



**BOSCH**

## A successful business year in 2017

Solutions for the internet of things (IoT): our portfolio at a glance



### **Connected cities: better quality of life**

With more than 15 million inhabitants, the Chinese city of Tianjin is an industrial center and transport hub. Bosch and the city authorities plan to work together to launch the “Smart Tianjin” initiative. Bosch will contribute the expertise it has gathered in other smart-city projects. With sensors, software, and services, Bosch is well positioned as an innovative IoT company. Worldwide, Bosch is already spearheading 14 beacon projects relating to smart cities.



### **Connected air-monitoring lab: Climo**

At CES 2018 in Las Vegas, Bosch presented Climo, a new microclimate monitoring system that analyzes data relating to air quality in real time. Combining wireless sensors with software, it uses cloud-based analysis to deliver a range of data about air quality in real time. It can measure and analyze a total of 12 parameters, including carbon dioxide, nitrogen oxide, temperature, relative humidity, and pollen count. It can help with traffic management and inform asthmatics when it is better to stay indoors or avoid certain districts.

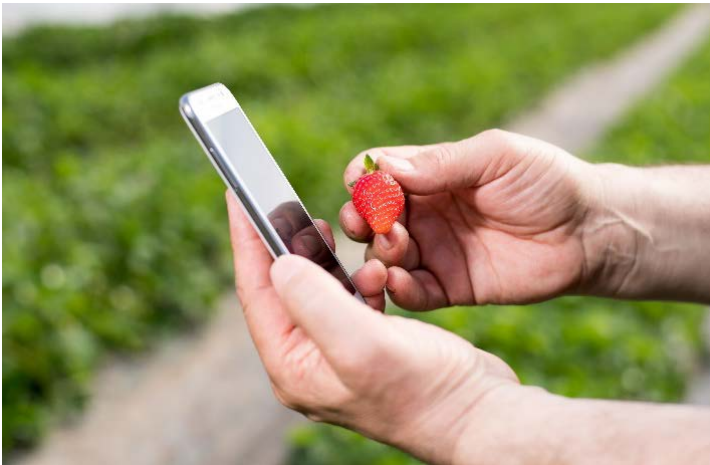


### **Connected kitchens: spice it up**

BSH Hausgeräte and the Berlin start-up Kitchen Stories are working together to open up new online cookery experiences for amateur cooks. BSH’s Home Connect ecosystem for household appliances incorporates a cooking app created by Kitchen Stories; the app has already been downloaded more than 15 million times. Available in 12 languages, the app contains over 1,000 recipes and uses videos and photos to demonstrate how to prepare them. In the future, it will be possible to send the oven temperature shown in the app directly to the connected oven.

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#### Connected agriculture: better harvests

A system of connected sensors is being put to use in fruit and vegetable cultivation. It measures the amount of moisture in the soil used to grow strawberries and informs the grower by app if it is too dry. The sensors also record temperature and humidity. If there is a risk of temperatures dropping, the app sends an alert telling growers to cover their plants. It also alerts growers to the need to ventilate their plants, and warns if there is a danger of a fungal infection.



#### Connected cattle: weighing made easy

Bosch's precision livestock farming system has debuted in Brazil: on Fazenda Santa Fé, one of the country's largest cattle ranches, Bosch sensors, software, and services help ranchers monitor things like the weight gain of their livestock. An RFID transponder attached to each animal's ear allows a scanner to identify them individually. The scanner signals are processed and assigned by a field box. The box gets its power from a solar panel, while an antenna is used to transmit the data to the ranch management.



#### Connected milk tanks: better quality

The Bosch milk monitoring system uses a sensor to measure the temperature of the milk in the tank. Via the Bosch IoT Cloud, the measured values are transmitted to the dairy farmer's smartphone. The dairy farmer receives an alert if there is a problem with the milk storage. If the temperature of the milk exceeds four degrees Celsius over a sustained period, bacteria can develop. This can cause the milk to spoil, which means a loss of income for the farmer. The Bosch system can be installed flexibly, and retrofitted to any milk tank.

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### Connected mobility: COUP

Bosch is establishing itself as a provider of connected mobility services: COUP, its e-scooter sharing service originally launched in Berlin, began operations in Paris in the summer of 2017. Six hundred e-scooters are available for rent in the city. An app is used to book and unlock the scooters. The electric runabouts offer a simple alternative to public transportation, private cars, and taxis. Starting in summer 2018, people in Madrid will be able to rent COUP e-scooters, too. Within a matter of months, COUP has evolved to become one of the leading e-scooter sharing services.



### Connected bikes: COBI

Until only a few years ago, the focus of the bicycle industry was on mechanical, analog products. Today's bikes, by contrast, are increasingly electric and digital. To improve the connectivity of e-bikes and complement its Nyon bicycle computer, Bosch acquired the connected biking start-up COBI in 2017. Its products and technology platform allow cyclists to use their smartphones as navigation, infotainment, and display devices.



### Connected parking: finding somewhere to park

Community-based parking enables drivers to find what has become a rarity in residential areas and city centers: an empty parking space. As they drive by, cars automatically recognize and measure the size of the gaps between parked cars, transmitting the data to a digital parking-space map. In this way, drivers can have themselves guided directly to free parking spaces. In 2018, Bosch plans to offer community-based parking in as many as 20 cities in the United States, including Los Angeles, Boston, and Miami.

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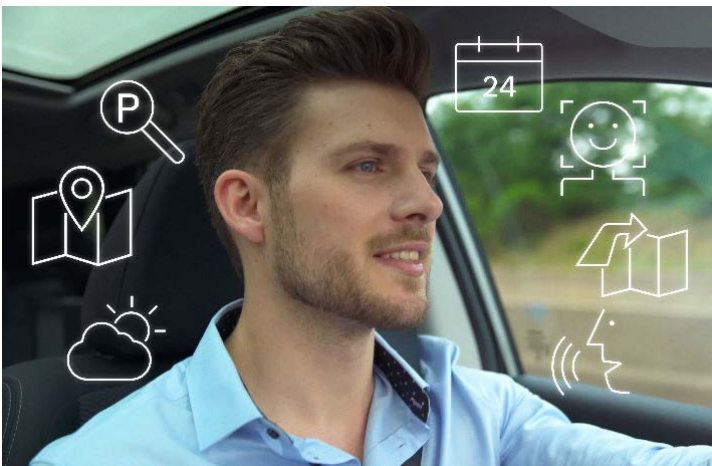
#### Connected parking garages: valet parking

In 2017, Bosch worked with Daimler to realize driverless parking in the Mercedes-Benz Museum parking garage in Stuttgart. In this world-first infrastructure-supported solution for automated valet parking, cars will look for a space in a parking garage and park themselves, without a driver. This cuts out stress, and makes more efficient use of parking lots – the same amount of space can accommodate up to 20 percent more vehicles. Bosch has thus already taken the first steps toward autonomous driving.



#### Connected robotaxis: pick me up

Bosch is working with Daimler to make a fully automatic, driverless system a reality in cities by the start of the next decade. The aim of this development alliance, which began in 2017, is to improve traffic flows in cities and make road traffic safer. One possible application is car-sharing. Instead of drivers going to their vehicles, the vehicles will come to them. Within a predetermined urban area, people can conveniently use their smartphones to book a shared car that autonomously delivers itself to them ready to take them to their destination.



#### Connected passenger: greater convenience

A new Bosch voice-controlled assistant helps drivers focus on the road ahead. Answering to name “Casey” when first installed, the assistant understands natural language as well as different accents and dialects. It makes driving not only more relaxed, but also safer, eliminating the distractions caused by actions such as using the navigation system, adjusting the climate controls, or accepting a call. Distractions like these are one of the most frequent causes of accidents.