

deployEMDS: Towards the common European mobility data space

ITS Factory development forum

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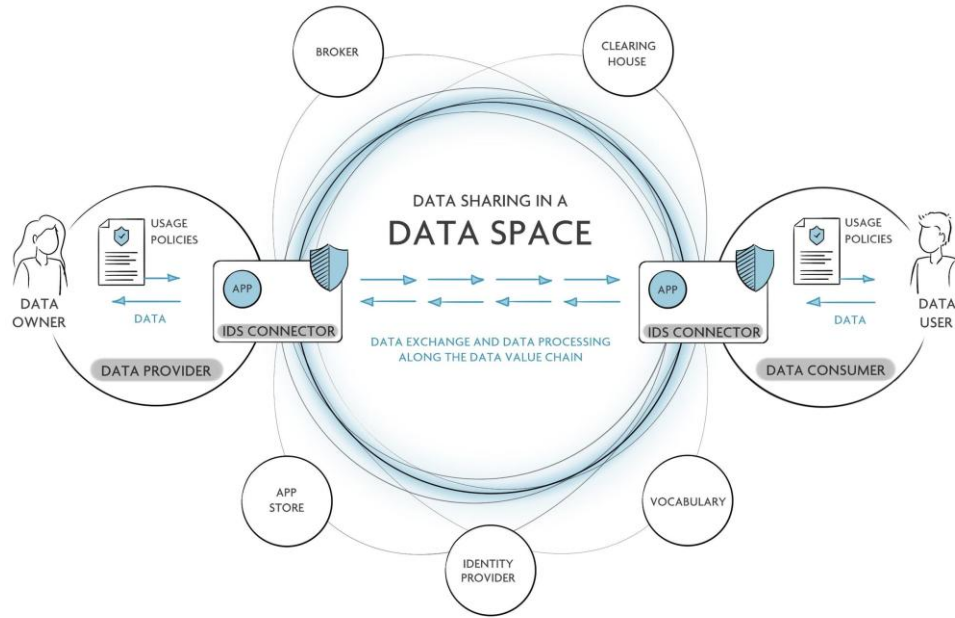
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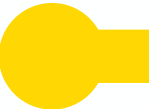


Data space



© International Data Spaces

- a **decentralised technical infrastructure**
- based on a **common governance framework**
- enabling participants to **securely exchange data**
- to create **value** for specific use cases



A common data space can help address key challenges in the mobility domain

CHALLENGES

Fragmentation of data sources

Reluctance to share data due to security and competition concerns

Lack of interoperability between different data types and standards

Underutilised innovation potential of mobility data

OPPORTUNITIES



Better discoverability and accessibility of data



Data sovereignty and trust through identification & usage policies



Convergence towards common standards



New data-driven solutions and business models



What is the EMDS?

The **common European mobility data space** (EMDS) aims to facilitate data access, pooling and sharing for more **efficient, safe, sustainable** and **resilient transport**.

The EMDS empowers **trustworthy, accessible** and **interoperable** data sharing.



Data sovereignty and trust

Retaining authority and control over data.



Accessibility

Discoverability and availability of mobility data.



Data interoperability

Sharing and exchanging data in a standardised way.



deployEMDS at a glance

- Build a decentralised technical infrastructure and common governance mechanisms for urban mobility use cases in 9 cities and regions across Europe
- deployEMDS supports the EMDS through development, testing and implementation
- November 2023 – February 2026
- www.deployemds.eu



45 European partners
(cities, regions, technical
and domain expertise)



develop decentralised
technical infrastructure and
shared **governance** mechanisms



for **16 urban mobility use**
cases in 9 cities and regions
across Europe



Flanders



Sofia



Barcelona



Tampere



Île-de-France



Budapest



Milan



Lisbon

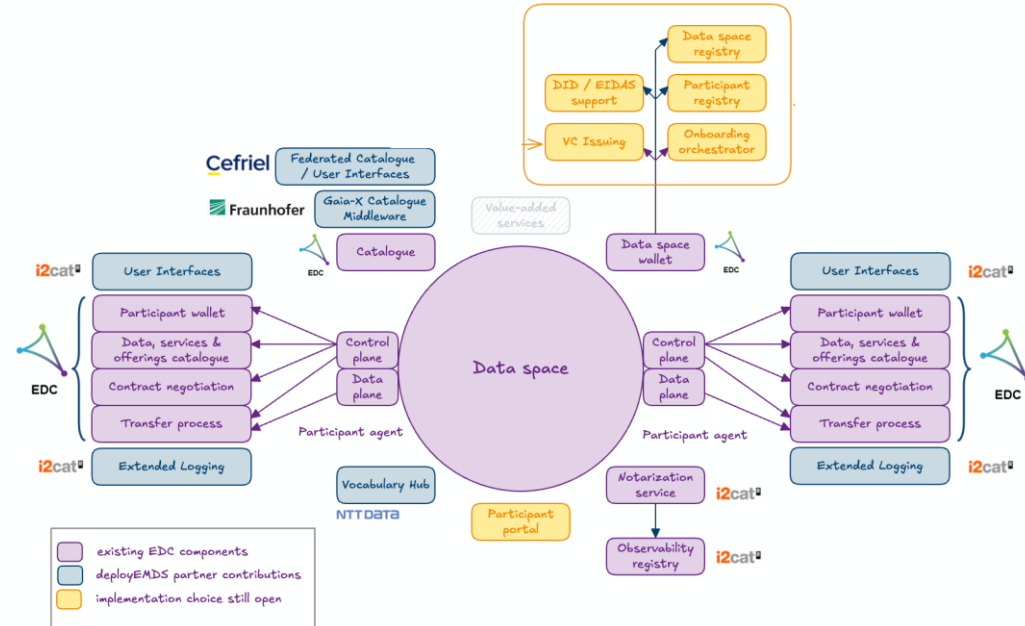


Stockholm



deployEMDS Approach

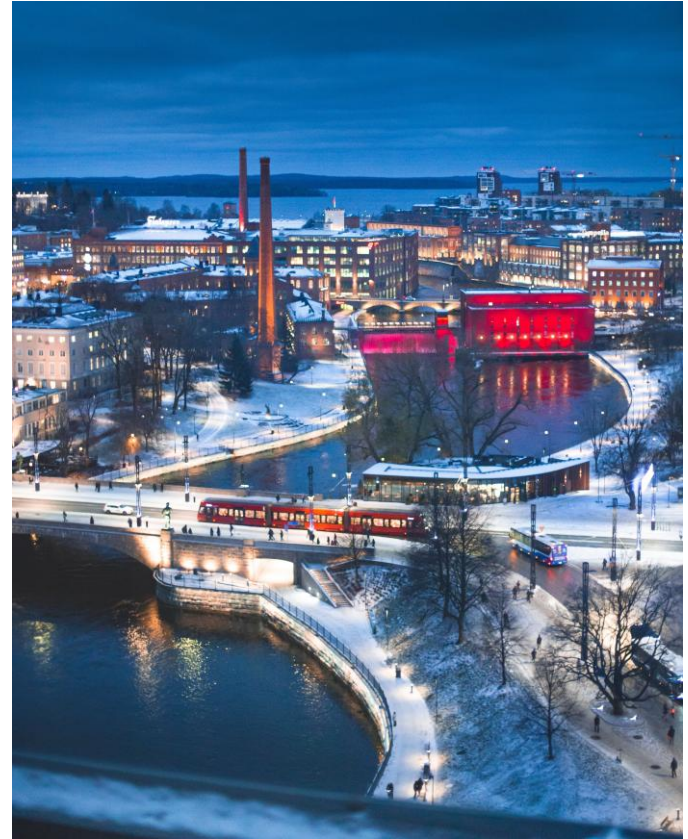
- One common infrastructure “proto-EMDS” following the DSSC Blueprint
 - Federation of local data spaces
 - Data space + Connector-as-a-Service provided to partners for realising their use cases
 - Based on EDC connector.
 - Additional features: UI, federated catalogue, identity management, mobilityDCAT-AP support
- One common governance
- Realising interoperability via a **win-win** for participating cities/regions



Tampere deployment site objectives

- Collection of data, which are mandated in the ITS directive, and interface to Finnish NAP
- Improve monitoring of real-time traffic information, in order to strengthen the city's ability to assess the impact of the actions taken towards optimising the transportation system, related emissions and calculation of UMI indicators

TAMPERE.
FINLAND



© Visit Tampere



Tampere use cases for deployEMDS demonstration

- Sharing of Tampere traffic measurements in DATEX format
 - Data from Tampere IoT platform converted to DATEX by VTT
 - Data transferred to Fintraffic (and Flanders)
 - Data also visualised in Digital Twin VTT
- Public transport history data
 - Service from Fintraffic to city
 - Real time data history, containing disturbances and substantial delays.
 - API
 - Use of data usage restrictions to be demonstrated in deployEMDS





Data space development

- Tampere city data space
 - Operated by VTT
 - Connector-as-a-Service approach
 - VTT offers connector as a service to other partners, so that deployment effort is minimal
- protoEMDS
 - federation of local (deployment site) data spaces, including Tampere City data space



Connector-as-a-Service

Why a hosted dataspace platform?

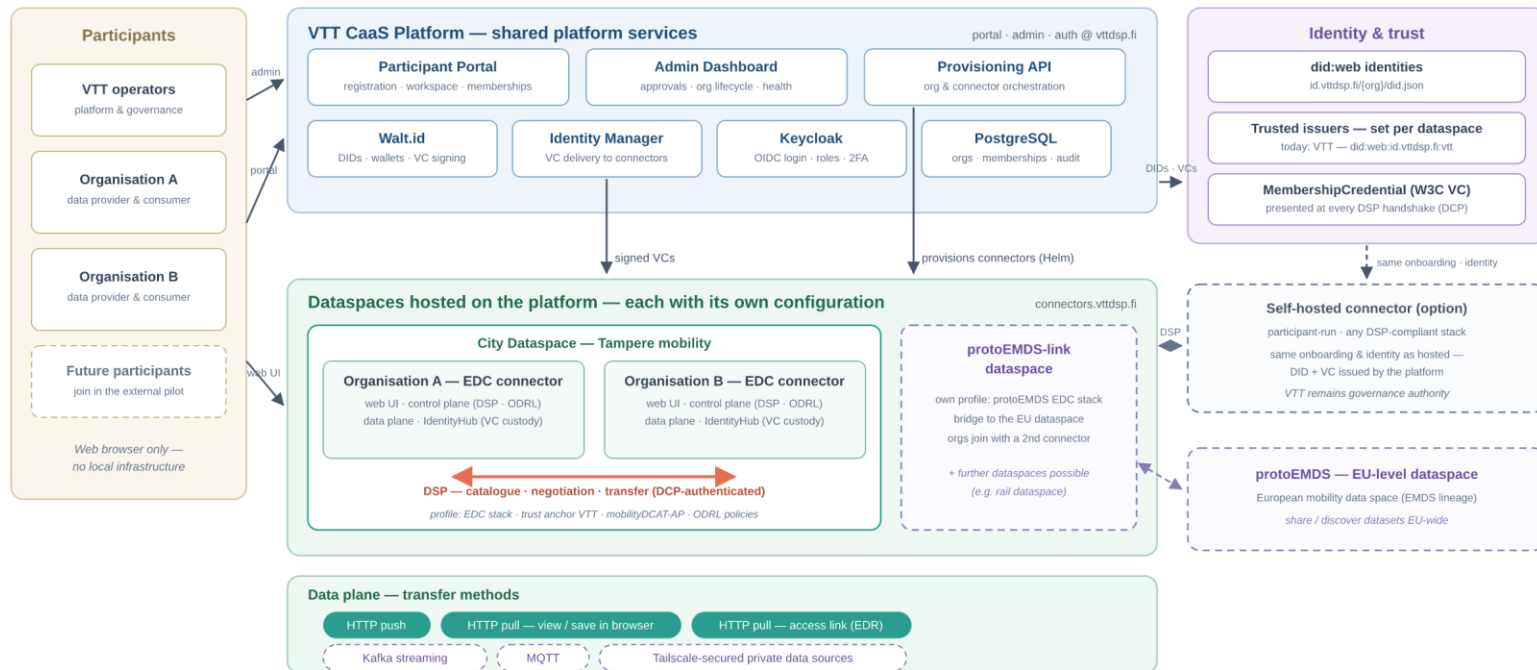
- Dataspace connectors are powerful but heavy to operate — Kubernetes, cryptographic identity, protocol configuration
- Most prospective participants (cities, operators, research institutes) do not want to run that infrastructure
- VTT CaaS: we operate the connectors — participants need only a web browser
 - Data ownership, governance and policy decisions stay with the participant
- Built on open standards end to end: IDSA Dataspace Protocol, W3C DID & Verifiable Credentials, ODRL, mobilityDCAT-AP
- Lowers the entry barrier to dataspaces without locking anyone in — self-hosting remains possible

Tampere City data space

VTT Data Space Platform (VTTDSP)

Connector-as-a-Service — available now (solid) and roadmap (dashed) · deployEMDS · June 2026

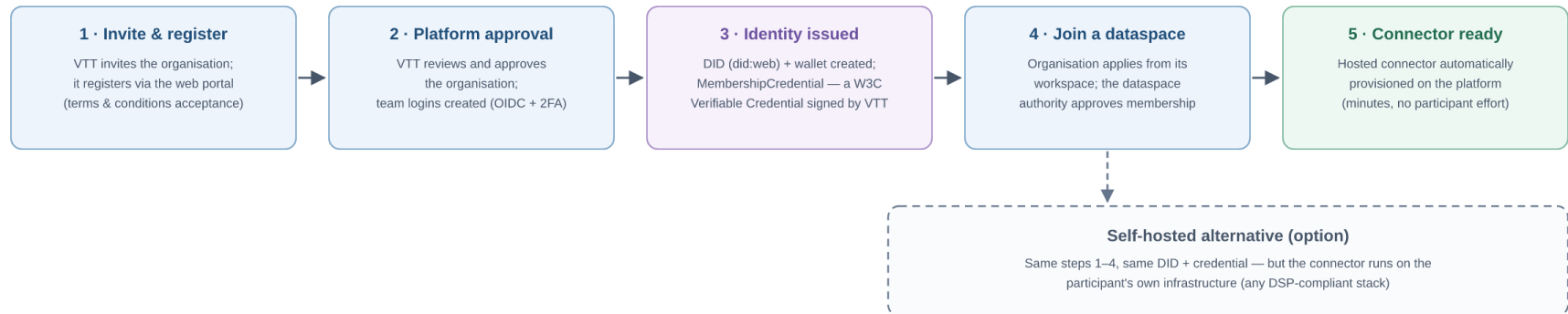
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Onboarding & identity management

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One organisation identity — valid across all dataspace and both hosting models



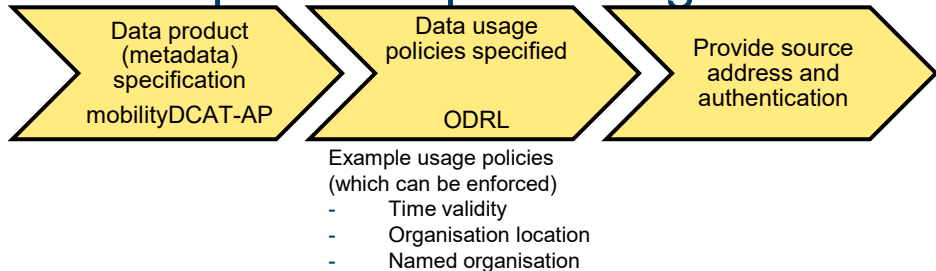
Trust model

- One DID per organisation — publicly resolvable (did:web), established once at registration
- MembershipCredential: a W3C Verifiable Credential signed by the dataspace's trusted issuer
- Connectors accept only credentials from the dataspace's trusted issuers and verify them cryptographically at every exchange (DCP) — no shared accounts or API keys between organisations
- Trusted issuers are part of each dataspace's profile — a dataspace can designate its own authority, or several issuers
- Humans sign in with OIDC + two-factor authentication; machine-to-machine trust is credential-based and automated

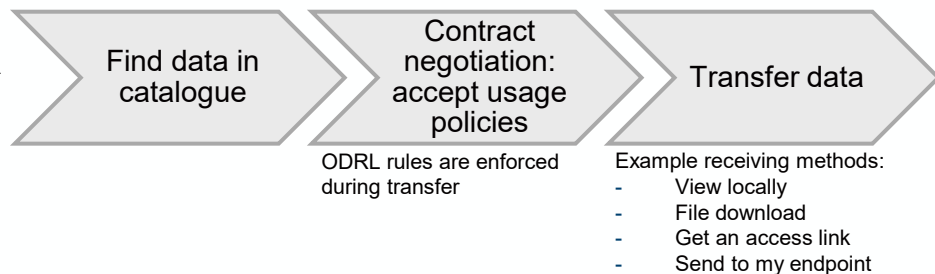


Data space processes

Data provider: publishing data



Data consumer: transfer data



3. USAGE POLICY

ACCESS CONTROL

Choose whether every dataspace member can request this dataset, or require matching organisation credentials.

☒ All dataspace members

☐ Restrict access

Validity window restrictions

☒ None ☐ From ☐ To ☐ Between

No usage constraint. Any member can negotiate and transfer at any time.

4. SOURCE CONNECTION

Source URL * (http/https)

Must be a **publicly reachable** URL — the connector fetches the data from here when a consumer pulls it, so VTT-internal or private hosts won't work.

Source authentication

Header name:

API key / token:

Catalogue

Tampere region municipalities

Provider: **acme-oy** Dataset ID: **tampere-region-municipalities-393c6bf93ddb**

Policy: **Restricted to 1 named partner**

DESCRIPTION

Policy example — Named partner: only VTT Oy (didwebid.vttsp.fivtt-oy) should be able to discover, negotiate and receive this dataset. Reference data for municipalities served by the Tampere regional public transport network.

METADATA (MOBILITYDCAT-AP)

Mobility theme	Transport mode
Public transport — scheduled transport	Bus, Tram, light rail
Update frequency	Spatial coverage
Daily	Tampere region, Finland
Format	Keywords
application/json	municipalities, reference-data, named-partner
Licence	Publisher
CC0 1.0 (public domain)	didwebid.vttsp.fi:acme-oy



Conclusions

- We have developed a data space, using Connector as a Service approach, reducing the technical effort to join dataspace
- Currently the data space is local; next step is federation to the proto-EMDS
 - Components are mature for local data spaces, interoperability between components and identity management is challenging in federation
- Benefits of data space:
 - When access to data has to be limited to trusted partners
 - Open data (without access limitations) can be made findable through federated catalogues, e.g. Finnish NAP included in proto-EMDS federated catalogue.

bey⁰nd

the obvious

Thank you!

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