

# HERE Intelligent Car:

the advent of Highly Automated Driving

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SIP-adus Workshop 2015

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HD Live Map vision

HD Live Map 2015

HD Live Map Client

Key takeaways



# HERE Automotive Portfolio

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## HERE Smart Guidance



HERE Auto



HERE Auto  
SDK

## HERE Intelligent Car



HERE HD Live Map



HERE HD Live  
Map Client



Intelligent Car  
Cloud Platform

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## HERE Maps and Automotive Services



HERE Map  
Data



HERE  
Traffic



HERE Automotive  
Services

# Problems we are solving to aid Automated Driving

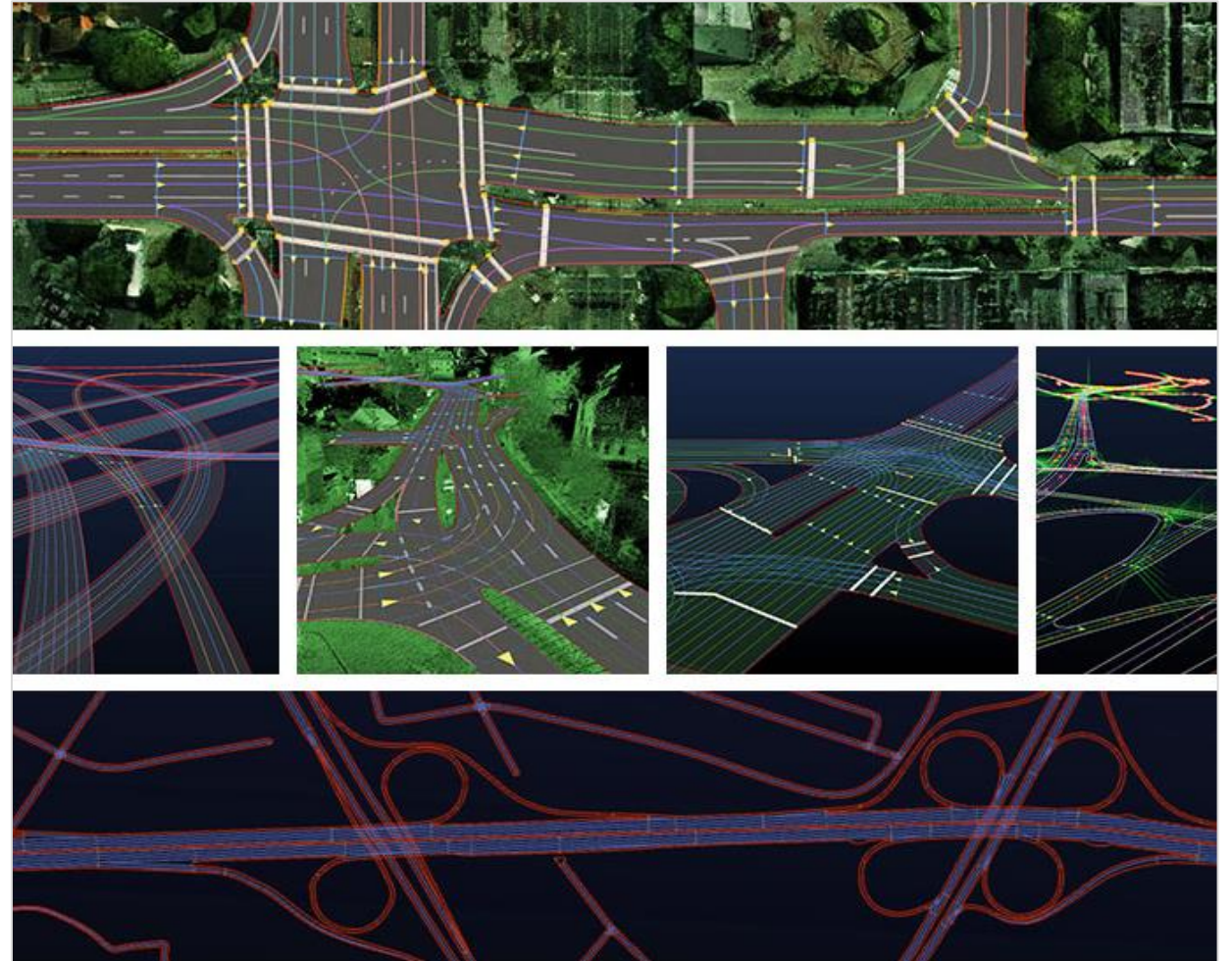
Problem	HERE Solution
Where am I exactly?	HD Map
What lies ahead?	+ Live Roads
How can I get there comfortably?	+ Humanized Driving



# Where am I exactly?

Precise positioning for lateral & longitudinal for vehicle control on the road surface

- 3D Spline-based Surface Model
- ADAS attributes (slope etc.)
- Localization objects (traffic lights etc.) for precise positioning



# Planning features

## Drive Strategy Planning

- Can the car switch lanes?
- Does it fit into the lane?
- Which lanes does the car need to follow (mini routing)?

## Behavior adjustment

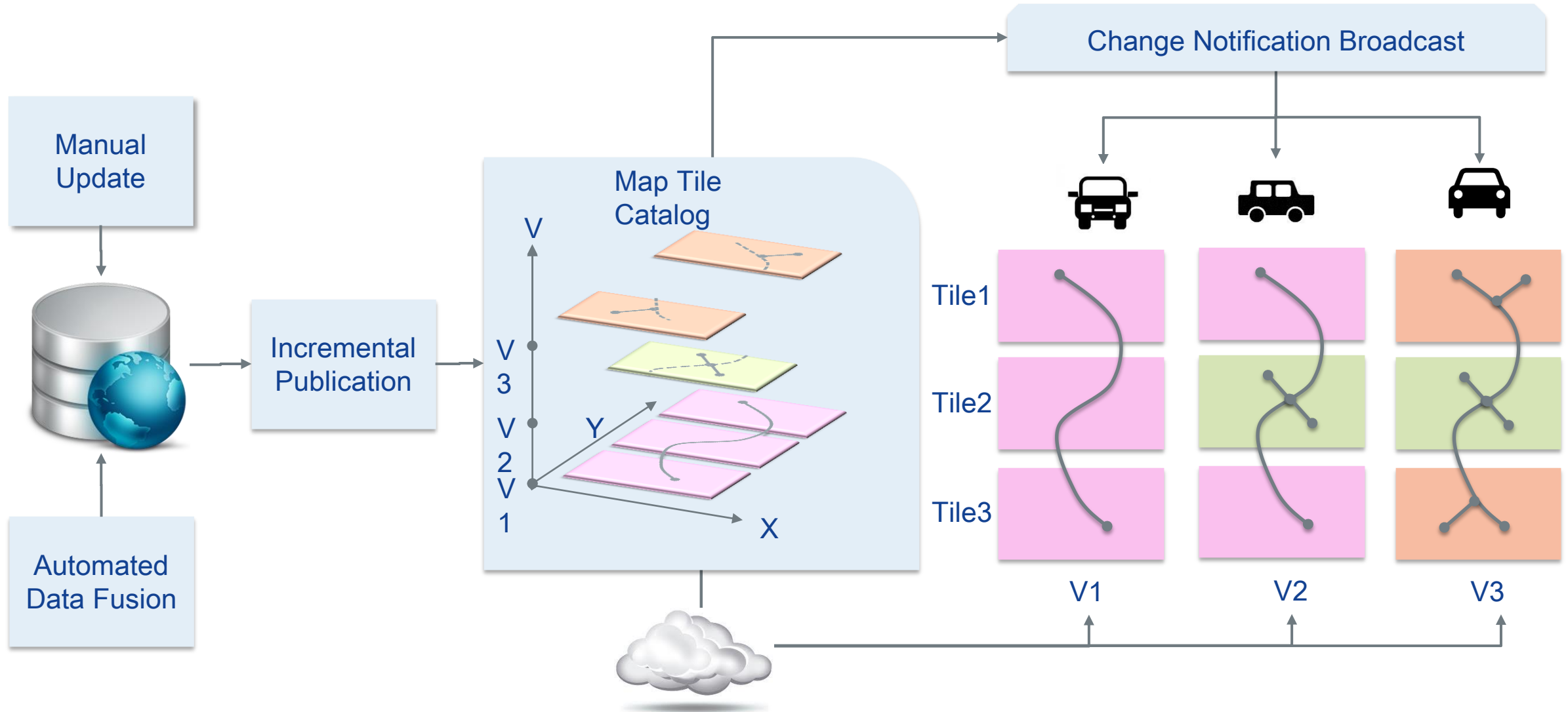
- Does the car need to adjust speed?
- Does the car need to anticipate incoming traffic?

## Cross Referencing

- Are there dynamic events along the lane?



# Near-real time publication (Data-as-a-Service)

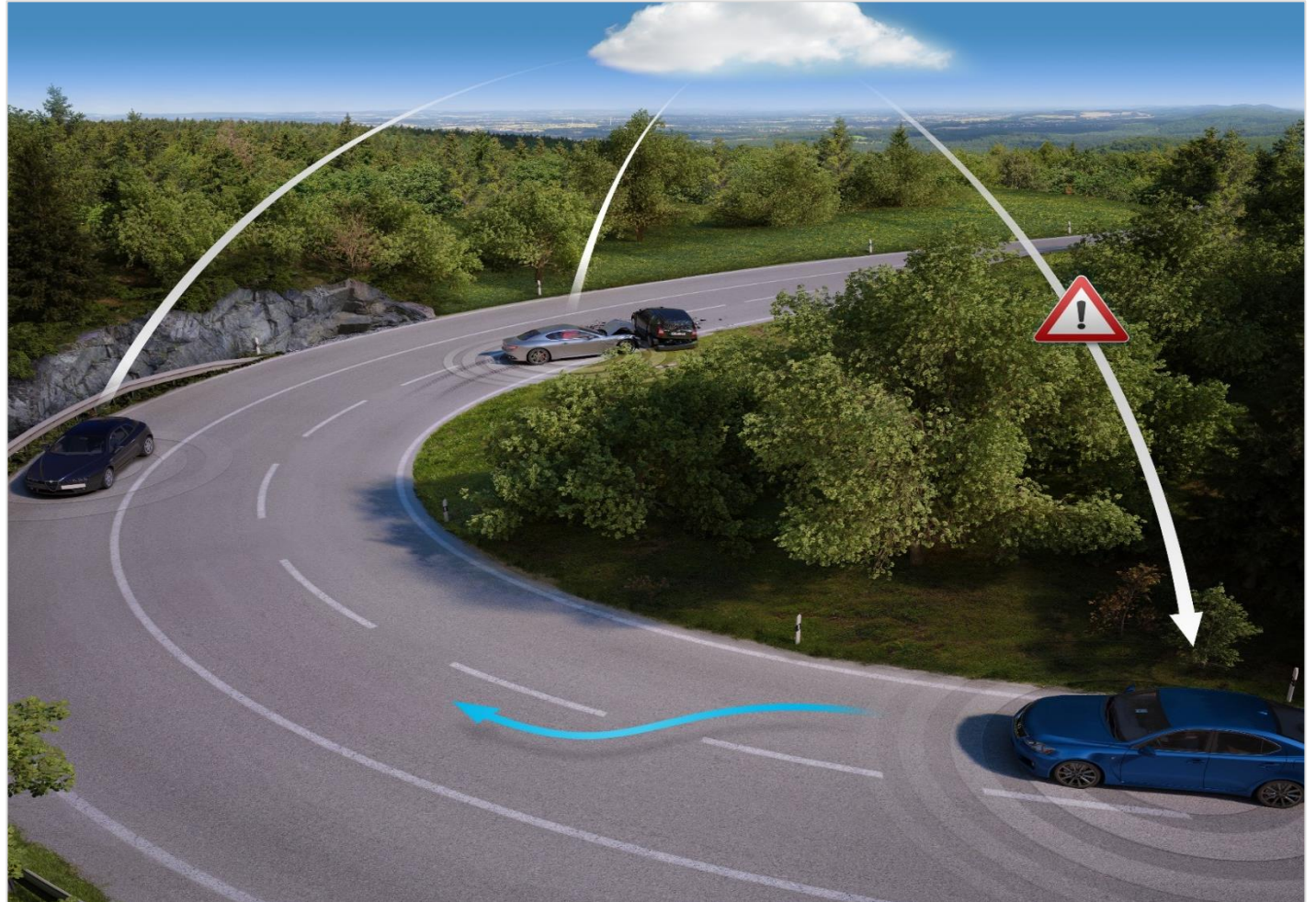




# What lies ahead?

Accurate planning of vehicle control maneuvers beyond sensor visibility.

- Traffic Flow directly linked to HD Map
- Traffic Incidents directly linked to HD Map
- Additional 3rd party sources (E.g. Weather information, additional road authorities)
- Crowd source dangerous road conditions

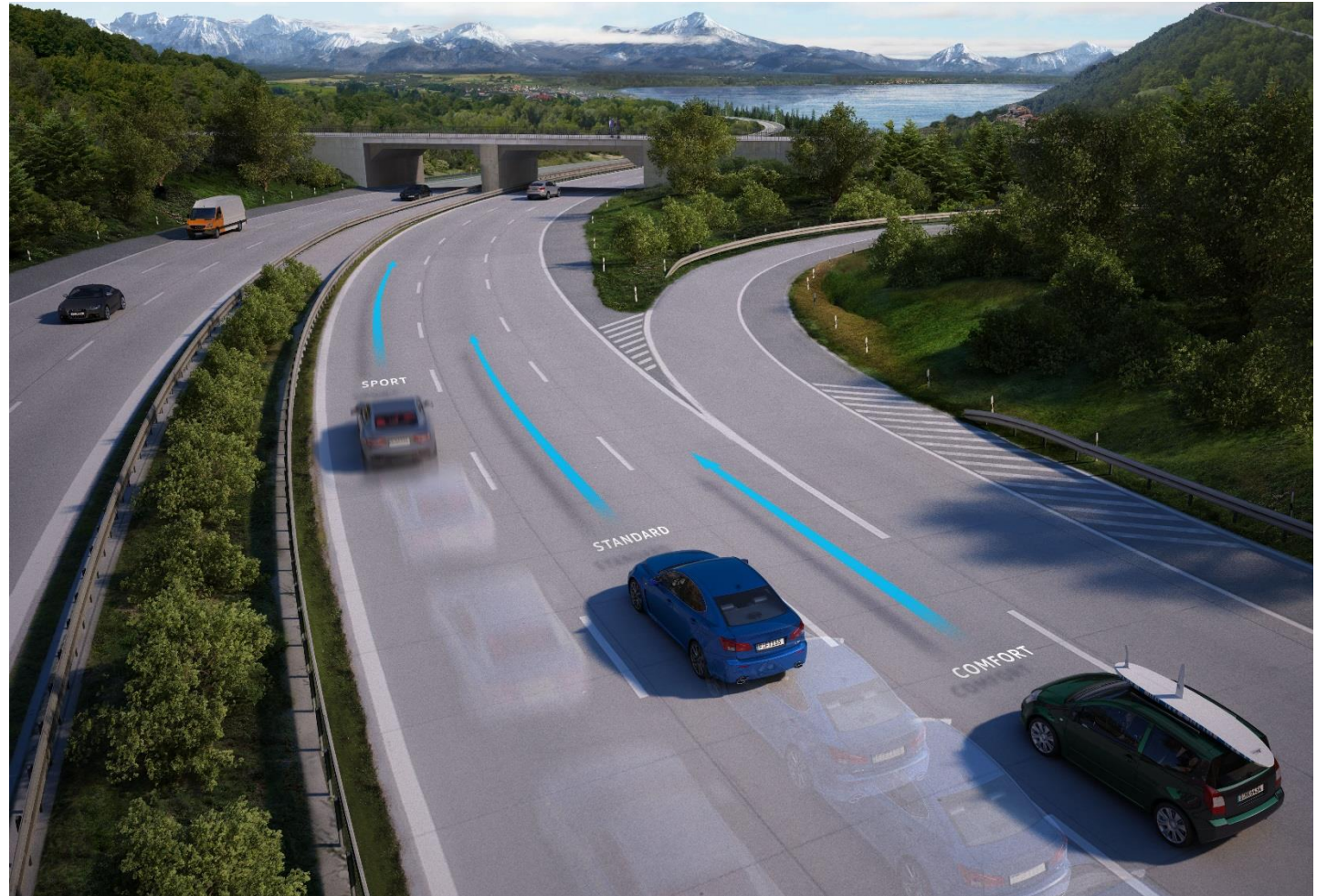




# How can I get there comfortably?

Making Automated Driving more comfortable for humans

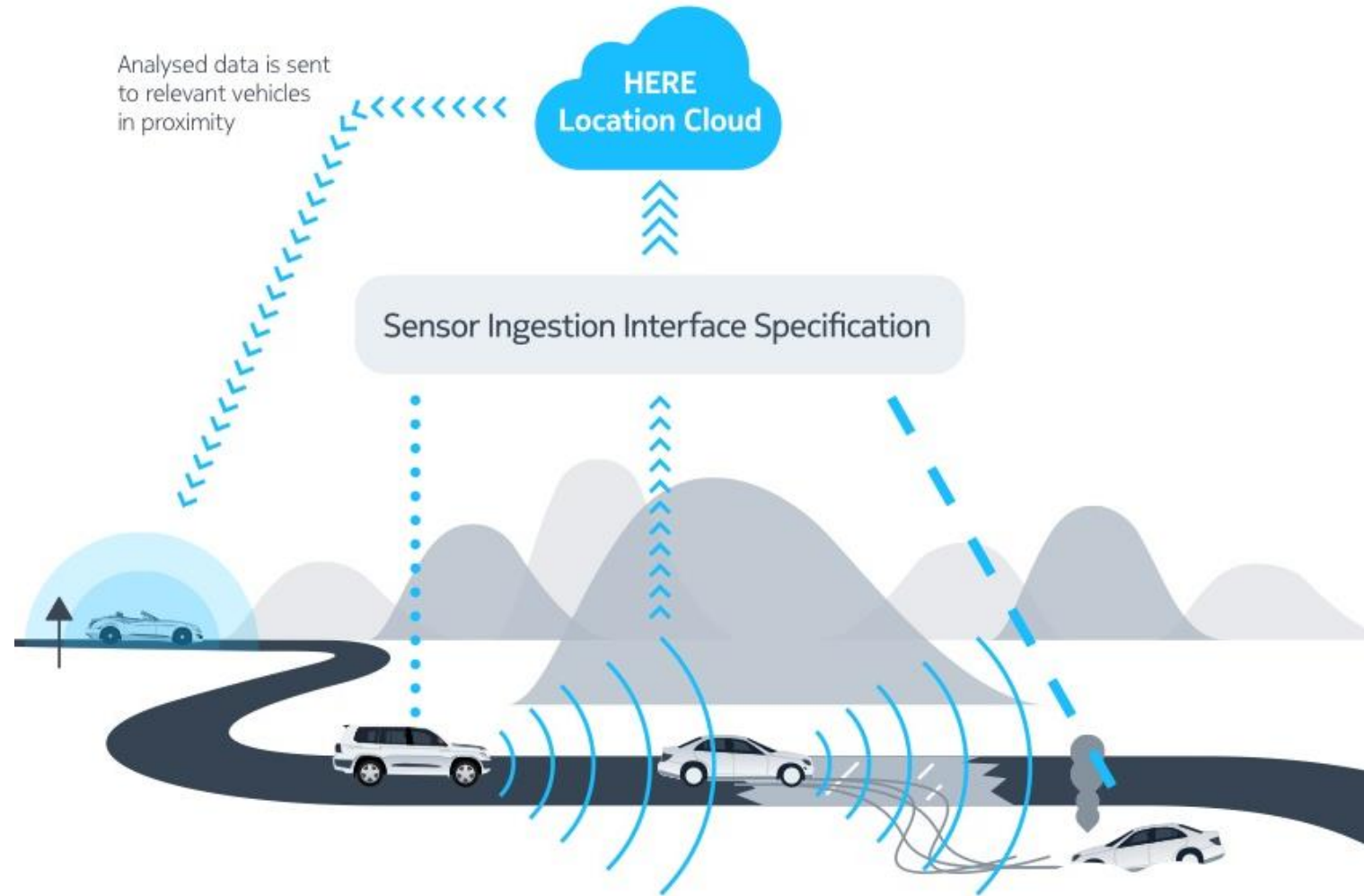
- Advanced data analytics providing insight into how humans actually navigate the road network.
- Refined speed profiles based on additional rich sensor data



# Inviting industry collaboration to support Automated Driving

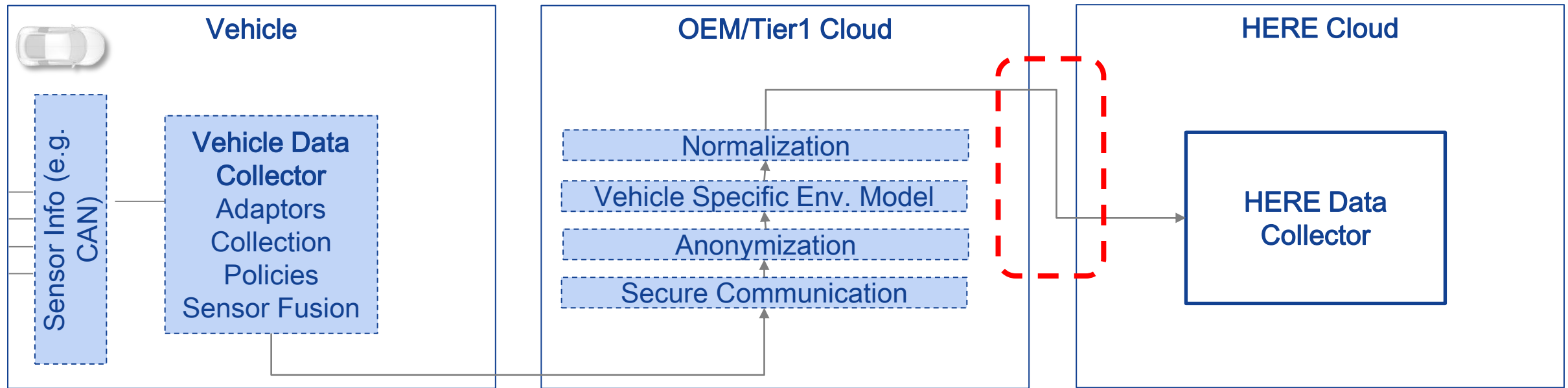
## HERE Continues to Drive Innovation for Automated Driving

Today, we are announcing the public release of our **Sensor ingestion interface specification** – to foster quicker innovation in vehicle to cloud communication.

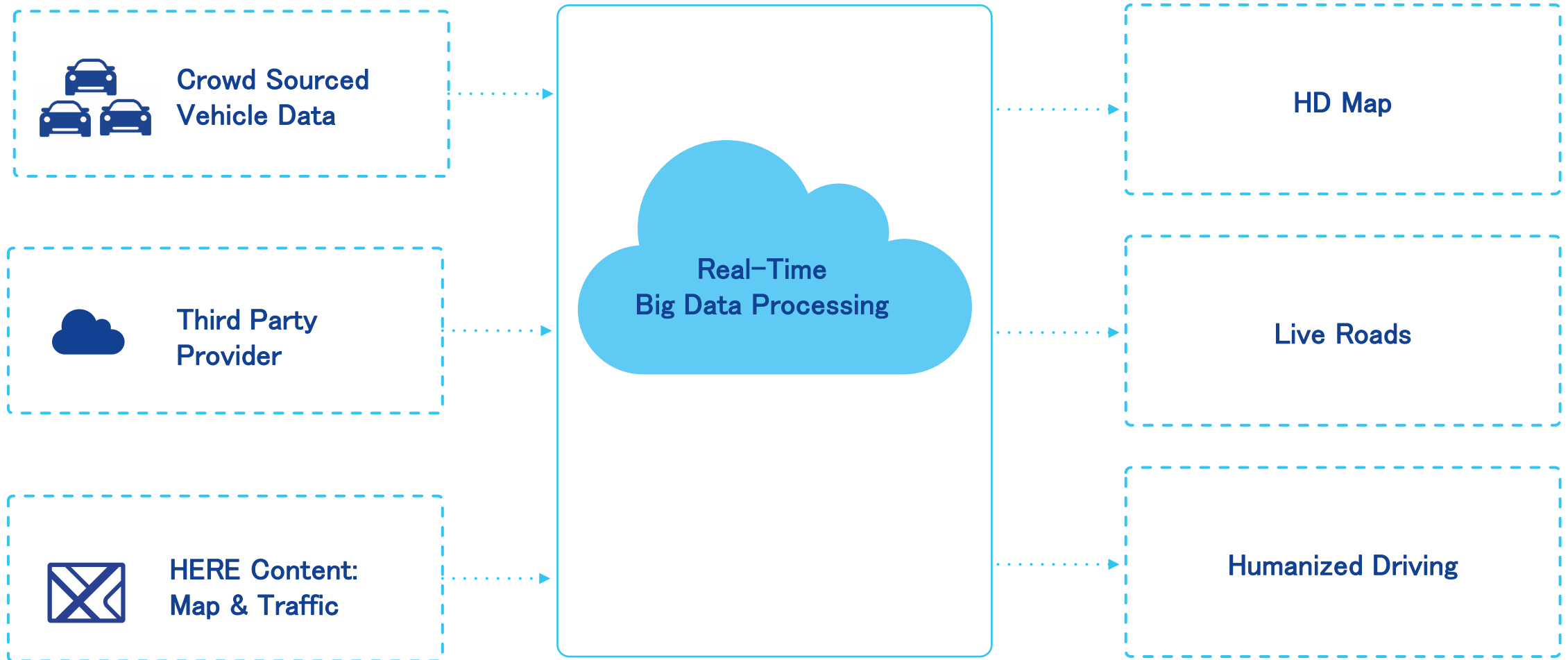




# Rich sensor data ingestion: from the vehicle to the HERE Cloud



# HERE vision for the HD Live Map





The background of the image is a stylized, high-density map. It features a dark blue base color with a complex network of yellow and orange lines representing roads and highways. Some lines are thicker and more prominent, while others are thinner and more numerous, creating a dense grid-like pattern. There are also some green lines interspersed among the yellow and orange ones. The overall effect is a high-tech, data-driven representation of a city's road network.

# HD Live Map 2015

# HD Live Map 2015

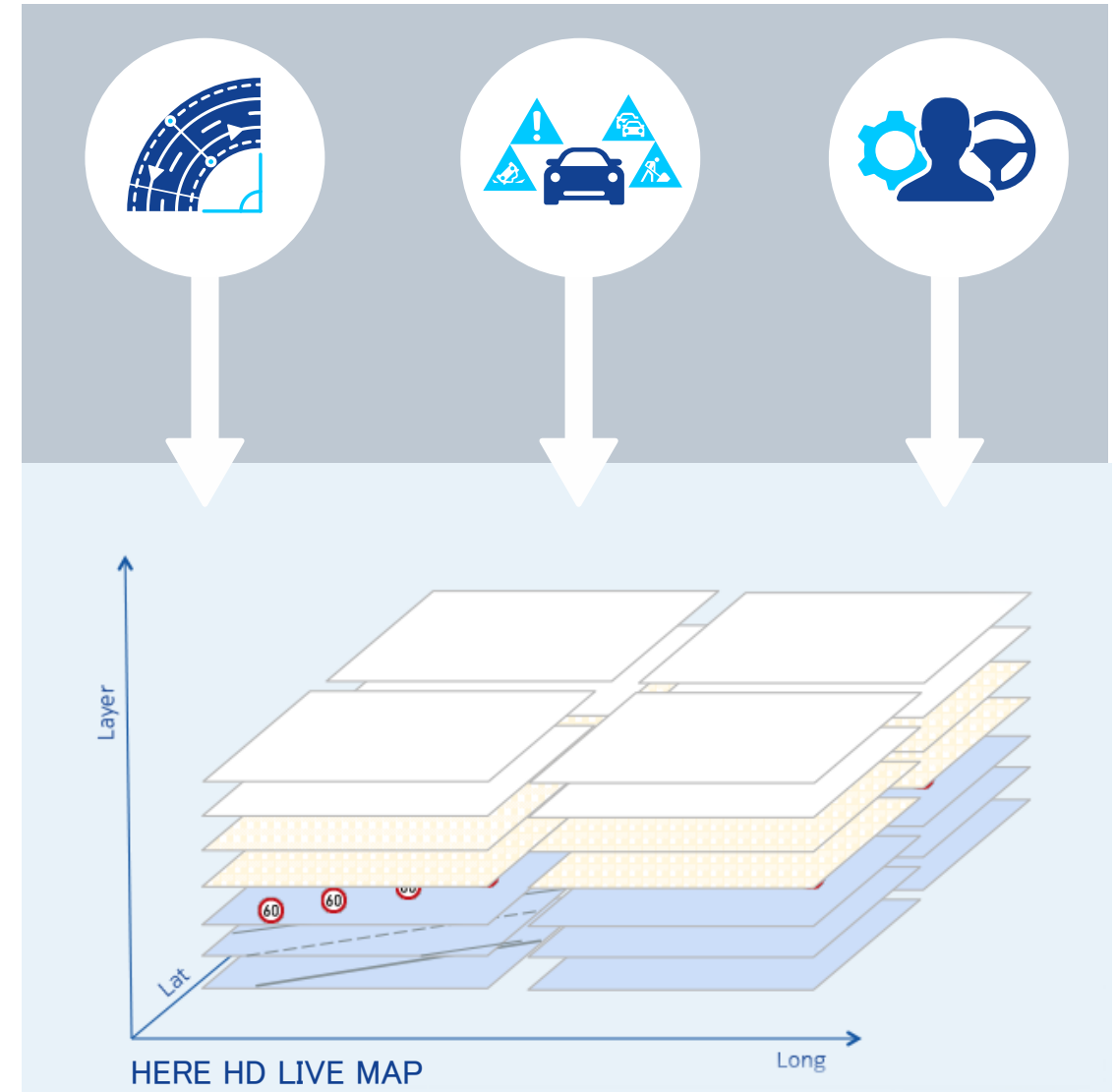
HERE HD Live Map is focused on connected ADAS related use cases.

## Product Features

- Cloud-based map tile distribution
- Road topology and road geometry
- Incidents and Road Weather
- Human curve speeds profiles

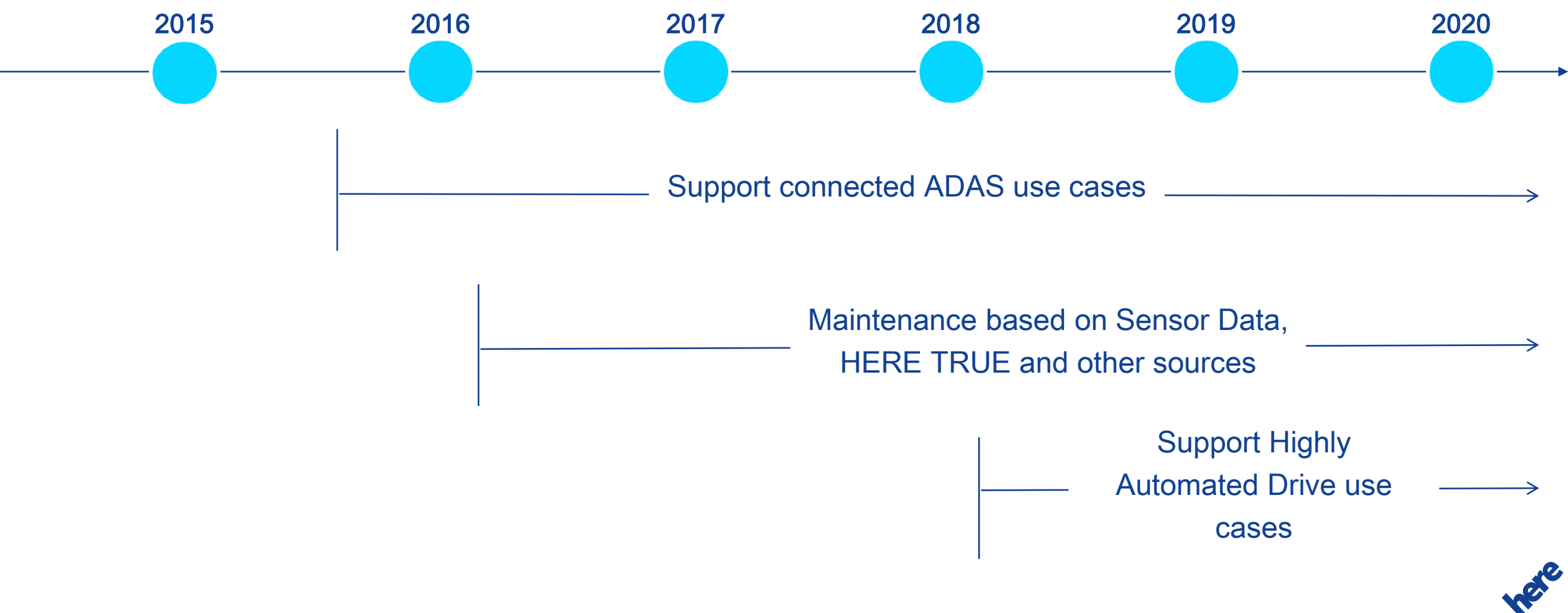
## ADAS Customer Use Cases

- Fuel Efficiency
- Super Cruise type of automation
- Enhanced Curve Speed Adjustment
- Connected Electronic Horizon





# HD Live Map coverage 2015



# HD Live Map Client



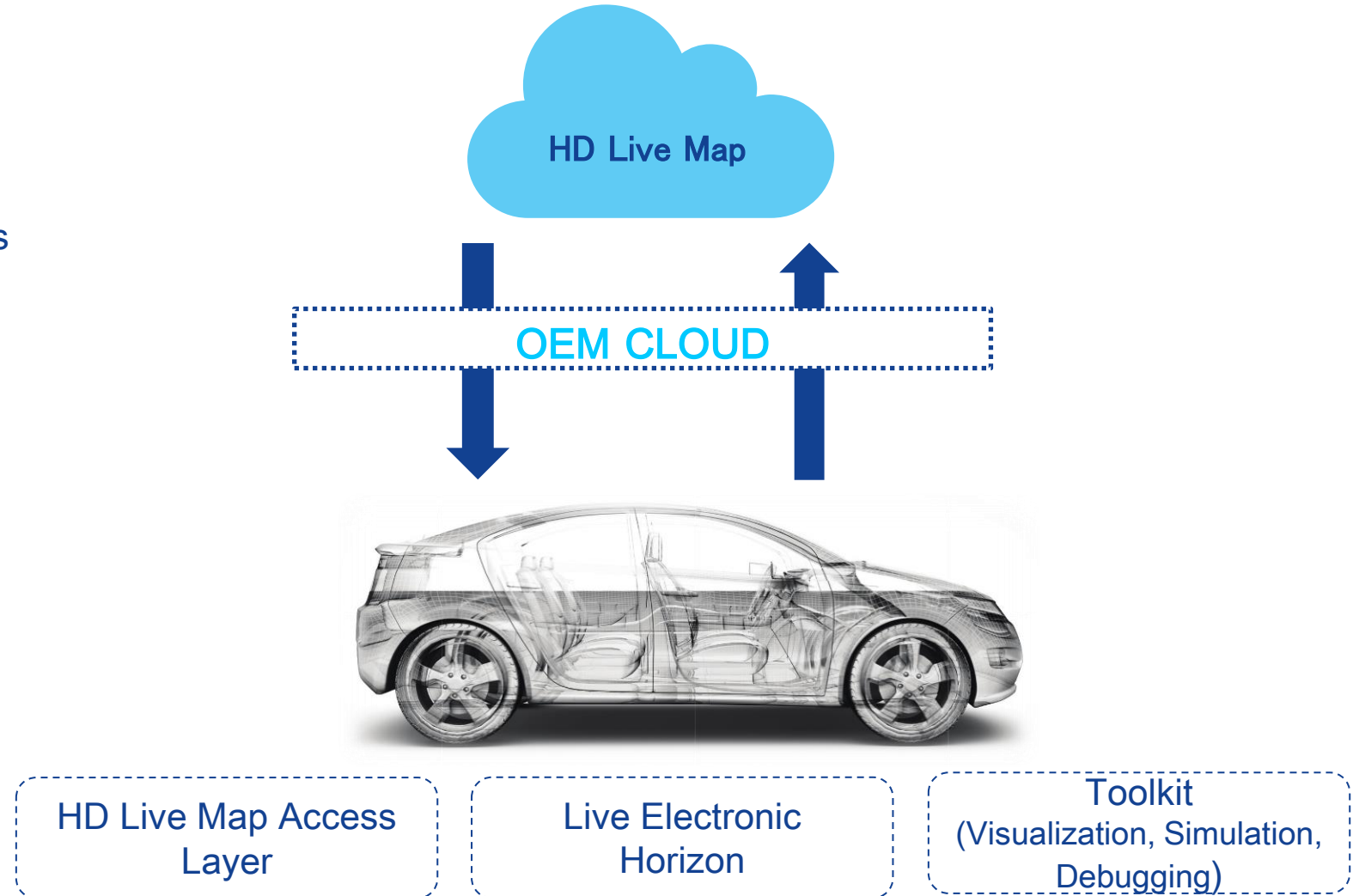


# HD Live Map client: components

**HD Live Map Access Layer:** Enables low level access to HD Live Map data and events

**Live Electronic Horizon:** Enables end to end ADAS and applications

**Toolkit:** Enables debugging, analysis and testing

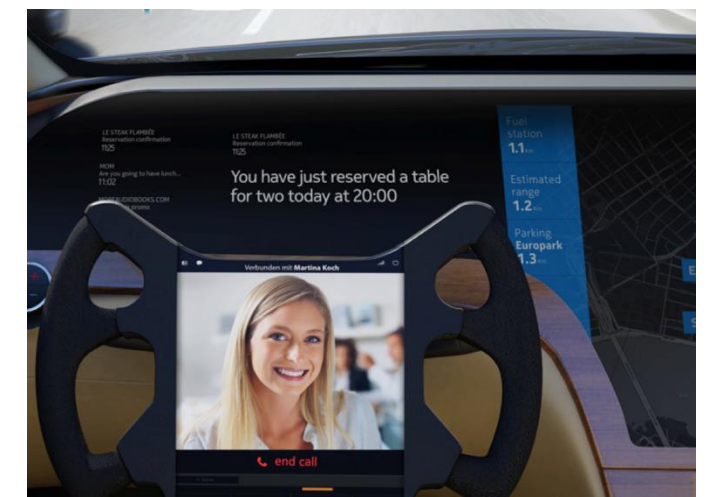
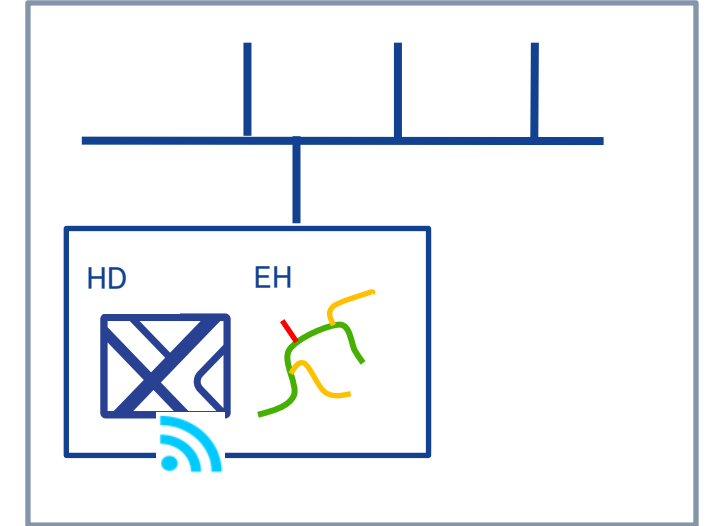




# Key benefits: HD Live Map Client

HERE HD Live Map Client **provides embedded and cloud components** for Automated Driving and connected ADAS products globally.

Allows for **faster development and productization of Highly Automated Driving** solutions due to less fragmentation across complex suppliers.



# Our HD Live Map vision is becoming a reality

- HERE HD Live Map is ready in H2 2015 – first enabling connected ADAS use case
- HERE HD Live Map Client is ready in H2 2015 and supports HD Live Map product
- Continued innovation in Intelligent Car, introducing to the industry a sensor ingestion specification to support Automated Driving

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Maps for Life