

USHR COMPANY INTRODUCTION

NDS CONFERENCE - MAY 18, 2022



Ushr Company Overview



Ushr is a technology leader offering high-definition mapping data and software to support advanced driver assistance and autonomous driving systems.

Company Name

Ushr Inc.
Est. Aug. 2017

Address

36965 W. Seven Mile Rd.
Suite 110
Livonia, MI 48152

Management

Chris Thibodeau, CEO & President

Employees

155 in MI, CA & Remote

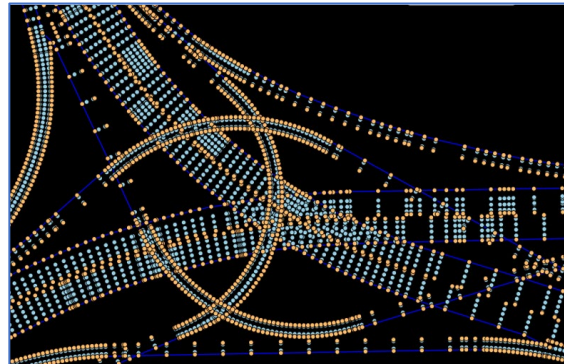
Ushr leverages over 20 years of geospatial data experience initially developed for the utilities industry.

- In 2017, Ushr separated from GeoDigital to pursue growth in the Automotive markets.
- Ushr launched on the GM Cadillac CT6 in late 2017 (World's 1st HD Map in production)
- In 2019, Tokyo-based Dynamic Map Platform Ltd. acquired Ushr. Ushr now operates as a wholly-owned subsidiary of DMP.

DMP shareholders



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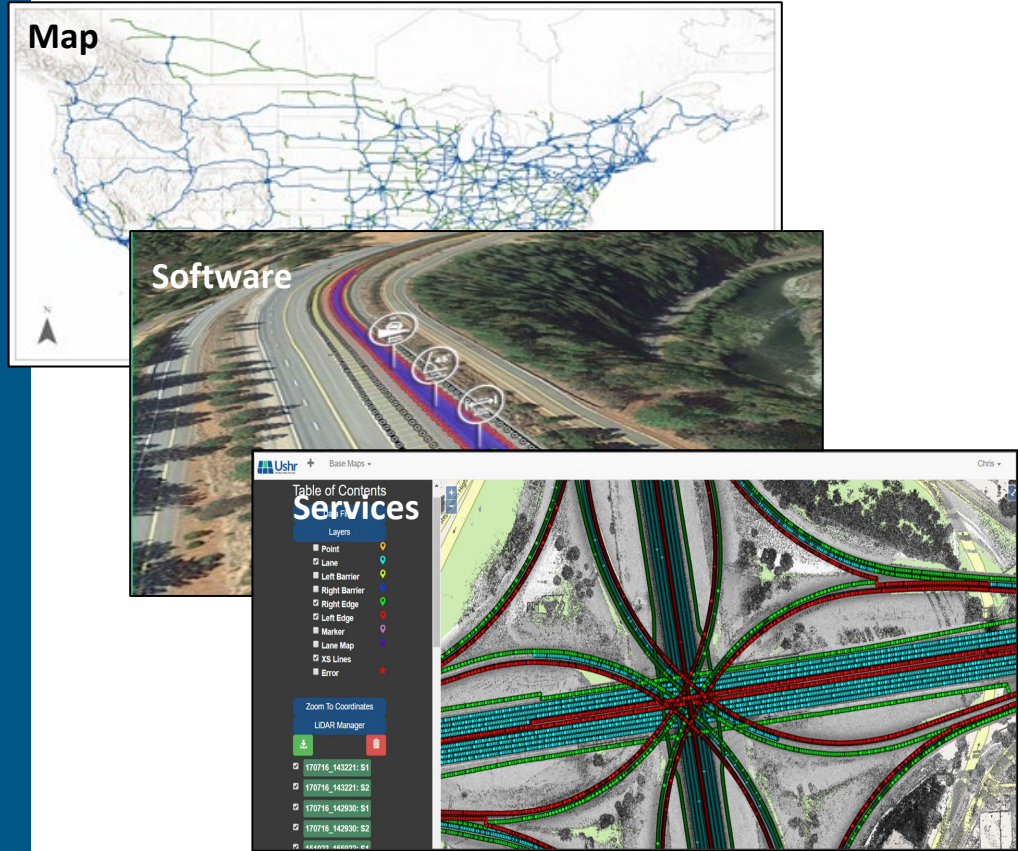
Product Portfolio

HD Maps

- Geographies
- Road class
- Road Features
- Construction Tracking
- Customer Publishing
- Curvature

Software & Services

- ADM eHorizon
- SD-HD Alignment
- Delivery Review Tool
- Database Conversion Tool (OpenDRIVE®)
- Data Analytics
- Web Coverage Layer



Custom HD Map Database

Sourcing

Ushr Database

OEM Specs

Customize

Updates

*Complete Attribution-
Accurate & High
Quality*

*Distill OEM's essential
attributes*

*Publish to Custom Database,
Truncate and Compress*

Secure

Ushr's Master Roadway
Database

OEM 1 Spec



OEM 1
Custom DB

Custom Database

- PostgreSQL
- SQLite
- XML
- OpenDrive(XML)
- NDS
- CSV

OEM 2
Custom DB

Navigation Data Standard

ASAM OpenDRIVE®



Delivery to vehicle

Custom OEM Database

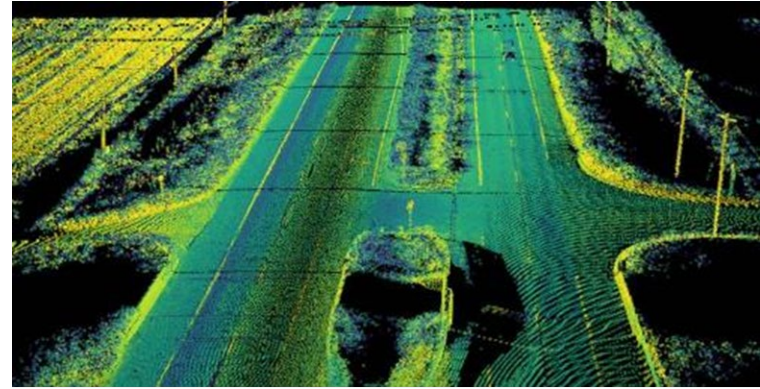
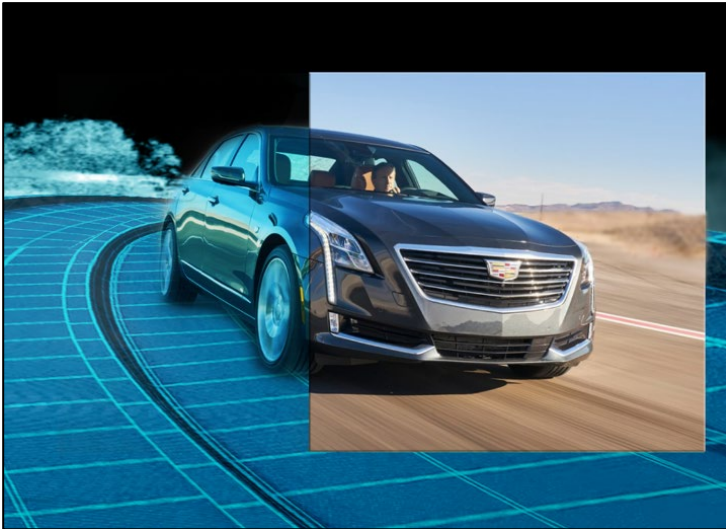
- Precise <15cm RMSE
- Customized Design & Attribution
- Conforms to:
 - OEM Control System
 - OEM Safety
 - OEM Validation
 - OEM OTA Delivery
- Auditable & Traceable to Ushr DB
- Low Memory Footprint

Ushr HD Map Can Optimize Total System Cost For Custom Applications

Ushr's HD Map in Production for 4 Years

GM Super Cruise™ Hands Free Driver Assistance launched on CT6 in Oct. 2017

- Mapped more than 200,000 miles
- Now supporting Auto Lane Change ('21)
- 4 years of Map Updates
- Exceptional Safety Record



DMP-Ushr is the world leader in HD Maps enabling hands-free highway driver assistance.

ADM e-Horizon Software

ADM API Software

On-Vehicle software for lane-level electronic-horizon (a.k.a. Most Probable Path)

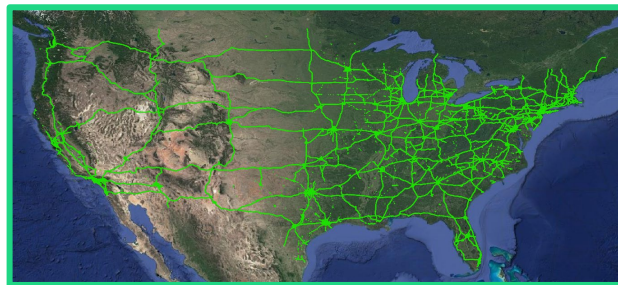
- Look-ahead distance of road features up to 2km & look behind of 200m
- Optimized for Automotive Grade Embedded Hardware (QNX, aarch64)
- Support for all Major US Highways
- Customer calibratable parameters for enhanced target hardware performance
- Open Drive 1.4 (DCT) compatible for simulation testing
- ISO-26262 ASIL B(D) process compliance
- Road Features Include: Point Features, Unsafe Stretches, Lane Level Attributes, Path Level Attributes, Most Probable Path Definition, On/Off Ramp scenario

ADM Data Store Update Module

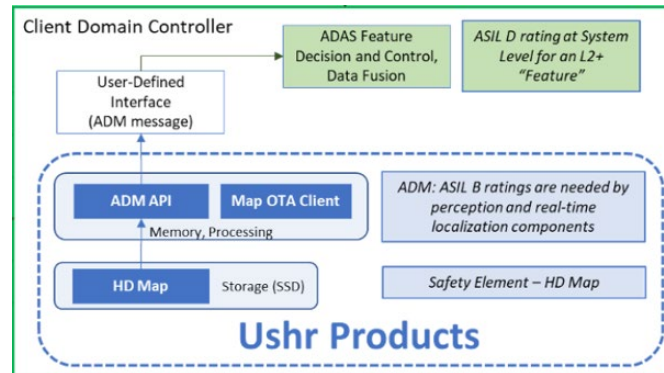
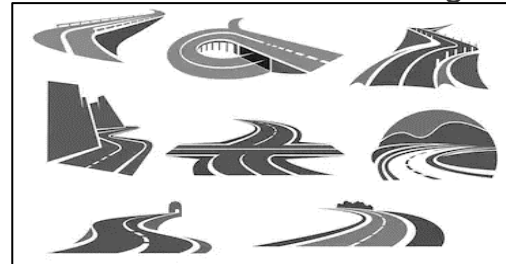
On-Vehicle software to update the HD Map when there is a new map or software update.

ADM Data Store Update Management Module

In-Cloud software which determines the delta between the latest map on cloud vs. the map on vehicle, prepares the update package, and pushes it to the vehicle



Bench & Simulation Testing



Why Join NDS?

Navigation Data Standard

The **worldwide standard** for map data in automotive eco-systems

CONNECTED

NDS is for in-vehicle navigation and for ADAS and e-horizon safety systems. It is for mobile companion apps, connected car cloud solutions, and for autonomous driving. It evolves with the market needs as NDS is for the automotive industry, by the automotive industry.

FLEXIBLE

NDS offers a well-defined spec for how to store map data and it allows flexibility for customized user experiences.

The NDS specification covers the data model, storage format, interfaces, and protocols.

WORLDWIDE

NDS maps work worldwide and are globally adopted.

NDS members and map coverage include North America, EMEA, APAC, including China, South Korea, and Japan.

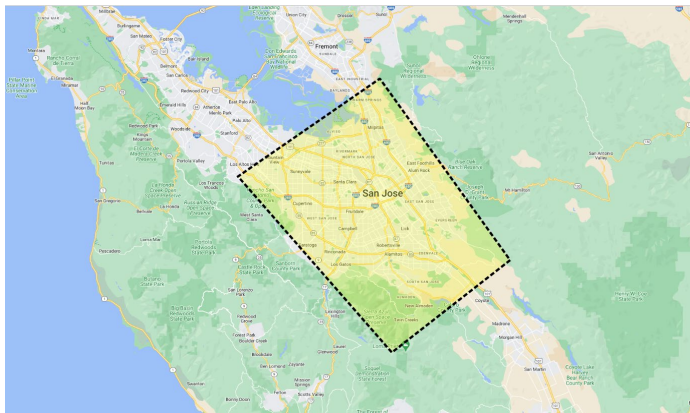
- Tomorrow's vehicles will combine map and sensor data for advanced driving automation.
- A standardized map will provide location references enabling the fusion of map and sensor data. The NDS Association members, believe that a common map standard is essential for creating a network effect.
- The automotive industry needs to work together on sharing data

"The map required for automated driving is a high definition map that enables vehicles to precisely locate themselves and data to be geo-referenced to precise locations. NDS offers the data specification for this kind of high definition map."

NDS Work Since Joining The Consortium

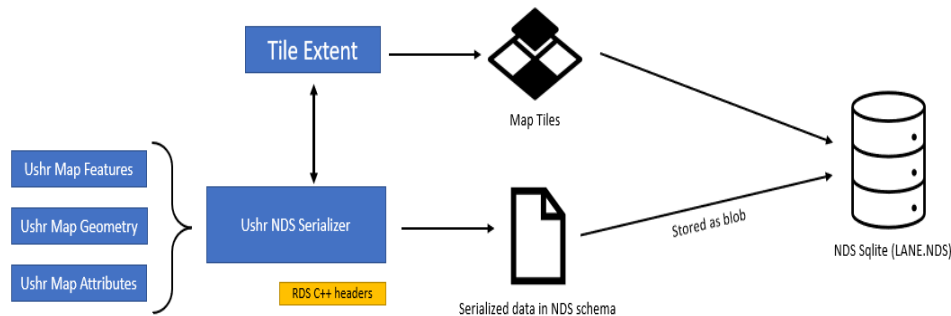
Phase 1

- Generated a sample NDS classic map using the NDS/OpenDrive tools
- Compare features and attributes between NDS and Ushr databases



Phase 2

Manually create NDS blobs using Ushr road geometry (LANE)



Summary

Ushr Is A Leading HD Mapping And Software Provider For ADAS and Autonomous Driving Systems



Large Growing Market

- \$77B world-wide (2035)
- 25% of total industry
- \$1.3 T total economic benefit



Industry Leadership

- First mover, first prover
- 2x-3x more accurate
- Industry Benchmark for ODD, Safety & Legal



Market Proven

- GM SuperCruise™
- PACE Award Finalist
- 2nd and 3rd OEMs Launch in 2021-22



Strong Plan and Team

- 10x coverage increase
- 10% of current data costs
- 10x productivity increase
- Veteran Team