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directly to the on-board vehicle systems. This way, customers will not be stuck with one version of the operating system or applications software, but rather they will register for a subscription that ensures access to the latest features delivered via cloud-based services.

Some new Mercedes-Benz cars already have Huawei modules onboard for telematics and multimedia applications. Huawei expects to further its reach in the automotive sector with LiteOS, a proprietary software operating system designed to power a wide range of smart devices. The LiteOS Application Program Interfaces (APIs) are built to enable third-party developers to easily write new applications for smart devices with embedded processors. Third-party partnerships will also be developed to aggregate these components into resource pools, and these resource pools into ecosystems that will include roadside assistance, navigation, and fleet management services.

### Thinking Outside the Car

The market for C2X and connected cars is quite different from Huawei's traditional carrier and enterprise technology markets. Today, Huawei has semi-conductor solutions that are packaged to provide GSM and LTE-based communications functions in combination with GPS, but it is Huawei's work as a global leader in the development of 5G broadband wireless protocols that will prove essential for assisted driving.

Employing a team of more than 500 experts dedicated to 5G research and having established partnerships with over 20 universities, including Harvard, Stanford, the Technical University of Munich, and Tsinghua University, Huawei estimates that its total investment in 5G research and development will be USD 600 million by 2018. Among the many corporate-level partnerships and collaborations is Huawei's relationship with the Fraunhofer Institute in Munich, Germany where integrated vehicle systems is one of the institute's key research areas.

Looking outside the car, Huawei solutions for data centers, communications carriers, and cloud services

are the connective fabric for bringing a wide range of on-the-move services that will include everything from vehicle monitoring to media content and even priority hospital access at great distances from the primary facilities. Nearly every C2X function will need a robust back-end system outside the car — likely provided by a partner ecosystem — to fully process the data and information that is most beneficial to drivers and their passengers.

### Strategic Partnerships and Stakeholders

Car manufacturers need strong partners in the IT and carrier businesses to operate C2X services on a global scale. For example, cars in Europe are subject to different environmental regulations than those in the Middle East. After years of use, the collected data sets between Europe and the Middle East will be quite different. Integrated cloud services provided by qualified ICT partners will enable automobile manufacturers to provide uniform driving experiences in all possible local conditions.

A newcomer to the automotive industry with no legacy solutions to overcome, Huawei has received strong recognition from Mercedes-Benz, BMW, and Audi for its technology, which indicates a bright and promising future with the C2X platform for the telecommunications giant.

For example, any car equipped with a Huawei processor and communications module is designed to have direct access to monitor critical data that can be transferred to nearby service centers located around the world via secure 5G and eLTE networks. Open-source cloud services operated by Huawei and auto industry partners are providing connectivity between the C2X telematics platform to navigation, eCommerce, and direct-to-consumer media systems.

As a global ICT company, Huawei customers include telecommunication carriers, national and local governments, multi-national enterprises, small- and medium-sized businesses, and consumers. Huawei currently has global partnerships with more than 50 telecommunications companies, such as telecom giant Vodafone and Big Data enablers like European software maker SAP. ▲