NatureSDI*plus*

Best Practice Network for SDI in Nature Conservation

Newsletter no. 1 - April 2009

Natura 2000 and the new EU approach for protected sites management has enforced the link between nature conservation and geo-information. This has generated the need for accessible, interoperable and harmonised datasets, also addressed by the INSPIRE Directive (2007/2/EC) that pursues an EU Spatial Data Infrastructure (SDI) to support environmental policies.

The **Nature-SDI*plus*** Network started in October 2008. It aims to enable and improve the harmonisation of national datasets on nature conservation, making them accessible and exploitable. Thus, it supports the implementation of the INSPIRE Directive in this field.

Nature-SDI*plus* Newsletters are sent to all the members of the network and all the stakeholders included into the Consortium mailing lists. Anyone interested in joining the network is invited to contact the **Nature-SDI*plus*** **Project Office** (see the back cover).

The **Nature-SDI*plus*** **Newsletter no. 1** offers a general overview of the **Nature-SDI*plus*** context and activities carried out in the first project period. In particular, the results from the participation in the testing of INSPIRE Data Specification on Protected Site and the launch of the Survey of target user needs are reported. In addition, an overview of the project Consortium is given.

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About NATURE-SDI*plus*

Background

NATURE-SDI*plus* aims at establishing a **Best Practice Network** dealing with a cluster of the data themes listed in the **Annexes I and III** of the **INSPIRE** Directive (2007/2/EC) and focused on the nature conservation issues. The considered data themes are:

- Protected sites (Annex I)
- Biogeographical regions (Annex III)
- Habitats and biotopes (Annex III)
- Species distribution (Annex III)

The need to have information on nature conservation geo-referenced and available at the EU level has grown in recent years due to the implementation of the **Natura 2000** Network established through the "Habitats" Directive (92/43/EEC) as well as a trend by European Park Authorities to develop management rules that respect the natural boundaries rather than the administrative ones, which often implies an international approach.

Moreover, the **multi-disciplinary approach to environmental issues**, as required for instance by the Environmental Assessment procedures of projects and infrastructures, implies the management of seamless geo-information in the different application fields. An example is given by the "assessment of implications" that, according to Art. 6 of the Habitats Directive must be carried out to evaluate short-term and long-term impacts of a project on a protected site through detailed studies which, in most cases, require the **comparison of different datasets**.

In such a context, Public Administrations and Park Authorities in Europe have plenty of data and databases created for management needs at local, regional or national level that, for the reasons above, should be made **available and re-usable** at the EU level through the use of common standards and interoperable services.

Objectives

The main objective of NATURE-SDI*plus* is the establishment of a network open to all stakeholders operating in the nature conservation. The network aims to collect, validate and implement good practices in order to create better conditions to favour the **exploitation** and the **re-use** of data on nature conservation in Europe. This is pursued through an analysis of the **state of the art** on data usability and accessibility as well as of **target user needs.** The analysis brings to the evaluation and the implementation of the available data specification and proposes the definition of a **metadata** and a **data model** to improve the **harmonisation** of available datasets, made accessible through designed web services.

According to the *e*EConten*tplus* objectives and rationale, the network is also expected to undertake **awareness raising** activities aimed at making stakeholders realise and exploit the full potential of digital contents, for management, training, communication and information purposes.

Outcomes

NATURE-SDI*plus* analyses the usability and accessibility of data. The results of this analysis are used to develop the NATURE-SDI*plus* European metadata profile and data model for datasets on nature conservation.

The project defines a common **multilingual and multicultural approach** for a simpler and standardised access to spatial data.

A demonstration infrastructure, compliant with the INSPIRE principles and supported by web services, provides the data accessibility through a **dedicated geoportal**: the main gateway to available datasets and services.

The main outcome of Nature-SDI*plus* is a long-term sustainable network of stakeholders dealing with geo-information for nature conservation.
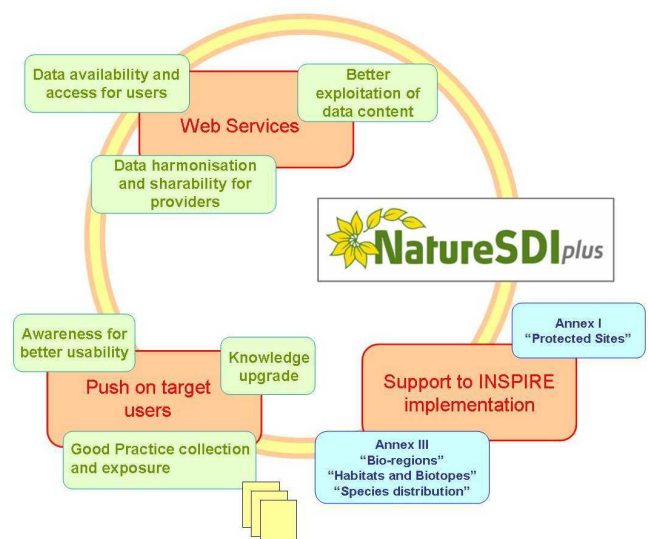
Target users

The involved stakeholders of NATURE-SDI*plus* network will consist in particular of **data providers**, taking advantages by the standardisation and improvement of their data, and **data users**, together with EU and standardisation bodies. They all form the NATURE-SDI*plus* target users, listed in the following.

- European institutions
- Member State administrations
- Nature conservation authorities
- Regional and local administrations
- Protected areas at all levels
- Commercial data providers
- Universities and Research Institutes
- Education (at all levels)
- Environmental NGOs
- Industrial and engineering companies
- Public and citizens

According to the concept of **network development**, new members will be at any time invited to participate in NATURE-SDI*plus* Network following a continuous process of recruiting.

Fig. 1: Schematisation of the NATURE-SDI*plus* approach

NATURE-SDI*plus* and the Testing of INSPIRE Data Specifications for Annex I Data Themes

The INSPIRE Testing on Data Specifications Annex I

The release of the INSPIRE Data Specifications of Annex I Data Themes, and the subsequent open call for testing, created a basic reference for the NATURE-SDI*plus* start up and development.

The call was addressed to the INSPIRE stakeholders, and in particular to the INSPIRE Spatial Data Interest Communities (SDICs) and to the Legally Mandated Organisations (LMOs).

The INSPIRE testing phase, from which the call was originated, is part of the roadmap defined by the Consolidation Team (CT) in order to guide the work done by the Thematic Working Groups (TWGs) for the Annex data specifications. The testing is meant to support the creation of the INSPIRE Implementing Rules to lay down the arrangements for interoperability, and if relevant, the harmonisation of spatial datasets and services.

The testing has considered the Data Themes of Annex I, that are: coordinate reference systems, geographical grid systems, geographical names, administrative units, addresses, cadastral parcels, transport networks, hydrography, **protected sites**. The last one was the subject of the NATURE-SDI*plus* testing.

In the call for testing, two types of testing were identified, for "transformation" and for "application".

The transformation testing was addressed to the technical feasibility and the work needed to transform local data into the draft INSPIRE model. The application testing was addressed to evaluate the benefits of harmonising data specifications from the point of view of an end-user working on application.

The contributions to the testing are going to be used by the INSPIRE CT to structure the contents and to elaborate the draft Implementing Rules for the Annex I.

NATURE-SDI*plus* participation in the testing

NATURE-SDI*plus* participated in the transformation testing for the theme "Protected Sites". The testing was coordinated by GISIG and the University of Aberdeen, respectively the project coordinator and the leader of the task 2.3 "Datasets analysis and systematisation".

A series of datasets from different Countries was used with the aim to verify the compliance of those actual datasets (features, attributes and models, when existing) with the INSPIRE Data Specifications.

To carry out the transformation testing, a methodology consisting of three steps was followed, which saw the active involvement of all the NATURE-SDI*plus* data providers.

An initial request (**Step 1**) was sent out to each data provider, asking for the full list of their datasets, their contexts, the list of attributes and other useful information (reference systems, geographic boundaries etc.). The list of attributes listed by the data providers was then matched with the attributes by the INSPIRE Data Specifications (**Step 2**). Upon these results, the analysis of datasets and their compliance with INSPIRE profile was carried out and reported.

In addition, the **Step 3** was carried out by submitting to the Nature-SDI*plus* data providers some questions by the INSPIRE Testing template. The questions were selected to better consider issues appearing difficult to derive from the two above illustrated steps and to offer to data providers

the possibility of better exposing their specific cases. The contributions to the Step 3 by each data providers were then collected into a consolidated report.

Conclusions from NATURE-SDI*plus*

The conclusions were laid down divided by steps, according to the methodology followed in the testing phase.

Steps 1 and 2 dealt with the analysis of 99 data sets from 15 countries and 23 different data providers.

The first conclusions from a set of criteria examined were that (i) all datasets met the requirement on the reference system; (ii) 80 datasets out of 99 met the requirement on shape topology (the shape topology must be area/polygon); (iii) 90 datasets out of 99 met the requirement to be non-transboundary.

The next set of criteria examined were the **Database field/ Attributes**, of which six are necessary for compliance at the INSPIRE Simple profile. Only 1 dataset, out of the total of 99, achieved compliance at the Database Full profile and only 4 achieved the Database Simple profile. The majority of datasets were missing from 1 to 5 items out of the six required. However, it was envisaged that required information existed in the metadata or in some location accessible to data providers.

The final set of criteria to examine are the **Metadata criteria**, of which five are necessary for compliance at the Simple profile. Only 2 datasets achieved the Metadata Simple profile whilst the majority of datasets were missing all five required items. Only for a minority of the datasets (22 out of 99) all the required information existed in some location accessible to the data provider.

As general conclusion from the **Step 3**, dedicated to interview the NATURE-SDI*plus* data providers, it can be quoted a general feasibility in applying INSPIRE requirements for transformation .
More in detail, speaking about costs and benefits from the INSPIRE implementation, additional costs have been envisaged for the training, the collection of new data, the SW maintenance and development, whilst benefits are in terms of simplified and speeded up work. As far as social and political value are concerned, the transformation should improve the decision making, public participation and eGovernment as well as the reuse of data.
According to the opinion of data providers, the datasets transformation is not necessary to satisfy the requirements of their end users, since in the majority of cases they already have data compliant with their needs. Nevertheless, within the survey, the data providers expressed their willingness to apply INSPIRE provisions to the new created datasets, to implement services for transformation (on the fly or off-line) and to modify their existing specifications to match INSPIRE requirements (mainly revision of attributes and metadata).

The INSPIRE Team is now focused on Annex I Data Specifications and related Implementing Rules. Nevertheless, a next testing phase on Annex II and III will be probably announced next June. In such a perspective, NATURE-SDI*plus* will work in parallel with INSPIRE, by adopting the proposed conceptual model and methodologies as well as by following, within its workplan, the roadmap for INSPIRE implementation.

The Survey of Target User Needs

Written with the contribution of OEAW (Austrian Academy of Sciences, Institute for Geographic Information Science), partner responsible for the survey.

European environmental policies (e.g. Natura 2000) imply the need for harmonisation, interoperability and consistency of data on nature and biodiversity within the EU. A major objective of the NATURE-SDI*plus* network is to collect and diffuse good practices to create better conditions in order to favour the exploitation and the re-use of data on nature conservation in Europe. The information on users and user requirements build the indispensable basis for the development of the technical specifications such as the development of the data model, the metadata profile and the geoportal and it is used as a benchmark for the project achievements in the testing phase of project outcomes. In the focus of interest of NATURE-SDI*plus* , there are the four INSPIRE "data themes" that directly relate to nature conservation: protected areas, biogeographical regions, habitats and biotopes, and species distribution.

The first project phase is dedicated to the analysis of the state of the art of data availability, usability and accessibility as well as a comprehensive understanding of target user needs. This analysis can be considered as the "Cognitive Phase" of the project and is developed under a specific Workpackage 2 "User Needs and Data Analysis", addressed in particular to answer the questions which follows.

Fig. 2: The project activities and their interdependencies

Seamless nature conservation data – how deep is the gap between the "INSPIRE dream" and European reality?

Different aims and contexts of data usage urge the need of acquiring knowledge about the world of users and their requirements. Specific activities led by the Institute for GIScience, Austrian Academy of Sciences with the support of other partners from the NATURE-SDI*plus* Consortium are dedicated to identify the gaps spanning between the existing data and the requirements of users. In particular these activities have three objectives: (1) to analyse the state

of the art of data provision (2) to identify typical user groups and their requirements, (3) to give an overview of existing copyright policies, eventually hindering data accessibility and (4), based on the results of the first three objectives: to demonstrate gaps between how data are currently provided and what would be required by the user community.

What is the state of the art of data provision?

An extensive collection of nature conservation datasets in 18 European countries are available to the project through the partners. First results regarding the state of the art of data accessibility indicate that there is a multitude of data and information available related to nature conservation. However, the data varies considerably from country to country: different content, variable metadata content, different scales, different quality and format, different terms, etc. Currently, it is therefore difficult for most users to use these data seamlessly in different applications domains (environment, regional policy, transport, agriculture, etc.) as required by environmental and nature conservation policies (e.g. for environmental assessment).

Which data is required by the user?

The information on users and their requirements is surveyed by an online questionnaire realised with the web survey tool "Survey Monkey" (www.surveymonkey.com/ NatureSDI_UserSurvey). The questionnaire design is closely related to the common SDI components (Figure 3): spatial data, metadata, tools and users, which build the conceptual frame. Detailed knowledge of (European) nature and nature protection was the prerequisite for the development phase. In total 67 questions were elaborated that are organised in ten sections: (1) organisation details (2) personal details (3) use of nature-conservation data (4) use of species data (5) use of biotope / habitat data (6) software (7) geoportal (8) data production (9) NATURE-SDI*plus*project: willingness to participate (10) summary.
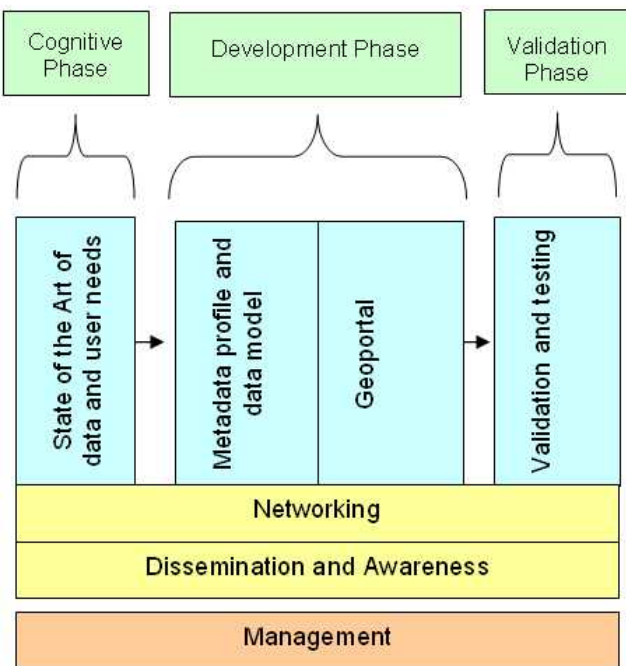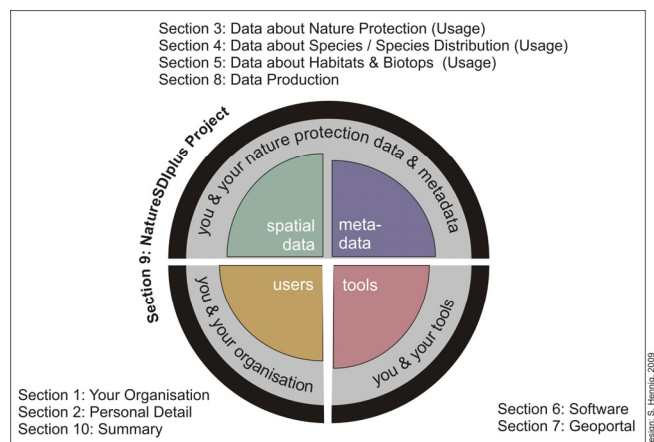

Fig. 3: The four SDI components: spatial data, metadata, tools and users as addressed by the survey and its questionnaire

The concept, structure and the question wording are methodologically based on empirical social science research. The questionnaire intends to gain a comprehensive overview on nature protection data usage and data provision within the INSPIRE addressed data themes.

After a considerable discussion about the questionnaire's content, concept, structure, design etc. with the project partners and a pre-testing phase the questionnaire has been sent to the national coordinators with the request for further distribution to the target users. The aim is to collect as much information as possible through actual and potential target users. Therefore, different groups of target users as shown in Table 1 operating at the local, regional, national and EU scale were defined.

In a subsequent step, the collected and statistically analysed information of users and their requirements will be the basis for the development of the use cases (WP3 "Interoperable Datasets for Nature Conservation") and to some degree the validation and testing of the interoperable datasets to be realised in WP5 "Validation and Testing of Interoperable Datasets".

As the work in NATURE-SDI*plus* progresses the match between data provided within the NATURE-SDI*plus* network and the identified user needs is monitored, to determine, where the gaps are, and where improvements can be made.

Target user	Task and commitment
European Institutions	Decision making Monitoring of and feedback to MS
Member States	Decision making/Monitoring policies/National and EU reporting
Nature Conservation Authorities	Study for prospective policies/ Communication with administrations/Reporting
Regional&Local Administrations	Creation/update of information/ Study for prospective policies/ Planning and management/Public communication
Protected Areas	Creation/update of information Planning and management/ Monitoring and control
Commercial Data Providers	As assigned by its customers
Research	Study and analysis
Education	Education, training and knowledge diffusion
Environmental NGO's	Study and analysis/Environmental policy process/Communication and awareness
Industry	As assigned by its customers
Citizens	Participation in decision making and in environmental policy process

Table 1: Groups of target users that work with spatial nature conservation data in Europe

NATURE-SDI*plus* Consortium

GISIG—Geographical Information Systems International Group (IT) - Project Coordinator

GISIG (www.gisig.it) is a sectoral non-profit European association on Geographical Information Systems (GIS) and on Geographical Information (GI). Its member organisations from more than 20 European Countries are Universities and Research Institutions, GIS technology suppliers, local bodies and companies operating on territorial subjects.
GISIG has a long record of experience in the areas of GIS, both on tools and on their applications (territorial planning, coastal area, water resources, environment, protected areas...) with an interdisciplinary approach. The Association deals also with the promotion of thematic networks such as NATURE-GIS on protected areas. The collaboration with the members of the GISIG thematic networks allows the collection of users needs and their analysis with the aim to address the sectoral R&D of technologies toward them. GISIG is also involved in the organisation of conferences and training courses and contributes to the development of the GI community and to the implementation of INSPIRE Directive.
GISIG is the NATURE-SDI*plus* project and network coordinator, hosting also the project technical secretariat.

OEAW - Austrian Academy of Sciences, Institute for Geographic Information Science (AT)

Fundamental research is the mission of the Austrian Academy of Sciences. The GIScience Institute investigates the concepts and methods for modelling, organising, analysis and communication of geospatial information. As the science supporting the development and application of Geographic Information Systems (GIS), GIScience has significant impact on professional disciplines, public administration and increasingly, everyday lives. The Austrian Academy of Science has the role of advising government on relevant issues. This gives us the opportunity to access data sets for research purposes, and to collaborate with various kinds of public institutions. Through our contacts to the Salzburg Provincial Government (AT) and the National Park Berchtesgaden (DE) several nature conservation datasets can be provided for the NATURE-SDI*plus* project. Furthermore GIScience is active at national level in dissemination and awareness, with contributions to the planned material and the organisation of project events such as conferences and workshop.

TRACASA - Trabajos Catastrales, S.A. (ES)

It is a public commercial company of computer science, cartographic, cadastral and location based services founded on 1.982 with a workforce of 240 persons. The main activity lines are based on Spatial data:

- Production of Spatial Data Systems
- Development of Spatial tools

TRACASA has long experience in the development of platforms for the exploitation of spatial data (2D and 3D) with customers coming from public administrations and private companies from Spain, Europe and Latin America.

The company is expert in the management of geospatial information as a complex process for the data acquisition – topography, aerial photograph, remote sensors, public data base, etc – organisation (metadata), access and visualisation (virtual reality) of the information. To achieve the maximum efficiency and efficacy in information representation, the information will be managed through the use of cartographic representations.

The TRACASA experience comes guaranteed by its 25 years working in the area of Geographical Information, specially the area or cadastre.

In NATURE-SDI*plus*, TRACASA acts as a technical partners, responsible for the workpackage on interoperable datasets for nature conservation and in particular the implementation of datamodel and metadata profile.

INTERGRAPH ITALIA LLC (IT)

Intergraph is the world leader in delivering software and services for the management and visual representation of complex information. Its products and services literally map the globe — they are used in communities around the world to make it a safer and more prosperous place.

Intergraph has two divisions: Intergraph Process, Power & Marine and Intergraph Security, Government & Infrastructure Its expertise is in numerous markets – including public safety, governments, military and intelligence, utilities and communications, transportation, and commercial photogrammetry. Beside that, Intergraph is one of the founding members of the Open Geospatial Consortium and dedicates large efforts in the development of interoperable software solutions.

In NATURE-SDI*plus*, Intergraph is a technical partner responsible for the implementation of the geoportal and its services.

EPSILON International SA (GR)

EPSILON International SA is (www.epsilon.gr) an international Technology Resources Group established in 1985, that specialises in the four **sectors** of Space & Telecoms, GIS & InfoSociety, Environment & Civil Engineering, and Management & Economics. It operates world-wide via independent companies located in Cyprus, Greece, Italy, and Russia, linked to leading organisational offices in numerous European countries and operating in full synergy as one Organization. Services in **GIS** cover technologies as geodata on INSPIRE/OGC, geo-systems integration, geo-marketing products, and IST/ICT technologies. EPSILON utilises terrestrial video, mobile mapping, LIDAR, space lasers, remote sensing, aerial mapping and high resolution imaging & processing for its applications, ranging from environmental management to security and safety systems, to global monitoring, to a full range of surveying technologies, and industry applications as health systems. Services in the **Environment** sector cover the entire spectrum of environmental engineering, sciences,

technologies development and products development.

In NATURE-SDI*plus* Epsilon acts as technical partner in charge of the validation and testing of interoperable datasets, as well as as network and data providers coordinator for Greece.

K. U. Leuven - Katholieke Universiteit Leuven (BE)

The Spatial Applications Division Leuven (SADL) is an R&D division of the Katholieke Universiteit Leuven (K.U.Leuven) in Belgium. SADL was set up at K.U.Leuven to manage and further develop the applied research, vocational training and consultancy activities in the field of Geographic Information Systems (GIS), Earth Observation (EO) and more recently Spatial Data Infrastructures (SDI). SADL is part of the Geo-Institute which hosts all the geo related units of the university and which has around 220 staff members. In line with the research activities of the participating academic units, SADL offers considerable thematic expertise with respect to land, water, forest, nature and landscape management, agri-environment, urban and regional planning, traffic and transport management, socio-economic issues like tourism and housing. It is complemented by important technical and organisational GIS- , EO- and SDI-expertise. SADL, and K.U.Leuven in general, was from the very beginning heavenly involved in the INSPIRE process, in the technical as well as in the legal/procedural issues.

In NATURE-SDI*plus* SADL is the partner having specific expertise on INSPIRE, responsible also for the datamodel. Moreover, it is network and data provider coordinator at national level.

Disy Informationssysteme GmbH (DE)

disy's mission is to provide methods and software products for efficient information handling and has a specific focus on heterogeneous and distributed environmental and spatial information. disy implements innovative software solutions, which combine, structure and present spatial data and services from a variety of different sources. disy makes use of modern and Web-based information and communication technologies in order to promote enhanced communication and co-operation between partners.

The product disy Cadenza for spatial and environmental reporting has become standard in many environmental agencies in Germany and Austria. It offers the basic infrastructure for storage, aggregation, access, transformation, visualisation and reporting of spatial and environmental data. With disy Preludio disy offers a web based application for the management of ISO 19115 Metadata and to set up thematic spatial data infrastructures (SDI). With disy GISterm disy provides a full featured Desktop and Web GIS.

As a spin-off company of the research transfer institute FZI most employees of disy have a strong research background. Currently disy employs 35 persons.

In NATURE-SDI*plus*, disy covers the role of technical partner and expert in the datamodel field.

CNR-IMATI - National Research Council, Institute for Apply Mathematics and Information Technology (IT)

National Research Council (CNR) is the Italian public organisation aiming to carry out, promote, spread and transfer research activities in the main sectors of knowledge growth and of its applications for the scientific, technological, economic and social development of the Country. CNR is distributed all over Italy through a network of Institutes. The Institute for Apply Mathematics and Information Technology (IMATI) in Genoa, taking part in the

project, carries out several research activities related to the knowledge management of geographic information. It has developed a strong, long-standing international co-operation with both industrial and research consortia as well as with public organisations within many research projects on GI.

In NATURE-SDI*plus*, CNR-IMATI has the role of semantics expert as well as of task leader for multilingual and multicultural issues.

AGI - Institute for Aerial Geodesy Ltd. (LT)

During fifty years of its existence, AGI developed into a National Mapping Center of Lithuania and became one of the most advanced cartographic companies in Baltic States, hosting professionals in photogrammetry, geodesy, digital cartography, publishing, GIS and informatics. The main activities of the Institute include collection and maintenance of Lithuania's basic topographic data, map production and publishing, preparation of geodetic and cartographic materials for demarcation of State borders of Lithuania. Applied Research Center of the institute is involved in geoinformatics and remote sensing studies, as well as spatial data infrastructure development projects. In 2005 AGI obtained and currently maintains an ISO 9001:2000 certificate for the scope of supply "Services of surveying, photogrammetry and topography; geographic datasets production".

As NATURE-SDI*plus* technical partner, AGI is in charge of the task on quality evaluation and datasets generalisation. Moreover, it is network and data providers coordinator at national level.

University of Aberdeen (UK)

The Centre for Marine and Coastal Zone Management (CMCZM), Department of Geography and Environment, University of Aberdeen, Aberdeen, Scotland, UK, specialises in the application of geospatial technologies (GIS, GPS, Digital Image Processing (DIP) and Remote Sensing, Internet technologies, mobile GIS, DEMs, Photogrammetry, online GIS, Cartography and Digital Mapping, databases and data models) to environmental applications including: integrated coastal management, vegetation mapping, landscape ecology, ecological impact/ risk assessment, precision viticulture, beach mapping, beach litter mapping, surf-school carrying capacity, environmental and occupational medicine, and coastal visualisation tools. In recent years we have participated in many EU projects including Coastwatch, Corepoint, Eco-Imagine, CopraNet, Nature-GIS, and IMCORE, as well as various local projects on community participation GIS e.g. SACRP in Aberdeen. The Centre hosts the EUCC-UK, and the Journal of Coastal Conservation, Planning and Management (JCCPM) (Springer). It has also managed numerous conferences and exhibitions and produced a number of books on GIS and coastal management, and runs the Applied Geospatial Technology M.Sc. degree and the undergraduate degree programme in Marine and Coastal Resource Management (MCRM). In NATURE-SDI*plus*, the role is one of task leader for the datasets analysis and systematisation work. Moreover, it is the network and data providers coordinator for the UK.

IGP - INSTITUTO GEOGRÁFICO PORTUGUÊS (PT)

The Portuguese Geographical Institute (IGP) is the result of the merging of two institutions: the National Center for Geographic Information (CNIG) and the Cartography and Cadastre Portuguese Institute (IPCC). IGP is the national authority for GI and the responsible for the NSDI co-ordination, SNIG, which was created in 1995, being one of the first NSDI in the world. IGP was recently nominated as the contact point entity for INSPIRE. Besides this role, IGP develops research in different areas associated to spatial information and technologies, being one of them the development of natural areas-selection techniques based on expert systems and spatial modelling of environmental impacts generated by human activities. Additionally, IGP participates in HUMBOLDT project being one of the partners involved in the Protected Areas Scenario, and is also involved in other initiatives and projects related to spatial data infrastructures such as GIS4EU and EFICP.

In NATURE-SDI*plus*, IGP is network and data providers coordinator at PT level. Moreover it contributes to the dissemination and technical activities.

Government of Navarra (ES)

The Department of Environment at the Government of Navarra has full competences about Species Conservation and Habitats.

It is therefore, the responsible at regional level regarding Biodiversity Data Information management. A web page http://www.biodiversidad.navarra.es have been recently launched following all Open Geospatial Consortium recommendations and standards and also committing with INSPIRE Directive. The Biodiversity information is also included as a main thematic component of the regional SDI http://idena.navarra.es, offering all this information to be discovered, viewed and downloaded.

The role in NATURE-SDI*plus* is of data provider and network coordinator at national level.

Regione Piemonte (IT)

Regione Piemonte is participating with its **Department for Protected Areas Planning**, and in close co-operation with its operative branch **I.P.L.A.** — Wood Plants for Wood Purposes and Environmental Institute.

Within the activities of Regione Piemonte, the **Department for Protected Areas Planning** mainly deals with all the aspects concerning the individuation, planning and scientific and promotional co-ordination of the regional Protected Areas. Moreover, the Department works, in connection with the Ministry and the European Union, on topics such as bio-diversity and nature preservation. A particular attention has been paid to GIS development and diffusion, also aimed to monitor and manage the protected territory.

I.P.L.A. is an in-house body of the Regione Piemonte with the task of providing technical-scientific medium for knowledge to policies of environmental protection, planning of territory, development and rational use of renewable resources. The Institute is active in the field of applied research in forestry, agronomy, and natural resources analysis since 1979 and has developed a significant experience in protected areas and nature conservation data collection and handling. Within its structure IPLA activated a laboratory of cartography and remote sensing.

In NATURE-SDI*plus*, Regione Piemonte plays the role of data provider and national network coordinator.

GraphiTech - Centre for Advanced Computer Graphics Technologies (IT)

GraphiTech (www.graphitech.it) is a no-profit private applied research centre which conducts research and development activities in the broad technology area of advanced computer graphics, mixed reality and communication and information systems. GT has been contributing towards the transfer of knowledge

between the research sector and the industry through the promotion of research on advanced graphic, information processing and visual communication, including virtual reality and virtual engineering.

GT has been involved in several RTD and industrial projects both at the EU, NATO-OTAN and at the national level focusing on intelligent multimodal interfaces, interactions with collaborative augmented reality environments, large scale visualization system for geographical data, web-service-based architecture to manage, distribute, navigate and interact with geospatial data and GeoVisual Analytics.

In NATURE-SDIplus, GT is a technical partner and it is responsible for the design of the geoportal and the additional services.

VÚGTK - Research Institute of Geodesy, Topography and Cartography (CZ)

The profile of VÚGTK is expressed in the list of its activities. 1) Development of systems and technologies for data acquisition, data processing and data utilisation in survey and photogrammetry, digitising and scanning of maps, especially for creation of Information System of Surveying, Mapping and Cadastre. 2) Exact astronomic-geodetical observations and data analyses for geodynamical applications. 3) Training of authorised and licensed surveyors etc. 4) Expert and counsellor services in geodesy, surveying, cartography, cadastre and computer science, including software.

The Institute is also active as a State Metrology Center.

In NATURE-SDI*plus*, VUGTK is network coordinator at CZ level and data provider.

University of West Hungary – GEO (HU)

The University of West Hungary, Faculty of Geoinfomatics, Székesfehérvár, is the leading institution in Hungary in continuing professional training on surveying, geoinformatics and land management.

The Faculty is involved in various flexible education programmes for land management giving professional development services to engineers, technicians, executives. In the previous years, the Faculty provided training for the industry to more than 500 student and their income from professional training is around 30% of their annual educational income. The Faculty of Geoinformatics has accumulated a great experience in the UNIGIS and similar international networks of universities, which offers common modules by open and distance learning to in-service professionals in the area of Geographical Information Systems and Land Management. The Faculty also has a long experience of migrating university modules to training courses.

The Faculty took part in Nature protection related European projects, such as Nature–GIS and GI-INDEED.

In NATURE-SDIplus, GEO is network and data provider coordinator at national level. Moreover, it is responsible for the overall management and assessment of the project quality.

IEB - HAS - Institute of Ecology and Botany of the Hungarian Academy of Sciences (HU)

The IEB HAS is a mid-sized research organisation and a botanic garden. The institute aims at studying different fields of ecology, nature conservation, hydrobiology, botany and vegetation sciences. It reveals, manages, develops and communicates knowledge in the above fields, mainly on Hungary's biodiversity and vegetation. To

conserve nature, biodiversity and ecosystem functioning, it is essential to know what kind of interventions must be, should be or should not be done, and in which particular areas. Therefore IEB HAS holds and manages the Habitat and Landscape Ecological Database of Hungary (MÉTA) about natural and semi-natural grasslands, marshlands, wetlands, shrublands and woodlands. The MÉTA information system and services provide expert knowledge basis for preparing habitat maps, landscape ecological analyses and spatial modelling for scientific use, and for nature conservation, strategic planning, water and forest management, agro-environmental policy, as well as education.

In NATURE-SDI*plus*, IEB HAS plays the role of national data provider.

GUGiK - Head Office of Geodesy and Cartography (PL)

The Head Office of Geodesy and Cartography (GUGiK) with the Surveyor General of Poland, have been entrusted by the Geodetic and Cartographic Act with the co-ordination of SDI issues Poland.

The Head Office of Geodesy and Cartography (http://www.gugik.gov.pl) is a member of Eurogeographics representing Poland.

The Surveyor General of Poland is the president of the Head Office of Geodesy and Cartography (GUGiK), which has numerous roles to play: establishing and maintaining geodetic and gravimetric networks, preparing official topographic maps, national resources of geodetic and cartographic data, cadastral register of land and buildings.

The Surveyor General of Poland performs tasks defined in the Act of the 17 May 1989 "Geodetic and Cartographic Law":

In NATURE-SDI*plus*, GUGiK plays the role on national data provider.

URSIT Ltd (BG)

URSIT Ltd. is based in Sofia, Bulgaria, and has been created in 2000. URSIT pursues the vision to support the ICT sector in South East Europe in the transition towards a fully developed market economy. In the areas Internet, electronic commerce, and Geographic Information Systems (GIS), URSIT offers services for systems analysis and user requirements definition, and business development. URSIT works towards the establishment of Spatial Data Infrastructures in South-East Europe and participates in several international programmes and projects such as in the European Commission funded projects GISEE, Nature-GIS and Digital-SEE. URSIT has carried out several consulting projects and studies in the area of GIS, mostly for corporate users of GIS. URSIT consults on INSPIRE, has delivered workshops and presentations on INSPIRE and is member of GISIG and of the Open Geospatial Consortium (OGC). URSIT is active in the area of the geospatial semantic web and has published several research papers.

In NATURE-SDI*plus*, URSIT acts as network and data providers coordinator at national level.

Strandja National Park (BG)

Strandja Nature Park (www.strandja.bg) is the largest protected area in Bulgaria. With a territory of 1161 square kilometres it covers more than 1 % of the country's territory. It is situated in the south-eastern part of Bulgaria. Strandja Nature Park was established in 1995 to preserve the unique ecosystems and biodiversity within the watersheds of the Veleka and Rezvaya Rivers as well as for the protection of Strandja's

folklore, culture and historical heritage. From an international and conservational point-of-view, Strandja Nature Park is one of the five most important habitat areas in Central and Eastern Europe. It is the only representative of a moderate climate with deciduous forests containing interspersed laurel type habitats. Strandja is of European significance because of its richness in plants, nesting birds and reptiles. It is of international significance because of the diversity of mammals, invertebrates and forests types. The whole territory of Strandja Nature Park was included in EU environmental network Natura 2000 - according to both Directives – for birds and for habitats.
In NATURE-SDI*plus*, Standja plays the role of data provider.

University of Cyprus – Computer Science Department (CY)

The University aspires to establish itself as a research-oriented institution that combines research with teaching in order to promote knowledge and educate highly qualified specialists and professionals.
The academic staff of the University of Cyprus participate in a wide variety of international research projects which involve partners and peers from many different countries, universities and research institutions. Research programmes are supported by both state and international funding agencies.
The Department of Computer Science is a research-oriented department active in several areas of information. The research interests of the Department vary from purely theoretical and foundational topics to applied development where, to the extent possible, this applied research is aimed to be directly useful to the local community of Cyprus.
In NATURE-SDIplus, the organisation acts as network and data providers coordinator at national level.

HiG – University of Gävle (SE)

The University of Gävle, with an enrolment of 11 000 students, is a young and expanding institution. It recruits students from all over Sweden to programs such as Surveying and Mapping and Creative Software Engineering. The University enjoys the benefits of working closely with local industry and governments. A science park has been established with the aim of attracting companies to the University campus area and thereby creating a stimulating environment for research and development activities. The GIS Institute of Gävle is a multi-disciplinary research and innovation centre at the University of Gävle. At the moment, 5 professors and 15 additional researchers are connected to the institute. The institute is recognised as a national focal point of GIS-related research and development in Sweden. It is an attractive partner in several networks, through its ability to provide GIS-specific competence to sector-oriented initiatives. In NATURE-SDI*plus*, HIG is responsible for training aspects and in particular for the task on training initiatives and on-line training framework. Moreover, it is the network and data provider coordinator at SE level.

CEMAGREF (FR)

Cemagref is the French institute of agricultural and environmental engineering research. Its work focuses on sustainable development in non-urban areas and its main purpose is to produce new knowledge and technical innovations for use by managers, decision-makers and companies in providing answers to the specific questions raised by society concerning resource management, land use and development. It contributes to the conservation and

acceptable management of land and water systems, the growth of economic activity on a sustainable basis, and the prevention of associated risks. Cemagref has been participating to European projects from the late eighties and is presently involved in 38 FP6 European projects, besides participating to several European networks, such as Landscape Europe or the PEER network
In NATURE-SDI*plus* it is the FR network coordinator, responsible also for the task dealing with the survey on data policies.

IRD - French Research Institute for Development – Appraise and spatialization of Knowledge in Environmental Unit (ESPACE) (FR)

Originally funded in 1944, the IRD (Institut de Recherche pour le Développement) is a public science and technology research institute, reporting to the French ministries in charge of research and development cooperation. Working throughout the tropics, the IRD conducts its research in close cooperation with its numerous partner countries with a view to assisting the economic, social and cultural development of the countries of the South. The IRD fulfils three main missions: research, training and consultancy ; it also collaborates to the scientific and technical information in countries of the South. IRD researches focus on the relationship between man and the environment in the tropical and mediterranean countries, with a view to contributing to the sustainable development. The aims of IRD activities are to respond to the major development challenges regarding societies and health, environment, earth and living resources.
The IRD participates to the major world research. Further details could be found, visiting IRD's website at the following address: www.ird.fr.
As NATURE-SDI*plus* technical partner, IRD is responsible for the task on metadata profile.

Slovak Environmental Agency (SK)

Slovak Environmental Agency (SAZP) is the scientific organisation operating on the territory of the whole Slovakia, the activity of which is focused on the environmental protection, environmental policy development and landscape creation on the principles of sustainable development. The main range of activities is focussed to assessment of the state of environment on both component and DPSIR oriented principles, environmental risk assessment, environmental reporting from Slovakia to international bodies, information systems building and maintenance, including of SDI development in environmental sector and support of public and public administration in EIA/SEA, SEVESO, IPPC, env.burdens, wastes, in env.education and awareness. SAZP is mandated body for cooperation and coordination of activities between EEA and Slovak institutions in EIONET. SAZP with the Ministry of the Environment of the Slovak Republic is responsible for INSPIRE transposition and implementation. SAZP is also registered as an INSPIRE legally mandated organisation (LMO) and as a member of spatial data infrastructure for particular uses (SDIC) called "National Spatial Data Infrastructure of Slovak Republic".

Regione Liguria (IT)

Regione Liguria, as an Italian regional authority, is responsible for the management of structural funds, Interreg programmes, Equal and for the co-operating with the European Community, especially for what Open Call for proposals are concerned, in order to support

Scientific and Technical Collaboration in Europe and among all the other Italian competent bodies.

In particular "Settore Sistemi Informativi e Telematici Regionali", the Department for the Electronic Service Delivery and Information Technology in Regione Liguria, is responsible for the implementation of the ICT projects, for the production and management of the regional digital cartography and GIS and for the development of the new technologies. In 1988, Regione Liguria created Datasiel S.p.A., which is now a regional company, whose mission consists in the implementation of the Regional information system and all of the services connected with it.

Regione Liguria contributes to NATURE-SDI*plus* as a data provider.

Fraunhofer IGD (DE)

Fraunhofer IGD focuses on the development of product prototypes (hard- and software) and the realisation of concepts, models, and solutions for computer graphics and its adoption to specific application requirements. The work is rounded off by object-oriented basic research projects and the realisation of single devices and computer graphics systems with pilot character (e.g. virtual and augmented reality, mobile computing, and security technologies). Three of the major subjects, Fraunhofer IGD is dealing with are industrial applications, animation and image communication as well as graphical information systems, with the focus on spatial and geographic information systems.

The tasks of the Graphic Information Systems (GIS) Department are research, development and services in the field of Graphic Information Systems, especially on 3D GIS, Location-based Services and Geo- & Metadata-Services. The activities cover research as well as end-user and producer-relevant services. The department has broad experience in the execution of national and international projects.

As technical partner, the organisation is responsible for the task on test of data searching and accessibility.

ATEN - Atelier Technique des Espaces Naturels (FR)

ATEN, the Atelier Technique des Espaces Naturels, is a public technical organisation, set up in 1997 under a mandate of the French Ministry of Environment, that brings together in a unique partnership 7 public and private organisations involved in nature conservation. It represents a network of professional networks since some of the members are already structured as a network, such as the Federations of national parks and of regional nature parks. It is a financially independent and non-profit making. ATEN provides its 7 members with the means to gather, develop and disseminate knowledge and methods for the sustainable management of natural areas.

ATEN main mission is to serve the needs of natural areas managers to ensure a better management.

ATEN has been participating to several European projects, some related to Natura2000 giving the organisation the opportunity to develop networks and to benefit from the transfer of experiences on the management of protected areas. It is also an active partner of the Natura2000 Network Program implemented by Eurosite. Further details could be found, visiting ATEN's website: www.espaces-naturels.fr.

In NATURE-SDI*plus*, ATEN plays the role of data provider as well as of coordinator of French data providers.

University of Zilina (SK)

University of Zilina, former University of Transport and Communications, is one of the major provider of higher education University of Zilina is one of the major provider of higher education in transport, communications and related domains in Slovakia. University staff has rich experience with participation in the international projects, it has been co-ordinator of FP6 projects INTRANSNET, SurfTran, Etra.cc project and participant in the FP6 Network of Excellence EURNEX project. In the domain of Geographic Information the University participated in the projects INCO—COPERNICUS WELL-GIS and PANEL-GI projects, in the FP5 IST "NATURE-GIS" and in Leonardo da Vinci "GI-Indeed" projects as well as in numerous educational projects in the EU programmes TEMPUS and SOCRATES. Its staff expertise in the GI domain is mostly in its use for logistics, environmental impact of transport constructions, as well as protection of the biodiversity at its specialised Institute of Mountain Biology.

In NATURE-SDI*plus*, the institution serves as the network organiser and coordinator of data providers at national level.

NEN – Nederlands Normalisatie-Instituut (NL)

NEN is the standardization body for The Netherlands. It hosts the secretariat of CEN/TC 287 "Geographic information" The TC was reformed to galvanise the geographic standardisation process in Europe. With its very close links to its international counterpart ISO/TC 211, to the Open Geospatial Consortium (OGC) and to the European directive INSPIRE, TC 287 is rolling out a series of standards that offer interoperability in Europe. CEN/TC 287 relies on the support of National standards bodies to nominate experts and delegates from their respective countries. Since 2003, when TC 287 was re-established more than 30 standards have been published in all 30 European member countries and another 10 or 20 will be published in the next few years including European profiles of International standards.

In NATURE-SDI*plus,* NEN covers the role of standardisation body, responsible of the task on this specific theme.

Fig. 4: The NATURE-SDI*plus* partners at the kick-off meeting of the project (Genoa, 6-8 November, 2008)

News and Events

GSDI 11 WORLD CONFERENCE
Rotterdam (NL) 15—19 June 2009

Spatial Data Infrastructure Convergence: Building SDI Bridges to Address Global Challenges.

The 11th edition of the GSDI Conference will take place in Rotterdam, the Netherlands.

Partners in organizing this conference include the GSDI Association, Geonovum, Joint Research Center (JRC) of the European Commission, EUROGI, Space for Geoinformation Innovation Program (RGI) and Delft University of Technology.

Three major components of this conference include:

- the Eleventh International Conference of the GSDI Association,
- **the Third INSPIRE Conference**, and
- a national conference on Dutch SDI Results and Challenges,.

While some conference sessions and tracks are being organized by the separate associations, the call for papers applies to all interested parties from any disciplinary sector and the vast majority of workshops, paper sessions, social events and business meetings offered throughout the week are open to all conference registrants.

Further information at: http://gsdi.org/gsdi11/

*e*Content*plus* projects clustering at GSDI 11

During the GSDI 11 World Conference, two consecutive workshops dealing with *e*Content*plus* projects on Geographical Information are organised.

The common framework for the two workshops is based on SDI INSPIRE related best practices addressed by five co-funded EC projects, one of them concerning a European wide case analysis (eSDI-Net+) and the four others concerning eContentplus thematic implementations (GIS4EU, EURADIN, **NATURE-SDI*plus***, and OneGeology-Europe).

These workshops create the opportunity for all five projects to present the lessons learned and the best practices identified in the respective projects and to show their overlapping interest and synergies.

The organised workshops, held on 15th June in the afternoon, are respectively:

- Workshop 3.4: Lessons Learned and Best Practices from **GI-SDI Projects I**: Examples of **eContentplus Projects**. Part 1: The eContentplus Program and the eSDI-Net+ Network", and
- Workshop 4.4: Lessons Learned and Best Practices from GI-SDI Projects II: Examples of eContentplus Projects. Part 2: GIS4EU, EURADIN, **NATURE-SDI*plus***, OneGeology Europe.

Both workshops are intended to transfer knowledge about the methodologies applied in the different projects, best practices, technical aspects and organisational constraints, as well as to provide the attendees with tools for enhancing SDI implementation approaches on other domains.

They will start with an introduction on the target and the perspectives of the *e*Content*plus* program of the European Commission, which sets the path for all projects. The workshop attendees are welcome to share experiences and perspectives, discuss the results obtained and interact about the evaluation process, being expected to acquire the basic knowledge for further engagement through follow up initiatives. For further information: http://gsdi.org/gsdi11/workshops.html

Projects Exhibition

The following EC "Inspired" projects will be present at the GSDI 11 exhibition, hosted in the EUROGI stand:

- ESDI-Netplus - European Network on Geographic Information Enrichment and Reuse
- EURADIN – European Address Infrastructure
- GIGAS - GEOSS, INSPIRE and GMES an Action in Support
- GIS4EU - Provision of Interoperable Datasets to open GI to the EU Communities
- HUMBOLDT - Towards the Harmonisation of Spatial Information in Europe
- **NATURE-SDI*plus* - Best Practice Network for SDI in Nature Conservation**
- NESIS - A Network to enhance a European Environmental Shared and Interoperable Information System
- OneGeology-Europe
- Plan4all - European Network of Best Practices for Interoperability of Spatial Planning Information
- VESTA-GIS - Vocational Education and Sectoral Training network on GIS & GI Application domains

NATURE-SDI*plus* presence in the GSDI 11

NATURE-SDI*plus* contributes in the GSDI 11 event through:

- Participation to the Workshop 4.4 "Lessons Learned and Best Practices from GI-SDI Projects II: Examples of *e*Content*plus* Projects";
- Presentation of a NATURE-SDI*plus* poster;
- Presence at the EC projects exhibition with dissemination material of the project such as leaflets, newsletters and poster

Announcement: NATURE-SDI*plus* Conference in Montpellier (FR) - October 2009

The first **NATURE-SDI*plus* Conference,** open to the network stakeholders, will be held on the occasion of the next Project Meeting of NATURE-SDI*plus,* organized in Montpellier (FR) on 7 - 10 October 2009 by the partner ATEN.

For further information related to conference (date, venue, logistics) visit the NATURE-SDI*plus* web site at: www.nature-sdi.eu.