SDI Research and Strategies towards 2030: Renewing the SDI Research Agenda

AGILE 2018 Pre-conference workshop

12 June, Lund (Sweden)

Aim & objectives

The aim of the 'SDI Research and Strategies towards 2030' Workshop is **to initiate the definition of a renewed Spatial Data Infrastructure Research Agenda for 'SDI Research and Strategies towards 2030',** incorporating both technical and non-technical perspectives and research challenges.

The workshop has three objectives:

1. To provide an overview of recent and ongoing research on SDI and related topics
2. To identify gaps and challenges in SDI research and define a research agenda for future SDI research
3. To (re-)establish a research community for SDI research that promotes and enables active collaboration and engagement across multiple disciplines and regions

Organizers

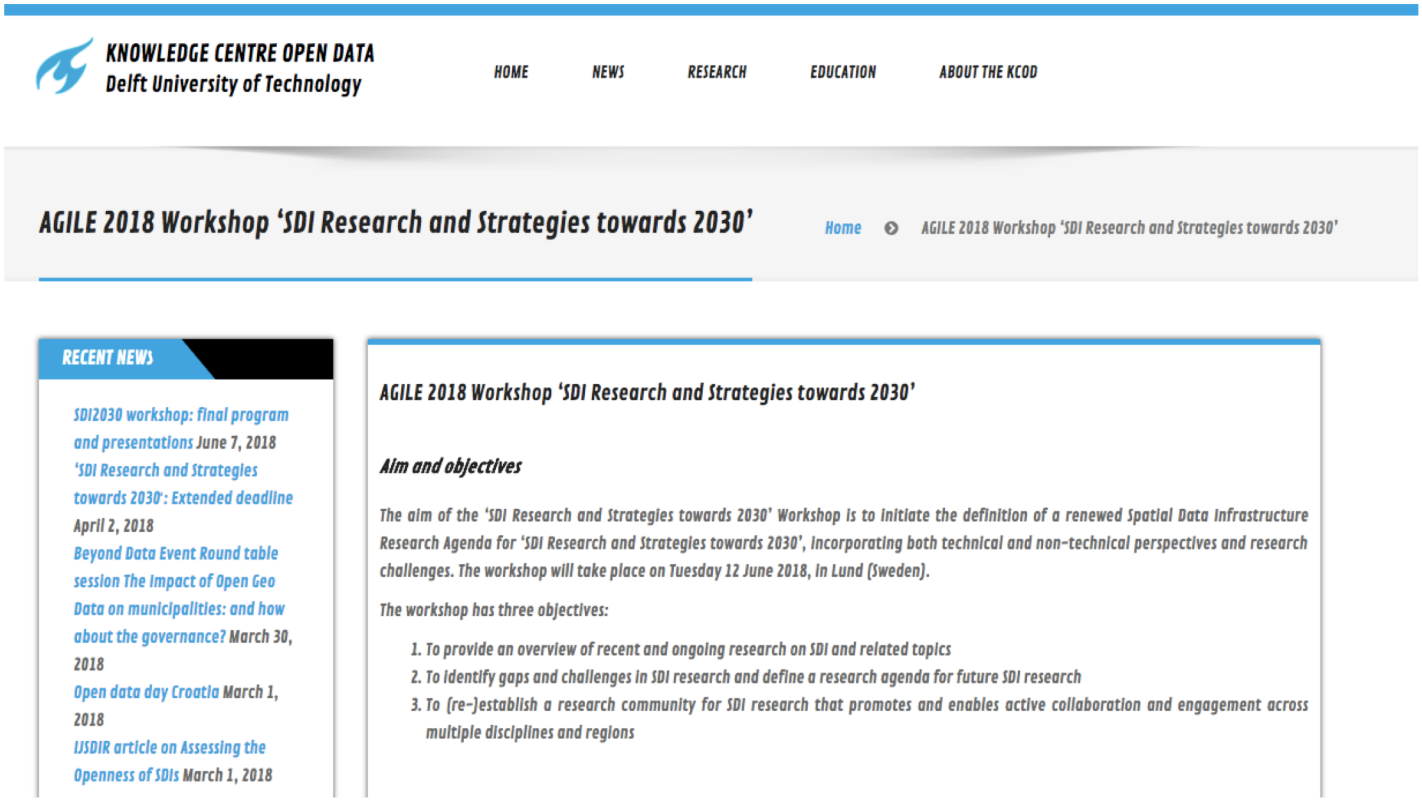
TU Delft

KU LEUVEN

AALBORG UNIVERSITY

LUND UNIVERSITY

Workshop webpage



Program, presentations, workshop report, etc.

http://kcopendata.eu/sdi2030

Program

9:00 – 9:30	Welcome and introduction
9:30 – 11:00	**Session 1 – SDI 2030: governance for innovation and sustainability**
11:00 – 11:30	Coffee break
11:30 – 13:00	**Session 2 – SDI 2030 for integration, visualization and exploration**
13:00 – 14:30	Lunch break
14:30 – 16:00	**Session 3 – SDI 2030 and Open Data**
16:00 – 16:30	Coffee break
16:30 – 18:00	**Discussion and next steps**

Session 1 - SDI 2030: governance for innovation and sustainability

The 'governability' of Spatial Data Infrastructures (SDIs)

Jaap-Willem Sjoukema (Wageningen University, the Netherlands), Arnold Bregt (Wageningen University, the Netherlands) & Joep Crompvoets (KU Leuven, Belgium)

Developing and connecting SDIs: Bringing in and clarifying the role of public values

Maxim Chantillon (KU Leuven - Belgium), Joep Crompvoets (KU Leuven - Belgium), Vassilios Peristeras (International Hellenic University - Greece)

Assessing the openness of Spatial Data Infrastructures in Europe

Bastiaan van Loenen & Glenn Vancauwenberghe (TUDelft, the Netherlands)

Session 2 - SDI 2030 for integration, visualization and exploration

SDI for exploration of the Digital Earth

Neil Sang (Swedish University of Agricultural Sciences, Sweden)

Beyond traditional SDI: new research topics and methods

Danny Vandenbroucke (KU Leuven, Belgium)

Integration and visualisation of geospatial data using Semantic Web technologies: an SDI perspective

Weiming Huang (Lund University, Sweden)

Session 3 - SDI 2030 and Open Data

INSPIRE2030: A vision for the European Spatial Data Infrastructure of the Future

Alexander Kotsev, Vanda Lima, Robert Tomas, Vlado Cetl, Michael Lutz, Sven Schade (European Commission, DG JRC)

Two different cases of free and open data in Denmark – The National Basic Data Program and the Opendata.dk

Lars Bodum (Aalborg University, Denmark)

Is NSDI dead?

Çetin Cömert & M. Emre Yıldırım (Karadeniz Technical University, Turkey)

Session 4 – Discussion & next steps

Scope: development and implementation of a renewed Spatial Data Infrastructure Research Agenda ('SDI2030')

1. **Development:** identification of research topics in order to stimulate relevant and promising SDI research
    - *Scope? Which topics? Structured framework? Link with other domains/disciplines? Building further on past and ongoing research?*

2. **Implementation:** foster collaboration and exchange and increase the connectedness between SDI researchers
    - *Do we need this? How to do this? Next steps (short and long term)? How to structure, coordinate and sustain this?*

Background (hypotheses)

1. **SDI research is relevant,** as a driver and enabler for SDI development and implementation.
2. **SDI research is dynamic:** new research challenges emerged and new researchers and research disciplines entered the domain of SDI research.
3. **SDI research is becoming more fragmented** into separate – disciplinary, organizational and geographic – silos, *due to a lack of initiatives enabling and facilitating collaboration and exchange of knowledge and experiences among SDI researchers.*

Collaboration and exchange in SDI research: past, present and future

Let's be interactive *(part 1)*

1. Take your laptop or mobile phone
2. Go to www.menti.com
3. Enter the following code: **19 67 84**
4. Answer the questions
5. *Warning: your answers will appear on the screen (anonymously).*

Collaboration and exchange in SDI research: past, present and future

A brief history of collaboration and exchange in SDI research (2005 - …)

Disclaimer:

- *just my personal opinion/thoughts*
- *not a complete overview*
- *different levels of collaboration/exchange*

Towards an SDI research agenda (2005)

Towards an SDI Research Agenda

Lars Bernard[1], Max Craglia[1], Michael Gould[2], Werner Kuhn[3]
1Joint Research Centre European Commission, Ispra, Italy
2 University Jaume I, Castellón, Spain
3Univerity of Münster, Münster, Germany

Abstract

We ask how research agendas of Geographic Information Science should reflect the ubiquitous discussions and developments on Spatial Data Infrastructures (SDI). Many research issues surrounding geographic information remain unresolved and are equally relevant in SDI settings. More interestingly, however, a host of GI research questions are different in the SDI context or have only arisen in it. The literature has so far discussed them from either technical or social perspectives, but no integrated view exists to our knowledge. We attempt it by combining our specializations in the technology, people, and content dimensions of SDI with a joint perspective on the "science behind SDI", as embodied in the Vespucci initiative.

11th EC-GI&GIS Workshop in Alghero (2005)

IJSDIR – International Journal of Spatial Data Infrastructure Research (2006)

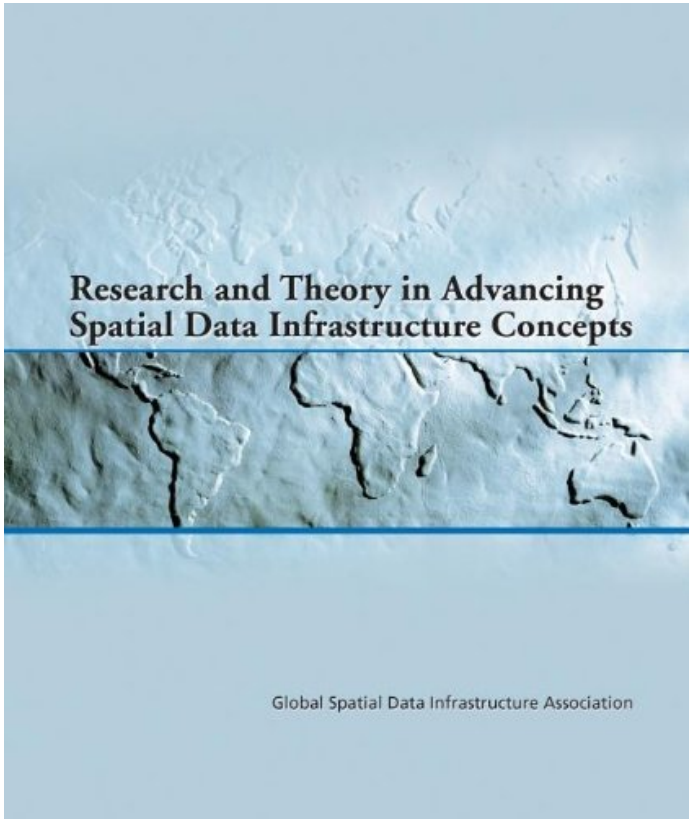
Vol 1 (2006)

Table of Contents

Editorials

Research Articles

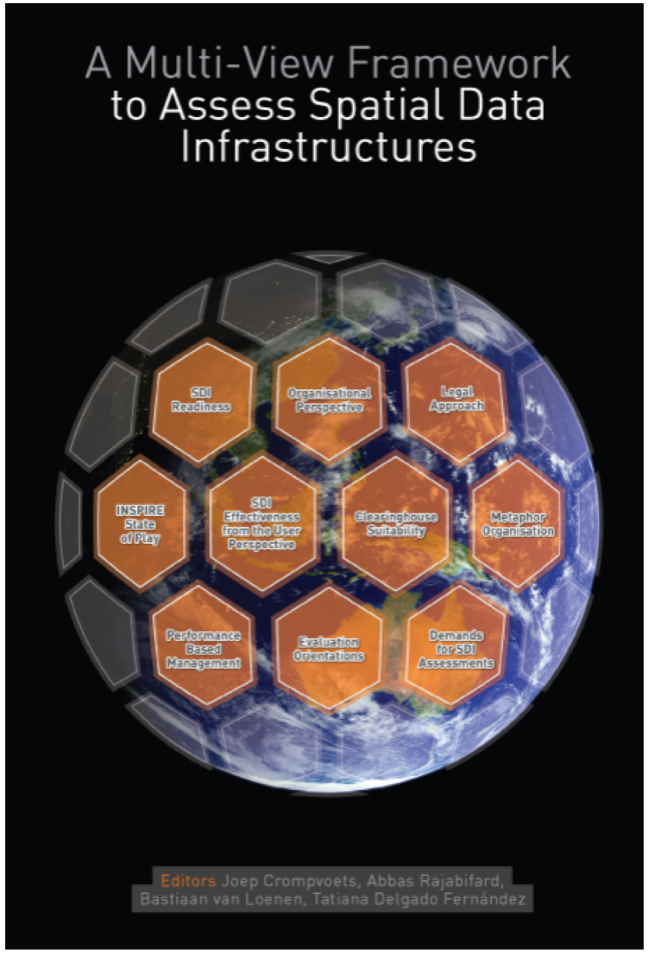
Research and Theory in Advancing Spatial Data Infrastructure Concepts (2007)



Onsrud H. (2007). Research and theory in advancing spatial data infrastructure concepts. Redlands California: Esri Press

In this scholarly volume Harlan Onsrud, president of the Global Spatial Data Infrastructure Association, presents the latest research by renowned international experts and offers insight into possible directions in which SDIs may be headed. Firmly rooted in a broad societal context, the studies take technical, legal, economic, and institutional challenges head on, with a strong emphasis on the needs of developing nations. The research analyzes models for planning, financing, and implementing SDI initiatives and assesses the extent to which established SDI projects in Australia, India, and the European Union are contributing to national economic competitiveness and social well-being.

A Multi-View Framework to Assess Spatial Data Infrastructures (2008)



Crompvoets, J., Rajabifard, A., van Loenen, B., & Fernández, T. D. (2008). A multi-view framework to assess SDIs. Space for Geo-Information (RGI), Wageningen University and Centre for SDIs and Land Administration, Department of Geomatics, The University of Melbourne.

The objective of this book is to promote a better understanding of SDI assessment by providing the concepts, demands and implications of SDI assessments, a compilation of existing approaches to assess SDIs and examples in practices in order to assist practitioners to develop more comprehensive and better evaluations that fits the assessment demands. The book is designed to be a professional resource to help build information resource management capacity in the context of SDI assessment. Although directed at spatial scientists, professionals, managers, policy makers and researchers, the book will have broader applications for other disciplines as the concept of SDI continues to adapt in response to the user needs in different societies.

PhD workshop 'Theory-based SDI research: North and South' (2009, Delft)

9:30	**Opening** **Tea and coffee**
9:45	**Welcome Address** **Bastiaan van Loenen**
10:00	**Panel 1** **Joep Crompvoets(chair)** ***(K.U.Leuven)*** **Lucas Grus** ***(PhD student, U of Wageningen)*** - abstract (pdf) **Frederika Welle Donker** ***(PhD student, TU Delft)*** - abstract (pdf) - presentation (pdf) **Walter de Vries** ***(PhD student, EU Rotterdam)*** - abstract (pdf) - presentation (pdf) **Dev Raj Paudyal** ***(PhD student, U of Southern Queensland)*** - abstract (pdf) - presentation (pdf) **Matthias Van Hoogenbemt** ***(PhD student, K.U.Leuven)*** - abstract (pdf) - paper (pdf) - presentation (pdf) **Tara van Dijk** ***(PhD student, U van Amsterdam)*** - abstract (pdf)- presentation (pdf) **Danny Vandenbroucke** ***(PhD student, K.U.Leuven)*** - abstract (pdf) -presentation (pdf)
11:15	**Coffee break**
11:30	**Panel 2** **Zorica Nedovic-Budic (chair) (U College Dublin)** - abstract (pdf) **Elisabetta Genovese** ***(PostDoc, U of Laval)*** - abstract (pdf) - presentation (pdf) **Prasanna Kolte** ***(PhD student, ITC)*** - abstract (pdf) - presentation (pdf) **Christine Richter** ***(PhD student,ITC)*** - abstract (pdf)- presentation (pdf) **Ezra Dessers** ***(PhD Student, KU Leuven)*** - abstract (pdf) - presentation (pdf) **Glenn Vancauwenberghe** ***(PhD student, KU Leuven)*** - abstract (pdf) - presentation (pdf) **Boris Mericksay** ***(PhD student, U of Laval)*** - abstract (pdf) **Henk Koerten** ***(PhD student, TU Delft)*** - abstract 1 (pdf) - - abstract 2 (pdf) - presentation (pdf) **Ara Toomanian (PhD student, U of Lund)** (pdf) - presentation (pdf)
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15.30	**Coffee Break**
15.45	**Panel 3: Group propositions** **Gianluca Miscione** ***(chair) (ITC)*** **Chair group 1:** ***(PhD student,*** **TBD)** **Chair group 2:** ***(PhD student*** **TBD)** **Chair group 3:** ***(PhD student,*** **TBD)**
16:30	**Closing Panel** **Francis Harvey** ***(chair)*** **(U Minnesota)** **Isa Baud (UvA)** **Luc Boerboom (ITC)** **Zorica Nedovic-Budic (University College Dublin)** **Gianluca Miscione (ITC)** **Joep Crompvoets (K..U.Leuven)**
17:30	**Closing**

Link: http://www.spatialist.be/eng/act/20090614.htm

PhD Student Workshop 'Sharing SDI Research Approaches' (2010, Singapore)

Workshop Sharing SDI Research Approaches
Source: Mabel Alvarez

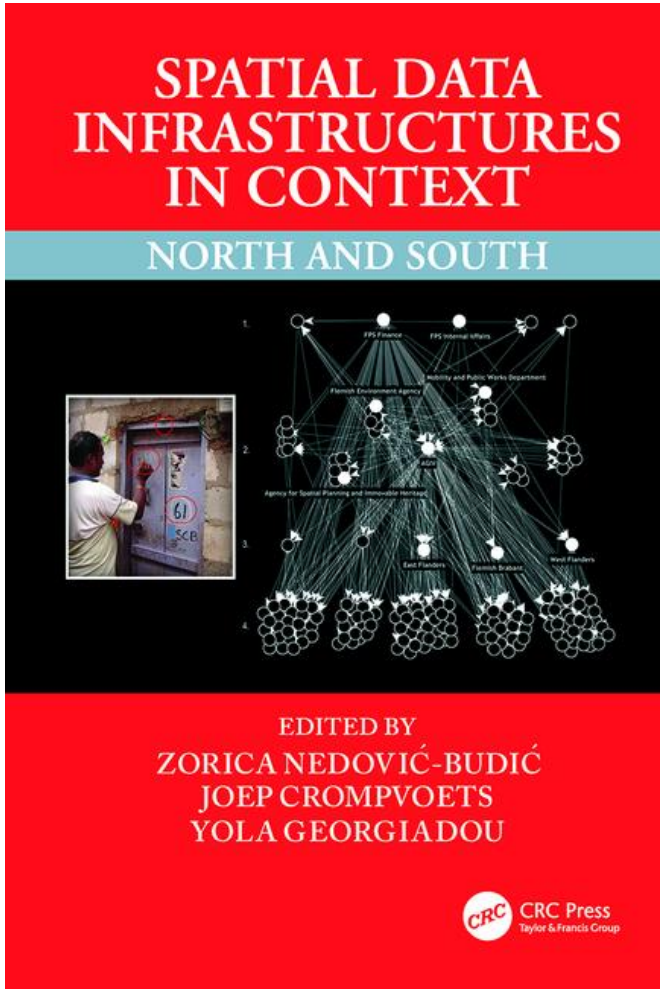
The workshop is free and is a follow up to the successful PhD workshop "SDI research: North and South", held prior to GSDI 11 in Delft, The Netherlands. This workshop provided an opportunity for SDI researchers to present their work and discuss issues of concern: substantive, theoretical, methodological or practical. 15 PhD students presented their work, several other PhD students attended the meeting and over 10 senior researchers/supervisors were present. The purpose of the workshop is to provide research students with the opportunity to present their research topics to other research students and experienced researchers at an open forum. Through presenting a range of varying research approaches it is hoped that a better understanding of these methods will be developed by all participants. This workshop welcomes contributions of all foci areas of an SDI. This implies socio-economic-policy oriented, technological-oriented research as well as research aiming at assessing SDIs. Students are encouraged to present their research at the meeting, provide a brief research proposal (submitted a month before the workshop) and prepare any pressing questions for discussion with the group and supervisors/senior researchers individually. The intended audience will be Masters and PhD candidates who may be at various stages of their research studies. Further details of workshop are available at http://www.gsdi.org/gsdiconf/gsdi12/workshops.html#wrkshp1.11 or by contacting Kevin McDougall mcdougak@usq.edu.au

Spatial Data Infrastructures in Context: North & South (2011)

Nedovic-Budic, Z., Crompvoets, J. W. H. C., & Georgiadou, P. Y. (2011). Spatial Data Infrastructures SDI in context: North and south. Boca Raton: CRC Press.

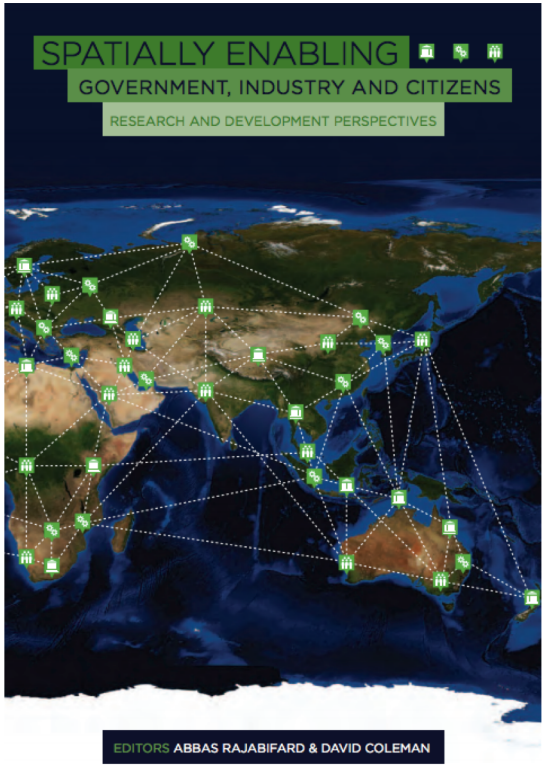
Analyzing the obstacles as well as the processes and mechanisms of integration and implementation, Spatial Data Infrastructures in Context: North and South investigates the technological and the non-technological aspects of the widespread adoption of spatial data infrastructures.

Supporting theoretical issues with empirical studies, the editors pay particular attention to the non-technological aspects of organizational, financial, and legal issues including owner rights, liability, copyrights, and compatibility with precedent and supercedent laws. The authors also highlight the importance of understanding the local environment and circumstances in the process of tailoring the approaches to the conditions that characterize societies of different cultural, institutional, and economic settings.



SDI past, present and future: a review and status assessment (2012)

- Harvey, F., Iwaniak, A., Coetzee, S., & Cooper, A. K. (2012). SDI past, present and future: a review and status assessment. In: Rajabifard A. & Coleman D. (Eds). Spatial Enabling Government, Industry and Citizens. Proceedings of the GSDI 13 Global Geospatial Conference.



GSDI
Global Spatial Data Infrastructure Association

IJGI Special Issue on 'Spatial Data Infrastructures, Cyberinfrastructure, and e-Science for GIScience' (2013)

Special Issue Information

Dear Colleagues,

Recent developments in geospatial and related technologies are having profound impacts on the field of geographic information science. This special issue takes stock of these impacts through contributions from leading GIScientists working at this scientific-technological interface. An overriding goal of this special issue will be to bring much needed clarity to the broadly defined and rapidly evolving areas of SDI, cyberinfrastructure, and e-Science to provide focus and guidance to GIScientists who want to make use of stirring new developments in Information and Communication Technology such as high speed networks, high performance computing, and distributed collaborative environments.

Prof. Sergio Rey
Mr. Michael P. Finn
Guest Editors

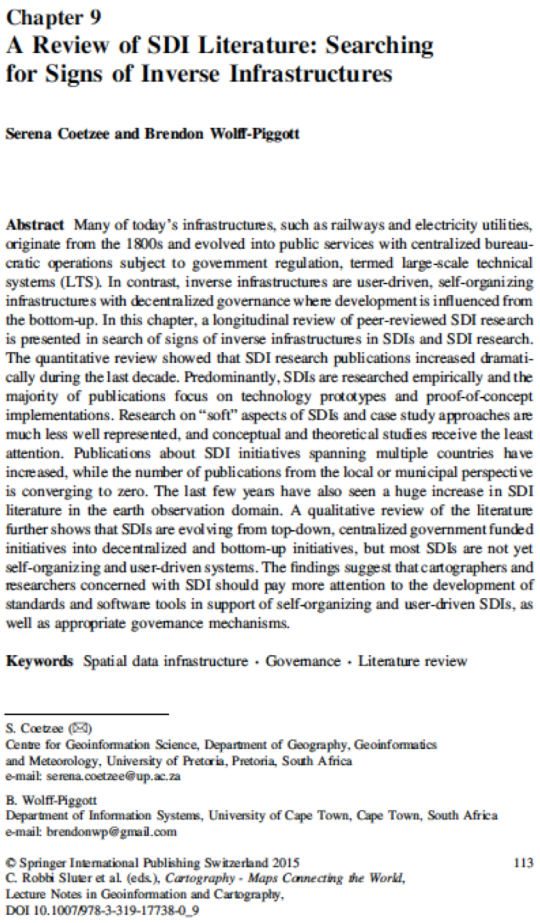
INSPIRE Conference 2014

AALBORG UNIVERSITY

- *INSPIRE Compliance of Public Health Information – a Danish Case Study*
- *The STIG – A new SDI Assessment Method - Stress Test for SDIs*
- *Investigating licences for Open Data from EU public administrations*
- *The Integration of INSPIRE Services in e-Government Processes: a Case from the Health Policy Domain*
- *SDI From User's Point Of View*
- *INSPIRE for Innovation and Growth in the Private Sector: Views and Opinions from Key Stakeholders*

And many other presentations at INSPIRE conferences…

A review of SDI literature: Searching for signs of inverse infrastructures (2015)



Chapter 9
A Review of SDI Literature: Searching for Signs of Inverse Infrastructures

Serena Coetzee and Brendon Wolff-Piggott

Abstract Many of today's infrastructures, such as railways and electricity utilities, originate from the 1800s and evolved into public services with centralized bureaucratic operations subject to government regulation, termed large-scale technical systems (LTS). In contrast, inverse infrastructures are user-driven, self-organizing infrastructures with decentralized governance where development is influenced from the bottom-up. In this chapter, a longitudinal review of peer-reviewed SDI research is presented in search of signs of inverse infrastructures in SDIs and SDI research. The quantitative review showed that SDI research publications increased dramatically during the last decade. Predominantly, SDIs are researched empirically and the majority of publications focus on technology prototypes and proof-of-concept implementations. Research on "soft" aspects of SDIs and case study approaches are much less well represented, and conceptual and theoretical studies receive the least attention. Publications about SDI initiatives spanning multiple countries have increased, while the number of publications from the local or municipal perspective is converging to zero. The last few years have also seen a huge increase in SDI literature in the earth observation domain. A qualitative review of the literature further shows that SDIs are evolving from top-down, centralized government funded initiatives into decentralized and bottom-up initiatives, but most SDIs are not yet self-organizing and user-driven systems. The findings suggest that cartographers and researchers concerned with SDI should pay more attention to the development of standards and software tools in support of self-organizing and user-driven SDIs, as well as appropriate governance mechanisms.

Keywords Spatial data infrastructure · Governance · Literature review

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C. Robbi Sluter et al. (eds.), *Cartography - Maps Connecting the World*,
Lecture Notes in Geoinformation and Cartography,
DOI 10.1007/978-3-319-17738-0_9

Coetzee, S., & Wolff-Piggott, B. (2015). A review of sdi literature: Searching for signs of inverse infrastructures. In *Cartography-Maps Connecting the World* (pp. 113-127). Springer, Cham.

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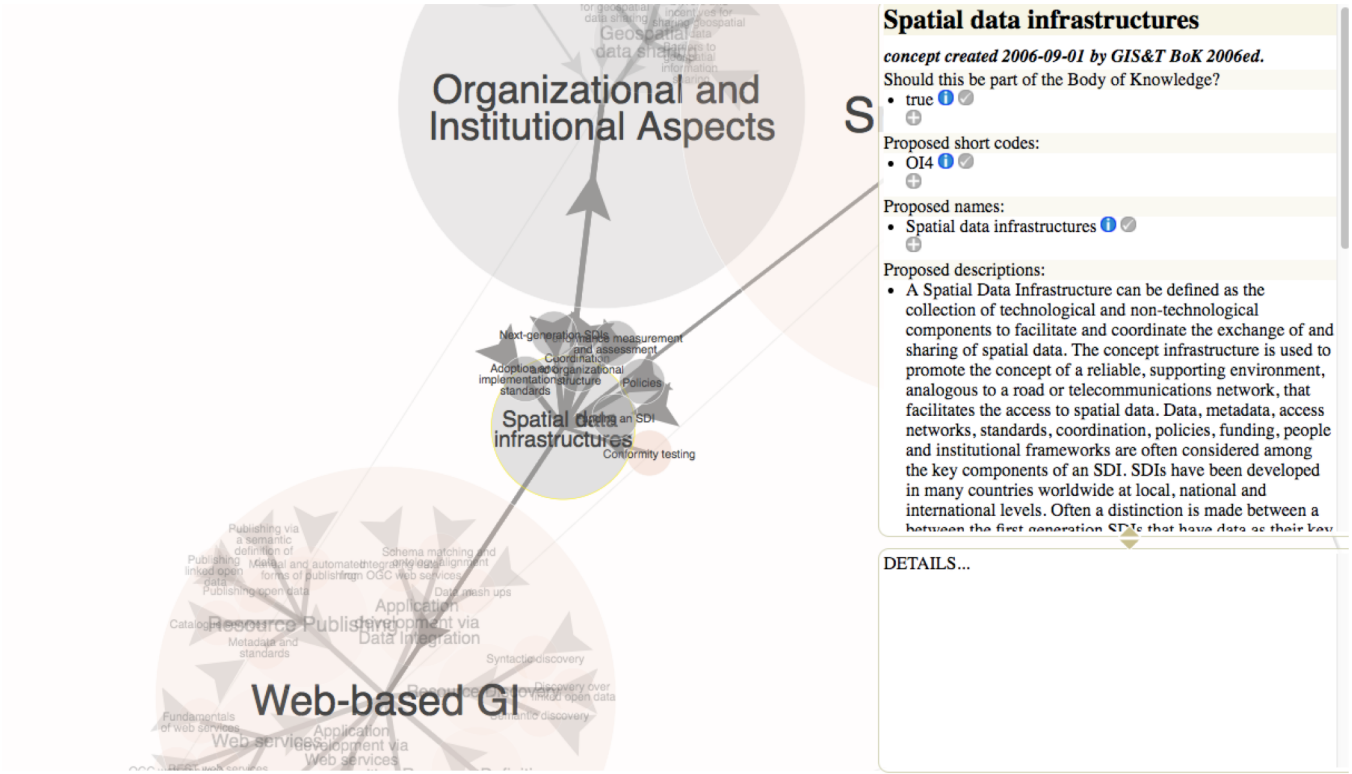
GI-N2K Body of Knowledge WIKI (2016)



Link: http://gin2k.bigknowledge.net/bokwiki/

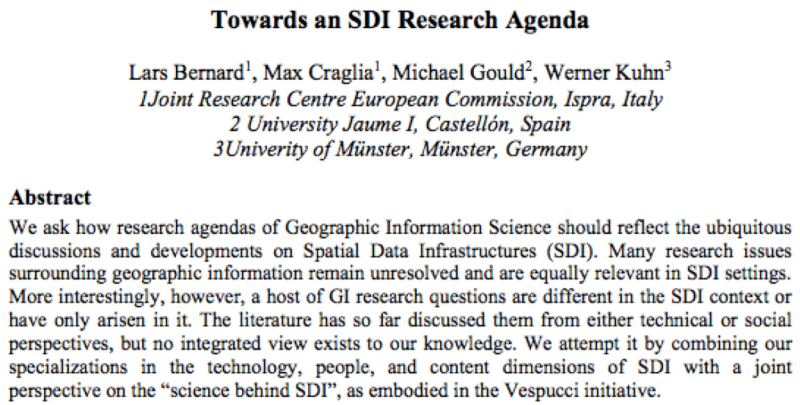
And many other projects … (H2020, Erasmus, FP7, etc.)

After 2016…

- GSDI15 World Conference in Taipei (Taiwan) in November/December 2016
- INSPIRE 2017 Conference in Kehl (Germany) and Strasbourg (France), and INSPIRE 2018 in Antwerp (Belgium)
- IJSDIR volume 12 (2017) and volume 13 (2018)
- 133 publications on SDI according to Scopus: 98 in 2017 and 35 in 2018
- And various other activities
- **AGILE 2018 Pre-conference workshop on SDI Research and Strategies towards 2030'**

Topics?

- **Towards an SDI research agenda (2005)**



Towards an SDI Research Agenda

Lars Bernard[1], Max Craglia[1], Michael Gould[2], Werner Kuhn[3]
1Joint Research Centre European Commission, Ispra, Italy
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1. Granularity of GI processing
2. Semantics of geodata and geoservices
3. Organisation and Implementation
4. Economics of GI
5. SDI versus other Information Infrastructures

Topics?

- **PhD workshop 'SDI research: North and South' (2009, Delft)**

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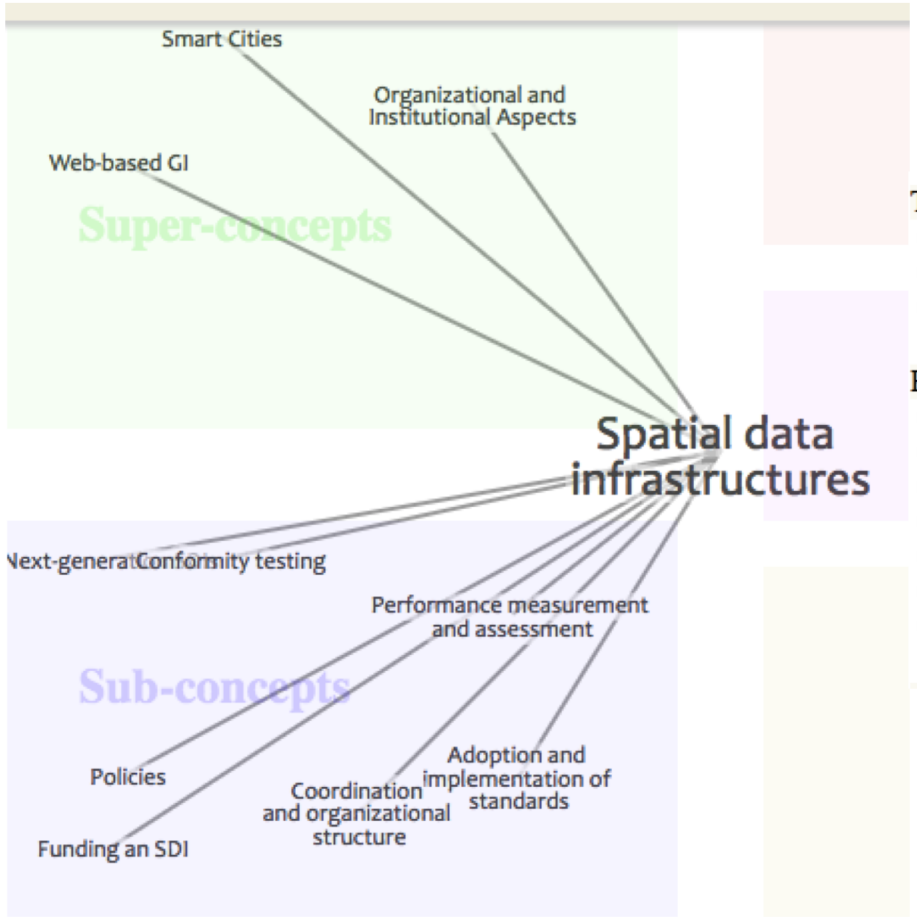
17:30	Closing

- SDI assessment
- legal framework
- interorganizational cooperation
- privacy aspects
- economic evaluation
- decision making
- business processes
- coordination
- geo-standards
- integration of VGI
- SDI for catchment management
- SDI for addressing urban inequalities

Topics?

- **GI-N2K Body of Knowledge WIKI (2016)**



This is proposed as a sub-concept of:

- Organizational and Institutional Aspects
- Smart Cities
- Web-based GI

Proposed subconcepts:

- Adoption and implementation of standards
- Coordination and organizational structure
- Policies
- Next-generation SDIs
- Funding an SDI
- Performance measurement and assessment
- Conformity testing

New topics?

- 3x3 presentations on ongoing and future SDI research
- 15-20’ presentation + 5-10’ Q&A
- 15’ discussion in each session
- 1 discussion session at the end of the workshop:
  - Proposal of a set of topics for a new SDI research agenda
  - Ideas on the implementation of this new research agenda through collaboration and exchange of ideas