

location intelligence
spatial technologies
geoinformatika d.o.o.

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Development of INSPIRE Data Specifications

1. Who has read "A Conceptual Model for Developing Interoperability Specifications in Spatial Data Infrastructures" JRC

2. Who has read more than one INSPIRE data specification from Annex II & III?

3. Who has contributed to development of INSPIRE data specifications?

It's all about data

SDI is spatial DATA infrastructure!

Current users of geographic information spend 80% of their time collating and managing the information and only 20% analysing it to solve problems and generate benefit

(Geographic Information panel 2008)

20 June - 21 October 2011

Annex II&III Data Specification v2.0

Stakeholders Consultation and testing

LMO
SDIC



6212 comments received

(5218 from review + 994 from testing)



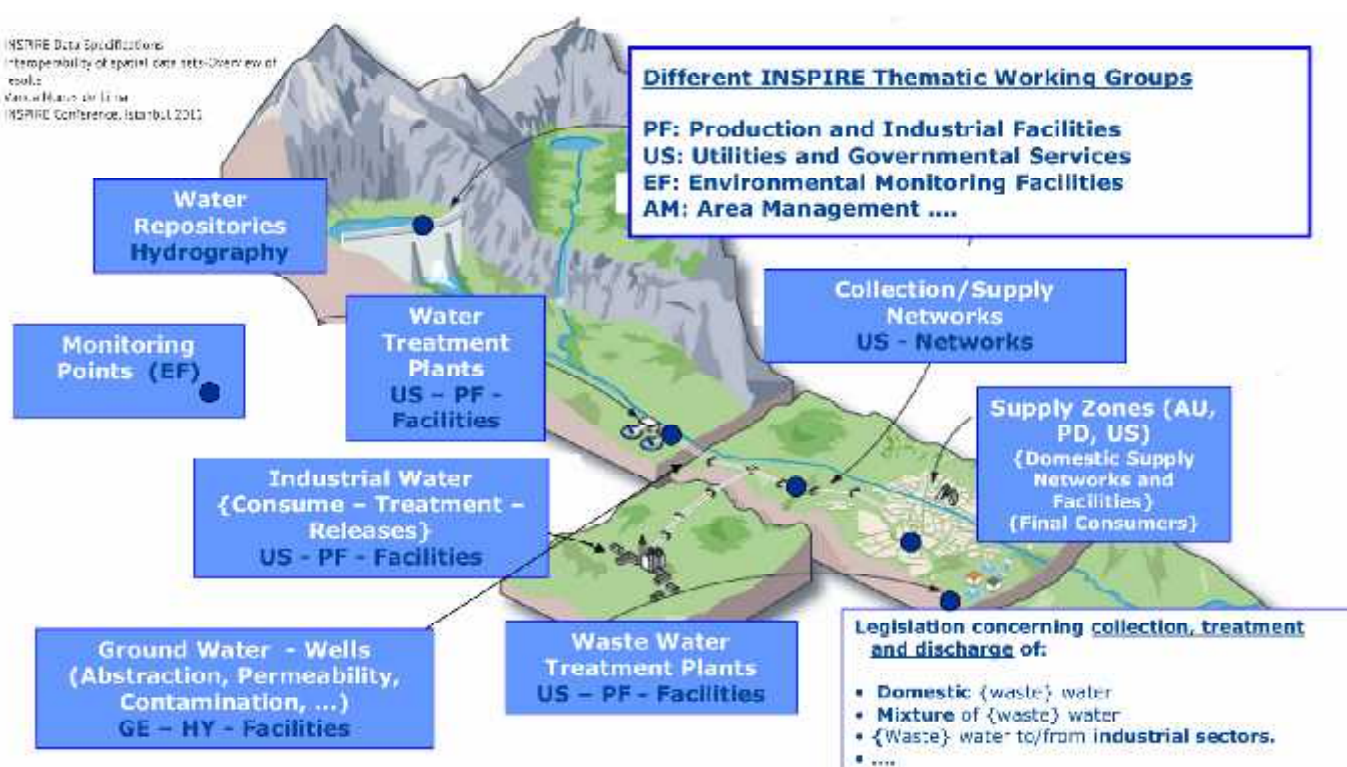
20 April 2012

Data Specification v3.0

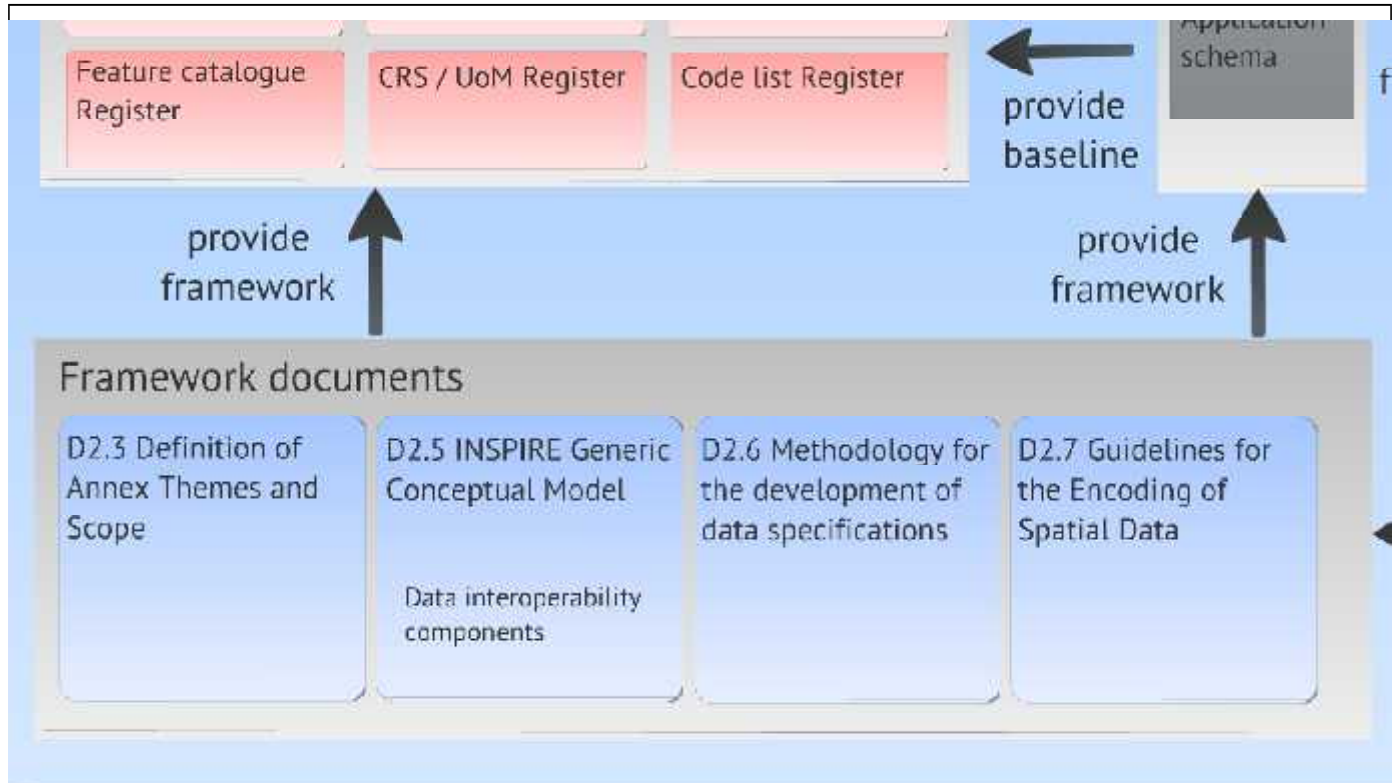
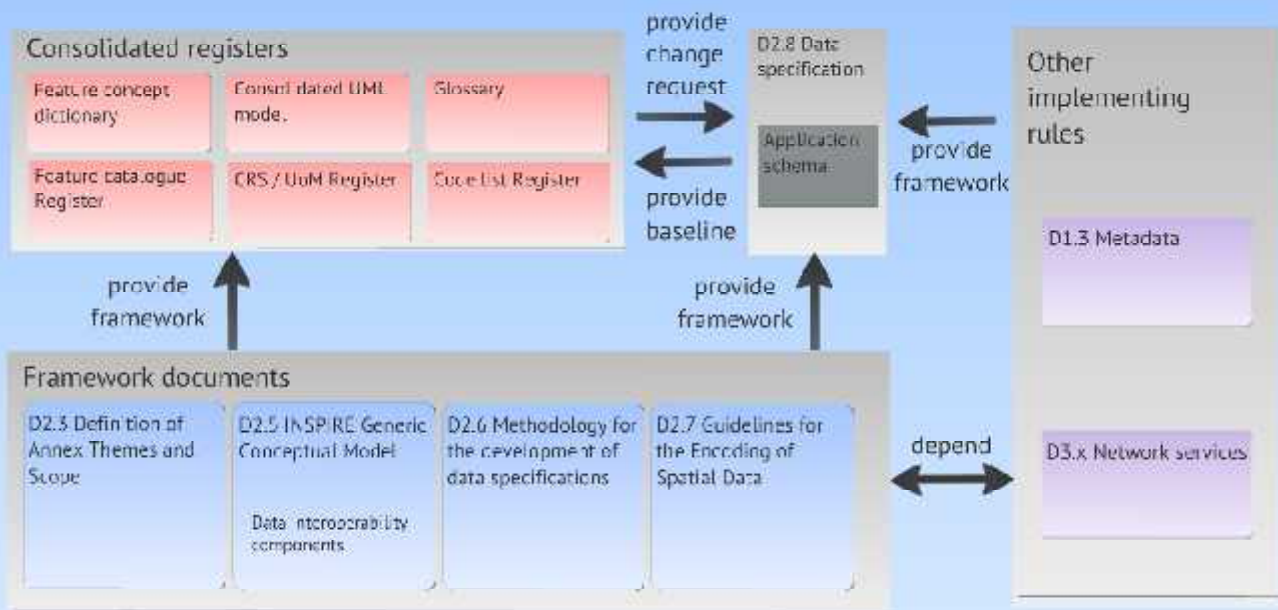


October 2012: Final draft Implementing Rule v3.0

INSPIRE Data Specifications
Interoperability of spatial data sets: Overview of
results
Consultation on the
INSPIRE Conference, Istanbul 2011



Data specification development framework



1 INSPIRE Principles

- that spatial data are stored, made available and maintained at the most appropriate level;
- that it is possible to combine spatial data from different sources across the Community in a consistent way and share them between several users and applications;
- that it is possible for spatial data collected at one level of public authority to be shared between other public authorities.

2 Terminology

Requirement 3 General terms and definitions in all INSPIRE data specifications shall be drawn from the INSPIRE Glossary. Terms that are important in the context of a theme, but which are not part of the INSPIRE Feature Concept Dictionary (see 9.3) shall be defined in the INSPIRE Glossary.

3 Reference model

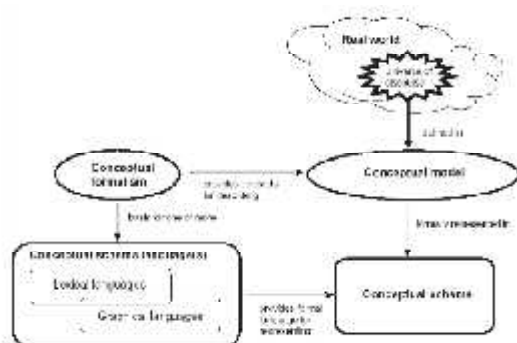


Figure 5 – From reality to conceptual schema (18/01/2001)

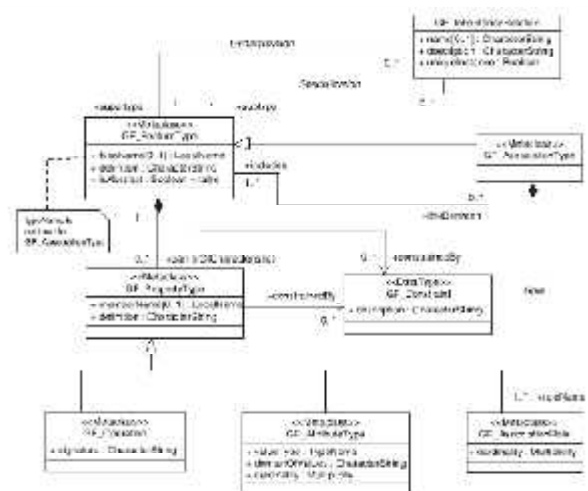


Figure 6 – Extract from the General Feature Model [350:19139]

4 Rules for application Schemas and feature catalogues

Requirement 9 Every INSPIRE application schema shall conform to the General Feature Model as specified in ISO 19109 7.3-7.7.

Requirement 10 Every INSPIRE data specification shall include one or more INSPIRE application schemas modelled according to ISO 19109 Clause 8, with particular attention to 8.2.

5 Spatial and temporal aspects

Requirement 36 Spatial characteristics of a spatial object shall be expressed in an application schema in one of the following ways depending on the requirements:

- by specifying properties of the spatial object type with a value that is a spatial geometry or a topology (see ISO 19109 8.7)
- by specifying properties of the spatial object type with a value that is a geographic identifier in a gazetteer (see 9.9 and ISO 19109 8.9)
- by specifying properties of the spatial object type with a value that is a coverage function (see 10.4)
- by specifying references to other spatial objects (see Clause 13)

Requirement 37 Temporal characteristics of a spatial object shall be expressed in an application schema in one of the following ways depending on the requirements:

- by specifying properties of the spatial object type with a value that is a temporal geometry or a temporal topology (see ISO 19109 8.6; note that time is a dimension analogous to any of the spatial dimensions and that time, like space, has geometry and topology);
- by specifying properties of the spatial object type with a value that is one of the basic types Date, DateTime and Time. However, this makes the attribute a "thematic attribute" instead of a "temporal attribute" in terms of the General Feature Model, as there is no temporal reference system connected to it (see note in ISO 19109 8.6.1), i.e. this method should be applied with care. The Gregorian calendar shall be the default calendar, UTC the default time zone.

6 Multi-lingual text and cultural adaptability

Requirement 41 For all geographical names and exonyms the support for multilingual text in the INSPIRE application schemas shall be considered.

Requirement 42 Translation of geographical names shall not be required in INSPIRE application schemas, only exonyms may be used.

EXAMPLE 1 The name of the German city "Neu-Ulm" in French will still be "Neu-Ulm" and not "Nouveau-Ulm" (translation). However, "London" will become "Londres" in French (exonym).

Requirement 43 There shall not be a limitation to the number of names in different languages for one spatial object.

EXAMPLE 2 Names of cities (e.g. "Bruxelles", "Brussel", "Brussels", "Brüssel", etc.) or other spatial object names in a multilingual area ("Brussel-Zuid", "Bruxelles-Midi").

Requirement 44 The types specified in 11.2 shall be used in application schemas whenever the value of a property is linguistic text.

7 Coordinate referencing and units model

Requirement 50 Spatial and spatio-temporal coordinate reference systems shall be described in accordance with ISO 19111 and ISO 19111-2^a whenever the spatial reference system is within the scope of these standards.

Requirement 51 Every INSPIRE data specification shall specify the list of coordinate reference systems that may be used in the encoding of spatial objects defined by that data product specification.

Requirement 52 Every INSPIRE data specification shall specify a minimum list of reference systems that may be used to query spatial objects defined by that data specification in a request to a download service.

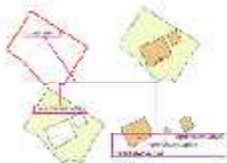
8 Object referencing modelling



In the example left, a property parcel or individual parcel is related to the spatial objects in the real world, represented in a topographic database. For all such boundaries may be continuous with common external features such as the road network, or they may be discontinuous.

When creating a new geographic database, often associated with a specific land use or planning purpose, it is necessary to identify the objects in the real world that are relevant to the purpose.

Generalised thematic data will be integrated in the property parcel database details, mortgage records, property rights etc.



Other users may use this data for other purposes in the display of any property parcel. For example, the data may be used to show the land use or the land use for other purposes, or the data may be used to show the land use for other purposes.

The data display of the property parcel is a reference and can support a number of different purposes. For example, the data may be used to show the land use or the land use for other purposes, or the data may be used to show the land use for other purposes.

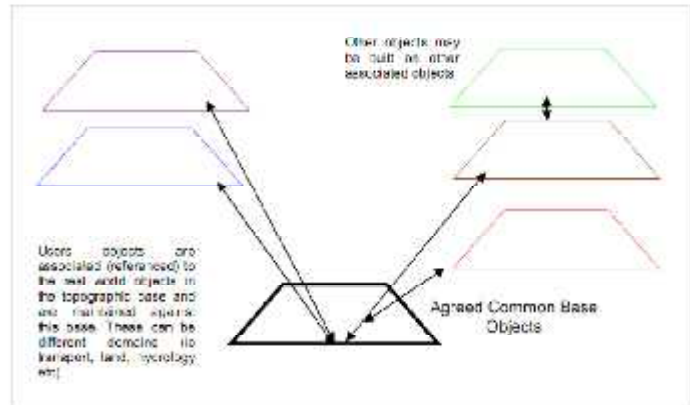


Figure 27 – Object referencing to a common base

9 Identifier Management

Requirement 58 Every spatial object type of Annexes I and II of the INSPIRE Directive shall receive a non-voidable property of type "Identifier" (see 9.8.3.1), with multiplicity "0..1" or "1", unless it is known that no requirement exists to identify or reference spatial objects of that type.

Recommendation 21 The name of the property should be "inspireId". Its definition should be "external object identifier of the <name of the spatial object type>" with an additional note: "An external object identifier is a unique object identifier published by the responsible body, which may be used by external applications to reference the spatial object. The identifier is an identifier of the spatial object, not an identifier of the real-world phenomenon."

10 Data transformation

This component is about the transformation from a national/local application schema to an INSPIRE application schema and vice versa. Translations are required for data and for queries.

11 Portrayal model

Requirement 61 Layers for each application schema shall be specified in accordance with the technical guidance for the view service so that each spatial object which is geo-referenced is rendered in at least one layer of a view service. For each layer, one default style to be used for portrayal shall be specified.

Requirement 62 In cases where no agreed/standardised style exists in a community for the portrayal of a layer, the following three simple styles (for points, curves and surfaces, respectively) shall be used as default styles, which use the defaults specified in the respective symbolisers of the Symbology Encoding standard: Point - grey square, 6 pixels; Curve - black solid line, 1 pixel; Surface - black solid line, 1 pixel, grey fill.

12 Registers

The registers keep track of changes so that data created in the past can still be interpreted completely and correctly; i.e. superseded or retired register items will remain in the register.

A key characteristic of a register is that every item in the register is associated with a unique, unambiguous and permanent identifier.

The registers will be available through registry services

Consolidated registers

Feature concept
dictionary

Consolidated UML
model

Glossary

Feature catalogue
Register

CRS / UoM Register

Code list Register

13 Metadata

Requirement 63 Where applicable, additional theme-specific metadata requirements and/or recommendations shall be specified in INSPIRE data specifications in conformance with ISO 19131 and the Implementing Rule on Metadata.

14 Maintenance

This component is about the documentation of maintenance procedures and life-cycle rules, where known.

It does not require any re-engineering of existing data specifications in the Member States.

15 Quality

Requirement 65 An INSPIRE data specification shall specify all data quality elements and sub-elements that are to be provided with the data set metadata in accordance with ISO 19113 and the implementing rule on Metadata. This shall include a statement on applicable data quality measures as defined in ISO/TS 19138.

16 Data Transfer

Requirement 68 The delivery format shall be specified in conformance with the guidelines on data encoding (document D2.7).

17 Data capturing

Requirement 73 Where applicable, capturing rules and associated criteria shall be specified for every spatial object type as part of a INSPIRE data specification in conformance with ISO 19131.

18 Conformance

Requirement 74 Every INSPIRE data specification shall specify a single conformance class per specification scope, i.e. in general one conformance class per INSPIRE data specification. Each conformance class shall reference an abstract test suite that tests all requirements specified in the data specification that are applicable to the specification scope of the conformance class.

19 Consistency between data

1 Consistency within a data set

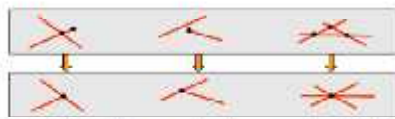


Figure 19 - Typical operations to connect spatial data

2 Consistency of spatial objects of a theme at two different levels of detail

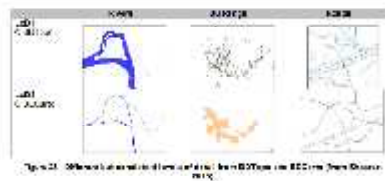


Figure 20 - Different levels of detail for a spatial object

3 Consistency of spatial objects along a boundary

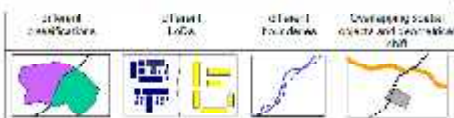


Figure 21 - Consistency along a boundary

4 Consistency between spatial objects of different themes at the same level of detail



Figure 22 - Example of consistency between spatial objects of different themes at the same level of detail



Figure 23 - Consistency between spatial objects of different themes at the same level of detail

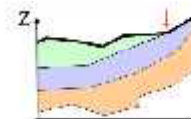


Figure 24 - Consistency between spatial objects of different themes at the same level of detail

D2.6 Methodology for the development of data specifications

It provides a process model and tools to assist in the process of INSPIRE data specification development

Based on the

- user requirements
- relevant international standards
- D2.5 INSPIRE Generic Conceptual Model



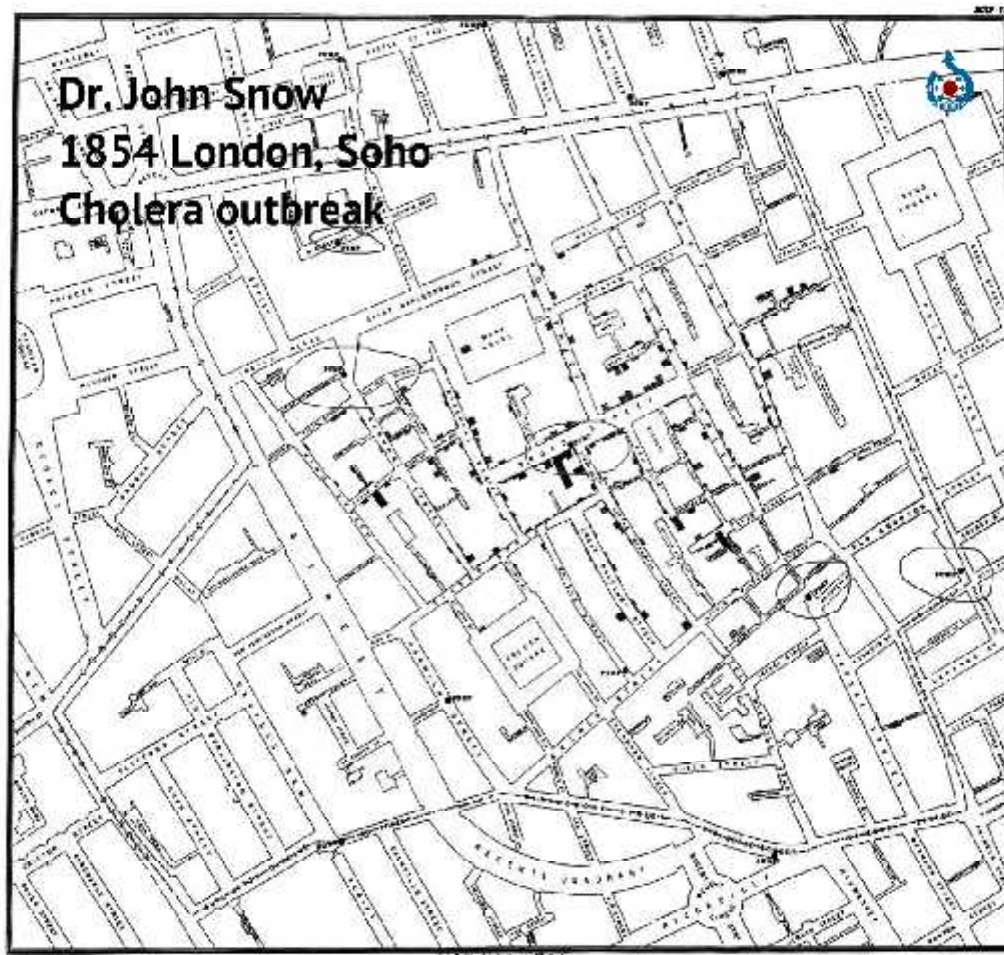
ISO19131 – Data Product Specification – defines content of data specification:

- General information
- Reference system
- Data quality
- Data capture
- Maintenance
- Metadata...

„It is expected to influence modeling activities at the national level”

1. it adds value to the national spatial data infrastructure
2. simplifies synchronisation with the INSPIRE data specifications

[illegible]



Thank you for your attention...