

# REALIZING OPPORTUNITIES WITH ADVANCED AUTOMOTIVE TECHNOLOGY



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# AUTONOMOUS TECHNOLOGY DELIVERING THE GOODS AT NORTHWEST OHIO COLLEGE



**"STARSHIP'S MAIN GOAL IS TO PROVIDE A MORE CONVENIENT WAY TO COMPLETE THE LAST MILE DELIVERY THROUGH THE MEANS OF AN AUTONOMOUS ROBOT.**

- Aram Hosenfeld, Starship Operations Site Lead, BGSU



In 2020, students at Bowling Green State University in Northwest Ohio were introduced to a new food delivery service - autonomous mobile robots. The safe, self-driving battery-operated units were brought to campus by Starship, a California-based company founded in 2014 behind a revolutionary food and package delivery service. Starship focuses its service on college campuses, with students as the primary customers.

The company chose the Bowling Green college campus for its robotic service venture because:

- The relative flatland of the campus is ideal for robots
- Starship prefers regions and colleges that focus on technological advancements and autonomous applications

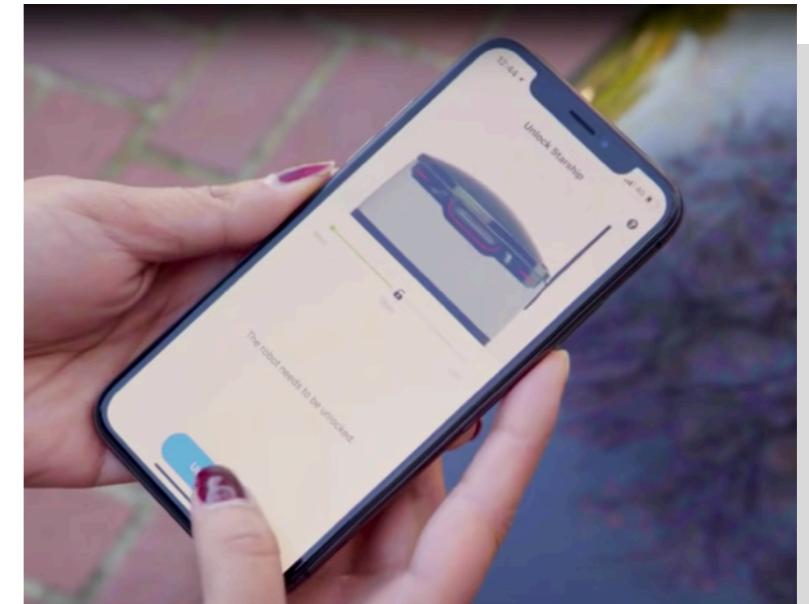
Northwest Ohio, with a rich heritage in advanced manufacturing and technology, particularly as it relates to automotive, autonomous and smart mobility, certainly checked the latter box for Starship.

The company partnered with BGSU Dining to implement the program. Using an app, students place their order, pay, and then drop a pin of the delivery location. Robots deliver the food, and then customers are able to unlock the lid of the robots with a unique code through their app.

"One of the interesting things is the 'cool' factor of the robots," said Jon Zachrich, director of marketing and communications with BGSU Dining. "BGSU and the city were excited about this opportunity and we all ran with it. Students love it, parents love it, the administration loves it."

According to Hosenfeld, the robots were designed with safety as the primary feature. Built in-sensors allow them to avoid running into traffic, objects and pedestrians. In the pandemic era, sanitation is also front and center. "I like to say the robot is a very nervous, polite pedestrian," Hosenfeld said. "If you try to give it the right away, it's not going to take it."

BGSU served as the pilot college for starting off-campus delivery. So far a success, according to Zachrich. He said that as many as 100 robots are now delivering across campus, leading some who asked if human jobs would be eliminated. "They weren't eliminated ... we actually hired 35 new positions," he said.



# TRANSITION WITHIN THE AUTOMOTIVE INDUSTRY PRESENTS OPPORTUNITIES FOR COMMUNITIES



**"THE BIGGEST TECHNOLOGY BOOST THAT'S HAPPENED HAS BEEN THE SPEED OF THE PROCESSORS ON THE VEHICLES ... 'CAN I GET THAT INFORMATION IN REAL TIME AND RESPOND TO IT IN REAL TIME?' THESE ADVANCEMENTS WITH THE COMPUTER HARDWARE AND SOFTWARE MAKES A VERY COMPLEX MACHINE MUCH EASIER FOR THE DRIVER TO OPERATE.**

- Kim Hill, President,  
HWA Analytics



The technological boom over the last half century has impacted nearly every industry and every facet of our lives.

Without question, advancements in the automotive industry have been extremely influential, particularly in just the last decade.

The rapid advancement of automotive technology is encouraging many non-traditional automotive companies to analyze potential opportunities in the market, according to Kim Hill, president and co-founder of HWA Analytics, an advisory firm providing research and consulting services, including for the automotive and advanced transportation industry.

Hill said the auto industry is on the cusp of change from motor vehicle manufacturing to a mobility industry, and these developments are creating a seismic shift throughout the industrial sector. How businesses react and respond to these opportunities will determine their future.

According to Hill, it was about 10 years ago when technology within the industry concentrated on software and self-driving vehicles - technology such as lane departure warnings and adaptive cruise control. More recently, the EV market has taken off, with estimates of more than 1.8 million electric vehicles registered in the U.S. in 2020, a 200% increase from 2016.

Hill says the U.S. has crossed a threshold of acceptance and desirability of electric vehicles. He attributes that to Tesla's work in improving the mileage. More and more automotive companies have now jumped in the market. In addition, progress has been made on the ability to charge the vehicle and the time necessary to charge.

Other advancements within the industry have included hybrid technology, safety features, driver assistance, quasi-autonomous, sensors and cameras, Hill said.

To best position themselves and take advantage of growing opportunities in the industry, Hill encourages enhanced collaboration among community leaders and businesses. Awareness and discussion of these industry advancements and awareness of forecasted changes will help both sides sufficiently prepare, he said. Tied to that, understanding the changing supply chain is critical, Hill said. As it relates to the EV market, wherever there are assembly plants, there will need to be nearby battery plants.



# TOLEDO AND NORTHWEST OHIO FINDING THEIR PLACE IN THE ADVANCED AUTOMOTIVE WORLD



**"SHOULD THOSE COMPANIES GO AWAY, THAT WOULD IMPACT OUR LOCAL AND REGIONAL ECONOMY IN A BIG WAY. THE GOOD NEWS IS, WHEN WE STARTED TO TALK TO THE COMPANIES IN THE SUPPLY CHAIN, WE FOUND OUT THEY'RE ALREADY INVOLVED.**

- GARY THOMPSON, EXEC. VP REGIONAL GROWTH PARTNERSHIP

Going back to World War II, the Toledo/Northwest Ohio region has played a major role in the automotive industry. It was then, the U.S. Army selected the Jeep 4x4 as the primary vehicle, with more than 640,000 produced over a five-year period. With ramped up production at the Toledo Jeep plant came suppliers, technological expertise, tool and die shops, educational programs - all ancillary components necessary to support an automotive assembly plant.

Over the years, some of the top-rated suppliers in the country, including engine and transmission plants, have made home in the Toledo region, supporting production for all makes and models.

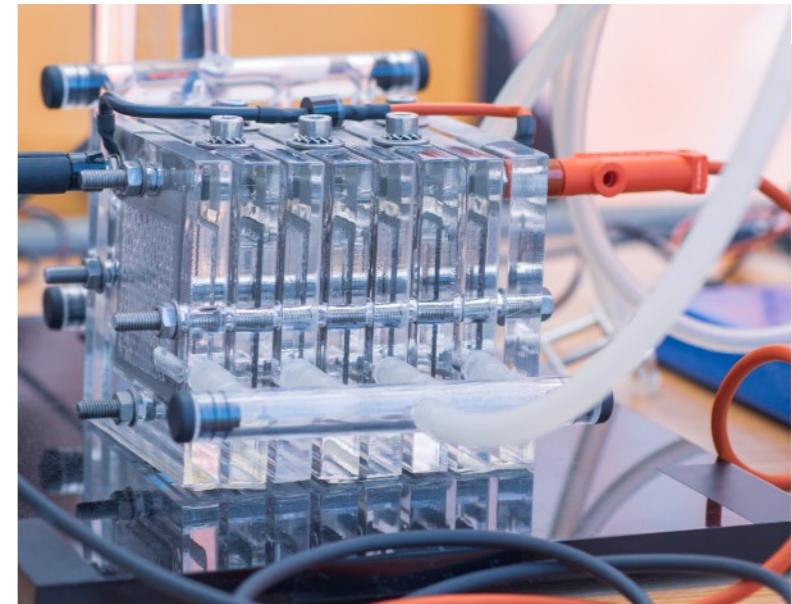
With growth in smart mobility skyrocketing across the globe, the Toledo region, including companies, economic development professionals and government leaders, were forced to address their place in the advanced automotive industry.

Where do they fit in? How do they stay relevant and succeed? What can the community do to support those businesses?

Thompson noted that Jeep will be launching its first electric vehicle by 2023. In addition, many other companies are involved in new program platforms for OEMs that are making the electric vehicle happen in Northwest Ohio.

These industry changes are being supported by educational institutions, utilities and other power providers. For example, the University of Toledo's engineering program is researching products and materials that are best fits for newer technologies, while Bowling Green State University's life sciences program is researching how to make paint on a car an active element for safety or communication. And utilities here in Northwest Ohio are working to provide renewable power for companies and helping to transition from carbon-based fuel to renewables such as solar or wind.

As part of the automotive triangle with Detroit and Ann Arbor, the Toledo region is establishing itself as a viable location for companies looking to test and deploy new technologies. One technology currently being tested is pedestrian detection software for vehicles. In addition, according to Thompson, there are a number of coalitions which have evolved recently to help the area further its standing in the expanding automation and mobility industry.





A history backed by discovery and innovation has elevated Ohio to the forefront of the North American automotive industry. Those advancements have continued as Ohio plays a major role in the research, testing and development of new technologies and smart mobility. Contact the Regional Growth Partnership in Northwest Ohio to learn more about opportunities for your business.



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