

Providing WFD Reporting over SDI services

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The Water Framework Directive (WFD) [OJ, 2000] introduces a new approach to data and information collection and reporting of hydrologic data and WFD implementation state from member states to the European Commission. This work proposes to use INSPIRE [CEC, 2004] principles for fulfilling the reporting requirements imposed by the WFD, i.e. the required data and information will be directly accessed within a spatial data infrastructure.

This work has dealt with a subset of the information described in the 2005 Reporting Guidance document, which collects typology information for the different types of water bodies, as stated by the article 5. The 2005 reporting guidance document [EC-DG Environment D.2, 2004] distinguishes between 28 reporting sheets of which a subset has been implemented.

The final result of the work has been a web application that presents to the user the WFD information according to the reporting requirements. The application offers to the user the possibility of choosing a report sheet:

- typology of surface water bodies (SWB1),
- identification of surface water bodies (SWB 2),
- artificial and heavily modified surface water bodies (SWB 3),
- reference conditions (SWB 4),
- significant pressures summary (SWPI 1),
- surface water bodies at risk (SWPI 2),
- point source pollution (SWPI 3),
- diffuse source pollution (SWPI 4),
- water abstraction (SWPI 5),
- flow regulations and morphological alterations (SWPI 6),
- data gaps (SWPI 8) and
- recommendations for surveillance monitoring (SWPI 9).

Additionally, the application allows the user to customize the kind of information to be considered when showing the request through a window (Figure 1) where restrictions to the features to be included in the report can be made. In addition, the user can specify if they want to visualize the features of the report with their real geometry (lines for river water bodies and polygons for lake, coastal and transitional water bodies) or only as centroids (points) and the legend to be applied to the features.

Figure 1. Restrictions window

- The reports corresponding with each selectable sheet are structured in three sections:
- geographical data, that it is provided both graphically in the form of an interactive map (Figure 2) and in tabular form (Figure 3, left));
- aggregated data (that are automatically calculated depending on the restrictions put on the features to include by the reporting sheet, the user restrictions and the geographic extent shown on the map) (Figure 3, right) and summary texts provided as part of the reports (Figure 3, right).

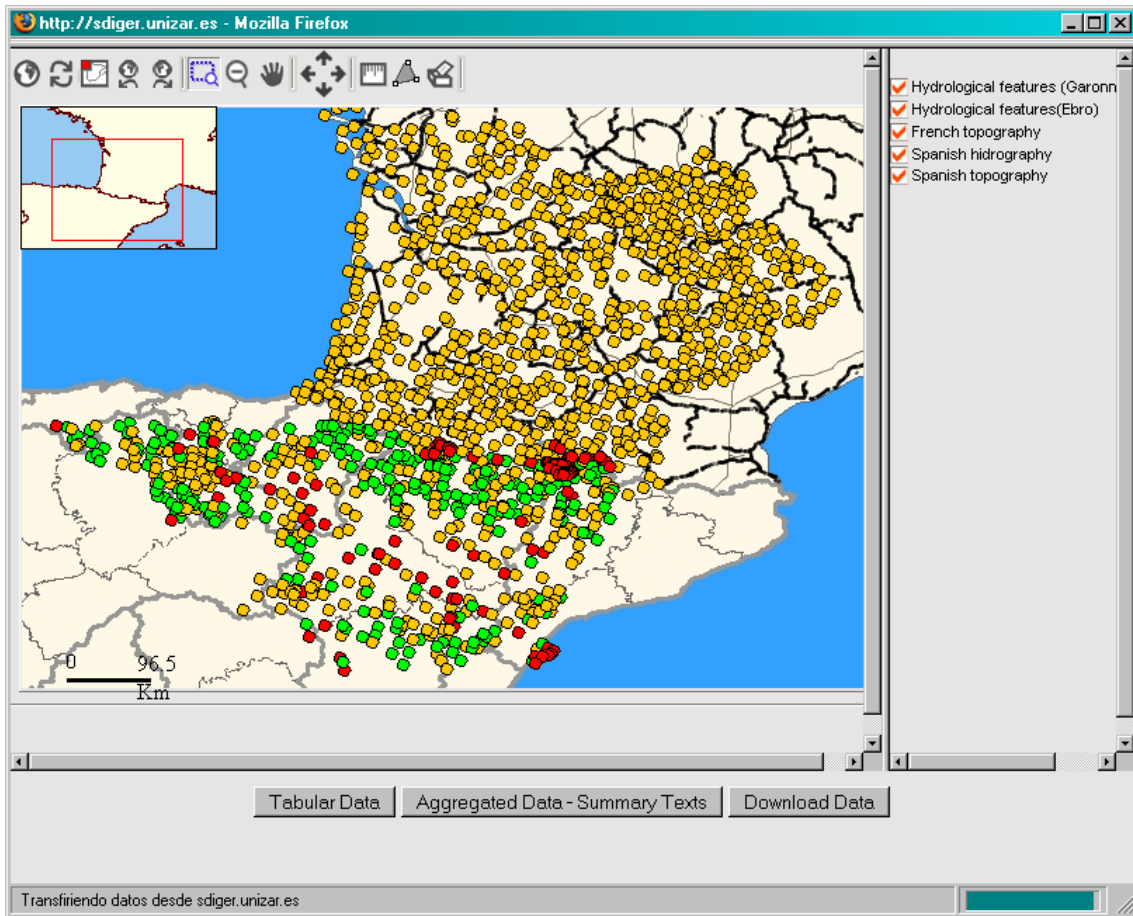


Figure 2. Geographical data of the report visualized as a map

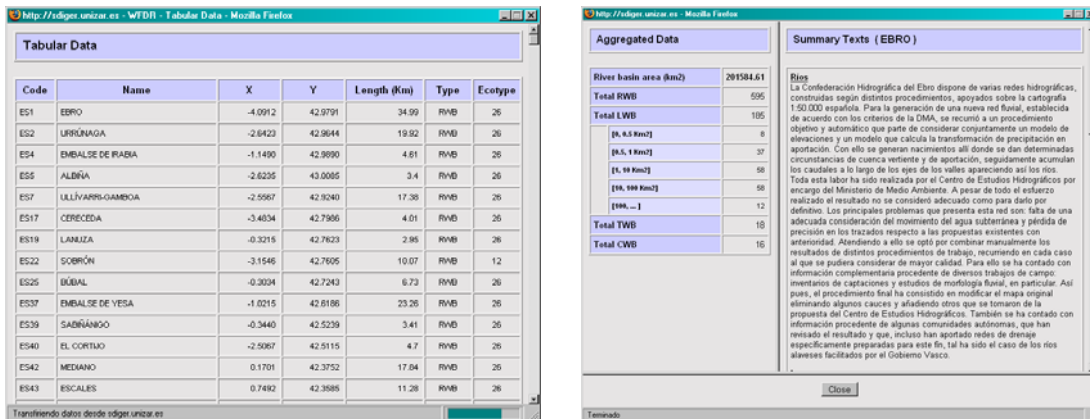


Figure 3. Tabular data of a report (left); aggregated data and summary texts (right)

The application obtains its data from a set of OGC standard, web interoperable services that form part of different SDIs. In particular, WFD data is obtained from Web Feature Services belonging to the WFD Competent Authorities, and it is served mainly according to the data model proposed by the WFD CIS GIS Working Group in their guidance document [Vogt 2002]. It is visualized through a WMS with Style Layer Descriptor capabilities where visualization options are included, together with the restrictions provided by the reporting sheet and the user, which are set in filter encoding when querying the WFS. Additional data needed for the sake of visualization is provided by Web Map Services provided by National Mapping Agencies.

This application has been developed as part of the SDIGER (A Cross-Border Inter-Administration SDI to support WFD Information Access for Adour-Garonne and Ebro river basins) pilot project on INSPIRE [Latre, 2005].

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Contents

SESSION: SDI	1
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
SESSION: PEER GROUP	13
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. Wachowicz¹ and S. Labbé²</i>	16
LANDSCAPE CHARACTER ASSESSMENT AS A BASIS FOR PLANNING AND DESIGNING SUSTAINABLE LAND USE IN EUROPE <i>D. Wascher, M. Perez-Soba & 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. Bliki, 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
SESSION: NATIONAL SDI	23
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
SESSION: METADATA AND CATALOGUES	35
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. Nogueras, M. Manso</i>	37
STANDARDS-BASED APPROACHES TO PUBLISHING AND ACCESSING CONTENT IN SPATIAL DATA INFRASTRUCTURES <i>C. Portele, R. Erstling</i>	39
STYLEDCAT: 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. Vasanen1, T. Toivonen2</i>	44

SESSION NATIONAL SDI II	47
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>	
SDI TECHNOLOGY	57
“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>	
NATIONAL / REGIONAL SDI I	69
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>	
SESSION: DATA HARMONISATION	81
AN ONTOLOGY BASED APPROACH FOR THE CONSTRUCTION OF AN ADDRESS GAZETTEER: THE IDEZAR GAZETTEER USE-CASE	82
<i>J. Nogueras-Iso, F. J. López, J. Lacasta, F. J. Zarazaga-Soria, P.R. Muro-Medrano</i>	
EUROADS’ 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>	

SESSION: NATIONAL / REGIONAL SDI II	101
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>	
SESSION: SDI IMPACTS	113
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>	
SESSION: REGIONAL SDI	129
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>	
SESSION: DATA SHARING.....	137
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 & E. Ennola</i>	
AVAILABILITY OF GOVERNMENTAL GEO-INFORMATION, COMPLICATIONS IN PRACTICE	144
<i>H. Nobbe</i>	
SESSION: CLOSING PLENARY AND WRAP-UP	145
HOW TO KEEP REBUILDING A SDI ? – THE PORTUGUESE EXPERIENCE	146
<i>R. P. Julião</i>	146

SESSION: POSTERS	147
THE MEDWET WEB INFORMATION SYSTEM: AN SDI APPLICATION <i>L. Hatzioranou, P. Katsaros</i>	148
CAGI AND ITS CONTEMPORARY ACTIVITIES <i>J. Hiess</i>	149
GIBSER WORKSHOPS - CBC GIS LESSONS <i>¹F. 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