# mobilityDCAT-AP Implementation and Publication

NAPCORE Mobility Data Days 2023 Mario Scrocca (Cefriel) mario.scrocca@cefriel.com



# mobilityDCAT-AP Roadmaap





## Roadmap https://ceur-ws.org/Vol-3235/paper22.pdf

# mobilityDCAT-AP RDF Implementation

- We mapped the Conceptual Model to RDF classes and properties that should be used for the actual encoding of metadata fields
- We extended the <u>DCAT Application</u> <u>Profile</u> (DCAT-AP) defined by the European Commission



We define custom RDF class and properties, e.g.,
 mobilitydcat-ap:transportMode to encode the metadata information
 about the transport modes associated with a dataset

# mobilityDCAT-AP Implementation

 Analysis of GeoDCAT-AP implementing SEMIC best practices for metadata specifications

SEMIC

## I. Online website for documentation

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### GeoDCAT-AP - Version 2.0.0 A geospatial extension for the DCAT application profile for data portals

SEMIC Recommendation 23 December 2020

### This version:

in Europe

https://semiceu.github.io/GeoDCAT-AP/releases/2.0.0/ Latest published version:

- https://semiceu.github.io/GeoDCAT-AP/releases/
- https://semiceu.github.io/GeoDCAT-AP/drafts/latest/

#### Previous version: https://semiceu.github.io/GeoDCAT-AP/drafts/2.0.0-draft-0.1/

- Previous Recommendation:
- https://semiceu.github.io/GeoDCAT-AP/releases/1.0.1/
- Editors: Andrea Perego (External Consultant, European Commission, Joint Research Centre) Bert van Nuffelen (TenForce)
- Former editors:
- Andrea Perego () (European Commission, Joint Research Centre) Stijn Goedertier (PwC EU Services) Antonio Rotundo (Agenzia per l'Italia Digitale)
- Author: GeoDCAT-AP Working Group (EU ISA<sup>2</sup> Programme)
- Participate:
  - GitHub semiceu/geodcat-ap File a bug
  - Commit history
    - Pull requests Document status
    - Completed

## 2. Different artifacts to be generated

# 3. Version Management

## GeoDCAT-AP Releases @

- Latest release:
  - HTML version
  - Turtle version
  - RDF/XML version
  - JSON-LD version
  - SHACL version
- GeoDCAT-AP v2.0.0 (23 December 2020) Major release.
- GeoDCAT-AP v1.0.1 (2 August 2016) Editorial revision to GeoDCAT-AP v1.0.
- GeoDCAT-AP v1.0 (23 December 2015)

### Licence 🖉

GeoDCAT-AP releases, starting from version 2.0.0, are distributed under CC BY 4.0.

Previous releases are distributed under the ISA Open Metadata Licence v1.1.



# mobilityDCAT-AP Implementation

# mobilityDCAT-AP HTML Documentation defined using the **ReSpec tool**

## **Draft documentation** (unstable)

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mobilityDCAT-AP - Version 1.0.0 A mobility extension for the DCAT application profile for data portals in Europe mobilitydcat-ap

NAPCORE Editor's Draft 11 May 2023

### This version:

https://w3id.org/mobilitydcat-ap/drafts/latest/ Latest published version:

https://w3id.org/mobilitydcat-ap/releases/ Latest editor's draft:

### https://w3id.org/mobilitydcat-ap/drafts/latest/

Latest Recommendation: https://w3id.org/mobilitydcat-ap/releases/1.0.0/

Editors: Lina Molinas Comet () (Fraunhofer Institute for Applied Information Technology FIT)

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

GitHub mobilityDCAT-AP/mobilityDCAT-AP

- - Document version:
- Record
- Record

- Peter Lubrich () (Federal Highway Research Institute (BASt)) Mario Scrocca () (Cefriel) Author:
- Participate:
- File a bug
- Commit history Pull requests
- Document status
- Completed
- 100
- Please check the errata for any errors or issues reported since publication.
- This document is also available in these non-normative formats: RDF/XML, Turtle, JSON-LD, and SHACL (Turtle)

## Versioned releases (stable)

for data portals in Europe

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mobilityDCAT-AP - Version 1.0.0 A mobility extension for the DCAT application profile mobilitydcat-ap



#### 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/

Lina Molinas Comet () (Fraunhofer Institute for Applied Information Technology FIT) Peter Lubrich (5) (Federal Highway Research Institute (BASt)) Mario Scrocca (2) (Cefriel)

#### Author:

Editors:

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

#### Participate: GitHub mobilityDCAT-AP/mobilityDCAT-AP

File a bug

Document status

Completed

Document version:

NAPCORE SWG 4.4

1.0.0

Reviewed by:

Commit history

Pull requests

# mobilityDCAT-AP Implementation

- Machine-readable serializations in different RDF formats: RDF/XML, Turtle, JSON-LD
- SHACL shapes for the automatic validation of metadata, i.e., to check if a set of metadata comply with the specification

```
@prefix vcard: <http://www.w3.org/2006/vcard/ns#> .
@prefix voaf: <http://purl.org/vocommons/voaf#> .
       vs: <http://www.w3.org/2003/06/sw-vocab-status/ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@base <https://w3id.org/mobilitydcat-ap/> .
mobilitydcatap: a voaf:Vocabulary,
    owl:Ontology,
    adms:Asset ;
  rdfs:label "mobilityDCAT-AP"@en ;
  dct:abstract "mobilityDCAT-AP is an extension of the DCAT application profile for data portals
  dct:alternative "mobilityDCAT-AP - Version 1.0.0: A mobility extension for the DCAT applicatio
  dct:conformsTo dcatap:,
    <https://joinup.ec.europa.eu/collection/semantic-interoperability-community-semic/document/p
    <https://joinup.ec.europa.eu/collection/semantic-interoperability-community-semic/solution/d</pre>
    <https://www.w3.org/TR/vocab-dcat-2/>;
  dct:created "2023-05-11"^^xsd:date ;
  dct:creator [ a foaf:Group :
      foaf:name "NAPCORE SWG 4.4" ;
      foaf:page <https://github.com/mobilityDCAT-AP/mobilityDCAT-AP> ];
  dct:dateCopyrighted "2023"^^xsd:gYear ;
  dct:description "mobilityDCAT-AP is an extension of the DCAT application profile for data port
  dct:issued "2023-05-11"^^xsd:date ;
  dct:license <https://creativecommons.org/licenses/by/4.0/> ;
  dct:modified "2023-10-15"^^xsd:date ;
  dct:publisher <https://napcore.eu/> ;
  dct:rightsHolder <https://napcore.eu/> ;
  dct:title "mobilityDCAT-AP"@en ;
  dct:type <http://publications.europa.eu/resource/authority/asset-classification/c_89b4bdb7>,
    <http://publications.europa.eu/resource/authority/dataset-type/APROF>,
    <http://publications.europa.eu/resource/authority/dataset-type/ONTOLOGY> ;
  bibo:editor [ a foaf:Person ;
      foaf:name "Lina Molinas Comet" ],
    <https://lina-molinas-comet.name/foaf/#me>;
  vann:preferredNamespacePrefix "mobilitydcatap" ;
  vann:preferredNamespaceUri "http://w3id.org/mobilitydcat-ap/"^^xsd:anyURI ;
  voaf:reliesOn dcatap:,
```



# **Controlled Vocabularies**

- The mobilityDCAT-AP specification also defines "recommended values" to be used for certain metadata fields
- For example, a fixed list of transport modes is defined for the property mobilitydcatap:transportMode
- mobilityDCAT-AP defines 11 controlled vocabularies using the W3C <u>SKOS</u> Recommendation

Air
Bicycle
Bike Hire
Bike Sharing
Bus
Car
Car Hire
Car Pooling
Car Sharing
E-Scooter
Long-distance coach
Long-distance rail
Maritime
Metro, Subway train
Motorcycle
Pedestrian
Regional and local rail
Ride Pooling
Shuttle bus
Shuttle ferry
Taxi
Tram, Light rail
Truck
Other



# **Controlled Vocabularies**

- Excel-based definition to better support collaboration and inputs from domain experts
- The Excel2RDF tool is used to automatically serialise the vocabulary in RDF

ConceptScheme URI	https://w3id.org/mobilitydcat-ap/transport-mode		
dct:title	Transport Mode		
dct:description	Controlled vocabulary for the transport modes covered by a dataset.		
dct:creator	Mario Scrocca (Cefriel)		
dct:creator	Peter Lubrich (BASt)		
dct:publisher	NAPCORE SubWG4.4		
dct:contributor			
dct:contributor			
owl:versionInfo	1.0.0		
owl:versionIRI	https://w3id.org/mobilitydcat-ap/transport-mode/1.0.0		
owl:priorVersion			
dct:license	https://creativecommons.org/licenses/by/4.0/		
http://purl.org/ontology/bibo/status	Published Controlled Vocabulary		
URI	skos:prefLabel		
https://w3id.org/mobilitydcat-ap/transport-mode/air	Air		
https://w3id.org/mobilitydcat-ap/transport-mode/bicycle	Bicycle		
https://w3id.org/mobilitydcat-ap/transport-mode/bike-hire	Bike Hire		
https://w3id.org/mobilitydcat-ap/transport-mode/bike-sharing	Bike Sharing		
https://w3id.org/mobilitydcat-ap/transport-mode/bus	Bus		
https://w3id.org/mobilitydcat-ap/transport-mode/car	Car		
https://w3id.org/mobilitydcat-ap/transport-mode/car-hire	Car Hire		
https://w3id.org/mobilitydcat-ap/transport-mode/car-pooling	Car Pooling		
https://w3id.org/mobilitydcat-ap/transport-mode/car-sharing	Car Sharing		
https://w3id.org/mobilitydcat-ap/transport-mode/e-scooter	E-Scooter		
https://w3id.org/mobilitydcat-ap/transport-mode/long-distance-coach	Long-distance coach		
https://w3id.org/mobilitydcat-ap/transport-mode/long-distance-rail	Long-distance rail		
https://w3id.org/mobilitydcat-ap/transport-mode/maritime	Maritime		
https://w3id.org/mobilitydcat-ap/transport-mode/metro-subway-train	Metro, Subway train		
https://w3id.org/mobilitydcat-ap/transport-mode/motorcycle	Motorcycle		
https://w3id.org/mobilitydcat-ap/transport-mode/pedestrian	Pedestrian		
https://w3id.org/mobilitydcat-ap/transport-mode/regional-and-local-rail	Regional and local rail		
https://w3id.org/mobilitydcat-ap/transport-mode/ride-pooling	Ride Pooling		
https://w3id.org/mobilitydcat-ap/transport-mode/shuttle-bus	Shuttle bus		
https://w3id.org/mobilitydcat-ap/transport-mode/shuttle-ferry	Shuttle ferry		





# **Controlled Vocabularies**

- For each vocabulary, the <u>Widoco tool</u> is used to automatically generate the **HTML documentation** and different RDF serialisation files
- Version management: new versions of each vocabulary may be released independently from the mobilityDCAT-AP specification

### language en Transport Mode This version: https://w3id.org/mobilitydcat-ap/transport-mode/1.0.0 Revision: 1.0.0 Authors: Mario Scrocca (Cefriel) Peter Lubrich (BASt) Publisher: NAPCORE SubWG4.4 Download serialization: Format JSON LD Format RDF/XML Format N Triples Format TTL License: License https://creativecommons.org/licenses/by/4.0/ Cite as: Mario Scrocca (Cefriel), Peter Lubrich (BASt). Transport Mode. Revision: 1.0.0. Retrieved from: https://w3id.org/mobilitydcat-ap/transport-mode/1.0.0 Provenance of this page Abstract Controlled vocabulary for the transport modes covered by a dataset

## 1. Transport Mode: Overview

### back to <u>ToC</u>

This ontology has the following classes and properties.

### Named Individuals

Bicycle Bike Hire Bike Sharing Bus Car Car Hire Car Pooling Car Sharing E-Scooter Long-distance coach Long-distance rai <u>Metro, Subway train</u> Pedestrian Shuttle bus Ride Poolina Shuttle ferry Taxi Tram Light rai ransport mode Truck



 Hosting Solution: solution to store, edit and make available online all the artifacts associated with mobilityDCAT-AP

 A GitHub Organisation mobilityDCAT-AP (link) was created to collaboratively manage the specification and the controlled vocabularies defined





- The publication of the specification online also requires the definition of a **Persistent Identifier** that should guarantee the possibility of changing the hosting solution in the future
- We selected the **w3id service** reserving the following namespace for mobilityDCAT-AP

# https://w3id.org/mobilitydcat-ap

 The namespace handles the possibility to request the specification and the controlled vocabularies in different formats, e.g., HTML, Turtle, etc.





 mobilityDCAT-AP specification v1.0.0: <u>https://w3id.org/mobilityd</u> <u>cat-ap/releases/</u>

### 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/

- List of Controlled
   Vocabularies described in the "Controlled vocabularies to be used" section (link)
- Application Layer Protocol, <u>https://w3id.org/mobilitydcat-ap/application-layer-protocol</u>
- Communication Method, https://w3id.org/mobilitydcat-ap/communication-method
- Conditions for Access and Usage, <u>https://w3id.org/mobilitydcat-ap/conditions-for-access-and-usage</u>
- Mobility Theme, <a href="https://w3id.org/mobilitydcat-ap/mobility-theme">https://w3id.org/mobilitydcat-ap/mobility-theme</a>
- Mobility Data Standard, <u>https://w3id.org/mobilitydcat-ap/mobility-data-standard</u>
- · Georeferencing Method, https://w3id.org/mobilitydcat-ap/georeferencing-method
- Grammar, <a href="https://w3id.org/mobilitydcat-ap/grammar">https://w3id.org/mobilitydcat-ap/grammar</a>
- Network Coverage, <u>https://w3id.org/mobilitydcat-ap/network-coverage</u>
- Intended Information Service, <u>https://w3id.org/mobilitydcat-ap/intended-information-service</u>
- Transport Mode, https://w3id.org/mobilitydcat-ap/transport-mode
- Update Frequency, <u>https://w3id.org/mobilitydcat-ap/update-frequency</u>

- GitHub Repository: <a href="https://github.com/mobilityDCAT-AP/mo
- Everyone is invited to <u>open an issue on</u> <u>GitHub</u> to propose a use case not covered by the specification and/or to share any feedback
- Issues will be considered for the development of new releases of mobilityDCAT-AP

mobilityDCAT-AP Public	☆ 1	idit Pins 👻 💿 Watch 3	▶ 😵 Fork 3 ♥ 🕇 Starred 3 ♥
° gh-pages → 🕈 2 branches 🔊 0	tags Go to file	Add file - <> Code -	About ô
Jcomet update config file	✓ 5edcf57 4 d	ays ago 🕚 658 commits	Repository of the mobility extension to DCAT-AP (mobilityDCAT-AP)
drafts	update config file	4 days ago	Providing-a-baseline-for-a-n
releases	update release version with updated acknowledgement section 4 days ago		metadata interoperability mobility
CITATION.cff	update release version	last month	europe dcat-ap application-profile data-portals mobility-data
CONTRIBUTING.md	Update CONTRIBUTING.md	3 months ago	data-specification
LICENCE.md	initial adaptation of the content from GeoDCAT-AP to mobilityDCA	T-AP 7 months ago	🛱 Readme
README.md	Update README.md	3 weeks ago	কা CC-BY-4.0 license
≘ README.md		Ø	<ul> <li>✓ Cite this repository →</li> <li>✓ Activity</li> <li>☆ 3 stars</li> </ul>
mobilityDCAT-AP 🖉			<ul> <li>3 watching</li> <li>3 forks</li> </ul>
This is the issue tracker for the mair	tenance of mobilityDCAT-AP.		Report repository
mobilityDCAT-AP is an extension of an RDF syntax binding for the unior basic use case is to make mobility c	DCAT-AP for describing mobility datasets, dataset series, and of metadata elements defined in the National Access Points atasets, data series, and services searchable on general data p	services. It provides across Europe. Its portals, thereby	Releases

Create a new release

making mobility information better searchable across borders and sectors.

# Thank you for your attention! Any questions?

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