How should companies and society handle
the collection and use of mobility-related data?**

Audi representatives: Thomas Göhmann, IT Car Cconcepts, and Dr. Thomas Schwarz, Government affairs
Chair: Sascha Pallenberg, tech blogger and consultant

The handling of mobility-related data was the topic of the third workshop. Thomas Göhmann and Dr. Thomas Schwarz kicked off the dialog by presenting the four principles that Audi has drawn up on the topic of data protection.

▸ First and foremost are the customer's wishes: Their data is only used to their own advantage.
▸ In addition, the customer should be able to decide for themselves what data they want to share.
▸ Third, maximum transparency is displayed towards the customer – starting with the appropriate notices in the owner's manuals for Audi models. Digitalization should not unsettle the customer.
▸ The fourth principle is that conforming to regulations is a matter of course for Audi: All national and international laws are unreservedly obeyed.

Top recommendations to Audi

3.1   Audi must increasingly address the issue of big data and develop its cars into key players on the "Internet of Things."

3.2   Data integration must deliver social added value.

3.3   The way data is handled must be rethought. Both customers and providers must learn to be bolder and evolve.

3.4   Statutory framework conditions must be refined. Common standards, ideally throughout Europe or worldwide, are needed.

3.5   Audi should take a lead role in setting standards on how data is handled.