Building a Soil Information Portal for Europe Based on the PortalU® Technology

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Abstract

The access, reuse and exploitation of digital environmental information has become an important concern for public and private bodies in recent years. Especially within the discussion of climate change this issue became more and more important world wide and particularly in Europe. The European Environmental Information Directive (COM 2003), the Directive for establishing an Infrastructure for Spatial Information (INSPIRE, COM 2007) as well as further initiatives of the EU like the Shared Environmental Information System (SEIS) emphasizes the need to make digital environmental information within Europe more accessible, usable and exploitable. The project GS Soil aims to make a contribution to improve the access to spatial soil data in terms of INSPIRE by establishing a European network for soil information. A central component of this network will be the GS Soil Portal, a European web portal for soil data and metadata. As basic technology for the GS Soil Portal, the software of the well established German Environmental Information Portal PortalU® will be used. Within the project the existing technology will be modified and communication interfaces will be added depending on the demands of the network.

Keywords: Environmental information, Soil data, INSPIRE, Spatial data infrastructure

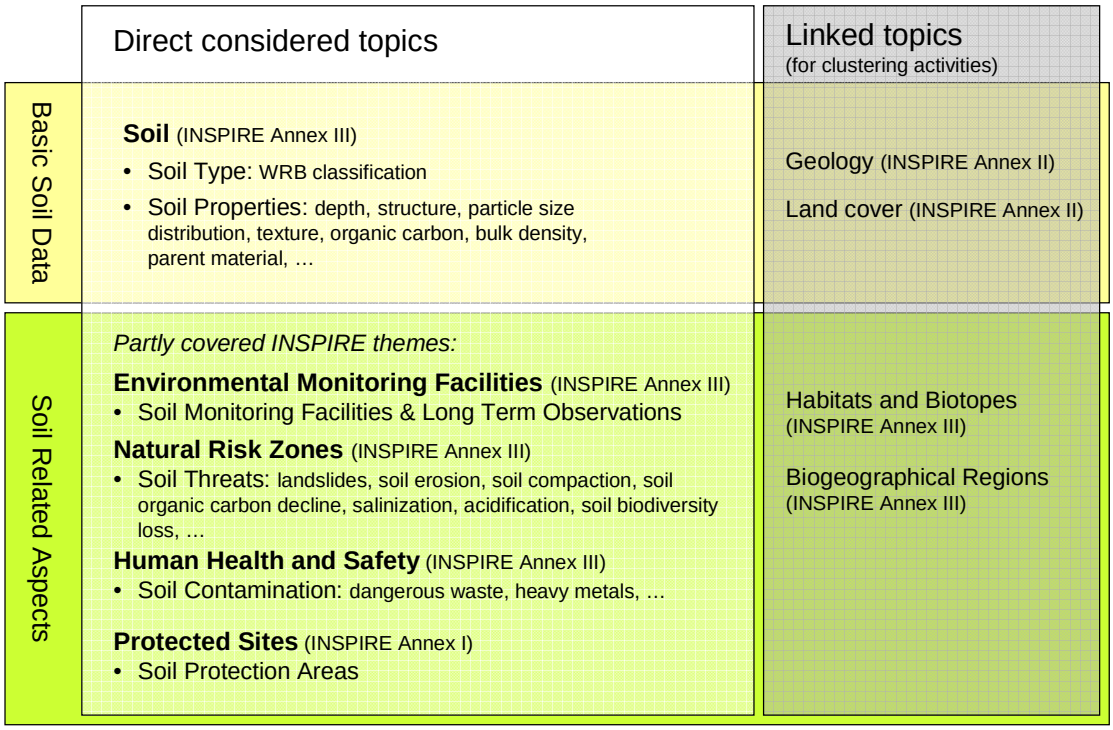
1. INTRODUCTION

The improvement of access to digital content within Europe is an important part of the European Commission's policy framework i2010 (COM, 2008). Within this framework the positive contribution of information and communication technologies on economy, society and personal quality of life shall be promoted. The increase of interoperability is thereby an important issue of the i2010 strategy (COM, 2009). In this context the increase of reuse of environmental information by improving the interoperability of spatial data sets and services in terms of the INSPIRE Directive (COM, 2007) is an important issue. The basis for an easier reuse of information is firstly an easier access to this information. Especially the web-based access to a huge amount of spatial environmental data deserves particularly attention, thus high organizational and financial efforts are necessary to improve the access to this kind of data. INSPIRE gives a framework to establish an appropriate European spatial data infrastructure. Nevertheless vital challenges referring to harmonisation and interoperability of data and services as well as referring to the organisational structure have to be met. The eContentplus project GS Soil aims at contributing to meet these challenges by assessing and developing INSPIRE compliant spatial data services for soil data within Europe. The project is currently under negotiation and will likely start in June 2009. Its focus is set on aggregating existing national datasets into cross border datasets, which will serve to underpin new information services and products for INSPIRE compliant soil and soil related data.

2. THE PROJECT GS SOIL

The project GS Soil is funded by the multi-annual Community program eContentplus from the European Commission DG Information Society and Media. Within the project a European network will be established in order to improve the access to spatial soil data for public bodies, companies and citizens. The project will focus on data organisation, data harmonisation as well as on semantic and technical interoperability of soil related data and services with the objective to implement spatial data and services in terms of INSPIRE. Figure 1 gives an overview, which INSPIRE Annex themes are considered within the project. The main focus will thereby set on the INSPIRE Annex III theme SOIL.

Figure 1: Direct considered and linked topics in GS Soil



The project consortium consists of 34 partners from 18 European member states. 24 of the partners will thereby provide soil and soil related data on national or on regional level. Thus a huge amount of soil and soil related information will be considered within the project.

2.1 Project structure

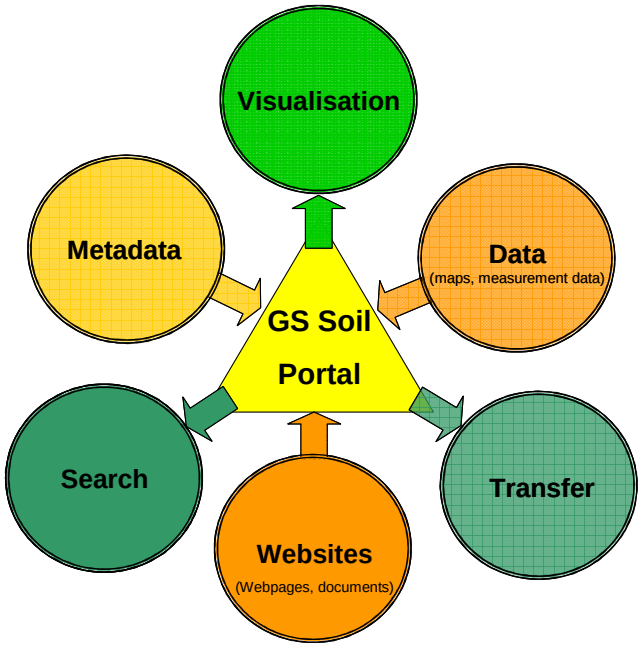
In order to meet the goal of GS Soil of improving access to digital spatial soil data in terms of INSPIRE, the project is structured in four main parts. In the first part a framework for the provision of spatial soil and soil related data will be defined. In the second part the development of a schema for describing the spatial soil and soil related data and services take centre stage. In the third part the focus is set on

harmonisation and semantic interoperability of selected soil data sets. In this context a framework will be developed to link similar soil data sets from one country to another. Part one to three will thereby set up on each other. The soil and soil related data will be analysed, necessary metadata will be identified and provided and specific datasets will be systematically harmonised. In the fourth part the establishment of an integrated network and the GS Soil portal for improving the access to data and metadata take centre stage. In order to consider the needs of the target users of the GS Soil portal, user requirements will be considered. Furthermore a long-term operation plan for the portal will be carried out. Within the GS Soil portal an access to all decentralized distributed data and metadata will be possible.

2.2 The GS Soil Portal

The basic idea of the GS Soil Portal is a web portal where all soil and soil related information can be searched, maps can be visualised and can also be transferred to other spatial data infrastructures (figure 2). The target users for the portal are any kind of users from soil and environmental experts to interested citizens. The provided information can thereby originate from different administrative levels: from regional, national or European level. Within the GS Soil Portal different kind of information shall be bundled: especially web pages, different kind of textual documents, metadata and maps.

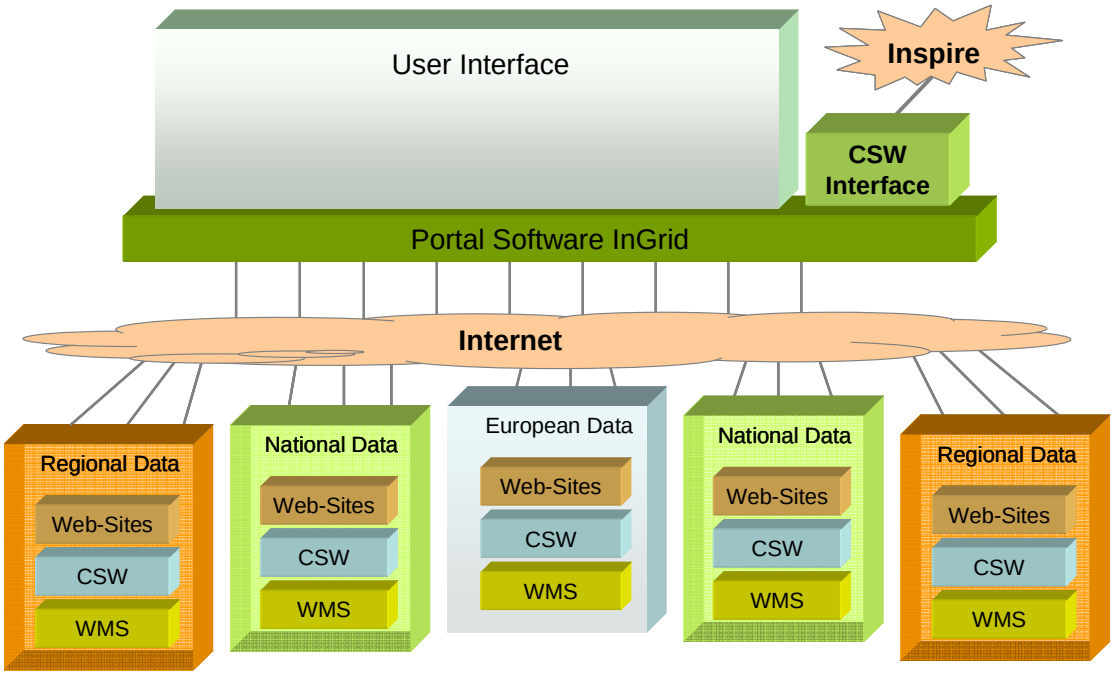
Figure 2: Architecture of the PortalU® Software InGrid



As technical base for the GS Soil Portal the technology of the German Environmental Information Portal PortalU® (*www.portalu.de*) (Voegele at al. 2007) will be used. With this technology all decentralized distributed information from web pages, databases up to data catalogues can be searched by simple or advanced search queries according to the requirements of the user. The results of a query are displayed in a ranked result list independent from the data source.

The technology provides different kind of interfaces to data sources (iplugs) and also interfaces for the transfer of information to other systems like a central INSPIRE portal (figure 3). The most important iplug / interface in reference to INSPIRE is the CSW-2.0-interface. The OGC conform CSW-2.0-interface is based on the ISO standards 19115, 19119 and 19139 and the Implementing Rules metadata of INSPIRE. This interface makes the exchange of spatial metadata in both directions possible. With the CSW-iplug spatial metadata sources (data catalogues) can be connected to the GS Soil Portal, while on the other hand the CSW-interface can be used to transfer spatial metadata from the GS Soil Portal to external systems. In reference to embed the GS Soil in a major spatial data infrastructure like INSPIRE the standardised CSW interface and further standardised interfaces play an important role.

Figure 3: Architecture of the PortalU® Technology



The PortalU® technology provides a hierarchical structure of partners and data providers in order to consider the federal administrative structure in Germany. According to this, the federal government and the states (Bundeslaender) act as partner in PortalU®, the single data providers are accordingly subordinated to the federal government or the referring state. This structure can also be easily used on European level for GS Soil: each state will act as partner and the data providers are allocated to the referring country. In the GS Soil Portal all soil related information will be made available and accessible. Spatial soil data from OGC compatible Web Mapping Services (WMS) and Web Feature Services (WFS) will be visualized in the map viewer.

3. PERSPECTIVE

The PortalU® technology has a modular structure and is thereby easily extendible for the specific needs within the project. It is based on open source components and internal developments. Therefore it can be used without external license costs in the project. For all tasks within the project the GS Soil web Portal will be used as platform for an improved access to the soil data. At the beginning of the project the PortalU® technology is used as based. During the project the technology will be extended in reference to the needs for the whole project network. Besides this, general open tools and services will be provided for the provision of data and metadata.

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