Audi
MediaInfo

Audi is creating a universal digital customer experience

- **Car as living and work space: an Audi becomes an experience device**
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- **Software unit CARIAD as a stronger technology partner for Audi**
- **Smart solutions also make production and logistics more flexible and efficient**

Ingolstadt, August 26, 2021 – Audi is creating an ecosystem for electric and autonomous driving. With new physical and digital offerings, the premium brand will enrich the customer experience and meet the growing needs and demands for the mobility of the future. Digitalization offers an opportunity to rethink the automobile and for that reason, it is an essential driver of transformation. The ecosystem around the vehicle makes an essential contribution to networked, sustainable premium mobility. The software unit CARIAD is playing an important role in that. It is developing a car operating system for the entire Volkswagen Group and creating the conditions for the next autonomous driving functions. In the meantime, Audi is aggressively developing new business models and sales potential – in retail, in the vehicle, and via innovative mobility services. And not least of all, the internet of things, the new 5G mobile communications standard, and artificial intelligence are making production and logistics processes more efficient. As part of Audi Media Days during IAA MOBILITY 2021, Spotlight Digitalization provided an overview of the core digitalization activities undertaken by the company with the four rings.

The automotive industry is currently in the midst of the greatest transformation in its history. The mobility of the future is sustainable and networked. Digitalization is making it simpler, more personal, and smarter. Even now, numerous Audi services and features ensure that cars are more and more smoothly integrated into our customers' digital environment. But that is just the beginning – in the future, Audi models will increasingly become personal experience devices. The experience in the interior while driving from point A to point B is coming more clearly into focus. It is transforming into a living and working space – calibrated precisely to specific needs – with completely new possibilities and free spaces for the occupants.

Mobility doesn't start in the vehicle. We are convinced that digitalization of the entire customer journey will be the most important competitive differentiator. To that end, Audi is creating a consistent, seamless, and emotional premium experience at all brand touchpoints – online as well as offline. In order to honor that promise, the company has comprehensively repositioned itself and is increasingly focusing on software and IT solutions. And it is doing so across all fields – from digital sales structures, e-commerce platforms, and interfaces to smart cities infrastructures all the way to production and logistics. Strong partners like CARIAD are accompanying Audi along the way.

Number one in customer experience

A personalized website, improved myAudi app features, and additional consultation options: Audi is pushing the digitalization of marketing, sales, and aftersales further. In the process, the brand is pursuing a clear vision: interested parties and customers should be offered the possibility of a seamless, emotional, and intuitive brand experience – online as well as offline, across all contact points, from initial interest in an Audi model to the utilization phase. The website, which was relaunched in spring 2021, is the point of entry into Audi's digital offerings. It provides interested parties and customers with personalized information on all models and services. At its heart is an interactive car configurator with high-end visualizations and detailed information. At any point during the configuration process, the user has the option of saving their selected configuration online using a code, downloading it in the form of a brochure, switching directly to an online consultation, or scheduling a test drive at a local dealership.
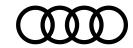
myAudi and the digital ecosystem around the car

The myAudi app remains the key to Audi's digitally connected world. By using the app, customers can access important vehicle data and digital services. After the app's relaunch with a new design, new vehicle-related functions will be available to users. With functions on demand, Audi customers will be able to retroactively book additional options via myAudi to align the car more precisely with their individual needs. For that, different durations and booking options will be available. This means that customers will have the opportunity to initially familiarize themselves with a function by booking a one-month test phase. Likewise, the available Audi connect packages can be extended and new Audi connect features can be booked using myAudi. Here as well, the customer will be able to choose different durations for individual digital products. To do that, AudiPay functions as a safe and convenient global payment and billing platform for supplemental digital offerings. In the process, the transition between the functional world in the car and the outside becomes fluid.

Linking the best of two worlds

Digitalization is also moving forward and offering new possibilities for on-site consultation at dealerships. For example, the customer experience in the new flagship store in Munich's Trudering district is getting better and better thanks to interactive modules and large-scale visualizations. Using the most up-to-date configurator, Audi models are presented there interactively in photorealistic depictions. That way, the desired configuration can be shown in 3-D as well as in-stock cars with similar equipment from other locations, all in real time. Supplementary to that is the possibility of Audi Live consultation, in which employees are directly linked with customers via data glasses and as a result can be advised on products and services completely regardless of the online user's location. Digital consultation is already in use across Germany in more than 40 partner businesses as well as Audi City in Berlin. Additionally, in the months and years to come, Audi will further develop its digital sales along with its retail trade.

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Our goal is a central e-commerce platform on which customers can find all the services that they are looking for built-in – from new and used vehicle purchasing to maintenance packages to leasing and financing. That is how Audi is bringing the strengths of online sales together with stationary dealerships.

The interior of the future
The vehicle interior is increasingly becoming a personal "experience device," in which living and working spaces are merged. Infotainment offerings will play a critical role in the interior of the future. A variety of assistance systems and networking with other road users and infrastructure will increase safety and comfort while new technologies like holoride will revolutionize in-car entertainment starting in 2022. In the future, the high bandwidth of 5G mobile communications will make an essential contribution to an infotainment experience in the car that is typical for the brand. Smooth and high-resolution multi-channel audio and video streaming, video conferencing, and immersive gaming via a VR headset will all be possible. Enhanced Mobile Broadband (eMBB) will make high data rates possible for applications that require a lot of bandwidth. This will significantly increase not only comfort, but also safety. In addition, further developments right up to the "empathetic car," which knows its occupants, their habits, and their needs and increases comfort, safety, and wellbeing through artificial intelligence, are conceivable.

New data-based business models
The car's progression toward being a software-based product creates the conditions for new business models based on data – for instance, new charging and energy services and on-demand functions. Using data, we can better analyze customers' desires in order to derive product optimizations, new digital services, or business models. This means that our model portfolio and services can be precisely adapted to different markets and individual customer needs. Additionally, is a developing possibility of expanding business models to new fields, such as traffic reporting and data-based services for safe and relaxing travel, entertainment offerings, or personalized telematics information for insurance products or fleet services. Transparency and security are important for that, which is why customers should be able to determine for themselves how and which data are used at any time. Likewise, what is known as privacy mode, which enables the customer to limit data streams directly from the vehicle, is anchored in the car.

Car2X and C-V2X – more safety and comfort through networking
Nonetheless, digital applications and technologies are not only significantly increasing comfort, but also safety. On the road to the "smart city," Audi is already networking its models with traffic lights. And with the start of 5G in China, Audi is once again proving its role as an innovation leader in the field of connected cars. Currently, Car2X and C-V2X technologies are the central pillars in that effort. For Car2X, mobile communications technology is permanently installed in each vehicle. The car sends and receives information from other vehicles and components of the traffic-engineering infrastructure – things like traffic lights or intelligent road signs.

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Car2X communication happens in real time. The data is sent anonymously to the communication network, where they are only saved for a short period.

C-V2X is based on the 5G mobile communications standard and transfers data directly to appropriate receivers within the sender's environment with the least possible latency and the highest possible reliability. Since 2017, Audi models have already been able to alert each other to accidents, service vehicles, traffic jams, slippery road surfaces, and limited visibility. The car-to-X service "Local Hazard Information" assesses various vehicle data for that purpose. In Europe, more than 1.7 million vehicles from the Volkswagen Group will provide the "Hazard Information" service with current data in 2021 and in 2022, that number will be more than three million. In worldwide pilot projects, Audi is testing its hazard warning system for road construction sites or how vehicles can communicate with school buses more safely in order to avoid accidents with schoolchildren. The Green Light Optimized Speed Advisory (GLOSA) service calculates the optimal speed for a "green wave" through traffic lights. Through the ConVex project, Audi is working with Ducati to test C-V2X technology in three situations that are as common for motorcyclists as they are likely to cause accidents: pulling into an intersection, turning left, and sudden braking by the vehicle in front.

The Audi A7 L and A6 L models will initially be equipped in China with a 5G communications module. With its low latency and high availability, 5G offers the conditions needed for safe autonomous driving. That is how using 5G to network with traffic light systems ensures more efficient and relaxed driving in the city. New services based on C-V2X are increasing traffic safety: an immediate warning that a vehicle in front has slammed on its brakes appears in vehicles behind it. Or a warning of approaching service vehicles, even when they cannot be heard or seen yet.

Stronger partners: CARIAD software company
One essential success factor for designing the mobility of the future more individually, intelligently, and safely is our technology partner CARIAD. The software company, which combines the digital competencies of every brand in the Volkswagen Group, will be the Group's backbone in a few years. The new organization's structure brings the software-development mindset together with the experience of one of the world's largest auto manufacturers. CARIAD's cross-brand software development is making an enormous scaling effect as well as customized solutions possible for Audi as a brand. At the heart of that is the development of our own operating system as well as a uniform and scalable software and technology platform for every brand in the Group. That assures the company of short development cycles and customized customer offerings.

Digitalization in production and logistics
Intelligent digital solutions are also increasing flexibility and efficiency in production and logistics. Audi is playing a central role in the Volkswagen Group's digitalization strategy. As part of Automotive Initiative 2025 (AI25), Audi is expanding its Neckarsulm location to include a leading factory for digital production and logistics in the Group.

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Partners like the Fraunhofer Institute for Industrial Engineering, the Technical University of Munich, SAP, and Capgemini are supporting that process. AI25 is an interdisciplinary network for factory transformation. Within it, the Audi site in Neckarsulm plays a pivotal role as a pilot factory and real-world laboratory for the digital transformation. Solutions will be tested and developed there until they are ready for series production. One core element of our digitalization efforts is the Digital Production Platform (DPP), in which the data from all the machines, facilities, and systems from all the factories in the Volkswagen Group are brought together in the world's largest IIoT (Industrial Internet of Things) platform. Over the medium to long term, digital solutions for the factory of the future will be developed here and transferred into series models in vehicle production and logistics – with the ultimate goal of designing them more efficiently and flexibly. Audi is particularly using the expertise in small-series and volume production at the Boellinger Hoefe facility and the Neckarsulm factory. In the next step, Audi will roll out its digital solutions in Group locations worldwide.

A variety of pioneering projects with digital technologies like 3-D printing, 5G mobile communications, virtual reality, or autonomous transportation systems are already revolutionizing operational process at Audi and creating synergies and new forms of global networking. For example, RFID (radio frequency identification) technology is being used for contactless vehicle identification in production. In Supermarket 2.0, Audi is reversing the sequencing principle in the field of intralogistics by using driverless transportation systems. Here, goods come to the employee rather than the other way around. This is possible thanks to innovative control software developed by Audi experts together with Ingolstadt-based start-up arculus. The Predictive Maintenance project in Neckarsulm makes upkeep on production facilities more efficient and reduces downtime in production. AI is used in the field of quality assurance, for example in recognizing the smallest cracks in sheet metal parts. Using VR glasses and controllers, employees from various specialties and locations tested assembly processes completely virtually. The basis for those tests is 360-degree scans, which provide a three-dimensional indoor map of the virtual space as well as VR software that Audi developed itself. That technology was used for the first time in preparations for production of the Audi e-tron GT* at the Neckarsulm location. Several applications are currently being tested in the Audi production lab under real production conditions in order to be able to formulate what challenges Audi's manufacturing environment will present to 5G technology. An exclusive frequency spectrum – a 5G campus network within the factory – has been in use in Ingolstadt since mid-2020. This local frequency is an important condition for successful 5G deployment in smart production.

But Vorsprung durch Technik means much more than just technology: optimal networking of human and machine in the factory of the future. Innovative technologies support Audi employees and reduce difficult physical labor and monotonous movements. Within the framework of various programs, Audi is therefore training its workforce for digital tasks. At a higher level, the Audi Academy offers a wide range of trainings in the futuristic digitalization field and thereby prepares its employees for the future.

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Audi has also been actively pushing this area forward through its vocational training for several years. Among other things, prospective mechatronics technicians can receive additional training in 3-D printing and trainees from factory logistics can practice routine activities via VR.

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Fuel consumption of the models named above

Information on fuel/electricity consumption and CO_2 emissions in ranges depending on the tires and alloy wheel rims used and on the equipment and accessories of the car.

Audi e-tron GT quattro
Combined electric power consumption in kWh/100 km (62.1 mi): 21.8–19.9 (WLTP);
19.6–18.8 (NEDC); combined CO_2 emissions in g/km (g/mi): 0 (0)

The indicated consumption and emissions values were determined according to the legally specified measuring methods. Since September 1, 2017, type approval for certain new vehicles has been performed in accordance with the Worldwide Harmonized Light Vehicles Test Procedure (WLTP), a more realistic test procedure for measuring fuel consumption and CO_2 emissions. Since September 1, 2018, the WLTP has gradually replaced the New European Driving Cycle (NEDC). Due to the realistic test conditions, the fuel consumption and CO_2 emission values measured are in many cases higher than the values measured according to the NEDC. Vehicle taxation could change accordingly as of September 1, 2018. Additional information about the differences between WLTP and NEDC is available at www.audi.de/wltp.

At the moment, it is still mandatory to communicate the NEDC values. In the case of new vehicles for which type approval was performed using WLTP, the NEDC values are derived from the WLTP values. WLTP values can be provided voluntarily until their use becomes mandatory. If NEDC values are indicated as a range, they do not refer to one, specific vehicle and are not an integral element of the offer. They are provided only for the purpose of comparison between the various vehicle types. Additional equipment and accessories (attachment parts, tire size, etc.) can change relevant vehicle parameters, such as weight, rolling resistance and aerodynamics and, like weather and traffic conditions as well as individual driving style, influence a vehicle's electrical consumption, CO_2 emissions and performance figures.

Further information on official fuel consumption figures and the official specific CO_2 emissions of new passenger cars can be found in the "Guide on the fuel economy, CO_2 emissions and power consumption of all new passenger car models," which is available free of charge at all sales dealerships and from DAT Deutsche Automobil Treuhand GmbH, Hellmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen, Germany (www.dat.de).