

**Open NDS Conference
2019**

**NDS Future and
Roadmap**



NDS Future and Roadmap: Introduction

A journey to the future of NDS in 20 minutes

- The short story of „George – the lonesome Car“
- How the new NDS.Live will help „George“?
- When the new NDS.Live can help „George“?
- How you can support „George“ ... to feel no longer lonesome?

The short story of ...

George

- the lonesome car –

and its dream of autonomous driving!

NDS Future and Roadmap: The short story of George ...

George was just a simple car ...

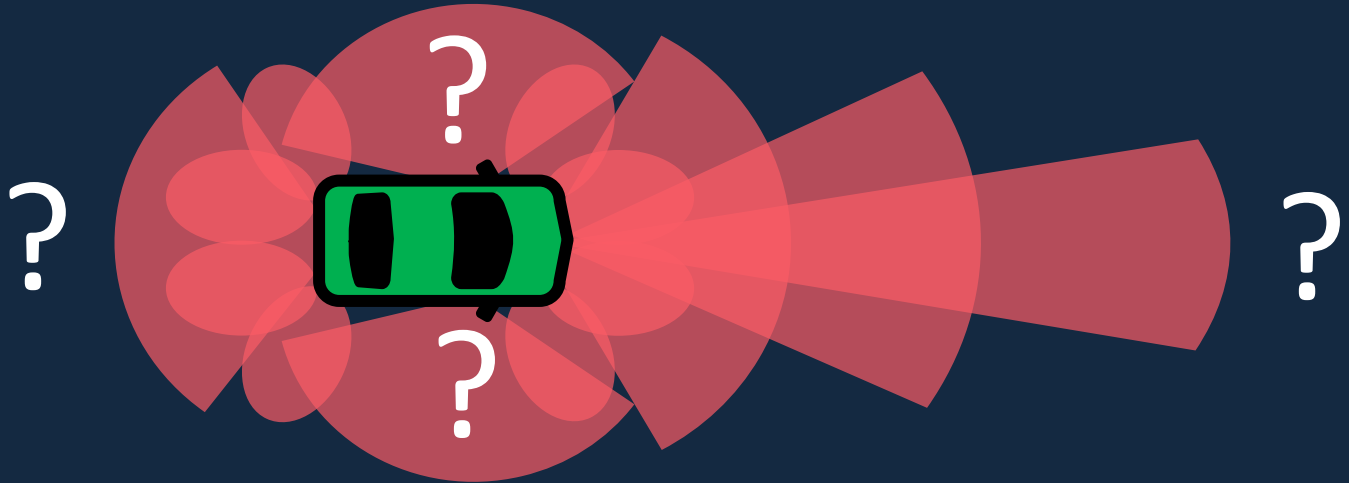


... felt like a frustrated slave of his driver ...

... and really lonesome!

NDS Future and Roadmap: The short story of George ...

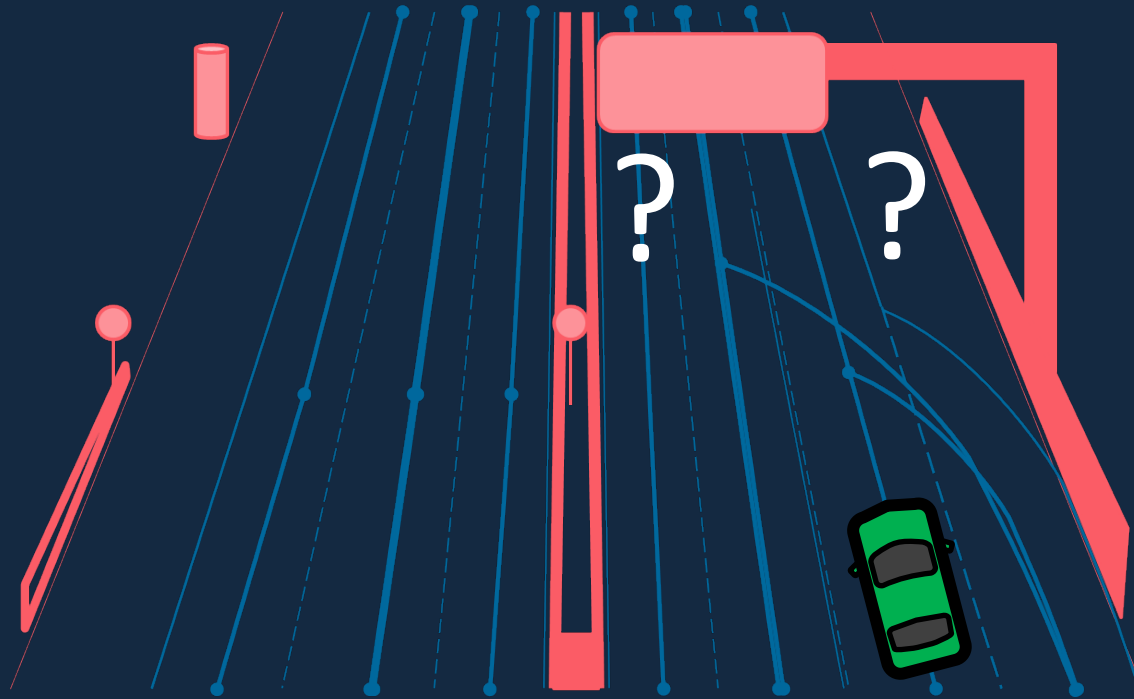
George was equipped with sensors ...



... but sometimes sensor information wasn't very clear!

NDS Future and Roadmap: The short story of George ...

George got a HD NDS Map additionally ...



... but the content was still not always reliable!

NDS Future and Roadmap: The short story of George ...

George connected to a Living Map Service in the Cloud ...



... and got only information from green cloud!

NDS Future and Roadmap: The short story of George ...

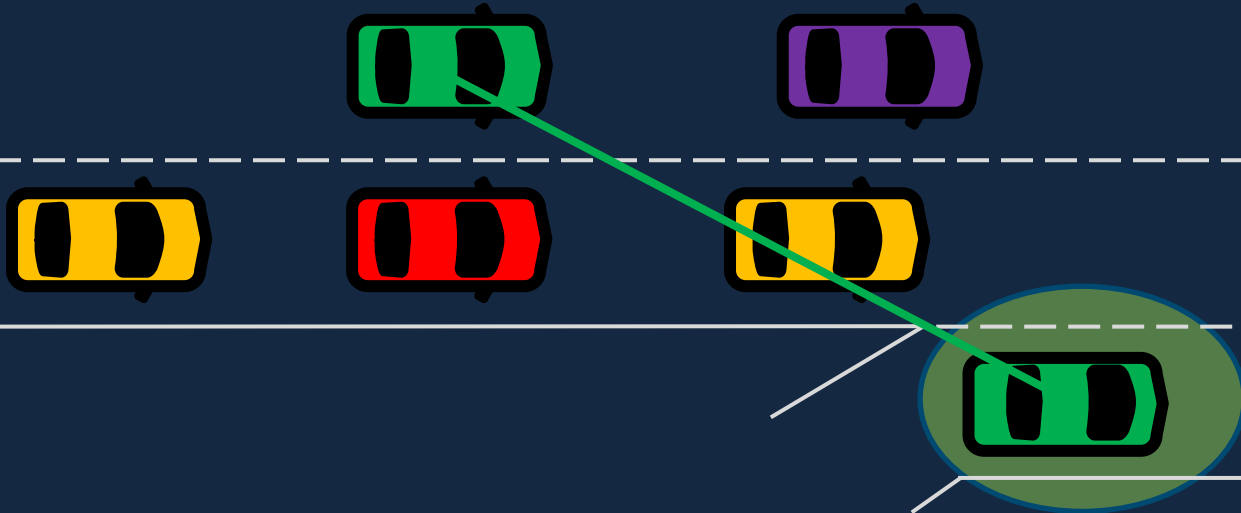
George connected to Living Map Services in the Cloud using NDS Interfaces ...



... and got now all cloud information independent of the cloud color ... but ...
... didn't get informations about maneuvers of other cars!

NDS Future and Roadmap: The short story of George ...

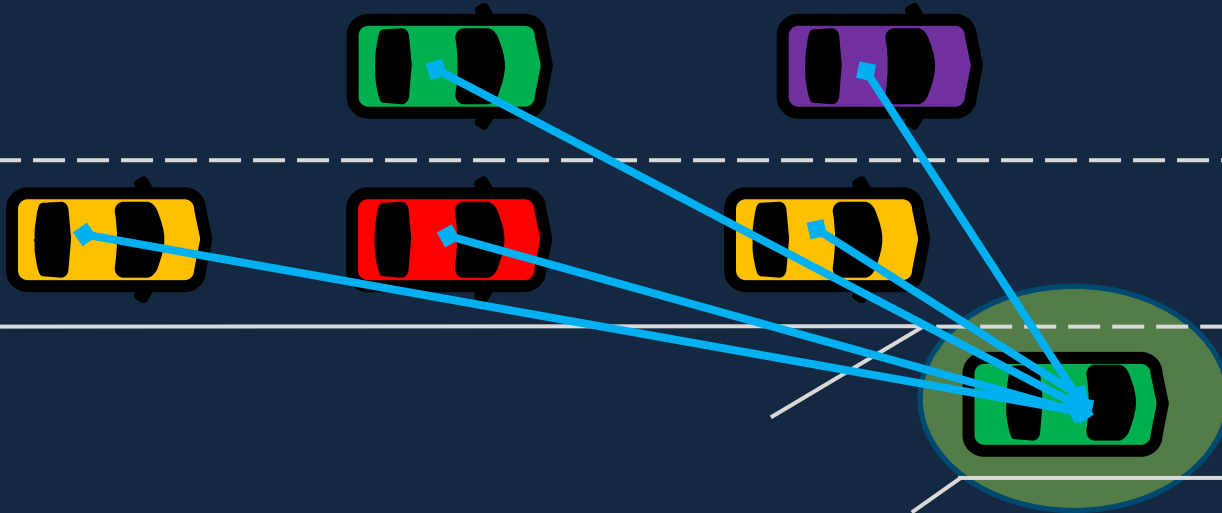
George asked other cars for their intended maneuvers ...



... but only one responded!

NDS Future and Roadmap: The short story of George ...

George asked now using NDS Interfaces ...



... and finally got responses from every car!

George felt really happy ...

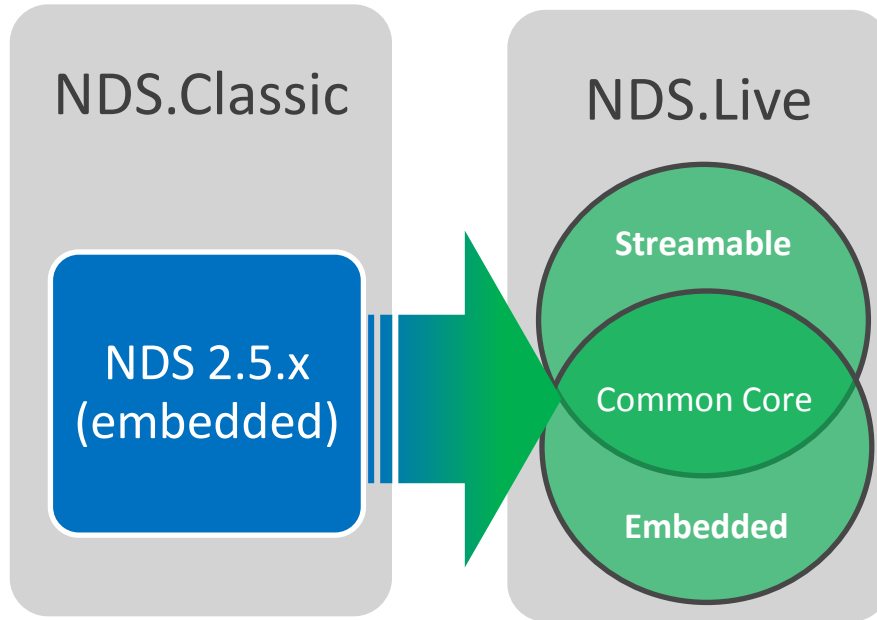
when using NDS Map Data Communication Standards
... he was no longer lonesome ...

... and was now able to drive autonomously!

- Networking needs Connectivity
- Connectivity needs Interoperability
- Interoperability needs Standards

**NDS provides the Standard for
Map based Interoperability**

NDS Future and Roadmap: NDS.Live -> Start of a new Era

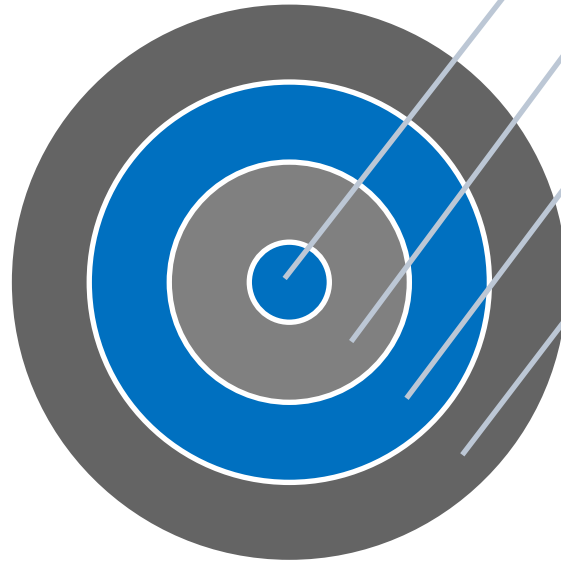


NDS Future and Roadmap: Design Goals for NDS.Classic (Reminder)

N Navigation

D Data

S Standard



support Navigation
Features worldwide



support efficient Map
Size



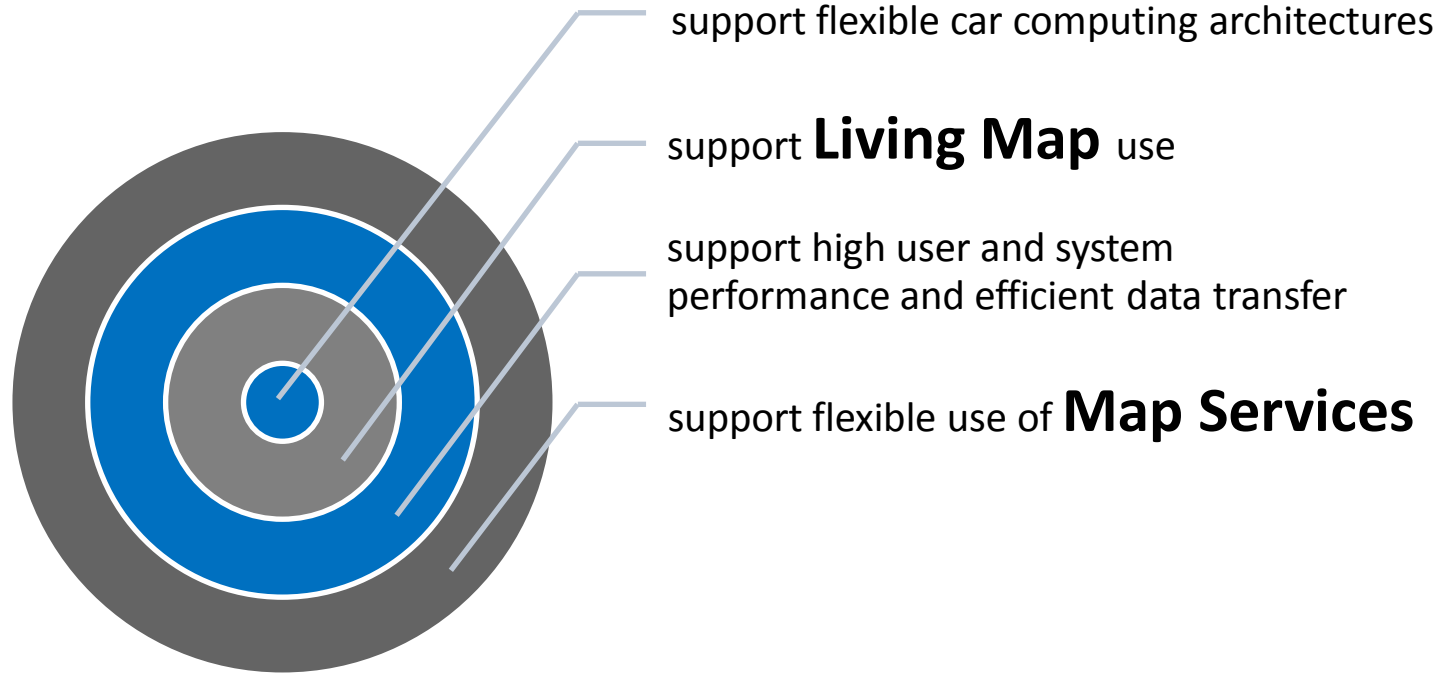
support high user and
system performance



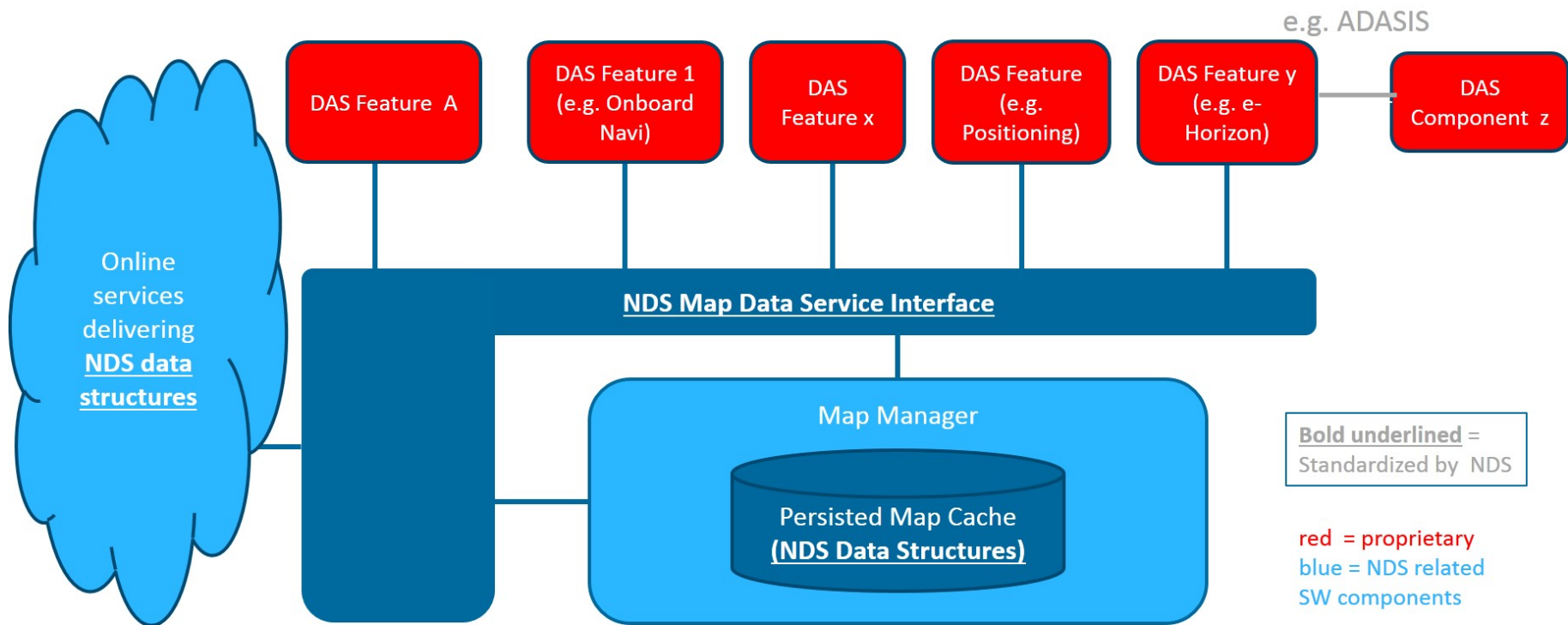
support efficient Over
the Air Update



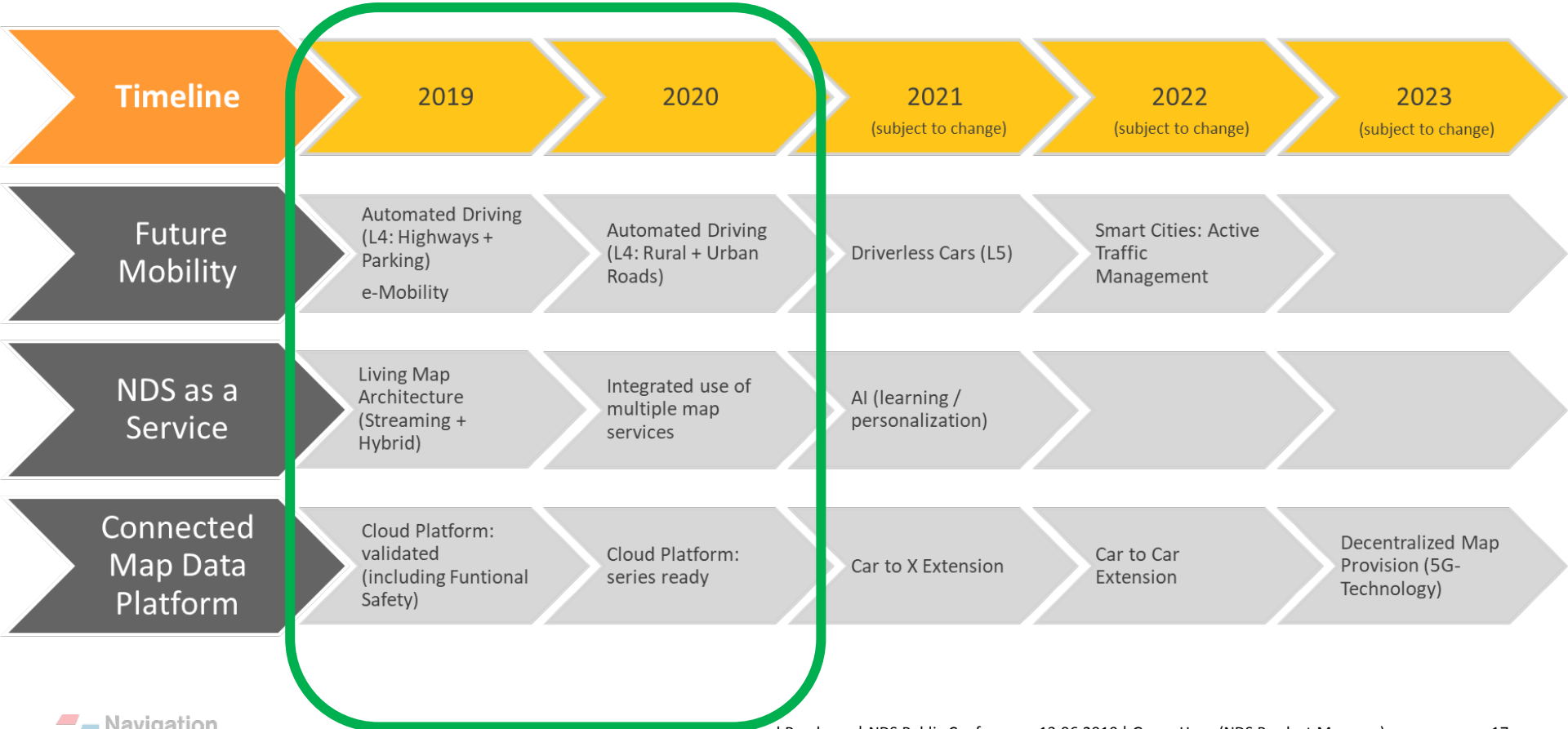
NDS Future and Roadmap: Design Goals for NDS.Live



NDS Future and Roadmap: NDS Living Map automotive Eco System



NDS Future and Roadmap: Roadmap for NDS.Live

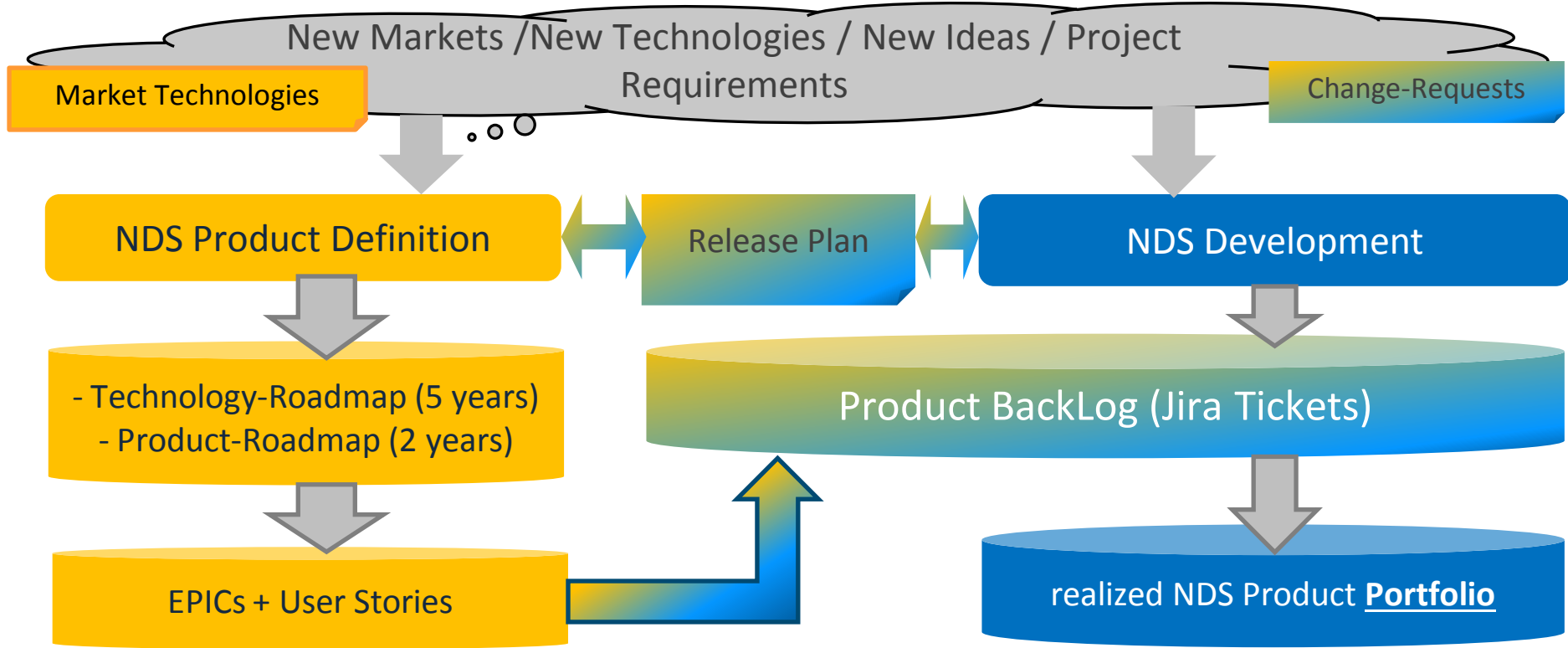


Status of NDS.Live:

- first (alpha-) version published
- base for ongoing Proof of Concept activities
- step by step re-factoring due to the needs for Map as a Service

Goal: Release of NDS.Live in 2020 for Series Projects

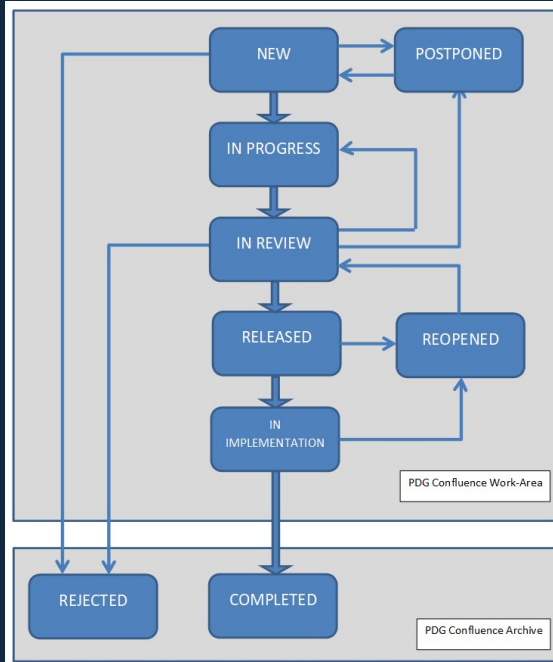
NDS Future and Roadmap: NDS Product Creation Process



Current Status of all active EPICs and User Stories (2019-05-13)

■ Status of PDG Work

EPIC Workflow and Status

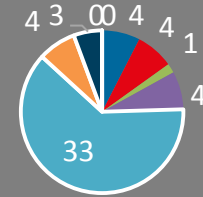


Statistic for EPICs (Total: 23)



- NEW
- IN PROGRESS
- IN REVIEW
- IN IMPLEMENTATION
- RELEASED
- REOPENED

Statistic for User Stories (Total: 53)



- NEW
- IN PROGRESS
- IN REVIEW
- IN IMPLEMENTATION
- RELEASED
- REOPENED

➤ *Join NDS (in case you didn't yet) ...*

➤ *Join the Product Definition Group (PDG) ...*

... to shape the future of NDS according to your needs!

- Workmode:
 - about 8 to 10 face-to-face meetings per year includes (2 days)
 - Technology and Roadmap Reviews
 - EPIC and User Story Elaborations
 - Joint Sessions with Working Groups
 - weekly PDG phone conference (1h)

Market size and target share: Infotainment/Navigation



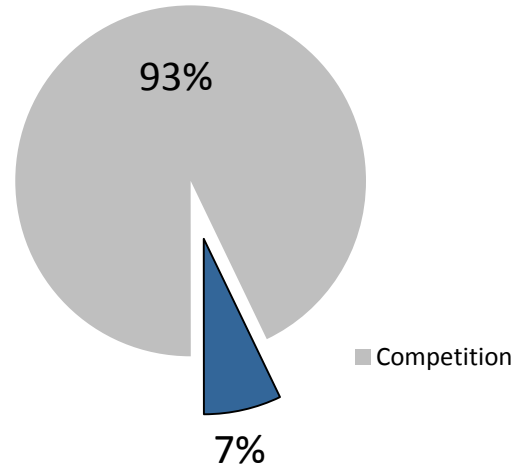
Calculation approach

Frost & Sullivan: "Navigation Data Standard (NDS) in the Global Automotive Navigation Market" published Sept. 2017

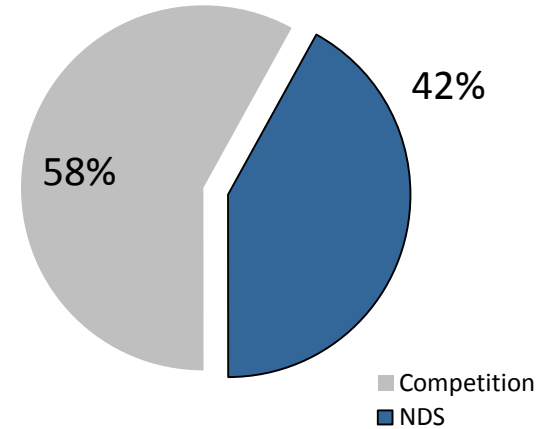


Target market share (Mio Units)

NDS share by 2016



NDS share by 2025



Market Forecast: ADAS (SAE Level 1-3)



Calculation approach

Source:

Strategy Analytics: “Advanced Driver Assist Systems Demand Forecast 2016 to 2015” Q2 2019”

Segmentation:

- Forecasts lists 13 categories of ADAS ECUs (like Distance, Parking, Blindspot, LDWS, Drowsiness, Adaptive Frontlight Systems, Night Vision, Head-up Displays, etc.

Remark:

- one vehicle is equipped with multiple ADAS ECUs -> Total No of ECU-systems cannot be related to Total No of produced vehicles
- Vehicle = light vehicle

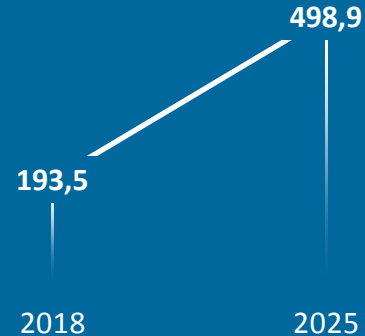
Major Statements:

- Market for ADAS System **will grow by 150%** until 2025
- not all ADAS ECUs counted here are using map data (sensor fusion) to improve the feature quality
- expectation: Market for ADAS ECUs using map data for sensor fusion will behave very similar to total ADAS ECU market



Market Forecast Total OEM Demand for ADAS ECUs (Mio Units)

TOTAL NO OF ADAS ECUS (MIO UNITS)



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

- Questions ?
- Feedback ?

Many Thanks to ...

- ... Philip Hubertus for some excellent slides which I reused here
- ... **all of you for your attention**

... get in contact, email to georg.horn@elektrobit.com