DRIVE SWEDEN

PROJECT TITLE
WP 7 Connected Traffic Signals

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Table of Content

1. Summary

WP 7 Connected traffic signals

As a result, there are now 13 connected intersection in different cities from various road authorities to the Drive Sweden Innovation Cloud. From an API there are SPAT and MAP available in a standard format from each and one of the traffic signals in the intersections.

Attached is three documents:

- Latency calculation, Attach. 1
- IT arkitektur Drive Sweden Innovation Cloud KRABAT WP7 Trafiksignaler. Attach. 2
- Interpretation SAEJ2735 in DRIVE SWEDEN Connected Traffic signals. Attach. 3

2. Swedish Summary

Som resultat finns nu 13 st uppkopplade korsningar i olika städer från varierande väghållare till Drive Sweden Innovation Cloud. Från ett API finns nu SPAT och MAP, på ett standardiserat sätt, tillgängligt från var och en av respektive trafiksignal i de olika korsningarna.

3. Background

The project was initiated in the very beginning as a feasibility study and from that there was a real project started, this WP 7 Connected Traffic signals project. Early in the feasibility study when interviewing OEM´s, road authorities, system suppliers, system integrators, reading research reports and other there was a picture that become more and more clear, there is a need of “Open Data” and sharing the data in order to Improve traffic flow, environmental from CO2 and emissions etc. perspective. Also competition from other countries give a push to the project.

The challenge was from different perspective but mainly technology and policy. In detail this means that the various road authorities have different IT systems and different data communications hardware, software and “local” standards. From a policy perspective the challenge has been to “send” the data outside the internal traffic signal operational network at the road authorities.

The main contribution to Drive Sweden members is that the Traffic signal data now is available as “open data” in the Drive Sweden Cloud and are used to develop different services based on traffic signals e.g. Time To Green /TTG) and other.

4. Project set up

4.1 Purpose

The main contribution to Drive Sweden members is that the Traffic signal data now is available as “open data” in the Drive Sweden Cloud and are used to develop different services based on traffic signals e.g. Time To Green /TTG) and other.

The project also “find out” that road authorities have a big challenge when it comes to connected infrastructure, and it seems that the discussion is now started for real.

4.2 Objectives

Describe the objectives of the project as it was described in the application. If the objectives have been changed explain why and how they have changed.

The WP 7 is focusing to connect a small number of ”Traffic signals” (this means both **Traffic lights** and other **dynamic signs** from the road side). This information will be connected and available in the **Drive Sweden Innovation Cloud** and primarily to the Drive Sweden Members. Geographical it will be in both Gothenburg, Uppsala, Stockholm and Södertälje areas both from the cities and also Trafikverket. The project will **not** develop any functions like e.g. “Time to Green” or similar, focus will be to connect and become an **enabler for other projects**.

In the project it will be also discussed:

- Policies, possibilities and benefits from different perspectives.
- What are possible technical solutions in a future regarding the system.
- Is the standard regarding “messages/information format” on track?

4.3 Project period

WP 7 Connected Trafic signals 2017-05-15 - -2019-06-30

4.4 Partners

- Ericsson
- Volvo Cars
- AB Volvo
- Scania CV AB
- Swarco
- RISE Viktoria
- Trafikverket
- Göteborg Stad
- Uppsala Kommun
- Stockholm Stad

5. Method and activities

- What methods have been used to carry out the project?
- What activities have been performed?

The methodology had the following steps:

- Project meetings
- Homework (preparation internal)
- Workshop (inspiration, learning from other)
- Technical workshop (detailed meetings)

- Documentation at Project place

A large number of above activities has been organized and various partners has been hosting the different activities in a very good and inspired way.

E.g. from the activities:

- Any ”Low hanging fruits?! Is there any “traffic lights” that are “easy” to connect, in order to start as early as possible?!

- How could “connected traffic lights” in short terms support/help the project partners development within this area e.g TTG (Time To Green)?

- With the feasibility study as a baseline in detail analyse the suggested areas/road segments close to “Greater” Göteborg and Stockholm to understand what area/road segment will support either TTG or GLOSA or other.

- From the analyse above make a cost-, time- and technical analyse for deployment, in order to get the optimised “number of connected signals”.

- Analyse in detail what signal in a intersection that are need to have and nice to have.

- Present standard used from data format and communication perspective.

- What standards are missing and need to be used and also updated.

- Technical connection and API´s to and from the Drive Sweden Innovation Cloud.

- What IT architecture is needed from the intersection to the car via Drive Sweden Innovation Cloud, and data security as well.

- Roles and responsibility during the project and after WP7.

- Quality in latency and other quality parameters.

- Accessibility and use of the API.

- Future use of the API. Project ideas.

Dissemination of the result.

6. Results and Deliverables

One finding of many is that the road authorities has a long way to go when it comes to “connecting” traffic signals in a “high quality mode” and operating that system 24/7/365. Today many intersections documentation is not even “digitalized” and the organization to run that operation need to be established.

Another is that the set up of WP 7 regarding partners has bee a success. All relevant stakeholders are at the table. You cannot “put any demand” to a stakeholder that are “missing”. And that set up has given a good understanding from all partners regarding each and one internal and external challenges.

Also from the cities especially, there is a need of understanding what's in it for us, what environmental and safety benefits could be there etc?!

Deliverables from the project:

- IT architecture regarding the flow of data in the different systems and also IT security.
- API´s from Drive Sweden Innovation Cloud with relevant information.
- Roles, routines, administration and responsibilities in the entire system from the local “traffic light” to the API also after this WP7 project is ended.

We didn´t managed within the time frame to connect two types of “signals” the MCS and VMS. Those systems belong mainly to Trafikverket, and the “IT behind” was too complicated to solve when it comes to data format and communication. Hopefully we will manage this in the Nordic Way 2 where the efforts will continue.

7. Conclusions, Lessons Learnt and Next Steps

Due to the good fact that the Nordic Way 2 project has been started before WP 7 comes to and end, there has been additional partner that join NW2 and we have managed to accelerate the use of the Traffic signals when we have created a number of POC, Proof of Concepts, TTG, GLOSA and Bus priority. Also, a research activity regarding GLOSA is started in NW2 in order to find out the “benefits” with that service for the society and other.

8. Dissemination and Publications

The result has been presented mainly at Drive Sweden Forum and Transportforum during the years when the project was ongoing. Also internal activities at the partners has been fulfilled.

Drive Sweden is one of the Swedish government’s seventeen Strategic Innovation Programs (SIPs) and consist of partners from academia, industry and society. Together we address the challenges connected to the next generation mobility system for people and goods. The SIPs are funded by the Swedish Innovation Agency, Vinnova, the Swedish