

Analyzing the Benefits of Using RDF on the eLearning Website

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Abstract- RDF is a part of the Semantic Web vision. The Semantic Web is a term coined by Tim Berners-Lee to refer to a vision of the next dramatic evolution of web technology. The basic idea of the semantic web is to create a layer on the existing web that enables advanced automatic processing of the web content so that data can be shared and processed by both humans and software. It will bring machine-readable descriptions to the data and documents already on the Web. It is not a separate Web but an extension of the current one.

By using RDF document, the Semantic Web will have a collection of data which is readable by the machine. If the RDF document is using on the eLearning website, it will help a lot of users to get the relationship between information inside. The prediction is the users can be easily make comprehensive analyzes. This paper presents the analyzing of the benefits of using RDF on the eLearning Website. The result will analyze the affect of RDF on the eLearning service and the users.

Keywords- Semantic Web, RDF, E-Learning

I. INTRODUCTION

The current web view can only be understood by humans. Software only has a job to display the web content based on the valid regulation, but not to understand it. If it can be understood by the software, it will be expected to be able to find other web pages

that have relevance. The Semantic Web has a mission to create a web of data which can be used and understood by machines.

RDF is used to give the meaning on the website content. It gives computers a structure in which to look for information and define relationships between resources. If computers understand what the information inside is, they can help humans to find the appropriate information. If it is implemented in the eLearning field, students can find the knowledge without intervention by themselves. The eLearning system will provide the materials based on student's need. The lecturers will not control the delivery of material to the students but the system will do it based on the RDF [3].

II. CONCEPTS OVERVIEW

The Semantic Web is a term introduced by Tim Berners-Lee to refer the communication between web pages. "The Semantic Web is not a separate Web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation." [4]

HTML does not have capability to be understood by any software. HTML is used to format and display the document. The Semantic Web provides the semantics of information and services on the web. It makes the web content possible to be understood by the machines. Machines can help human to find the information related to their needs. The Semantic Web is bringing

machine-readable descriptions to the data and documents already on the Web.

However, Semantic Web is not finish yet. Several elements which are needed to build Semantic Web are still on the development. Only some elements were standardized by W3C. Even though they were standardized, the researches on those elements are still doing until now to improve their performance or to find the more efficient form of each element.

The illustration of those elements was illustrated by Tim Berners-Lee to give the direction for the developer of Web Semantic, known as the Semantic Web Stack or the Semantic Web Layer Cake. It shows the hierarchy of languages, where each layer exploits and uses capabilities of the layers below. The terms written in the illustration shows the standardized technologies to make the Semantic Web possible.

The latest version of Semantic Web Stack is shown on the figure. From the illustration, everyone can see that the Semantic Web an extension, not a replacement of the current web. XML, RDF and OWL enable the Web to be a global infrastructure for sharing both documents and data, which make searching and reusing information easier and more reliable as well.

Resource Description Framework (RDF) is a language for representing information (metadata) about resources in the World Wide Web. The resources are not limited to web pages but can also include things that can be identified on web. [2] RDF data is written in XML format, machine readable, and can be outputted by machine. However, it is not designed for being displayed to people or designed to be displayed on the web, but computers. By using RDF, data on the web can be explained, exchanged, and integrated. RDF can describe the relationship between resources, but it has ambiguity like XML. The RDF Schema (RDFS) is required to reduce the limitation [5].

RDF Schema is RDF's vocabulary description language. RDFS is a standard language to create ontology in RDF. The ontology will define the vocabulary of RDF documents in a specific domain and manage the hierarchical relationship between terms. The ontology also has rules for reasoning of hidden information in RDF. For retrieving rich and accurate query results, advanced retrieval schemes using both metadata and ontology are considered [1].

III. SCENARIO

The critical information's needed by the students are the following questions: what is the topic, what is the objective of the content, what is the problem solved by the content, what is the knowledge discovery, and what is the similar learning material.

Those each material will be identified by lecture name, title, author, objective of course, domain of problem, knowledge discovery, and similar learning materials by using RDF document. Those identifications can help the students to find the precise learning material for them.

The example RDF element should be included on the document are `ecourse:title`, `ecourse:author`, `ecourse:lecturer`, `ecourse:objective`, `ecourse:problem`, `ecourse:knowledge`, `ecourse:similar`. The value of those elements should describe each e-learning material. Based on the value of each element, the current searching process will be easier than the conventional search.

IV. ANALYZING THE BENEFITS

By adding the RDF document into the eLearning material, each material will be identified by the eLearning system. Each material is not only identified using its title, its author, or its class subject. It can be identified with the problem which can be answered by the material. It will make an easier and faster search compared the conventional eLearning system.

Combination both of them looks like integrating the content with the context which can be an answer of the students' needs. The students are not only searching based on the content but the also based on the context.

It can be an answer for the students who need the material based on their problem. The students are not only learning from the recorded education, but also from their problem itself. It also will be more effectively implemented on the PhD level which is provided by College of Internet Distance Education at Assumption University.

V. CONCLUSION

RDF will increase the functionality of eLearning system. Adding the RDF document in the eLearning material can create an easier searching. Each document will be annotated and identified as an answer of solutions, not just as an ordering learning schedule.

So, students can determine their agenda to study. The eLearning system can distributed the material based on the students' need and user-specific course. RDF document will link the user needs and characteristics of the learning material.

The material will be distributed to respond the students' problem, not the daily schedule of study. The eLearning system should not be only recorded education as in CBT (Computer Based Training). As a personalized agent, it will active deliver the information to the students.

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