INTRODUCTION TO SPATIAL DATA INFRASTRUCTURES IN EUROPE

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Fall 2016

Laboratory on Geoinformatics and Cartography

About the course

- Z8210 Introduction to spatial data infrastructures in Europe
- Language: English
- Extent and intensity: 2/0, 5 credits
- Type of Completion: k (colloquium)
  - an academic seminar
    - theory as well as practice
    - broad discussion
  - each student will present one topic (from the list advertised by the teacher) during the course

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About the course

- Assessment methods
  - assessment of student's presentation;
  - assessment of student's activity during discussion throughout the semester.

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Syllabus

1. Motivations and benefits of the European spatial data infrastructures (ESDI).
2. Metadata as the founding stone for linking between ESDI components.
3. Discovery processes, searching for spatial data and Web services.
4. View processes, preview of discovered spatial data.
5. Download processes, ordering and download of desired data.
6. Data models, understanding the UML diagrams and other formalised descriptions.
7. Map compositions on the Web, OGC Web Map Context.
8. Data sharing, use limitations and other licensing issues.

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Literature

- *required literature*
  - CRAGLIA, M. et al. 2012. Digital Earth 2020: towards the vision for the next decade. In International Journal of Digital Earth, Volume 5, Issue 1. 20 pages.
  - http://inspire.ec.europa.eu
  - NOGUERAS-ISO J.,MURO-MEDRANO P.R.,ZARAZAGA-SORIA F.J. *Geographic information metadata for spatial data infrastructures :resources, interoperability and information retrieval*. 1st ed. New York: Springer, 2005. xxi, 263 p. ISBN 3-540-24464-6.
- *recommended literature*
  - ANNONI A.,CRAGLIA M.,EHLERS M.,GEORGIADOU Y.,GIACOMELLI A., KONEČNÝ, M.,OSTLAENDER N.,REMETEY-FULOPP G.,RHIND D.,SMITS P.,SCHADE S. A European perspective on Digital Earth. *International Journal of Digital Earth*, Abingdon, Oxon, UK: Taylor and Francis, 2011, July 2011, 4/4, p. 271-284. ISSN 1753-8947. doi:10.1080/17538947.2011.582888.
  - *UML modeling languages and applications :UML 2004 Satellite Activities, Lisbon, Portugal, October 11-15, 2004 : revised selected papers*. Edited by Nuno Jardim Nunes. 1st ed. New York, NY: Springer-Verlag Berlin Heidelberg, 2005. xiv, 294 s. ISBN 3-540-25081-6.
  - KAMBA V. *Tvorba systémů a komponent podle specifikace UML*. Brno, 2002. 61 CD.

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1. MOTIVATIONS AND BENEFITS OF THE EUROPEAN SPATIAL DATA INFRASTRUCTURES

Why European spatial data infrastructures?

- Initiative/legislation/framework to **discover** available spatial data, to evaluate their suitability for the purpose and to know the conditions applicable to their use.

Why such emphasis on discovery process?

- Have you ever heard about the PSI directive?
  - DIRECTIVE 2003/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 November 2003 on the **re-use of public sector information**

- **How could be any information re-used when we do not know that it exists?**

Why European spatial data infrastructures?

Why European spatial data infrastructures?

"Spatial data islands"

EU has islands of data of different standards and quality...

Why European spatial data infrastructures?

Google
UK

Google Search   I'm Feeling Lucky

Adopted from http://google.co.uk
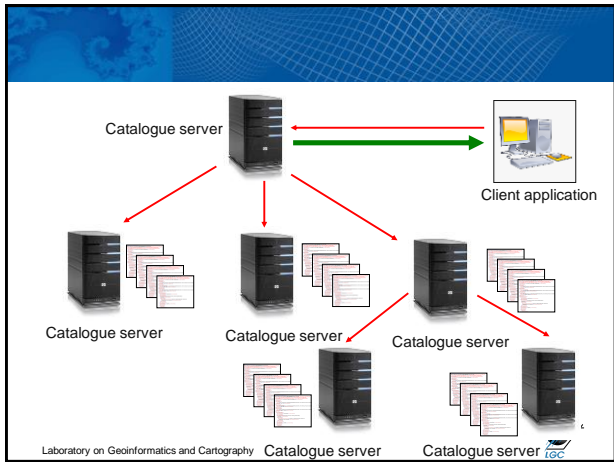
2

Why European spatial data infrastructures?

DISCOVERY SERVICE FOR SPATIAL DATA AND SERVICES

Search

Customized time range:

From:

To:

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INSPIRE metadata

Responsible party

Geographic location

Resource title

Date of creation

Lineage

Conformity

Topic category

Resource abstract

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A metadata editor?

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INSPIRE-compliant metadata

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Metadata publication

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Why European spatial data infrastructures?

DISCOVERY SERVICE FOR SPATIAL DATA AND SERVICES

map

Search

Customized time range:

From:

To:

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Catalogue server

Client application

Catalogue server

Catalogue server

Catalogue server

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Catalogue server

Catalogue server

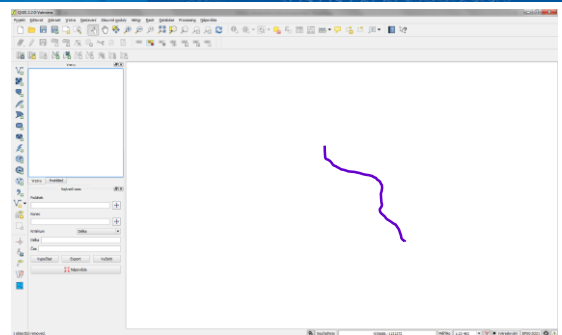# Why European spatial data infrastructures?

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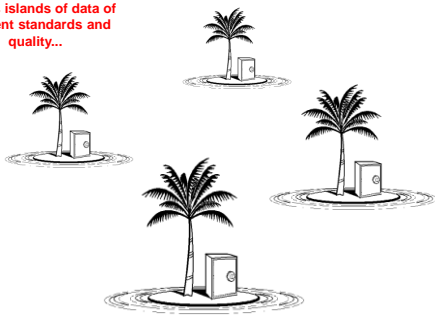

Why European spatial data infrastructures?

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Why European spatial data infrastructures?

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Why European spatial data infrastructures?

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For which themes may I search?

Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites

Annex II

1. Elevation
2. Land cover
3. Orthoimagery
4. Geology

For which themes may I search?

Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and governmental services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
10. Population distribution — demography
11. Area management/restriction/regulation zones and reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
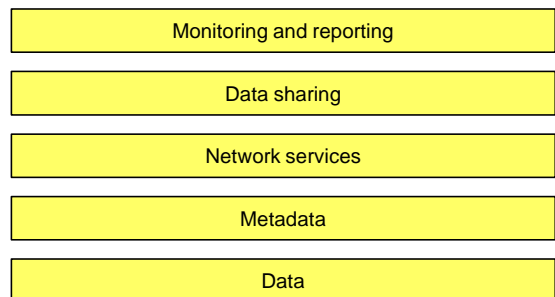19. Species distribution
20. Energy resources
21. Mineral resources

INSPIRE spatial data themes

- Exactly those themes that any student should choose and present its content to the audience.

Building blocks of any spatial data infrastructure

Monitoring and reporting

Data sharing

Network services

Metadata

Data

Who is obliged to create such SDI building blocks in the European Member States?

- So-called Legally Mandated Organisations (LMOs)
- Generally defined by the European directive 2007/2/EC
  - English version: http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32007L0002&from=EN
  - Versions for all 24 official European languages: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32007L0002
- In detail written in the appropriate legislation of each Member State, such as Zákon č. 123/1998 Sb. (CZ) or Zákon č. 3/2010 Z.z.(SK)

Which data shall be published under INSPIRE?

- Fulfilling the following conditions (see Article 4)
  - they relate to an area where a Member State has and/or exercises jurisdictional rights;
  - they are in electronic format;
  - they are held by or on behalf of any of the following:
    - (i) a public authority, having been produced or received by a public authority, or being managed or updated by that authority and falling within the scope of its public tasks;
    - (ii) a third party to whom the network has been made available in accordance with Article 12;
  - they relate to one or more of the themes listed in Annex I, II or III.

Deadlines

- See also http://inspire.ec.europa.eu/index.cfm/pageid/44

Feedback from the Member States

- Public consultations and testing
- **6554 comments** related to the data specifications in 2011
  - Each comment has to be answered and if appropriate, then also addressed

At the end there is more than 6'000 pages…

Legally binding

INSPIRE directive (2007/2/EC)

Commission Regulation No. 1205/2008 (metadata)	Commission Regulation No. 1089/2010 (data)	…	Commission Regulation No. 976/2009 (services)
Technical Guidelines for Metadata (1)	Data Specifications (34)	…	Technical Guidelines for Network Services (4)

INSPIRE objectives (purpose of all the 6'000 pages…)

Make relevant, harmonised spatial data <u>available</u> for Community Environmental Policy (formulation, implementation, monitoring and evaluation) and for the citizen ...

… through the establishment of integrated spatial information services, based upon a distributed network of databases, linked by common standards and protocols to ensure compatibility.

INSPIRE document repository

- http://inspire.ec.europa.eu

INSPIRE Geoportal

- http://inspire-geoportal.ec.europa.eu

Czech national INSPIRE geoportal

- http://geoportal.gov.cz

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