POLYTECHNIC OF TORINO
FACULTY OF ARCHITECTURE
Degree in Architecture
Honors theses

Metadata: standards, their use, software for their implementation. A Case Study: The Aquarium Project

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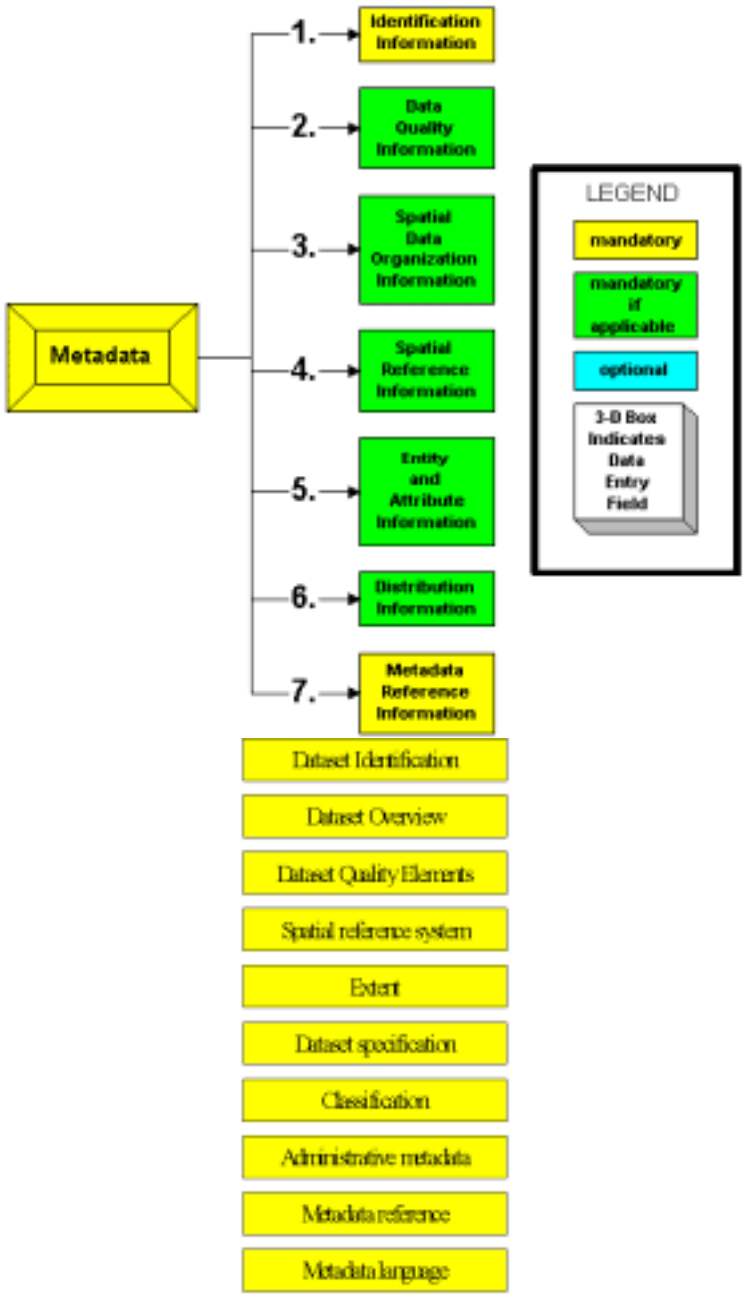
In the face of such a vast amount of available information, there is a rising demand for geographical data. However, access to the data is burdened with problems and remains limited because of inadequate knowledge about availability, existence of data that does not meet the needs and a resistance to yielding the data, often on the part of public organizations. All of this leads to limited data use and frequently to unnecessary duplications.
This situation has given rise to the concept of *metadata*, which is the tool for overcoming certain obstacles and the means for dealing with the evolving situation in the world of geographical information.
In answer to the question " What are metadata?", we can respond by saying " Anything you might want to know about data". In other words, metadata are information about data and concern high level data that describes data at a lower level by specifying the contents, quality, condition, etc. so as to satisfy a user's various questions about a set of data.
A series of initiatives have arisen around the idea of metadata that are aimed at establishing standards capable of unifying them and which can facilitate the exchange of information. These activities have developed at various local, national and international levels and include both those that are promoted by organizations in charge of unifying the different standards (see ISO at the international level and CEN at the European level) and those conducted by other organizations (see ESMI, Open GIS, etc.).
Within the geographical information community there have been numerous debates, conferences and discussions concerning metadata, These have focused on a variety of topics that include analyzing the real advantages that metadata can or cannot offer, dissertations about their costs and the economic advantages to those who realize them and the difficulty in compiling metadata to conform to the often complex standards.
In particular, this discussion analyzes the three principle standards:

- the American standard-FGDC (CSDGM version 2)
- the European pre-standard- CEN/TC 287
- the international standard ISO/TC 211

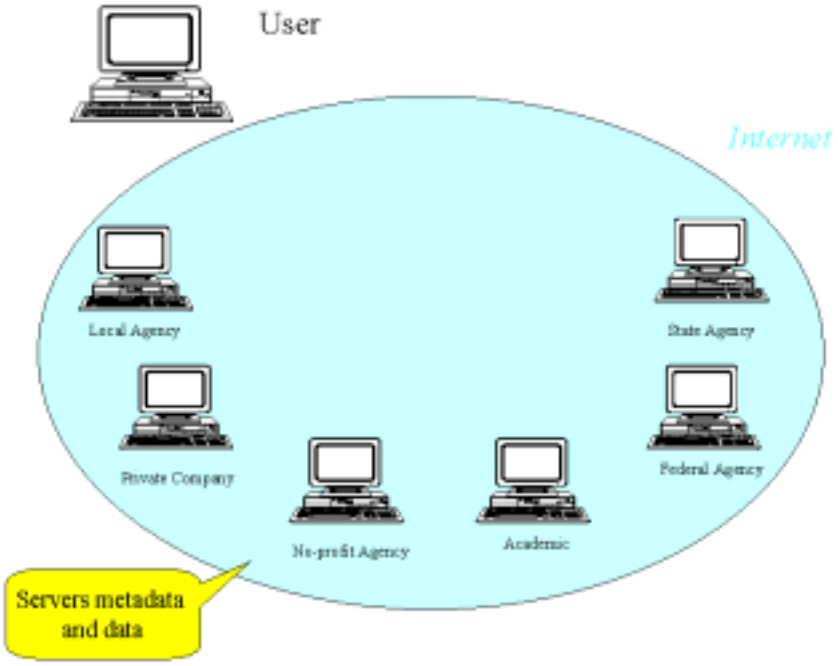
The analysis emphasizes their structural characteristics, the observations made about them and any modifications or simplifications that have been adopted to reduce their complexity (a particular case is the simplification of the CEN pre-standard carried out by the Piedmont Region).



One interesting aspect regards metadata production, the problems associated with it, the format, the software used for creating metadata, validation according to a given standard and their loading, updating and management. There is also a discussion of the products that have been realized for both local situations and for the implementation of metadata according to the national and international standards.

The following software have been described and analyzed:

- cns
- MetaMaker 2.30
- mp
- SMMS 3.0
- Tkme
- err2html



The last topic under discussion concerns the clearinghouses. These are decentralized Internet servers that contain information and the relative metadata compiled in standard formats. They permit access to geographical information by consulting a metadata catalogue which in turn enables the user to download the sets of data that are of interest, by using special tools for the purpose.
The Aquarium Project is an interregional Italian project that is part of a larger one known as the SINA project (Italian Environmental Information System), whose goal is to achieve a software system for the management of the cycle of water use, which is the case study under discussion. It was chosen so as to provide an example of a real case where metadata have played an important role and to analyze how the discussion relative to them has been dealt with and resolved in relation to both their standards and complexity and the software implemented. Finally there is an examination of the clearinghouse structuring of the Aquarium product.

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