



FAST

SAFE

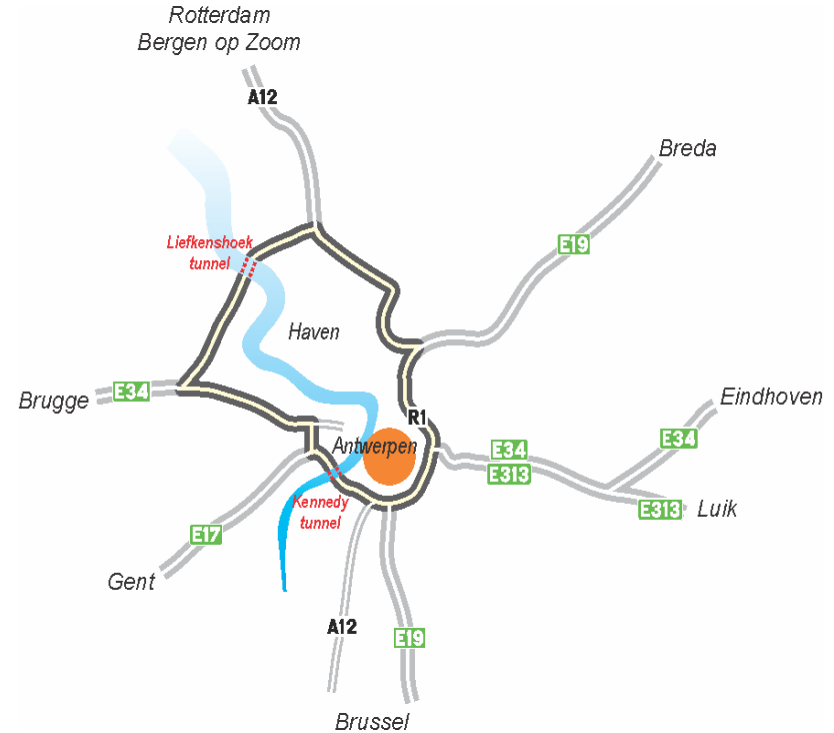
GREEN

SOCRATES^{2.0}

The Antwerp Voucher System in the SOCRATES^{2.0} project

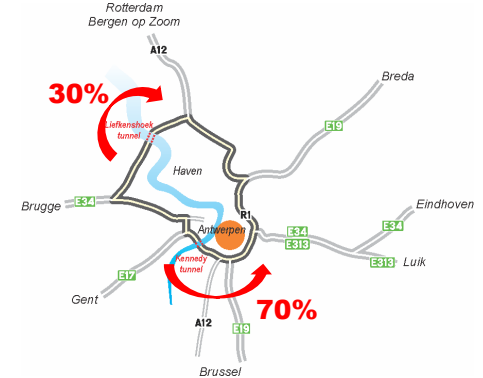
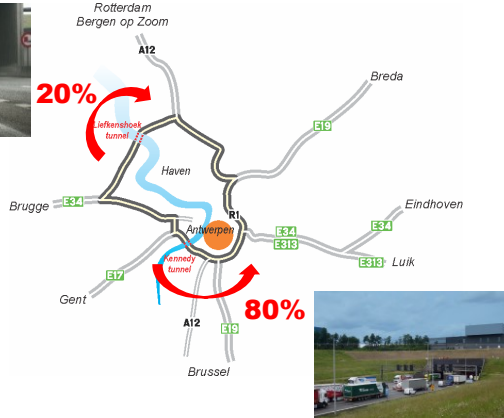
Local context

- **Antwerp motorway network:** 2 river crossings
- Toll at Liefkenshoektunnel, no toll at Kennedytunnel
- **Problem:** sub-optimal distribution of traffic over 2 river crossings



Objective

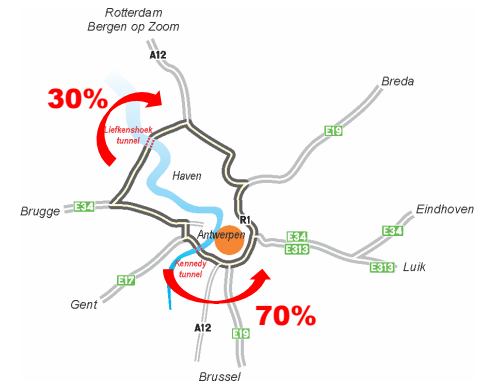
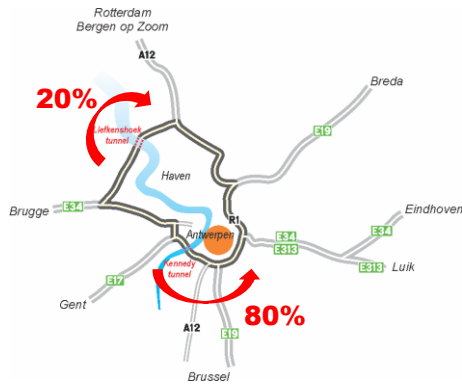
Mission: Optimize network traffic flow
Improve distribution of traffic over 2 river crossings



in such a manner that we obtain a **WIN** for the Road Authority (RA)
WIN for the Service Provider (SP)
WIN for the User

How?

- Get the excess traffic out of Kennedytunnel & shift it towards Liefkenshoektunnel
- Only target as much users as you need
- Use the services of SP's to reach eligible road users
- Encourage them by offering a toll reduction (voucher)



How? And what do we need?

1. When is how much traffic to be shifted from one tunnel to the other?

→ establish a **Strategy table** to define goals, targets, conditions

2. When are these conditions met?

→ establish a **Network Monitor** to monitor the real time traffic conditions in both tunnels

3. What if it is time to shift the traffic?

→ establish a **Network Manager** to activate/deactivate the measure, to define how much traffic is to be shifted and to send service requests to SP's accordingly

4. How to reach the eligible road users?

→ **Service providers** can contact their eligible travellers and offer them a toll-free re-route via Liefkenshoektunnel

5. How to actually measure and achieve the predefined goals?

→ establish an **Assessor** to assess the impact and to provide input on possible optimizations to the strategy table

1. Defining goals, targets & conditions → Strategy table

Strategy table defines goals, targets & conditions

- **Goals:**

- establish a more balanced distribution of traffic between the two tunnels

- **Targets:**

- avoid traffic density in the Kennedytunnel to exceed the critical level which is likely to induce congestion
 - use the available left-over capacity in the Liefkenshoektunnel to accommodate the rerouted traffic

- **Conditions:**

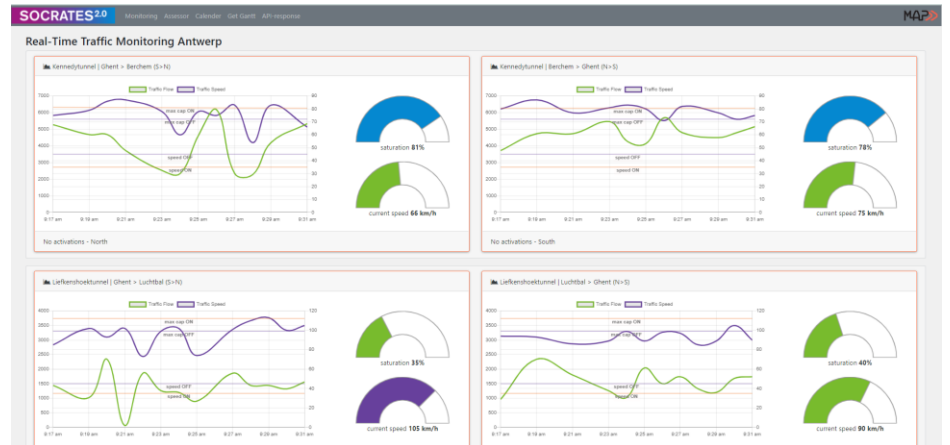
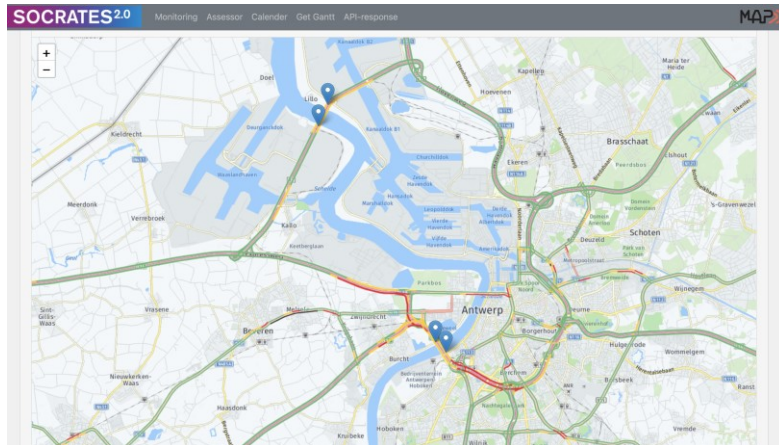
- when I/C ratio in Kennedytunnel reaches X% and left-over capacity at Liefkenshoektunnel is above y%, the service is to be activated
 - only users actually having a route through Kennedytunnel are to be targeted
 - the max # vouchers and the degree of toll reduction depend on the exceedance level of the threshold values

The strategy table can be managed by one party (e.g. the road operator) or by an entity in which all partners are represented

2. Monitoring traffic conditions → Network monitor

Network monitor monitors real-time traffic conditions

- Both KennedyTunnel and Liefkenshoektunnel
- Real-time monitoring of “I/C” and “speed” in multiple sections (point measurements)
- Based on Flemish MOW open data feed including traffic measurements (values/minute)



3. Activating toll reduction measure → Network manager

Network manager sends service requests (activation / deactivation of toll reduction measure) to Service Providers.

Activation

when I/C (KEN) > 0,85 and IC (LFK) < 0.75

Deactivation

when I/C (KEN) < 0.75 or IC (LFK) > 0.85



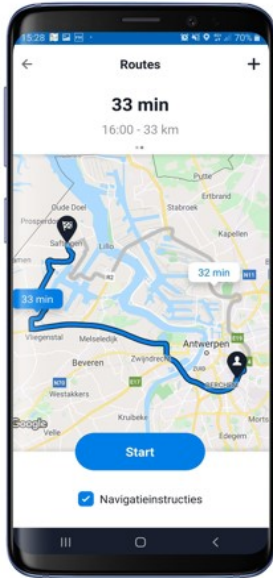
4. Approaching eligible road users → Service providers [1]

Service providers

- Select eligible drivers (only if Kennedytunnel was on original route AND if measure is activated)
- Reach out to those travellers (provide communication channel to support the strategy)
- Provide alternative route via Liefkenshoektunnel including toll-free voucher

4. Approaching eligible road users → Service providers [2]

Flitsmeister navigation app



4. Approaching eligible road users → Service providers [3]

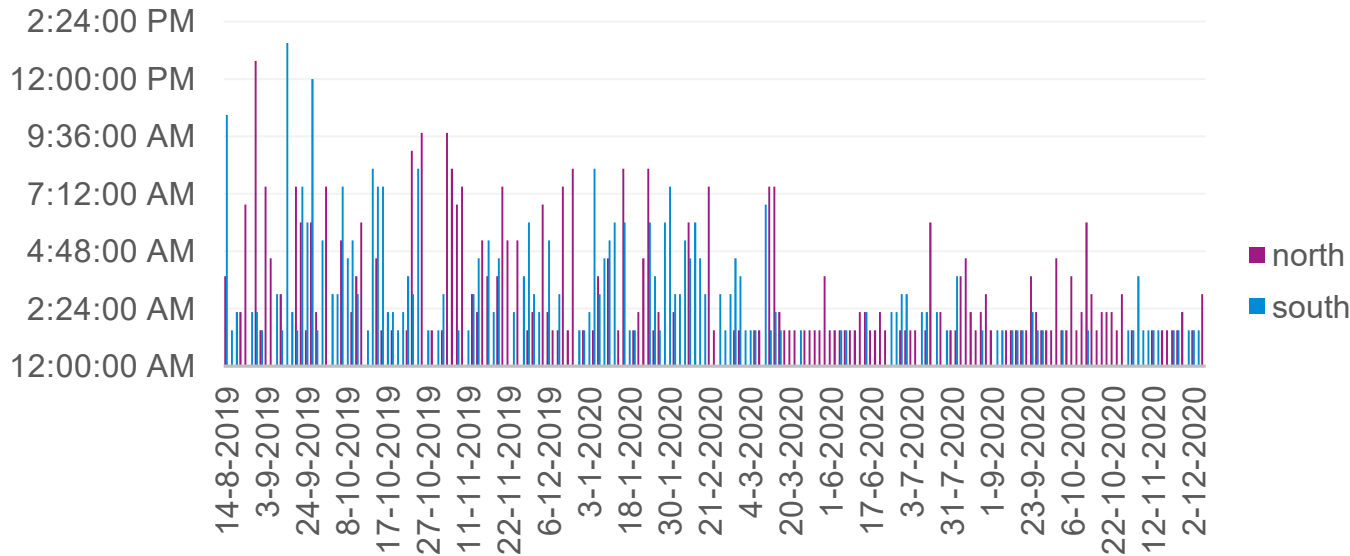
BMW in-car service



5. Measuring impact → Assessor [1]

Monitoring activation of toll reduction measure:

Activation duration



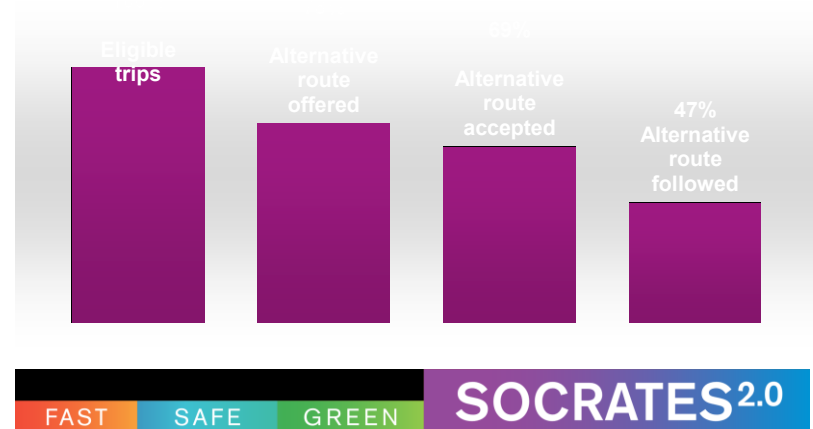
5. Measuring impact → Assessor [2]

Assessor: impact assessment, input for strategy table

Key statistics for Flitsmeister service [nov 2019 – dec 2020]:

- 8000 unique users; 1500 vouchers scanned
- 275 evaluation users making 1100 trips that are logged extensively
- Impact rate = Offer rate x Acceptance rate x Follow-up rate
= 78% x 88% x 69%
= 47%

→ 47% of targeted users can be diverted away from Kennedy tunnel



Win-win-win

What's in it for

- Road Authority: better distribution of traffic (optimized network traffic flow).
- Service Provider: more informative service for users; new offering to Road Authority (providing reach & impact).
- Users: Improved information → better informed decisions. No obligations, can still choose what they do.

Key takeaways from end user services:

- support traffic management strategies of road authorities
- offer a new communication channel for traffic management purposes, increasing reach
- allow for targeting individual travellers
 - » Providing control over requirements to obtain a voucher (e.g. only for specific origin-destination combinations)
 - » Providing control over max amount of vouchers per time period
 - » Enabling higher cost-effectiveness in Traffic Management
- have high potential for generating impact
- allow travellers to contribute to common objectives and to take better informed decisions