

## Near-term metadata challenges

M. Gould, J. Rocha, S. Nativi, J. Nogueras, M. Manso

*1 Information Systems, Universitat Jaume I, Castellón, Spain*

*2 Computer Science, Universidade de Minho, Braga, Portugal*

*3 Inst. Methodologies for Environ. Analysis, CNR-IMAA, Italy*

*4 Computer Science and Engineering, Universidad de Zaragoza, Spain*

*5 Topographic Engineering and Cartography, Universidad Politécnica de Madrid, Spain*

Based on experience from the AGILE Working Group on interoperability, SDI component development projects, and from the INSPIRE metadata Implementation Rules Drafting Team, we describe our personal views on near-term metadata challenges in support of a fully functional and useful SDI under the INSPIRE umbrella. We address both current (and legacy) issues as well as future needs, focusing on advances that are judged as possible within the coming 5 years.

Our views and recommendations fall under the following seven categories.

### **Shift from cartographic to informatics viewpoint**

Geodata are collections of digital objects. Particular assemblies of these objects, when displayed, become maps. Spatial metadata need to facilitate discovery and description of historical and current data in the form of map series and even individual paper maps, however this will soon become the rare legacy case. Modern metadata need to be able to provide discovery and description of objects: features encapsulating geometry, associated thematic attributes, self-description, and behaviour rules. Other related multimedia fields of study have much to offer here.

### **Automated production and extraction**

Metadata text editors are also destined to become legacy applications. The geodata collection or creation process needs to explicitly include the metadata creation process, as is now common in the remote sensing and other communities. The geodata community needs to change its mindset, through education initiatives, so that the next generation of geodata specialists naturally expects metadata to be present and attached or associated with the geodata payload. Automatic extraction from within a GIS environment currently can collect an estimated 50% of the core metadata necessary to provide discovery-level interoperability. For this practice to become commonplace mindsets also need to change to accept the fact that users may, and will, create their own metadata, being geodata experts or not, as they become user-providers.

### **Separation of discovery and description**

Current metadata standards include the ability to discover and describe geodata resources. However it is clever implementation practice, and not the standards themselves, that creates innovative, useful services based on metadata. Much work is needed in order to educate the community on the key differences between discovery metadata—determining what is available—from the secondary description of what is discovered. Current standards mix these two metadata types among the (often) hundreds of elements in the same document, and this causes confusion as it mixes the user/discovery and provider/cataloguing communities.

### **Linking metadata to data to services**

The three worlds of creation and publication of metadata, data, and services continue to exist in parallel rather than in an integrated form. Work on the creation and use of identifiers linking these three aspects, facilitating the use of registries, is direly needed.

### **Enabling an optimal use of thesauri to aid multilinguality**

True pan-European network services need to support automated multilingual support. This will involve linking various parts of the user experience to multilingual thesauri and gazetteers, permitting queries in one language to be handled using metadata in another language, with responses in perhaps yet another. The SDIGER (INSPIRE pilot) project, among others, has provided interesting input to this issue.

### **Treatment of imagery and other Earth Science data**

As observational and model output datasets in the Earth Sciences (ES) increase in resolution, there is a growing demand for information systems that interoperate between GI and ES domains. However, differences in the way the two communities think about and describe their data can give rise to difficulties in integrated analysis and display of datasets from the two disciplines. Improved geospatial data integration and GI Management is especially important for the European GMES initiative, which aims to provide society with certified and documented data from Earth observation sources and in situ measurements and surveys.

The GI community has been working on solutions for treating ES datasets. These efforts lead to the definition of "more general" models for geospatial information. Such models distinguish two kinds of geospatial information: boundary and coverage data. Boundary data is often called "vector data" and is almost always feature oriented. Generally, ES datasets are thought of as imagery or coverages and they often involve grid-oriented data. GI data and metadata models have been reshaped and extended. A valuable example is represented by the ISO 19115 Part 2: Metadata for imagery and gridded data; it extends the existing geographic Metadata standard by defining the schema required for describing imagery and gridded data.

In order to understand to what extent GI data and metadata models are suited for representing ES datasets, there are significant questions to be addressed, such as: 1. How well is time modeled? 2. How much of ES semantics are effectively captured? 3. How important is the documentation of acquisition process or measuring equipment for discovering and evaluating ES data?

In the Web era, the GI and ES different data and metadata models produce diverse content models generating disciplinary Markup Languages (e.g. GML, ncML, ESML, etc.). Mediation approaches, such as crosswalks languages, represent a valuable solution to harmonize GI and ES models.

### **Testing Onsrud's Geodata Commons**

GI professor, lawyer and GSDI president Harlan Onsrud has advocated a geodata commons, with set rules for creating geodata, documenting it with metadata, publishing both geodata and metadata (in a semi-automated manner) and also preserving rights while openly sharing the geodata with the community. This model, which is not at all incompatible with INSPIRE, needs to be tested to determine viability and possible benefit to the wider SDI community.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

Organisers



<http://www.ec-gis.org/Workshops/12ec-gis>



12<sup>th</sup> EC-GI&GIS Workshop

ESDI: From Inspiration to Implementation

# 12<sup>th</sup> EC-GI&GIS Workshop



**ESDI:  
From Inspiration  
to Implementation**



Innsbruck, Austria  
21-23 June 2006



**umweltbundesamt**<sup>U</sup>



# 12<sup>th</sup> EC & EC GIS Workshop

**Innsbruck, Austria**

**21-23 June 2006**



Edited by

Karen Fullerton  
and  
Katalin Tóth

JRC IES

#### MISSION STATEMENT

The mission of the Institute for Environment and Sustainability is to provide scientific and technical support to the European Union's policies for protecting the environment and the EU Strategy for Sustainable Development.

European Commission  
Joint Research Centre (DG JRC)  
Institute for Environment and Sustainability (IES)  
Spatial Data Infrastructures Unit  
I-21020 Ispra (VA), Italy

Contact information  
Tel.: +0039 0332 786491  
Fax: +0039 0332 789803

E-mail: [ies@jrc.it](mailto:ies@jrc.it)  
Website: <http://ies.jrc.ec.eu.int/>

Editor: Karen Fullerton, Katalin Tóth  
Cover: José-Joaquín Blasco

#### Legal Notice

The contents of this document do not necessarily reflect the official opinion of the European Commission or the European Community Institutions. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of the information contained in this production.

A great deal of additional information on the European Union is available on the Internet.  
It can be accessed through the Europa server  
<http://europa.eu.int>

Luxembourg: Office for Official Publications of the European Communities

EUR LB-X1-06-024-EN  
ISBN 92-79-02083-8

© European Communities, 2006

Reproduction is authorized provided the source is acknowledged

Printed in Austria by Hernegger Offsetdruck GmbH, Innsbruck

## Table of Contents

# Contents

<b>SESSION: SDI</b>	<b>1</b>
INSPIRE FROM THE NATIONAL AND REGIONAL PERSPECTIVE: SURVEY AMONG THE SDI STAKEHOLDERS IN THE CZECH REPUBLIC <i>E. Pauknerova, P. Tryhubova</i>	2
THE SPIRIT OF INSPIRE LIVES IN THE AUSTRIAN MINISTRY OF LIFE <i>F. Lux, W. Fahrner, T. Zelenka</i>	5
WILL INSPIRE COME UP TO ALL EXPECTATIONS? <i>R. Gissing</i>	7
SDI SOCIAL AND ECONOMIC IMPACT USERS' PERSPECTIVE <i>F. Salgé, J. Geirinhas, S. Gizzi</i>	8
FRAMING THE EVOLUTION OF SPATIAL DATA INFRASTRUCTURES <i>M. Wachowicz, A. Bregt and J. Crompvoets.</i>	10
<b>SESSION: PEER GROUP</b>	<b>13</b>
THE IMPORTANCE OF GEOGRAPHIC INFORMATION IN BIODIVERSITY AND NATURE CONSERVATION <i>R.A. Wadsworth, A. Watt</i>	14
SETTING UP A GI RESEARCH AGENDA FOR ENVIRONMENTAL MANAGEMENT: THE PEER EXPERIENCE <i>M. Wachowicz<sup>1</sup> and S. Labbé<sup>2</sup></i>	16
LANDSCAPE CHARACTER ASSESSMENT AS A BASIS FOR PLANNING AND DESIGNING SUSTAINABLE LAND USE IN EUROPE <i>D. Wascher, M. Perez-Soba &amp; S. Múcher</i>	18
EUROPEAN ENVIRONMENT AGENCY SDI – PROGRESS AND PLANS TO SUPPORT THE IMPLEMENTATION OF A SHARED ENVIRONMENTAL INFORMATION SYSTEM <i>M.P. Lund, J. Blik, A. Sousa, M. Erhard, T. Jessen, C. Steenmans</i>	20
CONTAMINATED ENVIRONMENTS, RISK ASSESSMENT AND REMEDIATION STRATEGIES <i>B. Münier, S. Gyldenkerne, P.B. Sørensen, M. Thomsen, P. Fauser</i>	21
<b>SESSION: NATIONAL SDI</b>	<b>23</b>
PORTALU – A NEW NATIONWIDE PORTAL TO ENVIRONMENTAL INFORMATION IN GERMANY <i>T. Vögele, M. Klenke, F. Kruse</i>	24
GI & SDI AS PART OF NATIONAL AND FEDERAL EGOVERNMENT– STATUS AND PERSPECTIVE FOR THE WORK OF THE CHAMBERS OF COMMERCE AND INDUSTRY <i>A. Fritzsche,</i>	27
GEODATA DISTRIBUTION NATIONWIDE - GEOPORTAL OF CZECH LAND SURVEY OFFICE <i>R. Widz, J. Havas, V. Spacek, J. Svaty</i>	30
THE SPANISH SDI: FROM TECHNOLOGICAL TO ORGANIZATIONAL ASPECTS <i>A. Rodríguez, P. Abad, E. López, A. Sánchez, J.A. Alonso</i>	31
STRENGTHS AND WEAKNESSES IN GEOSPATIAL DATA INFRASTRUCTURE IN ROMANIA <i>A. Ionita, I. Nedelcu, S. Andrei, V. Chendes, V. Craciunescu, M. Bichir, V. Gancz</i>	33
<b>SESSION: METADATA AND CATALOGUES</b>	<b>35</b>
DISTRIBUTED METADATA CATALOGUES THEORY VS. REALITY <i>I. Kanellopoulos, M. Millot, L. Bernard, K. Senkler, U. Voges</i>	36
NEAR-TERM METADATA CHALLENGES <i>M. Gould, J. Rocha, S. Nativi, J. Noguerras, M. Manso</i>	37
STANDARDS-BASED APPROACHES TO PUBLISHING AND ACCESSING CONTENT IN SPATIAL DATA INFRASTRUCTURES <i>C. Portele, R. Erstling</i>	39
STYLED CAT: DEFINITION OF A SLD CATALOGUE <i>A. Maldonado, M.A. Bernabé, M.A. Manso, M.C. Muñoz, M. Manrique</i>	41
DISTRIBUTED DATA MANAGEMENT IN INTERNET MAP SERVICES EXPERIENCES FROM LOUNAIKKA THEMATIC ATLAS <i>A. Vasanen<sup>1</sup>, T. Toivonen<sup>2</sup></i>	44

## 12th EC GI & GIS Workshop, ESDI: from Inspiration to Implementation

<b>SESSION NATIONAL SDI II</b>	<b>47</b>
OVERVIEW OF THE INSPIRE THEMES – EXEMPLIFIED THROUGH RUNNING NATIONAL SERVICES IN THE NORWEGIAN SDI	48
<i>A. Lillethun</i>	
SWEDISH PREPARATIONS FOR INSPIRE	50
<i>S. Jönsson, U. Sandgren</i>	
INSPIRE AND DANISH E-GOVERNMENT INITIATIVES SYNERGY OR CONFLICT	52
<i>J. Ryttersgaard</i>	
SOCIAL AND ECONOMIC BENEFITS FROM COMPILING THE FOREST DATA BANK PROJECT (DASOLOGIO) IN GREECE	54
<i>D.S. Palaskas, N.I. Stamou</i>	
RAVI AND THE DUTCH NATIONAL CLEARINGHOUSE ARE SHARING DUTCH INSPIRE	56
<i>B.C. Kok, M. Reuvers</i>	
<b>SDI TECHNOLOGY</b>	<b>57</b>
“WHERE WOULD YOU GO FOR MAPPING SERVICES, [NMAS] OR GOOGLE MAPS?” IMPLEMENTING “HACKABLE” USER-DRIVEN GI SERVICES WITHIN SDIS	58
<i>G. Barrotta, P. Cipriano, S. Pezzi, L. Zanella</i>	
CSCAT: CATALOGUE OF COORDINATE REFERENCE SYSTEM DEFINITION AND TRANSLATION WEB SERVICE	60
<i>M.A. Manso, M.A. Bernabé</i>	
THE ROLE OF FREE SOFTWARE THICK CLIENTS IN SDI: CASE OF gvSIG	62
<i>M. Gould, C. Granell, M.A. Esbrí, G. Carrión</i>	
HOW TO MOVE FORWARD IN IMPLEMENTING SDIS WITH SOA?	63
<i>Ç. Cömert, H. Akıncı</i>	
PROVIDING WFD REPORTING OVER SDI SERVICES	65
<i>M. Á. Latre, R. Béjar, J. A. Álvarez, O. Castillo, P. R. Muro-Medrano</i>	
<b>NATIONAL / REGIONAL SDI I</b>	<b>69</b>
OUT SPIRE	70
<i>S. Carlyle, M. Clark</i>	
DEVELOPMENT OF A DANISH INFRASTRUCTURE FOR SPATIAL INFORMATION (DAISI) - GOALS AND MEANS	72
<i>H. Brande-Lavridsen, B.H. Jensen</i>	
REACHING OUT AND UNDER	74
<i>I. Jackson</i>	
EU-PROJECT: CROSS-BORDER SPATIAL INFORMATION SYSTEM WITH HIGH ADDED VALUE (CROSS-SIS)	77
<i>J. Riecken</i>	
GEOINFORMATICS AND GISCIENCE EDUCATION: UNIGIS AS SDI BRAINWARE	79
<i>J. Strobl</i>	
<b>SESSION: DATA HARMONISATION</b>	<b>81</b>
AN ONTOLOGY BASED APPROACH FOR THE CONSTRUCTION OF AN ADDRESS GAZETTEER: THE IDEZAR GAZETTEER USE-CASE	82
<i>J. Noguera-Iso, F. J. López, J. Lacasta, F. J. Zarazaga-Soria, P.R. Muro-Medrano</i>	
EUROROADS’ CONTRIBUTION TO THE IMPLEMENTATION OF INSPIRE	84
<i>U.L. Sandgren</i>	
A NEW PRODUCTION PARADIGM BASED ON A SDI	86
<i>P. Trevelyan, G. Mallin, Jeremy Tandy</i>	
‘FEATURE/OBJECT DATA MODELS’ – A REPORT ON THE EUROSDR/EUROGEOGRAPHICS WORKSHOP, 24-25 APRIL 2006	87
<i>P. Woodsford, A. Illert, K. Murray, C. Portele, M. Seifert</i>	
DATA CERTIFICATION AND SPATIAL DATA QUALITY MANAGEMENT	95
<i>M. Sanderson</i>	

## Table of Contents

<b>SESSION: NATIONAL / REGIONAL SDI II</b>	<b>101</b>
LOUNAISPAIKKA REGIONAL GI SERVICE AND COLLABORATION INITIATIVE BUILDING A LSDI IN SOUTH WESTERN FINLAND	102
<i>L. Nurmi, A. Vasanen</i>	
STANDARDS FOR DATA AND METADATA SHARING IN ITALY: THE SIGMA TER INFRASTRUCTURE	105
<i>G. Ciardi, P. Cipriano</i>	
ASSESSING THE IMPLEMENTATION OF A X-BORDER SPATIAL DATA INFRASTRUCTURE IN THE EUREGIO MAAS RHINE	107
<i>J.D. Bulens, J. Crompvoets, F.R. Kooij, L.A.E. Vullings, A. Ligtenberg</i>	
SITAD: FROM A REGIONAL SDI TO A MODEL FOR DELIVERING CROSS-BORDER INFORMATION ON GEOGRAPHICAL DATA	110
<i>L. Garretti, S. Griffa, R. Lucà</i>	
<b>SESSION: SDI IMPACTS</b>	<b>113</b>
A ROAMING-ENABLED SDI (rSDI) OR THE RELATIONSHIP BETWEEN TECHNOLOGY AND MARKET PRESENCE	114
<i>R.M. Wagner, A. Remke</i>	
TRANSPARENCY OF ACCESSIBILITY TO GOVERNMENT-OWNED GEO-INFORMATION	116
<i>F. Welle Donker, B. van Loenen</i>	
MOTIIVE EXPERIENCES USING SIMULATION SOFTWARE TO ASSESS SDI COST-BENEFIT	125
<i>R.A. Longhorn</i>	
TOWARDS THE SOCIO-ECONOMIC ASSESSMENT OF SPATIAL DATA INFRASTRUCTURES	127
<i>M. Craglia, J. Nowak</i>	
<b>SESSION: REGIONAL SDI</b>	<b>129</b>
S. I. T. R. TERRITORIAL INFORMATION SYSTEM OF SARDINIA	130
<i>G. Pittau, R. Vinelli, M. Salvemini, L. Corvetto</i>	
HOW MUNICIPALITIES ARE JOINING REGIONAL SDI: FIRST RESULTS AND CONCLUSIONS	133
<i>J. Guimet Perenya,</i>	
NAVARRA IN INSPIRE. INTEGRATION OF SDI AT REGIONAL (IDENA) AND LOCAL (IDEPAMPLONA) LEVEL	134
<i>M. Cabello, P. Echamendi, M.A. Jiménez de Cisneros, A. Valentín</i>	
REGIO-GEO.CH – INTER-REGIONAL SPATIAL DATA HUB WITH AUTOMATED DATA SHARING AND QUALITY CONTROL	136
<i>A. Bernath</i>	
<b>SESSION: DATA SHARING.....</b>	<b>137</b>
ELIMINATING OBSTACLES AT THE POINT OF USE: SHARING ORDNANCE SURVEY DATA AMONG PUBLIC AUTHORITIES IN GREAT BRITAIN	138
<i>C. Hadley, N. Sutherland</i>	
INSPIRE AND INTELLECTUAL PROPERTY RIGHTS – A THUNDERSTORM OR A TEMPEST IN A TEAPOT?	139
<i>K. Janssen</i>	
DATA LENDING FACILITY – THE INNOVATIVE DOWNLOAD SERVICE OF THE FINNISH NSDI	141
<i>T. Toivonen, R. Kalliola &amp; E. Ennola</i>	
AVAILABILITY OF GOVERNMENTAL GEO-INFORMATION, COMPLICATIONS IN PRACTICE	144
<i>H. Nobbe</i>	
<b>SESSION: CLOSING PLENARY AND WRAP-UP</b>	<b>145</b>
HOW TO KEEP REBUILDING A SDI ? – THE PORTUGUESE EXPERIENCE	146
<i>R. P. Julião</i>	146



12th EC GI & GIS Workshop, ESDI: from Inspiration to Implementation

<b>SESSION: POSTERS</b>	<b>147</b>
THE MEDWET WEB INFORMATION SYSTEM: AN SDI APPLICATION <i>L. Hatzjiordanou, P. Katsaros</i>	148
CAGI AND ITS CONTEMPORARY ACTIVITIES <i>J. Hiess</i>	149
GIBSER WORKSHOPS - CBC GIS LESSONS <i><sup>1</sup>F. Hoffmann, J. Hiess</i>	150
INSPIRE AGAINST THE BACKGROUND OF SUSTAINABLE DEVELOPMENT, DPSIR AND AIR MONITORING <i>W. Pazdan</i>	151
X-BORDER GDI NRW - NL <i>K. van Raamsdonk</i>	153
ENVIRONMENTAL DATA SHARING OPPORTUNITIES – ESTONIAN ENVIRONMENTAL REGISTER <i>K. Liiv, T. Dišlis</i>	157
LOCAL SPATIAL DATA INFRASTRUCTURES – THE NEXT STEP FOR MUNICIPAL GIS <i>R. P. Julião, R. Dias</i>	158
MUNICIPAL ENVIRONMENTAL-MONITORING SYSTEM <i>F. Speiser, I. Magyar, R. Jamniczky, Á. Rédey</i>	159
WIN: A NEW GEO-INFORMATION ARCHITECTURE FOR RISK MANAGEMENT <i>C. Alegre, H. Sassier, A. Pi Figueroa</i>	160
GEODATA PUBLISHER SERVICE IMPROVES THE AVAILABILITY OF CONTENT IN SPATIAL DATA INFRASTRUCTURES <i>R. Erstling, C. Portele</i>	161