Access to Public Data for Digital Road Maps - Workshop
“Meeting the Mapping Requirements, Need for Public Road Data”

29th March 2011, Brussels

Stephen T’Siobbel
TomTom Content Production
Content

- Introduction
- Content production
- Interest in Public Road Data
- Enablers / Experiences
- Conclusion
Company profile

TomTom is the world’s leading supplier of location and navigation products and services.

We have four customer facing business units: Consumer, Automotive, Business Solutions and Licensing.

We are headquartered in Amsterdam, the Netherlands, and we employ over 3,500 people worldwide.

We are registered on the AEX (TOM2) in Amsterdam and in 2010 reported €1.5 billion in revenue and a net operating cash flow of €210 million.
**TomTom - Organisation update**

<table>
<thead>
<tr>
<th>Business Units</th>
<th>Consumer</th>
<th>Automotive</th>
<th>Business Solutions</th>
<th>Licensing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customers</td>
<td>Distributors, retail, consumers</td>
<td>Manufacturers, system integrators</td>
<td>Fleet owners</td>
<td>GIS, PND manufacturers, governments, internet, wireless</td>
</tr>
</tbody>
</table>

**Platform Units**
- User Experience
- Client technology
- Services & delivery
- **Content production**

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Content Production - Product portfolio

- Worldwide map coverage
- Address points
- Points of interest
- Brand icons
- Admin areas and postal codes

- Speed profiles
- Real time traffic
- Speed cameras
- Voice maps
- Advanced driving attributes

- Advanced city models/3D city maps
- 2D city maps
- 3D landmarks and landmark icons
- Traffic stats portal and custom travel times
- Junction views
Interest in road data (Vehicle manufacturer)

- Speed restrictions
- Traffic restrictions (traffic signs)
- Traffic Lights
- Traffic crossings (pedestrian/tram)
- Road characteristics (road gradient, curvature, banking, ...)
- [Road works]
- [Speed cameras]

=> High quality & full coverage
Content

Introduction

Content production

Interest in Public Road Data

Enablers / Experiences

Conclusion
How we produce & maintain maps
The highest quality maps use the highest quality sources

We source material
via governments, authorities, aerial and satellite images

We detect change
by our user generated content/community
Mobile Mapping, etc

We correct, update and enhance maps
by our field surveyors, mobile mapping vans
Semi automatic processes, ...
TomTom uses real speed data collected over 5 years from 20 million users to calculate the best and fastest route to take.

Only TomTom is able to take into account local factors such as local rush hour hot spots, slow traffic light changes, zebra crossings, school exits or even a particularly busy shopping street, every minute of every day.

4 billion speed measurements per day
3 trillion speed measurements to date
by customers driving 15 billion kilometres
and visiting every spot over 2,000 times on average
TomTom rigorous quality framework

Sources
- GPS measurements
- Community input
- Authoritative sources
- Field survey

Advanced technology
- Change detection algorithms
- Consistency checking algorithms
- Validation algorithms
- Automated feature creation algorithms

Products
- Traffic solutions
- Landmark icons
- Advanced city models
- POIs
- 2D city maps
- Address points
- Urban maps

Sources, Advanced technology, and Products are connected by a quality check process along the outer circle.
The ISO/TS 16949 standard


ISO/TS 16949:2009

ISO 9001:2008

Focus on Product Realization

How to control

WHAT to control

TomTom Content Production holds today ISO/TS certificates for its sites in EMEA (since 2005), APAC (since 2008) and North America (since 2009).
Interest in Public Road Data
Interest in access to Public Road Data

• Pre actual data (planned road works)
  • Impossible to observe from customer feedback & Mobile Mapping

• Road works
  • Relevant for routing, e.g. Official de tour route

• Spatial coverage
  • Towards full coverage

• Special content
  • Road surface attributes: rutting, road surface friction, micro-cracks,
  • Roadside furniture: road guards,
  • Traffic restrictions/preferences, e.g. for HGV,
  • Detailed intersection maps, etc

• Quality level
  • “Trusted user” input gets into products faster...
Enablers / Experiences
ROSATTE – safety attributes exchange

Funding through the EC Directorate General Information Society & Media  www.rosatte.eu

Enacting Authority
- Viewer sends map data visualization
- User requests visualization of map data
- Enacting Authority sends change data
- Map Provider requests change data
- Enacting Authority sends change data
- Enacting Authority requests feedback
- Map Provider sends feedback

Map Provider
- Online Map Viewer
- Push Service
- Pull Service
- Feedback Service

Data Processing
- Incl. Location Reference Decoding

Updated Spatial database

NAVTEQ

ROSATTE – safety attributes exchange

Funding through the EC Directorate General Information Society & Media  www.rosatte.eu
ROSATTE - TomTom implementation

Funding through the EC Directorate General Information Society & Media  www.rosatte.eu
Technology for location data exchange

AGORA-C standard
• license for commercial implementation via patent pool

OpenLR industry standard in GPL open source
• Royalty free for commercial implementations
• Supports point, line and now also area features

www.openlr.org
Introduction

Content production

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Conclusions

- There is customer interest for routing, eco driving, safety for which high quality road data is key (availability, accuracy, timeliness, ...)

- TomTom Content Production expresses interest in access to specific content

- Expertise via existing Public Private cooperations and R&D projects

- Enabling technologies & initiatives to support a cooperation

- Willingness from TomTom Content Production to discuss cooperation!
Thank you

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