The UDK
Present status and future development
An overview
- Abstract -

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Introduction

The Environmental Data Catalog (German: Umweltdatenkatalog; UDK) is a meta-data information system. From the time of it's conceptualization about 10 years ago, it has been refined and upgraded continuously. This article shows aspects of the organization, the data collection and the software. It provides a view on future developments also.

Organizational Evolution

The bases of the UDK were put in the years 1991 to 1995 in a research and development project at the Ministry of Environment of Lower Saxony promoted by the Federal Office for Environment Protection.

Still at run time of the project a co-operation of the larger part of the German countries was formed, aiming for both the development and the dissemination of the UDK. In 1993 Austria entered a formal co-operation with the Federal Republic of Germany concerning the environmental data catalog. At the same time, an Environmental Information Law introduced the UDK as the official navigation tool for all environmental information on record in Austria.

Since 01.01.1996 an administrative agreement UDK exists between the Federal Republic of Germany and 13 of the 16 German states. In 2001 the states Rheinland-Pfalz and Bayern also joined the agreement. As of today the state Berlin is the only missing member.

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The coordination center UDK was installed in 1996 in order to handle the business of the administration agreement, to organize future developments and to maintain the UDK software.

Evolution of data

Since the major software of 1997, the number of data entered into the system has been constantly growing. From the end of 1997 to the end of 2001 in Germany the number of records has more than trebled to about 25.000 data records. In Austria about 12.000 data records have been collected.

During the last year the German focus of the cooperation changed from a more quantitative sight on the data to a more qualitative approach. Because of the federal character of the German environmental administration the states are responsible for the metadata collection themselves. The discussion was focused on a more homogenous data gathering in the country as a whole.

Similar problems are the degree of completion of the individual UDK fields and the incomplete data coverage over all areas concerning the environment. This is a central point of study during the year 2002.

Software

In the passed years UDK applications were developed for the collection, administration and retrieval of environmental metadata.

Software for metadata collection

A Windows based software was developed for metadata collection. The software offers the possibility of entering environmental objects and addresses. In addition an administration tool for the entire UDK data collection is applied also. The software was developed in Visual Basic 6. It is running on all Windows operating systems (Windows 9x, Windows NT 4.0, Windows 2000 and XP). The database management systems Oracle, MS-SQL-Server, Access, Informix, and Ingres are supported.

In most cases the collection of metadata takes place in decentralized databases (several databases per state). The Windows UDK offers a special update mechanism (updating cycle) to exchange the modifications between the decentralized databases. The mechanism can be automated through the so-called UDK-Agent using an eMail system.

The current UDK Version 4.3 supports data exchange with many external systems through a XML interface.

In 2002 a Client-Server-Version (UDK 4.3 CS) was implemented, which is based on a three-tier architecture. For communication between Client and Server the XML based SOAP-Protocol is used. This UDK version can not only be used in local area networks (LAN) and intranets but also in the internet.

Retrieval Software for the Internet

For retrieval of metadata via the internet the WWW-UDK was developed. This application consists of two components:

1. The HTML-UDK is a Java servlet. It runs on a Web-server and communicates with a standard HTML-Browser. The application provides a quick search, an expert search (with various search filters, e.g., concerning the spatial, the temporal or the thematic relations of the UDK objects and addresses, respectively), and a thematic navigation along the thesaurus structure. Both quick search and expert search can be used to search for UDK objects and for addresses.
2. The Java-UDK is the enhanced application. It is oriented towards the retrieval functions of the Windows-UDK. It provides a UDK Navigator corresponding to the UDK Explorer of the Windows-UDK, an expert search with various search filters, a Thesaurus Navigator, and a geographical search called GeoView.

To compile a search in the catalogs of all states the so-called virtual UDK (V-UDK) was developed. This application provides a search in all UDK databases installed in the internet. The results are presented homogeneously in a single list.

The current Version, V-UDK 4.2, offers an extensive interface for the integration of external metadata systems with the UDK. The Bavarian Environmental Object catalog (UOK Bayern) is linked into the V-UDK with this interface. It is possible to integrate the WWW-UDK to other components of environmental information systems.

The V-UDK provides also an interface to the German Environmental Information Network (GEIN). Thereby, searches through GEIN are extended to search in the V-UDK.

Future Development

Certainly, the most important step during the next years will be the integration of GEIN and UDK into a common information system. In 2003 the administration offices for both systems will be merged at the current UDK offices at the Ministry of Environment of Lower Saxony in Hannover. The development of a common user interface for the retrieval of UDK and GEIN data is being discussed.

The administration of geographical metadata will play a very important role in future. In 2002 the international standard ISO 19115 will be published as a recom-

mendation. The data model of the UDK will be improved with the aim to achieve compatibility to this standard. The UDK will get interfaces for both in- and export and for the connection to external systems like e.g. the German Broker for geographical data GeoMIS Bund.

The application for metadata collection, Windows-UDK, is available for Microsoft Windows OS only. The client server version of this software will be used for data collection via the internet. Many German states use Unix and Linux OS on their web-servers. Thus, the development of a platform independent server application for the Windows-UDK is under evaluation.

Furthermore, it is planned to extend the international cooperation. For the use of the UDK in other, non-german-speaking countries, it will be necessary to upgrade the software with a multilingual user interface.