Chapter XVIII

Semantic Web and Digital Libraries

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Abstract

An analysis of the reality surrounding us clearly reveals the great amount of information, available in different forms and through different media. Volumes of information available in real time and via the Web are concepts perceived as closely related. This perception is supported by the remark that the objective of the Web was the definition and construction of a universal archive, a virtual site in which the access to documents was possible with no limits of time or space. In this digital library, documents have to be equipped with logical connections making possible for each user the definition of a reading map that expands according to the demand for knowledge gradually built up. This perspective is pointing now in the direction of the Semantic Web, a network satisfying our requests while understanding them, not by some magic telepathic communication between browser and navigator, but rather a data warehouse in which documents are matched to meta-data,\textsuperscript{1} letting specialized software to distinguish fields, importance, and correlation between documents. Semantic Web and library terms have an ever increasing close relationship, fundamental for the progress and the didactic efficiency in knowledge society.

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Introduction

Research for the creation of the Semantic Web requires structured information and the definition of the rules allowed for the cataloging of documents. This idea of a network cannot be separated from the concept of technological independence; the progress of communication has to face two problems: firstly the risk of obsolescence of instrumentation capable of reading the data from mass memory support, secondly the need for a multi-channel information distribution. The idea of the obsolescence of instruments for reading data establishes a connection with a verified fact: backups have a “life” longer than the instruments reading and managing original data. Even if not concerned with classic mass memory back-ups, one can think about LPs; today many of us have a lot of them in perfect condition but it is becoming more and more difficult to find turntables and their spare parts.

The multi-channel idea is highlighted by the fact that people have access to information by way of computers, telephones, palm, or interactive TV, and as a consequence there is a variety of forms of documents, one for each type of medium; therefore it is necessary to think in terms of content, structure, and description of the document. We can state that we are trying to add to the independence from space and time limits, also the independence from restrictions connected to the user instruments. One example of this requirement is obtained from news programs offered by some television networks; the same service is available on the Internet, through television and cell phones. It is obvious that news must remain unchanged into the three different systems, so that they are stored in such a way (e.g., title, text, and source) that the software understanding their particular structure is able to visualize them onto the requested service.

At the basis of this line of development is certainly the marker language XML (eXtensible Markup Language) that has flexibility as one of its strong points, which makes it independent of hard and software platforms, so enabling the definition of data easily comprehensible because it has the required specifications to restrict the logical layout but does not pre-determine in any way the possible manner of their description.

The Semantic Web

The introduction to the document presenting XML on the W3C site says:
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