Automated transport, curse or blessing ?
A small cities' view on AV's

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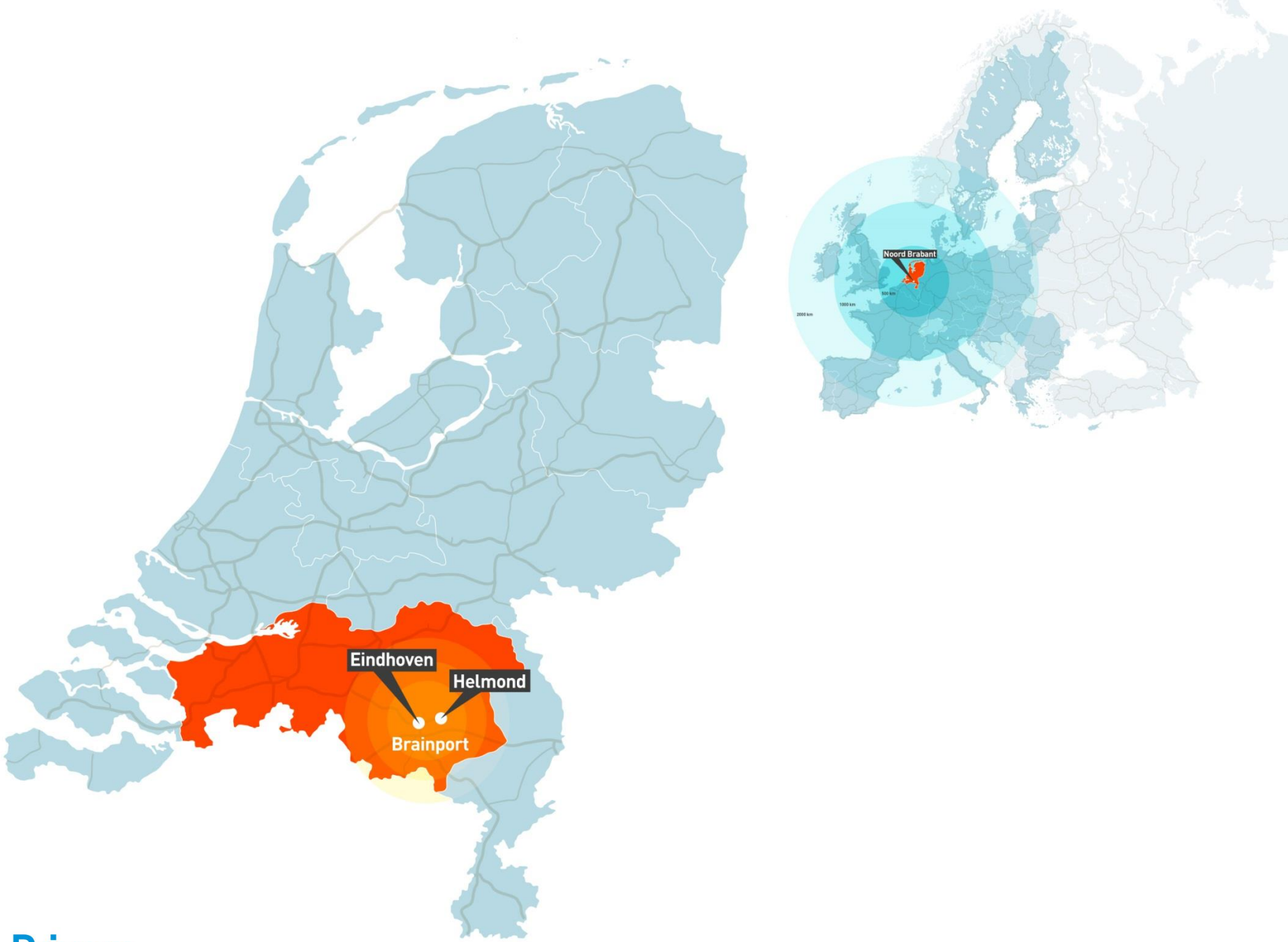

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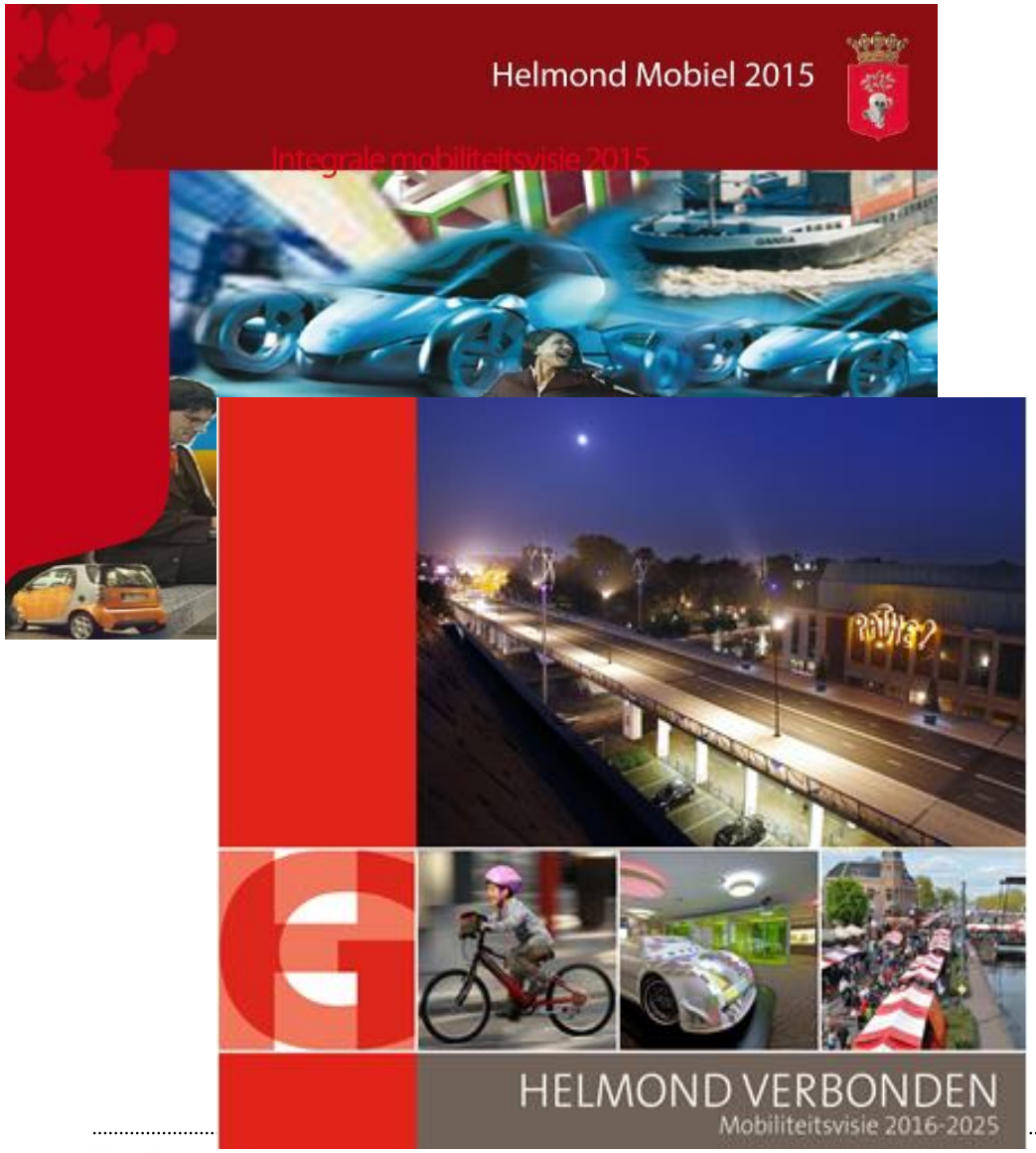
Mobility policy Helmond



Optimizing the use of existing infrastructure

Urban traffic solutions technology driven: ITS

Active support of smart mobility pilots and showcases

Helmond Living Lab ITS

Grand Cooperative Driving Challenge

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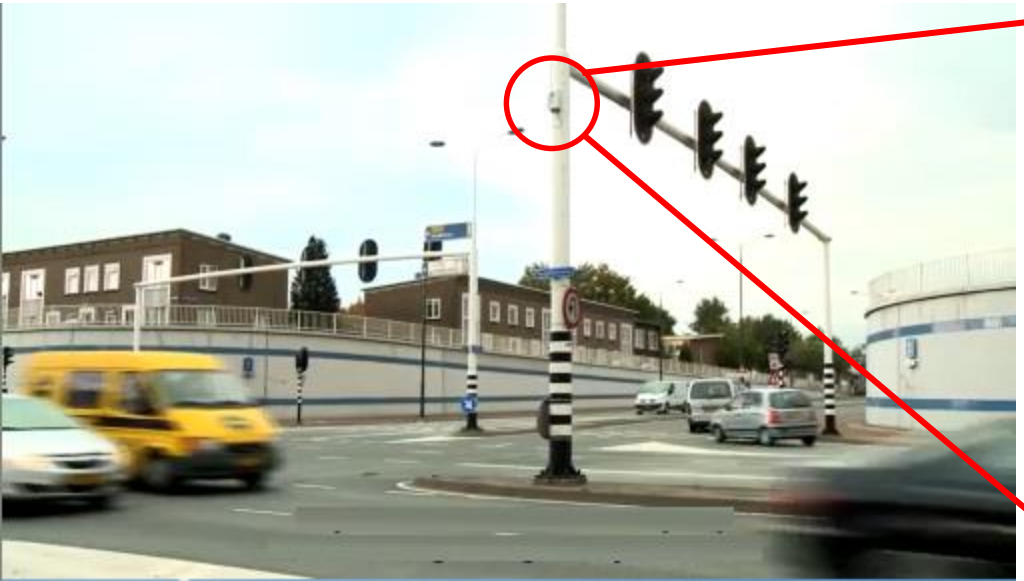
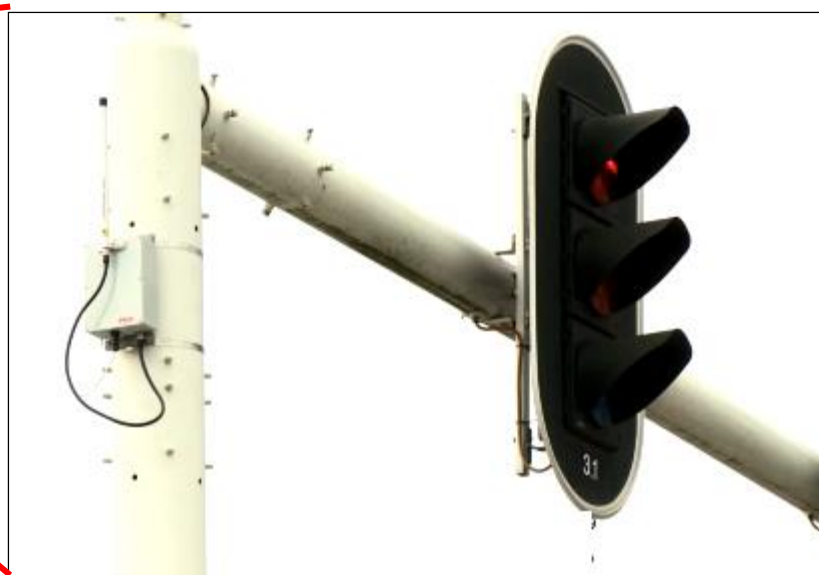
FREILOT Energy Efficient Intersection Service Helmond

Priority at intersections – speed & time-to-green advice





FREILOT Energy Efficient Intersection Service
The example of Helmond (NL)

Source: FREILOT project

14 equipped intersections in urban zone

Period	Number of crossings	Number of stops	% of stops
Baseline	408	52	13%
Pilot	343	20	6%

Number of crossings and stops in both periods

	Baseline	Pilot	Rate of change
CO_2 emissions (g/km)	644	562	-13%
NO_x emissions (g/km)	3.87	3.33	-14%
Fuel consumption (l/100km)	24	21	-13%
Speed (km/h)	35	36	+2.6%

Emissions, consumption and speed variations

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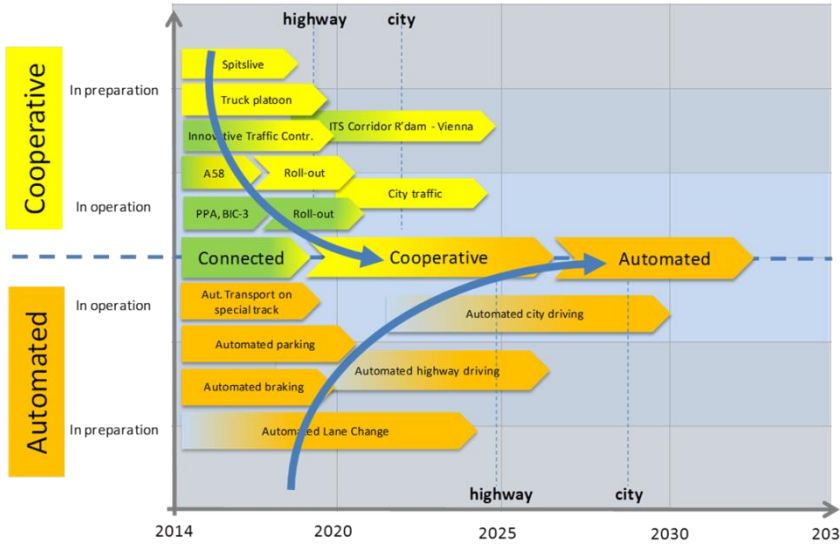
Next ITS steps for Helmond …

- Contribute to large scale deployment of C-ITS
  - EU- Projects ***C-Mobile, C-TheDifference, CAPITAL***
- Prepare for introduction and transition towards automated vehicles
  - EU- Projects ***MAVEN, AUTOPILOT, CoEXist***



Helmond use cases

- ✓**Highway and interurban zones:** Evaluate the impact of automated driving on the A270 highway and the transition zones to urban roads (N270).
- ✓**Signalised urban traffic junctions** with various modes, including HGV's and VRU's

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Project Partners

RUPPRECHT CONSULT Forschung & Beratung GmbH
INSTITUT VEDECOM
PTV GROUP the mind of movement
University of Stuttgart Germany
iD4CAR
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GROUPE RENAULT
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CoEXist

"AV-ready" transport models and road infrastructure for the coexistence of automated and conventional vehicles

MAKING AUTOMATION WORK FOR (small) CITIES

Public Transport in small and medium sized cities

- Low PT demand throughout the day.
- Demand strongly concentrated at peak hours.

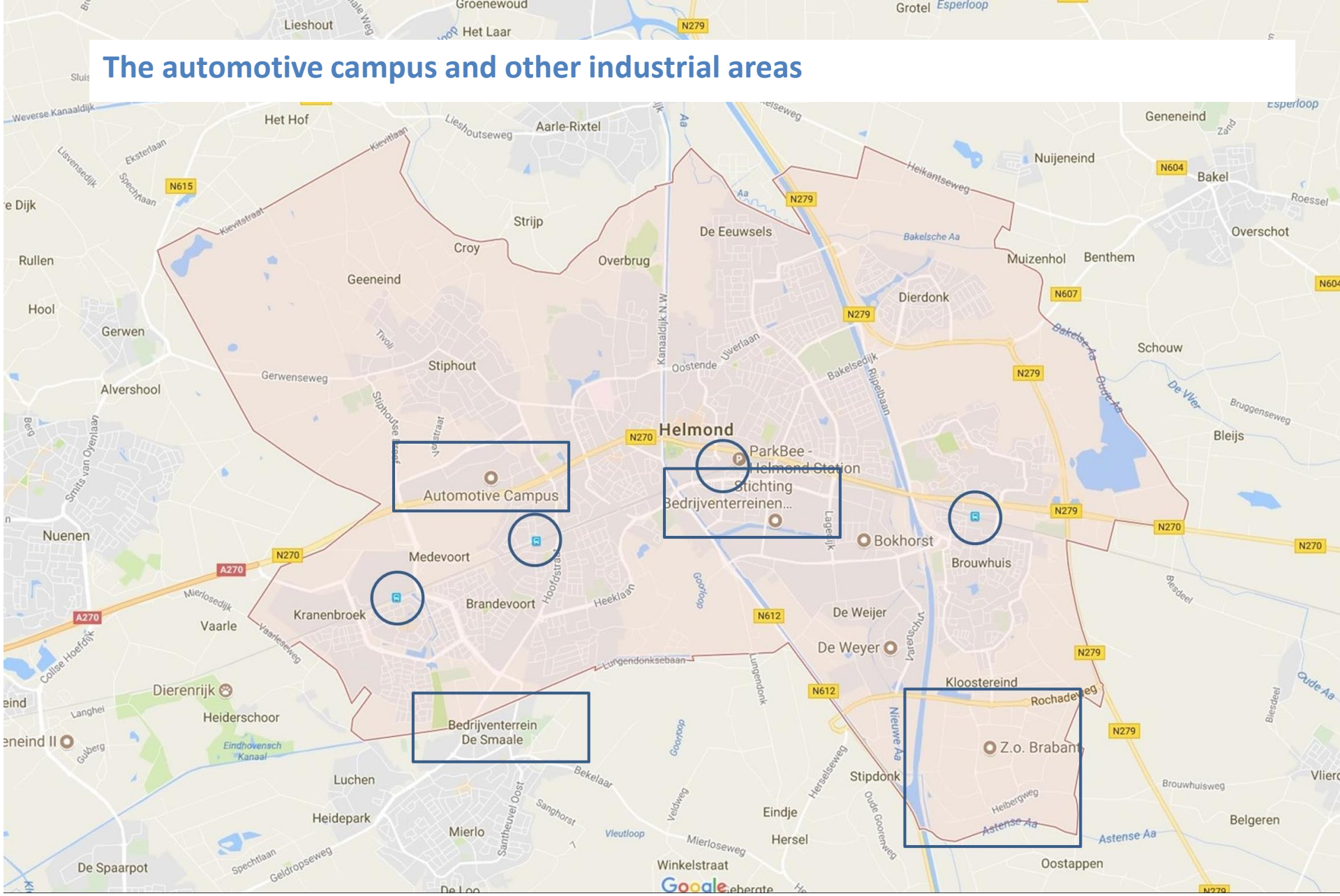
Result:

- Sometimes ridiculous C/B ratio for PT (drivers salaries – empty busses)
- Strongly limited PT available outside peak hours.
- Hardly any PT to outlying rural areas.

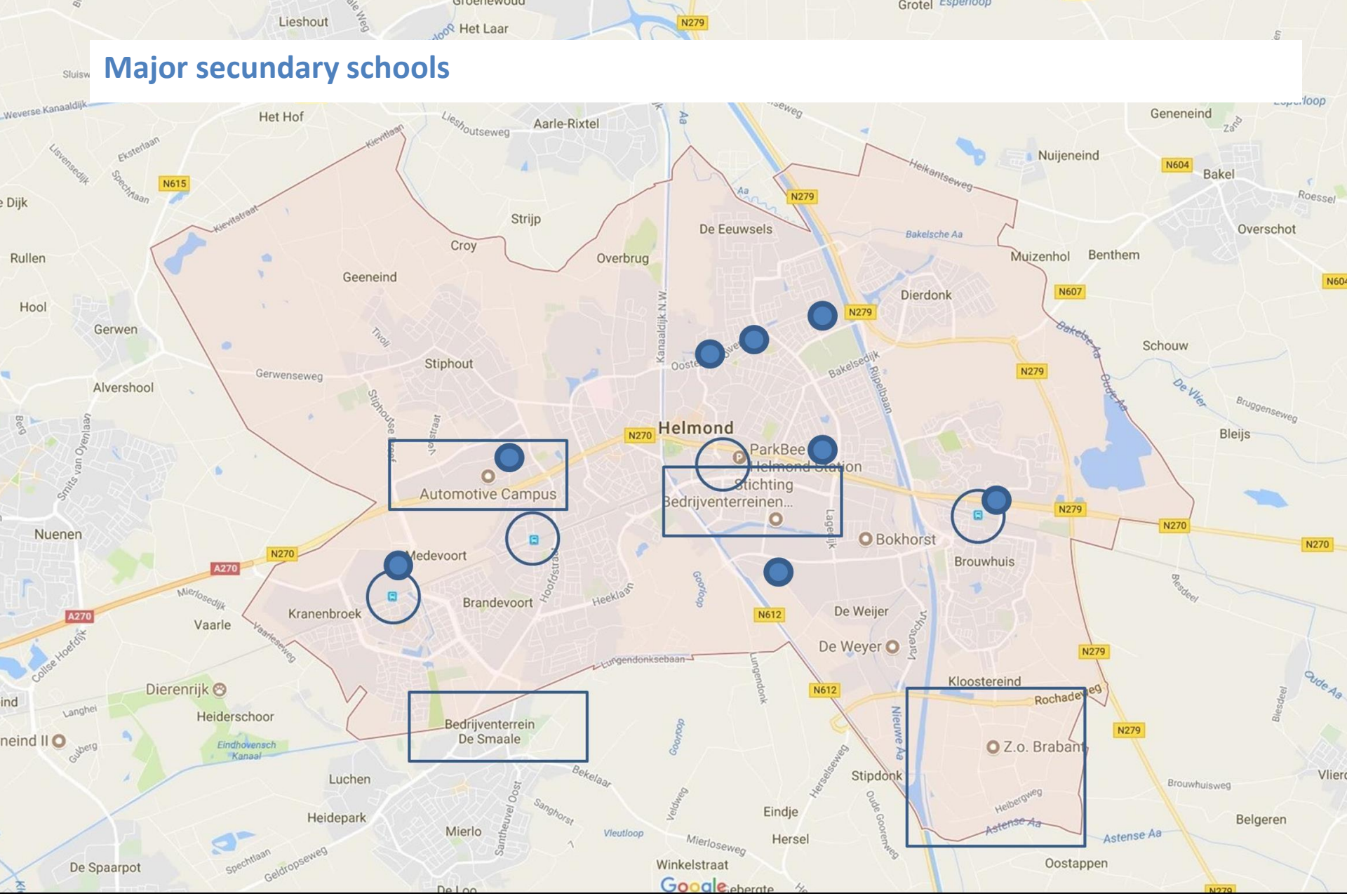
Therefore strong focus on private cars as the main means of transport.

Example: City of Helmond: 4 train stations , but limited PT connections to schools, the automotive campus, industrial areas and the surrounding rural area.

The automotive campus and other industrial areas



Major secundary schools



Around Eindhoven – Helmond large low density area with little PT

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MAKING AUTOMATION WORK FOR (small) CITIES

Proposed solution:

On demand small automated shuttles.

- Vehicles only operate when there is a demand (saves fuel and pollution).
- Less drivers needed (saves salary costs).
- Transport is available anytime (also during weekends and at night).

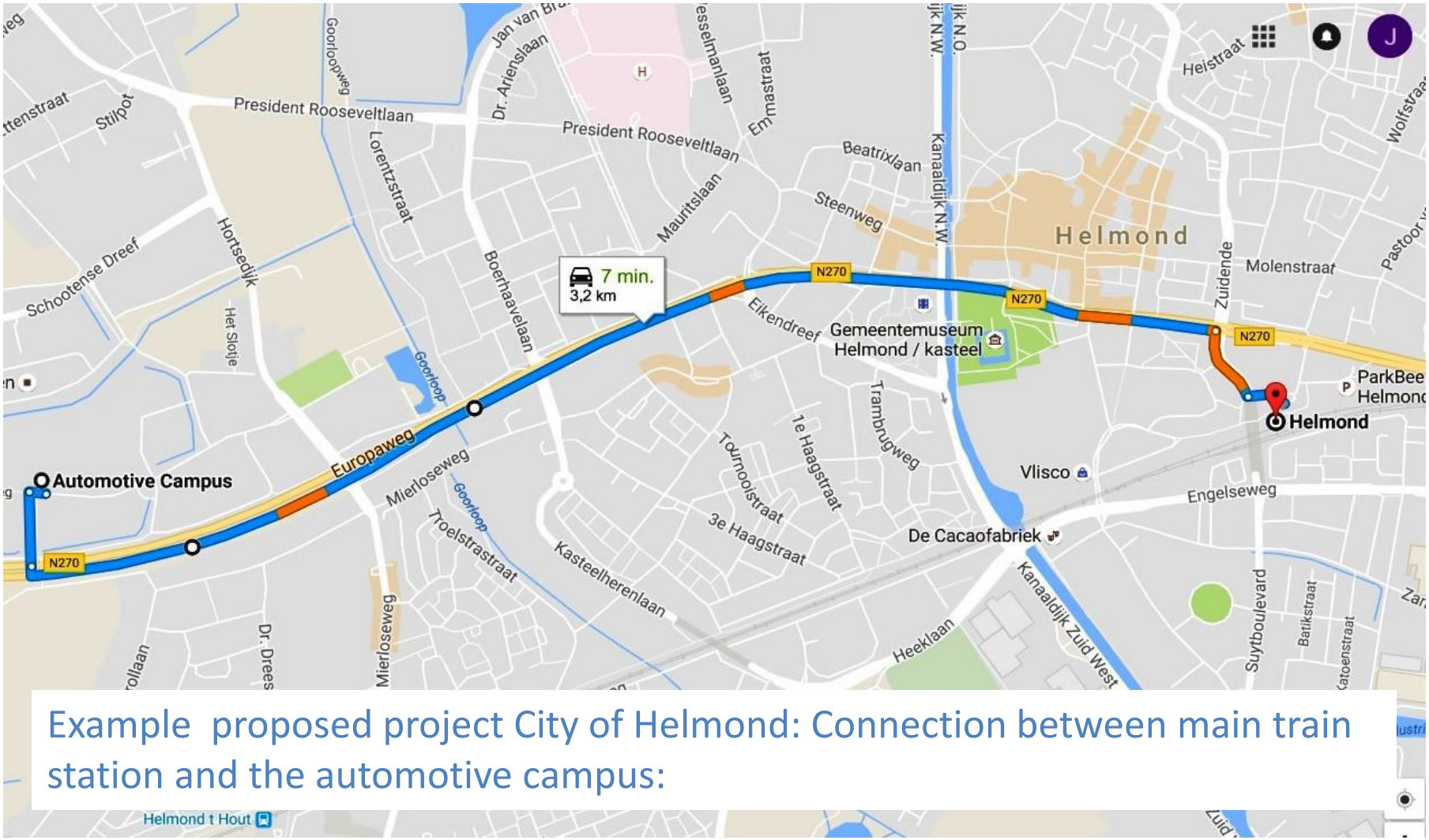
MAKING AUTOMATION WORK FOR (small) CITIES

Start with connections between public transport hubs and schools, industrial areas, shopping centres, etc.

Expand step by step to include all possible required low demand connections and private living addresses.

If needed in combination with scheduled automated shuttles or (automated) bigger buses during peak hours.

MAKING AUTOMATION WORK FOR (small) CITIES



Example proposed project City of Helmond: Connection between main train station and the automotive campus:

MAKING AUTOMATION WORK FOR (small) CITIES

Automated shuttles: challenges and opportunities

Challenges:

- Normal city speeds (up to 50 km/h) in mixed city traffic
- European laws still prohibit driverless vehicles from using public roads (but exceptions are possible)
- Fully automated vehicles not integrated in existing public transport networks
- Possible modal shift from cycling & walking to using the shuttle
- The increased availability of public transport might enable people to live further away from work and thus increase total miles travelled

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MAKING AUTOMATION WORK FOR (small) CITIES

Automated shuttles: challenges and opportunities

Opportunities:

- Dramatic improvement of the service level at lower costs
- On demand service instead of (infrequent) scheduled service
- Use of the existing road network, with minimum infrastructural adaptations
- Transport capacity can be increased at peak times by including additional vehicles
- Replace the private car as the preferred transport option for many trips, with advantages for the environment, congestion and energy consumption

The real challenge for ITS …

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