



# De Vlaamse Smart Data Space

Een meerwaarde voor jouw business en organisatie



Technical Advisory Board

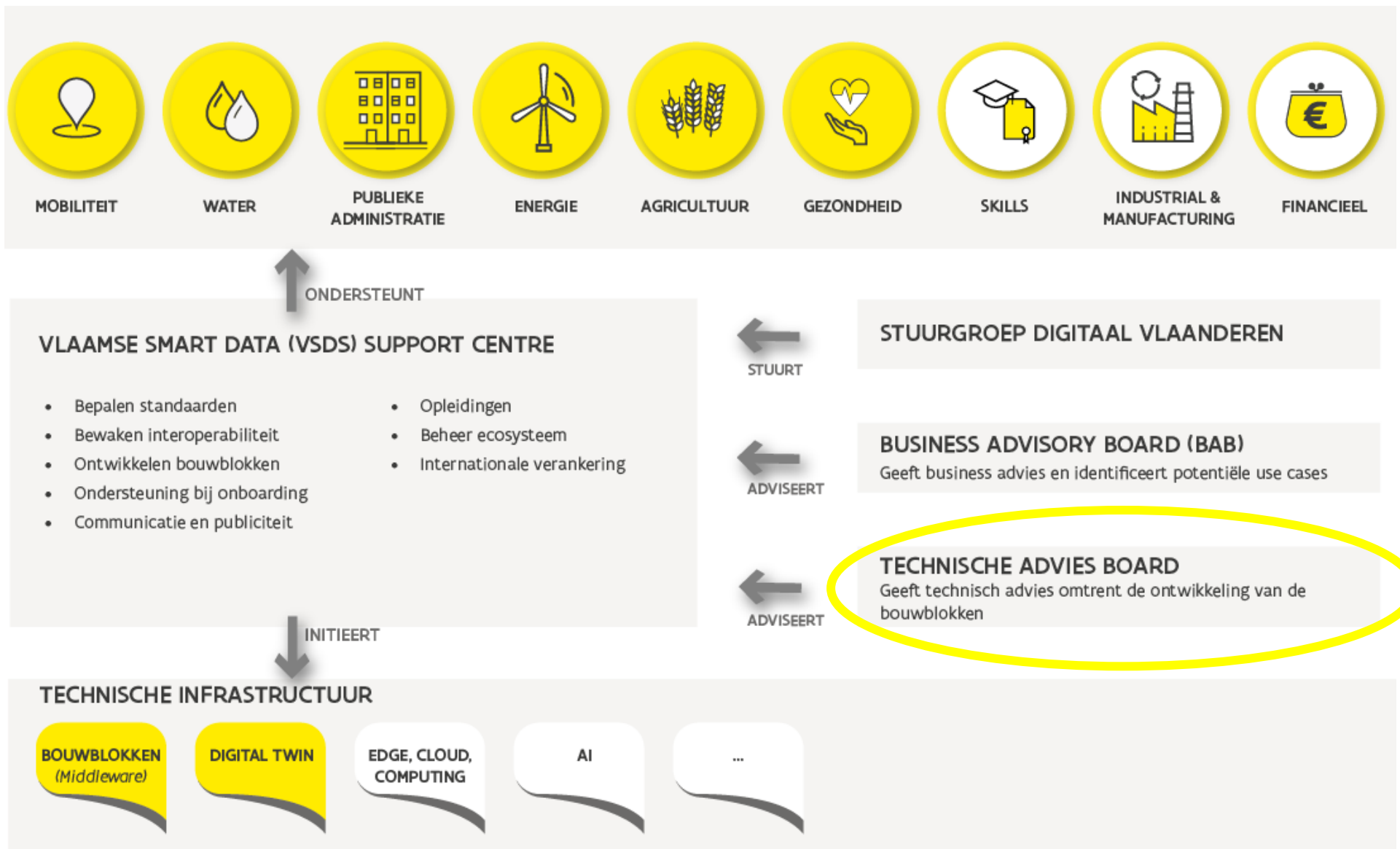
13/10/2023

# Agenda



- 13:30 – 13:35 Welkom & situering TAB
- 13:35 – 14:00 Update bouwblokken
- 14:00 – 15:00 Onboardingstrajecten
- 15:00 – 15:15 **Koffie**
- 15:15 – 15:25 Internationalisering (link met Fiware)
- 15:25 – 15:35 Marketplace
- 15:35 – 16:00 Demonstrator showcases (2)
- 16:00 – 16:20 OSLO traject LDES 2.0
- 16.20 - 16:30 Oproep + closing

# Situering Technische Advies Board (TAB)





# Update bouwblokken

# Agenda

- 13:30 – 13:35 Welkom & situering TAB
- 13:35 – 14:00 Update bouwblokken
- 14:00 – 15:00 Onboardingstrajecten
- 15:00 – 15:15 **Koffie**
- 15:15 – 15:25 Internationalisering (link met Fiware)
- 15:25 – 15:35 Marketplace
- 15:35 – 16:00 Demonstrator showcases (2)
- 16:00 – 16:20 OSLO traject LDES 2.0
- 16.20 - 16:30 Oproep + closing

# Agenda

- **13:35 – 14:00 Update bouwblokken**
  - Update Tech docs en VSDS bouwblokken (Jef Laenen – Cegeka)
  - Testbed (Dwight Van Lancker – Digitaal Vlaanderen)
  - Planning architectuur VSDS connector (Sander Van Dooren – Digitaal Vlaanderen)

# Tech Docs | General concepts

<https://informatievlaanderen.github.io/VSDS-Tech-Docs/>

The screenshot displays the 'Vlaanderen VLAAMSE SMART DATA SPACE' website. The left sidebar contains a navigation menu with sections: 'Home', 'Linked Data Interactions', 'INTRODUCTION TO LDES' (with sub-items: Introduction, LDES Client, LDES Server, Specification), 'QUICKSTART' (with sub-items: Quick start, LDES2Service, Use case LDES server), and 'RELEASE MANAGEMENT' (with sub-item: Release management). The main content area is titled 'Technical Documentation' and includes a search bar. Below the search bar, there is a paragraph about security options, followed by a section titled 'OpenAPI swagger UI' which explains how to discover the LDES server API. Below this, a table lists DCAT endpoints with their respective HTTP methods and descriptions.

Method	Endpoint	Description
PUT	<code>/admin/api/v1/eventstreams/{collectionName}/views/{viewName}/dcat</code>	Update DCAT metadata for a view
POST	<code>/admin/api/v1/eventstreams/{collectionName}/views/{viewName}/dcat</code>	Add DCAT metadata for a view
DELETE	<code>/admin/api/v1/eventstreams/{collectionName}/views/{viewName}/dcat</code>	Delete DCAT metadata for a view
PUT	<code>/admin/api/v1/eventstreams/{collectionName}/dcat</code>	Update DCAT metadata for a LDES
POST	<code>/admin/api/v1/eventstreams/{collectionName}/dcat</code>	Add DCAT metadata for a LDES
DELETE	<code>/admin/api/v1/eventstreams/{collectionName}/dcat</code>	Delete DCAT metadata for a LDES

# Tech Docs | Linked Data Interactions

<https://informatievlaanderen.github.io/VSDS-Linked-Data-Interactions>

Vlaanderen | VLAAMSE SMART DATA SPACE HULP NODIG ?

## Linked Data Interactions

Search Linked Data Interactions

Home  
VSDS Technical Docs

LINKED DATA INTERACTIONS CORE BUILDING BLOCKS

**Introduction**

LDI Inputs

LDI Adapters

LDI Transformers

LDI Outputs

LINKED DATA INTERACTIONS ORCHESTRATOR

The Linked Data Interactions Orchestrator

LDIO Inputs

LDIO Adapters

LDIO Transformers

LDIO Outputs

Examples

LINKED DATA INTERACTIONS FOR APACHE NIFI

Linked Data Interactions For Apache NIFI

LDI NiFi Processors

### Building blocks

As the LDI strives to be an easily reusable project, each of our building blocks are framework independent and is being maintained as part in our LDI Core.

Each of the LDI Core Building Blocks falls under one of four categories:

- **LDI Input:** A component that will receive data (not necessarily LD) to then feed the LDI pipeline.
- **LDI Adapter:** To be used in conjunction with the LDI Input, the LDI Adapter will transform the provided content into and internal Linked Data model and sends it down the pipeline.
- **LDI Transformer:** A component that takes in a Linked Data model, transforms/modifies it and then puts it back on the pipeline.
- **LDI Output:** A component that will take in Linked Data and will export it to external sources.

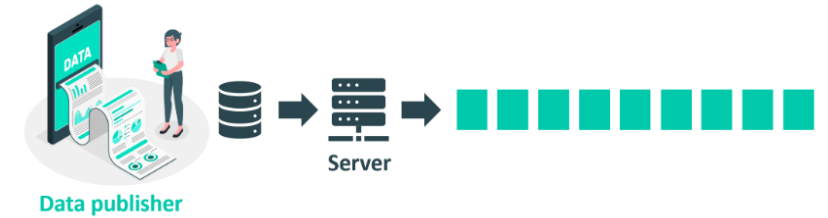
```
graph LR; Input(( )) -- "NON LD" --> Adapter[LDI_Adapter]; subgraph LDI_Input; Adapter; end; Adapter -- "LD" --> Transformer[LDI_Transformer]; subgraph LDI_Transformer; Transformer; end; Transformer -- "LD" --> Output[LDI_Output]; subgraph LDI_Output; Output; end;
```

Contribute on GitHub



# Statusupdate

## LDES Server



- Meerdere stromen per server mogelijk
  - Kostenefficiëntie ↗
  - Schaalbaarheid ↗
  - Splitsen van
    - Ingesten van data
    - Fragmentaties



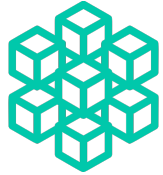
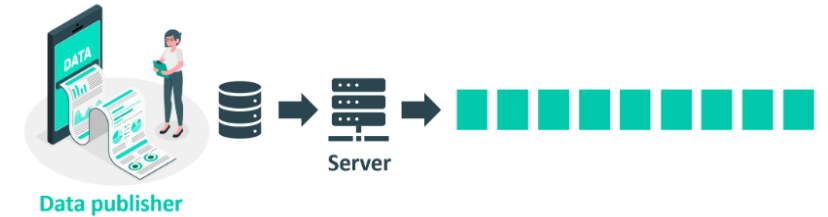
- Dynamisch beheer
  - Stromen
  - Views
  - Metadata



- Security
- Additionele retentie mogelijkheden
  - Time-based
  - Point-in-time
  - Version-based

# Statusupdate

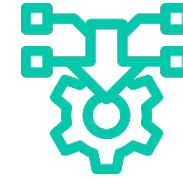
## LDES Server



- Fragmentatie
  - Time-based fragmentatievervangen door  
hierarchische timebased  
fragmentatie



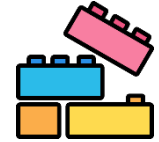
- Compacteren van fragmenten



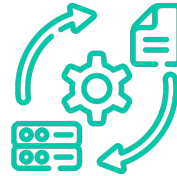
- Asynchrone fragmentatie
  - Verhogen van performantie

# Statusupdate

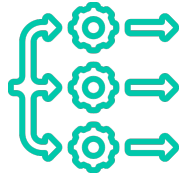
## Workflow bouwblokken



- Archivering



- Data transformatie



- Kafka in & -out voor LDIO workbench
- http-polling
  - Pol http-inputs om data te ingesten



- RML-mapper
  - Generisch van gestructureerde data naar linked data
- JSON to JSON-LD adapter



- Object splitter

# Statusupdate

## LDES Client



- Meerdere stromen in dezelfde workbench



- Werkt met API-gateway



Available on  
**Microsoft Azure  
Marketplace**

# VSDS Testbed

- Hergebruik [European Interoperability Testbed \(ITB\)](#)
- Beschikbaar op GitHub: <https://github.com/Informatievlaanderen/VSDS-Testbed>

ITB in support of Digital Flanders

Like (1)

Translate

The Test Bed will be used by Digital Flanders for the conformance testing of open data exchanges [↗](#)



Costas SIMATOS

Published on: 28/08/2023

News

The Interoperability Test Bed will be used by Digital Flanders for conformance testing of vendors producing software for open data exchanges.



# VSDS Testbed

- Conformance testen voor de LDES Server

The screenshot displays the VSDS Testbed web interface. At the top, there is a navigation bar with the text "TREE hypermedia specification" and a user profile "ADMIN@LDES.EU". Below this is a blue header with the text "My conformance statements". A breadcrumb trail reads "Home > My organisation > VSDS LDES Server > Conformance statements > TREE hypermedia specification".

The main content area is titled "Test execution" and contains a table with the following data:

Test case	Description	Status
[TC1] Member discovery	A node from which all members of a collection can be discovered, can be found through a triple stating ex:C1 tree:view ex:N1 with ex:C1 being a tree:Collection and ex:N1 being a tree:Node.	<span>Info</span> <span>Settings</span>

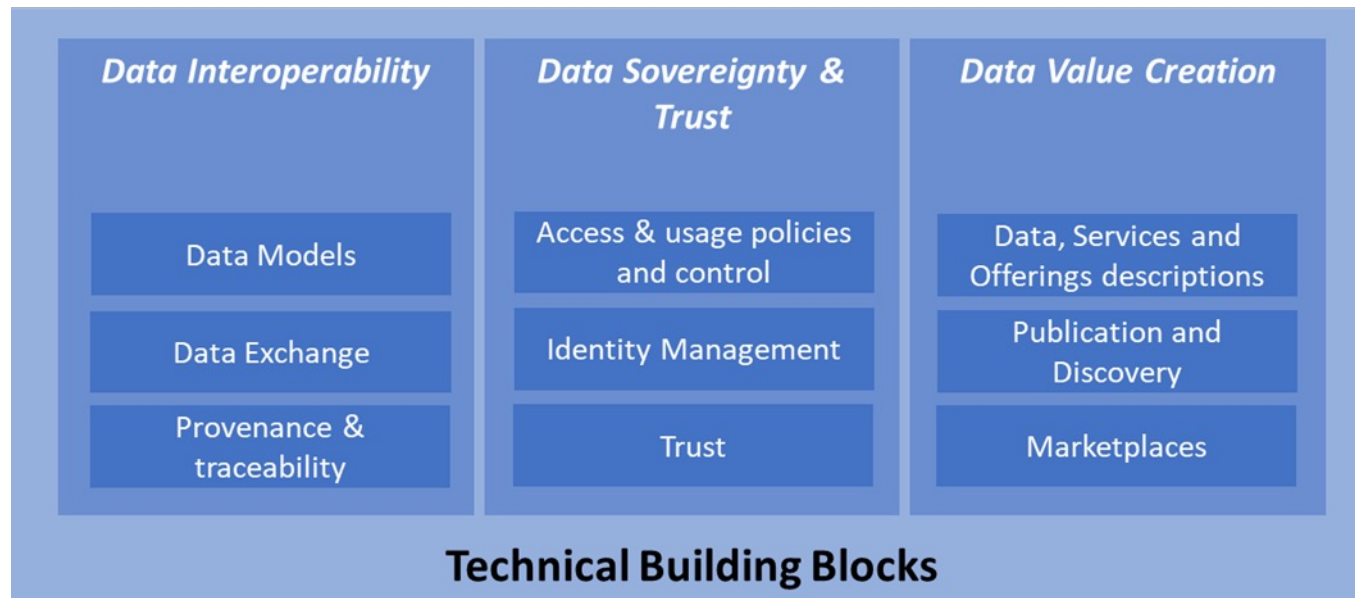
Below the table, a session is identified as "Session abf79c26-3def-40f1-a03a-eeadfd06e524". To the right of the session ID are buttons for "Export report as PDF" and "View log".

The session details are shown in a sequence diagram with three participants: "Data Provider", "LDES Server (SUT)", and "Test Engine".

```
sequenceDiagram
    participant DP as Data Provider
    participant SUT as LDES Server (SUT)
    participant TE as Test Engine
    Note over DP: Setup
    DP->>SUT: Ingest data if needed
    DP->>SUT: Get view page
    TE-->>TE: Validate view page
```

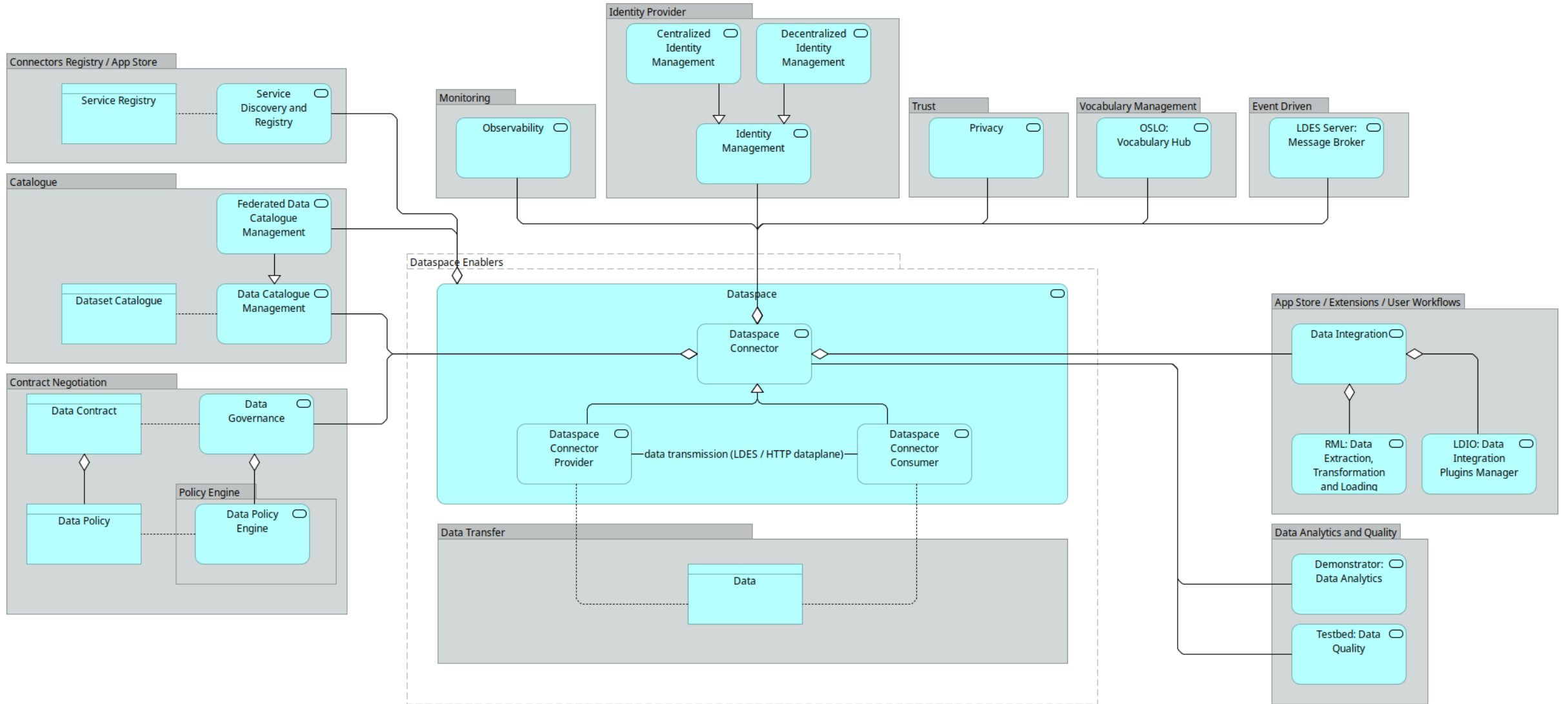
The diagram shows a "Setup" phase for the Data Provider. It then sends "Ingest data if needed" and "Get view page" messages to the LDES Server (SUT). The Test Engine performs a "Validate view page" action.

# VSDS Dataspace connector

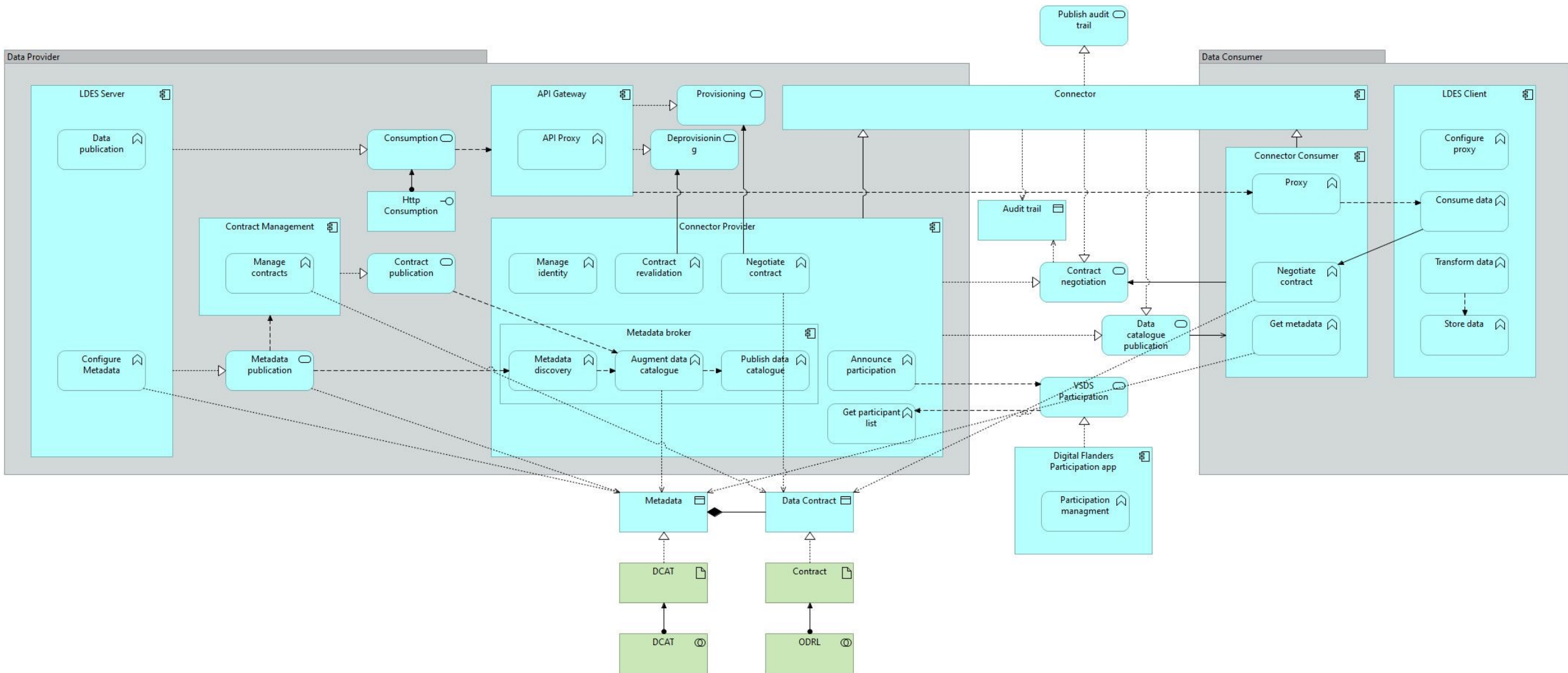


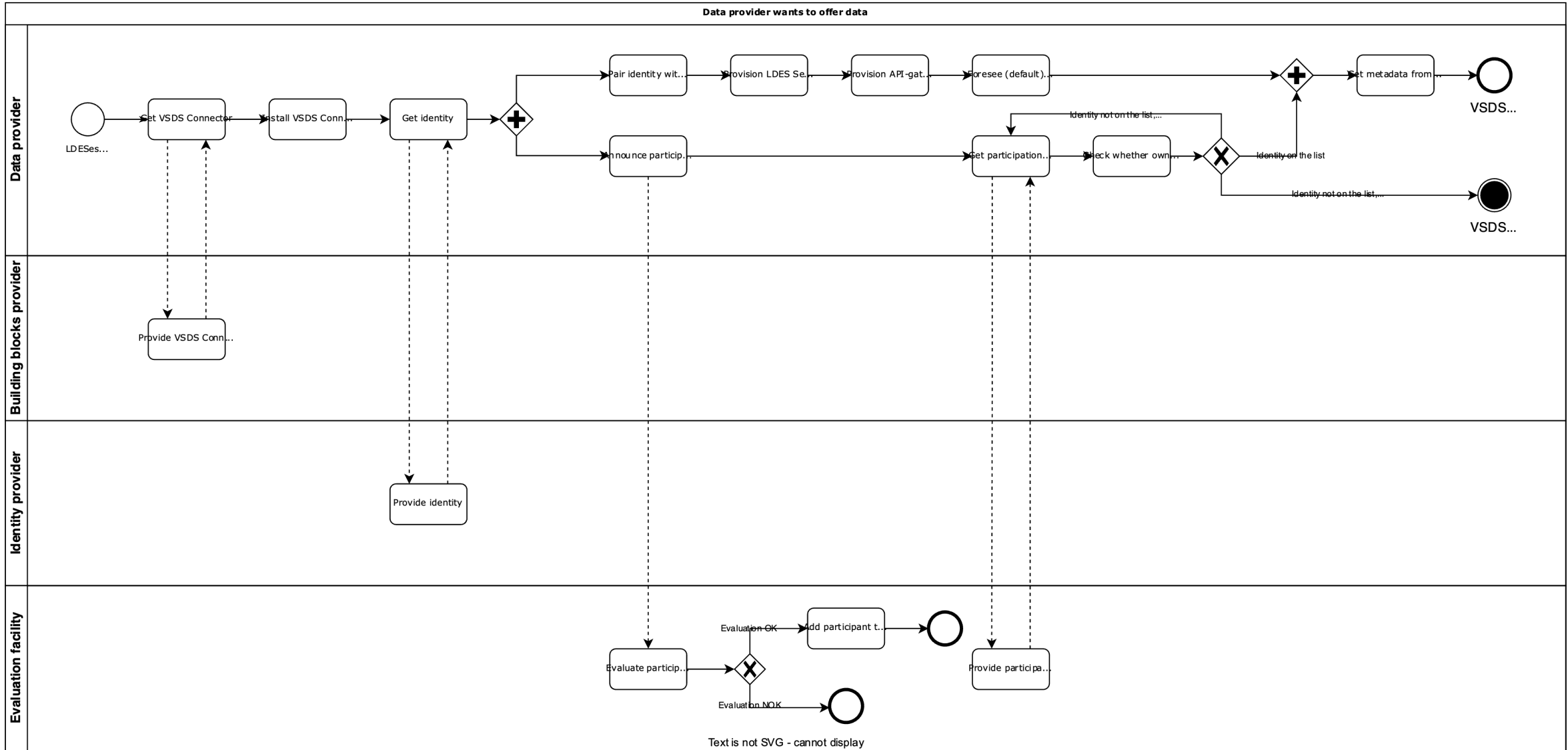


# VSDS Dataspace connector




# VSDS Dataspace connector

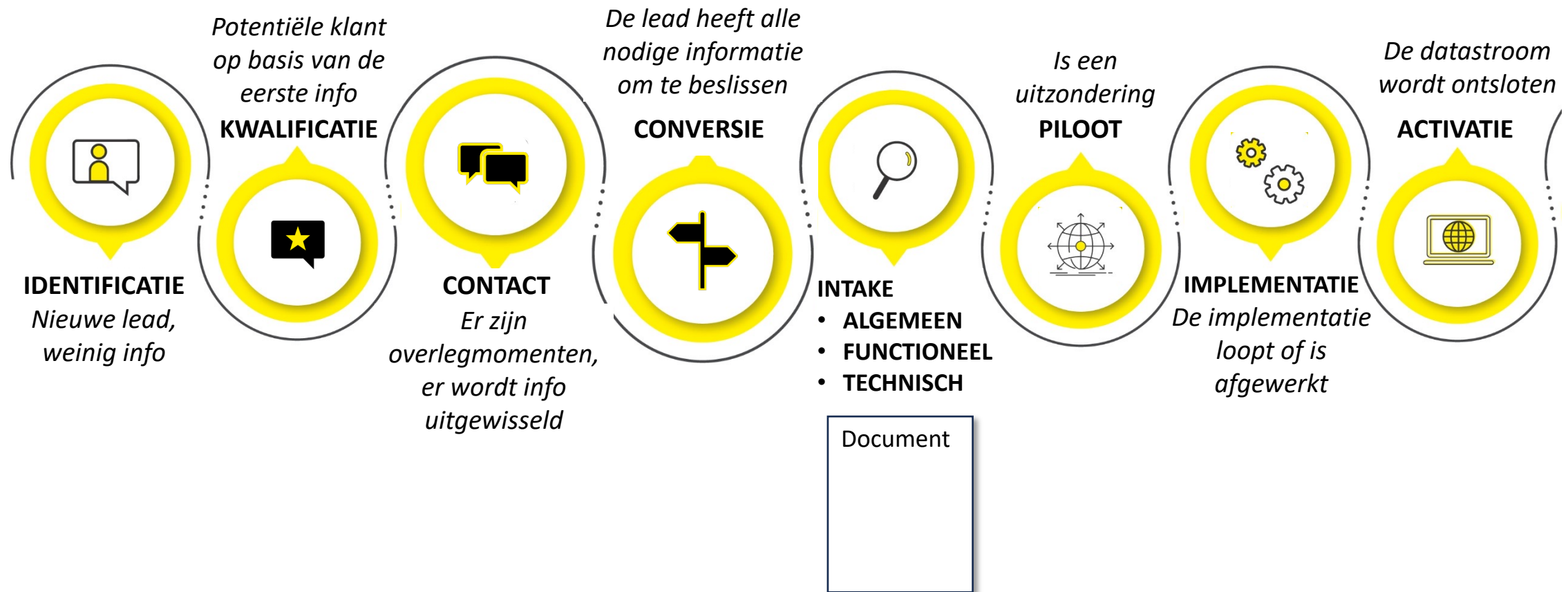




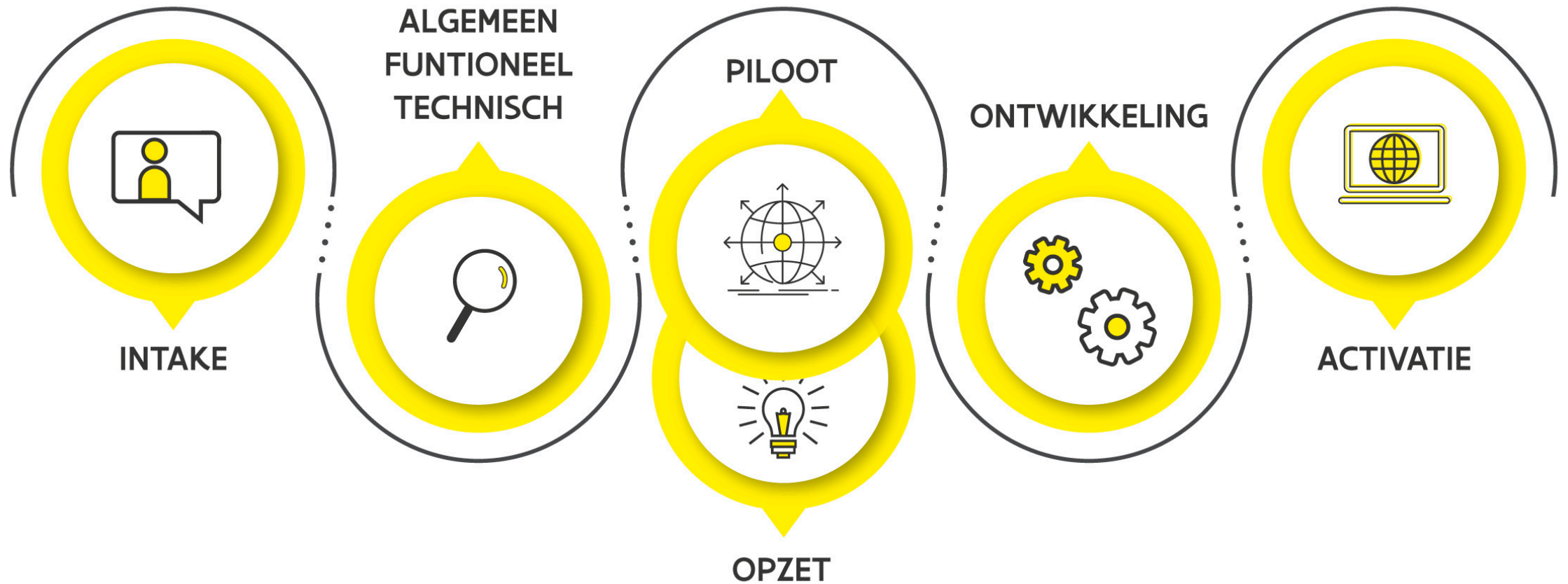
# Update onboardingstrajecten

- 
- Samuel Van Ackere Mappen van databronnen naar OSLO
  - Pierre Maere Geomobility - onboarding DIM
  - Bram De Vreese Stad Brugge - waterdata ODALA
  - Ben Bellekens Crowdsan - drukte data als LDES
  - Brecht Van De Vyvere Sirius - Westtoer

# Lead en Onboarding Proces



# Onboardingsproces



# Onboarding

## Intake



### Functioneel

Waarde  
Afnemers  
Data  
Constraints  
Organisatie  
Communicatie



### Technisch

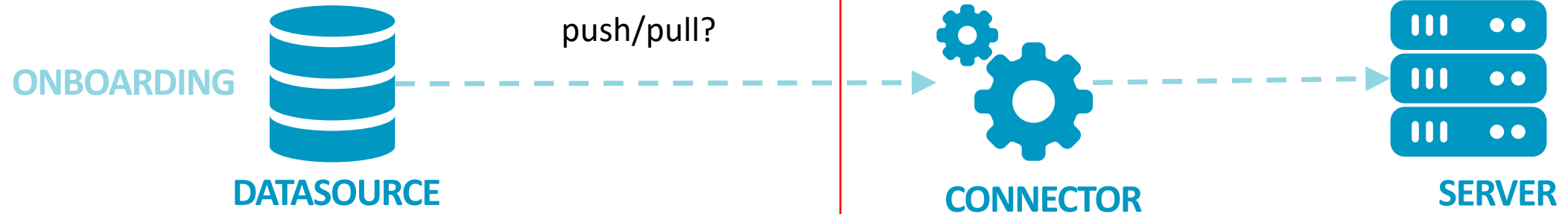
Performantie  
Schaalbaarheid  
Beschikbaarheid  
Security  
Disaster recovery  
Monitoring  
Technische kennis  
Beheer  
Onderhoud



### Algemeen

Plan van aanpak  
Samenwerkingsovereenkomst  
Scope  
Architectuur  
Metadata

# Onboarding



Startend van niet-LDES data. Hoe wordt de data aangeleverd?





# OSLO mapping

```
"classification" : "PCL",  
"count" : 5,
```

```
{  
  "@id": "_:vkmauto001",  
  "@type": "Verkeersmeting",  
  "Verkeersmeting.geobserveerdKenmerk": {  
    "@type": "Verkeerskenmerk",  
    "Verkeerskenmerk.type": "cl-vkt:aantal",  
    "Verkeerskenmerk.voertuigType": "cl-vrt:fietser"  
  },  
  "Verkeersmeting.geobserveerdObject": "_:mpt001",  
  "Verkeersmeting.fenomeenTijd": ":_fenomtime001",  
  "Verkeersmeting.resultaat": 5,  
  "Verkeersmeting.uitgevoerdMet": "_:mti001",  
  "dct:memberOf": "_:GM001"  
},
```

## Vehicle Classifications

Pedal Cycle

PCL



# OSLO mapping | codelijsten



Vlaanderen | DATA VLAANDEREN

## Conceptscheme: VkmVoertuigType

< <https://data.vlaanderen.be/id/conceptscheme/VkmVoertuigType>

### Gegevens

[label](#)

[definitie](#)

heeft topconcepten

[status](#)

dataset

VoertuigType

Codelijst van voertuigtypes

> [voetganger](#)

> [gelede vrachtwagens](#)

> [auto](#)

> [fietser](#)

Meer

<https://data.vlaanderen.be/id/dataset/codelist>



Vlaanderen  
verbeelding werkt

Data.vlaanderen.be is een officiële website van de Vlaamse overheid  
uitgegeven door [Digitaal Vlaanderen](#)

OVER | DISCLAIMER | TOEGANKELIJKHEIDSVKLAARING

# OSLO mapping

phenomenonTime

```
"timestamp" : "2016-11-22T09:00:00.000Z",
```

```
{  
  "@id":":_fenomtime001",  
  "Observatie.fenomeentijd": {  
    "@type": "time:ProperInterval",  
    "time:hasBeginning": {  
      "@type": "time:Instant",  
      "time:inXSDDateTime": {  
        "@type": "xml-schema:dateTime",  
        "@value": "20161122T09:00:00.000Z"  
      }  
    },  
    "time:hasEnd": {  
      "@type": "time:Instant",  
      "time:inXSDDateTime": {  
        "@type": "xml-schema:dateTime",  
        "@value": "20161122T10:00:00.000Z"  
      }  
    }  
  }  
},
```

# OSLO mapping documentatie

<https://informatievlaanderen.github.io/OSLO-mapping/>

OSLO mapping documentatie

Search OSLO mapping documentatie

Home

WATER DATA SPACE

- Internet of Water
- LODI ODALA
- VMM
- Waterkwaliteit Brugge
- Input data
- Data voorbeeld
- Methodologie
- Stap voor stap
- Output json-ld**
- Implementatie model
- Expanded output

MOBILITY DATA SPACE

- Fietstelpunten
- Geomobility
- Hoppinpunten
- Signco
- Telraam
- Verkeerscentrum

AGRICULTURE DATA SPACE

- Internet of NH3
- LUCAS

```
    ],
    "Bemonstering.resultaat": "_:mon001"
  },
  {
    "@id": "_:mon001",
    "@type": "Monster",
    "Monster.materiaalklasse": "cl-mat:water",
    "Monster.bemonsteringstijdstip": {
      "@type": "time:Instant",
      "time:inXSDDateTime": {
        "@type": "xml-schema:dateTime",
        "@value": "20210111T12:05:51.000"
      }
    },
    "Monster.bemonsterObject": "_:mpt001",
    "Bemonsteringsobject.identificator": {
      "@type": "Identificator",
      "Identificator.identificator": {
        "@value": "2021000015",
        "@type": "cl-idt:monstercode"
      }
    },
    "Monster.monstertype": "cl-mot:schepstaal",
    "Bemonsteringsobject.geassocieerdeObservatie": [
      "_:obs001",
      ""
    ]
  }
],
{
  "@id": "_:mpt001",
  "@type": [
    "Meetpunt",
    "Bemonsteringspunt"
  ],
  "Bemonsteringsobject.identificator": {
    "@type": "Identificator",
    "Identificator.identificator": {
      "@value": "R4",
      "@type": "cl-idt:meetplaatsnummer"
    }
  }
},
{
  "Bemonsteringspunt.geometrie": {
    "@type": "Punt",
    "Geometrie.gml": {
```

OSLO mapping documentatie

Search OSLO mapping documentatie

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- Verkeerscentrum

AGRICULTURE DATA SPACE

- Internet of NH3
- LUCAS

```
[
  {
    "@type": "http://www.w3.org/ns/sosa/Sampling",
    "http://www.w3.org/ns/sosa/hasFeatureOfInterest": "_:mpt001",
    "http://www.w3.org/ns/sosa/resultTime": {
      "@type": "http://www.w3.org/2006/time#Instant",
      "http://www.w3.org/2006/time#inXSDDateTime": {
        "@type": "http://www.w3.org/2001/XMLSchema#dateTime",
        "@value": "20210111T12:05:51.000"
      }
    }
  },
  "https://data.vlaanderen.be/ns/sensoren-en-bemonstering#Bemonstering.conditie": [
    "_:wra001",
    ""
  ],
  "http://www.w3.org/ns/sosa/hasResult": "_:mon001",
  "https://data.vlaanderen.be/ns/sensoren-en-bemonstering#Bemonstering.uitgevoerdDoor": {
    "@type": "Organisatie"
  },
  "http://www.w3.org/ns/sosa/madeBySampler": {
    "@type": "http://www.w3.org/ns/sosa/Sampler",
    "http://purl.org/dc/terms/type": [
      "cl-bet#staalnamekool",
      "cl-bet#files"
    ]
  }
],
{
  "@id": "_:mon001",
  "@type": "http://def.isotc211.org/iso19156/2011/Specimen#SF_Specimen",
  "http://def.isotc211.org/iso19156/2011/Observation#ObservationContext.relatedObservation":
    "_:obs001",
    ""
  ],
  "https://data.vlaanderen.be/ns/observaties-en-metingen#Bemonsteringsobject.identificator":
    "@type": "http://www.w3.org/ns/adms#Identifier"
  },
  "http://def.isotc211.org/iso19156/2011/Specimen#SF_Specimen.samplingTime": {
    "@type": "http://www.w3.org/2006/time#Instant",
    "http://www.w3.org/2006/time#inXSDDateTime": {
      "@type": "http://www.w3.org/2001/XMLSchema#dateTime",
      "@value": "20210111T12:05:51.000"
    }
  }
},
{
  "http://def.isotc211.org/iso19156/2011/Specimen#SF_Specimen.materialClass": "https://exam",
  "http://def.isotc211.org/iso19156/2011/Specimen#SF_Specimen.specimenType": "https://exam"
},
],
```

# OSLO mapping documentatie

## OSLO mapping documentatie

Search OSLO mapping documentatie

Home

### WATER DATA SPACE

Internet of Water

LODI ODALA

VMM

Waterkwaliteit Brugge

Input data

Data voorbeeld

Methodologie

Stap voor stap

Output json-ld

Implementatie model

Expanded output

### MOBILITY DATA SPACE

Fietstelpunten

Geomobility

Hoppinpunten

Signco

Telraam

Verkeerscentrum

### AGRICULTURE DATA SPACE

Internet of NH3

LUCAS

## Observatieverzameling

Dit object groepeert meerdere observaties. Er zijn twee soorten observatieverzamelingen in dit document: één voor metingen ter plaatse en één voor weerobservaties.

```
{
  "@id": "_:obv001",
  "@type": "Observatieverzameling",
  "dcterms:type": "cl-ovt:metingenterplaats",
  "Observatieverzameling.geobserveerdObject": "_:mon001",
  "Observatieverzameling.heeftLid": ["_:obs001", ""]
}
```

## Observatie

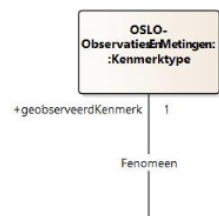
Dit object beschrijft een specifieke observatie of meting. Het bevat details zoals het type observatie, het kenmerk dat wordt gemeten, en het resultaat van de observatie.

We vertrekken van dit resultaat van de sensormeting:

```
"Waterkwaliteit":
{
  "Temperatuur(water)": 3.6,
}
```

Wanneer we de sensormeting van de watertemperatuur zelfbeschrijvend willen maken, bestaat hiervoor in het OSLO model [Sensoren en Bemonstering](#) de gepaste ontologie. Zo spreken we bij de sensor meting van [Observatie](#).

Om het zelfbeschrijvend te maken dienen we naast de sensormeting ook het type van observatie ("Observatie.type") te omschrijven. Hiernaast dient ook nog gedefinieerd te worden wat er exact wordt geobserveerd, dit wordt aan de hand van het kenmerktype ("Observatie.kenmerktype") gedefinieerd (bijvoorbeeld fysiochemische kenmerktype van het geobserveerd object).





# Pauze



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# Internationaliserin g

# Internationale verankering

DIGITAAL  
VLAANDEREN



Vlaamse  
overheid

# #LDES

Linked Data Event Streams  
*event sourcing on Web-scale*



INTERNATIONAL DATA  
SPACES ASSOCIATION

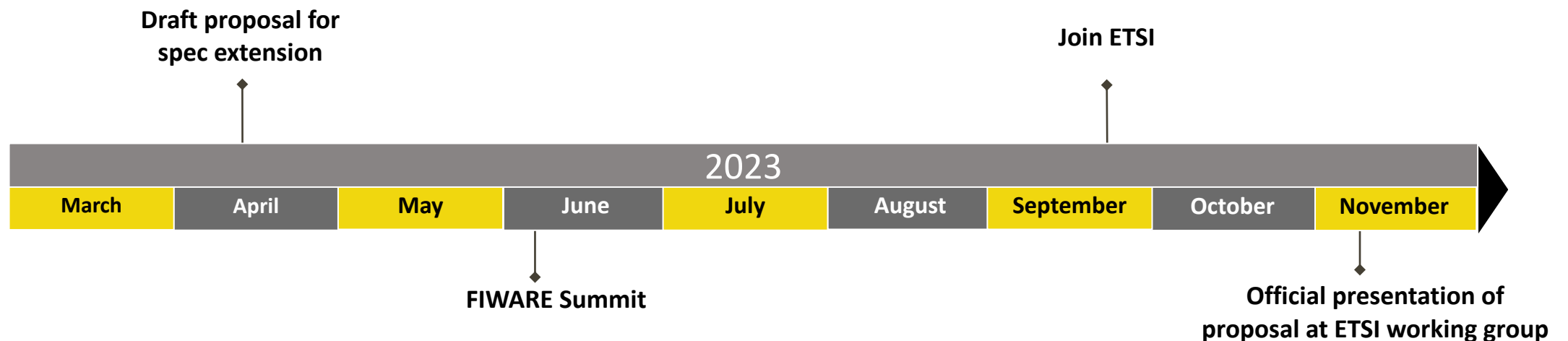


ECLIPSE  
DATASPACE  
CONNECTOR

# FIWARE — ETSI

- **3 user stories**

- As an NGSI-LD context broker manager, I want to be able to replicate any LDES and always be in sync with that LDES
- As an NGSI-LD context broker manager, I want to publish an LDES from my NGSI-LD context broker
- As an NGSI-LD context broker manager, I want to federate between context sources by using replication and synchronization via LDES



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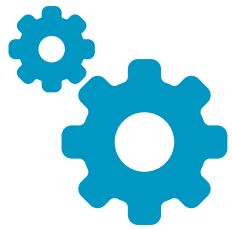


“

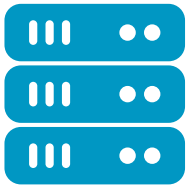
Marketplace

# General Concept

## Technical Knowledge required



CONNECTOR



SERVER



LDIO

## Easy to use



Available on  
**Microsoft Azure Marketplace**



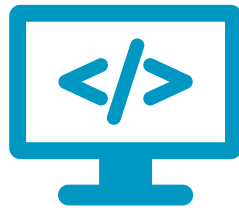
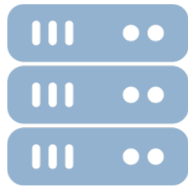
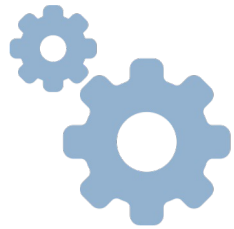
**aws**marketplace



Google Cloud

# General Concept

## Technical Knowledge required



## Easy to use



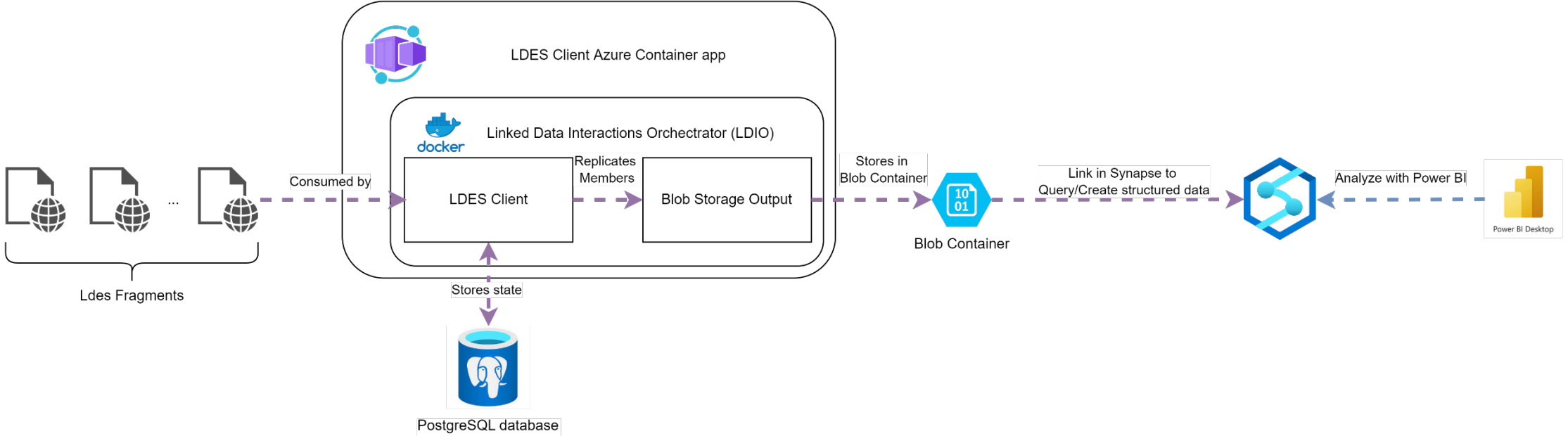
Available on  
**Microsoft Azure Marketplace**



**aws marketplace**



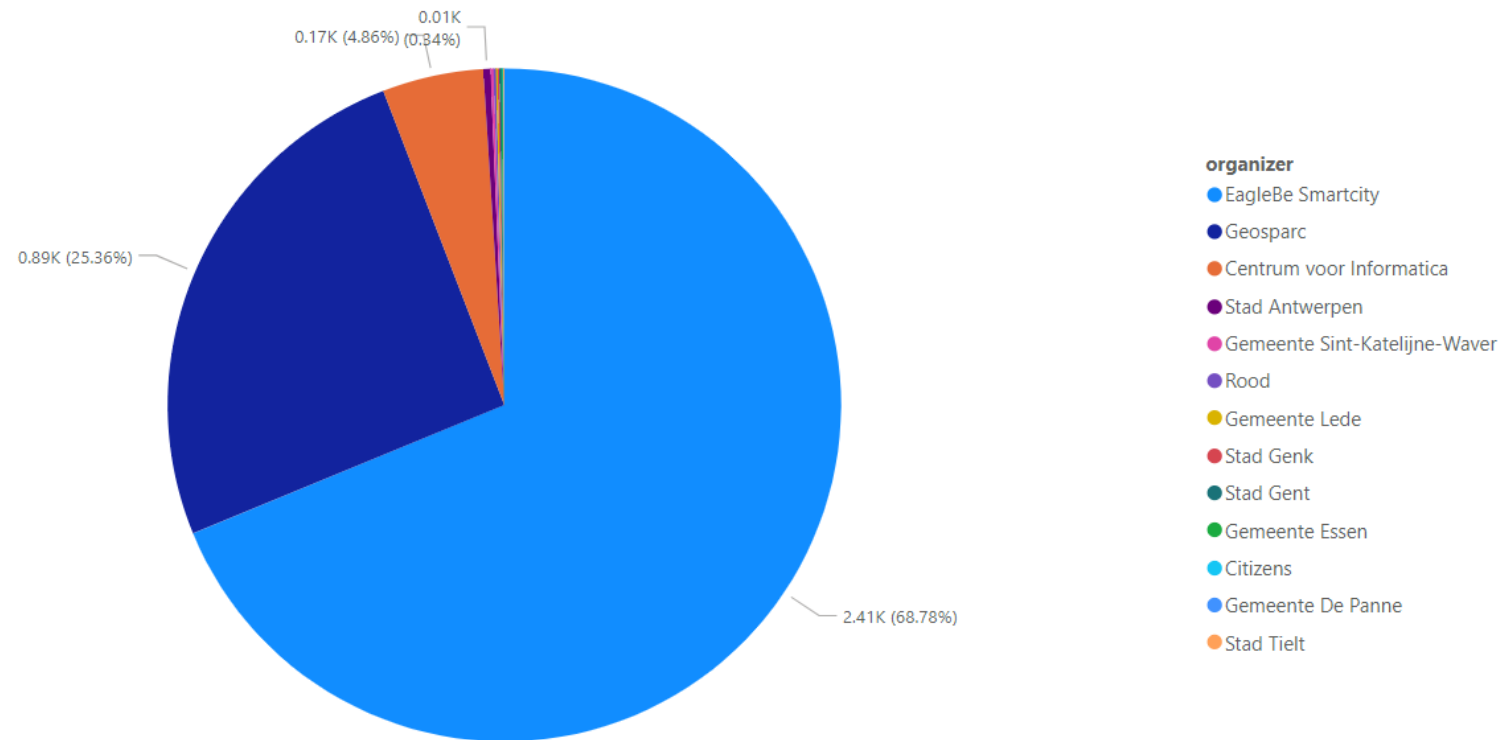
# VSDS Client On Azure





# Power BI Visualisation

Organisatoren van Mobiliteitshindernissen



**Demo available on GitHub**



<https://github.com/Informatievlaanderen/VSDS-Client-Azure-Demo>



Tot waar gaan wij met het aanbieden van  
bouwblokken?

# Agenda

- 13:30 – 13:35 Welkom & situering TAB
- 13:35 – 14:00 Update bouwblokken
- 14:00 – 15:00 Onboardingstrajecten
- 15:00 – 15:15 **Koffie**
- 15:15 – 15:25 Internationalisering (link met Fiware)
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- 16.20 - 16:30 Oproep + closing



“

# VSDS Demonstrator

# Demonstrator | Opzet

“De Demonstrator moet toelaten om LDES-stromen die vanuit verschillende platformen gepubliceerd worden te integreren, transformeren, archiveren en fragmenteren. Deze datastromen moeten vindbaar zijn in de datacatalogus en kunnen worden ingezet in een LDES-datapipeline. Deze gebruikte pipeline moet resulteren **in een mogelijke toepassing of product wat de sterkte en toegevoegde waarde van de ontwikkelde componenten van de Vlaamse Sensor Data Space voortreffelijk, performant en visueel aantrekkelijk aantoont.**”

*Bestek VSDS*

# Demonstrator | Ideeën

Intro



<https://softwaremill.com/kafka-visualisation/>

**Kafka Visualization**

Search Kafka is a distributed event streaming platform. Using the tool below you can simulate how data flows through a replicated Kafka topic, to gain a better understanding of the message processing model.

**Configuration**

Choose the number of partitions - between which data will be evenly distributed. Experiment with various counts of brokers, turning them on and off, and seeing how the system adapts. Make sure to store data in multiple partitions, not just the default one, to illustrate the consumer manual "load" - verify how offsets are committed, and see how this impacts replication when consumers or brokers are added/removed.

Partitions:

Brokers:

Replication factor:

**Producer**

Producing interval:  ticks

**Consumers**

Consumer 1

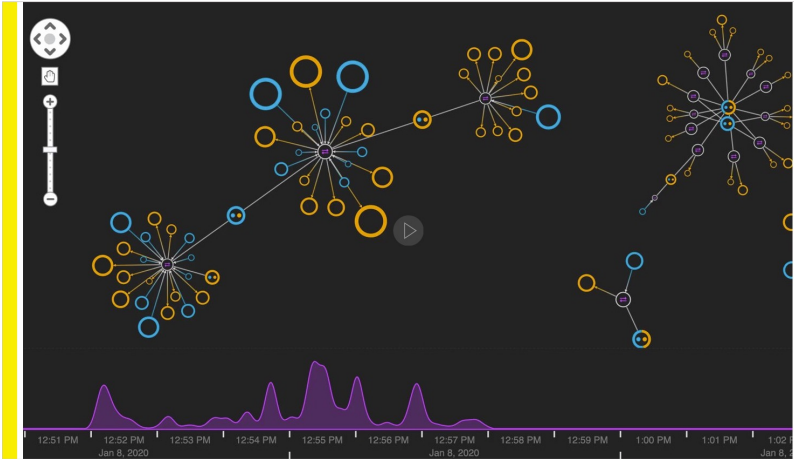
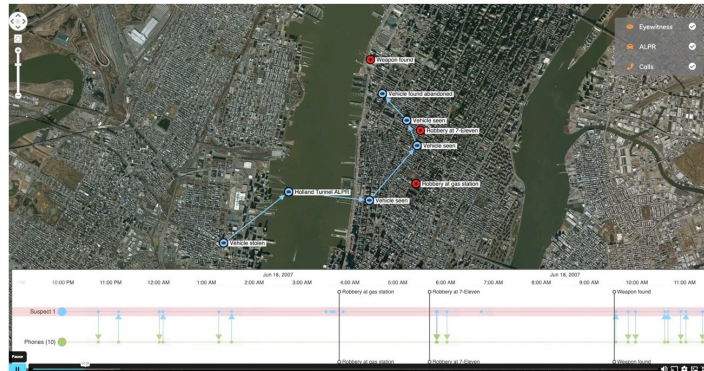
Consuming interval:  ticks

Consumed offset interval:  messages

Consumer group:

Note that this visualization ignores default producer & broker configurations for Kafka version <3.0.0 which accepts any message size. If supporting all brokers are down, see this [blog](#) for more details.

## Spatio-temporal knowledge graph



#LDES Xplorer <https://onboarding1.smartdataspace.beta.vlaanderen.be/building-units-by-page>

Views Found 1 view

- For <https://onboarding1.smartdataspace.beta.vlaanderen.be/building-units-by-page>

Relations Found 1 linked page

Members Found 0 members on this page

Interoperable Europe Interoperability Solutions

At least 5 words, not similar to the title.

**Contact information**

Name **European Commission - ISA**

**Topic \***

- Digital government
  - Business and competition
  - Collaboration
  - Demography and population
  - Digital ready policymaking

**Owner**

Name	Type	Operations
The ISA Programme	Supra-national authority	<input type="button" value="Remove"/>

The Owner is the organisation that owns this entity and is the only responsible for it.

**Solution type \***

# Demonstrator | Wireframes

The image shows a wireframe of a web application interface. The browser tabs include 'Untitled', 'Vlaamse Smart Data Space', and 'Map demonstrator'. The page title is 'Vlaanderen | VLAAMSE SMART DATA SPACE' with a 'HULP NODIG' button. The main content area features a heading 'VSDS Demonstrator' and a red badge indicating '725615 members'. Below the heading is a paragraph explaining the service's purpose: 'De Vlaamse Smart Data Space helpt bij het duurzame delen van snel en traag veranderende data en hun contextinformatie. Hiervoor wordt data gepubliceerd als Linked Data Event Streams.' A second paragraph states: 'Deze technische standaard houdt de historiek bij, maakt de data zelfbeschrijvend via semantische standaarden en interoperabel via het linked data principe en houdt de eindgebruiker altijd up-to-date met de bron.' To the right of the text is a line graph titled 'Aantal members' showing member counts over time from -7 to 0. Below the text and graph is a map of the Geel-West - Herentals-Oost area with a search bar and a legend. To the right of the map is a network diagram with nodes like 'ex:Thailand', 'ex:spicyfood', 'ex:TomYumKung', 'ex:chilly', and 'ex:spicy'. At the bottom of the map area are time navigation buttons: '-24 uur', '-48 uur', '-3 uur', '-8 uur', and 'Realtime'. A sidebar on the left contains a 'Pages' menu with 'Mocks' and 'Probeerfels', and a 'Flowkit' section with various map layer toggles and time-based frames. A right sidebar shows 'Comment', 'Properties', and 'Export' options, along with a 'Layout' table and a 'Colors' section.

**Vlaanderen | VLAAMSE SMART DATA SPACE** HULP NODIG ?

## VSDS Demonstrator

**725615** members

De Vlaamse Smart Data Space helpt bij het **duurzame** delen van snel en traag veranderende data en hun contextinformatie. Hiervoor wordt data gepubliceerd als **Linked Data Event Streams**.

Deze technische standaard houdt de **historiek** bij, maakt de data zelfbeschrijvend via semantische standaarden en interoperabel via het **linked data** principe en houdt de eindgebruiker altijd **up-to-date** met de bron.

**Aantal members**

tijd (uur)	Aantal members
-7	50000
-6	60000
-5	50000
-4	70000
-3	70000
-2	70000
-1	50000
0	60000

Zoek op adres

Geel-West - Herentals-Oost (richting Antwerpen)

Legende  
Lagen

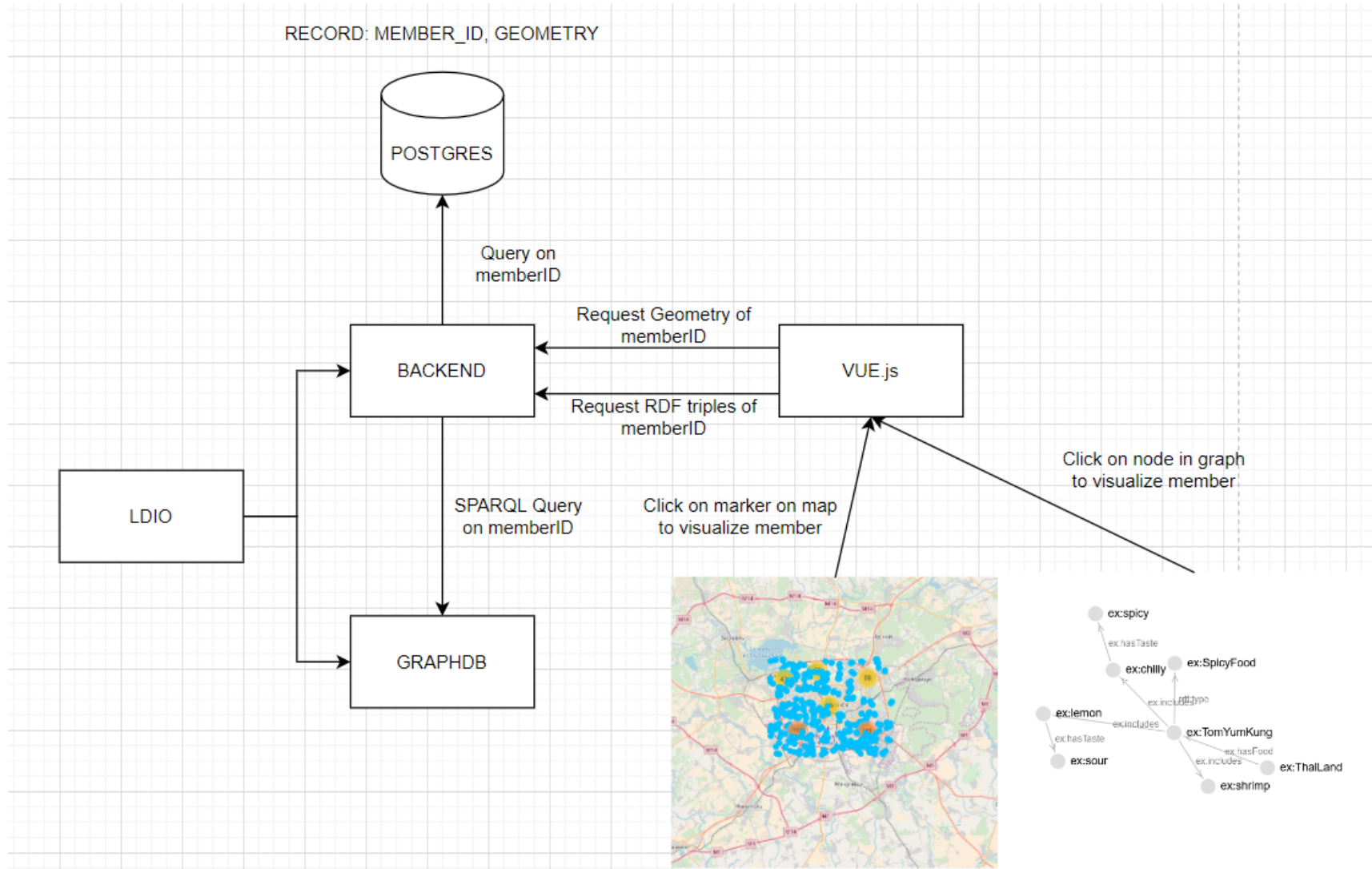
-24 uur -48 uur -3 uur -8 uur Realtime

Property	Value
Width	1440px
Height	1024px
Top	7103px
Left	3216px

Colors Hex #FFFFFF



# Demonstrator | Architecture



# Demonstrator

Vlaanderen | VLAAMSE SMART DATA SPACE HULP NODIG ?

## VSDS Demonstrator

**8797** members

De Vlaamse Smart Data Space helpt bij het **duurzame** delen van snel en traag veranderende data en hun contextinformatie. Hiervoor wordt data gepubliceerd als **Linked Data Event Streams**.

Deze technische standaard houdt de **historiek** bij, maakt de data zelfbeschrijvend via semantische standaarden en interoperabel via het **linked data** principe en houdt de eindgebruiker altijd **up-to-date** met de bron.

Tijd	Aantal members gipod	Aantal members verkeersmeting
2023-10-05T11:00	~9000	~0
2023-10-06T22:00	~9000	~0
2023-10-08T03:00	~9000	~0
2023-10-09T08:00	~9000	~0
2023-10-10T13:00	~9000	~0
2023-10-11T18:00	~9000	~0

Map showing data points across Belgium. Legend and Layer controls are visible.

Network graph showing data streams and their relationships. Nodes contain URIs and timestamps.

**-7 dagen** **-48 uur** **-24 uur** **-12 uur** **-1 uur** **Realtime**



“

# ODALA Demonstrator

# Agenda

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Welke topics moeten we volgens jullie behandelen?

# Roadmap Ontwikkelingen VSDS 2023-2024

**DIGITAAL  
VLAANDEREN**



**Vlaamse  
overheid**



# High level roadmap

**Timing: Q3 2023 - Q4 2023 - Q1 2024**

- 1. Technische Bouwstenen**
- 2. Domein implementaties (Onboardings)**
- 3. Connectiviteit met Europese dataspace**
- 4. Demonstrator**
- 5. Conformiteit testing framework**

	Q3 2023 (30/09)	Q4 2023 (31/12)	Q1 2024 (31/03)
1.	Analyse Demonstrator afgerond en vertaald in ingeschatte stories <b>Demonstrator v1 ontwikkeld</b>	<b>Demonstrator v2 ontwikkeld</b>	
2.	Analyse VSIDS Connector afgerond en vertaald in ingeschatte stories		<b>VSIDS Connector ontwikkeld (v1)</b>
3.	Analyse LDES Client/Server in Azure Marketplace	<b>LDES Client en Server in Azure Marketplace</b>	<b>LDES Client &amp; Server in AWS Marketplace</b>
4.	<b>Archiveringsfunctie beschikbaar</b>	<b>LDES Server modulair</b>	<b>(URI Proxy Server)</b>
5.	Onboarding final*: Crowdscan	Onboarding final*: AWW fietstellussen	Onboarding final*: Smart water platform
	Onboarding final*: Brugge watermonitoring	Onboarding final*: Krycer	Onboarding final*: Verkeers centrum
	Onboarding final*: Telraam	Onboarding final*: Signco	Onboarding final*: GRAR
	Onboarding final*: Geomobility		
6.	Analyse testbed	<b>Finaliseren conformiteit testen</b>	<b>Deployment Testbed</b>



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# Technische documentatie

# Tech Docs | General concepts

<https://informatievlaanderen.github.io/VSDS-Tech-Docs/>

The screenshot displays the 'Vlaanderen VLAAMSE SMART DATA SPACE' website. The left sidebar contains a navigation menu with sections: 'Home', 'Linked Data Interactions', 'INTRODUCTION TO LDES' (with sub-items: 'Introduction', 'LDES Client', 'LDES Server', 'Specification'), 'QUICKSTART' (with sub-items: 'Quick start', 'LDES2Service', 'Use case LDES server'), and 'RELEASE MANAGEMENT' (with sub-item: 'Release management'). The main content area is titled 'Technical Documentation' and includes a search bar. The 'LDES Server' page is active, showing text about security options and integration. Below the text, there is a section for 'OpenAPI swagger UI' which lists several DCAT endpoints with their respective HTTP methods and descriptions:

Method	Endpoint	Description
PUT	<code>/admin/api/v1/eventstreams/{collectionName}/views/{viewName}/dcat</code>	Update DCAT metadata for a view
POST	<code>/admin/api/v1/eventstreams/{collectionName}/views/{viewName}/dcat</code>	Add DCAT metadata for a view
DELETE	<code>/admin/api/v1/eventstreams/{collectionName}/views/{viewName}/dcat</code>	Delete DCAT metadata for a view
PUT	<code>/admin/api/v1/eventstreams/{collectionName}/dcat</code>	Update DCAT metadata for a LDES
POST	<code>/admin/api/v1/eventstreams/{collectionName}/dcat</code>	Add DCAT metadata for a LDES
DELETE	<code>/admin/api/v1/eventstreams/{collectionName}/dcat</code>	Delete DCAT metadata for a LDES

# Tech Docs | Linked Data Interactions

<https://informatievlaanderen.github.io/VSDS-Linked-Data-Interactions>

Vlaanderen | VLAAMSE SMART DATA SPACE HULP NODIG ?

## Linked Data Interactions

Search Linked Data Interactions

- Home
- VSDS Technical Docs
- LINKED DATA INTERACTIONS CORE BUILDING BLOCKS
  - Introduction**
  - LDI Inputs
  - LDI Adapters
  - LDI Transformers
  - LDI Outputs
- LINKED DATA INTERACTIONS ORCHESTRATOR
  - The Linked Data Interactions Orchestrator
  - LDIO Inputs
  - LDIO Adapters
  - LDIO Transformers
  - LDIO Outputs
  - Examples
- LINKED DATA INTERACTIONS FOR APACHE NIFI
  - Linked Data Interactions For Apache NIFI
  - LDI NiFi Processors

### Building blocks

As the LDI strives to be an easily reusable project, each of our building blocks are framework independent and is being maintained as part in our LDI Core.

Each of the LDI Core Building Blocks falls under one of four categories:

- **LDI Input:** A component that will receive data (not necessarily LD) to then feed the LDI pipeline.
- **LDI Adapter:** To be used in conjunction with the LDI Input, the LDI Adapter will transform the provided content into and internal Linked Data model and sends it down the pipeline.
- **LDI Transformer:** A component that takes in a Linked Data model, transforms/modifies it and then puts it back on the pipeline.
- **LDI Output:** A component that will take in Linked Data and will export it to external sources.

```
graph LR; Input(( )) -- "NON LD" --> LDI_Input[LDI Input]; LDI_Input --> LDI_Adapter[LDI Adapter ADAPT]; LDI_Adapter --> LDI_Transformer[LDI Transformer TRANSFORM]; LDI_Transformer --> LDI_Output[LDI Output];
```

[Contribute on GitHub](#)

# How to | Blogs

<https://www.vlaanderen.be/vlaamse-smart-data-space-portaal/blog>

The screenshot shows the website interface for the Vlaamse Smart Data Space Portaal. At the top left, the logo for 'Vlaanderen' is visible. In the top right corner, there are links for 'AANMELDEN MIJN BURGERPROFIEL' and 'HULP NODIG'. Below the navigation bar, the main header reads 'VLAAMSE SMART DATA SPACE PORTAAL' with sub-links for 'Documentatie', 'Datavindplaats', and 'Blog'. A secondary navigation bar includes 'Overzicht', 'Data delen', 'Onboarding', 'Use cases', 'Community', and 'Contact'. The main content area is titled 'Vlaamse Smart Data Space Portaal' and 'Blog'. Below this, there are four blog post thumbnails. The first two are visible with their titles and external link icons: 'Linked Data Event Streams explained in 8 minutes' and 'Incremental Machine Learning for Linked Data Event Streams'. The other two thumbnails show a person looking at a tablet and a cityscape.

Vlaanderen

AANMELDEN MIJN BURGERPROFIEL HULP NODIG

> Blog

Zoeken op vlaanderen.be


VLAAMSE SMART DATA SPACE PORTAAL

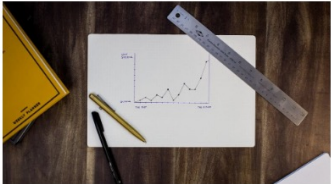
Documentatie Datavindplaats [Blog](#)


[Overzicht](#) [Data delen](#) [Onboarding](#) [Use cases](#) [Community](#) [Contact](#)


Vlaamse Smart Data Space Portaal

## Blog

  
[Linked Data Event Streams explained in 8 minutes](#)

  
[Incremental Machine Learning for Linked Data Event Streams](#)





Update ecosystem

# Evenementen – (apr-okt)

- Lancering Belgian Data Space Alliances – Brussel
- FIWARE conferentie – Wenen
- **Smart Data Community Dag – Brussel**
- Smart Mobility Dag – Antwerpen, Beacon
- ITS congres – Brussel
- Slimme Stad Parade – Den Bosch
- Domein specifieke events
  - athumi
  - Energie
  - GzG en COT
  - CoGhent
  - Open en Geo
  - Water en omgeving
  - Mobiliteit
  - ...



# Evenementen - Oproep

- Semic Conferentie 2023 – Madrid
- **Trefdag Digitaal Vlaanderen – 26 oktober 2023**
  - Ankerpunt 'OSLO'
  - Demo's
  - Plenaire sessie in Europatrack
  - ...
- Smart City Conferentie – 7-9 november – Barcelona
  - VSDS – pitch ~ OSLO en VLOCA
  - Demo's
  - Technische deepdive on VSDS middleware
  - ...
- Lanceringsevent “Mobiliteit & Verkeersmetingen” – Gent
  - Dataleveranciers met verkeersmetingen
  - Consumers van verkeersmetingen
- Smart Data Academy opleidingen – Brussel en Gent
- ...



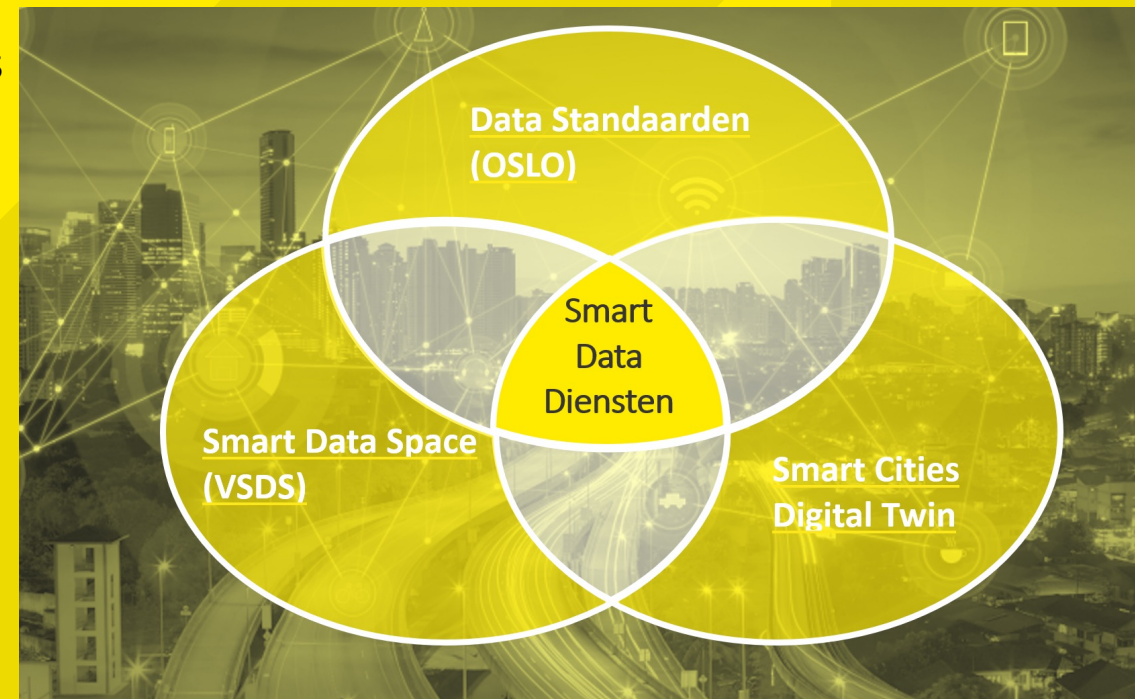


# Opleidingen: Smart Data Academy

## 8 december – Brussel OF 13 december – Gent

### Opleidingen:

- Gericht aan publieke en private organisaties:
  - Beleidsmedewerkers, business verantwoordelijken, business analisten, ontwikkelaars, architecten, VO-medewerkers ...
- Meerwaarde voor uw organisatie van linked data
- Hoe standaarden implementeren en onboarden op data spaces
- Concrete technische onboarding
- Zoektocht naar use cases
- ...





# Trefdag Vlaanderen Digitaal

26 OKTOBER 2023  
FLANDERS EXPO GENT

**#TREFDAG23**