cooperative mobility Conference 2010

Accurate CVIS positions & maps

Boudewijn Schokker

logica be brilliant together

coopers

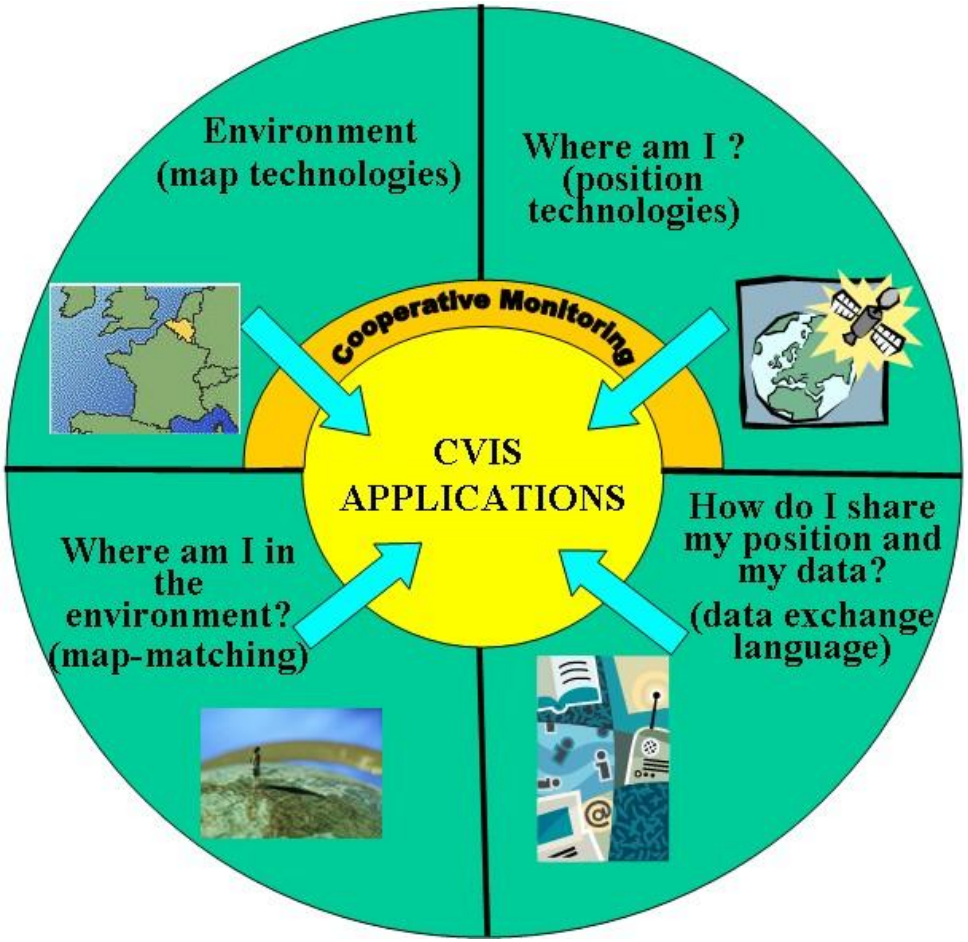
CVIS COOPERATIVE VEHICLE-INFRASTRUCTURE SYSTEMS

SAFESPOT COOPERATIVE SYSTEMS FOR ROAD SAFETY

European Commission Information Society and Media

Ministerie van Verkeer en Waterstaat

TALKING POSITIONS AND MAPS



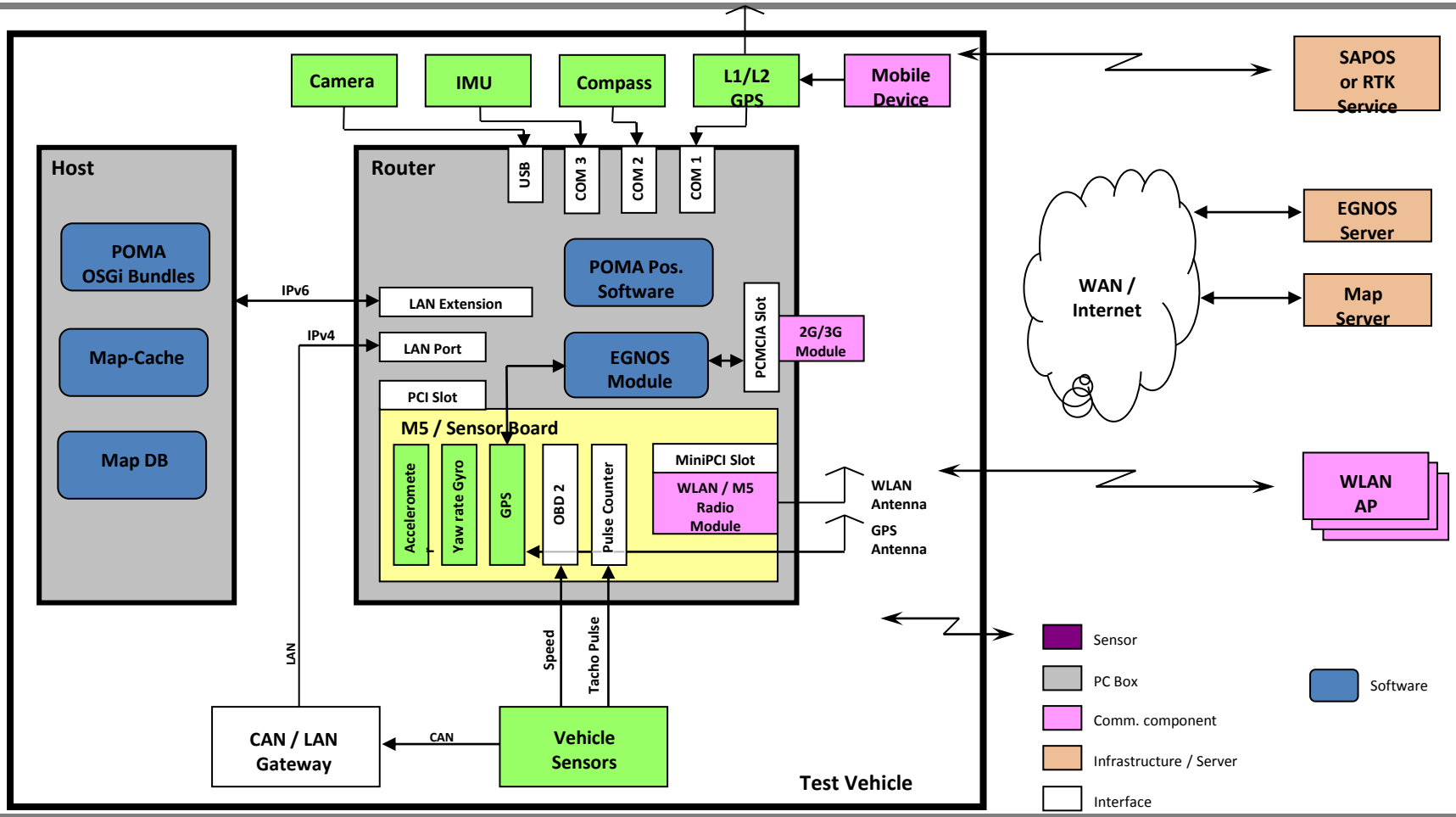
CVIS POMA EXPECTED RESULTS

data fusion
&
map-matching

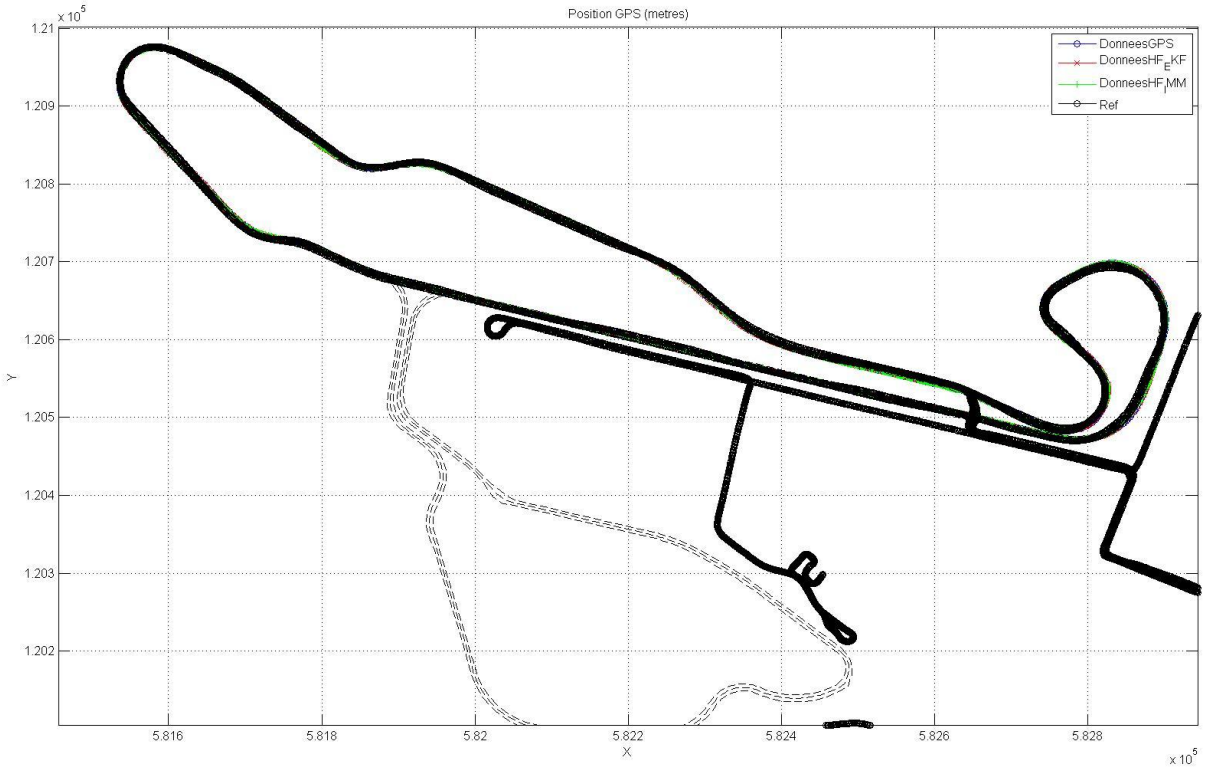
You are here, on this segment, at this abscissa, on this lane!

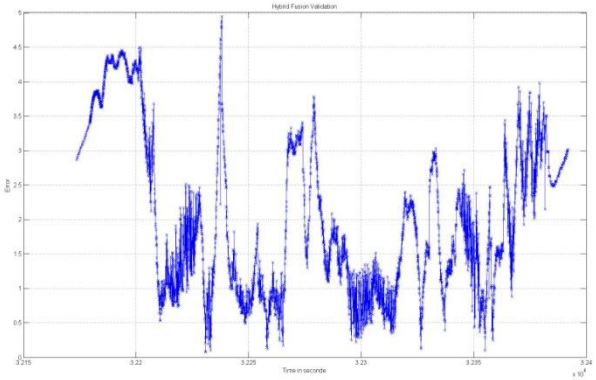
With position on the map and relevant attributes of the road segment

POSITIONING CONFIGURATION



POSITIONING ACCURACY





Positioning: 2 m accuracy

UNPRECEDENTED MAP-MATCHING

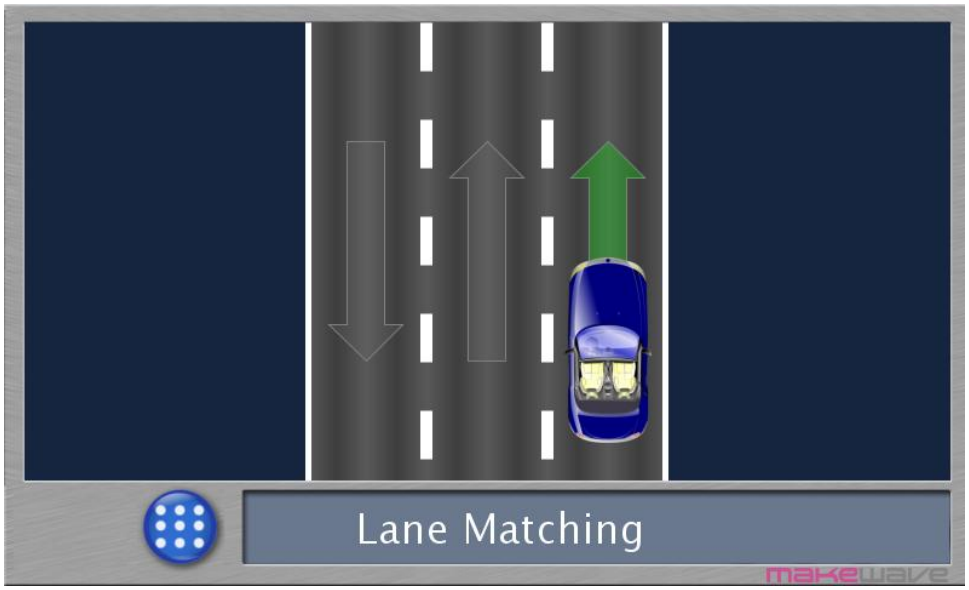
Experimental results Göteborg test track

Map	**FAR (%)**	**MDR (%)**	**OCDR (%)**
Map *i*	0.66	0.57	98.77
Map *j*	1.33	0.91	97.76

~3000 Map-Matched positions

OCDR (overall correct detection rate) >> required 95%

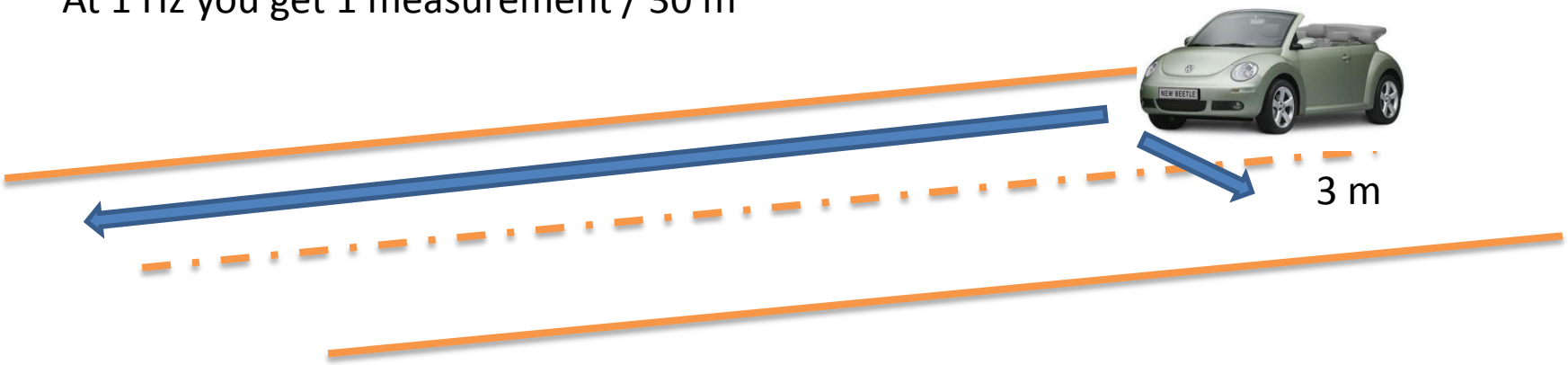
KILLER APP: REAL TIME LANE LEVEL MAP-MATCHING



- ITS WC 2009, Stockholm: >> 98% success in Public Road Tours
- Go do the Public Road Tour today and experience yourself!!

WHAT INFORMATION DO YOU HAVE NOW?

Speed: 110 km/h = 30 m/s
At 1 Hz you get 1 measurement / 30 m



If a position per 1 m is needed, then use at least 30 Hz !

NEW CHALLENGES FOR APPLICATIONS

- Share your map-matched positions
- Build liability applications using vehicle position
- Use lane-level accuracy / time critical/fast

POMA PARTNERS

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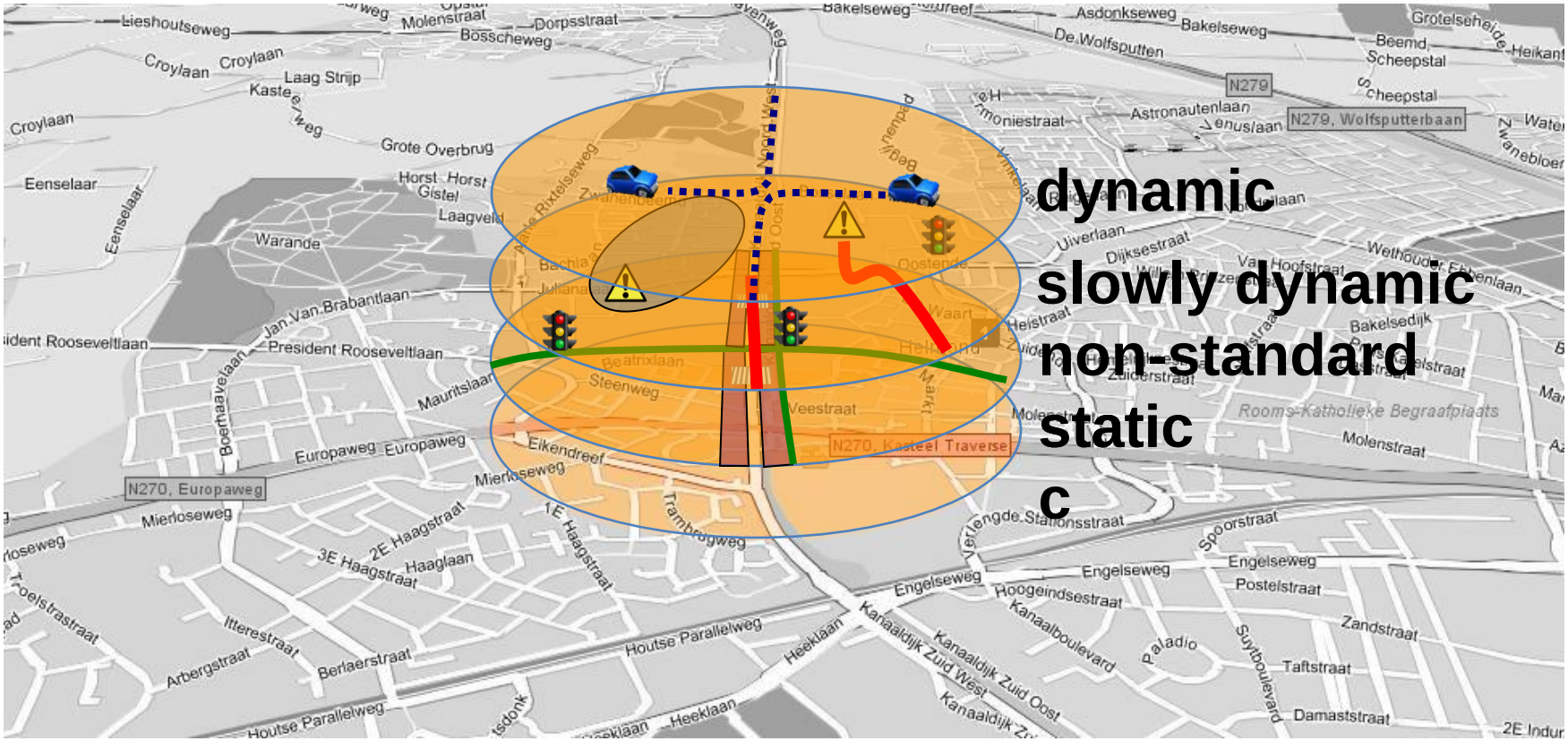
LOCAL DYNAMIC MAP



LOCAL DYNAMIC MAP CHARACTERISTICS

Dynamic data

- Data needs to be added, removed and accessed quickly without compilation of binary data.
- Relational database approach

Geometry

- Features are defined with geometries (e.g. sidewalk, pedestrian crossing, traffic island)
- LDM has to support spatial queries to find objects within range of a sensor and to find non-navigable entities (e.g. area/point landmarks)

Structure

- 4 layer structure with increasing dynamics
- Structure and content defined by object model and database schema
- Additional relationships and communication tables

Implementations

- NAVTEQ – based on SQLite
- Bosch / Tele Atlas – based on Postgres