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NAP Interoperability Demonstrators

Mobility Data Days

Turin, 7th November 2024

General introduction

- NAPCORE WG2 – **Interoperability** and Level of Service of NAPs
- T2.4 – Showcasing possibilities to foster cross-border interoperability through the NAPs...
- … by developing **Interoperability Demonstrators**, which:
  - Address topics of common interest
  - Analyse different NAP architecture options
  - Promote a promising solution for specific use cases
- Demonstrations shall:
  - Clarify the scope and purposes of each demonstrator
  - Give insights on the solution design and architecture
  - Outline the main lessons learnt

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Agenda

1. Interchange demonstrator
2. MarketPlace demonstrator
3. Metadata & Alternative Fuels demonstrators
4. Outlook - Q/A session

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Milestone M2.6 (task 2.4.2): Sharing cross border metadata and real-life data

Author: Christian Berg Skjetne (NO) and Christian von Huth (DK)

Meeting: Mobility Data Days, in Turin

Date: 7. November 2024

Agenda

1. Purpose
2. The use case
3. Technology
4. Demonstration video
5. Results + feedback
6. Since 2023 + future plans?
7. Questions?

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Purpose of the demonstrator

- Explore solutions to overcome the challenges of European-wide metadata and data sharing
- Promote collaborative metadata and data sharing practices among different nations and their NAPs
- Make relevant metadata and real-time data accessible to all interested parties through any NAP.

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Purpose of the demonstrator

- To present a potential solution to the challenge at hand, by leveraging existing technology to facilitate sharing of metadata among NAPs in Sweden, Norway, and Denmark.
- Provide a technical solution to how this type of interoperability can be achieved, for example in the form of suggested minimum requirements for the reference architecture
- Provide input to the NLKF measuring the level of service

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Use case

*«As a Service Provider, I wish to provide real time safety related traffic information, **cross border**, to my end users, so that they can receive relevant and updated information in a timely fashion and plan their journey accordingly»*

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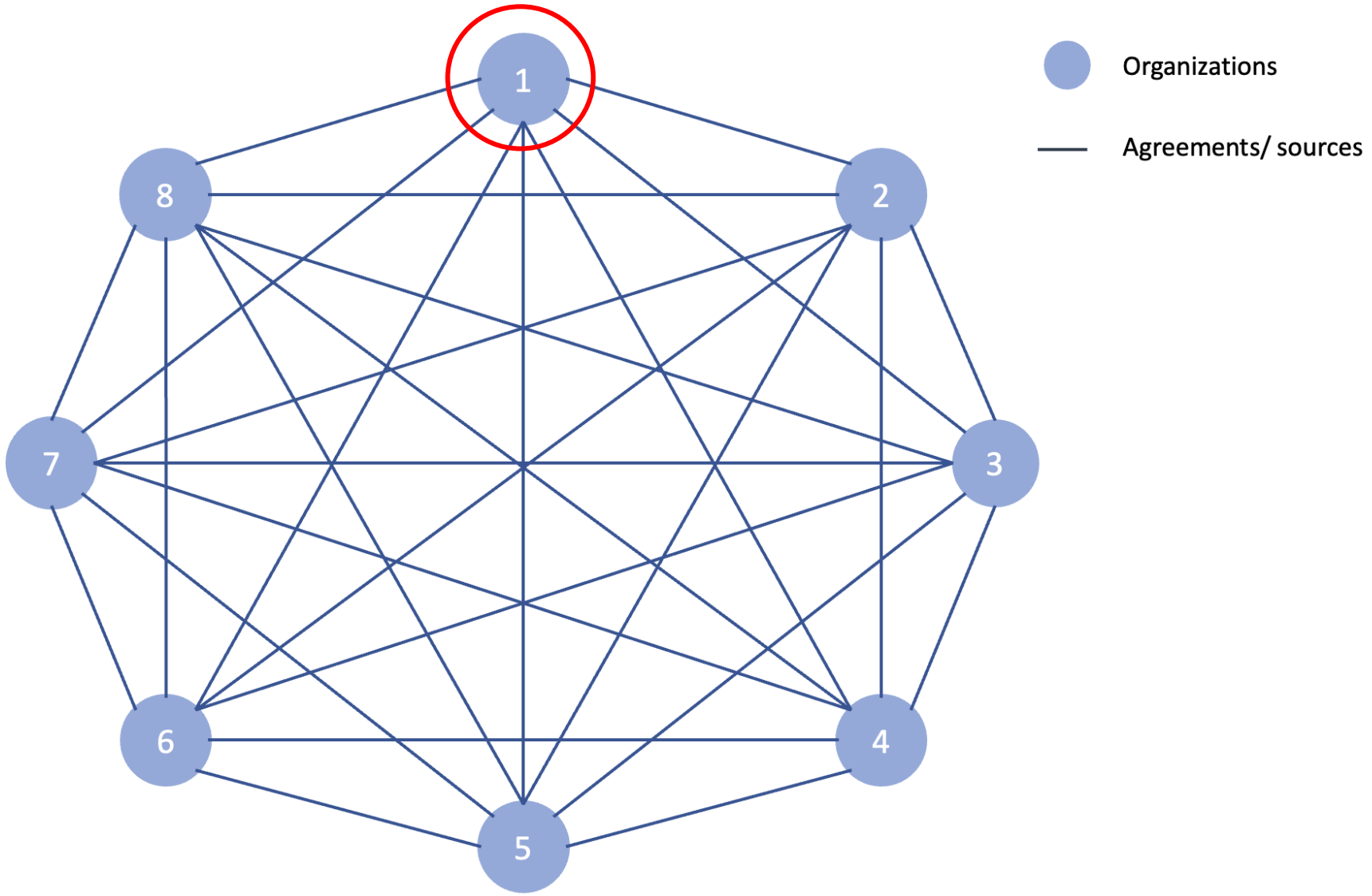

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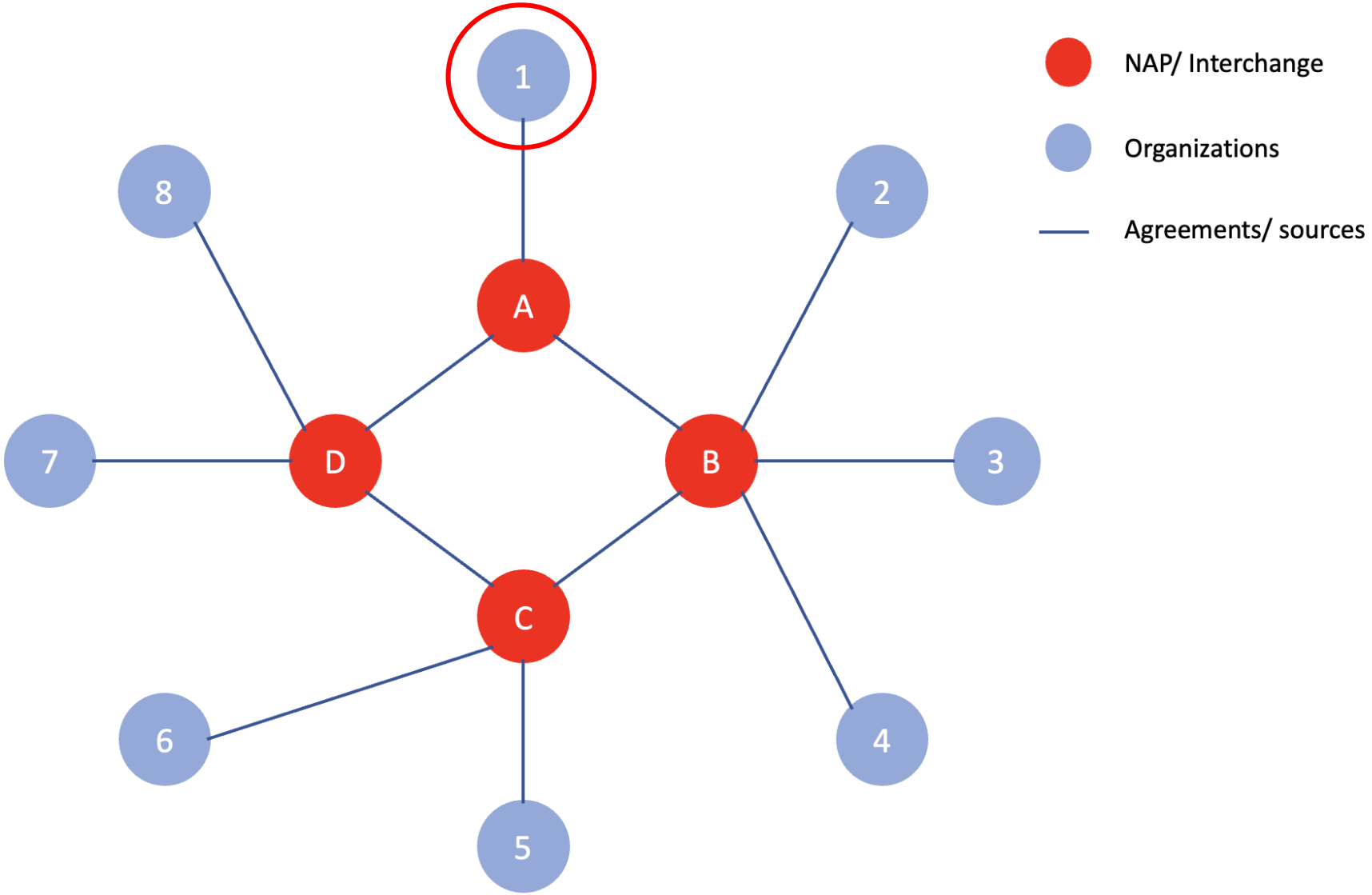
1
8
2
A
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4
5
NAP/ Interchange
Organizations
Agreements/ sources

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What we demonstrated

- Provided cross border meta-data and data via one national access point / one interchange.
- Enabled service providers to find and start using data
- A minimum proof of concept implementation (now it is a bit more)
- Integration with the participating NAPs

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Technology

- Built using established specifications and technology from
  - C-ROADS
  - NordicWay
- Federation using the Interchange core technologies
  - Basic Interface (BI)
  - Improved Interface (II)

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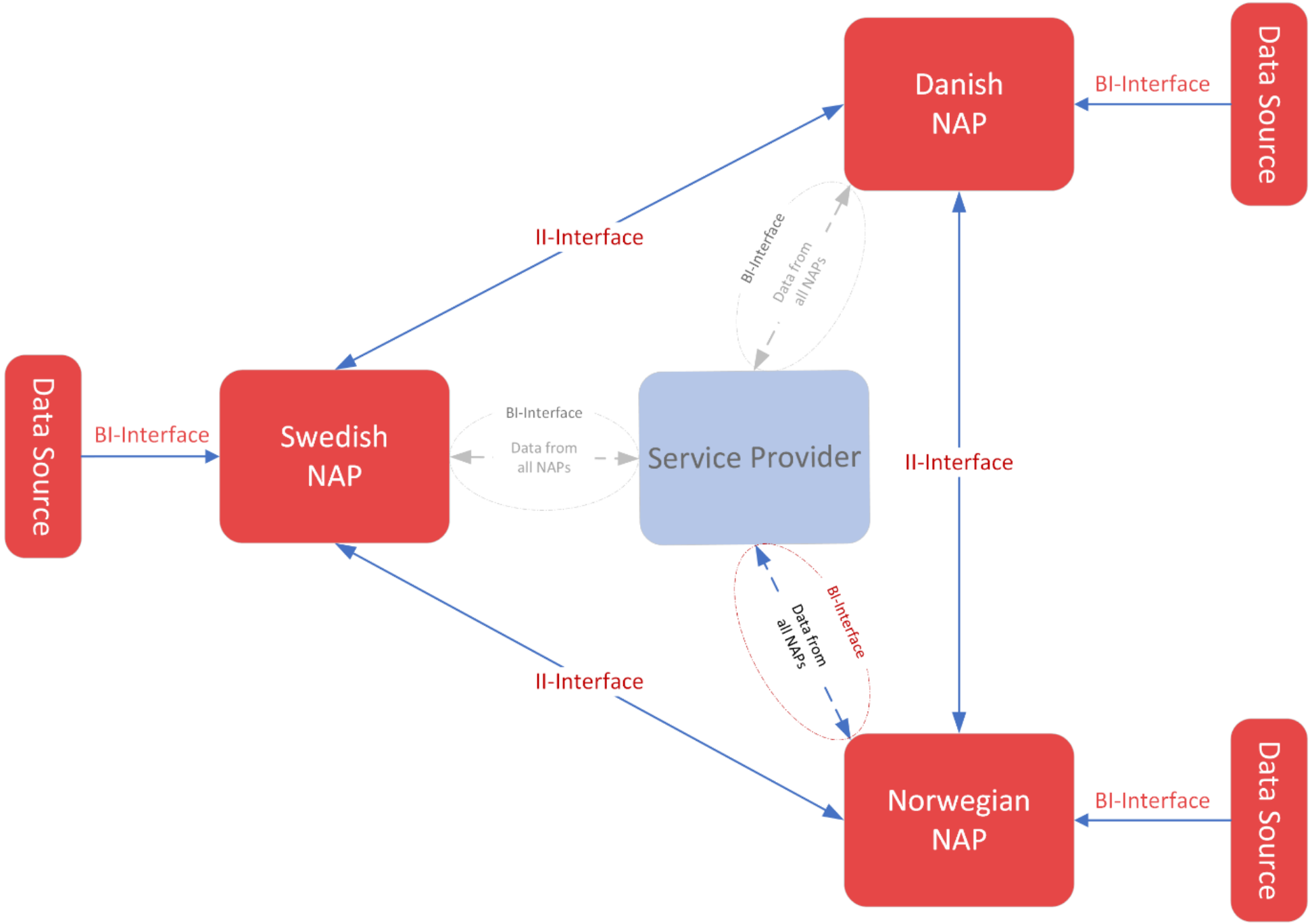
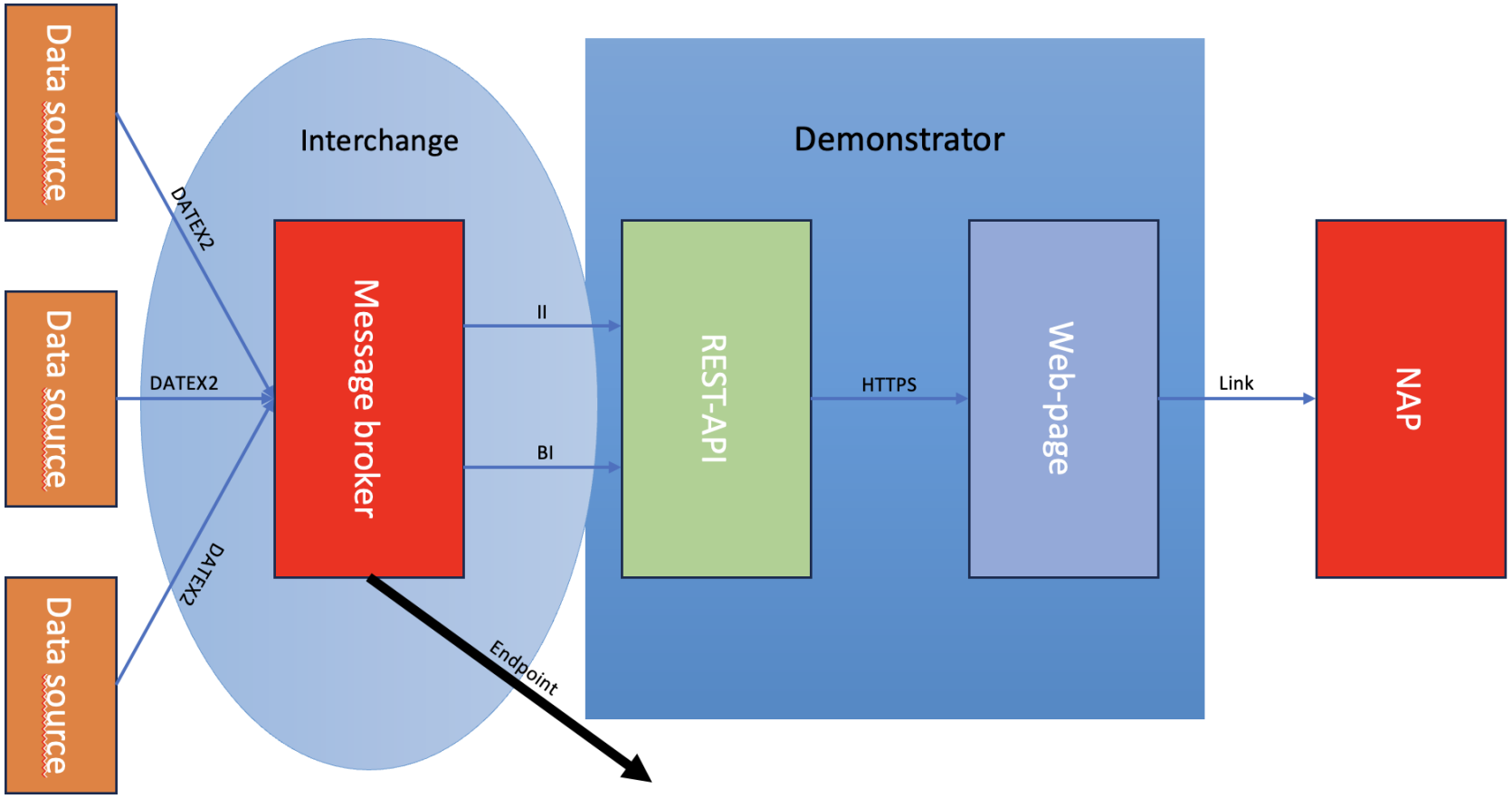

Data Source
BI-Interface
Swedish NAP
II-Interface
Danish NAP
BI-Interface
Data from all NAPs
BI-Interface
Service Provider
Data from all NAPs
BI-Interface
II-Interface
Norwegian NAP
BI-Interface
Data Source
Data Source

The background for the demo



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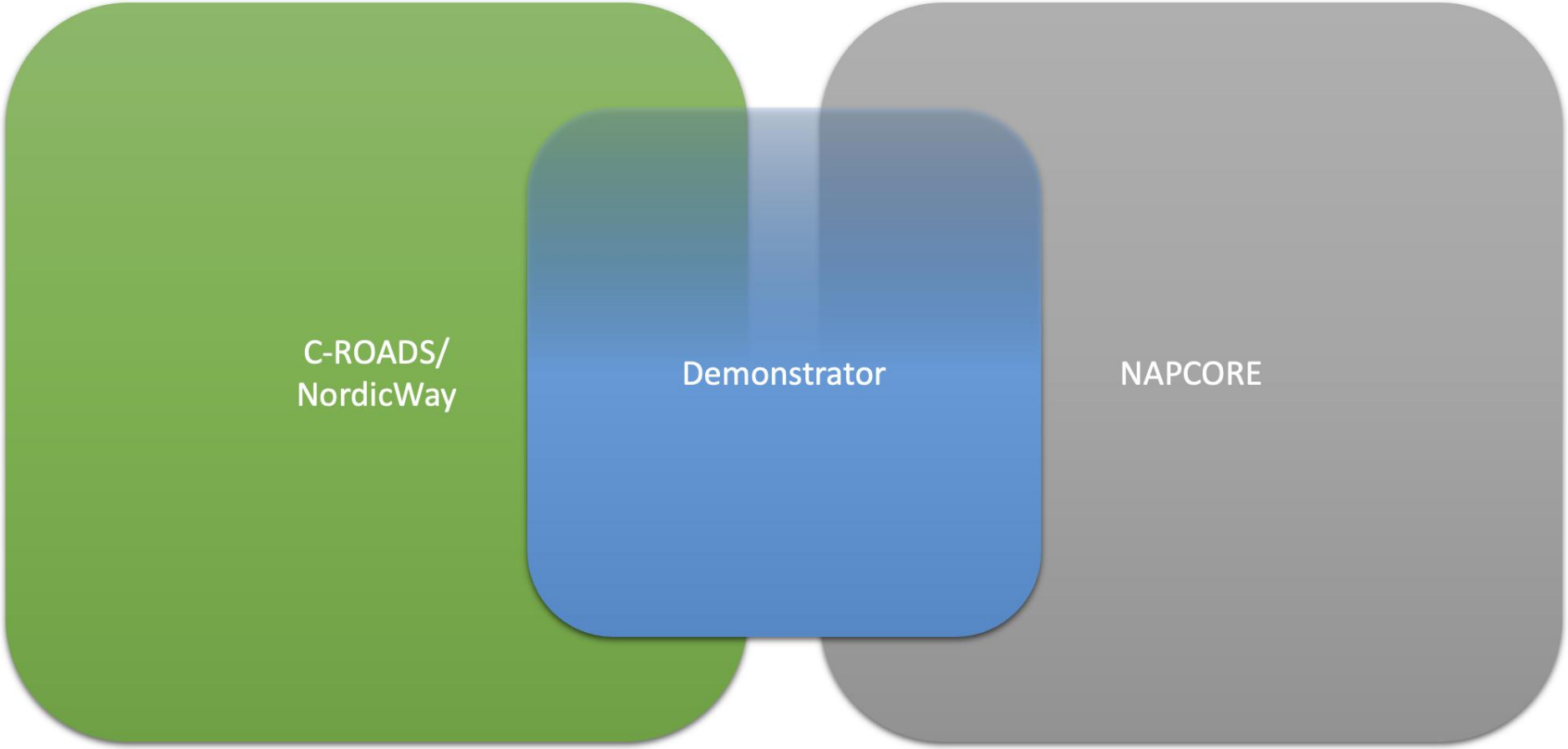
The background for the demo



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Microsoft Teams

NAPCORE: BeMobile will be demonstrating - easy findable and ac...

2023-10-24 07:30 UTC

Recorded by
Christian Rantzow von Huth

Organized by
Christian Rantzow von Huth

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The service providers response:

“If all countries or a group of countries had set up such a system, then that would make our technical work a lot easier. That is certainly fair to say.“ ,

Wannes De Smet, Offering Manager Traffic Information, Be-Mobile

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Since MDD 2023

- Demonstration Report (Milestone 2.6) approved
- Input to NAP Levels of service KPI Framework (NLKF) (not implemented yet)
- Input to the reference architecture (not implemented yet)

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Proposed solution (to achive the improvments)

- Make use of the already existing European standards for metadata and data sharing developed in other European-founded projects (C-roads and NordicWay).
- Improve the metadata standard of the interchange to fit the "mobility_DCAT-AP".
- Develop the NAP to support the II-interface.

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Since MDD 2023

- Funding for additional development:
  - Create endpoints for publishing data (demo)
  - Private end-points (screen shot)
  - Naming the endpoints (instead of just an ID-number)
  - NO has started using the solution

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NO showing the Interchange

- How to find the Interchange via the Norwegian NAP

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transportportal.atlas.vegvesen.no/no/

Bookmarks | Trafikkortet - Conflu... | Scrum board TRF -... | Google Play Udvikle... | NAPCORE [all partn... | Trafikinfo - Trafikinf... | Storskærmskortet | Vejledning til deklar... | Data | Alle bogmærker

norsk | dansk

Google Translate

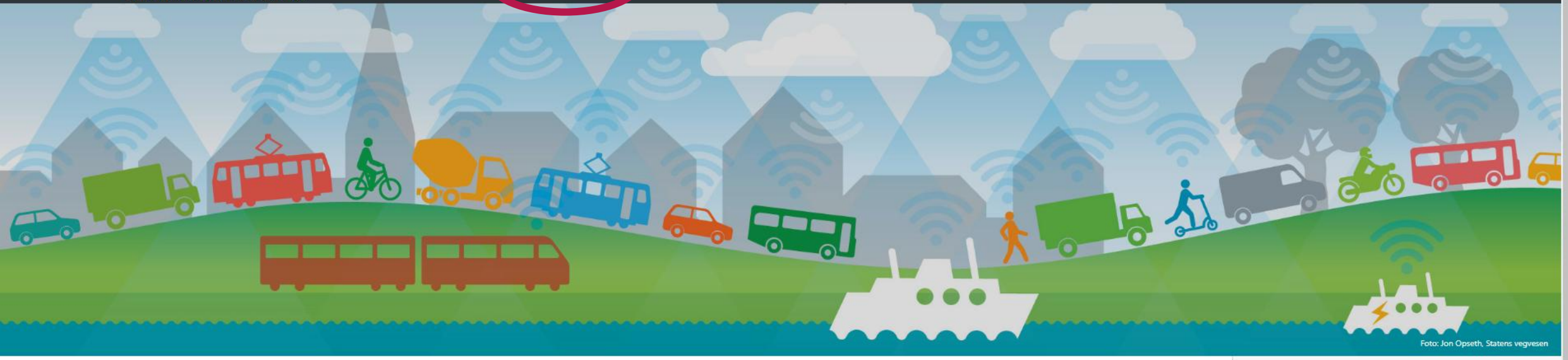

Foto: Jon Opseth, Statens vegvesen

Velkommen til det nasjonale tilgangspunktet for veg- og transportdata for Norge

I portalens datakatalog finner du beskrivelser av og lenker til datasett og tjenester om vegstatus, hendelser, reisetider, kollektivtrafikk, rutetider og mye mer.

Alle datasettene er åpne - bruk dem gjerne for å utvikle egne tjenester.

Alle i Norge som har datasett eller tilbyr tjenester knyttet til vegtrafikk, kollektivtrafikk og mobilitetstilbud kan og bør legge informasjon om disse åpent tilgjengelig i denne portalen, se nærmere beskrivelse om innlegging av data.

Alle land i Europa skal ha et slikt tilgangspunkt for å få til sammenhengende informasjonstjenester for transport - i tråd med ITS-direktivet til EU.

Generell informasjon

- Roller og ansvar
- ITS direktiv og forordninger
- Informasjon om portalen

For databrukere

- Nyhetsbrev
- Hvor finner jeg data?
- Hva finnes av data?

For datatilbydere

- GDPR og personvern
- Samsvarserklæring
- Legge inn data

Transportportal

- Home
- Subscriptions
- Network capabilities
- My capabilities
- Deliveries
- Certificate
- Glossary

Welcome, christian.berg.skjetne!

Shortcuts

Subscriptions	Network capabilities	My capabilities	Deliveries	Certificate
View subscriptions	View all capabilities	View my capabilities	View deliveries	Generate certificate

Your latest subscriptions

ID	Status	Capability matches	Last updated
ecdad509-a4fb-464f-9ffe-3e943547906e	CREATED	1	28/10/2024

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Transportportal

- Home
- Subscriptions
- Network capabilities
- My capabilities
- Deliveries

Add my capability

Add a user capability with the form.

< My capabilities

Publisher ID *
NO00001

Publication ID *
NO00001: SituationPublication

Protocol version *
DATEX2:3.2

Originating country *
NO

Message type *
DATEX2

Publisher name *
NPRA

Publication type *
SituationPublication

Quadtree *
1200230,1200213,12002310,1200212,1200221,1200203,1200201,1200210,1200211,120003,1200023,1200013,12

Show map

Only comma (,) separated numbers between 0-3 is allowed.

Create my capability

Clear form

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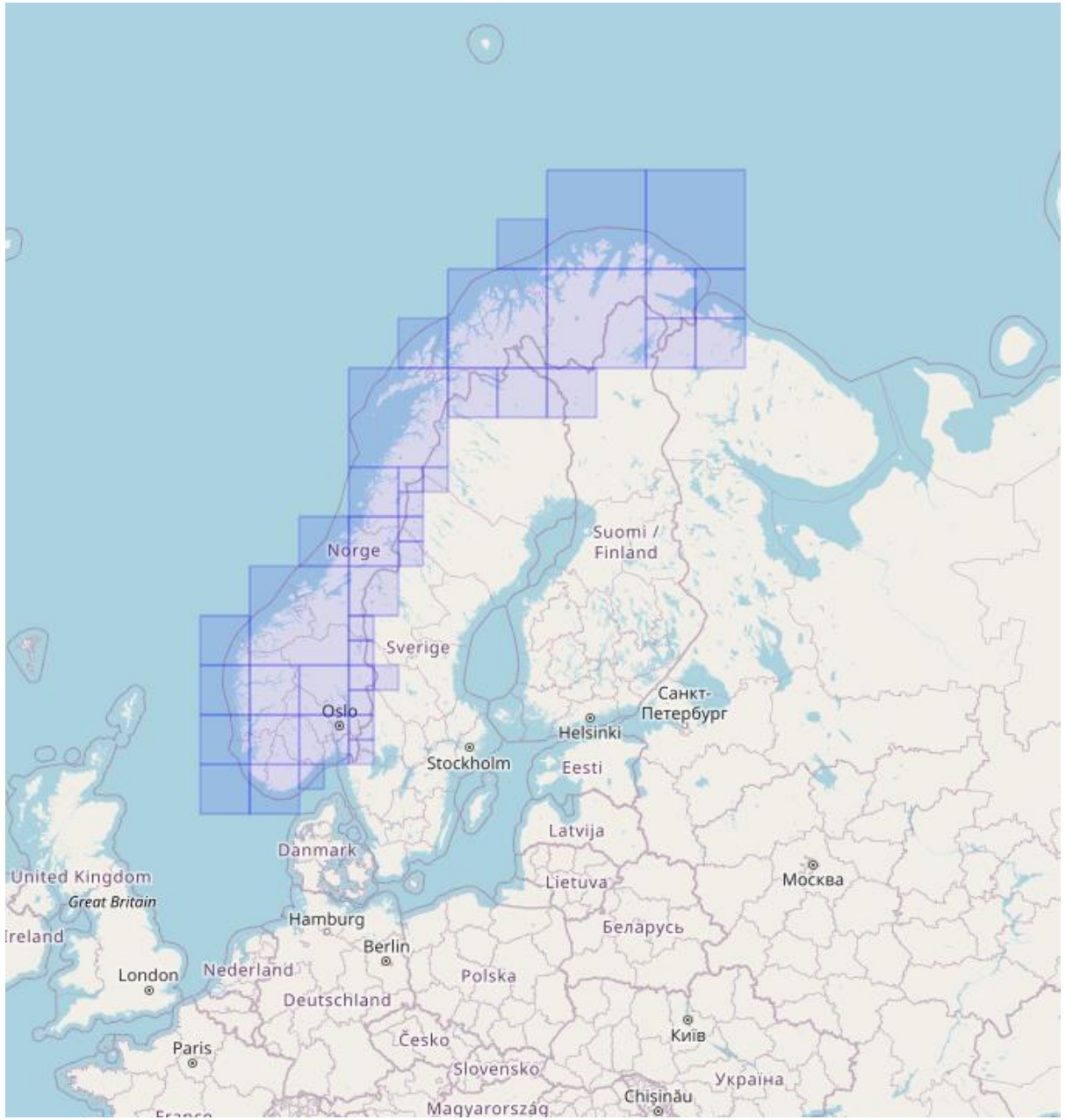
Norge
Suomi /
Finland
Sverige
Oslo
Санкт-
Петербург
Helsinki
Stockholm
Eesti
Latvija
Danmark
United Kingdom
Great Britain
Lietuva
Москва
Hamburg
Беларусь
Berlin
London
Nederland
Polska
Deutschland
Київ
Česko
Paris
Slovensko
Україна
Chișinău
Magyarország

Transportportal

christian.berg.skjetne

Logou

Home

Subscriptions

Network capabilities

My capabilities

Deliveries

Certificate

Glossary

My Capabilities

These are all of user capabilites in the network. You can click a

+ Add capability

Publisher ID	Publication ID	Message type
N000001	N000001:SituationPublic...	DATEX2
DK00000	DK00000:SituationPublic...	DATEX2

Capability details

Publisher

Publisher ID
N000001

Publication ID
N000001:SituationPublication1

Publication type
SituationPublication

publisher name
Norwegian Public Roads Adminstration

Originating Country
NO

Message

Message Type
DATEX2

Protocol Version
DATEX2:3.2

Quadtree

Hash
102231,102230,102321,102233,10232(

Show map

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Transportportal

christian.berg.skjetne | Logout

- Home
- Subscriptions
- Network capabilities
- My capabilities
- Deliveries
- Certificate
- Glossary

Deliveries

These are all of the deliveries in the network. You can click a delivery to view more information and create a delivery.

+ Create delivery

ID	Status	Capability matches	Last updated	Description
df112552	CREATED	1	28/10/2024	
1fa69cbd	CREATED	1	24/10/2024	

Rows per page: 10 1–2 of 2

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Transportportal

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- Home
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- Deliveries
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Deliveries

These are all of the deliveries in the network. You can click a del

+ Create delivery

ID	Status	Capability matches
df112552	CREATED	1
1fa69cbd	CREATED	1

Delivery details

CREATED

ID
df112552-35da-4039-9fdc-86b94bc3b773

Last updated
28/10/2024

Capability matches
1

Endpoints

Host
belle.stminterchange.com

target
del-c25a6336-9714-4736-9093-dddfea891f1e

5671
5671

Selector

(publicationId = 'NO00001:SituationPublication1')

Description

Remove Delivery

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Transportportal

victoria | Logout

- Home
- Subscriptions
- Network capabilities
- My capabilities
- Deliveries
- Private channels
- Certificate
- Glossary

Private channels

These are all of private channels in the network. You can click a private channel or a subscribed private channel to view more information and remove.

+ Create private channel

My private channels

ID	Status	Description	Last updated
[illegible]	CREATED	Private channel for bouvet and friends	25/10/2024
[illegible]	CREATED	Private channel for bouvet and friends	25/10/2024
[illegible]	CREATED	Private channel for bouvet and friends	25/10/2024
[illegible]	NOT_VALID	123	25/10/2024
[illegible]	CREATED	HELLO	25/10/2024
[illegible]	CREATED	test	25/10/2024
[illegible]	CREATED	this is a description	25/10/2024

My subscribed private channels

ID	Status	Owner	Last updated
[illegible]	CREATED	[illegible]	28/10/2024
[illegible]	CREATED	[illegible]	28/10/2024
[illegible]	CREATED	[illegible]	28/10/2024
[illegible]	CREATED	[illegible]	28/10/2024
[illegible]	CREATED	[illegible]	28/10/2024
[illegible]	CREATED	[illegible]	28/10/2024
[illegible]	CREATED	[illegible]	28/10/2024

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Marketplace Demonstrator

Ed Ooms

7 November 2024

Agenda

Goal

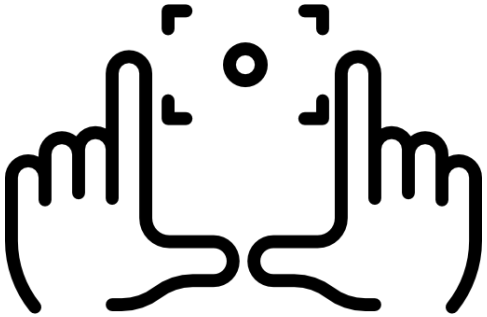
Solution

Demo

Questions

Goal

Demonstrate that it is possible to federate data access to the consumer. Consumers can easily use data from various sources.



Scope

1 dataset of roadworks from the German Mobilithek portal

Success criteria

- The consumer can easily search for data in the dataspace.
- The consumer can easily access the data in the dataspace.
- Automatic data refresh from the data owner to the dataspace.

Overall Process

Company Onboarding

Dataspace Operator

- Send the invite via email
- Approve registration

Company Admin

- Fill out registration form
- Invite other company members (optional)
- Submit registration

Data Provision

Data Provider

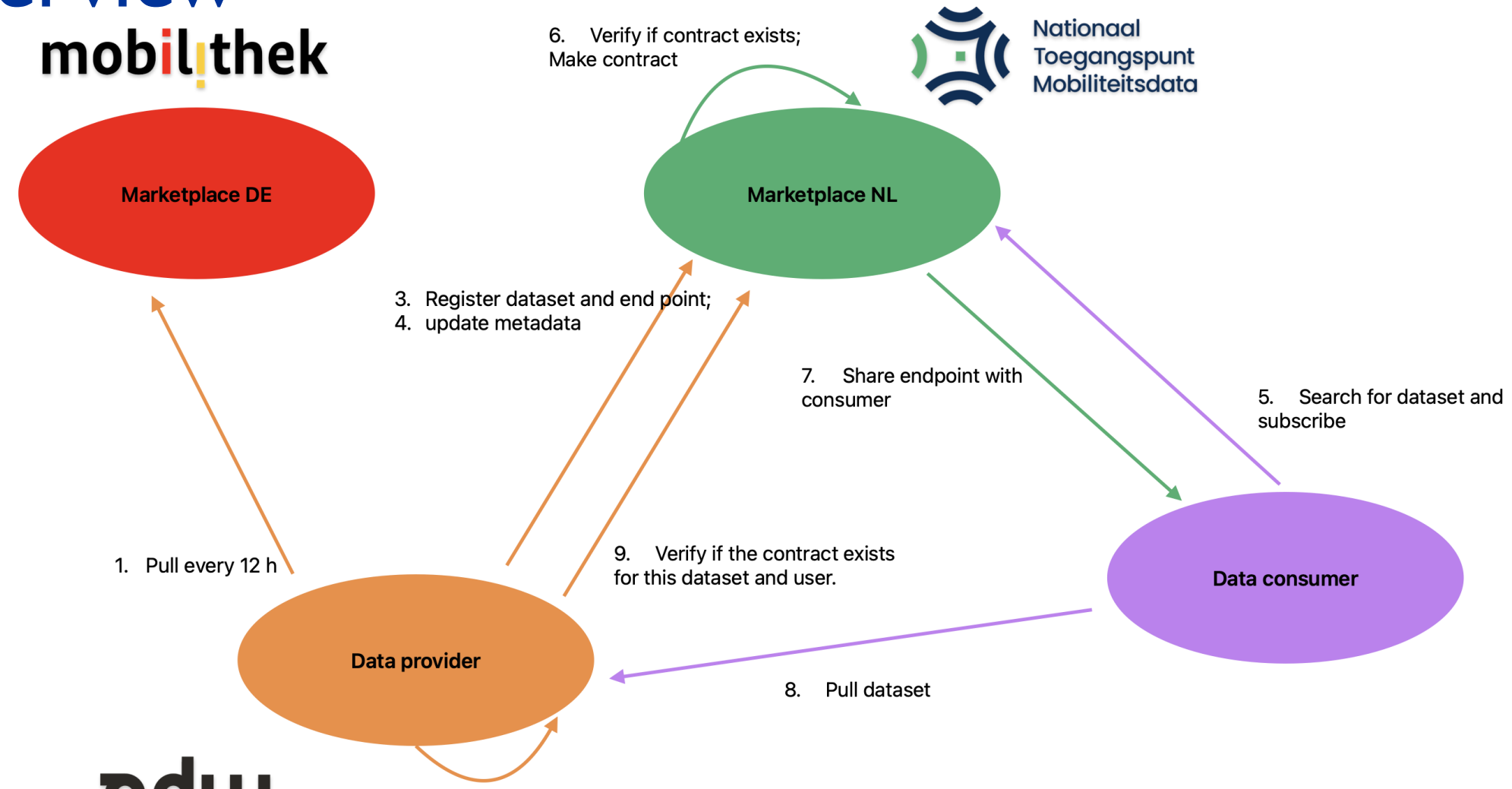
- Provision EDC against assigned BPN during company onboarding process
- Register data assets, policies and contracts to EDC
- Add data to backend service

Data Consumption

Data Consumer

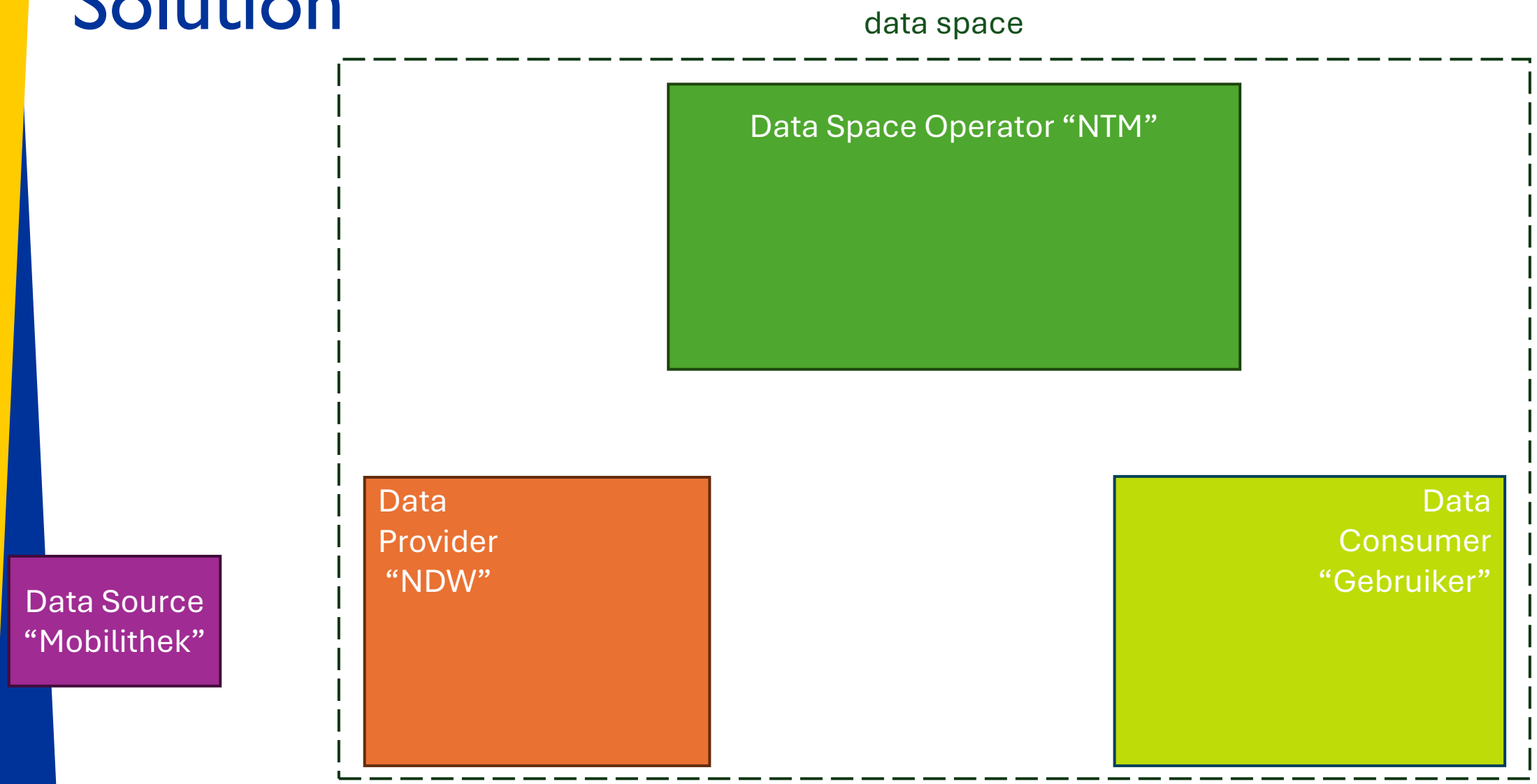
- Provision EDC against assigned BPN during company onboarding process
- Request Catalog
- Perform contract negotiations with data provider
- Retrieve requested data

Overview

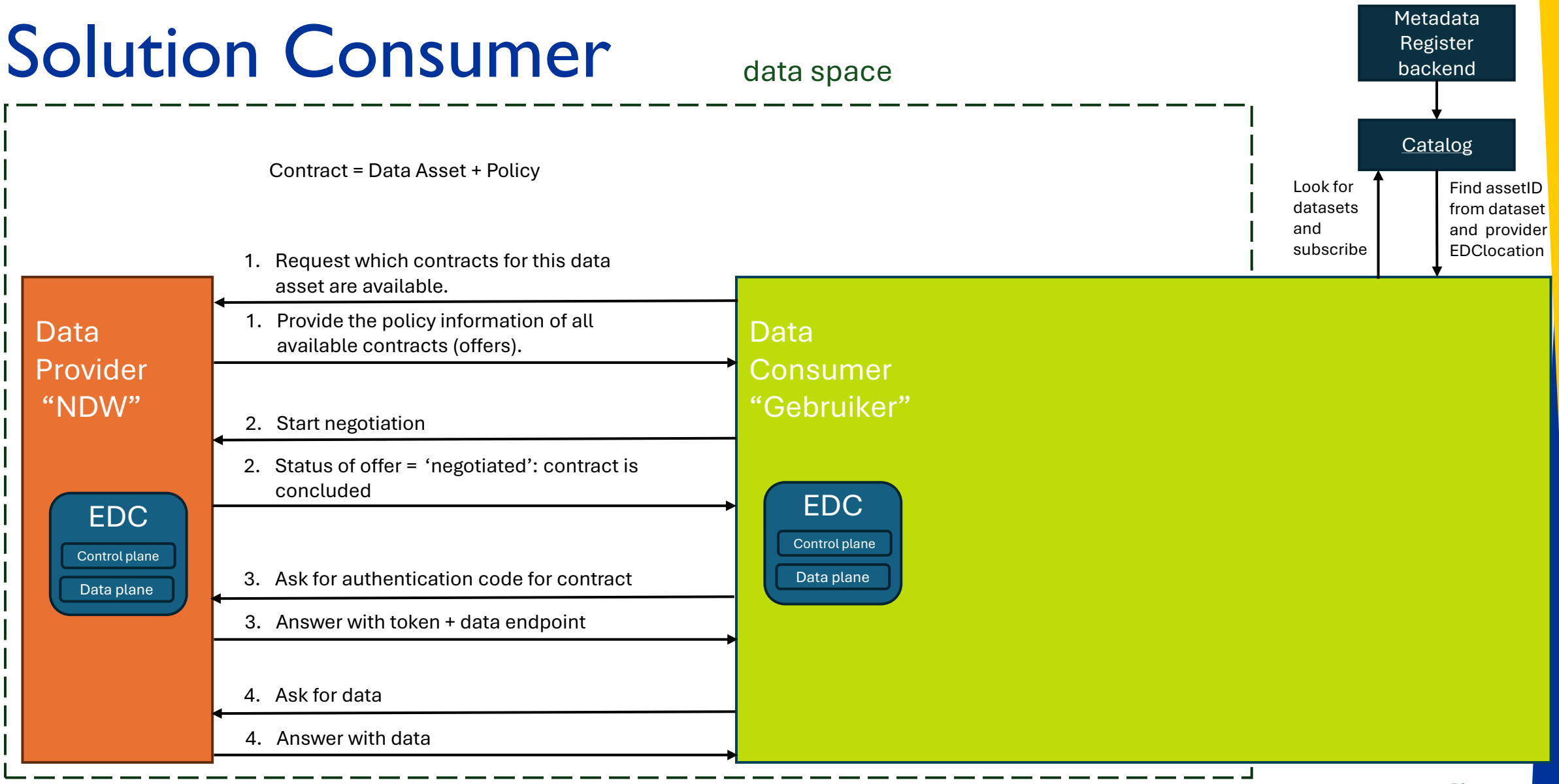


ndw

Solution


data space
Data Space Operator “NTM”
Data
Provider
“NDW”
Data
Consumer
“Gebruiker”
Data Source
“Mobilithek”

Solution Consumer



Technical EDC Terms

Contract Offer → Contract Negotiation → Contract Agreement → Transfer Process

Data Offer

A representation of the **Contract Definition** for a specific consumer and serves as protocol for a **Data Transfer Object (DTO)** for a particular contract negotiation.

Contract Offer → Contract Agreement

It captures the **current state** of the negotiation of a contract between two parties. This process is inherently asynchronous.

Signed Contract

It represents the agreed-upon **terms of access** and **usage of an asset** data between two data space participants, including a start and an end date and further relevant information.

Data Transfer

Data consumer EDC initiates data transfer process to the data provider EDC after a **successful contract negotiation** based on contract agreement against an asset.

Source: Eclipse Tractus-X Website

Data Asset

- An Asset is the **fundamental representation** of an arbitrary backend interface in the EDC*.
- Data asset are represented as data sources (databases, files, cache information, etc.),connected to the EDC.
- A **data address** is a pointer into the physical storage location where an asset will be stored. For each asset, a **DataAddress** needs to be resolvable.
- The **Data Provider** registers it with its EDC Control Plane as a first step to expose it to the Dataspace via the EDC Dataplane later on.

Example Asset


```
{
    "@id": "urn:uuid:25692900-cfc6-b7fe-42a2-cf0df6d638d3",
    "@type": "edc:Asset",
    "edc:properties": {
        "edc:description": " Test data asset",
        "edc:id": "urn:uuid:25692900-cfc6-b7fe-42a2-cf0df6d638d3"
    },
    "edc:dataAddress": {
        "@type": "edc:DataAddress",
        "edc:proxyPath": "true",
        "edc:type": "HttpData",
        "edc:proxyMethod": "true",
        "edc:proxyQueryParams": "true",
        "edc:proxyBody": "true",
        "edc:baseUrl": "https://data-
service.d37c3234d8454420babf.westeurope.aksapp.io/api/752571257922158592"
    },
    "@context": {
        "dct": "https://purl.org/dc/terms/",
        "tx": "https://w3id.org/tractusx/v0.0.1/ns/",
        "edc": "https://w3id.org/edc/v0.0.1/ns/",
        "dcat": "https://www.w3.org/ns/dcat/",
        "odrl": "http://www.w3.org/ns/odrl/2/",
        "dspace": "https://w3id.org/dspace/v0.8/"
    }
}
```


Eclipse Dataspace Connector (EDC)*: A data transmitter, gateway to data exchange

Sources: Eclipse Tractus-X Website | Github

Policy Definition

- A **standardized** set of policies, defines actions regarding access to and usage of assets.
- These actions can be limited further by **constraints** (temporal or spatial) and **duties** such as deletion of the data after 30 days.
- Two types of policies: **Access** & **Usage Policies**.
- The **Data Provider** registers the policy to its EDC.

Access Policy

- Determines whether a **particular consumer** is offered an asset or not.
- **Example:** restriction on certain assets such that only consumers within a **particular geography** can see them. Consumers outside that geography wouldn't even have them in their catalog.

Usage Policy

- Determines the conditions for **initiating a contract negotiation** for a particular asset.
- Does not automatically guarantee the successful creation of a contract, instead expresses the **eligibility to start the negotiation**.
- **Usage policy** and **Contract policy** are synonymous

Sources: Eclipse Tractus-X Website | Github

Policy Examples

Default: Allow Everything


```
{
    "@id": "default-policy",
    "@type": "edc:PolicyDefinition",
    "edc:createdAt": 1723390895272,
    "edc:policy": {
        "@id": "c9053ca8-5401-49f7-ac1e-e4ded03ae75e",
        "@type": "odrl:Set",
        "odrl:permission": [],
        "odrl:prohibition": [],
        "odrl:obligation": []
    },
    "@context": {
        "dct": "https://purl.org/dc/terms/",
        "tx": "https://w3id.org/tractusx/v0.0.1/ns/",
        "edc": "https://w3id.org/edc/v0.0.1/ns/",
        "dcat": "https://www.w3.org/ns/dcat/",
        "odrl": "http://www.w3.org/ns/odrl/2/",
        "dspace": "https://w3id.org/dspace/v0.8/"
    }
}
```


Access Policy

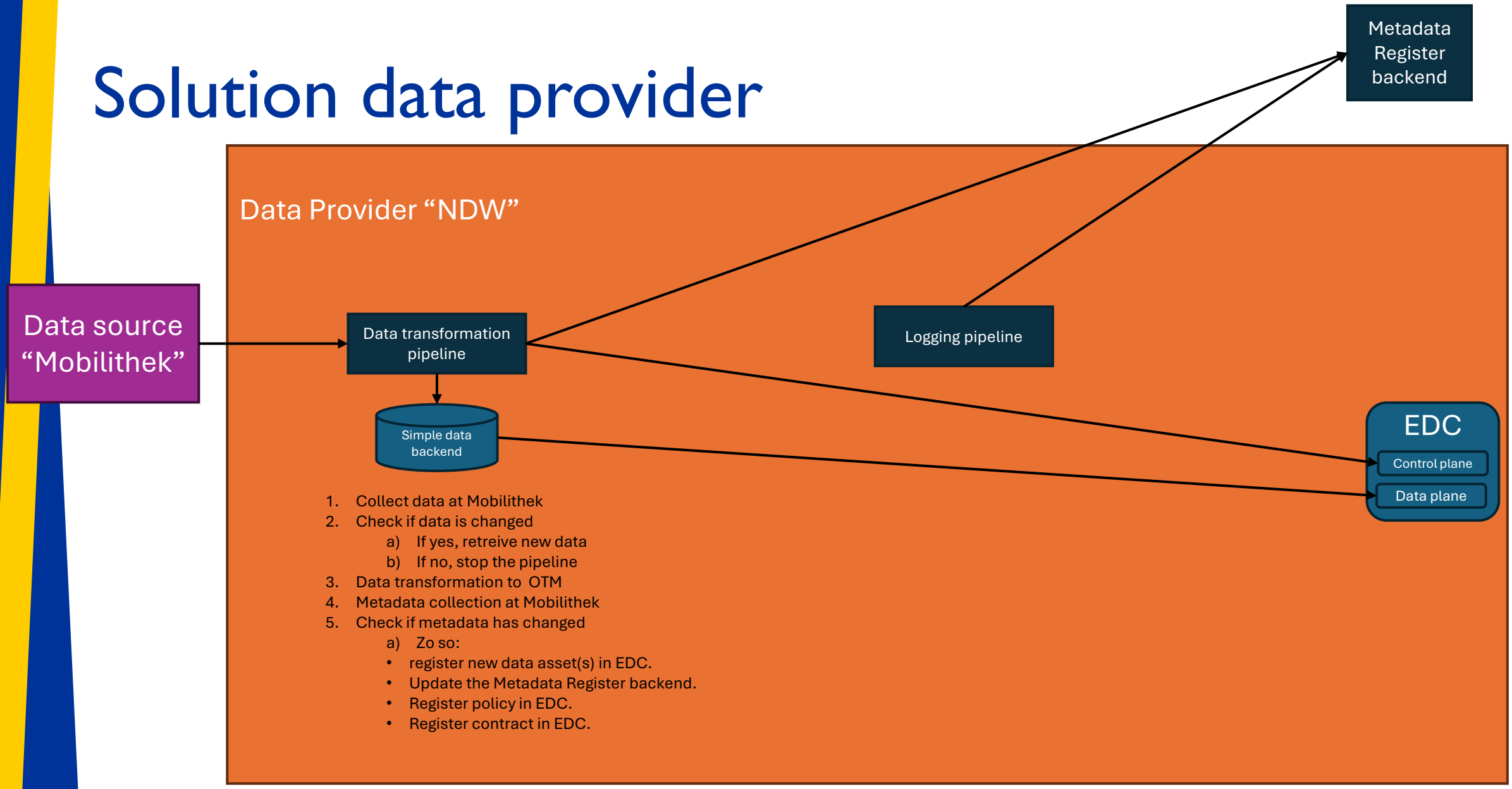

```
{
    "@id": „accessPolicy",
    "@type": "edc:PolicyDefinition",
    "edc:createdAt": 1723390895317,
    "edc:policy": {
        "@id": "7e998ec3-7554-479a-9b0d-2684e87d406d",
        "@type": "odrl:Set",
        "odrl:permission": {
            "odrl:action": {
                "odrl:type": "USE"
            },
            "odrl:constraint": {
                "odrl:or": {
                    "odrl:leftOperand": „BusinessPartnerNumber",
                    "odrl:operator": {
                        "@id": "odrl:eq"
                    },
                    "odrl:rightOperand": „BPN456"
                }
            }
        },
        "odrl:prohibition": [],
        "odrl:obligation": []
    },
    "@context": {
            …
    }
}
```


Usage Policy


```
{
    "@id": „usagePolicy",
    "@type": "edc:PolicyDefinition",
    "edc:createdAt": 1723390895317,
    "edc:policy": {
        "@id": "7e998ec3-7554-479a-9b0d-2684e87d4068",
        "@type": "odrl:Set",
        "odrl:permission": {
            "odrl:action": {
                "odrl:type": "USE"
            },
            "odrl:constraint": {
                "odrl:or": {
                    "odrl:leftOperand": „FrameworkAgreement",
                    "odrl:operator": {
                        "@id": "odrl:eq"
                    },
                    "odrl:rightOperand": "Traceability:<version>"
                }
            }
        },
        "odrl:prohibition": [],
        "odrl:obligation": []
    },
    "@context": {
            …
    }
}
```

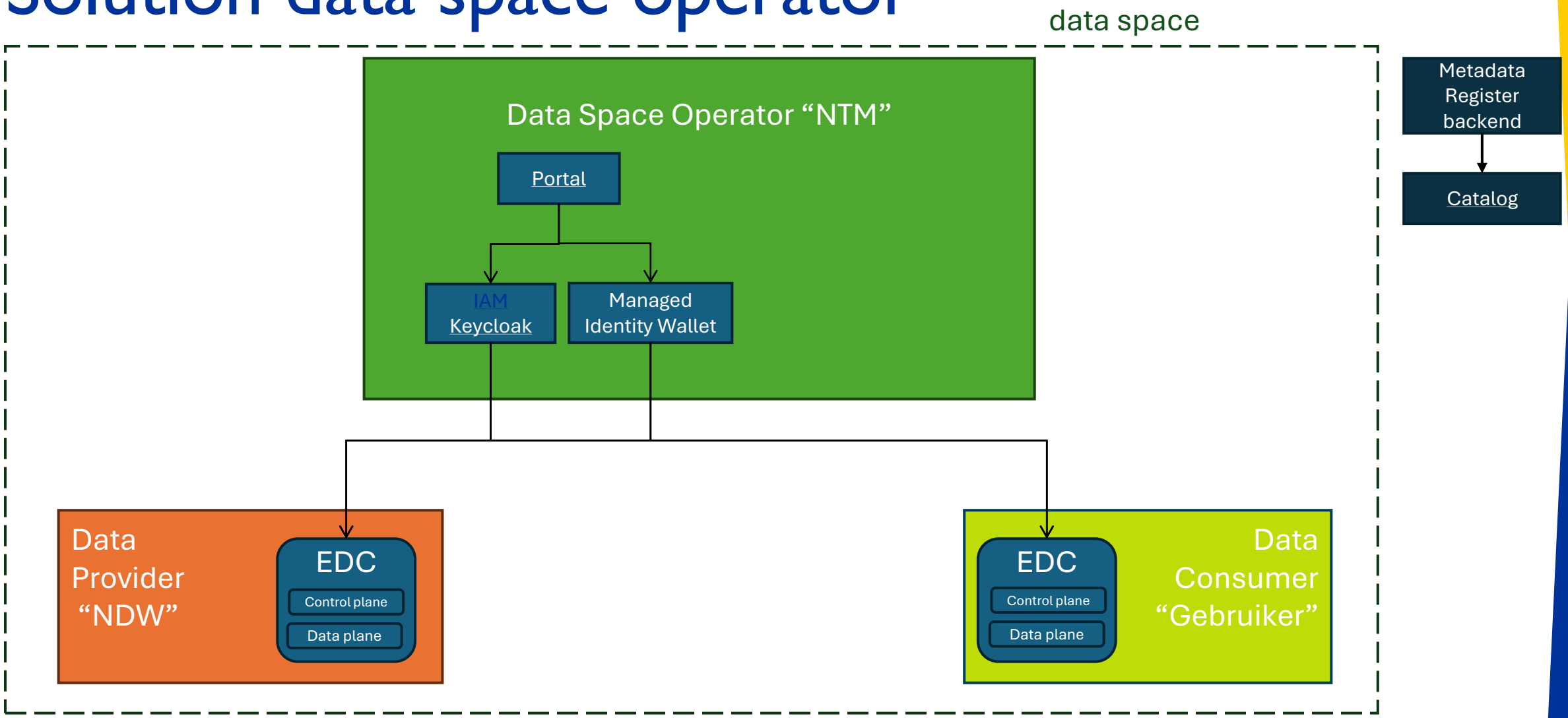

Sources: Eclipse Tractus-x Github

Solution data provider



1. Collect data at Mobilithek
2. Check if data is changed
   a) If yes, retreive new data
   b) If no, stop the pipeline
3. Data transformation to OTM
4. Metadata collection at Mobilithek
5. Check if metadata has changed
   a) Zo so:
   - register new data asset(s) in EDC.
   - Update the Metadata Register backend.
   - Register policy in EDC.
   - Register contract in EDC.

Solution data space operator



Lessons learned

1. There are many good basic tools available (in our case: Catena-X and Tractus-X) that can be deployed quickly.
2. There are a significant differences between the German and the Dutch Datex implementation.
3. Supplying a useable OTM-file is difficult.
4. By using the standard components, it is possible to set up a scalable environment. The environment can grow along with the availability of datasets.

Any questions?

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1. Interchange demonstrator
2. MarketPlace demonstrator
3. Metadata & Alternative Fuels demonstrators
4. Q/A session

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NAP Interoperability demonstrators

Metadata & Alternative Fuels Demonstrators

NAPCORE Mobility Data Days

November 2024

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Agenda

- Purpose
- Solution Design Concept
  - Metadata Directory
  - Data Platform
- Results
- Lessons Learned
  - Limitations of the demonstrator
  - Availability of Alternative fuels Data

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Purpose

- Align Metadata descriptions from multiple NAPs
- Make Metadata from multiple NAPs visible/searchable
- Prove-of-value for "mobilityDCAT-AP" metadata spec
- Explore the required elements for the development of a common EU Access Point for alternative fuels data, creating a common interface that would act as a data gateway linking all MS NAPs in a single web platform
- Consider EAFO as the web platform that would host this common EU Access Point in the future, which as part of its current development and evolution would be equipped with the corresponding technical elements to this end

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Alternative Fuels Data Categories

Alternative Fuels data can be defined as data related to:

- availability of recharging points and stations for electric vehicles;
- availability of refuelling points and stations for alternative fuel types (Hydrogen, LNG, CNG,…)
- location of recharging points for electric vehicles and the conditions for their use;

Data Provision (DR 2023/1804 – AFIR Art.20)

- Art. 20(2) Operators of recharging and refuelling points to provide **static and dynamic data** through their National Access Points (NAPs) at no cost.
  - **Static**: *geographic location, number of connectors, no. of parkings for persons with disabilities, contact information, opening hours.* For recharging only: *identification code of operator, type of connector, current (DC or AC), max power output of station and point (kW), vehicle type compatibility.*
  - **Dynamic**: *operational status, availability, ad hoc price, 100% renewable electricity supply contract*

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Availability of Alternative Fuels data

Implementation status – Survey from the IDACS project in 2020

- Regarding EV charging points, this was the scenario found for static and dynamic data availability:

Which **static data** is available on the NAP?	AT	BE	CZ	ES	FR	GER	GR	HR	HU	LT	LUX	NL	PL	PT	SI
- Location GNSS coordinates															
- Location Address (street name, zip code, city,...)															
- Available charge-solutions (power, modes)															
- Available connectors (plugs, sockets, induction plate..)															
- Opening hours															
- Identification and Payment methods															
- Contact info for owner/operator															
- Full e-mobility code of the charging point (outlet)															

Which **dynamic data** is available on the NAP?	AT	BE	CZ	ES	FR	GER	GR	HR	HU	LT	LUX	NL	PL	PT	SI
- Availability (operational / non-operational)															
- Occupation status (free / occupied)															
- Price for ad-hoc charging															

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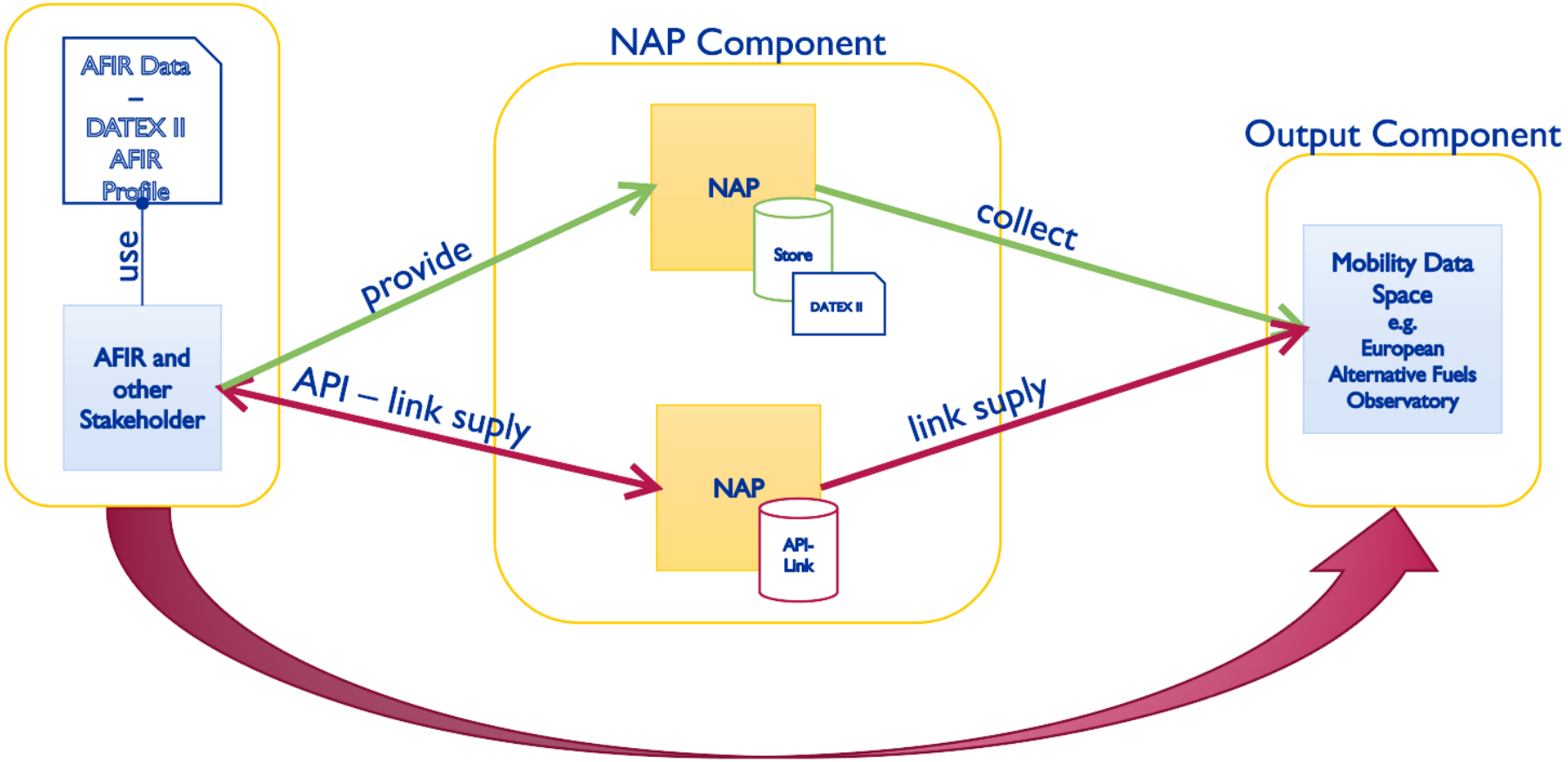
Conceptualization – Initial Approach



Initial demonstrator Proof-of-concept would entail different use cases of data according to NAP typologies (Metadata Directory or Data Platform) or other stakeholders.

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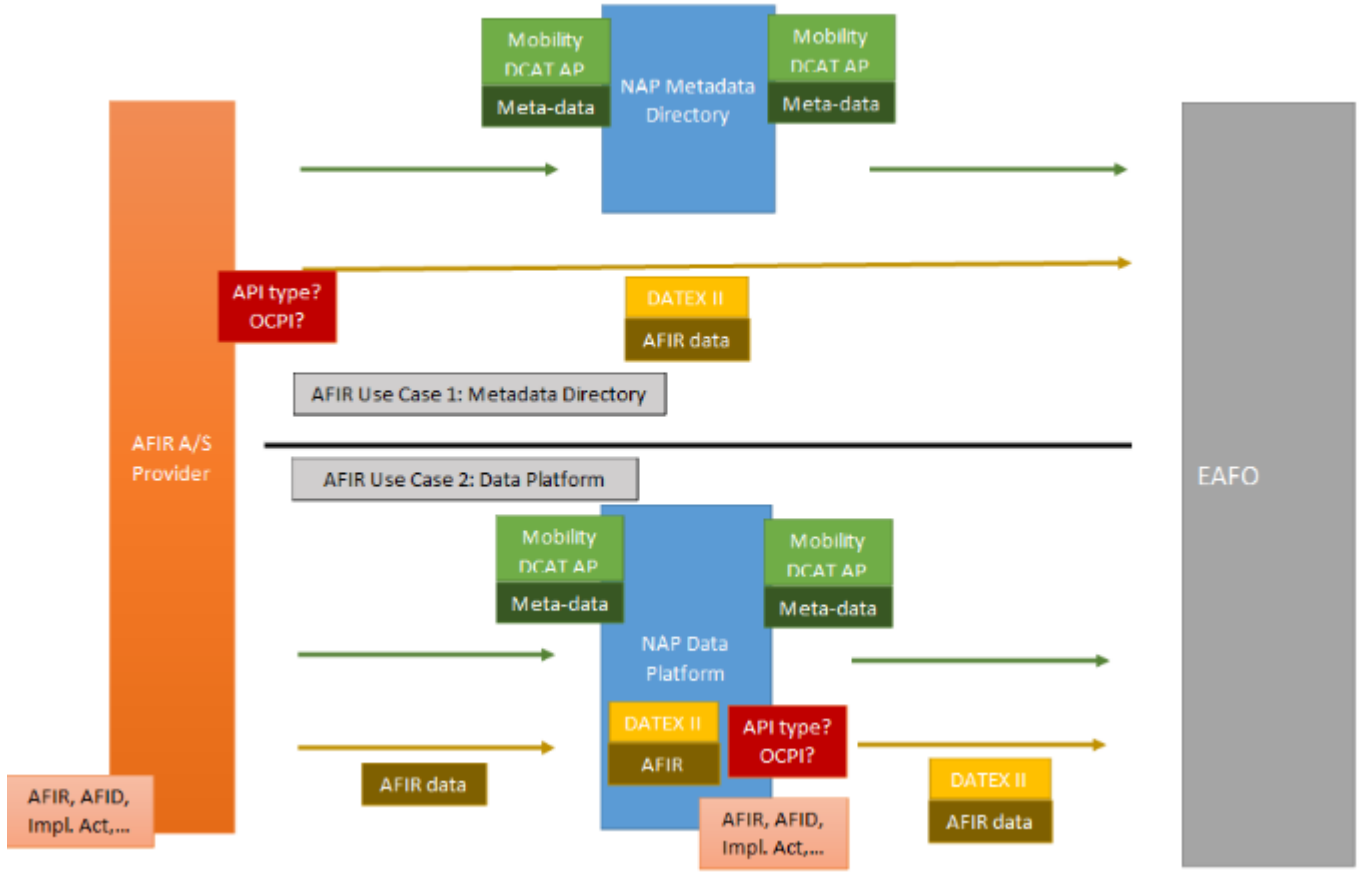
Solution Design Concept – Metadata Directory & Data Platform



Possibility to test an architecture on how an EAFO

Use Case 1: NAP as Metadata Directory (MD-NAP)

- EAFO maintains a comprehensive list of **all Metadata NAPs** (MD-NAPs).
- National stakeholders submit descriptions of AFIR-related data services to the NAP, using DCAT-AP standards (data categories and keywords).
- NAP lists this metadata in a **machine-readable format** for easy retrieval.
- EAFO requests the metadata from NAP to access service descriptions.
- EAFO extracts the necessary API link from the data provider.
- EAFO uses the data provider's API for streamlined data access.

Use Case 2: NAP as Data Provider (DP-NAP)

- EAFO holds a registry of Data Provider NAPs (DP-NAPs).
- NAP provides AFIR-compliant data directly to EAFO **via a free API, aligning with STF standards.**
- EAFO directly utilizes data from the NAPs, enabling seamless data integration and uniform access across EU infrastructure platforms.

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Why metadata?

- Significant disparities in structural configurations and data access interfaces
- Metadata provides an automatized solution for data extraction starting with the dataset harmonized description

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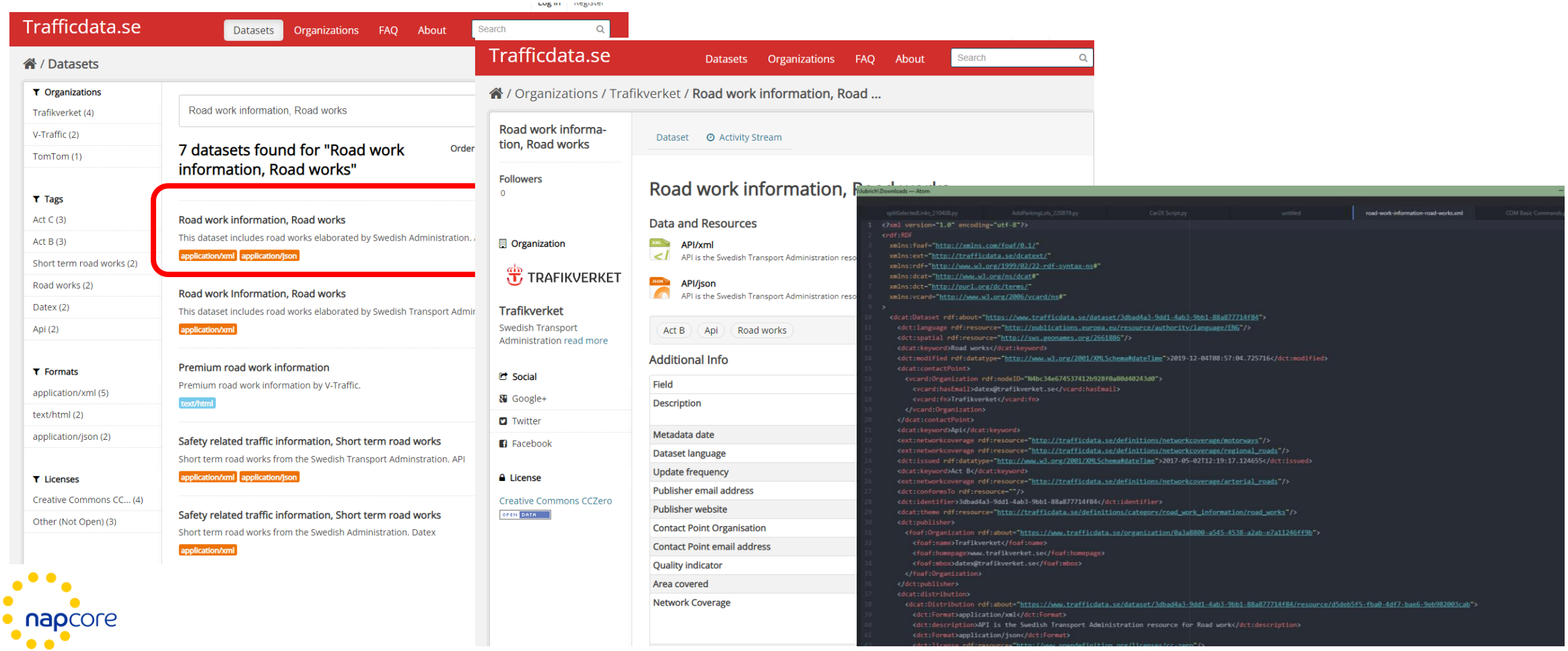
Solution Design Concept - Metadata Repository

- Some NAPs already provide metadata in DCAT-AP format!



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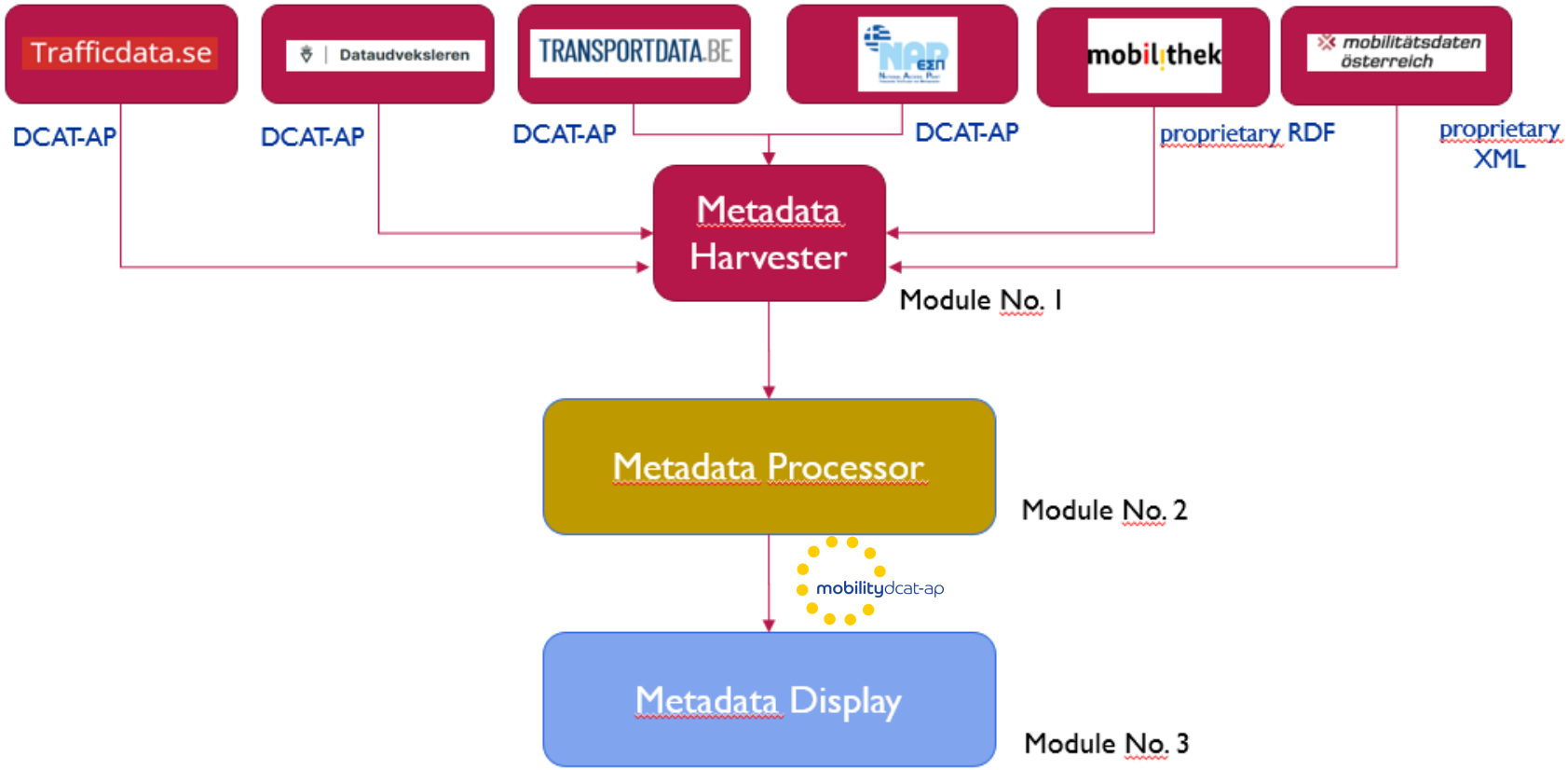
Solution Design Concept - Metadata Repository



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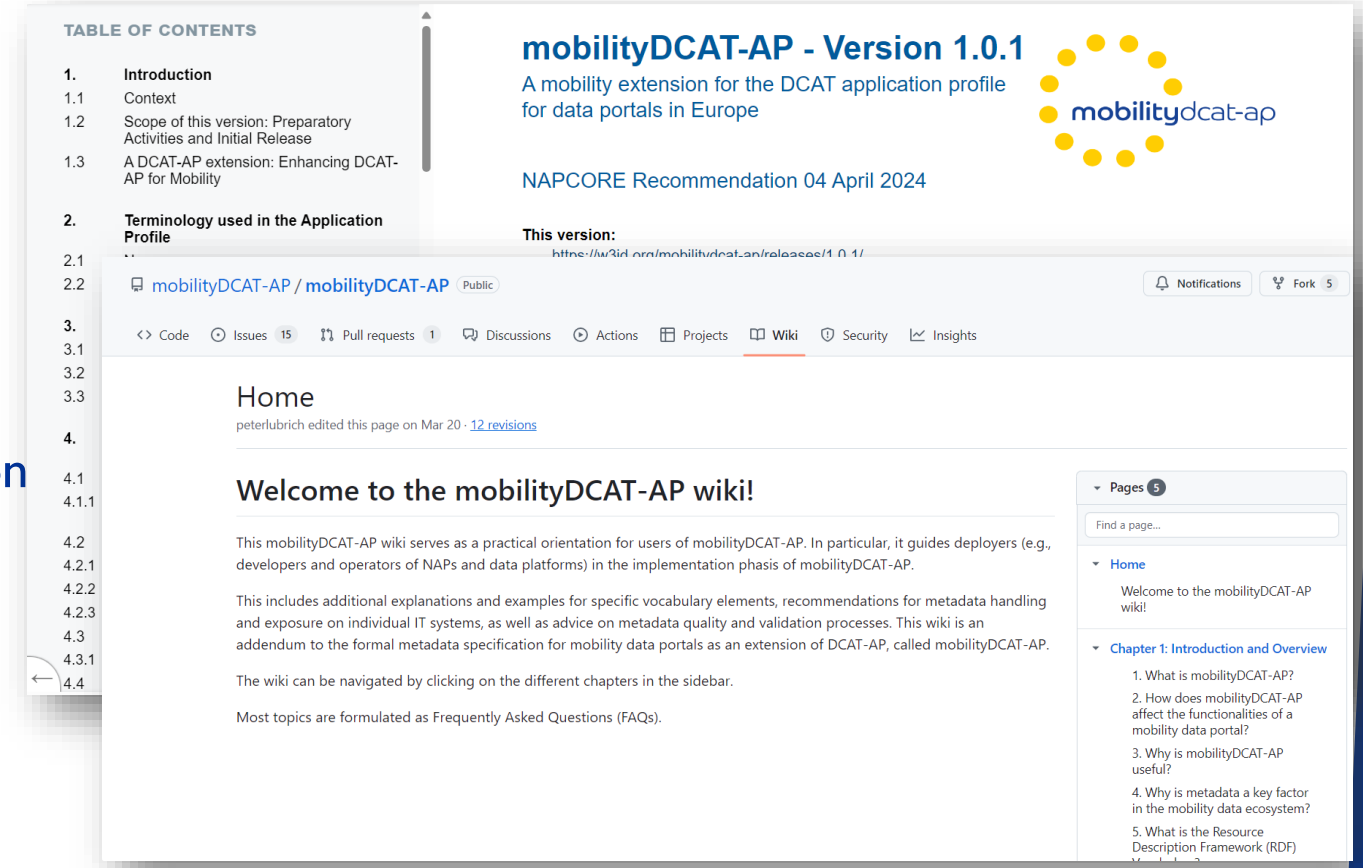
Solution Design

- **mobilitDCAT-AP:** a metadata specification for National Access Points and other mobility data portals
- Outcomes: conceptual model, logical model, technical documentation, user support, maintenance & governance
- Target group: deployers and hosts of European NAPs and other data portals
- The latest mobilityDCAT-AP specification
  - https://w3id.org/mobilitydcat-ap
- mobilityDCAT-AP main repositories:
  - mobilityDCAT-AP · GitHub



Solution Design

- Field-by-field mapping

Field	Convert	GR	DE	TARGET: mobilityDCAT-AP
Name	OK	<dct:title></dct:title>	<ids:title></ids:title>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-title
Keywords	TBD	<dcat:keyword></dcat:keyword>	<ids:keyword xml:lang="de"></ids:keyword>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-keyword
Description	OK	<dct:description></dct:description>	<ids:description></ids:description>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-description
Metadata Date	OK	<dct:issued rdf:datatype=""></dct:issued>	<ids:created rdf:datatype="http://www.w3.org/2001/XM	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#catalogue-record-creation-date
Dataset Language	OK	-	<ids:language></ids:language>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-language
Update Frequency	OK	-	<ids:accrualPeriodicity> </ids:accrualPeriodicity>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-frequency
Publisher	OK	<dct:publisher></dct:publisher>	<ids:publisher></ids:publisher>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-publisher
Contact Point	SKIP	<dcat:contactPoint></dcat:contactPoint>		
Quality Indicator	SKIP		<mdp:qualityDescription></mdp:qualityDescription>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-quality-description
Area Covered	**TBD**		<ids:spatialCoverage></ids:spatialCoverage>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-spatial-coverage
Transport Modes	TBD		<mdp:transportMode></mdp:transportMode>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-transport-mode
Conforms to (data format)	TBD	<dct:format></dct:format>	<ids:mediaType></ids:mediaType>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#distribution-format
Category	**TBD**		<mdp:dataCategory></mdp:dataCategory>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#dataset-category
Access URL	OK	<dcat:accessURL rdf:resource="" />	<ids:accessURL rdf:resource=""/>	https://mobilitydcat-ap.github.io/mobilityDCAT-AP/drafts/latest/#distribution-access-url

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Use Case 1.1- OVERVIEW NAP DATASETS

- Definition: As a Service Provider, to grasp which countries have an easily available metadata description of the dataset, organized by geographical area, so that a product can be designed that is capable of extracting data across borders.
- Preparatory Stage:
  - Limited to 5 NAPs
  - Limited fields to be extracted to the following:
    - Name, Description, Metadata Date, Dataset Language, Update Frequency, Publisher, Contact Point, Quality Indicator, Conforms to (data format), Access URL
  - Extracted either the datasets metadata either from single file or by going through each dataset metadata file (depending on the NAP)

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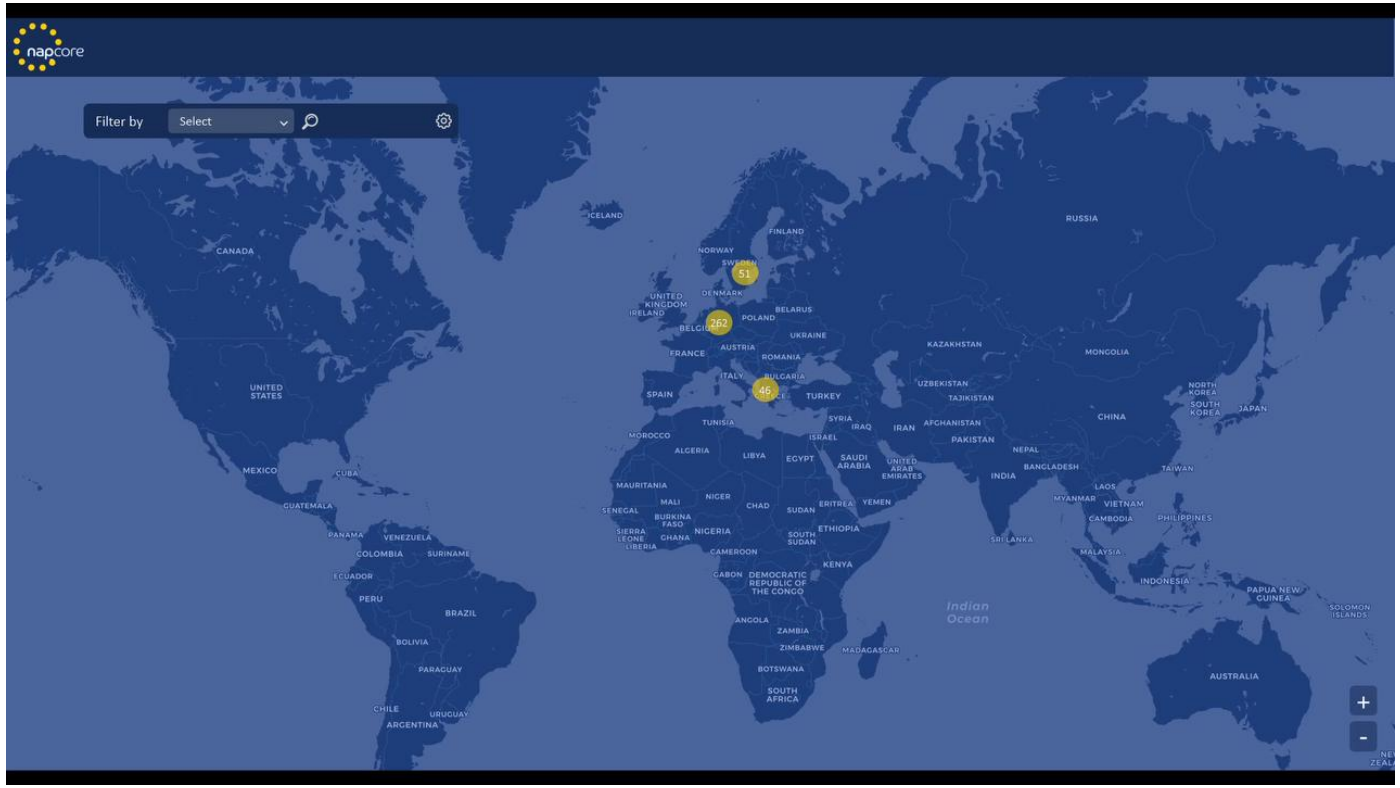
Use Case 1.1- OVERVIEW NAP DATASETS

- Extracted Metadata from NAPs identified over 300 datasets
- Extracting and Processing NAPs metadata phase is a time consuming process:
  - Extraction might fail for changes in NAPs access (e.g. URL changes in GET request, wrong API access)
  - Initial validation step requires a constant comparison with each NAP interface > wrong number of datasets, is it the Extraction URL? > no metadata, is it non-existent or was it the extraction that failed for a specific metadata dataset
  - Missing fields, different resources mentioned in the NAP metadata leads to the need of a field-by-field comparison
- Empty fields in metadata in NAPs (e.g. Quality Indicator)
- Possible to purpose a Quality Indicator of the metadata structure



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Metadata Inventory

- Comparison

NAP	# of datasets August 2022	DCAT-AP schema ?	# of datasets October 2024	MobilityDCAT-AP status
Trafficdata.se*	49	DCAT-AP + extensions („ext: …“)	51	preparation
du-portal-ui.dataudveksler.app.vd.dk	26	DCAT-AP	95	deployed
transportdata.be	176	DCAT-AP	123	testing
data.nap.gov.gr	34	DCAT-AP	47	-
mobilithek.info	> 7000	Proprietary RDF model, compatible with IDS and DCAT-AP + extensions („mdp: …“)	> 9000	testing
mobilitydata.gv.at	40	Proprietary XML model	47	preparation

Availability of Alternative Fuels data

Implementation status – Internal survey (April 2023)

- A deep research regarding the availability of AF data on the NAPs was carried out by the PT team as part of the work related to the AF demonstrator (task 2.4)
- It pointed out that 13 MS (out of 30) have some sort of AF data
- However, only a few of those had their datasets clearly organized according to the CKAN, which allows them to integrate the Metadata demonstrator more easily
- The table below summarizes this information

Member State	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH	UK
Availability of Alternative Fuels data																														
"Ease" of obtaining dataset metadata through CKAN																														

No data was found

Some data was found

Only 4 NAPs had usable data for POC

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Use Case 1.2 - FILTER THE AVAILABLE DATA BY CATEGORY

- Definition: As a Service Provider, to have access to up-to-date metadata that is organized according to a certain category/topic (e.g. Alternative Fuels) so that the characteristics of said dataset (format of the data, updated timeframe) can be analysed.
- Preparatory Stage:
  - Characterization of the Category defined by the usage of the terms:
    - Eletric Vehicle
    - Charging station / CPO
    - Hydrogen
    - LNG / CNG
  - Note: did not consider additional terminologies for similar Alternative Fuels concepts nor Language variations

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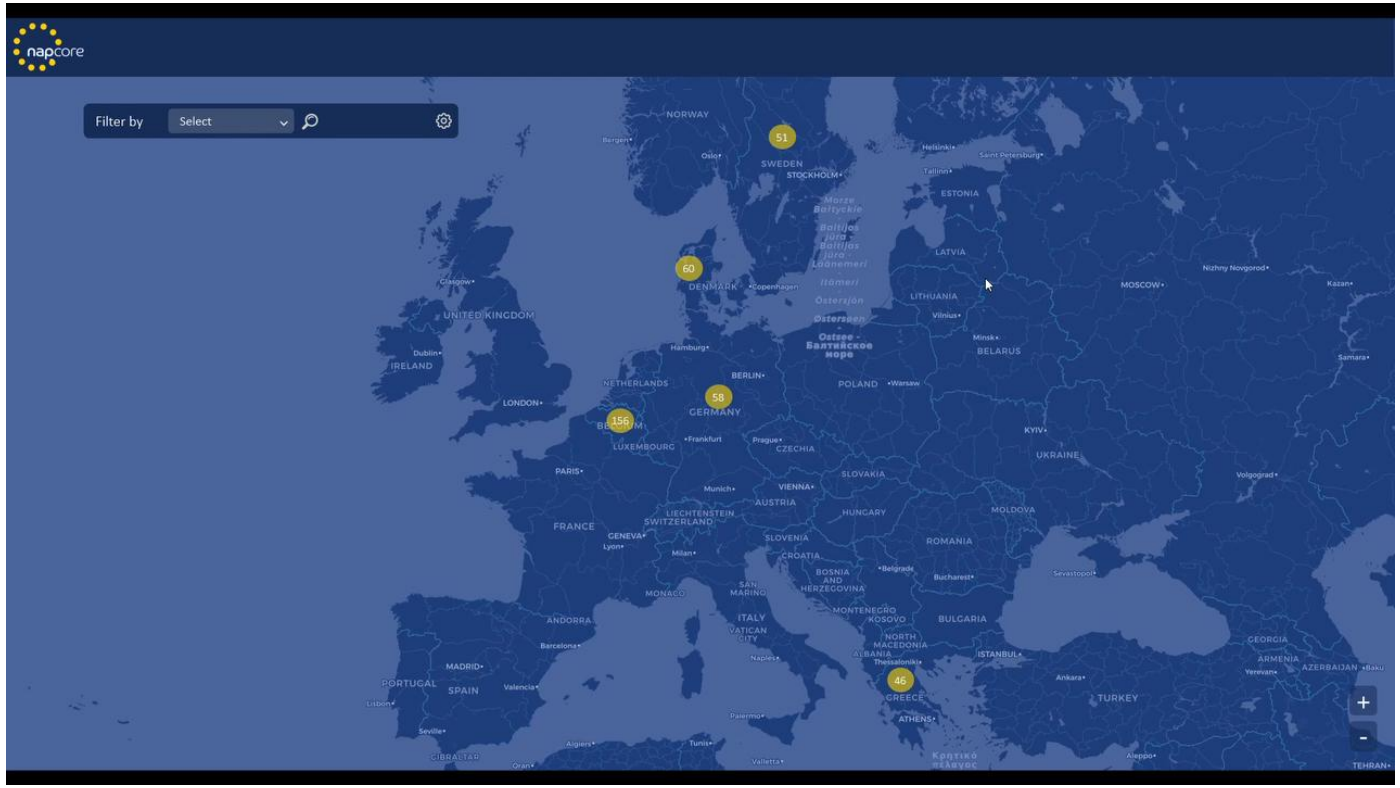
Use Case 1.2 - FILTER THE AVAILABLE DATA BY CATEGORY

- About 10 datasets of returned results
- The full text search - a text search index for a specific term or phrase - using the Title and Description field provided acceptable results
- Validate the flexibility of metadata in increasing data discoverability: in this case the lack
- Data discoverability can be used both in metadata repository as well as in data platform NAP types, as long as there is a public available access to the datasets metadata



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Data Challenges – Provider POC

- Available Information on AF Data Providers with regards to:
  - Type of Data
  - Interface to Extract Data
  - Data Format & version – conformity with Datex II
  - Data Category
  - Contact Person
  - Privacy (is it Publicly available?)
  - Refresh rate of dynamic data
  - Is there any additional data what is available, but not shared free of charge (eg. Only for registered members)
  - Assurance of quality of the data
  - Challenges getting the Data from Access Points
  - How to cope with different data standards and Versions? (OCPI,...)

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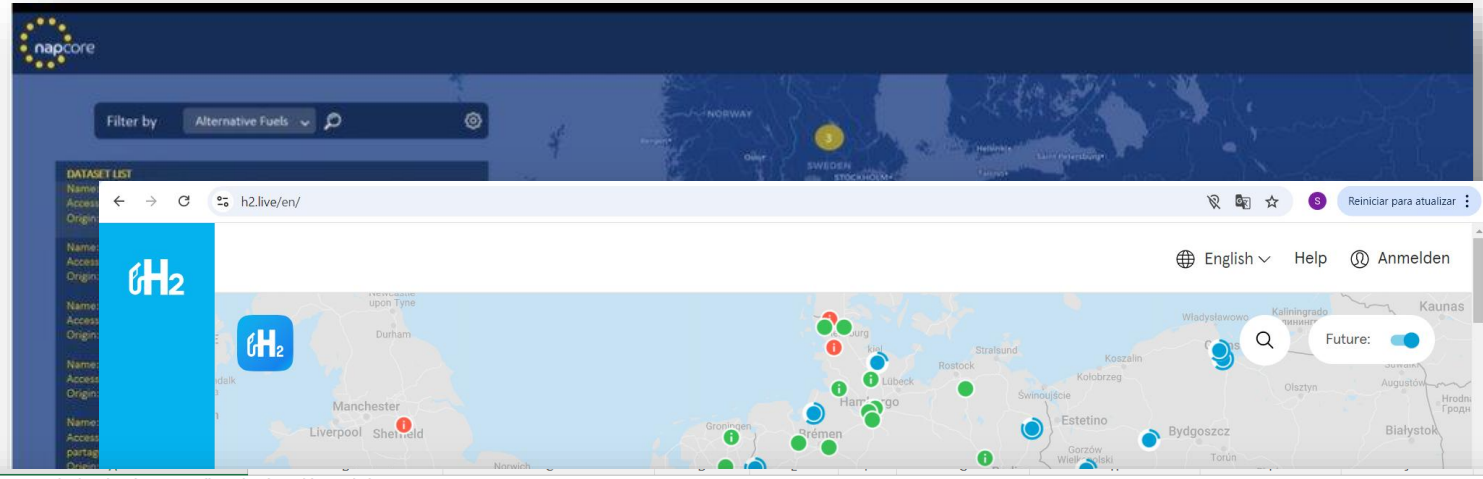
Lessons Learned

- Challenging to extract datasets - data must be freely available to be extracted
- Data described in Local languages
- Duplicate data Across countries
  - Comparison of sources as identifier (e.g. H2 Mobility)
  - Comparison of type of data, format
    - IF metadata is harmonized duplicates will be easier to identify
- EV charging points are in higher demand compared to hydrogen and other AF fuelling infrastructure.



zum Zeitpunkt der Aktualisierung vollständig abgeschlossen haben.
Die Zahl der öffentlich zugänglichen Ladeeinrichtungen in Deutschland ist daher größer als hier dargestellt.

Letzte Aktualisierung vom: 01.09.2024

						Allgemeine Informationen				
Betreiber	Anzeigename (Karte)	Straße	Hausnumm	Adresszusa	Postle	Ort	Kreis/kreisfreie Stadt	Bundesland	Breitengrad	Läng
Albwerk GmbH & Co. KG	Albwerk GmbH & Co. KG	Ennabeurer Weg	0		72535	Heroldstatt	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,442398	9,65
smopi® - Multi Chargepoint Solution GmbH	smopi	Albstraße	15		72535	Heroldstatt	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,449424	9,67
smopi® - Multi Chargepoint Solution GmbH	smopi	Albstraße	15		72535	Heroldstatt	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,449424	9,67
smopi® - Multi Chargepoint Solution GmbH	smopi	Albstraße	15		72535	Heroldstatt	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,449424	9,67
Albwerk GmbH & Co. KG	Albwerk GmbH & Co. KG	Parkplatz Campingplatz	0		72589	Westerheim	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,5105	9,60
EnBW mobility+ AG und Co.KG		Hauptstraße	91c		73340	Amstetten	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,578534	9,87
SWU Energie GmbH		Sterngasse	6		88481	Balzheim	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,179959	10,0
Shell Deutschland GmbH		Kiesgräble	2		89129	Langenau	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,49339	10,1
EnBW mobility+ AG und Co.KG		Karlstr.	45		89129	Langenau	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,500374	10,1
EnBW mobility+ AG und Co.KG		Flurstück	313		89129	Langenau/Seligweiler	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,456817	10,0
EnBW mobility+ AG und Co.KG		Flurstück	313		89129	Langenau/Seligweiler	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,456817	10,0
EnBW mobility+ AG und Co.KG		Flurstück	313		89129	Langenau/Seligweiler	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,456817	10,0
EnBW mobility+ AG und Co.KG		Flurstück	313		89129	Langenau/Seligweiler	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,456817	10,0
EnBW mobility+ AG und Co.KG		Parkplatz Burghof	0		89129	Langenau	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,500057	10,1
EnBW mobility+ AG und Co.KG		Benzstraße	3		89129	Langenau	Landkreis Alb-Donau-Kreis	Baden-Württemberg	48,49975	10,1

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Availability of Alternative Fuels data

Challenges faced in making AF data available

- AF data availability depends on the provision by the CPOs
- MS mandated CPOs to provide AF data through their NAPs
- Different NAP Architectures and other issues prevent CPOs from adding such data
- For that reason, much of the data still lacks in several NAPs and MS (as observed in the status of implementation)

Possible solution: common EU access point for AF data

- EC has established that by 31 December 2024, MS shall ensure that AF data is made accessible on an open and non-discriminatory basis to all data users through their NAPs
- EC has established that – by 2027 – there shall be a common EU access point for AF data
- Technical details of such a platform are still to be defined.

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Next Steps – Alternative Fuels Demonstrator

- Improve mapping tables in the metadata Processor module
  - multiple national NAP Metadata Schemes (mostly DCAT-AP) → harmonized/ European NAP Metadata Scheme (mobilityDCAT-AP)
- Improve Extraction module times (possible solution introduce a versioning control of the metadata of datasets across NAPs)

Provide Input for WG2 & WG3 tasks:

- NAPCORE WG2 Task 2.1 - Level's of service of NAPs
  - Provide an example on how the different NAP's Levels of service affect the automatization and dissemination of data (through their metadata availability and structure) on a European scale. Additionally, how to develop a new/adjust KPI focus on metadata.
- NAPCORE WG2 Task 2.3 - NAP Reference Architecture
  - Understand how the current NAP architectures are "compatible" to this solution, and identify the NAP architectures limitations. The outcomes of this Metadata & Alternative Fuels demonstrator will help build the NAP Reference Architecture.
- NAPCORE WG2 Task 3.2: European NAPs data quality
  - Provide an overview of the adoption of AF and the discoverability of AF data to contribute to the Alternative Fuels Quality Framework

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Thanks

Do you have any questions?

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Agenda

1. Interchange demonstrator
2. MarketPlace demonstrator
3. Metadata & Alternative Fuels demonstrators
4. Outlook - Q/A session

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Outlook

THANK YOU!

- Milestone 2.6 – Interchange Demonstrator – available at the NAPCORE Website

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Deliverables and Milestones

- Activity S.1: Project management and administration
- Activity H.1 Steering Committee Support (SCS)
- Activity H.2 Identification of actions needed
- Activity H.3 Dissemination, outreach activities, training
- Activity WG1 NAP & NB platform strategy and governance
- Activity WG2 Interoperability and level of service of NAPs
- Activity WG3 NAP content and accessibility

M2.6 Interoperable NAP demonstrator with real world use of the NAP information

This report presents the idea and reasoning behind the interoperability demonstrator making use of real-time safety related transport information cross border.

It describes why the use of the Improved Interface (II) and Basic Interface (BI) capabilities of the interchange makes it easy fo service providers to find and access transport-related data using the NAPs, and afterwards describes the result of the demonstration carried out to "test" the idea with a real service provider.

The report also lists implementation possibilities resulting in NAP improvements and increased level of service.

- Milestone 2.10 – comprising all demonstrators – should be published in early 2025!

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