SDI in Life-Long Learning Educational Courses in the Region

Dražen Tutić
University of Zagreb, Faculty of Geodesy
dtutic@geof.hr
Usage of SDIs? New hype or part of plan!

- **Robots** (binding services into new ones)
- **Humans** (decision making for better life)
  - SDI in the center of a bigger picture
  - SDI to support better decision making

- **Requirements to achieve this goal**
  - Developed **human capacities** with motivation to create better environment for societies
  - What are the motivations (ethics) of providers and users?
<table>
<thead>
<tr>
<th>Providers</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>• SDI is so great</td>
<td>• SDI is here</td>
</tr>
<tr>
<td>• You can do so much with SDI</td>
<td>• Have invest to evaluate it before using it. Is it best source of data?</td>
</tr>
<tr>
<td>• SDI will help solve environmental problems</td>
<td>• What problems I want to solve?</td>
</tr>
<tr>
<td>• SDI will be here forever</td>
<td>• How to give back to SDI from using it?</td>
</tr>
</tbody>
</table>
SDI usage challenges – SWOT (subjective)

- **(S)** Has financial and legal **drivers** (still!)
- **(W)** Technically **demanding** – strongly depend on specialization
- **(W)** Difficult to put all components and processes (people) together (from data to decision process)
- **(O)** Openess – everyone can participate and question
- **(O)** Sustainability through step-by-step increase of quality (of data and processes)
- **(T)** Outdate by new technologies and social inventions (e.g. Copernicus, sensors that can give Annexes data on the fly?)
Understanding SDI „industry”
(metaphore with music industry)

- All people love beautiful music (listeners), many people can sing beautifully (singers), but not so many can write beautiful new music (songwriters).

- How SDI joins together „songwriters”, „singers” and „listeners”?

- Can we easily find „good songs” on who, how and why in SDI and „sing” them for different „listeners”?

- Do SDI „songwriters” of today depend on „singers” and „listeners”?

BESTSDI approach

- Connect **teachers** („singers”) together
- **Explore** SDI arena (past, present, future) („songwriters”)
- **Cover** BEST SDI practices („songs”) and teach („sing”) them to students and **professionals** („listeners”)

- **Ideas and inspiration** cannot be copyrighted, some of „listeners” will turn to „songwriters”

- Evaluating success of BESTSDI is another process – not part of this presentation
BESTSDI LLL Courses

• Sub-group A – Geodesy and Geoinformatics BESTSDI people
• Sub-group B – All other study programs BESTSDI people

• Each sub-group has the objective to develop three LLL courses for the respective groups of professionals including theoretical and practical learning material as well as methodology for courses execution.

1. SDI Basics
2. Advanced SDI
3. SDI Application
Current status

• **Geodesy & Geoinformatics LLL Courses**
  • Basic SDI for Providers
  • Setting up OGC Web Services (advanced)
  • Application?

• **Thematic SDI LLL Courses**
  • Basic SDI for Users
  • Using Spatial Data and OGC Web Services (advanced)
  • Application?
Learning materials

• LINKVIT/GISIG re-use (open to public)

• Learning materials developed for BESTSDI core curriculum (not open to public yet)

• Other
BESTSDI Core Curriculum Building Blocks

Concept(s) of SDI
SDI Components
Goals of SDI
History of SDI
SDI Standards
Examples of SDI

SDI at work
How to use SDI
Publish-search-bind
Portals
Using SDI components in GIS
Standards for metadata

Data modelling and data specifications
Data harmonisation
Conceptual modelling languages
Standards for data modelling

Accessing data through the web
How the web works
Standards for web services
Types of web services

Assessing SDI
Quality issues in SDI
Metadata
Data
QoSE
Conformity & Compliancy
Testing & Validation

Non-technological developments
SDI and e-Government
Institutional & Governance
Legal aspects

Technological trends
Semantic web
Linked Data
Sensor web enablement
Augmented reality
3D-4D mapping

SDI for agricultural applications
SDI for Forestry and nature conservation
SDI for geology & mining

SDI application development
API’s
Programming (methods)
Coding in Java, Python, ...
Web app design
...
Initial SDI Learning Building Blocks

**LM1 SDI Concepts and Principles**
- Concept(s) of SDI
- SDI Components
- Goals of SDI
- History of SDI
- SDI Standards
- Examples of SDI

**LM2 SDI at Work**
- SDI at work
- How to use SDI
- Publish-search-bind
- Portals
- Using SDI components in GIS
- Standards for metadata

**LM3 SDI Data Modelling and Data Harmonization**
- Data modelling and data specifications
- Data harmonisation
- Conceptual modelling languages
- Standards for data modelling

**LM4 Access Mechanisms**
- Accessing data through the web
- How the web works
- Standards for web services
- Types of web services

**LM5 SDI Assessment and Quality Issues**
- Assessing SDI
- Quality issues in SDI
- Metadata
- Data
- QoSE
- Conformity & Compliancy
- Testing & Validation
Specialized SDI Learning Building Blocks

LM6 Non-technical Developments
- Development
- SDI and e-Government
- Institutional & Governance
- Legal aspects

LM7 Technological Trends
- Technological trends
- Semantic Web
- Linked Data
- Sensor web enablement
- Augmented reality 3D-4D mapping

LM8 SDI for Thematic Applications
- SDI for agricultural applications
- SDI for Forestry and Nature conservation
- SDI for geology & mining

LM9 SDI Application Development
- SDI application development
- API’s
- Programming (methods)
- Coding in Java, Python, ...
- Web app design
Modules – Topics – Units - Exercises

- 9 modules
- 72 topics
- >150 units & exercises (to be concluded)
Customization and Localization
Example - Basic SDI for Providers - Topics

• *Different components of SDI: data, metadata, access mechanisms, standards, people and organisations, institutional and legal aspects (LM1)

• *Different types of SDI and different models: hierarchical or network based, connecting distributed resources (LM1)

• Main geospatial standards, the standardisation process and relevant standardisation bodies (LM1)

• Introducing the publish-search/find-bind paradigm by using single points of access (portals) to distributed data and services (LM2)
Example - **Basic SDI for Providers - Topics**

- The role of metadata in SDI, the different types of metadata (discovery, evaluation and usage) and the standards they are built upon (ISO 19115, ISO 19119 and ISO 19139) (LM2)
- The role of catalogues and catalogue services, and the concept of harvesting catalogues (LM2)
- What is Quality Assurance in the context of SDI’s and how does the quality control process work (LM5)
- Methods for testing and validating harmonized data against data specifications including examples (LM5)
Example - **Basic SDI for Providers - Topics**

- Explaining and analysing examples of product specifications and INSPIRE data specifications in particular (examples to be chosen depending on the field of interest) (LM3)
- *Authoritative spatial data and official registries and/versus volunteered geographic information and crowdsourcing (LM6)
- Detailed overview and comparison of relevant European (and national) legislation with regard to GI and other public sector information: INSPIRE, PSI, Aarhus & Access
- *Overview of the major developments and trends as defined by UN-GGIM and OGC (with focus on technological trends) (LM7)
SDI LLL in action during 2018/19 - Croatia

• GDPR and Spatial Data
• SDI in surveyors’ daily workplace
• Concepts and components of SDI (BESTSDI)
  • INSPIRE Directive (BESTSDI)
  • Spatial Data Web Services (BESTSDI)
  • Using Web Services in GIS and Web Maps (BESTSDI)
• Setting up Web Services (BESTSDI)
• Copyright and Licences, Privacy and Ethics
LLL in Region

• BESTSDI partners created/will create its own LLL offers to local communities
• Work in progress
• Evaluation at the end of project cycle
• Modification of core curricula and LLL courses
• Ensuring continuation (sustainability)
Thank you for your attention!

www.bestsdi.eu