

---

# WikiNext, a JavaScript Wiki With Semantic Features

**Pavel Arapov**

KEWI/Wimmics Group,  
I3S Laboratory,  
University of Nice, France  
arapov@i3s.unice.fr

**Michel Buffa**

Wimmics Group,  
I3S Laboratory,  
University of Nice, France  
buffa@i3s.unice.fr

**Abstract**

WikiNext<sup>1</sup>, is a semantic wiki prototype written in JavaScript, from database to server and client code. It is not in competition with wikis like Semantic Media Wiki, but more a test bed for new ideas. Every wiki page is an application that keeps a Web Socket open with the server, enabling incremental saves or collaborative editions using Google wave like algorithms. Using JavaScript on the whole chain of operations avoids data transformation from/to different formats like in traditional approaches (Objects, JSON/XML, and SQL). WikiNext uses JavaScript distributed objects and includes an IDE to write JS applications within wiki pages.

**Author Keywords**

JavaScript, NodeJS, Wiki, MongoDB, Semantic Web, RDF, HTML5, Web Socket, Linked Open Data

**ACM Classification Keywords**

K.4.3 [**Organizational Impacts**]: Computer-supported collaborative work.

*WikiSym '12*, Aug 27–29, 2012, Linz, Austria.

Copyright © 2012 ACM 978-1-4503-1605-7/12/08

---

<sup>1</sup> Demo of the WikiNext prototype is available at <http://wikinext.herokuapp.com/>

## Introduction

This demo will present WikiNext, “a semantic application wiki” for writing documents that embed metadata (both local and from the Linked Open Data) and applications for manipulating/visualizing them. Distributed, shared JavaScript objects and remote method calls (from clients to server, over HTML5 Web Sockets) are the core technologies used behind the hood. The Wiki uses an HTML5 nearly WYSIWYG in place editor as well as an embedded JavaScript IDE for writing applications within the wiki. It also uses the VIE2 framework [3] for handling RDFa metadata and the KGRAM/CORESE RDF engine on the server side as well as the MongoDB database for persistence. Collaborative edition of both documents and JavaScript applications embedded within documents is also possible as WikiNext uses transformation of operation algorithms (similar to google wave’s ones), thanks to the inclusion of the ShareJS JavaScript library.

## Proposed scenario

The demonstration will show collaborative creation and edition of wiki documents, inclusion of JavaScript applications created from within the wiki, i.e. for visualizing data from the Linked Open Data (DBPedia.org, etc.). The technical aspects behind the hoods will be also explained during the demonstration as WikiNext uses several emergent technologies such as server side JavaScript (NodeJS server), document oriented database (MongoDB), distributed JavaScript objects (JS RPC) and real robust collaborative edition altogether with google wave like versioning.

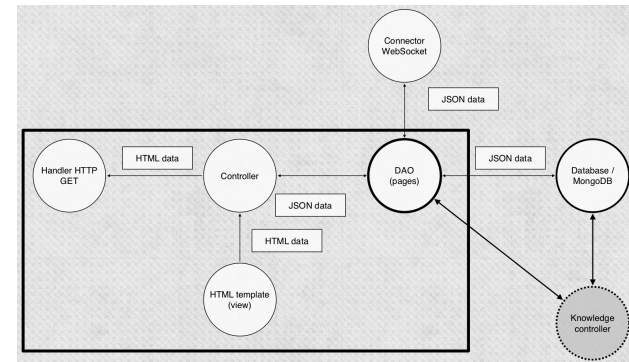
## Context

In the past many semantic wikis have been initiated (see [4] for an overview), most popular ones are Semantic Media Wiki [5] or IkeWiki/Kiwi [6], [7]. Our research group developed SweetWiki [8] that was from the first generation of semantic wikis (2005-2008), written from scratch in Java, and since 2008 SweetDeki [9], based on an open source industrial wiki engine named Mindtouch Core. Most semantic wiki engines had to deal with storage and handling of both semantic data and classic wiki data together. With WikiNext, we started again from scratch, trying to take into account emergent technologies and tools that appeared recently in the web development landscape, including HTML5 and micro web servers (lightweight web servers dedicated to a single application). (1) On the client side, HTML5 proposes new tags for creating web pages, but it also comes with many new JavaScript APIs that increases the momentum already existing around this language. For example, APIs like WebSockets<sup>2</sup> for synchronous communication between web browsers and servers are very appealing for implementing some features in a collaborative edition platform, such as notifications or collaborative synchronous edition. Around HTML5 and JavaScript, interesting applications appeared like IDEs written in JavaScript, enabling development and testing of JavaScript code directly in the browser, like jsbin.com, jsfiddle.net or Cloud9IDE.com, this latter enabling the development of JavaScript code both for the client side but also for the server side. (2) Another trend is server side JavaScript; indeed, the CommonJS<sup>3</sup> specification allows developers

<sup>2</sup> Even if not officially part of the HTML5 standard, see <http://en.wikipedia.org/wiki/WebSocket>.

<sup>3</sup> <http://www.commonjs.org/>

to create different applications that run in JavaScript interpreters like the V8 engine (from Google) or SpiderMonkey/TraceMonkey (from Mozilla).



**Figure 1:** WikiNext Back end architecture

## References

- [1] Pavel Arapov, Michel Buffa: « [WikiNext, a JavaScript semantic wiki](#) », developer track, WWW2012 Conference, Lyon, April 2012.
- [2] Pavel Arapov, and Al., « ISICIL : Intégration Sémantique d'Informations à travers des Communautés d'Intelligence en Ligne », EGC Demo paper, Brest, January 2011.
- [3] Szabolcs Grünwald and Henri Bergius, "[Decoupling Content Management](#)", developer track, WWW2012 Conference, Lyon, April 2012.
- [4] Orlandi, F. (2008). Using and extending the sioc ontology for a fine-grained wiki modeling. Master's thesis, Università degli Studi di Modena e Reggio Emilia.
- [5] Völkel, M., M. Krötzsch, D. Vrandečić, H. Haller, et R. Studer (2006). Semantic wikipedia. In WWW '06 : Proceedings of the 15th international conference on World Wide Web, New York, NY, USA, pp. 585–594. ACM.

- [6] Schaffert, S. et Al. (2009). KiWi - A Platform for Semantic Social Software. In 4th Semantic Wiki Workshop (SemWiki 2009) at the 6th European Semantic Web Conference (ESWC 2009), Hersonissos, Greece, June 1st, 2009.
- [7] Schaffert, S., R. Westenthaler, et A. Gruber (2006). IkeWiki : A user-friendly semantic wiki. In 3rd European Semantic Web Conference (ESWC06).
- [8] Michel Buffa, Fabien Gandon, Guillaume Ereteo, Peter Sander and Catherine Faron, SweetWiki: A semantic wiki, Special Issue of the Journal of Web Semantics on Semantic Web and Web 2.0, Volume 6, Issue 1, February 2008 , Edited by Mark Greaves and Peter Mika, Elsevier, Pages 84-97
- [9] M. Buffa, N. Delaforge and G. Husson, "SweetDeki : le wiki sémantique couteau suisse du réseau social ISICIL", conférence EGC 2012 (Extraction et Gestion des Connaissances), 31 Janvier – 4 février 2012, Bordeaux, France.