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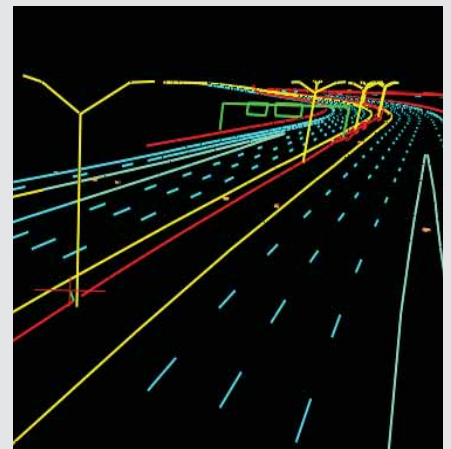
Sanborn HD Maps for Autonomous Driving*

Sanborn's Advanced Technology group has developed proprietary HD Mapping technology that leverages Aerial Imagery, Aerial LiDAR data, and Mobile (driven) LiDAR data to create standardized HD Maps for self-driving vehicle programs.

Sanborn High Definition Maps For Autonomous Driving Feature:

- Accuracy in the 7-10cm absolute ranges for ultra high precision global reference.
- Highly detailed inventories of all physical road network infrastructure such as road lanes, edges, shoulders, dividers, traffic signals, signage, paint markings, poles, and all other critical data needed for the safe navigation of roadways and intersections by autonomous vehicles.
- Electronic Horizon Predictive Awareness – autonomous vehicles will know what lies ahead beyond typical 200m sensor threshold limitations.
- OpenDrive and NDS format compatibility. (Conversion to ODR formats available).
- ADASIS v2 standardization. (Paths are represented as optimized Drive-Line trajectories).
- Proprietary Geo-Database schematics that have been reviewed by top-level industry consultants and DOT professionals.
- Integration compatibility with all forms of Municipal Data, Vehicle Supplied Data, and Crowd-Sourced datasets. (Real time traffic conditions and routing integration).
- Conflation functionality designed to improve the absolute accuracy of third-party Road Data (probe or alternative source) to Sanborn HD Map high-precision standards.
- Online web-based analytics – designed for auto teams to review / discuss vector and point data superimposed digitally on top of high-resolution imagery.
- Lightweight data size – data is optimized and compressed for onboard CPU systems.

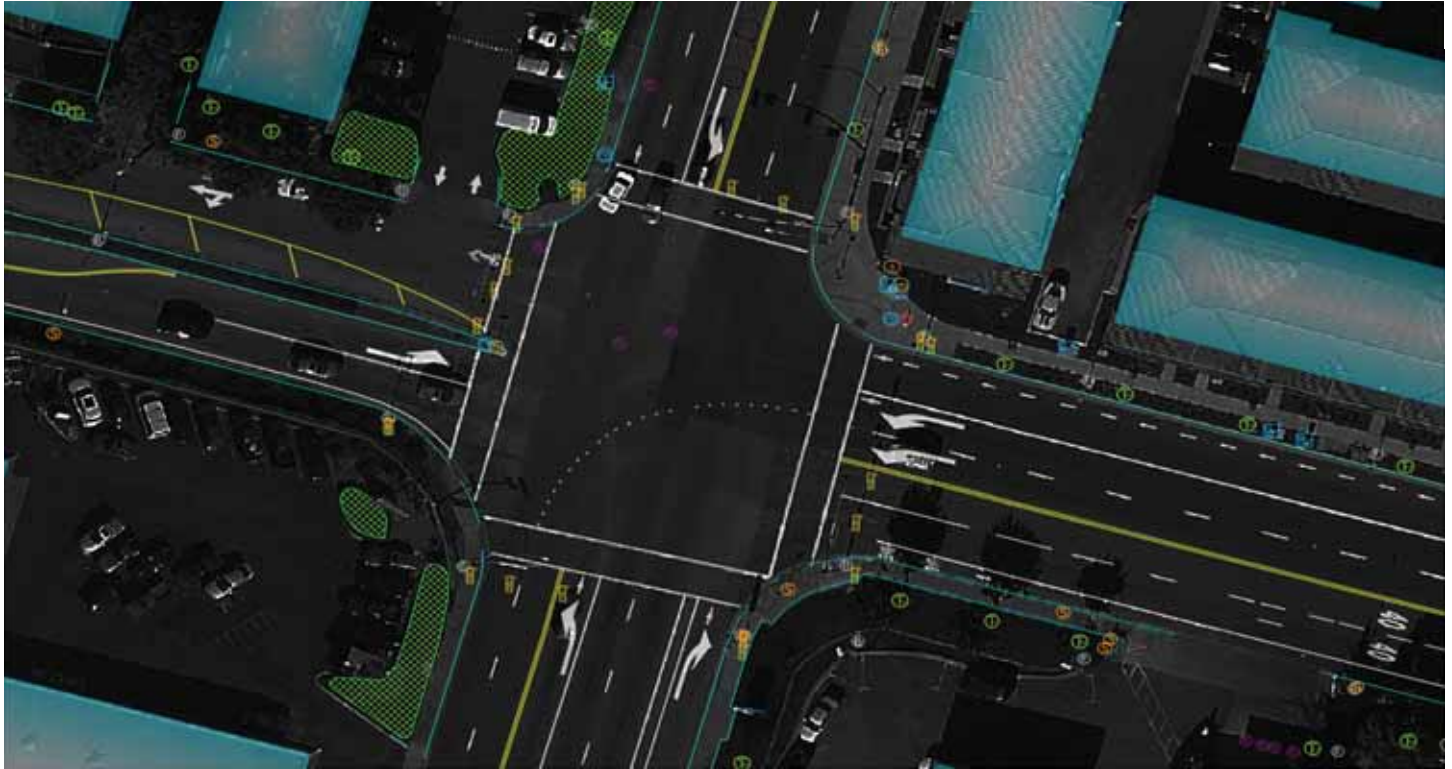
To Demo, Please Contact:
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Precision 3D designed for Computer Vision

Sanborn HD Maps - Complex Urban Datasets

Sanborn collected aerial and street-level data for the Silicon Valley area (Santa Clara) in Spring 2016 and constructed sizable target areas in Sunnyvale (Heritage District), Palo Alto, and surrounding locations. Sanborn teams are refreshing and expanding all of the 2016 HD Maps with new 2017 data - showcasing Sanborn advanced change detection algorithms and road network feature update programs. Sanborn HD Maps for Autonomous Driving data is currently available for California and Michigan.



HD Map - Precision 3D Road Network Data Features:

1. All road network features are available as precision 3D global data files (GeoJSON, Shape Files, and CSV in WGS-84 projection).
2. All road network features are attributed and classified for the most sophisticated autonomous driving programs.
3. Complex Urban HD Map datasets deliver high-precision road feature intelligence:

Painted Lines – All painted lines assembled as precision 3D map features, polygons, and lines.

Signs – All signs represented as locational precision XYZ features designed to guide the most advanced target recognition for high precision localization.

3D Building Models – All buildings constructed and attributed with height points for advanced 3D City Model visualization.

Signals and Stop Lines – Traffic signals and stop lines collected in absolute 3D XYZ space delivering precise locations for intersection control protocols.

Parking Spaces – Each parking space attributed with a unique ID, geometric shape, and centroid location.

4. Datasets are available for all environments and levels of autonomous drive testing complexity - Freeway, Complex Urban, Complex Parking, etc.



About Sanborn

Sanborn is a 21st century industry leader in geospatial solutions and technology, offering superior services, program management, and customer support.

For our clients we provide a national presence, extensive resources, quick responses, and exceptional value. For over a century, we have been a leader in the rapidly growing geospatial industry, with successful projects delivered worldwide.

For more information, visit us online at www.sanborn.com, or call 1.866.726.2676 to speak with a representative.