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PRESS INFORMATION

On autopilot into the future: the Audi vision of autonomous driving

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Audi to debut three at IAA 2017: The new Audi A8 is making its show premiere in Frankfurt. It is the first production automobile to permit conditional automated driving on public roads. For the first time, drivers will be able to completely turn over the task of driving in certain situations. This step is a technological revolution. And with the double world premiere of two concept cars, Audi is also showing how the brand intends to further develop autonomous driving in the future.

Audi Elaine is an electric-powered SUV coupe that in a few short years will make highly automated driving possible – at times even without a driver on board. The driver parks the Audi in a designated area – the "handover zone" – and exits the vehicle. From there, the car drives automatically and unoccupied into a multistory parking garage offering a variety of services, such as a car wash, a package station, a gas station or a charging post. Thanks to Audi AI, the car does all of this itself.

With the four-door design vision **Audi Aicon**, the brand with the four rings is presenting a autonomous Audi of the future – with no steering wheel or pedals. As a design concept, the four-door 2+2 boldly leaps ahead to show the exterior and interior design of the next decades. The technology demonstrator combines innovations relating to the drivetrain, suspension, digitalization and sustainability in a visionary manner. The Aicon, too, is designed for purely electric operation and should be able to cover distances of more than 800 kilometers *(497.1 mi)* on a single charge.

Audi AI – intelligence and interaction

Audi El**AI**ne and Audi **AI**con – two concept cars whose very names refer to the new, two-letter abbreviation under which Audi is bundling an entire cluster of innovative mobility technologies. **Audi AI** is the new cipher for a variety of innovative systems that relieve strain on drivers and simultaneously also offer them new possibilities to use the time spent in the car. To this end, Audi AI also uses strategies and technologies from the field of artificial intelligence and machine learning.

Audi AI systems are capable of learning and thinking, while also being proactive and personal. Thanks to Audi AI, models bearing the four rings will be both intelligent and empathetic. They will be able to continually interact with their surroundings and passengers, and thus adapt themselves in a better way than ever before to the requirements of those on board.

Freedom on the road
Audi AI draws on the many years of experience that the brand has accumulated in concept cars featuring piloted driving. The new label bundles together innovative and intelligent electronic systems and technologies from Audi. Audi AI creates new forms of freedom for drivers and passengers by reducing the complexity of their interaction with the vehicle and with other road users. Various elements of artificial intelligence also play a leading role in this – both in the development of new, intelligent and empathetic systems, as well as during their subsequent use. Audi is evaluating various approaches and methods for machine learning in this regard.

Automated driving – from assistance functions to autonomy
What is long established in rail transportation and even aviation is only now at the threshold of feasibility for automotive transportation – automated driving. Audi is the technology leader here, and the new generation of its A8 flagship is the world's first production model developed for conditional automated driving at level 3.

What does this classification mean? A five-level scale has been established in international automotive engineering as the definition for automated driving. This scale was developed by the American standardization organization SAE.

- **Level 1 – Driver Assistance:** The system is able to take over either continual longitudinal or the lateral control of the vehicle. It supports the driver, who remains responsible, however, and must be ready to assume control immediately, if necessary. An example of a level 1 system of this type at Audi is the adaptive cruise control (ACC) system.

- **Level 2 – Partial Automation:** In certain situations, the driver can delegate continuous, combined longitudinal and lateral control of the vehicle to the system, but must monitor the system at all times and assume control as needed. The driver therefore always maintains responsibility. An example is the traffic jam assist from Audi: it assumes the tasks of braking and accelerating the car in slow-moving traffic up to 65 km/h *(40.4 mph)*, and also takes charge of steering on better roads.

- **Level 3 – Conditional Automation:** The driver no longer has to continuously monitor and can carry out other activities supported by on-board equipment. The system autonomously recognizes the limit – that is, the point at which the ambient conditions no longer match the range of functions of the system. In these cases, the vehicle prompts the driver to take over the task of driving the vehicle, with several seconds advance warning. The traffic jam pilot in the new Audi A8 will satisfy these criteria.

- **Level 4 – High Automation:** Systems with level 4 function do not require any assistance on the part of the driver, but their function is limited to a specific area – such as on highways or in a parking garage. In these places, the driver can completely transfer the task of driving to the system. The driver only needs to resume the task when the car leaves the area defined for highly automated driving. If the driver does not react, the system assumes a safe position, e.g. pulls onto the shoulder and stops there. Robot taxis in city centers are another example of such a system. They take over the complete task of driving within a restricted speed range and on a limited route.

- **Level 5 – Full Automation:** The automobile assumes complete longitudinal and lateral control. Level 5 systems do not need help from the driver in any situation. Control elements like the steering wheel or pedals are not necessary here.

Audi developers in the field of piloted and conditional automated driving are focused in practice on systematically and rapidly expanding the scope of and the situations in which levels 3 and 4 can be used. Their aspiration is for drivers to reclaim as much freedom and time for themselves as possible.

Research on the highway
In 2013, Audi was the first car manufacturer worldwide to obtain a testing license for the US states of California and Nevada. In January 2015, the Audi A7 piloted driving concept research vehicle drove 900 kilometers *(559.2 mi)* on the highway from San Francisco to Las Vegas. In May 2015, an automated Audi A7 drove in the dense urban traffic of Shanghai, China – a highly complex situation.

How far along is the development of the intelligent automobile today? Ultrasound and radar sensors, laser scanners, camera-based systems, a high-performance processor for data processing and a rapid internet connection via the mobile phone network are all features that the new Audi A8 has on board. As rule-based applications, driver assistance systems such as active lane assist, adaptive cruise control (ACC) or the predictive efficiency assistant have already made driving safer, more comfortable and more efficient in recent years.

The car looks to the future
The next step is Audi AI. In the future, the car will process the large amounts of data acquired underway by the various assistance systems faster than ever. It can synchronize and share these data with other road users nearly in real time. With Audi AI, the fully networked car can look roughly 10 seconds into the future – farther than the systems used previously. In short: The car of the future will for the first time be able to make prognoses.

And the future begins with the new Audi A8. In this model, Audi is presenting the Audi AI traffic jam pilot – the world's first system that allows conditional automated driving at level 3. Level 3 means that in defined situations, the car takes over the task of driving. Unlike at level 2, the driver no longer needs to monitor it permanently. The driver needs merely to be in a position to take back control within 10 seconds once requested to do so. The new Audi AI traffic jam pilot is a technological milestone that was preceded by many years of research and development work.

Vehicle intelligence and interaction intelligence
Vehicle intelligence is a key part of Audi AI. Assist systems and technologies with this capability are blazing the trail to automobiles that can drive autonomously. The Audi AI traffic jam pilot in the new Audi A8 is an example of how vehicle intelligence looks today. A comprehensive collection of sensors scans the surroundings. The central driver assistance controller (zFAS), which celebrates its premiere in the new Audi A8, then uses this data to continually compute an image of the surroundings with the help of a second fusion of data in the radar controller. The new Audi A8 is the world's first production automobile to fulfill the technical requirements for conditional automated driving on demand in traffic jam situations.

On the path to highly automated driving functions and the vision of autonomous driving, the car of the future will offer much more. Vehicle intelligence will steadily advance, and the car will also possess a high level of interaction intelligence.

Thanks to Audi AI, the car will feature a completely new characteristic in the future: empathy. It can empathize with its occupants. The intelligent systems and technologies turn the car into an empathetic companion that thinks far outside the box of its originally intended purpose. Audi AI allows the vehicles of the future to anticipate the wishes of the driver or passengers in a situationally appropriate way, and thus support them proactively. Furthermore, they can suggest a service and book it for the passengers autonomously, very much like a personal concierge. Audi AI thus creates new freedom and a new type of premium experience.

In a nutshell, Audi AI stands for the holistic and responsible interplay of innovative technologies that are seamlessly networked with the infrastructure and other road users. The Audi of the future will continually learn new things and develop its capabilities even further. In this way, the technology adapts ever more closely to the individual needs of people.

Audi AI fundamentally changes how automobiles are used and significantly enhances the time spent on board. The car will become more and more a “third living space” alongside our homes and workplaces. Individual customer benefits are Audi’s main focus, as is the clear relation to mobility. Audi AI’s advantages for the customer are clearly defined: The intelligent systems and technologies are targeted toward time, safety, efficiency and customization.

Time
Functions such as the new Audi AI traffic jam pilot or piloted parking are just the beginning. Audi AI makes it possible for drivers to use their time on board a fully connected vehicle more freely in the future. Drivers can gradually let go of the steering wheel and work, communicate or relax instead. And because the autonomously driving vehicle takes over routine tasks such as parking or even driving through the car wash, the driver also gains time.

Safety
Currently, driver error is the reason for up to 90 percent of all road accidents. In the future, Audi AI will prevent dangerous situations that cause accidents from arising in the first place. If automated driving eventually is to be possible even in confusing traffic situations, additional methods and approaches are required. These range from rule-based systems right up to elements from artificial intelligence. The development of a vehicle capable of avoiding accidents is the top priority at Audi.

Efficiency
Extensively networked and piloted vehicles use space and energy more efficiently, which brings about both ecological and economic benefits. Using Car-to-X technology (intelligent networking of road users and the infrastructure), the vehicle can avoid traffic jams or find the nearest free parking space. Besides the individual customer benefits and energy savings, there is another economic dimension to piloted driving: The targeted guidance of traffic flows can permanently reduce traffic on heavily frequented routes.

Customization
Audi AI enables the vehicle to gets to know its passengers and their habits personally. Man and machine communicate with one another, establishing trust and allowing for a much more flexible daily routine. The personal intelligent assistant (PIA) gets to know the driver and thanks to intelligent algorithms can interact with the user autonomously and adaptively.

The new Audi A8 – conditional automated at level 3

The new A8 is the world's first production automobile to have been developed specially for conditional automated driving at level 3 according to the applicable international standards. The Audi AI traffic jam pilot takes charge of driving in slow-moving traffic at up to 60 km/h *(37.3 mph)* on highways and multi-lane roads with a physical barrier separating the two directions of traffic. The driver activates the system with the AI button on the center console.

The traffic jam pilot handles starting from a stop, accelerating, steering and braking in its lane. Drivers no longer have to continuously monitor the car. When certain conditions are met, they can take their hands off the steering wheel for longer periods and can focus on another activities supported by the on-board infotainment system, depending on the legal situation in the respective country. As soon as the system reaches its limits, the car requires manual driver control again.

From a technical perspective, the traffic jam pilot is revolutionary. During piloted driving, a central driver assistance controller (zFAS) now continually computes an image of the surroundings by merging the sensor data. In addition to the radar sensors, a front camera and the ultrasonic sensors, Audi is the first car manufacturer also to use a laser scanner. Introduction of the Audi AI traffic jam pilot requires clarity regarding the legal parameters for each country as well as specific adaptation and testing of the system. The brand's high claim to quality also applies to conditional automated driving. In addition, different approval procedures worldwide and their corresponding time limits must be kept in mind. For these reasons, Audi will initiate series production of the traffic jam pilot in the new A8 incrementally.

The Audi AI remote parking pilot and the Audi AI remote garage pilot autonomously steer the A8 into and out of a parking space or a garage, while the maneuver is monitored by the driver. The driver need not be sitting in the car. The respective system is started via smartphone using the new myAudi app. To monitor the parking maneuver, the driver holds the Audi AI button pressed and a live display from the car's 360 degree cameras is displayed on their device. Upon completion of the parking maneuver, the system automatically sets the tiptronic to P and switches off the engine.

Audi Elaine concept car – highly automated at level 4

A familiar face – The exterior of the Audi Elaine concept car debuted just a few months ago. In May 2017, Audi presented the celebrated Audi e-tron Sportback design study and technology demonstrator at Auto Shanghai in China. The IAA debutant shares its body line, electric drive and not least its distinctive exterior lighting with the precursor to the second production electric car from Audi.

23-inch wheels in a technical 6-spoke design highlight the confident presence of the SUV coupe. An exterior length of 4.90 meters *(16.1 ft)*, a width of 1.98 meters *(6.5 ft)* and a height of 1.53 meters *(5.0 ft)* with a wheelbase of 2.93 meters *(9.6 ft)* position the Audi Elaine in the C segment, close to the Audi A7. The interior is bright and designed for simplicity. Functions are clearly structured, the number of control elements vastly reduced. Expansive touchscreens below the central display, on the center console and in the door trims supply information and interact with the on-board systems. Horizontal surfaces on the dashboard and the seemingly floating center console convey a sense of open perspectives for the four passengers in their individual seats.

The concept car's lighting technology is an innovation that is visible by both day and night. Digitally controlled Matrix LED units at the front and rear produce an excellent light yield. Minuscule Digital Matrix projectors literally make their mark on the road ahead, turning light into a versatile, dynamic channel of communication with the surroundings. Other road users can also be informed of the various driving modes, such as when the vehicle is driving autonomously. The Audi Elaine uses animated LED fields to greet passengers individually when they enter or exit the vehicle.

For its drive, the Audi Elaine uses a configuration that Audi will use in future production models with all-electric drive: One electric motor on the front axle and two on the rear power all four wheels, transforming the high-performance coupé into a quattro in typical Audi style.

320 kilowatts of power – which can even reach 370 kW in the boost mode – provide a fitting level of propulsion. Elaine sprints from 0 to 100 km/h (*62.1 mph*) in just 4.5 seconds. With the battery's energy content of 95 kilowatt-hours, its range is in excess of 500 kilometers *(310.7 miles)* (NEDC). There are two options for charging the battery: a wired fast charging function at 150 kW or wireless charging via the Audi Wireless Charging system.

Highly automated with Audi AI
Setting the Audi Elaine apart from the Shanghai show car are numerous functions that push the envelope for piloted driving and assistance systems, and in a few years will also extend the scope of Audi AI in production models. The foundation is provided by a much more advanced zFAS controller installed in the rear.

The new generation processor has more computing power and refined sensors with even greater range and precision. The Audi Elaine can therefore serve its owner as a highway pilot, relieving the burden on the driver over extended distances. The highway pilot is an extension of the traffic jam pilot in the A8 and allows piloted driving at speeds from 60 to 130 km/h *(37.3 to 80.8 mph)*, which in most countries is the maximum permissible speed.

When the highway pilot is active, the Audi Elaine changes lanes automatically – it can pass and then return to the original lane, for example. It can initiate, perform and complete such actions autonomously, without any involvement of the person behind the wheel. If the driver does want to intervene, they can do so spontaneously at any time.

The Audi Elaine continues to support the driver after leaving the highway and multilane urban freeways behind. All of the usual driver assistance systems are on board, including the pre sense safety technologies and the predictive efficiency assistant, which can be provided with even more precise route details from the HERE navigation data.

Time savings and comfort gains
Audi is continually expanding the infotainment functions, with ever-faster internet connections making it possible to share large quantities of data during the journey. Simultaneously, the integration of communications media in the vehicle continues to advance. They allow people to work inside the vehicle, for example, taking part in a video conference. Drivers have more time and more choice as to how they use the time aboard the vehicle. The car of the future has great potential for time savings and comfort gains. In specially designated areas called Audi AI Zones, an Audi will be able to perform a variety of tasks autonomously while the driver works or engages in leisure activities.

Audi AI Zone
The networking of the car and the infrastructure is crucial for driverless mobility. The driver parks the Audi in a designated area (the handover zone) and exits the vehicle. From there, the car drives automatically and unoccupied into a multistory parking garage offering a variety of services, such as a car wash, a package station, a gas station or a charging post. Thanks to Audi AI, the car does all of this itself. Connected with its surroundings, the intelligent Audi can even locate an unmarked parking space on the side of the road and pull precisely into it. At the desired time, the vehicle is back in the handover zone, ready for its next journey. Drivers can follow the actions of their vehicle at all times and even add new tasks using an app.

Customers of the premium brand will soon be able to save time and enjoy greater convenience in Audi AI Zones. Audi is currently developing a standard interface for a wide variety of smart devices and is preparing web-based, vehicle-specific apps. The project is almost ready for production. The Audi Elaine will thus become an IoT device (internet of things), seamlessly and smartly integrating itself within the world of its user.

Assistant and butler – PIA
The best operating concept is the one that is ideally adapted to the driver, the one that relieves him/her of as many actions as possible and that autonomously carries out routine operational inputs. PIA, the personal intelligent assistant, follows precisely this principle. Using artificial intelligence methods, PIA combines data intelligently with one another – data from the car, data about the driver, traffic jam reports and traffic projections, as well as information from the internet. PIA also responds to voice inputs and uses tailored algorithms to communicate autonomously and adaptively with the user.

PIA gets to know the driver by observing their behavior patterns. This opens it up to use for a broad range of applications: navigation, selection of music, selection of the desired Audi connect service, climate control, suggestion of a parking space or maintaining the regular distance to vehicles ahead on the highway. PIA applies machine learning methods to gain insights and adapts the car's functions to the behaviors and needs of the driver. It also makes active recommendations.

A server in the secure Audi cloud hosts and processes the PIA data. Customers can view and manage this data at any time via their myAudi account. They can delete or edit this data, for instance in the case of a move. What's more, they can be automatically transferred to other cars. The car identifies the individual user, loads their user profile, and PIA then adapts the car and its interactive behavior accordingly.

Car-to-X technology

See more than with the human eye or the infra-red camera – Car-to-X technology expands the horizon of the established vehicle sensors based on radars, cameras and ultrasound, by supplementing these with information obtained from far away and outside of the field of vision of the driver. Car-to-X, the real-time communication between cars and with the infrastructure, offers greater safety, comfort and efficiency. In this way, the car recognizes dangerous situations even earlier and accidents can be avoided.

Audi Fit Driver

Every Audi today already is equipped with the latest technology and offers top-level comfort and safety. As a private place of retreat and all-round networked space, a car is an ideal place for monitoring fitness levels and can also actively improve the health and well-being of the driver. Projects like Audi Fit Driver make the Audi Elaine concept vehicle an empathetic companion. In many situations, it knows what the driver needs. A wearable device on the driver's wrist provides the data. It collects and transmits information about the most important vital signs, such as body temperature and heart rate.

If Audi Fit Driver detects increased stress or fatigue, for example, the vehicle systems adapt themselves accordingly in a relaxing, a vitalizing or a protective manner. Thanks to intelligent algorithms, the system gets to know the driver better and better.

With Audi Fit Driver, driver can for the first time actively reduce stress and improve their concentration. If the system notices that the driver is highly stressed, this can be reduced by means of a special breathing technique. The Audi virtual cockpit displays bio-feedback like that used in performance sports as a guide. Additionally, a voice over the loudspeakers guides the driver through the exercise. Whether it be relaxing breathing exercises, energizing seat massage functions to the beat of the music, special climate control functions, adaptive infotainment measures or perfectly-suited interior lighting moods: The objective of Audi Fit Driver is a driving experience optimally tuned to the driver's condition. Drivers should be more relaxed when they get out of the car than when they got in.

Audi Aicon concept car – autonomous on course for the future

Design study, technology demonstrator, mobility concept: The Audi Aicon exploits every possibility offered by a autonomous luxury sedan of the future with unprecedented consistency. As a design study, the four-door 2+2 boldly leaps ahead to show the exterior and interior design of the next decades. The technology demonstrator combines innovations relating to the drivetrain, suspension, digitalization and sustainability in a visionary manner.

And as a mobility concept, the Audi Aicon shows the world of tomorrow, in which the advantages of door-to-door individual transportation are combined with the luxurious ambiance of a first-class airline cabin. A cabin with no steering wheel or pedals that can thus offer all the comforts of modern communications electronics and perfect ergonomics – simply first-class.

One look is all it takes: In contrast to a robot taxi, which is reduced to pure functionality, the autonomous Audi Aicon concept vehicle pulls out all the stops. Its presence is impossible to ignore, and its exterior hints at the spacious comfort afforded the passengers and the upscale technical aspirations. The Audi Aicon is a sneak peak at a prestigious automobile of tomorrow that stirs the desires of demanding customers.

Pure presence – the exterior
The Audi Aicon looks spectacular from any angle. Its sheer size – an exterior length of 5,444 millimeters *(17.9 ft)*, a width of 2,100 millimeters *(6.9 ft)* and a height of 1,506 millimeters *(4.9 ft)* – places it in the automotive top tier, the D segment. The wheelbase measures 3,470 millimeters *(11.4 ft)*. That's 240 millimeters *(9.4 in)* more than with the long version of the new Audi A8.

The central element of the exterior is the cabin. Large glass surfaces at the front and rear as well as the significantly convex side windows create a bright expanse of space for the travelers. A distinct edge runs as a hard line along the side window surfaces of the Aicon back to the D-pillar – a first in automotive design. This line emphasizes the car's length and effectively reduces the apparent volume of the cabin relative to the overall body. The darkened side sills rise subtly toward the rear, making it seem like the car is ducking.

The strongly flared wheel wells emphasize Audi's quattro DNA while simultaneously building a bridge to the latest production creations from the Audi designers. Giant 26-inch wheels are placed as far outward as possible. They underscore the car's impressive presence.

The designers reduced the front and rear ends to a minimum of lines and focused on large, uninterrupted surfaces. As with the Audi e-tron Sportback concept, the Aicon front features the inverted hexagonal Singleframe, a typical feature of the upcoming generation of electric cars from Audi. The sharply inclined silhouette of the entire front end evokes a sense of forging ahead – this, too, is a typical sports car body line.

Emotion and information – the LED lighting technology
Conventional headlights and lighting units are absent from both the front and rear of this car. Instead there are fully digital display surfaces comprising hundreds of triangular pixel segments. They are three-dimensional recreations of the Audi AI symbol.

Grouped around the Singleframe are large light fields, in which – as at the rear – more than 600 3D pixels are arranged in space. The large surfaces and high pixel count enable versatile graphics, animations and information visualizations in any color. The Audi Aicon is thus no longer bound to a daytime running lights look, but rather can adapt to the driving situation and even its passengers. The customization is boundless.

Horizontally cut lighting segments to the left and right of the Singleframe look like eyes and can be expanded to resemble wide pupils or squinted for an aggressive look. If the car detects passers-by or other road users, it literally makes eye contact with them and follows them with its “eyes.”

The Audi Aicon supports its surroundings intelligently and uses animations on its display surfaces to warn pedestrians or cyclists of dangerous situations. Driving modes such as platooning, urban driving or driving at a walking pace can be visualized. Horizontal stripes of light move from the bottom up when the car accelerates and in the opposite direction during braking. Their speed increases or decreases in sync with that of the car.

Future cars will expand their sphere of communication to the surroundings. The Audi Aicon uses projector modules to illuminate the road and surroundings in high resolution and project signals onto the ground. This enables it to communicate warnings and vehicle information to passers-by with no direct line of sight to the car.

One thing that an autonomously driving vehicle of the future definitely won't need anymore are long-range headlights. The Audi Aicon's laser and radar sensor system also "sees" enough even in the dark, can reliably find the way and detects possible obstacles in good time. All this time the passengers can use the services provided by myAudi or even close their eyes for a while. When passengers exit the Audi Aicon in the dark, a "light companion" is activated: A mini-drone with a flashlight safely illuminates the user's walking path.

Space, form, function – the interior
The Audi Aicon features opposed doors that open to the front and rear. There is no B-pillar. The entire breadth of the interior is thus exposed to the passengers as they get in the car. In the interior, the lines of the decorative surfaces and functional elements are markedly horizontal. Becoming lighter from bottom to top, the interior reinforces the impression of unique spaciousness, and the lack of a steering wheel and a classic dashboard creates a sense of openness and expanse.

This is underscored by the large glass surfaces, the transparent roof and the low waist line. Not to mention the special geometry of the side windows. Their top half angles distinctly outward, so that the maximum width is at eye height.

The interior appears to be particularly wide when the two individual front seats are slid all the way back. The Audi Aicon is a 2+2-seater. An upholstered, two-seat bench is integrated into the rear panel. The two front seats are designed for maximum comfort and optimal spaciousness. Passengers can slide them up to 500 millimeters *(19.7 in)* back and forth between the forward and rear positions. The seats don't slide on rails, but rather on a platform covered in high-pile carpet that can be moved longitudinally, and on which the passengers' feet also rest. The platform height is variable, so that it can also be used as an ottoman for your legs. The pitch of the seat cushions and backrests can be steplessly adjusted for a comfortable working or resting position.

The individual seats can also be swiveled by up to 15 degrees. Turning the seats outward makes it even easier for the passengers to get in. Turning them inward makes it easier for the passengers to talk and interact. If the passengers turn around, the head restraints fold back like a collar and become an arm rest.

The architecture of the seats is the automotive reinterpretation of a classic piece of furniture, the lounge chair. The seat cushion and backrest are visually separated from one another. Two outer shells support the light-colored, pillow-like upholstery elements with a square-quilted surface. The side bolsters of the backrest are subtly angled to provide sufficient support in curves.

There is also plenty of space in the Audi Aicon long-distance vehicle for luggage, of course. Thanks to the space-saving design of the electric drive, there is a storage compartment at both the front and the rear of the vehicle with a combined capacity of roughly 660 liters *(23.3 cu ft)*. The Aicon also offers numerous storage options in the passenger compartment.

Accommodating – operation and communication
The oft-cited paradigm change in the automotive world – it shows in the Audi Aicon. One glance is all it takes to realize that all of the controls and displays are missing. Steering wheel, pedals, groups of buttons and instruments – nothing. Instead just wide, uninterrupted surfaces. The passengers are enveloped by the gently curved armrest along the doors, which rises slightly from back to front. Instead of a dashboard in front of them, there is a generous shelf and the central display below the windshield.

The interior quickly comes to life once passengers enter. Illuminated lines of LEDs set colorful accents in the area of the doors. The front display lights up with a welcome message. PIA, the empathetic electronic vehicle assistant, recognizes the passenger by his phone and activates all of his personal settings. There are custom settings for the air conditioning and seating position, interior light color and the layout of the infotainment system. The navigation system awaits entry of a destination, and all accessible channels of communication are ready for use, connected via the fastest available standard.

New are the variably positionable control interfaces in the encircling door rail. Depending on the position of the seats, which can be shifted by up to 50 centimeters *(19.7 in)*, ergonomically perfectly positioned touch and display elements are available in the digitized wrap-around. Your hand instinctively finds its way to the touch-sensitive control panels. Passengers can set the most important settings by tapping with their fingers without having to sit up in their seats or leaning forward. Operation is also interactive. The PIA system is often one step ahead of the passenger and offers services before they actively chose them.

There are multiple input modes available for engaging with the car. Besides the haptic-manual layer, there are also voice control and eye tracking, in which sensors in the front end of the interior track where the passenger is looking. The passenger locks his onto a control element in the area of the front main display to select it and performs fine adjustments using his hand or voice.

The full range of services offered by modern communications electronics are available at all times in the Audi Aicon. Travelers can relax and watch a film or surf the web. Video conferences are another option, as is interaction on social media. Depending on the seating position, the passengers can use the large front display as the output surface or a virtual head-up image displayed above it in the windshield.

The glass roof panels can block out the sunlight, if desired. Their transparency level changes upon application of an electric voltage. Integrated OLED lighting elements allow for precise mood lighting or the even illumination of the interior when getting in or out of the car, for instance.

The Audi Aicon opens up a new world of mobility to its passengers. Freed from the tasks of driving, they can choose how to spend their time in the car. Working, communicating or simply just relaxing and even napping: Anything is possible while the car autonomously and safely finds its way.

Optimized for the long haul – drivetrain and suspension
The very shape of the Audi Aicon reveals that it is a car from another world, an automobile of the future. The technology used in the concept vehicle has also been systematically designed for this world. It presumes a transportation infrastructure in which autonomously driving automobiles are a given on every street. Road users are connected to one another and their surroundings.

This also means that traffic will be less hectic and flow more smoothly in the future than is imaginable today. Even at moderate speed limits, long distances can be covered at a high constant speed of around 130 km/j *(80.8 mph)*. Passengers experience the journey as comfortable cruising without constant braking and accelerating.

Accidents will also be a thing of the past thanks to the highly advanced sensor systems and networking. Passengers in an automobile like the Audi Aicon will therefore no longer need classic restraint systems. They will also experience a physical sense of freedom during their journey that in 2017 still appears visionary.

The drive and the total vehicle have also been optimally adapted to this new world of mobility. A highly efficient electric drive provides for the dynamics of the Audi Aicon. A total of four electric motors are located in the area of the front and rear axles. The energy storage units are integrated into the area below the floor. These are solid body batteries with considerably more energy capacity than lithium-ion batteries.

The four electric motors produce a total of 260 kW and 550 Newtonmeters *(405.7 lb-ft)*. Each drives one wheel, enabling electronically controlled, variable quattro all-wheel drive. Maximum acceleration played a less important role in the specification than maximum efficiency and thus also range. This operating strategy is also pursued by the powertrain and electric brake units, which use recuperation to recover energy. Targeted lightweight construction of the multimaterial body and optimized aerodynamics also help the Audi Aicon to achieve ranges of more than 800 kilometers *(497.1 mi)* on a single charge.

Even charging has been reduced to a minimum. Thanks to a high-voltage system with 800 volts, the Aicon's battery unit can be charged to 80 percent of capacity in less than 30 minutes. The car is also equipped with a unit of inductive, i.e. wireless, charging. The Aicon manages both without a driver. In an AI Zone, it can pull up to a charging station on its own and charge its battery without any human assistance.

As a true quattro, the Audi Aicon offers ample performance and even autonomously always reaches its destination safely regardless of the weather or road surface. The suspension is designed for maximum comfort. Pneumatic spring and damper units smooth out any road surface irregularities. And electric actuators at all four wheels actively counteract any body lean, whether when cornering, accelerating or braking. As a fully active suspension system, it also optimizes the qualities of the adaptive air suspension. The Audi Aicon literally glides over even large potholes.

The Aicon brakes primarily by way of recuperation and in so doing recharges the batteries. The development engineers have relocated the disk brakes from the wheels to a position close to the drivetrain. This improves the aerodynamics at the wheels as there is no longer any need for air cooling at the wheels, which is always associated with turbulence. Another secondary effect is the reduction of the unsprung masses, which the Aicon's passengers perceive as a particularly sensitive damping response to road surface irregularities.

The axle and drive units in the Audi Aicon are symmetrical, i.e. identical at the front and rear. Mechanical components, such as the steering shaft or steering hydraulics, have been eliminated. The car is therefore equipped with a complete all-wheel steering system without compromising the available space and thus the passenger compartment. A positive effect for the practical qualities of the Audi Aicon: Despite its long wheelbase of nearly 3.47 meters *(11.4 ft)*, the car is extremely agile due to its two steerable axles – the turning radius of only 8.50 meters *(27.9 ft)* is below that of a small car thus making the Audi Aicon suitable for city center driving.

The Audi Aicon is an all-arounder well prepared for its primary task: to offer a maximum of comfort, communications technology and freedom for its occupants during a long journey. It combines the scopes for autonomous driving in an urban environment and on the highway with an unprecedented range for an electric drive. The Aicon will be followed by further multitalented Audi models, each with their own specialized discipline, ensuring that the vehicle range of the brand with the four rings remains as diverse as it is fascinating.