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Bucharest

# Single Point of Access (SPA) – Coordinated Metadata Catalogue

Cooperation AT, DE and NL

# Agenda

1. The framework provided by EC
2. The need for Metadata from MS perspective
3. Do we need Metadata harmonisation?
4. The proposal elaborated by the NL-GE-AT cooperation
5. Discussion

# What is Metadata?

- Metadata is defined as data about data
- A Metadata dataset describes the administration, organisation, and content of a dataset and of a data service, including
  - description of data set and/or data
  - geographic or network coverage
  - Contact information
  - License agreement and reuse conditions
  - quality information
  - access and service information
- Metadata has nothing to do with the underlying system, e.g. how the Single Point of Access is set up (it can be a simple registry or a comprehensive data warehouse)
- Metadata is the basis for a search function (discovery service) on the SPA

# The framework provided by EC 1/2

Metadata is up to now only mentioned for Priority Action b (Delegated Regulation EC 2015/962):

- (11) Member States and stakeholders should be encouraged to co-operate in order to reach an agreement on data definition, data format and metadata
- (15) In order to allow road authorities, road operators, service providers and digital map producers to successfully and cost-efficiently discover and use the relevant data, it is necessary to properly describe the content and structure of this data using appropriate metadata.

Article 2 – Definitions:

- 'access point' means a digital interface where the static road data, dynamic road status data and traffic data, together with the corresponding metadata are made accessible for re-use to users, or where the sources and metadata of these data are made accessible for re-use to users;
- 'metadata' means a structured description of the contents of the data facilitating the discovery and use of this data;
- 'discovery services' means services allowing for the search of the requested data using the contents of the corresponding metadata and displaying such contents;

# The framework provided by EC 2/2

## Article 3 - National access points

3. National access points shall provide appropriate **discovery services** to users.
4. Road authorities and road operators, in cooperation with digital map producers and service providers, **shall ensure that they provide the appropriate metadata** in order to allow users to discover and use the datasets to which access is provided through the national access points.

## Article 4, 5 and 6 - Accessibility, exchange and re-use of data

2. The data referred to in paragraph 1 and the corresponding metadata including information on the quality thereof **shall be accessible for exchange and re-use** by any service provider within the Union

# The need for Metadata from MS perspective

- Metadata (data description and discovery service) will help us to make data accessible.
- This can be done via a central architecture (metadata and data in one system) or via a decentralised architecture (e.g. data with different data owners, metadata with SPA)
- Aside Priority Action b we expect, that such a service will cover ALL data available via the SAP (in our cases including Priority Actions c and e – 886/2013 and 885/2013 - as well).
- Most probably such a Metadata service needs to be set up in a way to include as well data (and services?) covered through Priority Action a.
- We would like to re-use definitions (Metadata descriptions, Metadata structure, etc.) from existing Metadata sets (e.g. Inspire, DCAT-AP).
- The requested quality information might become high complex

# Do we need Metadata harmonisation?

- In accordance to fulfil the requirements from the delegated regulation: NO
- BUT:
  - Only harmonised Metadata will help us to make data available and searchable for pan-European service providers easily
  - Only harmonised Metadata (including data fields and corresponding descriptions) will ensure in a later stage to be machine-readable (automated integration of metadata from external systems into the own discovery service)
  - Only harmonised Metadata will ensure a common understanding of the listed data content

# Our aim

- We would like to harmonise our Metadata structure (data fields and corresponding descriptions)
  - We need to agree on clear labelling, definitions, enumerations and remarks concerning mandatory fields to avoid misunderstanding
  - We need to agree on a context to structure the metadata by building groups
  - We need to agree on a commonly used “master” language (English)
- It might be, that there are additionally “national” fields, that are not used across whole Europe
- The look and feel of the Metadata services will follow the national needs
- We would like to agree on the harmonised Metadata structure first and start with the implementation (adoption, if a service is already existing like for NDW or MDM) in a second step → the final Metadata description shall be presented at the EIP+ Forum
- We would like to invite other MS to follow our discussions closely. EIP+ is the appropriate platform for further discussions and to become the European wide multiplier.



# The proposal for a harmonised Coordinated Metadata Catalogue

Cooperation AT, DE and NL

# Purpose of coordination

- Definition of data elements which are necessary to describe a dataset in a minimal but adequately way
- Definition of wordings and semantics
- Definition of predefined categorisation
- Definition of data field name
- Definition of data value type
- Recommendations of data field length

# Overview of Metadata elements

Category	Data field	Data type	Mandatory
Metadata information	date of metadata	<i>DateTime</i>	<i>yes</i>
	metadata language	<i>predefined</i>	<i>yes</i>
	contact point for metadata (name, company, address, email, website, phone)	<i>specific text</i>	<i>yes</i>
Content information	name of publication	<i>free text</i>	<i>yes</i>
	description of publication	<i>free text</i>	<i>yes</i>
	dataset type category	<i>predefined</i>	<i>yes</i>
	dataset detailed type	<i>predefined</i>	<i>yes for self-validation</i>
	dataset language	<i>predefined</i>	<i>yes</i>
Temporal information	start date of publication	<i>date</i>	<i>yes</i>
	end date of publication	<i>date</i>	<i>no</i>
Geographical coverage	area covered by publication	<i>predefined</i>	<i>yes</i>
	network coverage	<i>predefined</i>	<i>yes</i>

# Overview of Metadata elements

Category	Data field	Data type	Mandatory
Responsibilities / Contact information	Publisher (name, company, address, email, website, phone)	<i>specific text</i>	<i>yes</i>
	data owner (name, company, address, email, website, phone)	<i>specific text</i>	<i>no</i>
Conditions for use	contract or license	<i>predefined</i>	<i>yes</i>
	conditions for use	<i>URL</i>	<i>Yes if con/lic is used</i>
Access information	structure of dataset	<i>predefined</i>	<i>yes</i>
	Access interface	<i>predefined</i>	<i>yes</i>
	communication method	<i>predefined</i>	<i>yes</i>
	access URL	<i>URL</i>	<i>yes</i>
Quality information	update frequency	<i>predefined</i>	<i>yes</i>
	quality indicator	<i>URL + free text</i>	<i>yes</i>
	National body validation date	<i>Date</i>	<i>no</i>

# Metadata elements

## Metadata information: Date of Metadata

- Description: date stamp (date and time) when the current version of the metadata set was created or last modified.
  
- Datatype: dateTime (dd.MM.yyyy T hh:mm )
- Reference to
  - DCAT-AP: catalogue record: modified (modification date)
  - INSPIRE: Metadata date
- Obligation: mandatory (DCAT-AP: mand., INSPIRE: mand.)

# Metadata elements

## Metadata information: Metadata language

- Description: Indicates the language in which the metadata related to a publication are expressed
- Intention: different languages in one MS, international acting data owner, mandatory in DCAT
- Datatype: predefined (24 EU languages), ISO 639 part 2 (3 letter code)
- Reference to
  - DCAT-AP: catalogue record: language (worldwide), multiple languages possible
  - INSPIRE: Metadata language (European subset)
- Obligation: mandatory (DCAT-AP: mand., INSPIRE: mand.)

# Metadata elements

## Metadata information: Contact point for metadata

- Description: Organization, if applicable a person, who is responsible for the creation and maintenance of the metadata related to a publication
- Intention: Contact opportunity for SPA operator, feedback concerning given information
- Datatype: Name of an organization linked with contact details (vCard-format)
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: Metadata point of contact – organization name and e-mail address
- Obligation: optional (DCAT-AP: n/a, INSPIRE: mand.)

# Metadata elements

## Content information: Name of Publication

- Description: It describes the data set in a generic term or short description/brief overview.
- Datatype: free text (language dependent)
- Reference to
  - DCAT-AP: dataset: title, free text with opt. further language versions
  - INSPIRE: Resource title, free text
- Obligation: mandatory (DCAT-AP: mand., INSPIRE: mand.)



# Metadata elements

## Content information: Description of Publication

- Description: Brief descriptive summary of the publication content
- Datatype: free text (language dependent)
- Reference to
  - DCAT-AP: dataset: description, free text with opt. further language versions
  - INSPIRE: Resource abstract, free text
- Obligation: mandatory (DCAT-AP: mand., INSPIRE: mand.)

# Metadata elements

## Content information: Dataset type – dataset type category

- Description: Main classification of the publication content, Aggregated dataset for usability
  
- Datatype: predefined by categories
- Reference to
  - DCAT-AP: dataset: theme (definable categories)
  - INSPIRE: Keyword: free text (may originate from a controlled vocabulary)
- Obligation: mandatory (DCAT-AP: rec. 0..n, INSPIRE: mand.)

# Metadata elements

## Content information: Dataset type – dataset detailed type

- Description: According to the EU-Regulations there are predefined categorisations for Data Sets of priority b/c/e. In case that these 50 categories are needed for validation by the national body they have to be mentioned in the SPA data system.
- Datatype: predefined categorisations for data sets of priority b/c/e
- Reference to
  - DCAT-AP: dataset: theme (definable categories)
  - INSPIRE: Keyword: free text (may originate from a controlled vocabulary)
- Obligation: mandatory for self declaration

# Categories under discussion

Aggregated Description	Original Description	Action					
<b>Static road data</b> (data on permanent road infrastructure characteristics, including fixed traffic signs or their regulatory attributes);	Road network links and their physical attributes: - Geometry - Road width - Number of lanes - Gradients - Junctions- Road classification	Action B: Real Time Traffic Information (RTTI)		- Dynamic access restrictions and other traffic regulations			
	Traffic signs expressing traffic regulations and identifying dangers: - Access conditions for tunnels - Access conditions for bridges - Speed limits - Permanents access restrictions and other traffic regulations		<b>Traffic management plans</b> (pre-defined allocation of a set of temporary measures to a specific traffic situation)		Action B: RTTI		
	Traffic circulation plans		<b>Traffic management data</b> (data on the content and activation status of traffic management plans)			Action B: RTTI	
	Location of tolling stations		<b>Real-time traffic data</b> (data on road traffic characteristics) Estimated travel times Traffic volume Speed Travel times Que- ends Traffic data at border crossings to third countries Expected delays	Action B: RTTI			
	Identification of tolled roads and applicable static road user charges						
	Location of parking places and service areas						
	Location of charging points for electric vehicles and the conditions for their use						
	Location of public transport stops and interchange points						
	<b>Dynamic road data</b> (data on short-term road infrastructure characteristics)		Action B: RTTI	<b>Real-time traffic information</b> (any combination of extracted, aggregated and processed static road data, dynamic road data, traffic management data and real-time traffic data)			Action B: RTTI
	Road closures			<b>Adverse weather conditions</b> (unusual, severe or unseasonal weather conditions which might affect safe driving)			Action B: RTTI
	Lane closures			<b>Recommended routes</b> (routes that are recommended to drivers for traffic management purposes)			Action B: RTTI
	Overtaking bans on heavy goods vehicles			<b>Accident black spots</b> (locations identified as particularly dangerous from a road safety point of view on the basis of road accident statistics)			Action B: RTTI
	Road works: - Short-term road works (temporary road works... which are indicated only by minimum signing) - Long-term road works (road works which foreseen duration exceed the duration of short-term road works)			<b>Activation of a traffic management plan</b> (the procedures by which the temporary measures included in a traffic management plan are put in place)			Action B: RTTI
	Accidents and incidents			<b>Safety Related Traffic Information</b> Tempory slippery road Animal, people, obstacle, debris on the road Unprotected accident area Short term road works Reduced visibility Wrong-way driver Unmaged blockage of a road Exceptional weather conditions	Action C: Safety Related Traffic Information		
	Bridge opening hours						
	Direction of travel on reversible lanes						
Poor pavement conditions							
Temporary traffic management measures							
Variable road user charges							
Availability of parking places	<b>Static data relating to truck parking area's</b>	Identification information of parking area:			Action E: Truck parking		
Cost of parking							
Availability of charging points for electric vehicles							
Weather conditions affecting road surface and visibility							
Dynamic traffic signs expressing traffic regulations, namely: - Dynamic access conditions for tunnels - Dynamic access conditions for bridges - Dynamic Speed limits							

	- Name of the truck parking area - Address of the truck parking area	information
	Location information of the truck parking area - Location information of the entry point of the parking area - Primary road identifier(s) and direction - Indication of the exit to be taken from primary road - Distance from primary road	
	Total number of available parking places for trucks Price and currency of parking places for trucks	
<b>Information on safety and equipment of truck parking area's</b>	Information on safety, security and equipment of truck parking area's Information on service equipment of truck parking area's (Inter)National classification of truck parking area's Information on parking places for refrigerated goods vehicles on truck parking area's Information on specific equipment or services for specific goods vehicles on truck parking area's	Action E: Truck parking information
<b>Contact information of truck parking area operators</b>	Name and surname Telephone number E-mail address Consent of the operator to make his contact information public	Action E: Truck parking information
<b>Dynamic data on availability of parking places on truck parking area's</b>		Action E: Truck parking information

# Metadata elements

## Content information: Dataset language

- Description: Indicates the language used for textual information in the data sets
- Datatype: predefined (24 EU languages)
- Reference to
  - DCAT-AP: dataset: language (worldwide), multiple languages possible
  - INSPIRE: Resource language (European subset)
- Obligation: mandatory (DCAT-AP: opt., INSPIRE: mand. if resource contains textual information)

# Metadata elements

## Temporal information: Start date of publication

- Description: Date when the data delivery is applicable
- Datatype: date
- Reference to
  - DCAT-AP: n/a (validity of data set: dataset: temporal coverage – start date)
  - INSPIRE: n/a (validity of data set: temporal extent – starting date)
- Obligation: mandatory (DCAT-AP: n/a (opt.), INSPIRE: n/a (opt.)); no entry means that the publication gets valid immediately

# Metadata elements

## Temporal information: End date of publication

- Description: Date when data delivery to this publication terminates
- Datatype: date
- Reference to
  - DCAT-AP: n/a (validity of data set: dataset: temporal coverage – end date)
  - INSPIRE: n/a (validity of data set: temporal extent – end date)
- Obligation: optional (DCAT-AP: n/a (opt.), INSPIRE: n/a (opt.)); no entry means that the publication does not expire

# Metadata elements

## Geographical coverage: Area covered by Publication

- Description: Describes the geographic area that is covered by datasets of the publication
- Datatype: predefined (NUTS 0 – 3 Code); multiple choice possible
- Reference to
  - DCAT-AP: dataset: spatial/geographical coverage – A spatial region or named place (free text)
  - INSPIRE: Geographic bounding box (westbound and eastbound longitudes, and southbound and northbound latitudes in decimal degrees)
- Obligation: mandatory (DCAT-AP: opt., INSPIRE: mand.)



# Metadata elements

## Geographical coverage: Network coverage

- Description: part of the transport network (functional road classes) which is covered by datasets of the publication in a general way
  
- Datatype: predefined (searchable)
  
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: n/a
  
- Obligation: mandatory (DCAT-AP: n/a, INSPIRE: n/a)

# Metadata elements

## Geographical coverage: Network coverage description

- Description: details of transport network on a national basis, due to different meanings and understanding of different terms in each country
  
- Datatype: free text
  
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: n/a
  
- Obligation: optional (DCAT-AP: n/a, INSPIRE: n/a)

# Metadata elements

## Responsibilities: Publisher

- Description: Entity that publishes datasets of the described publication. Information contains details about a contact person to allow a direct contact for further information or agreements.
- Datatype: Name of an organization linked with contact details (vCard-format)
- Reference to
  - DCAT-AP: dataset: publisher – only organisation name is given (free text);  
dataset: contact point (contact details for feedback)
  - INSPIRE: Responsible party, role: publisher – organisation name and e-mail address
- Obligation: mandatory (DCAT-AP: rec., INSPIRE: mand. if applicable)

# Metadata elements

## Responsibilities: Data Owner

- Description: The company that owns the dataset of a publication and is responsible for content and quality of the dataset.
- Datatype: Name of an organization linked with contact details (vCard-format)
- Reference to
  - DCAT-AP: dataset: creator – authority under whose responsibility the dataset is made available (free text)
  - INSPIRE: responsible party, role:owner (organisation name, e-mail address)
- Obligation: optional (DCAT-AP: opt., INSPIRE: mand. if applicable)

# Metadata elements

## Conditions for use: Contract or licence

- Description: Indication the condition of use: whether a free and unrestricted use is possible, a contract has to be concluded or a licence has to be agreed on to use a dataset.
  
- Datatype: predefined categories
  - No Licence – no contract
  - Licence and Free of Charge
  - Licence and Fee
  - Contract and Free of Charge
  - Contract and Fee
  
- Reference to
  - DCAT-AP: n/a (indirectly if licence and/or right statement is provided)
  - INSPIRE: conditions for access and use (free text with predefined suggestions)
  
- Obligation: mandatory (DCAT-AP: n/a, INSPIRE: mand.)

# Metadata elements

## Conditions for use: Conditions for use

- Description: A document that contains a sample contract or terms of use. This allows potential data consumers to prove terms and conditions before getting in touch with the publisher.
- Datatype: URL to a PDF document
- Reference to
  - DCAT-AP: catalogue record: licence / dataset: access rights (complex structure)
  - INSPIRE: conditions for access and use (free text with predefined suggestions)
- Obligation: mandatory if contract or licence is selected (DCAT-AP: opt., INSPIRE: mand.)

# Metadata elements

## Access Information: Structure of data set

- Description: Technical format of the data set
- Datatype: predefined by categories
- Reference to
  - DCAT-AP: distribution: format (media type / extent: ods, csv, xls, xlsx, rdf, ttl, xml)
  - INSPIRE: n/a
- Obligation: mandatory (DCAT-AP: rec., INSPIRE: n/a)

# Metadata elements

## Access information: Access interface

- Description: IT protocol of the data interface that will be used to transfer data
- Datatype: predefined by categories
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: n/a
- Obligation: mandatory (DCAT-AP: n/a, INSPIRE: n/a)



# Metadata elements

## Access information: Communication method

- Description: Indication whether new data sets to this publication can be provided regular, by push or pull service to the data receiver
  
- Datatype: predefined by categories
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: n/a
  
- Obligation: mandatory (DCAT-AP: n/a, INSPIRE: n/a)

# Metadata elements

## Access information: Access URL

- Description: Access URL provides a link for access to the current dataset of a publication
- Datatype: URL to a website, service or a file in a given format (Structure of data set)
- Reference to
  - DCAT-AP: distribution: Access URL
  - INSPIRE: resource locator
- Obligation: mandatory if applicable (DCAT-AP: mand., INSPIRE: n/a)

# Metadata elements

## Quality information: Update frequency

- Description: the update rate of the data set
- Datatype: predefined by categories
- Reference to
  - DCAT-AP: Dataset: Frequency (minutely, daily ..., half yearly, annual)
  - INSPIRE: n/a
- Obligation: mandatory (DCAT-AP: opt., INSPIRE: n/a)

# Metadata elements

## Quality information: Quality Indicator

- Description: means and results of a quality assessment. This information shall assist data consumers in determining the value of data for their own services
- Datatype: URL and free text; possible to be changed based on results of EIP/EIP+ concerning data quality
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: lineage (free text)
- Obligation: mandatory (DCAT-AP: n/a, INSPIRE: rec. if appropriate)

# Metadata elements

## Quality information: National Body validation date

- Description: If the dataset is validated the date of the validating process is mentioned in the data storage. It's optional and only needed for the validation process.
- Datatype: Date
- Reference to
  - DCAT-AP: n/a
  - INSPIRE: n/a
- Obligation: optional (DCAT-AP: n/a, INSPIRE: n/a)

Thank you for your kind attention!