Challenges in Geospatial Data Harmonisation

Workshop held in conjunction with the 12th International Conference on Geographic Information Science AGILE 2008

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Workshop Motivation

- European Spatial Data Infrastructures (ESDI) integrate the diversity of geospatial data available for a multitude of European organisations

  - context for implementation: initiatives like INSPIRE, GMES and SEIS

  - requires that the organisations document, publish and harmonise their geospatial data and support users in accessing this information in a suitable way

Geospatial Data Harmonisation
Geospatial Data Harmonisation

“creating the possibility to combine data from heterogeneous sources into integrated, consistent and unambiguous information products, in a way that is of no concern to the end-user.”

research challenge for facilitating the harmonisation of geospatial data and metadata by automating the necessary steps as far as possible.
Topics of Interest

- Research in harmonisation processing for e.g. resolution, generalization, edge matching, multiple representation, schema translation

- Conceptual Schema Translation
  - Specification of the mapping process
  - Formal language for the specification

- Quality
  - Specification of quality evaluation processes for harmonisation
  - Metrics for quality evaluation of mapping processes
  - Investigating the impact of processing on the quality of data

- How to enable semantic interoperability?
  - Approaches with formal semantics, collaborative approaches, approaches from machine learning, ...
  - How to measure and express thematic accuracy?

- Handling gridded data (multidimensional grids) or dynamic data (e.g. mathematical models for forecasts)
  - Harmonisation issues
  - Harmonisation processes

- Automatic set up of data harmonisation process
  - Identification of existing heterogeneities such as semantic, geometric, resolution or others
  - Methods to automatically assign a specific harmonisation process to a detected heterogeneity?
  - How to handle specification and execution of workflows for web services to construct complex transformation services?
Programme Committee

- Rolland Billen, University of Liege, Belgium
- Marian de Vries, Technical University of Delft, The Netherlands
- Pasquale Di Donato, University of Rome, Italy
- Werner Kuhn, University of Muenster, Germany
- Lassi Lehto, Finnish Geodetic Institute, Finland
- Michael Lutz, Joint Research Centre, Italy
- Pier Giorgio Marchetti, European Space Agency, Italy
- Hardy Pundt, University of Applied Studies and Research, Hochschule Harz-Wernigerode, Germany
- Matthäus Schilcher, Technical University of Munich, Germany
Special Issue on Data Harmonisation

- International Journal of Spatial Data Infrastructures Research (IJSDIR)
  - peer-reviewed journal published exclusively on line by the Joint Research Centre of the European Commission
  - published free of charge and adheres to the Open Archives Initiative, which aims to facilitate the dissemination of electronic content

- Open Call for Papers until September/October 2009
- Accepted Workshop Papers will be invited for extended paper submission

http://ijsdir.jrc.it/
## Programme

### 09:15-10:30: The Warm-up

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| **Eva Klien**  
*Welcome / Introduction* |

**Keynote by Christine Giger**  
*Challenges in Geospatial Data Harmonisation: Examples and Approaches from the HUMBOLDT project.*

**Sven Schade**  
*Translation of Geospatial Data – Challenges, Solution and Vision.*

### 10:30 – 11:00: Coffee Break
11:00 – 12:30: Semantics

Session 2

Marian de Vries, Thorsten Reitz
*Conceptual Schema Matching with the Ontology Mapping Language: Requirements and Evaluation.*

Stephan Mäis
*Harmonisation of Spatial Semantic Integrity Constraints.*

Nathalie Abadie
*Formal Specifications to Automatically Identify Heterogeneities.*

12:30-14:00 Lunch Break
14:00 – 15:30: Experiences and Applications

Session 3

Gobe Hobona, Carmelo Attardo, Robert Laurini, Mike Jackson, Maria Pla, Stefania de Zorzi, Anette Breu, Catherine Roussey, Alina Kmiecik
Considerations for Harmonising Cross-Border Geospatial Datasets.

Claudia Gedrange, Marco Neubert, Myra Sequeira
Cross-Border Harmonisation of Spatial Base Data – An Example from a German-Czech project.

Marcus Richter, Barry Masterson, Tino Miegel
The sdi-suite Inspire Fusion Center Pilot.

15:30-16:00: Coffee Break
16:00-17:30: Sensor Web

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| **Holger Neuhaus**, Michael Compton  
| **Désirée Hilbring**, Katharina Schleidt  
*Automatic creation of INSPIRE related metadata from Sensor Web Enablement Services.* |
| Round Table Discussion and Wrap-up |
Questions

- In the context of your work – what are the biggest challenges in geospatial data harmonisation?
- Organisational / Technical level?
- Do you have 3D harmonization issues?
- Handling gridded data (multidimensional grids)
- Handling dynamic data (e.g. mathematical models for forecasts)
  - Harmonisation issues
  - Harmonisation processes
Thank you

IceBreaker at 19:30 o’clock