Maps by Cars for Cars
The role of data-driven, location-based services for the future mobility

Helmuth Ritzer
Fachkonferenz Automatisiertes Fahren | Juni 20, 2017
01.
We are HERE
HERE in numbers

- 200 Countries mapped
- 7,000+ Employees in 56 countries focused on delivering the world’s best map and location technologies
- 30 Years of experience transforming location technology
- 700,000 3D data points per second per car
- 4 of 5 In-car navigation systems in Europe and North America use HERE maps
- HERE Maps on board of 100M vehicles and counting
- 28 TB map data collected per day
- 400 HERE cars collecting data for our maps

© 2017 HERE | Confidential
We are making sense of the world through the lens of location
Beyond roads
Things
People
Spatial/Temporal
HERE Open Location Platform: 
The place for intelligent data usage and development

Serves a variety of industries...
The HERE Open Location Platform opens new opportunities for all kinds of industries and use cases.
02.
HERE for Automotive: today and tomorrow
As the level of automation increases, the role of location-based services specifically designed for cars grows as well.

Levels of Automation

1. The role of the human driver in performing a driving task
2. Levels of Automation
3. The role of the machine in performing a driving task
1. Location-based services for drivers

Consumer:
Key benefit: Informed driving
Update frequency:
• Historic or real-time for Parking
• Up to 5’ for Traffic
• Quarterly for map-based content

Sources:
• Content suppliers
• Conventional map-making

Time horizon: Today

Driver

Maps by Cars for Cars | Juni 2017 © 2017 HERE | Confidential
Location-based services for vehicle’s brain, with the driver still responsible for the driving task

**Consumer:** Connected ADAS
**Key benefit:** Safer driving
**Update frequency:**
- Real-time
- Quarterly for map-based content
**Sources:**
- Cars on the road
- Conventional map-making
**Time horizon:** Today to 2020
HD Maps & Location-based services for a vehicle’s brain

Consumer: Automated/autonomous car

Key benefit: Safe autonomy
  - Real-time

Update frequency:

Sources:
  - HD Map build-out
  - Cars on the road

Time horizon: 2020+
Eventually, the map becomes the most intelligent vehicle “sensor”

Local knowledge of the rules of the road

Precise positioning for lateral & longitudinal control

Enhanced “sensor” functionality for contextual awareness of the road ahead

Vehicle mission planning beyond vehicle sensor visibility
Build-out of the HD map

700,000 Points Per Second

41.3°

GPS Antenna
LiDAR
Proprietary cameras
96.4 MP every 6 meters

NovAtel GPS/INS
A high definition, continuously updated map requires the crowd

Harness crowd-sourced sensor data   High definition map   For near real-time updates
Data-driven decision-making in the car creates the need to derive quality indexes or confidence scores.

“How **trustworthy** is the data?”

“Can I **rely** on it for my next decision?”

“Do I have to get a second opinion?”
Summary

1. We’re moving from static to dynamic location content

2. The map and its live layers on top are crucial for the autonomous car to be able to navigate safely

3. An HD map needs the ability to heal itself via the crowd

4. Confidence scores for both the HD map and its live layers are essential for the data-driven decision making in the vehicle
Thank you

Contact

Helmuth Ritzer, VP Connected Vehicle Services

HERE Technologies

helmuth.ritzer@here.com