

The GS SOIL contribution to INSPIRE

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Abstract

GS SOIL “Assessment and strategic development of INSPIRE compliant geodata services for European soil data” is a Best Practice Network co-funded by the European Commission under the eContentplus Programme. It aims to improve the semantic interoperability and harmonization of soil datasets. The soil geodata is accessible and exploitable via the “one stop GS SOIL portal <http://gssoil-portal.eu/>. In this context, it contributes to the INSPIRE Directive implementation with specific reference to the Annex III theme “Soil”.

1 Introduction

The GS SOIL consortium comprises 34 project partners out of 18 European member states. The first two years of GS SOIL were dedicated to the survey and the analysis of data availability and accessibility, the activities towards the GS SOIL metadata profile, the data model and the GS SOIL portal.

The aim of the paper is to present the state of the art of the GS SOIL project and the ongoing activities to support the INSPIRE implementation in the soil domain.

INSPIRE and the relevant implementation rules provide the framework for the establishment of European Spatial Data Infrastructures. In addition, also requirements and guidelines for harmonization and interoperability of data and services as well as of organizational structure are published. The best practice network GS Soil majorly contributes to the parallel ongoing INSPIRE processes, especially to the development of data specification for the annex III theme “soil. The project outcomes are listed as reference material for the official committees, as the INSPIRE Thematic Working Group (FEIDEN 2010A; see also GS SOIL DELIVERABLES).

2 The GS SOIL portal

In recent years, one of the most successful attempts at unifying metadata catalogue and retrieval systems nation wide, inside the EU, was represented by the InGrid platform. It was first used in the German PortalU project, a direct descendant of the older UDK projects (UDK stands for “environmental data catalogue”), and which is now also moving towards INSPIRE compliance.

InGrid forms the underlying driving platform of the GS Soil portal, thus presenting its users with an ISO and INSPIRE-compliant metadata search interface, and is capable of

functioning as a primary metadata publishing service, in addition to harvesting and indexing.

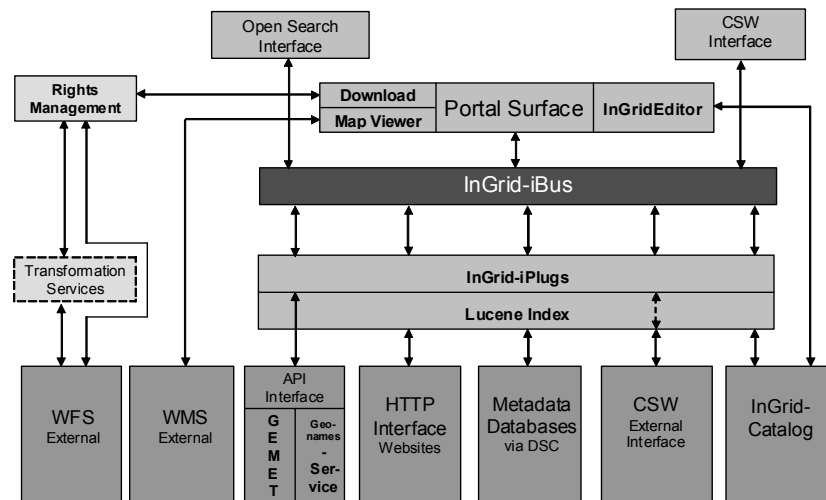


Fig. 1: The architecture of the GS Soil portal (FEIDEN ET AL. 2010B)

The interfaces of InGrid and therefore of the GS Soil Portal supports all INSPIRE compliant GIS services related to the GS Soil project. So the underlying structure of the GS Soil Network may technically use all kinds of INSPIRE compatible service applications.

The software was built on single components which communicate via internal interfaces based on TCP/IP. A multi-lingual portal user interface, catalogue systems, search functionalities, web mapping services was built up. Web mapping services will be developed with regards to the INSPIRE Directive, the relevant implementing rules and technical guidance documents prepared and published by the European Commission. It will also be based on the required ISO and OGC standards.

The URL of the GS Soil portal is: <http://gssoil-portal.eu>. It offers simple and advanced search tools, RSS feeds, an integrated OGC-conform WMS viewer and a user administration. The current version of the GS Soil Portal is already available in 11 project languages.

As open tools for the publishing of metadata the project partners implement either GeoNetwork or the IngridEditor provided by the Coordination Center PortalU.

3. INSPIRE compliant content in the GS SOIL Portal

The GS SOIL geoportal is a demonstration infrastructure that is compliant with INSPIRE principles and enhances the accessibility and exploitation of available digital soil data, as data sets / services and metadata, that was made available in the GS SOIL network. This technical solution of a geoportal only gains value if sufficient content is provided.

The GS SOIL contribution to INSPIRE

The GS SOIL network aims with its activities to establish best practice in data specification development. These activities regarding an INSPIRE compliant GS SOIL data specification lead to the definition of GS SOIL specific metadata profiles for soil geographic datasets / dataset series and data services. They were developed following the INSPIRE IR for metadata, other international, and national standards (like the ISO 19115 and ISO 19119), and the needs of the data users. The focus was also on data quality that is necessary for the soil spatial data theme. The results are directly defined in the soil metadata profiles. Additionally, recommendations were defined since this second part is not compliant to the existing ISO structure. Metadata structure developed in this project contains an example of the XML encoding soil specific resource.

The GS SOIL profiles include data quality elements and sub-elements as well as the associated basic data quality measures to be used to describe data related to the spatial data theme "Soil". Multilingualism is served via a theme specific thesaurus that deals with the soil topic based on the European environmental thesaurus GEMET. The approach mentioned above significantly improves multilingual support especially for the discovery purposes and solves some multilingual issues at the same time as well.

Further, interoperability in GS SOIL is broadly defined as the ability of two or more autonomous entities to communicate and co-operate among themselves in a meaningful way despite differences in language, context or content (INSPIRE DT [DRAFTING TEAM] DATA SPECIFICATION (2008A AND B)). Technically, interoperability is the capability of a product to interact and function with other products without any access or implementation restrictions, and without immediate human intervention. This requires that specified data formats such as XML are maintained so that data sets can be exchanged and communicated (syntactic interoperability). Besides the simple exchange of information, it must be possible to interpret exchanged information meaningfully and accurately so that useful results are received by users (semantic interoperability). This requires that data sets conform to a common information exchange reference model, represented as a specific application schema and that the meaning of the contents is defined in common concepts and reference lists. The domain community has to agree on a common schema and on common concepts with which those schemata are filled. The data provider has to map his data to the concepts and fill in the schemata.

The GS SOIL network developed an application schema for soil data, based on existing ideas of ISO 28258 draft for digital exchange of soil-related data. The schema allows data providers to define XML data structures for their soil data in a way that data receivers can immediately use and interpret the data in a meaningful and scientifically sound way.

GS SOIL is registered as Spatial Data Interest Community (SDIC) and supports the INSPIRE development process in the theme soil. Significant effort to harmonise project activities with INSPIRE development was taken from the early start of the project and will be regarded in the "sustainability long term operational plan" of the project.

Acknowledgment



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References

- FEIDEN, K. ET. AL. (2010A): Progress of the transnational cooperation in building up a SDI for European soil data (eContentplus-project GS SOIL). INSPIRE conference 2010 – a framework for cooperation, 22-25. June 2010, Krakow, Poland.
- FEIDEN, K., KRUSE, F., EPITROPOU, V., KARATZAS, K. (2010B): The GS SOIL portal prototype and its integrated network. 24th International Conference on Informatics for Environmental Protection in cooperation with Intergeo 2010. 6.-8.10.2010 EnviroInfo Köln/Bonn 2010 / in: Greve, K. (Ed.): Integration of environmental information in Europe, pages 420-428.
- INSPIRE DT [DRAFTING TEAM] DATA SPECIFICATION (2008A). Definition of Annex Themes and Scope. Deliverable D2.3. Version 3.0.
- INSPIRE DT [DRAFTING TEAM] DATA SPECIFICATION (2008B). Methodology for the development of data specifications. Deliverable D2.6. Version 2.2.

Relevant project deliverables to be downloaded at www.gssoil.eu:

- GS SOIL CONSORTIUM (2010): D3.1 Metadata profile for soil geographic datasets and dataset series
- GS SOIL CONSORTIUM (2010): D3.2 Metadata profile for soil geographic data services
- GS SOIL CONSORTIUM (2010): D4.1 Theme specific test suite for developing data specifications
- GS SOIL CONSORTIUM (2010): D5.1 Design specifications of teh GS SOIL PORTal and ist network
- GS SOIL CONSORTIUM (2010): D5.2 GS Soil Portal (Prototype)
- GS SOIL CONSORTIUM (2010): D5.3 First set of open tools and services
- GS SOIL CONSORTIUM (2011): D3.4 Final best practice guidelines for Creating and Maintaining Metadata for Soil Database
- GS SOIL CONSORTIUM (2011): D4.2 Generic application schemes for soil information.