A training framework to support the INSPIRE implementation process

Giorgio Saio, GISIG
Alessandra Marchese, GISIG
Roderic Molina, GISIG
Anders Ostman, University of Gavle

Education and Awareness Raising session
INSPIRE Conference 2010
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The GISIG networking approach for training for SDI/INSPIRE
GISIG Activity Lines

Projects and **Thematic Networks** development
GISIG THEMATIC NETWORKS

Thematic Networks are promoted in order to create frameworks of common interest among the GISIG members and to establish linkages and partnership with various GIS applications domains, users groups and professional operators.

Example of thematic networks already started:

- **WATER-GIS**
  GIS for Water Environment
- **ICAM-GIS**
  GIS for Integrated Coastal Area Management
- **NATURE-GIS**
  GIS for protected areas and nature conservation
THE GISIG THEMATIC NETWORKING FRAMEWORK

Gi for Coastal Management

INSPIRE SDIC

GI-CLAN

Nature Conservation

NATURE-GIS

Water Resources

Water Thematic Network (TECHWARE)

Stakeholders and User Communities

About 480
About 450
About 350

Leonardo DaVinci

e-Content+

GMES

ECO-IMAGINE (Marie Curie)

Coast-GIS’03

ENCORA

HUMBOLDT (leadership WP Training)

GI-INDEED

NATURE-SDIplus

eLEANOR (proposal)

@qua (proposal)

Transboundary Catchments Scenario

VESTA-GIS

NATURE-GIS (IST)

Leonardo DaVinci

CIP-ICT-PSP

Registered organisations

About 480
About 450
About 350

Nature-GIS (IST)

Protected Areas Scenario

TRANCAT

ECO-GEOWATER (Marie Curie)

eLEANOR (proposal)

@qua (proposal)
Training Needs

• Training is needed regarding the content and the topics subject of the new European Directives and policies, such as INSPIRE, SEIS, WFD, etc

• Training is also needed to support European project development

• Training is needed about the new technologies related to access and management of Geographical Information, more and more popular, with a European dimension

• In such a context, GISIG is developing a line of action able to integrate various experiences and offer to its Members and the GI Community different training opportunities, according to a flexible and “interoperable” schema
GISIG and EU Programmes/Initiatives - Training

- GMES
- INSPIRE
- SEIS
- NESIS
- Data Harmonisation
- Data Specifications
- eContentplus
- ICT - PSP
- BRISEIDE (environm. risks)
- NATURE-SDIplus
- HUMBOLDT
- GIS4EU
- EU Directives
- Training within EU Projects
- VESTA-GIS
- Leonardo Da Vinci
- TRAINING (e-learning)
TRAINING (e-learning)

Training within EU Projects

WP/TASK TRAINING FRAMEWORK

Training package for the project issues
Knowledge background
Training on the project results

HUMBOLDT
NATURE-SDIplus
BRISEIDE
others

VESTA-GIS Course Catalogue

e-Learning platforms

VESTA-GIS
G I S I G
UNGAVLE
OTHER
Training and Good Practices

- Exchange of experience and learning from good practices is also an important subject for training.
- Networks like VESTA-GIS and NATURE-SDIplus are the natural frameworks in which to exploit Good Practices collection throughout:
  - Good Practices workshops
  - Collection of structural information about good practices and creation of
  - Catalogues of Good Practices on specific thematic domains
VESTA-GIS
Vocational Education and Sectoral Training network on GIS & GI application domains

LIFELONG LEARNING PROGRAMME 2007 - 2013
Leonardo Da Vinci Network

Duration: 01/11/2007 - 31/10/2010
VESTA-GIS structure

Three main pillars

• The Training Framework
• The Mobility Framework
• The Network (Leonardo Thematic Network)

Thematic sub-networks on:

➢ (GI &) Water Resource Management
➢ (GI &) Natural Environment Protection
➢ (GI &) Coastal Management and Landscape
VESTA-GIS Training Framework

• Training Course metadata catalogue
  • Links to courses organised or hosted by the partners
  • Courses hosted in the VESTA-GIS e-Learning platform

• Dedicated e-Learning platform

• Dedicated Geoportal

• Support tool for the creation of customised training paths

• Links with Projects Training Frameworks
VESTA-GIS Training Framework

Project Training Frameworks
- HUMBOLDT
- NATURE-SDIplus
- BRISEIDE
- others

Skill competence test

Training Courses Catalogue
- GIS Technology and related sciences
- Application domains
  - Water Management
  - Natural Environmental protection
  - Coastal Management and Landscape
  ...

Courses hosted in the VESTA Platform

Geo-portal for exercises

Direct links to other course providers
<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>ONE LINE COURSE PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIS</td>
<td>Basic elements of cartography, geodesy, GIS technology, spatial databases, GIS and its use</td>
</tr>
<tr>
<td>Practical GIS application for development of Ecological Atlas, Systems of River Basin Management, Waste Management</td>
<td></td>
</tr>
<tr>
<td>Practical training in GIS application for various tasks</td>
<td></td>
</tr>
<tr>
<td>Practical GIS application for development of Ecological Atlas, Systems of River Basin Management, Waste Management</td>
<td></td>
</tr>
<tr>
<td>Practical training in GIS application for various tasks</td>
<td></td>
</tr>
<tr>
<td>Preparation to GIS certification - endorsed by FCDI Foundation</td>
<td></td>
</tr>
<tr>
<td>UNGIS professional</td>
<td></td>
</tr>
<tr>
<td>UNGIS professional is designed to develop or improve application-oriented GIS skills and provide an understanding of GIS. The course also targets those already engaged in GIS related jobs and/or have some background in a spatial discipline. UNGIS professional is an in-service online distance learning course leading to a professional diploma. Certificate by Salzburg University. The programme is designed to be completed in one year (18 Months max) with a weekly workload of minimum 12-15 hours. The curriculum includes seven compulsory modules and a choice of elective subjects or project work. The compulsory part covers acquisition, modelling, and visualisation of geodata, spatial analysis, geocIMs and application software development.</td>
<td></td>
</tr>
</tbody>
</table>

Download register course template
vesta_gis_metadata English comparatistics
Entry of course details (METADATA)

<table>
<thead>
<tr>
<th>COURSE TITLE (*)</th>
<th>The INSPIRE Directive and its</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course ID</td>
<td>403</td>
</tr>
<tr>
<td>LANGUAGE OF TEACHING (*)</td>
<td>English</td>
</tr>
<tr>
<td>SUBJECT AREA of VESTA-GIS project (*)</td>
<td>GIS technology &amp; related sciences, GI for Water Resource Management, GI for Natural Environment Protection, GI in Coastal Management &amp; Landscape, Other (please specify) INSPIRE Implement</td>
</tr>
<tr>
<td>COURSE WORKLOAD (*)</td>
<td>1 (By Month)</td>
</tr>
<tr>
<td>COURSE DURATION (*)</td>
<td>5 (By Day)</td>
</tr>
<tr>
<td>COURSE LEVEL (*)</td>
<td>Basic</td>
</tr>
<tr>
<td>COURSE DELIVERY FORMAT (*)</td>
<td>Distance</td>
</tr>
<tr>
<td>KEYWORDS (*)</td>
<td>GIS technology &amp; related sciences, Data Modelling, Geospatial Data and Data Collection, Analytical Methods, GI Systems Design, Training of specific GIS software.</td>
</tr>
</tbody>
</table>

Basic information to input the catalog
GI Technologies & related sciences

Geovisualization and Geospatial Visual Analytics - Fraunhofer IAIS (DE)
Preparation to GIS certification - Test Center Sapienza University of Rome (IT)
UNIGIS professional - UNIGIS Salzburg - Zentrum für Geoinformatik Salzburg (AT)
GIS Introduction - Ulrich Boes, URSIT Ltd. (BG)
Metadata and metainformation systems in the context of INSPIRE - Technical University of Ostrava (CZ)
Global Positioning Systems - Technical University of Ostrava (CZ)
Spatial Data on Internet - Technical University of Ostrava (CZ)
Introduction to GMES – CNR-IREA (IT)
GMES Services – CNR-IREA (IT)
Metadata, concepts and standards - LABSITA/Sapienza (IT) and HUMBOLDT
SIGEO: Geographical Information Systems – ENEA (IT)
Web Services - HUMBOLDT
Datamodelling & Dataconversion with FME - Runder Tisch GIS e.V (DE)
INSPIRE Basics - Runder Tisch GIS e.V (DE)
INSPIRE-GMES test-platform: INSPIRE compliant services & practical examples - Runder Tisch GIS e.V (DE)
INSPIRE - Harmonization of data - Runder Tisch GIS e.V (DE)
Google Maps & Microsoft Bing Maps in action - Runder Tisch GIS e.V (DE)
Oracle Maps - Runder Tisch GIS e.V (DE)
Web services for developers - Runder Tisch GIS e.V (DE)
Web services for developers - Advanced training course - Runder Tisch GIS e.V (DE)
Introduction to spatial statistics for GIS user - Runder Tisch GIS e.V (DE)
City GML - Linking 3D city models with facility management - Runder Tisch GIS e.V (DE)
Geoinformatics - University of West Hungary (HU)
How to understand INSPIRE? - Spatial Applications Division Leuven (BE)
Introductory Seminar on INSPIRE - Spatial Applications Division Leuven (BE)
## VESTA-GIS Application Domains

### Water Resources Management, Natural Environment Protection, Coastal Management and Landscape
- **Practical GIS application for development of Ecological Atlas, Systems of River Basin Management, Waste Management** - Ukrainian Scientific and Research Institute of Ecological Problems (UA) (Basic and intermediate course)
- **Low Cost Wastewater Treatment** - Gembloux Agricultural University (BE)
- **Use of SDI for protected areas** - GI-Indeed Consortium
- **Use of SDI for coastal areas** - GI-Indeed Consortium
- **Indicators for Coastal Management** - ICCOPS (IT)
- **FOSS4G for sharing and processing of spatial data for land evaluation and land use planning** - Spatial Applications Division Leuven (BE)
- **Workshop WMS & WFS** - Spatial Applications Division Leuven (BE)
- **NATURE-SDIplus Module 1 - Nature Conservation** – GISIG (IT)
- **NATURE-SDIplus Module 9 – Nature Conservation in INSPIRE** – GISIG (IT)

### Other Application Domains
- **Project management in GI projects** - Institute for Geoinformatics, University of Münster (DE)
- **Statistical maps and map composition for labour market** - Technical University of Ostrava (CZ)
- **Analysis and predictions of labour market indicators** - Technical University of Ostrava (CZ)
- **Transport accessibility** - Technical University of Ostrava (CZ)
- **Land Administration Management** - University of West Hungary (HU)
- **Semantic Web Tutorial** - Fraunhofer Institute for Computer Graphics (DE)
- **Engineering surveying** - University of West Hungary (HU)
- **Real estate law** - University of West Hungary (HU)
- **Real Estate Management** - University of West Hungary (HU)
- **Soil mapping** - University of West Hungary (HU)

*Note: The image contains the text for the application domains, provided in a structured format with bullet points and links to various universities and organizations.*
The users of the Catalogue

Four main types of users:

• The trainee, a person or a group of persons having the same or similar training needs.
• The course provider is a person or organization which provides training courses.
• The training broker is a person or organization which matches the requirements of the trainees with the courses provided.
• The training offer tutor is a person that takes didactic responsibility for the training offer.
A tool in the VESTA- GIS Training Framework, based on forms, which aims to guide the development of a training offer.

The forms are based on a process consisting of the following steps:

- Process modeling, where the tasks within a workflow are specified.
- Specification of required skills and competences.
- GAP analysis, where the differences between current skills and required skills are specified.
- Search for candidate courses.
- Evaluation of courses and preparation of training offer.
Structured Training Packages in the context of Projects Training Frameworks:

- **HUMBOLDT Training Framework**
  HUMBOLDT- Towards the Harmonisation of Spatial Information in Europe (www.esdi-humboldt.eu) (GMES SIP-CT-2006-030962)

- **NATURE-SDIplus Training Framework**
  NATURE-SDIplus –Best Practice Network for SDI in Nature Conservation (www.nature-sdi.eu) (eContent+ ECP-2007-317007)

- **BRISEIDE Training Framework (under definition)**
  BRISEIDE – Bridging Services, Information and Data for Europe (www.briseide.eu) (CIP-ICT-PSP-2009-3-250474)
Schematization for a project Training Framework

PROJECT TRAINING FRAMEWORK
supported by a Training Portal at project web site

1. TRAINING PACKAGE
Contents of Training Offer, Meta-information and Accessibility

2. E-LEARNING TOOLS (distributed platforms)

3. TRAINING MATERIAL
E-learning Training Platform(s)

- Constitutes the infrastructure hosting the training modules and training material.
- Established by widely diffused open source e_Learning tools.
- Open to the project members and (open registration) to the users Communities.
- Once subscribed to the Module (or Modules), the user is redirected to an e_Learning platform with personalized access.
- Decentralised: Training Material is hosted in different platforms.
- Training material developed on a variety of formats: Presentations with voice, screencasts, plain text lectures, exercises, etc.
- Allows monitoring the user progress and students/teachers interaction.
The HUMBOLDT Training Framework
The HUMBOLDT project in brief

HUMBOLDT develops and provide software that can be used for various tasks of geodata harmonisation.

HUMBOLDT focuses on the facilitation of cross-national and cross-border harmonisation of spatial data, and supports the implementation of the European Directive INSPIRE (tools for data harmonisation) in applications related to GMES.

28 partners from 14 European countries collaborate on the development of IT solutions to support the harmonisation of spatial data to be used within Spatial Data Infrastructures (SDI s).

Learn more about HUMBOLDT by visiting our website: http://www.esdi-humboldt.eu
Examples of HUMBOLDT data harmonisation requirements:

Problems with **different data formats**: provide interoperable access to heterogeneous data sources

Problems with **different data models**: provide solutions for data model harmonisation (schema mapping)

Problems with **different coordinate reference systems**: provide Coordinate Transformation Service(s)

Problems with **different geometries** (Spatial consistency): provide Edge Matching Service(s)

Problems with the **meaning of objects**, i.e. semantics: provide solutions like application domain dictionaries and thesauri
The solution: The HUMBOLDT Framework

Providing the **functionalities for covering the data harmonization process as a whole** (framework)

The tools **can be integrated into existing SDIs** to support spatial data and service providers in offering harmonised spatial information.

The methodological framework of HUMBOLDT is **supported by a Harmonisation Toolkit and a Service Integration**

The Framework components are available as **Open Source Software**, released under the LGPL 3.0 license.

Enhancement of the **automation of the data harmonisation processes**
The HUMBOLDT Training Package
Accessed from the “Training” link in the project’s Community website
http://community.esdi-humboldt.eu/

Training on Data Harmonisation
You are invited to visit our project’s training platform, which offers free on-line training courses on topics like Web Service, GMES, Geospatial Data harmonisation and others:

Training Platform

Latest Updates
News
Overall Project Activity
The Training Package site structure: Training Content Levels

The training Package site offers a description of all the training content levels:

- **Level 1, The HUMBOLDT Knowledge courses**
- **Level 2, The HUMBOLDT Framework**
- **Level 3, The HUMBOLDT Scenarios**

The Platform is established by existing open source e-learning platform and is developed considering four levels:

- **The Entrance Test**
  To filter trainees before entering the Humboldt Framework Training

- **The HUMBOLDT Knowledge courses**
  Training modules related to knowledge useful to operate with the HUMBOLDT Framework

- **The HUMBOLDT Framework**
  To provide training on the results coming from the HUMBOLDT Framework.

- **The HUMBOLDT Scenarios**
  Example use cases explaining the application areas of Humboldt. Addressed to the users and organisations that will be involved in the HUMBOLDT Scenarios.
Examples of HUMBOLDT data harmonisation requirements:

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The HUMBOLDT Training Modules:
Training Level 2 “The HUMBOLDT Framework“

Divided in two main sections:

- The HUMBOLDT Framework outlines and components: Training material for the use of the HUMBOLDT Tools.

- The Data harmonisation within HUMBOLDT: Concerned mostly with the harmonisation of data models.
The HUMBOLDT Training Modules:

Training Level 3: “The HUMBOLDT Scenarios“

Scenarios **apply and test the developed software in real world conditions**

Supporting the project policy of users’ involvement. **To be addressed to end-users**, in particular the organisations representing a potential audience for the HUMBOLDT framework.

**The Training Platform is the main access** for the users comunity of the Project to **demonstrative and well-documented examples of the use of the HUMBOLDT tools**
The HUMBOLDT Training Modules:

Training Level 3: “The HUMBOLDT Scenarios“

Harmonisation aspects in different domains:

Border Security: Enabling Effective Border Control and Security in Rural Areas
Urban Planning: European Urban Management Information Systems
Forest: Land cover and vegetation integration
Urban Atlas: Support city habitability
Transboundary Catchments: Integrated management of cross-border catchment areas
Protected Areas: Management of Protected Areas of Regional Parks
ERiskA: Collect and combine existing data concerning natural risks and vulnerability efficiently
Ocean: Oil/Contaminants spill crisis impact and management
Atmosphere: Air quality data integration and provision through a Location-based Service (LBS)
NATURE-SDIplus Training Framework

Co-funded by the Community Programme eContentplus ECP-2007-GEO-317007
NATURE-SDIplus
Best Practice Network for SDI in Nature Conservation

Nature-SDIplus Network aims to improve the harmonisation of national datasets and make them more accessible and exploitable, with reference to a cluster of data themes on nature conservation:
- Protected sites (Annex I);
- Biogeographical regions, Habitats and biotopes,
- Species distribution (Annex III).

Objective
- to involve new stakeholders
- to share data and best practices
- to improve and stimulate exploitation and re-use of information
Results

a EU metadata profile based on standards and a data model in CEN/TC 287 Geographic information

a common multilingual/multicultural approach to geo-data, with a Thesaurus to support data modelling and metadata provision

a demonstration infrastructure (INSPIRE compliant Geoportal) supported by web services providing data access to users

share with the INSPIRE Teams of expertise, outcomes and best practices, to drive to adoption of INSPIRE specifications

a Community on SDI for nature conservation addressing themes and consensus building and ensuring wide awareness (also with training and dissemination)

Not only test data-sets, but also Good Practices will be provided by partners for many EU Member States
Training for who?

NATURE-SDIplus Training actions are mainly addressed to the NATURE-SDIplus Community, with the aim to provide them with required knowledge on how to manage interoperable datasets on nature conservation.

In addition, the NATURE-SDIplus training is addressed to the project Partners, in order to acquire a common knowledge on the different topics addressed by the project (both on the technical aspects and in the nature conservation topics), also in view to make easier their participation in the project activities.
Training about what?

NATURE-SDIplus Training Package deals with the topics addressed by the project.

Training is about:

- **NATURE CONSERVATION** issues and policies
- **DATA MODELLING** and **IT STANDARDS** (Data Harmonisation, Web Services, Geo-Standards...)
- **INSPIRE** (Directive and Data Specifications)
- **PROJECT OUTCOMES** (Data Analysis, Thesaurus, Geoportal)
- **GOOD PRACTICES** (from NATURE-SDIplus collection)
The NatureSDIplus Training Package increases the value of the NatureSDIplus project by providing training activities towards the NatureSDIplus Communities.

The Training Package aims at helping the members of the network to create interoperable datasets on nature conservation. It is organized by Modules, which have been grouped considering three levels:

- **Background Knowledge**
  
  Training modules related to basic knowledge on nature conservation and technological issues useful to work with INSPIRE nature conservation themes.

- **SDI and Nature conservation**
  
  Training modules on the results coming from the NatureSDIplus project.

- **Applications**
  
  Training module on the good practices coming from the NatureSDIplus project.

The NatureSDIplus on-line training material is established by existing open source e-learning platforms. For each Module a short description is given [metadata] and the direct access to the on-line training material is provided through the login to the e-learning platform.
Training Package

Level 1 - Background Knowledge

**Background Knowledge on Nature Conservation**
- MODULE 1 - NATURE CONSERVATION

**GI Data Modelling and Standards**
- MODULE 2 - DATA MODELLING
- MODULE 3 - METADATA
- MODULE 4 - DATA HARMONIZATION
- MODULE 5 - STANDARDS

**Basic IT Standards**
- MODULE 6 - BASICS OF WEB SERVICES
- MODULE 7 - BASICS OF XML AND GML

**INSPIRE**
- MODULE 8 - THE INSPIRE DIRECTIVE
Level 2 - SDI and Nature conservation

- MODULE 9 - NATURE CONSERVATION IN INSPIRE
- MODULE 10 - DATASETS ANALYSIS AND DATA POLICIES
- MODULE 11 - DATASETS HARMONISATION - TRANSFORMATION
- MODULE 12 - THESAURUS
- MODULE 13 - GEOPORTAL
- MODULE 14 - TESTING THE COMPLIANCE OF OUTCOMES WITH INSPIRE AND INTERNATIONAL STANDARDS
Level 3 - Applications

- **MODULE 14 - GOOD PRACTICES**
  - Interreg IIIA Alcotra Italy-France - Flora and habitat conservation and management in the south-western Alps
  - VIC - NATUR (Swedish EPA)
  - Dutch Provinces - datasets INSPIRE compliant
  - ...
GISIG and the projects promoted by the Association (such as VESTA-GIS and NATURE-SDIplus are open networks

You are all very welcome!
Many thanks for your attention

g.saio@gisig.it

INSPRIRE Conference 2010