

# BMW at Auto Shanghai 2019. Long version.



<b>1. Sportiness, comfort and innovations exclusively for the Chinese market:</b>	
The long-wheelbase version of the new BMW 3 Series Sedan. ....	2
<b>2. The quintessential sports sedan:</b>	
The new BMW 3 Series Sedan, made in China.....	5
<b>3. Bringing high performance to a new segment:</b>	
The new BMW X3 M and BMW X3 M Competition, the new BMW X4 M and BMW X4 M Competition. ....	9
<b>4. Intoxicating dynamism, state-of-the-art luxury, sophisticated elegance:</b>	
The new BMW 8 Series Coupe, the new BMW 8 Series Convertible. ....	12
<b>5. Increased electric range and efficiency thanks to cutting-edge battery technology:</b>	
The new BMW X1 xDrive25Le. ....	16
<b>6. A toolkit for the BMW Group's future:</b>	
The BMW Vision iNEXT. ....	19
<b>7. The efficient exchange of knowledge between racing car and production car development:</b>	
The BMW iFE.18. ....	22
<b>8. Digital character:</b>	
The BMW Intelligent Personal Assistant for China. ....	24
<b>9. Ongoing development work in Germany and China:</b>	
Automated driving at the BMW Group. ....	26



# 1. Sportiness, comfort and innovations exclusively for the Chinese market:

## The long-wheelbase version of the new BMW 3 Series Sedan.

Premium German carmaker BMW is presenting the new edition of the variant of its globally successful sports sedan that is developed exclusively for the Chinese market. The long-wheelbase version of the new BMW 3 Series Sedan will celebrate its world premiere at the Auto Shanghai 2019 show. Tailored specifically to the requirements of Chinese customers, it combines the new, elegantly sporty and emotionally rich design of the latest-generation BMW 3 Series Sedan with the most spacious and comfortable interior of any premium mid-size car, plus ground-breaking innovations in intelligent connectivity.

The long-wheelbase version of the new BMW 3 Series Sedan addresses the needs of young, progressive customers in the Chinese market more effectively than ever. It was developed alongside the new BMW 3 Series Sedan with standard wheelbase at the BMW Group's Munich home in cooperation with Chinese engineers. With an extended wheelbase and exclusive equipment features, the long-wheelbase version of the new BMW 3 Series Sedan offers exceptional driving pleasure and outstanding comfort for rear passengers. It is also the first model available in China to feature the innovative BMW Intelligent Personal Assistant, which elevates intuitive operation and driver/vehicle interaction to a new level. The new model is powered by a four-cylinder engine with BMW TwinPower Turbo technology.

The long-wheelbase version of the new BMW 3 Series Sedan will be produced by BMW Brilliance Automotive (BBA) at its Tiexi plant in Shenyang, Liaoning Province (north-eastern China). The facility began operations in 2012 as the second production plant in the BMW Group / Brilliance China Automotive Holdings Ltd. joint venture. Among the models built here is the China-only variant of the new BMW 3 Series Sedan with standard wheelbase, which will likewise be unveiled for the first time at Auto Shanghai 2019.

The two body variants of the new sports sedan allow customers in China to plump for either extra dynamism or even greater comfort. Both model variants have all the ingredients to build on the successful history of the BMW 3 Series Sedan, which in China is headlined by the incredibly rapid growth in demand. Much of the credit here goes to the long-wheelbase version, which accounts for almost 80 per cent of 3 Series Sedan sales in China. All in all, around one in three new BMW 3 Series cars will be delivered to customers in China.

With this prognosis in mind and in keeping with the “production follows the market” principle, capacity at BMW Brilliance Automotive’s Tiexi plant has been ramped up once again. This demand-oriented production strategy is also contributing significantly to the burgeoning success of BMW models in other segments of the Chinese car market. Like the BMW 3 Series Sedan, the BMW 5 Series Sedan and BMW X1 are also offered in long-wheelbase versions developed specially for Chinese customers – and produced in Shenyang exclusively for the Chinese market.

### **New design language and distinctive proportions.**

The distinct character of the new BMW 3 Series Sedan in long-wheelbase guise stems from its extra wheelbase length and the associated increase in seating comfort and legroom in the rear compartment. Its body design blends the new, extremely precise design language and sporting aura of the new BMW 3 Series Sedan with distinctive proportions. The new car improves significantly on its predecessor’s aerodynamics by virtue of finely judged optimisations. BMW’s hallmark sporting prowess is embodied here by short overhangs, a long bonnet and a set-back passenger compartment. The four-door model’s stretched silhouette underscores its inherent elegance and hints at the enviable spaciousness of the interior.

### **Interior: extra space and exclusive appointments.**

The extended wheelbase and stretched flank lines of the new long-wheelbase BMW 3 Series Sedan are all about increasing spaciousness for rear-seat passengers. Add the special shaping and super-comfortable upholstery of the rear seats to the mix and you have an outstanding level of rear-seat comfort over long journeys.

The comfort-oriented character of the new long-wheelbase BMW 3 Series Sedan is also highlighted by a host of other model-specific equipment features. The standard-fitted panoramic glass roof, for example, ensures an effective supply of fresh air and a light, airy ambience for the interior.

### **Developed in Munich, made in Shenyang: the four-cylinder engine with BMW TwinPower Turbo technology.**

A four-cylinder engine from the latest generation of power units developed by the BMW Group in Munich produces sporty performance. The new petrol unit is produced at the BMW Brilliance Automotive engine plant in Shenyang and features advanced BMW TwinPower Turbo technology. A twin-scroll turbocharger, High Precision Injection, VALVETRONIC fully variable valve timing and Double-VANOS variable camshaft control deliver instantaneous response, the appetite for revs drivers expect from a BMW, exceptional efficiency and minimised emissions.

## **Control/operation and connectivity: China premiere for the BMW Intelligent Personal Assistant.**

The modern, digital functions of the new BMW Operating System 7.0 – geared precisely to the needs of the driver – optimise intuitive operation in the new long-wheelbase BMW 3 Series Sedan.

Another new arrival in the field of control/operation and intelligent connectivity is the BMW Intelligent Personal Assistant, an intelligent, digital character that responds to the prompt “Hey BMW” and is making his debut in a model offered for the Chinese market. He is the ideal co-driver and comes in particularly useful during everyday driving by responding to natural voice commands to help the driver with numerous tasks, such as enhancing productivity and on-board entertainment.

## 2. The quintessential sports sedan: The new BMW 3 Series Sedan, made in China.



The BMW 3 Series Sedan is regarded as the benchmark for sportiness in the midsize premium segment the world over. Exuding dynamic design, agile handling, exceptional efficiency and innovative technology, it takes the signature characteristics of a BMW and turns the volume up several notches. This seventh generation of the perennial bestseller sees BMW building most prominently on the sporting tradition of the 3 Series, which is underpinned by an enviable record of success in race competition. The version of the sports sedan built in Shenyang combines the carmaker's distinctive brand of driving pleasure with equipment features that have been tailored specially to the demands of customers in China. It is celebrating its public debut at Auto Shanghai 2019 with the long-wheelbase version of the new BMW 3 Series Sedan, also made exclusively for the Chinese market.

### **Exterior design: a clear, precise expression of sporting prowess.**

BMW's new design language showcases the modern and dynamic character of the new BMW 3 Series Sedan with precisely drawn lines and strikingly contoured surfaces. It measures 4,719 millimetres from nose to tail, 1,827 millimetres wide and 1,459 millimetres in height. The car's 41-millimetre longer wheelbase (2,851 mm) and increased track widths (front: 1,583 mm, rear: 1,599 mm) have a direct and positive influence on its poise and agility.

The large BMW kidney grille and the headlights leading off it are dominant themes of the front end of the car. Their familiar two-way split is emphasised by an eye-catching notch in the front apron that rises up into the headlight contour. The dynamic side view is shaped by a pair of character lines and a sweeping side skirt contour. The trailing edge of the side window graphic with its Hofmeister kink design cue is now integrated into the C-pillar. Horizontal lines and slim, stylishly darkened LED lights give the rear a wide and muscular stance. There is a choice of six exceptionally striking shades for the exterior paint finish.

### **Interior: a classy route to sporting flair.**

The brand's new design language also brings a clear arrangement of surfaces to the interior of the new BMW 3 Series Sedan. This accentuates the spaciousness of the cabin and, together with the cockpit's focus on the driver, enhances their concentration on the road. The new screen grouping of

Control Display and instrument cluster, the tall centre console and the coordinated design of the light, modern instrument panel and door panel trim give the driver's area an enclosed feel and a sporting aura.

The controls are clustered into a small number of function panels. In the centre of the instrument panel, the displays and buttons for the air conditioning and air vents form a sharply designed unit, while the light functions are operated from a panel of buttons next to the standard-fitted sports leather steering wheel. The start/stop button for the engine is now positioned in the newly designed control panel in the centre console, where the gearshift lever or selector lever is joined by the iDrive Controller and the buttons for the Driving Experience Control switch unit and electromechanical parking brake.

Extended shoulder and elbow room in the front seats and additional legroom, seat comfort and ease of entry and exit in the rear all contribute to the generous feeling of space in the interior. The version of the sports sedan devised for the Chinese car market is fitted as standard with specially designed comfort seats with Sensatec trim in the front and a rear seat bench likewise designed with maximum comfort on long journeys in mind. Also to be found on the list of standard equipment is an electrically operated glass roof whose transparent surface is now 100 millimetres longer than on the outgoing model. Last but not least, the new BMW 3 Series Sedan's 480-litre boot offers improved loading comfort.

### **Eager and efficient: four-cylinder engine with BMW TwinPower Turbo technology.**

The new BMW 325i Sedan will be offered on the Chinese market from launch. Its 2.0-litre four-cylinder engine boasting latest-generation BMW TwinPower Turbo technology is also manufactured in Shenyang and stands out with its instantaneous power delivery, the appetite for revs drivers expect from a BMW and excellent efficiency. The Power directs to the rear wheels via an eight-speed Steptronic transmission.

### **Innovative chassis technology for sports performance and driving comfort.**

A number of clear priorities were established in the development of the body structure and chassis technology for the new BMW 3 Series Sedan: enhanced driving dynamics, agile handling characteristics, high-precision steering and superior braking performance. Overall, the new BMW 3 Series Sedan weighs up to 55 kilograms less than the predecessor model, depending on the equipment fitted. The new BMW 3 Series Sedan also has a low centre of gravity and 50:50 weight distribution, while the stiffness of the

body structure and suspension mountings has been significantly increased. Optimised aerodynamics reduce the car's drag coefficient.

The standard-fitted suspension and optional M Sport suspension both include lift-related dampers, which are making their debut in a BMW model. They are a major contributor to the balance between sportiness and comfort – unmatched by any rival – which defines the character of the new BMW 3 Series Sedan. Continuously variable control allows them to adjust the damper firmness progressively according to changing spring travel, which reduces body movement perceptibly when evening out vibrations caused by bumpy road surfaces and dynamic cornering. M Sport suspension (with a 10-millimetre reduction in ride height) is joined on the options list by Adaptive M suspension with electronically controlled dampers.

### **Leading the way to automated driving.**

The new BMW 3 Series Sedan uses a significantly expanded selection of innovative assistance systems to take a leading role in progress towards automated driving. These include Lane Departure Warning, plus Collision and Pedestrian Warning with City Braking function, Active Cruise Control with Stop & Go function and the Driving Assistant with Lane Change Warning, rear collision warning and crossing traffic warning. Also offered is the Driving Assistant Professional, a complete comfort and safety-enhancing package. One of the features of the Driving Assistant Professional is the steering and lane control assistant, which works together with the driver to help keep the vehicle in the detected lane, even through narrow channels, and also includes the lane keeping assistant with active side collision protection and the Evasion Assistant. The new-generation BMW Head-Up Display offers a larger projection surface, new graphics and additional display content.

Park Distance Control and the rear view camera assist the driver with manoeuvring and entering/exiting parking spaces. Also available is the Parking Assistant, which takes over steering, acceleration, braking and gear changes when driving into and out of a space. Its range of functions additionally includes the reversing assistant, which makes light work of backing up over distances of up to 50 metres by steering the vehicle along exactly the same path it took when moving forward.

### **Intuitive operation and supreme connectivity: BMW Operating System 7.0 and BMW Intelligent Personal Assistant.**

The new BMW Operating System 7.0 plays a leading role in optimising the control and display system with modern, digital functions geared precisely to the needs of the driver. The BMW Live Cockpit Professional comprises

consistently designed, situation-linked and customisable displays on the fully-digital 12.3-inch instrument cluster and 10.25-inch Control Display. For intuitive operation, the driver can choose from the Control Display's touchscreen functionality, the iDrive Controller, the steering wheel buttons, voice control and gesture control (optional).

The operating system fitted in the new BMW 325i Sedan also features the BMW Intelligent Personal Assistant, a digital character that is activated using natural voice commands and assists the driver by acting as a helpful co-driver with expert knowledge of numerous vehicle functions.





### **3. Bringing high performance to a new segment: The new BMW X3 M and BMW X3 M Competition, the new BMW X4 M and BMW X4 M Competition.**

BMW M GmbH is expanding its high-performance model line-up to include models in the mid-size Sports Activity Vehicle (SAV) and Sports Activity Coupe (SAC) segments for the first time. The BMW X3 M (fuel consumption combined: 10.5 l/100 km [26.9 mpg imp]; CO<sub>2</sub> emissions combined: 239 g/km\*) and BMW X4 M (fuel consumption combined: 10.5 l/100 km [26.9 mpg imp]; CO<sub>2</sub> emissions combined: 239 g/km\*) set the benchmark for dynamic excellence, agility and precision in their respective classes.

Also new is the launch alongside the BMW X3 M and BMW X4 M of their Competition siblings. The BMW X3 M Competition (fuel consumption combined: 10.5 l/100 km [26.9 mpg imp]; CO<sub>2</sub> emissions combined: 239 g/km\*) and BMW X4 M Competition (fuel consumption combined: 10.5 l/100 km [26.9 mpg imp]; CO<sub>2</sub> emissions combined: 239 g/km\*) will capture customers' imagination with their extra power and exclusive appointments.

#### **New six-cylinder in-line engine with superlative performance.**

The most powerful straight-six petrol engine ever to see action in a BMW M car provides the muscle for stunning performance attributes. The newly developed high-revving unit with M TwinPower Turbo technology generates maximum output of 353 kW/480 hp from its 3.0-litre displacement, together with peak torque of 600 Nm (442 lb-ft). The version of the bi-turbo unit developed specially for the BMW X3 M Competition and BMW X4 M Competition raises the output figure by 22 kW/30 hp to 375 kW/510 hp.

#### **Flawless distribution of power: M xDrive, Active M Differential.**

The new high-performance engine teams up with an eight-speed M Steptronic transmission with Drivelogic and uses the new M xDrive all-wheel-drive system, which made its debut in the BMW M5, to channel its power to the road. The M xDrive system has a rear-wheel bias and offers BMW X3 M and BMW X4 M owners two AWD modes. The centrally controlled interaction between M xDrive and the Active M Differential at the rear axle allows the all-wheel-drive system to split the engine's power between the four wheels as required to deliver optimal traction, agility and

directional stability. The BMW X3 M and BMW X4 M both sprint from 0 to 100 km/h (62 mph) in 4.2 seconds, while their Competition variants hit 100 km/h (62 mph) from rest in just 4.1 seconds.

### **M-specific chassis technology provides sublime dynamics.**

The combination of dynamism and precision for which BMW M cars are renowned is underpinned by model-specific body strengthening elements and sophisticated chassis technology tuned astutely to marshal the engine's power. With three settings selectable at the touch of a button, the M-specific suspension's electronically controlled dampers enable both excellent everyday comfort and extremely direct contact with the road, with low wheel and body movements. The bespoke kinematics and elastokinematics of the M-specific suspension – with its double-joint spring strut front axle and five-link rear axle – deliver precise wheel location and directional stability.

Composed to also deliver precisely controllable on-limit handling, the chassis technology package rounds off with M-specific steering (including M Servotronic and variable ratio) and powerful M compound brakes. Among the other items on the standard specification list are 20-inch M light-alloy wheels.

Like the damper control systems and M xDrive modes, the engine and transmission characteristics and steering set-up can be adjusted at the touch of a button. The DSC (Dynamic Stability Control) system allows controlled wheel slip in M Dynamic Mode and, needless to say, can also be switched off. Plus, the content shown in the optional Head-Up Display can be specified via the iDrive menu. The driver can store two overall set-up options – configured as desired from the above parameters – in the iDrive menu and select them as and when required using the two M buttons on the steering wheel.

### **Signature M design elements for the exterior and interior.**

M-specific design features optimise the supply of cooling air for the BMW X3 M, BMW X4 M and Competition models, as well as their aerodynamics. Inside the cars, the electrically adjustable sports seats, Vernasca leather upholstery, M-specific cockpit, M leather steering wheel and M gearshift selector lever create a sporty and luxurious ambience.

The BMW X3 M Competition and BMW X4 M Competition bring further exclusive accents to the exterior, in the form of High-gloss Black for the BMW kidney grille surround, exterior mirror caps and M gills, and the rear spoiler of the Sports Activity Coupe. Their standard equipment also includes 21-inch M light-alloy wheels in polished Black and an M Sport exhaust system. The expressive aura of the interior, meanwhile, is enhanced by M Sport seats with extended Merino leather upholstery, model-specific door sill plates and a

model nameplate on the centre console. Options for the Competition models include special bi-colour leather upholstery variants with Alcantara applications.

The optional M Carbon exterior package (expected to be available from August 2019), which features design elements in carbon fibre-reinforced plastic (CFRP) for the front air intakes, the air blades in the front apron, the rear diffuser and the exterior mirror caps, adds further individual flourishes. On the BMW X4 M and BMW X4 M Competition, these elements are joined by a CFRP rear spoiler.

Among the items fitted as standard in the BMW X3 M, BMW X4 M and Competition models are LED headlights, the hi-fi speaker system and the ConnectedDrive navigation package including the Navigation system Professional. The options list for the BMW X3 and BMW X4 provides further scope for individualisation and includes cutting-edge driver assistance systems and the digital services from BMW Connected and BMW ConnectedDrive.

All figures relating to performance, fuel/electric power consumption and CO<sub>2</sub> emissions are provisional.

The fuel consumption and CO<sub>2</sub> emission figures are determined according to the European Regulation (EC) 715/2007 in the version applicable. The figures refer to a vehicle with basic configuration in Germany. The range shown considers the different sizes of the selected wheels/tyres and the selected items of optional equipment, and may vary during configuration.

The values are based on the new WLTP test cycle. With respect to these vehicles, for vehicle-related taxes or other duties based (at least inter alia) on CO<sub>2</sub> emissions, the CO<sub>2</sub> values may differ from the values stated here (depending on national legislation).

Correct as at: 01.02.2019.

Further information on official fuel consumption figures and specific CO<sub>2</sub> emission values of new passenger cars is included in the following guideline: 'Leitfaden über den Kraftstoffverbrauch, die CO<sub>2</sub>-Emissionen und den Stromverbrauch neuer Personenkraftwagen' (Guide to the fuel economy, CO<sub>2</sub> emissions and electric power consumption of new passenger cars), which can be obtained free of charge from all dealerships, from Deutsche Automobil Treuhand GmbH (DAT), Hellmuth-Hirth-Str. 1, 73760 Ostfildern-Schramhausen and at <https://www.dat.de/co2/>.



## 4. Intoxicating dynamism, state-of-the-art luxury, sophisticated elegance: The new BMW 8 Series Coupe, the new BMW 8 Series Convertible.

BMW is forging ahead with its model offensive in the luxury segment with Asian premieres at Auto Shanghai 2019 for two sports cars that explore the upper reaches of dynamic flair, emotionality and exclusivity. The new BMW 8 Series Coupe and new BMW 8 Series Convertible are hugely desirable cars boasting outstanding performance, emotion-stirring design, state-of-the-art luxury and exceptionally advanced equipment when it comes to display and control technology, driver assistance and connectivity. Pure dynamism, sumptuous mile-covering ability and progressive luxury are the defining characteristics of the new BMW 8 Series Coupe. The new BMW 8 Series Convertible blends driving properties of vivid porting intent with strikingly elegant design and offers a highly exclusive passport to hallmark BMW driving pleasure and a full-blooded open-top driving experience.

The body, powertrain and suspension of both models betray their maker's commitment to achieving the supreme agility, precision and poise expected of a top-class sports car. They were developed alongside the BMW M8 GTE racing machine, which competes in the FIA WEC endurance series and the IMSA WeatherTech SportsCar Championship (IWSC) in North America.

### **Exterior design: new design language generates sporting appeal.**

The BMW brand's new design language employs precisely drawn lines and muscular surfacing to give the BMW 8 Series Coupe and BMW 8 Series Convertible an aura defined as much by sporting prowess as superior elegance. The surging front apron lends the front end of the car undeniable athletic presence with its large air intakes, which assume an even more imposing appearance when combined with the optional M Sport package. The low-set BMW kidney grille, jutting out clearly between the ultra-slim headlights, is hexagonal and framed by a single-piece surround. Adaptive LED headlights are part of standard specification on both models. There is also the option of BMW Laserlight with variable road illumination and Selective Beam, which generates a high-beam range of around 600 metres.

The car's low-slung design, an elongated silhouette (incorporating a slim window graphic plus a roofline flowing elegantly into the rear and featuring distinctive "double-bubble" contouring), a long wheelbase and a wide track are the defining elements of the new BMW 8 Series Coupe's proportions. In the case of the new BMW 8 Series Convertible, meanwhile, the dynamically

stretched flanks are combined with a classical soft-top roof that opens and closes fully automatically and at the touch of a button in the space of 15 seconds. The hushed roof operation can be initiated with the car travelling at up to 50 km/h (31 mph). It pulls taut over the interior when closed, lending the car a strikingly stepped, coupe-like silhouette.

While the surfaces curve inwards aft of the front wheels, they flare outwards again in powerful fashion towards the rear wheels. This combines with the strikingly tapered glasshouse to create a muscular shoulder line. At the rear, the interplay of horizontal and diagonal lines emphasises the car's width and low centre of gravity. The LED rear lights add to the effect by extending well into the flanks.

### **The interior: a case study in dynamism, elegance and luxury.**

The modern and minimalistic design language of the exterior continues inside the new BMW 8 Series Coupe and BMW 8 Series Convertible. The ambience of the interior overflows with dynamism, elegance and distinctive luxury at every turn, and the standard ambient lighting emphasises the cabin's forward-focused lines. The two models are furnished with full leather trim for the instrument panel and door shoulders as standard, plus electrically adjustable sports seats and Vernasca leather upholstery.

Standard equipment for the new BMW 8 Series Convertible additionally includes a wind deflector which can be raised in the rear-seat area to prevent unwanted air turbulence when driving with the top down. For an even greater feel-good factor with the roof open in cooler weather, neck warmers are also available as an option, their air outlets integrated into the front-seat head restraints. The rear backrest in both models has a 50:50 split as standard, with both elements folding separately to offer a through-loading facility. The new BMW 8 Series Coupe has a 420-litre luggage compartment, while the new BMW 8 Series Convertible can accommodate 350 litres of cargo in its boot when the roof is closed. Another special feature specific to the open-top model is its rollover protection system, which consists of two protective aluminium bars fitted out of sight behind the rear-seat head restraints. The bars are extended by a pyrotechnic charge in a fraction of a second if it looks like the car is about to turn over.

### **New six-cylinder in-line engine, eight-speed Steptronic Sport transmission and M Sport differential.**

The BMW 840i Coupe and BMW 840i Convertible available in China are both powered by a newly developed six-cylinder in-line engine with BMW TwinPower Turbo technology. The 250 kW/340 hp unit boasts the free-revving performance and silky smoothness for which straight-six engines from

BMW are renowned. It also stands out with its weight-minimising design, even greater efficiency and highly impressive elasticity. The new engine's peak torque of 500 Nm (369 lb-ft) can be summoned from as low down as 1,600 rpm.

The BMW 840i Coupe accelerates from 0 to 100 km/h (62 mph) in 5,0 seconds, while the BMW 840i Convertible takes 5,3 seconds to reach the 100 km/h (62 mph) mark from rest. Such rapid bursts of speed also prompt a distinctive aural accompaniment from the standard-fit sports exhaust system. The BMW 840i Coupe returns fuel consumption and CO<sub>2</sub> emissions of 7,3 – 7,2 litres per 100 kilometres and 167 – 164 g/km, while the BMW 840i Convertible posts figures of 7,5 – 7,4 litres per 100 kilometres and 170 – 168 g/km. Power is relayed to the rear wheels via an eight-speed Steptronic Sport transmission, and both models are equipped as standard with an M Sport differential. As well as improving traction, the locking effect produced by an electric motor in the rear differential optimises the car's agility first and foremost, ensuring it powers out of corners with ample dynamic élan.

The new straight-six engine will also be added to the choice of power units available for the two luxury sports cars in all other markets worldwide. Outside China, the BMW 840i Coupe and BMW 840i Convertible will be joined in the line-up by the BMW 840i xDrive Coupe and BMW 840i xDrive Convertible with intelligent all-wheel drive.

### **The chassis: know-how from the race track delivers unbeatable dynamics on the road.**

The construction principles underpinning the chassis and the use of BMW M GmbH racing expertise in optimising its set-up take the car's agility, precision and performance to great heights. The new BMW 840i Coupe and BMW 840i Convertible are fitted as standard with 18-inch light-alloy wheels shod with mixed-size tyres and Adaptive M suspension with electronically controlled dampers. Thanks to finely metered spring and damping responses, the driver is only fed relevant information on the road surface. The likewise standard Integral Active Steering reduces the car's turning circle when manoeuvring, increases agility and maximises poise and assurance when changing lanes and cornering at high speeds.

The optional M Sport package includes 19-inch M light-alloy wheels, M Sport brakes and illuminated door sill plates with an M logo. There is also the option of the M Technic Sport Package, which adds 20-inch M light-alloy wheels with high-performance tyres and even more powerful M Sport brakes.

## **State-of-the-art driver assistance systems increase comfort and safety.**

The latest driver assistance systems are on hand to further enhance comfort and safety in the new BMW 8 Series Coupe and BMW 8 Series Convertible. The selection of systems on offer includes the BMW Head-Up Display and the Driving Assistant, which comprises Collision and Pedestrian Warning with City Braking function, Lane Departure Warning and Lane Change Warning, Speed Limit Info, rear crossing traffic warning and rear collision warning. Active Cruise Control with Stop & Go function, Driving Assistant Professional (extra features include the steering and lane control assistant) and BMW Night Vision are all available too. The Parking Assistant, meanwhile, also features a rear view camera and the reversing assistant.

## **Intuitive operation and supreme connectivity: BMW Operating System 7.0 and BMW Intelligent Personal Assistant.**

The BMW 8 Series Coupe and BMW 8 Series Convertible come as standard with the BMW Live Cockpit Professional. This comprises a navigation and multimedia system, a fully digital, high-resolution instrument cluster behind the steering wheel (with a screen diagonal of 12.3 inches) and a Control Display (measuring 10.25 inches across). BMW Operating System 7.0 stands out with its modern, digital functions geared precisely to the needs of the driver. Touchscreen functionality via the Control Display, the iDrive Controller, buttons on the steering wheel and voice control allow the driver to choose from a selection of intuitive operation methods.

The BMW Intelligent Personal Assistant has a key role to play in the operating system. The digital companion can be activated with the spoken prompt “Hey BMW” and helps the driver to use vehicle functions. What is more, he will keep acquiring new capabilities all the time thanks to updates transmitted seamlessly by Remote Software Upgrade.

All figures relating to performance, fuel/electric power consumption and CO<sub>2</sub> emissions are provisional.

The fuel consumption and CO<sub>2</sub> emission figures are determined according to the European Regulation (EC) 715/2007 in the version applicable. The figures refer to a vehicle with basic configuration in Germany. The range shown considers the different sizes of the selected wheels/tyres and the selected items of optional equipment, and may vary during configuration.

The values are based on the new WLTP test cycle. With respect to these vehicles, for vehicle-related taxes or other duties based (at least inter alia) on CO<sub>2</sub> emissions, the CO<sub>2</sub> values may differ from the values stated here (depending on national legislation).

Correct as at: 01.04.2019

Further information on official fuel consumption figures and specific CO<sub>2</sub> emission values of new passenger cars is included in the following guideline: 'Leitfaden über den Kraftstoffverbrauch, die CO<sub>2</sub>-Emissionen und den Stromverbrauch neuer Personenkraftwagen' (Guide to the fuel economy, CO<sub>2</sub> emissions and electric power consumption of new passenger cars), which can be obtained free of charge from all dealerships, from Deutsche Automobil Treuhand GmbH (DAT), Hellmuth-Hirth-Str. 1, 73760 Ostfildern-Schramhausen and at <https://www.dat.de/co2/>.



## 5. Increased electric range and efficiency thanks to cutting-edge battery technology: The new BMW X1 xDrive25Le.

At Auto Shanghai 2019, BMW Brilliance Automotive is presenting the new edition of the BMW X1 xDrive25Le. Thanks to cutting-edge battery technology, the compact Sports Activity Vehicle (SAV) developed exclusively for the Chinese automotive market with extended wheelbase and plug-in hybrid drive now achieves an electrically powered range of up to 110 kilometres (68 miles)\*. The efficiency of the new BMW X1 xDrive25Le has also been further increased. Its combined fuel consumption is now some 72 per cent lower than before. Hallmark driving pleasure is also ensured by the hybrid-specific version of the BMW xDrive intelligent all-wheel-drive system along with an extensive range of standard equipment for enhanced comfort and safety. The new BMW X1 xDrive25Le is produced at BMW Brilliance Automotive's Tiexi plant in Shenyang, China.

With the significant boost to range and efficiency, the new improved plug-in hybrid model has everything it takes to continue its success story on the Chinese automotive market. In 2018 the BMW X1 xDrive25Le was China's top-selling plug-in hybrid vehicle in the premium SUV segment. The BMW X1 xDrive25Le was purpose designed to meet the needs and preferences of Chinese customers, while in Europe the BMW 225xe Active Tourer (fuel consumption combined: 1.9 l/100 km [148.7 mpg imp]; CO<sub>2</sub> emissions combined: 43 g/km\*\*) has the plug-in hybrid compact car segment perfectly covered with its all-round qualities and excellent spatial functionality.

The diverse range of models consolidates the BMW Group's position as a pioneer and market leader in the field of electrically powered automobiles. With a market share of more than 8 per cent, the company leads the worldwide ranking of established premium providers of vehicles that are purely electrically powered or run on plug-in hybrid systems. In 2018 the BMW Group was the market leader in the premium electrified vehicle segment in both Germany and in China. The company sold more than 140,000 plug-in hybrid and electrically powered vehicles worldwide – a year-on-year increase of 38.4 per cent. As one of the four future-oriented ACES areas of action (Autonomous, Connected, Electrified and Services/Shared), electric mobility is one of the key elements of the BMW Group's NUMBER ONE > NEXT strategy. During the remainder of 2019 the range of BMW models with electrified drive will be expanded to include the plug-in hybrid models in the new BMW 7 Series range (fuel consumption combined: 2.6 –

All figures relating to performance, fuel/electric power consumption, emissions and range are provisional.

\* Figures measured in accordance with market-specific test cycle in China.

\*\* Figures measured in accordance with WLTP test cycle, translated back into NEDC-equivalent values for the purpose of comparison.



2.1 l/100 km [108.6 – 134.5 mpg imp]; electric power consumption combined: 16.3 – 15.1 kWh/100 km [100 miles]; CO<sub>2</sub> emissions combined: 59 – 48 g/km\*\*), the new BMW 330e Sedan (fuel consumption combined: 1.7 l/100 km [166.2 mpg imp]; CO<sub>2</sub> emissions combined: 39 g/km\*\*), the new BMW X5 xDrive45e (fuel consumption combined: 2.1 l/100 km [134.5 mpg imp]; CO<sub>2</sub> emissions combined: 49 g/km\*) and the new BMW X3 xDrive30e (fuel consumption combined: 2.4 l/100 km [117.7 mpg imp]; CO<sub>2</sub> emissions combined: 56 g/km\*\*). In addition, the very latest battery cell technology provides a boost in terms of range and efficiency for the BMW 530e (fuel consumption combined: 1.7 l/100 km [166.2 mpg imp]; CO<sub>2</sub> emissions combined: 38 g/km\*\*) and the BMW 225xe Active Tourer.

### **State-of-the-art battery technology with exceptionally high energy density.**

The increase in range by 83 per cent as compared to the predecessor model and the reduction in fuel consumption by 72 per cent to 1.3 litres per 100 kilometres (217.3 mpg imp)\* were made possible by the very latest advances in the area of battery cell technology. The new BMW X1 xDrive25Le features a lithium-ion high-voltage battery, with battery cells produced exclusively based on specifications defined by the BMW Group. The further increase in battery capacity was the result of substantial research and development work in the field of cell chemistry and close cooperation with the battery cell manufacturer. In the new battery cells, the ratio of nickel, cobalt and manganese in the anode material is 8 : 1 : 1. The increased proportion of nickel increases energy density, while the reduction in the cobalt component means that less rare earth material is required. The design is as compact as ever, while the weight of the battery – which is positioned at a very low point in the vehicle floor – has only increased by 2.5 kilograms. Like the vehicle it is fitted in, the high-voltage battery is manufactured at the Shenyang site.

The plug-in hybrid system of the new BMW X1 xDrive25Le comprises a 1.5-litre three-cylinder petrol engine with BMW TwinPower Turbo technology driving the front wheels and an electric motor that delivers its power to the rear wheels. Together they generate a system output of 170 kW/231 hp along with a maximum system torque of 382 Nm (282 lb-ft). Fitted with a six-speed Steptronic transmission, the BMW X1 xDrive25Le accelerates from 0 to 100 km/h (62 mph) in 7.4 seconds.

The progressive drive technology and versatile driving properties of the new BMW X1 xDrive25Le are combined with exceptionally generous interior space and particularly high-quality standard equipment. A high degree of driving

pleasure, safety, comfort and luxury is provided by such features as a large panoramic glass roof, the BMW Navigation system with 10.25-inch touchscreen display and natural voice recognition, LED headlights and the Parking Assistant.

All figures relating to performance, fuel/electric power consumption, CO<sub>2</sub> emissions and range are provisional.

The fuel consumption, CO<sub>2</sub> emission, electric power consumption and range figures are determined according to the European Regulation (EC) 715/2007 in the version applicable. The figures refer to a vehicle with basic configuration in Germany. The range shown considers the different sizes of the selected wheels/tyres and the selected items of optional equipment, and may vary during configuration.

The values marked \*\* are based on the new WLTP test cycle and are translated back into NEDC-equivalent values in order to ensure comparability between the vehicles. With respect to these vehicles, for vehicle-related taxes or other duties based (at least inter alia) on CO<sub>2</sub> emissions, the CO<sub>2</sub> values may differ from the values stated here (depending on national legislation).

Further information on official fuel consumption figures and specific CO<sub>2</sub> emission values of new passenger cars is included in the following guideline: 'Leitfaden über den Kraftstoffverbrauch, die CO<sub>2</sub>-Emissionen und den Stromverbrauch neuer Personenkraftwagen' (Guide to the fuel economy, CO<sub>2</sub> emissions and electric power consumption of new passenger cars), which can be obtained free of charge from all dealerships, from Deutsche Automobil Treuhand GmbH (DAT), Hellmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen and at <https://www.dat.de/co2/>.

## 6. A toolkit for the BMW Group's future: The BMW Vision iNEXT.



The BMW Vision iNEXT heralds the dawn of a new age in driving pleasure. Highly automated, emission-free and fully connected, it brings together all the BMW Group's strategic innovation areas in a single Vision Vehicle. Armed with the very latest developments in the fields of autonomous driving and advanced connectivity, the BMW Vision iNEXT creates totally new experiences and offers fresh ways of making the most of car journeys. All these possibilities centre more than ever on human wishes and emotions. The interior of the BMW Vision iNEXT creates a mobile environment designed to enhance quality of life, a new "Favourite Space" where driver and passengers can relax and choose what they want to do. The BMW Intelligent Personal Assistant acts as a constant companion and on-board expert. With his typical BMW character, he is always fully connected and serves as an intuitive interface with the digital outside world based on natural language interaction.

The BMW Vision iNEXT blends trailblazing design with the future fields of action identified as part of the company's NUMBER ONE > NEXT strategy (Design + Automated driving, Connectivity, Electrification and Services – D+ACES). In so doing, it answers the question: "What does a vehicle look like that no longer needs to be driven by a person, but can be if desired?". The BMW iNEXT production model will be built at the Dingolfing plant from 2021. It will acquire the status of the BMW Group's new technological flagship and transport the company's strategic innovation areas from the drawing board to the road.

Boasting the dimensions and proportions of a modern BMW Sports Activity Vehicle (SAV), the Vision iNEXT cuts an authoritative figure. Its visionary character is plainly visible in its clearly sculpted forms and surfaces. Two large opposing doors, with no B-pillar between them, make it easy to climb inside. A further characteristic is the unusually distinct separation between the cockpit and the rear. A roomy, continuous seat area gives the rear compartment a relaxing lounge-like feel.

### **Boost and Ease modes alter the driver's environment.**

BMW Vision iNEXT drivers can choose to either drive themselves (in Boost mode) or be driven (in Ease mode). Boost uses the electric drive train to deliver a dynamically sharp and virtually silent driving experience with zero

emissions, while in Ease mode the vehicle creates space for the driver and passengers to engage in a wide range of activities.

Inside the generously sized cockpit, the driver's area is dominated by the two visible digital display panels and the steering wheel. The flat dashboard covered in beige fabric teams with wood accents and a clearly patterned wood floor to create an inviting atmosphere. In Boost mode, the steering wheel and displays are clearly angled towards the driver. When Ease mode is engaged, the driver's immediate environment changes: the steering wheel moves back and the pedals retract to create a more open sense of space. The display panels switch from driving-related content to Exploration mode, which provides the driver and passengers with suggestions for places and events in the surrounding area that may be of interest to them.

**“Shy tech”: innovative technology integrated out of sight, but always available.**

The steering wheel and displays in the driver's area are the only controls/screens visible in the BMW Vision iNEXT. To preserve the cosy, inviting character of the rear compartment, all technology is kept out of sight and only reveals itself visually when needed. For example, in the future various functions could be operated via surfaces made out of wood or fabric, as dynamic projections turn them into an interactive display. The BMW Vision iNEXT highlights three different visionary applications of this “shy tech” approach: the BMW Intelligent Personal Assistant, Intelligent Material and Intelligent Beam.

The Intelligent Personal Assistant is activated in response to the prompt “Hey BMW” or any other wake word the user chooses. It ensures that the BMW Vision iNEXT is an integral part of the driver's digital world and interlinks seamlessly with the ensemble of BMW Connected, the user's smart devices and their smart home. Drivers can therefore make purchases or close the windows of their house, for example, by voice command from their vehicle.

The use of Intelligent Material allows controls to be integrated discreetly into interior surfaces. When driving in Boost mode, the Control Display can be operated using conventional touch functionality. However, in Ease mode, the centre console's wood surface can assume this control function instead. Arm and hand posture is just as relaxed as when using the iDrive Controller: the driver's hand rests on the perforated wooden surface and points of light follow their finger during inputs. The Jacquard cloth in the rear also possesses integral control functionality. For example, music playback can be controlled using various gestures that are given visual emphasis by LEDs positioned underneath the material.

As with the control concept, the digital and analogue worlds also are set to merge increasingly in the use of media. The possibilities when it comes to visualising information in projected form are expanding, which could dispense with the need for displays in the long term. The Intelligent Beam technology showcased in the BMW Vision iNEXT already takes a step in this direction, serving as both a dynamic reading light and a situation-linked, interactive projection surface. This enables the text in a printed book, for instance, to be supplemented by images, moving content and interactive graphics – all of which can be controlled by touch.

## 7. The efficient exchange of knowledge between racing car and production car development: The BMW iFE.18.



BMW i will be introducing visitors at the Auto Shanghai 2019 show to the company's Formula E racing car a matter of weeks after it was in action at the sixth race of the ABB FIA Formula E Championship season in Sanya. Not only does the BMW iFE.18 add a spectacular eye-catching highlight to the show stand, it is tangible proof of the remarkably efficient and successful transfer of electric mobility technology between the worlds of motor sport and series production. The all-electric Formula E racer stands out with both its sensational design and its pioneering powertrain, whose development harnessed the expertise of the same engineers who devised the drive system for the BMW i3, among other things, and are working on the development of powertrains for future electrified models from BMW.

Team BMW i Andretti Motorsport has two BMW iFE.18 cars competing in the ABB FIA Formula E Championship. Behind the wheel of the BMW i Andretti Motorsport cars are two exceptionally talented and highly experienced drivers – António Félix da Costa (POR) and Alexander Siems (GBR).

### **Combining the innovative skills of BMW Motorsport and BMW i.**

The BMW iFE.18 is an amalgamation of the pioneering spirit, innovative flair and technological expertise of both BMW Motorsport and BMW i. The Formula E car's powertrain was created using the know-how and experience amassed by the BMW i engineers in the development of the brand's production cars. This involved employing some of the same production facilities used in the manufacture of the BMW i3. The collaboration between the motor sport and series production wings of the company results in an efficient two-way exchange, the findings gleaned from Formula E feeding straight back into the development of series-produced drive systems for upcoming BMW models.

The design of the BMW iFE.18 reflects the urban setting of Formula E races, which are staged on narrow city circuits. Featuring a colour scheme based on the blue and white elements of the BMW roundel, the racing cars' livery also incorporates an interlinking network of blue and violet "veins". The alternating sequence of contrasting colours and shapes ensures maximum visibility at racing speeds and identifies the BMW iFE.18 beyond doubt as a BMW.

Prototype engineers involved in the development of drive units for series-produced vehicles came up with the high-performance motor powering the BMW iFE.18. It is manufactured in the same prototype construction facility as the next generation of motors for future electrified models from the BMW Group. Standout characteristics include exceptional efficiency, extremely high power density, innovative materials, a high-revving concept and a very effective cooling system. Further similarities between the race car's drive system and future series-produced drive units can be found in the function-controlling software module. The BMW Motorsport engineers designed the rear axle (including the suspension) and integrated the powertrain into the race car's rear section.

### **BMW i at the heart of the Formula E action from day one.**

BMW i has been involved in the ABB FIA Formula E Championship from the word 'go' in its role as Official Vehicle Partner, and is once again responsible for providing the fleet of Safety Cars this season. Heading the line-up is the BMW i8 Coupe Safety Car (fuel consumption combined: 1.8 l/100 km [156.9 mpg imp]; electric power consumption combined: 14.0 kWh/100 km [62 miles]; CO<sub>2</sub> emissions combined: 42 g/km)\*, which has been modified with the addition of BMW M components. The BMW i models in action at the ABB FIA Formula E Championship also include a BMW i3s (fuel consumption combined: 0.0 l/100 km; electric power consumption combined: 14.3 kWh/100 km [62 miles]; CO<sub>2</sub> emissions combined: 0 g/km)\* as the Race Director's Car, and a BMW 530e Sedan (fuel consumption combined: 2.2 – 2.1 l/100 km [128.4 – 134.5 mpg imp]; electric power consumption combined: 13.6 – 13.3 kWh/100 km [62 miles]; CO<sub>2</sub> emissions combined: 49 – 47 g/km)\* in its capacity as Medical Car.

## 8. Digital character: The BMW Intelligent Personal Assistant for China.



The BMW Intelligent Personal Assistant marks the start of a new era in driving pleasure, which will increasingly allow drivers to operate their car, access its functions and obtain information simply by speaking. At Auto Shanghai 2019, the BMW Group is presenting the Intelligent Personal Assistant for China. The new BMW 3 Series Sedan and new long-wheelbase BMW 3 Series Sedan will be the first models that offer the ability to use this digital character, who can be activated with the prompt “Hey BMW”. The BMW Intelligent Personal Assistant is closely tailored to the needs of Chinese customers with personalised and localised functions, in the same way as the digital services from BMW Connected.

The BMW Intelligent Personal Assistant forms part of BMW Operating System 7.0, which takes intuitive operation to the next level at the same time as helping drivers to concentrate even more effectively on the road ahead. The new BMW 3 Series Sedan and new long-wheelbase BMW 3 Series Sedan models available in China are equipped as standard with the Live Cockpit Professional, whose fully digital display and operating system comprises a high-resolution instrument cluster with a screen diagonal of 12.3 inches and a Control Display measuring 10.25 inches across. Thanks to its personalised, customisable content and clearly structured presentation, the system provides the driver with optimum assistance at all times. Multimodal interaction between driver and vehicle has also undergone further improvement. The driver can choose from a selection of intuitive operating methods – the familiar iDrive Controller, steering wheel controls, touchscreen control, voice control or gesture control (optional) – to suit the situation at hand.

### **Digital expert and ideal co-driver for customers in China.**

The personal digital assistant is able to explain all sorts of vehicle functions (“How does the high beam assistant work?”), provide current status information (“Is the oil level okay?”) and help answer questions (“What warning messages do I have?”). He also learns routines and habits, and is then able to apply them in the appropriate context. As a result, the BMW Intelligent Personal Assistant is familiar with the driver’s preferred settings for the seat heating, for example, or the places they navigate to frequently (“Take me home”). He can also operate vehicle functions as required. Saying “Hey BMW, I’m cold” will prompt the personal assistant to adjust the temperature inside



the car accordingly. And in response to “Hey BMW, I feel tired” he will trigger a vitality programme that adjusts the music, lighting mood and temperature to make the driver feel more awake.

One unique feature compared with other digital assistants of this type is the option of giving him a personally selected name (such as “Charlie”) to lend him even greater individuality and personality. Thanks to BMW’s Open Mobility Cloud and the use of artificial intelligence, the personal assistant’s capabilities are growing all the time. The range of functions available will be constantly expanded as part of regular updates, which can be carried out seamlessly on a smartphone and in-car by Remote Software Upgrade.

### **Market-specific digital services, integration of Tmall Genie.**

Numerous market-specific products are being constantly added to the range of digital services offered in China, while the functions and capabilities of the BMW Intelligent Personal Assistant are likewise enhanced by the inclusion of China-only services.

BMW is also going to integrate Alibaba’s voice assistant – Tmall Genie – into the operating system of its cars in China in future, making it the first premium carmaker to do so. The seamless integration of this intelligent, cloud-based voice service unlocks a wealth of entertainment and shopping options that BMW drivers in China can access from the comfort of their car simply by speaking. This means that in future, BMW customers in China will be able to use Tmall Genie to place online orders while they are driving, for example, find out movie times, listen to their favourite playlist or check the weather at their destination.

## 9. Ongoing development work in Germany and China: Automated driving at the BMW Group.

The BMW Group is forging ahead with the development of technological systems for automated driving as part of its vision of a car that people can drive themselves, but don't have to. Automated driving will have a game-changing impact on personal and sustainable mobility in the future. As well as addressing the safety aspects involved, efforts are focused on bringing about a significant gain in comfort and a further improvement in efficiency. The latest driver assistance systems – such as the Driving Assistant Professional tech available in various models, including the new BMW 3 Series Sedan – are an important building block on the road to automated driving. And the company already has its sights firmly set on its next objective: in 2021 the production car based on the BMW Vision iNEXT will become the first model from the BMW Group to offer a system for Level 3 automated driving as an option. This system will enable drivers to delegate the task of driving to the car for longer periods when driving on the motorway at up to 130 km/h (81 mph).

The BMW Group has amassed a vast well of experience in automated driving. Indeed, the company has been conducting research activities in this field since the year 2000. In 2006, a BMW drove around the Hockenheim Formula One circuit on the racing line without driver intervention for the first time. Since 2011, highly-automated test vehicles from the BMW Group have been driving up and down the A9 motorway between Munich and Nuremberg. And at the Consumer Electronics Show (CES) in 2014, the BMW Group gave a demonstration of highly-automated driving at the limits of performance on the Las Vegas Speedway. The next wave of innovations are now taking shape in both Germany and China. The Autonomous Driving Campus in Unterschleißheim near Munich has been the BMW Group's centre of excellence for automated driving since September 2017. And the BMW Group's research and development centre in Shanghai – which opened in June 2018 – houses around 60 software engineers working on key technologies for autonomous driving.

### **A hotbed of development expertise: the BMW Group's Autonomous Driving Campus.**

Just 15 months after the go-ahead was given to pool together all of its development resources for highly and fully-automated driving at a single location, the BMW Group opened the gates to the end result: the

Autonomous Driving Campus. This state-of-the-art development hub offers around 23,000 square metres of office space and has room for approximately 1,800 employees.

The move to the emerging centre of excellence coincided with the introduction of a new working method, along with changes to organisational structures. An open-plan layout, flexible use of office space and a multifaceted working environment provide all the ingredients for creativity, efficiency and employee autonomy while keeping distances short. For example, a software developer only has to take a few steps to test out code they have just written in the actual vehicle. Managers work in the same open-plan office spaces as their staff, which fosters interaction and simplifies communication – and, in so doing, facilitates effective teamwork in the development of a highly complex product.

The BMW Group is the first company in the car industry to apply agile working models systematically and universally for an entire specialist area. From the research phase right through to series production development, small feature teams with an interdisciplinary structure handle individual sub-processes, working independently with an end-to-end approach. The high degree of flexibility allows the teams to react quickly and effectively to new requirements. The new structures both speed up the overall software development process and enable it to handle extremely complex tasks. In late 2021, a fleet of test vehicles is due to start work as part of large-scale trials on Level 4 automated driving – i.e. fully-automated without any driver intervention – conducted in defined urban environments.

### **Software development in Shanghai for China and the whole world.**

The development work carried out in China also has a key role to play as the BMW Group progresses towards automated driving. The company has been running relevant research and development projects in China since 2014. In Shanghai, for example, a local team of around 60 engineers focus on high-resolution map material, sensor systems and perception, driving strategy and vehicle control, interfaces for on-demand mobility services, prototypes and regulatory issues. And the experts in the automated driving laboratory – which forms part of the BMW Group's research and development centre in Shanghai – work on areas including the development of machine learning algorithms to assist with the challenges of driving in China's cities. The contributions made by the research and development centres in Shanghai and Beijing to innovations in the ACES (Autonomous, Connected, Electrified, Services/Shared) future fields of action make them an essential element of the company's NUMBER ONE>NEXT strategy.

The BMW Group was quick to get involved in the development of automated driving systems in China. Back in 2016, the company became the first manufacturer to give a demonstration of Level 3 highly-automated driving on a designated section of motorway in Chengdu under official supervision. And in May 2018, the BMW Group officially obtained its Shanghai Intelligent Connected Autonomous Driving Test Licence issued by the authorities in the city, making it the first international carmaker to be authorised to test automated driving systems on China's roads. This licence allows the development team to collect several petabytes of data that will map urban traffic in all its complexity. This data will then serve as the basis for developing driving strategies for Level 4 fully-automated driving.

### **Collaboration with Baidu and involvement in the Apollo technology platform.**

In July 2018, the BMW Group and Baidu reached an agreement to collaborate on automated driving projects. The partnership seeks to develop safe, convenient and intelligent mobility solutions for customers in China. Under the terms of the agreement, the BMW Group also took a seat on the board of management for Baidu's Apollo initiative.

Apollo is an open technology platform from Baidu designed to drive forward the broad-based development of automated driving in China. Since its launch in 2017, more than 118 global partners from the automotive and technology industries have got involved in the project. All of which makes the Apollo platform one of the leading initiatives for safe and convenient automated mobility in the Chinese market.