

Company Information

Who We Are

Ushr has harnessed the world's most complex geospatial data for autonomous driving, making a safe, hands-free driving experience a reality today.

Based in Detroit and in CA, Ushr has access to the world's leading automotive minds, bringing together a powerful force of change and development in the autonomous industry.

Through a combination of expert engineers in artificial intelligence, LIDAR and image sensing, geospatial databases, photogrammetry, GNSS positioning, machine vision, machine learning, and embedded system development, Ushr delivers cutting edge software to autonomous vehicle manufacturers around the world.

Why It Matters

Ushr's technology is critical for safe vehicle operation as it provides knowledge of the roadway to vehicle controllers.

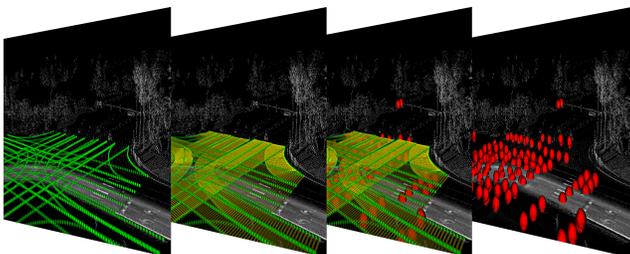
By interpreting and communicating street level detail, our mapping systems function much like a human driver's memory of the road, providing autonomous vehicles with a long-range view that allows the vehicle to proactively anticipate roadway changes (instead of merely reacting to sensor inputs).

Ushr software then interprets and communicates road level detail to enable intelligent control decisions — giving vehicle operators and passengers confidence, comfort and peace of mind.

How Does It Work

Ushr creates HD maps by combining long-range remote sensing technologies with proprietary geo-spatial and machine learning (ML) techniques. LiDAR and advanced photogrammetry capture the roadway data. Roadway features are extracted from the data using advanced ML/AI algorithms and placed into a global coordinate system that has a deviation of less than ten centimeters (about four inches).

These techniques can be implemented in real-time in vehicle systems to detect an object or a change in the road. By combining geospatial data with remote sensing technologies such as LiDAR and geospatial software, Ushr digitizes, visualizes, analyzes and acts on complex geospatial challenges like no other.



What Sets Us Apart

- We are the only company that interprets maps and communicates them to the vehicle control system.
- Ushr maps and software provide the most accurate long-distance sensing systems enabling safe and predictable autonomous vehicle operation.
- We are the first to market for high-definition mapping in an autonomous vehicle (Cadillac's CT6).
- Ushr's staff has been mapping engineering structures, power lines, railways and roadways accurately for over 20 years. That expertise puts us squarely ahead of any other HD mapping providers.
- Benchmarked against other mapping technologies, Ushr has mapped over 200,000 miles of roadway to under 10 centimeters' level of absolute accuracy.
- We have a role in every stage of product development (research, advanced, execution) within the autonomous driving technology spectrum.
- We are based in Detroit, Michigan, the epicenter of automotive development.
- We architect HD mapping software that takes autonomous driving beyond traditional sensors.
- Ushr's technology not only "sees" the road, but functions as a memory of the road, providing autonomous vehicles with a long-range view that allows the vehicle to proactively anticipate roadway changes (instead of merely reacting to sensor inputs).
- Ushr's in-vehicle software solutions reduce cost and implementation complexity for automotive OEM customers, a compelling sales opportunity which provides competitive differentiation.
- The automotive market can be challenging due to the length of design cycles. Ushr's existing contracts and technological "head start" provide a significant barrier to entry for competitors.

Where We Came From

Over the last three years, the Ushr team has developed the first production HD maps for autonomous driving integrated into GM's Cadillac SuperCruise™ with the CT6 model that launched in September 2017.



Ushr's three-year lead in collecting, processing and delivering its proprietary mapping technology gives it a clear advantage in the market. Ushr, in close collaboration with GM, has delivered over 200,000 miles of roadway data for production vehicles.

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Our Solution

Our software, known as the Advanced Driver's Map (ADM), allows system developers to eliminate the "map-module" and replaces the e-Horizon software used in many of today's AV control systems. Eliminating the map module significantly reduces system cost and complexity. The ADM provides the required system interfaces, allowing the vehicle to access all the roadway feature data needed for safe vehicle operation. Vehicle localization software integrated with the ADM allows for precise positioning of the vehicle on the roadway. The ADM also integrates with Ushr's change detection algorithms.

Ushr is focused on increasing quality while reducing cost for HD map data collection and map production. Unique application of stereo camera imaging techniques allows Ushr to dramatically reduce the cost of acquiring roadway data. Most HD map production currently utilizes large teams of people in low cost geographies to manually extract the map features required for autonomous driving. The manual process is both costly and error prone. Using advanced machine vision and machine learning techniques, Ushr is on target to achieve 90% automation of data processing by the end of 2017.

By dramatically reducing human error, automation yields an increase in map quality from 96% feature accuracy in 2016 to 99+% feature accuracy today.

Over the past four years, Ushr has reduced map production (data collection and processing) costs by 80%. Further technical developments in automation and beyond will reduce costs to a mere 7% of original estimates by 2020. Achieving these targets allows Ushr to dramatically increase map mileage/coverage at a lower cost point than competitors.



Where We Are Headed

Autonomous driving has received significant global attention. Its evolution is expected to transform the automotive industry and other adjacent markets. As a result, OEMs and suppliers are aggressively pursuing new technologies and partners to solve for the challenges of autonomous driving.

Ushr is working with major automotive OEM companies and automotive suppliers to integrate its cutting-edge software and map technology for future products into vehicles on this curve. The developments include the use of Ushr software and HD maps to improve vehicle positioning, situational awareness and trajectory planning.

HD maps require different processing and data collection techniques than traditional navigation maps. This has effectively leveled the playing field and yields no competitive advantage to the traditional navigational map suppliers. In fact, traditional suppliers must collect all roadway data again with new equipment and redevelop their processing tools to produce HD maps. Thus far, competitors have been unable to produce maps with the levels of accuracy Ushr has achieved.

While most start-ups provide isolated solutions for OEMs, Ushr is a part of the full spectrum of autonomous vehicle development – delivering comprehensive support to its partners where other mapping providers tend to focus only on map processing, map data acquisition or change detection.

Successful suppliers will be established in the next 1-2 years. Ushr is strategically positioned with its current software and high definition roadway data to be selected as a key partner and Tier 1 software supplier.

Our Team

We are proud to bring together a diverse team of expert engineers in artificial intelligence, LIDAR and image sensing, geospatial databases, photogrammetry, GNSS positioning, machine vision, machine learning, and embedded system development to deliver cutting-edge software to autonomous vehicle manufacturers around the world.

Based in Detroit, MI and Lompoc, CA, we have access to the world's leading automotive minds, bringing together a powerful force of change and development in the autonomous industry.



A Snapshot of Valuable Information

Background:

- Founded: June 2017
- Employees: 42
- Office Locations: Michigan and California

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Social Channels: [Facebook](#) | [Twitter](#) | [LinkedIn](#) | [Instagram](#)