Organizing co-loading within municipal distribution

A talk with Kristine Bull Sletholt, strategist at the STA, on Living Lab #9[1]

Kristine Bull Sletholt works as a strategist for the National Expert Department 'Transport Quality' of the Swedish Transport Administration, within the unit Freight and Intelligent Transport Systems. This unit gets assignments from the central government, and Kristine is one of the people from her unit who presently work on the assignment 'promoting horizontal collaboration for data sharing'. She also hosts conferences on such topics. Besides that, Kristine is the coordinator of Living Lab #9 Transparant Transport – City of Helsingborg*. She expresses herself with clarity, which is a blessing for an interviewer.*

The co-founder of this Living Lab is the city of Helsingborg, which is situated on the Westcoast of Sweden, where the distance to Denmark is only 6.5 kilometers. Here the passenger ferries from Denmark arrive. But Helsingborg is not only a city to transit. One can also stay and spend some time at this beautiful seaside resort with 2 km of beachy coastline. It is an innovative city, and when they heard about the governmental assignment on 'horizontal collaboration', they contacted Kristine's unit at the STA and presented their case. Then things started rolling and the Helsingborg case was tied to the FEDeRATED project.

Kristine Bull Sletholt

This Living Lab is about municipal last mile delivery and the city of Helsingborg is the 'problem owner'. The case: a local school in Helsingborg which, like any other 'municipal unit' in the city, is supplied with food, groceries and supplies on a regular basis, but until now also in quite an inefficient way, because the distribution of different suppliers is not coordinated. Ten suppliers are involved in this Living Lab, including three distributors who deliver vegetables and fruits, milk and dairy products, and groceries respectively. And then there are Logtrade and MobiOne, IT-platforms that participate in this Living Lab.

[1] Interview by Minne Buwalda

IoT-technology and data sharing for co-loading purposes

Kristine: “Platform company MobiOne installed trackers in the trucks that deliver the goods to public units. They gather the data so they can trace their movements. And together with MobiOne we installed this digital ‘geo-fence’ around the school, so we can see when trucks enter the school yard. Of course, we notice there are several trucks delivering goods around the same time. This creates the possibility of co-loading when the trucks come from more or less the same area or share routes.”

The case is limited but exemplary, and the local results should be scaled up when things turn out as expected. Kristine: “The STA assists the city to achieve their goal of more efficient last mile delivery to municipal units. Besides that, we also want to spread the gathered knowledge and solutions to other municipalities.”

According to the factsheet, Living Lab #9 want to “identify a minimum set of data that the municipality needs to access for coordinated transport”, meaning co-loading of deliveries to municipal locations like schools. Asking what kind of data have been identified, Kristine says: “First of all there are the location data from the trackers and fence around the school. Then there are the data on the goods ordered by the city. The order goes to a distributer and is entered into their ordering system. You have data on the type of goods, the amount ordered, the weight of the products, and sometimes a reference number. We want to share some of those data from the distributer to the platform we envisage.” She further specifies: “We want to share data concerning the ID of the order, the volume and weight, the delivery address, and requirements regarding the delivery. These requirements are sometimes based on procurement, like the need for the transport to be done by electrical vehicles or within a certain timeframe. And sometimes there are requirements like the need for cooled transport, because products like milk and the like need that.”

Based on the insights created by these data, the distributors know what type of products need to be brought where within a certain time frame under which conditions. Kristine: “We not only work with real time data here, but aim to include historical data, because the school often orders roughly the same products in the same amount at certain intervals. Based on these historical data the distributers can build more long-term collaborations regarding co-loading.” She continues: “When they know which products can be co-loaded, there needs to be a location to co-load at. These distributers have their own terminals, but there might be a need for dedicated terminals for co-loading.”

A conceptual platform

The factsheet of Living Lab #9 speaks of the objective to develop ‘a conceptual data sharing platform enabling new, collaborative business models’. Asking what the proposed conceptual platform entails, Kristine says: “By the end of this Living Lab we will have specifications for a platform. Specifications that the city of Helsingborg can develop or integrate into their system. We give a clear description of how the architecture should look like, the semantic modelling of it, the needed data sets, and how it works. And after the summer we are going to test it.”

The FEDeRATED meeting in Delft, in the spring of 2022, brought new ideas and caused things to

speed up. Kristine: “We wondered how to move forward with the project. We were already supported by RISE since the beginning of the project, but since the FEDeRATED-meeting in Delft we decided to work more closely together and use RISE-platform Deplide for technical support. We are preparing the collaboration now and plan to test Deplide after the summer (2022).” To that she adds: “It is an intensive phase right now.”

The testing within Deplide after summer is not the first testing phase of this Living Lab. Kristine: “We did a small test this spring with MobiOne, on gathering the sensor data from the trucks. We know now how that works, and are going to feed those data into Deplide, to see if we can build a front-end.” Kristine explains that, initially, the plan was that an IT-supplier should build this front-end, but because of the tight time schedule, and because of all the knowhow of RISE in this respect, also concerning the FEDeRATED requirements, the building of the interface is now going to be done through Deplide. Despite the development of front-end solutions, the efforts undertaken in Living Lab #9 are meant to stay conceptual, yet Kristine stresses: “But it should be a real operational platform in the future, developed or bought by the city of Helsingborg based on the specifications that we bring to the table.”

Data sharing in a municipal context

Asking about the willingness to share detailed data like the type of goods and their quantities, Kristine says: “The city has agreements with many suppliers, and 10 are involved in the project. They have agreed to share these data, as long as it is limited to municipal distribution. They do not want to share such data on their private distributions.” She continues: “As a municipal organization, the city of Helsingborg tries to bring the incentives for data sharing to the table. Besides that, the municipality can also set requirements for deliveries to their ‘units’, be it schools or elderly homes or whatever. The city is an important customer, and that helps to get companies to share their data.” And: “These data are necessary to both allow distributers to co-load and to allow the city to follow up on this, in the sense of monitoring if things are getting better.”

Until now, two suppliers started co-loading in real life, but not yet by way of data sharing. Kristine: “They save money by distributing their goods in a coordinated way. And in the next round of procurement, they could deliver a lower bid, which gives them a greater chance to get the contract. This way there is money saved and there are less trucks on the road. That’s win-win. We explain this to the other stakeholders. Data sharing must not be seen as a hassle, but as an enabler to save money and gain contracts.”

When I bring up an example of a municipality that obliges both municipal and private last mile delivery to bring their goods to a central warehouse on the border of town, in order to organize co-loading, Kristine says: “In Sweden, many municipalities work with a similar concept in municipal last mile delivery. In their procurement contracts they require the products for municipal units to be brought to a co-loading terminal, then distributed by a separate transporter that is procured. But that is not what we are aiming for in our Living Lab. The possible issue of that option is that, by arranging co-loading for municipal units but not for private actors, you may be optimizing the municipal transport, but at the same time suboptimizing the overall last mile delivery in a town, since these distributers

handle both municipal and private transport, and they have to deliver to the private actors anyway." So. 'horizontal cooperation' is your take? Kristine: "Yes, because the distributers are the experts here. They have their logistics systems in place, and since they want to make money, arranging co-loading is a win for them, so they are motivated to cooperate."

Helsingborg – South coast Sweden - in 1651 and in 2022

Functionalities and measurable results

Asking about FEDeRATED functionalities like Semantics, Kristine refers to Deplide: "The sequence diagram is an intermediary step towards our semantic model. Many of the Swedish Living Labs work with the method that RISE presented at the FEDeRATED meeting in Delft, a method on how to get your semantic model. With the sequence diagram we've got now, we can build the local semantic model, and RISE will help us to map this against the FEDeRATED semantic model." Concerning the functionalities Identity and Access, those are also dealt with in the Deplide-environment according to Kristine. "We are discussing access rights with them, because as a public organization we want the system to be as open as possible. It is mainly private actors who stress access rights due to competition and trade secrets."

Asking about quantitative results, and the objective of this Living Lab 'to reduce the number of deliveries to the school by at least 20%', Kristine says: "This 20% reduction was the goal of the project from the beginning. Technically we can calculate the potential gain of data sharing in a quantitative way, based on the movement data."