



Ford, Bedrock and Bosch are Exploring Highly Automated Vehicle Technology in Detroit to Help Make Parking Easier

- Ford research vehicles begin demonstrating infrastructure-based solution for highly automated valet parking
- Using a sophisticated set of infrastructure-based sensors in Bedrock's Assembly Garage, vehicles drive and park themselves inside the enclosed garage
- Drivers benefit from reducing the stress of looking for a parking space; garage operators and residents benefit from automated valet parking solutions that increase parking capacity and offer services for vehicles while parked

Many people enjoy driving... until it's time to park. So why not leave the task to the vehicle?

Ford Motor Company, Bedrock and Bosch are launching a demonstration project with connected Ford test vehicles that can drive and park themselves inside Bedrock's Assembly Garage in Detroit, in the US, using Bosch smart infrastructure. This is the first U.S. infrastructure-based solution for automated valet parking where the vehicle will park itself inside a parking garage.

The research will take place in the Corktown neighborhood, the site of Ford's new mobility innovation district, anchored by Michigan Central Station. The district will draw mobility innovators and disruptors from around the world to develop, test, and launch new solutions to solve urban transportation challenges, improve mobility access for everyone and prepare for the increasingly connected and autonomous world ahead.

"We are continually searching for opportunities to expand our leading suite of Ford Co-Pilot360 driver-assist technologies that help people drive more confidently and we believe automated valet parking technology holds great promise," said Ken Washington, chief technology officer at Ford Motor Company. "Our work with Bosch and Bedrock also aligns with our vision for the future, which includes increasingly automated vehicles that are more aware of their surroundings while requiring less on-board computing to help improve design, packaging and affordability."

The demonstration project will be on display on the ground floor of Bedrock's Assembly Garage, the real estate developer's first residential redevelopment project in the Corktown neighborhood. The project aligns with Bedrock's vision of combining ground up and historical developments with the newest technology in parking and mobility - including the current installation of the Midwest's first automated parking stall, which parks and retrieves vehicles in the basement of the Free Press Building using street-level load bays.

"We strive to be at the forefront of parking and mobility initiatives in Detroit because we recognise the importance of interconnectivity between real estate and mobility," said Heather Wilberger, chief information officer at Bedrock. "In addition to drastically reducing park time, we see this solution as the first step to bringing automated parking to our city, providing the ultimate convenience for our tenants, visitors, neighbourhoods and residents."

Connected vehicle and smart infrastructure enhance automated parking

The connected Ford test vehicles operate in a highly automated fashion by vehicle-to-infrastructure (V2I) communication with Bosch's intelligent parking infrastructure. The infrastructure sensors recognise and localise the vehicle to guide its parking manoeuvre, including the ability to help avoid pedestrians and other hazards. If the infrastructure senses something in the vehicle's path, it can stop the vehicle immediately.

"For Bosch, automated valet parking brings together our deep cross-domain experience in mobility and building technologies to deliver a smart infrastructure solution that improves everyday life," said Mike Mansueti, president of Bosch in North America. "This technology enables consumers to see the benefit of highly automated technology as the vehicle handles a task such as parking in a garage."

Upon arriving into the garage, a driver will leave the vehicle in a designated area and use a smartphone app to send the vehicle into an automated parking manoeuvre. Drivers will also use the app to request the return of the vehicle to the designated pick-up area, expediting the parking experience and removing the responsibility of finding the vehicle upon return to the garage.

New mobility requires collaboration

The demonstration project at Assembly Garage brings together one of the world's largest automakers, Ford, the largest property developer in the City of Detroit, Bedrock, and the world's largest automotive supplier, Bosch, to demonstrate how organisations are working together on new mobility initiatives.

The demonstration project will enable the three companies to gain valuable insights regarding user experience, vehicle design, parking structure design and application to expand the technology and its application.

"It is exciting and challenging to explore smart vehicles in a smart world. Ford, Bosch and Bedrock have learnt a lot about how cars communicate with infrastructure from the automated valet parking project. We were able to manoeuvre the vehicles safely in a complex environment while maintaining the highest level of safety," said Joseph Urhahne, Automated Driving Research & Advanced Engineering, Ford of Europe.

Efficient use of space and vehicle services make the case

Automated parking solutions bring value to garage owners by allowing for the more efficient use of spaces inside a parking garage. With automated valet parking, the same amount of space can accommodate up to 20 per cent more vehicles. The solution can be deployed via retrofitted solutions like the one in the Assembly Garage or with embedded infrastructure planned into construction of new garages that enables optimised design for maximum capacity.

In addition to simply parking, a vehicle could also drive itself to areas within the garage for specific services such as vehicle charging or a car wash. During the demonstration project, Ford, Bedrock and Bosch will demonstrate vehicle paths showing how a vehicle would move between service areas and ultimately to a parking spot before the user calls it back to leave the garage.

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About Ford Motor Company

Ford Motor Company is a global company based in Dearborn, Michigan. The company designs, manufactures, markets and services a full line of Ford cars, trucks, SUVs, electrified vehicles and Lincoln luxury vehicles, provides financial services through Ford Motor Credit Company and is pursuing leadership positions in electrification; mobility solutions, including self-driving services; and connected services. # Ford employs approximately 188,000 people worldwide. For more information regarding Ford, its products and Ford Motor Credit Company, please visit .

Ford of Europe

is responsible for producing, selling and servicing Ford brand vehicles in 50 individual markets and employs approximately 45,000 employees at its wholly owned facilities and consolidated joint ventures and approximately 58,000 people when unconsolidated businesses are included. In addition to Ford Motor Credit Company, Ford Europe operations include Ford Customer Service Division and 18 manufacturing facilities (12 wholly owned facilities and six unconsolidated joint venture facilities). The first Ford cars were shipped to Europe in 1903 – the same year Ford Motor Company was founded. European production started in 1911.

About Bosch

Having established a regional presence in 1906 in North America, the Bosch Group employs 34,600 associates in more than 100 locations, as of December 31, 2019. In 2019 Bosch generated consolidated sales of \$14.4 billion in the U.S., Canada and Mexico. For more information, visit www.bosch.us, www.bosch.ca and www.bosch.mx.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 400,000 associates worldwide (as of December 31, 2019). The company generated sales of 77.7 billion euros in 2019. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. Bosch employs some 72,600 associates in research and development at 126 locations across the globe, as well as roughly 30,000 software engineers.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, www.twitter.com/BoschPress.

Exchange rate: 1 EUR = 1.1027

About Bedrock

etroit-based Bedrock is a full-service real estate firm specialising in acquiring, developing, leasing, financing and managing commercial and residential buildings. Since its founding in 2011, Bedrock and its affiliates have invested and committed more than \$5.6 billion to acquiring and developing more than 100 properties, including new construction of ground up developments in downtown Detroit and Cleveland totaling more than 18 million square feet.

Bedrock's real estate portfolio consists of 210 office tenants and 125 retailers and restaurants in Detroit's technology-centric downtown, the majority of which are new to the market. Key office tenants include Coyote Logistics, IBM, Microsoft, Quicken Loans, LinkedIn, StockX, Universal McCann, UBS, Ally Bank's national headquarters and Fifth Third Bank's regional headquarters. Key retail tenants include H&M, Plum Market, The Lip Bar, 6 Salon, Lululemon, Shake Shack and countless others.

Bedrock is currently developing four transformational projects including the Hudson's Site, Monroe Blocks, Book Tower renovation and One Campus Martius expansion. Bedrock is also undergoing construction of City Modern, a community development in Detroit's Brush Park neighborhood. Partnering with Detroit-based Shinola, Bedrock developed the world's first Shinola Hotel on Woodward Avenue, which opened in early 2019.

Bedrock is dedicated to creating jobs for Detroiters and investing in job training. Over the last year, the company has invested in both the Randolph & Breithaupt Career and Technical Centers to build a pipeline of talent for Detroit's growing economy.

Creating unique experiences through real estate is Bedrock's mission. To make this a reality, Bedrock and its affiliates continuously invest in significant public art installations and placemaking initiatives throughout the city.

For more information on Bedrock's business model, visit the For More Than Profit book. For more information on Bedrock's projects, visit bedrockdetroit.com or engage with us on Twitter and Facebook.

Click [here](#) to view a complete timeline of Bedrock and the Rock Family of Companies' engagement within the Detroit community.

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