

# VikiBuilder: Let's build a Visual Wiki

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## ABSTRACT

Following our previous work with building "Visual Wiki" applications, we introduce "VikiBuilder", a Visual Wiki meta-tool, which provides end-user supported modeling and generation of Visual Wiki instances.

## Keywords

Visual Wiki; wiki; visualization; code generation; domain specific visual language; modeling.

## 1. Visual Wikis

In our previous work [3, 4], we have introduced the concept of the "Visual Wiki" as a knowledge management and discovery application. We have defined such a Visual Wiki as a web-application which integrates visual and textual representations of a common underlying body of knowledge. Both or either of the two representations may be editable in a shared, traditional wiki style. Visualizations offer effective methods for representing and organizing information-rich scenarios. Textual representations in form of wikis provide benefits for authoring dynamic information spaces. The purpose of a Visual Wiki is to increase the capability of a wiki as a knowledge management tool, by elaborating the synergetic effects of integrating visual enhancements.

We have developed a theoretical model [3] to analyze and describe not only existing tools which fall in the category of the Visual Wiki, but also to design and implement new applications. Some of our Visual Wikis can be seen in Figure 1. Thinkpedia [8] for instance is built on top of Wikipedia, extracts concepts out of articles and displays those in an interactive graph-based visualization shown alongside the articles (Figure 1 top). Thinkbase [6], another example, is built on top of the Semantic Wiki Freebase [2] and visualizes the semantically enriched relationships between articles. We are using Thinkmap [8] for creating the visualizations in those and other prototypes of the Visual Wiki.

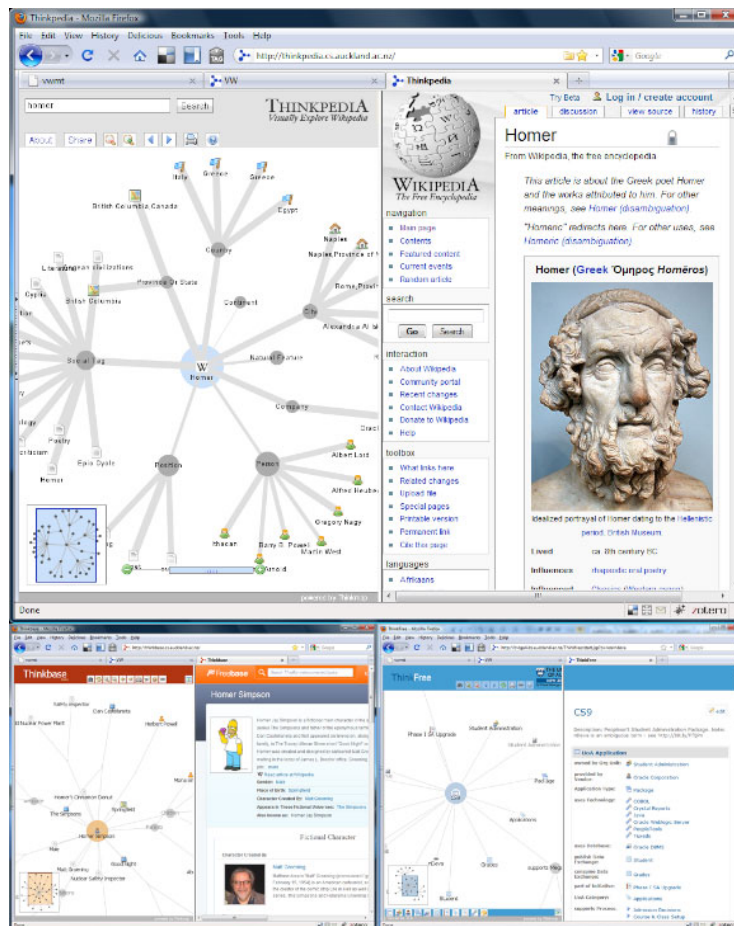


Figure 1. Different Visual Wikis.

## 2. VikiBuilder

Building on our work of the different Visual Wiki implementations, we are introducing VikiBuilder, an early prototype of a Visual Wiki meta-tool – *a tool which allows the user to design and build their own instances of a Visual Wiki*. This work can be divided into three parts: (1) Design of a domain specific visual language (DSVL) to describe Visual Wikis; (2) Implementation of the VikiBuilder which enables users to visually model Visual Wiki instances using that language; (3) Automatic generation of the modeled Visual Wiki.

Regarding (1), we started with aggregating the common architectural features of the different Visual Wiki prototypes. All of our prototypes implement variations of a visualization pipeline architecture as described e.g. in [1] and found in a range of visualization toolkits. Furthermore the Visual Wiki shares design features with multiple coordinated views (MCV) applications [5]. The result of our review is a first version of a DSVL consisting of the entities “Data Source”, “Adapter”, “Data Representation”, “Transformation Agent”, “View”, and “Coordination Object”. The entities have detailed properties and relationships so that the language is capable of describing a complete

Visual Wiki including its data sources, how they are accessed, transformed or filtered, and displayed in a view which can be coordinated with other views.

In part (2) we implemented the VikiBuilder which lets the user model Visual Wiki instances using the above DSL. Figure 2 shows the main user interface of the tool which is in itself a Visual Wiki: The left frame shows an interactive visualization of the currently active Visual Wiki model (in this case the model for a re-implemented Thinkpedia tool). The right frame shows a textual representation of the active entity including editing functionality. For this view and the underlying data model we are using Freebase [2].

Lastly, in part (3) we extended the modeling tool with a Visual Wiki generator, which takes the finished model as input, parses it, and creates a new instance. This includes a basic project structure, template-driven creation of property and source files, and compilation of the same. To prove the concept, we have modeled a modified version of the Thinkpedia application. This version uses a different Mediawiki-based wiki as the data source (namely “Lostpedia”, a wiki about a TV show), extracts the concepts from the text, and displays an interactive graph of those next to the articles (in different frame locations). Figure 3 shows the model of that Visual Wiki on the left side, and a preview of it on the right side. Figure 4 shows the final Lostpedia Visual Wiki in which the user can explore the wiki space by navigation along the interactive graph.

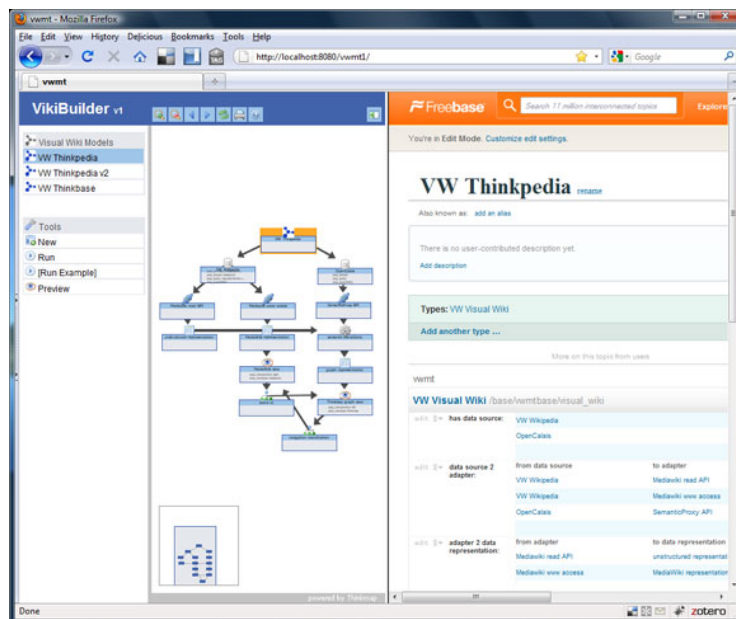


Figure 2. The main VikiBuilder interface.

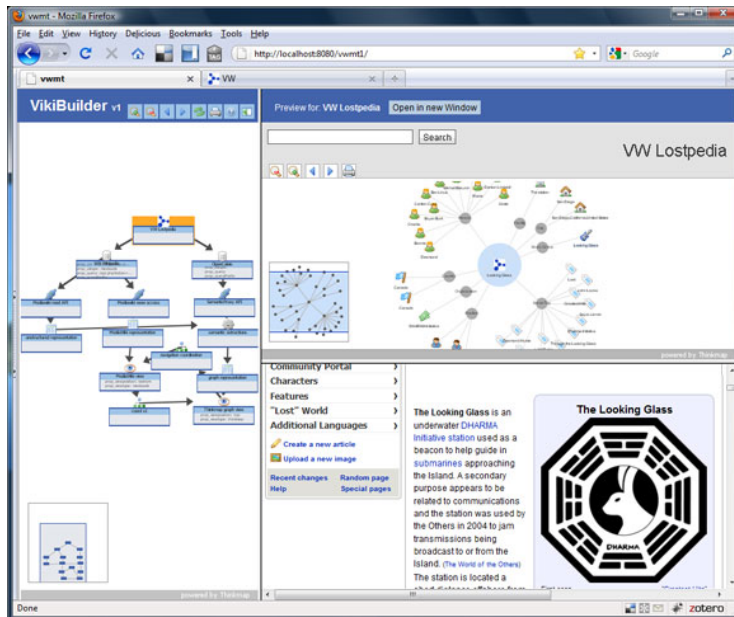


Figure 3. Preview of a modeled Visual Wiki.



Figure 4. An automatically created new Visual Wiki.

### 3. Conclusions

Following our previous work and experience with building Visual Wiki applications, we have implemented VikiBuilder, a Visual Wiki meta-tool prototype, which allows the user to model an instance of a Visual Wiki using a DSVL. We have demonstrated how, based on that model, a new instance of a Visual Wiki can automatically be generated. We have

shown this by re-building one of our previous prototypes (Thinkpedia) as well as a modified version of it (Lostpedia Visual Wiki) in VikiBuilder. Our prototype still has several limitations. Future work will look into overcoming these by improving the application's flexibility. This includes for example increasing the variety of accessible data sources, advanced filtering mechanisms, and possibilities for code extensions. Future work will result in modifications of the DSVL as well as the code generator.

## References

- [1] Chi, E.H. "A Taxonomy of Visualization Techniques Using the Data State Reference Model", In Proc. of InfoVis '00. pp. 69-75 2000.
- [2] Freebase. 2010. <http://www.freebase.com>.
- [3] Hirsch, C., Hosking, J.G., Grundy, J.C., Chaffe, T., MacDonald, D., and Halyskyy, Y. "The Visual Wiki: A New Metaphor for Knowledge Access and Management", In Proc. of the 42nd Hawaii International Conference on System Sciences, Big Island, Hawaii, Jan 5-8 2009, IEEE CS Press.
- [4] Hirsch, C., Hosking, J.G., Grundy, J.C. "Interactive Visualization Tools for Exploring the Semantic Graph of Large Knowledge Spaces", 1st Int'l Workshop on Visual Interfaces to the Social and the Semantic Web (VISSW 2009), Sanibel Island, Florida, 2009.
- [5] Roberts, J. "State of the art: Coordinated and multiple views in exploratory visualization. In Coordinated and Multiple Views", In Exploratory Visualization, ETH, Switzerland, IEEE Press, 61-71, 2007.
- [6] Thinkbase. 2010. <http://thinkbase.cs.auckland.ac.nz>.
- [7] Thinkmap. 2010. <http://www.thinkmap.com>.
- [8] Thinkpedia. 2010. <http://thinkpedia.cs.auckland.ac.nz>.

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