NDS.Live

A distributed Map Data System

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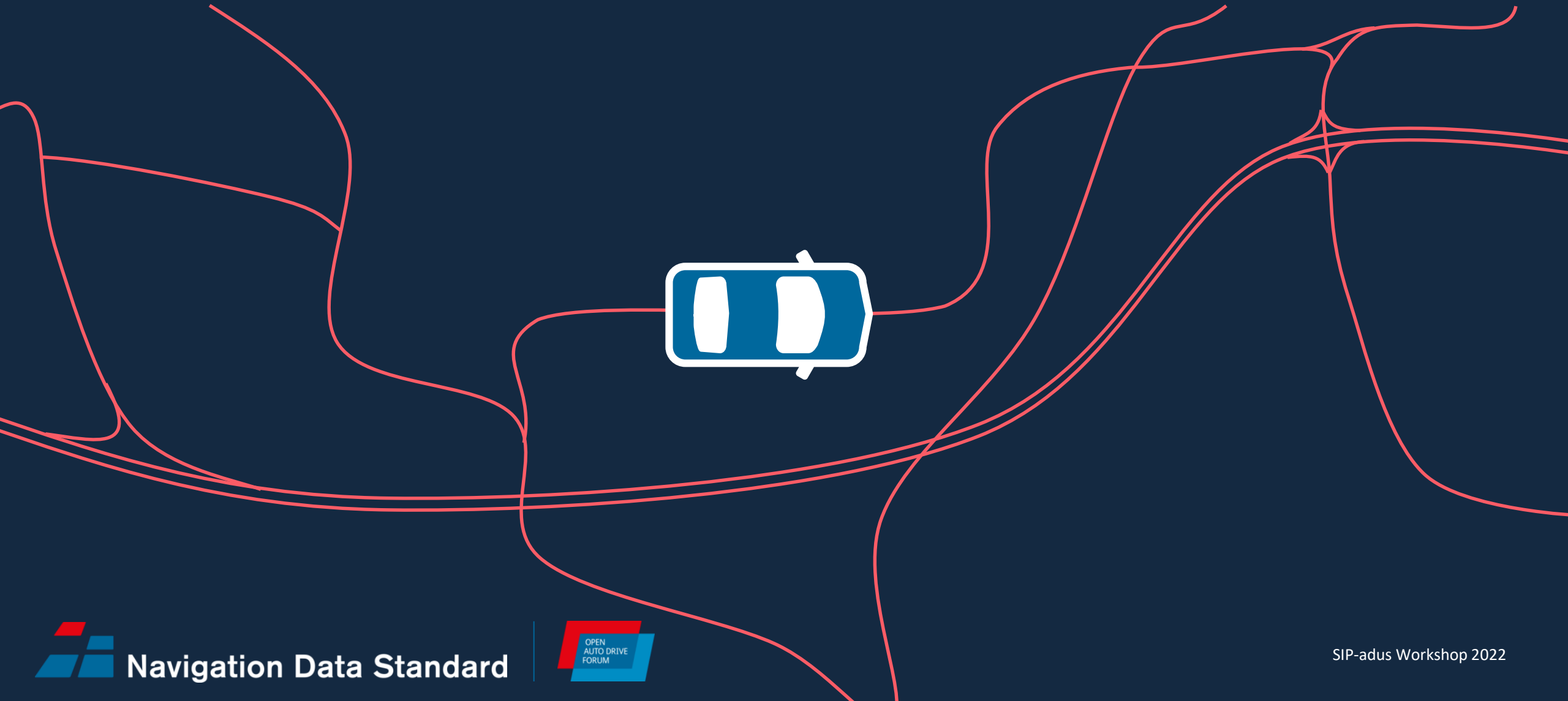
Navigation Data Standard | OPEN AUTO DRIVE FORUM

Autonomous Driving needs a Map as a Sensor



Navigation Data Standard

OPEN AUTO DRIVE FORUM

NDS is THE worldwide standard for map data in automotive eco-systems

NDS is THE worldwide

worldwide coverage and global adoption

standard for map data

one specification with enough flexibility
for a customized user experience

data model (structure & semantics),
storage format, interfaces, protocols

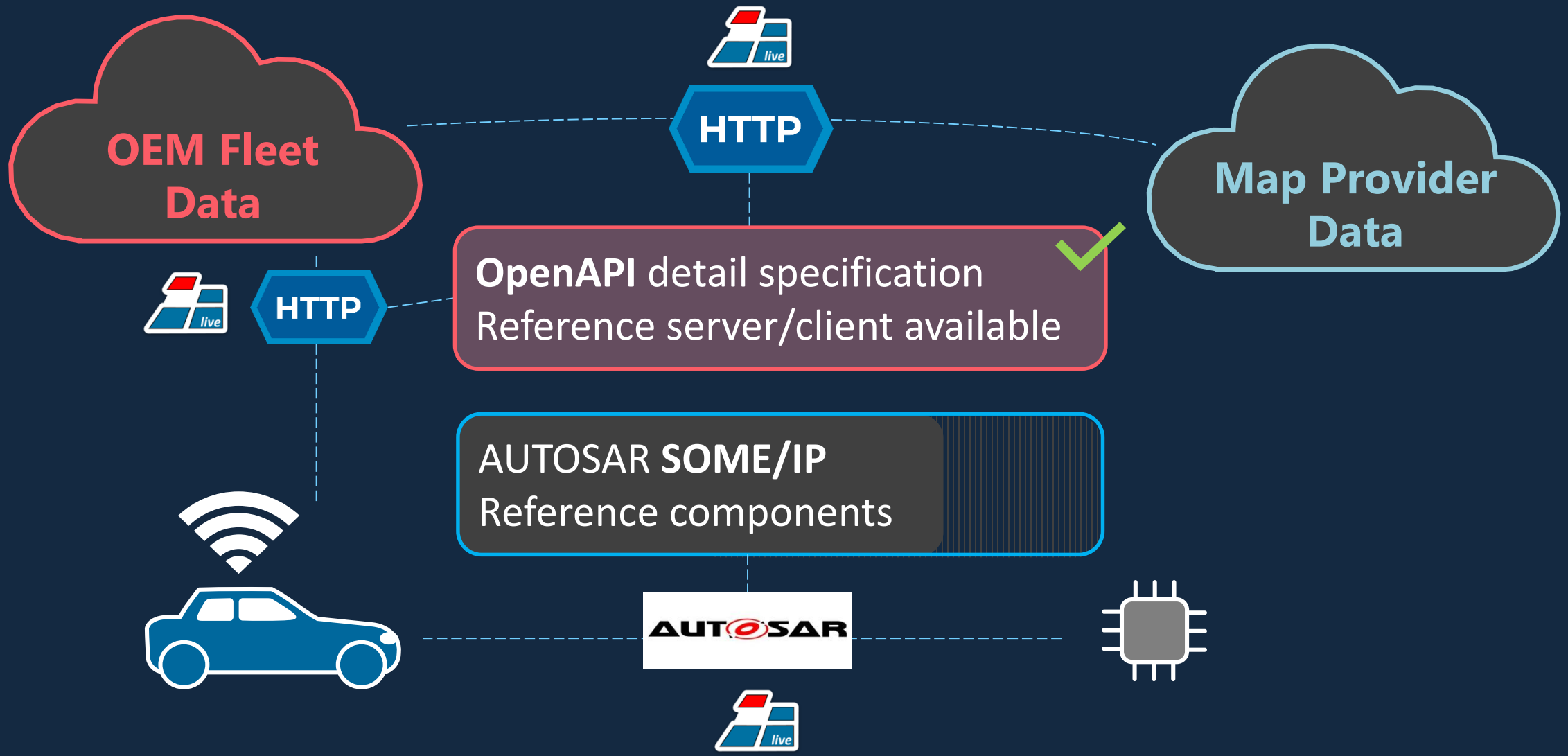
in automotive eco-systems

in-vehicle applications, companion applications, cloud applications, vehicle related services,
supporting navigation, driver assistance and autonomous driving

NDS Association Members

NDS spec is defined by the members of the NDS association which include OEMs, system vendors, solution providers, and navigation data providers.

NDS.Live – Reference Transport Layers



NDS.Live – HD & ADAS map is product ready

HD Map layers

- Lanes
- Lane attributes
- Localization Landmarks
- Obstacles
- Occupancy Grids
- Road Surfaces
- Parking Facilities

ADAS Map layers

- Roads
- Road attributes
- Routing attributes
- ADAS attributes
- Road Names
- Admin. Hierarchy

IVI Map Layers

- POI
- Voice Guidance
- 2D Map Display
- 3D Buildings
- Advanced City Models
- Aerial & SAT images
- Digital Terrain Model

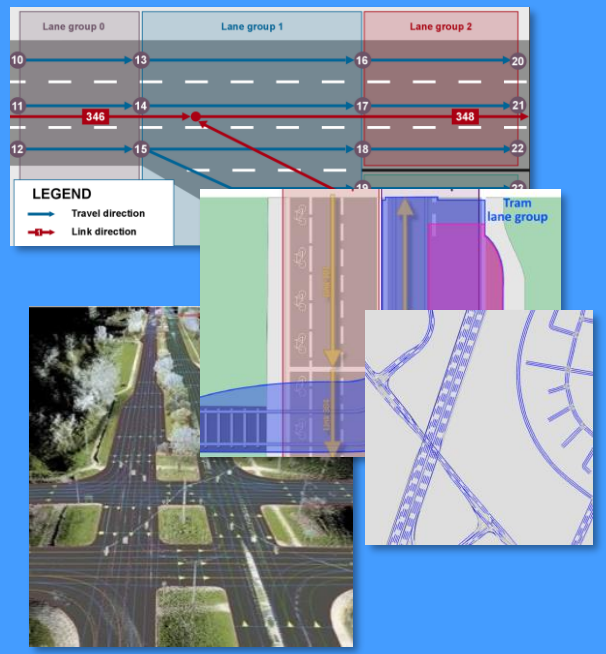
Access to NDS.Live

NDS.Live specification openly accessible!

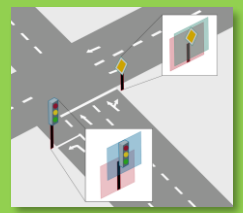
https://nds-association.org/nds-live-open-access

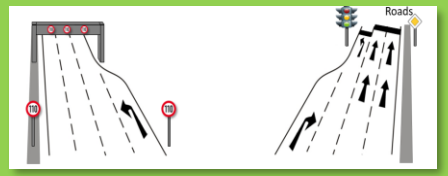
- Access allows non-members to
  - review the NDS.Live Specification and Tools and become familiar with it
  - contribute requirements for use cases
  - built demonstration application for convincing customers
  - check potential business cases with NDS.Live in detail before joining the NDS Association
- Commercial use requires to become NDS Member and to accede the NDS Member Cross License Agreement

NDS HD Map Features



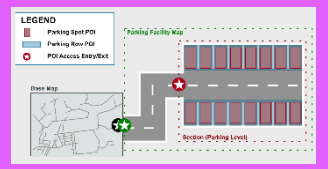
HD Lanes

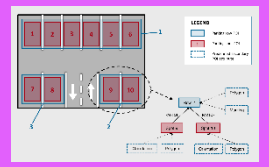




Localization Landmarks

Obstacles





Parking

Occupancy Grid (Extension)

Road Topology & Geometry

Navigation Data Standard

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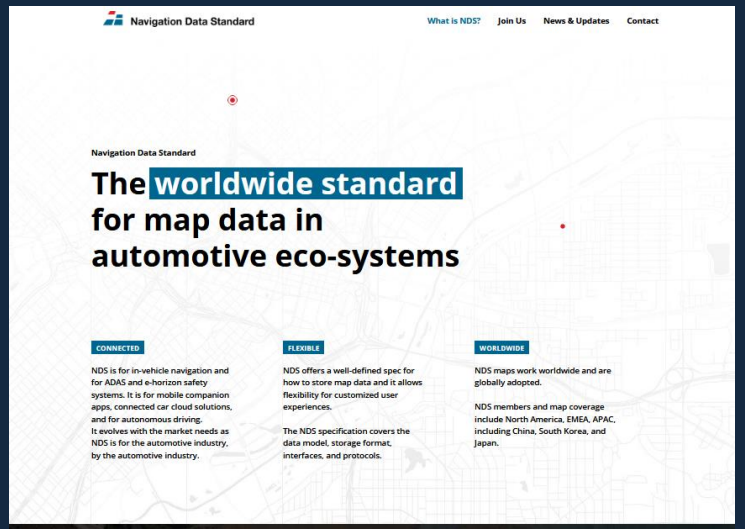
Dissemination of NDS

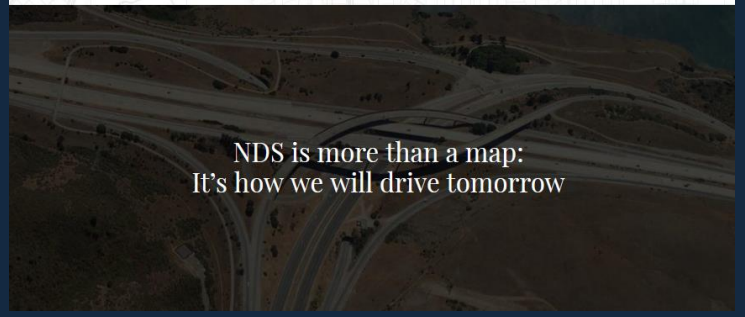
Today, map data in NDS format is used in vehicles of over 40 automotive brands globally

NDS Roadmap

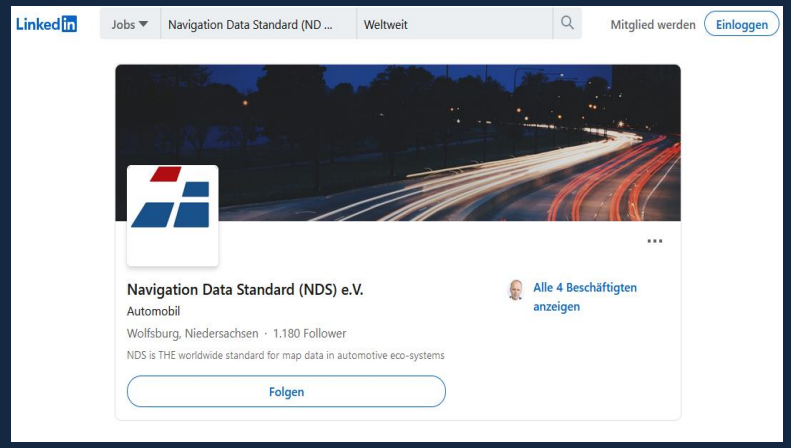
Focus	2022.H1	2022.H2	2023	2024
Future Mobility	NDS - OpenDRIVE Converter product strategy NDS.Live running in the car	Enhance ODD awareness Supporting Cooperative ITS services Safety aspect Supporting advanced e-Mobility	Automated Driving (L4): - Urban mobility - Transport (hub-to-hub) - Supporting ODD gaps Addressing AD related HD map issues Supporting environmental sustainability	Autonomous Driving (L5): - Driverless Mobility Services - Driverless Delivery Services Door-to-door mobility with inter-modality Smart cities (active traffic management)
NDS as a Service	Hybrid Navigation - application services (search, guidance) - smart layer services (display, guidance, traffic) - supporting offline use cases (search, speech)	ADAS support for NCAP regulations Supporting RTTI & SRTI services NDS.Live interoperability with NDS.Classic	Augmented Reality use cases First- and last-mile navigation Predictive 5G service Supporting AI technologies with NDS.Live	Support perception for ADAS and AD Map assisted sensor fusion Connected cars and IoT

Further Information

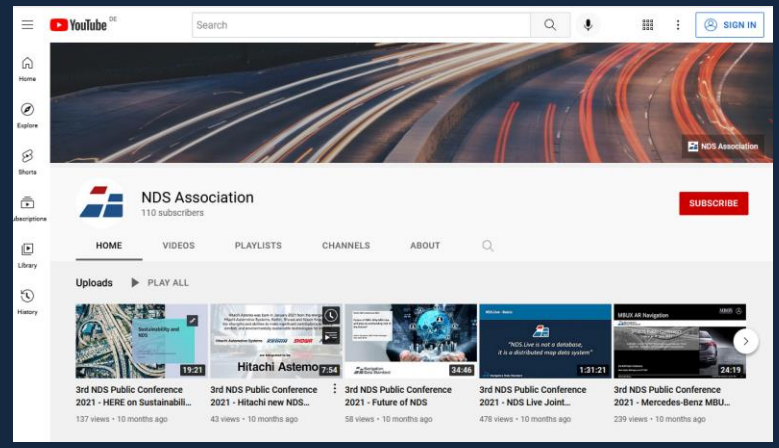




www.nds-association.org



nds.to/linkedin



nds.to/youtube

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