

## Chapter XIX

# Metadata Information Systems for Geospatial Data

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## INTRODUCTION

The more information and data<sup>1</sup> are produced by the actual information society, the more important become mechanisms and systems which organize the data and include information where to find which data. The most popular peculiarities of such information systems are metadata information systems (MIS) and catalogue systems (CS).

The main difference between these systems is the extent of the information spectrum covered. Whilst e.g. catalogues for department stores or phone books are typical representatives of CS covering a relatively clearly outlined information spectrum (address, phone number, article no., price etc.), other systems cover a quite larger spectrum. Examples for this are environmental MIS such as the UDK (German: Umweltdatenkatalog, engl.: environmental data catalogue, see Swoboda et al., 1999) on a national basis or GELOS (Global Environment Information Locator Service, see GELOS, 2000 and ETC/CDS, 1999) and EIONET (European Environment Information and Observation Network, see EIONET, 1999) on an European basis.

This chapter describes general aspects of the topic, outlines typical strengths and problems of existing systems and gives some impressions about trends and current activities in the field of MIS for geospatial data.

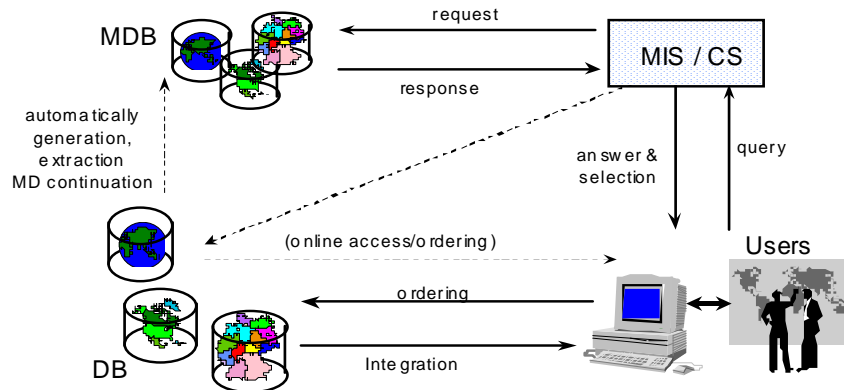
In the first part, some definitions and background information about the topics metadata and MIS are given. Then, different metadata tasks and views are listed, whilst from the user point of view, MIS is used as a search engine in order to locate suitable data and to integrate it in current GIS projects, on the other hand geodata providers use it as a marketing instrument – here MIS build the basis for E-Commerce applications. Afterwards, several examples of existing MIS and current activities and organizations involved in the field of MIS for geospatial data are presented. Finally, some trends referring to further development and technical research in that field are mentioned.

## DEFINITIONS AND SCENARIO

The following list defines several terms, important for the scenario of a MIS for geospatial data:

- 1) Geospatial data contains all kind of data with a spatial reference. Examples for this are cadastral information, several types of maps (e.g. hiking, travel), weather information, environmental data (e.g. landfills, residual wastes), and addresses and phone books.
- 2) Metadata or 'data about data' describes the content, quality and further characteristics of (original) data. In the context of a catalogue of a department store this includes the description of products and articles by price, color, weights and measures; typical metadata for geospatial data are spatial extent, spatial resolution, keywords, feature descriptions (for instance legends of maps telling the reader which layers/features are presented on a map) or distribution information.
- 3) Metadata formats (MDF) are used as description language for geospatial data. This language respective grammar is used in order to create a common, harmonized and structured instrument for describing original geodata. Metadata formats contain a lot of metadata fields — each of them corresponding to one characteristic of the original data — and build the basis for MDB's and MIS (see Göbel and Lutze, 1998).
- 4) Meta databases (MDB) are a collection of metadata sets, which are based on a common metadata format and cover a harmonized information spectrum. Representatives of MDBs with a very detailed, specific information spectrum are phone books or catalogues for a shoe shop, while catalogues for a complete department store or digital archives for geospatial data are examples for MDBs with a broader information spectrum.
- 5) Metadata information systems (MIS) are based on one singular or several MDBs and offer mechanisms for dissemination and locating data using the technique of metadata.

Figure 1: Typical scenario of a MIS - comparable to a catalogue of a department store, people are searching for special things and use information systems which assists them in locating suitable products or data.



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