



Press release
January 7th, 2020

The BMW Group at the Consumer Electronics Show (CES) 2020 in Las Vegas.

At the Consumer Electronics Show (CES) 2020 – taking place in Las Vegas on 7 – 10 January 2020 – the BMW Group will be presenting its visionary approaches to creating the mobility experience of the future. The premium carmaker's presence at CES 2020 can be summed up by the hashtag #ChangeYourPerception. At its heart is the company's firm conviction that a change in perspective is essential in order to not only understand the requirements of future mobility but also address them. The BMW Group stand at this year's CES showcases this new angle of thought, while close-up experiences and practical demonstrations anchor it in reality for the show's visitors from all over the world.

One of the highlights of CES 2020 is the BMW i Interaction EASE at the BMW Group stand, which offers a glimpse into a future where autonomous driving has become commonplace. The concept car has deliberately been given an abstract exterior appearance in order to focus attention purely on the interior. Not only is the cabin meant to give passengers the feeling of having already arrived at their destination while still en route, it also underscores the potential of intuitive, almost human-like interaction between passenger and vehicle.

The headline feature here is the innovative gaze detection system in the BMW i Interaction EASE. The vehicle's artificial intelligence detects when a passenger fixes their gaze on an object outside the car and offers them relevant information on it or other ways to interact with it. A second highlight of the CES reveals how close the BMW Group is to turning such visions of the future into reality. Three BMW X7 models have been fitted with the luxurious ZeroG Lounger, which will be ready for series production vehicles in just a few years in a similar form.

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The ZeroG Lounger presents a brand new way of relaxing while out on the road. The occupant can tilt the seat back by up to 60 degrees while still being able to enjoy the usual creature comforts and without any compromises in terms of safety or protection in an accident.

The third highlight on display at the show is the BMW i3 Urban Suite, which is designed to offer a mobility experience tailored precisely to the passenger's needs. To this end, series production BMW i3 cars underwent a complete transformation – with only the driver's seat and the dashboard left untouched – to recreate the ambience of a boutique hotel, while paying particular attention to sustainability. 20 examples of the BMW i3 Urban Suite, which can be summoned using an app, are in action on the streets of Las Vegas. The interior of the car welcomes passengers with a laid-back ambience. This is partly down to the lounge chairs, which offer generous legroom and feature a special Sound Zone allowing passengers to shut out all noise from the outside world.

This trio of standout exhibits re-affirms the BMW Group's commitment to employing technologies in a way that delivers tangible benefits for customers. 5G technology also features very prominently in the carmaker's line-up for this year's CES. The BMW iNEXT due to be launched in 2021 will come with 5G capability, which will likely make the BMW Group the world's first premium carmaker to offer the new mobile standard in a production model. BMW's outdoor area at the event will host a live demonstration – starring a BMW i3 and a smartphone – that shows how 5G can take road safety to the next level.

Past editions of the Consumer Electronics Show have seen the BMW Group unveiling a number of key technologies (and their potential applications), which have subsequently been readied for series production and incorporated into the company's product portfolio. For instance, the BMW Intelligent Personal Assistant presented in Las Vegas last year made its debut in a BMW model barely six months later.

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Similarly, just a few months after being revealed to the public at CES 2016, the BMW Connected digital mobility assistant was featured in the BMW model range and on customers' mobile devices. And BMW's revolutionary Remote 3D View tech likewise celebrated its premiere in Las Vegas shortly before market launch.

1. The BMW i3 Urban Suite.

For seven years now, the BMW i3 has played the role of iconic ambassador for electric driving pleasure, sustainability and intelligent connectivity in urban areas. These qualities have helped to make it the world's best-selling electric car in the premium compact segment. The BMW Group has brought the BMW i3 Urban Suite to this year's CES in Las Vegas to showcase a mobility experience tailored entirely to the passenger's individual needs. To achieve this, a standard BMW i3 underwent a complete transformation (with only the driver's seat and dashboard left untouched) so that its interior now has the relaxed feel of a boutique hotel. The aim was to create an inviting space with a high feel-good factor in which to spend time – the perfect place for relaxing, enjoying in-car entertainment or focusing on work in a laid-back setting. This has been achieved by including, among other things, a large, comfortable seat with footrest, a screen that flips down from the headliner and a personal Sound Zone.

The BMW i3 Urban Suite also represents a logical step forward in the BMW Group's commitment to sustainable mobility. The vehicle is underpinned by a holistic approach to making responsible use of resources, encompassing the powertrain with zero local emissions, the careful selection of materials and the production processes involved. Recycled materials have therefore been used in the fabrics, together with certified wood, olive-tanned leather and floor mats made from recyclable materials that can be fed back into the materials cycle, as per circular economy principles.

In preparation for the CES, 20 standard BMW i3 cars were converted into Urban Suites in Munich then brought to Las Vegas, where they can also be seen gracing the city's streets. Anyone wishing to be chauffeur-driven to their desired destination can

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use a special app to order one of the BMW i3 Urban Suites. The car will offer its passenger a first-hand experience of the BMW Group's innovative and sustainable mobility concept, while clearly demonstrating that luxury travel in the future will have nothing to do with vehicle size.

Perfectly crafted design for individual requirements.

Sustainable, innovative mobility is not just about technical innovations; it is also reflected in design. The overriding objective with the BMW i3 Urban Suite was to turn the interior into an experience for the passenger, rather than just restyle it.

The experience begins the moment they step in, thanks to the coach doors and exceptional ease of entry they offer. In order to optimise the mobility experience for the passenger, the entire cabin – with the exception of the driver's workstation – has been completely remodelled so that it now resembles the inside of a boutique hotel. Leather has been largely dispensed with in favour of fabrics and wood instead. There is no rear bench seat in the BMW i3 Urban Suite, its place taken by an amply sized, petrol-coloured lounge chair offering the ultimate in seating comfort.

The lounge chair also serves as a private retreat thanks to the special Sound Zone incorporated into its head restraint that simulates the effect of an acoustically sealed space. This means the passenger can enjoy their choice of entertainment without being disturbed or hold phone conversations that cannot be overheard by the chauffeur. The small wooden table connected to the chair provides a surface on which items can be placed and also includes a touch-control lamp creating an ambient lighting effect. The omission of a front passenger seat in the electric car means that legroom for the sole passenger in the rear is generous to say the least. It can be extended further still thanks to the electrically adjustable footrest.

To ensure passengers can relax in exceptional comfort during a journey, stowage space is likewise in ample supply on board the BMW i3 Urban Suite. Features include a clothes hanger for jackets, blazers and coats, a storage tray between the driver's seat and wooden table – which is large enough for a bag or laptop – and a pair of thermoelectric cup holders in the centre console that can warm drinks up

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or cool them down. A screen flips down from the headliner when required to create an optimum set-up for working or entertainment. This means that passengers can now watch their favorite shows and movies via Amazon Fire TV for an integrated entertainment experience that showcases what the future of rear-seat entertainment could look like. There are 110-volt charging sockets located at various points inside the i3 Urban Suite to ensure a sufficient power supply for all of the passengers' devices. The absence of a physical partition between the driver and passenger enhance the open, friendly relationship between the two. However, the display is positioned out of the driver's view to ensure the requisite levels of privacy.

Rethinking sustainability.

A carefully considered approach to materials selection was a high priority for the BMW i3 Urban Suite, in keeping with the company's commitment to responsible use of resources. All the buttons in the cabin are manufactured without the use of chrome and are therefore free of toxins. The same applies to the thermoelectric cup holders and the table lamp. The table and bag tray are both made of oiled oak from a certified timber supplier, while the olive tanning process used for the leather trim means it is also completely non-toxic. Recycled materials feature prominently in the car's cabin as well. All the fabric upholstery inside the vehicle is made purely of recycled PET material and at least 70 per cent of the fleece lining underneath has also been recycled. A particularly important step towards a circular economy has been made with the floor mats. The previous manufacturing technique involved combining several different types of plastic, which could not be separated from one another afterwards making it impossible to reuse them. New processes have been employed to reduce the composition to one single combination of materials, which can then be fed back into the materials cycle fully when no longer in use in the vehicle.

The future of connectivity, today.

As well as comfort and sustainability, seamless connectivity between passengers, the

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vehicle and the outside world also plays a key role for the BMW Group when it comes to future mobility. The BMW i3 Urban Suite exemplifies this to vivid effect. To begin with, all that is needed to summon one of the electric cars is an app that makes it easy for the passenger to enter the pick-up point and their destination. Once inside their requested vehicle, the passenger can do more than just connect their iPhone to the car wirelessly in the usual way – there is also a mirroring function which allows them to beam their mobile device’s content to the flip-down overhead screen and then work on the screen.

Amazon Fire TV in the BMW i3 Urban Suite showcases what rear-seat entertainment could look like in the future, with on-demand access to vast content catalogs and voice control via Alexa. The result is an impressive demonstration of how such formats and content could be integrated in future and the possibilities this offers, particularly once Level 4 and Level 5 autonomous driving become a reality.

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2. The BMW i Interaction EASE.

Autonomous mobility is once again a key theme at this year's edition of the CES. The BMW Group partnered Designworks together with their Research and Development department to create the BMW i Interaction EASE; which addresses the topic from a totally fresh perspective, while highlighting the premium carmaker's culture of innovation. The BMW stand will offer a glimpse into a future where autonomous travel has long since become part of everyday life. The BMW i Interaction EASE has deliberately been given an sheer, abstract appearance on the exterior, contrasted with a rich, immersive interior to create a luxurious mobility experience. The high-quality materials, the cabin's tailored geometry, and the cutting-edge technology are geared squarely to the passenger and their requirements. Particular emphasis has been placed on natural interaction with an intelligent autonomous vehicle making the most engaging use of time spent travelling.

"The BMW i Interaction EASE demonstrates what mobility might feel like in the future once autonomous driving becomes commonplace: luxurious, human, and intuitive" explains Adrian van Hooydonk, Senior Vice President BMW Group Design.

"Passengers start their journey with the feeling of having already arrived."

Consequently, interaction with the vehicle is made as simple, as intuitive, and above all, as human as possible. To put this theory into practice, the BMW i Interaction EASE offers an intelligent combination of different operating modes. This elevates forms of interaction already familiar from the current BMW model range – i.e. using touch control, gesture control and natural speech to converse with the BMW Intelligent Personal Assistant.

In addition, the BMW i Interaction EASE treads entirely new ground; with its artificial intelligence (AI) capable of following and interpreting the driver's gaze. This fusion of ultra-advanced technologies with breathtaking design creates an emotional bond between person and machine.

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Natural interaction enters the next stage of development.

The BMW Group is therefore taking the interaction between human and machine to the next level with the BMW i Interaction EASE; using a genuinely multimodal concept to successfully create an all-new interactive experience designed to be as simple and natural as possible and seem almost human in nature. Alongside verbal engagement with the BMW Intelligent Personal Assistant and a new type of gesture control, the gaze detection system has taken a leading role in enabling new ways of responding to the passenger's needs. Rather than users needing to first learn specific commands in different modes, the vehicle's AI processes the acoustic and visual information received from a variety of sensors and interprets it according to the driving situation, time, location, and vehicle signals.

The AI uses gaze sensing for browsing the space around the user and vehicle, while pointing can be used to register a selection for more information. This form of interaction draws on the way people talk to one another; i.e. each person's gaze identifies who or what is the subject of the conversation or makes the meaning of what is being said clear. A spoken or gesture command can then be given to initiate interaction with the target object. In this way, it is possible to obtain information on the context within the passengers' frame of view as their gaze falls on e.g. a restaurant or cinema.

The Panorama Head-Up Display spanning the entire width of the front-end windscreen has a key role to play in this regard. By imposing a second, digital layer of information over the real-world view, it acts as an immersive augmented-reality user interface. It can show additional information on the windscreen that is tailored to the situation at hand and the vehicle's surroundings. Thanks to 5G connectivity the vehicle knows exactly where it is and can offer the user information on the surrounding buildings, businesses and other objects as and when required.

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First features to premiere in the BMW iNEXT.

BMW Natural Interaction paves the way to the next level of control inside the vehicle and beyond. The first features of the BMW i Interaction EASE will become reality in the market in the BMW iNEXT.

An interior headlined by flawless intuition.

The interior user experience for BMW i Interaction EASE starts on the way to the vehicle. The BMW Intelligent Personal Assistant recognises passengers as they approach, greeting them with a welcome illumination and directing them to the two seats inside with the use of dynamic lighting. The leather-free interior becomes a premium living space, reinforcing the feeling of having already arrived at a destination. Not only do the soft, welcoming seats with three-dimensional knitted surface ensure a high standard of comfort, they also come to life on contact thanks to embedded smart materials. The cabin is bordered at the sides by glass surfaces whose smart-glass functionality allows them to either be transparent or conceal the seating area from the outside world and so ensure the passengers' privacy.

The focal point of the BMW i Interaction EASE interior is the large Panorama Head-Up Display positioned directly in front of the seating area. There is a choice of three experience modes – Explore, Entertain and Ease – which alter the interior, integrate information on the vehicle's surroundings and provide in-car entertainment, privacy, or relaxation respectively.

In **Explore mode**, the focus shifts to the area around the vehicle. The BMW Intelligent Personal Assistant uses AR technology to superimpose information of interest to the passengers on the display so it appears both in their line-of-sight and in the correct position for their view of the real world.

Additional information or options for interaction with both the vehicle's immediate and more distant surroundings can be accessed as the user desires.

Focussing their gaze on the superimposed information brings up further details on the display, and a confirmatory gesture takes the user to the next interaction level.

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Entertain mode brings the in-car experience to the fore. The surfaces at the sides are darkened to obscure the world beyond and the Panorama Head-Up Display can be used for watching movies, for example. The theatre-like ambient lighting extends light and colour throughout the interior enriching the content shown on the display; inviting passengers to immerse themselves fully in the entertainment experience.

When **Ease mode** is activated, the vehicle transforms into a place of calm and relaxation. Touching the intelligent material moves the seat into the “zero-gravity” position, in which the occupant feels as if they are almost floating. The BMW Intelligent Personal Assistant darkens the Panorama Head-Up Display and makes the surfaces at the sides opaque. At the same time, ambient lighting bathes the interior in a soothing glow, while a harmonious composition of pleasant sounds spreads through the cabin.

With the sound of the BMW Vision M NEXT, Hans Zimmer and BMW Sound Designer Renzo Vitale have outlined the sound of the future for the BOOST moment.

For the BMW i Interaction EASE, the challenge was to use sound to turn the EASE moment into an authentic and emotional experience. “The sound subtly accompanies the interaction between passenger and vehicle and supports the unique BMW experience” says Renzo Vitale. The sound of the BMW i Interaction Ease thus also demonstrates the breadth of the partnership with Hans Zimmer, who, as composer and curator, is driving the development of BMW IconicSoundsElectric.

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3. The BMW X7 ZeroG Lounger.

With the BMW i Interaction EASE, the BMW Group is offering a glimpse into a future where autonomous travel has long since become part of everyday life. However, the premium carmaker's stand at this year's CES in Las Vegas is not only a platform for study vehicles, it also showcases concrete designs – as highlighted by the BMW X7 ZeroG Lounger to stunning effect. Offering the first fully personalised recline and relax experience in a BMW model, this seat has been earmarked for series production in the next few years.

Two BMW X7 models fitted with a ZeroG Lounger are on display at CES 2020 and can be taken for a test drive. The luxurious seat can be tilted back by 40 or 60 degrees into a comfortable reclined position. The seat belt forms an integral part of the seat and adjusts to suit the reclined position, ensuring maximum safety even while on the move. The BMW X7 ZeroG Lounger already meets all the requisite safety standards, thanks to new and innovative safety features. Besides the integration of the belt into the seat, this also includes a cocoon airbag providing wraparound protection for the occupant in the event of an accident and efficient dissipation of impact energy via the seat rail.

Made from top-quality materials, the ZeroG Lounger focuses on delivering the ultimate in seating comfort – and also responds to the passenger's needs while on the road. When the seat is in the reclined position, for instance, the passenger can enjoy the in-car entertainment programme on a screen built into the headliner. They can also opt to have directional information shown on the screen during a journey, complete with animated graphics when making a turn. As well as aiding spatial orientation, this can reduce motion sickness by a factor of four. Passengers don't have to worry about dwindling smartphone battery life either; their device can be placed in a holder with an inductive charging facility. The holder's clever design allows the smartphone's display to be viewed effortlessly in any of the ZeroG Lounger's various sitting or reclining positions.

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4. 5G – The future of connectivity.

The BMW Group has always met the challenges of digitalisation head-on – and has been instrumental in shaping and driving forward its implementation and ongoing development in the automotive sector. The premium carmaker has likewise been quick to embrace 5G technology, adhering to the maxim “act like a start-up – deliver like a grown-up” wholeheartedly in the process. The new mobile standard is set to catapult mobile networks into a whole new dimension, courtesy of bandwidth 10 to 100 times greater than that of current standards and minimal latency. 5G paves the way to unprecedented levels of connectivity and high-speed data exchange, which will be a key driver for industry as a whole. Its primary benefit in the automotive sector will be to greatly speed up the development and rollout of autonomous driving – or even make it possible in some instances.

5G in the new BMW iNext.

The BMW Group has been breaking new ground for some time now with the implementation and integration of 5G-capable applications in its models. When the first examples of the BMW iNext make their debut in mid-2021, 5G technology will be present and correct. This will make the BMW Group the world’s first premium carmaker to offer the new mobile technology in one of its models. The introduction of 5G into other model ranges will commence soon after, although integration will vary according to the specific model and configuration. The BMW iNext’s built-in SIM card will be used to provide 5G capability, meaning customers will benefit from the new technology in their car even if they don’t have a 5G smartphone. The new generation of 5G telematics componentry is under development as part of a collaboration with HARMAN Samsung, with the BMW Group responsible for its integration into the vehicle’s new electrical system architecture.

5G: a building block and key milestone in the future of mobility.

5G technologies are a prerequisite for autonomous driving (from Level 3 upwards) – and, by extension, for vehicles with this capability, such as the BMW iNext. The increasing number of highly complex features in a vehicle, including driving assistance and semi-automated driving functions, fuels corresponding growth in the quantity of data that has to be both processed in the vehicle itself in real time and shared with the backend.

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To make safety-related vehicle functions work in a model like the BMW iNEXT, the following three boxes at least must be ticked: low latency, guaranteed network coverage and an allotted minimum data rate for specific applications. This is all made possible by the arrival of 5G technology. It means the new generation of telematics componentry developed by the BMW Group in partnership with HARMAN Samsung is also the first to support the high-precision Global Navigation Satellite System (GNSS). Not only is vehicle geolocation more accurate and reliable as a result, it also complies with the statutory requirements (automotive safety integrity level B in accordance with ISO 26262).

GNSS is also essential when it comes to incorporating semi-automated driving functions, such as those set to be offered in the BMW iNEXT. The telematics components will be modular in composition, providing the extra flexibility in terms of hardware and software the BMW Group needs to make the vehicle a viable proposition for many years to come, even though innovation cycles are getting shorter all the time.

Using 5G offers an insight into what the future holds for customers in terms of entertainment and comfort functions. Exclusive video content can be enjoyed in high quality at resolutions up to 4K. The same is true for video conferences, which require both high data speeds and low latency. However, the biggest winners with 5G are applications it has so far been virtually impossible to stream in real time from a car. For example, cloud-based gaming now becomes an attractive in-car application thanks to zero-delay streaming.

A quantum leap for road safety.

The BMW Group does not wish to restrict the groundbreaking implementation of 5G technology and its possible applications to its own models. The premium carmaker has already declared its intention to make our roads safer and more efficient for all road users with the help of 5G. On 1 July 2019, the BMW Group became the first carmaker to make its anonymised safety-related traffic data universally available for non-commercial use.

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“When it comes to road safety, there are no competitors, only partners,” explains Christoph Grote, Senior Vice President Electronics BMW Group. “By sharing traffic data and implementing C-V2X vehicle connectivity, we can directly improve safety for road users everywhere.”

(C-V2X standing for Cellular Vehicular to Everything). This is because creating Cooperative Intelligent Transport Systems (C-ITS) and putting them into practice requires two types of high-speed connectivity. Firstly, safety-related traffic data has to be made available to all of a transport system’s active parties via a neutral server platform. This must be guaranteed across the industry and manufacturers, and be shared with traffic associations and relevant authorities. Secondly, all road users need to be interconnected. This is the only way to ensure they can communicate with one another directly (peer-to-peer) and in real time without having to rely on a mobile network connection.

The BMW Group has teamed up with Qualcomm Technologies at the CES to stage a live demonstration. The purpose of the demonstration is to show the enormous potential of C-V2X, in the future, to address a critical, yet less protected segment of the road population, the vulnerable road users, and to make a significant impact in reducing pedestrian accidents in the future. C-V2X technologies and platforms may be well suited to cover other vulnerable road users such as cyclists, e-scooters and motorbikes, and those already being taken advantage of by the road transportation ecosystem.

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Designworks

Designworks is the design innovation studio for BMW Group.

As an independent studio, Designworks stimulates ambitious visions of the future through practical design strategies and explorations. It pushes future experiences that are as relevant and ambitious as possible. Designworks are the 'architects of future' – designing for BMW Group and other partners holistic systems that impact and improve the world we live in.

With three global studios, Designworks is a powerful tool supporting the BMW Group to be the very forefront of design, technology and innovation.

www.bmwgroupdesignworks.com

The BMW Group

With its four brands BMW, MINI, Rolls-Royce and BMW Motorrad, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial and mobility services. The BMW Group production network comprises 31 production and assembly facilities in 15 countries; the company has a global sales network in more than 140 countries.

In 2018, the BMW Group sold over 2,490,000 passenger vehicles and more than 165,000 motorcycles worldwide. The profit before tax in the financial year 2018 was € 9.815 billion on revenues amounting to € 97.480 billion. As of 31 December 2018, the BMW Group had a workforce of 134,682 employees.

The success of the BMW Group has always been based on long-term thinking and responsible action. The company has therefore established ecological and social sustainability throughout the value chain, comprehensive product responsibility and a clear commitment to conserving resources as an integral part of its strategy.

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