

Towards a Semantic Wiki Wiki Web

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Abstract

This article describes PlatypusWiki, an enhanced Wiki Wiki Web using technologies from the Semantic Web. Platypus Wiki offers a simple user interface to create Wiki pages including metadata according to W3C standards. It uses RDF, RDF Schema and OWL to manage the metadata and create ontologies. We present the essential features of what we have called a *Semantic Wiki Wiki Web*, showing how the existing Wiki Wiki Web can be improved and how we have implemented these features in Platypus Wiki. Platypus Wiki is a rapid and useful Personal Knowledge Management system, as well as a valuable tool to manage Communities of Practice.

1 Introduction

In this article, we present Platypus Wiki, a prototype of a Semantic Wiki Wiki Web, an enhanced Wiki Wiki Web using the RDF model and OWL vocabulary to represent metadata and relations between Wiki pages.

A Wiki Wiki Web, or simply Wiki for short, is a web site where users can contribute by adding content on any page. When a page is created other users can edit the content in a collaborative manner. Platypus Wiki extends the Wiki Wiki Web idea by adding metadata to Wiki pages and using RDF properties to represent the ‘meaning’ of links and to provide the navigational layout.

Platypus Wiki is an ongoing project enabling the collaborative editing of vocabularies and ontologies according to RDF Schema and OWL recommendations.

2 Wiki Wiki Web

There is no definition of the Wiki Wiki Web that is shared by everyone. It is a discussion medium, a repository of ideas and a tool for collaboration. In a Wiki Wiki Web, anyone can add or edit a page using a simple syntax to write content. This allows anyone to participate and permits the site to evolve in a collaborative way.

The idea of the Wiki Wiki Web [1] and the first running implementation comes from Ward Cunningham who published the Portland Pattern Repository’s Wiki in May 1995 [2]. “Wiki wiki” is a Hawaiian term for *quick* and is pronounced *wee-kee*. The name underlines the simplicity of a publishing system that is easy to learn and quick to use.

3 Platypus Wiki: a Semantic Wiki Wiki Web

A Semantic Wiki Wiki Web is a Wiki improved with Semantic Web [3] technologies.

The first thing to consider is the decision to represent every RDF resource in the same way as a Wiki page. A Wiki page always has a URL, while an RDF resource always has a URI. In a Semantic Wiki Wiki Web, this URI can also be reached with a URL, and sometimes URIs and URLs can be the same. While Wikis usually store information on a page in plain text, in Platypus Wiki, all pages are stored in a HTML file with metadata in RDF. The convention chosen to represent a link to a page is *namespace:pagename* which can be reached with URL `http://hostname/namespace/pagename/`. If the user requests a URL `http://hostname/namespace/pagename/index.rdf`, the system returns only RDF metadata about the resources. Similarly if the user asks for `http://hostname/namespace/pagename/index.html`, we have chosen to return only the plain HTML content without any navigation bar, page header or footer.

While relations between pages in a standard Wiki are HTML links, Platypus Wiki uses RDF properties between resources to construct “labeled HTML links”. The information architecture in Wikis is an organic structure similar to a directed graph: a node is a Wiki page and a link represents a directed arc between two pages. In Platypus Wiki, RDF statements construct a directed labeled graph: a node is an RDF resource and a link is a RDF property. We have chosen to allow the user to select any RDF resource: subjects, objects or predicates. When the user clicks on a resource, it becomes the current resource and its RDF metadata is used to construct the navigation and presentation.

Another important feature of Wikis is the automatic linking between pages. When users want to make a link to another Wiki page, they normally use a particular convention called WikiName or CamelWord. Some implementations use other conventions, like surrounding one or more words with square brackets. Platypus Wiki uses the namespace and pagename convention as *namespace:pagename*. As in standard Wikis, if the page exists and the user clicks on the link, that page becomes the current resource, while if the page does not exist a form asking to create a new page is shown.

We have noticed that when users write Wiki pages, they frequently forget to use the convention to create links, be-



Figure 1: A screenshot of Platypus Wiki.

Table 1: Site links example

Words	URL
Java	http://java.sun.com/
Java Servlet	http://www.servlets.com/
Platypus Wiki	http://platypuswiki.org/
...	...

cause they are thinking about the content and do not know that other pages may or may not exist. To resolve this problem, Platypus Wiki offers the possibility to create “site links”, “namespace links” and “page links”. A “site link” consists of one or more words and an URL. It is like removing links from pages [4]. For example:

In each page, the Platypus Wiki engine replaces every word specified as a site link with the URL given. The engine is smart enough to replace the longest match first, so in the example given above, the word *Java* is replaced only if it is not followed by the word *Servlet*. Existing HTML links are maintained.

We think Semantic Wiki Wiki Webs should merge the world of the Wiki Wiki Web with that of the Semantic Web. In a Wiki Wiki Web, every page represents a concept, an object or an idea. From the point of view of Wikis, each page in Platypus Wiki is grouped under a “topic”: the first level directory represents a set containing related pages. From the point of view of the Semantic Web, each page can be a class, a property or an individual. In the case of Platypus Wiki, the first level directory is the namespace of an ontology (a set of concepts and the relations between them) or a knowledge base (a set of individuals).

3.1 Implementation

Platypus Wiki is implemented in Java as a web application under Apache Tomcat as the servlet container, and using servlets and JavaServer Pages (JSP). Platypus Wiki uses Jena to manage RDF models and for a set of limited reasoning features.

Platypus Wiki is an open-source project, and source files can be downloaded from <http://platypuswiki.sourceforge.net/>.

4 Conclusion

In conclusion, we have proposed a meeting point between the Semantic Web and Wiki Wiki Webs, which we have

called the Semantic Wiki Wiki Web. We have implemented this idea in Java and named our prototype Platypus Wiki. A Semantic Wiki Wiki Web can be used by a single person, a community or, better, by a Community of Practice to create and share information, vocabularies, ontologies or a generic knowledge base in a collaborative way.

Platypus Wiki is an ongoing project that started on 23th December 2003. The features described in this article are essential for a Semantic Wiki Wiki Web, but we are working to extend and to improve Platypus Wiki. In particular, we are trying to find a way to classify Wiki pages automatically into topics by using techniques from machine learning. Another important step is to identify the most common vocabularies and to implement features that add value to the end user. Possible vocabularies are, for instance, RDF Schema, OWL, Dublin Core and FOAF. An example would be to show the complete taxonomy of subclass relations when the current resource is an individual of `rdf:Class`.

Platypus Wiki is built to be a Semantic Web platform with which to experiment and to try other ideas. It may be useful to extend Platypus Wiki towards a plug-in architecture. It would also be very helpful to study the appliance of trust and assess the reputation of users writing anything as an RDF statement.

We hope that the Semantic Wiki Wiki Web will be an important step in allowing users to participate in building the Semantic Web, and we envisage that Weblog, Wiki Wiki Web, P2P networks and collaborative annotation systems will converge to lead the World Wide Web towards a Semantic Web.

References

- [1] Bo Leuf and Ward Cunningham. *The Wiki Way: Collaboration and Sharing on the Internet*. Addison-Wesley, 1st edition, April 2001.
- [2] Ward Cunningham. Portland pattern repository’s wiki. <http://www.c2.com/cgi/wiki>.
- [3] Tim Berners-Lee and Mark Fischetti. *Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web by its Inventor*. Harper SanFrancisco, 1st edition, September 1999.
- [4] Theodor Holm Nelson. *I don’t buy in*. <http://ted.hyperland.com/buyin.txt>.