A

Seminar report

On

Semantic Web

Submitted in partial fulfillment of the requirement for the award of degree of MCA

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Acknowledgement

I would like to thank respected Mr…….. and Mr. ……..for giving me such a wonderful opportunity to expand my knowledge for my own branch and giving me guidelines to present a seminar report. It helped me a lot to realize of what we study for.

Secondly, I would like to thank my parents who patiently helped me as i went through my work and helped to modify and eliminate some of the irrelevant or un-necessary stuffs.

Thirdly, I would like to thank my friends who helped me to make my work more organized and well-stacked till the end.

Next, I would thank Microsoft for developing such a wonderful tool like MS Word. It helped my work a lot to remain error-free.

Last but clearly not the least, I would thank The Almighty for giving me strength to complete my report on time.

Preface

I have made this report file on the topic **Semantic Web**: I have tried my best to elucidate all the relevant detail to the topic to be included in the report. While in the beginning I have tried to give a general view about this topic.

My efforts and wholehearted co-corporation of each and everyone has ended on a successful note. I express my sincere gratitude to ……..who assisting me throughout the preparation of this topic. I thank him for providing me the reinforcement, confidence and most importantly the track for the topic whenever I needed it.

CONTENTS

INTRODUCTION

The Semantic Web is an evolving extension of the World Wide Web in which the semantics of information and services on the web is defined, making it possible for the web to understand and satisfy the requests of people and machines to use the web content. It derives from World Wide Web Consortium (web as a universal medium for data, information, and knowledge exchange).

At its core, the semantic web comprises a set of design principles, collaborative working groups, and a variety of enabling technologies. Some elements of the semantic web are expressed as prospective future possibilities that are yet to be implemented or realized. Other elements of the semantic web are expressed in formal specifications. Some of these include Resource Description Framework (RDF), a variety of data interchange formats (e.g. RDF/XML, N3, Turtle, N-Triples), and notations such as RDF Schema (RDFS) and the Web Ontology Language (OWL), all of which are intended to provide a formal description of concepts, terms, and relationships within a given knowledge domain.

Another criticism of the semantic web is that it would be much more time-consuming to create and publish content because there would need to be two formats for one piece of data: one for human viewing and one for machines. However, many web applications in development are addressing this issue by creating a machine-readable format upon the publishing of data or the request of a machine for such data. The development of microformats has been one reaction to this kind of criticism.

PURPOSE

Humans are capable of using the Web to carry out tasks such as finding the Finnish word for "monkey", reserving a library book, and searching for a low price on a DVD. However, a computer cannot accomplish the same tasks without human direction because web pages are designed to be read by people, not machines. The semantic web is a vision of information that is understandable by computers, so that they can perform more of the tedious work involved in finding, sharing and combining information on the web.

Semantic publishing will benefit greatly from the semantic web. In particular, the semantic web is expected to revolutionize scientific publishing, such as real-time publishing and sharing of experimental data on the Internet. This simple but radical idea is now being explored by W3C HCLS group's Scientific Publishing Task Force.

The idea of a 'semantic web' necessarily coming from some marking code other than simple HTML is built on the assumption that it is not possible for a machine to appropriately interpret code based on nothing but the order relationships of letters and words. If this is not true, then it may be possible to build a 'semantic web' on HTML alone, making a specially built 'semantic web' coding system unnecessary.

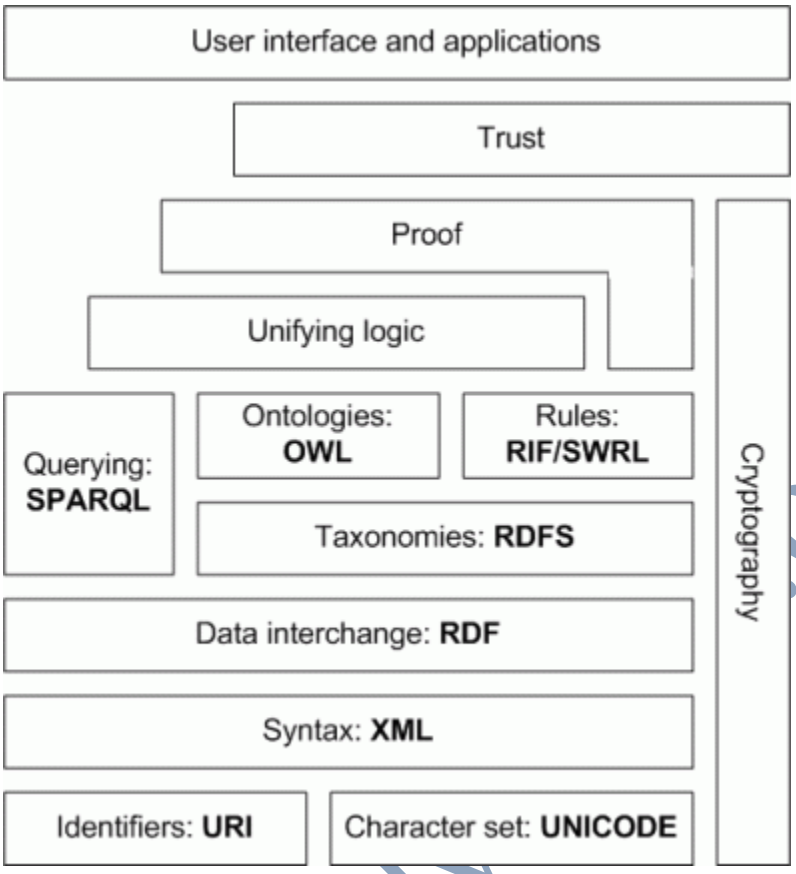
There are latent dynamic network models that can, under certain conditions, be 'trained' to appropriately 'learn' meaning based on order data, in the process 'learning' relationships with order (a kind of rudimentary working grammar).

TECHNOLOGIES

The semantic web comprises the standards and tools of XML, XML Schema, RDF, RDF Schema and OWL that are organized in the Semantic Web Stack. The OWL Web Ontology Language Overview describes the function and relationship of each of these components of the semantic web:

XML provides an elemental syntax for content structure within documents, yet associates no semantics with the meaning of the content contained within. XML Schema is a language for providing and restricting the structure and content of elements contained within XML documents. RDF is a simple language for expressing data models, which refer to objects ("resources") and their relationships. An RDF-based model can be represented in XML syntax. RDF Schema is a vocabulary for describing properties and classes of RDF-based resources, with semantics for generalized-hierarchies of such properties and classes.

OWL adds more vocabulary for describing properties and classes: among others, relations between classes, cardinality equality, richer typing of properties, characteristics of properties (e.g. symmetry), and enumerated classes.



Current ongoing standardizations include:

Rule Interchange Format (RIF) as the Rule Layer of the Semantic Web Stack

The intent is to enhance the usability and usefulness of the Web and its interconnected resources through:

Servers which expose existing data systems using the RDF and SPARQL standards. Many converters to RDF exist from different applications. Relational databases are an important source. The semantic web server attaches to the existing system without affecting its operation.

Documents "marked up" with semantic information (an extension of the HTML <meta> tags used in today's Web pages to supply information for Web search engines using web crawlers). This could be machine-understandable information about the human-understandable content of the document (such as the creator, title, description, etc., of the document) or it could be purely metadata representing a set of facts (such as resources and services elsewhere in the site). (Note that anything that can be identified with a Uniform Resource Identifier (URI) can be described, so the semantic web can reason about animals, people, places, ideas, etc.) Semantic markup is often generated automatically, rather than manually.

Common metadata vocabularies (ontologies) and maps between vocabularies that allow document creators to know how to mark up their documents so that agents can use the information in the supplied metadata (so that Author in the sense of 'the Author of the page' won't be confused with Author in the sense of a book that is the subject of a book review).

Automated agents to perform tasks for users of the semantic web using this data

Web-based services (often with agents of their own) to supply information specifically to agents (for example, a Trust service that an agent could ask if some online store has a history of poor service or spamming).

EXAMPLE APPLICATION:

Suppose a semantic web system was built to administer the selling and buying of used cars over the internet.

The system could contain two main applications. One for people who wanted to buy a car and the other for people who wanted to put up a car for sale.

In a "real live" IBA application may asked to identify ourself the first time we used it. Our ID would be stored in an RDF file. ID would identify as a person with name, address, email and ID number. When we submitted the query, the application would return a list of cars for sale, and the list could be drilled down and sorted by year, price, location, and availability. This information would be return by searching the web for RDF files continuously.

People who want to sell a car can use ISA application. When we submit the form, the application would ask for more information and store ID and the information in RDF file made available to the web. The RDF file would contain information like:

ID: Name, address, email, ID Number.

Selling item: type, model, picture, price, picture, description.

Behind the scene the "ISA" application creates an RDF file with a lot of RDF pointers.

It creates an RDF pointer to a file with information about your person, an RDF pointer to information about Volvo and Volvo models, an RDF pointer to Volvo dealers and resellers, about parts, about prices, and much more.

An RDF pointer is a pointer (actually an URL) to information about things (like a knowledge database).

The beauty about this is that you don't have to describe yourself, or the car model. The RDF application will sort it out for you.

SERVICES

The web is a repository for text and images, is evolving into a provider of services-information-providing services, such as flight information providers, temperature sensors, and cameras, and world altering services, such as flight booking programs, sensor controllers and a variety of e-commerce and business-to-business applications.

Semantic Web Ping Service

The Semantic Web Ping Service is a notification service for the semantic web that tracks the creation and modification of RDF based data sources on the Web. It provides Web Services for loosely coupled monitoring of RDF data. In addition, it provides a breakdown of RDF data sources tracked by vocabulary.

Piggy Bank

Another freely downloadable tool is the Piggy Bank plug-in to Firefox. Piggy Bank works by extracting or translating web scripts into RDF information and storing this information on the user's computer. This information can then be retrieved independently of the original context and used in other contexts, for example by using Google Maps to display information. Piggy Bank works with a new service, Semantic Bank, which combines the idea of tagging information with the new web languages. Piggy Bank was developed by the Simile Project, which also provides RDFizers, tools that can be used to translate specific types of information, for example weather reports for US zip codes, into RDF. Efforts like these could ease a potentially troublesome transition between the web of today and its semantic successor.

Webepags Databases

Webepags Databases is an application that allows users to create an rdf database in the browser, without any knowledge necessary.

CONCLUSION

Eventhough the semantic web will not work all by itself its very useful.It will need some help to become reality.Its not very easy that we will be able to buy a car just by putting RDF file on the internet.we can have some applications where we can share some common information.there semantic web is more helpful.Semantic web is an extension of world wide web not a replacement.

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