Chapter VIII
A Wiki on the Semantic Web

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ABSTRACT

The wiki concept is more than 10 years old but has attained public success only recently, thanks to Wikipedia. However, in the intranet world, several studies have shown that the usage of wikis is subject to debate. Acceptance of such open, low-structured collaborative tools is not the rule. There are different reasons for explaining such low acceptance: social reasons (corporate culture may not be adapted) but also usability reasons (the wiki is not structured enough, it is hard to navigate and find relevant information, the wiki markup language used by most wiki engine makes people reluctant to contribute to the wiki, etc.). In this chapter we present SweetWiki, a new wiki engine that relies on Semantic Web technologies and addresses most usability problems that have been reported in Buffa and Gandon (2006), Chat and Nahaboo (2006), and Powers, (2005). SweetWiki is an example of an application reconciling two trends of the future Web: a semantically-augmented Web and a Web of social applications where every user is an active actor and provider. SweetWiki makes heavy use of Semantic Web concepts and languages and demonstrates how the use of such paradigms can improve navigation, search, and usability. By semantically annotating the resources of the wiki and by reifying the wiki object model itself, SweetWiki provides reasoning and querying capabilities. All the models are defined in OWL schemata capturing concepts of the wikis (wiki word, wiki page, forward and backward link, author, etc.) and concepts manipulated by the users (users' folksonomy, external ontologies). These ontologies are exploited by an embedded semantic search engine (Corese) allowing us to support and ease the lifecycle of the wiki (e.g., restructuring pages), to propose new functionalities (e.g., semantic search, profile-based

monitoring) and to allow for extensions (e.g., support new medias in pages, integrate legacy software). In SweetWiki we have paid special attention to preserve the essence of a wiki: simplicity and social dimension. Thus SweetWiki supports all the common wiki features such as easy page linking using WikiWords, versioning, and so forth, but also innovates, integrating a WYSIWYG editor extended to support social tagging functionalities, embedded SPARQL queries, and so forth, masking the OWL-based annotation implementation. Users can freely enter tags and an auto-completion mechanism suggests existing ones by issuing queries to identify existing concepts with compatible labels. Thus tagging is both easy and motivating (real time display of the number of related pages) and concepts are collected in folksonomies. Wiki pages are served directly in XHTML or in JSPX format, embedding semantic annotations ready to be reused by other Semantic Web software.

INTRODUCTION

Wikis were designed in the mid-1990s exploiting the Web technologies of the time, that is, mainly HTML, HTTP, CGIs, and URIs. To make up for the lack of simple remote editing and storage facilities wikis developed variants of "wiki markup languages" or WikiML. There is still no WikiML standard even if several efforts have been undertaken, including the ongoing project CREOLE[1] for standardizing WikiML and the Wiki Interchange Format (WIF) project.[2] Other features of the wikis are the WikiWords for specifying hypertext links, simple versioning mechanisms, simple locking, and so forth. The idea of SweetWiki is to revisit the design rationale of wikis, taking into account the wealth of new standards available for the Web more than 10 years later to address some of the shortcomings identified through experience. The idea leads to a new tool for semantic work environments: semantic wikis.

After evaluating several wiki engines (regular or semantic), we decided to write a new engine because our vision of the wiki of the future was not compatible with what we found in existing wikis. We wanted our wiki to:

- **Rely on Web standards:** standards for the wiki page format (XHTML), for the macros included in pages (JSPX/XML tags), and so forth;

- **Include a framework to structure and query the wiki itself within the pages:** it is articulated around a semantic engine that supports Semantic Web languages like RDFa, RDF, RDFS, OWL, SPARQL, to describe and query the wiki ontology, the domain ontologies, and the indexing metadata;

- **Support social tagging and folksonomies, as well as external ontologies;**

- **Get rid of the WikiML dialects used and modified by most wiki systems:** we wanted an alternative to translating WikiML to XHTML each time a page is viewed and doing the reverse translation each time a page is saved;

- **Improve the access to information:** propose faceted navigation and enhanced search tools;

- **Allow metadata edition:** merging in one interface content edition and metadata edition;

- **Make metadata public:** allow metadata to be extracted and exploited by other applications.

In the next section, we review the state of the art on "semantic wikis." We then detail the architecture of SweetWiki, talk about the Sweet-Wiki framework that turns SweetWiki into an "application wiki," a wiki that enables users to

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