



TomTom



Panel: Data Integration and Policy Framework for Bridging the Gap



UN-GGIM

Arnout Desmet, Vice-President Maps - July 31st, 2018

TomTom at a glance



Business Units

Consumer

- > B2C devices
- > Smartphone Apps



- > Consumers

Automotive

- > B2B connected navigation components



- > Car OEMs
- > Tier 1 suppliers

Telematics

- > B2B fleet telematics



- > Commercial fleet owners

Enterprise

- > B2B system components



- > Smartphone vendors
- > App & website developers
- > GIS owners

Core Assets

Maps

Navigation Software

Traffic

MAP FACTS

AS OF Q2 2018

NAVIGABLE MAPS FOR

149 | **33**

COUNTRIES | TERRITORIES

56.8+
MILLION KM

OF NAVIGABLE ROADS
GLOBALLY



400+ THOUSAND KM

HD MAP COVERAGE



116+ MILLION

POINTS OF INTEREST



344+ MILLION

ADDRESS POINTS



550+ MILLION

CONNECTED DATA SOURCES



3+ MILLION KM

DRIVEN BY MOBILE MAPPING VEHICLES EACH YEAR

TomTom Map Products

- (High Definition) Maps
- Digital Elevation Models
- 3D City Models & Landmarks
- Land Use and Cover
- Addressing Data
- Points of Interest,
- Signpost and Traffic Signs
- Junction Views
- Mobile Mapping data (LIDAR)
- Autonomous Driving Positioning Technology



A world map where the landmasses are filled with a complex network of glowing lines representing traffic data. The lines are primarily blue and purple, with some yellow and orange highlights, particularly in North America and Europe. The background is black.

**WE ALSO
COLLECT TRAFFIC DATA**



Speed

Counts

Location

Travel times

Origin-destination

535

TomTom Dynamic Information

- Dynamic Speed limit information
- On-Street parking info
- EV station availability
- Weather information



TomTom Multi-Source Map Maintenance

CHANGE DETECTION AND CROWDSOURCING

Car sensor data



Community input



GPS traces



TARGETED SOURCING

Mobile Mapping



Government Road authorities



PROCESSING TECHNOLOGY

AI and computer vision



Transactional map making

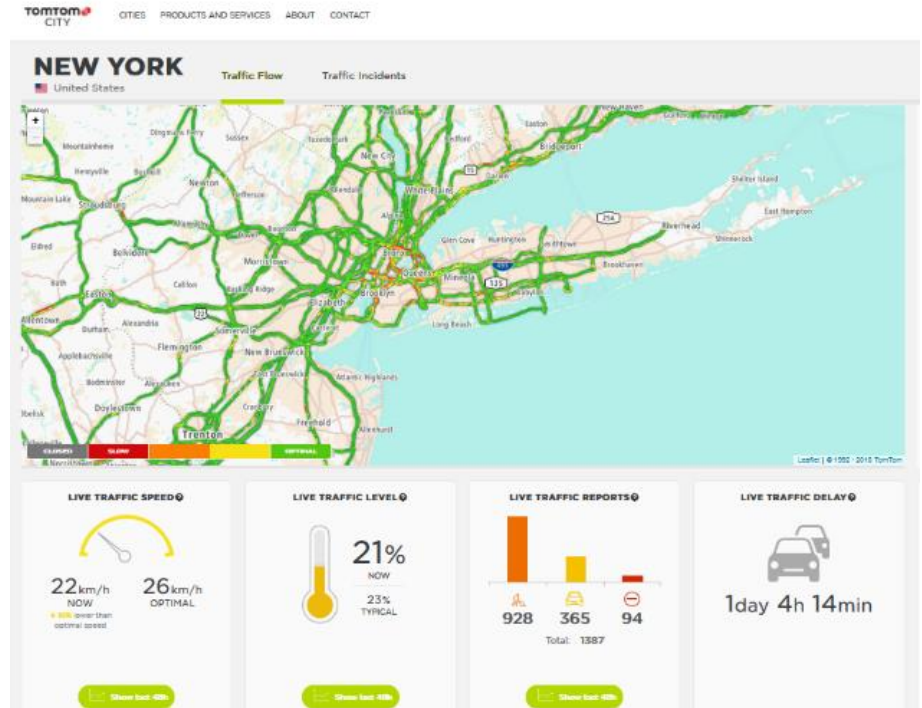


Big data

Helping Authorities and Citizens

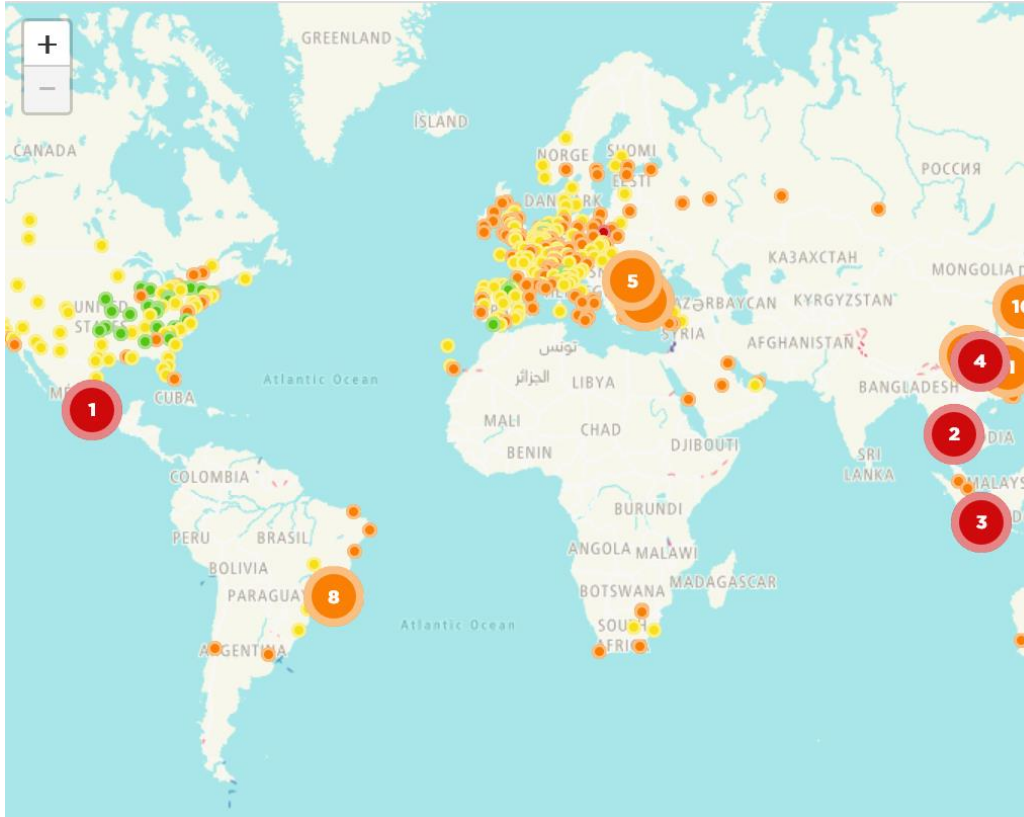


Connected in-dash navigation



TomTom City

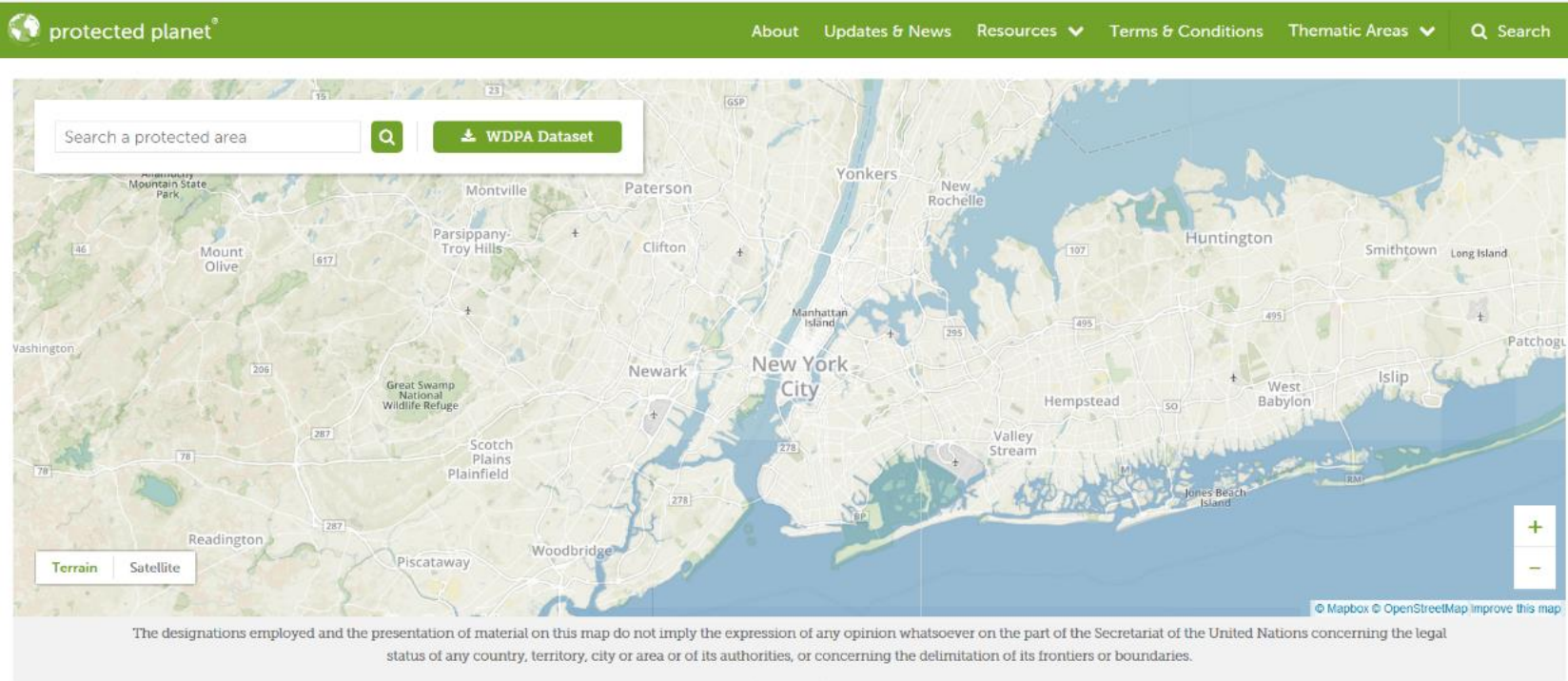
Global Traffic Index



WORLD RANK	CITY	CONGESTION LEVEL
1	<u>Mexico City</u>	66%
2	<u>Bangkok</u>	61%
3	<u>Jakarta</u> NEW	58%
4	<u>Chongqing</u>	52%
5	<u>Bucharest</u>	50%
6	<u>Istanbul</u>	49%
7	<u>Chengdu</u>	47%
8	<u>Rio de Janeiro</u>	47%
10	<u>Beijing</u>	46%

Need for Authoritative Data

- Increased **availability** of fresh geospatial data



The screenshot shows the Protected Planet website interface. At the top, there is a green navigation bar with the logo and menu items: About, Updates & News, Resources, Terms & Conditions, Thematic Areas, and Search. Below the navigation bar is a search bar with the text "Search a protected area" and a magnifying glass icon. To the right of the search bar is a green button labeled "WDPA Dataset" with a download icon. The main content is a map of the New York City area, showing various protected areas and geographical features. The map includes labels for cities like New York City, Newark, Paterson, and Yonkers, as well as parks like Mount Olive and Great Swamp National Wildlife Refuge. The map is displayed in a terrain view, with a "Satellite" option also visible. At the bottom of the map, there is a disclaimer: "The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries." The map is credited to Mapbox and OpenStreetMap.

Need for Authoritative Data

- Increased **access & quality** of geospatial data



via standard Interfaces, data formats, data platforms

Need for Authoritative Data

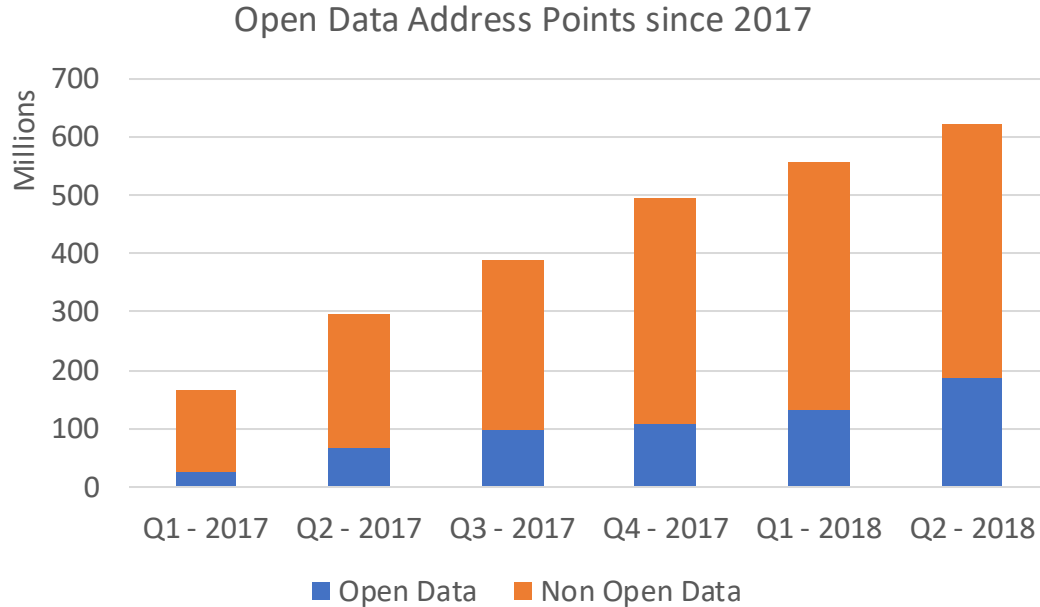
- Increased **re-usability** of geospatial data
 - Apply **standard** data licenses:

Acceptable Open Data licenses:

- ✓ Creative Commons / Open Data Commons /
Open Government License
(Attribution condition is OK!)
- ✗ **Avoid use of:** Non Commercial, Non Derivative,
Share Alike conditions



TomTom and Open Data



- Important source since digital mapping started
- Strong in North America, Western Europe, and Australia
- TomTom supports Open Data initiatives:
 - government hackathons
 - OD memberships
 - Quality validation & feedback

Open Data Value Creation

Changes of speed limit in Sweden



Standardized online access to changes in Speed Limits in Sweden, Norway, Finland



Road Administrations offers Open Data; +200k changes published since 2016



Increases **road safety** by informing and/or assisting drivers to respect the correct speed limits ('Vision Zero')

Electric Vehicle charging stations in US



Electric Vehicle Charging Stations in USA

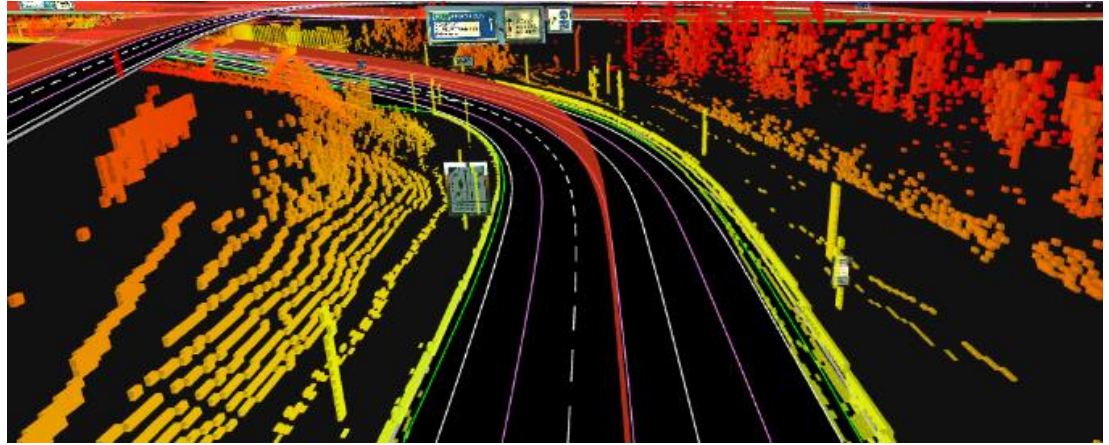


Data made available by National Renewable Energy Laboratory of the US Government Works



New map use case results in better **EV experience**, reduced 'range anxiety', better eco and sustainable mobility

Self Driving Cars



- TomTom offers HD Maps & streaming service to enable autonomous driving
- Mobile Mapping vehicles equipped with high-end LIDARs provide accurate source data
- Authorities do also invest heavily in Mobile Mapping technologies for road asset inventory and management as well as detailed city mapping.
- This is an opportunity for collaboration.



TomTom

LEADING THE WAY
TO A FUTURE OF

**SMARTER
MOBILITY &
AUTONOMOUS
DRIVING**