Assessing the openness of Spatial Data Infrastructures in Europe

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http://kcopendata.eu/openSDI

AGILE 2018 Pre-conference workshop 'SDI Research and Strategies towards 2030: Renewing the SDI Research Agenda'
12 June, Lund (Sweden)

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Open SDI

A working definition:

> "An SDI where all stakeholders commonly ***govern, share and use*** open geodata"

In essence:

Open SDI = Open spatial data (product) + open infrastructure (process)

A new generation of SDIs?

Open spatial data

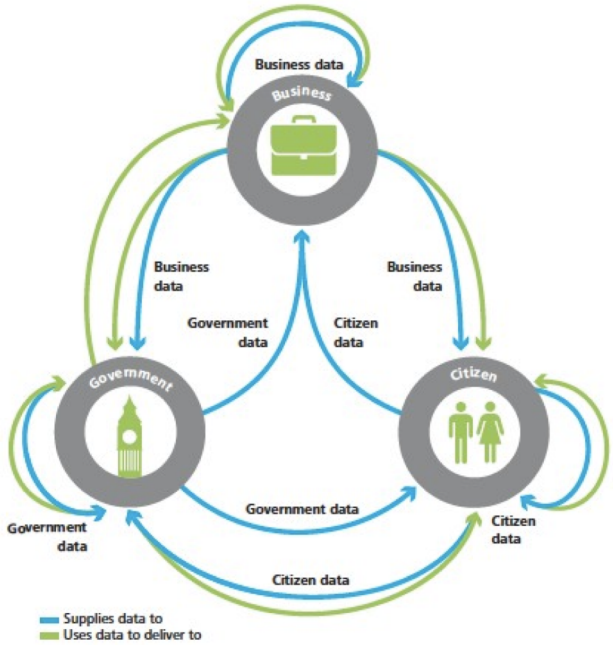
1. Application of principles of open government data to spatial data

Government data shall be considered open if it is made public in a way that complies with the principles below:

1. Complete
   All public data is made available. Public data is data that is not subject to valid privacy, security or privilege limitations.
2. Primary
   Data is as collected at the source, with the highest possible level of granularity, not in aggregate or modified forms.
3. Timely
   Data is made available as quickly as necessary to preserve the value of the data.
4. Accessible
   Data is available to the widest range of users for the widest range of purposes.
5. Machine processable
   Data is reasonably structured to allow automated processing.
6. Non-discriminatory
   Data is available to anyone, with no requirement of registration.
7. Non-proprietary
   Data is available in a format over which no entity has exclusive control.
8. License-free
   Data is not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privil

Compliance must be *reviewable*.

2. Government data + **non-government** data

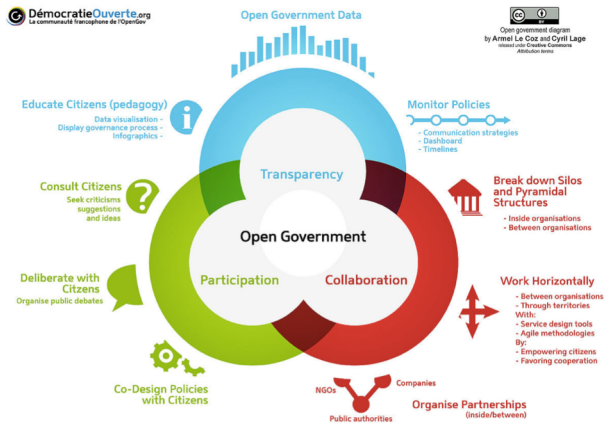


Open infrastructure

Simple: open governance + open implementation =
a co-created spatial data infrastructure

'Open government':

- Transparency
- Participation
- Collaboration



Stages of co-creation:

1. co-initiation
2. co-design
3. co-implementation
4. co-evaluation

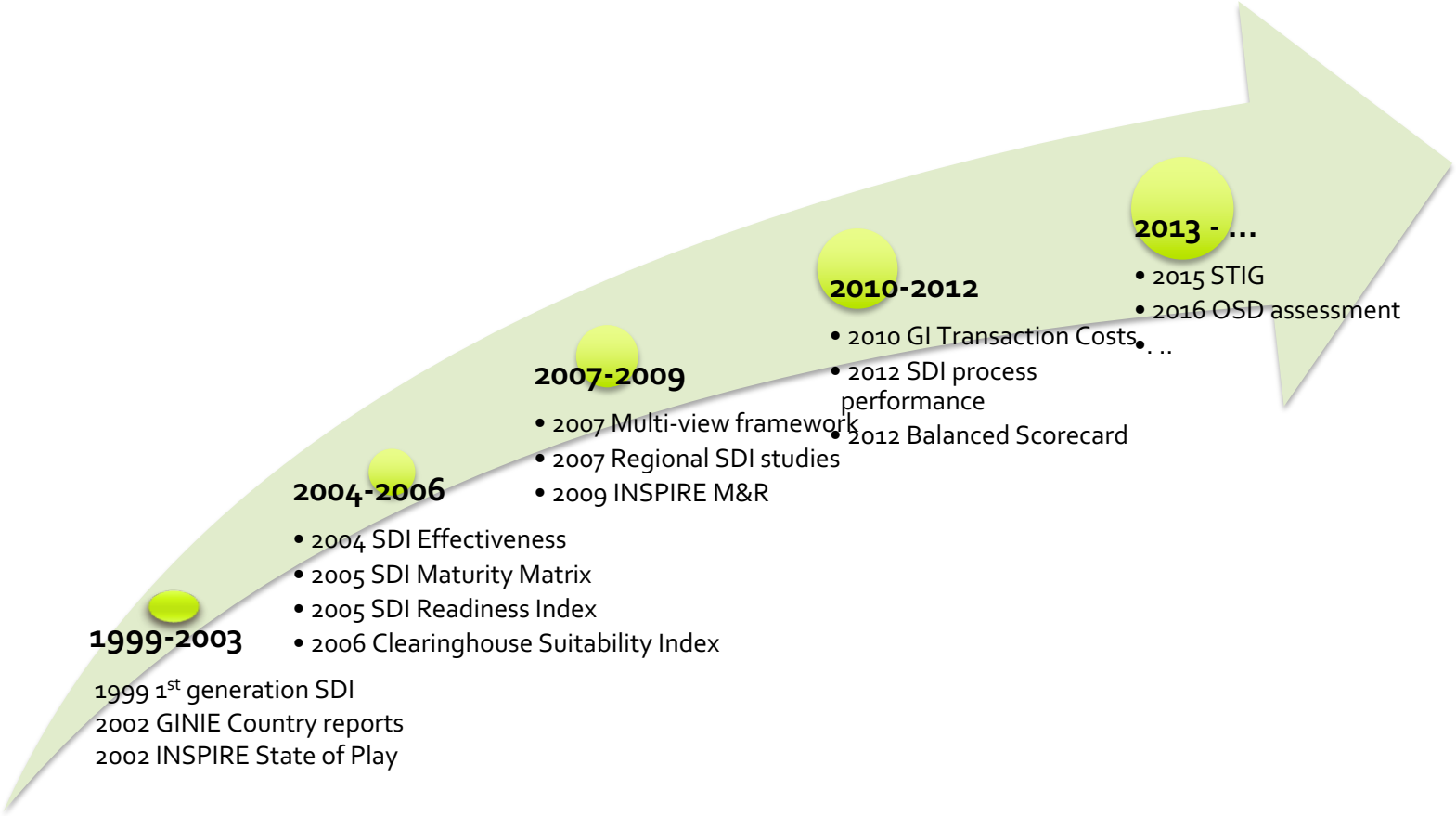
Research challenge

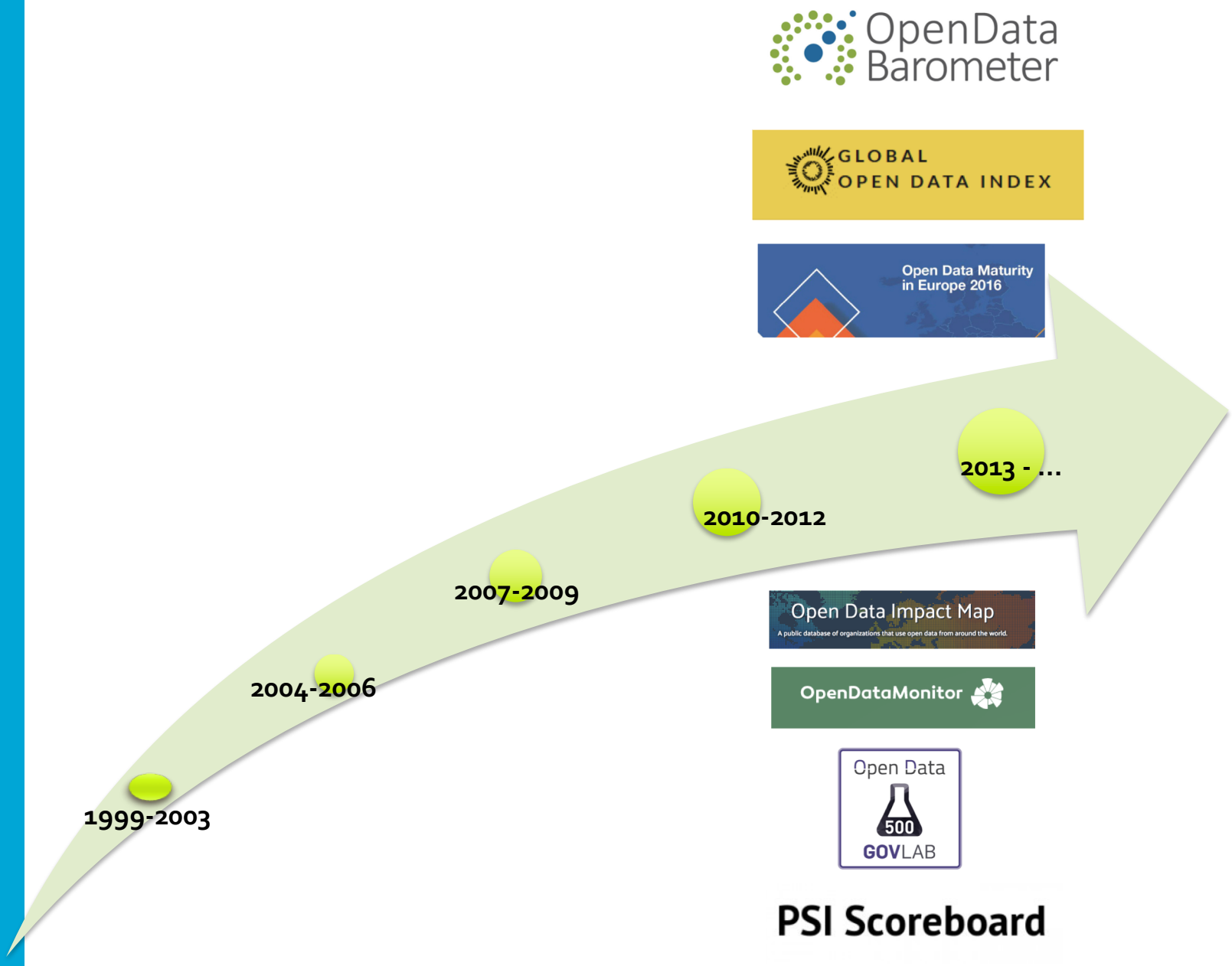
Research challenge

- How to assess the openness of SDIs?
- How to assess the performance of open SDIs?

Open SDI = Better performing SDI?

History of SDI assessment




OpenData Barometer
GLOBAL OPEN DATA INDEX
Open Data Maturity in Europe 2016
2013 - ...
2010-2012
2007-2009
2004-2006
1999-2003
Open Data Impact Map
A public database of organizations that use open data from around the world.
OpenDataMonitor
Open Data 500 GOVLAB
PSI Scoreboard

Towards a common – open - spatial data assessment framework

- Identification of common categories and indicators in open/spatial data assessments within an overarching framework (similar to the common open data assessment framework)
  - **Readiness**: Presence of technological and non-technological components
  - **Data:** Availability and accessibility of spatial data and services
  - **Use:** Use of spatial data (by government, businesses, citizens, etc.)
  - **Impact:** Socio-economic benefits of sharing and using spatial data

Spatial data assessment framework

1. Readiness	2. Data	3. Use	4. Impact
Technological and non-technological components	Availability and accessibility of spatial data and services	Use of spatial data and services	Socio-economic benefits of using spatial data and services

Spatial data assessment framework

	Readiness	Availability	Use	Impact
Global NSDI Survey	**+++**	+	o	o
SDI First generation	++	o	o	o
GINIE	++	++	+	+
SDI State of Play	**+++**	++	o	o
SDI Generations	++	+	o	+
SDI Effectiveness	o	++	++	++
Clearinghouse suitability	++	++	+	o
Organisational maturity	++	o	o	o
SDI Readiness Index	**+++**	++	o	o
SDI Theoretical Framework	++	++	++	**+++**
SDI Socio-economic Impact	o	o	+	**+++**
INSPIRE M&R	**+++**	**+++**	++	++
SDI BSC	++	++	++	+
SDI Process Performance	+	+	++	++

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OSDI assessment

Key Performance Indicators

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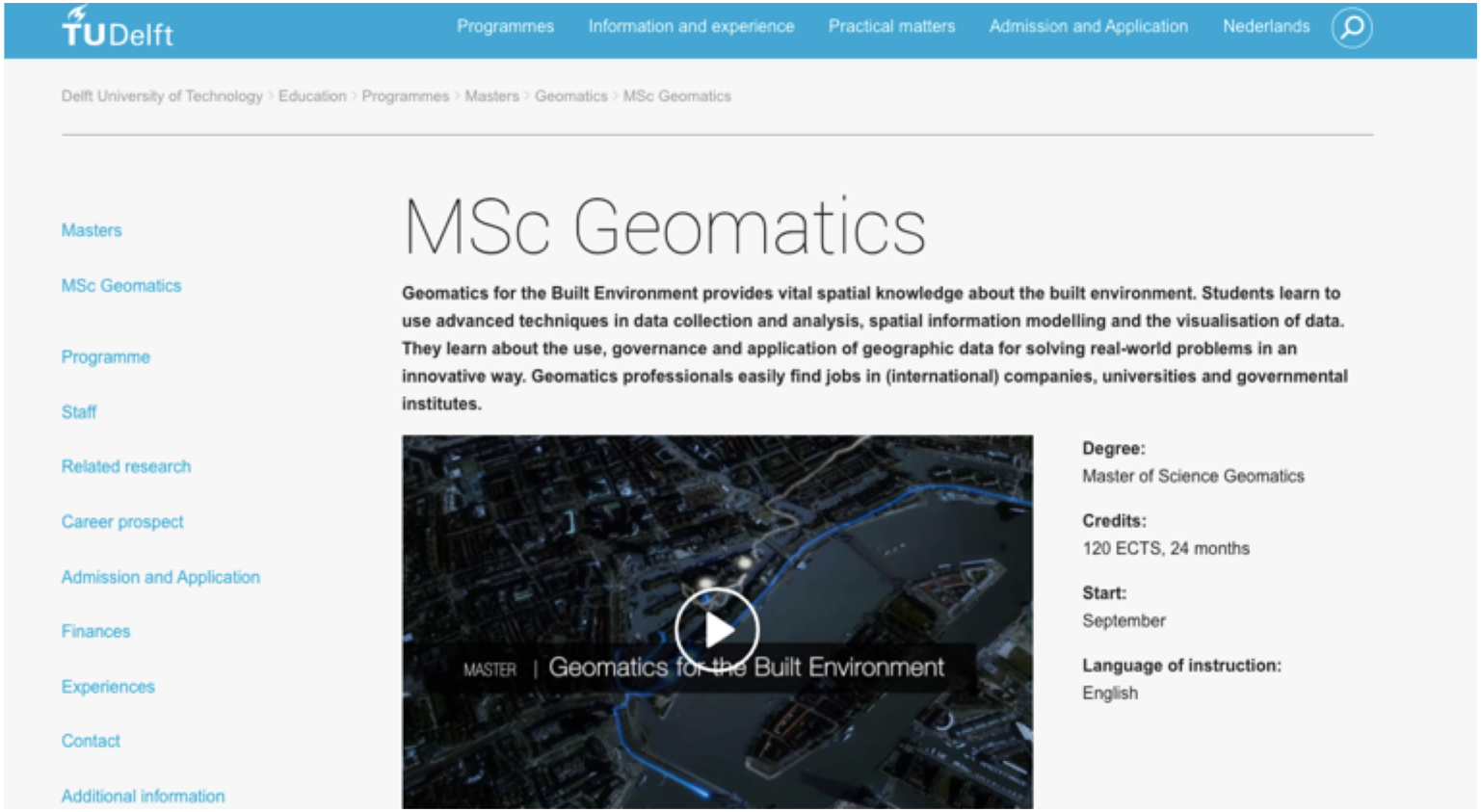
Context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Programmes
Information and experience
Practical matters
Admission and Application
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Masters
MSc Geomatics
Programme
Staff
Related research
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Experiences
Contact
Additional information
MSc Geomatics
Geomatics for the Built Environment provides vital spatial knowledge about the built environment. Students learn to use advanced techniques in data collection and analysis, spatial information modelling and the visualisation of data. They learn about the use, governance and application of geographic data for solving real-world problems in an innovative way. Geomatics professionals easily find jobs in (international) companies, universities and governmental institutes.
MASTER | Geomatics for the Built Environment
Degree:
Master of Science Geomatics
Credits:
120 ECTS, 24 months
Start:
September
Language of instruction:
English

Core foundation courses

The core foundation courses provide a strong foundation to all students by teaching the fundamentals of data gathering, processing, analysing and visualisation. The core foundation courses are focussed around six fundamental themes: Location Awareness, Sensing Technologies, Geo datasets & Database Management Systems, Geoweb & Legal Aspects, GIS & Cartography and 3D Modelling & Disaster Management. The core courses are building up from fundamentals and basic skills to application and integration.

- **Python Programming**
- **Sensing Technologies**
- **GIS and Cartography**
- **Positioning and Location Awareness**
- **Spatial Decision Support for Planning and Crisis Management**
- **Geo Database Management Systems**
- **3D Modelling of the Built Environment**
- **Geo-datasets and Quality**
- **Geo-information Organisation and Legislation**
- **Geo Web, Sensor Networks and 3D-GeoVisualisation Technology**

Spatial data assessment framework

1. Readiness	2. Data	3. Use	4. Impact
Technological and non-technological components	Availability and accessibility of spatial data and services	Use of spatial data and services	Socio-economic benefits of using spatial data and services

Open spatial data assessment framework

1. Readiness	2. Data	3. Impact
Technological and non-technological components	Availability and accessibility of spatial data and services	Use of spatial data and services and associated benefits
To involve (government and) non-government actors in developing and implementing the SDI	**To government, businesses, citizens, non-profit organizations and other actors**	**By and for government, businesses, citizens, non-profit organizations and other actors**

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1. Readiness

- Establishment of components to enable the participation of non-government actors in implementing SDI

- Indicators
  - 1.1. vision on Open SDI
  - 1.2. participation of non-government actors in SDI decision making
  - 1.3. open data policy (for all – spatial – data)
  - 1.4 non-government data included in the SDI

2. Data

- Availability and accessibility of spatial data to non-government actors

- Focus on two data sets:
  - topographic data 1⁰10000 & address data (2017)
  - elevation data and transportation network (2018)

2. Data

- Indicators
  - 2.1. search engine score
  - 2.2. available through geoportal and/or open data portal
  - 2.3. language(s)
  - 2.4. publicly available
  - 2.5. discovery, view and download services
  - 2.6. available for free
  - 2.7. use restrictions
  - 2.8. interoperability
  - 2.9. use statistics

3. Impact

- Use of spatial data by non-government actors and associated benefits

- Indicators

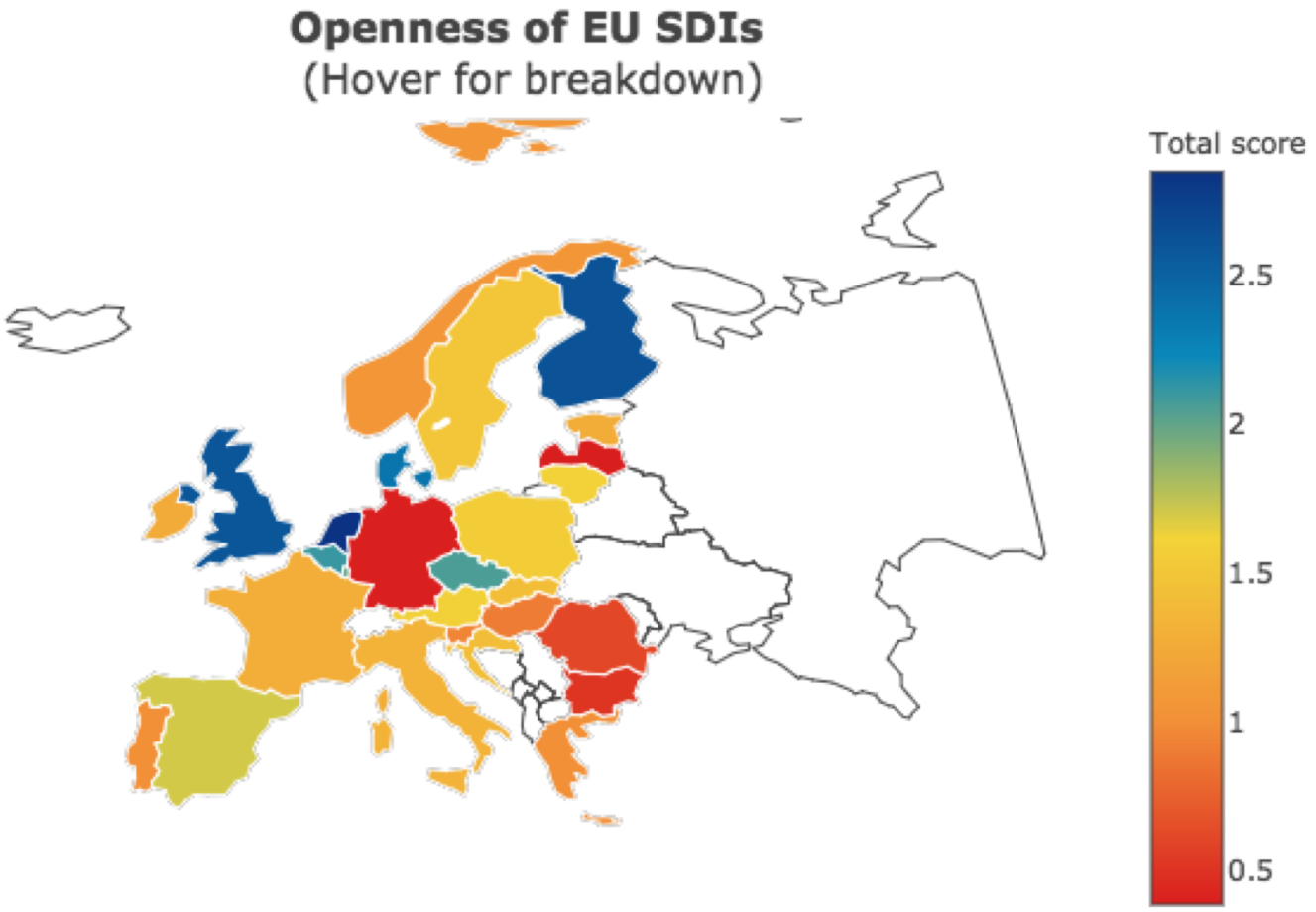
  3.1. use cases of non-government actors using open spatial data

  3.2. studies showing the benefits of open spatial data

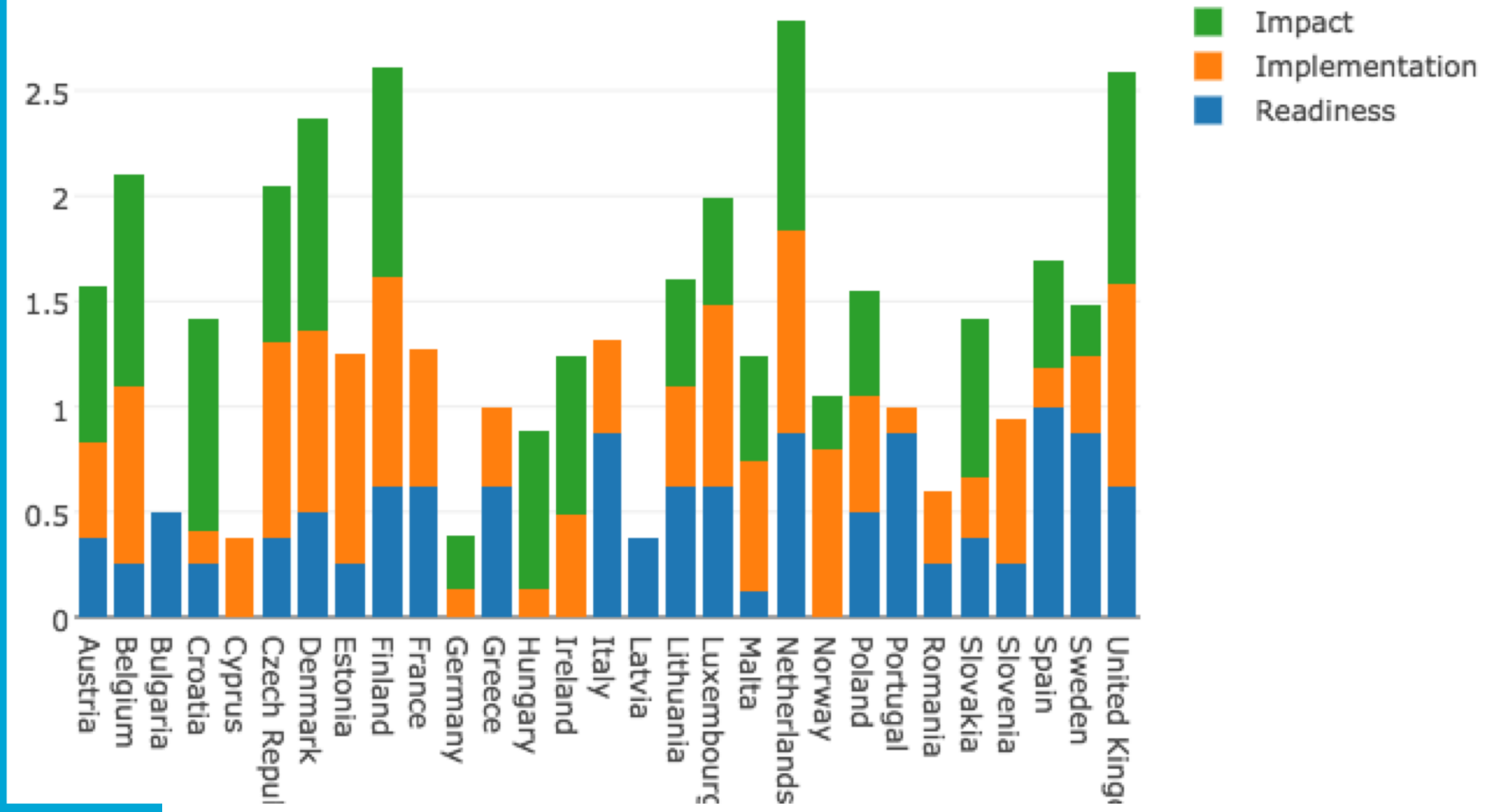
  3.3 media coverage (2018)

Results

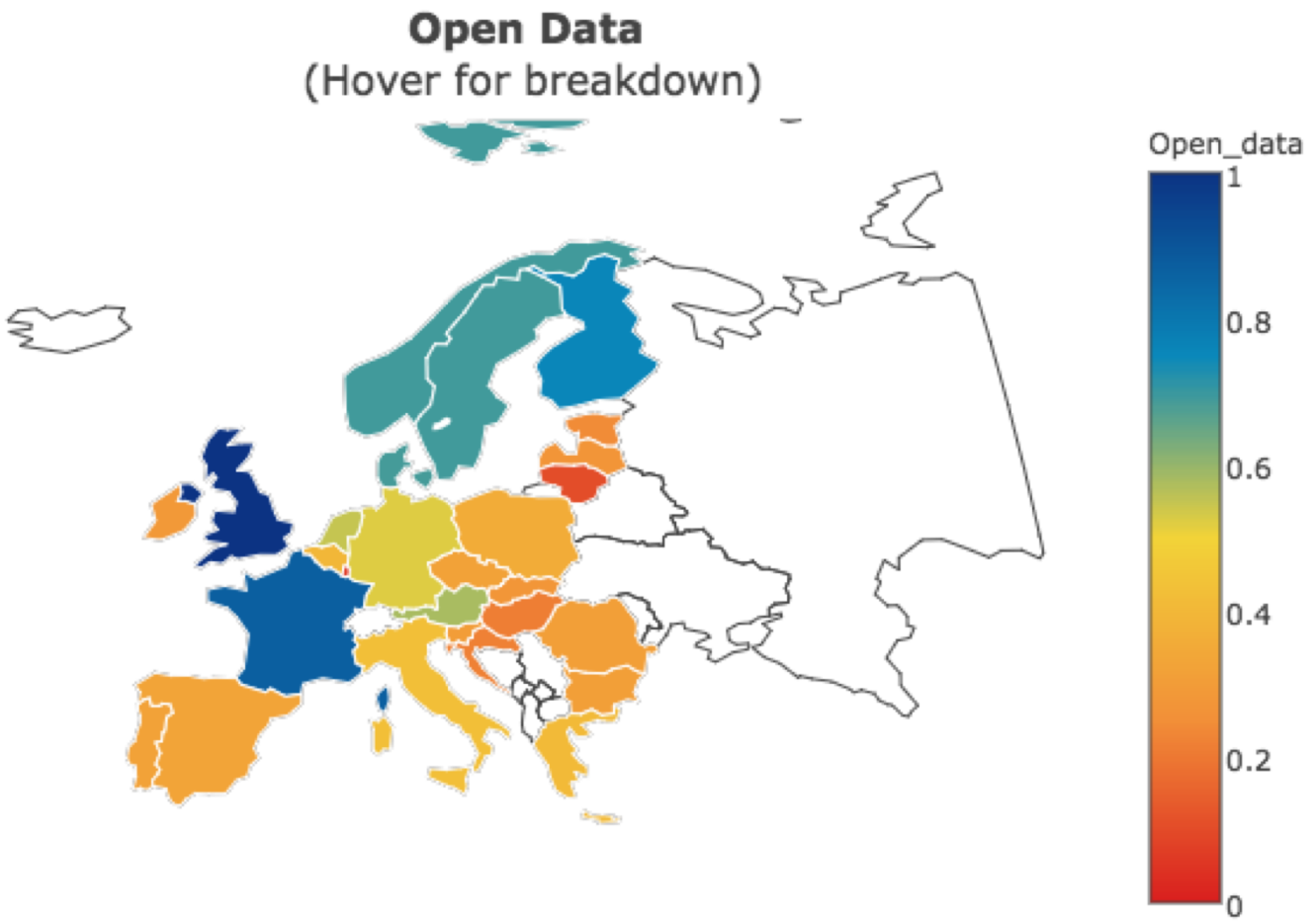
2017 Map of Open SDI



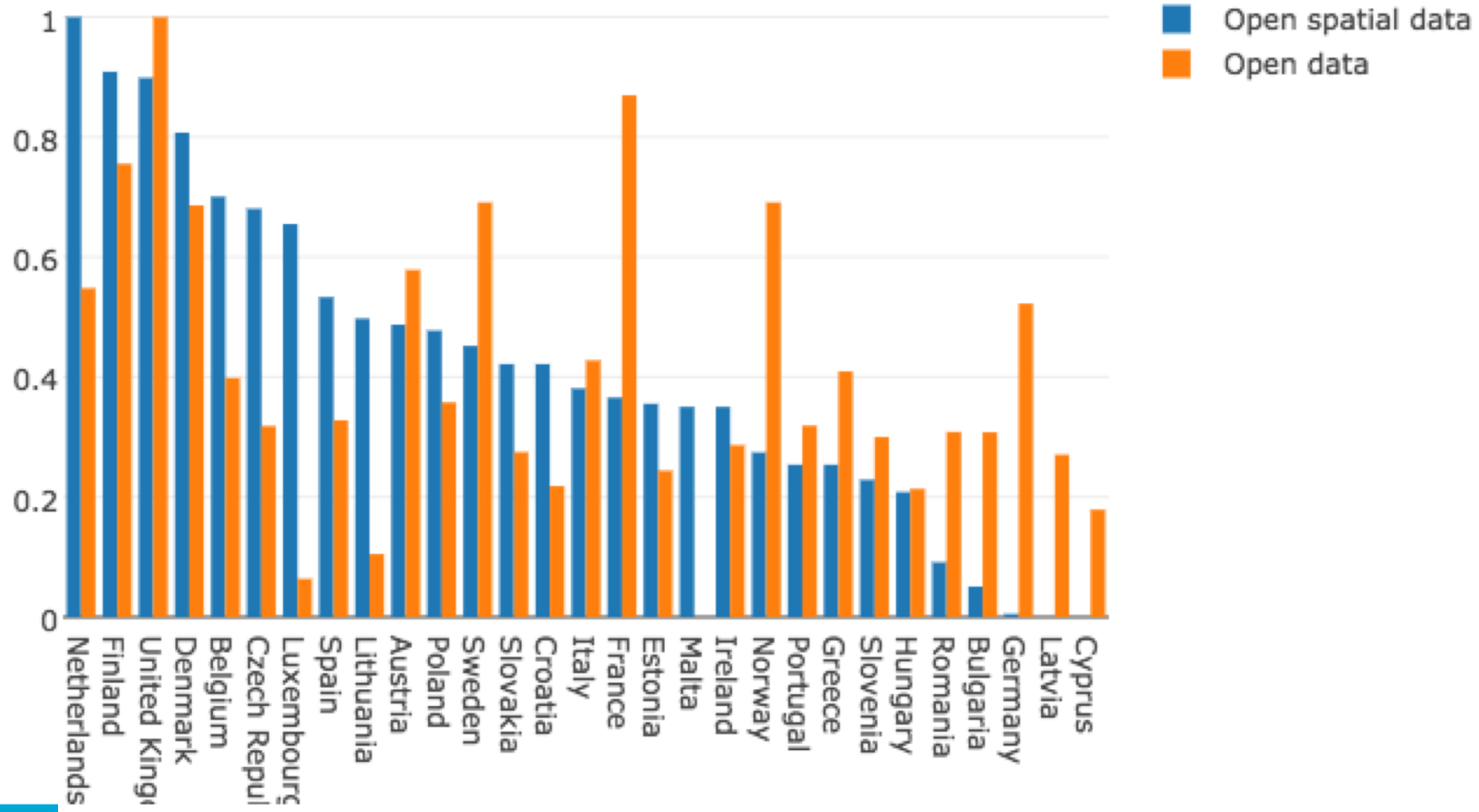
Map of Open SDI - overview



Map of Open data



Comparison with OD



2017 & 2018 results

	2017	2018
United Kingdom	0,86	0,93
Netherlands	0,95	0,69
Finland	0,87	0,64
Luxembourg	0,66	0,64
Spain	0,56	0,73
Poland	0,52	0,75
Denmark	0,79	0,47
Czech Republic	0,68	0,47
Lithuania	0,53	0,55
Norway	0,35	0,71
France	0,43	0,57
Ireland	0,41	0,58
Belgium	0,70	0,22
Estonia	0,42	0,49
Slovenia	0,31	0,55
Sweden	0,50	0,33
Portugal	0,33	0,46
Hungary	0,30	0,49
Slovakia	0,47	0,22
Austria	0,45	0,20
Croatia	0,47	0,18
Romania	0,20	0,44
Greece	0,33	0,29
Bulgaria	0,17	0,40
Latvia	0,13	0,29
Cyprus	0,13	0,27
Germany	0,13	/
Italy	0,44	/

But…

- Research performed by (foreign) students:
  - !
  - ?

Conclusion

Mind the gap

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International (student) user

- **Hard to find:**
  - Language barrier
  - Not in first 20 Google results
  - No common dataset naming
  - Multiple access points
- **Hard to understand:**
  - Language barrier
  - Geoportal search gives irrelevant results
- **Hard to use:**
  - Many datasets
  - National licenses

Research challenges

- (Open) SDI Assessment:
  - Impact: use, users and benefits of an SDI (how to monitor and compare at country level)
  - Automated assessment/benchmarking
- Open SDI governance:
  - Roles, responsibilities and rights of non-government actors
- Towards an Open Spatial Data Ecosystem:
  - What is it?
  - How to establish it?
  - **Open SDI = Better performing SDI?**

2017 Assessment - General

Results: **Map of Open SDI in Europe**

See: http://kcopendata.eu/opensdi/

Paper: Vancauwenberghe, G., K. Valeckaite, B. van Loenen & F. Welle Donker (2018). Assessing the Openness of Spatial Data Infrastructures (SDI): Towards a Map of Open SDI. International Journal of Spatial Data Infrastructure Research, 13, 88-100.

Available at:
http://ijsdir.jrc.ec.europa.eu/index.php/ijsdir/article/view/468

Thank you for your attention

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Comments? Questions? Interested to contribute?

Let us know!

b.vanloenen@tudelft.nl

Visit our website

http://kcopendata.eu/openSDI

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