DIGITAAL VLAANDEREN

Business Workshop

Vlaamse overheid

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1 PRACTICAL INFORMATION

- Data: 26/04/2022
- Location: Virtual

1.1 ATTENDANTS

Agentschap voor Maritieme Dienstverlening en Kust
- Thomas Gerets
- Valeria Ignatenko

Agentschap Wegen en Verkeer
- Joris Cornu

ATOS Belgium
- Clara Pezuela
- Patrick Michels

De Lijn
- Bart Verdeyen

Department mobility en Public Works
- Bart Baeyens
- Els Maesen

Digital Flanders
- Geert Thijs
- Tom Callens

IMEC
- Jan Deprez
- Filip Gosselé

Inter
- Marcel Wijnker

Smart Region Limburg
- Geert Thoelen

MyCSN
- Simon Rosseel

Stad Hasselt
- Yannick Fabbro

Universiteit Gent
- Jiao Long
- Brecht Van de Vyvere

PwC
- Alexis Driesen

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- Arne Scheldeman

1.2 SCHEDULE

09:00 - 09:10 AM	Welcome and introduction	Arne Scheldeman (DV)
09:10 - 09:20 AM	Project introduction	Tom Callens & Clara Pezuale (GreenMov)
09:20 - 09:35 AM	Introduction to OSLO	Arne Scheldeman (DV)
09:35 - 10:15 AM	Flemish model OSLO Hoppinpunten	Joris Cornu (DMOW) Arne Scheldeman (DV)
10:15 - 10:30 AM	*Break*	
10:30 - 10:50 AM	Model explained by real-life example	Arne Scheldeman (DV)
10:50 - 11:40 AM	Brainstorm: use cases and expectations	Arne Scheldeman (DV)
11:40 - 12:00 AM	Q&A en next steps	Arne Scheldeman (DV)

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2 INTRODUCTION

2.1 OSLO (OPEN STANDARDS FOR LINKED ORGANIZATIONS)

The initiative for this standardization project comes from Digital Flanders and GreenMov. The intention is to ensure more coherence and better understandability and retrievability of the data. A semantic standard makes sharing and exchanging data between different stakeholders easier. 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.

We refer to the slides and purl.eu for more information.

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.

We refer to the slides for more information.

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 will be used as a basis for the OSLO - Passenger Transport Hubs track. The model will be translated in English and be extended to the European requirements.

More information concerning the implementation of the model within Flanders can be retrieved from the presentation slides of the business workshop.

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 and we refer to the slides for more information.

3 DISCUSSION POINTS OF THE MODEL

During the workshop a first draft was presented of the model. By the feedback given during the workshop, some translation errors popped up. Towards the nex workshop, the model will be updated and translation errors will be tackled. The model can be retrieved in the presentation and the Annex in this document.

Below you can find the main discussion points that were tackled during the workshop.

3.1 ACCESSIBILITY

A main discussion point was the accessibility part of the model. These were mainly misunderstandings of the model. For example, there was a remark that the model would only have the option for accessible or not, and 'grey' areas would be forgotten. Though, the model is able to divide accessibility into three part:

1) Level of accessibility: e.g. Accessible with support, fully accessible…
2) Component of accessibility: The component of the passenger hub to which the accessibility applies. E.g. infrastructure, mobility service…
3) Type of accessibility: e.g. information accessible, service accessible, physic accessible…

There was also the question: What about the availability of NMBS assistance for people with disabilities and reservation? However, reservation is not included in this model. Reservations etc are tackled within other standards, such as OSLO Mobility: Trips and offers. The OSLO: Passenger

Transport Hub model, however, describes the transport hub in all its detail and the services you could use and its infrastructure.

3.2 VERSIONING

There were some discussions related to versioning. Data versioning is the storage of different versions of data that were created or changed at specific points in time. Versioning is about historic and future data that you want to keep track of. However, versioning is not within the scope of this model. The purpose of this model is to describe the current state of passenger transport hubs. This will be made more clear in the next workshop. The fact that versioning is not a part of this standard is no limitation, as other standards concerning versioning and taking track of historic data, are created (such as OSLO LDES) and can be connected with the OSLO Passenger Transport Hubs.

3.3 REAL TIME INFO

There were several discussion points concerning the real time capacity of the model to predict the availability of services. For example, if there are roadblocks or traffic jams, which results in a later arrival or arrival at another location. Or, if you want to know if bikes are available at a certain transport hub. Will the model be capable of handling these real time adjustments? To clarify, this model omits aspects related to real time implementation. The model has to make a distinction between the infrastructure part of the service (left side of the model), which are the fixed things the transport hub consists of, and the services part itself (right side of the model). The infrastructure part is fixed. If you want to see, for example, how many bikes are available at the infrastructrure part, you have to look at the services part. There is a difference between the physical infrastructure and the services available. These services have resources which are fixed on the terrain. They are available or not. They are physical, but they are connected to the service. So if you talk about capacity you have to look at available resources for a certain service. Via the links you can go to the infrastructure to see in which station they are available. But the database will only capture the functions, available services and infrastructure. If the model wants to be able to act in real time, then there is the need to make a derived model by aggregation of the data. But there is a problem with some of the existing standards, as they have a different level of granularity. If there is a use case which demands that real time information is available immediately, rather than aggregating existing data, then we will look into that and discuss it in one of the following thematic workshops.

In general, OSLO makes models for a certain point in time. Though, it is possible to use it in a real time manner. NeTEx, for example, has a lot of real time data. The model itself would not, or rather limited, require adjustments to use it in a real time manner, but it is dependent on the way of data collection and processing. Data has to be collected and processed in a real time manner. Data collection is very important for this part, how fast can a provider of data adjust his database to map real time changes in the environment. From the discussion, it was decided that this is an interesting

fact to look at in more detail, what additional info would be needed to make it useful for real time considerations.

There was also a discussion point about the possibility of adding feedback to the database in order that the data can learn from the comment of the users. At the moment, it is not possible to give feedback. For feedback we need another model. A feedback model. Then this feedback has to be processed and the result of this processing you will see in the accessibility data type. So, feedback would be on the right side of the model. It would be connected to actual trips. The trips are modeled and this is the actual user experience. For every segment in the route the traveler can use another type of transport. He/she can state 'this was my trip', the trip can be described and what parts of the infrastructure were used. Then, it is possible to add feedback. But you can't just add an attribute 'Feedback' as it will be unprocessed feedback. You have to process it, to do something with the feedback. So, currently this is not in the model, but it is possible. This is something that we will take with us to the following workshop.

Some questions related to real time information were not fully tackled within the business workshop:
   ● Does this present the predicted or the real trip? What about occurring differences?
   ● How would this model deal with traffic, or a strike causing blocked streets?
These questions will be elaborated on in one of the following thematic workshops.

3.4 PRICING

There were also some concerns about the modeling of a price plan. The choice was made to not model the price plan, because it is a complex matter that is a trajectory on itself. The only thing in the model at the moment is the possibility to reference an existing price plan. Though, we will take note about the questions concerning the price plan. The actual trip calculations where price is a factor is a black box that is not included in the model, as it is highly complex and not in scope for this standard. In general, the main function of the Passenger Transport Hub model is to describe a transport hub in detail and their possibilities.

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4 Brainstorm session

The purpose and approach of the virtual brainstorming session are described below. The input during the brainstorm is summarized below and screenshots can be retrieved in the Annex (see below).

4.1 Purpose

- Gaining insights into current and potential use cases
- Listing concepts regarding Passenger Transport Hubs
- Capturing information needs and existing data models

4.2 Approach

The brainstorming session is divided into three exercises: (1) Generating use cases, (2) Generating concepts and (3) Generating data models. The intention is to make the topic 'Passenger Transport Hubs' as broad as possible, in order that the scope can be refined in subsequent working groups.

For each exercise, we use Mural. In Mural it is possible to give input via virtual post-its. For each exercise, the data from the Mural is listed below. At the end of the report, in 6. Annex, the screenshots from Mural can be found.

4.3 Use Cases

The provided Use Cases will be validated with the 'OSLO - Passenger Transport Hubs' model.

4.3.1 Use Case availability

1. I want to know if chances are high that shared bikes will be available tomorrow at 4PM at Gent-Sint-Pieters station.
2. As a traveler, I would like to know, the night before my trip, how probable it is to find a shared bike at a specific transport hub.
3. As a traveler I want to know if a taxi will be available at the time I arrive by bus.
4. The train I'm on is 30' minutes late, and I want to check if bikes will still be available when it arrives at the hub.
5. As a traveler, I would like to know if bike sharing WILL be available at the time I arrive with the bus.
6. As a traveler, I would like to receive information about cross-country mobility services.

4.3.2 Use Case accessibility

1. I'm a blind person and want to know if guidelines are available from the train to the tram I want to take.
2. As a wheelchair user I want to know what's the most efficient way to get from A-B in time and cost.
3. As a non-digital user, I would like to have a summary-export to PDF that can be printed out.

4.3.3 Infrastructure

1. As a senior citizen, I want to be sure I can sit comfortably while waiting for my shared car.
2. As a traveler I want to charge my EV: availability, power
3. I'm an old man and can't walk very far, I need time and place to rest (sit). Can I know if there are places to sit?
4. Extend this model with the classes and properties of Velopark , e.g. Bicycle Pump.

4.3.4 Use Case real time info

1. Possibility to communicate with other users of the application, f.e. communicate that due to bad weather the ferry service is temporary not working, so that all users who are following the same traject can see this information (same as Waze)
2. As a traveler, I would like to have correct information about temporary infrastructure in case of works/events/…
3. As a traveler I would like to be informed if no services are provided due to detours or that my normal stop has been replaced.
4. As a traveler, I would like to have my connected bus assured if my train is delayed.
5. I want to check if I should switch to a bus or take a shared bike next Monday when I arrive by train during rush hour.
6. As a traveler I would like to know if a certain stop is still on that location on the day that I travel

4.3.5 Others

1. As a traveler, I would like to know the time estimate of traveling between two addresses at a given time.
2. As a frequent traveler I want to provide feedback on the conditions/properties of certain Hoppin Points

4.4 CONCEPTS

4.4.1 Concepts infrastructure

1. Number of parking spaces (car, bike, step)
2. Number of charging points
3. Bikes for people with disabilities (ex. wheelchairs)

4. Benches
5. Hub infrastructure
6. Bike sharing station
7. Low emission zones

4.4.2 Concepts availability

1. Availability forecasting models
2. Mobility services
3. Kind of bikes available
4. Locations

4.4.3 Concepts travel

1. Travel info
2. Route planner
3. Connections
4. Distance you can ride with a bike
5. Dynamic multi-parameter trip planning
6. CO2 emission
7. Information on how I can use a bike as a traveler

4.4.4 Concepts feedback

1. User feedback
2. Trip scoring (speed, cost, comfort, open-air…)

4.4.5 Concepts real time information

1. Real time schedules
2. Real time information

4.4.6 Concepts versioning

1. Versioning on objects

4.4.7 Concepts persona

1. Operator (who is responsible?)

4.5 DATA MODELS

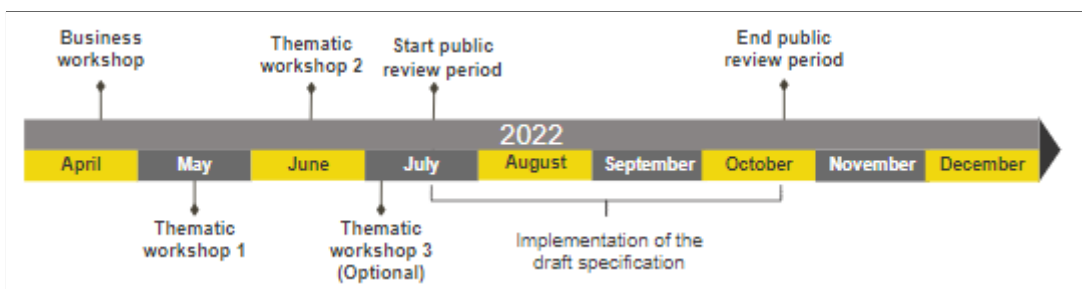Listing of predefined data models (1-9) + models brought up during the brainstorm (10-12):

1. OSLO Mobility - Trips and Offer
2. OSLO Transport Network
3. GBFS

4. INSPIRE
5. NeTEx
6. OSLO Public Domain
7. Mobivoc
8. Datex II
9. Velopark Data Model
10. OSLO Generic: Versioning
11. OSLO Timetables/Stoppingplaces
12. Point Of Interest (POI)

5 NEXT STEPS

During the business working group, there were some discussion points that needed some further explanation. These points will be illustrated and clarified during the next thematic workshop. The use cases and concepts raised during the brainstorming session will be processed and also taken to the next thematic workshop.

If you would like to participate in one of the upcoming workshops, you can find an overview of the workshops and register via the link below. The first thematic workshop will take place on Thursday 19 May at 09h00 via Microsoft Teams. Registration link: Thematic workshop 1
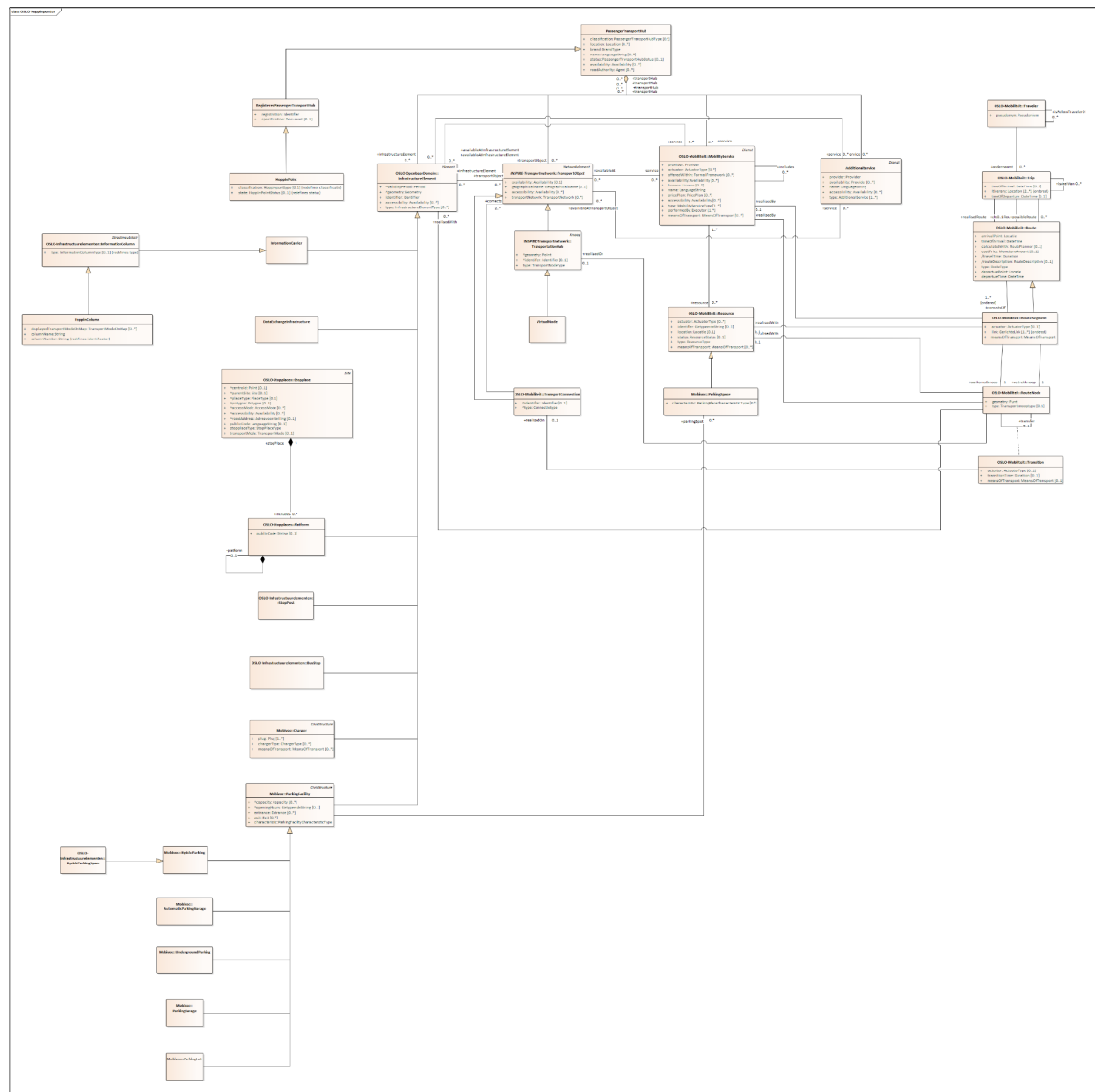
6 ANNEXES

Figure 1: Draft version *Passenger* Transport Hubs model

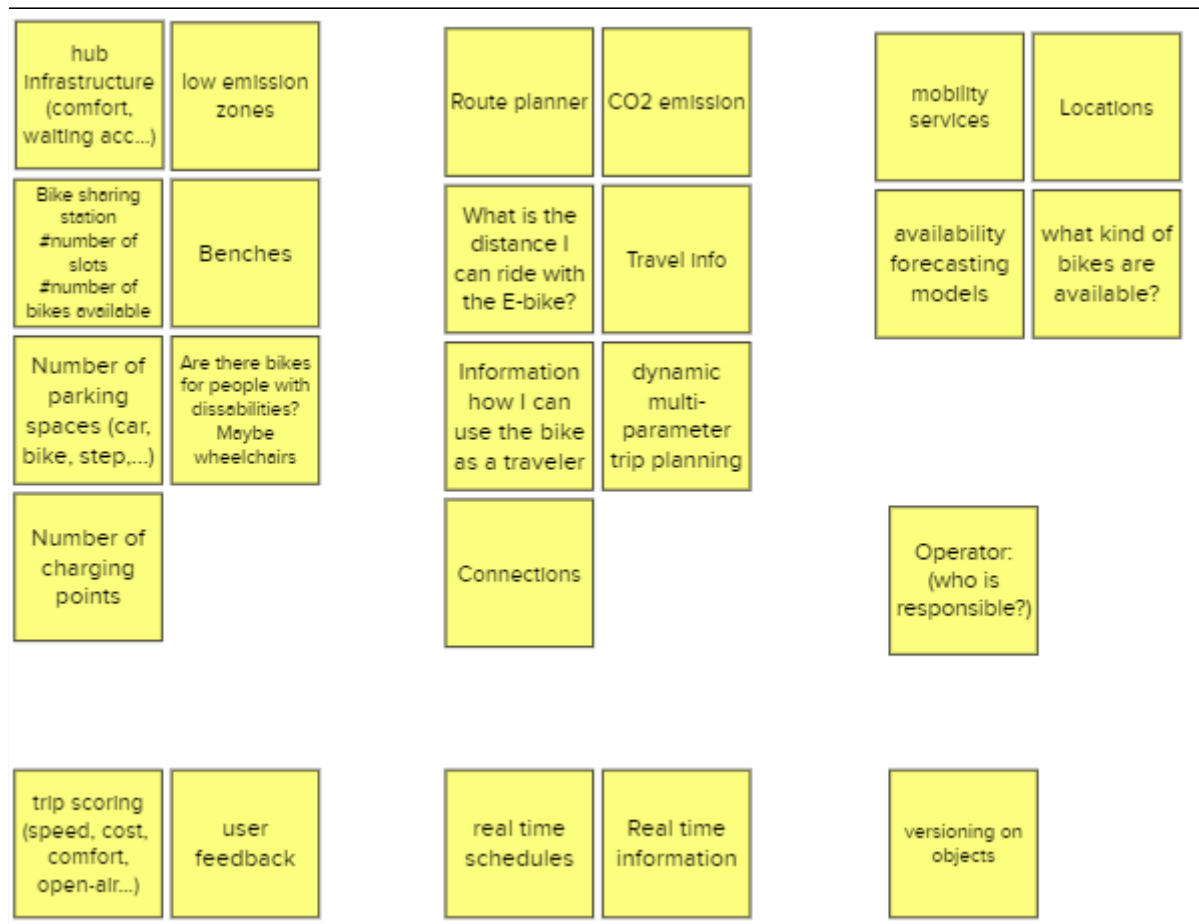|					
I'm an old man and can't walk very far, I need time and place to rest (sit), Can I know if there are places to sit?	Extend this model with the classes and properties of Velopark, e.g. Bicycle Pump	As a traveler, I would like to receive information of cross-country mobility services	I want to know if chances are high shared bikes will be available tomorrow at 4PM at Gent-Sint-Pieters station	Possibility to communicate with other users of the application, f.e. communicate that due to bad weather the ferry service is temporary not	As a traveler I would like to be informed if there no service are provided due to detours or that my normal stop has been replaced
As a senior citizen, I want to be sure I can sit comfortably while waiting for my shared car	As a traveler I want to charge my EV: availability, power	As a traveller, I would like to know - the night before my trip - how probable it is to find a shared bike at specific transport hub	As a traveler I want to know if a taxi will be available at the time I arrive bij bus.	As a traveler, I would like to have my connected bus assured if my train is delayed.	I want to check if I should switch to a bus or take a shared bike next Monday when I arrive by train during rush hour
As an non-digital user, I would like to have to have a summary-export to PDF that can be printed out	As a wheelchairuser I want to know what's the most efficient way to get from A-B in time and cost	The train I'm on is 30' minutes late, and I want to check if bikes will still be available when it arrives at the hub	As a traveler, I would like to know if bike sharing WILL be available at the time I arrive with the bus. (so predicterd availabiltiy)	As a traveler, I would like to have correct information about temporary infrastructure in case of works/ events/...	As a traveler I would like to know if a certain stop is still on that location on the day that I travel
I'm a blind person and want to know if guidelines are available from the train to the tram I want to take		As a frequent traveler I want to provide feedback on the conditions/properties of certain Hoppin Points	As a traveler, I would like to know time estimate of travelling between two addresses at a given time.		

Figure 2. Use Cases

hub Infrastructure (comfort, waiting acc...)	low emission zones		Route planner	CO2 emission		mobility services	Locations
Bike sharing station #number of slots #number of bikes available	Benches		What is the distance I can ride with the E-bike?	Travel Info		availability forecasting models	what kind of bikes are available?
Number of parking spaces (car, bike, step,...)	Are there bikes for people with dissabilities? Maybe wheelchairs		Information how I can use the bike as a traveler	dynamic multi-parameter trip planning			
Number of charging points			Connections			Operator: (who is responsible?)	
trip scoring (speed, cost, comfort, open-air...)	user feedback		real time schedules	Real time information		versioning on objects	

Figure 3. Concepts

OSLO Mobiliteit Trip en Aanbod (Mobility - Trips and Offer)	OSLO Transportnetwerk (Transport network)	GBFS	INSPIRE
NeTEx	OSLO Openbaar Domein (Public Domain)	Mobivoc	Datex II
Velopark datamodel	OSLO Generiek: versioning	OSLO TimeTables/ stoppingplaces	point of interest (POI)

Figuur 4. Data models