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Futures Studies at the Libraries: The Application of Semantic Technologies to Organize Information in a Digital Library Software

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Abstract: Objective: To determine the application of semantic technologies to promote digital library software Methodology: Procedures are used in the library and review. Firstly, four main challenges are present in digital libraries, secondly, this paper examines which the extent of semantic technology can be used to answer these questions and then, in third challenge, the information organization will be discussed. Innovation: Considering that digital libraries spend their early developmental periods and it has more instance in developing countries, like Iran, so the present discussion is to examine the application of semantic technologies as a new field to organize information of digital library software.
Keywords: Semantic Technology, Semantic, Information organization, Digital libraries, Models of information organization

Introduction

Information had a great impact on different aspects of human life and the need for information is considered as one of the most basic human needs for development (Jokar, Naeimi, 2008: 223-238). So to access the necessary information needed to program the digital library and since digital library systems that access to resources is organized and provides a large amount of information and knowledge for community use (Alipoor Hafezi, 2008: 45-67). So clearly felt need for a digital library user you can easily find in a library or in other libraries and information centers to centers seeking other sources. Hence, in this paper, 4 main challenge posed by Garcia-Molina and Lynch in 1995, including:

1. Interoperability
2. Explain the topics and resources
3. Portfolio management and organization
4. The user interfaces and human-computer interaction

They are reviewed and using the SEKT project in 2006, the use of semantic technology to help address these challenges, and there is no optimal organization of information, recovery is faster and there will be no meaningful information to the user (Gazni, 2001) and in the definition of digital library, the main emphasis is on organizing (Norouzi, 2013). According to the information given is determined that organizes digital library software is important. The main concern of this paper is to examine the application of semantic technologies for digital library software is the third challenge of organizing information.

Happened history

The surveys showed that research conducted in the world in terms of semantic technology is limited and to solve problems Digital Library less use of semantic technology and in Iran, there has been no similar research. Also look for records related to research in the following databases with keywords semantic technologies, organizing data, semantic technology in digital library, organize the information in a digital

library, metadata, and metadata in digital libraries, semantics and semantic as well as search engine Google Scholar Google Chrome was also searched.

Row	Database Name
1.	www.answer.com
2.	www.infoplease.com
3.	www.xanedu.com
4.	www.findarticles.com
5.	www.magportal.com
6.	www.headlinespot.com
7.	www.lii.org/search/file/magazine
8.	www.doaj.org
9.	www.sage. com
10.	www.springer.com
11.	www.llc.oxfordjournals.org
12.	www.wiley.com
13.	www.Cambridge journal
14.	www.civilica.com
15.	http://www.jstor.org
16.	http://www.sciencedirect.com
17.	http://dl.acm.org
18.	http://www.emeraldinsight.com
19.	http://www.nature.com
20.	http://ieeexplore.ieee.org/Xplore/home.jsp
21.	Perseus Digital Library
22.	CDL (California Digital Library)
23.	NSDL (The National Science Digital Library)
24.	Hathi Trust's Digital Library
25.	Kdl.Kyvl.org (Kentucky Digital Library)
26.	Sunsite.berkeley.edu
27.	www.NDLTD.org
28.	www.questia.com
29.	www.search.usc.edu
30.	Digital Library GEORGIA
31.	LOC.GOV (Library of Congress)
32.	Greenchameleon.com
33.	Course.washington.edu
34.	Clir.org (council on Library and Information resources)

Research carried out in conjunction with semantic technology:

Warren and Ales Meyer (2005) in a case study as the use of semantic technology in a digital library in order to describe how semantic technology to enhance knowledge digital library can be used on digital library, is designed. The results showed that 4 number of challenges were identified extensive digital library and semantic technologies are eliminated. Also, Chang and Teseng and Liu (2013) in a research paper on identifying the impact of semantic web technology knowledge the male and female users to search behavior and search strategies in the search to understand the technique have done to show gender differences in the use of semantic technologies. Male and female students in two different environments, the research community has developed a semantic technology and one without effect. Results showed that effective search techniques has been made in improving men's and women to use information better organized. And also, Bucer (2005) in a survey as assessing the quality of the user and the business value of applications using Semantic Technology to introduce a procedure for evaluating new software applications for use in the field of information technology and knowledge-intensive semantic knowledge is designed. The results showed that this method RTD projects are being carried out and described in the various user organizations. Also, Guha (2006) dealt with in a study entitled Digital Library Services aims to provide

information semantic ontology-based annotation Drhalhay of documents, annotation and annotation user domain. His study in order to identify problems of semantic interoperability in the digital library.

Semantics

Word meaning (semantics) for the first time, "Michelle Brill" in 1997 in a book entitled "Research on semantics" used in French. The term "semantic" from the Greek word "semantikos" is derived from the section "semaino" means "sense or meaning, showing" and "sema" means "sign, sign" is formed. Semantics, sometimes with the syntax (grammar) that sign language study, regardless of the meaning of some passages deals with pragmatics (realism) that deals with the relationship between the signs of a language, are equated (Wikipedia, 2009).

Webster's Dictionary (1981, 2062) defined the term as follows:
Related to, or relating to meaning in language
Connoting different words that have similar meanings.
Meaning system or theory
Meaning study.

Columbia Encyclopedia "semantics" of the relationship between words and their meanings in linguistics. He also began in the 1820s in France and Germany, when the meanings of words as features important in language development was recognized. The first linguists of the 20th century (Columbia Encyclopedia, 2013).

The Oxford Encyclopedia also considers it irresponsible language branch of logic in relation to the meaning. Study aspects such as sense, meaning, the semantics of words, the meanings of words and relationships, etc. (Oxford Dictionary, 2009). Thus, we can conclude all technical semantic meaning in relation to the meaning of the word and a logical study of the meanings of words that refers to the content of the message and in general to understand and describe a phenomenon (Mansouri, 2011), and will help users in search of useful information.

Semantic Technology

The use of a potential approach for increasing the use of web knowledge (Hayes & Becker, 1963). And also consider the use of metadata to describe the concept of threads (warren & Alsmeyer, 1995). Semantic technology enables data by coding the semantic meaning of all things related information (Chang and Teseng, 2013). Semantic technology encodes comprehensive meanings and structures of complex data objects, so that users may understand the information objects before you read its details (Barren & Fischetti, 1999). It does this by means of recovery, transplant and organize semantic information is obtained from data objects (Liu et al., 2010). Search the web with semantic technology to allow organized knowledge structure even users may develop their knowledge domain (Chayan, Keng-Chieh and Hsu-Chieh, 2007). That Semantic technology is considered as a potentially effective way to help the user learn on the web. (Norouzi, 2013, 27). However, we can say that semantic technology consists of the following components:

1. The main building blocks of the Semantic technology is XML extensible markup language that permits the use of labels to describe the objects. XML is widely used, especially by a large number of standardized languages over a wide range of commercial activities. XML has no facilities for the project described the relations between the parties.
2. To overcome this problem of RDF is used. Professor RDF description of the information contained in the Semantic Web, so that they understand the machine does. The XML-based language for describing concepts and create documents on the Semantic Web, which is a very simple design language and may be based on section 3 of the subject, verb and object is. Statements and are subject to source object can also be a source or a string constant. RDF is in principle independent of XML and often "serial" using XML.

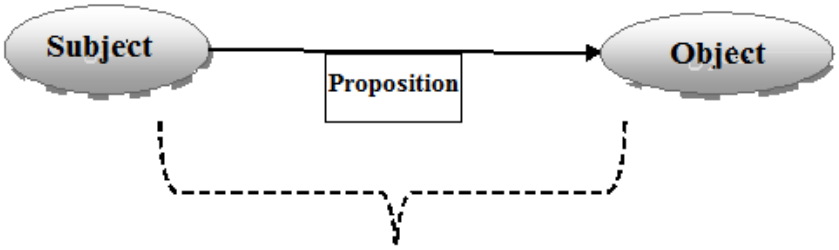

Figure 1: RDF components and their relationships with each other

3. RDF language that is more descriptive language for describing ontologies. RDFS can be used to obtain further knowledge management application.
4. Using ontology to describe the rich context information relating to the search for and visit its users. Ontology is not only for documents but the documents have also been created for intelligence agencies. An ontology for describing people, companies, industries and various relationships have been established. To combine semantic and summary information from a variety of documents. Ontology also varies according to time and must be managed and evolve.

According to the above figure shows the components of semantic technology, we can see

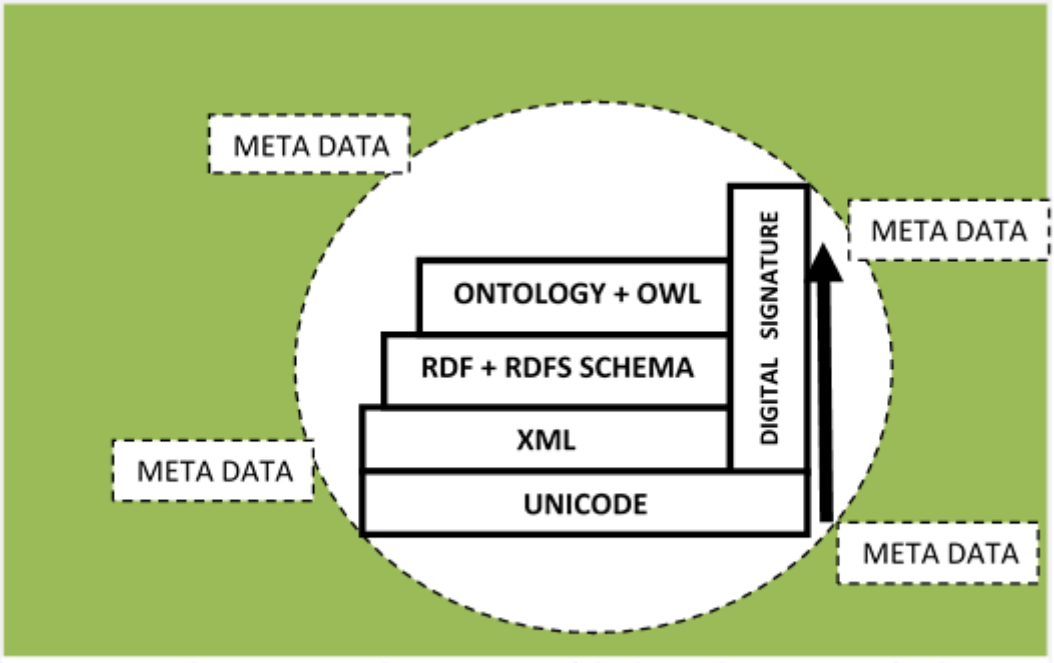

Figure 2: The structure and components of the layered Semantic Technology

That behind the Semantic Web is semantic technology with respect to the components like the Semantic Web and in fact one of the Semantic Web is semantic technology. However, semantic technologies for a complete description of the uses semantic metadata objects.

Digital Library Components

Digital Library due to the volume of activities in order to provide digital resources and services requires software that can fulfill all your activities. In this regard, the digital library needs to use a set of software and services to provide user access (Norouzi, 2013, 27).

The purpose of this digital library is not part of the architecture analysis, the main goal is just to show that semantic metadata technologies to solve the challenges of the digital library using a digital library is one of the levels and this will help the importance of metadata.

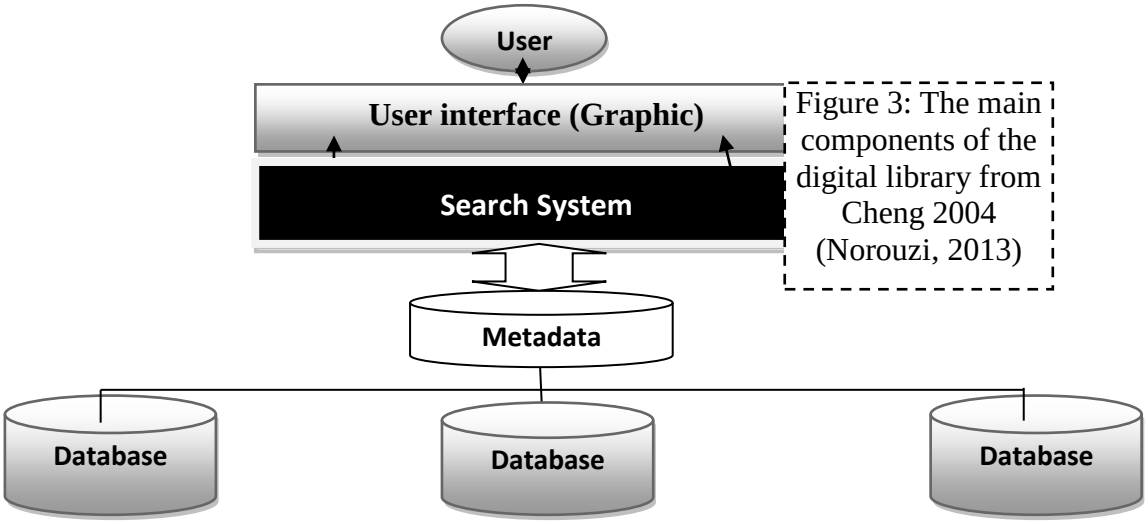

Figure 3: The main components of the digital library from Cheng 2004 (Norouzi, 2013)

Now we look to provide a definition of metadata to tell us we use levels provided in semantic metadata technologies that will help organize information. Metadata word is taken from the root of Meta Latin meaning the nature and Data means data or information. Metadata, has organized the characteristics of a source of information, or in other words, metadata is data that specifies a reflection of other information (Mohammadi, 2004) and it can be concluded that the metadata in all definitions of the same substance and is "data about data "is defined.

Run a semantic technology for a digital library software

Access to useful and appropriate information is one of the major concerns in today's society and users search for information in an understandable and accurate information from a network or digital library. The digital library should be able to combine our past data with new data and update them all. Hence, to resolve such problems in a digital library of semantic technology is used. Semantic technology building blocks of xml markup language that uses tags to describe objects to the software license and widely in use today, but does not describe the relationships between individuals. For example, doctor Norouzi a writer is that it is so labeled: Norouzi <author /> As a result, in order to overcome this problem is to use RDF description of the source and is independent of XML. RDF defines a model and set of elements for describing resources in terms of named properties and values are used. In addition to each group describes the syntax for creating a resource that allows project-specific representation of the area with the help of its cultural meaning is created. Of this model and syntax can be used to encode data in machine-readable format. This data exchange between applications, and data processing means used. RDFS, RDF with the definition of "media language" and processed for car complements and develops. In fact, as a set of classes (resources type) and their characteristics, to determine the meanings of these classes and the classes and attributes, and specify limits on the properties used. RDF and RDFS semantic model to define the syntax and structure of the ontology and metadata schemes to be prepared for the process. These structures represent the different sources of scripting support. RDFS semantic information necessary for a plan or by a computer system provides, has been expressed in language classes, properties, and values created by the plan do not understand. Using web-based RDFS modeling arrangements for organizing hierarchical objects can be provided and for writing more complex relationships between objects in the ontology used. Ontology classification of objects or elements in a particular field of study, and based on that review, a list of issues and the relationships between them in the review states. The term ontology refers often to understand the semantic or conceptual framework of knowledge that is shared among members of a given area. This conceptual framework or semantic ontology there can be as informal conceptual hierarchy of the area with a variety of concepts and relationships defined in natural language, or as formal conceptual structure of the area with a variety of concepts and relations between them. The latter relationship is

typically defined and systematically in the language of logic and on the basis of the "genus" or "whole and part" to be regular. Ontology addition to the specific syntax and semantics of a field of knowledge that knows the modeling. The conceptual framework into machine language processor (Translator Sheikh Shojaei, 2005). Expressed through the frame can be fixed key challenges of the digital library. Each user profile information in a digital software, which is all the information that search, delete, or add it to the catalog. Many users tend to be under the control of the information they have when rejecting or accepting the document, received a warning from the software. The user profiles can be used for many purposes. Digital library must be able to be designed software using this general framework to be able to search the user's needs and that any new entry into the software automatically returns a message to the user and it informed, even if he does not fit the needs. For example, a user who searches for information on "jaguar" is, this time for the car and for nature. As a result of the use of semantic technology can search user profiles and search for the information they already have, the best information at its disposal. So, through this new technology can also check the information contained in user profiles can understand whether the user is a beginner or an expert, and that people read what kind of information and how the information. Any information to be provided to store and sometimes lose them but this technology allows users to develop their information and even share with other people and if you need experts to guide them in their introduction. In fact, this new technology of a three-class approach uses the high level of general categories such as individual, role, subject, time and class. The middle floor contains classes that are specific knowledge management, the user profile and the device are also available in a library. This section contains information sources. There are other top class called "threads". That will be an issue as more conventional subject matter, or the subject. In fact, we are dealing with a subjective category, namely due as members of classes, classes are specific issues. In fact, with this technology, users can not only search a range of text, but using some existing metadata to complete research and access to appropriate information and updated together. This technology encompasses any information such as: fixed and animated pictures, multimedia files, text files and textual basis for this technology is the only means of communication between key search terms users easy access to information is organized that the most important parts of a program and there will be no recovery in the absence of faster and more accurate for the user.

Conclusion

According to the information given can be organized and convenient access to the main purpose of such digital library and digital Library to solve this problem and recover faster through technology SEKT project Semantic technology is used. This technology through the framework of XML and RDF and RDFS ontology and the face of the two approaches of understand the details of the above and understand the details of downward and because the information is added in the form of varied past, this technology is able to update and complete and manage them and it seems appropriate for a group of users. In fact, with this technology, users are able to learn new information and knowledge base of knowledge discovery techniques to automatically identify and classify new issues of free texts tailored to the users. This motivation and knowledge sharing for users and they can easily store and easily retrieve your knowledge.

References

1. Jokar, Abdollrasoul., and Sheila Naeimi. 2008. Comparison of the use of the Internet to meet the information needs of graduate students at the University of Isfahan and Shiraz University. National studies on librarianship and information organization, 19 (3): 223-238.
2. Jacob, Elaine K. 2005. Ontologies and the Semantic Web. Translated by Fatemeh Sheikh Shojaei. Journal book. 64: 189-194.
3. Alipoor Hafezi, Mehdi. 2010. Exchange of digital library information systems: analysis of the content. Institute of Information Science and Technology, 26 (1): 45-67.
4. Gazni, Ali. 2001. Organizing information retrieval systems "Journal of Library and Information Science, 13: 70-95.
5. Mohammadi, Hossein. 2004. Metadata: concepts and functions. Electronic journals and scientific evidence Iran. Second year. Third Issue
6. Mansouri, Ali. 2011. Semantic information theory "Librarian. 15 (3): 101-129.
7. Norouzi, Yaghoub. 2013. The user interface of digital libraries. Qom, Qom University.
8. Becker, J and Hayes, R. 1963. Information and Retrieval: Tools, Elements: theories. New York: john Wiley & sons. Bedford. Massachusetts: C. cleverdon,
9. Berners-Lee, T. and Fischetti, M. 1999. Weaving the web: The Past, Present and Future of the World Wide Web by its Inventor, Orion Business, London
10. Bourne, C. P. 1963. Methods of Information Handling, New York: john Wiley & sons.
11. Chang, chia-jung and Teseng, jui- min and liu, chen-chung. 2013. The effect of semantic technology on the exploration of the web of knowledge by female and male users, The Electronic library, Vol.31, No.3, pp. 376-398

12. Guha, Nabonita. 2006. Semantic Digital library services. Han, Yan. 2006. A RDF-based digital library system. Library Hi Tech. Vol.24, No.2. pp. 234-240.
13. http://www.merriam-webster.com/dictionary/semantics
14. Lynch and Garcia- Molina.1995. ITTA Digital Libraries Workshop, Available at: www diglib.stanford.edu/diglib/pub/reports/iita-dlw/main.html.
15. Semantics." The Columbia Encyclopedia, 6th ed., 2013. Encyclopedia.com. 17 Oct. 2013 http://www.encyclopedia.com
16. Semantic", 2009, [online]. Available at: http://en.wikipedia.org/wiki/Semantic,17November
17. "Semantics." The Oxford Pocket Dictionary of Current English. 2009. Retrieved October 17, 2013 from Encyclopedia.com: http://www.encyclopedia.com/doc/1O999-semantics.html
18. Warren, Paul and Alsmeyer, David. 2005. Applying semantic technology to a digital library: a case study. Library management, Vol.26, No.4/5, 200, pp.196-205.