The Next Generation of Transportation…

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Powering the next generation of mobility with maps, dynamic data, and analytics
Largest transportation data supplier in the world

Employs over 7,000 people in 55 countries

Produces maps for nearly 200 countries, real-time traffic for 58 countries, multi-modal routing

Enables nine out of ten in-car nav systems in North America

Enables mobile, web, and enterprise solutions for global industry leaders

Powering the next generation of map, dynamic data, and analytics for Connected & Automated Driving
The evolution of mapping assets to Smart Cities…

Static flat maps
30 years ago map creation started out by digitizing physical map sources

Computable Roads
Collection grew to precise road geometries with rich sets of attributes to make them computable

Computable Reality
We are creating fully interconnected and attributed 3D models, combining aerial and street level technologies
The Evolution of Vehicle Automation

- **Level 0 (2025+)**: No assistance system, driver fully executing driving maneuvers and vehicle controls.
- **Level 1 (2025)**: Driver Only. Driving assistance in longitudinal or lateral driving activity, Park Assist / Collision Prevention.
- **Level 2 (2018 - 2020)**: Assisted. Car has limited control, driver must observe at all times and be ready to take control instantly (Traffic Jam Assist), "Hands on".
- **Level 3 (2015)**: Connected. HERE HD Live Map 1.0, Realtime Map updates, closed loop between vehicle sensor data and ADAS Map.
- **Level 4 (2013)**: Partially Automated. Car has partial control, under controlled circumstances the vehicle can take over driving controls, "Hands off".
- **2025**:
  - Car has full control.
  - No driver – only passengers.

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Connecting Travelers, Vehicles, Infrastructure

…via cloud-based data management and analytics to enhance safety, mobility, environmental and economic efficiency.
Mercedes showcases self-driving S 500 in Germany powered by HERE.

Historic route from Mannheim to Pforzheim in Germany 1st driven over 125 years ago.
Smart Guidance Example:
Jaguar Land Rover Connected Navigation powered by HERE

Real-time awareness with route personalization

Capabilities
- Navigation maps
- Places
- Smart route guidance
- Personal preferences
- Real-time traffic
- Parking availability & prices
- Companion app on mobile
Finnish Transport Authority V2X Pilot – Safety & Mobility

Sending targeted and fast hazard alert messages to vehicles and traffic management centers via the HERE Location Cloud
High Definition Mapping
<table>
<thead>
<tr>
<th>Problem</th>
<th>HERE Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where am I exactly?</td>
<td>Lane level precision &amp; localization</td>
</tr>
<tr>
<td>What lies ahead?</td>
<td>Real-time environment awareness</td>
</tr>
<tr>
<td>How do I get relevant information?</td>
<td>V2X messaging</td>
</tr>
<tr>
<td>How can I get there comfortably?</td>
<td>Advanced analytics for human driver behavior</td>
</tr>
</tbody>
</table>
Leveraging HERE True System technology
HD Live Map that can be consumed by automotive companies
HERE Humanized Driving
Connecting Vehicles & Infrastructure
Connecting data from vehicles and infrastructure
Digital Transportation Infrastructure (V2X)

- **Connected Infrastructure**
  - Connecting vehicles to infrastructure

- **Connected Analytics**
  - Turning car big data to Smart data

- **Connected Messages**
  - Connecting vehicles to vehicles
Data from Vehicle Sensors
HERE created a common standard across automotive companies

HERE published an open specification for integrating vehicle sensor data and has a platform to process this data

Analytical data

• Inform drivers of conditions ahead
• Decisions for automated vehicles
• Maintenance data for road authorities
Data from Transportation Agencies
HERE is working with agencies to integrate infrastructure data

Data Examples
• Road and lane closures
• Traffic signal data
• Dynamic speed limits
• Dynamic tolling and lanes
• Snow clearing
03
Mobility across all modes
Integrating transit, pedestrian, bike, ride share data into a seamless user experience

Options for Travelers

- Ability to add city-relevant data
- Rich visual experience

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Map 2020: data is the new currency

50X more data of higher quality
faster speed

23B connected devices

250M connected cars

Sensor data explosion
The Next Generation of Transportation

- Service operators
- Public agencies
- Automated OEMs
- Automated Driving
- Insurance
- Navigation

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Iowa Department of Transportation Announce Ignite Iowa Automated Vehicle Project

Ignite Iowa will develop a cutting edge, ready-for-implementation platform.
Thank You!