Julius Rios

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Midterm Paper

Proposed Topic for Project

**Introduction**

The purpose of this paper is to outline the proposed topic for my project. The proposed topic for my project is a research paper on the State of the Art in OWL Profiles. In this paper I will discuss how I plan to cover the topic and what questions I plan to address. This paper will include the planned flow for my project development. I will also discuss any anticipated problems or challenges in completing my project.

**Plan**

The concept of semantic web is constantly evolving and changing. It is very important to have a grasp of the current status of the OWL profiles used in semantic web. Therefore, the proposed topic for my research paper is the State of the Art in OWL Profiles. I plan to write this research paper by myself, without collusion from other partners. My research will include secondary sources from multiple locations. Some of these secondary sources include websites, articles and other research papers. I plan to use and site the W3C: Recommendation website. According to the W3C website: “The World Wide Web Consortium (W3C) is an international community where [Member organizations](http://www.w3.org/Consortium/Member/List), a full-time [staff](http://www.w3.org/People/), and the public work together to develop [Web standards](http://www.w3.org/standards/). Led by Web inventor [Tim Berners-Lee](http://www.w3.org/People/Berners-Lee/) and CEO [Jeffrey Jaffe](http://www.w3.org/People/Jeff/), W3C's mission is to lead the Web to its full potential. [Contact W3C](http://www.w3.org/Consortium/contact) for more information.” The W3C website offers a large amount of information about the three different OWL profiles. I will be able to gain a lot of background knowledge that can be used for this paper. I plan to use this knowledge to gain a full understanding of the intricacies of how the three different profiles work. I also plan to reference research papers from the ESWC website. In regards to the conference’s history the website states:

“This conference series started its life as the European Semantic Web Symposium (ESWS), which was held in Heraklion, Greece in May of 2004. The event was established by the [SEKT](http://www.sekt-project.com/), [DIP](http://dip.semanticweb.org/), and [KnowledgeWeb](http://knowledgeweb.semanticweb.org/) projects that made up the SDK cluster. Based on the success of this first event, the symposium was expanded and upgraded to a conference with the new name the European Semantic Web Conference (ESWC). From 2005 through to 2008 the conference has grown in stature and quality, visiting Budva in Montenegro, Innsbruck in Austria, and Tenerife in Spain. The SDK Cluster that initially established the conference series later became known as ESSI with the addition of the [ASG](http://asg-platform.org/) project. ESSI was the major seed for the establishment of STI International, which now runs the series as one of its major activities. In 2009 the conference returned to its spiritual home in Heraklion, Greece. From 2010 on, the ESWC is named 'Extended Semantic Web Conference' to underline the extended scope and international character behind the event.”

The research papers consists of a number of different semantic web projects from around the world. I plan to find out which of these projects used the OWL profiles. A majority of my research and findings will be derived from this website and the projects that used the OWL profiles.

The goal of the research paper is to determine the status of the three different OWL profiles. The three different OWL profiles are OWL 2 EL, OWL 2 RL, and OWL 2 QL. Each of the three profiles are designed for different a purpose. According to the W3C website, “OWL 2 EL is particularly useful in applications employing ontologies that contain very large numbers of properties and/or classes. This profile captures the expressive power used by many such ontologies and is a subset of OWL 2 for which the basic reasoning problems can be performed in time that is polynomial with respect to the size of the ontology [[*EL++*](http://www.w3.org/TR/owl2-profiles/#ref-ELpp)] (see [Section 5](http://www.w3.org/TR/owl2-profiles/#Computational_Properties) for more information on computational complexity). Dedicated reasoning algorithms for this profile are available and have been demonstrated to be implementable in a highly scalable way. The EL acronym reflects the profile's basis in the EL family of description logics [[*EL++*](http://www.w3.org/TR/owl2-profiles/#ref-ELpp)], logics that provide only Existential quantification.” An example of an OWL 2 EL application is it’s use for the SNOMED CT, which is a very large biomedical ontology. The W3C website mentions that, “OWL 2 RL is aimed at applications that require scalable reasoning without sacrificing too much expressive power. It is designed to accommodate OWL 2 applications that can trade the full expressivity of the language for efficiency, as well as RDF(S) applications that need some added expressivity. OWL 2 RL reasoning systems can be implemented using rule-based reasoning engines. The ontology consistency, class expression satisfiability, class expression subsumption, instance checking, and conjunctive query answering problems can be solved in time that is polynomial with respect to the size of the ontology. The RL acronym reflects the fact that reasoning in this profile can be implemented using a standard Rule Language.” The W3C website also states that, OWL 2 QL is aimed at applications that use very large volumes of instance data, and where query answering is the most important reasoning task. In OWL 2 QL, conjunctive query answering can be implemented using conventional relational database systems. Using a suitable reasoning technique, sound and complete conjunctive query answering can be performed in LOGSPACE with respect to the size of the data (assertions). As in OWL 2 EL, polynomial time algorithms can be used to implement the ontology consistency and class expression subsumption reasoning problems. The expressive power of the profile is necessarily quite limited, although it does include most of the main features of conceptual models such as UML class diagrams and ER diagrams. The QL acronym reflects the fact that query answering in this profile can be implemented by rewriting queries into a standard relational Query Language.” The idea for this profile was to be able to keep data in a relational database and allow reasoning to be translated into queries on the database.

In this paper I plan to answer many questions. The questions include the following: Who are using which profile? How are they using the profiles? Where are the profiles being used? What kind of projects are the profiles used for? What are their experiences? What kind of metrics were used in the project? What can be concluded from the projects that used these profiles? Are there any advantages or disadvantages to using the certain profile? What can be done to improve the profiles or how there are used? By answering these question I plan to determine the current status of the OWL 2 profiles in the world of semantic web.

**Problems**

In the creation of this research paper I anticipate a couple of problems. One potential problem could be an inability to find a sufficient amount of valid and relatable resources. The aforementioned papers on semantic web projects are going to be my primary source for this research paper. I assume there will be enough material, among the many papers, I can use as references. However, I have yet to read any of these papers and therefore I am uncertain. If this problem should materialize, my alternative would be to research other comparable websites. I would attempt to find other papers to reference. The other possible problem would be the lack of accessibility to the papers from the ESWC website. When I visited the website, on the page where the papers are listed, I notice the titles of the papers were not hyperlinked. I did not see a means of downloading or accessing the papers. I might have to contact the website to ask for a way to access the papers. The other option would be to run a search on Google’s search engine.

**Conclusion**

In conclusion, the proposed topic for my project is a research paper on the State of the Art in OWL Profiles. I have discussed how I plan to cover the topic and what questions I plan to address. I included the planned flow for my project development. I also discussed any anticipated problems or challenges in completing my project.

References

<http://www.w3.org/TR/owl2-profiles/>

<http://2015.eswc-conferences.org/history>

<http://www.w3.org/Consortium/>