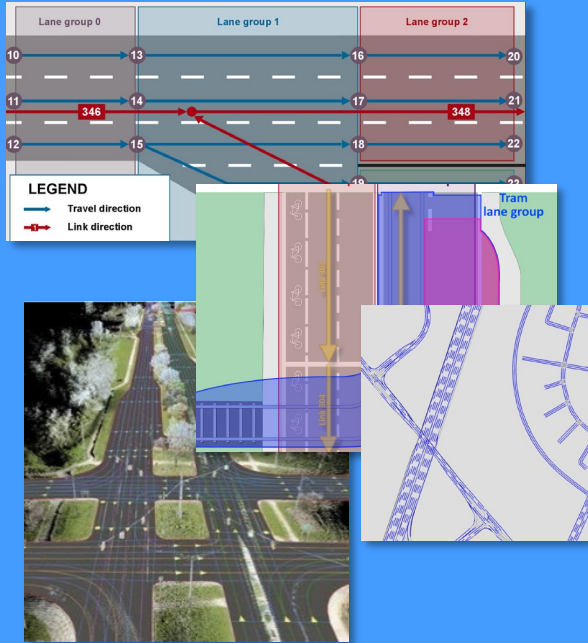# NDS Achievements
NDS Conference 2019

Fabian Klebert

June 13, 2019

Munich

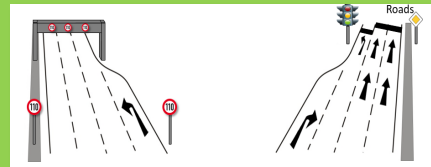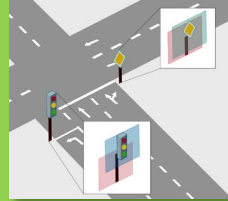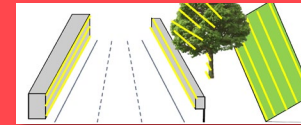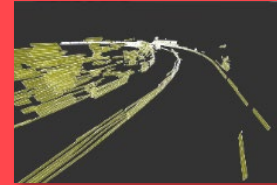Navigation
Data Standard

NDS.Classic

- Version 2.5.4 released in December 2018
  - Improved and extended HD map building blocks
  - Extended volatile data concept to support dynamic data
  - Add quality indication on feature level to support highly-reliable maps
  - Refactor data schema to simplify functional safe implementations

- HD map components used in series development of several OEMs for L3-L5 SOPs in 2020

- Current Fast track extension development
  - Signature FTX for improved end-to-end data integrity
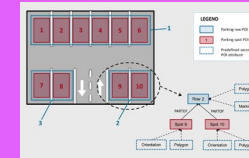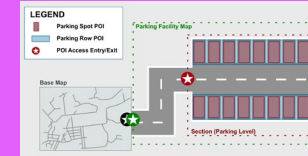 - Reference FTX for associate HD and SD map contents

Navigation
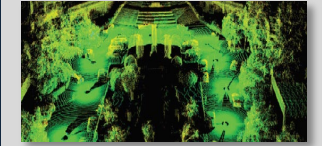Data Standard

NDS.Classic – HD map components

HD Lane model

Localization Landmarks

Obstacles

Parking

Occupancy grid extension

Road topology & geometry

NDS.Live

- Dedicated Working Group installed in 2018
- First alpha version released May 2019
- Version 1.0 planned for 2020

- Modular architecture to speed up development
- Service oriented design
- SmartLayer concept to enable scaling data configuration
- Online e-horizon concept
- Proof-of-concept implementation to evaluate distributed system components
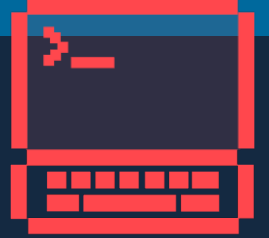
NDS.Live – Proof of concept

Goals

- Evaluate different deployment scenarios (car/cloud/edge)
- Assess decoupling from underlying technology stack
- Demonstrate basic online e-horizon concept
- Reference implementation of NDS SmartLayer server
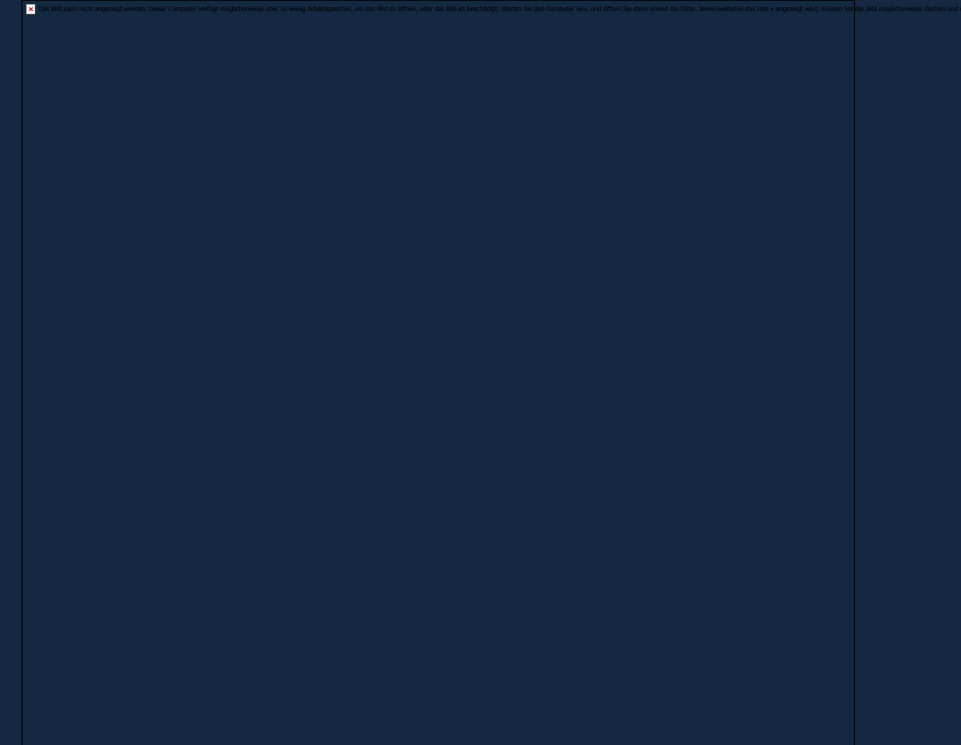- Reference implementation of NDS service registry

Development

- Continous development until first version of NDS.Live
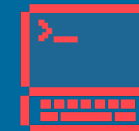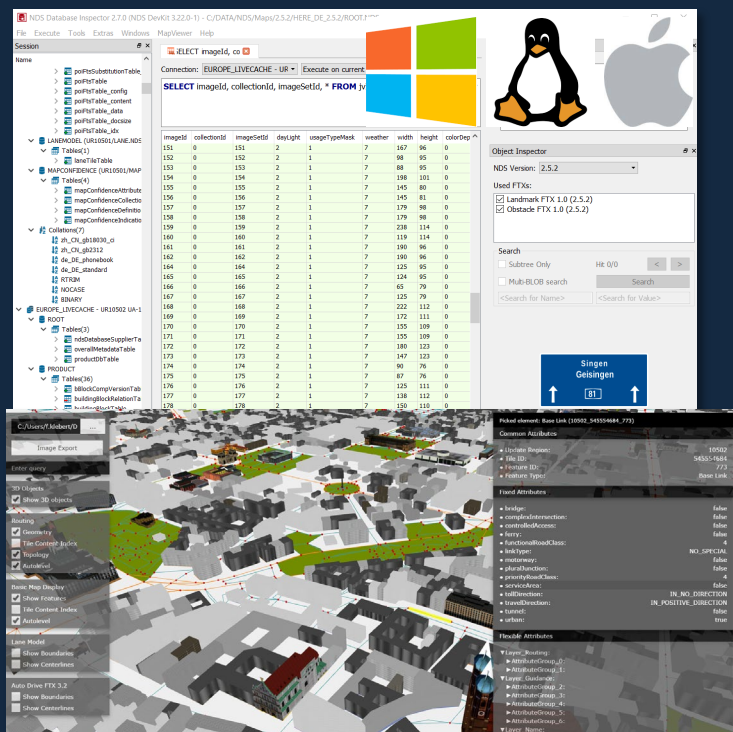- May be continued as reference implementation afterwards

Database Inspector & MapViewer development 2018/2019

- Advanced database search functionality
- MapViewer visualization of
  – Digital Terrain
  – 3D Objects
  – POIs
  – Name Labels (cities, countries)
  – Localization Landmarks
  – Obstacles
- Powerful extension API to enable 3rd party development

Navigation
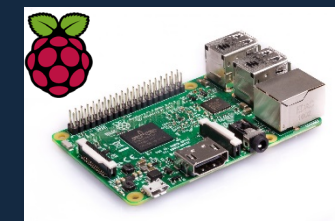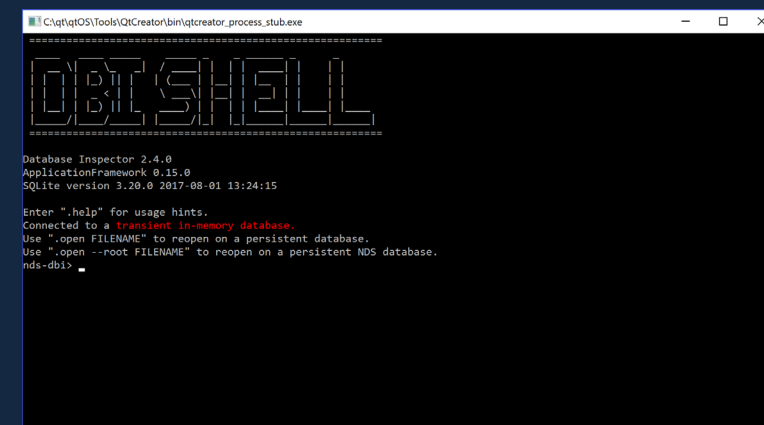Data Standard

NDS.Tools

Database Inspector

Database inspection with advanced search & export capabilities + MapViewer

MapViewer Online Server

MapViewer web service to centrally manage maps for multiple clients
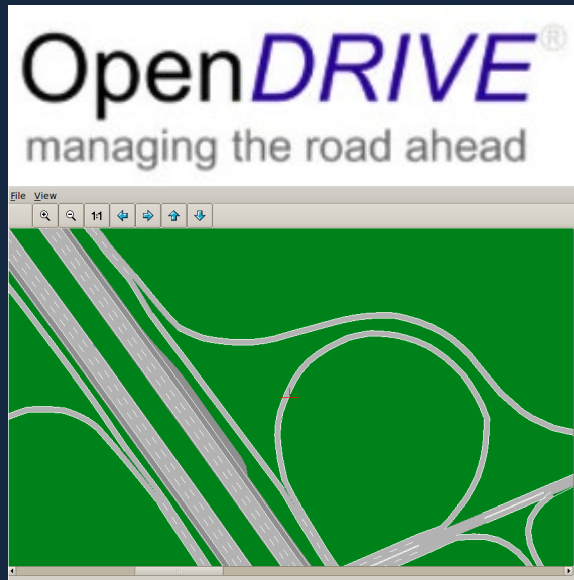
DBI Shell

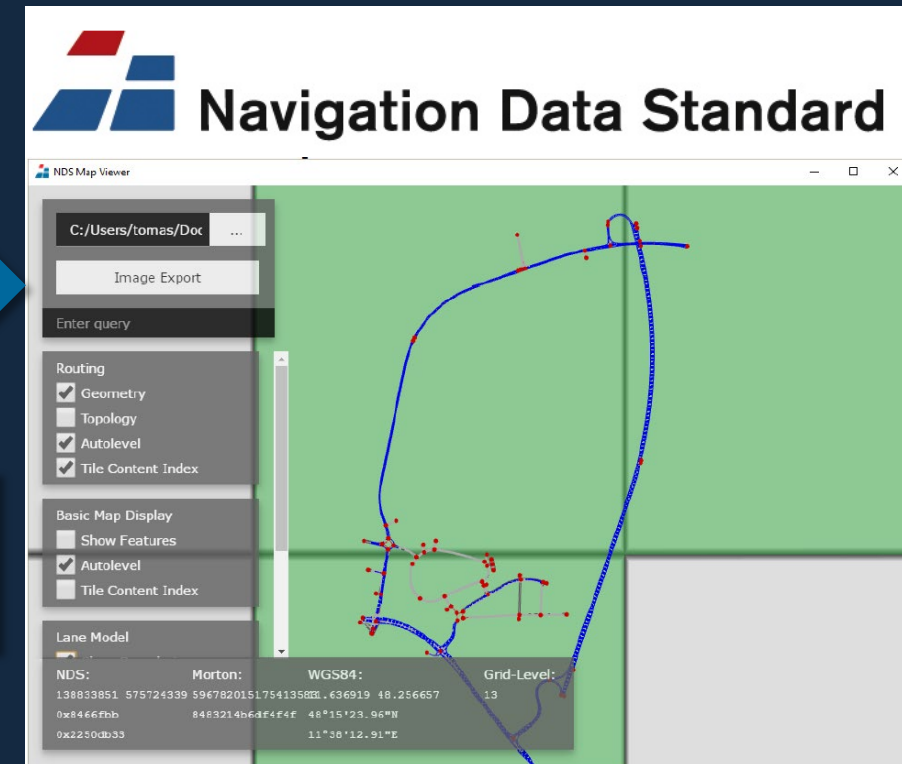All Database Inspector features without GUI to run on servers and embedded devices

Navigation Data Standard

NDS-2-OpenDrive Converter development 2018/2019

- HD Lanes
- Localization Landmarks
- ADAS attributes

NDS 2.5.2
NDS 2.5.3
NDS 2.5.4

OpenDrive 1.4 rev H
OpenDrive 1.5

zserio – open source successor of RDS

- Open sourced NDS's serialization framework in 2018

- Key aspects
  - Smaller payload than any other well-known serialization (e.g. minimum 10% smaller than Google Protocol Buffer)
  - Type-safe schema language including service definitions
  - Under NDS control so that it can be made functional safety compliant (ISO 26262)
  - Open Source License (BSD-3)