DIGITAAL
VLAANDEREN

REPORT

Thematic Workshop 1

Vlaamse
overheid

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1 Practical Information

- Date: 19/05/2022
- Location: Virtual

1.1 Attendants

Agentschap voor Maritieme Dienstverlening en Kust
- Valeria Ignatenko

Agentschap Wegen en Verkeer
- Joris Cornu

ATOS Belgium
- Patrick Michels

Digitaal Vlaanderen
- Geert Thijs
- Tom Callens

IMEC
- Jan Deprez

Inter
- Marcel Wijnker

1.2 Agenda

Timetable	Topic	Who
09:00 - 09:10 AM	**Welcome and introduction**	**Arne Scheldeman (DF)**
09:10 - 09:20 AM	**Recap of last workshop**	**Arne Scheldeman (DF)**
09:20 - 09:30 AM	**Unified Modeling Language**	**Alexis Driesen (DF)**
09:30 - 09:35 AM	**Introduction Passenger Transport Hub**	**Arne Scheldeman (DF)**
09:35 - 10:30 AM	**Discussion points**	**Arne Scheldeman (DF)**
10:30 - 10:45 AM	***Break***	
10:45 - 11:10 AM	**Passenger Transport Hub model**	**Arne Scheldeman (DF)**
11:10 - 11:30 AM	**Q&A en next steps**	**Arne Scheldeman (DF)**

2 Introduction

2.1 OSLO (Open Standards for Linked Organizations

The initiative for this standardization project originates from a collaboration between Digital Flanders and GreenMov. The intention is to ensure more coherence and better understandability and retrievability of the data. A semantic standard facilitates sharing and exchanging data between different stakeholders. Each data subject can directly use and interpret the data of the other. This stimulates the exchange and reuse of data and reduces the cost of exchange. The semantic standard provides machine-readable data. It also brings efficiency gains if the data can be used in different processes. OSLO makes a concrete contribution to semantic and technical interoperability. The vocabularies and application profiles are developed in co-creation with, among others, international administrations and authorities, federal partners, academics, the European Commission and private partners.

2.2 GreenMov

GreenMov is a CEF (Connecting Europe Facility) project within the framework of the Green Deal to bring smart mobility data together and make it accessible with the ultimate aim of realizing greener mobility. GreenMov and Digital Flanders contribute to harmonizing mobility datasets, creating integrated services (cross-services) and new cross-border functionalities by combining various datasets.

2.3 Flemish track OSLO Hoppinpunten

In Flanders Passenger Transport Hubs are being branded as “Hoppin Points”. A semantic data model of Passenger Transport Hubs is created, in Dutch, and currently in public review. The OSLO Hoppin points core vocabulary and application profile can be retrieved from "Standard register Hoppin points". This is used as a basis for the OSLO - Passenger Transport Hubs track. The model is translated in English and extended to the European requirements.

2.4 Context Passenger Transport Hubs

The Passenger Transport Hub is based on the “Hoppinpoints” track, described above. In general, a Passenger Transport Hub is a place with a diverse range of transport options. Depending on the location, you will find trains, tram and bus stops, shared vehicles, a Park & Ride, bicycle parking spaces, etc. These modes of transport are coordinated with each other and are preferably supplemented with additional services. The aim is to facilitate multimodality. A Hoppinpoint is a Passenger Transport Hub that meets specific criteria and it is divided into four major parts. These are:

- **Infrastructure elements**: These elements represent the physical aspect of the Passenger Transport Hubs. For example: information points, parking facilities, bicycle sheds…
- **Transportobjects**: These objects represent the transport nodes and their connections within the available transport networks.
- **Mobility services**: These are the available mobility services at the Passenger Transport Hubs. For example: mobility by train, bus, taxi, shared cars, bikes…
- **Additional services**: These are the additional services available to the traveler, making his/her trip as efficient as possible. For example: mailboxes, bakeries, sanitation facilities, bike repair shops…

The model can be retrieved in the Annex (See 6.1).

3 Objective and Approach

This section clarifies the purpose and approach of the first thematic working group.

3.1 Objective

The first objective of the thematic workshop was to summarize briefly what had been presented in the first business workgroup and to provide feedback. Secondly, we wanted to explain our vision on the discussion points from the previous workgroup and discuss this with the participating stakeholders. Finally, the aim was to present the updated model and to do a small brainstorming exercise about it.

3.2 Approach

During the first thematic workshop, a presentation briefly summarized what had been presented in the previous business workshop. Afterwards, we gave a small introduction on UML to provide the stakeholders with a basic knowledge of the used technique to model the data. Subsequently, the various discussion points were raised, clarified and our vision on them explained. These discussion points were:

- Versioning
- Real-time capacity
- Real-time information
- Accessibility
- Feedback
- Data standard Velopark
- Transport Hub & Route planning

We gave the attending stakeholders the opportunity to give their opinion on these subjects and to point out uncertainties, which were then answered as best as possible. At the end, the revised full model was presented in MURAL and the stakeholders could ask their questions via Post-its and these were then clarified. By this occasion, they also got the chance to brainstorm about possible improvements or adjustments to the model.

4 Discussion points

This section describes and explains the various discussion points that were presented and/or emerged during the thematic workshop. For more information on and a description of the points themselves, we refer you to the slides of the presentation.

First of all, it is important to mention that the initial objective of this track and model is to give a static representation of a transport hub in all its elements. It is a snapshot and should not be seen as a constantly changing environment. This means that the model is a starting point for calculations which can change over time.

Versioning

In the previous workshop, there were questions about how the model handles real-time changes to the data and the fact that the data is constantly changing. For example, you could see if a bicycle would be available within a certain period of time. Don't we need attributes to tackle this? During this workshop, we provided an answer to this. We referred to a model called OSLO LDES, which is explained in depth within the presentation.

OSLO - LDES is a mechanism to present versioned data and immutable objects such as observations (for example observation of temperatures). With the mechanism of LDES, it is possible to process those observations directly or work with versioning.

What is this versioning? An event stream is a collection of versions of objects or of observations. The idea is that they are immutable objects. It is to say that once such an object is instantiated you cannot return to it. A transport hub has a certain state at a certain moment, the transport hub was in that state at that moment, it cannot suddenly be in another state, only if mistakes have been made, but even then it will instantiate a new version.

The bottom line is that it is not necessary to add fields or attributes with specific calculations or indications of timestamps. The idea is that changes within the model are synced so that within implementation the cache/database is up-to-date. In the back-end, when changes happen, a timestamp is always added. One option is to count by aggregation how many bikes are still available. Another option is to add a field 'number of bikes available', but the problem is then which bikes, bikes of what, of which service? This would become very complicated.

The advantage of working with LDES is that there is no need to open up your database remotely and make it queryable, or to provide very dedicated remote services to keep it in sync. That is perfectly possible, but with LDES it is assumed that the client on his side does caching and processing of updates and can answer questions like 'How many bikes are available?' or 'When did a resource change from availability?' by himself and limits himself to the objects that interest him. This by creating event streams for specific classes such as a resource.

In the end, the explained way of versioning seems a good alternative to adding extra attributes and was accepted by the stakeholders.

As stated earlier, a description of versioning and an example are explained in the presentation slides.

Real-time Capacity and Information

Regarding real-time capacity, the remark was made that it could offer added value to a traveler to see how many resources are available at a transport hub. After all, this would partly determine the choice for a trip. This question was countered by the fact that this refers to the implementation model and to a lesser extent to the semantic aspect of the model, which the passenger transport hub model represents. This model represents the semantic aspect and rather omits the real application. If this model is implemented within an organisation, it is up to the organisation to do the calculation based on the resources given in the semantic part. This is also in line with the versioning part.

We also spent a little time on reservations. Reservations are included in another model: OSLO Mobility: Trips & Offers. This model is in Dutch at the moment, but an English translation is in the pipeline. It is up to the provider of services to include reservations. There were no comments, so we will leave this aside for now.

Concerning real-time information we asked the participating stakeholders if we would have to include multiple concepts such as: ‘canceled service’, ‘delays’ and ‘incidents’, in the model or take it with us to another model, as it would expand the scope of the model. The general answer was that it is interesting to include them in this model or another, but the way to do it is unclear. By using OSLO LDES it is possible to track the changes within the Transport Hub, however, it is not indicated what the reason of change is for the travelers.

It was decided to keep them out of the scope, as this would be too complicated and would actually require a new model, as those concepts are broader than limiting it to Passenger Transport Hubs.

Feedback

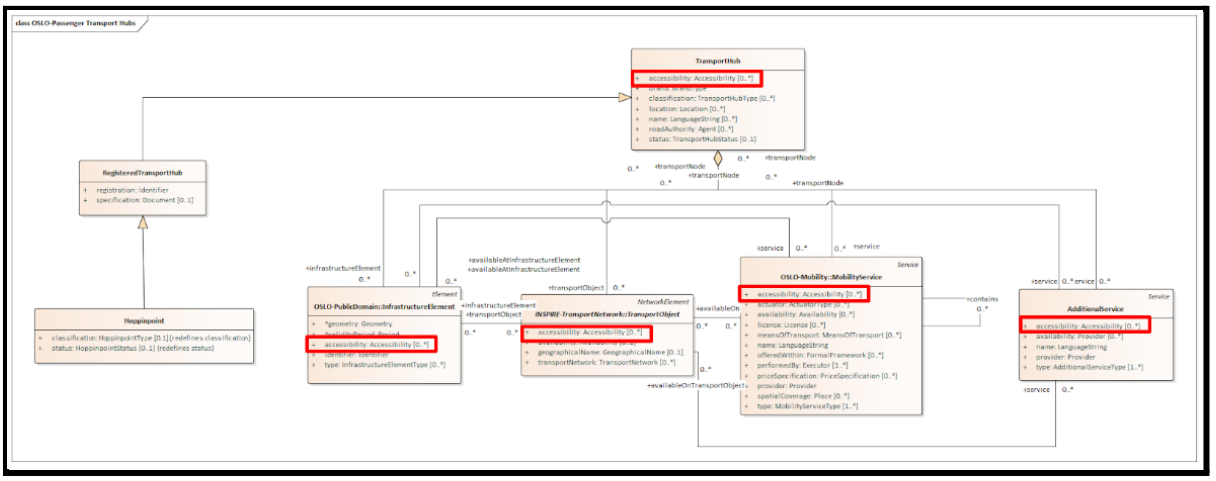
Following some uncertainties and questions asked in the business working group, part of the presentation was dedicated to this topic. There were no remarks and it was decided to leave this out of scope and omit it from the model. More information on feedback itself can be found in the slides.

Accessibility

During the business workshop there were some use cases and uncertainties concerning the accessibility of transport hubs.

In the presentation it was explained that accessibility is divided into 3 aspects (the level of accessibility, component of accessibility and type of accessibility). The listings in the enumerations still need to be determined, but they already give a picture.

Accessibility is present in 5 classes and each class goes deeper into what is possible. So, to say it is accessible for these people and not for those people. So this should always include a statement if something is not accessible to a certain group.



Data Standard Velopark

Due to a comment during the last workshop we explained the data standard of Velopark during the workshop. In the presentation this is visually represented.

This diagram shows a shortened version of Velopark. Describes the representation of parking facilities for bicycles and its features. Here, Mobivoc has been used as a base, similar to the representation of parking facilities in the Passenger Transport Hub model. The difference with Velopark and OSLO standards can be found in the modeling part. Within Velopark all features are modeled as separate classes, however within OSLO it is modeled as a type of feature. Within the Passenger Transport Hub model the features will be seen as AdditionalServices connected to the Infrastructure. For instance a bicycle pump is an additional service to the parking station.

Transport Hub & Route Planning

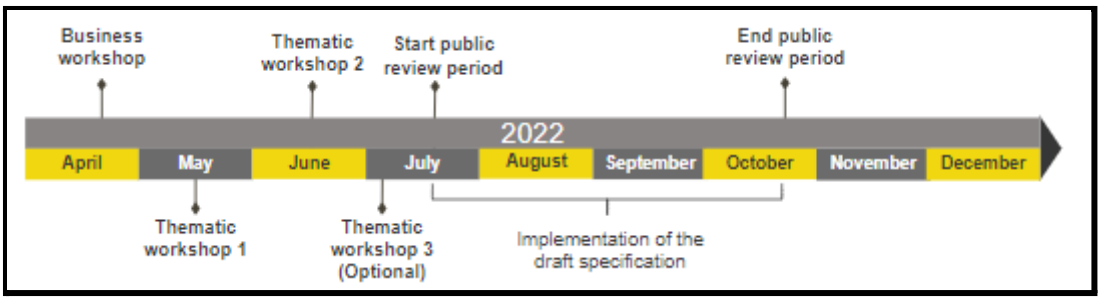
Last workshop, we had some use cases about the shortest path calculation for the traveler. We have subdivided that into 2 aspects, on the one hand a route within the Transport Hub and on the other hand a route planning to calculate the shortest path for a traveler. With the first aspect we mean that it is possible to determine the distance between certain mobility services within the Transport Hub by using their connected transport nodes. With the second aspect, for calculating the shortest path, it is possible to make the calculation outside the model. If a traveler uses a Transport Hub during his/her trip, then the nodes connected to the used mobility services are used, as a starting point for example. However, all other nodes, outside the Transport Hub are part of the calculation, but are not part of this model. That's why the calculation of the shortest path is not included and seen as a black box

5 Next Steps

In the period leading up to the next thematic working group, the input from this working group will be processed. Furthermore, the model will be reviewed to see what can be updated and these changes will be presented during the next thematic working group. This will probably be the last working group before we go in public review.

If you have any additions for the next working group, feel free to share them via GitHub or send a mail directly to Arne.Scheldeman@vlaanderen.be.

If you would like to participate in one of the upcoming workshops, you can find an overview of the workshops and register via the following link: Thematic Workshop 2. The second thematic workshop will take place on Thursday 23rd of June at 09h00 via Microsoft Teams.



6 ANNEXES

6.1 PASSENGER TRANSPORT HUBS MODEL