



The EU HUMBOLDT Project – Networking of Spatial Data

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Weather, rivers preserve areas are inherently international and don't care for national borders. The necessary political decisions and challenges resulting from natural disasters or concerning the protection of preserve areas are, consequently, also transboundary concerns. The spatial data required for this in Europe, however, shows an extensive heterogeneity. The EU project HUMBOLDT, a framework for geodata harmonization and service integration, started in October 2006 and shall facilitate a cross-national harmonization of spatial data. Under the coordination of the Fraunhofer IGD and with the contribution of the INI-GraphicsNet Stiftung 27 partners from 14 European countries are working in the four-year project with a total volume of 13.5 million euros.

German Abstract

Wetter, Flussläufe, Naturschutzgebiete oder Meere kümmern sich nicht um Ländergrenzen. Die sich ergebenden Probleme und Herausforderungen etwa durch Wetterkatastrophen oder beim Schutz von Naturreservaten sind grenzüberschreitend. Die zur Vorbeugung und Bekämpfung der Hochwasser notwendigen Geodaten jedoch liegen in den verschiedenen Ländern in unterschiedlichen Formaten und in verschiedenen Systemen vor. Das im Oktober 2006 gestartete EU-Projekt HUMBOLDT soll die länderübergreifende Harmonisierung von Geodaten erleichtern. Unter Leitung des Fraunhofer-Instituts für Graphische Datenverarbeitung und in Kooperation mit der INI-GraphicsNet Stiftung arbeiten insgesamt 27 Partner aus 14 europäischen Ländern in dem auf vier Jahre angelegten Projekt mit einem Gesamtvolumen von 13,5 Millionen Euro.

Vision

The primary aim of Alexander v. Humboldt (1769 -1859, Prussian naturalist and explorer and one of the last universal scholars), was to integrate the knowledge of his time to gain new insights and to further all areas of science. Following the path of its eponym, it is the aim of the HUMBOLDT project to advance the implementation process of a European Spatial Data Infrastructure (ESDI). This integrated network of systems providing data and services will allow the sustained use of existing services as well as the development of entirely new applications and business models. For research, this availability of data is – despite ongoing efforts – still highly scattered and heterogeneous. A unification can contribute to the creation of new knowledge by combining data that was previously not integrable – or only with prohibitively high effort. Also, new processes that replace complicated existing activities and

have a much higher efficiency can be developed on the base of the envisaged system.

Objectives of the Project

In this context, HUMBOLDT's most important goal is the harmonization of existing data. This includes the provision of a basis for GMES (Global Monitoring for Environment and Security) application services by meeting their requirements, supporting the harmonization process and creating the basis for a sustained use of spatial data. The core of the project marks the creation of a software framework covering the harmonization of data and services on the syntactic, schematic and semantic levels.

Creating such a framework also involves finding solutions for open research issues like the efficient connection of legacy systems providing important data, the visualization of enormous amounts of data, the handling and processing of 3D urban models and the design of new user interfaces for complex conceptual systems. In all these areas, the Fraunhofer IGD department for Graphic Information Systems contributes profound experience from previous developments like the City-Server3D technology. Fraunhofer IGD also has the leading role in the specification of the HUMBOLDT framework. In this sense, the framework is a set of software modules that enables providers and users of geospatial data to create their applications with minimal effort. This assumes the solving of many typical problems present in heterogeneous environments and by providing extension points to these components.

An essential element of the project is the development of scenarios in which the different components are applied under realistic conditions.

The Eight HUMBOLDT Scenarios at a Glance:

Border Security: This enables effective border control and security in rural areas by the leverage of a routing-enabled transportation network in a command and control system on the external EU border, integrating new sensor technologies and mobile resource management capabilities.

Urban Planning: This scenario aims to bring the HUMBOLDT project together with projects related to the Urban Thematic Strategy (UTS) and consequently manage the information needs for the UTS delivery. The UTS strategy is guided by a vision of sustainable urban management in order to improve the socio-economic conditions of cities.

Forest: The scenario will be focused mainly on land cover and vegetation integration with data for water resources, risk management and security. It will demonstrate a Czech use case, in combination with Saxon and pan-European data.

Protected Areas: The objectives are to embed the geo-information managed by parks in a seamless flow that gathers various information from all available sources and exploits it for planning, management and promotion. These flows stream along all the different levels (EU, national, regional and local) involved according to the scheme highlighted in INSPIRE principles.

European Risk Atlas: The goal of this scenario is the development of a European Risk Atlas that, on the one hand, collects and combines existing data concerning risks and vulnerability (severe weather phenomena that cause natural hazards like drought, floods, storms, fire and landslides) and, on the other hand, demonstrates the capability of earth observation systems in respect of gathering new and consistent data. The scope of the testbed for this scenario will be the arc of the Alps with its extension in the Pyrenees and the Carpathians.

Water: This scenario is based on and contributes to the water directive framework (WFD) which is a new piece of European legislation. It promotes a new approach to water management through river basin planning and helps to improve and protect inland and coastal waters.

Ocean: The Ocean scenario focuses on integrating and testing the HUMBOLDT framework for assessing and managing oil/contaminants spill crises. The aim is to prove how the technical components developed in the HUMBOLDT project can be implemented and configured for the easy and combined use of different and heterogeneous (spatial) data sources.

Galileo: The Galileo scenario has two main aims: to offer a location-based service which allows both to retrieve and to enter atmospheric data and to use the additional capabilities provided by Galileo to do so effectively even in critical surroundings, such as forests or urban surroundings. The testbeds for this scenario will be southern Hesse and southern Sweden.

The scenarios show – among others – applications for an effective border control and security in rural regions, for the risk management in weather disasters, for the protection of cross-border forests or for the management of nature reserves. The variety of scenarios also shows how many different areas will benefit from a harmonization of the spatial data.

The organizational structures and sub-structures have already been established and started on the prototype specification and on the dissemination plan. The last-mentioned functions as a strategic roadmap to ensure the visibility and long-term sustainability of the project. This is being managed by the INI-Graphic-sNet Stiftung during the whole duration of the prestigious EU project, including user involvement strategies, cost and process analysis, marketing plans according to the foundation's expertise in calculating, evaluating and demonstrating short-term and mid-term measures of IT projects, as well as their effects.

Further Information

www.esdi-humboldt.eu

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