

Leading the way: How Standardization helped scaling TomTom's NDS business



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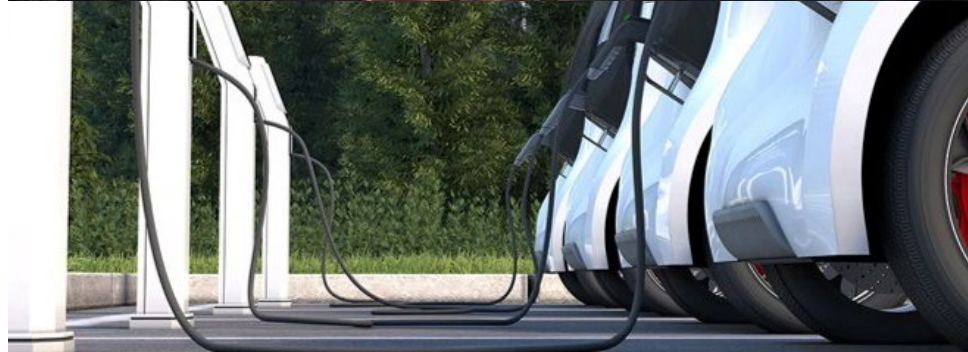


NDS Public Day, Frankfurt / Germany
September 24, 2020



Our vision

A safe, connected, autonomous world that is free of congestion and emissions



Shaping mobility **with and for our customers**

Automotive



Enterprise



Consumer



Car manufacturers and Tier 1 vendors

Application developers, internet-of-things companies, governments, logistics services and fleet management experts, and cloud service providers

Drivers

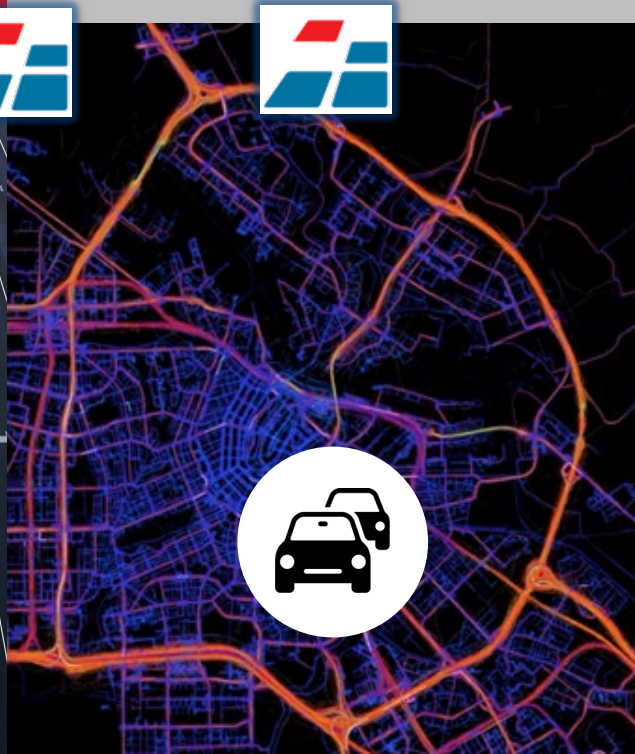


TomTom Automotive product portfolio

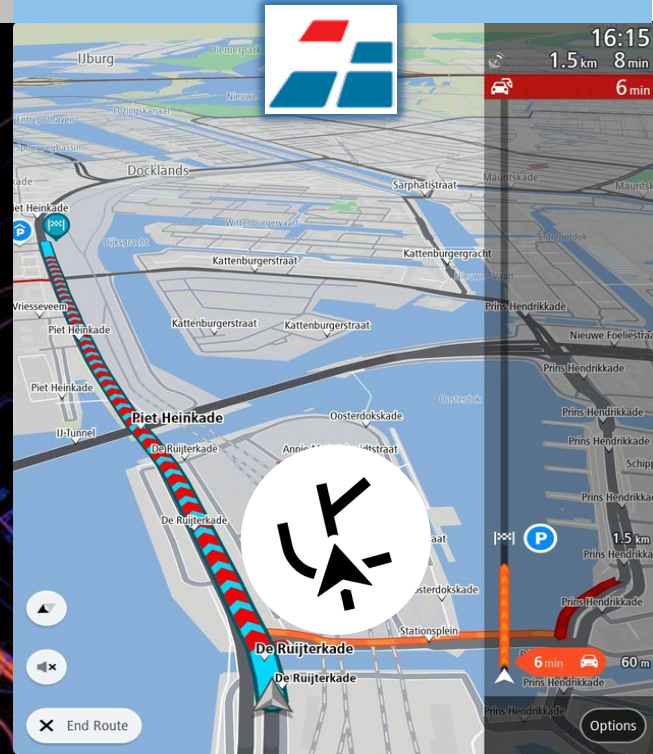
Maps



Services



Software



Trusted by largest Automotive & Technology Companies



LEADING by SCALING

History

- TomTom NDS maps in operational use since 2013
- TomTom navigation assets fully migrated to NDS
- NDS deployment extended beyond automotive use cases
- Global NDS map releases (last white spot: SOP in 2021)
- NDS conceived as a service (incl. update hosting & distribution)
- OTA map updates & map mgmt. in operational use since 2017

Rationalization of NDS product portfolio

- Economies of scale → standardisation of NDS map profiles
 - Automotive NDS Map
 - Mobile NDS Map
 - Server NDS Map
 - ADAS NDS Map
- Operational synergies → scaling of TomTom's NDS business

Automotive NDS map

TomTom

Automotive NDS Map

Application-ready maps for enhanced automotive navigation and driver assistance applications

Overview

Enhanced navigation and supporting rich map features, flexibility to provide a customized user experience. TomTom is the global leader in serving user-time application maps in NDS format to automotive customers and is exclusively positioned to leverage scale of business and customer experience.

The TomTom Automotive NDS Map enables advanced navigation technologies by delivering readily compiled, production-quality maps, seamlessly integrable with content of automotive manufacturers and industry suppliers, guaranteeing compatibility and interoperability across ecosystems. TomTom is uniquely positioned as both an NDS application developer as well as content provider for vehicle-related services, in-vehicle and companion applications.

Features

Features	Benefits
Scalable and modular feature set	Supports full range of application development, including low, mid and high-end applications Provides pre-defined content modules for the composition of the desired map content profile
Map coverage management	Supports ability to add/remove regions or sub-regions depending on storage capacity and/or specific licensing model Enables map management to be manual and/or automated
Geo-political flexibility	Supports requirements for multiple geo-political views and use cases (in a single map)
Supports incremental map updates and IQ Maps compatible	Change-only map update information Compatible with IQ Maps for seamless and automated over-the-air map updates, enabling always up-to-date maps for areas relevant to the user's personal driving patterns

Mobile NDS map

TomTom

Mobile NDS Map

Application-ready maps for embedded smartphone navigation

Overview

Emerging use cases and technologies drive the need for enhanced navigation and related services, compatible with a variety of devices and operating systems, and easily accessible at the driver's fingertips. Connected navigation and the demand for richer as well as more intuitive content is highly dependent on high quality, standardized and scalable application-ready maps which are fast, efficient, and easy-to-use and deploy.

Navigation Data Standard, NDS, is the standard format for automotive-grade navigation databases, jointly developed by consortia of automotive manufacturers and industry suppliers, guaranteeing compatibility and interoperability across ecosystems. TomTom NDS combines the stability of a single, harmonized, globally adopted specification, with unique flexibility to provide a customized user experience.

Features

Features	Benefits
Scalable and modular feature set	Supports full range of application development, including low, mid and high-end applications Provides pre-defined content modules for the composition of the desired map content profile
Map coverage management	Supports ability to add/remove regions or sub-regions depending on storage capacity and/or specific licensing model Enables map management to be manual and/or automated
Geo-political flexibility	Supports requirements for multiple geo-political views and use cases (in a single map)
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ADAS NDS map

TomTom

ADAS NDS Map

Application-ready maps for driver assistance and safety applications

Overview

Enhanced navigation and advanced safety features should be available to every driver on the road today. Advanced Driver Application (ADA) Systems are reliant on high quality map data as a predictive sensor in addition to vehicle sensor information for enhanced functionality and safety features.

The TomTom NDS Map enables advanced navigation technologies by delivering readily compiled, production-quality maps, seamlessly integrable with content of automotive manufacturers and industry suppliers, guaranteeing compatibility and interoperability across ecosystems. TomTom NDS ADA Map combines next generation automotive capability with the stability of a single, harmonized, globally adopted specification, as well as unique flexibility to provide a customized user experience.

Features

Features	Benefits
Map coverage management	Supports ability to add/remove regions or sub-regions depending on storage capacity and/or specific licensing model Enables map management to be manual and/or automated
Supports incremental map updates and IQ Maps compatible	Change-only map update information Compatible with IQ Maps for seamless and automated over-the-air map updates, enabling always up-to-date maps for areas relevant to the user's personal driving patterns
Scalable content profile	Standard feature set, as well as configuration options

Server NDS map

TomTom

Server NDS Map

Application-ready maps for online navigation and location services

Overview

Increasing dependence on location-based information necessitates high quality, standardized, yet flexible and scalable application-ready maps which are fast, efficient, and easy-to-use and deploy.

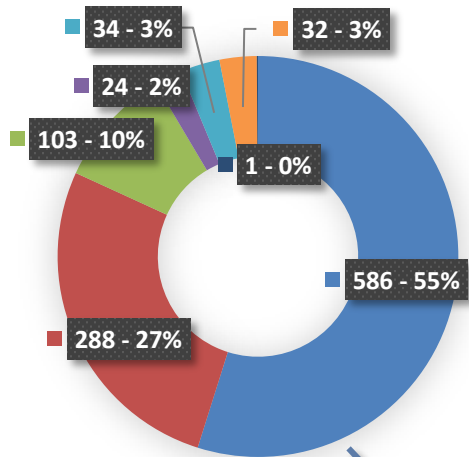
Navigation Data Standard, NDS, is a standardized format for automotive-grade navigation databases, jointly developed by consortia of automotive manufacturers and industry suppliers, guaranteeing compatibility and interoperability across ecosystems. TomTom NDS allows customers to serve up-to-date content and services, directly into their applications, enabling an enhanced user experience.

Features

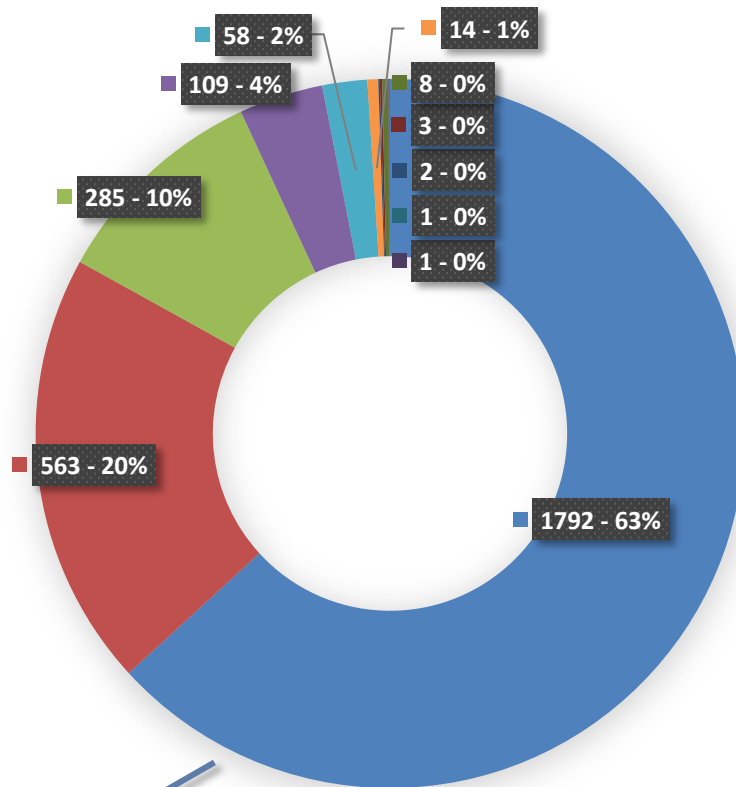
Features	Benefits
Geo-political flexibility	Supports requirements for multiple geo-political views and use cases (in a single map)
Early integrate for remote use cases	Allows combining regional maps with online services (i.e., TomTom Traffic, Speed Camera, Online Search, Online Routing) for online navigation experience, revert to offline turn-by-turn navigation if connectivity not or not preferred Supports personal data management, recommendations, synchronization, and sharing across multiple devices
Supports incremental map updates	Change-only map update information

2018

NDS Map Certificates submitted (accumulated): 2020(Q3)



3x



Thank you

