



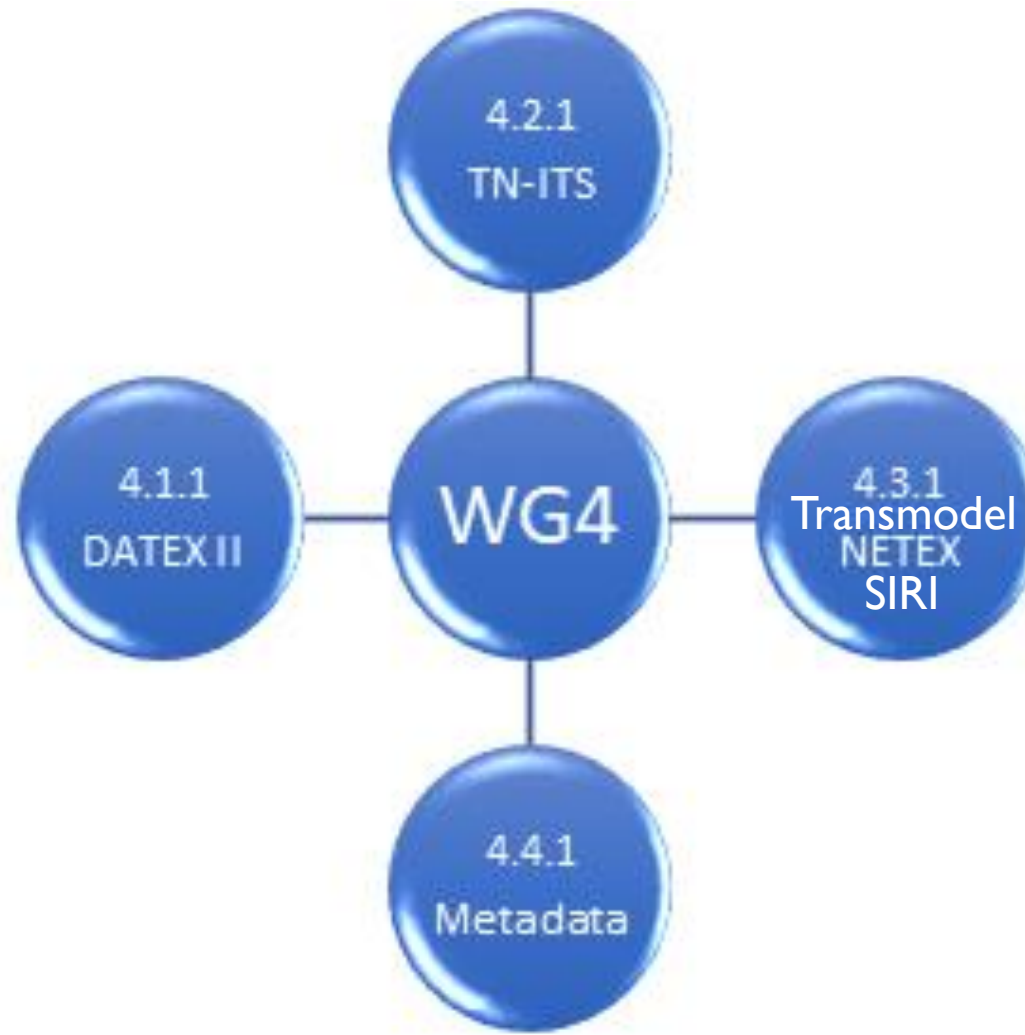
Alignment and harmonization of data exchange standards

WG4 – Sylvain Belloche

Mobility Data Days

09.11.2023

Introduction and objectives



Introduction and objectives

Context of the **finalization of a roadmap** for alignment and harmonization of data exchange standards (NAPCORE WG4)

Today's session:

- Presentation of the current content of the roadmap
 - Topics for alignment and harmonization
 - Alignment and harmonization methodology
 - Actions and assessment
- Do not hesitate to interact!



Agenda

- **General presentation of each standards**
 - DATEX II
 - TN-ITS
 - Multimodal data exchange standards
 - Metadata
- **Presentation of the roadmap:**
 - Objectives, identified topics, actions and tasks
 - Methodology to ensure alignment / harmonization
 - Presentation of 2 topics: parking and real-time traffic information
- **Discussion with the audience**





I. Presentation of the standards

Alignment and harmonization of data exchange standards

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DATEX II

ITS enabled by DATEX II

[presenter name]

[presenter title/role]



Information challenge



DATEX II

About DATEX II

- E-language for road-traffic and travel related information
- For all road-networks (motorway, trunkroads and urban/local roads)
- Maintained by stakeholder community
- Standardized stepwise in CEN TC278 WG8 (16157 series) and ISO TV204 WG9 (for Exchange).
- Local additions are facilitated
- Like a natural language: grammar and dictionary

DATEX II

Standardisation? The will to cooperate



Each actor has to maintain receiving asynchronous different interfaces in terms of:

- Information model
- Location referencing standards

DATEX II

Local adaptations

Examples:

- Netherlands expanded road works (hindrance category).
- OpenLR support started as a local need in Sweden
- Germany: real time fuel price information -> Energy Publication
- Cross border TMP between Spain and France (being standardized right now)

DATEX II

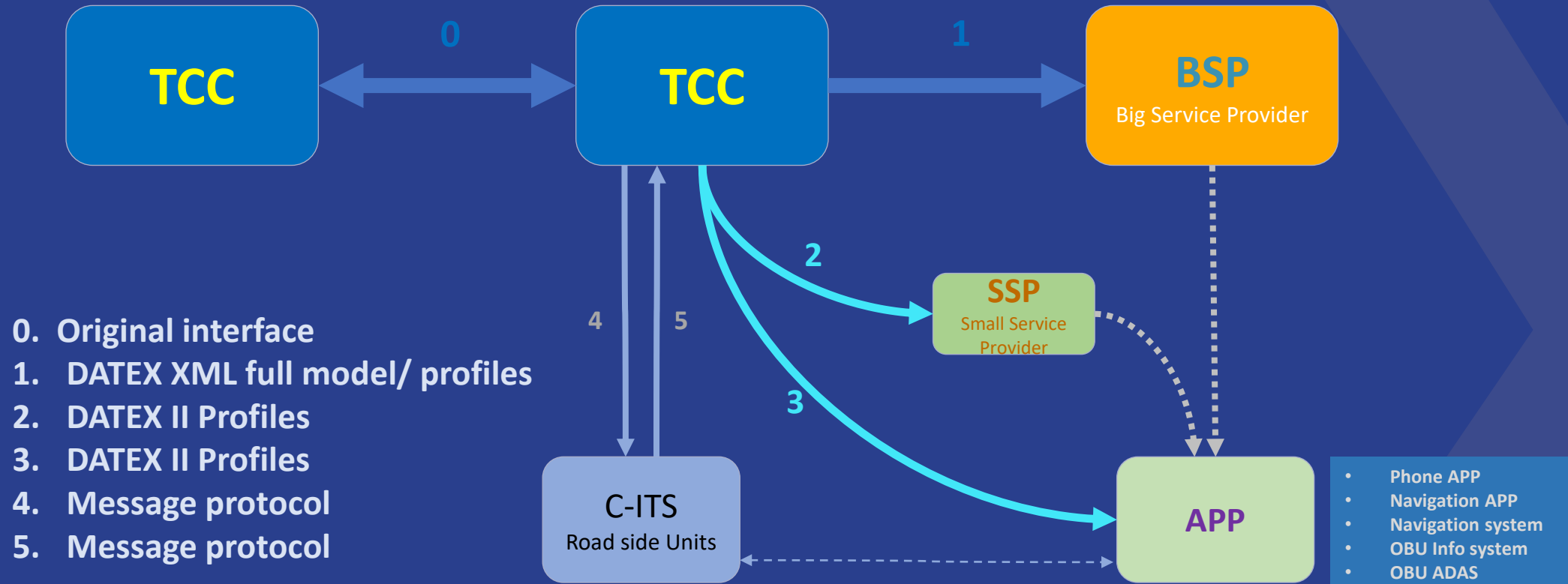
If DATEX II is the letter...

- DATEX II = language and paper
- DATEX II profile = predefined form for specific purpose
- Postal system: uses standard IT
 - Two envelope types are developed (XML; json)
 - One transport type is defined in two flavours
 - Pull (webservices and simple http)
 - Push
- Content is independent from postal system
- Support for other delivery methods are being developed



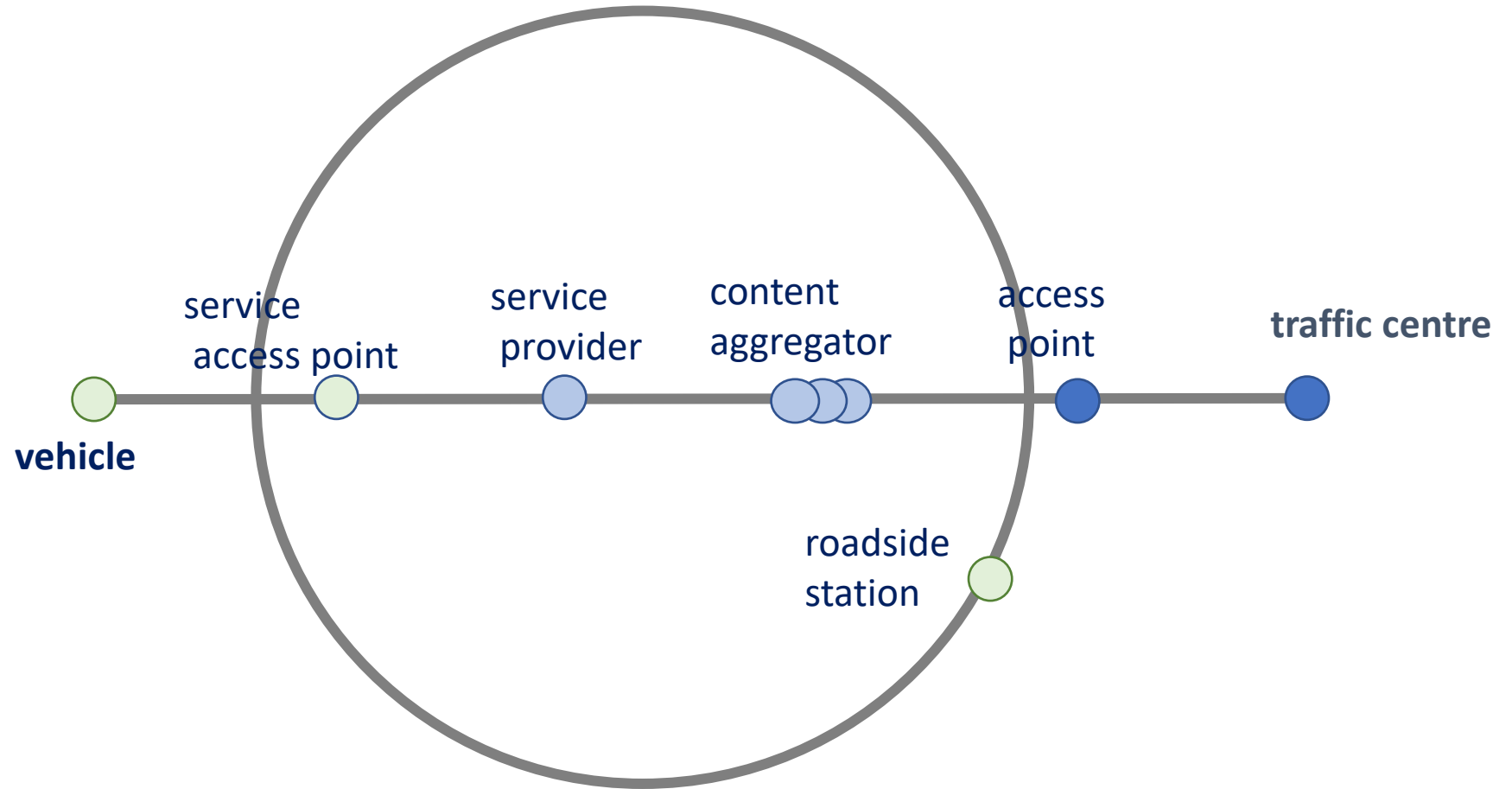
DATEX II

The Evolution of DATEX II



DATEX II

The ITS value chain



DATEX II

The content part of DATEX II

- Traffic situations
- Traffic status
- Traffic management
- Messages displayed on VMS
- Service information
- Parking
- Urban traffic specifics
- Electromobility infrastructure
- Management of electronic traffic regulations
- Urban vehicle access regulations
- Map updates*

DATEX II

What is DATEX II about?

- Toolbox

ready to support:

- Traffic management
 - Urban mobility
 - Electric mobility charging infrastructure
 - Logistics
 - Electronic traffic regulations
 - Cooperative, connected, and automated mobility
- Functional packages instead of one big model
 - Exchange completely separated (now also JSON and ASN.1)
 - Profiles per use-case

DATEX II

DATEX II in the NAP ecosystem

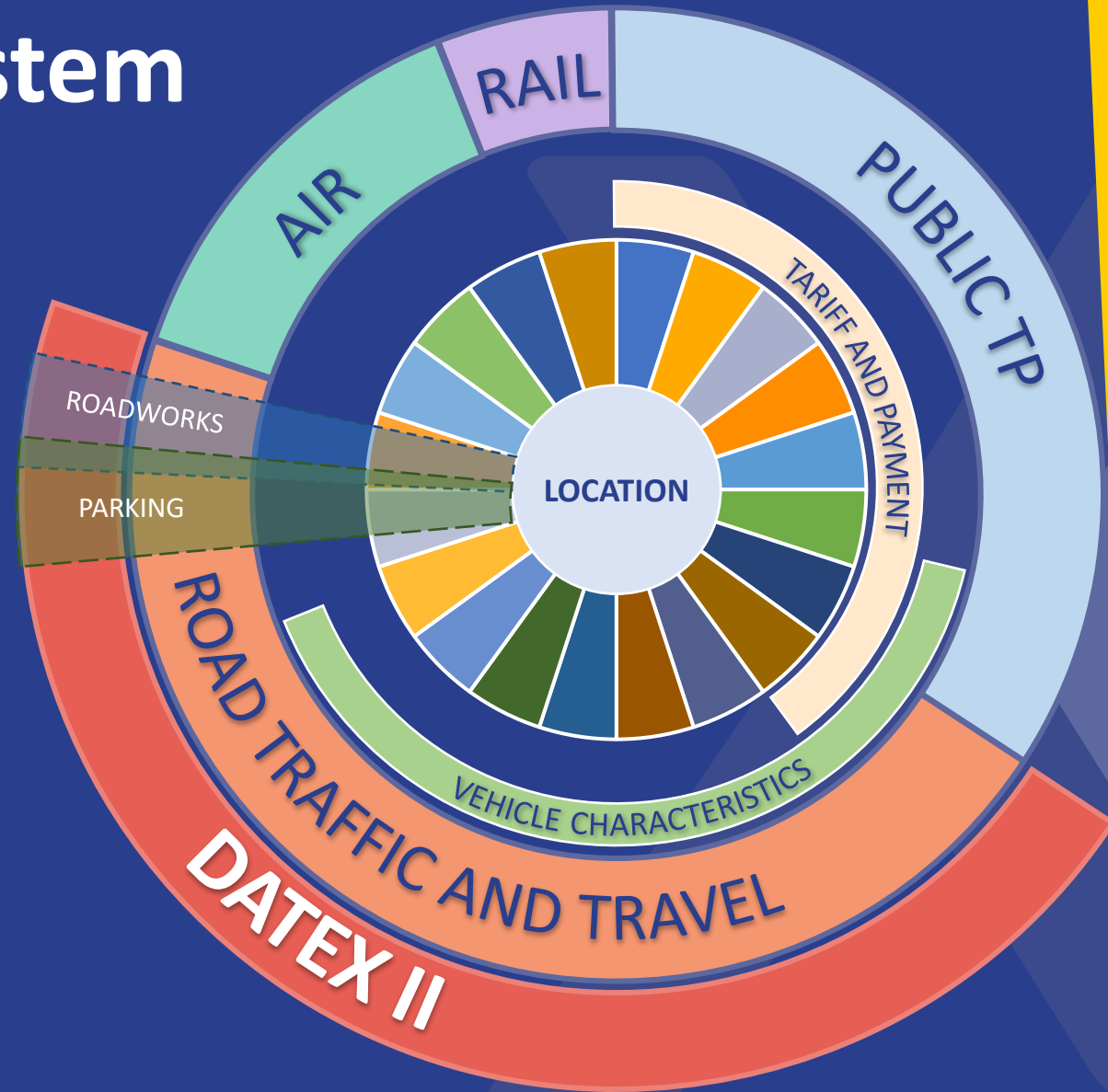


EU Regulations

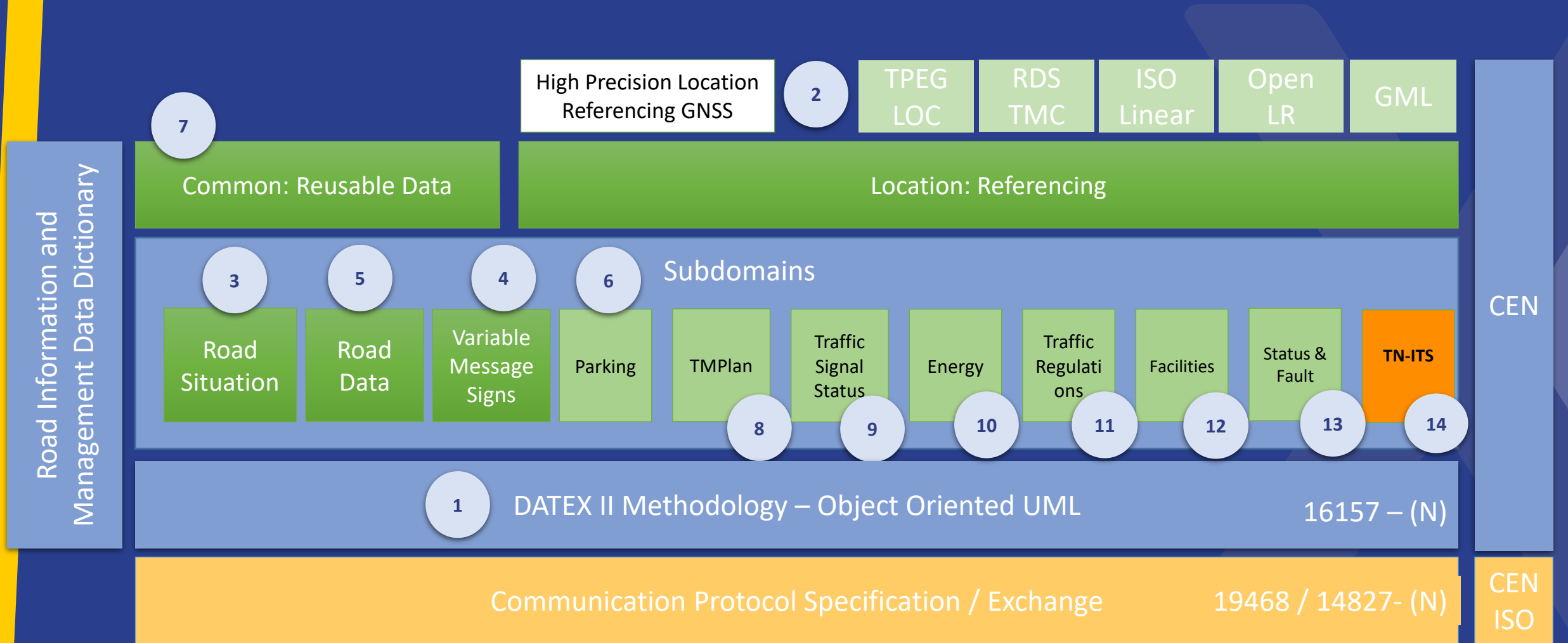
- Commission Delegated Regulation (EU) 2015/962 – RTTI
- Commission Delegated Regulation (EU) 2017/1926 – MMTIS
- ...

FACILITATE

???



DATEX II Components



DATEX II



Co-funded by
the European Union



I. Presentation of the standards TN-ITS

Alignment and harmonization of data exchange standards

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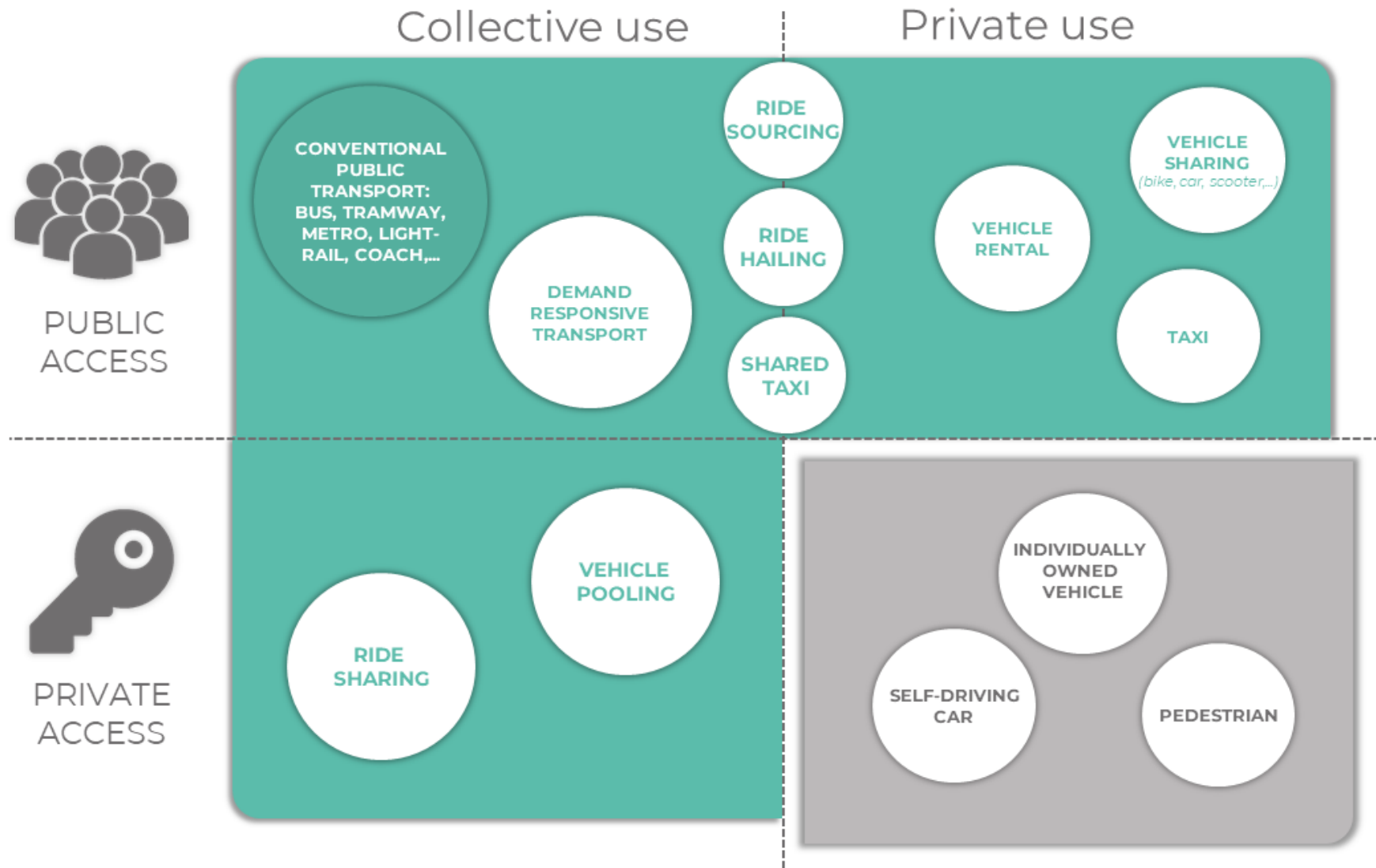
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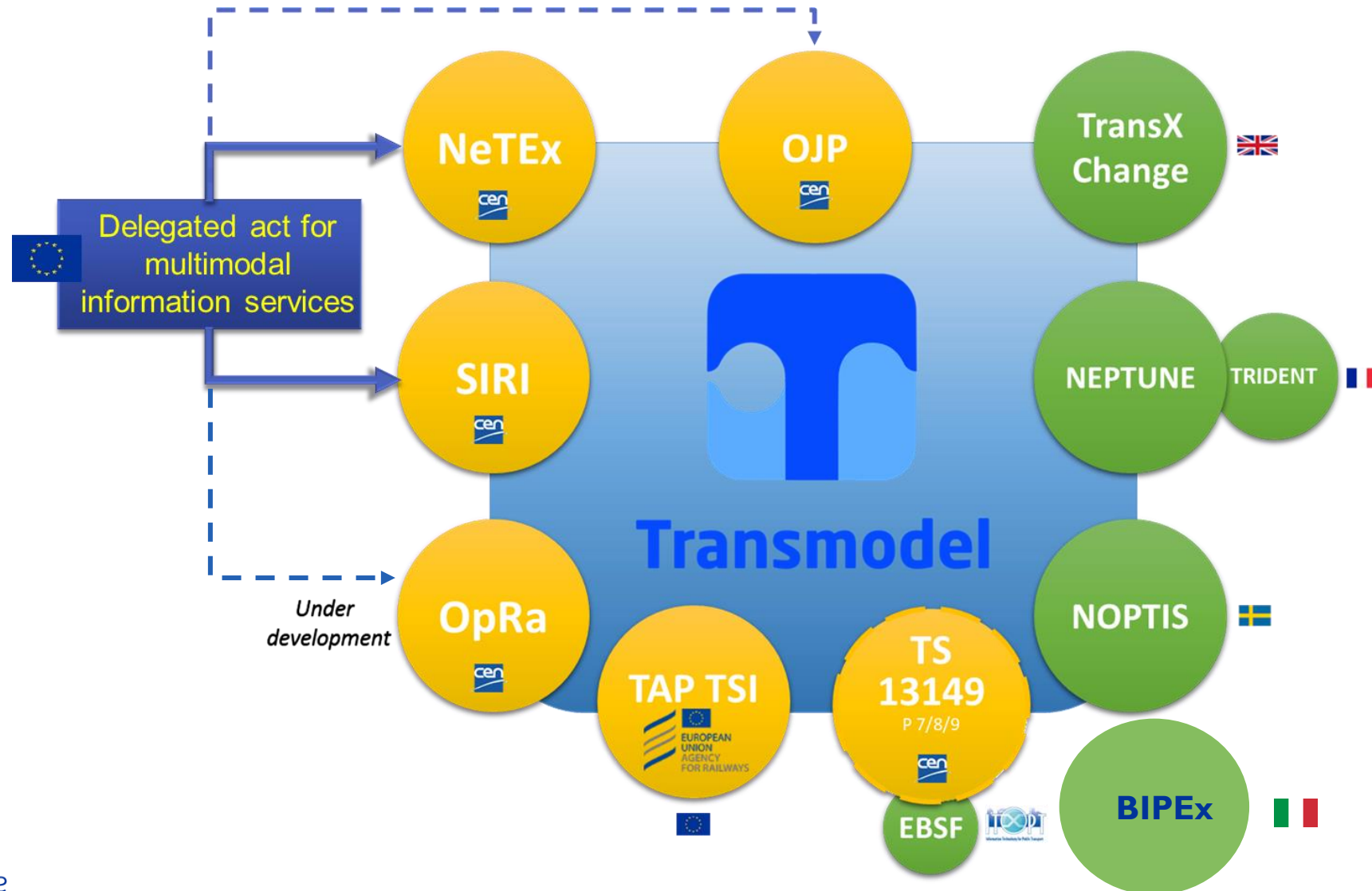
Multimodal data standard presentation

09/11/2023

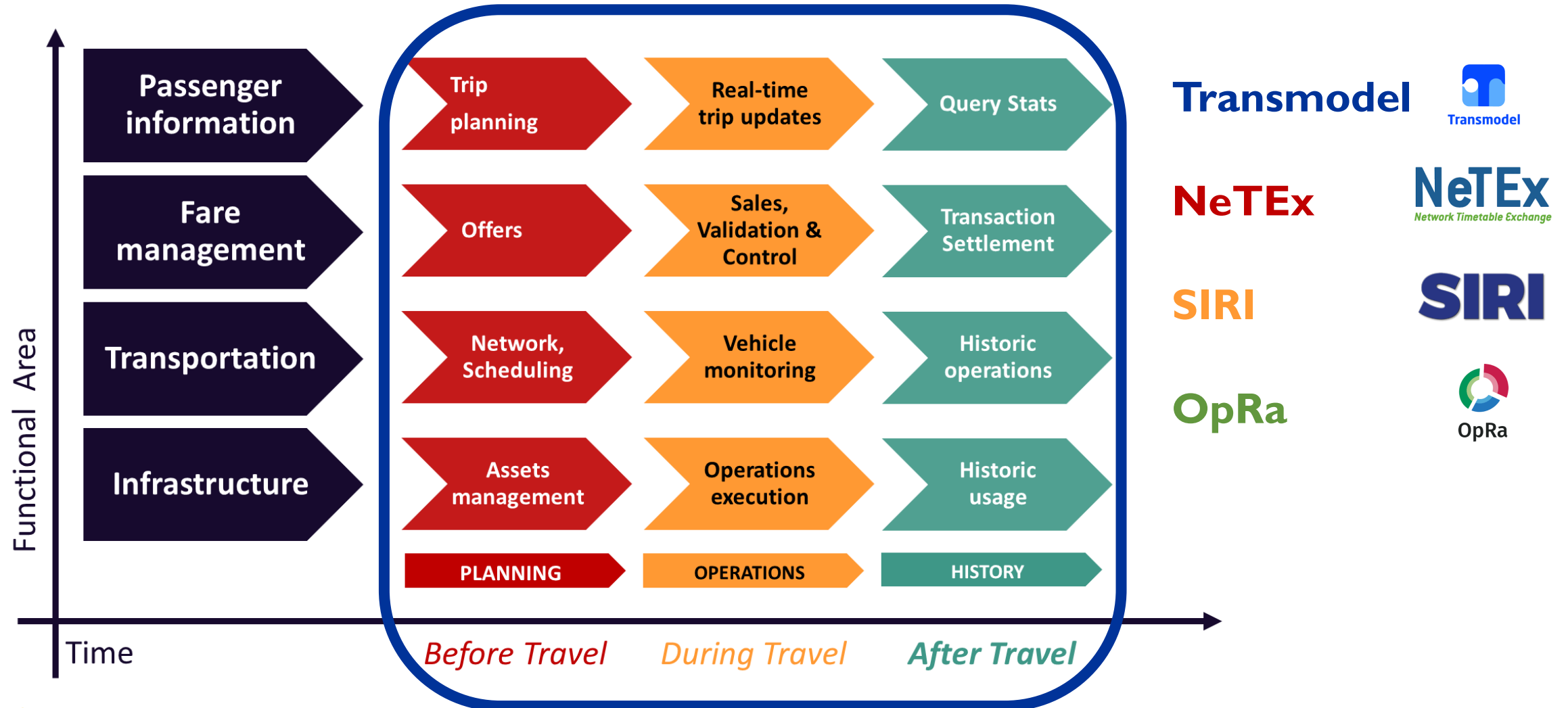
Multimodal data standards – Scope



Multimodal data standards – Ecosystem



Multimodal data standards – Functional Areas





mobilityDCAT-AP

NAPCORE Mobility Data Days – WG 4 Session

November 9th, 2023

Context

- Metadata for search function in NAPs

The screenshot shows the TRANSPORTDATA.BE website interface. At the top, there is a navigation bar with links for Datasets, Organizations, News, and About, along with a search bar. Below the navigation bar, the page title is "TRANSPORTDATA.BE" and the current page is "Datasets". A search bar is present with the placeholder text "Search datasets...". The main content area shows "97 datasets found" and an "Order by: Relevance" dropdown menu. On the left side, there are filter sections for "Filters", "Organizations", "Tags", "Formats", and "Licenses". The "Tags" filter is highlighted with a red box, and a red arrow points to a dropdown menu that is open, showing a list of tags with their respective counts: Rail (including high speed rail) 36, Car 23, Bus 22, Truck 20, Cycle 19, Car-sharing 18, Motorcycle 17, Taxi 17, Tram 15, and Bike-sharing 14. The "Formats" section shows "Other 30", "CSV 29", "JSON 29", and "XML 10". The "Licenses" section shows "License not specified 37" and "Creative Commons CCZero 33".

TRANSPORTDATA.BE

Datasets Organizations News About Search

Home / Datasets

Filters

Organizations

Tags

Formats

Other 30 CSV 29 JSON 29 XML 10

Licenses

License not specified 37 Creative Commons CCZero 33

Search datasets...

97 datasets found

Order by: Relevance

Tags

Rail (including high speed rail) 36

Car 23 Bus 22 Truck 20

Cycle 19 Car-sharing 18

Motorcycle 17 Taxi 17 Tram 15

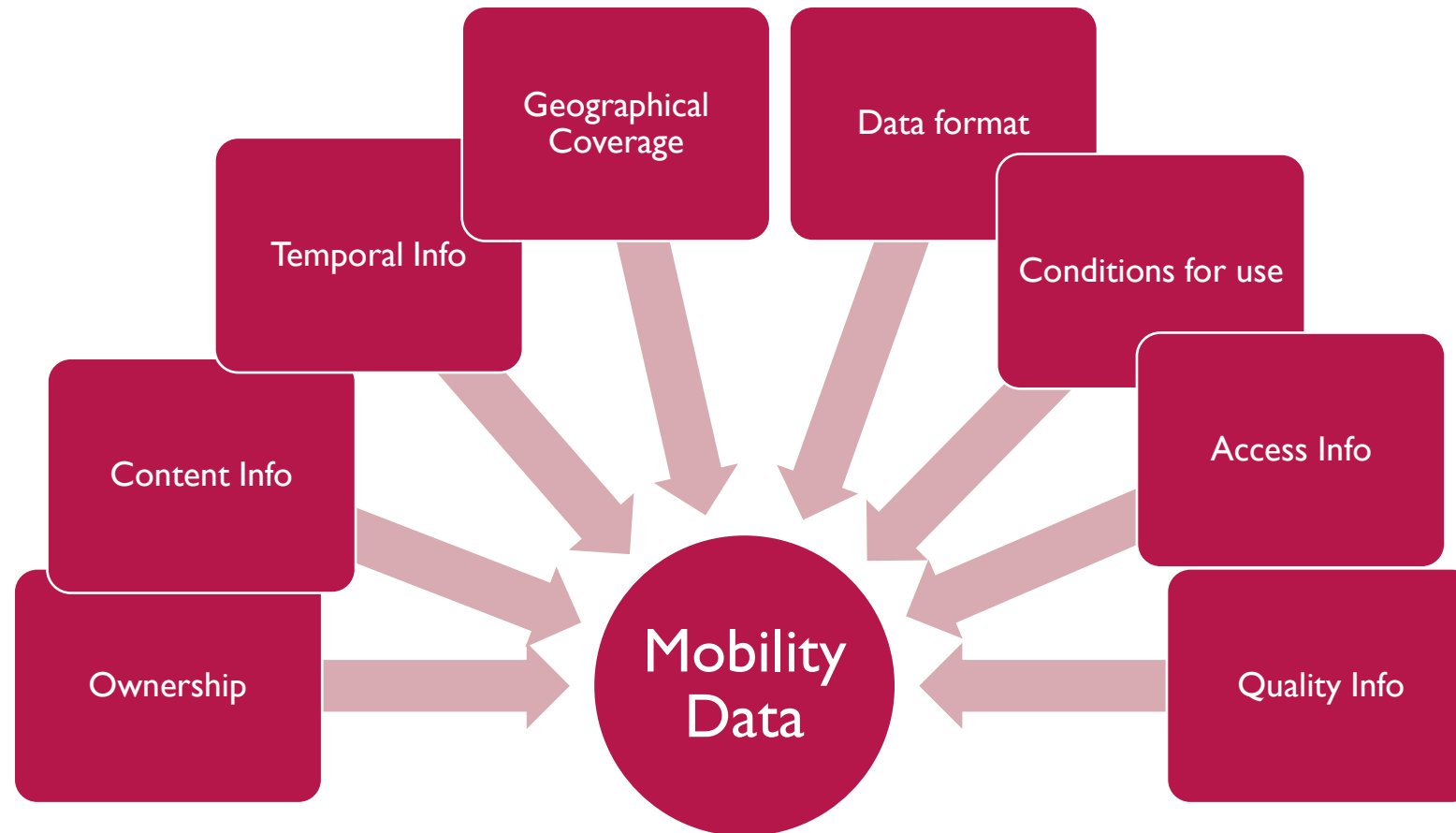
Bike-sharing 14

nationaal-geografisch-instituut-institut-geographique-national-nationale-geographische-institut-national-

Belgian hydrography. This data set includes six classes. First class: waterway kilometre markers of the Belgian surfaces. Third class: watercourse segments. Fourth class: water points, which means points where the water il. Fifth class: wetlands, which means zones where the soil is saturated or regularly flooded. Sixth class: water sponding hyperlink.

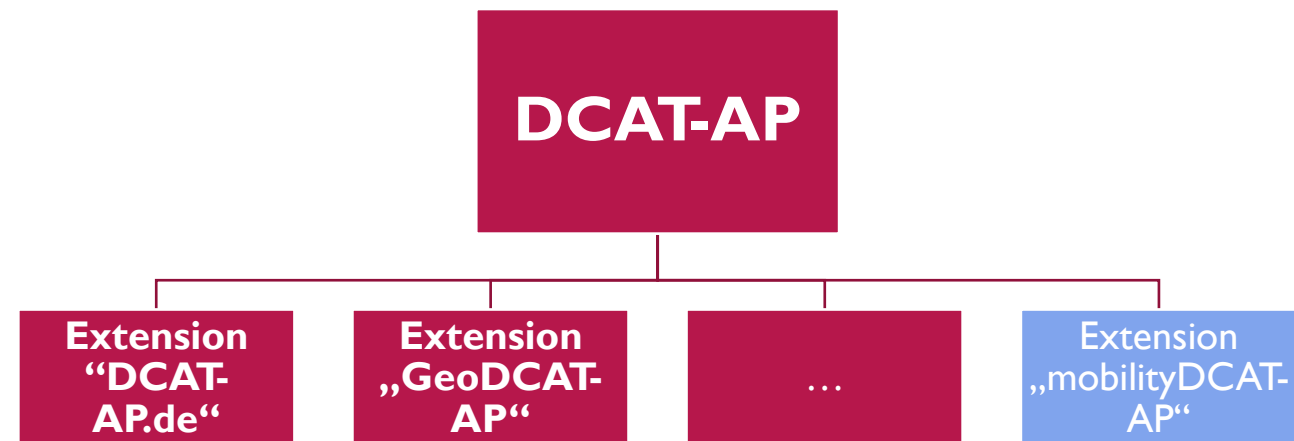
se information.

How to describe mobility data?



DCAT-AP framework

- Idea: a DCAT-AP extension for mobility data



A new Metadata specification



A new Metadata specification

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 - 3.2 Recommended Classes
 - 3.3 Optional Classes
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 - 4.1.1 Recommended properties for Address (Agent)
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 - 4.2.3 Optional properties for Agent

mobilityDCAT-AP - Version 1.0.0

A mobility extension for the DCAT application profile for data portals in Europe



NAPCORE Recommendation 16 October 2023

This version:

<https://w3id.org/mobilitydcat-ap/releases/1.0.0/>

Latest published version:

<https://w3id.org/mobilitydcat-ap/releases/>

Latest editor's draft:

<https://w3id.org/mobilitydcat-ap/drafts/latest/>


Previous version:


<https://w3id.org/mobilitydcat-ap/drafts/1.0.0-draft-0.1/>


Latest Recommendation:

<https://w3id.org/mobilitydcat-ap/releases/1.0.0/>

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[NAPCORE Sub-Working Group \(SWG\) 4.4 \(NAPCORE \(National Access Point Coordination Organisation for Europe\) Organization\)](#)

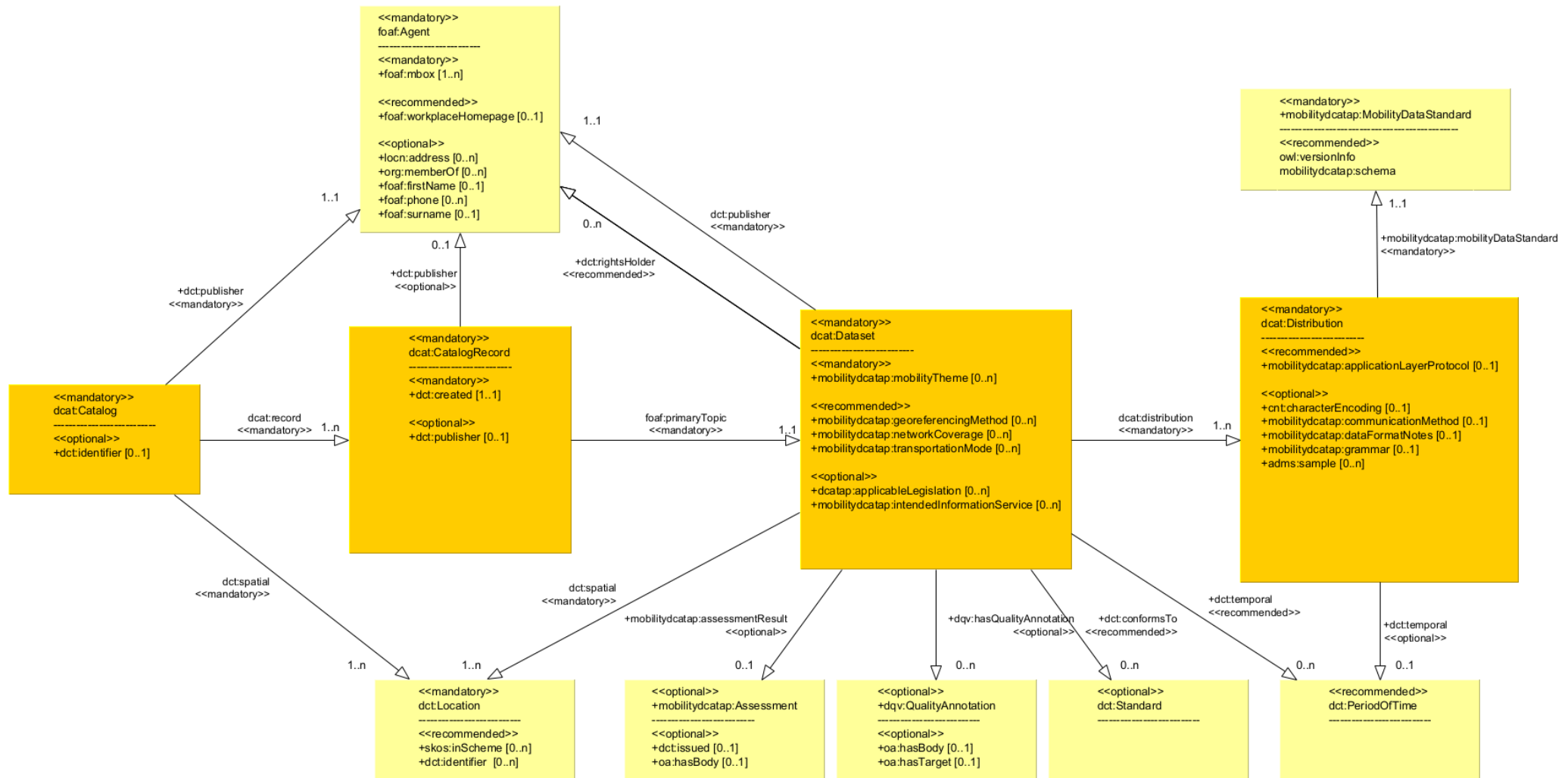
Work done so far

- Preparatory actions : Requirement Analysis, RoadMap, Conceptual Model, Mapping to DCAT-AP elements
 - <https://napcore.eu/providing-a-baseline-for-a-new-metadata-scheme-for-european-naps/>
- Draft and review of mobilityDCAT-AP
- Intensified exchange with DCAT-AP/SEMIC group

The final product

- October 16th 2023: official release of mobilityDCAT-AP v1.0 specification
 - A set of documentation and technical artefacts
 - <https://w3id.org/mobilitydcat-ap/releases/>

mobilityDCAT-AP: UML model



Upcoming tasks

- mobilityDCAT-AP governance & maintenance concept
December 2023
- Accompanying Guidelines as additional user support
January 2024
- WG 2 Metadata demonstrator as Proof-of-concept for mobilityDCAT-AP
April 2024

Thank you!



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II. Presentation of the roadmap

Alignment and harmonization of data exchange standards

Mobility Data Days

09.11.2023

Roadmap for alignment and harmonization of data exchange standards

- Finalisation of the roadmap underway inside NAPCORE WG4
- Roadmap to help to ensure harmonization between standards: how?



Methodology to ensure alignment and harmonization

09/11/2023

Alignment methodology – Overview

Three
main
scenarios

Alignment

Harmonization

Mapping

Alignment methodology – Alignment

I. Alignment:

- applied (new) standardisation topics
- supported by one or more of the NAPCORE core standards, avoiding parallel/competing initiatives.
- identifying existing semantical equivalent concepts that can be subject of alignment in this context

Alignment methodology – Harmonization

2. Harmonization:

- The process to ensure that semantical equivalences between standards are interoperable:
 - unifying overlaps
 - merging standards

Alignment methodology – Mapping

3. Mapping:

- Process that allows representation of a reference standard to a different one.
- when overlapped standards exist and cannot be aligned nor harmonized:
 - Legacy
 - Wide implementation
- Mappings require regular updates and maintenance.



II. Presentation of the roadmap

Alignment and harmonization of data exchange standards

Mobility Data Days

09.11.2023

Roadmap for alignment and harmonization of data exchange standards

- Finalisation of the roadmap underway inside NAPCORE WG4
- Roadmap to help to ensure harmonization between standards
- To achieve harmonization:
 - Identification of common grounds, such as
 - Real-time traffic information / real-time multimodal traffic information
 - Parking data
 - Infrastructure changes, conditions of use of the infrastructure, availability of the infrastructure
 - Search for alignment or harmonization of the standards for these common grounds
 - Alignment: management of the distribution of new standardisation topics, to avoid parallel/competing initiatives
 - Harmonization: interoperability of semantical equivalences between standards
 - If alignment or harmonization is not possible (legacy...), elaboration of a mapping
 - Mapping and convertor tools needed
 - Requires maintenance and updates

Roadmap for alignment and harmonization of data exchange standards

Main action foreseen:

- Elaboration of a governance process to enable alignment and harmonization between data exchange standards
- This process may include:
 - Communication agreement to share change requests
 - Assessment of the relevance of a task / work item
 - If relevant, assignement of a host and definition of resources for the work item
 - Joint solution to be found. This may lead to prior definition of priorities to select one proposal from a range of conflicting solutions

Communication and cooperation are keys!

Roadmap for alignment and harmonization of data exchange standards

- Case of metadata: potential interaction points between domain data standards and metadata includes
 - Equivalent information provided by both standards (e.g data provider details)
 - Automated creation of metadata from content data (such as via a GUI - graphical user interface)
- Pending question about the role of standardization organization, such as CEN
- Illustration with 2 topics
 - Parking
 - Real-time traffic information



Focus – Parking data

09/11/2023

Parking

DATEX II

APDS

Safe and secure truck

Storage due to crisis

Transmodel

Park-and-ride

Park-and-drive

Scooter parking

Parking Tariffs

Parking

	Ontology		
Data Category (MMTIS)	<u>Transmodel minimum CONCEPT</u>	<u>Transmodel Extra CONCEPT</u>	<u>Datex II CONCEPT</u> (If not otherwise specified, from: <u>ParkingTablePublication</u>)
	COMMISSION DELEGATED REGULATION (UE) 2017/1926		
Location search (origin / destination)	ENTRANCE (VEHICLE and PASSENGER) PARKING		<u>VehicularAccess</u> and <u>PedestrianAccess</u> Place
Location search (demand-responsive modes)	PARKING	PARKING AREA REFUELLING EQUIPMENT VEHICLE CHARGING EQUIPMENT	Place, <u>SubPlaceElement</u> <u>Place.ElectricChargingEquipment</u> / <u>SubPlaceElement.ElectricChargingEquipment</u> For all energy types: <u>EnergyInfrastructureTablePublication</u> (Viewpoint = Energy distribution) <u>EnergyInfrastructureSite.EnergyInfrastructureSite.RefillPoint</u>

- National NeTEx parking profile (France)
(http://www.normes-donnees-tc.org/wp-content/uploads/2021/10/NF_Profil-NeTEx-pour-les-ParkingsF-v1.2a.pdf)



The column “DATEX II CONCEPT” is extracted from: drafted version parking profile

Focus

- Parking data
- Real-time traffic information

RTTI and Public Transport

NAPCORE Mobility Data Days 09-11-2023

Martin van Ekelenburg

NDW, The Netherlands

RTTI related data standards WG4

- DATEX II – Real Time Traffic Information
 - Disturbances on the road network
- Transmodel NeTEx / SIRI – Public Transport Information
 - Timetables
 - Real Time Information

DATEX II

Planned roadworks / events

DATEX II contains:

- Road closures
- Possible rerouting

Public transport impact:

- Delays on the route
- Changes of a stop
- Cancellations of a stop



DATEX II

Unplanned disturbances

DATEX II contains

- Accidents
- Traffic jams
- Weather impact on road
- Road closures

Public transport impact:

- Delays on the route
- Unplanned changes/ cancellation of a route



Unplanned disturbances

Public transport events:

- Queuing times near ferries

Traffic Management impact

- Slow down traffic route



DATEX II

Harmonisation/ alignment

- More than traveller information data
- Relevance for incident management and the response
- ,
- Support the data concepts in the involved standards in harmonized way
- Not driven by the Delegated Regulations

- Intermodal RealTime Incident Management Process

DATEX II

Thank you for your attention!

What's next?

- Roadmap to be enhanced and finalized
- WG4 workshop 29-30 November

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WG4 leader

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