Panel: Data Integration and Policy Framework for Bridging the Gap

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

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MAP FACTS
AS OF Q2 2018

NAVIGABLE MAPS FOR
149 COUNTRIES
33 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
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
WE ALSO COLLECT TRAFFIC DATA
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

CHANGE DETECTION AND CROWDSOURCING + TARGETED SOURCING = PROCESSING TECHNOLOGY

Community input
GPS traces
Mobile Mapping
Government Road authorities
AI and computer vision
Transactional map making
Big data
Helping Authorities and Citizens

Connected in-dash navigation

TomTom City
Global Traffic Index

<table>
<thead>
<tr>
<th>WORLD RANK</th>
<th>CITY</th>
<th>CONGESTION LEVEL</th>
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<tbody>
<tr>
<td>1</td>
<td>Mexico City</td>
<td>66%</td>
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<tr>
<td>2</td>
<td>Bangkok</td>
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<tr>
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<tr>
<td>8</td>
<td>Rio de Janeiro</td>
<td>47%</td>
</tr>
<tr>
<td>10</td>
<td>Beijing</td>
<td>46%</td>
</tr>
</tbody>
</table>
Need for Authoritative Data

- Increased **availability** of fresh geospatial data
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
- 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
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.
LEADING THE WAY TO A FUTURE OF
SMARTER MOBILITY & AUTONOMOUS DRIVING