C-ROADS

Antwerp-Helmond

Helmond – City of Smart Mobility

Intelligent speed adaptation (ISA), data, and C-ITS in Helmond

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7 December 2023

Introduction

Innovation Hub:

The Role of Helmond in the Brainport Region

Smart Mobility in Helmond:

Vision, Department, and Current Projects

Helmond & ISA:

How a city validate digital data
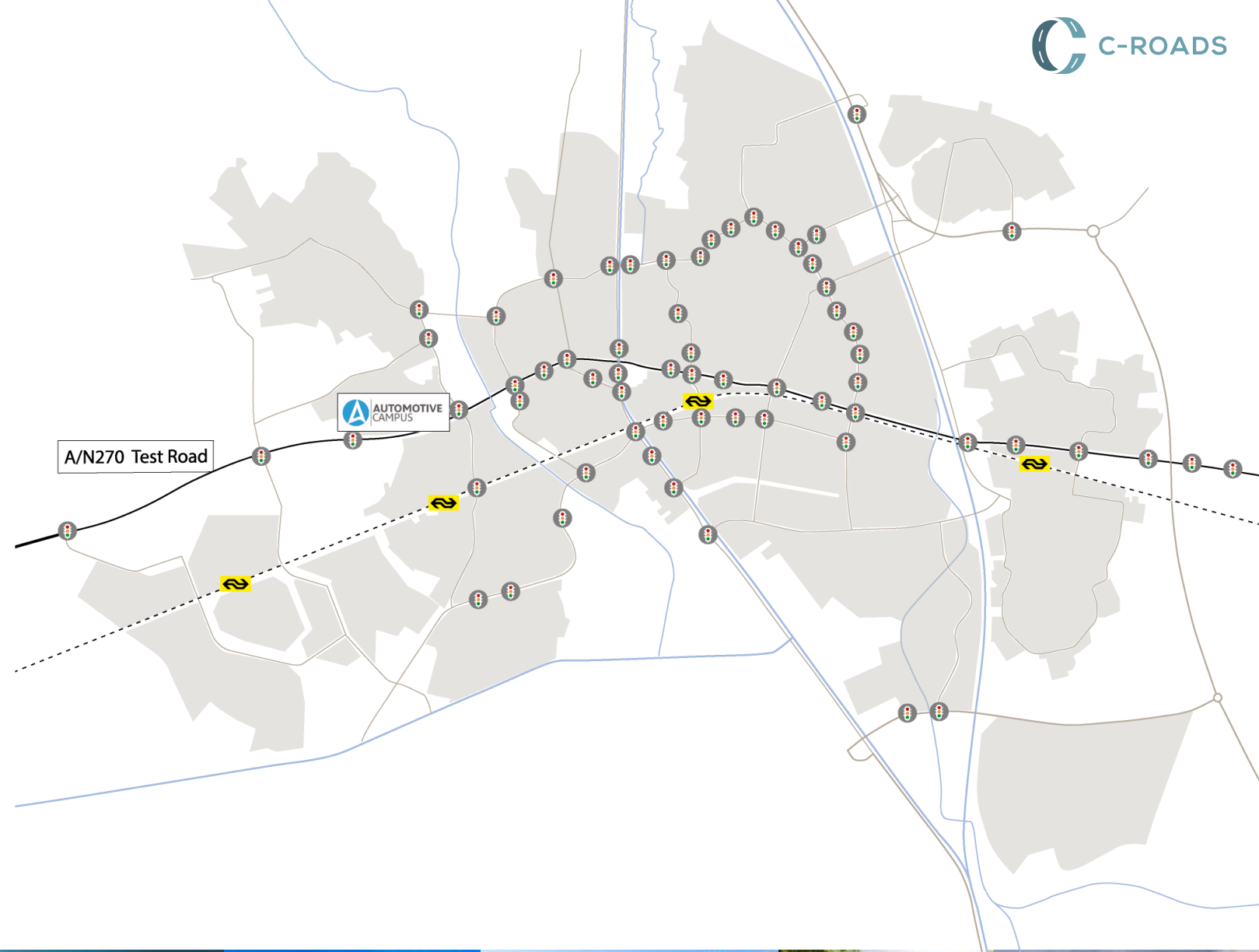to improve ISA experience

Brainport Region

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City of Helmond

- 95.000 inhabitants
- 54,57 km²
- 67 iTLC
- 4 Train stations
- Mobility Living Lab

Helmond & Smart Mobility

- Department of Smart Mobility (6fte)

- **To improve** the quality of life for all citizens of Helmond by developing and promoting sustainable, safe, and efficient mobility. (Citizens)

- **To create** a thriving ecosystem that supports the growth and success of the Brainport Region including the Automotive Campus and its companies. (Facilitator)

- **To attract** new businesses, talent, and investments, which can help to boost economic growth and create jobs. (Economic)
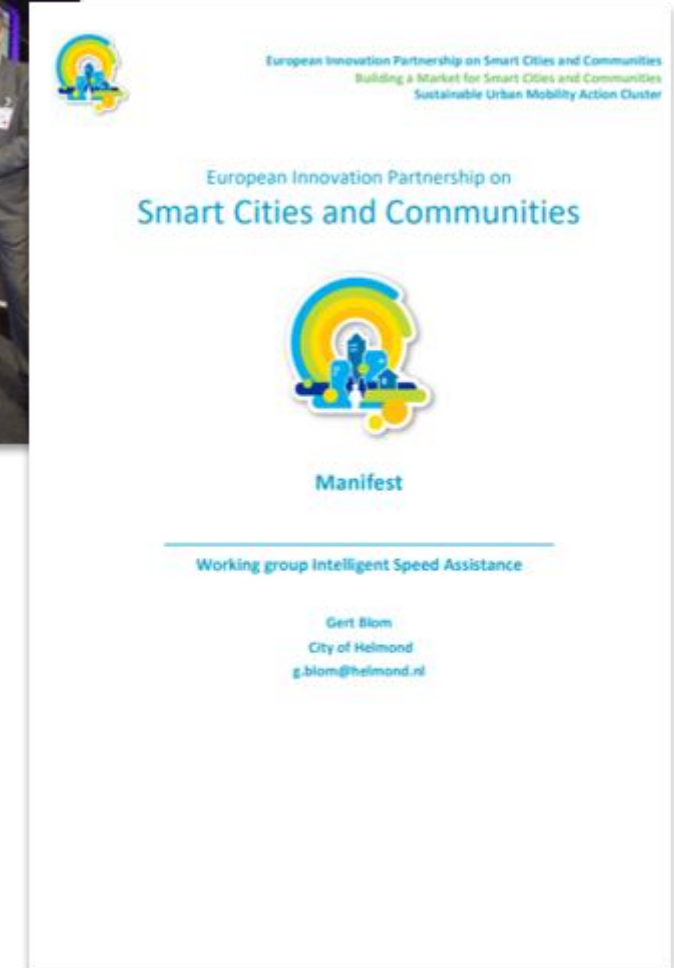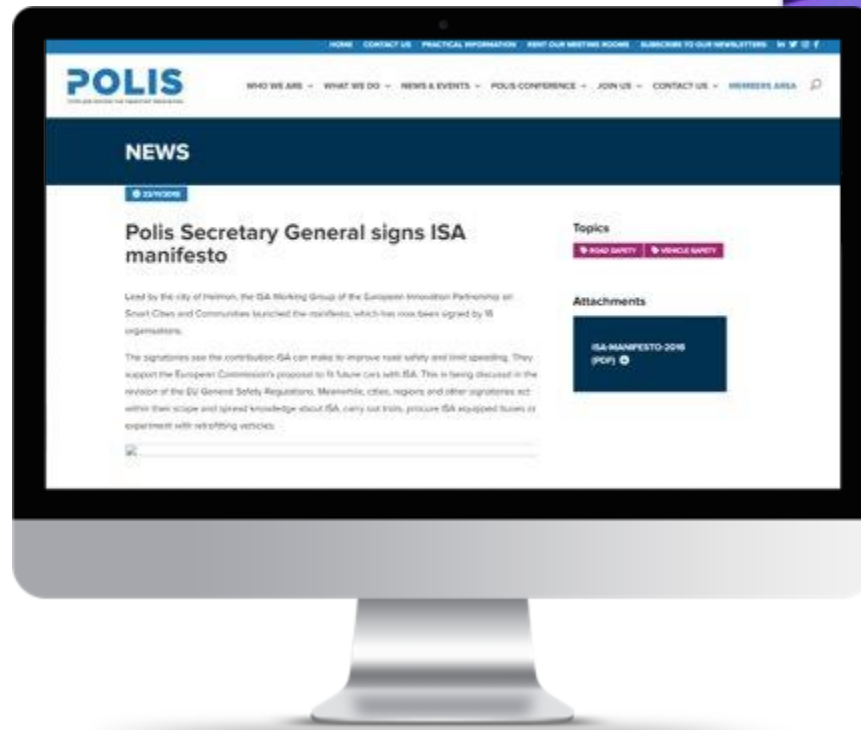
Our EU history

| 2009 | 2010 | 2013 | 2016 | 2016 | 2017 | 2017 | 2017 | 2018 | 2018 | 2019 | 2021 | 2022 | 2023 |

Helmond & ISA

- Initiator of ISA Manifest 2018

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Helmond & ISA

- ISA set to become mandatory 2019

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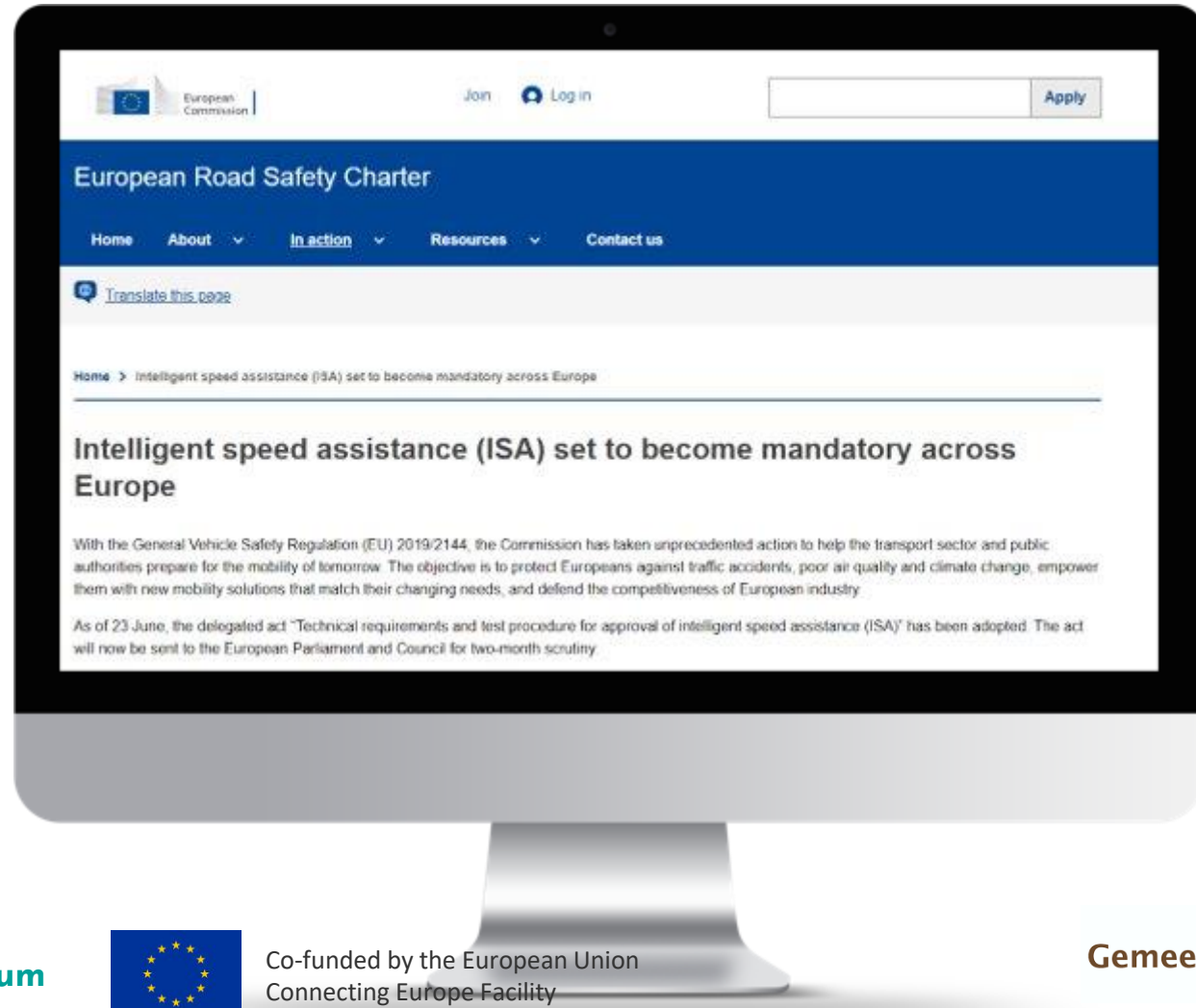
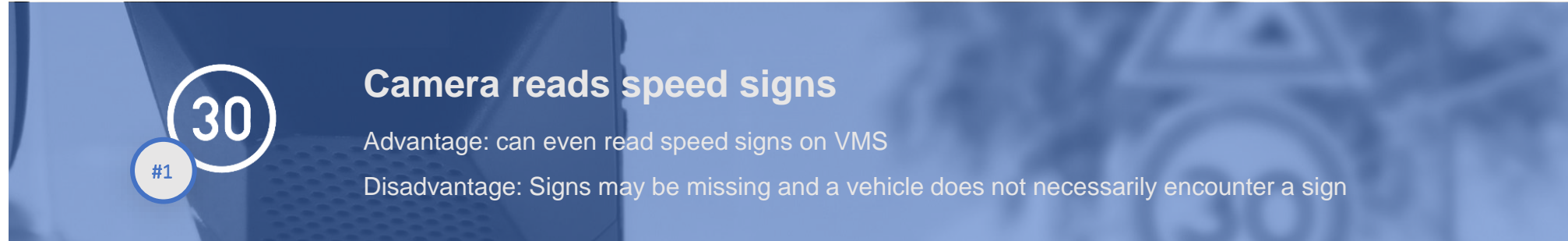# Helmond & ISA -> Accelerating the ISA rollout

GSR 2019/2144 Article 6(2)a

The driver may be made aware via the gear control, or by specific, **appropriate and effective feedback**, that the applicable speed limit has been exceeded.

4 types of feedback

1. Visual warning + graduated audible warning

2. Visual warning + stepped haptic warning.(a) increasing the recovery force of the accelerator pedal.or(b) vibration of the accelerator pedal

3. Haptic warning only   (increasing the recovery force on the accelerator pedal).

4. <mark>Speed control function (SCF).</mark>
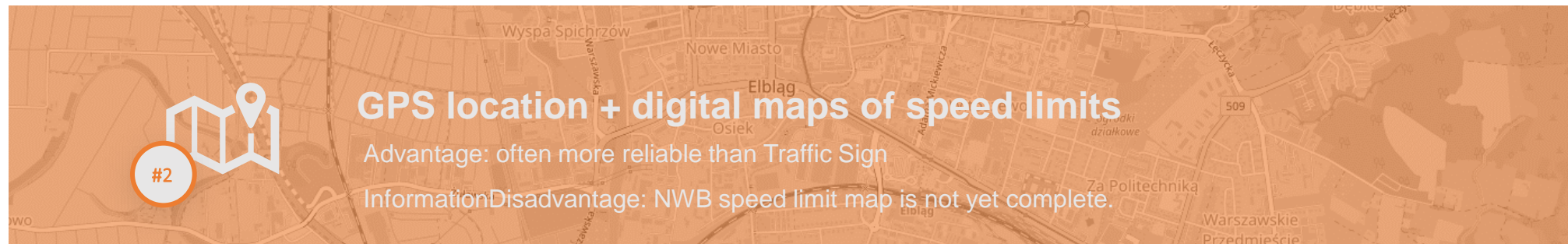
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ISA Speed limit detection technologies

Camera reads speed signs

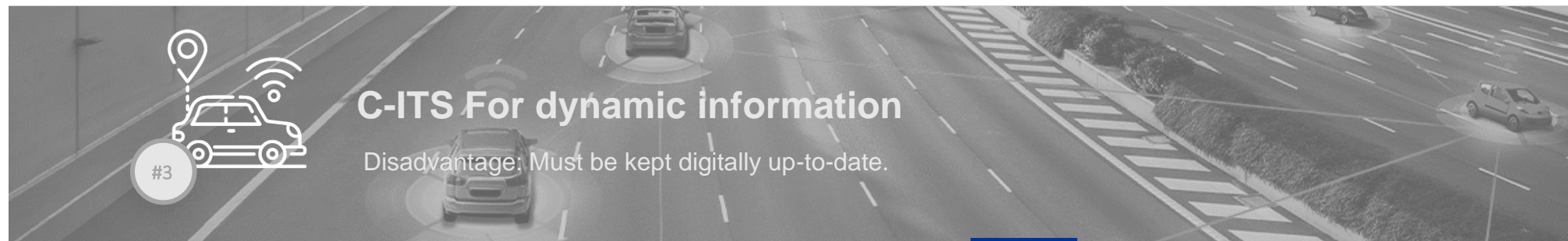Advantage: can even read speed signs on VMS

Disadvantage: Signs may be missing and a vehicle does not necessarily encounter a sign

#1

GPS location + digital maps of speed limits

Advantage: often more reliable than Traffic Sign

InformationDisadvantage: NWB speed limit map is not yet complete.

#2

C-ITS For dynamic information

Disadvantage: Must be kept digitally up-to-date.

#3

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Helmond & ISA -> Accelerating the ISA rollout

- Starting in 2022, all new vehicle types will have ISA

- From 2024, all new vehicles on the EU market must be equipped with ISA.

- The average lifespan of vehicles is about 10 years, so it will take some time before the effects are felt on EU roads.

- A possible accelerator for ISA implementation is retrofit, where an "ISA-toolkit" is retrofitted into existing vehicles.

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ISA in Practice (2021-2023)

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Research questions of Practice Test ISA

- **1. How is the built-in ISA system perceived?** including interface & operation, behavior (overriding; compensatory behavior)

- **2. Does the built-in ISA system work as intended?** a.o. robustness: sign recognition and does the digital map work (limit recognition, correct intervention), how does the ISA system handle conflicts between map and sign (failure modes)?

- **3. Is the digital and physical environment ISA-Ready?** e.g. are the road signs correct in terms of content and location, is the Speed Limit Map in order? Are we ISA-Ready

How is the built-in ISA system perceived?

"The system monitors speed so I don't commit a violation and can focus more on traffic concentrate"

"People can no longer speed unknowingly [...] so safety will increase."

"One of the most important things is that it feels safe and also just familiar. Now it's still a surprise when it's going to slow down"

"There I also got motorists behind me thinking of that old guy, what is he doing and they started honking)"

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Does the built-in ISA system work as intended?

"There were many times when speed signs did not match the system, the car would react when it shouldn't."

"Sometimes it picks up the speed of the parallel road, if this is then 30 and I am allowed 50 this is quite annoying."

"I have to disable the system, which results in an immediate 100% torque in the vehicle. This, in turn, manifests itself in extreme acceleration of at least 10 kph extra."
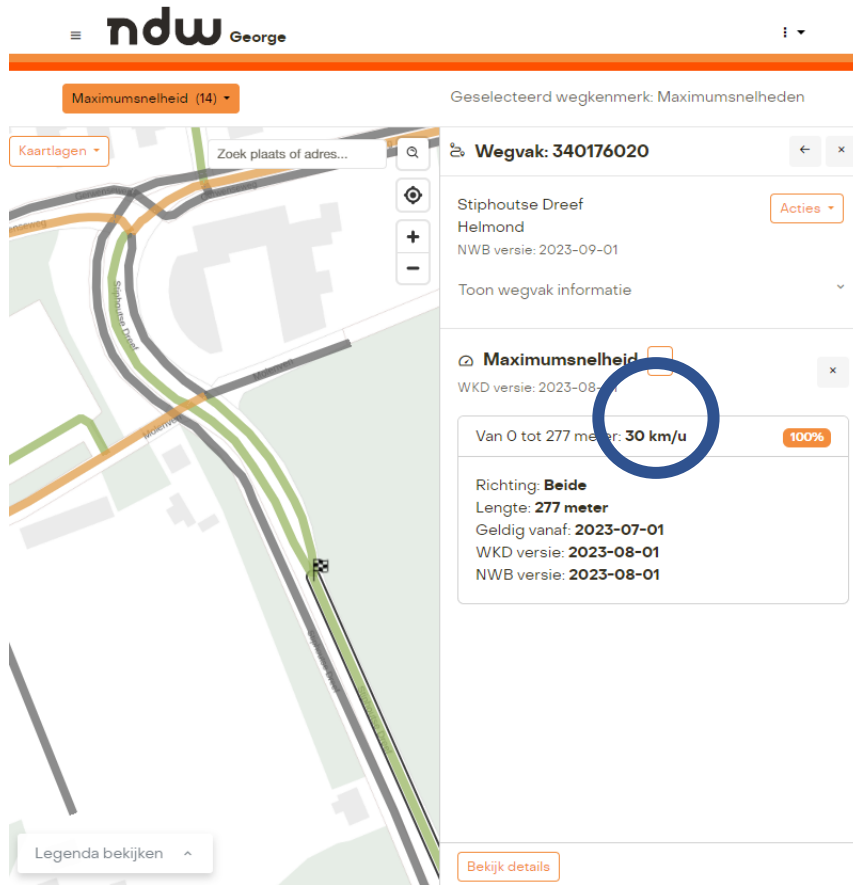
"It is less fun that you have to give a lot of gas, so your car starts mooing and then it takes a while before it reacts. And then you have to be careful, because then it suddenly shoots forward again, should be a bit more subtle, this gives agitation."

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Is the digital and physical environment ISA-Ready?

No...

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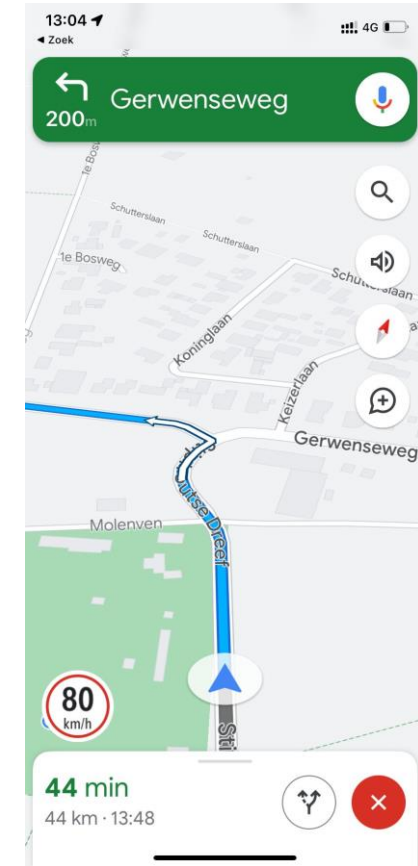
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Is the digital and physical environment ISA-Ready?

NWB George 30km/h

By law 50 km/h

Google Maps 80km/h

?

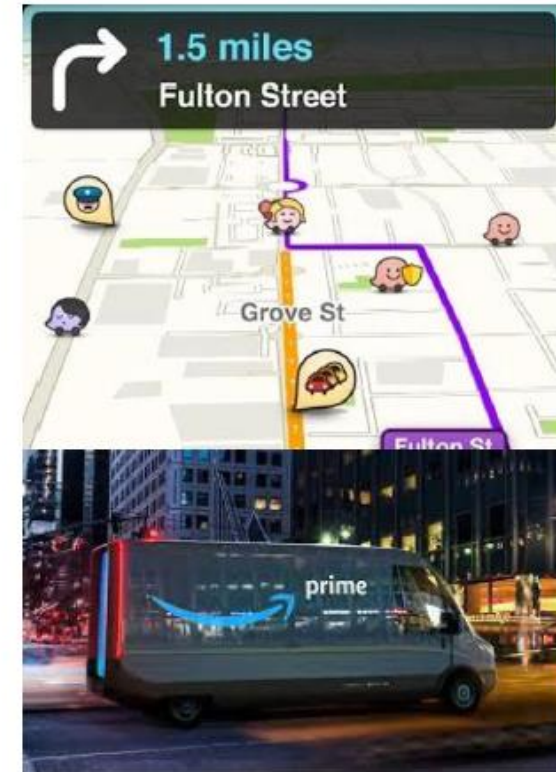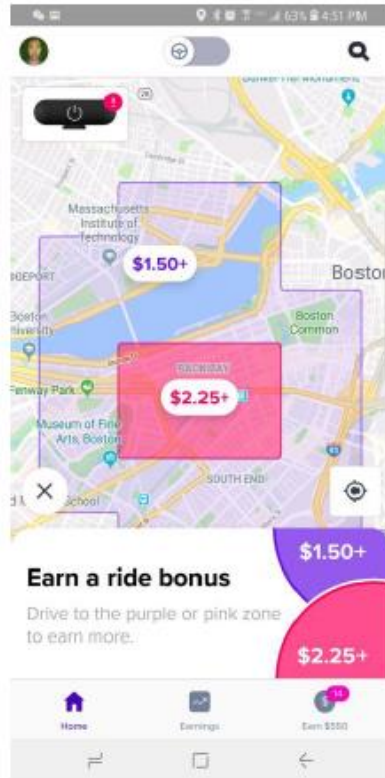# Why is the digital infrastructure actually out of order?

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1900-2000: Focus on physical infrastructure

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Road operator and work processes under control

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2010- The need for digital infrastructure

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Road operators gain more tasks and processes

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Wanted: Digital Road operator

Road Operator

As a road operator, you are responsible for ensuring future-proof road maintenance of the area of roads and pavements. You do this by focusing on quality and life cycle. Together with your colleagues from the Management team, you are responsible for management, maintenance and executive policy.
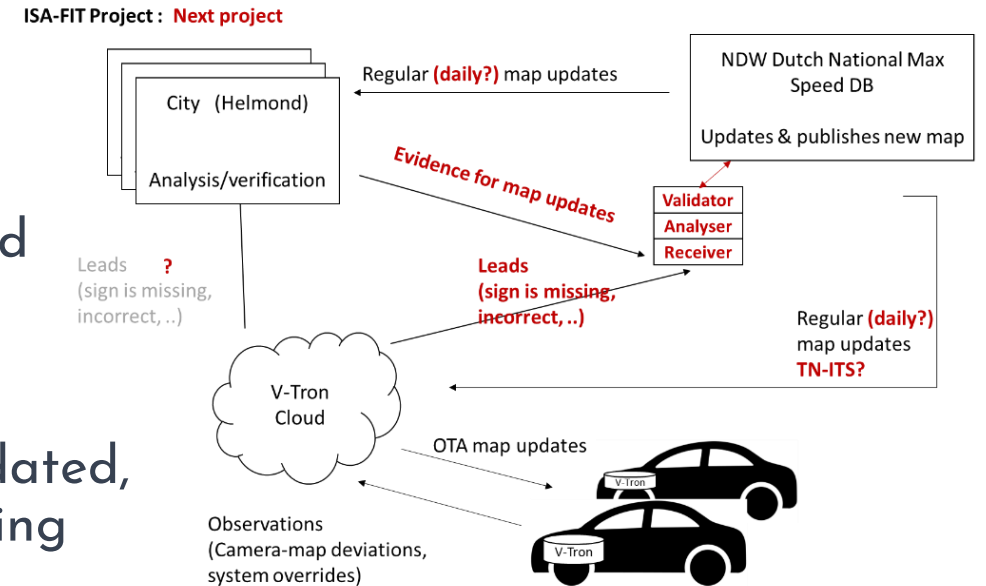
+

Digital Road Operator

As a Digital road operator, you are responsible for ensuring future-proof Digital road maintenance of the area of Digital roads and pavements. You do this by focusing on Digital quality and life cycle. Together with your colleagues from the Management team, you are responsible for Digital management, maintenance and executive policy.

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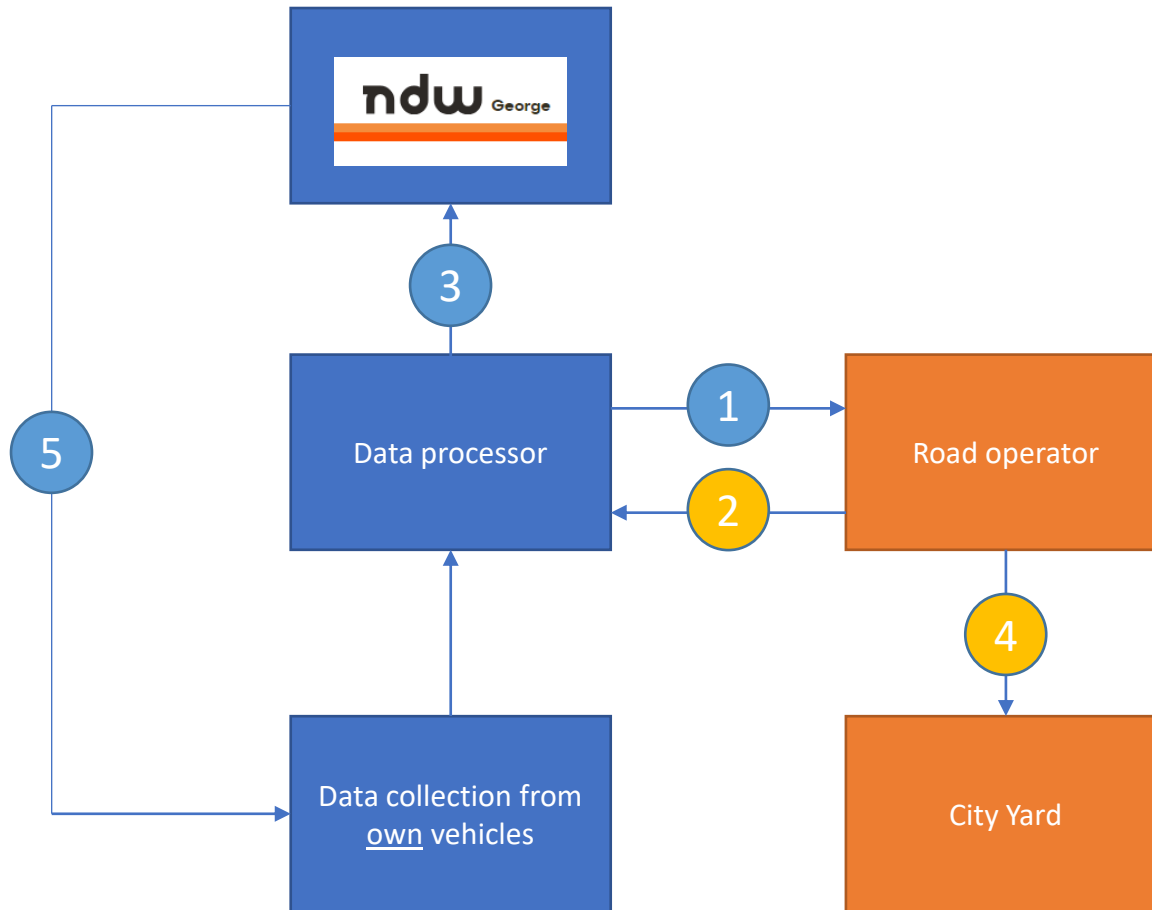Connecting Europe Facility

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Follow-up to ISA-FIT

- **Maintenance of Digital Maps for ISA Systems**:

- Digital maps used for Intelligent Speed Assistance (ISA) systems require accurate maintenance to reflect real-world road networks.

- Speed limit data in digital maps can quickly become outdated, with approximately 10% of signposted speed limits changing yearly.

ISA-FIT Project : **Next project**

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Improving digital infrastructure (validation loop)

The feedback loop

Improving the digital infrastructure

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Questions?

Rene Spaan

City of Helmond | Horizon 2020 | CEF - C-ROADS | SmartwayZ.NL | Automotive Week '23

Helmond, North Brabant, Netherlands

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City of Helmond

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