INSPIRATION – Spatial Data Infrastructure in the Western Balkans

Implementing SDI

Status quo, lessons learned & the road ahead

SDI Days, Zagreb Croatia
25 – 29 September 2012

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Agenda

- **Status quo & the wider context**
- **What do we observe?**
- **Strategic challenges**
- **Conclusion**

SDI implementation – Status quo

- **Spatial data infrastructures are being implemented on all governmental levels**
  - Extensive spatial data offerings are becoming findable and interoperably available across Europe
  - Geoportals are being implemented on EU, national and sub-national levels
  - Re-usable spatial information increasingly helps to reduce transaction costs and to improve business and governmental processes
- **INSPIRE is the driver for the most public SDI initiatives in Europe**
  - Interestingly it needed a legislative push to actively pursue well known and accepted goals

INSPIRE implementation – Status quo

- **INSPIRE Directive in force since 15 May 2007**
- **Transposed into national legislative systems since 2009**
- **Implementation phase effectively started in 2010**
- **Member states are progressing, but still a long way until full operation**
  - Example Germany (monitoring 2012)

Accessability of spatial datasets via view services

Spatial datasets	# accessible	# total	% accessible
Annex I	429	769	56 %
Annex II	353	487	72 %
Annex III	598	1210	49 %

Accessability of spatial datasets via download services

Spatial datasets	# accessible	# total	% accessible
Annex I	40	769	6 %
Annex II	5	487	1 %
Annex III	36	1210	3 %

INSPIRE implementation – Roadmap

10 years! – that's geological timeframe for IT

15-May-2010	Implementation of provisions for monitoring and reporting
03-Dec-2010	**Metadata available** for spatial data sets and services corresponding **to Annex I and II**
09-May-2011	Member States shall provide the **Discovery and View Services with initial operating capability**
30-Jun-2011	The EC establishes and runs a **geo-portal at Community level**
19-Oct-2011	Implementation of Regulation as regards the access to spatial data sets and services under harmonised conditions for new arrangements
09-Nov-2011	**Discovery and view services operational**
28-Jun-2012	**Download Services with initial operating capability**
28-Jun-2012	**Transformation Services with initial operating capability**
23-Nov-2012	Implementation of Commission Regulation (EU) No 1089/2010 of 23 November 2010 as regards interoperability of spatial data sets and services for **Newly collected and extensively restructured Annex I spatial data sets available**
28-Dec-2012	**Download services operational**
28-Dec-2012	**Transformation services operational**
04-Feb-2013	Implementation of Commission Regulation (EU) No 102/2011 of 4 February 2011 as regards interoperability of spatial data sets and services for newly collected and extensively restructured Annex I spatial data sets
19-Apr-2013	Implementation of Regulation as regards the access to spatial data sets and services of the Member States by Community institutions and bodies under harmonised conditions for existing arrangements
03-Dec-2013	**Metadata available** for spatial data sets and services corresponding **to Annex III**
October 2015	**Newly collected and extensively restructured Annex II and III spatial data sets available**
23-Nov-2017	Implementation of Commission Regulation (EU) No 1089/2010 of 23 November 2010 as regards interoperability of **spatial data sets and services for other Annex I spatial data sets still in use at the date of adoption**
04-Feb-2018	Implementation of Commission Regulation (EU) No 102/2011 of 4 February 2011 as regards interoperability of spatial data sets and services for other Annex I spatial data sets still in use at the date of adoption
October 2020	Other **Annex II and III spatial data sets available in accordance with IRs for Annex II and III**

Today

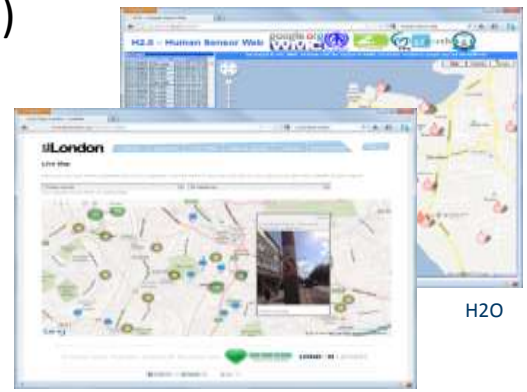
The wider context – overlapping trends

- **SDI / INSPIRE is not the only ecosystem for providing spatial information**

- **Open Data: "The idea that certain data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control." (Wikipedia)**
  - Expectation: generate innovative solutions and societal/economic added value
  - EU Open Data Strategy part of the Digital Agenda for Europe
  - Expected update of the PSI Directive enforces the provision of public sector data free of charge or at low cost under attractive license terms
  - E.g. Germany adopted a new law for spatial data access, which makes all federal INSPIRE data available as open data

The wider context – overlapping trends

- **Open government**
  - Citizens are getting more and more involved into management & planning processes (i.e. they not only consume but also provide information e.g. for urban land-use planning, support management)
- **Sharing & collaboration becomes a widely spread culture**
  - Well known in private spheres (Flickr, facebook etc.)
  - Established in our daily business (Dropbox, CIRCA etc.)
- **Volunteered geographic information (VGI)**
  - VGI becomes a serious competitor for public and commercial products (e.g. Open Street Map)



H2O

LoveClean London

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What do we observe?

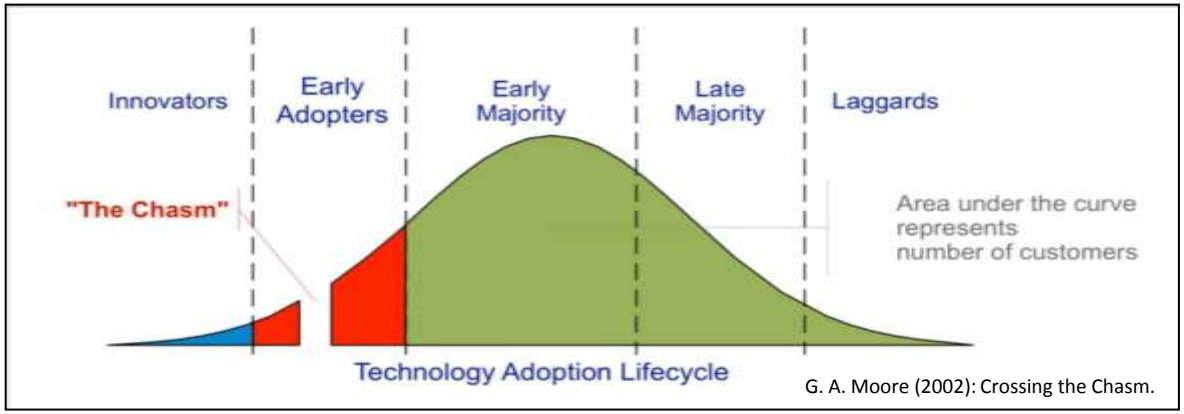
- **IT is evolving with fast pace – SDI roadmaps can hardly reflect the technological evolution**
  - Limited adaptability
    - Volume of documents in the INSPIRE library: about 15.000 pages (2002-2012)
    - Volume of documents published in the INSPIRE library 2011: about 4.680 pages
      (Monitoring and Reporting 41, Data and Service Sharing 122, Spatial Data Services 333,
      Network Services 484, Data Specifications 3700)
  - Examples:
    - Resource oriented architectures (ROA) not reflected yet
      (although widely being used in Mainstream- and Geo-IT)
    - Up to now no guidelines how to deal with access control and licensing technically

What do we observe?

- **SDIs do not support an individual's culture of sharing**
  - Sharing information in an SDI is more an organisational than an individual task
  - SDI development is still very much provider centric
  - No convergence with social media (patterns)
    - Our thinking still: publishing a map = administer a mapping service (or even deploy it), author the map, create and publish metadata

What do we observe?

- **Early majority behaves different from early adopters**



G. A. Moore (2002): Crossing the Chasm.

- In the early days:
  - Expect real business advantage,
  - ready to be the first mover,
  - accept shortcomings in the product
- Now:
  - Want productivity improvement
  - minimize discontinuity
  - evolution not revolution
  - technology has to work and to integrate appropriately with existing tech base

Challenges

- **Continuous improvement**
  - Keep track with changing stakeholder‘s demands
  - Adapt the benefits of new Technologies
    - Introduce new architectural styles, lightweight protocols etc. (REST, JSON, ..)
    - Reduce costs for integrating SDI components and for building smart applications
    - Use technology as is – avoid modifications, which need to be implemented by both users and providers
  - Design for adaptability
    - Allow partly overlapping IT capabilities instead of exclusive ones (e.g. service interfaces)

→ helps to quickly integrate offerings into existing workflows

→ leads to potential de facto standards, which support the users’ real needs

Challenges

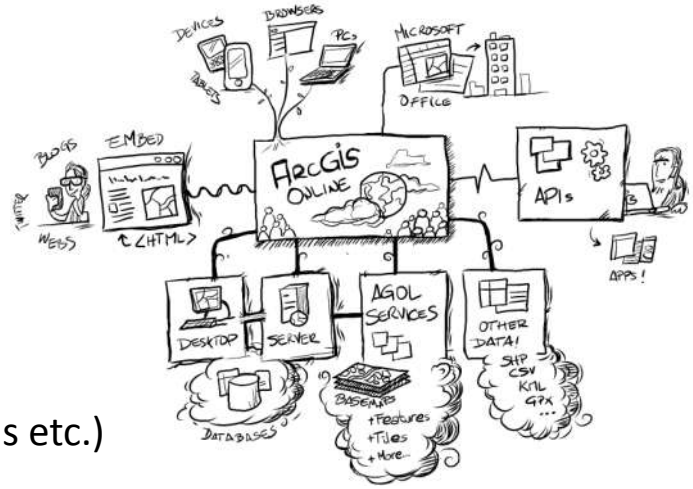
- **Reflect the new role of user**
  - More than 2 billion people getting connected through mobile devices, location based services, smart apps …
  - **Participative platforms** and volunteer geographic information are widely emerging
    - → Strengthen the role of individuals / citizens as SDI stakeholders
    - → Means for complementing and improving authoritative data
    - → Integrate SDI into daily business and workflows

Challenges

- **New deployment models**
  - Public sector data centers act more and more as service providers for SDI stakeholders
    - Cost efficiency
    - Guaranteed SLAs
  - Increased provision of multi-tenant solutions and SaaS offerings deployed in private clouds

Cloud-based Web GIS

- **Ecosystem for sharing and collaboration**
  - Software as a Service
    - provision of end-user applications as a service
  - Platform as a Service
    - provision of middleware
    - Allows the development and deployment of applications and services (APIs, templates, tools etc.)
  - Infrastructure as a Service
    - IT infrastructure as off-premise, on-demand services
  - Open
    - Interoperable services
    - Integration into business systems



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Cloud-based Web GIS – An example

- **Eye on Earth**
  - Online service for hosting, sharing and finding environmental data
  - Cooperation of EEA, Esri and Microsoft
  - Promotes Open Data and Citizen Science
  - Building a community for collecting environmental parameters

http://network.eyeonearth.org

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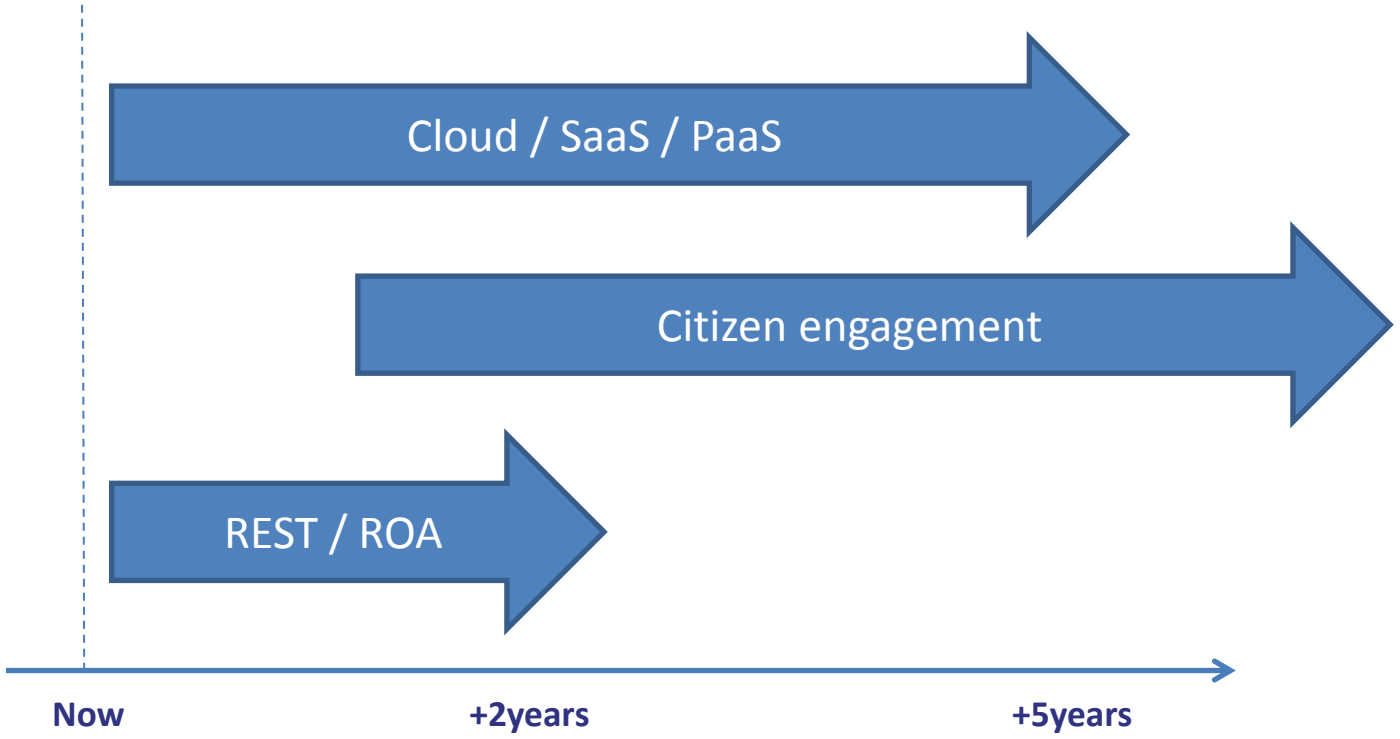
When do we benefit?



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Conclusion

- **SDI / INSPIRE is entering the operational phase and needs to design and organize its adaptability**
  - Simplification and providing alternatives are key to fast adoption of new technologies
- **Reflect the user's culture of sharing and collaboration**
  - Make SDI a part of the daily business
- **It's all about cultivating and engineering**
  - The dynamic complexity of an SDI / INSPIRE requires a design process, which is also about cultivating a self-organizing system than about a straight forward engineering approach

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We can learn a lot from II design theory

- **Hanseth, O and K. Lyytenen (2010): Design theory for dynamic complexity in information infrastructures: the case of building internet.**
  Journal of Information Technology (2010) 25, 1–19. JIT Palgrave Macmillan.