

Current state of the German Environmental Information Portal PortalU[®]

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Abstract

The German environmental information portal PortalU[®] is now more than three years accessible via **www.portalU.de** for both citizens and environmental experts. This paper aims at drawing up an interim balance of the development from PortalU[®]. What was the starting point for PortalU[®]? What was the motivation to build up the portal? Which features offer PortalU[®] today? And which development perspectives arise for the technology from today's point of view? Both important technical aspects as well as important organizational and content aspects will be thereby high lighted.

Keywords: SDI, public environmental information, INSPIRE, SEIS, information portal, eGovernment

1. Introduction

1.1 Public-owned environmental information in Germany

The availability and accessibility of environmental information held by or for public authorities are getting more and more important. On the one hand an increased access and dissemination of environmental information for the general public is essential for attracting greater awareness of environmental matters, a free exchange of views and more effective participation by the public in environmental decision-making as pointed out in EU Directive 2003/4/EC (EU 2003). On the other hand detailed knowledge and information about the environment are necessary in order to ensure that the environmental policy-making of the European Community considers regional and local differences as pointed out in EU Directive 2007/4/EC (EU 2007).

In federal structured states like Germany public environmental information are provided by various agencies on different levels of public authority from local, regional and national level. The environmental information is thereby quite heterogeneous both in content and in data format. In order to coordinate this highly distributed public environmental information within Germany a first administrative agreement between the federal environmental institutions and thirteen of the sixteen German states (Länder) was set up thirteen years ago in the year 1996. Two years before the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) was signed (UNECE 2009). In the first years the administrative agreement was focused on the shared development and maintenance of an environmental catalog called "Umweltdatenkatalog" (short UDK) (SWOBODA ET AL. 1998). The UDK software was developed from 1991 to 1995 within a research and development (R&D) project at the Lower Saxony Ministry for Environment and Climate Protection (LESSING & SCHÜTZ 1994) co funded by the German Environmental Agency. Within the catalog, informa-

tion about existing environmental and geo spatial information and services were collected in terms of structured metadata.

Besides this, a second initiative started in 1998 at the German Environmental Agency with the objective to establish the German Environmental Information Network *gein*[®]. With the web application *gein*[®], web presences of public environmental institutions as well as environmental web pages from further public institutions has been made accessible and could be searched through by a specific search engine. Furthermore *gein*[®] has provided access to various environmental data bases (Bandholz al. 2000).

Both systems UDK and *gein*[®] were successfully implemented. Thus the systems complement one another quite good and both systems were set up to improve the access to environmental information. Therefore the environmental administration decided to merge both systems in a new one-stop-portal by using improved software technology. For this purpose a new administrative agreement (Verwaltungsvereinbarung UDK/GEIN) was signed January 2003. All environmental institutions on federal and state level are involved in this agreement. The agreement is the current basis for the common approach for accessing and maintaining public environmental information in Germany. The software for the new one-stop-portal was called *InGrid*[®], while the new German Environmental Information Portal was called *PortalU*[®].

1.2 Objective of *PortalU*[®] and organizational structure

PortalU[®] aims at improving the availability to widespread environmental information held by or for public authorities. Therefore the fast growing, decentralised offered public environmental information in the web is bundled in the German Environmental Information Portal *PortalU*[®]. The federal-state-cooperation *PortalU*[®] has the objective to involve all data providers in the one-stop-portal holding public environmental information referring to the definition of “environmental information” in article 2 within EU Directive 2003/4/EC (EU 2003). Moreover the cooperation argued for using *PortalU*[®] as instrument to provide information about environmental spatial data and services in terms of INSPIRE metadata (EU 2007, EU 2008).

The organizational structure of the federal-state-cooperation consists of the following components: the Coordination Center *PortalU*, the decision-making body (LA *PortalU*), the working group for content and technical development of *PortalU*[®] (AG IUTE) and particular contact persons on federal level and for each state (zentrale Stellen). The Coordination Center *PortalU* is the head office of the cooperation and therefore responsible for overall coordination, maintenance and further development of *PortalU*[®]. The maintenance thereby includes the support of *PortalU*[®] partners referring to quality and quantity of the provided content. The decision-making body LA *PortalU* consists of three to four members from federal environmental institutions (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Federal Environmental Agency, Federal Nature Conservation Agency & Federal Office for Radiation Protection) and one member from each of the sixteen states. The LA *PortalU* meets generally twice a year in order to get informed about the current state of *PortalU*[®] referring to content and technical developments and to decide about further developments and strategies. The decision finding is supported by the working group AG IUTE. This body meets likewise generally twice a year in normal meetings and additionally in special workshops and software trainings. The working group consists of members from federal and state level and discusses current content and technical issues of *PortalU*[®]. The body gives particular recommendation for the LA *PortalU*. The fourth body “zentrale Stellen” are contact persons for day to day business between the Coordination Center *PortalU* and the federal level and states, respectively.

2. Technical development

In 2003, at the time as the one-stop-portal PortalU[®] was developed, the focus was set on the increased demands of the EU Directive on public access to environmental information (EU 2003). The Directive grants all citizens of EU member states free access to public-owned environmental information. Therewith public institutions are obliged to provide environmental information, both metadata and data, and disseminate them in an active systematic way. In this context the complete integration of the environmental data catalog UDK in the one-stop-portal as well as the revision of the former topics concept of gein[®] were seen as most important. Furthermore short response times for a query as well as clearly arranged sorted result lists were defined as key criteria for the new one-stop portal in order to meet the user needs. From the data provider perspective the provided information shall be as up-to-date as possible and shall be stored only at one place. And last but not least, from the perspective of the cooperation partners the system has to be cost efficient and should not cause licence fees.

In order to meet these requirements, a modular, service oriented, distributed technical tool was developed. The software was called InGrid[®] and consists of several open source software components which were combined and modified due to the existing demands. InGrid[®] stands thereby for “information grid”, which shall emphasize the modular structure of the software. The software consists of a central component the iBus, several interfaces to diverse data sources and open interfaces to external information systems. Short response times were realized in the PortalU[®] software InGrid[®] by omitting cascading. Moreover the use of an index accelerates the response as well and permits the sorting of results in a result list.

The first version of the PortalU[®] Software InGrid[®] (InGrid[®] 1.0) was launched in Mai 2006. It contained already all main categories from Search over Topics, Service, Data, Maps and an environmental Almanac. New components compared to gein[®] were the possibility to offer common RSS feeds from different sources and to create a personal user profile via “myPortalU“. Moreover environmental maps are visualised by an integrated OGC conform web mapping viewer. Further features of the first PortalU[®] version are a more specific semantically, spatially and timely search queries. Web pages, data bases and also metadata from the environmental data catalogues UDK were already considered in PortalU[®] searches. The former gein[®] concept for the rubric Topics was completely renewed base on the specifications in EU Directive 2003/4/EC (EU 2003). The new concept was thereby discussed very thoroughly, given that this rubric shall serve as easy access point for citizens to important environmental web pages and thus serves as measure for an active dissemination of environmental information.

The most important development in the first expansion phase of InGrid[®] (InGrid[®] 2.0) has been the integration of a metadata editor in the software. This new PortalU[®] component is called InGrid[®]Editor and can be used by all authorised metadata providers since Mai 2008. The InGrid[®]Editor and the PortalU[®] metadata search and presentation functionalities form together the InGrid[®]Catalog which replaces the former UDK software. Besides this the INSPIRE Directive and its implementing rules (EU 2007, EU 2008) implicated and will implicate further demands for describing spatial data and services in terms of structured metadata within the InGrid[®]Catalog. In order to meet these demands, the former UDK metadata model had been adopted.

In terms of the INSPIRE Directive, which focuses on the establishment of an infrastructure for spatial information in Europe, public institutions in Europe will be obliged in intermediate-terms to prove various environmental spatial data and services through metadata. For this the web catalog InGrid[®]Catalog can be used as comfortable software tool. Besides this some further modifications InGrid[®] 2.0 compared to InGr-

id[®] 1.0 shall be highlighted: the search index was optimized, several interfaces were added and the search category Laws were added.

3. Development of available information in PortalU[®]

PortalU[®] started in May 2006 with about 400 000 environmental web pages from around 90 information providers and connections to nine environmental data bases with over 500 000 entries, which were transferred from the former German environmental information network gein[®]. Furthermore over 30 000 environmental metadata entries were transferred from the former UDK software to PortalU[®] (VÖGELE ET AL. 2004). Since then the amount of integrated environmental web pages in PortalU[®] is growing continuously (see fig. 1). While at the beginning of 2007 less than 500 000 pages were available, the amount was doubled during the 2007. In January 2009 over 2 Million public environmental web pages could be searched through in PortalU[®].

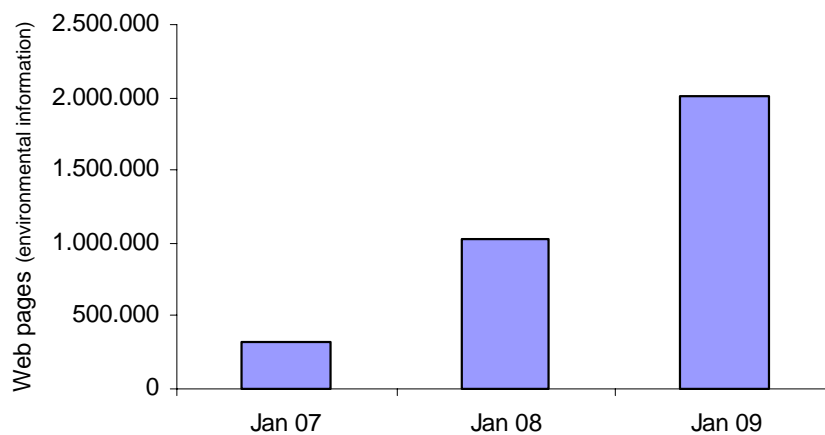


Figure 1: Amount of embedded environmental web pages in PortalU[®] for January 2007, January 2008 and January 2009.

Besides this, the amount of information providers in PortalU[®] increased within the last three years as well continuously. Starting with around 90 information providers in May 2006, 50 new providers were involved in PortalU[®] until January 2007. Moreover until January 2009 the amount grew up to over 240 information providers (fig. 2). Furthermore the amount of providers of up-to-date environmental news has also increased from 14 RSS-feeds providers in the first quarter of 2007 to 21 in the first quarter of 2009.

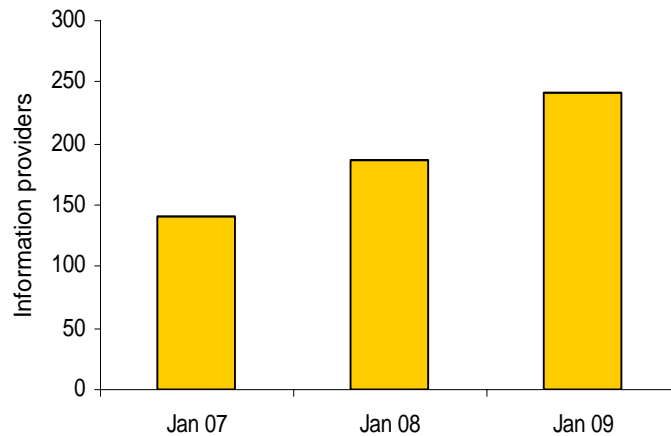


Figure 2: Information providers in PortalU® in January 2007, January 2008 and January 2009

Currently 28 environmental data bases can be searched through in PortalU®: sixteen InGrid® Catalogs on federal and state level as well as the Bavarian environmental object catalog UOK and eleven further data bases like DNL-Online or Floraweb. Besides the increase of environmental information and information providers, the amount of visitors increased as significant during the last years, as well. Figure 3 shows the increase of sessions in PortalU®. The access from one IP address within one hour is thereby counted as a single session. The amount of session increased from the second term 2006 to the second term 2008 from 50 000 to 122 000.

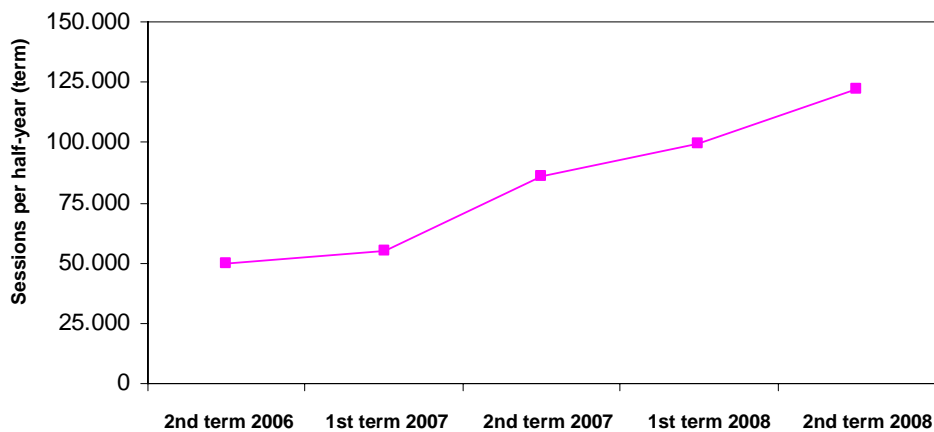


Figure 3: Amount of PortalU® session per half-year (term)

On the whole, PortalU® offers today already an easy access to various German public environmental information. Currently the focus is set on the integration of public institutions, which are not part of the environmental administrative department and just the same provide environmental data referring to EU Directive 2003/4/EC (EU 2003) such as forest management. In order to involve these institutions in PortalU® information events are offered for new potential information providers regularly. The last of these events took place in March 2009 at the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety in Bonn. Furthermore the further involvement of municipal information providers is also an important issue.

4. Conclusions and outlook

The continuous development of the modular software InGrid[®] is a productive reaction on the dynamic development of information and communication technologies and the demands of the users of public environmental information. In 2009 the catalog service web (CSW), the Data Source Client (DSC) and the map viewer of the InGrid[®] software will be updated. Moreover new components referring to numerical measurement data are currently discussed with special focus on the upcoming demands according to EU initiative SEIS (Shared Environmental Information System). The planned and already developed InGrid[®] software components have great potential to be used in different application contexts. Today, InGrid[®] is already used for further applications besides the German wide PortalU[®]: on state level the SachsenportalU (<http://portalu.smul.sachsen.de>) and the Umweltportal Rheinland-Pfalz (www.portalu.rlp.de), the environmental information portals for Saxony and Rhineland-Platinat, are based on InGrid[®] technology. Furthermore the municipal environmental information portal for Lower Saxony “Kommunales Umweltportal Niedersachsen” (www.portalu.niedersachsen.de), which is coordinated by the municipal umbrella organizations Landkreistag and Städtetag of Lower Saxony, is also based on InGrid[®]. Last but not least InGrid[®] will be used within the EU funded best practice network GS Soil (www.gssoil.eu), which has started in June 2009, as basic software for establishing a European soil portal for INSPIRE compliant soil data and metadata (UHRICH ET AL. 2009).

References

- BANDHOLTZ T., BÖS R., RÜTHER M. (2000). The German Environmental Information Network (GEIN), Proceedings of the 14th International Symposium „Computer Science for Environmental Protection ‘00”, Bd. 2, S.632-646, Bonn.
- EU (2008). Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council regards metadata, Official Journal of the European Union, L 326/12.
- EU (2007). Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), Official Journal of the European Union, L 108.
- EU (2003). Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, Official Journal of the European Union, L 41, 26.
- LESSING, H., SCHÜTZ, T. (1994). Der Umwelt-Datenkatalog als Instrument zur Steuerung von Informationsflüssen. Informatik für den Umweltschutz, 8. Symposium, Marburg.
- SWOBODA, W., KRUSE, F., NYHUIS, D. & ROUSSELLE, H. (1998), Die Neukonzeption des Umweltdatenkataloges. Tagungsband zum 12. Internationalen Symposium Informatik für den Umweltschutz der Gesellschaft für Informatik (GI) in Bremen, Bd. 2, S. 610-620, Marburg.
- UNECE (United Nations Economic Commission for Europe) (2009): Publication of the Aarhus Convention <http://www.unece.org/env/pp/documents/cep43e.pdf> (23.6.2009)
- UHRICH, S., KLENKE, M., KRUSE, F., GIFFEI, C. (2009). Approach to Build a Soil Information Portal for Europe Based on the PortalU Technology. Proceedings of the European conference of the Czech Presidency of the Council of the EU TOWARDS eENVIRONMENT. Opportunities of SEIS and SISE: Integrating Environmental Knowledge in Europe, March 2009, S. 266-268, Prague.
- VÖGELE, T., KRUSE, F., KARSCHNICK, O. (2004). Sharing Environmental Data with gein®, Proceedings 18th International Conference for Environmental Protection (EnviroInfo 2004), Genf, 21.-23.10.2004, Bd.1, S.502-514.