Digitalisation and distribution of Environmental Zone information in the Amsterdam Region

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Abstract (600 words)

In the European project SOCRATES$^{2.0}$, a consortium consisting of public and private organisations has been challenged to try different ways of working together to realise smart mobility services. The partners have selected and developed multiple services in the regions of Amsterdam, Copenhagen, Munich and Antwerp. One of the Amsterdam services is Environmental Zone information. The service has started early 2020 and aims for better Environmental Zone information for truck drivers. It is expected to lead to more business opportunities for the private partners, less violations and better service for road users and an improved air quality for the community.

All SOCRATES$^{2.0}$ partners believe that by cooperating more business opportunities for private partners can be developed, more effective traffic management for public authorities can be achieved and better services for road users can be provided. The goal of SOCRATES$^{2.0}$ is to test if this added value is actually created by a closer cooperation and find out how this can lead to sustainable business cases for all stakeholders. To facilitate this, the SOCRATES$^{2.0}$ partners created a Cooperation Framework consisting of a set of cooperation models. The cooperation models are based on the level of communality of the collaboration. The first level comprises of agreements for sharing public and private traffic data, based on agreed data exchange formats ("Exchanged data"). Bringing the cooperation a step further, partners can create a common view of current and/or predicted traffic situations on a network, based on the exchanged data ("Shared view"). The most elaborate level of cooperation arises when based on the created shared view, partners develop and implement coordinated actions and services towards communities of travelers ("Coordinated approach"). For the use case Environmental Zone Amsterdam cooperation model "Shared view" was chosen and implemented.

Since 2008, an 'environmental zone' for freight traffic is active in Amsterdam. Heavy trucks running on diesel engines of emission class 0, 1, 2 or 3 are not allowed. There is also a 'dynamic' component to the environmental zone, as the Kennedylaan (normally part of the environmental zone) can be

opened to diesel trucks.

Many truck drivers don't know there is an environmental zone before they see a sign. Or they don't know in advance that their route is through an environmental zone. In addition, it is not clear to everyone what requirements apply and whether their vehicle may enter the zone. With the result: vehicles with Dutch number plates are fined and vehicles with non-Dutch number plates are not recognized and not fined, which leads to unfair penalizing and ignoring of the environmental zone. For the dynamic part of the zone the communication about the availability of the route is complicated; not for everyone this prism sign is clear. This leads to little use of the road, which does not help to reduce the delay on the standard route. However the problem is more challenging. Considering other European cities with low emission zones, for truck drivers it's impossible to know all the access restrictions and exemptions details.

The objective of this use case is to test possible scalable solution to tackle this problem. It also should lead to new business opportunities for private partners, less violations and better services for road users and an improved air quality for the community.

The municipality of Amsterdam, National Data Warehouse (NDW), TomTom and Be-Mobile are active in the Environmental Zone use case Amsterdam. And they all have their own reasons to cooperate and take on one of the three roles: data provider, network monitor and end user service provider. Each role is responsible for one or more tasks in the use case.

Highlight innovation (200 words)

The most challenging and innovative part of the use case is the standardisation and digitalisation data exchange. In order to support this cooperation chain a functional design was developed, enabling partners to implement their part of the technical chain. The non-trivial part was developing, implementing and testing the data exchange format. For this we created the DATEX II Restricted Area Zone profile, in close collaboration with DATEX II. They run an activity to develop the DATEX II view on Management of Electronic Traffic Regulation (METR). METR supports the digitalisation of traffic regulations in such a way that the dataset can be used for navigation and automated driving. The SOCRATES$^{2.0}$-RAZ profile formed the basis for the Urban Vehicle Access Regulations (UVARs) specialisation of the DATEX II-METR publications. The most innovative feature of the Amsterdam RAZ is the opening of a specific feeder road towards the RAI-fair, allowing trucks to use a road normally unavailable. The combination of a semi-static closed for trucks area with a dynamically exempted road through it, demonstrated that the variety of service-architectures operated by service providers, ask for a service oriented information provision. This lesson and further deployment on European scale will be adopted by DATEX II.

Results achieved (200 words)

In terms of results we look at the currently available services for road users. The first version (launched in January 2020) of the service is about informing road users (in this case drivers of trucks) who have planned a destination in the environmental zone or users who have a route through the environmental zone. These users are informed about the environmental zone with information on the geographical limitations (using a geofence). This service does not yet use the navigation function or vehicle specifications. So, the user doesn't receive an updated route advice. However, changes on the environmental zone itself is included in this first end user service. The second version (launched in March 2020) includes more features. First and foremost the navigation function is added. Road users receive an alternative route in case their vehicle is prohibited and not exempt in the environmental zone. In the upcoming months more features will be added to the current services of Be-Mobile and TomTom.

Results on e.g. the environmental impact, violations, sustainable cooperation, technical chain are expected early 2021 as part of the SOCRATES$^{2.0}$ evaluation and dissemination.

Lessons learned (200 words)

SOCRATES$^{2.0}$ partners, international service providers, car manufacturers, ITS companies and road authorities, believe that new and better traffic information and navigation services for road users can be realized by more cooperation and sharing of information. The partners in SOCRATES$^{2.0}$ are defining and experiencing sustainable public-private cooperation and business cases in traffic management. This is an important step in the direction of implementation of smart mobility services. The collaboration makes SOCRATES$^{2.0}$ a unique and valuable project, from which lessons can be drawn for all stakeholders in the traffic management chain. It is expected that SOCRATES$^{2.0}$ will learn from different approaches.

More concrete lessons learned will be shared after the SOCRATES$^{2.0}$ consolidation process has completed in the first half of 2021.

Comments (eg presentation format)

The results and lessons learned in this article are based on the first 6 months of operational use. Due to the Corona lockdown we get the opportunity to test this use case for a longer period. Therefor new insights will be available at the Polis conference in December.

My preferred presentation format is a short presentation of the results and lessons learned and after that room for interaction with the audience.

Rijkswaterstaat/NDW is responsible for the overall project management of SOCRATES$^{2.0}$. The author is use case lead for SOCRATES$^{2.0}$ and project leader at Rijkswaterstaat.