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R&D State-of-the-art report

D2.3

Annex I: SWOT analysis of the projects

ENERGIC OD
European NEtwork for Redistributing Geospatial Information to user Communities - Open Data

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Project title	European NEtwork for Redistributing Geospatial Information to user Communities - Open Data
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[1] R = Report, P = Prototype, D = Demonstrator, O = Other

[2] PU = Public, PP = Restricted to other programme participants (including the Commission Services), RE = Restricted to a group specified by the consortium (including the Commission Services), CO = Confidential, only for members of the consortium (including the Commission Services).

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1 COMPARATIVE SWOT ANALYSIS OF SELECTED PROJECTS FROM D2.2

1.1 EuroGeoSource - EU Information and Policy Support System for Sustainable Supply of Europe with Energy and Mineral Resources

1.1.1 Brief description of the project[3]

EuroGeoSource is a data portal, which allows access by Internet to the aggregated geographical information on geo-energy (oil, gas, coal etc.) and mineral resources (metallic and non-metallic minerals, industrial minerals and construction materials: gravel, sand, ornamental stone etc.), coming from a wide range of sources in a significant coverage area of Europe (ten countries). The project is co-funded by the Competitiveness and Innovation Framework Programme (CIP), under the Policy Support Programme (PSP), Geographic Information Theme.

The aim of the project is to provide information on oil and gas fields, including prospects and mineral deposits, in order to stimulate investment in new prospects for geo-energy resources, as well as in renewing production at mines undergoing economic decline or closure, contributing this way to the independence of the EU having to import valuable minerals from outside resources.

By developing web services for sharing spatial data between public organizations and authorities (including EC and EU research and policy making institutions), as well as commercial stakeholders, the project will enable the creation of value-added services (such as demand-supply modeling) for the sustainable geo-energy and mineral supply of Europe.

The portal will welcome all other national/local data providers who wish to join in these initiatives by either using the web services to deliver their data on the Internet (according to their licensing conditions), or by incorporating these services into their own applications.

The practical implementation of the spatial infrastructure for oil and gas and mineral deposit data sets will also contribute to themes 20 and 21 of Annex III of the INSPIRE Directive.

The EuroGeoSource outputs are intended for the use of the European Commission and its institutions, EU and national geo-energy and mining authorities, oil, gas and mining companies, investment companies, geological surveys, research institutes, universities and the general public.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191726_es.html
Official page	http://www.eurogeosource.eu/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme CIP-ICT-PSP.2009.6.2 - Geographic Information Call for proposal CIP-ICT-PSP-2009-3 Project reference 257641
From/to	2010-04-01 → 2013-03-31
Total cost	EUR 2 591 793
EU contribution	EUR 1 295 894
Coordinated by	Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek – TNO (Netherlands)
Participants	Institut Royal Des Sciences Naturelles De Belgique (Belgium), Ministry Of Economy, Energy And Tourism (Bulgaria), Geological Survey of Denmark and

[3] Source: http://www.eurogeosource.eu/

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	Greenland (Denmark), Eesti Geoloogiakeskus OÜ (Estonia), Universidad de Zaragoza (Spain), GeoSpatiumLab SL (Spain), Magyar Foldtani Es Geofizikai Intezet (Hungary), Regione Emilia Romagna (Italy), Geodan Software Development & Technology b.v. (Netherlands), Panstwowy Instytut Geologiczny - Panstwowy Instytut Badawczy (Poland), Laboratorio Nacional de Energia e Geologia I.P. (Portugal), Institutul Geologic Al Romaniei (Romania), Geoloski Zavod Slovenije (Slovenia)

1.1.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	EuroGeoSource is a data portal, which allows access by Internet to the aggregated geographical information on geo-energy and mineral resources, coming mainly from OGC & INSPIRE compliant web services their partners.
S2. Technologies	OGC & INSPIRE compliant web services for sharing spatial data. Development of multilingual translation service to support multilingualism. [EuroGeoSource D7.1] Portal accessible through: desktop browser, Android app, Windows RT and Microsoft PixelSense application [EuroGeoSource D8.1]. All components are open source. [EuroGeoSource D9.2] A SPARQL end point has been added to provide queries to the data in the project as linked data in RDF. [EuroGeoSource D8.1]
S3. Standards	Development of a harmonised INSPIRE compliant data model (EGS data model) for thematic data (Energy and Mineral resources). The data model includes an exchange format defined in XML and XSD. The “openness” of each attribute is analyzed. [EuroGeoSource D4.1 & D4.2]
S4. Brokered approach	They provide a single point of access to harmonised data. [EuroGeoSource D6.2]
W1. Reuse	The coverage of EuroGeoSource is limited to ten European countries (the ones of the consortium).
W2. Technologies	
W3. Standards	The developed data model (EGS data model) is not completely aligned with the corresponding ones in INSPIRE.
W4. Brokered approach	Not really brokered (the harmonisation of data is done offline through ETLs to comply with the EGS data model, and the compliant data are harvested. [EuroGeoSource D6.2]
O1. Impact	The project took into account the integration of additional data providers. The project searched for potential users (organizations) and additional providers.
O2. Dissemination	Workshops, final seminar, other events, articles, papers, abstracts, newsletters, flyers

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Question	Answer
O3. Viability	Sustainability of partners web services based on INSPIRE obligations. [EuroGeoSource D11.3]
T1. Impact	The project failed at the creation of value-added services. [EuroGeoSource D11.3] The project has not attracted more countries to include their data regarding Energy and Mineral resources in the portal.
T2. Dissemination	Dissemination strategy was not original; it is hard to assess its impact regarding projects' impact and viability.
T3. Viability	Sustainability of the EuroGeoSource system and portal assured just for 3 years after project end. [EuroGeoSource D11.3] There is no business model to support the sustainability of the portal from the revenues of commercial services offered by the system. [EuroGeoSource D11.3]

1.1.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Focused on providing access to GI ▪ OGC & INSPIRE compliant web services for sharing spatial data. ▪ Support of multilingualism. ▪ Experience with SPARQL end points and linked data in RDF. ▪ Development of a harmonised data model (EGS data model) for thematic data (Energy and Mineral resources), mapped to INSPIRE energy and mineral themes.	▪ The architectural approach is not really brokered
External	**OPPORTUNITIES**	**THREATS**
	▪ The project took into account the integration of additional data providers. ▪ The project searched for potential users (organizations) and additional providers.	▪ The project failed at the creation of value-added services. ▪ The project did not attract more countries to include their data regarding Energy and Mineral resources in the portal. ▪ Dissemination strategy was not original; it is hard to assess its impact regarding projects' impact and viability. ▪ No business model to support the sustainability of the portal from the revenues of commercial services offered by the system.

1.1.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Development of a harmonised data model (**EGS data model**) for thematic data (Energy and Mineral resources), mapped to INSPIRE "energy resources" and "mineral resources" themes. The data model includes an exchange format defined in XML and XSD. The "openness" of each attribute is analyzed. [EuroGeoSource D4.1 & D4.2]
- The project references in [EuroGeoSource D4.1] to the **EarthResourceML Data Exchange Model**[4], an XML-based data transfer standard for the exchange of digital information for mineral occurrences, mines and mining activity. The model describes the geological features of mineral occurrences, their commodities, mineral resources and reserves. It is also able to describe mines and mining activities, and the production of concentrates, refined products, and waste materials.
- A **multilingual translation service** was created to deal with multilingualism with an OGC-service like interface [EuroGeoSource D7.1].
- A **protocol for machine-readable cache policies in OGC web services,** developed in order to provide an efficient access to the contents provided through OGC web services, while allowing the data providers to express the conditions required to allow or to forbid cache and harvesting conditions in a machine-readable way [Béjar, 2014].

1.2 ENVISION – ENVIronmental Services Infrastructure with Ontologies

1.2.1 Brief description

The ENVISION project provides an ENVIronmental Services Infrastructure with Ontologies that aims to support non ICT-skilled users in the process of semantic discovery and adaptive chaining and composition of environmental services. Innovations in ENVISION are: on-the-Web enabling and packaging of technologies for their use by non ICT-skilled users, support for migrating environmental models to be provided as models as a service (Maas), and the use of data streaming information for harvesting information for dynamic building of ontologies and adapting service execution.

The ENVISION Environmental Decision Portal supports the creation of web-based applications enabled for dynamic discovery and visual service chaining. The ENVISION Ontology Infrastructure provides support for visual semantic annotation tools and multilingual ontology management. The ENVISION Execution Infrastructure comprises a semantic discovery catalogue and a semantic service mediator based on a generic semantic framework and adaptive service chaining with data-driven adaptability.

Scenario requirements and pilots from the ENVISION user partners focus on landslide hazard assessment and environmental pollution (oil spills) decision support systems. The benefit of ENVISION for the wider community will be better accessibility to modelling tools using the Web and it will provide greater flexibility through improved connections to distributed sources of information.

The technology partners contribute their technologies for semantic service discovery and chaining based on semantic annotations as a foundation for the infrastructure of ENVISION.

The impact of the project is ensured through strong partner participation and leadership in relevant standardisation communities (e.g. INSPIRE, OGC, ISO/TC211, OMG and OASIS), in user communities like SEISnet and EuroGeoSurveys and through the development of open-source software and reference implementations supporting open standards.

CORDIS permalink	http://cordis.europa.eu/project/rcn/93797_en.html

[4] http://www.earthresourceml.org/

Official page	http://www.envision-project.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogram: ICT-2009.6.4 Call for proposal FP7-ICT-2009-4 Project reference 249120
From/to	2010-01-01 → 2012-12-31
Total cost	EUR 5 483 504
EU contribution	EUR 4 165 084
Coordinated by	Stifelsen Sintef (Norway)
Participants	Universitaet Innsbruck (Austria), Westfaelische Wilhelms-Universitaet Muenster (Germany), Bureau De Recherches Geologiques Et Minieres (France), National And Kapodistrian University Of Athens (Greece), Statens Kartverk (Norway), CS Romania SA (Romania), Institut Jozef Stefan (Slovenia)

1.2.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Single collaborative web-based platform exposed as a service/portal for environmental data exchange, model sharing and model composition (MaaS). [ENVISION D3.1] Backend components can be reused in different applications. Software developed in this project is open source. [ENVISION D7.5]
S2. Technologies	Java Portlets (IPC, JSR 286: Portlet Specification 2.0) Semantic annotation of services Tools for combining and composing data Tools for tailoring specific applications [ENVISION D2.1]
S3. Standards and specifications	OGC Standards (WFS, WCS, SOS, WPS, NetCDF, …) W3C Standards (WSDL, SOAP, …) [ENVISION D2.1]
S4. Brokered approach	ENVISION platform is by design a data broker.
W1. Reuse	Developing new applications with the given framework depends on being able to use and understand several different components of the system. [ENVISION D6.4] To utilize full feature range additional work is required.
W2. Technologies	No weaknesses could be identified here.
W3. Standards and specifications	Some data sources do not adhere to the above mentioned standards.
W4. Brokered approach	Operation and maintenance spread across many partners and locations [ENVISION D2.1]

Question	Answer
O1. Impact	The pilot cases aimed at the environmental community but impact far beyond that is possible. Platform deployed with Norwegian Mapping Authority, Deployment planned in other countries (e.g. Romania) and authorities. [ENVISION D1.6]
O2. Dissemination	Project is openly available on the web, workshops [ENVISION D7.5] [ENVISION D7.9] [ENVISION D7.10] [ENVISION D7.11]
O3. Viability	Integrated with INSPIRE, SEIS, GMES
T1. Impact	Very few instances of the platform are in use.
T2. Dissemination	Large user-base is required to annotate map data in meaningful way No native support of mobile devices.
T3. Viability	Availability of web based services dependent on continued maintenance of suitable server infrastructure

1.2.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Additional information and data provided ▪ Based on INSPIRE infrastructure, SEIS, GMES initiative	**WEAKNESS** ▪ Very dependent on standardized data sources ▪ Additional work required to utilize features
External	**OPPORTUNITIES** ▪ Easy sharing of environmental information with a given community ▪ Involved communities could provide valuable additional data to existing catalogues	**THREATS** ▪ Possible lack of collaborations ▪ Continued operation and maintenance of necessary server infrastructure ▪ Usage under very narrow constraints due to framework

1.2.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Exploration [ENVISION D3.1] and implementation [ENVISION D3.4] of MaaS concept
- Development of Multilanguage Ontolgy-based Semantic Annotation [ENVISION D4.1]
- Development of Adaptive Execution Infrastrucure as a core piece of the ENVISION framework [ENVISION D6.1]
- Development of a Semantic Catalogue for enhanced access to OGC based services [ENVISION D5.1]

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1.3 SeaDataNet-II – Pan-European infrastructure for ocean and marine data management

1.3.1 Brief description of the project

The overall objective of the SeaDataNet II project is to upgrade the present SeaDataNet infrastructure into an operationally robust and state-of-the-art Pan-European infrastructure for providing up-to-date and high quality access to ocean and marine metadata, data and data products originating from data acquisition activities by all engaged coastal states, by setting, adopting and promoting common data management standards and by realising technical and semantic interoperability with other relevant data management systems and initiatives on behalf of science, environmental management, policy making, and economy. SeaDataNet is undertaken by the National Oceanographic Data Centres (NODCs), and marine information services of major research institutes, from 31 coastal states bordering the European seas, and also includes Satellite Data Centres, expert modelling centres and the international organisations IOC, ICES and EU-JRC in its network. Its 40 data centres are highly skilled and have been actively engaged in data management for many years and have the essential capabilities and facilities for data quality control, long term stewardship, retrieval and distribution.

SeaDataNet II will undertake activities to achieve data access and data products services that meet requirements of end-users and intermediate user communities, such as GMES Marine Core Services (e.g. MyOcean), establishing SeaDataNet as the core data management component of the EMODNet infrastructure and contributing on behalf of Europe to global portal initiatives, such as the IOC/IODE – Ocean Data Portal (ODP), and GEOSS. Moreover it aims to achieve INSPIRE compliance and to contribute to the INSPIRE process for developing implementing rules for oceanography.

CORDIS permalink	http://cordis.europa.eu/project/rcn/100341_en.html
Official page	http://www.seadatanet.org/
Funded under	FP7 CP-CSA-Infra - Combination of CP and CSA Subprogramme: INFRA-2011-1.1.14. - Multidisciplinary Marine Data Centres Call: FP7-INFRASTRUCTURES-2011-1
From/to	2011-10-01/2015-09-30
Total cost	7 575 312,51
EU contribution	6 000 000
Coordinated by	Institut Français de Recherche pour l'exploitation de la Mer (France)

Participants	Mariene Informatie Service Maris Bv (Netherlands), Natural Environment Research Council (United Kingdom), Bundesamt Fur Seeschifffahrt Und Hydrographie (Germany), Sveriges Meteorologiska Och Hydrologiska Institut (Sweden), Instituto Español de Oceanografía (Spain), Hellenic Centre For Marine Research (Greece), Istituto Nazionale Di Oceanografia E Di Geofisica Sperimentale (Italy), All-Russian Research Institute Of Hydrometeorological Information-World Data Centre (Russia), Agenzia Nazionale Per Le Nuove Tecnologie,L'energia E Lo Sviluppo Economico Sostenibile (Italy), Istituto Nazionale Di Geofisica E Vulcanologia (Italy), Middle East Technical University (Turkey), Collecte Localisation Satellites Sa (France), Alfred-Wegener-Institut Helmholtz- Zentrum Fuer Polar- Und Meeresforschung (Germany), Universite De Liege (Belgium), Havforskningsinstituttet (Norway), Aarhus Universitet (Denmark), International Council for the Exploration of the Sea (Denmark), JRC -Joint Research Centre- European Commission (Belgium), Marine Institute (Ireland), Instituto Hidrografico (Portugal), Stichting Nioz, Koninklijk Nederlands Instituut Voor Onderzoek Der Zee (Netherlands), Institut Royal Des Sciences Naturelles De Belgique (Belgium), Vlaams Instituut Voor De Zee VZW (Belgium), Hafrannsoknastofnunin (Iceland), Ilmatieteen Laitos (Finland), Instytut Meteorologii I Gospodarki Wodnej - Panstwowy Instytut Badawczy (Poland), Tallinna Tehnikaulikool (Estonia), Latvijas Hidroekologijas Instituts (Latvia), Aplinkos Apsaugos Agentura (Lithuania), P.P. Shirshov Institute Of Oceanology Of Russian Academy Of Sciences (Russia), Marine Hydrophysical Institute - Ukrainian National Academy Of Sciences (Ukraine), Institute Of Oceanology - Bulgarian Academy Of Sciences (Bulgaria), Institutul National De Cercetare-Dezvoltare Marina Grigore Antipa (Romania), Ivane Javakhishvili Tbilisi State University (Georgia), Institute of Oceanography and Fisheries (Croatia), Nacionalni Institut Za Biologijo (Slovenia), Universita Ta Malta (Malta), University Of Cyprus (Cyprus), Israel Oceanographic And Limnological Research Limited (Israel), Consiglio Nazionale Delle Ricerche (Italy), A.O. Kovalevskiy Institute Of Biology Of Southern Seas (Ukraine), Universitaet Bremen (Germany), Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu (Turkey)

1.3.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	SeaDataNet II has the specific objective of reusing and advancing the existing SeaDataNet infrastructure

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Question	Answer
S2. Technologies	▪ Editing and generating XML metadata entries: MIKADO javatool ▪ Tool for the generation of spatial objects from vessel navigation during observations: EndsAndBends ▪ Conversion of the Medatlas format to the SeaDataNet Medatlas format: Med2MedSDN ▪ Conversion of the SeaDataNet Medatlas format to the SeaDataNet NetCDF (CFPOINT) format: MedSDN2CFPOINT ▪ Conversion of the SeaDataNet ODV format to the SeaDataNet NetCDF (CFPOINT) format: OdvSDN2CFPOINT ▪ Conversion of any ASCII format to the SeaDataNet ODV4 ASCII format: NEMO javatool ▪ Conversion of SeaDataNet ODV or MEDATLAS with V1 vocabs to NVS V2.0: Change_Vocab_V1toV2 ▪ Connecting systems of Data Centres to the SeaDataNet portal for data access: Download Manager javatool ▪ Analysing and visualising of data sets: Ocean Data View (ODV) software package ▪ Interpolation and variational analysis of data sets: DIVA software package
S3. Standards and specifications	All SeaDataNet metadata services (CSR, CDI, EDMED, EDMERP and EDIOS) make use of XML formats and exchange schema's (XSD). These are based upon the ISO 19115 content model. SeaDataNet Common Vocabularies and the EDMO directory (European Directory of Marine Organisations) The following data transport formats have been defined: SeaDataNet ODV4 ASCII for profiles, time series and trajectories, SeaDataNet NetCDF with CF compliance for profiles, time series and trajectories, SeaDataNet MedAtlas as optional extra format, NetCDF with CF compliance for 3D observation data such as ADCP
S4. Brokered approach	The SeaDataNet II infrastructure can be brokered by the GI-suite Brokering Infrastructure. (It is actually already brokered by the GEO DAB in GEOSS).
W1. Reuse	SeaDataNet infrastructure is accessible through a data portal. Implementation of INSPIRE compliance (ISO 19139 for metadata, and CSW/ISO interface) is under development
W2. Technologies	Some technologies are specifically tailored to SeaDataNet needs
W3. Standards and specifications	SeaDataNet II builds on the existing SeaDataNet infrastructure which implemented legacy formats (e.g. CDI)
W4. Brokered approach	SeaDataNet II investigated the use of brokering approach in its infrastructure, but so far it still adopts the SeaDataNet federation approach based on a common model (agreed interfaces, metadata and data formats)

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Question	Answer
O1. Impact	SeaDataNet Consortium includes relevant actors from all the marine areas in Europe assuring a wide impact. SeaDataNet is widely recognized as one of the main initiatives on marine data sharing in Europe.
O2. Dissemination	
O3. Viability	The SeaDataNet initiative received sustained funding from the EC through SeaDataNet (2006-2011) and SeaDataNet II (2012-2015)
T1. Impact	The integration of different projects and initiatives on marine data sharing (e.g. JERICO, EuroARGO, EMSO, MyOCEAN) is not clear and may affect the impact of the project
T2. Dissemination	
T3. Viability	Different options are under exploration (ESFRI, H2020, EMODnet), but all based on EC funding [SDN2 FO]

1.3.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ SeaDataNet II operational infrastructure deployed and working ▪ Several technologies and specs available	**WEAKNESS** ▪ Infrastructure and technology under development and upgrade, in particular to improve standard compliance ▪ Some provided technology is tailored to SeaDataNet needs.
External	▪ ▪ SeaDataNet II infrastructure can be brokered by the GI-suite Brokering Framework	▪ ▪ Still adopting some legacy specification and format ▪ Competing with other initiatives in Europe on marine data sharing

1.3.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- **SeaDataNet infrastructure**: The SeaDataNet infrastructure can be brokered by the GI-suite Brokering Framework and can provide several marine datasets.

1.4 CryoLand – GMES Service Snow and Land Ice

1.4.1 Brief description

CryoLand is a project aimed at developing, implementing and validating a standardized and sustainable download service on snow and land ice monitoring within Copernicus, the European EO Programme, in a value added chain with the GMES Land Monitoring Core Service. The download service developed in CryoLand provides geospatial products on the seasonal snow cover, glaciers, and lake / river ice derived

from EO satellite data in response to user needs. CryoLand prepare the basis for a future cryospheric component of the GMES Land Monitoring Service.

CryoLand objectives include:

- Development and validation of a pan-European satellite-based snow and land ice service delivering highly needed products to the user society.
- Integration and operationalization of existing snow and land ice services.
- Preparation of tools for offering snow and ice services worldwide.
- Development of tools to utilize data from the GMES Sentinel Satellite Series for snow and ice applications.
- Performing verification and real time demonstration of the services.
- Preparation of the basis for the Cryosphere Component of a GMES Global Land Monitoring Service.
- Developing products conform to INSPIRE/GEOSS standards.
- Making products available via state-of the-art online services.
- Producing guidelines for stakeholders and for service deployment operations.

An important part of the project was the design, development and implementation of a network system for CryoLand services that ensured interoperability of infrastructure by compliance with INSPIRE and GEOSS, and by integration with the Land Monitoring Core Services, the GMES Space Component Data Access service, and the required in-situ and reference data access. During the project second phase full performance demonstration of the system and comprehensive promotion and dissemination work was planned in order to prepare for the transition to a self-sustained operational snow and land ice monitoring service.

CORDIS permalink	http://cordis.europa.eu/project/rcn/97901_en.html
Official page	http://www.cryoland.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/fp7/cooperation/ict_en.html) SPA.2010.1.1-01 - Stimulating the development of downstream GMES services Call for proposal FP7-SPACE-2010-1 Project reference 262925
From/to	2011-02-01 → 2015-01-31
Total cost	EUR 2 828 859
EU contribution	EUR 2 201 182
Coordinated by	Enveo Environmental Earth Observation Information Technology (Austria)
Participants	Eox It Services (Austria), Suomen Ymparistokeskus (Finland), Ilmatieteen Laitos (Finland), Kongsberg Satellite Services (Norway), Norsk Regnesentral Stiftelse (Norway), Northern Research Institute Tromso (Norway), Administratia Nationala De Meteorologie (Romania), Gamma Remote Sensing Research And Consulting (Switzerland), Sveriges Meteorologiska Och Hydrologiska Institut (Sweden)

1.4.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Data availability priorities in CryoLand are driven by the CryoLand User group [Nagler 2012]
S2. Technologies	They affirm to use OASIS Security standards [Triebnig 2011]

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Question	Answer
S3. Standards	CSW, WMS, WFS, WPS [Nagler 2012], CryoLand User group contributes actively to the consolidation of product and service specification by means of workshops [Nagler 2012]
S4. Brokered approach	No, CryoLand architecture is designed to support only product generation chains [Triebnig 2011].
W1. Reuse	There is no specific commitment for the development of tools for the reuse of geographic information in the sense of ENERGIC OD.
W2. Technologies	No technology can be considered as weak.
W3. Standards	The project emphasises the alignment with existing standards [Triebnig 2011].
W4. Brokered approach	CryoLand has a goal the development of new products and services. This project does not provide access to the original data [Nagler 2012]
O1. Impact	CryoLand user group includes more than 60 organisation from 12 countries [Nagler 2012]
O2. Dissemination	The results of the project are accessible.
O3. Viability	CryoLand User group contributes to the testing and evaluation of services and products [Nagler 2012]
T1. Impact	They have made an intense effort of dissemination in forums and maintain a user group. Hence, there is no threat to the impact of the project.
T2. Dissemination	The products and services are online. However the documentation about the project is scarce and not recent.
T3. Viability	Although one of the goals of the project was the creation of a self-sustainable infrastructure, this goal is not yet reached [Horizon 2015]

Disclaimer: CryoLand does not have sufficient public documentation to perform a more detailed review

1.4.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Use of OASIS standards for security ▪ Commitment to be driven by community needs	**WEAKNESS** ▪ No related to brokerage or reuse in the sense of ENERGIC OD. The objective is the creation of new products and services
External	**OPPORTUNITIES** ▪ They have been successful into the creation of a community of users. ▪ The project has developed a visible infrastructure related to the topics of the project.	**THREATS** ▪ Recent documentation is scarce. ▪ They have failed in to be self-sustainable.

1.4.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The versions of the CryoLand products and the demonstration of the CryoLand GeoPortal were presented by means of two dissemination workshops5,6 among final users including JRC and ESA. Users also presented their needs and provided feedback to improve CryoLand outcomes. All the documentation presented at the dissemination workshops is available.
- As part of the dissemination strategy, the project was presented on several conferences and symposiums related to the topics of the project during the two first years.

1.5 EarthServer – European Scalable Earth Science Service Environment

1.5.1 Brief description of the project

EarthServer aimed at open access and ad-hoc analytics on Earth Science (ES) data, based on the OGC geo service standards Web Coverage Service (WCS) and Web Coverage Processing Service (WCPS). The WCS model defines "coverages" as unifying paradigm for multi-dimensional raster data, point clouds, meshes, etc., thereby addressing most of Earth Science data. WCPS as aka "XQuery for raster data" allows declarative, SQL-style queries on coverages. [EarthServer]

CORDIS permalink	http://cordis.europa.eu/project/rcn/99766_en.html
Official page	http://earthserver.eu/
Funded under	FP7 CP/CSA INFRA-2011-1.2.1. - e-Science environments Call: FP7-INFRASTRUCTURES-2011-2
From/to	2011-09-01/2014-08-31
Total cost	4 949 772
EU contribution	4 000 000

[5] http://cryoland.enveo.at/news-and-events/83-1st-dissemination-workshop

[6] http://cryoland.enveo.at/news-and-events/87-2nd-dissemination-workshop

Co-funded by the European Union

Coordinated by	JACOBS UNIVERSITY BREMEN GGMBH Germany
Participants	EOX IT SERVICES GMBH Austria FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V Germany RASDAMAN GMBH Germany ATHENA RESEARCH AND INNOVATION CENTER IN INFORMATION COMMUNICATION & KNOWLEDGE TECHNOLOGIES Greece METEOROLOGICAL AND ENVIRONMENTAL EARTH OBSERVATION SRL Italy CONSIGLIO NAZIONALE DELLE RICERCHE Italy COMETA CONSORZIO MULTI ENTE PER LAPROMOZIONE E L ADOZIONE DI TECNOLOGIE DI CALCOLO AVANZATO Italy NATURAL ENVIRONMENT RESEARCH COUNCIL United Kingdom PLYMOUTH MARINE LABORATORY United Kingdom

1.5.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	EarthServer technological approach was successfully based on re-use, integration and improvement of: a) software provided by partners, b) standard specifications. The majority of project outcomes are provided as open source software and open specifications. EarthServer had a strong interaction with OGC for the advancement of standards. Several partners were co-chairs and members of relevant OGC SWGs.
S2. Technologies	EarthServer built on a core technology: the rasdaman array database advancing its functionalities and improving performances. A clear metric (data volume, time required for data ingestion) was defined to evaluate achievements. EarthServer investigated a specific approach in big data analytics, based on the support of a query language extending SQL. This approach is intermediate between a very specific processing (WPS approach) and a generic processing support (e.g. through a full programming language as in Google Earth Engine).
S3. Standards and specifications	EarthServer adopted and advanced a wide set of OGC specifications including: CF-netCDF, GeosciML, WCS, WCPS.
S4. Brokered approach	The adoption of the brokered approach was not foreseen in EarthServer. However, a pilot on the integration of the EarthServer architecture and the brokering approach based on the GI-suite brokering framework (adopted in FP7 GEOWOW) was successfully carried out in the OGC Architecture Implementation Pilot Phase 6 (AIP-6) as an EarthServer-GEOWOW joint activity.

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Question	Answer
W1. Reuse	EarthServer was strongly focused on a specific technology (rasdaman array database). Rasdaman is delivered in two versions: an open-source Community Edition and a commercial Enterprise Edition sold by the Rasdaman GmbH company. Not all the advancements achieved in the project were included in the Community Edition (e.g. support of NULL values)
W2. Technologies	The EarthServer technology supports big data analytics for a specific set of use-cases involving a collection of typical EO processing functionalities on coverage-type (i.e. raster) data. The EarthServer technology may require a long time for data ingestion. EarthServer is conceived as a tool for big data analytics on very large datasets, but the most challenging test aimed 200 TB which is at the very low end of what big data is usually considered.
W3. Standards and specifications	Some standards proposed in EarthServer are defined by consortium partners, and the EarthServer platform is the reference implementation but still the only implementation. Therefore interoperability issues between different tools could exist and arise later.
W4. Brokered approach	At the time of the brokering pilot, processing capabilities were not standardized yet, and the pilot only focused on discovery and access.
O1. Impact	EarthServer was recognized as one of the European leading projects in the big data arena. EarthServer had participation of SMEs, and the main outcome (improved version of Rasdaman) is a product commercialized by a German company (Rasdaman GmbH). EarthServer Networking Activities included specific WPs focused on the outreach of scientific communities (Marine Science, Atmospheric Science and Solid Earth Science) and international initiatives such as EGU, GEO, INSPIRE. These activities were tasks assigned to partners belonging to the specific communities facilitating the interaction. [EarthServer CR] EarthServer has been tested with relevant big data providers including ESA.
O2. Dissemination	EarthServer organized several meetings and workshops piggybacking relevant conferences and industrial fairs including GEO side-events, EGU splinter meetings, INSPIRE annual conferences, FP7 project conferences, FOSS4EU conference.
O3. Viability	Sustainability beyond the projects duration was assured by the interest of the main technology provider (rasdaman GmbH).

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Question	Answer
T1. Impact	EarthServer platform is conceived as a stand-alone tool, and interaction with the outside world happens through standard interfaces. However, there are not many other implementers of those standards and other players in the big data arena may not be interested in do it. In particular big players, like Google Earth Engine, are not usually open to integrate other tools, and present themselves as possible strong competitors. Also space agencies may be interested in providing big data analytics capabilities, but it is not clear if they will be willing to bind to a specific tool, or to standards they do not control.
T2. Dissemination	
T3. Viability	The fact that the main outcome of the project is commercialized by a single entity, a SME, is an opportunity, but also a thread for providing the needed support to customers.

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1.5.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ EarthServer was recognized as one of the European leading projects in the big data arena. ▪ EarthServer worked on technological achievements keeping a strong alignment with the relevant international initiatives	**WEAKNESS** ▪ EarthServer technologies are focused on specific use-cases ▪ Not all the advancements achieved in the project were included in the open source Community Edition
External	**OPPORTUNITIES** ▪ The EarthServer approach of assigning outreach towards communities to partners belonging to the community itself was successful	**THREATS** ▪ EarthServer is a stand-alone technology competing with other solutions for big data analytics.

1.5.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Technologies
  - **EarthServer platform** : The EarthServer platform for big data analytics is able to provide processing on very large coverage datasets. However the usability in ENERGIC-OD should be investigated along several axes: a) EarthServer requires data ingestion while a VH is a « virtual » hub with data kept on the original infrastructure (this is also required by the subsidiarity principle of INSPIRE), b) EarthServer is a specific solution for coverage-type datasets, while the VH should be able to serve also feature-type data.
  - **WCPS** : The Web Coverage Processing Service standard is an OGC specification to invoke coverage processing based on a specific query language.
- Outreach
  - **Communities outreach** : the successful approach of interacting with scientific communities and international initiatives through partners belonging to them, was successful and could be replicated in ENERGIC-OD.

1.6 LIFE + IMAGINE - Integrated coastal area Management Application implementing GMES, INspire and sEis data policies

1.6.1 Brief description of the project[7]

LIFE+IMAGINE implements an infrastructure based on web services for environmental analysis, integrating in its own architecture specifications and results from INSPIRE, SEIS and GMES/Copernicus. Existing web services will be customized during the project to provide functionalities for supporting the integrated management of coastal zones (ICZM).

LIFE+IMAGINE infrastructure is applied for the environmental analysis of two scenarios, aiming at the achievement, in the short-term, of the following results:

- Landslides Scenario:
  - (re)shaping of risk analysis models, based on INSPIRE compliant datasets;

[7] Source: http://www.life-imagine.eu/what-lifeimagine-is/

- definition of standard procedures to create landslide risk maps, identifying, for specific meteorological events, the inference area of phenomena occurrence;
- definition of a procedure to evaluate environmental impacts, with a set of indicators to estimate % of population/ territory/infrastructures involved by landslide and/or floods events.

- Soil Consumption Scenario:
  - production, from multi-sources data, of indicators on the land consumption in coastal areas, incorporating historical information.
  - monitoring of changes in Land Cover, Land Use and related soil sealing in the past years.

Mid-term results, derived by the application in integrated coastal zone management (ICZM) of the LIFE+IMAGINE infrastructure, are expected to bring environmental benefits thanks to the availability of new, usable and accessible information to:

- better assess the impacts by landslides and land consumption, by calculating in which measure the investigated zone is affected by these phenomena.
- mitigate the impacts through the prevision and the monitoring of these phenomena.
- improve and, in a longer term, reshape the planning processes, by proposing interventions aimed at removing the impacts.

Pilot sites are for Regione Liguria the Tigullio Area (soil consumption scenario) and the Cinque Terre (landslides scenario) and for Regione Toscana the zone including Lunigiana, Versilia and Garfagnana, where both scenarios will be applied

CORDIS permalink	http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=4531
Official page	http://www.life-imagine.eu/home/
Funded under	LIFE+ Programme (call 2012) Project reference: LIFE12 ENV/IT/001054
From/to	2013-07-02 → 2016-07-01
Total cost	EUR 1 521 258
EU contribution	EUR 754 628
Coordinated by	Geographical Information Systems International Group (Italy)
Participants	Epsilon Italia SRL (Italy), Fondazione Graphitech (Italy), Istituto Superiore per la Protezione e la Ricerca Ambientale, ISPRA (Italy), Laboratorio di Monitoraggio e Modellistica ambientale per lo Sviluppo sostenibile, LAMMA (Italy), Regione Toscana (Italy)

1.6.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Production, from multi-sources data (local data and Copernicus data), of indicators on the land consumption in coastal areas. (Re)shaping of risk analysis models, based on datasets compliant with the INSPIRE Directive [LIFE+IMAGINE 1]

Question	Answer
S2. Technologies	Re-use of components developed within the eENVplus project as-is, in order to "plug" additional software components (WPS) on the existing infrastructure. Software components that will be used in the project are: ▪ Deegree 3.X: INSPIRE Web Services and INSPIRE compliant GML Ingestion. ▪ Geoserver 2.X: WPSs ▪ GeoBatch 1.0: Ingestion of not INSPIRE harmonized data. ▪ GeoNetwork 2.1: Catalogue. ▪ EUOSME 1.0.3: Metadata Editor. ▪ TF 1.0: Thesaurus Framework for metadata editing. ▪ PostGIS 2.0: Geographical Database. ▪ Cesium 1.X: WebGL-enabled client. [LIFE+IMAGINE 3]
S3. Standards and specifications	LIFE+IMAGINE implements an infrastructure based on web services for environmental analysis, integrating specifications and achievements from the INSPIRE Directive and the SEIS Communication and data from the GMES/Copernicus programme. One of the general objectives is standardizing operational workflows, dictated by EU environmental directives, making them re-usable and easily transferable thanks to their compliancy with INSPIRE. [LIFE+IMAGINE 2]
S4. Brokered approach	The architectural solution contains a set of "Ingestion Services". They will be responsible for ingesting, pre-processing and storing data received from external sources of information, external stakeholders as well as from other services. [LIFE+IMAGINE 3]
W1. Reuse	Use cases limited to the Italian regions of Liguria and Toscana.
W2. Technologies	Implementation phase has just begun. There are no visible results yet.
W3. Standards and specifications	-
W4. Brokered approach	Implementation phase has just begun. There are no visible results yet.
O1. Impact	It is possible to contact with the project team and to join the project mailing lists through the website. There is a LIFE+IMAGINE group in LinkedIn.
O2. Dissemination	The website of the project has some dissemination materials (leaflet, poster and workshops proceedings) labelled as "Publications".
O3. Viability	The project has not finished yet
T1. Impact	Not much activity in LinkedIn. No Twitter profile.

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Question	Answer
T2. Dissemination	Channel used to disseminate the results are the common ones in any EU project (website, social networks, meetings and conferences,…). If there are deliverables, they are not available. Some of the dissemination materials are written in Italian.
T3. Viability	The project has not finished yet

1.6.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Dealing with data and services according to INSPIRE, SEIS and GMES/Copernicus. ▪ Re-use of components developed in another EU project: eENVplus. ▪ Some components can be used to be integrated in a brokered architecture.	**WEAKNESS** ▪ Use cases limited to the Italian regions of Liguria and Toscana. ▪ Implementation phase has just begun. There are no visible results yet.
External	**OPPORTUNITIES** ▪ Workshops to disseminate the performed work.	**THREATS** ▪ The project has not finished yet. It is very soon to analyze the impact.

1.6.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- eENVplus project.
- GeoBatch[8] 1.0: Ingestion of not INSPIRE harmonized data

1.7 GIS4EU – Provision of interoperable datasets to open GI to EU

1.7.1 Brief description of the project

The GIS4EU project aim is to provide base cartography datasets for Europe on the following themes: administrative units, hydrography, transportation networks, elevation.

Therefore, the project intends to develop a common data model in order to enable access to consistent and homogenous reference data provided by cartographic authorities of different countries and levels (national, regional and local).

The project's main objective is to increase communication and networking relationships among the project partners to ensure it addresses cross scale, cross language and cross border interoperability and accessibility issues.

This is to create a common knowledge base and make spatial information more accessible according to standards and requirements of the INSPIRE Directive (20007/2/EC).

Each type of partner has particular experience and expertise, and through knowledge exchange and interdisciplinary work, the project can achieve meaningful results. Partners represent: Data providers on national, regional and local scale; Researchers; Technological partners; Users of spatial information.

[8] http://www.geo-solutions.it/technologies/geobatch

Europe's Information Society Thematic Portal link	http://ec.europa.eu/information_society/apps/projects/factsheet/index.cfm?project_ref=ECP-2006-GEO-310011
Official page	http://www.gis4eu.eu/
Funded under	eContentplus Programme (http://ec.europa.eu/econtentplus) Area: 3.1 - Targeted projects for geographic information
From/to	01/11/2007 → 31/07/2010
Total cost	€ 4 200 000
EU contribution	€ 2 100 000
Coordinated by	Consorzio per la Gestione del Centro di Coordinamento delle Activita di Ricerca Inerenti il Sistema Lagunare di Venezia (Italy)
Participants	Institut National Des Sciences Appliquees De Lyon (France), Intergraph Sg&I Deutschland Gmbh (Germany), Foldmeresi Es Taverzekelesi Intezet (Hungary), Universita Iuav Di Venezia (Italy), Universita Degli Studi Di Roma La Sapienza (Italy), Regione Piemonte (Italy), Regione Liguria (Italy), Regione Del Veneto (Italy), Insiel - Informatica Per Il Sistema Degli Enti Locali S.P.A. (Italy), Gisig Geographical Information Systems International Group Associazione (Italy), Consorzio Per Il Sistema Informativo (Csi Piemonte) (Italy), Consorzio Con Attivita Esterna Venezia Nuova (Italy), Comune Di Genova (Italy), Lodzkie*Wojewodztwo (Poland), Intergraph Polska Sp.Z O.O. (Poland), Instituto Geografico Portugues (Portugal), Vyskumny Ustav Geodezie A Kartografie V Bratislave (Slovak Republic), Univerzita Komenskeho V Bratislave (Slovak Republic), Universitat De Girona (Spain), Institut Cartografic De Catalunya (Spain), The University Of Nottingham (United Kingdom), Intergraph (Italia) L.L.C. (United States)

1.7.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The project provided base cartography datasets for Europe on administrative units, hydrography, transportation networks and elevation, using *a priori* existing data.
S2. Technologies	
S3. Standards and specifications	Common data models in administrative units, hydrography, transportation networks and elevation.
S4. Brokered approach	
W1. Reuse	
W2. Technologies	

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Question	Answer
W3. Standards and specifications	The project was coincident with the definition of the INSPIRE implementation rules, so there may be aspects of the proposed data models not conformant to the final implementation rules [GIS4EU D3.1]
W4. Brokered approach	The project approach was the harmonization of data to comply with a common model: an approach very different to the brokered approach to be used in ENERGIC OD.
O1. Impact	Spatial information more accessible according to standards and requirements of INSPIRE Impact on data providers, as they could acquire a major awareness of the technical and implementation aspects required for adopting the INSPIRE Directive. [GIS4EU Newsletter # 8] The project highlighted a series of implementation problems, which INSPIRE implementers will have to face during the further development of the next data models and during the implementation. [GIS4EU Newsletter # 8] Results of GIS4EU contributed to the INSPIRE process (testing phases, involvement of GIS4EU experts into the new TWGs, provision of reference materials to new TWGs for Annex II & III) and to some continuation projects (Plan4all, Nature-SDIplus, Briseide, ...) [Attardo, 2010] GIS4EU registered as a SDIC (Spatial Data Interest Community) via the “Call for Expression of Interest for INSPIRE development” in order to ensure closer cooperation with all aspects of the INSPIRE initiative and to provide direct feedback to the wider INSPIRE community, in particular through the “INSPIRE testing phase” [GIS4EU D6.1].
O2. Dissemination	
O3. Viability	The geoportal is still operative. The exploitation plan in the context of the project is a quantitative analysis of the project’s impact, taking in some aspects into account the cost for transformation, direct user value, institution operational impact possible strategic decision, social value and strategic and political value [GIS4EU D9.1 & D9.2]
T1. Impact	
T2. Dissemination	
T3. Viability	The ENERGIC OD exploitation plan will much differ from the GIS4EU one due to the different project characteristics.

1.7.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ The project provided base cartography datasets for Europe on thematic areas using *a priori* existing data. ▪ Development of common data models in administrative units, hydrography, transportation networks and elevation, together with methodologies and harmonization rules.	**WEAKNESS** ▪ The project was parallel with the definition of the INSPIRE implementation rules, and these later are compulsory. ▪ Data harmonization approach is opposite to the ENERGIC OD brokered approach.
External	**OPPORTUNITIES** ▪ Spatial information more accessible according to standards and requirements of INSPIRE ▪ Impact on data providers. ▪ Contribution to the INSPIRE process. ▪ Careful and measurable definition of its exploitation plan	**THREATS** ▪ The ENERGIC OD exploitation plan will much differ from the GIS4EU one due to the different project characteristics.

1.7.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Creation of common data models for administrative units, hydrography, transportation networks and elevation. It includes methodologies and harmonization rules (Merging Rules - Degradation Rules, Aggregation Rules - Degradation Rules). The project overlap up to a point the objectives of the INSPIRE Data Specification Drafting Teams. The later should be the reference to use in ENERGIC OD. Nevertheless, as the GIS4EU project used a priori existing data (as ENERGIC OD will do too) some deliverables from GIS4EU (such as [GIS4EU D3.6, D3.7, D4.1]) can be of relevance to the WP4 of ENERGIC OD

1.8 TaToo – Tagging Tool based on a Semantic Discovery Framework

1.8.1 Brief description of the project

TaToo aims to set up a semantic web solution to close the discovery gap that prevents full and easy access to environmental resources on the Web. The core of the project focuses on the development of tools allowing third parties to easily discover environmental resources on the Web (data and/or services residing on different information nodes) and to add valuable information in the form of semantic annotations to these resources, thus facilitating future usage and discovery, and kicking off a beneficial cycle of information enrichment. The proposed TaToo framework is of a generic, application-independent nature and allows the integration of semantics, taking into account the challenges of different domain-ontologies in a multi-domain and multilingual context.

TaToo provides three complex and extensive Validation Scenarios and therefore targets skilled or expert users as the primary user group. TaToo encourages external validation of the usability of its framework and tools by scientific communities such as the International Environmental Modelling and Software Society (iEMSs), the International Federation of Information Processing (IFIP), and members of the Central and Eastern European Centre for Persistent Organic Pollutants (CEEPOPsCTR). TaToo positively stimulate the European Economy because environmental resources will become more attractive by accumulating

exploitable descriptions which are enhanced by expert users' knowledge and linked with other knowledge domains.

TaToo has one major objective: To contribute to closing the discovery gap in the Single Environmental Information Space in Europe for the Environment (SISE) by developing easy to use tools within a semantic framework for discovery of and access to environmental resources in a multilingual and multi-domain context.

This involves a set of scientific and technological objectives that need to be achieved in order to reach the major objective.

The scientific objectives of this project focus on the study, evolution, design, and realization of methods that support the discovery of environmental resources on the Web. The main focus here is to: provide a methodology for structuring the acquired meta-information and design and implement a software architecture for the semantically enhanced tagging of environmental resources (data and services), allowing for 'indirect tagging', which is the tagging of resources not directly owned by the tagging user. The scientific objectives listed above will be converted into technological objectives, in order to deliver a set of tools to support semantic tagging and discovery of environmental resources:

a) tool(s) for tagging discovered or already known resources

b) tool(s) for semantically based validation, verification and evaluation of tags

c) standard or open and published service interfaces to search for and retrieve the semantically tagged resources

d) provision of a set of reusable web components which allow independent actors (e.g. service companies or administrations) to move to a business model working as providers of environmental metainformation services or resources of various owners.

CORDIS permalink	http://cordis.europa.eu/project/rcn/93778_en.html
Official page	http://portal.tatoo-fp7.eu/
Funded under	FP7 ICT
From/to	2010 – 2012
Total cost	3 814 393
EU contribution	2 525 599
Coordinated by	AIT Austrian Institute of Technology GmbH
Participants	JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION (Belgium) SCUOLA UNIVERSITARIA PROFESSIONALE DELLA SVIZZERA ITALIANA (SUPSI) (Switzerland) Masarykova univerzita (Czech Republic) cismet GmbH (Germany) ATOS SPAIN SA (Spain) TELESPAZIO SPA (Italy)

1.8.2 Identification of the SWOT of the project

Question	Answer

Question	Answer
S1. Reuse	Yes. The goal of TATOO is to use existing environments data from different sources on the web.
S2. Technologies	Yes. It makes reference on the ORCHESTRA (http://www.eu-orchestra.org) and SANY-SA (http://cordis.europa.eu/project/rcn/79757_en.html) architectures JAVA
S3. Standards and specifications	Yes. The aim of the project is to be able to collect metadata from different standards : RDF, OGC, SOAP, REST…
S4. Brokered approach	No. This is an harvesting based architecture.
W1. Reuse	The aim of the project was to create a central portal to discover, tag and view services. There is no need to create another portal allowing users to tag and evaluate existing data.
W2. Technologies	Semantic approach based on RDF and Ontology concept is complex and difficult to implement
W3. Standards and specifications	The Harvester is too global. There is no definition of specifics stakeholders needs in the project.
W4. Brokered approach	NA
O1. Impact	No. The project is dead. The web Portal is down : http://www.tatoo-fp7.eu/
O2. Dissemination	Some research publications written by Tatoo project partners
O3. Viability	No
T1. Impact	No visible impact
T2. Dissemination	Only the deliverables of the project are visible and some research publications written by Tatoo project partners
T3. Viability	No reuse of the software found

1.8.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Harvesting metadata from different sources and converting it in RDF	▪ Architecture too complex and not oriented on user needs
External	**OPPORTUNITIES**	**THREATS**
	▪ Nothing	▪ No visible impact

1.8.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- What is interesting is that they tried to use RDF to create a semantic platform and they didn't achieve it

1.9 GIGAS – GEOSS Inspire and GMES an action in support

1.9.1 Brief description of the project

CORDIS permalink	http://cordis.europa.eu/project/rcn/87875_en.html
Official page	http://www.thegigasforum.eu/project/project.html
Funded under	7th Framework Programme (FP7-ICT) Support Action
From/to	European Commission
Total cost	EUR 3 084 359
EU contribution	EUR 2 099 989
Coordinated by	Fraunhofer IGD, Darmstadt, Germany
Participants	FhG IGD (Germany), FhG ITTB (Germany), Austrian Research Center Labs (Austria), JRC (Italy), ESA (France), OGCE (United Kingdom), Spacebel (Belgium), Science and Technology Facilities Council (United Kingdom), CNR (Italy), interactive instruments (Germany), TU Dresden (Germany), AED-SICAD (Germany), NEN (Netherlands), Statens Kartverk (Norway), Thales Alenia Space (France), Spot Image (France), Infoterra (France), Elsag Datamat spa (Italy), IGN (France), ERDAS (Belgium), EOX (Austria)

The GEOSS INSPIRE and GMES an Action in Support (GIGAS) promotes the coherent and interoperable development of the GMES, INSPIRE and GEOSS initiatives through their concerted adoption of standards, protocols, and open architectures. Given the complexity and dynamics of each initiative and the large number of stakeholders involved, the key added value of GIGAS is bringing together the leading organisations in Europe who are able to make a difference and achieve a truly synergistic convergence of the initiatives. Among them, the Joint Research Centre is the technical coordinator of INSPIRE, the European Space Agency is responsible for the GMES space component, and both organisations together with a third partner, the Open Geospatial Consortium play a leading role in the development of the GEOSS architecture and components.

This core group is supported by key industrial players in the space and geographic information sectors, with the scientific leadership of the Fraunhofer Institute. This consortium will achieve the objectives set through an iterative and consensus based approach which includes: in-depth analysis of the requirements and barriers to interoperability in each of the three initiatives and strategic FP 6/FP 7 projects; comparative evaluation of this activity as input to a forum of key stakeholders at a European level; consensus building in the forum on how to update and integrate the architectures of GMES, INSPIRE and GEOSS, and influence standards development and adoption. From these recommendations follow actions to shape the direction of the initiatives and to define a roadmap for future development, including the key research topics to be addressed to sustain the convergence of the initiatives.

GIGAS thus will contribute to the emergence of a collaborative information space for accessing and sharing distributed environmental resources in Europe. This will represent a milestone towards building a Single Information Space in Europe for the Environment.

The feedback on the outcomes of the GIGAS project was very positive. GIGAS did create the platform to get stakeholders together for the first time ever. At the technical level convergence has been reached to a great extent. In fact, the excellent networking results resulted in good working relationships between GEOSS, INSPIRE and GMES and the Standardisation Organisations.

The process for analysis, comparison, consensus and shaping that has been defined and setup by GIGAS

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can be re-used and refined by the stakeholder community. The wide-spread dissemination of its methodology has been ensured, e.g. by submitting the neutral methodology for technology watch and comparative analysis of information and data management systems as OGC Best Practice Papers. Through the process of analyses, comparison and recommendation, GIGAS improved mutual understanding (technical and procedural) and produced important technical notes and comparative analyses that establish a fundamental and unique cross-initiatives knowledge-base for stakeholders. This knowledge-base will remain accessible through the GIGAS website and further maintained through processes currently set up by CEN/TC 287.

GIGAS drafted business models for persistent SDI testing facilities. From these models the Persistent Interoperability Testbed (PIT) and the Meta SDI Testbed are derived as easy-win recommendations, having moderate budget requirements, and both generating a highly sustainable value-added impact on the productivity of the various European SDI developments and furthermore increase and strengthen the European impact on international SDI matters.

1.9.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Methodology for Comparative Analysis of Information and Data Management Systems Results of GIGAS were used in INSPIRE, GMES, GEOSS, GENESIS, SAFER, GEOLAND 2
S2. Technologies	SOAP Bindings and Protocol versions: GIGAS raises the issue of SOAP Versions and consistent use of SOAP Header. Metadata and Catalogues: The main issue that GIGAS raises is the existence of two non-interoperable Catalogue solutions. Web Processing Services: GIGAS recommends use of WPS for INSPIRE Transformation and Invoke Services.
S3. Standards and specifications	Bring together INSPIRE, GMES and GEOSS as well as OGC, ISO and CEN and influence a convergent standardization process Bridge gaps between the initiatives different data-modelling traditions by feature / coverage harmonization. Develop improved OWS Common (v2.0) by harmonizing ISO and OGC Metadata / Catalogs
S4. Brokered approach	
W1. Reuse	
W2. Technologies	technologies from the different initiatives remains slightly different
W3. Standards and specifications	Standards and specifications from the different initiatives remains partly different
W4. Brokered approach	
O1. Impact	GIGAS hat shaped the development of standards, specifications and technologies in the European initiatives: INSPIRE, GMES and GEOSS.

Question	Answer
O2. Dissemination	GIGAS brought out Issues to develop standards, specifications and technologies in a harmonized and synergetic way
O3. Viability	
T1. Impact	
T2. Dissemination	
T3. Viability	

1.9.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Shaped standardizations process in INSPIRE, GMES and GEOSS in a harmonized and synergetic way	▪ Doesn't reach the one and only way to realize Geo infrastructures
External	**OPPORTUNITIES**	**THREATS**
	▪ Brought together the key players from the most important European initiatives	▪

1.9.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

Technologies and standards / specifications

- OWS Common 2.0

Dissemination:

- European GEO Standards and Interoperability Forum (SIF): The European GEO SIF has been initiated by the GIGAS project in an effort to better coordinate European requirements for GEO and GEOSS related activities, and is recognized by GEO as a regional SIF http://www.thegigasforum.eu/sif
- GIGAS Disaster Scenario and GIGAS Data Interoperability contributions to the GEOSS Architecture Implementation Pilot – Phase 3 (AIP-3)
- The GEOSS-INSPIRE-GMES ("GIGAS") liaison group has been established by representatives of GEO Secretariat, EC-GMES Bureau, and EC-JRC to formalize relations and to foster good communication with the standards developing organizations
- GEOSS-INSPIRE-GMES interoperability workshops under umbrella of INSPIRE Forum (e.g., co-located with INSPIRE Conference)
- OGC - ISO/TC 211 - CEN/TC 287 Shared Requirements and Change Request Repository

Business models:

- GIGAS Business Model for Interoperability Testing Platform

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1.10 GeoViQua – QUAlity aware VIsualisation for the Global Earth Observation system of systems

1.10.1 Brief description of the project

The GEOSS Common Infrastructure provides discovery and visualisation of data in an integrated way. GEOVIQUA aimed to extend the GEOSS infrastructure by adding well-defined data quality indicators and quality-enabled search and visualisation tools. These GEOVIQUA components were implemented so they can be accessed based on existing geo-portal standards and in the mass market "Google-like" map tools and other 3D viewers, as well as on mobile devices. The design and development of GEOVIQUA components was undertaken in collaboration with the relevant GEO committees, the Open Geospatial Consortium Architecture Implementation Pilots and other relevant standards committees.

Data quality is extracted from metadata, from provenance information, from the reference data, from validation with in-situ sensors and from expert user comments. Existing quality standards were used or extended to formalise the quality indicators and provenance in line with the Quality Assurance for Earth Observation (QA4EO) framework and taken forward into the standardisation process.

Graphical representation of metadata allows users to easily screen data. Search functions can be augmented using quality indicators and search results can be ranked by quality indicator. The work aimed to contribute to a GEO S&T label increasing user trust in GEO product quality.

Components were developed to visualise data and associated quality information on GEO portals using different strategies. Specific actions were dedicated link quality indicators and data in web map services and Google like tools, and make these available on mobile devices.

Several pilot case studies ranging from local to global scales concerning many key Societal Benefit Areas were used to motivate and validate the GEOVIQUA developments. The Global Carbon Project and the European Space Agency acted as link to the Communities of Practices in GEO, disseminating the results widely.

CORDIS permalink	http://cordis.europa.eu/project/rcn/97291_en.html
Official page	http://www.geoviqua.org/
Funded under	FP7 CP-FP - Small or medium-scale focused research project ENV.2010.4.1.2-2 - Integrating new data visualisation approaches of earth Systems into GEOSS development Call: FP7-ENV-2010
From/to	2011-02-01/2014-01-31
Total cost	4 031 006
EU contribution	3 266 803
Coordinated by	CENTRO DE INVESTIGACION ECOLOGICA YAPLICACIONES FORESTALES Spain

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Participants	UNIVERSITAT AUTONOMA DE BARCELONA Spain FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V Germany CONSIGLIO NAZIONALE DELLE RICERCHE Italy ASTON UNIVERSITY United Kingdom THE UNIVERSITY OF READING United Kingdom COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES France EUROPEAN SPACE AGENCY France SCIENCE AND TECHNOLOGY B.V. Netherlands OPEN GEOSPATIAL CONSORTIUM (EUROPE) LIMITED United Kingdom 52°NORTH INITIATIVE FOR GEOSPATIAL OPEN SOURCE SOFTWARE GMBH Germany

1.10.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	GeoViQua based on the reuse of achievements of previous research projects (e.g. UncertWeb, EuroGEOSS) and on existing infrastructures namely GEOSS. GeoViQua main outcomes are available for reuse in other projects and activities
S2. Technologies	▪ Producer quality model ▪ User feedback model ▪ User feedback system ▪ GeoViQua broker ▪ GECA WPS ▪ Quality emitter ▪ Rubric-Q tool
S3. Standards and specifications	▪ GEOLabel ▪ QualityML ▪ Quality Metadata Status ▪ WMS-Q ▪ KML-Q
S4. Brokered approach	GeoViQua adopted the brokering approach to integrate quality information from producers and users. The resulting GeoViQua broker, also DAB-Q, is an extension of the CNR-IIA GI-suite Brokering Framework.
W1. Reuse	Most of the project outcomes are based on the QualityML and can be reused only if QualityML is reused as well.
W2. Technologies	Most of the technologies are based on the QualityML depending on its wide acceptance

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Question	Answer
W3. Standards and specifications	The process for standardization of QualityML is not known The acceptance of the GeoViQua proposal for a GEO label acceptance is still pending
W4. Brokered approach	The only instances available of quality enhanced catalogues are those developed in the project, therefore possible interoperability issues cannot be investigated.
O1. Impact	Tests have been carried out in three scenarios: Agriculture, Air quality, Carbon Activities are strongly linked with GEO and GEOSS
O2. Dissemination	
O3. Viability	Many GeoViQua activities had and have a follow-on in other research projects (e.g. H2020 ConnectinGEO) and standardization working groups
T1. Impact	There is not any clear evidence of wide exploitation of technologies beyond the duration of the project and the group of project partners
T2. Dissemination	
T3. Viability	

1.10.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ One of the very few projects addressing users' feedback for data quality documentation ▪ Many delivered technologies are reusable ▪ Many open specifications delivered	**WEAKNESS** ▪ Most technologies are built around the QualityML and their reuse implies reuse of QualityML as well.
External	▪ ▪ Most of the tools are effectively maintained by their initial developers	▪ ▪ Strategy for pursuing the standardization process beyond the project duration is not clear ▪ QualityML acceptance/standardization ▪ GEO label acceptance

1.10.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

GeoViQua produced several outcomes which are remarkable for ENERGIC OD purposes.

- **User feedback model and system**: The user feedback system allows users to express their opinion about datasets quality. The information is stored as metadata annotation according to a well-defined user feedback model.
- **GeoViQua broker (DAB-Q)**: The DAB-Q is an extension of the GI-suite Brokering Framework

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adopted in ENERGIC OD, to integrate quality information provided by data producers, and feedback from users.

1.11 SmartOpenData – Linked Open Data for environment protection in Smart Regions

1.11.1 Brief description

The project SmartOpenData is focused on how the Linked Open Data Initiative can be linked with INSPIRE, GEOSS Data-CORE, GMES and external third parties and how it can impact on the economic and sustainability progress in European Environmental research and protection. SmartOpenData aims to define mechanisms for acquiring, adapting and using Open Data provided by existing sources for environment protection in European protected areas. Through five target pilots in these areas, the project plans harmonise metadata, improve spatial data fusion and visualisation and publish the resulting information according to user requirements and Linked Open Data principles to provide new opportunities for SMEs. There is a plan for involving SMEs into developing new services based on this data. Innovation by third party SMEs will be encouraged by the promotion of royalty-free open standards and best practices initiated by SmartOpenData. However, the project is yet in an early stage. The public deliverables currently available only describe requirements and dissemination activities.

CORDIS permalink	http://cordis.europa.eu/project/rcn/110753_en.html
Official page	http://www.smartopendata.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/fp7/cooperation/ict_en.html) Subprogram ENV.2013.6.5-3 – Exploiting the European Open Data Strategy to mobilise the use of environmental data and information Call for proposal FP7-ENV-2013-two-stage Project reference 603824
From/to	2013-11-01 → 2015-10-31
Total cost	EUR 3 189 858
EU contribution	EUR 2 355 400
Coordinated by	Empresa de Transformación Agraria – TRAGSA (Spain)
Participants	Universidad Politecnica de Madrid (Spain), The National Microelectronics Applications Centre (Ireland), Sindice Limited (Ireland), Agenzia Regionale Per La Protezione Dell'ambiente (Italy), Fondazione Bruno Kessler (Italy), Spaziodati (Italy), Help Service - Remote Sensing (Czech Republic), Stiftelsen Sintef (Norway), Latvijas Universitates Matematikas Un Informatikas Instituts (Latvia), Direcao Geral Do Territorio (Portugal), Geie Ercim (France), Ceske Centrum Pro Vedu A Spolecnost (Czech Republic), Mid-West Regional Authority (Ireland), Slovenska Agentura Zivotneho Prostredia The Slovak Environmental Agency (Slovakia), Ãstav Pro Hospodářskou Ãpravu Lesů Brandãs Nad Labem (Czech Republic)

1.11.2 Identification of the SWOT of the project

Question	Answer

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Question	Answer
S1. Reuse	Make existing "INSPIRE based" relevant spatial data sets, services and appropriate metadata within the environmental research domain concerning rural and protected areas available through a new Linked Data structure. Also adhere to GEOSS Data Sharing Principles[9] and OPQUAST Open Data best practices[10]. [SmartOpenData D2.1] Existing identifiers to be reused as much as possible, especially those coming from reference data sources, such as the INSPIRE Registry, EU Publications Office Metadata Registry, and company registers. [SmartOpenData D2.1].
S2. Technologies	Planned to have similar functionality as industry-standard web-based open data platforms such as CKAN[11], Junar[12] and Socrata[13], including having a user-friendly application interface for querying data (as a simple form to be able query data without standards experience). Planned to support spatial, semantic and multilingual queries. Geographical metadata will be translated using GMET[14] and AGROVOC[15] thesauri. Much data may be also accessed through SPARQL queries. They will use tools based on the LOD2 Linked Open Data Management Suite and use of DCAT-AP for INSPIRE metadata and automatic transformation from ISO XML to RDF. [SmartOpenData D2.1].
S3. Standards	WMC, RSS/GeoRSS, KML/KMZ, GeoSPARQL, Linked Data, ISO 19115/19119, DCAT, CC REL, W3C ODRL [SmartOpenData D2.1]
S4. Brokered approach	The user and the system must be able to make requests for data and models of third party databases, providing payment for access where necessary. The system will also provide discovery services base on local and external metadata [SmartOpenData D2.1] The system or originator may change public data acquired by the system keeping a transaction history and version control [SmartOpenData D2.1].
W1. Reuse	All datasets used by the SmartOpenData system will use Creative Commons licenses, with the CC0 option[16], or "No Rights Reserved". This decision constrains the reuse of data when owners want attribution, no commercial use, no derivation or share alike [SmartOpenData D2.1].
W2. Technologies	The project is highly influenced by the Linked Data approach.

[9] http://www.earthobservations.org/geoss_dsp.shtml

[10] http://checklists.opquast.com/en/opendata

[11] http://ckan.org/

[12] http://www.junar.com/

[13] http://www.socrata.com/

[14] http://www.eionet.europa.eu/gemet/

[15] http://aims.fao.org/standards/agrovoc/

[16] "No Rights Reserved" Creative Common License, http://creativecommons.org/about/cc0

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Question	Answer
W3. Standards	The available documentation does not describe the use of OGC interfaces for access, view, download or discovery.
W4. Brokered approach	No enough data to reach a conclusion
O1. Impact	Planed 5 pilots [SmartOpenData D2.1] that will interact with local SMEs [SmartOpenData D7.6]
O2. Dissemination	Participation and organization of workshops with technologists working in the same field and end users. Intense dissemination activity: SmartOpenData has been presented in 38 events in 2014. [SmartOpenData D7.6].
O3. Viability	No references found to the maintenance of a community after the end of the project.
T1. Impact	No enough data to reach a conclusion
T2. Dissemination	There are no threats identified
T3. Viability	There is no viability study published or considered in the requirements.

1.11.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Best practices for publishing, accessing and integrating datasets. ▪ Linked Geo Data focus. ▪ Platform will be based on results of previous projects. ▪ Integration with other platforms by supporting DCAT ▪ Integration with INSPIRE metadata infrastructure as requirement ▪ Multilingual	**WEAKNESS** ▪ It is undefined the access using OGC based interfaces. ▪ The project is in an early stage, so the final results may vary.
External	**OPPORTUNITIES** ▪ Strong commitment with open data and geographic information. ▪ The project has developed a highly effective dissemination plan.	**THREATS** ▪ Focus on Linked Data requirements. ▪ Too early to determine the transferability of the outcomes of the project.

1.11.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The project is committed to be aligned to EC policies related to geographic information (INSPIRE, GEOSS), this include the support of **INSPIRE and GEOSS specifications and standards** in a varying degree.
- The project has a best practice to **reuse existing identifiers** as possible, especially those coming from reference data sources, such as the INSPIRE Registry, EU Publications Office Metadata Registry, and company registers.

- The use of DCAT-AP for INSPIRE metadata implies the use of **best practices and technology related to DCAT** in the INSPIRE context.
- The intense dissemination activity is remarkable, in particular the participation and organization of **workshops with technologists and end users**.
- The **participation of the SMEs in the pilots** is worth to be analysed when more information on this issue is available.

1.12 NETMAR – Open service network for marine environmental data

1.12.1 Brief description of the project[17]

The NETMAR project developed a pilot European Marine Information System (EUMIS) for searching, downloading and integrating satellite, in situ and model data from ocean and coastal areas. It is a user-configurable system offering flexible service discovery, access and chaining facilities using OGC, OPeNDAP and W3C standards. It uses a semantic framework coupled with ontologies for identifying and accessing distributed data, such as near-real time, forecast and historical data. EUMIS also enables further processing of such data to generate composite products and statistics suitable for decision-making in diverse marine application domains. Observations, derived parameters and predictions are retrieved from a distributed service network through standard protocols, and delivered through the EUMIS portal using ontologies and semantic frameworks to select suitable products and where new products can be generated dynamically using chained processing services.

CORDIS permalink	http://cordis.europa.eu/project/rcn/93737_en.html
Official page	http://netmar.nersc.no/
Funded under	FP7-ICT (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogramme: ICT-2009.6.4 - ICT for environmental services and climate change adaptation Call for proposal: FP7-ICT-2009-4
From/to	2010-02-01 → 2013-01-31
Total cost	EUR 3 892 852
EU contribution	EUR 2 970 950
Coordinated by	Stiftelsen Nansen Senter for Miljoog Fjernmaling (Norway)
Participants	CEDRE (France), Institut Francais de Recherche Pour L'exploitation de la Mer (France), University College Cork, National University of Ireland, Cork (Ireland), Meteorologisk Institutt (Norway), Plymouth Marine Laboratory (United Kingdom), Natural Environment Research Council (United Kingdom)

1.12.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Focused in marine geographical data.

[17] Source: http://netmar.nersc.no/

Question	Answer
S2. Technologies	Use of the Liferay Community Edition framework for developing their portal. [NETMAR D8.3] Development of PyWPS, an Open Source tool that implements the OGC Web Processing Service (WPS) standard with WSDL (Web Services Description Language) interface Developments in semantics: a Semantic Framework, a Semantic Web Service (SWS), using the Jena ontology framework and a Catalogue Services for the Web Mediator (CSWM). [NETMAR D8.3] Provided a concrete set of recommended tools [NETMAR D2.1], based in the GEOSS Best Practices Wiki[18] [NETMAR D2.4.2] for OGC standards, OPeNDAP, workflow engine and portal framework. Provided a complete review and recommendations of semantic technologies [NETMAR D3.2], semantic resources (thesauri and ontologies) [NETMAR D3.3] and semantic frameworks [NETMAR D4.1] Development of several WPS wrappers for GRASS functionality. [NETMAR D5.2.1] Use of Taverna as Workflow Management System [NETMAR D5.3.1]
S3. Standards and specifications	Use of RDF, SKOS, OWL and UncertML XML [NETMAR D4.3.2] Use of OGC (CSW, WMS, WFS, WCS, SWE, SOS, WPS) [NETMAR D8.3] Use of OGC Sensor Web Enablement (SWE) framework together with OGC O&M standard. Use of OPeNDAP and W3C standards [NETMAR D8.3] Used the ontology registry and repository (ORR) from the Marine Metadata Interoperability Project (MMI) Created the NERC Vocabulary Server (NVS) V2, which provides online access to semantic resources (ontologies), a de facto standard vocabulary for Linked Open Data descriptions in the marine science domain. [NETMAR D8.3] Definition of the NETMAR metadata profile, encoded according to the ISO 19139 standard [NETMAR D8.3] Use of the RM-ODP reference architecture [NETMAR D2.4.2]
S4. Brokered approach	A pilot European Marine Information System (EUMIS) as a single access point to marine data. Used CSWM (CSW Mediator), an extension of the CSW to support smart search. [NETMAR D8.3]
W1. Reuse	Focused only on marine data, what allowed them to be very centred on semantic interoperability
W2. Technologies	

[18] http://wiki.ieee-earth.org

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Question	Answer
W3. Standards and specifications	
W4. Brokered approach	Difficult to assess how brokered or mediated the approach was. Depending on the deliverable or presentation, the CSWM harvest metadata [NETMAR D8.3] or mediates with its base catalogues to semantically expand a query [NETMAR D4.4.2].
O1. Impact	The impact of the EUMIS system and services has been assessed by selected users from the 4 pilot marine application domain communities [NETMAR D8.3] The results (technologies, working methods and EUMIS pilot) are openly available. [NETMAR D8.3] The public PyWPS wiki received more than 20 000 hits, being accessed by about 250 unique visitors per week. [NETMAR D8.3] The Vocabularies and Semantic Search services are being used by SeaDataNet-2 and MESMA as well as two U.S. programmes for oceanographic data management (BCO-DMO, R2R). [NETMAR D8.3] The Ontology Browser/Search Client is being used in the ICAN portal, and search technologies and tools are foreseen to be re-used in the further development of the Marine Irish Digital Atlas (MIDA) coastal web atlas. [NETMAR D8.3] There are two software projects in GitHub from NETMAR. Submission of the NERC Vocabulary Server to the datahub.io registry for consideration for the next version of the Linked Open Data diagram The project delivered an impact assessment with a long list of results [NETMAR D7.6].
O2. Dissemination	Presentations at international conferences and workshops (9 papers) (FOSS4G, ENVIP, EuroGOOS, EGU, GEOSS Best Practices Wiki, AGU) [NETMAR D8.3] User community workshops. [NETMAR D8.3] Cookbooks for capacity building and tutorials/videos [NETMAR D8.3]
O3. Viability	The project created an exploitation plan [NETMAR D7.6] The services that will be maintained by the respective partner for a period of one year or more have also been registered in the GEOSS CGI16, in the GEOSS Service Registry. [NETMAR D7.6]
T1. Impact	Few users, only ten in total, were involved in the impact assessment
T2. Dissemination	No social media profiles (Twitter, LinkedIN, Facebook, etc.)
T3. Viability	The EUMIS portal does not work (February 2015)

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1.12.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Focused in marine geographical data. ▪ Use of many OGC technologies (CSW, WMS, WFS, WCS, SWE, SOS, O&M, WPS), including an own WPS implementation ▪ Development of several WPS wrappers for GRASS functionality. ▪ Developments in semantics: a Semantic Framework, a Semantic Web Service (SWS) a Catalogue Services for the Web Mediator (CSWM). ▪ Provided a concrete set of recommended tools, based in the GEOSS Best Practices Wiki for OGC standards, OPeNDAP, workflow engine and portal framework. ▪ Provided a complete review and recommendations of semantic technologies, semantic resources (thesauri and ontologies) and semantic frameworks. ▪ Use of RDF, SKOS, OWL and UncertML XML ▪ Use of OPeNDAP and W3C standards ▪ A pilot European Marine Information System (EUMIS) as a single access point to marine data. ▪ Used CSWM (CSW Mediator), an extension of the CSW to support smart search.	**WEAKNESS** ▪ Focused only on marine data, what allowed them to be very centred on semantic interoperability ▪ Difficult to assess how brokered or mediated the approach was. Depending on the deliverable or presentation, the CSWM harvest metadata or mediates with its base catalogues to semantically expand a query.
External	**OPPORTUNITIES** ▪ Impact assessed by users from the 4 pilot marine application domain communities ▪ The results (technologies, working methods and EUMIS pilot) are openly available ▪ Many results to be used by other projects. ▪ There are two software projects in GitHub from NETMAR. ▪ Submission of the NERC Vocabulary Server to the datahub.io registry for consideration for the next version of the Linked Open Data diagram ▪ Cookbooks for capacity building and tutorials/videos	**THREATS** ▪ Few users, only ten in total, were involved in the impact assessment ▪ No social media profiles (Twitter, LinkedIN, Facebook, etc.) ▪ The EUMIS portal does not work (February 2015)

1.12.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Use of OGC's Sensor Web Enablement (SWE) framework, which defines a suite of web service interfaces and communication protocols abstracting from the heterogeneity of sensor (network) communication together with OGC O&M standard.
- The NVS content is becoming a de facto standard vocabulary for Linked Open Data descriptions in the marine science domain.
- Use of datahub.io and the "Linked Open Data diagram" for increasing impact and visibility of the project with new generated linked data datasets.
- RM-ODP reference architecture [NETMAR D2.4.2]
- Provided a concrete set of recommended tools [NETMAR D2.1], based in the GEOSS Best Practices Wiki[19] [NETMAR D2.4.2] for OGC standards, OPeNDAP, workflow engine and portal framework.
- Complete review and recommendations of semantic technologies: [NETMAR D3.2]
  - Ontology Languages
    - RDF, RDFS, OWL, Common Logic, SKOS
  - Ontology Query Languages
    - New Racer Query Language (NRQL), OWL Query Language (OWL-QL), RDF data query language (RDQL), SPARQL protocol and RDF query language (SPARQL), Interactive Tucana Query Language (iTQL)
  - Ontology Editors
    - SWOOP, HOZO, CMAPTOOLS Ontology Editor, Topbraid Composer, Protégé, ThManager, SKOS Validation Service, SQL, NERC Vocabulary Editor, Semantic Turkey, POOLPARTY
  - Text to RDF converters
    - VOC2RDF, Terminizer
  - …
  - Revision of existing semantic resources (thesauri and ontologies) [NETMAR D3.3]
  - Review and recommendations on Semantic Frameworks [NETMAR D4.1]
- Recommendations regarding semantics and ontologies [NETMAR D3.2]
  - RDF family of languages to represent its ontologies.
  - The SPARQL Protocol and RDF Query Language (SPARQL)
  - Mulgara server and interactive Tucana Query Language (iTQL) (despite scalability issues)
  - Sesame framework and 4store for scalability.
  - Jena is a powerful complete ontology framework that is considered the best. The querying mechanism is an extension of SPARQL called ARQ which provides access to Extensible Stylesheet Language Transformations (XSLT) functions that make complex queries possible.
  - The concept mapping tool recommended is the CMAPTools Ontology Editor due to its ability to export visual concept maps as Web Ontology Language (OWL) documents.
- Development of their own SWS was implemented in Java using the Jena ontology framework, and Jena TDB as a backend [NETMAR D4.4.1] [NETMAR D4.4.2]
- Development of the CSWM 1.0 (Catalogue Services for the Web, Mediated), semantically enabled. The CSWM does not harvest or index the metadata records of the catalogue nodes. Instead, it rewrites the user's query into queries supported by the catalogue nodes and executes

[19] http://wiki.ieee-earth.org

them on the fly, then collects the answers from the different nodes and sends them back to the user [NETMAR D4.4.2]

- Development of several WPS wrappers for GRASS functionality. [NETMAR D5.2.1]
- Use of Taverna[20] as Workflow Management System [NETMAR D5.3.1]
- Use of the Open-source Project for a Network Data Access Protocol (OPeNDAP)[21]. OPeNDAP ia a protocol that provides a discipline-neutral means of requesting and providing data across the WWW, particularly popular in the field of oceanography.
- ISO 19139 standard for encoding their own metadata schema.

1.13 BRISEIDE – BRIdging SErvices, Information and Data for Europe

1.13.1 Brief description of the project

BRISEIDE (BRIdging SErvices, Information and Data for Europe)" aims at delivering (1) time-aware extension of data models developed in the context of previous/ongoing EU INSPIRE related projects (e.g. in the context of GMES, eContentPlus), (2) application (e.g. Civil Protection) based on the integration of existing, user operational information and (3) value added services for spatio-temporal data management, authoring, processing, analysis and interactive visualisation.
The use of GI requires re-consideration of time/spatial accounting to achieve optimality geo-processing services essential in environmental management, as demanded by planners and decision makers. With a few exceptions, current guidelines & standards do not provide such a support whilst funded by EC programmes or initiatives as GMES, eContentPlus and INSPIRE. It is the aim of BRISEIDE to fill-in this gap.
BRISEIDE will be applied, tested and validated within a Civil Protection application context, using the INSPIRE relevant themes, via a chain of stakeholders, data providers, technology partners, and downstream users. The Pilot operational phase will last 12 months and will consider real life events, with extensions in additional domains, being considered and assessed.
Civil Protection operators and Public Administrations, engaged in urban planning, resource & environmental management, need spatio-temporal processing of GI to support decision-making. Current SDIs and the ESDI offer no or very limited time variable management. The integration between INSPIRE-compliant geographic datasets and operational databases, essential in domains such as environmental risk management and civil protection, is poor. Thus the present scope of services SDI can offer is somewhat limited. It is the aim of BRISEIDE to build on existing SDI's in order to provide users with more complete and adequate data and processing tools.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191716_en.html
Official page	http://www.briseide.eu/
Funded under	CIP-ICT-PSP.2009.6.2 - Geographic Information
From/to	From 2010-03-01 to 2012-08-31
Total cost	EUR 3 810 891
EU contribution	EUR 1 905 444
Coordinated by	FONDAZIONE GRAPHITECH, Italy
Participants	ZAPADOCESKA UNIVERZITA V PLZNI (Czech Republic), Ceske centrum pro vedu a spolecnost (Czech Republic), 52°North Initiative for Geospatial Open Source Software GmbH (Germany), TRABAJOS CATASTRALES S.A. (Spain),

[20] http://www.taverna.org.uk

[21] http://www.opendap.org/about

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	COMUNIDAD FORAL DE NAVARRA - GOBIERNO DE NAVARRA (Spain), EPSILON INTERNASIONAL ANONYMI ETAIREIA MELETON KAI SYMVOULON (EPSILON INTERNATIONAL SA) (GR), GEOFOTO DRUSTVO S OGRANICENOM ODGOVORNOSCU ZA FOTOGRAMETRIJSKE I GEODETSKE POSLOVE (Croatia), Istituto Superiore per la Protezione e la Ricerca Ambientale (Italy), SINERGIS SRL (Italy), REGGIANI SPA (Italy), GISIG - GEOGRAPHICAL INFORMATION SYSTEMS INTERNATIONAL GROUP ASSOCIAZIONE (Italy), UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA (Italy), TEHNOLOGIJU ATTISTIBAS FORUMS (Latvia), INSTITUTO GEOGRAFICO PORTUGUES (Portugal)

1.13.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The integration in existing frameworks helps spreading the usage of the spatial analysis algorithms and making them available to everyone using one of the supported frameworks
S2. Technologies	The implementation of spatial analysis tools such as WPS (they apply base services: WMS, WFS, WCS; and Geoprocessing services: WCPS, WPS). Adaptation of high-level Service Oriented Architecture (SOA) either via SOAP or OWL (OGC Web Services)
S3. Standards and specifications	Focus lies on Web Processing Service (WPS) – a Standard by the Open Geospatial Consortium
S4. Brokered approach	BRISEIDE acts as a broker
W1. Reuse	Only possible if using the supported frameworks
W2. Technologies	High dependency on the used frameworks
W3. Standards and specifications	WPS and other processing services are not the most widespread OGC standards
W4. Brokered approach	Web Service Orchestration and Chaining via OGC Web Services can be slow and cumbersome
O1. Impact	The Involvement of the final users will take place through series of workshops
O2. Dissemination	The project has involved experts of different expertise in the field of ITC and Earth Sciences and public stakeholders in the sector of Civil Protection. The dissemination of the project results through website deployment, editorial activities (e.g. brochure, newsletter, flyers), openness activities through user partners (workshops, seminars, trainings), scientific and technical dissemination, etc. Linkage to other similar EU projects through consortium partners, exploitation and business plan, BRISEIDE international conference.

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Question	Answer
O3. Viability	The spatio-temporal services of BRISEIDE will be available as open source during the duration of the project and one year after, and on "lease" as a commercial product subsequently. Project services converge with Free & Open Source Software (FOSS) initiatives from the Open Source Geospatial Foundation (www.osgeo.org). This ensures further development and processing functionalities built on top of the BRISEIDE framework, to be extended by public administrations or private industries according to their specific needs. The BRISEIDE platform will be available on lease, thus ensuring economic sustainability and partners' investment recovery.
T1. Impact	YouTube channel and twitter not active since 3 years, training website and portal down.
T2. Dissemination	The results of the project are not accessible therefore it is hard to assess its impact regarding projects' impact and viability. No publications are to be found after 2011 and the publications before this year are mostly about the goals to be achieved and not the actual results.
T3. Viability	The system provides for different domains with different needs (very generic) and can be reused in many other domains, therefore it produces quite complex results for the final user. To avoid underuse of the solution they set up training actions for the BRISEIDE users.

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1.13.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ OGC & INSPIRE compliant web services for sharing spatial data ▪ With integrating INSPIRE-related EU projects, Newly developed or prototypical OWSs are made available ▪ Provides access to relevant geodatabases, enriched, when needed, with information, extracted from heterogeneous, distributed user operational databases. ▪ Interactive access to datasets and a synchronous processing at the server side.	▪ High dependency on the framework ▪ Web Service Orchestration and Chaining via OGC Web Services can be slow and cumbersome
External	**OPPORTUNITIES**	**THREATS**
	▪ The project has involved experts of different expertise in the field of ITC ▪ Project services converge with Free & Open Source Software initiatives from the Open Source Geospatial Foundation. This ensures further development and processing functionalities built on top of the BRISEIDE framework	▪ The results of the project are not accessible therefore it is hard to assess its impact regarding projects' impact and viability.

1.13.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- BRISEIDE develops spatial analysis WPSs and integrates them within existing open source frameworks (e.g. WPS extension of Sextante by 52°North). Spatio-temporal processing services are exposed via the web and are made available through compatible WebGIS applications. Standard services such as WMS, WCS and WFS, will be used to provide access to relevant geodatabases, enriched, when needed, with information, extracted from heterogeneous, distributed user operational databases. [BRISEIDE Project Structure]

1.14 COBWEB – Citizen OBservatory WEB

1.14.1 Brief description of the project[22]

COBWEB (Citizen OBservatory WEB) project will develop an "observatory framework" that will make it easier for citizens to collect environmental data suitable for use in research, decision making and policy formation. The project is built around UNESCO's World Network of Biosphere Reserves (WNBR), with test areas in Biosphere Reserves within the UK, Germany and Greece. The infrastructure developed will explore the possibilities of crowd sourcing techniques around the concept of "people as sensors", particularly the use of mobile devices for data collection and geographic information.

[22] Source: https://cobwebproject.eu/project

The Citizen OBservatory WEB project seeks to increase the value and interoperability of crowdsourcing technology to policy makers by enabling the fusion of citizen-sourced data with reference data from a range of sources including data published by public authorities. This will be achieved through operationalization of the European INSPIRE (Infrastructure for Spatial Information in Europe) Directive, compliant national SDIs (Spatial Data Infrastructures) and GEOSS (the Global Earth Organisation System of Systems).

Concentrating initially on the Welsh Dyfi Biosphere Reserve, the project aims to leverage the WNBR and the enthusiasm of local Biosphere Reserve communities for improved environmental decision making to help develop technology that will eventually be more widely applicable.

CORDIS permalink	http://cordis.europa.eu/project/rcn/105504_en.html
Official page	https://cobwebproject.eu/
Funded under	FP7-ENVIRONMENT (http://cordis.europa.eu/programme/rcn/855_en.html) Subprogramme: ENV.2012.6.5-1 - Developing community-based environmental monitoring and information systems using innovative and novel earth observation applications Call for proposal: FP7-ENV-2012-two-stage
From/to	2012-11-01 → 2016-10-31
Total cost	EUR 8 509 615,5
EU contribution	EUR 6 549 522
Coordinated by	The University of Edinburgh (United Kingdom)
Participants	Panepistimio Dytikis Elladas (Greece), The University of Nottingham (United Kingdom), Welsh Assembly Government (United Kingdom), Environment Systems Limited (United Kingdom), Partneriaeth Eco Dyffryn Dyfi Eco Valley Partnership Lbg (United Kingdom), Open Geospatial Consortium (Europe) Limited (United Kingdom), University College Dublin, National University of Ireland, Dublin (Ireland), Technische Universitaet Dresden (Germany), Secure Dimensions Gmbh (Germany), University of Patras (Greece), Oikom Meletitiki Perivallontos Epe (Greece), Geocat BV (Netherlands)

1.14.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Combine crowdsourced environmental data with existing sources of reference data [COBWEB 3]
S2. Technologies	COBWEB will build demonstrator mobile phone applications [COBWEB 3] Authentication and identification based on OpenID, SAML2 and “GEOSS User” [COBWEB 5]

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Question	Answer
S3. Standards and specifications	COBWEB is forced to work within GEOSS framework (common methodologies and standards for data archiving, discovery and access). Data collected should be made available through the GEOSS without any restrictions [COBWEB 2] OGC standards. Data will be available via OGC Web Services and discoverable via CSW [COBWEB 3]
S4. Brokered approach	Access Management is based on a federated system [COBWEB 6].
W1. Reuse	There is a lack of information about the data they are reusing.
W2. Technologies	The project is mainly for research and not for demonstration. Technologies used in demonstrators are not documented.
W3. Standards and specifications	-
W4. Brokered approach	-
O1. Impact	It is possible to subscribe to the project newsletter and to join the project mailing lists through the website. Stakeholder engagement drives the user requirements [COBWEB 2]
O2. Dissemination	There is a Dissemination section in the website, which includes presentations, publications, press, newsletter and promotional materials. The project has a Twitter and Google+ profiles
O3. Viability	The COBWEB project invites people and companies for projects under a co-design fund. Proposals should build on existing work, and involve the collection of environmental data by citizens – be they volunteers, organisation members, clients, students, or the general public. They are looking for plans that will use COBWEB's demonstrator mobile phone applications to collect these data, and the Dyfi Biosphere website to display the data. No scientific or technical expertise is required, and technical support will be provided free of charge to successful applicants as part of the project. Ideas might include volunteering schemes, a program of educational activities, activities targeted at visitors, or proposals related to specific sites.
T1. Impact	The project has not finished yet
T2. Dissemination	Deliverables are not available through the website for public access. The dissemination material are very repetitive, they do not provide substantial changes from the start date
T3. Viability	The project has not finished yet

1.14.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD

Internal	**STRENGTHS**	**WEAKNESS**
	▪ Combine crowdsourced data with reference data. ▪ GEOSS framework and OGC standard are used. ▪ Access Management is based on a federated system.	▪ There is a lack of information about which data or technology they are using.
External	**OPPORTUNITIES**	**THREATS**
	▪ Stakeholder engagement drives the user requirements. ▪ The COBWEB project invites people and companies for projects under a co-design fund.	▪ Deliverables are not available through the website for public access. ▪ The project has not finished yet

1.14.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Access Management is based on a federated system. It combines OpenID, SAML2 and "GEOSS User". [COBWEB 6]

1.15 eENVplus – eEnvironmental services for advanced applications within INSPIRE

1.15.1 Brief description of the project (source: Project Fact Sheet)

The eENVplus project aims to unlock huge amounts of environmental data, managed by the involved national and regional environment agencies and other public and private environmental stakeholders, through the integration and harmonisation of existing services. These data are not only collected to answer reporting obligations on the environment to the European Union, but also to support national and local policies and actions.

The project does not design new services but rather, starting from the results of previous European experiences (funded projects, best practices, EU and national and local experiences), it integrates existing infrastructures into an operational framework able to overcome cross-border and language barriers. eENVplus provides not only the ICT infrastructure but also the description and the support to make this infrastructure operational and profitable through the provision of an organisational model and a tutored training framework.

eENVplus interoperable infrastructure provides Member States and Geographic Information Communities with:

- A comprehensive, open and scalable infrastructure able to integrate existing infrastructures according to the INSPIRE requirements, open standards and interoperable innovative services;
- A common Environment Thesaurus Framework, supporting the integration of existing thesauri relevant for the environmental sector via Linked Data and providing added value services for its integration and exploitation in pilot applications
- A comprehensive toolkit with procedures, guidelines and examples for data harmonisation and validation supporting Member States during INSPIRE implementation;
- A set of innovative on line added value interoperable services aiming to facilitate the development of innovative environmental applications;
- A Training Framework to support, with eLearning tools, the development of the necessary capacities and knowledge to implement INSPIRE, to develop a SEIS and to keep this new adapted infrastructure operational.

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CORDIS permalink	http://cordis.europa.eu/project/rcn/191767_en.html
Official page	http://www.eenvplus.eu/
Funded under	The Information and Communication Technologies Policy Support Programme CIP-ICT-PSP-2012-6 No. 325232
From/to	01/01/2013 / 31/12/2015
Total cost	4.900.008 €
EU contribution	2.450.000 €
Coordinated by	GISIG - GEOGRAPHICAL INFORMATION SYSTEMS INTERNATIONAL GROUP ASSOCIAZIONE, ITALY
Participants	GISIG - GEOGRAPHICAL INFORMATION SYSTEMS INTERNATIONAL GROUP ASSOCIAZIONE, VLAAMSE MILIEUMAATSCHAPPIJ, CENIA,CESKA INFORMACNI AGENTURA ZIVOTNIHO PROSTREDI, GIP ATELIER TECHNIQUE DES ESPACES NATURELS*ATEN, DISY INFORMATIONSSYSTEME GMBH, PLANETEK HELLAS, EPSILON INTERNASIONAL ANONYMI ETAIREIA MELETON KAI SYMVOULON (EPSILON INTERNATIONAL SA), VIDEKFEJLESZTESI MINISZTERIUM, UNIVERSITY OF WEST HUNGARY, NATIONAL LAND SURVEY OF ICELAND, SINERGIS SRL, ISTITUTO SUPERIORE PER LA PROTEZIONE E LA RICERCA AMBIENTALE, FONDAZIONE GRAPHITECH, EPSILON ITALIA SRL, CONSIGLIO NAZIONALE DELLE RICERCHE, DIRECAO GERAL DO TERRITORIO, GEOLOSKI ZAVOD SLOVENIJE, SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA THE SLOVAK ENVIRONMENTAL AGENCY, GiStandards LTD

1.15.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	▪ interoperable existing solutions for environmental data-sharing ▪ scalable infrastructure able to integrate existing infrastructures according to the INSPIRE requirements , open standards and interoperable innovative services ▪ A common Environment Thesaurus Framework ▪ A comprehensive toolkit with procedures, guidelines and examples for data harmonisation and validation ▪ A set of innovative added-value interoperable services aiming to facilitate the development of innovative environmental applications ▪ A Training Framework to support, with eLearning tools, the development of the necessary capacities and knowledge to implement INSPIRE, to develop a SEIS and to keep this new adapted infrastructure operational

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Question	Answer
S2. Technologies	Tools ▪ scalable infrastructure able to link to existing infrastructures ▪ communication, through interoperable standards ▪ a set of innovative on-line pre-built services facilitating the development of innovative applications ▪ a Common Environment Thesaurus Framework, supporting via Linked Data the integration of existing Thesauri for environmental application ▪ a comprehensive toolkit with guidelines and examples for data harmonisation and validation Technologies ▪ a portal to describe, manage and access these services ▪ a mixed infrastructure based on SOA and Linked Data ▪ set of transformation services will enable users to run data and metadata remodelling processes o Harmonisation Toolkit o Validation Toolkit o Data Access Services o Ingestion Services o Processing Services o Crowdsourcing Services o TF Exploitation Services o Authentication Services o Notification Services ▪ Thesaurus framework to share and consume semantic metadata to facilitate the widespread adoption of open data for digital content in the environmental area
S3. Standards and specifications	▪ INSPIRE I II III ▪ SEIS Data Access Services ▪ Web Map Service (WMS) ▪ Web Feature Service (WFS) ▪ Web Coverage Service (WCS) ▪ Catalogue Service for Web (CSW) ▪ Sensor Observation Service (SOS) ▪ Web Processing Service (WPS)
S4. Brokered approach	Service Oriented Architecture; eENVplus metadata Catalogue; Thesaurus Framework; Thesaurus Exploitation Services - Metadata Compilation - Data Discovery - Semantic Explorative Search
W1. Reuse	
W2. Technologies	

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Question	Answer
W3. Standards and specifications	
W4. Brokered approach	
O1. Impact	Environmental Thesaurus to linked open data
O2. Dissemination	
O3. Viability	Training Framework to make operational also involved stakeholders which have to manage and exploit the designed technological solutions
T1. Impact	EU Open Data Portal and Framework in parallel in development
T2. Dissemination	
T3. Viability	

1.15.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Linked Open Data ▪ Mobile Mapping ▪ GI and OGC Standards ▪ Profound eLearning ▪ Focus on environmental topics	▪ Multilanguage support
External	**OPPORTUNITIES**	**THREATS**
	▪ eLearning platforms	▪ wide spread topics and tasks from technological view

1.15.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Various National datasets related to many INSPRE Annex I, II, III Data Themes are considered for eENVplus
- Very engaged eLearning Scenarios for Managers, Professionals, End Users
- Thesaurus Framework and adoption of open data for digital content in the environmental area

1.16 InGeoCloudS – INspired GEOdata CLOUD Services

1.16.1 Brief description of the project

Co-financed by the European Commission, InGeoCloudS is an innovative and competitive system for environmental data production and sharing. The project was launched in response to the INSPIRE European Directive, which requires the relevant public authorities to make all their geographical data accessible on the Internet.

In practice, InGeoCloudS facilitates access for the general public and professional users to a large volume of

geological data, in particular the study and prevention of natural disasters: seismic zones, landslip risks, groundwater conditions. Once published on the Cloud, the data are downloadable as INSPIRE compliant services.

The reliability and flexibility of Cloud architectures enables providing of a high quality, robust and cost-effective service for the scientific community.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191927_en.html
Official page	http://www.ingeoclouds.eu/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme: CIP-ICT-PSP.2011.4.1 - Towards a cloud of public services Call for proposal: CIP-ICT-PSP-2011-5
From/to	2012-02-01 → 2014-07-31
Total cost	EUR 3 070 799
EU contribution	EUR 1 535 398
Coordinated by	Akka Informatique et Systemes (France)
Participants	Geological Survey of Denmark and Greenland (Denmark), Bureau de Recherches Geologiques et Minieres (France), Ethniko Kentro Viosimis Kai Aeiforou Anaptyxis (Greece), Organismos Antiseismikou Sxediasmoukai Prostasias (OASP EPPO Earthquake Planning And Protection Organization) (Greece), Foundation for Research and Technology Hellas (Greece), Consiglio Nazionale delle Ricerche (Italy), Geoloski Zavod Slovenije (Slovenia)

1.16.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Compliance with EU regulations on the provision of environmental data.

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Question	Answer
S2. Technologies	The underlying cloud infrastructure provides scalability, reliability and robustness for the provided services. It also guarantees that the computing infrastructure will scale as needed to cope with an increasing demand for services and data. Extensibility of system architecture allows for support of new spatial data types and new services. This in turn will attract new users and data/service providers and ensure that InGeoCloudS is a constantly evolving service. High standard quality of service is provided by the cloud platform even in times of crisis. Semantic data integration, under a core ontology schema, will enhance data usage and credibility and allow for better exploitation of the available information. InGeoCloudS will be a user friendly and user oriented system, designed from the start to meet the requirements of the participating data suppliers as well as the users' needs. Data providers, especially smaller ones, can directly benefit from a readily available cloud infrastructure that they can seamlessly use. Cloud computing becomes a prominent computing paradigm both for data storage and manipulation.
S3. Standards and specifications	Data and services will comply with the INSPIRE technical directive and incentives for data publishing under INSPIRE. The project consortium combines expertise and a strong background in the scientific fields involved: Use of geological and related data, cloud computing technologies, data integration using semantic web technologies, metadata transformations to meet INSPIRE compliance etc. InGeoCloudS platform will be deployed using cloud interoperability standards so that it can be migrated to a different cloud provider with minimal software adaptation costs (to take advantage of better technology or lower costs). InGeoCloudS is currently the only known on-line cloud-based GIS platform to provide semantic data integration and compliance to INSPIRE and OGC standards, thereby having an advantage over other initiatives. Contribution to standards could be a quite interesting opportunity so as to allow for the development of other cloud-based solutions that conform with InGeoCloudS.
S4. Brokered approach	Single point of access for different categories of geo-data will increase public awareness of the project and the service. System architecture independent of geo-formats and technologies.

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Question	Answer
W1. Reuse	The involved data providers could lose interest in the service/infrastructure and avoid moving part of their everyday operations to the cloud. The geographical coverage is limited to 4 countries (Greece, Slovenia, Denmark and France). Nevertheless the consortium has the infrastructure to incorporate new sets of geographical data when a new national market can be opened to the product.
W2. Technologies	The consortium is relatively small and the technology is developing very fast requiring large resources to deliver fast enough. Security is a major issue in cloud infrastructures which is not properly and entirely handled at the moment.
W3. Standards and specifications	Data and service integration may be complicated and require important support and strong learning efforts for providers. Eventually, data and/or service integration may fail, so no added value is generated for the participating bodies and the end users.
W4. Brokered approach	
O1. Impact	The platform provides a great opportunity for integrating data and services from different providers at a wide European level. Thus, the InGeoCloudS pilot system could evolve in a pan-European platform for geo-environmental data and their availability, which providers and other types of users from different European countries could exploit for publishing data or exploiting/processing/viewing the data stored.
O2. Dissemination	The project consortium members play a leading role in other large professional initiatives and can therefore achieve a good dissemination and advertisement of InGeoCloudS. Similarly, the size of AKKA Technologies group and its customer's palette in numerous application domains (industry, services, public administrations) opens up commercial initiatives related to InGeoCloudS services.

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Question	Answer
O3. Viability	The project may have a very good timing in relation to the EGDI initiative by the European Geological Surveys to build a Geological Data Infrastructure. The cloud technology may be very appropriate for this initiative which is aimed at establishing a sustainable platform for pan European geological datasets. Therefore there is a possibility that funding will be available. InGeoCloudS could migrate to a free public cloud infrastructure provided and supervised by a European organization (see “Helix Nebula - the Science Cloud” project which works towards that direction). This could also foster InGeoCloudS to become a PanEuropean platform of environmental data. In that case, the operational costs would minimize thus allowing better business models to be exploited. The members of the consortium could decide to continue financing the InGeoCloudS platform for a period longer than the 5 years after the end of the project. A single member of the consortium could decide to take over InGeoCloudS maintenance.
T1. Impact	The cloud infrastructure may fail at fulfilling its promises as regards platform scalability and quality of service. Security and legislation issues as well as improper management of digital rights may prevent users from adopting the InGeoCloudS platform. Some countries may have particular legislation that forbids e.g. the publishing of data outside the European Union but the cloud provider does not provide control over the actual location of the data.
T2. Dissemination	Communication policy may fail to reach interested communities and attract new users and data providers. In case of poor results of dissemination and promotion activities low interest of other countries might arise and the geographical extent of the service may remain limited. The marketing strategy and the promotional activities will then have to intensify the promotional campaign.

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Question	Answer
T3. Viability	Business plan cost and revenues analysis is based on estimated data and may have failed to depict a realistic scenario for the sustainability of InGeoCloudS. Cloud platform provider may change pricing policy, adopt new technologies or alter provided functionalities over time. Also they could cease operation. InGeoCloudS should be able to adapt or migrate if needed. Also, higher costs will incur if additional data and services are incorporated. So costs might fluctuate over time possibly creating viability problems. Cost for sustaining InGeoCloudS may prove to be higher than expected. The consortium may fail to find sufficient funding resources for sustaining the cloud infrastructure. Competition goes ahead and more appealing products/offerings are supplied. In addition, novel, more appealing and effective technologies appear after the InGeoCloudS platform development.

1.16.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Underlying cloud infrastructure provides scalability, reliability and robustness. ▪ Semantic data integration, under a core ontology schema ▪ Data providers, especially smaller ones, can directly benefit from a readily available cloud infrastructure that they can seamlessly use. ▪ Data and services will comply with the INSPIRE technical directive and incentives for data publishing under INSPIRE. ▪ Deployed using cloud interoperability standards so that it can be migrated to a different cloud provider. ▪ Cloud-based GIS platform to provide semantic data integration and compliance to INSPIRE and OGC standards. ▪ Single point of access for different categories of geo-data. ▪ System architecture independent of geo-formats and technologies.	▪ The geographical coverage is limited to 4 countries. ▪ The consortium is relatively small and the technology is developing very fast requiring large resources to deliver fast enough. ▪ Security is a major issue in cloud infrastructures which is not properly and entirely handled at the moment. ▪ Data and service integration may be complicated and require important support and strong learning efforts for providers.
External	**OPPORTUNITIES**	**THREATS**

▪ Great opportunity for integrating data and services from different providers at a wide European level. Thus, the InGeoCloudS pilot system could evolve in a pan-European platform for geo-environmental data and their availability, which providers and other types of users from different European countries could exploit for publishing data or exploiting/processing/viewing the data stored. ▪ The project may have a very good timing in relation to the EGDI initiative by the European Geological Surveys to build a Geological Data Infrastructure. The cloud technology may be very appropriate for this initiative which is aimed at establishing a sustainable platform for pan European geological datasets. ▪ InGeoCloudS could migrate to a free public cloud infrastructure provided and supervised by a European organization ▪ The members of the consortium could decide to continue financing the InGeoCloudS platform for a period longer than the 5 years after the end of the project. A single member of the consortium could decide to take over InGeoCloudS maintenance.	▪ The cloud infrastructure may fail at fulfilling its promises as regards platform scalability and quality of service. ▪ Security and legislation issues as well as improper management of digital rights may prevent users from adopting the InGeoCloudS platform. ▪ Communication policy may fail to reach interested communities and attract new users and data providers. In case of poor results of dissemination and promotion activities low interest of other countries might arise and the geographical extent of the service may remain limited. ▪ Business plan cost and revenues analysis is based on estimated data and may have failed to depict a realistic scenario for the sustainability of InGeoCloudS. ▪ Cloud platform provider may change pricing policy, adopt new technologies or alter provided functionalities over time. ▪ Cost for sustaining InGeoCloudS may prove to be higher than expected. The consortium may fail to find sufficient funding resources for sustaining the cloud infrastructure. ▪ Competition goes ahead and more appealing products/offerings are supplied. In addition, novel, more appealing and effective technologies appear after the InGeoCloudS platform development.

1.16.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Use of linked data, OGC standards, INSPIRE data models and CIDOC CRM Ontology [InGeoCloudS D2.2]
- Use of R2RML mapping language, XSLT and Virtuoso RDF TripleStore [InGeoCloudS D4.1]
- SPARQL language, GeoSPARQL OGC [InGeoCloudS D4.1, D4.2]
- GML, Well-known text (WKT), GeoJSON, Shapefile and KML formats [InGeoCloudS D4.1]
- Single point of access to harvested and adapted data through applications [InGeoCloudS D4.1]
- GeoCatalog in Geonetwork [InGeoCloudS D4.2]
- Cloud based development, with specific components to take advantage of the cloud scalability (Elastic File Server, Elastic Database Server, Elastic Computing) [InGeoCloudS D4.3]
- Technologies used : PostgreSQL, PostGIS, Pgpool, GlusterFS, OpenDJ, Amazon AWS, GeoNetwork, MapServer, Virtuoso Triple Store, GeoTools (Linked Data Management), uSeekM, Apache, RabbitMq, MapScriptphp, MapCache, Opensearch [InGeoCloudS D4.3]
- Evaluation of cloud service providers (Amazon EC2, CloudSigma, Flexiant, GoGrid, Google Compute Engine, Joyent, Microsoft Azure, OVH Public Cloud, Opsource and Rackspace) [InGeoCloudS D3.1.3]

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1.17 CARARE – Connecting ARchaeology and ARchitecture in Europeana

1.17.1 Brief description of the project

CARARE is a Best Practice Network, funded under the European Commission's ICT Policy Support Programme, which started on 1 February 2010 and will run for three years. It is designed to involve and support Europe's network of heritage agencies and organisations, archaeological museums and research institutions and specialist digital archives in:

- making the digital content for the archaeology and architectural heritage that they hold available through Europeana,
- aggregating content and delivering services,
- and enabling access to 3D and Virtual Reality content through Europeana.

CARARE is one of a suite of projects, funded by the European Commission, to help further develop Europeana. It will play an important role in involving Europe's network of organisations responsible for investigating, protecting, informing and promoting unique archaeological monuments, architecturally important buildings, historic town centres and industrial monuments of World, European and National heritage importance alongside the existing national, regional and local content providers. Such involvement will not only bring together a rich diversity of content about the archaeology and architectural heritage but also adds 3D and Virtual Reality content to Europeana. CARARE aims to enable 2D and 3D content for heritage places to be brought together in Europeana and new services for users.

Europe's Information Society Thematic Portal link	http://ec.europa.eu/information_society/apps/projects/factsheet/index.cfm?project_ref=250445
Official page	http://www.carare.eu/
Funded under	Competitiveness and Innovation Framework Programme (CIP) The ICT Policy Support Programme (ICT PSP) (http://ec.europa.eu/ict_psp) Area: CIP-ICT-PSP.2009.2.2 - Digital Libraries : European Digital Library aggregating digital content in Europeana
From/to	01/02/2010 → 31/01/2013
Total cost	€ 5 380 000
EU contribution	€ 4 300 000
Coordinated by	Kulturarvsstyrelsen (Denmark)

Participants	Visual Dimension Bvba (Belgium), Ministère de la Région de Bruxelles-Capitale (Belgium), National Institute of Archaeology With Museum- Bulgarian Academy Of Science (Bulgaria), The Cyprus Research And Educational Foundation (Cyprus), Narodni Pamatkovy Ustav (Czech Republic), Deutsches Archaologisches Institut (Germany), National Technical University Of Athens (Greece), Hellenic Ministry Of Culture (Greece), Athena Research And Innovation Center In Information Communication & Knowledge Technologies (Greece), Fornleifavernd Rikisins*The Archaeological Heritage Agency Of Icelandmci (Iceland), Scuola Normale Superiore di Pisa (Italy), Heritage Malta (Malta), Krajowy Osrodek Badan I Dokumentacji Zabytkow (Poland), Eesti Vabariigi Kultuuriministeerium (Republic Of Estonia), Vilniaus Universitetas (Republic Of Lithuania), Javni Zavod Republike Slovenije Za Varstvo Kulturne Dediscine (Republic Of Slovenia), Institutul De Memorie Culturala (Romania), Pamiatkovy Urad Sr (Slovak Republic), Universidad de Jaén (Spain), Riksantikvarieambetet (Sweden), N303Bv (The Netherlands), Stichting European Digital Library (The Netherlands), Ministerie Van Onderwijs, Cultuur En Wetenschap (The Netherlands), Koninklijke Nederlandse Akademie Van Wetenschappen - Knaw (The Netherlands), Erfgoed Nederland (The Netherlands), University of York (United Kingdom), Mdr Partners (United Kingdom),

1.17.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Focused on digital content for the archaeology and architectural heritage. CARARE-mapping web application (mapping, route planning, mobile, search) [CARARE D4.7]
S2. Technologies	CARARE established an aggregation service and a workflow for metadata harvesting from the content providers' repositories to Europeana. [CARARE D1.8] Establishment of a pilot map-based search interface, route planning and mobile applications for Europeana. [CARARE D1.8] Use of the HTML5 Geolocation API for mobile map viewer [CARARE 4.7] Use of DigMap geoparser [CARARE 3.5] Use and assessment of geoparsing and gazetteers services (The Getty Thesaurus of Geographic Names, Alexandria Digital Library (ADL) gazetteer, Global Gazetteer, The Fuzzy Gazetteer, Maplandia) [CARARE 3.5] Use of geotagging tools (flickr) [CARARE 3.5] Recommendation of Proj4js as coordinate system transformation tool. [CARARE 3.5] Recommendation of WGS84 or ETRS89 as coordinate system. [CARARE 3.5]

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Question	Answer
S3. Standards and specifications	Implementation of Europeana Data Model (EDM) metadata. [CARARE D1.8] Definition of a CARARE metadata schema interoperable with EDM [CARARE D1.8]. Definition of a harvesting protocol compatible with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH): an application-independent interoperability framework based on metadata harvesting. [CARARE D1.8] Establishment of mappings between different metadata standards and the CARARE metadata schema (MIDAS, LIDO, DC (ESE) and EDM)[23]
S4. Brokered approach	
W1. Reuse	CARARE tried to investigate the possibilities of more tied connection between CARARE and INSPIRE as part of their business model of sustainability [CARARE 3.5], but it was not possible to assess if indeed they managed to do that.
W2. Technologies	Project also focused in 3D and virtual reality, domains that are outside the scope of ENERGIC OD. The main geoparsing and gazetteer technologies considered in CARARE refer to the results of another project (Europeana Connect), that are not currently operative and that do not seem to belong to Europeana.
W3. Standards and specifications	
W4. Brokered approach	CARARE follows Europeana approach: single entry point for accessing digital contributions related to European cultural and scientific heritage. The single entry point access is achieved by the harvesting of metadata (metadata mapping and ingestion) [CARARE D4.4.1]. This approach is not brokered.
O1. Impact	Over 2 million items ingested by Europeana (10% of all the content then accessible through Europeana).
O2. Dissemination	Conferences and training workshops training workshops to support content providers. [CARARE D1.8] Partners were encouraged to become active members of the Europeana Network [CARARE D1.8] Online channels including Twitter (268 tweets, 431 followers), Facebook (currently not available) and LinkedIn (17 followers) [CARARE D1.8]
O3. Viability	Establishment of a Community Interest Group (no-fee post-project community) for networking, workshops, dissemination and collaboration [CARARE 6.9]. Continuation in other project (3D-ICONS) [Niccolucci 2013]
T1. Impact	

[23] http://www.carare.eu/eng/Resources/CARARE-Documentation/About-metadata-mapping

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Question	Answer
T2. Dissemination	
T3. Viability	The establishment of sustainable repositories (maintained by the data providers themselves) was devised, but it was not possible to find references to who is maintaining the harvesting infrastructure. Currently, it seems not be working. CARARE tried to investigate the possibilities of more tied connection between CARARE and INSPIRE as part of their business model of sustainability [CARARE 3.5], but it was not possible to assess if indeed they managed to do that. CARARE did an exhaustive analysis of different business models, but oriented to organizations [CARARE WP7], instead of technological results, which would have been of use to ENERGIC OD.

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1.17.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Establishment of an aggregation service and a workflow for metadata harvesting to Europeana. ▪ Establishment of a pilot map-based search interface, route planning and mobile applications for Europeana. ▪ Used some mature GI technologies ▪ Implementation of Europeana Data Model (EDM) metadata and definition of a CARARE metadata schema interoperable with EDM ▪ Establishment of mappings between different metadata standards and the CARARE metadata schema (MIDAS, LIDO, DC (ESE) and EDM)	**WEAKNESS** ▪ Failed to get more tied connection between CARARE and INSPIRE ▪ 3D and virtual reality are outside the scope of ENERGIC OD ▪ Geoparsing and gazetteer technologies considered in CARARE are not currently operative ▪ Europeana provides a single entry point access that is achieved by harvesting metadata. This approach is not brokered.
External	**OPPORTUNITIES** ▪ Online channels for dissemination (Twitter, Facebook and LinkedIn) ▪ Establishment of a Community Interest Group ▪ Continuation in other project	**THREATS** ▪ The establishment of sustainable repositories (maintained by the data providers themselves) was devised, but currently, it seems not be working. ▪ Business models analysis was oriented to organizations, instead of technological results

1.17.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Standards: metadata standards mainly from the digital libraries domain
  - Europeana Data Model (EDM), MIDAS, LIDO, DC (ESE), EDM and CIDOC CRM
- Specifications:
  - CARARE used the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH): an application-independent interoperability framework based on metadata harvesting
- Platforms and tools related to digital libraries domain: digital resources repository that can also deal with metadata and metadata harvesting:
  - **HP-MIT DSpace**[24]: platform that allows capturing digital resources (text, video, audio and data in general) with the purpose of distributing it over the web. It indexes the data so users can search and retrieve the items that constitute it. Maturity: initiated in July 2000 [CARARE D3.4]
  - **Fedora Digital Object Repository Management System**[25]: based on the Flexible Extensible Digital Object and Repository Architecture (FEDORA), is a repository with search capabilities and different web APIs: management API (administering the repository, including creation and maintenance of digital objects); access API (discovery and dissemination); and streamlined access [CARARE D3.4]. This may be of relevance to ENERGIC OD.

[24] http://www.dspace.org/

[25] https://getfedora.org/

- **EPrints** repository platform. Maturity: first version of the system was released in late 2000. [CARARE D3.4]. EPrints is a free and open-source software package for building open access repositories that are compliant with the Open Archives Initiative Protocol for Metadata Harvesting[26].
- **Invenio** (formerly CERN Document Server Software) [CARARE D3.4]: open source software package that provides the tools for management of digital assets (typically scholarly and/or published digital content) in an institutional repository.[27]
- **The D-Net Software Kit**[28] is an Open Source service-oriented solution for the construction of customized Data Infrastructures. Addresses the need to operate over the integration of content collected from several information sources (such as institutional repositories endowed with OAI-PMH interfaces, or archives of research data). Manages a federation of input data sources (e.g., OAI-PMH, JDBC, FTP) (data source registration, followed by data validation and collection), aggregates data to form uniform Information Spaces (data conversion (mapping, transformation, cleaning, etc.), curation, and enrichment) and provides Information Space content to end-user or third-party consuming systems: web user interfaces for data discovery (search, browse, recommendations, user profiling, user collections) and standard APIs to access the data (e.g., OAI-PMH, OAI-ORE, SRW/CQL) Result of the project "DRIVER: Building a sustainable infrastructure of (European) Scientific Repositories" [CARARE D3.4]. This may be of relevance to ENERGIC OD
- **REPOX**[29]: a framework to manage metadata spaces. It comprises several channels to import metadata from data providers, services to transform metadata between different schemas according to user's specified rules, and services to expose the results to the exterior [CARARE D3.4]. This was used in the CARARE MORE repository [CARARE D4.4.1].

- Creation of a metadata enrichment tool that allows content providers to enrich their metadata with semantic relations (populated from an ontology) before they are ingested into Europeana. It is implemented using and HTML based RDF editor that allow the content providers to add/edit the RDF relations with other objects [CARARE D2.5].
- Software components used [CARARE D3.5]:
  - OpenLayers
  - Simile Timeline/Timeplot
  - Geo-names (Geoparser...)
  - Explorer Canvas (Google)
  - GeoServer (OpenStreetmap, Google Maps)
  - Google Web Toolkit (GWT)
  - KML (XML).
  - HTML5 Geolocation API,
  - DigMap geoparser,
  - Gazetteers services (The Getty Thesaurus of Geographic Names, Alexandria Digital Library (ADL) gazetteer, Global Gazetteer, The Fuzzy Gazetteer, Maplandia),
  - Geotagging tools (flickr),
  - Proj4js as coordinate system transformation tool
- Recommendation of WGS84 or ETRS89 as coordinate system. [CARARE 3.5]

[26] http://en.wikipedia.org/wiki/EPrints

[27] http://en.wikipedia.org/wiki/Invenio

[28] http://www.d-net.research-infrastructures.eu/

[29] http://repox.sysresearch.org/

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1.18 ESDI-NET+ – European Network on Geographic Information Enrichment and Reuse

1.18.1 Brief description of the project

The project “ESDI-Net+ European Network on Geographic Information Enrichment and Reuse” started its activities on September 1, 2007 funded within the eContentplus programme of the European Commission ECP-2006-GEO-320005 and has completed its co-funded phase in 2010. European Umbrella Organisation for Geographic Information took over responsibility for continuing the network after the project completion and as part of this ongoing responsibility EUROGI organised the second edition of the Awards: EUROGI/eSDI-Net sub-national SDIs Best Practice Awards 2011.

The Thematic Network was established in order to create a platform for communication and exchange between different stakeholders involved in the creation and use of Spatial Data Infrastructures (SDIs). The main goal of the network is to promote the cross-border dialogue and exchange of best practices on SDI’s throughout Europe. The eSDI-Net+ intends to be the catalyser of different initiatives, actions and services based on GI. The consortium includes representatives from 14 European countries.

The objective of ESDI-Net+ is to bring together existing SDI key players and target users in a Thematic Network to be established as a platform for communication and exchange between different stakeholders involved in the creation and use of SDI’s. The network will promote high-level decisions, low-level technical discussion and information exchange, in order to increase awareness concerning the importance of GI enrichment and of SDI’s for GI reuse, to allow an integrated view of the experts and to permit the creation of integrated guidelines, standards, and implementation of best practices. Within the network, communication mechanisms between the European and local levels will be implemented to maximize the benefits of INSPIRE, GMES and GALILEO, regarding digital GI content. As a result, the project will contribute to achieving interoperability between national digital collections and services (e.g. through common standards) and facilitating access and use of the material in a multilingual context.

Over the last 3 years the eSDI-Net+ project collected numerous data related to the 135 SDI applications from 24 European countries. The defined criteria, indicators and weighted indexes were used to assess the subnational SDIs - at the same time this information is a valuable good in itself. The SDI analysis and selection process resulted in a reference database that contains all collected data of the SDIs analysed. European SDI best practices are documented and categorised according to these criteria and indicators developed during the project. A large subset of the database information now has been made available publicly following the approval of the SDI owners. Currently more than 100 SDIs are referenced in the public version of the ESDI-NET+ database containing information about good practices in the SDI field in Europe.

During 2008 and 2009 the eSDI-NET+ project team produced a “Methodology for describing sub-national SDIs” and derived from that an operational “Evaluation Framework” that includes defined criteria, indicators and weighted indexes in order to assess sub-national SDIs. This process was tested and verified with all submitted SDIs from 24 countries in Europe. The results of this assessment process were presented in the European SDI Best Practice Awards 2009 Learning from Best Practices, International Conference held in Turin, Italy, 26th and 27th November 2009. Twelve sub-national SDIs were commended as excellent Best Practices.

The ESDI-Net+ SDI self-assessment framework (SDI-SAF) derives from the experiences resulting from the adopted methodology and the overall assessment process which were presented and appreciated at an international level. SDI-SAF is a framework of indicators. Its main purpose is to help SDI’s in characterising and describing themselves. It can be even regarded as useful check-list to better focus at key issues in developing an SDI. To single out and to follow a successful implementation path in developing an SDI needs understanding of its own strengths and weaknesses. Self-understanding implies comparisons and measuring against others. The SDI-SAF is also intended to work in the opposite direction, from SDIs to the

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SDI community: by facilitating the comparison among various SDIs practices, it fosters networking and sharing experiences among similar SD.

The Project legacy is:

- a network and a platform to exchange experiences in the field of SDI and GI.
- a reference database of sub-national and thematic SDIs, available on the web,
- the SDI self-assessment framework (SDI-SAF)

CORDIS permalink	
Official page	http://www.esdinetplus.eu/
Funded under	eContentplus Programme
From/to	2007-2010
Total cost	
EU contribution	
Coordinated by	Joachim Rix, http://www.gris.tu-darmstadt.de/home/index.de.htm,
Participants	1. Technische Universität Darmstadt, Fachgebiet GRIS (TUD) 2. AGH - University of Science and Technology (AGH-UST) 3. AM/FM GIS Italia (AMFM) 4. Association for Geospatial Information in South-East Europe (AGISEE) 5. Association of Geographic Information Laboratories in Europe (AGILE) 6. Association of Geographic Information Users (USIG) 7. Consiglio Nazionale delle Ricerche (CNR) 8. European Umbrella Organisation for Geographic Information (EUROGI) 9. Fraunhofer Institute for Computer Graphics Research (FHG-IGD) 9. Fraunhofer Institute for Open Communication Systems (FOKUS) 10. Geographical Information Systems International Group (GISIG) 11. Hungarian Association for Geo-information (HUNAGI) 12. Research Institute for Artificial Intelligence "Institutul De Cercetari Pentru Inteligenta Artificiala, Academia Romana" (ICIA) 13. Intergraph CS, s.r.o. (INGR) 14. Kouvola Region Federation of Municipalities (KRF) 15. Linköpings University, Department of Computer and Information Science, Sweden (LIU-IDA) 16. Regione Piemonte (PIEMONTE) 17. SADL Katholieke Universiteit Leuven R&D (SADL) 18. South East European Research Centre (SEERC) 19. University Jaume I (UJI) 20. University of Rome "La Sapienza" (URS)

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1.18.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The network aims at increasing awareness of the important role SDIs play in the efficient and effective acquisition, access, enrichment and reuse of Geo Information (GI).
S2. Technologies	Network as a platform to exchange experiences
S3. Standards and specifications	Methodology for describing sub-national SDIs: self-assessment framework (SDI-SAF)
S4. Brokered approach	SDI Best Practice Database: http://www.esdinetplus.eu/best_practice/database.html
W1. Reuse	The project is dedicated to GI and ignores the open data. The reports provide a picture of the organization of SDI in EU
W2. Technologies	N/A
W3. Standards and specifications	Improve SDI-SAF to take into account the OPEN DATA websites
W4. Brokered approach	In 2012, a new version of SDI-Self Assessment Framework was produced but the planned EUROGI-eSDInet 2013 Awards did not take place because the insufficient response of EUROGI members.
O1. Impact	Under FP7, the e-Infrastructures activity is part of the Research Infrastructures programme, funded under the FP7 'Capacities' Specific with a focus on Programme.adoption of e-Infrastructures by user communities
O2. Dissemination	Best practices award workshop, Flyers, Posters.. Results of the project are accessible on the project web site http://www.esdinetplus.eu/publications.html And on the EUROGI web site http://www.eurogi.org/projects/esdi-net-eurogi-2/esdi-net-eurogi/139-sdi-saf
O3. Viability	The self-Assessment framework was produced in a European context.
T1. Impact	The latest version of the best practices awards was held in 2011. It brought together 46 SDI from 14 European countries.
T2. Dissemination	The 2013 version of the best practice awards did not take place
T3. Viability	One of the actions in preparation of the 2013 Awards' edition is the revision of the SDI-SAF to be in-line with the INSPIRE implementation processes

1.18.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	STRENGTHS	WEAKNESS

	▪ International contacts to SDIs, GI and SDI key players, GI associations and related networks and projects ▪ SDI self-assessment framework finalised ▪ SDI Best Practice identified in Database	▪ OD is not taken into account ▪ EUROGI quit maintain database
External	**OPPORTUNITIES**	**THREATS**
	▪ Complete the Methodology and a list of criteria for the assessment of open data platforms and initiatives across the EU (D3.1) with SDI-SAF ▪ Having an ENERGIC-OD Label for bench marking the OD and GI platform	▪ Convince EUROGI to restart

1.18.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Sustainable network as a platform to exchange experiences in the field of SDI and GI
- International contacts to SDIs, GI and SDI key players, GI associations and related networks and projects
- 12 regional and national SDI workshops to present SDI best practices at local, national and regional levels
- More than 200 SDIs from 32 countries analysed in interviews and at workshops
- 12 European SDI Best Practices highly commended at the European SDI Best Practice Awards 2009 in Turin, Italy in November 2009
- SDI Best Practice Database containing data of 135 sub-national SDIs (will be public soon)
- SDI assessment methodology developed by the eSDI-Net+ project
- SDI self-assessment framework finalised

1.19 ORCHESTRA – Open Architecture and Spatial Data Infrastructure for Risk Management

1.19.1 Brief description

ORCHESTRA was motivated by disaster events related to chemicals that have highlighted the need to consolidate information from disparate information systems to support citizen protection and security issues, and disaster and emergency management operations. As disaster risk management activities involve multiple organisations, each having their own systems and services, the capacity to share relevant information required when dealing with chemical risks, especially in cross-border scenarios, is too limited. This situation prevented an efficient handling of risks. Therefore, an important challenge to be faced is to get systems to work together and share information to allow proper data analysis and resource management in disaster risk scenarios.

ORCHESTRA (Open Architecture and Spatial Data Infrastructure for Risk Management) was conceived with the goal of design and implement the specification for a service oriented spatial data infrastructure for interoperability among risk management authorities in Europe. The specification produced, named ORCHESTRA Architecture (OA), was open and based on standards. This specification is contained in a document called the Reference Model ORCHESTRA Architecture (RM-OA) [ORCHESTRA-RM-OA] which is open and free of charge.

ORCHESTRA results were validated via four European scenarios that involved different natural and man-

made risks, and administrative levels, in cross-border situations. The four pilots take place in Catalonia (Spain), in the French-Italian border region, in the German Bight (Wadden Sea) area, and at pan-European scale.

ORCHESTRA also aimed to bring together and consolidate the risk management community in Europe. This was done by integrating the results and recommendations of previous and existing European and National projects and initiatives, and collaborating with nearly twenty projects and initiatives, including projects not funded by the EC and projects outside Europe. Some of the results of ORCHESTRA where used as input to the INSPIRE and GMES initiatives. The RM-OA was also used as input by the OGC.

CORDIS permalink	http://cordis.europa.eu/project/rcn/91172_en.html
Official page	http://www.eu-orchestra.org/
Funded under	FP6-IST (http://cordis.europa.eu/programme/rcn/711_en.html) Subprogram IST-2002-2.3.2.9 – Improving Risk management Project reference 511678
From/to	2004-09-01 → 2007-08-31
Total cost	EUR 13 748 984
EU contribution	EUR 8 199 978
Coordinated by	Atos Origin (Spain)
Participants	European Commission – DG Joint Research Centre (Italy), Hochschule fuer Technik und Wirtschaft des Saarlandes (Germany), Open Geospatial Consortium (Europe), BRGM (France), Eidgenoessische Technische Hochschule Zuerich (Switzerland), Ordnance Survey (United Kingdom), Fraunhofer IITB (Germany), ARC Seibersdorf research (Austria), Intecs (Italy), DATAMAT (Italy), TYPSA (Spain), BMT Cordah Limited (United Kingdom), The Alliance of Maritime Regional Interests in Europe (Belgium)

1.19.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	ORCHESTRA infrastructure provides solutions to access geographic information [ORCHESTRA-book].
S2. Technologies	Specified [ORCHESTRA-RM-OA] and implemented an open Service-oriented architecture for improving interoperability for geo-spatial applications, which is derived from user and system requirements. The project includes security and trusted application and services [ORCHESTRA-AS].
S3. Standards	ORCHESTRA was committed to implement their services using OGC, W3C and OASIS standards.
S4. Brokered approach	A brokered approach may be developed using the RM-OA [ORCHESTRA-book]. For example, they developed a component that provides functionality related to the mapping of features from a source into a target schema [ORCHESTRA-SM].
W1. Reuse	ORCHESTRA pilots were focused to provide applications that use the data

Question	Answer
W2. Technologies	The ORCHESTRA RM is influenced by different and sometime incompatible service platforms (OASIS, OGC, W3C) and refers to standards that were in draft on these years. Also, some approaches for some services are not currently mainstream (e.g. an ontology repository based in WSDL [ORCHESTRA-OA], today the SPARQL will be the choice)
W3. Standards	ORCHESTRA implementation is heavily dependent of W3C WS services (WSDL, SOAP), a [ORCHESTRA-book].
W4. Brokered approach	ORCHESTRA service implementation specifications have always SOAP HTTP, OGC XML and/or OGC KVP. as bindings
O1. Impact	The specifications of ORCHESTRA where used as inputs in the INSPIRE and GMES initiatives. The RM-OA was adopted for the development of other projects (SANY[30], GITEWS[31], DEWS[32], HUMBOLDT[33]) [ORCHESTRA-book].
O2. Dissemination	The specifications defined in ORCHESTRA are public and open [ORCHESTRA-RM-OA]. Also, the project provided a roadmap to ORCHESTRA that justified why and how adopt RM-OA. [ORCHESTRA-book]. Also, provided training material[34]. During the lifetime of ORCHESTRA, numerous collaborations were carried with other European and non-European projects in the same and different fields.
O3. Viability	The use as input of ORCHESTRA by INSPIRE and GMES can be considered an example of its viability.
T1. Impact	There is no threat. The influence in other projects and the awareness of the project by the academia (more than 187 papers can be found in GoogleScholar referring to ORCHESTRA) is a guarantee.
T2. Dissemination	All the pilots are now inaccessible and some training material such as the guidance to how to apply the RM-OA to new use case were not published.
T3. Viability	Some components, such as relying on ontologies for the mediation has not been adopted by the industry yet.

1.19.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	STRENGTHS	WEAKNESS

[30] http://cordis.europa.eu/project/rcn/79757_en.html

[31] http://www.gitews.org/homepage/

[32] http://www.dews-online.org/

[33] http://www.esdi-humboldt.org/

[34] http://www.eu-orchestra.org/TUs.shtml

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	▪ Best practices for developing an architecture based in the OGC reference model ▪ Spatial data focus. ▪ Experience in the development of services and chains of services based	▪ No focused on the reuse ▪ Bindings focused on heavy weight solutions (HTTP SOAP).
External	**OPPORTUNITIES**	**THREATS**
	▪ The dissemination approach based on a network of collaboration relationships with other projects has been successful. ▪ The training material, the book and the carefully described interfaces have helped to the success of the project.	▪ The pilots are now inaccessible. ▪ Some technologies have not been adopted by the industry.

1.19.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The OGC best practice reference model ORCHESTRA Architecture (RM-OA). It is an extension of the OGC Reference Model and contains a specification framework for the design of geospatial service-oriented architectures and service networks. The RM-OA comprises the generic aspects of service-oriented architectures, i.e., those aspects that are independent of the risk management domain and thus applicable to other application domains. [ORCHESTRA-RM-OA]
- The abstract specifications and implementation specifications of the different services35 developed in ORCHESTRA: annotation service, authentication service, authorisation service, catalogue service, coordinate operation service, document access service, feature access service, format conversion service, gazetteer service, knowledge base service, map and Diagram service, ontology access service, schema mapping service, sensor access service, service chain access service, service monitoring service and user management service.
- During the lifetime of ORCHESTRA, numerous collaborations were carried with other European and non-European projects in the same and different fields

1.20 E.L.F. – European Location Framework

1.20.1 Brief description of the project

The three-year project is supported by a consortium of 30 partners across Europe, whose work is co-funded by the European Commission. It will foster the wider use of geo-information and enable the creation of innovative value-added services. The project's proactive stimulation of content markets involves the creation of sample applications using thematic communities to make user-led developments by SMEs (both inside and outside the consortium).

The consortium is committed to continue to provide the ELF Platform beyond the end of the project, thus enabling growth in the use and re-use of trustworthy, accurate and re-usable official reference geo-information. It therefore aims to create a sustainable framework for re-use of authoritative public sector reference geo-information at users.

The objectives of the project are to:

- add value to INSPIRE data by contributing to cross border harmonisation
- build a high performance platform and associated cloud services that support multiple national feeds and a wide spectrum of value-added services

[35] http://www.eu-orchestra.org/publications.shtml

- demonstrate the usability of the ELF platform and cloud services for key European policy areas and other users including SMEs
- develop sample applications in the sectors of Health Statistics, Emergency Mapping, Real Estate and Insurance
- integrate of 3rd party thematic datasets and National Spatial Data Infrastructures (particularly extending beyond the INSPIRE themes provided by NMCAs) for service implementations based on specific user needs
- provide a user friendly interface to find, view and compare the geo-information
- extend the successful 'proof of concept' implementation within the ESDIN project

The European Location Framework is a technical infrastructure which delivers authoritative, interoperable, cross-border geospatial reference data for analysing and understanding information connected to places and features. The European Location Framework builds a geospatial reference data infrastructure and provides interoperable reference data and services from national information assets enabling users to build their work on it. Once developed and adopted they will be the basis for the official framework providing location information needed to geographically reference objects from other domains allowing panEuropean interoperability.

The ELF Platform will provide access to a range of regional and national datasets supported by a number of ELF Services

- **ELF Basemap Service** as a specific view service supporting multiple scale levels for use as backdrop reference of other data, consisting of EuroGeographics existing data at Global and Regional level as well as National data
- **ELF Geo Product Finder**, for locating data on the platform and associated license agreements
- **ELF View and Download Services** to provide access to ELF data and maps via interfaces commonly used by web and mobile applications
- **ELF Geolocator**, which will provide a geocoding service based on addresses, geographical names (EGN) and administrative boundaries.
- The project also supports the development of the OSKARI open source software by extending the number of languages supported.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191764_en.html
Official page	www.elfproject.eu
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) The Competitiveness & Innovation framework Programme (CIP) Information and Communication Technologies Policy Support Programme (ICT PSP) Open Data and open access to scientific information Call for proposal CIP-ICT-PSP-2012-6 - Project reference 325140
From/to	1 March 2013 to 28 February 2016
Total cost	12,999,995.00
EU contribution	6,499,994.00
Coordinated by	STATENS KARTVERK (Norway)

Co-funded by the European Union

Participants	BUNDESAMT FUR KARTOGRAPHIE UND GEODASIE (Germany) EUROGEOGRAPHICS AISBL (Belgium) INSTITUT NATIONAL DE L'INFORMATIONGEOGRAPHIQUE ET FORESTIERE (France) CENTRO NACIONAL DE INFORMACION GEOGRAFICA (Spain) MINISTRY OF AGRICULTURE AND FORESTRY (Finland) Ministerio de Hacienda y Administraciones Publica (Spain) Ministrsvo za infrastrukturo in proctor (Slovenia) GEODEETTINEN LAITOS (Finland) Dienst voor het kadaster en de openbare registers (Netherlands) MINISTERSTWO ADMINISTRACJI I CYFRYZACJI (Poland) Department for Business, Innovation & Skills (United Kingdom) INSTITUT GEOGRAPHIQUE NATIONAL * NATIONAAL GEOGRAFISCH INSTITUUT * NATIONALES GEOGRAPHISCHES INSTITUT (Belgium) Kort & Matrikelstyrelsen (Denmark) INTERACTIVE INSTRUMENTS GESELLSCHAFT FUER SOFTWARE-ENTWICKLUNG MBH (Germany) KATHOLIEKE UNIVERSITEIT LEUVEN (Belgium) WIRELESSINFO (Czech Republic) GEODETSKI INSTITUT SLOVENIJE JAVNIZAVOD GI (Slovenia) EUROPA TECHNOLOGIES LIMITED (United Kingdom) SNOWFLAKE SOFTWARE LIMITED (United Kingdom) 1SPATIAL GROUP LIMITED (United Kingdom) TECHNISCHE UNIVERSITEIT DELFT (Netherlands) ASSOCIAZIONE ITHACA-INFORMATION TECHNOLOGY FOR HUMANITARIAN ASSISTANCE COOPERATION AND ACTION (Italy) CARTONET SAS (France) REGIONE PIEMONTE (Italy) CONTERRA - GESELLSCHAFT FUR ANGEWANDTE INFORMATIONSTECHNOLOGIE GMBH (Germany) OPEN GEOSPATIAL CONSORTIUM (EUROPE) LIMITED (United Kingdom) NETRIUS MANAGEMENT SERVICES LTD (United Kingdom) The National Land Survey of Sweden (Sweden) CESKY URAD ZEMEMERICKY A KATASTRALNI (Czech Republic)

1.20.2 Identification of the SWOT of the project

Question	Answer

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Question	Answer
S1. Reuse	ELF is a pan European service to provide access to authoritative reference data supplied from National Mapping and Cadastral Authorities from across Europe. This means that ELF will deliver a web based map service supplying to up to date information to end users and applications alike.
S2. Technologies	Web Technology: ELF provides a flexible architecture with both cache and cascading options, based upon technical standards.
S3. Standards and specifications	The planned ELF. Platform service architecture is based on internationally agreed open geospatial Web standards. These were originally developed as open industrial technology specifications by the Open Geospatial Consortium (OGC) and in many cases also published as official standards by the ISO Technical Committee 211 (Geographic Information/Geomatics). Subsequently, these specifications/standards have partially also been promoted by the EU for adoption in the European context, as they form the basis for the INSPIRE regulations governing the development of the 'European Spatial Data Infrastructure' (ESDI).
S4. Brokered approach	ELF provides one source for harmonised Reference GeoInformation for Europe. Transformation and edge-matching tools are at the heart of the ELF implementation: Model transformation, schema transformation, coordinate transformation, edge-matching on the borders. These transformation and edge-matching tools enable to achieve harmonization of national web services to pan-European (ELF) web services.
W1. Reuse	For the moment the coverage of ELF is limited to fourteen European countries (the ones of the consortium). There is different level of responsibilities on INSPIRE themes implementation by the NMCAs taking part in the project.
W2. Technologies	Different applications are in use by NMCAs arranging national web services.
W3. Standards and specifications	INSPIRE specifications are maintained irrespective to the ELF developments. Changes in INSPIRE specifications impact ELF workplan. NMCAs provide web services in different CRS.
W4. Brokered approach	INSPIRE compliant web services are not known and utilised in the GI market.
O1. Impact	The project makes thematic and other data from different sources available to add value for the user, increases the use of authoritative data, and increase integration with third party services and existing cross border co-operations. The project identified the key user insights.
O2. Dissemination	Awareness building with stakeholders, communications infrastructure, focused concertation actions, themed seminars or special interest groups, strategic communications to stakeholders in support of sustainable access by users beyond the project period.

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Question	Answer
O3. Viability	Sustainability of partners web services based on both European INSPIRE obligations and national public missions related to geospatial authoritative data and services.
T1. Impact	No threat detected
T2. Dissemination	Consistency between themes of INSPIRE annexes, so that themes can be used together in various resolutions inside EU
T3. Viability	Sustainability of the ELF platform assured just for 2 years after project end. The business model to support the sustainability of the platform has to be implemented.

1.20.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Focused on providing unified access to GI ▪ OGC & INSPIRE compliant web services for sharing spatial data. ▪ Development of a harmonised data model compliant to INSPIRE requirements	**WEAKNESS** ▪ Only a part of Pan-European coverage will be available as outcome of the project ▪ There is different level of responsibilities on INSPIRE themes implementation by the NMCAs taking part in the project.
External	**OPPORTUNITIES** ▪ The project took into account the integration of authoritative data, thematic and other data from different sources, and third party services and existing cross border co-operations. ▪ The project identified key user insights and additional providers.	**THREATS** ▪ The business model to support the sustainability of the platform has to be implemented.

1.20.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Provision of E.L.F data and service specifications based on INSPIRE specifications
- Provision of data maintenance and processing geo-tools
- Provision of data via national services (based on E.L.F specifications) and provision of cascaded E.L.F services based on the national services
- Provision of an Open Source based cloud service platform
- Provision of geo-tools for use within NMCAs: Transformation, Data Quality, Generalisation, Edge Match, Visualisation, Change Detection
- Provision of a Geo Product Finder tool for the public
- Offer of a highly scalable service, readily usable by application developers and end-users, whether they use desktop, web or mobile GIS applications

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1.21 LAPSI – Legal Aspects of Public Sector Information

1.21.1 Brief description of the project[36]

LAPSI (Legal Aspects of Public Sector Information) is a European Commission-funded project on PSI coordinated by the Nexa Center for Internet & Society.

Information generated and collected by public sector entities represents a veritable minefield; it might make a much greater contribution to EU economies and societies, if current legal barriers to access and re-user were removed.

The LAPSI project dealt both with established PSI areas (geographic, land register data, etc.) as well as novel areas (cultural data from archives, libraries, scientific information, etc.) and environmental figures and data sets. Legal barriers to access and re-use and strategies to overcome them were considered from the perspectives of information, IP, privacy and competition law; in addition it dealt with administrative, environmental law and public procurement rules.

The proposal brought together partners belonging to research institutions which have made substantial contributions in the relevant fields, as well as a number of crucial stakeholders, from a large number of EU jurisdictions. The debate was to be organized around four focal points: (1)implementation and deployment issues; (2)design of the incentives for public bodies and private players, both in the for-profit and non-profit sectors, to make available and, respectively, to re-use public data; (3)special consideration of infra- and supra-national levels of access and re-use policies and practices, intended to enlist the dynamic forces of regulatory competition and to bring out the full potential of cross-border, EU-wide services; and (4)strategic vision and occasions for out-of-the box thinking for the next steps ahead in policy making.

The discussion was organized around cycles of seminars and conferences, intended to foster debate among the researches and players in the field, which were complemented by dissemination exercises linked to it (primers) and awareness-raising events and contests.

The network activity aimed to produce a set of policy guidelines that helps all interested stakeholders in their access and reuse policies and practices.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191882_en.html
Official page	http://www.lapsi-project.eu/lapsi-1
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme: CIP-ICT-PSP.2009.6.1 - Legal aspects of Public Sector Information Call for proposal: CIP-ICT-PSP-2009-3
From/to	2010-03-22 → 2012-09-21
Total cost	EUR 517 500
EU contribution	EUR 517 500
Coordinated by	Politecnico Di Torino (Italy)
Participants	Facultes Universitaires Notre-Dame De La Paix De Namur (Belgium), Katholieke Universiteit Leuven (Belgium), Masarykova Univerzita (Czech Republic), Westfaelische Wilhelms-Universitaet Muenster (Germany), Max Planck Gesellschaft Zur Foerderung Der Wissenschaften E.V. (Germany), Kobenhavns

[36] Source: http://www.lapsi-project.eu/about

	Universitet (Denmark), Tartu Ulikool (Estonia), Universidad de Murcia (Spain), Fundacio per a la Universitat Oberta De Catalunya (Spain), Hellenic Ministry of Administrative Reform and E-governance (Greece), Magyar Terinformatikai Tarsasag Tarsadalmi Szervezetet (Hungary), Universita Commerciale 'Luigi Bocconi' (Italy), Consorzio per il Sistema Informativo (Csi Piemonte, Italy), Universiteit Van Amsterdam (Netherlands), Universitatea Din Bucuresti (Romania), Institut Za Intelektualno Lastnino, Intellectual Property Institute IIL IPI (Slovenia), Informacijski Pooblascenec Informattion Commissioner (Slovenia), The University Of Nottingham (United Kingdom), The City University (United Kingdom)

1.21.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The project studies some of the best practices and implementation initiatives enabling re-use for Public Sector Information (PSI). Open data and Linked data approaches are considered [LAPSI D04.4.1]
S2. Technologies	The project indirectly refers to existing tools specifically designed for making (public sector) open discoverable: such as DataHub and CKAN. [LAPSI D04.4.1]
S3. Standards and specifications	Studies and Guidelines for public sector information (PSI) re-using. [LAPSI P.Paper 1, LAPSI P.Paper 2, LAPSI P.Paper 3]
S4. Brokered approach	The LAPSI website is connected to websites of other major projects through a RSS Feed linking technology
W1. Reuse	Reuse is only studied in a theoretical way. No data is managed in the context of the project.
W2. Technologies	The project did not used or developed any specific technology. Only a wiki and a website were set up.
W3. Standards and specifications	-
W4. Brokered approach	The LAPSI Thematic Network was not directly involved in specific aggregation of data related initiatives, a part the linking of relevant websites to the LAPSI website project. However some LAPSI partners are involved in such an initiative. In particular CSI Piemone is now involved in the Homer project, which is an international project on the federation of portals of the Mediterranean area. [LAPSI D04.4.1]

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Question	Answer
O1. Impact	The LAPSI Thematic Network defined a strategy for sustaining the interest of an increasing number of interested parties in the LAPSI project, its initiatives, objectives and results. In particular the LAPSI Network: a) provided constant and regular contacts during the course of the project; b) produced relevant material on a regular basis. Although the LAPSI Network ran the risk of collecting non-updated contacts and therefore being unable to maintain a communication on a regular basis with interested parties. Thanks to a real interest in the project, most of the interested parties informed the LAPSI Coordinator to update their contact details when it was necessary to do so. [LAPSI D03.3.2]
O2. Dissemination	LAPSI awareness and dissemination activities included market, eGovernment and eDemocracy activities; therefore, they addressed a wide range of interested parties, such as public administrations and bodies, cultural, academic and research institutions, PSI related communities and market operators, including potential re-users. The information was distributed: ▪ a) to a present audience of interested parties, during meetings open to the public and meetings beyond LAPSI initiatives. ▪ b) to a remote public of interested parties by means of common internet channels, general and dedicated press, as well as dedicated scientific periodicals or publications. Indicators about the performed work in dissemination are provided in the deliverables [LAPSI D03.3.2] Dissemination strategies included 'hackathons', barcamps, and PSI-re-use oriented competitions [LAPSI D04.4.1]
O3. Viability	The project was continued in another FP7 project: LAPSI 2.0.
T1. Impact	The number of interested stakeholders is not very high. There are still many potential stakeholders to be reached, informed and involved on the potential and challenges of the PSI re-use [LAPSI D02.2.5]
T2. Dissemination	
T3. Viability	-

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1.21.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ The project defined best practices and implementation initiatives enabling re-use for Public Sector Information (PSI)	▪ The project did not used or developed any specific technology
External	**OPPORTUNITIES**	**THREATS**
	▪ The project was continued in another FP7 project: LAPSI 2.0. ▪ Real interest in the project by stakeholders. ▪ Dissemination strategies included 'hackathons', barcamps, and PSI-re-use oriented competitions	▪ Reached stakeholders were only a reduced group of the potential ones. ▪ Channels used to disseminate the project results were very usual.

1.21.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Guidelines for public sector information (PSI) re-using.
- The project indirectly refers to existing tools specifically designed for making (public sector) open discoverable: such as DataHub and CKAN. [LAPSI D04.4.1]
- Dissemination strategies included 'hackathons', barcamps, and PSI-re-use oriented competitions [LAPSI D04.4.1], probably similar to the ENERGIC OD application contest defined for T8.2.

1.22 ENVIROGRIDS – Building Capacity for a Black Sea Catchment Observation and Assessment System supporting Sustainable Development

1.22.1 Brief description of the project

Building Capacity for a Black Sea Catchment Observation and Assessment System supporting Sustainable Development. The Black Sea Catchment is internationally known as one of ecologically unsustainable development and inadequate resource management, which has led to severe environmental, social and economic problems. EnviroGRIDS @ Black Sea Catchment aims at building the capacities of regional stakeholders to use new international standards to gather, store, distribute, analyze, visualize and disseminate crucial information on past, present and future states of the environment, in order to assess its sustainability and vulnerability. The EnviroGRIDS @ Black Sea Catchment project addresses these issues by bringing several emerging information technologies that are revolutionizing the way we are able to observe our planet. The Group on Earth Observation Systems of Systems (GEOSS) is building a data-driven view of our planet that feeds into models and scenarios. EnviroGRIDS aims at building the capacity of scientist to assemble such a system in the Black Sea Catchment, the capacity of decision-makers to use it, and the capacity of the general public to understand the important environmental, social and economic issues at stake. To achieve its objectives, EnviroGRIDS will build an ultra-modern Grid enabled Spatial Data Infrastructure (GSDI) that will become one component in the Global Earth Observation System of Systems (GEOSS), compatible with the new EU directive on Infrastructure for Spatial Information in the European Union (INSPIRE). EnviroGRIDS will particularly target the needs of the Black Sea Commission (BSC) and the International Commission for the Protection of the Danube River (ICPDR) in order to help bridging the gap between science and policy.

CORDIS permalink	http://cordis.europa.eu/project/rcn/92905_en.html
Official page	http://www.envirogrids.net/
Funded under	FP7-ENVIRONMENT, ENV.2008.4.1.4.1. - Developing necessary research activities for capacity building relevant to Earth Observation and GEO in the Black Sea basin
From/to	2009-04-01 to 2013-03-31
Total cost	EUR 8 011 430
EU contribution	EUR 6 222 574
Coordinated by	UNIVERSITE Switzerland
Participants	Organisation Europeenne Pour La Recherche Nucleaire European Organization For Nuclear Researchcern (Switzerland), Eidgenoessische Anstalt Fur Wasserversorgung Abwasserreinigung Und Gewaesserschutz (Switzerland), United Nations Educational, Scientific And Cultural Organization – UNESCO (France), Universitat Autonoma de Barcelona (Spain), Ukrainian Scientific And Research Institute Of Ecological Problems (Ukraine), Antea Belgium NV (Belgium), Saint Petersburg State University – SPSU (Russia), Istanbul Teknik Universitesi (Turkey), Black Sea Regional Energy Centre (Bulgaria), Institutul National De Cercetare Dezvoltare Delta Dunarii (Romania), Danube Hydrometeorological Observatory Of State Hydrometeorological Service Of Ministry Of Ukraine Of Emergencies And Affairs Of Population Protection From Consequences Of Chornobyl Catastrophe (Ukraine), A.O. Kovalevskiy Institute Of Biology Of Southern Seas (Ukraine), Institutul De Geografie (Romania), Institutul National De Hidrologie Si Gospodarire A Apelor (Romania), Odessa National I.I. Mechnikov University (Ukraine), Universitatea Tehnica Cluj-Napoca (Romania), Vituki Kornyezetvedelmi Es Vizgazdalkodasi Kutato Intezet Nonprofit Kozhasznu Korlatolt Felelossegu Tarsasag (Hungary), Permanent Secretariat Of The Commission On The Protection Of The Blacksea Against Pollution (Turkey), Centro Di Ricerca, Sviluppo E Studi Superiori In Sardegna (Italy), National Institute Of Meteorology And Hydrology Of The Bulgarian Academy Of Sciences (Bulgaria), Taurida National V.I. Vernadsky Unversity (Ukraine), Kozep-Europai Egyetem (Hungary), Cevre Ve Orman Bakanligi - Turkiye Cumhuriyeti (Turkey), Universidad de Málaga (Spain), Arx It Consulting (Switzerland), Ceske Centrum Pro Vedu A Spolecnost (Czech Republic), Gis And Rs Consulting Center Geographic (Georgia), International Commission For The Protection Of The Danube River (Austria), Melitopol State Pedagocical University (Ukraine)

1.22.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Project approach can be easily reused and adjusted to current needs. EnviroGRIDS has developed its own capacity building strategy to strengthen people, institutions and infrastructures for GEO and INSPIRE activities in the Black Sea region.

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Question	Answer
S2. Technologies	EnviroGRIDS relies on ultra-modern technology using the largest gridded computing infrastructure in the world and it will serve as a benchmark for the development of the European Directive on Infrastructure for Spatial Information and for the Global Earth Observation System of Systems.
S3. Standards and specifications	EnviroGRIDS functionality gathers services provided by various technologies such as SWAT (Soil Water Assessment Tool) related modules, Collaborative Working Environment (CWE), Uniform Resource Management (URM), gProcess, ESIP, and eGLE platforms. Support interoperability between the Geospatial and Grid infrastructures on security, heterogeneous data access, distributed data processing.
S4. Brokered approach	-
W1. Reuse	No weakness is found.
W2. Technologies	-
W3. Standards and specifications	-
W4. Brokered approach	-
O1. Impact	EnviroGRIDS is clearly going beyond the state of the art in the Black Sea region by adopting a catchment approach and by tackling several societal benefits areas together. By using the most powerful computer network of the world it is clearly showing the direction on how to analyse the increasing amount of global data made available throughout the planet. It is bringing crucial information in a relatively data-poor region on future scenarios of expected climate, demographic and land cover changes. Based on the outputs of these scenarios it is building geoprocessing services in key societal benefits areas that will be connected back to the GEOSS.
O2. Dissemination	The results of the project are accessible on the website. The enviroGRIDS has reached an official end at the end of March 31. 2013.

Question	Answer
O3. Viability	In order to allow end users to keep developing applications from the Black Sea catchment Observation System (portal.envirogrids.net), this platform will also remain open for several years with all its components: • Geoportal: allows users to search, discover, and access data sets in the Black Sea catchment. • Greenland: generates and executes on the GRID workflows processing satellite images. • gSWAT: allows users to calibrate SWAT hydrological models on the GRID. • eGLE: implements both a user interface, and the tools for the development, the execution and the management of teaching materials. • BASHYT: is a Collaborative Working Environment (CWE) on the web that relies on complex "physically based" hydrological, land cover and ocean models to support decision makers through a user-friendly Web interface.
T1. Impact	No threat is considered.
T2. Dissemination	There is no dissemination threat. The enviroGRIDS has reached an official end at the end of March 31. 2013.
T3. Viability	No threat is considered.

1.22.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ ultra-modern technology using the largest gridded computing infrastructure in the world ▪ functionality gathers services provided by various technologies	▪ No weakness impacting negatively ENERGIC OD
External	**OPPORTUNITIES**	**THREATS**
	▪ Lined to Geoportal, gSWAT, eGLE, Greenland	▪ No threats impacting negatively ENERGIC OD

1.23 UrbanAPI – Interactive Analysis, Simulation and Visualisation Tools for Urban Agile Policy Implementation

1.23.1 Brief description of the project

The **urbanAPI - Information and Communication Technology (ICT)** project will provide urban planners with the tools needed to actively analyse, plan and manage the urban environment.

The urbanAPI toolset allows the fast development and deployment of participative policy support applications for decision support, conflict management, analysis and visualisation.

Such developments collectively provide vital decision-making aids for urban planners in the management of the territory, support policy makers for the associated responsibilities in political negotiation, and enable wider stakeholder engagement regarding the future development of the territory.

Within this EC FP7 project, the urbanAPI ICT tools are being developed and will be evaluated in collaboration with the cities of **Bologna, Ruse, Vienna** and **Vitoria-Gasteiz** between September 2011 and November 2014.

urbanAPI is seen as a community driven solution project and the resulting ICT tools shall improve city planning and management in the long term. For more information on how to participate, acquire and apply the urbanAPI tools please follow the links of this website.

CORDIS permalink	http://cordis.europa.eu/project/rcn/100322_en.html
Official page	http://www.urbanapi.eu/
Funded under	FP7-ICT-2011-7 ICT-2011.5.6 - ICT Solutions for governance and policy modelling
From/to	2011-09-01/2014-11-30
Total cost	EUR 2 992 086
EU contribution	EUR 2 406 371
Coordinated by	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
Participants	Fraunhofer IGD, University of the West of England, Austrian Institute of Technology, GeoVille GmbH, AEW srl, City of Bologna, Agency for Sustainable Development and Eurointegration, Municipality of Ruse, City of Vienna, Vitoria-Gasteiz (CEA)

1.23.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	the urbanAPI ICT approach and tools are developed and tested through specific real-world application scenarios in collaboration with the cities of Bologna, Ruse, Vienna and Vitoria-Gasteiz. These cities have a wide range of different socio-economic, environmental and territorial characteristics, governance structures and practices. Nonetheless distinct commonalities can also be observed in the challenges facing the majority of cities in Europe today. These common challenges are best served by common solutions. urbanAPI accordingly deploys a generic framework and methodology for the development of ICT enabled tools for urban governance that not only serves the needs of the project partner cities, but also offers decision-making solutions for all European cities.

Co-funded by the European Union

Question	Answer
S2. Technologies	The proposed UrbanAPI toolset and the applications will make use of the vast data resources – geospatial and statistical datasets – related to urban planning, by integrating smart ICT technologies to promote sustainable planning policies by engagement with the public through ideas and visions that address alternative urban planning perspectives and new city development proposals. Local initiatives will be encouraged to participate within the planning process, to contribute to the appropriate solutions and understand and finally endorse the expected impacts on environment and citizens.
S3. Standards and specifications	2D/3D web client: standard web browser Optional VR client: MultiTouch Table. ISO9126 (ISO/IEC 9126-1 2001). Agile development methodology
S4. Brokered approach	The motion explorer app can access the “Converter service” which is able to convert various file formats to a web-compatible representation. For example, the app sends its processing results as JSON objects to the converter service. The service then converts them to X3D, a format that can easily be displayed by the X3DOM framework.
W1. Reuse	A component of the GIS should encapsulate complexity and not expose it to the outside to be able to reuse the component easily
W2. Technologies	the architecture described here lies on the web technology that is used to implement the use cases defined in the requirements documentation that are targeted to a broad audience including non-domain experts such as citizens of a city or other city departments
W3. Standards and specifications	The architecture of the GIS should be modular and dependencies between components should be minimal
W4. Brokered approach	The process of data acquisition needs to be improved and automated, but this was beyond scope of the project
O1. Impact	Organisations like ISOCARP, ICLEI were members of the advisory board and participated actively in evaluation and several project meetings. The project results were also presented at several international major events such as the ISOCARP world congress in Poland, the WEB 3D conference in Vancouver, the CeBIT fair in Hannover and the Smart City Exhibition in Bologna
O2. Dissemination	A detailed Dissemination and Exploitation Plan was elaborated in the project. Results of the project are available on the website as public deliverables. Prototypes of the web based parts are also available for the public.
O3. Viability	A market analysis was carried out to identify the target audience for further marketing activities. Business models are developed as well in the Exploitation Plan. Some results are in use within other projects and became part of existing software already on the market (additional tool/service)
T1. Impact	Right now there are no active user communities due to the limited resources of the city partners.

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Question	Answer
T2. Dissemination	The typical process of acquisition in communities and cities takes longer than in industry – sales are therefore delayed
T3. Viability	The tools are not necessarily easy to take over directly, but needs adaptation to the given environment of each customer

1.23.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ the urbanAPI ICT approach and tools are developed and tested through specific real-world application scenarios in collaboration with four cities ▪ The project uses geospatial and statistical datasets – related to urban planning, by integrating smart ICT technologies ▪ The project uses Agile development methodology ▪ the "Converter service" which is able to convert various file formats to a web-compatible representation	▪ A component of the GIS should encapsulate complexity ▪ the architecture described here lies on the web technology that is used to implement the use cases ▪ The architecture of the GIS should be modular and dependencies between components should be minimal
External	**OPPORTUNITIES**	**THREATS**
	▪ has established a Stakeholder Board ▪ The project uses various conferences and newsletters to disseminate ▪ The project partners include representatives from four application cities	▪ Maybe need to involve more cities ▪ The typical process of acquisition in communities and cities takes longer than in industry – sales are therefore delayed

1.23.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The proposed UrbanAPI toolset and the applications will make use of the vast data resources – geospatial and statistical datasets – related to urban planning, by integrating smart ICT technologies to promote sustainable planning policies.

1.24 MS.MONINA – Multi-scale Service for Monitoring NATURA 2000 Habitats of European Community Interest

1.24.1 Brief description of the project

MONINA

NATURA 2000, an endeavour in the spirit of the Convention of Biological Diversity (Rio, 1992), is one of the success stories among pan-European initiatives and one of the world's most effective legal instruments concerning biodiversity and nature conservation.

The EU Habitats Directive (council directive 92/43/ECC) requires a standardised monitoring of the habitat types and a reporting every six years. For this reason, an operational, objective, economically priced and as

far as possible automated application is required. The rapidly developing remote sensing sensor technique and also new image processing methods offer new possibilities to apply remote sensing data for NATURA 2000 monitoring. Today, with (i) GMES as an umbrella for utilizing latest EO-based achievements form both space- and in-situ sensors to provide European solutions for global problems of the environment-security-nexus, (ii) INSPIRE as a pan-European endeavor of obeying standards and other prerequisites of interoperable use, and (iii) the vision of a unified and integrated (i.e. single) European Information Space (SEIS), set the stage for a technologically mature, integrated, and user-centric system, more effectively to be used than ever. Users are in need, as imposed by the legally binding character of the directives, and this is what this project will service, from European to local scale.

MS.MONINA follows a pan-European, multi-scale approach that on the one hand reflects the specifics and the variety of habitats in the different biogeographical regions, and on the other hand guides the specifications of the service chains and their implementations as service cases and pilots. The multi-scale (MS) concept reflects the fact that on different (administrative) levels there are specific requirements for sensitive sites-related reporting, monitoring, management etc.

CORDIS permalink	http://cordis.europa.eu/project/rcn/96950_en.html
Official page	http://www.ms-monina.eu/home
Funded under	FP7-SPACE, SPA.2010.1.1-04 - Stimulating the development of GMES services in specific areas
From/to	From 2010-12-01 to 2013-11-30
Total cost	EUR 2 528 215,7
EU contribution	EUR 1 963 037,2
Coordinated by	Paris-Lodron-Universitätsalzburg (Austria)
Participants	Universitat Autonoma De Barcelona (Spain), Institut National de Recherche en Sciences et Technologies pour l'environnement et l'agriculture (France), Vlaams Gewest (Belgium), Eftas Fernerkundung Technologietransfer GMBH (Germany), Vlaamse Instelling Voor Technologisch Onderzoek N.V. (Belgium), National Observatory Of Athens (Greece), Accademia Europea Per La Ricerca Applicata Ed Il Perfezionamento Professionale Bolzano (Accademia Europea Bolzano) (Italy), Rheinische Friedrich-Wilhelms-Universitat Bonn (Germany), Instytut Geodezji I Kartografii (Poland), Technische Universitat Berlin (Germany), Eovision GMBH (Austria), Specto Natura Limited (United Kingdom), Mouseio Goulandri Fysikis Istorias (Greece), Lup-Luftbild Umwelt Planung GMBH (Germany), Landesamt fur Landwirtschaft, Umwelt und Landliche Raume des Landes Schleswig-Holstein (Germany), Conservatoire Des Espaces Naturelsdu Languedoc Roussillon Association (France), Universidad de Málaga (Spain)

1.24.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Tools and services developed within MS.MONINA project are presented on MOMINA geoportal with the option to be re-used as required by service customers

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Question	Answer
S2. Technologies	The prepared technologies of image classification and habitat monitoring are prepared in line of the state-of-the art level of their development, applying in-house developed solutions for data analysis
S3. Standards and specifications	MS.MONINA products have been prepared according to commonly used standards of product generation based on satellite data, applying INSPIRE directives for metadata production
S4. Brokered approach	Some of the tools in the MONINA geoportal can be considered as data brokers
W1. Reuse	There is no specific commitment for operational continuation of MS.MONINA services developed within the Project
W2. Technologies	No technology can be considered as weak
W3. Standards and specifications	Some tools were developed at the dedicated centre of image processing, hence transfer of technology is required to make it operational for a wider range of customers
W4. Brokered approach	No specific plans for technology transferability
O1. Impact	The project has been completed recently so assessment of its impact on operational applications is difficult
O2. Dissemination	The MS.MONINA products and tools for their generation are accessible through Geoportal
O3. Viability	The Project results were presented to a wide range of users at EU, state and site level to promote their usefulness
T1. Impact	There is still a need to promote usefulness of MS.MONINA tools and services at site level
T2. Dissemination	There is no dissemination threat; it is well organized through Geoportal
T3. Viability	Viability of MS.MONINA services depends on awareness of customers at site and state level to use satellite-based techniques for habitat monitoring

1.24.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ High-level space-based products for habitat monitoring	▪ Some tools developed were not full justified from the transferability point of view
External	**OPPORTUNITIES**	**THREATS**
	▪ Possibility of setting-up operational service for NATURA 2000 habitats at European scale	▪ User community is still partly convinced on operational maturity of the developed methods and services

1.24.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Development of sophisticated approaches for classification and monitoring of various NATURA 2000 habitats based on satellite data
- Development of high standards of product generation and validation
- Development of dissemination strategy trough MS.MONINA Geoportal

1.25 PEGASO – People for Ecosystem Based Governance in Assessing Sustainable Development of Ocean and Coast

1.25.1 Brief description

The aim of PEGASO is to build on existing capacities approaches to support integrated policies for the coastal, marine and maritime realms of the Mediterranean and Black Sea Basins in ways that are consistent with and relevant to the implementation of the protocol to the Barcelona Convention on Integrated Coastal Zone Management[37] for the Mediterranean. PEGASO has developed the following actions:

- An ICZM governance platform that acts as a bridge between scientist and end-user communities.
- Indicators, accounting methods and models, scenarios, and socio-economic valuations for making sustainability assessments in the coastal zone.
- Regional networks of scientists and stakeholders in Mediterranean partners countries in FP7, supported by capacity building, to implement the PEGASO tools and lessons learned.
- A Spatial Data Infrastructure, following INSPIRE Directive, to organize local nodes and standardize spatial data to support information sharing on an interactive visor and to disseminate all results of the project to all interested parties and beyond.

The access and reuse of data is ancillary in PEGASO. The project is focused on providing Integrated Coastal Zone Management, Marine and Strategy Framework Directive, Water Framework Directive, Habitats and Birds Directives, and Strategic Environmental Assessment Directive indicators.

CORDIS permalink	http://cordis.europa.eu/project/rcn/94028_en.html
Official page	http://www.pegasoproject.eu
Funded under	FP7-ENVIRONMENT (http://cordis.europa.eu/programme/rcn/855_en.html) Subprogram ENV-2009.2.2.1.4 – Integrated Coastal Zone Management

[37] http://ec.europa.eu/environment/iczm/barcelona.htm

	Project reference 244170
From/to	2010-02-01 → 2014-01-31
Total cost	EUR 8 827 935
EU contribution	EUR 6 999 004
Coordinated by	Universitad Autonoma de Barcelona (Spain)
Participants	Universidad Pablo de Olavide (Spain), Plan Bleu pour l'Environnement et le Developpement en Mediterrannee (France), Institut Francais de Recherche pour l'Exploitation de la Mer (France), Acri Etudes et Conseil (Morocco), United Nations Educational, Scientific And Cultural Organization –Unesco (France), The University of Nottingham (United Kingdom), Vlaams Instituut voor de Zee (Belgium), Universita Ca' Foscari Venezia (Italy), JRC - Joint Research Centre-European Commission (Belgium), Universite de Geneve (Switzerland), Hellenic Centre for Marine Research (Greece), Akdeniz Kiyi Vakfi (Turkey), University of Balamand (Lebanon), Marine Hydrophysical Institute - Ukrainian National Academy Of Sciences (Ukraine), Fondation Tour du Valat (France), The Commission on the Protection of the Black Sea against Pollution (Turkey), Union Internationale pour la Conservation de la Nature et de ses Ressources (Switzerland), Institutul National de Cercetare-Dezvoltare Delta Dunarii (Romania), Association de Reflexion, d'Echanges et d'Actions pour l'Environnement et le Developpement (Algeria), National Authority for Remote Sensing and Space Sciences (Egypt), National Institute of Oceanography and Fisheries (Egypt), Priority Actions Programme Regional Activity Centre (Croatia), University Mohammed V-Agdal (Morocco)

1.25.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	PEGASO has developed a SDI focused on coastal Mediterranean and Black Sea data. [PEGASO-D3.2A]
S2. Technologies	The technology approach is quite simple, nevertheless they developed a moodle e-learning platform and a performed hands-on training session for building capacity among partners in order to implement local geonodes [PEGASO-D3.2B]
S3. Standards	Full use of the basic OGC stack: WMS/WFS/WCS/CSW. [PEGASO-D3.2A] Offered data and metadata are harmonized (INSPIRE, reference system, coordinates systems, identifiers for a spatial object) [PEGASO-D3.2B]
S4. Brokered approach	PEGASO SDI is a, infrastructure comprised of a distributed network of geonodes that shares data and services. A geonode is a system that consists of OGC WMS/WFS/WCS/CSW services, web clients and a geoportal. [PEGASO-D3.2A] CSW harvesting was used for retrieving metadata from local geonodes [PEGASO-D3.2B]
W1. Reuse	Open data is out of the scope of the project. They do not support formats such as JSON or GeoJSON

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Question	Answer
W2. Technologies	The trainees were dissatisfied about the e-learning training sessions. [PEGASO-D3.2B].
W3. Standards	None
W4. Brokered approach	There were partners unable to implement a geonodes. Data release was performed by the central geonode by FTP uploading datasets and associated metadata & symbolization. [PEGASO-D3.2A].
O1. Impact	The project may have impact on EU policies as provider of indicators and supporting initiatives during the project. [PEGASO-D2.4A][PEGASO-D2.4A]
O2. Dissemination	The results of the project are accessible. In addition there was an intensive participation in events and publications in journals [PEGASO-D7.1]
O3. Viability	PEGASO has a business plan proposal to ensure the PEGASO legacy specially non-technical aspects [PEGASO-D2.4B]
T1. Impact	It is unclear its impact regarding to data reuse.
T2. Dissemination	The research work and practical experiences are not yet described in comprehensive and operational documents [PEGASO-D2.4B]
T3. Viability	The business plan only identifies possible funding agencies; it does not consider transference of results to the industry [PEGASO-D2.4B]

1.25.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Domain SDI ▪ Experience in the development of indicators	**WEAKNESS** ▪ Open data is out of the scope of PEGASO ▪ Simple technological approach
External	**OPPORTUNITIES** ▪ Project oriented to provide indicators to the EC. ▪ The project has a business plan	**THREATS** ▪ Unclear relevance regarding data reuse. ▪ No transference of results to the industry.

1.25.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Regarding ENERGIC OD, this project does not contain remarkable technologies, standards, specifications, dissemination strategies or business models that deserves to be identified.

1.26 ICT-ENSURE – European ICT environmental sustainability research

1.26.1 Brief description of the project

The internationally organized scientific community "Environmental Informatics" proposes a support action. The super ordinate goal is to promote and extend the European exchange of knowledge and information on environmental issues for a sustainable environmental development based on a well-established network.

The overall idea of the Support Action includes the following activities:

- To identify relevant application areas for “ICT for a sustainable development”
- To expand the existing network with experts from EU27+
- To organise two enlarged EnviroInfo conferences
  - 2008: "Environmental Informatics and Industrial Ecology" and
  - 2009: "Environmental Management Information Systems: Accessing and Providing valuable Information for companies’ sustainable oriented Decision Making" (tentative)
- build a database on research literature - based on EnviroInfo proceedings
- provide a Web based information system on European environmental sustainability research
- to define requirements for a portal concept for the development of a "Single information space in Europe" and finalize with recommendation and a roadmap for inter-/transdisciplinary research to strengthen the EUROPEAN RESEARCH AREA in the field of ICT for environmental sustainability.

The group "Environmental Informatics" provides in this Support Action long-standing experience in ICT application for communication, technology and environmental protection. While gaining additional information from other countries, an added value emerges from a growing network of experts and practitioner in research, industry, SME’s and administration linked with an in-deep interdisciplinary knowledge transfer. It is certain, that after this Support Action the current independent group will cross over again into an enlarged self-sufficient European network with a well-founded information basis.

CORDIS permalink	http://cordis.europa.eu/project/rcn/87015_en.html
Official page	http://www.ict-ensure.eu/en/index.html
Funded under	FP7-ICT, ICT-2007.6.3 - ICT for environmental management and energy efficiency
From/to	From 2008-05-01 to 2010-04-30
Total cost	EUR 1 513 833
EU contribution	EUR 1 249 994
Coordinated by	TECHNISCHE UNIVERSITAET GRAZ Austria
Participants	FORSCHUNGSZENTRUM KARLSRUHE GMBH Germany INTERNATIONALE GESELLSCHAFT FUER UMWELTSCHUTZ Austria

1.26.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	There is no available information about it.
S2. Technologies	Within ICT-ENSURE two information systems have been developed.
S3. Standards and specifications	There is no available information about it.
S4. Brokered approach	There is no available information about it.
W1. Reuse	There is no available information about it.
W2. Technologies	There is no available information about it.

Question	Answer
W3. Standards and specifications	There is no available information about it.
W4. Brokered approach	There is no available information about it.
O1. Impact	It is difficult to determine.
O2. Dissemination	Many different dissemination activities.
O3. Viability	The process framework developed to describe the main activities carried out in ICT-ENSURE can be re-mapped taking these trends into account, in order to produce a broader roadmap for future activities.
T1. Impact	The project has been finished 5 years ago.
T2. Dissemination	There is no dissemination threat.
T3. Viability	The project has been finished 5 years ago, so it is difficult to determine it is viability.

1.26.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	STRENGTHS	WEAKNESS
	▪ Many experts in different area in one place	
External	OPPORTUNITIES	THREATS

1.26.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- enlargement and strengthening the European network of experts in ICT for environmental sustainability.
- outline a concept for the integration of European environmental information into a single information space (SISE- Single Information Space in Europe for the Environment)
- extending the network of environmental sustainability research

1.27 NESIS – A Network to enhance a European Environmental Shared and Interoperable Information System

1.27.1 Brief description of the project[38]

The NESIS aim is to promote the uptake of ICT solutions by public authorities in providing information for the monitoring and reporting of environmental impacts and threats. By supporting a shared vision towards an interoperable information infrastructure, the Network fosters the creation of the Shared Environmental

[38] Source: http://www.nesis.eu/

Information System (SEIS) and a coherent frame for existing good practices. The Network grounds on the experience of the EIONET Community, a Network of some nine hundreds experts from over three hundreds national environment agencies and other bodies in 38 European Countries. The Network Consortium is composed of partners from among 14 EU and Associated Countries, most of them as aforesaid EIONET National Focal Points, thus guaranteeing the involvement and commitment of the SEIS main actors. The thematic Network approach allows bringing together stakeholders through workshops, exchange of best practice, and a dedicated website linked to the EIONET and INSPIRE portals. Technical guidance and a comprehensive review of the state-of-play in ICT deployment for environmental monitoring and reporting within EIONET community is of help for the convergence of ICT approaches and increased interoperability and then a concrete proposal for the ICT roadmap to the implementation of SEIS will be produced. The leading criterion is to evolve towards a distributed, standards-based infrastructure for spatial and non-spatial environmental information, grounded on the principle of shared access rather than centralised reporting.

Objectives:

- a forum of stakeholders at national level to share good practices and provide indications and solutions about environmental information management within SEIS. At such aim the involvement of EIONET (the European Environmental Information and Observation Network) has been pursued as a key factor, to leverage and exploit its competence and pool of implementation experience
- a ICT roadmap, through stakeholders consultation, for the implementation of SEIS as a distributed information system
- structuring and expressing the needs arising from the INSPIRE compliancy process, the spatial data infrastructure of which will be backbone of SEIS for geospatial data exchange. It will result in a roadmap to ensure convergence of SEIS and INSPIRE
- streamlining the SEIS implementation with other EU initiatives about environmental information services (e.g. GMES, ICT 7 FP and ICT PSP related projects)
- a further involvement of stakeholders at the local and regional level, with cross-fertilisation of ideas and proposals, also individuating specific pilot initiatives to improve efficiency and impact of environmental information exchange
- to investigate how new technology could be addressed by the ICT-PSP-CIP programme to promote proper initiatives and stimulate the uptake of innovative ICT solutions in Member States

CORDIS permalink	http://cordis.europa.eu/project/rcn/191705_en.html
Official page	http://www.nesis.eu
Funded under	CIP 2007-2013 (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme: CIP-ICT-PSP-2007.4.2 - Supporting sustainable growth Call for proposal: CIP-ICT-PSP-2007-1
From/to	2008-05-01 → 2010-10-31
Total cost	EUR 417 500
EU contribution	EUR 417 500
Coordinated by	GISIG (Geographical Information Systems International Group Associazione, Italy)

Co-funded by the European Union

Participants	Katholieke Universiteit Leuven (Belgium), Ceska Informacni Agentura Zivotniho Prostredi (CENIA) (Czech Republic), Slovenska Agentura Zivotneho Prostredia (SAZP) (Slovakia), Statens Forurensningstil Syn (SFT) (Norway), Kornyezetvedelmi Es Vizugyi Miniszterium (MOEW) (Hungary), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) (Italy), Umhverfisstofnun (EAI) (Iceland), Umweltbundesamt Gmbh (UBA-A) (Austria), Malta Environment & Planning Authority (MEPA) (Malta), Landscape, Natural And Cultural Heritage Observatory Onlus (ICCOPS) (Italy), Institut Francais De L'en Vironnement (IFEN) (France), Tietoenator Eesti Aktsiaselts (TEE) (Estonia), Naturvardsverket (SWEDISH EPA) (Sweden), Ministry of Agriculture, Natural Resources and Environment (MOA) (Cyprus), Aplinkos Apsaugos Agentura (AAA) (Lithuania)

1.27.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	One of the topics of the project was to study the reuse of environmental information, optimising institutional cooperation so that information is reported once but used by many: duplication and confusing information requests should be prevented. The Good Practices Catalogue created by NESIS describes and shares the experience about ICT solutions to manage environmental information. It collects those carried out projects which led to an operational improvement of ICT aspects of environmental data management (methods, technology, procedures). [NESIS D2.6] The Good Practices Catalogue is freely accessible and searchable. It is opened to new additions.

Question	Answer
S2. Technologies	The project studied: ▪ the NESIS approach to identify SEIS requirements; ▪ a high level description of the SEIS ICT Components, suggesting an architecture for SEIS and the services it should offer, partly based on INSPIRE, partly analysing SEIS specific aspects; ▪ a proposal of Technical Guidelines for implementing the ICT components of SEIS, that considers, Metadata, Data Specifications and Network Services, according to the INSPIRE taxonomy; ▪ in addition to the above core components of SEIS, additional issues have been considered: the connection of INSPIRE with the environmental domain through the Linked Data technology, the already existing e-Reporting experience (based on EEA's SENSE project), an Environmental Thesaurus for SEIS, the specific case of voluntarily collected and provided data; ▪ a possible plan for SEIS implementation. [NESIS D1.3.1] Starting from the results of NESIS, the following features are being developed within an open eENVplus Infrastructure, allowing deployment and creation of new and innovative applications: ▪ Harmonisation and validation services: A toolkit for data harmonization and validation, in line with the INSPIRE data specification. ▪ Added-value specialised services: To compose the base overlay for building advanced environmental application in order to provide an operational shared environmental information infrastructure. ▪ Thesaurus framework: Extending to new data themes the NATURE-SDIplus Thesaurus Frameworks and provision of services for accessing data in a multilingual context. ▪ Training Framework: To support the transfer of knowledge and skills for the implementation of the EU policy related to GI.
S3. Standards and specifications	The project studied the convergence of SEIS and INSPIRE. Other EU initiatives about environmental information services (e.g. GMES, ICT 7 FP and ICT PSP related projects) were taken into account.
S4. Brokered approach	-
W1. Reuse	The search engine of the Good Practices Catalogue is out of work in February 2015. The services proposed by NESIS for SEIS deal with data and information products but the process of how data is processed into policy-relevant information is not explicitly considered. [NESIS D1.3.1]
W2. Technologies	The project performed a study about the state of play and good practices regarding the implementation of the Shared Environmental Information System (SEIS). No technology was developed or used in the project.
W3. Standards and specifications	The project finished on 2010. Some conclusion might be outdated.

Question	Answer
W4. Brokered approach	-
O1. Impact	NESIS is a network open to any stakeholder interested in the SEIS implementation. The network includes 43 Members from 24 Countries. It leverages the existing EIONET Community. *To become a member of the network, a* subscription form must be completed. The NESIS network is invited to participate in eENVplus and take benefit of this new initiative
O2. Dissemination	There is a website to supply general information, to host the on-line catalogue and to allow partners the access to technical documents. There are promotional materials (poster and leaflets) and several national and international workshops were attended to disseminate the project.
O3. Viability	A SWOT analysis was provided. It allowed the identification of internal and external factors that are expected to be favourable or unfavourable if the ICT implementation of SEIS follows the NESIS proposal. [NESIS D6.1] The main topics addressed by NESIS are being further developed in the context of the new initiative eENVplus.
T1. Impact	Impact of NESIS network must be analysed in the context of other related projects, such as the eENVplus project.
T2. Dissemination	There are no Social Media profiles (Twitter, LinkedIn, Facebook…). Dissemination channel are the common ones in any EU project (website, posters, leaflets, workshops, meetings, conferences).
T3. Viability	Viability of NESIS network must be analysed in the context of other related projects, such as the eENVplus project.

1.27.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Results of NESIS are being applied in an open eENVplus.	**WEAKNESS** ▪ The topics are studied in a theoretical way. No data is managed in the context of the project, no technology is developed or used and no standard is applied. ▪ The project finished on 2010. Some conclusion might be outdated.
External	**OPPORTUNITIES** ▪ Network of stakeholders. Some of them participate in eENVplus. ▪ A SWOT analysis about the implementation of SEIS was provided.	**THREATS** ▪ Impact of NESIS network must be analysed in the context of other related projects, such as the eENVplus project.

1.27.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- None.

1.28 SENSE4US – Data Insights for Policy Makers and Citizens

1.28.1 Brief description of the project

Making and implementing policy at any governmental level is a difficult task. Policy-makers and specialists must rely on readily available public information sources that rely on historic, rather than current data. Moreover, they lack the resources and methodology to be able to access current data and take the views of the citizens into consideration when forming policies. Sense4us project will cover this need for tools and techniques and will create a toolkit that will support information gathering, analyzing and policy modelling in real time. The package of utilities will be based on cutting-edge research.

The ultimate objective of the Sense4us project is to take recent advances in policy modelling and simulation, data analytics and social network discussion dynamics. Sense4us will further develop them into integrated tools which will make public service and policy provision faster and more effective. This way, the project will provide both economic and social benefits at local, national and supra-national levels across Europe.

- A selection of the functionalities that will be provided by the tools that will be developed in the project:
- Find and select available information relevant to the policy under development
- Link and homogenise the data to make it accessible and useful
- Model the policy against its objectives and intended impact
- Validate the policy against existing legislation
- Discover and take account of the views and opinions of non-governmental groups and the general public
- Predict and test economic outcomes to ensure beneficial results
- Model and predict the likely social impact of policy
- Build a record of the policy development process in order to justify decisions made
- Provide multiple policy options to be modelled, improving the negotiation process between key stakeholders

CORDIS permalink	http://cordis.europa.eu/project/rcn/110186_en.html
Official page	http://www.sense4us.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogramme: ICT-2013.5.4 - ICT for Governance and Policy Modelling Call for proposal: FP7-ICT-2013-10
From/to	2013-10-01 → 2016-09-30
Total cost	EUR 3 332 562
EU contribution	EUR 2 540 000
Coordinated by	University of Southampton (United Kingdom)

Participants	Government To You (Belgium), Universitaet Koblenz-Landau (Germany), Gesis - Leibniz Institut fur Sozialwissenschaften e.V. (Germany), Stockholms Universitet (Sweden), The Open University (United Kingdom), Hansard Society Limited By Guarantee (United Kingdom)

1.28.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	
S2. Technologies	
S3. Standards and specifications	
S4. Brokered approach	
W1. Reuse	It is not focused on GI, but in open data and linked open data in general, and (according to the deliverables published at the moment) social media data in particular.
W2. Technologies	The project is developing its own technology for Sentiment Analysis on Twitter regarding policies [SENSE4US D5.1], this is not related to ENERGIC OD.
W3. Standards and specifications	
W4. Brokered approach	
O1. Impact	
O2. Dissemination	Very active accounts on Facebook, Twitter (473 tweets, 352 followers) and LinkedIn (406 contacts) Dissemination activities include press releases, featured articles, interviews and posts, website, newsletters, social media, conference presentations, workshops, demonstrations, deliverables, brochures and posters and collaboration with other EU-funded projects [SENSE4US D8.4]
O3. Viability	
T1. Impact	
T2. Dissemination	
T3. Viability	

1.28.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD

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Internal	**STRENGTHS**	**WEAKNESS**
		▪ It is not focused on GI, but in open data and linked open data in general, and social media data in particular. ▪ The project is developing its own technology for Sentiment Analysis on Twitter regarding policies.
External	**OPPORTUNITIES**	**THREATS**
	▪ Very active accounts on Facebook, Twitter (473 tweets, 352 followers) and LinkedIn (406 contacts)	

1.28.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- None.

1.29 Fusepool – Fusing and pooling information for product/service development and research

1.29.1 Brief description of the project[39]

Fusepool develops a user-adaptive «Living Knowledge Pool» for product development and research. Compared to existing search and knowledge management solutions, Fusepool provides two core benefits: the automated transformation of content from web-harvesting and participating organizations into structured Linked Open Data format and the automated group-specific optimization of knowledge finding and matching based on transfer learning from individual users. Instead of optimizing results only individually per user, Fusepool fuses anonymised user interactions to derive optimizations for specific user groups of users. Information mining and interlinking combine text mining, feature- and entity extraction with semantic web technologies. Content classification and entity identification enable automated enrichment and interlinking of information extracted from internal as well as web-harvested 'raw' content. In addition, Linked Open Data (LOD) from hundreds of data repositories such as Eurostat or DBPedia (Wikipedia) are accessed to pool knowledge related to the information need of the user. Moreover, 'raw' content that is transformed into machine-understandable content can be published as LOD for others to reuse it. Knowledge finding and matching refers to the semantics-aware search integrating content based on available metadata (e.g. classifications, entities) into a stream-lined application for finding and matching content to support the user's information needs. Advanced search features include refinement and filtering, query intent discovery, and proactive information gathering. In addition, recommendations provide the user with potentially relevant information and user dis/approval optimizes future recommendations. Visual analytics and graphical user interfaces present intuitively the complex information and analytical results. Users can develop and share layouts and even layouts are able to adapt to user needs based on past user interactions.

CORDIS permalink	http://cordis.europa.eu/project/rcn/103901_en.html
Official page	http://www.fusepool.eu/ ; http://sme.fusepool.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogramme: ICT-2011.4.1 - SME initiative on Digital Content and Languages

[39] Source: http://cordis.europa.eu/project/rcn/103901_en.html

Co-funded by the European Union

	Call for proposal: FP7-ICT-2011-SME-DCL
From/to	2012-07-01 → 2014-06-30
Total cost	EUR 2 463 784
EU contribution	EUR 1 930 980
Coordinated by	BERNER FACHHOCHSCHULE (Switzerland)
Participants	European Network Of Living Labs (Belgium), Iminds Vzw (Belgium), Swissdat (Schweiz) GMBH (Switzerland), SEARCHBOX SA (Switzerland), XEROX SAS (France), Geox Terinformatikai KFT (Hungary), Treparel Informations Solutions BV (Netherlands)

1.29.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Focused on LinkedData Refers to the 8 principles of publishing open data[40] [Fusepool D1.1]
S2. Technologies	Use of state-of-the-art but mature enough semantic technologies: the SILK framework, Open Refine, OpenLink Virtuoso Universal Server and Apache semantic tools (Clerezza, Stanbol, Solr, Apache Marmotta and Apache Stanbol Contenthub[41]) [Fusepool D1.1] The project created the Fusepool Data Platform (the R5 Framework) [Fusepool D1.1] OSGi42 architecture and Apache Felix43 Cloud based (Amazon)
S3. Standards and specifications	RDF, CSV, Linked Data [Fusepool D1.1]
S4. Brokered approach	
W1. Reuse	The project did not use geographic information. Main efforts on text processing for extracting semantic
W2. Technologies	Main technologies related to semantics
W3. Standards and specifications	
W4. Brokered approach	Fusepool R5 Framework is described as a brokered approach in [Fusepool D1.1], although is really a harvested approach.

[40] http://www.opengovdata.org/home/8principles

[41] https://stanbol.apache.org/docs/trunk/components/contenthub/

[42] http://www.osgi.org/

[43] http://felix.apache.org/

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Question	Answer
O1. Impact	The code developed for the Fusepool Data Platform will be contributed to Apache projects [Fusepool D1.1, D2.1] Fusepool has 45 projects in Github
O2. Dissemination	The project has a Twitter profile Living lab approach to software development; User-feedback integration, Stakeholder Workshop and Open Call for users [Fusepool D1.1] Hack-a-thons for apps based on open-source and Apache-based Fusepool platforms and components. This format in the Urban Data Challenge and the Data|Hack|Award. Regionally organized workshops and international conferences and exhibits
O3. Viability	
T1. Impact	All Github projects were quickly abandoned after the end of the project (last update of the last recent, 2014 October 6th)
T2. Dissemination	The public website seems to be an Alfa version. Only 7 deliverables are definitive (the other 10 are under review, although the project finished in June 2014)
T3. Viability	Viability cannot be assessed

1.29.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Focused on LinkedData ▪ Use of state-of-the-art but mature enough semantic technologies: the SILK framework, Open Refine, OpenLink Virtuoso Universal Server and Apache semantic tools (Clerezza, Stanbol, Solr, Apache Marmotta and Apache Stanbol Contenthub) ▪ RDF, CSV, Linked Data	▪ The project did not use geographic information. ▪ Main efforts on text processing for extracting semantic ▪ Main technologies related to semantics ▪ Harvested approach.
External	**OPPORTUNITIES**	**THREATS**
	▪ Contribution to Apache projects ▪ Fusepool has 45 projects in Github ▪ Living lab approach to software development; User-feedback integration, Stakeholder Workshop and Open Call for users ▪ Hack-a-thons for apps based on open-source and Apache-based Fusepool platforms and components. This format in the Urban Data Challenge and the Data|Hack|Award.	▪ All Github projects were quickly abandoned after the end of the project (last update of the last recent, 2014 October 6th) ▪ The public website seems to be an Alfa version. ▪ Only 7 deliverables are definitive (the other 10 are under review, although the project finished in June 2014) ▪ Viability cannot be assessed

1.29.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

Technologies

- Clerezza[44] is a service platform based on OSGi (Open Services Gateway initiative) which provides a set of functionality for management of semantically linked data accessible through RESTful Web Services and in a secured way. Furthermore, Clerezza allows to easily develop semantic web applications by providing tools to manipulate RDF data, create RESTful Web Services and Renderlets using ScalaServerPages.
- Stanbol[45] enables the chaining of several semantic services, e.g. tag extraction/suggestion, text completion in search fields, ‘smart’ content workflows based on extracted entities, topics, etc. Apache Stanbol provides a set of reusable components for semantic content management. Apache Stanbol's intended use is to extend traditional content management systems with semantic services. Other feasible use cases include: direct usage from web applications (e.g. for tag extraction/suggestion; or text completion in search fields), 'smart' content workflows or email routing based on extracted entities, topics, etc.
- Solr[46] is an open source enterprise search platform, written in Java, from the Apache Lucene project. Its major features include full-text search, hit highlighting, faceted search, dynamic clustering, database integration, and rich document (e.g., Word, PDF) handling. It provides

[44] http://clerezza.apache.org/

[45] http://stanbol.apache.org

[46] http://lucene.apache.org/solr/

distributed search and index replication Solr has REST-like HTTP/XML and JSON APIs that make it usable from most popular programming languages. Apache Lucene and Apache Solr are both produced by the same Apache Software Foundation development team since the two projects were merged in 2010. It is common to refer to the technology or products as Lucene/Solr or Solr/Lucene.

- The Apache Stanbol Contenthub is an Apache Solr based document repository which enables storage of text-based documents and customizable semantic search facilities. The Contenthub exposes an efficient Java API together with the corresponding RESTful services.
- Apache Marmotta[47] provides an open implementation of a Linked Data Platform that can be used, extended, and deployed easily by organizations wanting to publish Linked Data or build custom applications on Linked Data.
- The SILK framework[48] is a tool for discovering relationships between data items within different Linked Data sources. (2009-02-01: Version 0.1 released; current 2 014-02-21: Version 2.6)
- Open Refine[49] (formerly Google Refine) is a powerful tool for working with messy data: cleaning it; transforming it from one format into another; extending it with web services; and linking it to databases like Freebase (Initial release: 10 November 2010). It works with files of different format, CSV, Excel spreadsheets, XML. It can be used to connect to remote naming services to reconcile records through its Reconciliation API.
- Drupal
- OpenLink Virtuoso Universal Server[50] is a multi-purpose and multi-protocol (Hybrid) Data Server from OpenLink Software that includes SQL Object-Relational, RDF, XML, and Free Text data management, alongside Web Application (HTTP, SOAP, WebDAV), SyncML, and Discussion Server functionality, in a single server.
- RDF RDFS, XSD, OWL, the DC Terms (DCMI Metadata Terms) is used for general purpose resource publications, and the FOAF (Friend of a Friend) vocabulary is used to primarily represent Agents, Persons and Organizations. PROV-O is used for provenance coverage. SKOS (Simple Knowledge Organization System) and XKOS (extension to SKOS) [Fusepool D2.1]
- XSLT 2.0 Saxon's command-line XSLT and XQuery Processor [Fusepool D2.1]

Dissemination

- Living lab approach to software development; User-feedback integration, Stakeholder Workshop and Open Call for users Hack-a-thons for apps based on open-source and Apache-based Fusepool platforms and components. This format in the Urban Data Challenge and the Data|Hack|Award.

1.30 ENVIROFI – The Environmental Observation Web and its Service Applications within the Future Internet

1.30.1 Brief description of the project

ENVIROFI was one of the eleven projects selected for the Phase 1 of the Future Internet Public-Private-Partnership (FI-PPP) programme [FI-PPP]. In particular, ENVIROFI was one of the eight Usage Areas and Use-Case projects aiming to make use of the FI-PPP core platform in setting up trials of advanced Future-Internet-based services and applications. ENVIROFI aimed to consolidate the Future Internet requirements from the Environmental Usage Area perspective and provided technical specifications and prototypes of interoperable geospatial Environmental Enablers.

CORDIS permalink	http://cordis.europa.eu/project/rcn/100097_en.html

[47] http://marmotta.apache.org/

[48] http://wifo5-03.informatik.uni-mannheim.de/bizer/silk/

[49] http://openrefine.org/

[50] http://virtuoso.openlinksw.com/dataspace/doc/dav/wiki/Main/

Official page	http://www.envirofi.eu/
Funded under	FP7 FI.ICT-2011.1.8 - Use Case scenarios and early trials Call FP7-2011-ICT-FI
From/to	2011-04-01/2013-06-30
Total cost	6425614
EU contribution	4 963 942
Coordinated by	ATOS SPAIN SA
Participants	UMWELTBUNDESAMT GMBH Austria UBIMET GMBH Austria AIT Austrian Institute of Technology GmbH Austria JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION Belgium FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V Germany EURESCOM-EUROPEAN INSTITUTE FOR RESEARCH AND STRATEGIC STUDIES IN TELECOMMUNICATIONS GMBH Germany AALTO-KORKEAKOULUSAATIO Finland Intune Networks Limited Ireland MARINE INSTITUTE Ireland CONSIGLIO NAZIONALE DELLE RICERCHE Italy STIFTELSEN SINTEF Norway NORSK INSTITUTT FOR LUFTFORSKNING Norway UNIVERSITY OF SOUTHAMPTON United Kingdom

1.30.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	ENVIROFI delivered a set of technological solutions (tools, specifications), called “environmental enablers” in the FI-PPP jargon, for re-use in the FI-PPP Phase 2 and 3. An ENVIROFI Environmental Enablers and Applications catalogue was published on the Web (http://catalogue.envirofi.eu/) for discovery and evaluation of enablers and it is still maintained. ENVIROFI delivered 20 enablers, and the final validation classified 40% of them as “Mature”, and another 45% as “Working prototype” [ENVIROFI D5.6]. The large majority of those enablers would be then reusable in other projects. Contacts and partial documentation is provided through the ENVIROFI Catalogue. The focus of ENVIROFI was on geospatial technologies and reuse was actually one of the requirements in the FI-PPP. ENVIROFI developed a set of three applications (web and mobile apps) on top of environmental enablers.

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Question	Answer
S2. Technologies	According to the ENVIROFI Catalogue, enablers are classified as: ▪ **Harvesters, connectors and mediators**: collection of brokers, connectors and mediator services which support protocols and data models found in the environmental domain. This thematic class of specific enabler is there to facilitate easier interoperability between specific enabler services, encouraging agile and flexible service composition in the future internet. ▪ **Geo-referenced data collection applications**: geo-referenced observation and sample data is key in the environmental usage area. The services in this thematic class provide ways to record and archive geo-tagged measurements for later use by other specific enablers such as fusion services. The enablers in this class are designed to support crowd sourcing of environmental measurements, recording multi-author data at a scale to exploit fully the future internet. ▪ **Semantic tagging tools**: tools and services that provide support for semantic enrichment of environmental data streams and sources. This thematic class includes environmental domain ontology support, harvester services and linked data services allowing uncertainty annotation of existing measurement resources. ▪ **Fusion tools for heterogeneous data sources**: heterogeneous environmental data fusion services operating at different semantic levels. This thematic class includes pre-processing, feature extraction, situation assessment and prediction services, preparing and aggregating environmental data into formats suitable for use by human end users and automated services such as alert services. ▪ **Event detection and notification services**: services which provide a variety of notification mechanisms compatible with the environmental geospatial standards and protocols. ▪ **Geospatial data provisioning and storage**: services related to the provisioning and storage of environmental observations and measurements. This category includes a number of existing open source environmental services that have gained traction in the environmental geospatial community. Most of the enablers are delivered with open license, or otherwise available for re-use in EU projects and initiatives. Three enablers in the category “Harvesters, connectors and mediators” are actually the main components of the GI-Suite brokering framework.
S3. Standards and specifications	The ENVIROFI architecture pushed OGC compliance in particular referring to the Sensor Web Enablement (SWE) framework.
S4. Brokered approach	The initial ENVIROFI system architecture [ENVIROFI D6.1.1] was designed around the concept of brokered System of Systems (very similar to the ENERGIC-OD approach). The brokered approach proved to be effective in at least one of the three ENVIROFI applications concerning biodiversity.

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Question	Answer
W1. Reuse	The maturity level of proposed technologies was mostly based on self-assessment or internal peer-review. Only a few enablers (but including the brokers) were validated with external validation in other projects and even with external evaluation by experts outside the consortium.
W2. Technologies	The project has ended in June 2013, therefore some technologies could be outdated. (Others may actually be improved.)
W3. Standards and specifications	
W4. Brokered approach	ENVIROFI deployed a different instance for each of the three applications, making difficult to evaluate how the brokered approach worked serving many different data sources, and supporting many different applications
O1. Impact	ENVIROFI and more generally FI-PPP addressed impact and dissemination through specific projects (e.g. FI-IMPACT). ENVIROFI was the only FI-PPP project focusing on geospatial technologies.
O2. Dissemination	ENVIROFI and more generally FI-PPP addressed impact and dissemination through specific projects (e.g. FI-IMPACT) Some former partners of the ENVIROFI consortium are still active in FI-PPP Phase 2 and 3 (they could be contacted by CNR-IIA for dissemination opportunities).
O3. Viability	ENVIROFI was part of a wider initiative FI-PPP covering a large time span (8 years). Moreover as a Public-Private Partnership, FI-PPP has sustainability as one of the main requirements.
T1. Impact	As a programme involving eleven projects running in parallel and then moving to other two phases, FI-PPP was and is a complex initiative. Such a complexity made complicated for ENVIROFI any strong coordination with other projects, limiting in some way the overall impact. In Phase 2 no project dealing with the environmental usage area was selected. Therefore the impact of ENVIROFI, at least in the FI-PPP, was less than expected and possible.
T2. Dissemination	Most of the dissemination was carried out through other dedicated projects in the FI-PPP limiting the ENVIROFI visibility, and mostly focus on the FI-PPP own objectives
T3. Viability	Geospatial technologies were not considered specifically important for the FI-PPP strategy. In particular they were not considered to be part of the core infrastructure (the so-called generic enablers) although proposed by ENVIROFI. Therefore the sustainability of environmental enablers is now up to the proposing institutions.

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1.30.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ The focus of ENVIROFI was on geospatial technologies and reuse was actually one of the requirements in the FI-PPP. ▪ ENVIROFI developed 20 environmental enablers, and 85% are classified at least as working prototypes ▪ The initial ENVIROFI system architecture was designed around the concept of brokered System of Systems. Such approach was successfully adopted in one of the three ENVIROFI apps	**WEAKNESS** ▪ The maturity level of proposed technologies was mostly based on self-assessment or internal peer-review. ▪ The project ended in June 2013, therefore some technologies could be outdated.
External	**OPPORTUNITIES** ▪ FI-PPP is a relevant EU initiative involving public sector and private companies.	**THREATS** ▪ Geospatial technologies were not considered specifically important in the overall FI-PPP strategy.

1.30.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

ENVIROFI was a technology-oriented project therefore the most remarkable outcomes concern technologies and architecture. Technologies delivered by ENVIROFI as « environmental enablers », by other FI-PPP use case projects as « specific enablers » and by the FI-PPP core infrastructure projects as « generic enablers » should be evaluated during ENERGIC-OD virtual hubs and applications design and development. At this stage it is possible to suggest some relevant outcomes :

- Technologies
  - **Access Broker**, **Service to semantically enhance queries**, **Discovery Broker** : these components are currently integrated in the GI-suite brokering framework and actually already re-used in ENERGIC-OD
  - **Geo-referenced data collection applications** (http://catalogue.envirofi.eu/enablers?field_enabler_category_tid=9): the services in this thematic class provide ways to record and archive geo-tagged measurements for later use by other specific enablers such as fusion services. The enablers in this class are designed to support crowd sourcing of environmental measurements, recording multi-author data at a scale to exploit fully the future internet.
  - **Wirecloud** (https://conwet.fi.upm.es/wirecloud/; from other FI-PPP projects) **:** Wirecloud is a visual tool for building web applications. It helps end users to innovate through experimentation by choosing the best suited widgets and prefab mashups (a.k.a. mashup-lets) from a vast, ever-growing distributed catalogue.
- Specifications
  - **Sketch of the ENVIROFI Architecture** [ENVIROFI D6.1.1]: it depicts the overall system architecture for ENVIROFI which shares many requirements and constraints with ENERGIC-OD

1.31 EuroGEOSS – European approach to GEOSS

1.31.1 Brief description of the project

EuroGEOSS aimed to demonstrate the added value to the scientific community and society of making existing systems and applications interoperable and used within the GEOSS and INSPIRE frameworks.

The project built an initial operating capacity for a European Environment Earth Observation System in the three strategic areas of Drought, Forestry and Biodiversity. It then undertook the research necessary to develop this further into and advanced operating capacity that provided access not just to data but also to analytical models made understandable and useable by scientists from different disciplinary domains. This concept of inter-disciplinary interoperability required research in advanced modelling from multi-scale heterogeneous data sources, expressing models as workflows of geo-processing components reusable by other communities, and ability to use natural language to interface with the models.

The extension of INSPIRE and GEOSS components with concepts emerging in the Web 2.0 communities in respect to user interactions and resource discovery, also supported the wider engagement of the scientific community with GEOSS as a powerful means to improve the scientific understanding of the complex mechanisms driving the changes that affect our planet.

CORDIS permalink	http://cordis.europa.eu/project/rcn/92593_en.html
Official page	http://www.eurogeoss.eu/
Funded under	FP7 CP-IP - Large-scale integrating project ENV.2008.4.1.1.1. - European Environment Earth Observation system supporting INSPIRE and compatible with the GEOSS (Global Earth Observation System of Systems) Call: FP7-ENV-2008-1
From/to	2009-05-01/2012-04-30
Total cost	7 905 328
EU contribution	6 035 566
Coordinated by	BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES France

Co-funded by the European Union

Participants	JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION Belgium CONSIGLIO NAZIONALE DELLE RICERCHE Italy INTERNATIONALES INSTITUT FUER ANGEWANDTE SYSTEMANALYSE Austria UNIVERSITAT JAUME I DE CASTELLON Spain THE UNIVERSITY OF NOTTINGHAM United Kingdom CENTRO NACIONAL DE INFORMACION GEOGRAFICA Spain SECTION FRANCAISE DE L'INSTITUT DES INGENIEURS ELECTRICIENS ET ELECTRONICIENS France EDISOFT-EMPRESA DE SERVICOS E DESENVOLVIMENTO DE SOFTWARE SA Portugal FUNDACION GENERAL DE LA UNIVERSIDAD DE ALCALA Spain UNIVERZA V LJUBLJANI Slovenia UNITED NATIONS ENVIRONMENT PROGRAMME Kenya ROYAL SOCIETY FOR THE PROTECTION OFBIRDS United Kingdom BIRDLIFE INTERNATIONAL United Kingdom UNIVERSITAET HAMBURG Germany UNIVERSITAET FUER BODENKULTUR WIEN Austria ALBERT-LUDWIGS-UNIVERSITAET FREIBURG Germany UNIVERSIDAD DE ZARAGOZA Spain CONFEDERACION HIDROGRAFICA DEL EBRO Spain AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS Spain UNIVERSITY OF NEBRASKA United States FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS FAO Italy GLOBAL BIODIVERSITY INFORMATION FACILITY Denmark

1.31.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	EuroGEOSS based on the reuse and advancement of existing technologies, and on a better exploitation of existing data and model infrastructures. The architectural and technological solutions developed in EuroGEOSS explicitly aimed to be reused in contexts like INSPIRE and GEOSS.

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Question	Answer
S2. Technologies	EuroGEOSS developed several technologies and tools: ▪ the EuroGEOSS broker for discovery and access [EuroGEOSS broker] ▪ Web 2.0 extensions to the EuroGEOSS broker ▪ Integration of vocabularies and other semantic assets and their publication as a SparQL/SKOS service The EuroGEOSS infrastructure has been tested for interdisciplinary applications involving Forest, Biodiversity and Drought. EuroGEOSS developed an advanced infrastructure in incremental steps: Initial Operating Capacity, Advanced Operating Capacity
S3. Standards and specifications	EuroGEOSS paid attention to standards with particular reference to INSPIRE specifications and profiles
S4. Brokered approach	EuroGEOSS was the project where the brokered approach was first demonstrated for advanced multidisciplinary infrastructures.
W1. Reuse	
W2. Technologies	The project has ended on April 2012, therefore some technologies could be outdated. (Others may actually be improved.)
W3. Standards and specifications	
W4. Brokered approach	
O1. Impact	EuroGEOSS achieved high impact through a strong relationship with GEOSS and INSPIRE The EC-JRC unit responsible of INSPIRE implementation was a partner in the project
O2. Dissemination	EuroGEOSS organized events including a high-level final conference [EuroGEOSS FC]
O3. Viability	Many outcomes of EuroGEOSS become part of the GEOSS Common Infrastructure. EuroGEOSS outcomes had a follow-up in FP7 GEOWOW
T1. Impact	The brokered solution proposed in EuroGEOSS was competing with federated solutions proposed by other projects and organizations including space agencies (GEOWOW involving ESA, mitigated such a threat)
T2. Dissemination	
T3. Viability	

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1.31.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ EuroGEOSS reused existing tools (also advancing them) and existing forest, drought, biodiversity infrastructures ▪ EuroGEOSS outcomes (brokering framework, semantic assets and other tools) are available for reuse in projects, and public infrastructures	▪ The project has ended on April 2012, therefore some technologies could be outdated. (Others may actually be improved.)
External	**OPPORTUNITIES**	**THREATS**
	▪ EuroGEOSS provided major contributions to GEOSS with tools and architectural solutions that are currently integrated in the GEOSS Common Infrastructure	▪ The brokered solution proposed in EuroGEOSS was competing with federated solutions proposed by other projects and organizations including space agencies (GEOWOW involving ESA, mitigated such a threat)

1.31.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

EuroGEOSS produced several outcomes which are remarkable for ENERGIC OD purposes.

Technology:

- **EuroGEOSS architecture**: The EuroGEOSS architecture allowed the integration of autonomous disciplinary infrastructures, similarly to what a ENERGIC OD VH should do.
- **EuroGEOSS incremental approach**: EuroGEOSS adopted an incremental approach for the development and deployment of the Operating Capacity. It resulted effective for both technological development and dissemination.
- **EuroGEOSS brokering framework**: The EuroGEOSS brokering framework was actually the basis of the current GI-suite brokering framework adopted in ENERGIC OD
- **Semantic assets**: EuroGEOSS introduced the concept of query expansion enabled in the brokering framework accessing semantic assets (vocabularies, thesauri, ontologies) stored in a knowledge base.

Dissemination:

- **Final conference**: The EuroGEOSS Final Conference was an effective high level event helping to achieve dissemination and impact and could be replicated at the end of the ENERGIC OD duration.

1.32 smeSpire – A European Community of SMEs built on Environmental Digital Content and Languages

1.32.1 Brief description of the project

The INSPIRE Directive 2007/2/EC, establishes an Infrastructure for Spatial Information in Europe, requiring large amounts of environmental digital content to be made accessible across Europe, resulting in a data pool that is expected to be of huge value for a myriad of value-added applications. The INSPIRE Implementing Rules Legal Acts outlines these data pools, but more work is needed.

Making data available according to the INSPIRE standards in 30 countries using 22 languages requires

specific skill sets that few public authorities have. The management of this content represents an opportunity for SMEs active in this sector.

SMEs can enable countries to fulfil the Directive, creating new market opportunities with increased potential for innovation and new jobs. Due to the legal requirements, the INSPIRE implementation becomes the entry-point for crucial business opportunities, opening new, or reinforcing existing perspectives (including Linked Open Data, Sensor Web, cloud computing and other e-environment application domains).

SmeSpire addressed 4 main tasks:

Assessment of market potential for SMEs in relation to INSPIRE as an integral component of the Digital Agenda for Europe, describing obstacles for SMEs to enter this market in terms of knowledge gaps.

Collation, translation and exploitation of a Best Practice Catalogue in the management of environmental content.

Development of a multilingual package to train environmental data analysts in the maintenance and exploitation of environmental data commons.

Creation of a network capable of transferring result-driven knowledge throughout Europe with research centres, environmental agencies, progressive technology providers and digital content providers.

SmeSpire's purpose was/is to encourage and enable the participation of SMEs in the mechanisms of harmonising and making large scale environmental content available.

To achieve these goals smeSpire created a network of SMEs all around Europa to exchange knowledge and information between them. The project built up a training and Best-Practises platform that can be used by every partner with no cost. Furthermore smeSpire was very active in building up local networks in each country and joined a huge number of conferences, i.e. the yearly INSPIRE-conferences.

CORDIS permalink	http://cordis.europa.eu/project/rcn/103999_en.html
Official page	http://www.smespire.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/fp7/cooperation/ict_en.html) Subprogram ICT-2011.4.1 - SME initiative on Digital Content and Languages Call for proposal FP7-ICT-2011-SME-DCL Project reference 296307
From/to	2012-05-01 - 2014-04-30
Total cost	EUR 1 979 328
EU contribution	EUR 1 791 000
Coordinated by	EPSILON ITALIA SRL (Italy)

Participants	JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION (Belgium) KATHOLIEKE UNIVERSITEIT LEUVEN (Belgium) INFO-LOGICA OOD (Bulgaria) EPSILON CONSULTING LIMITED (Cyprus) CENIA,CESKA INFORMACNI AGENTURA ZIVOTNIHO PROSTREDI (Czech Republic) PROF. SCHALLER UMWELTCONSULT GMBH (Germany) TRABAJOS CATASTRALES SA SOCIEDAD UNIPERSONAL (Spain) EPSILON INTERNASIONAL ANONYMI ETAIREIA MELETON KAI SYMVOULON (EPSILON INTERNATIONAL SA) (Greece) GISIG - GEOGRAPHICAL INFORMATION SYSTEMS INTERNATIONAL GROUP ASSOCIAZIONE (Italy) FONDAZIONE GRAPHITECH (Italy) UAB AEROGEODEZIJOS INSTITUTAS (Lithuania) PARAGON LIMITED (Malta) SLOVENSKA AGENTURA ZIVOTNEHO PROSTREDIA THE SLOVAK ENVIRONMENTAL AGENCY (Slovakia) GiStandards LTD United (Kingdom)

1.32.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Training package available on an e-learning training platform Best Practice catalogue, mainly focused on INSPIRE projects Study on the Geo-ICT sector in Europe Database of Geo-ICT SMEs (over 600 entries) [Net10]
S2. Technologies	
S3. Standards and specifications	
S4. Brokered approach	
W1. Reuse	smeSpire focused on the INSPIRE-Directive only
W2. Technologies	
W3. Standards and specifications	
W4. Brokered approach	
O1. Impact	smeSpire encouraged SMEs all over Europe to work together and share their experiences

Question	Answer
O2. Dissemination	Workshops and presentations on European conferences Local workshops with different partners on country-level "smeSpire Challenge": Best Practice award for "Best Practices for INSPIRE", "Open Source Software for INSPIRE" [Net7]
O3. Viability	Online training package and Best Practice catalogue will remain
T1. Impact	
T2. Dissemination	
T3. Viability	

1.32.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Best Practice catalogue ▪ Database of Geo-ICT SMEs	
External	**OPPORTUNITIES**	**THREATS**
	▪ Brought together a large number of European GEO-ICT SMEs ▪ Good dissemination ideas like the Best Practice Award	

1.32.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- A training package based on vocational training curricula, designed to train environmental data analysis professionals, expert in the maintenance and exploitation of environmental data commons. The training package, including a catalogue translated in all the official languages of the participating Member States, is available on an e-learning training platform.
- A Best Practice catalogue, including lessons learned and unsuccessful outcomes, in the field of the management of environmental digital content across Europe.
- Dissemination events, in the form of smeSpire days, which included training workshops, organised in the 12 participating countries.
- A network of SMEs and other institutional stakeholders aiming at bridging the gap between the INSPIRE driven demand of environmental digital data and the industry-driven offer of geo-ICT solutions.
- A business model aiming at enabling already established and new geo-ICT SMEs in Europe to convert technological innovation which is inside the INSPIRE implementation process into economic value.
- A database containing information about the geo-ICT SMEs in Europe, enabling complex business intelligence studies and analysis, even beyond the project lifetime, useful to extract real indicators and to map competences from SMEs across Europe.

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1.33 CloudSpaces – Open Service Platform for the Next Generation of Personal clouds (STREP)

1.33.1 Brief description of the project

The CloudSpaces project advocates for a paradigm shift from application-centric to user-centric models where users will retake the control of their information. To this end, CloudSpaces will devise an open service platform providing privacy-aware data sharing as well as interoperability mechanisms among heterogeneous Personal Clouds

CloudSpaces aims to create the next generation of Personal Clouds, namely Personal Cloud 2.0, offering advanced issues like interoperability, advanced privacy and access control, and scalable data management of heterogeneous storage resources. Furthermore, it will offer an open service platform for third-party applications leveraging the capabilities of the Open Personal Cloud.

CORDIS permalink	http://cordis.europa.eu/project/rcn/105603_en.html
Official page	http://cloudspaces.eu
Funded under	FP7-ICT-2011-8 - ICT-2011.1.2 - Cloud Computing, Internet of Services and Advanced Software Engineering
From/to	October 2012 - September 2015
Total cost	4 011 303 €
EU contribution	2 638 999 €
Coordinated by	Universitat Rovira i Virgili (ES)
Participants	Ecole Polytechnique Federale de Lausanne (CH), Institut Eurecom (FR), Canonical Limited(UK), eyeOS (ES), Tecnologia e Ingenieria de Sistemas y Servicios Avanzados de Telecomunicaciones (ES)

1.33.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Yes, the project reuses open data for cloud storage experiments
S2. Technologies	The project developed StackSync, an open source secure Personal Cloud for OpenStack Swift. And use Attribute Based Encryption
S3. Standards and specifications	OpenStack APIs and middleware
S4. Brokered approach	CloudSpaces defined interoperation protocols between personal clouds using mediators
W1. Reuse	CloudSpaces does not use geographic information
W2. Technologies	The project is currently tied to OpenStack Swift
W3. Standards and specifications	The project uses adhoc data sets from partners in the consortium
W4. Brokered approach	

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Question	Answer
O1. Impact	The project has user communities, but more have to be done.
O2. Dissemination	Yes, openStack Summit gave to CloudSpaces a lot of impact. This year the project will increase dissemination
O3. Viability	Yes, one partner is beginning to commercialize results. CloudSpaces is considering the creation of a company.
T1. Impact	User community is not big enough, we need more dissemination
T2. Dissemination	Results are accessible, but CloudSpaces needs more dissemination and impact this last year
T3. Viability	Yes, several companies and Universities around the world are already using StackSync. CloudSpaces is negotiating deals with commercial providers

1.33.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ CloudSpaces reuses open data for cloud storage experiments ▪ The project developed StackSync, an open source secure Personal Cloud for OpenStack Swift. And use Attribute Based Encryption ▪ Uses of OpenStack APIs and middleware ▪ CloudSpaces defined interoperation protocols between personal clouds using mediators	**WEAKNESS** ▪ CloudSpaces does not use geographic information ▪ The project is currently tied to OpenStack Swift
External	**OPPORTUNITIES** ▪ The project has user communities ▪ CloudSpaces is considering the creation of a company ▪ Summit gave to CloudSpaces a lot of impact	**THREATS** ▪ Not everything for user communities has been done ▪ but CloudSpaces needs more dissemination and impact this last year

1.33.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The project developed StackSync, an open source secure Personal Cloud for OpenStack Swift. And use Attribute Based Encryption
- CloudSpaces uses OpenStack APIs and middleware
- StackSync client is a branch project that evolved from Syncany, it presents a number of drawbacks that made CloudSpace evolves towards the current StackSync architecture
- StackSync, is an open framework for Personal Cloud systems. Its architecture is highly modular,

with each module represented by a well-defined API, allowing third parties to replace components for innovation in versioning, deduplication, live synchronization or continuous reconciliation, among other relevant topics.

- StackSync will be used in the CloudSpaces to design, implement, and validate essential contributions of the project such as Personal Cloud interoperability, privacy-aware data sharing or achieving an adaptive personal storage.

1.34 LinDA - Enabling Linked Data and Analytics for SMEs by renovating public sector information

1.34.1 Brief description of the project

The LinDA project addresses one of the most significant challenges of the usage and publication of Linked Data, the renovation and conversion of existing data formats into structures that support the semantic enrichment and interlinking of data. The set of tools provided by LinDA will assist enterprises, especially SMEs which often cannot afford the development and maintenance of dedicated information analysis and management departments, in efficiently developing novel data analytical services that are linked to the available public data therefore contributing to improve their competitiveness and stimulating the emergence of innovative business models.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191625_en.html
Official page	http://linda-project.eu/
Funded under	Co-funded by the European Commission under the 7th Framework Programme - FP7 ICT-2013.4.3 - SME Initiative on Analytics
From/to	01/12/2013 – 30/11/2015
Total cost	1,931,624.00 €
EU contribution	1,419,959.00 €
Coordinated by	NTUA
Participants	National Technical University Of Athens – NTUA, Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V, Gioumpitek Meleti Schediasmos Ylopoiisi Kai Polisi Ergon Pliroforikis Etaireia Periorismenis Efthynis, Rheinische Friedrich-Wilhelms-Universitaet Bonn, Piksel SPA, Critical Publics LTD, Hyperborea SRL, Ttnews 24 SRL

1.34.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	LinDA offers a set of re-usable, linked data tools for SMEs that facilitate querying and interlinking between re-usable open data. LinDA project is not limited to a specific domain, or to specific datasets types.

Co-funded by the European Union

Question	Answer
S2. Technologies	LinDA is a complete open-source package of Enterprise Linked Data tools to quickly map and publish data in the Linked Data Format, interlink them with other public or private data, analyze them and create visualizations. Consists of the LinDA Transformation engine, a lightweight transformation to linked data tool, the LinDA Vocabulary repository for increasing the semantic interoperability for your data, the LinDA RDF2Any , a tool for converting RDF to conventional data structures in order to be used by legacy applications, the LinDA Query Builder and Query designer to easily navigate and query your data, the LinDA visualization to perform smart visualizations on linked data out-of-the box and the LinDA Analytics package for running analytic processes against your data. LinDA enables enterprises to lower the learning curve of semantic technologies and harvest the potential of Linked Data in an intuitive and cost-effective manner. LinDA is a data management and application building workbench. It does not limit its focus to specific mobile technology or security frameworks.
S3. Standards and specifications	LinDA by its very nature is driven by interoperability and standards. More specifically it embraces the following standards: ▪ Semantic Web Standards (especially W3C Semantic standards and linked data) ▪ Metadata Standards and Vocabularies (A specific project task involves the maintenance of a platform that provides cloud access to Linked Data vocabularies and Metadata standards to be re-used by other applications)
S4. Brokered approach	LinDA embraces and promotes the Linked Data approach for the discover, access and use of data.
W1. Reuse	LinDA as a general-purpose toolset leaves a lot of flexibility in the hands of a user in terms of making the data re-usable (e.g. the user is able to avoid automatic suggestions and hand-pick a metadata vocabulary for mapping his data). If the user makes weak choices the end-result will not be of high-quality.
W2. Technologies	The Linked Data approach and technologies offered by the project is more suitable for enhancing data interoperability and publishing data on the web. It may not perform well on some specific data intensive operations (e.g. big data analysis or real-time transactions).
W3. Standards and specifications	LinDA is a set of toolsets, not limited to specific ad hoc interfaces, data sets or data models.
W4. Brokered approach	LinDA will further improve the access to data by providing the users and maintained dynamic list of available public sparql endpoints.
O1. Impact	The Linda tools were up until now under development, the user communities have not been engaged in large-scale currently.

Co-funded by the European Union

Question	Answer
O2. Dissemination	The project has a very ambitious dissemination plan. Pilot users of the platform are part of the consortium and have direct access a huge network of further potential users and stakeholders. The project even from the development phase has followed an open approach (the tools and development approach were openly available to the public from the beginning of the development)
O3. Viability	The project has drafted and will follow a sufficient and realistic sustainability plan that is based on its open-source philosophy.
T1. Impact	Same as O1, the LinDA tools have not been disseminated in large-scale by now.
T2. Dissemination	The LinDA results and software code is already available in github with an open license. Other projects have already contacted the LinDA project for re-using its tools
T3. Viability	The LinDA project directly targets and involves the SMEs – the industry, the long-term re-use of the tools is one of the main consideration of the Linda project.

1.34.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ LinDA is a complete open-source package of Enterprise Linked Data tools ▪ Consists of the LinDA Transformation engine ▪ Embraces W3C Semantic standards and linked data and Metadata Standards and Vocabularies ▪ promotes the Linked Data	**WEAKNESS** ▪ It may not perform well on some specific data intensive operations
External	**OPPORTUNITIES** ▪ The project even from the development phase has followed an open approach (the tools and development approach were openly available to the public from the beginning of the development) ▪ The project is based on its open-source philosophy	**THREATS** ▪ The LinDA tools have not been disseminated in large-scale by now.

1.34.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- LinDA by its very nature is driven by interoperability and standards. More specifically it embraces the following standards:

- Semantic Web Standards (especially W3C Semantic standards and linked data)
- Metadata Standards and Vocabularies (A specific project task involves the maintenance of a platform that provides cloud access to Linked Data vocabularies and Metadata standards to be re-used by other applications)

1.35 ODIP – Establishing and operating an Ocean Data Interoperability Platform

1.35.1 Brief description of the project

Europe, the USA and Australia are making significant progress in facilitating the discovery and access of marine data through the development, implementation, population and operation of overarching distributed ocean and marine data observing and management infrastructures such as SeaDataNet, Geo-Seas, IOOS and the Australian Ocean Portal. All these regional and national developments are resulting in the implementation of standards for formats of metadata, data, and data products, quality control methods and flags, common vocabularies, as well as services for discovery, viewing and downloading, and software tools for editing, conversions, communication, analysis and presentation, that are increasingly adopted and used by their national and regional ocean and marine communities. There is also a general trend towards the use of the basic ISO and OGC standards, however these allow the use of different profiles and vocabularies. As a result there are differences in the standards used in the different regions which hinder their direct exchange and use at an international and global scale, and as a result act as a barrier to the realisation of global portals such as the IODE Ocean Data Portal and GEOSS.

In order to remove impediments hindering the effective sharing of data across scientific domains and international boundaries, it is proposed to initiate and operate an Ocean Data Interoperability Platform (ODIP) which will include all the major organisations engaged in ocean data management in EU, US and Australia. ODIP is also supported by the IOC-IODE who will participate in its implementation and operation. The ODIP platform will organise international workshops to foster the development of common standards and develop prototypes to evaluate and test selected potential standards and interoperability solutions. The ODIP partnership will provide a forum to harmonise the diverse regional systems, while advancing the European contribution to the global system.

CORDIS permalink	http://cordis.europa.eu/project/rcn/105937_en.html
Official page	http://www.odip.eu/
Funded under	FP7 CSA - Coordination and support actions INFRA-2012-3.2. - International cooperation with the USA on common e-Infrastructure for scientific data Call: FP7-INFRASTRUCTURES-2012-1
From/to	2012-10-01/2015-09-30
Total cost	984 248
EU contribution	699 999
Coordinated by	NATURAL ENVIRONMENT RESEARCH COUNCIL United Kingdom

Co-funded by the European Union

Participants	UNIVERSITE DE LIEGE Belgium INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE Belgium INSTITUT FRANCAIS DE RECHERCHE POUR L'EXPLOITATION DE LA MER France HELLENIC CENTRE FOR MARINE RESEARCH Geece AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE Italy CONSIGLIO NAZIONALE DELLE RICERCHE Italy ISTITUTO NAZIONALE DI OCEANOGRAFIA E DI GEOFISICA SPERIMENTALE – OGS Italy MARIENE INFORMATIE SERVICE MARIS BV Netherlands NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK – TNO Netherlands

1.35.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	ODIP aims to integrate existing marine data infrastructures in Europe, Australia and USA ODIP prototypes will be compliant with GEOSS
S2. Technologies	As a CSA, ODIP will not deliver any technology, however improvements in existing infrastructures and services are expected.
S3. Standards and specifications	SensorML profiles for specific marine observations profile for Starfish Fungus Language for Sensor Description
S4. Brokered approach	One of the explicit objective of ODIP was the use of the (Euro)GEOSS Brokerage to harmonise the three regional services (SeaDataNet-Europe, IMOS-Australia, NODC-USA) to a common level and use the broker to facilitate access to data from the regional services by the GEOSS and Ocean Data Portals
W1. Reuse	
W2. Technologies	
W3. Standards and specifications	The project is still running therefore proposed specs are not yet approved as standards: SensorML profiles for specific marine observations and Starfish Fungus Language for Sensor Description are currently OGC discussion papers
W4. Brokered approach	Some of the three infrastructures still do not provide any service interface to be brokered
O1. Impact	ODIP aims to harmonize marine data infrastructures from three main regions: Europe, Australia and USA

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Question	Answer
O2. Dissemination	
O3. Viability	ODIP 2 has been recently approved for grant in H2020
T1. Impact	
T2. Dissemination	
T3. Viability	

1.35.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ One of the explicit objective of ODIP was the use of the (Euro)GEOSS Brokerage harmonise three regional services in Europe, Australia and USA ▪ ODIP 2 funded in H2020	▪ Prototypes not available yet
External		
	▪ Main marine data sharing infrastructure in Europe, USA and Australia participate in ODIP	▪ ODIP proposes enhancements and profiles to specifications that are still at OGC discussion paper level

1.35.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

As a Coordination and Support Action, ODIP will not deliver any technology, however it may be of interest for the following reason:

- **Brokering use-case**: ODIP will build a prototype of brokered infrastructure harmonizing three marine data sharing infrastructures in Europe, Australia and USA adopting the GI-suite Brokering Framework already selected as enabling technology in ENERGIC OD.

1.36 OpenDataMonitor – Monitoring, Analysis and Visualization of Open Data Catalogues, Hubs and Repositories

1.36.1 Brief description of the project

The OpenDataMonitor, provides a comprehensive and organized overview of all open data hubs and repositories within the European network. Using a dynamic and customizable framework metadata from a diverse pool of open data resources is harvested. Novel methods are used to structure, process and subsequently harmonize the metadata. Through the use of unique and intuitive visualisations, the tool will allow end-users to scan, explore, and quantitatively evaluate the composition of open data resources at municipal, national and pan-European scales. The OpenDataMonitor project highlights critical insights into the current open data scene, but also identifies emerging trends and obstacles to prepare all key stakeholders across Europe for the future of open data innovation...

CORDIS permalink	

Co-funded by the European Union

Official page	http:// www.project.opendatamonitor.eu
Funded under	Fp7 ICT
From/to	11/2013 – 10/2015
Total cost	1 910 121 €
EU contribution	1 496 000 €
Coordinated by	SYNYO Gmbh (AT)
Participants	http://project.opendatamonitor.eu/consortium/

1.36.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Project fosters to find and reuse open data by all kind of stakeholders
S2. Technologies	Harvesting and harmonisation of open data meta-data http://project.opendatamonitor.eu/wp-content/uploads/deliverable/OpenDataMonitor_611988_D3.3-Tool-architecture-and-components-plugins-programming-status-report-1.pdf
S3. Standards and specifications	Harvesting of CKAN and html open data repositories
S4. Brokered approach	ODM gathers meta data on open data from all over Europe to make it comparable and allows end-users to find relevant open data for them (for free).
W1. Reuse	Meta-data is often incomplete which makes it hard to compare data, however ODM makes this visible to make it easy for open data publishers to improve their meta-data quality
W2. Technologies	CKAN is standardised while html repositories are hard to harvest, however ODM includes also html repositories to provide a more complete picture of open data across Europe
W3. Standards and specifications	
W4. Brokered approach	Growing number of open data repositories → community approach is needed which will be integrated during the project to achieve a complete or almost complete view on the open data landscape
O1. Impact	After 15 project months more than 1.000 twitter followers are aware of the project (constantly growing)

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Question	Answer
O2. Dissemination	Project is strongly disseminated and also outcomes are prepared especially for the community see: http://opendatamonitor.eu – demonstration of the open data monitor http://project.opendatamonitor.eu/ including know-how section to support community both is constantly updated as the project is still in progress
O3. Viability	Exploitation opportunities are currently under development
T1. Impact	Feedback of community is appreciated and included in the further development, of course there are limitations based on the resources and time left
T2. Dissemination	Dissemination
T3. Viability	In general the whole open data community including industry will be able to make use of the project outcomes and insights of the demonstration site – based on exploitation opportunities and open data community interest project will be sustainable after project end, several business models are currently discussed

1.36.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ fosters to find and reuse open data by all kind of stakeholders ▪ Harvesting and harmonisation of open data meta-data ▪ Harvesting of open data repositories ▪ Gathers meta data on open data from all over Europe	**WEAKNESS** ▪ No focused on geographic information ▪ repositories are hard to harvest
External	**OPPORTUNITIES** ▪ twitter followers are aware of the project (constantly growing) ▪ outcomes are prepared especially for the community	**THREATS** ▪ are limitations based on the resources and time left

1.36.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Harvesting and harmonisation of open data meta-data http://project.opendatamonitor.eu/wp-content/uploads/deliverable/OpenDataMonitor_611988_D3.3-Tool-architecture-and-components-plugins-programming-status-report-1.pdf
- Harmonisation Engine. This component processes the raw, original metadata that were retrieved by the harvesters and performs cleaning and integration tasks required to obtain a homogenized

dataset in terms of both attribute names and attribute values.

- The Project has a Demonstration Site that comprises a set of components that are responsible for generating various visualisation and reports that will allow the end user to obtain a comprehensive overview of the monitored open data catalogues, based on a set of key metrics that have been identified.

1.37 EUBrazilOpenBio – Open Data and Cloud Computing e-Infrastructure for Biodiversity

1.37.1 Brief description of the project[51]

EUBrazilOpenBio - Open Data and Cloud Computing e-Infrastructure for Biodiversity (2011-2013) funded under the Objective FP7-ICT-2011-EU-Brazil Research and Development cooperation and by the Brazilian Minister of Science Technology and Innovation (MCTI) - National Council for Scientific and Technological Development (CNPq) will deploy an e-Infrastructure of open access resources supporting the needs of the biodiversity scientific community.

Tackling the complexity of Biodiversity Science requires dealing with multiple multidisciplinary datasets spanning from climatology to earth sciences all of key importance to overcome the fragmentation and focus on uniting existing different European and Brazilian data sources to provide scientists with an even greater knowledge base, achieved through the integration and shared use of appropriate computing resources.

In parallel EUBrazilOpenBio supports the Open Access Movement, promoting the concept of openness for scientific research, aligned with the OpenAIRE initiative launched in 2010 to establish an infrastructure for EC-funded researchers to publish their OA work. EUBrazilOpenBio supports these critical initial steps towards greater openness in the advancement of research and scholarship, through both a policy mandate for open access and a provision of infrastructure to support that policy.

The breadth and depth of the resulting data infrastructure and the openness of its resources will enable a large variety of new cost-effective, cross-disciplinary virtual research environment applications thus opening the way to its widespread adoption and exploitation by the biodiversity scientific community.

EUBrazilOpenBio aims to ambitiously combine the two key themes above to deploy an e-Infrastructure of open access resources (data, tools and services) that will make significant strides towards fully supporting the needs and requirements of the biodiversity scientific community. This data e-Infrastructure will result from the federation and integration of existing EU and Brazilian developed infrastructures and resources, namely through Catalogue of Life, D4Science-II, openModeller and Venus-C.

CORDIS permalink	http://cordis.europa.eu/project/rcn/99564_en.html
Official page	http://www.eubrazilopenbio.eu
Funded under	FP7-ICT (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogramme: ICT-2011.10.1.5 - e-Infrastructures Call for proposal:FP7-ICT-2011-EU-Brazil
From/to	2011-06-01 → 2013-09-30
Total cost	EUR 1 253 555
EU contribution	EUR 1 049 737
Coordinated by	Barcelona Supercomputing Center (Spain)

[51] Source: http://www.eubrazilopenbio.eu

Participants	Universitat Politecnica de Valencia (Spain), Consiglio Nazionale Delle Ricerche (Italy), Species 2000 (United Kingdom), Trust-It Services Ltd (United Kingdom), Stichting Naturalis Biodiversity Center (Netherlands), Cardiff University (United Kingdom), The University Of Reading (United Kingdom)

1.37.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	EuBrazilOpenBio deployed an e-Infrastructure by leveraging open access resources (data, tools, services). The resource inventory contains: data sources, tools and computational and storage resources from Brazil and Europe about biodiversity [EUBrazilOpenBio D2.1]
S2. Technologies	The starting point for developing the EUBrazilOpenBio software platform was the gCube system. gCube system provides facilities for[52]: Data Management, Data Security, Workflow Management, Data Retrieval, Data Mining Facilities, Data Visualisation, Semantic Data Analysis, APIs. EUBrazilOpenBio software consists in a number of software systems integrated together to form a new platform. Some of these software systems results from enhancements of pre-existing software systems while others will be developed from scratch to serve the needs of this project. Most of the software is related to biodiversity and species data discovery and management. Regarding Geographic information management two gCube plug-ins have been used (GeoExplorer[53] and GISViewer[54]). [EUBrazilOpenBio D3.1]
S3. Standards and specifications	EGI Federated Cloud through the COMPSs-PMES components: interoperable standard interfaces for VM management (OCCI), data management (CDMI) and information discovery (GLUE 2) [EUBrazilOpenBio D4.4] gCube system provides support for: ▪ OGC standard protocols like WFS, WCS, WMS, WPS. ▪ OAI providers for document data. ▪ SPARQL endpoints. ▪ Biodiversity data sources, including OBIS, GBIF and Catalogue of Life.

[52] https://gcube.wiki.gcube-system.org/gcube/index.php/GCube_Features

[53] https://gcube.wiki.gcube-system.org/gcube/index.php/GeoExplorer

[54] https://gcube.wiki.gcube-system.org/gcube/index.php/Gis_Viewer

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Question	Answer
S4. Brokered approach	The EUBrazilOpenBio infrastructure. Such infrastructure results from the federation and integration of existing European and Brazilian infrastructures (e.g. D4Science, VENUS-C), resources (e.g. datasources including Gbif, Catalogue of Life, speciesLink, List of Species of the Brazilian Flora) and tools (eg openModeler). The EUBrazilOpenBio infrastructure offers a number of computing services including COMPSs, EasyGrid AMS, VENUS-C, HTCondor, and gCube Hosting Node.
W1. Reuse	Data and other resources are oriented to biodiversity and species topics.
W2. Technologies	Mobile technologies are not considered.
W3. Standards and specifications	-
W4. Brokered approach	Broker solution is oriented to manage biodiversity and species data and to distribute calculation processes among computing nodes.
O1. Impact	There is an EUBrazilOpenBio Community through the Web Channel (http://www.eubrazilopenbio.org) and the Gateway (https://eubrazilopenbio.d4science.org/web/guest/home) [EUBrazilOpenBio D5.3]
O2. Dissemination	Several workshops and meetings took place; lots of papers, presentations, newsletters… were published. There are Websites and platforms available, Linkedin and Twitter profiles up-to-date [EUBrazilOpenBio D5.1]
O3. Viability	A Joint Action Plan was developed [EUBrazilOpenBio JAP]
T1. Impact	-
T2. Dissemination	The access to the deliverables is allowed only after registration. Some activity reports and the Final EC report are restricted. The website provides too much information and it is confusing. A project summary, presentation or demonstration video could be useful in order to explain the project and gain interest.
T3. Viability	Specific business models and cost-benefit analysis about EUBrazilOpenBio are not available

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the European Union

1.37.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ The EUBrazilOpenBio software platform is based on the gCube system. ▪ gCube system offers a broker solution to access and manage several resources.	▪ Data and other resources are oriented to biodiversity and species topics. ▪ Mobile technologies are not considered.
External	**OPPORTUNITIES**	**THREATS**
	▪ EUBrazilOpenBio Community. ▪ A Joint Action Plan was developed	▪ Access to some deliverables is restricted. ▪ The website is confusing. ▪ Specific business models and cost-benefit analysis about EUBrazilOpenBio are not available

1.37.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- **gCube** (http://www.gcube-system.org/). gCube is a large software framework designed to abstract over a variety of technologies belonging data, process and resource management on top of Grid/Cloud enabled middleware. By exposing them through a comprehensive and homogeneous set of APIs and services, it globally provides:
  - access to different storage back-ends in a variety of crucial areas for various purposes. Different storage layers offer facilities for handling: (a) multi-versioned software packages and dependencies resolution among them; (b) large scientific data-sets storable as tables (to be released in the upcoming minor release); (c) Time Series by offering an OLAP interface to operate over them; (e) structured document objects storable as trees of correlated information objects; (f) geo-coded datasets compliant with OGC-related standards; (g) and, finally, plain files;
  - management of metadata in any format and schema that can be consumed by the same application in the same Virtual Organization;
  - a process execution engine, named PE2ng. PE2ng is a system to manage the execution of software elements in a distributed infrastructure under the coordination of a composite plan that defines the data dependencies among its actors. It provides a powerful, flow-oriented processing model that supports several computational middleware without performance compromises. Thus, a task can be designed as a workflow of invocation of code components (services, binary executables, scripts, map-reduce jobs, etc.) by ensuring that prerequisite data are prepared and delivered to their consumers through the control of the flow of data;
  - a transformation engine to tackle the issue of transformation of data among various manifestations. This engine is manifestation and transformation agnostic by offering an intelligent, object-driven operation workflow. It relies on the PE2ng and it's extensible through transformation-program plugin that can be added as PE2ng component. Each transformation-program is registered in the transformers registry and then used at run-time to perform transformation among large (in batch) and small (in real-time) transformation scenarios;
  - management of Virtual Research Environment (VRE). Through VREs, groups of users have controlled access to distributed data, services, storage, and computational resources integrated under a personalised interface. A VRE supports cooperative activities such as: metadata cleaning, enrichment, and transformation by exploiting mapping schema, controlled vocabulary, thesauri, and ontology; processes refinement and show cases

implementation (restricted to a set of users); data assessment (required to make data exploitable by VO members); expert users validation of products generated through data elaboration or simulation; sharing of data and process with other users.

1.38 FINODEX - Future INternet Open Data EXpansion

1.38.1 Brief description of the project

The FIWARE Accelerator Programme (part of the EU Future Internet-Public Private Partnership FI-PPP) offers €80 million euros of direct funding, mentoring, networking and other acceleration services through 16 Future Internet Accelerator projects to promote the use and adoption of FIWARE technologies and to help entrepreneurs create innovative Internet applications.

FINODEX (Future INternet Open Data EXpansion), one of the 16 accelerators, is co-funded by the European Union to support SMEs and Web Entrepreneurs to develop products, services building upon FIWARE technologies and using Open Data.

FINODEX will launch 2 open calls, select and support up to 100 SMEs and web entrepreneurs with a total grant of 4.640.000 EUROS. The overall financial contribution for each selected project will be between 10.000 and 170.000 EUROS depending on the stage the project reaches.

The first open call was launched on 7 October 2014 and the second call will be in Spring 2015. More information on the calls, conditions and evaluation process will be published on this website.

Projects selected through these open calls will receive, in addition to funding a set of support services allowing them to develop viable products and give them the necessary skills connections to become sustainable after their support phase.

FINODEX will focus on the most promising sectors that could benefit from the combination of FI-PPP technologies with open data: health, transport, environment and finance. Leaving room for any proposal including and open topic called the bottom-up approach.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191684_en.html
Official page	http://www.finodex-project.eu/
Funded under	FP7-ICT - FP7 Specific programme 'Cooperation' - Research theme: 'Information and communication technologies' (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogramme: ICT-2013.1.8 - Expansion of Use Cases Call for proposal:FP7-2013-ICT-FI
From/to	2014-06-01 → 2016-08-31
Total cost	EUR 6 087 529
EU contribution	EUR 5 800 000
Coordinated by	ZABALA INNOVATION CONSULTING, S.A. (Spain)

Participants	EUROPE UNLIMITED S.A. (Belgium), COPENHAGEN BUSINESS SCHOOL (Denmark), ASOCIACIONES DE SOFTWARE LIBRE FEDERADAS (Spain), ENGINEERING - INGEGNERIA INFORMATICA SPA (Italy), ASSOCIAZIONE TRENTO RISE (Italy), ESLE ASOCIACION DE EMPRESAS DE SOFTWARE LIBRE DE EUSKADI (Spain), Asociación de Empresas Galegas de Software Libre (Spain), ASOC MADRILENA DE EMPRESAS DE SOFTWARE LIBRE SOLIMADRID (Spain), ASOCIACION DE EMPRESAS DE SOFTWARE LIBRE DE ANDALUCIA (Spain), CLUSTER DE ENTIDADES PRO SOFTWARE LIBRE DE ARAGON (Spain), ONDAZIONE BRUNO KESSLER (Italy).

1.38.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	FINODEX project gives SMEs and Web Entrepreneurs the opportunity to generate value and develop their business by making use of open data. It's the Future Internet Accelerator open to any business that uses open data as part of their products, services, building upon FIWARE technologies. Although FINODEX encourages SMEs and Web Entrepreneurs to generate open data, the main criterion to be part of this project is REUSING open data and not producing it. [FINODEX D1.1, FINODEX D2.2]. FINODEX participants are developing materials related to Open Data: What is open data? Which licenses are open? How can we create a business model related to Open Data? [FINODEX D3.2]
S2. Technologies	FINODEX project promotes the use of technologies of the Future Internet PPP programme (FIWARE). FIWARE is an innovative platform seeking to provide a truly open, public and royalty-free architecture and a set of open specifications that will allow developers, service providers, enterprises and other organizations to develop products that satisfy their needs while still being open and innovative. FIWARE provides a rich library of components offering a number of added-value functions offered "as a Service". These components, called Generic Enablers (GEs), provide open standard APIs that make it easier to connect to the Internet of Things, process data and media in real-time at large scale, perform BigData analysis, manage security and access control or incorporate advanced features to interaction with the user. [FINODEX D3.1]
S3. Standards and specifications	GEs are based on open standard APIs. [FINODEX D3.1]

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Question	Answer
S4. Brokered approach	Some GEs are brokers for different purposes. For instance, the FIWARE Context Broker GE (reference implementation: Orion) is used to handle/publish Context Information and implement context awareness, or the FIWARE IoT Broker GE is used to perform some calculations based on the combination of measures captured from multiple sensors. CKAN is the reference implementation of the FIWARE Datasets Management GE. Although it is not exactly a broker, it offers an API to query and retrieve datasets.
W1. Reuse	Although FINODEX promotes and the support the reuse of open data, the project itself does not make use of any specific dataset. This work shall be done by the sub-projects selected in the two open calls considered in the project.
W2. Technologies	Technology is very focused to the use of FIWARE. Although the sub-projects selected in the two open calls can use some technologies in addition to FIWARE, FINODEX only provides support to the use of FIWARE.
W3. Standards and specifications	Standard APIs in the context of Geographic Information is reduced to the ones provided by Geoserver, as this tool is the basis of the GE related to GIS.
W4. Brokered approach	No brokers related to Geographic Information are provided.
O1. Impact	FINODEX is one of the 16 accelerators belonging to the FIWARE Accelerator Programme. There is a broad community to promote the use of this technology.
O2. Dissemination	FINODEX itself is a way to promote and disseminate the usage of FIWARE. This task is done via two open calls that aim SMEs and Web Entrepreneurs to build new products using this technology. Each call is planned as a quiz where projects are refunded as they reach different phases. The first open call has received 196 proposals. A high number taking into account that only the first 50 better are selected and they have no guaranteed refund until they pass the first phase. FINODEX has done more than 30 appearances in the press until now. Results of the project are accessible through the web site [FINODEX D4.3].
O3. Viability	FINODEX sub-projects shall develop a full explanation about a business canvas model or equivalent on the product/service to be developed, including market perspectives for the project, as well as results of preliminary market tests and/or user/customer interviews. FINODEX participants will develop guides for commercializing products and services [FINODEX D2.1].
T1. Impact	The project started on June 2014. It is very soon to determinate its impact.
T2. Dissemination	The project started on June 2014. It is very soon to determinate its impact of the dissemination strategy.

Question	Answer
T3. Viability	The project started on June 2014. It is very soon to determinate the viability of the results.

1.38.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Open data reuse ▪ Open standard APIs ▪ FIWARE provides a rich library of components to make easier the development of web applications and services	▪ Technology is mainly focused on FIWARE usage
External	**OPPORTUNITIES**	**THREATS**
	▪ High number of appearances in the press. ▪ Each open call is planned as a quiz. It is an innovative approach to advertise the project. ▪ High number of proposals in the first call. ▪ Each sub-project shall develop a viability study. ▪ Partners must compete among themselves. It could be an incentive to disseminate their results.	▪ The project started on June 2014. It is very soon to determinate its impact.

1.38.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The project is mainly focused on **FIWARE** usage. This technology can be taken into account in order to improve the interoperability of the applications and services developed in ENERGIC OD. FIWARE provides a rich library of components to make easier the development of new tools, as well as cloud hosting capabilities to tests them.
- **CKAN** is the reference implementation of the FIWARE Datasets Management GE. Although it is not exactly a broker, it offers an API to query and retrieve datasets.

1.39 LEO – Linked Open Earth Observation Data for Precision Farming

1.39.1 Brief description of the project55

Lots of Earth Observation data has become available at no charge in Europe and the US recently and there is a strong push for more open EO data. For example, a recent paper on Landsat data use and charges by the US National Geospatial Advisory Committee – Landsat Advisory Group starts with the following overarching recommendation: “Landsat data must continue to be distributed at no cost”. Similarly, the five ESA Sentinel satellites that would soon go into orbit, starting with Sentinel-1 in 2013, have already adopted a fully open and free data access policy.

[55] Source: http://www.linkedeodata.eu/

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Open EO data that are currently made available by space agencies such as ESA and NASA are not following the linked data paradigm. Therefore, from the perspective of a user, the EO data and other kinds of geospatial data necessary to satisfy his or her information need can only be found in different data silos, where each silo may contain only part of the needed data. Opening up these silos by publishing their contents as RDF and interlinking them with semantic connections will allow the development of data analytics applications with great environmental and financial value.

The European project TELEIOS is the first project internationally that has introduced the linked data paradigm to the EO domain, and developed prototype applications that are based on transforming EO products into RDF and combining them with linked geospatial data.

In LEO, the core academic partners of TELEIOS (UoA and CWI) join forces with 2 SMEs (SpaceApps, VISTA) and one industrial partner (PCA) with relevant experience to develop software tools that support the whole life cycle of reuse of linked open EO data and related linked geospatial data. Finally, to demonstrate the benefits of linked open EO data and its combination with linked geospatial to the European economy, a precision farming application is developed that is heavily based on such data.

CORDIS permalink	http://cordis.europa.eu/project/rcn/110225_en.html
Official page	http://www.linkedeodata.eu/
Funded under	FP7-ICT (http://cordis.europa.eu/programme/rcn/853_en.html) Subprogramme: ICT-2013.4.3 - SME initiative on analytics Call for proposal: FP7-ICT-2013-SME-DCA
From/to	2013-10-01 → 2015-09-30
Total cost	EUR 2 043 183
EU contribution	EUR 1 494 999
Coordinated by	National and Kapodistrian University of Athens (Greece)
Participants	Space Applications Services N.V./S.A (Belgium), VISTA Geowissenschaftliche Fernerkundung GmbH (Germany), Pc-Agrar Informations- Und Beratungsdienst GmbH (Germany), Stichting Centrum voor Wiskunde en Informatica Database Architectures Group (Netherlands)

1.39.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Focus on Linked Data and Earth Observation Data

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Question	Answer
S2. Technologies	Use of the Silk framework [LEO D1.2.1], OpenSearch [D1.2.1] and D2RQ platform [LEO D1.1] Development of GeoTriples for the transformation of raw geospatial data into RDF [LEO D1.2.1] [LEO D2.1] Development of applications: Sextant, LEO DSE and LEODroid [LEO D1.2.1] Development of their own mapping language that use GeoSPARQL vocabulary for mapping geometries Reuse of Strabon[56] (a semantic geospatial and temporal DBMS for storing and querying geospatial data that changes over time) with SPARQL endpoints, from a previous project. [LEO D1.2.1] Reuse of MonetDB form previous projects: open-source column-store DBMS which achieves very efficient storage and query processing. [LEO D1.2.1] Review of languages for mapping relational databases to RDF graphs: Direct Mapping, R_2O, Relatinal OWL, Virtuoso, D2RQ, Triplify, R2RML, R3M, choosing R2RML for the project for being a W3C recommendation. [LEO D2.1] Review of R2RML processors: OpenLink Virtuoso, RDF-RDB2RDF, XSPARQL, UltraWrap, DB2Triples, Morph, and D2RQ [LEO D2.1] Review of linked data tools: RDF extraction tools (Apache Stanbol, DBpedia Spotlight, D2RQ platform, Valiant), storage (Virtuoso), authoring (OntoWiki, PoolParty), Interlinking (Silk, LIMES), Classification (DL-learner), Quality Analysis (Sieve), Evolution/Repair (ORE), Search, Browsing and Exploration (CubeViz, SemMap, Sig.ma EE) [LEO D1.1]
S3. Standards and specifications	Review of Earth Observation data formats (shape files, KML, GML, GeoJSON, GeoTIFF, Network Common Data Form (netCDF), Hierarchical Data Format (HDF)), access services (OGC, DBMS), metadata (OGC GML Application schema for Earth Observation products and the OGC Metadata Profile of Observations and Measurements) [D2.1]
S4. Brokered approach	The project will develop tools for cross-platform searching, browsing and visualization of linked EO data and linked geodata, by transforming raw data into RDF [LEO factsheet].
W1. Reuse	
W2. Technologies	Development of extensions to several standards to adapt them for the EO domain. However, these extensions can limit the way the results of the project can be reused.
W3. Standards and specifications	Development of extensions to several standards to adapt them for the EO domain. However, these extensions can limit the way the results of the project can be reused.

[56] http://strabon.di.uoa.gr/

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Question	Answer
W4. Brokered approach	Data would only be used as linked data
O1. Impact	Geotriples is open source and available on GitHub Development of a strong synergy with other project (talkingfields) that provide to LEO a use case description for implementation and demonstration [LEO D5.1] Establishment of close links with other projects (MELODIES, Prod-Trees, OBEOS and InGeoClouds) for reuse of software and data results [LEO D7.2.1]
O2. Dissemination	The dissemination channels include: the website, scientific publications, talks, demos, workshops, courses and theses, promotional material and the establishment of links with other projects and users. [LEO D7.2.1] Nine publications in a year and a half
O3. Viability	
T1. Impact	Development of extensions to several standards to adapt them for the EO domain. However, these extensions can limit the way the results of the project can be reused.
T2. Dissemination	The project has a Twitter profile but with minimum activity (1 tweet, 11 followers) The main dissemination channel will be the web site of the project. [LEO D7.2.1]
T3. Viability	The project has not ended yet, but no information on its viability or sustainability could be found

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1.39.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Focus on Linked Data and Earth Observation Data ▪ Use of the Silk framework, OpenSearch and D2RQ platform ▪ Development of many technologies related to Linked EO Data ▪ Reuse of many technologies from other projects ▪ Review of linked data tools, RDF mapping languages, R2RML processors and Earth observation data formats, access services and metadata ▪ The project will develop tools for cross-platform searching, browsing and visualization of linked EO data and linked geodata, by transforming raw data into RDF.	▪ Development of extensions to several standards to adapt them for the EO domain. However, these extensions can limit the way the results of the project can be reused. ▪ Data would only be used as linked data
External	**OPPORTUNITIES**	**THREATS**
	▪ Geotriples is open source and available on GitHub ▪ Development of strong synergy with other project (talkingfields) and establishment of close links with other ones ▪ Strong scientific diffusion	▪ The extensions to several standards can limit the way the results of the project can be reused and thus, its impact. ▪ Minimum activity on Twitter ▪ The main dissemination channel will be the web site of the project. ▪ The project has not ended yet, but no information on its viability or sustainability could be found

1.39.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Use of the Silk framework [LEO D1.2.1], OpenSearch [D1.2.1] and D2RQ platform [LEO D1.1]
- Developed or reused technologies
  - GeoTriples, tool developed in LEO, for transforming geospatial data sources into RDF. Employs and extends RDB to RDF Mapping Language (R2RML)[57] to create mappings that dictate the method of conversion of the raw data into the RDF data model. [LEO D2.1]. GeoTriples is open source, accessible from GitHub. GeoTriples is developed as part of the LEO project and, thus, cannot be considered a mature technology.
  - Strabon is a semantic geospatial and temporal DBMS for storing and querying geospatial data that changes over time. Strabon is an implementation of the data model stRDF, the query language stSPARQL and the respective part of the OGC standard GeoSPARQL. stRDF and stSPARQL extend RDF and SPARQL 1.1 respectively providing a function set and data types for making the querying of spatiotemporal information via stSPARQL or

[57] http://www.w3.org/TR/r2rml/

GeoSPARQL possible, such as finding spatial and temporal relations (e.g. intersection) between two resources. Its functionality is based on a spatially enabled database back end (currently PostgreSQL and MonetDB). Strabon is an open source application dating 2010, currently in version v3.2.10.

- MonetDB is an open-source column-store DBMS which achieves very efficient storage and query processing. It has two distinctive characteristics: the query language SciQL and the Data Vaults framework. SciQL is a new SQL-based query language for scientific applications that uses multidimensional arrays to represent EO data (e.g., time series of images) and query their content declaratively. The Data Vaults provides a true symbiosis between a DBMS and existing (remote) file-based repositories such as the ones used in EO applications. The data vault keeps the data in its original format and place, while at the same time it enables transparent data and metadata access and analysis using the SciQL query language. MonetDB is an open source application. First version dates from 2002 and it is currently updated

- The Silk Link Discovery Framework is a tool for discovering relationships between data items within different Linked Data sources. In LEO, Silk was extended in order to be able to discover precise geospatial and temporal links among RDF data. Silk is an open source application, freely distributed according to the Apache License v2.0.
- The project succeeds at developing of strong synergies and establishing close links with other projects.

1.40 EGIDA – Coordinating Earth and Environmental cross-disciplinary projects to promote GEOSS

1.40.1 Brief description of the project

EGIDA was a Coordination Action project aiming to support broader implementation and effectiveness of the GEOSS Science and Technology roadmap and the mission of GEOSS through coherent and interoperable networking of national and international initiatives and European projects [EGIDA].

CORDIS permalink	http://cordis.europa.eu/project/rcn/97100_en.html
Official page	http://www.egida-project.eu/
Funded under	FP7 CSA-CA - Coordination (or networking) actions ENV.2010.4.1.1-1 - Supporting the integration of European and international R&D programmes in GEO Call FP7-ENV-2010
From/to	2010-09-01/2012-12-31
Total cost	1 531 793
EU contribution	994 656
Coordinated by	CONSIGLIO NAZIONALE DELLE RICERCHE Italy

Co-funded by the European Union

Participants	SECTION FRANCAISE DE L'INSTITUT DES INGENIEURS ELECTRICIENS ET ELECTRONICIENS France INTERNATIONALES INSTITUT FUER ANGEWANDTE SYSTEMANALYSE Austria NORSK INSTITUTT FOR LUFTFORSKNING Norway MAX PLANCK GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V. Germany GKSS - FORSCHUNGSZENTRUM GEESTHACHT GMBH Germany IVL SVENSKA MILJOEINSTITUTET AB weden INSTITUT JOZEF STEFAN Slovenia NATURAL ENVIRONMENT RESEARCH COUNCIL United Kingdom BENTE LILJA BYE Norway DANMARKS METEOROLOGISKE INSTITUT Denmark CENTRO DE INVESTIGACION ECOLOGICA YAPLICACIONES FORESTALES Spain ISTITUTO SUPERIORE PER LA PROTEZIONE E LA RICERCA AMBIENTALE Italy

1.40.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	EGIDA proposed the integration of top-down actions (coming from GEO) with bottom-up actions (coming from existing projects and initiatives) through a set of specific coordination activities, for a more efficient implementation process of the GEOSS. EGIDA consolidated its achievements in the project activities (including use cases) in a general methodological approach – the EGIDA Methodology – to support the (re-)engineering of Earth Observation infrastructures. The EGIDA Methodology has been already re-used in other projects (FP7 IASON and FP7 EOPOWER) and the investigation of its support in the GEO Institutions Development Implementation Board (IDIB) is under discussion [EGIDA D4.8]. The EGIDA Methodology itself proposed re-use as the primary approach in the technical activities for the re-engineering of EO infrastructures.
S2. Technologies	Not applicable
S3. Standards and specifications	Not applicable
S4. Brokered approach	The EGIDA Methodology was tested in five use-cases. One of them, dedicated to the Mediterranean region, investigated the brokered approach for the integration of data sources for the upgrading of existing EO systems.
W1. Reuse	The EGIDA Methodology proposes guidelines based on previous experiences (good practices). For a few actions no good practice was available and no guideline is therefore available.

Question	Answer
W2. Technologies	Not applicable
W3. Standards and specifications	Not applicable
W4. Brokered approach	
O1. Impact	EGIDA was a coordination action specifically targeted to support activities of a high-level board (the GEO Science and Technology Committee, now superseded by the GEO Institutions Development Implementation Board).
O2. Dissemination	EGIDA set up a Stakeholders Network that became the GEOSS Stakeholder Network. EGIDA organized annual Stakeholders Network meetings with the support of the GEO STC.
O3. Viability	EGIDA delivered several outcomes directly to GEO and GEOSS assuring their viability and sustainability: the EGIDA Stakeholders Network became the GEOSS Stakeholder Network, the EGIDA Methodology has been proposed in several GEO-related European projects.
T1. Impact	As a coordination action supporting an existing board (the GEO STC) every change in the board strategy and activities was a threat for the project whose objectives were instead already defined in the DoW
T2. Dissemination	
T3. Viability	The main outcome of the project, the EGIDA Methodology, is maintained by the responsible partner who has to fund the maintenance effort.

1.40.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ EGIDA was strongly supported from a high-level board in a relevant initiative (the GEO STC) ▪ EGIDA based on previous successful experiences (in EO systems re-engineering)	**WEAKNESS** ▪ Possible misalignments between GEO STC objectives and EGIDA project objectives.
External	**OPPORTUNITIES** ▪ EGIDA built an efficient Stakeholders Network	**THREATS** ▪ Different visions between EGIDA and stakeholders from non-GEO domains

1.40.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

EGIDA did not deliver any technology.

- **EGIDA Methodology** : The EGIDA Methodology is described in a document detailing a set of

Networking and Technical Activities needed for the re-engineering of Earth Observation infrastructures. Some activities and related guidelines may be of interest also in a different context like the VH implementation in ENERGIC-OD.

1.41 eEnviPer – A single multi-purpose SOA platform that delivers environmental permissions services through the cloud of e-Government services and applications

1.41.1 Brief description of the project

The Aarhus Convention (1998) established that sustainable development can be achieved only through the involvement of all stakeholders. It linked government accountability with environmental protection and focused on interactions between the public and public authorities in a democratic context. This has led to a clear need for public participation and consultation during the environmental permitting procedures.

There is therefore a great need for a system that integrates relevant processes and services collected by public authorities and agencies, to enable them to model and deploy services, as a cloud of e-Government services that support environmental licensing procedures to citizens and businesses. For this purpose, basic operational services will be aggregated on the platform and will be offered to citizens as e-services. At the same time, the architecture of the platform will give the public administrations the opportunity to deploy easily new services, and existing procedures will be available as shared services. Geographical information services are critical for this system, since the decision making process of all stakeholders is dominated by information that has a clear spatial dimension.

The eEnviPer project aims to test an existing single multi-purpose cloud platform based on Service Oriented Architecture (SOA) for providing software as a service in five different European countries. The project will demonstrate the benefits of SOA and cloud architecture by integrating complementary existing systems that support environment-related permit procedures and provide digital services for permitting authorities at different levels, enterprises, consulting services and civil society (either individual citizens or special interest groups such as NGOs).

eEnviPer is an integrated web-based platform for the application, administration and consultation of environmental permits. In 2012-2014, eEnviPer set-up and tested its existing multi-purpose cloud platform in five pilot communities, supported by the European Commission's ICT Policy Support Programme. In making the environmental permits process more transparent, accessible and efficient, eEnviPer will help to reduce the environmental impact of economic activities through the environmental permits process in a cost-effective manner.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191928_en.html
Official page	http://www.eenviper.eu/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme: CIP-ICT-PSP.2011.4.1 - Towards a cloud of public services Call for proposal: CIP-ICT-PSP-2011-5
From/to	2012-04-01 → 2014-03-31
Total cost	EUR 4 126 002
EU contribution	EUR 2 063 000
Coordinated by	Draxis Environmental S.A. (Greece)

Participants	STELLA Consulting SPRL (Belgium), Etam Anonymh Etaireia Symboyleytikon Kai Melethtikon Ypiresion (Greece), Aristotelio Panepistimio Thessalonikis (Greece), KRITI (Greece), Krapinsko-zagorska županija (Croatia), Oikon Doo Institut Za Primijenjenu Ekologiju (Croatia), Agenzia Regionale Per La Protezioneambientale (Italy), Planetek Italia SRL (Italy), Municipality of Indjija (Serbia), Evrogeomatika d.o.o. (Serbia), Ministry Of Environment And Urban Planning (Turkey), Sampas Bilisim Ve Iletisim Sistemleri Sanayi Ve Ticaret A.S. (Turkey), Nigde Belediyesi (Turkey)

1.41.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Use of geographical and open data related to the environment and to environmental permits. The project provided access to information that was not available before [eEnviPer D4.4.2].
S2. Technologies	EnviPer platform offered as a cloud solution (Software as a Service). Based on the software development framework DOTframework and ArcGIS Server for spatial data management. eEnviPer uses identity management standards such as Security Assertion Markup Language 2.0 (SAML 2.0) and WS-Federation to assert the identity of a user and control access. eEnviPer uses Open Geospatial Consortium (OGC) interoperability standards: WMS, WFS, WCS, KML. EnviPer platform provides SOAP Web Services and RESTful application programming interfaces (APIs) Security: Access control, patches, anti-virus, encryption, secure protocols, logging, backup, Authentication, SQL Injection protection, Cross-site scripting (XSS) protection, Session hijacking protection [eEnviPer D3.1]
S3. Standards and specifications	
S4. Brokered approach	
W1. Reuse	
W2. Technologies	
W3. Standards and specifications	Regarding interoperability only the use of XML for data inputs and outputs is mentioned. No particular standard or specification could be found among the project deliverables.
W4. Brokered approach	eEnviPer is an integrated web-based platform for the application, administration and consultation of environmental permits, but no particular references to a brokered or mediated approach for the use of the data could be found among the project deliverables.

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Question	Answer
O1. Impact	The project implemented thirteen use cases and/or common procedures that the integrated software platform would need to deliver on. Pilots also modelled the workflows for their own customised installation. The project tested the platform using real-life cases with all stakeholders. According to their web page, users praised the user-friendliness, the integration of paperless workflows and the immediate availability of geographic information in the system. eEnviPer involved about 6,000 users in the five pilot projects, and reached nearly 1 million citizens in these countries and beyond.
O2. Dissemination	User engagement events: training sessions [eEnviPer D4.2], 2 workshops, media relations and one-on-one meetings. The project partners encouraged public authority staff, environmental engineers, investors and citizens to test the eEnviPer platform and provide feedback on its performance. High level endorsement for the project (for instance, the Greek Ministry of the Environment and Croatian Ministry of Environmental and Nature Protection).
O3. Viability	Throughout the project, eEnviPer followed a thorough business development process, from market analysis and pricing strategy to localised business plans for each pilot [eEnviPer D5.2.1 & D5.2.2]. Business model obtained/assessed through questionnaires to the stakeholders (citizens, NGOs, engineers, public administrations) [eEnviPer D4.4.2]. The eEnviPer software solution is commercially available in Croatia, Italy, Greece, Serbia and Turkey and the identification of future opportunities is underway. A contract was signed with the Greek Ministry of Environment, Energy and Climate Change for the implementation of the eEnviPer solution for the Greek region. eEnviPer solution presented the to the Croatian Ministry of Environmental and Nature Protection looking forward to a future collaboration. The Croatian Ministry expressed their interest to implement the eEnviPer solution for their region and so they submitted their offer for consideration.
T1. Impact	Evaluation results (productivity, cost reduction, accessibility, participatory, usability and sustainability) made through “do-you-think-that” questionnaires (subjective method) instead of trying to evaluate through any other objective method. [eEnviPer D4.4.2]
T2. Dissemination	Twitter account with just 62 tweets and 52 followers. Unable to find scientific papers or conferences, neither from their website nor from general and scientific search engines (Google and Scopus).
T3. Viability	The five use cases platforms examples were not working on 27-1-2015.

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1.41.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Use of geographical and open data related to the environment and to environmental permits, making new data available ▪ Cloud solution (SaaS) ▪ Identity management standards ▪ OGC interoperability standards: WMS, WFS, WCS, KML	▪ No particular standard or specification for data inputs and outputs could be found. ▪ No particular references to a brokered or mediated approach for the use of the data could be found.
External	**OPPORTUNITIES**	**THREATS**
	▪ The project tested the platform using real-life cases with all stakeholders ▪ Users generally praised the project ▪ eEnviPer involved about 6,000 users in the five pilot projects, and reached nearly 1 million citizens in these countries and beyond. ▪ High level endorsement for the project (Greek Ministry of the Environment and Croatian Ministry of Environmental and Nature Protection). ▪ Thorough business development process, from market analysis and pricing strategy to localised business plans for each pilot. ▪ The eEnviPer software solution is commercially available in the countries participating in the project ▪ A contract was signed with the Greek Ministry of Environment, Energy and Climate Change for the implementation of the eEnviPer solution for the Greek region.	▪ Evaluation results (productivity, cost reduction, accessibility, participatory, usability and sustainability) made through “do-you-think-that” questionnaires (subjective method) instead of trying to evaluate through any other objective method. ▪ Twitter account with just 62 tweets and 52 followers. ▪ Unable to find scientific papers or conferences, neither from their website nor from general and scientific search engines (Google and Scopus). ▪ The five use cases platforms examples were not working on 27-1-2015.

1.41.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- From the technological point of view, the project included workflow tools, decision-making tools and negotiation and public participation (Web 2.0) tools
- The eEnviPer services layer provides an application programming interface (API) [eEnviPer White Paper #3]
- Deliverable D6.2 [eEnviPer D6.2] makes reference to the European Interoperability Framework (EIF) [European Commission, 2010]. However, EIFv2, the last version available, is a non-technical document devised to guide decision-making by Public Administrations on European public services that support the implementation of EU policy initiatives and on establishing public services that in the future may be reused as part of European public services. Since that point of view, it is usefulness for ENERGIC OD would be limited to assure that the Virtual Hubs architecture and design comply with the recommendations made by the EIF in the concrete field of e-government.

- The dissemination strategy included high level endorsement for the project (Greek and Croatian Ministries).

Thorough business development process, from market analysis and pricing strategy to localised business plans for each pilot. The eEnviPer software solution is commercially available in the countries participating in the project and at least a contract was signed.

1.42 Apps4EU – Apps 4 Europe - Turning Data into Business

1.42.1 Brief description

The project Apps4EU (Apps for Europe - turning Data into Business) is a thematic network that organises competitions for using open data and stimulates the winners to start business ventures. The project is aligned with the open data policy of the Commission and stimulates the reuse of public sector information from governmental, scientific and cultural sources. The project was proposed as a reaction to the low quality of initiatives between 2010-2012 (low quality of apps, small and fragmented initiatives, a lack of clear economic impact of the efforts related to the reuse of open data). Apps4EU has as goal to overcome these problems by contributing to a pan-European marketplace for Apps and App developers. The activities of the project includes:

- The Business Lounge. It is a training infrastructure for helping developers willing to turn their innovative concepts and prototypes related to Open Data reuse into successful start-ups. This training infrastructure will be integrated in 20 local and national competitions that will be held during the span of the Apps4EU.
- Open Data Competitions. Apps4EU organises two pan-European competitions that take into account the prototypes and their business model.
- Support action for competitions. It is a supporting action for creating knowledge useful for Open Data Competitions.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191761_en.html
Official page	http://www.appsforeurope.eu/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogram CIP-ICT-PSP.2012.2.2 – Open Data and open access to scientific information Project reference 325989
From/to	20103-01-01 → 2015-06-30
Total cost	EUR 595 000
EU contribution	EUR 595 000
Coordinated by	Stiching Waag Society (Netherlands)

Participants	Open Knowledge Foundation Belgium (Belgium), IMINDS (Belgium), Vlaamse ICT Organisatie (Belgium), Ceske centrum pro vedu a spolecnost (Czech Republic), Open Knowledge Foundation Deutschland (Germany), Fundación ESADE (Spain), Rooter Analysis (Spain), Forum Virium Helsinki (Finland), EURECOM (France), Consorzio TOP-IX – Torino e Piemonte Exchange Point (Italy), Stichting Open State Fundation (Netherlands), Stiching Europeana (Netherlands), Stichting Nederland Kennisland (Netherlands), Stichting Nederlands Inskktituut voor Beeld en Geluid (Netherlands), PT Comunicaçoes (Portugal), Nesta (United Kingdom), FutureEverything CIC (United Kingdom), Open Knowledge Foundation (United Kingdom)

1.42.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The project is focused on improve the practices on the usage of open data. The project implicitly acknowledges the relevance of geographic information as formats such as SHP and KML are supported by the recommended toolset for open data competitions [APPS4EU-D4.5]
S2. Technologies	Apps4EU recommends a technical toolset for developing open data competitions that comprises a WordPress plugin to manage events[58], an API powered by The DataTank[59] (non semantic API approach) and the Datalift platform[60] (semantic API with a Sesame backend) and a collection of tools and vocabularies for cleaning, modelling and interlinking data [APPS4EU-D4.5]
S3. Standards	The Apps4EU has published licensing guidelines based on Open Data Commons and Creative Commons licenses for reusers [APPS4EU-D4.2] and owners [APPS4EU-D4.3]. The DataTank recommended for being used in open data competitions can provide data in CSV, XML, JSON, SHP and KML [APPS4EU-D4.5]. The DataLift platform can use content produced by the DataTank and relational databases and publish it enriched as Linked Data [APPS4EU-D4.5]
S4. Brokered approach	Apps4U recommends a brokered approach to access the data in open data competitions (DataTank and DataLift) [APPS4EU-D4.5].
W1. Reuse	The support of geographic information is ancillary.
W2. Technologies	DataTank does not support CRS and the query language does not support spatial queries. Datalift does not support geographic information yet[61].

[58] https://github.com/mmlab/AppsForX

[59] http://thedatatank.com/

[60] http://datalift.org/

[61] http://datalift.org/wiki/index.php/How_to_use_the_Datalift_platform_to_publish_a_dataset_on_the_Web

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Question	Answer
W3. Standards	The Apps4Eu vocabulary is an ad-hoc RDF vocabulary for contests organised by the project[62].
W4. Brokered approach	The project does not offer a central hub where all the data offered in the different competitions can be discovered. However, this is feasible as they are collecting data about the contests and their results. Data include links to the datasets used by the applications.
O1. Impact	They provide guidelines for organisers of Apps challenges [APPS4EU D4.6], for data publishers [APPS4EU-D4.5], for policy makers, and guides for business models [APPS4EU-D4.1] based on open data that could be followed even after the finalization of the project[63] The guidelines for organisers of challenges includes a section addressing community sustainability after the event or initiative [APPS4EU D4.6, D4.7].
O2. Dissemination	The results of the project are accessible at the project's website.
O3. Viability	The project has published guidelines that may help to the sustainability of the communities developed in contests [APPS4EU D4.5, D4.6].
T1. Impact	We cannot measure it at the moment.
T2. Dissemination	Some services of the project are temporarily unavailable in when this analysis was performed[64,65]. The project website
T3. Viability	There are no maintenance plans after the end of the project. This is a minor threat because the project has no technological results.

1.42.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Focused on improving best practices on reusing open data ▪ Tools recommended support geographic data types	**WEAKNESS** ▪ Geographic information is ancillary ▪ Support of geographic data types in the technologies recommended for contests is limited ▪ The brokers may persist only during the duration of the contests
External	**OPPORTUNITIES** ▪ Published guidelines for dissemination activities and community maintenance related to open data. ▪ Published guidelines for sustainability of	**THREATS** ▪ Unclear relevance regarding data reuse.

[62] https://github.com/mmlab/apps4eu-vocabulary/

[63] http://www.appsforeurope.eu/resources

[64] SPARQL endpoint: http://apps4europe.eurecom.fr/sparql

[65] Virtuoso facetted browser: http://apps4europe.eurecom.fr/fct

	communities of practice	

1.42.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The project provides material directed to policymakers where the idea behind Open Data and the role of the government as an open data publisher is explained. The most remarkable aspect is that the material is related to the material provided in meeting points between start-ups, developers, investors and policymakers [APPS4EU-D4.1].
- The project has published an introductory guideline for potential reusers on accessing and understanding the reuse condition of a given license, and what to do if they are unclear [APPS4EU-D4.2]. Similarly, they have published an equivalent guideline for data owners regarding to licensing [APPS4EU-D4.3].

The project has compiled **a technical toolset for supporting open data competitions** [APPS4EU-D4.5] along with **guidelines for organising the competitions** [APPS4EU D4.6] **and publishing the data** used [APPS4EU D4.7].

1.43 PlanetData

1.43.1 Brief description

PlanetData aimed to establish a sustainable European community of researchers that supports organizations in exposing their data in new and useful ways. PlanetData proponents consider that the ability to effectively and efficiently make sense out of the enormous amounts of data continuously published online, including data streams, blog posts, digital archives, eScience resources, public sector data sets, and the Linked Open Data Cloud, is a crucial ingredient for Europe's transition to a knowledge society. In their vision, making sense of this enormous amount of data allows businesses, governments, communities and individuals to take decisions in an informed manner, ensuring competitive advantages, and general welfare. PlanetData research was concentrated on three key challenges for effective data exposure in a usable form at global scale. PlanetData objectives included:

- Providing representations for stream-like data, and scalable techniques to publish, access and integrate such data sources on the Web.
- Establishing mechanisms to assess, record, and, where possible, improve the quality of data through repair. These mechanisms include the definition of means to capture the context in which data is produced and understood - including space, time and social aspects - to further enhance the usefulness of data.
- Developing access control mechanisms in order to attract exposure of certain types of valuable data sets that take proper account of data owner's concerns to maintain control and respect for privacy and provenance, while not hampering non-contentious use.

PlanetData planned to test all of the above on highly scalable data infrastructures, supporting relational, RDF, and stream processing, and on novel data sets exposed through the network, and derive best practices for data owners. By providing these key precursors, complemented by a comprehensive training, dissemination, standardization and networking program, PlanetData planned as outcome the enablement and the promotion of data exposure at planetary scale.

CORDIS permalink	http://cordis.europa.eu/project/rcn/95557_en.html
Official page	http://www.planet-data.eu/

Co-funded by the European Union

Funded under	FP7-ICT (http://cordis.europa.eu/fp7/cooperation/ict_en.html) Subprogram ICT-2009.4.3 - Intelligent Information Management Call for proposal FP7-ICT-2009-5 Project reference 257641
From/to	2010-10-01 → 2014-09-30
Total cost	EUR 3 690 105
EU contribution	EUR 3 020 000
Coordinated by	Universitaet Innsbruk (Austria)
Participants	STI International Consulting un Research (Austria), Modul University Vienna (Austria), Ecole Polytechnique Federale de Lausanne (Switzerland), Universitaet Mannheim (Germany), Mediaevent Services (Germany), Karlsruher Institut fuer Technologie (Germany), GeospatiumLab (Spain), Universidad Zaragoza (Spain), Universidad Politécnica de Madrid (Spain), Foundation for Research and Technology Hellas (Greece), CEFRIEL (Italy), Foundazione Bruno Kessler (Italy), Politecnico di Milano (Italy), Stichting Centrum voor Wiskunde en Informatica (Netherlands), COMPUTAS (Norway), Stiftelsen SINTEF (Norway), Institut Josef Stefan (Slovenia), University of Southampton (United Kingdom), The Open University (United Kingdom)

1.43.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The tools and best practices developed within the PlanetData project can be used for publishing RDF data and consuming different sources of data, in particular geographic. The project also deals with issues related to the selective exposure of data and documents, such as access control and digital rights management [PlanetData D3.1], and its quality [PlanetData D4.4]
S2. Technologies	The project maintains a catalogue[66] of tools developed by PlanetData partners that support large-scale data management, with particular attention to Linked Data and Sensor Data [PlanetData 5.1]. Some of the published tools can produce, transform and publish geographic information and open data [PlanetData D5.4]. Subprojects have an intensive use of geographic information [PlanetData D15.1].
S3. Standards	RDF, SPARQL, OWL, XML, XML Schema, SDMX, SQL
S4. Brokered approach	Some of the tools in the catalogue such as CKAN and related extensions can be can be considered data brokers.
W1. Reuse	There is no specific commitment for the development of tools for the reuse of geographic information.

[66] http://www.planet-data.eu/planetdata-tool-catalogue

Question	Answer
W2. Technologies	No technology can be considered as weak.
W3. Standards	Some tools use ad-hoc interfaces (e.g. GSN[67] is a software middleware that does not support OGC sensor standards) or very early standardization work (e.g. HDT[68] implements W3C member submission proposal). Best practices are not standards.
W4. Brokered approach	There is no plan for the discovering of data.
O1. Impact	The project has finished recently and it is difficult to determine the impact. The community probably impacted is the Semantic Web community.
O2. Dissemination	The results of the project are accessible.
O3. Viability	The training program and program infrastructure developed within the PlanetData project has a sustainability plan [PlanetData D6.2].
T1. Impact	The project has a strong bias towards the Semantic Web community.
T2. Dissemination	There is no dissemination threat. For example, each related tool has its own web site.
T3. Viability	During the project the PlanetData organized to Calls for including new partners (both enterprises and academia) with expertise to demonstrate the results with concrete applications. However, these projects hardly reuse PlanetData previous outcomes.

1.43.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Best practices for publishing, accessing and integrating datasets. ▪ Linked Data and Sensor Data focus . ▪ Experience in the use of tools such as CKAN and standards such as SPARQL.	**WEAKNESS** ▪ No focused on geographic information. ▪ Some interfaces are ad-hoc and some pre-standardization work is used.
External	**OPPORTUNITIES** ▪ Semantic Web community is interested in these issues. ▪ The project has developed a sustainable training program and training infrastructure related to the topics of the project.	**THREATS** ▪ Focus on the Semantic Web requirements. ▪ Too early to determine the transferability of the outcomes of the project.

[67] https://github.com/LSIR/gsn/

[68] https://code.google.com/p/hdt-it/

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1.43.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Development of a **curricula** [PlanetData D6.1] and an **Open Training Infrastructure** (OTI) [PlanetData D6.2] supported by a training portal, ICT based training tools, and 'radar' activities to gather information from other relevant projects, programmes and initiatives. The OTI helps to disseminate project results and lessons learned through the training programme.
- Development of methods for **enriching sensor metadata**, and **linking raw sensor data** measurements to high-level semantics [PlanetData D1.4].
- Development of an **access control specification language** to control the access to sensitive or classified data [PlanetData D3.1].
- Accounting of **best practices for large-scale data management infrastructures** based on experiences with large-scale data management tools [PlanetData D5.2].
- Accounting of **best practices on how to producing and publishing self-describing data** [PlanetData 4.2].
- Accounting of **best practices for publishing data subsets from a larger dataset** based on contextual dimensions. The contextual dimensions are the spatial context (e.g. the type of geometry, the location), the temporal context (e.g. the production date) or the social context (e.g. who produced the subset) [PlanetData D2.7].

1.44 LAPSI 2.0 – Legal Aspects of Public Sector Information 2

1.44.1 Brief description of the project[69]

LAPSI (Legal Aspects of Public Sector Information) 2.0 is a Thematic Network funded by the European Commission under the 2007-2013 Competitiveness and Innovation Framework Programme 2007-2013.

LAPSI 2.0's objective is to identify the remaining legal barriers and obstacles to access and re-use of public sector information (PSI) on the European content market, and to propose measures and tools to stimulate the progress of the European market towards open data. It will build on the policy recommendations made by the first LAPSI network to provide guidance and advice on how to overcome the legal obstacles hindering the development of the open data ecosystem.

The network brings together academic experts and stakeholders from the public sector, business and civil society from 15 countries. They will address issues relating to licensing, complaints procedures, access to information, privacy and data protection, competition, intellectual property rights etc. By combining academic expertise with the real-life experience from the stakeholders, the network can provide realistic solutions to the existing legal threats on the PSI market.

The activities planned were:

- The collection of examples of existing good practices relating to open licensing, enforcement of the PSI legislation, finding a balance between open data and data protection or intellectual property rights, etc. These good practices will showcase the progress that has already been made on the PSI market and can inspire others to follow in their footsteps.
- The creation of position papers and guidelines on how to adapt the legal framework or how to use the law to stimulate open data and the PSI market.
- The organisation of meetings, workshops and conferences to disseminate the project results and to raise awareness on the legal obstacles on the PSI market and – most of all – how to overcome them. The following events will be organized:
    - Team meetings for collecting the good practices and preparing the guidelines. These meetings are open to anyone who wants to join the network.

[69] Source: http://www.lapsi-project.eu/lapsi-20-project-overview

- 4 Workshops organized in cooperation with other projects, organizations or networks. These workshops will allow LAPSI 2.0 to exchange expertise and information with stakeholders from other disciplines and sectors.
- 2 conferences to present the project results to the PSI and open data community.

- The development of a PSI toolbox, that will guide the re-users through the labyrinth of the regulatory framework for PSI.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191766_en.html
Official page	http://www.lapsi-project.eu/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme: CIP-ICT-PSP.2012.2.2 - Open Data and open access to scientific information Call for proposal: CIP-ICT-PSP-2012-6
From/to	2013-01-01 → 2014-12-31
Total cost	EUR 446 000
EU contribution	EUR 446 000
Coordinated by	Katholieke Universiteit Leuven (Belgium)
Participants	PSI Alliance (Belgium), Universite De Namur ASBL (Belgium), Communia International Association On The Public Domain AISBL (Belgium), Masarykova Univerzita (Czech Republic), Max Planck Gesellschaft Zur Foerderung Der Wissenschaften E.V. (Germany), Universidad de Murcia (Spain), Ethniko Idryma Erevnon (Greece), Politecnico Di Torino (Italy), Universita Commerciale 'Luigi Bocconi' (Italy), Sabiedriskas Politikas Centrs Providus (Latvia), De Vries Marc - Citadel Consulting (Netherlands), Stichting EUROGI (Netherlands), Universiteit Van Amsterdam (Netherlands), Direktoratet For Forvaltning Og Ikt (Norway), Fundacja Projekt: Polska (Poland), Universitatea Din Bucuresti (Romania), Stockholms Universitet (Sweden), Informacijski Pooblascenec Informattion Commissioner (Slovenia), Institut Za Intelektualno Lastnino, Intellectual Property Institute IIL IPI (Slovenia), Public Records Office The Keeper Of Public Records And Historic Manuscripts Commissioner (United Kingdom), The University Of Nottingham (United Kingdom),

1.44.2 Identification of the SWOT of the project

Question	Answer

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Question	Answer
S1. Reuse	The project analyzed the best practices on legal rules and contractual transfers of rights in the area of public sector works in different European Union countries [LAPSI 2.0 D.3.1]. The project provided a set of good practices on access to data [LAPSI 2.0 D.2.1, LAPSI 2.0 D2.2]. Meteorological data from Norway and Netherlands were studied [LAPSI 2.0 D.2.1]. Norway, the Czech Republic and the UK were identified as examples of good practice in the area of open Company register data. [LAPSI 2.0 D.2.1]. The project provided a PSI toolbox, that guide the re-users through the labyrinth of the regulatory framework for PSI.
S2. Technologies	Some governmental web portals about open data were studied [LAPSI 2.0 D.4.1, LAPSI 2.0 D.2.1]
S3. Standards and specifications	The project performed a study about the key characteristics of several Open Government Licenses in order to ensure interoperability among them. It also provided a set of good practices about releasing Public Sector Information (PSI) for re-use in accordance to Directive 2013/37/EU. [LAPSI 2.0 D.5.1, LAPSI 2.0 D.5.2] INSPIRE was studied as example of PSI sharing and re-using [LAPSI 2.0 D.2.1].
S4. Brokered approach	-
W1. Reuse	Reuse is only studied in a theoretical way. No data is managed in the context of the project.
W2. Technologies	The project did not used or developed any specific technology. Only a website developed in Drupal was set up.
W3. Standards and specifications	Although some specifications (INSPIRE, Linked Data, Open Data) are mentioned, they are not applied in a real scenario. They only are analysed in a theoretical way.
W4. Brokered approach	-
O1. Impact	The project is a continuation of another FP7 project: LAPSI (from 2010 to 2012). There was a real interest in the past project, so it might be reasonable to continue this interest.
O2. Dissemination	The website collects information about papers, meetings, conferences and workshops related to the project.
O3. Viability	The project is a continuation of another FP7 project: LAPSI (from 2010 to 2012).
T1. Impact	LAPSI 1.0 provided indicators about the impact and dissemination. No information has been found about LAPSI 2.0.

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Question	Answer
T2. Dissemination	LAPSI 1.0 provided indicators about the impact and dissemination. No information has been found about LAPSI 2.0, apart from some statistics about the number of visits to the website (25% of visitors return to the website). Channel used to disseminate the results are the common ones in any EU project (website, social networks, meetings and conferences,…).
T3. Viability	The project finished on December 2014. It is very soon to determinate the viability of the results.

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1.44.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Studies and guides about licensing and re-using PSI. ▪ PSI toolbox, that guides the re-users through the labyrinth of the regulatory framework for PSI.	**WEAKNESS** ▪ The topics are studied in a theoretical way. No data is managed in the context of the project, no technology is developed or used and no standard is applied.
External	**OPPORTUNITIES** ▪ The project is a continuation of another FP7 project (LAPSI 1.0), so it might be reasonable to think that there is a real interest in it. ▪	**THREATS** ▪ Channel used to disseminate the results are the common ones in any EU project. ▪ Although LAPSI 1.0 provided indicators about the impact and dissemination. Very little information has been found about these topics related to LAPSI 2.0.

1.44.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Licensing Guidelines for Public Sector Information (PSI) releasing and re-using [LAPSI 2.0 D.5.2].
- Good practices on access to data [LAPSI 2.0 D2.2].
- Meteorological data and open Company register data were studied [LAPSI 2.0 D.2.1].
- PSI toolbox, that guides the re-users through the labyrinth of the regulatory framework for PSI (http://www.lapsi-project.eu/psi-toolbox).

1.45 UncertWeb – Uncertainty Enabled Model Web

1.45.1 Brief description of the project

UncertWeb aimed to create the Uncertainty enabled Model Web by allowing interoperability between data and models with quantified uncertainty, building on existing open, international standards. In particular UncertWeb developed encoding standards, service interface profiles, discovery and chaining mechanisms and open source implementations, and generic tools to realize a 'model Web' that takes uncertainty in data and models fully into account. The developments in UncertWeb were validated by scenarios from four environmental application domains: biodiversity and habitat change, land use and policy modelling, local air quality forecasting, and individual activity in the environment. In each application domain prototype service chains were built using UncertWeb technology. To further evaluate the discovery and chaining mechanisms UncertWeb integrated the air quality and activity modelling to produce novel service chains that quantify individual exposure and the effects of individual's activity choices on emissions with quantified uncertainty. The project delivered encoding standards, interface profiles and open source software implementations to allow continued development of the Uncertainty enabled model Web beyond the funding.

CORDIS permalink	http://cordis.europa.eu/project/rcn/93798_en.html
Official page	http://www.uncertweb.org/

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Funded under	FP7 CP - Collaborative project (generic) ICT-2009.6.4 - ICT for environmental services and climate change adaptation Call: FP7-ICT-2009-4
From/to	2010-02-01/2013-01-31
Total cost	3 708 137
EU contribution	2 825 200
Coordinated by	ASTON UNIVERSITY United Kingdom
Participants	JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION Belgium WESTFAELISCHE WILHELMS-UNIVERSITAET MUENSTER Germany CONSIGLIO NAZIONALE DELLE RICERCHE Italy TECHNISCHE UNIVERSITEIT EINDHOVEN Netherlands WAGENINGEN UNIVERSITY Netherlands NORSK INSTITUTT FOR LUFTFORSKNING Norway THE SECRETARY OF STATE FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS United Kingdom

1.45.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	UncertWeb based on previous activities, enhancing existing tools and specifications: UncertML from INTAMAP project, Uncertainty enabled SOS from 52N SOS server UncertWeb foreground is documented in a public wiki site (https://wiki.aston.ac.uk/foswiki/bin/view/UncertWeb/UncertWebSoftware)

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Question	Answer
S2. Technologies	Core software and utilities ▪ CaaS service - for executing workflows ▪ CaaS client - for designing workflows ▪ UPS - for wrapping existing services to enable uncertainty propagation using Monte Carlo simulation ▪ U-SOS - the uncertainty enabled SOS ▪ UTS - service for transforming uncertainties from one representation to another (e.g. from a probability distribution to samples). ▪ Processing Service framework - a utility project to help expose models as SOAP/WSDL web services, supporting JSON and XML interfaces. UncertWeb tools ▪ The Elicitator - tool for expert elicitation ▪ The Variogram Elicitation tool - tool for expert elicitation of a variogram ▪ Viz client - tool for visualising uncertainty ▪ STAS - tool for converting uncertain quantities between different spatial and temporal resolutions ▪ Sensitivity Analysis, Emulation and Validation tool - analyse the sensitivity of models on the web, emulate them creating surrogate models and then validate probabilistic predictions Utilities ▪ jStat - a Javascript library to help in visualising and managing uncertainty ▪ UncertML Java API - API to read and write UncertML in XML and JSON ▪ UncertML_R-API - R API to read and write UncertML in XML and JSON and process, for example sample, compute statistics ... ▪ SOS insertion client ▪ U-O&M API ▪ UncertWeb GML API
S3. Standards and specifications	▪ UncertML for uncertainty description ▪ U-O&M: UncertML encoding in Observation&Measurement ▪ NetCDF-U: UncertML encoding in netCDF
S4. Brokered approach	The brokered approach was adopted for integration of scientific models in the CaaS
W1. Reuse	The project mainly built on partners' background. Reuse of tools from outside was limited.
W2. Technologies	Most of the developed technologies were designed around the UncertML and depend on that. The UncertML concept changed during the project from a markup language to a descriptive vocabulary.
W3. Standards and specifications	UncertML and netCDF-U are still discussion papers. No information is available about U-O&M standardization
W4. Brokered approach	

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Question	Answer
O1. Impact	The main outcomes of UncertWeb had a follow-up in other initiatives and projects: uncertML in GeoViQua for quality model definition, CaaS in the Business Process Framework adopted in IASON and MEDINA.
O2. Dissemination	
O3. Viability	Most of the tools are effectively maintained by their initial developers: UncertML by ASTON, CaaS (now Business Process Broker) by CNR-IIA, UncertWeb Java API by 52N
T1. Impact	The UncertWeb outcomes were mostly adopted in research projects and promoted by developing partners, therefore it is not clear the impact outside the initial UncertWeb participants. The project outcomes are built around UncertML and their impact depend on UncertML acceptance.
T2. Dissemination	
T3. Viability	

1.45.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Many technologies (core technologies, tools, utilities) are reusable ▪ Attention paid to standardization	▪ Most technologies are built around the UncertML vocabulary and their reuse implies reuse of UncertML as well.
External		
	▪ The main outcomes of UncertWeb have been enhanced in other projects: uncertML in GeoViQua for quality model definition, CaaS in the Business Process Framework adopted in IASON and MEDINA. ▪ Most of the tools are effectively maintained by their initial developers: UncertML by ASTON, CaaS (now Business Process Broker) by CNR-IIA, UncertWeb Java API by 52N	▪ Strategy for pursuing the standardization process beyond the project duration is not clear ▪ UncertML acceptance/standardization

1.45.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

UncertWeb produced several outcomes which are remarkable for ENERGIC OD purposes.

- **UncertML and related tools, specs and APIs**: UncertML allows to express datasets uncertainty through samples, statistics (including mean, variance, standard deviation and quantile), probability distributions. It can be useful for an objective description of data (and sensors) quality.
- **CaaS (Composition-as-a-Service)**: The CaaS (and its improvement as Business Process Broker framework) can be exploited to implement models chaining. The main idea beneath CaaS is

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facilitate the description of scientific business process.

1.46 HOMER – Harmonising Open data in the Mediterranean through better access and Reuse of public sector information

1.46.1 Brief description

HOMER (Harmonising Open data in the Mediterranean through better access and Reuse of public sector information) is a MED project that focuses on the theme of Open Data. The overall goal of HOMER is to contribute to unlock the potential of the PSI in the Mediterranean space enabling public governments in Spain, Italy, France, Malta, Greece, Slovenia, Cyprus and Montenegro to better address the legal, cultural and technological challenges linked to PSI policy. The data topics of interest are Agriculture, Tourism, Environment, Energy and Culture.

The goal of HOMER during its first phase is to open hundreds of public datasets on local Open Data portals. Then, the "opened" PSI will be then federated, setting up the basis for a transnational open data federation named HOMER Federation[70], thus promoting interoperable and multilingual solutions and the development of a Mediterranean community of stakeholders. Each local Open Data portal should expose their assets using a CKAN API, a CSW API or an ad-hoc interface defined by HOMER. The MED PSI Federation is a SOLR based application.

HOMER activities are also focused to communication and dissemination activities to raise awareness on the benefits of a harmonised open data Policy for the Mediterranean and to create synergies with relevant initiatives of the MED area and of the EC PSI policy. Also, HOMER aims to ensure the long lasting impact achieved through the implementation of an analysis of MED PSI social and economic impact, the aforementioned development of a federation of open data portals among partners, the delivery of official implementation plans and the development of synergies with relevant existing MED/ENPI CBC, IPA, EU projects.

HOMER also aims to develop the use of PSI data in each territory among the citizens, governments and public bodies (“HACK4MED!” pilot) and to develop a joint standardisation process (both under technical and legal aspects) aimed at the development of open data portals (“open data e-participation” pilot).

MED database	http://www.programmemed.eu/en/the-projects/project-database/results/view/single.html?idProject=125
Official page	http://homerproject.eu/
Funded under	MED Programme 4th Call Strategic Projects Objective 3.2 Support of the use of information technologies for a better accessibility and territorial cooperation
From/to	2012 → 2014
Total cost	EUR 3 566 437
EU contribution	EUR 2 728 711
Coordinate by	Piedmont Region Innovation, Research, University Directorate (Italy)
Participants	Sardinia Region Direzione generale degli affari generali e della societá dell'informazione (Italy), CSI-Piemonte (Italy), Emilia-Romagna Region ICT

[70] http://opendata-federation.csi.it

	Department (Italy), Veneto Region Direzione Sistemi Informativi (Italy), Decentralized Administration of Crete (Greece), University of Crete (Greece), Sewerage Board of Limassol - Amathus (Cyprus), Funditec (Spain), Provence Alpes Cote d'Azur Region (France), Institut de la Méditerranée (France), Local Council Association of Malta (Malta), Geodetic Institute of Slovenia (Slovenia), Aragonese Society of Agri-Envionmental Management (SARGA) (Spain), Agencia de Gestión Agraria y Pesquera de Andalucía (Spain), Internet New Generation Foundation (FING) (France), Greek Free / Open Source Software Society (GFOSS) (Greece), Anatoliki Makedonia, Thraki (Greece), University Mediterannean (Montenegro), Collectivite Territoriale de Corse (France)

1.46.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	HOMER is focused on enabling the reuse of PSI (including geographic information).
S2. Technologies	HOMER Federation is a SORL-based broker and supports harvesting metadata on PSI resources from CKAN and CSW endpoints. [HOMER Federation]
S3. Standards	CSW
S4. Brokered approach	HOMER Federation offers a brokered approach to discover data. [HOMER Federation]
W1. Reuse	The broker only provides access to metadata record. The broker does not enable spatial search. [HOMER Federation]
W2. Technologies	HOMER Federation is strongly dependent on the technical requirements of the Open Data portal of Piemonte (Italy). [HOMER Federation]
W3. Standards	Although the project aims to promote standards, there is no a deliverable that clearly identifies recommended standards. Rather, they propose best practices. [HOMER Technical Guidelines]
W4. Brokered approach	HOMER should provide a standard search API interface alongside its technology dependent (SORL) interface. [HOMER Federation]
O1. Impact	By means of the HACK4MED pilot the project has gained visibility in some Mediterranean regions. [HOMER Hack4MED!]
O2. Dissemination	The results of the project are accessible and the regional Open Data portals (mostly) and HOMER Federation broker are online.
O3. Viability	The regional Open Data portals are potentially sustainable [HOMER Socioeconomic study].
T1. Impact	The documents regarding the standardization and local tasks forces of the "open data e-participation" pilot[71] cannot be the basis for a future impact.

[71] http://homerproject.eu/project/pilot-actions

Question	Answer
T2. Dissemination	The dissemination activities during the pilots may have had an impact, thus no threat is identified here.
T3. Viability	Each project has developed its own open data action plans[72]. Each plan has both short and long term actions and a section dealing with funding and sustainability. Most of the portals operate using in house resources and staff and without future funding.

1.46.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS** ▪ Focused on PSI reuse. ▪ SORL-based metadata broker for data discovery ▪ Experience in CKAN and CSW.	**WEAKNESS** ▪ No focused on geographic information. ▪ Some interfaces are ad-hoc. ▪ No endorse PSI standards.
External	**OPPORTUNITIES** ▪ Interest of Mediterranean public administrations is the reuse of PSI. ▪ The open data portals may support a community of PSI users.	**THREATS** ▪ Failed to identify best practices. ▪ Open data portals operate using in house resources and without future funding.

1.46.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The project has organized an **international hackathon** named “Hack4MED!” that was held simultaneously in five countries and six locations. [HOMER Hack4MED!]. **Guidelines** for organizing a hackathon are also published. [HOMER Hack4MED! Guidelines]. These guidelines are based on the *Open Data Hackaton How to Guide* [McArthur 2012].
- The project has discussed the issues related to rights, pricing and privacy of open public sector information data providing **best practices and suggestions to help public administrations to make PSID available and re-usable**.[HOMER Legal Adjustment]
- The project has published a technical guideline listing and detailing **technical and functional recommendations** that appear essential to build an **Open Data portal** in the opinion of the participants. [HOMER Technical Guideline]

1.47 GE^{2}O - Geo-clustering to deploy the potential of Energy efficient Buildings across EU

1.47.1 Brief description of the project

Geo-clustering to deploy the potential of Energy efficient Buildings across EU (GE^{2}O) is a European project, (FP7-2011-NMP-ENV-ENERGY-ICT-EeB).

The principle aim of the project is the definition of a methodology to build up a geographic cluster, able to identify geographical areas which share similarities (i.e. climatic conditions, regulations, financial incentives

[72] http://homerproject.eu/project/open-data-action-plans

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culture and behaviour, construction typologies, economy, energy price and policies and gross domestic product, to name a few) to deploy Energy Efficiency (EE) market potential across EU.

Given that Energy Efficiency in buildings will play a major role in responding to climate change and energy issues, one of the objectives of Ge^{2}O is to trigger large scale actions involving EU, all Member States and their regional and local authorities. The concept of "Geo-clusters" implies virtual trans-national areas where strong similarities are found. In this framework, the geo-cluster map was not based on fixed geographic regions, but is to be considered as a multi-dimensional and dynamic tool.

Ge^{2}O is based on a correlation methodology that clusters information about technology, context, building culture and many more keeping as one of the main reference the geospatial component of these data.

Experts acknowledge that Energy Efficiency in the built environment, including a large deployment of Renewable Energy Sources in districts, would require the definition of holistic solutions which are optimised at European (even global) scale but adapted to local and regional conditions and specificities.

This require systemic approaches, flexible and modular solutions which necessarily involve large industrial players in close cooperation with SMEs and research centres, as well as other relevant stakeholders as promoters, investors and users, covering multi-disciplinarily from basic to applied and pre-normative research, demonstration and training.

The proposed **geocluster concept** is based on the possibility to locate similarities across enlarged EU by combining single or multiple parameters and indicators organised in homogeneous layers and sub-layers by using available Open Data. Some aspects considered were:

- a Technological layer consisting for instance of building typologies, technologies and technical solutions;
- a Context layer consisting for instance of climatic conditions (i.e. temperature, solar radiation, wind speed and direction, rain, humidity, pollution, etc.), types of area (i.e. seaside, mountains, etc.), raw materials availability (including for instance kind of waste streams), etc.;
- a Socio-economic layer consisting for instance of macroeconomic indicators (energy price incentives and energy policies, ….), living habits and behavioural aspects (i.e. countryside, cities…), construction business process (i.e. stakeholder roles, procurements rules and typical models), etc.
- a Political-strategic layer consisting of applicable building directives and laws, standards and regulations, energy policies, etc.

The main result of the project is the Geocluster mapping Tool, an interactive web geo-portal that allows user to query the database developed by the project consortium and to create new maps of clusters, regarding specific technologies targeting Energy efficiency in Buildings (EeB) and their indicators developed on a wide Geospatial data sets.

A special focus was given to two key technologies: envelope retrofitting and solar cooling (thermal insulation and solar cooling), respectively in two pilot case areas Benelux and Mediterranean Arc.

CORDIS permalink	http://cordis.europa.eu/project/rcn/101645_en.html
Official page	http://www.geoclusters.eu/home
Funded under	FP7-NMP (http://cordis.europa.eu/programme/rcn/854_en.html) Subprogram EeB.NMP.2011-4 - Geo-clusters approach to support European energy-efficiency goals Call for proposal FP7-2011-NMP-ENV-ENE Project reference 285501 Funding scheme: CSA-CA - Coordination (or networking) actions
From/to	01/01/2012 – 31/12/2013

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Total cost	Euro 1,494,303.52
EU contribution	Euro 995,000.00
Coordinated by	CENTRE SCIENTIFIQUE ET TECHNIQUE DU BATIMENT - CSTB (FR)
Participants	Centre Scientifique et Technique du Batiment (CSTB) (France), Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek (TNO) (Netherlands), Zavod Za Gradbenistvo Slovenije (ZAG) (Slovenia), Technicky A Zkusebni Ustav Stavebni Praha S. P. (TZUS) (Czech Republic), Centre Scientifique Et Technique De La Construction (BBRI) (Belgium), Politecnico di Milano (POLIMI) (Italy), Thames Gateway Institute For Sustainability (IFS) (United Kingdom), Acciona Infraestructuras SA (Spain), Arcelormittal Belval & Differdange SA (Luxembourg), D'Appolonia SPA (Italy), ASM Centrum Badan I Analiz Rynku SP. Z O O (Poland), Energy Efficient Buildings Aisbl (E2BA) (Belgium)

1.47.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Most of the data gathered was all publically available from EU and national statistics agencies (Eurostat and similar on national level), public authorities and previous regional, national and European projects. The logic followed was that of PSI indications i.e. fostering the use and re-use of public information.
S2. Technologies	Open Source software and libraries for management of geo-spatial data were employed, such as: PostGIS for database, Geoserver as Application Server, as GeoExt and open Layers for User interface. GeoWebCache is a Java web application used to cache map tiles coming from a variety of sources. *D4.4 GeoCluster Mapping Tool* (http://www.geoclusters.eu/ge2O/)
S3. Standards and specifications	XML, XML Schema Open standards such as OGC and INSPIRE specifications for Open Data, metadata, data sets and services were followed and applied.
S4. Brokered approach	NA

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Question	Answer
W1. Reuse	The coverage of GE2O data is limited to ten European countries (the ones of the consortium), and to National Open Data and Regional Open Data. For a wider reuse of such data, it would be needed an architecture able to dynamically extend the GeoData across all the EU countries (here limited to 10 countries) and thus allowing to tailor the methodology and the mapping tool on all the different technologies not considered and developed by the Ge2O mapping tool (here tested only on 2 pilot technologies as explained). As far as regarding the local data at the state of the art of the urban level they can't be accessed until the municipalities publish the local data as Open Data, including the Open GeoData (coming from the Topographic DB or from the current technical maps): as it is the case of climate data non often available as Open Data, or the others geographic indicators that could be better dimensioned using the cross-correlation algorithm implemented within the Ge2O mapping tools. Low availability of local Open Data represents a strong barrier to the development of the concept of Geocluster to the urban level and to deploy the EE market across EU.
W2. Technologies	Although compliancy was met by the data and the system structure, the services elaborated within the project were not published as Web Map Services. In fact, the algorithm implementation of the correlation matrix took more of the expected time in terms of man month to tune the mapping tool on the pilot technologies. At the end of the project the consortium underestimated the potential on the users and subjects, deciding to share only PDF data format, thus limiting the re-use of the overall system and demanding this aspect to a future implementation of the platform. As a consequence, the system is interactive but rather static (research and view functions only). W and P.
W3. Standards and specifications	Absence of WMS, WPS, WFS. This implies a passive level in the platform toward a full Open Data sharing by the users through Open Source GIS.
W4. Brokered approach	No broker approach was applied. This implies that the geospatial set won't dynamically grow in the future by means of the user demand and in function of the extensions of the 2 pilots to the other technologies analysed.

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Question	Answer
O1. Impact	The project has made available an extensive set of validated data and indicators for key geographical areas so as to allow to properly defining requirements and specifications for technology development and integration across EU in Energy efficiency domain. The potential of the GE2O tool developed within the project is very high as it can provide interesting insights into the state of the art of Energy efficiency technologies on a European geographical scale. Ge2O potentials at an EU multi-scale level: the opportunity of GMES implementation and urban EU atlases to deploy local geo-clustering Semantic clusters matching Geographic and Energy use/Efficiency Matters, such as Ge2O can progressively contribute to realize an European Spatial Data Infrastructure for Energy Efficiency (EE-SDI) at a multi-scale level. Ge2O proposes an operational service model for generating a semantic clusters able to match Geographic and Energy use/Efficiency Matters in order to connect different data, values, contexts and languages aiming to EE domain and goals. The main challenge of the proposal is to create a platform to allow the determination of exploitable parameters and services able to continuously acquire knowledge and elaborate information, supporting future EE related actions. The project demonstrated that such geo-mapping tool are able to provide new scenarios for retrieving geospatial knowledge regarding efficiency of European built environment, in order to address geo-cluster policies of Public Authorities (PA) and support professional related activities in the EE domain. Its sustainable management can better benefit by open access of information structured in a dynamic data model and a wider data accessibility. A Dynamic Data Model has been conceived as updatable in an iterative process scheme of a cross-correlation methodology with a relevant potential of Geospatial Information and related services for structuring and access of information for EeB deployment. The results of the Open Source GeoCluster Mapping Tool demonstrated to enable the user to retrieve geospatial knowledge regarding EE of European building stock and to support assessment of technologies in order to foster deployment of EEB concept across Europe and beyond. The Ge2O project demonstrated a great potential of the methodology and OD access, but at the same time the Threats given by the static architecture with no brokering architecture. The VH approach could represent a great potential in this sense, limiting Threats and Weaknesses given by the accessibility architecture and data gathering only by the informatics tool developer and not to the users.

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Question	Answer
O2. Dissemination	Project has a dedicated website (http://www.geoclusters.eu/home); 2 specific workshops with stakeholders were held during the project in countries of the two pilot regions – Luxembourg and Spain. The final seminar as well as other events was used for dissemination of the project result; several scientific articles and papers have been also been written (see references).
O3. Viability	Exploitation strategy was developed within the project taking into consideration
T1. Impact	The fact that services are not fully interoperable and interactive with other systems (ex. No WMS, WPS, WFS) is a limitation for a full exploitation of results of the projects i.e. technological maps and relevant indicators.
T2. Dissemination	No threats were found in dissemination.
T3. Viability	The mapping tool is still existing but not always active as its life beyond the project was not foreseen by the proposal.

1.47.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ First example of geo-cluster concept for EE in Buildings with great potential, in merging OD with EE challenge, even tested only on 2 pilot case ▪ Data used are of public domain (in line with PSI) ▪ The structure of Web Geo portal and mapping tool are INSPIRE compliant ▪ Open Data could be easily accessed through VH approach ▪ Ge2O mapping tools and the implemented open source platform could be updated with the VH approach ▪ Open source software and standard used ▪ Good focus on GI and geo-location of data with no intrinsic GI ▪ Possibility to recall external WMS services ▪ Innovative Best Practices could be implemented by using VH architecture and adopting a brokering approach to get OD for the different purposes	▪ Service is provided as a static geo-portal, no WMS,WPS, WFS or other services are available ▪ Broker approach is not applied ▪ The static approach on the OD access, limited to the pilot and to the countries involved by the tested tool, is a relevant threat to the development of the methodology. ▪ A strong weakness: a strong methodology with high potential demonstrated by the Ge2O project, risks to remain an isolated case study a without a full open system able to allow to a wider user platform (SMEs, Companies, citizens, professionals) to access all the available data implemented by the algorithms, to perform their context, to tailor and add other technologies, to get their demands producing new required maps, by adding the available OD. ▪ The lack of local Open Data and Open Geo Data is a strong limit to the development of the methodology at the urban level and to the market deployment of EE technologies where the local Pas can have an important role in addressing new policies toward EE EU goals. ▪ A wider range of users, beginning from SMEs and Companies, as well as Associations (ex. Ass. of consumers) and even citizens and building/district inhabitants is limited to the pilot and Data Countries selected.

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	OPPORTUNITIES	THREATS
External	▪ The project is not technologically advanced as far as regarding a full OD access and the architecture adopted by the open source platform without the support of a VH broker system but it sets the scene for the use and full exploitation of GI in a sector that is not traditionally geo-dependant (EE in Buildings). At the same time can be easily integrated within the system with a relevant multiplier effect in the wider re-use of all the huge OD considered by the mapping tools here developed. ▪ Results provide interesting insights into the state of the art of Energy Efficiency technologies, with possibility to expand this on a EU scale. ▪ More refined data could be integrated within the system (i.e. not only at NUTS3 regional level but even district/building level for an EU EE urban level implementation). ▪ Interesting service for a wide range of users, for Association (ex. Ass. of consumers) and even citizens and building/district inhabitants	▪ Service was fully operational only during the project ▪ Service might be directed to much only towards professional ▪ The static approach adopted on the OD access is a relevant threat to the development of the methodology, even if adopting OGC and INSPIRE protocols and open source geoportal, and it will limit the development of the methodology only to the pilot and to the countries involved by the tested tool. ▪ The high cost effective of further updating of the Ge2O platform and mapping tools, in order to involve new countries or new technologies can represent a threat to the development of the approach, if it won't be gained a more dynamic data access architecture tailored on the user needs. ▪

1.47.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- Indicators were defined and described for 2 different technologies taking into consideration not only technological performance but their geo-graphical context [GE2O D.2.1];
- Development of a 3D correlation matrix (X,Y,Z) where X stands for **energy efficiency technologies**; Y stands for the **parameters and performance indicators** (factors relating strictly to a specific technology) and Z stands for **geo-indicators and geo-descriptors** (factor relating to a specific geographic location in which technology should be applied) [GE2O D.2.3];
- Generation of first and second level **Technological Maps** – the EeB concept and technologies explored have been mapped, clustered and presented as single layers on a EU scale (consortium countries) using open source instruments and standards [GE2O D.4.1, D.4.2 and D.4.4].

1.48 CEUBIOM – Classification of European biomass potential for bioenergy using terrestrial and earth observations

1.48.1 Brief description of the project

Classification of European biomass potential for bioenergy using terrestrial and earth observations (CEUBIOM). The main objective of the project was is to develop a common methodology for gathering information on biomass potential using terrestrial and earth observations. This objective was achieved by the implementation of a systematic assessment work plan and resulted in the establishment of a harmonised approach and an e-training tool for dissemination. The e-training environment was an important tool for reaching the much-needed European harmonisation, whereas a Stakeholder Platform facilitates access to

reliable and common datasets on biomass potential and as such it was aimed at more efficient use of the available European biomass feedstock.

The project was aimed to:

- Develop a common methodology for gathering information on biomass potential using terrestrial and earth observations
- Use e-technologies for disseminating information, best practices on the use and applicability of developed harmonised methodology

CORDIS permalink	http://cordis.europa.eu/project/rcn/86249_en.html
Official page	http://www.ceubiom.org/
Funded under	FP7-ENERGY, ENERGY-2007-3.7-01 - Harmonisation of biomass resource assessment
From/to	2008-03-01 to 2010-11-30
Total cost	EUR 1 340 827
EU contribution	EUR 1 340 827
Coordinated by	GEONARDO ENVIRONMENTAL TECHNOLOGIES LTD Hungary
Participants	REMOTE SENSING SOLUTIONS GMBH Germany CENTRUL PENTRU PROMOVAREA ENERGIEI CURATE SI EFICIENTE IN ROMANIA Romania UNIVERZA V LJUBLJANI Slovenia UNIVERSITY OF ZAGREB FACULTY OF ELECTRICAL ENGINEERING AND COMPUTING Croatia MEDITERRANEAN AGRONOMIC INSTITUTE OF CHANIA Greece JOANNEUM RESEARCH FORSCHUNGSGESELLSCHAFT MBH Austria INSTYTUT GEODEZJI I KARTOGRAFII Poland BALKAN FOUNDATION FOR SUSTAINABLE DEVELOPMENT MK CROSS CZECH A.S. Czech Republic UNIVERZITET U SARAJEVU Bosnia and Herzegovina ADVANCED COMPUTER SYSTEMS ASC S.P.A. Italy SLOVENSKA INOVACNA A ENERGETICKA AGENTURA Slovakia NACIONALNA ASOCIACIA PO BIOMASA Bulgaria MIZHNARODNA ASOCIACIA UKRAINSKII CENTR MENEDJMENTU ZEMLI TA RESURSIV Ukraine

1.48.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Project approach can be easily reused and adjusted to current needs
S2. Technologies	Developed methodologies and approaches can be further enhanced or re-used

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Question	Answer
S3. Standards and specifications	Methods of biomass assessments for energy based on terrestrial and remote sensing data
S4. Brokered approach	The data elaborated under the project can be considered as brokered data
W1. Reuse	The Project approach would need to be adjusted to current needs and requirements of the market
W2. Technologies	Technologies based on remote sensing data would need to be transferred into COPERNICUS satellites in order to enable the service to be fully operations
W3. Standards and specifications	Methods need to be adjusted to newest satellite data
W4. Brokered approach	There were no commercialization activity performed under the project
O1. Impact	The Project has a relatively high impact because of the wide accessibility of data and e-learning activities
O2. Dissemination	The project was disseminated through dedicated portal and project partners
O3. Viability	The elaborated methods and e-learning training activity is considered to be viable
T1. Impact	Various systems for biomass assessment are being developed by different consortia
T2. Dissemination	No after-project dissemination activities performed
T3. Viability	A significant need for adjustment of the Project Methodology and Approach to current Users and Customers' needs and requirements

1.48.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Comprehensive approach using both terrestrial and remote sensing data; user-focused approach;	▪ Needs for adjustment of the methods developed under the project
External	**OPPORTUNITIES**	**THREATS**
	▪ Energy biomass market is developing significantly and needs reliable information on biomass amount accessible for energy market	▪ High competition on the market

1.48.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- None

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1.49 GEOLAND2 – Towards an operational GMES Land Monitoring Core Service

1.49.1 Brief description of the project

Geoland2 intends to constitute a major step forward in the implementation of the GMES Land Monitoring Core Service (LMCS). The three components (Local, Continental and Global) of the LMCS are addressed. The goal of geoland2 is (i) to prepare, validate and demonstrate pre-operational service chains and products that will underpin the LMCS, and (ii) to propose and demonstrate a concrete functional organisation of the LMCS. The geoland2 deliverables are: (i) the organisation of a production network, (ii) the building of operational processing lines, (iii), the demonstration of services and products, (iv), the setup of a land user platform. geoland2 efforts will rely on the assets of previous or ongoing projects funded under FP6 (geoland, Boss4GMES), by ESA (GSE projects Land, Forest Monitoring, GMFS, SAGE, Urban Services) and EEAs CLC/FTS 2006 project. The architecture of geoland2 is made of two different layers, the Core Mapping Services (CMS) and the Core Information Services (CIS). The CMS produce basic land cover, land cover change, and land state products which are of broad generic use and can be directly used for deriving more elaborated products. The CMS products cover a wide variety of thematic content, spatial scales from local to global, and update frequency, from 1 day to several years. The CIS are a set of thematic elements that start from CMS products and other data sources to produce elaborated information products addressing specific European policies. They are in direct contact with institutional end-users in charge of European policies and Member State policies which have a generic pan-European character. geoland2 gathers 51 partners from 21 European countries. The requested EC grant is 25 M, which corresponds to a total budget of approximately 37 M. The largest part of the budget allocation goes to the construction of the CMS.

CORDIS permalink	http://cordis.europa.eu/project/rcn/89120_en.html
Official page	http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home
Funded under	FP7-SPACE, SPA-2007-1.1-01 - Development of upgraded capabilities for existing GMES Fast-Track Services and related (pre)operational services
From/to	From 2008-09-01 to 2012-12-31
Total cost	EUR 32 558 056
EU contribution	EUR 22 399 424
Coordinated by	ASTRIUM GMBH Germany

Co-funded by the European Union

Participants	UAB AEROGEODEZIJOS INSTITUTAS Lithuania. STICHTING DIENST LANDBOUWKUNDIG ONDERZOEK Netherlands ARISTOTELIO PANEPISTIMIO THESSALONIKIS Greece COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES France CONSIGLIO NAZIONALE DELLE RICERCHE Italy ASSOCIATION EUROPEENNE DE LABORATOIRE DE TELEDETECTION France EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS United Kingdom EUROPEAN FOREST INSTITUTE Finland UNIVERSITAT AUTONOMA DE BARCELONA Spain EUROSENSE BELFOTOP N.V. Belgium. GAF AG Germany GEOAPIKONISI ANONYMI ETERIA MELETON KAI GEOPLIROFORIKIS (GEOAPIKONISIS SA) Greece GEOSAT TECHNOLOGY SARL France GEOVILLE INFORMATIONSSYSTEME UND DATENVERARBEITUNG GMBH Austria. GISAT S.R.O.Czech Republic INSTYTUT GEODEZJI I KARTOGRAFII Poland INSTITUTO PORTUGUES DO MAR E DA ATMOSFERA IP Portugal INDRA SISTEMAS S.A. Spain. INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE France. SPOT IMAGE (SI) SA France. INFOTERRA LIMITED United Kingdom. JOANNEUM RESEARCH FORSCHUNGSGESELLSCHAFT MBH Austria. JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION Belgium. METEO-FRANCE France. ORSZAGOS METEOROLOGIAI SZOLGALAT Hungary. PLANETEK ITALIA SR Italy. SVERIGES METEOROLOGISKA OCH HYDROLOGISKA INSTITUT Sweden. SPACEBEL SA Belgium. CENTRUM BADAN KOSMICZNYCH POLSKIEJ AKADEMII NAUK Poland. ROMANIAN SPACE AGENCY Romania. TECHNISCHE UNIVERSITAET WIEN Austria. UNIVERSITE CATHOLIQUE DE LOUVAIN Belgium. UNIVERSITY OF LEICESTER United Kingdom. DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV Germany. VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK N.V. Belgium. TEKNOLOGIAN TUTKIMUSKESKUS VTT Finland. UNIVERSITA DEGLI STUDI DELLA TUSCIA Italy. SUOMEN YMPARISTOKESKUS Finland HYGEOS SARL France. CENTRE NATIONAL D'ETUDES SPATIALES – CNES France. INFOTERRA GMBH Germany. EOX IT SERVICES GMBH Austria SPECTO NATURA LIMITED United Kingdom. UNIVERSIDAD DE MALAGA Spain. METRIA AB Sweden. AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH Austria. EOLAB SPAIN S.L. Spain. GEODATEN INTEGRATION & ANALYSE Germany. INSTITUTO DE METEOROLOGIA Portugal. KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT (KNMI)Netherlands. LAND NETWORK E.V. Germany. REMOTE SENSING APPLICATION CENTRE – RESAC Bulgaria. THE NATIONAL LAND SURVEY OF SWEDEN Sweden

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1.49.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The Geoland 2 approach and methods can be easily reused
S2. Technologies	Technologies were developed by well experienced institutions and are of high standard and advance
S3. Standards and specifications	
S4. Brokered approach	Significant number of data elaborated under the project can be considered as data brokers
W1. Reuse	No weakness is found
W2. Technologies	Need to adjust of the technologies to the commonly accessible data – COPERNICUS Programme
W3. Standards and specifications	
W4. Brokered approach	The data would need to be adjusted more significantly to the Users requirements
O1. Impact	High impact through delivery of data sets for whole World
O2. Dissemination	Services developed under the Project are widely disseminated through web-sites and scientific conferences as well as through Copernicus Programme Services
O3. Viability	The elaborated Services are considered viable
T1. Impact	No threat is considered
T2. Dissemination	The Need to adjust to the Copernicus Programme Satellites in order to be compatible with the Programme
T3. Viability	No threat is considered

1.49.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Lots of methodologies and applications elaborated and data sets available	▪ No weakness impacting negatively ENERGIC OD Project is anticipated
External	**OPPORTUNITIES**	**THREATS**
	▪ COPERNICUS PROGRAMME is found very useful and interesting by the Users which creates the opportunity for Geoland 2 Services to be applied by the Users	▪ Competing Services being elaborated

1.49.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The European Land Monitoring Service (EUROLAND) addressing the local (i.e. very high spatial resolution (VHR), sample-based Urban Atlas) and the continental component (i.e. high spatial resolution (HR), wall-to-wall land cover and land cover change data) of the LMCS.
- BioPar pre-operational processing lines running in NRT and off-line mode generating bio-geophysical variables describing:
  - The continental vegetation: Leaf Area Index (LAI), Fraction of
  - Absorbed PAR (FAPAR), Fraction of vegetation cover, Dry Matter
  - Productivity (DMP), Normalised Difference Vegetation Index (NDVI), Phenology, Burnt Areas;
  - The energy budget: albedo, downwelling shortwave and longwave fluxes, Land Surface Temperature (LST);
  - The water cycle: Soil Water Index (SWI), freeze and thaw conditions, small water bodies.
- SATChMo operates at continental scale over Europe and Sub-Saharan Africa, delivering services adapted to the specific local user requirements through:
  - a VHR AFS scheme and VHR/HR products for Europe;
  - a HR AFS scheme and products for Africa;
  - a complete continental MR coverage of seasonal and annual vegetation parameters.

1.50 HAIVISIO – Enhanced visibility and awareness in eHealth, Active Ageing and Independent Living projects

1.50.1 Brief description of the project

HAIVISIO is an ambitious Coordination and Support Action project aimed at enhancing visibility and awareness of the results generated by eHealth, Active Ageing and Independent Living projects, supporting community building around these results, through a series of communication and synergy exploitation activities.

The proposed project invites relevant projects to engage in a collective and synergetic way, identifying best-practices, involving the most active partners and stakeholders and disseminating widely the added value and assets generated from each of these projects. HAIVISIO links and works in tandem with almost all relevant projects funded by the European Commission in an attempt to increase their impact on the society and to bridge the existing gap between ICT research and innovation results in eHealth, Active Ageing and Independent Living and the routine provision of services to the European citizens.

CORDIS permalink	http://cordis.europa.eu/project/rcn/110504_en.html
Official page	www.haivisio.eu
Funded under	FP7-ICT, ICT-2013.5.1 - Personalised health, active ageing, and independent living
From/to	2013-11-01 to 2015-10-31
Total cost	EUR 416 652
EU contribution	EUR 399 000
Coordinated by	ATOS SPAIN SA Spain

Co-funded by the European Union

Participants	HEALTH INFORMATION MANAGEMENT SA Belgium AGE PLATFORM EUROPE AISBL Belgium VILABS OE GR DUNDALK INSTITUTE OF TECHNOLOGY Ireland

1.50.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	Services to enhance visibility and awareness of project results. HAIVISIO will coordinate communication activities, facilitate specific events and synergies in order to increase the number of collaboration cases and to significantly enhance visibility and awareness on the results generated from eHealth, Active Ageing and Independent Living projects.
S2. Technologies	
S3. Standards and specifications	
S4. Brokered approach	
W1. Reuse	
W2. Technologies	
W3. Standards and specifications	
W4. Brokered approach	
O1. Impact	Impact is not exclusively related to the results of the projects themselves but it also has a very important component in relation to dissemination, communication and exploitation strategies. Depending on how these strategies are implemented, the final impact reached by the project could vary.
O2. Dissemination	HAIVISIO utilises online resources and offline media forms to ensure, on the one hand, that a regular communication is established between the more active projects and relevant stakeholders and, on the other hand, a wider visibility to the general public. Workshops, other events, articles, papers, abstracts, newsletters, e-learning platform, forum, utilises online resources and offline media.
O3. Viability	The elaborated methods and e-learning training activity is considered to be viable.
T1. Impact	The project has not finished yet so it is difficult to determine the impact.
T2. Dissemination	There is no dissemination threat.
T3. Viability	The project is ongoing.

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the European Union

1.50.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	**STRENGTHS**	**WEAKNESS**
	▪ Facilitate specific events to increase visibility of the impact and the potential of current research and innovation projects results ▪ Increase the number of collaboration cases between projects and external stakeholders though the networking and synergies events. ▪ Easy access to advice for free.	▪ Too early to determine the outcomes of the project.
External	**OPPORTUNITIES**	**THREATS**
	▪ Lack of communication and knowledge sharing among projects that are dealing with similar health, ageing and inclusion problems or use complementary technologies. ▪ Lack of awareness and effective dialog between stakeholders involved in active and healthy ageing and social inclusion, on one side, and all the research and innovation projects funded by the EC, on the other side. ▪ Slow uptake of technological innovation due to a lack of appropriate visibility and practical applicability of quality and potential of project results ▪ Lack of awareness of the wider societal and business impact that research and innovation on active and healthy ageing and social inclusion can bring to local and regional communities	▪ Too early to determine the outcomes of the project.

1.50.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- None

1.51 i-SCOPE – interoperable Smart City services through an Open Platform for urban Ecosystems

1.51.1 Brief description of the project

The latest generation of 3D Urban Information Models (UIM), created from accurate urban-scale geospatial information, can be used to create smart web services based on geometric, semantic, morphological and structural information at urban scale level, which can be used by local governments to:

- improve decision-making on issues related to urban planning, city management, environmental protection and energy consumption based on urban pattern and its morphology;
- promote inclusion among various users groups (e.g. elder or diversely able citizens) through services which account for barriers at city level;
- involve citizens at wider scale by collecting geo-referenced information based on location based services at urban scale.

Based on interoperable 3D UIMs, i-SCOPE delivers an open platform on top of which it develops, within

different domains, three 'smart city' services. These will be piloted and validated, within a number of EU cities which will be actively engaged throughout the project lifecycle. The services will address:

Improved inclusion and personal mobility of aging and diversely able citizens through an accurate city-level differently-abled-friendly personal routing service which accounts for detailed urban layout, features and barriers.

Optimization of energy consumption through a service for accurate assessment of solar energy potential and energy loss at building level.

Environmental monitoring through a real-time environmental noise mapping service leveraging citizen's involvement will who act as distributed sensors city-wide measuring noise levels through their mobile phones.

All smart services will be based on already available technologies which will be integrated, deployed and made publicly available from a "3D smart EU cities" portal. Potential trust, privacy and data security risks and vulnerabilities, i.e. due to localisation of people, are integral part of the project and will be explicitly addressed.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191922_en.html
Official page	http://www.iscopeproject.net/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogramme CIP-ICT-PSP.2011.5.1 - Open Innovation for future Internet enabled Services in "smart" Cities Call for proposal CIP-ICT-PSP-2011-5
From/to	2012-01-15 / 2015-07-14
Total cost	EUR 4 039 971
EU contribution	EUR 2 019 982
Coordinated by	FONDAZIONE GRAPHITECH (Italy)
Participants	MAGISTRAT DER STADT WIEN (Austria), CEIT ALANOVA GEMEINNUTZIGE GMBH (Austria), VRIJE UNIVERSITEIT BRUSSEL (Belgium), M.O.S.S. Computer Grafik Systeme GmbH (Germany), EPSILON INTERNASIONAL ANONYMI ETAIREIA MELETON KAI SYMVOULON (EPSILON INTERNATIONAL SA, GR), Zadarska Zupanija (Croatia), Grad Zagreb (Croatia), GEOFOTO DRUSTVO S OGRANICENOM ODGOVORNOSCU ZA FOTOGRAMETRIJSKE I GEODETSKE POSLOVE (Croatia), INFORMATICA TRENTINA SPA (Italy), REGIONE LAZIO (Italy), SINERGIS SRL (Italy), GeoSYS Limited (Malta), BAIA MARE (Romania), INDECO SOFT SRL (Romania), Evrogeomatika d.o.o.(Serbia), Municipality of Indjija (Serbia), NEWCASTLE CITY COUNCIL (United Kingdom), Department for Business, Innovation & Skills (United Kingdom), CADZOW COMMUNICATIONS CONSULTING LIMITED (United Kingdom), GiStandards LTD (United Kingdom)

1.51.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	i-SCOPE aims to deliver an open source toolkit for 3D smart city services based on 3D Urban Information Models (UIM), created from accurate urban-scale geospatial information [Patti et al., 2013].

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S2. Technologies	i-SCOPE integrates open source technologies and previously developed partner projects within a comprehensive toolkit promoting interoperability through the use of OGC and other open standards for data exchange and services [Patti et al., 2013]. These open source technologies are: a 3D geobrowser by Graphitech (both web-based and mobile devices), an OpenLS compliant routing technology based on OpenStreetMap data, a technology by MOSS for noise simulation, a technology by MOSS to create 3D city models at urban scale (as CityGML) from geospatial data (e.g. LIDAR), a technology by CEIT to automatically create semantically rich routing instructions to visually impaired users technology by VUB to create real-time noise maps (both mobile client and server), a VUB real-time noise mapping services [De Amicis, 2012].
S3. Standards and specifications	i-SCOPE will significantly rely on CityGML. This is the open standard for interoperable encoding of 3D Urban Information Models. Since i-SCOPE refers to Smart Cities, CityGML and its extension according to the requirements of the project is the most prominent solution. The standard is being developed by the Open Source community under coordination of OGC. i-SCOPE requires extension of the core standard as well as the creation of two Application Domain Extension (ADEs) and the extension of a third one (on noise) of the current CityGML [Patti et al., 2013]. Various methods can deliver the data to the client: Web Feature Service (WFS), Web 3D Service (W3DS), World View Service (WVS) [Prandi et al., 2013].
S4. Brokered approach	The service is asynchronous and realized with novaFACTORY software solution [Patti et al., 2013].
W1. Reuse	By its nature a policy is political thus policies in general cannot be correct but support a particular view of how a system is to work. Thus a general policy statement may be that "the i-SCOPE system will not gather data for sale or distribution to 3rdparties". Whilst this is a common system policy construct found in a wide range of web services, for i-SCOPE this policy misses a number of key elements that make it impractical for large scale distributed systems due in the main to the loose definition of the system, of 3rd parties, and what is meant by gathering.
W2. Technologies	By its nature a policy is political thus policies in general cannot be correct but support a particular view of how a system is to work. Thus a general policy statement may be that "the i-SCOPE system will not gather data for sale or distribution to 3rd parties". Whilst this is a common system policy construct found in a wide range of web services, for i-SCOPE this policy misses a number of key elements that make it impractical for large scale distributed systems due in the main to the loose definition of the system, of 3rd parties, and what is meant by gathering [De Amicis, 2013].
W3. Standards and specifications	
W4. Brokered approach	

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O1. Impact	Users of this project will be: Diversely-abled citizens needing customised routing instructions. Specifically, mobility impaired users or people with limited ambulation requiring barrier-free routing functionalities, and visually impaired users who cannot read maps and need voice-based semantically rich routing instructions. City administrations that need to define policies in terms of heat dispersion and solar potential at urban level. Professionals who need to have high precision solar potential assessment. City administrations needing to assess noise through simulation as well as existing mapping data in order to create noise maps according to EU Directive 2002/49/EC. Citizens, who can access real-time data as well as accumulated maps on areas and time-scales of interest.
O2. Dissemination	Newsletters, workshops, conferences, videos, flyer, articles, abstracts, user guides
O3. Viability	As one of the main objective of the i-SCOPE project is to develop an open toolkit based on 3D UIMs, this tool could be easily reused.
T1. Impact	The project is not finished, so it is difficult to determine the impact.
T2. Dissemination	
T3. Viability	The viability of the project cannot yet been determined.

1.51.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD
Internal	STRENGTHS	WEAKNESS
	▪ OGC & INSPIRE compliant web services for sharing spatial data. ▪ i-SCOPE will significantly rely on CityGML, the open standard for interoperable encoding of 3D Urban Information Models.	▪ The i - SCOPE system will not gather data for sale or distribution to 3rd parties.
External	OPPORTUNITIES	THREATS
	▪ As one of the main objective of the i-SCOPE project is to develop an open toolkit based on 3D UIMs, this tool could be easily reused.	▪ The impact and the viability of the project can not yet been determined.

1.51.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

I-SCOPE project implements the possible services to stream the data to the client considering two different features: a) obtain optimum performance and very short response time avoiding the complex queries that can be made with the WFS; b) transmit to the client the geometries plus the semantic information in a single stream. The way to obtain this kind of results is to stream data directly in the **CityGML** format. The method consists in a downloading service, which provides to the client the CityGML data following a classic tile-based approach. Within the i-SCOPE project the client has been developed on top of Nasa World Wind Java SDK. Thanks to this approach many useful features can be implemented in parallel: different services like the WMS, WFS and the proposed approach can run concurrently allowing a great flexibility of the entire system [Patti et al., 2013].

The services foreseen by the i-SCOPE platform are three [Prandi et al., 2013]: service for accurate assessment of solar energy potential at building level; improved inclusion and personal mobility of aging and diversely able citizens through an accurate city-level disable-friendly personal routing service which accounts for detailed urban layout, features and barriers; environmental monitoring through a real-time environmental

noise mapping service-leveraging citizen's involvement will who act as distributed sensors city-wide measuring noise levels through their mobile phones.

1.52 SDI4APPS

1.52.1 Brief description

The main target of SDI4Apps is to bridge the top-down managed world of INSPIRE, Copernicus and GEOSS and the bottom-up mobile world of voluntary initiatives, micro SMEs and individuals developing applications based on geographic information. The bridge is provided by a cloud-based framework with open API for data integration, easy access and provision for further reuse. The framework will get data and crate metadata from open data, spatial data, environmental data and crowdsourced data sources. Then the framework will harmonise and integrate the data into a linked data mesh. Data will be delivered as Linked Open Data or accessible through an API. This cloud-based framework will be validated through six pilot applications focused on easy access to data, tourism, sensor networks, land use mapping, education and ecosystem services evaluation.

CORDIS permalink	http://cordis.europa.eu/project/rcn/191778_es.html
Official page	http://sdi4apps.eu/
Funded under	CIP (http://cordis.europa.eu/programme/rcn/838_en.html) Subprogram CIP-ICT-PSP.2013.2.2a – Open data – Open data experimentation and innovation building on geographic information Project reference 621129
From/to	2014-04-01 → 2017-03-31
Total cost	EUR 4 070 000
EU contribution	EUR 2 035 000
Coordinated by	University of West Bohemia (Czech Republic)
Participants	Rtd Talos (Cyprus), Help Service - Remote Sensing (Czech Republic), Uhlava Ops (Czech Republic), Masarykova Univerzita (Czech Republic), Ceske Centrum Pro Vedu A Spolecnost (Czech Republic), European Regional Framework For Co-Operation Association (Greece), The National Microelectronics Applications Centre (Ireland), Hyperborea (Italy), Stepim - Strategie Strutturali Di Antonio Paterno' & C. (Italy), Scuola Superiore Di Studi Universitari E Di Perfezionamento Sant'anna (Italy), Baltic Open Solutions Center (Latvia), Vidzemes Planosanas Regions (Latvia), Zemgales Planosanas Regions (Latvia), Asplan Viak Internet (Norway), E-Pro Group (Slovakia), Pronatur Obcianske Zdruzenie (Slovakia), Slovenska Agentura Zivotneho Prostredia -- The Slovak Environmental Agency (Slovakia)

1.52.2 Identification of the SWOT of the project

Question	Answer
S1. Reuse	The project addresses the reuse of geographic information and open data under the SDI paradigm.

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Question	Answer
S2. Technologies	The project proposes a scalable architecture for SDI based on cloud technologies that include a parallel write-only storage and a parallel read-only storage based on clustered or Postgres XL[73] databases with PostGIS extension [SDI4APPS D3.1]. The cloud used is based on OpenNebula. [SDI4APPS D3.2.1]. MICKA is responsible for managing metadata and supporting data and service discovery in the SDI cloud. MICKA can support INSPIRE metadata [SDIAPPS D3.2.1]. Sens Log and FI-WARE Orion[74] are used for sensors management [SDIAPPS D3.2.1].
S3. Standards	The project claims to be aligned with INSPIRE, Copernicus and GEOSS. The metadata catalogue MICKA is a CSW catalogue that can import FGDC CSDGM, ISO 19139, metadata form OGC Web services and ISO 19110 Feature Catalogue. Metadata can be exported as ISO 19139, GeoRSS, HTML, PDF, JSON, GeoRSS, Atom, KML, OAI PMH, OAI MARC2, and RDF. Also it can validate metadata against the INSPIRE profile [SDIAPPS D3.2.1].
S4. Brokered approach	See W4.
W1. Reuse	Too early to evaluate.
W2. Technologies	The project acknowledges that Postgres may fail as database for the write-only storage.
W3. Standards	The API for data access in the cloud could be ad-hoc
W4. Brokered approach	The system proposed is not a broker.
O1. Impact	The project has a detailed plan for managing communities [SDI4APPS D2.2.]
O2. Dissemination	The dissemination strategy has listed LinkedIn groups, organisations and EU projects for diffusion activities. Also it lists events in the period 2015-2016 where the project should be presented. One WP is explicitly targeted to provide support for external developers of new applications on top of the SDI4Apps cloud infrastructure.
O3. Viability	One WP has as topic the development of a sustainable business model for a cloud based SDI. [SDI4APPS D2.2.]
T1. Impact	Too early to evaluate the impact.
T2. Dissemination	Too early to evaluate the impact
T3. Viability	No outcome has been produced yet.

1.52.3 SWOT summary of the project

	Helpful for ENERGIC OD	Harmful for ENERGIC OD

[73] http://www.postgres-xl.org/

[74] http://catalogue.fi-ware.org/enablers/configuration-manager-orion-context-broker

	STRENGTHS	WEAKNESS
Internal	▪ Focused on reusing geographic information as open data ▪ INSPIRE aligned	▪ The system is not a data broker. It is rather a data aggregator provider. ▪ The project is in a very early stage and they are unsure of the suitability of some technologies ▪ Some of the APIs proposed could be ad-hoc
	OPPORTUNITIES	**THREATS**
External	▪ Highly detailed plan for community engagement. ▪ Focused on non-GI experts.	▪ The project is very ambitious.

1.52.4 Most remarkable technologies, standards, specifications, dissemination strategies and business models identified

- The cloud based approach for providing access to the data is remarkable, in particular the use of clustered spatial databases [SDI4APPS D3.1].
- The description of the social strategy for community engagement and pilots is a highly detailed document plenty of insights [SDI4APPS D2.2].

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[HAIVISIO 3]	http://haivisio.eu/haivisio-workshop-in-athens/
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