



HD MAP

HIGHLY ACCURATE BORDER-TO-BORDER MODEL OF THE ROAD

OVERVIEW

Autonomous driving is the most disruptive change in the automotive industry since the invention of the car. Autonomous driving will completely transform not only the way we commute but will boost the safety, comfort and efficiency of vehicles to a level beyond imagination. Undeniably, autonomous driving will require an advanced on-board map to support various vehicle systems.

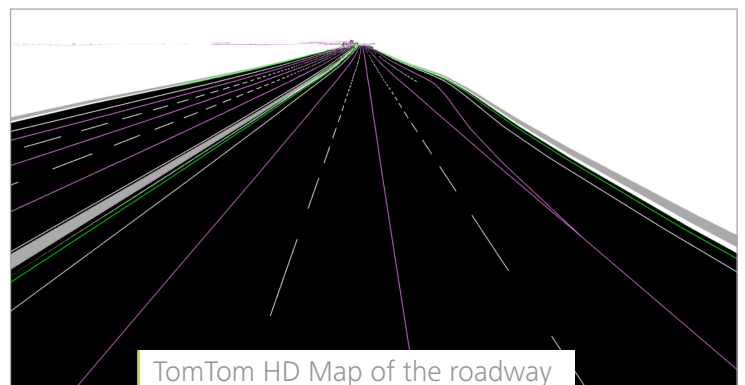
Enabled by its real-time map infrastructure, TomTom’s High Definition (HD) Map provides a highly accurate and realistic representation of the roadway profile, including curvature and terrain information. The HD Map extends the range of view for the vehicle while enabling smoother, safer and more efficient driving scenarios. The HD Map can also be leveraged to fulfill a broad range of advanced driving applications. The first generation of the HD Map focuses on highway driving; support for other environments including urban and rural will follow as autonomous driving evolves.

PRODUCT FEATURES AND BENEFITS

FEATURES	BENEFITS
3D geometry	<ul style="list-style-type: none"> • Delivers realistic modelling of surroundings and driving scenarios • Enables slope and curvature values to be derived for ADAS applications
Lane dividers	<ul style="list-style-type: none"> • Allows for precise positioning of vehicle and other sensed objects
Road borders	<ul style="list-style-type: none"> • Delivers improved driving scenarios
Guard rails	<ul style="list-style-type: none"> • Increases confidence in sensor input
Lane connections and lane dependent attributes	<ul style="list-style-type: none"> • Delivers improved driving scenarios
Lane dependent speed limits	<ul style="list-style-type: none"> • Delivers improved driving scenarios
Absolute accuracy	<ul style="list-style-type: none"> • Delivers precision in terms of X,Y,Z coordinates since the HD Map has an accuracy of 1 m or better compared to reality
Relative accuracy	<ul style="list-style-type: none"> • Allows neighboring reference locations in the HD Map to be positioned with an accuracy of around 15 cm relative to each other



Live roadway situation



TomTom HD Map of the roadway situation pictured on the left

ADVANCED DRIVING APPLICATIONS ENABLED BY THE HD MAP

Hands-free driving	Predictive powertrain control	Eco-routing and driving
Lane merge and end notification	Advanced lane guidance	Advanced road display
Lane splits	Curve speed warnings	

END USER BENEFITS

- Highly precise vehicle positioning
- Small data footprint
- Robust feedback

FORMAT

- XML
- Shapefile format
- Navigation Data Standard (NDS)

HD MAP
ENABLING LOCALIZATION & MANEUVER PLANNING

- LANE DIVIDERS**
SUPPORT ALL DIVIDER TYPES
TO PROVIDE PROPER DRIVING CONTEXT
- 3D LANE CENTER LINES**
ENABLE AUTONOMOUS DRIVING
WHEN DIVIDERS ARE NOT VISIBLE
- LANE LEVEL SPEED LIMIT**
ATTRIBUTE IS AVAILABLE FOR EACH LANE,
PROVIDING CAMERA REDUNDANCY &
SAFE VEHICLE OPERATION
- ROAD BORDERS**
FULL EDGE TO EDGE ROAD REPRESENTATION
INCLUDING EMERGENCY LANES & DRIVABLE AREAS

TomTom

TomTom's high quality ADAS and autonomous driving content enable precise localization and motion planning for vehicles

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