SlideWiki: Elicitation and Sharing of Corporate Knowledge using Presentations

Ali Khalili[1], Sören Auer[2], Darya Tarasowa[1], Ivan Ermilov[1]

[1] Universität Leipzig, IfI/BIS/AKSW, Johannisgasse 26, 04103 Leipzig, Germany
{lastname}@informatik.uni-leipzig.de, http://aksw.org
[2] Technische Universität Chemnitz, Informatik/ISST, D-09107 Chemnitz, Germany
soeren.auer@informatik.tu-chemnitz.de

Abstract. Presentations play a crucial role in knowledge management within organizations, in particular to facilitate organizational learning and innovation. Much of the corporate strategy, direction and accumulated knowledge within organizations is encapsulated in presentations. In this paper, we investigate the limitations of current presentation tools for semi-structured knowledge representation and sharing within organizations. We address challenges such as collaborative creation of presentations, tracking changes within them, sharing and reusing existing presentations. Then we present SlideWiki as a crowd-sourcing platform for the elicitation and sharing of corporate knowledge using presentations. With SlideWiki users can author, collaborate and arrange slides in organizational presentations by employing Web 2.0 strategies. Presentations can be organized hierarchically, so as to structure them reasonably according to their content. According to the wiki paradigm, all content in SlideWiki (i.e. slides, decks, themes, diagrams) are versioned and users can fork and merge presentations the same way as modern social coding platforms allow. Moreover, SlideWiki supports social networking activities such as following and discussing presentations for effective knowledge management. The article also comprises an evaluation of our SlideWiki implementation involving real users.

1 Introduction

In medium and large enterprises and organizations presentations are a crucial element of the corporate knowledge exchange. Such organizations are mostly hierarchically organized and communication and knowledge flows usually accompany corporate hierarchies. In addition to sending emails and documents, meetings where presentations are shown to co-workers, subordinates and superiors are one of the most important knowledge exchange functions. Research conducted by the Annenberg School of Communications at UCLA and the University of Minnesota's Training & Development Research Center show that executives on average spend 40-50% of their working hours in meetings.[3] They spend a remarkable amount of time collecting their required materials and creating new presentations.

[3] http://www.shirleyfinelee.com/MgmtStats

The challenges with current organizational presentations can be roughly divided into the following categories:

- *Sharing and reuse of presentations.* Much of the corporate strategy, direction and accumulated knowledge is encapsulated in presentation files; yet this knowledge is effectively lost because slides are inaccessible and rarely shared. Furthermore offline presentations are hard to locate. Thereby executives usually spend their time creating new slides instead of re-using existing material.
- *Collaborative creation of presentations.* Executives in different departments or countries often unknowingly duplicate their efforts, wasting time and money. To collaboratively create a presentation, the members need to manually download and merge the presentations.
- *Following/discussing presentations.* Finding the most up-to-date presentation is difficult and time-consuming, therefore costly. Furthermore, discussing the content of presentations in face-to-face meetings or email discussions is not efficient within organizations.
- *Tracking/handling changes in presentations.* Tracking and handling changes that occur within different presentations is a time-consuming task which needs opening all offline presentations and manually comparing their content. Additionally there are hundreds of slide copies to change when an original is modified. This cascading change costs a fortune each time.
- *Handling heterogeneous presentation formats.* Presentations can be created in different formats (e.g. Office Open XML, Flash-based, HTML-based or LaTeX-based presentations) thereby integration and reuse of them will be a cumbersome task for organization members.
- *Ineffective skills management and training.* Medium and large enterprises are obliged by law to provide means for training and qualification to their employees. This is usually performed by seminars, where training material is prepared in the form of presentations. However, it is usually not possible to provide engaging bi-directional and interactive means of knowledge exchange, where employees contribute to the training material.
- *Preserving organization identity.* Having a consistent template and theme including the logo and brand message of organization is of great significance in shaping the organization identity. With offline presentations it is difficult to persistently manage and sustain specific organization templates. Everyone needs to take care of templates and themes individually and managing the changes takes a remarkable amount of time.

In this paper, we investigate the above mentioned limitations of current presentation tools for semi-structured knowledge representation and sharing within organizations. We present an application called *SlideWiki* as a crowdsourcing platform for the elicitation and sharing of knowledge using presentations. With SlideWiki users can author, collaborate and arrange slides in organizational presentations by employing Web 2.0 strategies. Presentations can be organized hierarchically, so as to structure them reasonably according to their content. According to the wiki paradigm, all content in SlideWiki (i.e. slides, decks, themes,

diagrams) are versioned and users can fork and merge presentations the same way as modern social coding platforms (e.g. Github, Bitbucket) allow. Moreover, SlideWiki supports social networking activities such as following and discussing presentations for effective knowledge management.

This article is structured as follows: We first discuss the applicability of presentations as a tool for knowledge management in Section 2. In Section 3 we describe SlideWiki concept for elicitation and sharing of corporate knowledge. We discuss our implementation including crucial functionality such as authoring, versioning, Linked Data interface and search in Section 4. An evaluation using synthetic benchmarking as well as involving real users is provided in Section 5. We review related work in Section 6 and conclude with an outlook on future work in Section 7.

2 Presentation as a tool for knowledge management

Presentations play a crucial role in knowledge management within organizations, in particular to facilitate organizational learning and innovation. Presentations are one of the commonly used communication channels through which organization members elicit and share their knowledge. They typically have a different purpose than normal written documents. Presentations transfer fewer words per minute in the verbal channel, but also convey nonverbal information known for its impact on credibility [8]. They do not focus on the detailed information (the *what*), but what this information means to the audience in view of the presentation's purpose (the *so what*). As a tool for knowledge management within organizations, presentations can be applied to the following areas:

Developing a shared mental model within organization. In organizational learning, learning occurs through shared insights and mental models. In this process, organizations obtain the knowledge that is located in the minds of their members or in the epistemological artifacts (maps, memories, policies, strategies and programs) and integrates it with the organizational environment [19]. This shared mental model (a.k.a. *organizational memory*) is the accumulated body of data, information, and knowledge created in the course of an individual organization's existence.

Combining presentations with social approaches for crowdsourcing. Presentations when combined with *crowdsourcing* and *collaborative social approaches* can help organizations to cultivate innovation by collecting and expressing the individual's ideas within organizational social structures. As discussed in [4], there are different types of social structures living in the context of organizations. Work groups, project teams, strategic communities, learning communities, communities of practice, informal networks, etc. to mention some. These social structures make use of presentations frequently to present and discuss their internal ideas. Therefore, creating an integrated collaborative platform for authoring and sharing presentations will result in exchanging knowledge within and cross these social structures (even supporting inter-organizational knowledge transfer).

As a driver for organizational innovation. Presentations are an important driver of organizational innovation particularly when they are exchanged between social connections that cross functional and organizational boundaries. As discussed in [9], improvising is a structured process of innovation that involves responding to changing situations with resources at hand by creating a production and adapting it continuously. Presentation tools enable the creation of so called *Structural Referents* – a representation one develops about a structure. Structural referents support the communities to collaborate on individual's ideas and foster the potential ideas in alignment with the organizational goals. *Ghost Sliding* is a process introduced in [9] which utilizes presentation slides as structural referents for collaborative knowledge management. Ghost sliding is an iterative process where consultants draw up quick, rough representations of each slide and discuss them with clients to develop consensus on what statements are going to be included in the final presentation and what data needs to be collected to support those statements. The rationale for ghost-sliding is that by developing explicit representations of what a consultant is striving for, the consultant could discuss the hypotheses with others and be more efficient about what kind of data to look for.

As a media for knowledge exchange and training. As reported in [7], PowerPoint presentations are the most used (75.4 %) for developing e-learning content within organizations. Presentations contain visualized learning materials which improve the training of organization members having different levels of knowledge. Enabling users to contribute to this training materials makes it possible to provide engaging bi-directional and interactive means of knowledge exchange.

3 SlideWiki concept

SlideWiki is a crowdsourcing platform for elicitation and sharing of corporate knowledge using presentations. It exploits the wisdom, creativity and productivity of the crowd for the collaborative creation of structured presentations. Figure 1 shows the SlideWiki ecosystem for supporting organizational knowledge management. SlideWiki provides a collaborative environment to resolve the challenges discussed in Section 1. It enables knowledge communities to contribute to dynamic parts of organizational memory which is encapsulated in presentations. The dynamic view of the structure of organizational memory [6] takes into account the social nature of memory. Rather than viewing memory as knowledge stored in a collection of retention bins, the emphasis is on memory as continually constructed and reconstructed by humans interacting with each other and their organizational environment.

In SlideWiki, users from different knowledge communities crossing the organization and functional boundaries can collaboratively create structured online presentations. Users can assign tags and categories for structuring the presentations. The created presentations can be shared and reused to build new synergetic presentations. Users can also track and manage changes occurring within presentations using a revisioning system. Additionally, SlideWiki includes an e-learning

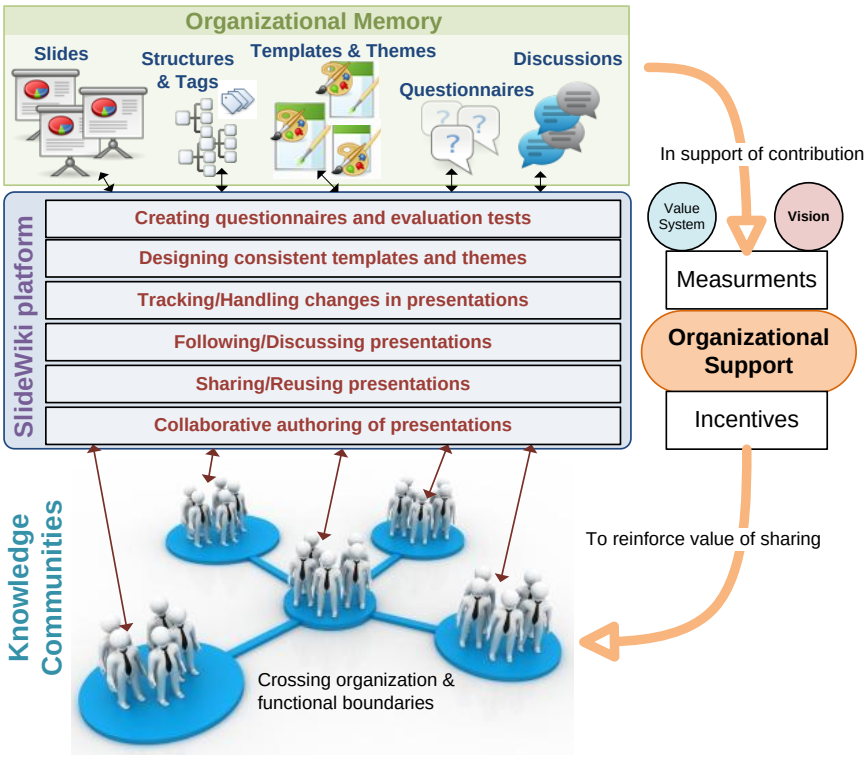

Fig. 1. SlideWiki ecosystem for organizational knowledge sharing.

component which deals with questionnaires created for each presentation slide. Questionnaires together with the evaluation tests facilitate the training of users within organizations. With regard to preserving the organization identity and branding, SlideWiki supports creating and sharing of templates and themes. Apart from the contribution on authoring of presentation content, SlideWiki also supports social networking activities such as following presentation decks, slides and users as well as discussing the created content.

In order to effectively integrate and employ SlideWiki within an organization, having an organizational evaluation and support system seems to be crucial. Measuring the quality of user contributions as well as providing some incentives to reinforce the value of user contributions are required elements of a comprehensive knowledge management framework [10]. Organizations need to frequently monitor the organizational memory created by presentations in order to link and align the user contributions with the organization's goals, visions, management, value system, and infrastructure.

SlideWiki as a social Web 2.0 software for organizational knowledge management is developed according to the PLANT SEEDS Framework [5]. The PLANT SEEDS framework is a set of high-level design considerations targeted

at enhancing social computing success by increasing the chances of rapidly growing productive and self-sustaining communities that deliver business value. The PLANT SEEDS framework consists of 10 design considerations from which it gets its name: *Purpose*, *Liberty*, *Authorship*, *Nurturing*, *Tipping Point*, *Structure*, *Ease of Use*, *Ecosystem*, *Discoverability*, *Seeding*.

The first five design considerations (PLANT) are associated with defining and growing the community, and facilitating productive and valuable participation. The second five considerations (SEEDS) address the corresponding information system's design. In the sequel, we briefly describe each aspect of the PLANT SEEDS framework and discuss them in relation to our SlideWiki implementation.

Purpose. Purpose is the foundational design consideration. The purpose is the cause around which the community will rally. It is the "What's in it for me?" that will motivate the community to participate. SlideWiki helps users to manage their knowledge using presentations. For this purpose, it enables users to share, reuse and collaboratively create interactive online presentations.

Liberty. Liberty is about social participation governance – that is, how to guide participant behaviors toward productive interactions and away from undesirable behaviors. As shown in Figure 1, organizational leadership and support should be considered when implementing SlideWiki system within an organization.

Authorship. Promoting authorship is a critical aspect of an enterprise social solution's success. SlideWiki follows the wiki paradigm hence allowing all users to write and edit presentations. The SlideWiki implementation complies with our WikiApp development model [2] for engineering of domain-specific wiki applications.

Nurturing. Community productivity depends on sharing and reuse. When deploying SlideWiki, leadership involvement is critical. Leaders must not only care, they must also participate visibly in the collaborative creation of presentations.

Tipping Point. The tipping point is the critical mass level of community participation required for the system to experience viral growth, achieve the network effect and become self-sustaining. In order to reach this point when deploying SlideWiki, a set of initial presentation content and early adopters should be provided by the organization. These initial content act as examples for other users to help them contribute to system.

Structure. To minimize the curve to productivity, SlideWiki employs a set of structures that facilitate participation relevant to the related purpose. Structures involved predefine themes and transitions as well as slide templates which can be edited and reused by users.

Ease of Use. Ease of use is a common mantra for all applications, but its importance for social solution adoption is uniquely grand. SlideWiki utilizes several modern and user-friendly interfaces to increase the usability of system. Inline content authoring UI, progressive Ajax-based load of presentations are two examples (c.f Section 4).

Ecosystem. An ecosystem is the converse of a social island, where the social solution is tied into existing enterprise systems and work practices. Since SlideWiki supports importing/exporting different file formats (PowerPoint, PDF, HTML, SVG, etc.), it can be easily integrated into existing enterprise systems thereby providing a high level of interoperability.

Discoverability. The social computing tenets of "architecture of participation" and everyone's a potential author is leading to an explosion of content on the public Web. This is also happening in enterprises. This explosion creates a content overload challenge that demands a new and more-comprehensive approach to information discoverability. Better discoverability is required to deliver a good user experience. SlideWiki's search features enables participants to view a set of results that may address their needs or provide an entry point for further discoverability. It also includes the ability to organize or reduce often huge search result sets, with capabilities like sorting and filtering, for more-efficient discoverability. Furthermore, by supporting social feedback technologies – such as rating, ranking, voting, investing, commentary, badging and tagging – SlideWiki can substantially add value to discoverability. SlideWiki also employs *subscription* technology, such as email feedback, RSS and Atom, which allows participants to determine what information they want to be alerted to or have pushed to them.

Seeding. The critical aspect here is that, prior to the tipping point, the social solution environment must contain enough base content and initial participation to encourage participant active content contribution and to catalyze the community to critical mass. By providing import from other presentation formats, organizations can easily convert and inject a huge amount of their previously created content into SlideWiki system.

4 SlideWiki Implementation

The SlideWiki application makes extensive use of the model-view-controller (MVC) architecture pattern. The MVC architecture enables the decoupling of the user interface, program logic and database controllers and thus allows developers to maintain each of these components separately. As shown in Figure 2, the implementation comprises the main components authoring, change management, import/export, frontend, social networking, linked data interface, search, e-learning and styling. We briefly walk-through these components in the sequel.

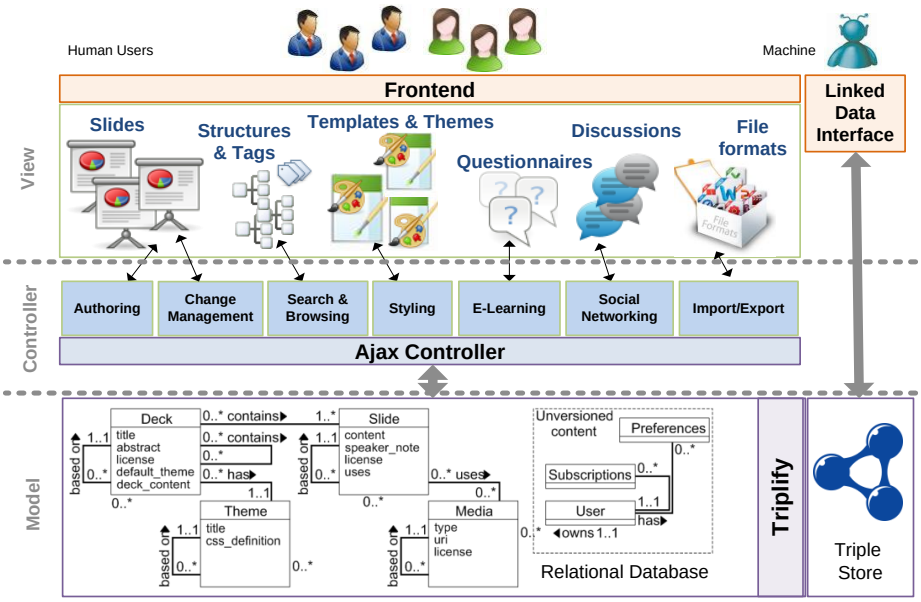

Fig. 2. Bird's eye view on the SlideWiki MVC architecture.

Authoring. SlideWiki employs an inline HTML5 based WYSIWYG (What-You-See-Is-What-You-Get) text editor for authoring the presentation slides. Using this approach, users will see the slideshow output at the same time as they are authoring their slides. The editor is implemented based on ALOHA editor[4] extended with some additional features such as image manager, source manager, equation editor. The inline editor uses SVG images for drawing shapes on slide canvas. Editing SVG images is supported by SVG-edit[5] with some predefined shapes which are commonly used in presentations. For logical structuring of presentations, SlideWiki utilizes a tree structures in which users can append new or existing slides/decks and drag & drop items for positioning. When creating presentation decks, users can assign appropriate tags as well as footer text, default theme/transition, abstract and additional meta-data to the deck.

SlideWiki follows the "anyone can edit" philosophy of Wiki for creating synergistic presentations. In order to manage the changes made by users, SlideWiki defines a revisioning system as described in the following.

Change Management. As shown in Figure 4, there are different circumstances in SlideWiki for which new slide or deck revisions have to be created. For decks, however, the situation is slightly more complicated, since we wanted to avoid an uncontrolled proliferation of deck revisions. This would, however, happen due to

[4] `http://aloha-editor.org/`
[5] http://code.google.com/p/svg-edit/

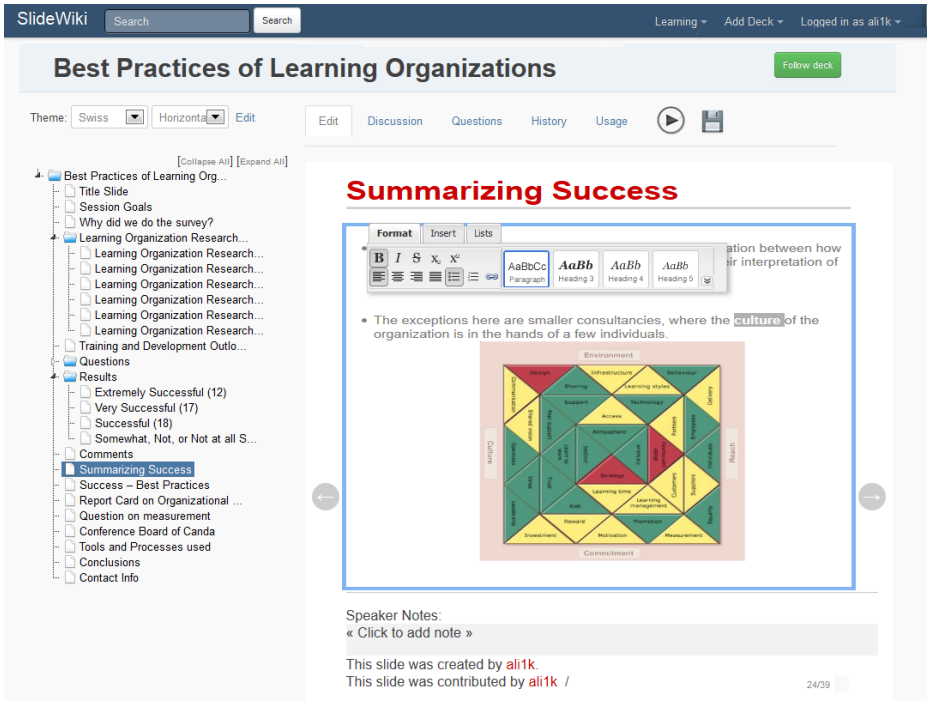

Fig. 3. The screenshot of the SlideWiki application: Inline authoring of presentations

the fact, that every change of a slide would also trigger the creation of a new deck revision for all the decks the slide is a part of. Hence, we follow a more retentive strategy. We identified three situations which have to cause the creation of new revisions:

- The user specifically requests to create a new deck revision.
- The content of a deck is modified (e.g. slide order is changed, change in slides content, adding or deleting slides to/from the deck, replacing a deck content with new content, etc.) by a user which is neither the owner of a deck nor a member of the deck's editor group.
- The content of a deck is modified by the owner of a deck but the deck is used somewhere else.

In addition, when creating a new deck revision, we always need to recursively spread the change into the parent decks and create new revisions for them if necessary.

Import/Export. A crucial feature of SlideWiki is an ability to import and export data into different formats. Without the possibility to import and export data (i.e. making backups and transferring data to other data mediums or applications) a user will be discouraged from contributing and maintaining data

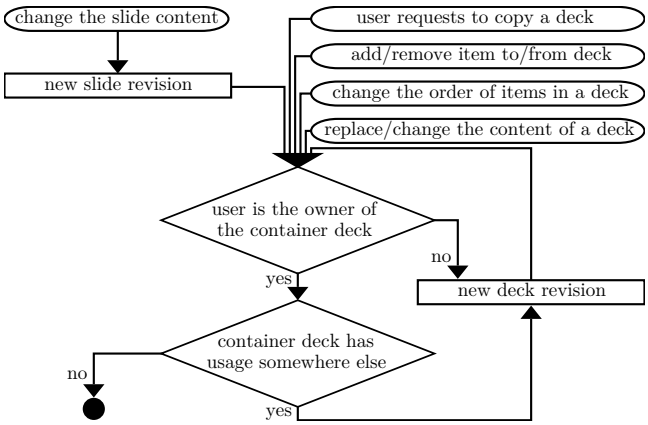

Fig. 4. Decision flow during the creation of new slide and deck revisions.

on the platform. The main data format used in SlideWiki is HTML. However, there are other popular presentation formats commonly used by desktop application users, such as Office Open XML (ECMA-376 or ISO/IEC 29500) and LaTeX. Thus we implemented importing and exporting functionality for abovementioned formats. Currently, SlideWiki supports importing from Microsoft Office implementation of ECMA-376 format (i.e. files with .pptx extension) and exporting to the deck.js[6] HTML+JS format. LaTeX and OpenOffice ECMA-376 implementation support are prepared but not yet completed.

Frontend. SlideWiki makes extensive use of HTML5 features to provide users with intuitive and responsive interfaces. In addition to the overall MVC architecture, SlideWiki utilizes a *client-side MVC* approach (implemented in JavaScript and running inside the users Web browser). The client-side MVC handler as (singleton) controller listens to the hash fragment of the requested URLs and once a change has occurred the handler triggers the corresponding actions. Each action has a JavaScript template (implemented using *jQuery templates*) with the corresponding variable place holders. For each action an Ajax call is made and the results are returned to the controller in JSON format. Subsequently, the controller fills the templates with the results and renders them in the browser.

Additionally, SlideWiki supports *progressive loading* of presentations to guarantee the scalability when a large presentation is loaded. Progressive loading is a design pattern for web applications which adds content to a web page incrementally. It results in gradually increasing the workload over time when loading a large presentation thereby improving the performance of the system.

Social Networking. As a social enterprise software, SlideWiki supports different types of social networking activities. Users can follow items such as decks,

[6] `http://imakewebthings.github.com/deck.js/`

slides and other users. They can also rate, tag and discuss decks and slides. Content syndication in multiple formats such as RSS, ATOM, OPML and JSON is provided for created items so that users can subscribe to them. We are currently integrating SlideWiki with popular social networking sites like Twitter, Facebook, GooglePlus and LinkedIn.

E-Learning. SlideWiki supports the creation of questionnaires and self-assessment tests from presentation slides. Questionnaires (like decks and slides) are supported by a revisioning system so that users can create, edit and share questionnaires according to the Wiki collaboration style. The created questionnaires can be employed for training organization members or to interview prospective members. Educators can manually or automatically generate evaluation tests from the questionnaires based on their preferences to assess the knowledge of employees to be trained.

Linked Data Interface. SlideWiki implementations can be easily equipped with a Linked Data interface. We employed the RDB2RDF mapping tool *Triplify* [1] to map SlideWiki content to RDF and publish the resulting data on the Data Web. Triplify is based on mapping HTTP-URI requests onto relational database queries. It transforms the resulting relations into RDF statements and publishes the data on the Web in various RDF serializations, in particular as Linked Data. Triplify neither defines nor requires to use a new mapping language, but exploits and extends certain SQL notions with suitable conventions for transforming database query results (or views) into RDF and Linked Data. The Triplify configuration for SlideWiki was created manually. The SlideWiki Triplify Linked Data interface is available via: `http://slidewiki.aksw.org/triplify`.

Search and Browsing. There are three ways of searching in SlideWiki: by *keywords*, by *metadata* and by *user* (who contributed or follows certain content). We combined keywords and tag search so that users can either 1. search by keywords and then add a tag filter, or 2. show all slides or decks having the tag and then running an additional keyword search on the results. In both cases an ordering a user might have applied is preserved for subsequent searches. In addition to the deck tree user interface for browsing the presentations, a breadcrumb navigation bar is implemented in SlideWiki. Breadcrumb improves the accessibility of system by increasing the user awareness when browsing nested presentations.

Styling. In order to create flexible and dynamic templates and styles for presentations, SlideWiki utilizes *Saas* (Syntactically Awesome Stylesheets) language[7]. Sass extends CSS by providing several mechanisms available in programming languages, particularly object-oriented languages, but not available in CSS3 itself. When Sass script is interpreted, it creates blocks of CSS rules for various selectors as defined by the Sass file. Using Saas, SlideWiki users can easily create and reuse presentation themes and transitions.

[7] `http://sass-lang.com/`

Feature	Usage
WYSIWYG slide authoring	76.92%
Importing pptx presentations	46.15%
Using LaTeX in slide content	58.85%
Using/Creating themes for decks	46.15%
Searching slides/decks	76.92%
Adding existing slides/decks to your deck	69.23%
Following slides/decks/users	53.85%
Contributing to other's slides/decks	53.85%
Using other revisions of slides/decks	76.92%
Playing slides/decks	**92.31**%
Downloading the decks for offline preview	**38.46**%
Adding comments about slides/decks	61.54%

Table 1. SlideWiki feature usage per user.

5 Evaluation

The SlideWiki concept was evaluated in several ways: Firstly, as a proof-of-concept we developed a comprehensive implementation, which is available at: `http://slidewiki.aksw.org`. The SlideWiki platform is currently used for accompanying an information systems lecture with more than 80 students. We performed a preliminary usability study which is described in the sequel.

determine whether we succeeded to effectively hide SlideWiki's data model complexity, we performed a usability user study with 13 subjects. Subjects were drawn from the members of AKSW research group, the computer science department at the university of Leipzig. We first showed them a tutorial video of using different features of SlideWiki then asked each one to create a presentation with SlideWiki. After finishing the task, we asked the participants to fill out a questionnaire which consisted of three parts: demographic questions, feature usage questions and usability experience questions. Table 1 summarizes the different SlideWiki features as well as their usage during the evaluation. We used the *System Usability Scale* (SUS) [14] to grade the usability of SlideWiki. SUS is a standardized, simple, ten-item Likert scale-based questionnaire[8] giving a global view of subjective assessments of usability. It yields a single number in the range of 0 to 100 which represents a composite measure of the overall usability of the system. The results of our survey showed a mean usability score of 69.62 for SlideWiki which indicates a reasonable level of usability. Of course, this is a very simplified view on usability and we expect even better results could be achieved by putting more effort into the SlideWiki development (the development of SlideWiki only consumed 5 man months). However, our goal was to demonstrate that SlideWiki implementations with good usability characteristics can be created with relatively limited effort. In addition to quantitative results, we also collected a number of user suggestions. For instance some users

[8] `http://www.usabilitynet.org/trump/documents/Suschapt.doc`

suggested improving the WYSIWYG editor for adding predefined shapes, providing autosave feature, supporting more import/export formats, defining user groups etc.

6 Related work

Related work can be roughly divided into the following three categories:

Wiki-based Collaborative Knowledge Engineering The importance of wikis for collaborative knowledge engineering is meanwhile widely acknowledged. In [16], for example, a knowledge engineering approach which offers wiki-style collaboration is introduced aiming to facilitate the capture of knowledge-in-action which spans both explicit and tacit knowledge types. The approach extends a combined rule and case-based knowledge acquisition technique known as Multiple Classification Ripple Down Rules to allow multiple users to collaboratively view, define and refine a knowledge base over time and space. In a more applied context, [11] introduces the concept of wiki templates that allow end-users to define the structure and appearance of a wiki page in order to facilitate the authoring of structured wiki pages. Similarly the Hybrid Wiki approach [15] aims to solve the problem of using (semi-)structured data in wikis by means of page attributes. SlideWiki differs from such general purpose wiki-based knowledge engineering methodologies due to its domain-specific functionalities which are provided for presentations. The wiki paradigm was meanwhile also applied to domain-specific applications, such as, for example, *Adhocracy*[9] – a policy drafting tool for distributed groups.

Semantic Wikis. Another approach to combine wiki technology with structured representation are semantic wikis [17]. There are two types of semantic wikis. Semantic text wikis, such as *Semantic MediaWiki* [13] or *KiWi* [18] are based on semantic annotations of the textual content. Semantic data wikis, such as *OntoWiki* [12], are based on the RDF data model in the first place. Both types of semantic wikis, however, suffer from two disadvantages. Firstly, their *performance and scalability* is restricted by current triple store technology, which is still an order of magnitude slower when compared with relational data management, which is regularly confirmed by SPARQL benchmarks such as *BSBM* [3]. Secondly, semantic wikis are generic tools, which are not particularly adapted for a certain domain thus substantially increase the usage complexity for users. The latter problem was partially addressed by OntoWiki components such as *Erfurt API*, *RDFauthor* and *Semantic Pingback*, which evolved OntoWiki into a framework for Web Application development [12].

Presentation Management Systems. There are already many Web-based platforms that provide services for online creation, editing and sharing of presenta-

[9] `http://trac.adhocracy.cc/`

tions. *SlideShare.net* is a popular Website for sharing presentations[10]. Comparing to SlideWiki, it does not provide any feature to create and reuse the content of presentations. *SlideRocket.com* and *Prezi.com* are other related works which help people to create fancy and zoomable presentations. In contrast to SlideWiki, they focus more on the visualization aspects rather than the content of the presentations. *Microsoft SharePoint Online* [11] and *SlideBank.com* are two commercial solutions which provide the feature of slide libraries to allow users to work with PowerPoint slide decks stored in the cloud. Despite SlideWiki which is an online platform, these tools adopt the Software-As-A-Service approach to enable a synchronization between desktop applications and Web service providers.

7 Conclusion

In this paper we presented the SlideWiki platform for elicitation and sharing of corporate knowledge using presentations. SlideWiki addresses weaknesses of conventional presentation tools currently used by organizations. It provides a crowd-sourcing platform for the collaboratively authoring of presentations. The created presentations will help to effectively shape the organizational memory by utilizing crowd feedback. SlideWiki also addresses e-learning as well as social aspects of knowledge management by providing features such as creating questionnaires, following, tagging and discussing the presentation content.

We see this effort as the first step in a larger research and engineering agenda to employ presentations for knowledge management. As a future work, we envision to provide crowd-sourced translation of presentations. This will enable multi-national organizations to employ the full potential of their dispersed branches for knowledge representation and exchange. We also aim to improve the interactivity of the system by providing features like video chats or shared blackboards synchronized with the presentations.

Acknowledgments

We would like to thank our colleagues from AKSW research group for their helpful comments and inspiring discussions during the development of SlideWiki. This work was partially supported by a grant from the European Union's 7th Framework Programme provided for the project LOD2 (GA no. 257943).

References

1. Sören Auer, Sebastian Dietzold, Jens Lehmann, Sebastian Hellmann, and David Aumueller. Triplify: Light-weight linked data publication from relational databases. In *WWW2009, Spain*. ACM, 2009.

[10] Other examples include: *authorSTREAM* (`http://www.authorstream.com`), *SlideServe* (`http://www.slideserve.com`), *Scribd* (`http://www.scribd.com`) and *slideboom* (`http://www.slideboom.com`).

[11] `http://sharepoint.microsoft.com`

2. Sören Auer, Ali Khalili, Darya Tarasova, and Ivan Ermilov. Wikiapp - engineering of domain-specific wiki applications. 2012. Available at http://svn.aksw.org/papers/2012/WISE2012_SlideWiki/public.pdf.
3. Christian Bizer and Andreas Schultz. The berlin sparql benchmark. *Int. J. Semantic Web Inf. Syst.*, 5, 2009.
4. Selena Blankenship and Wendy Ruona. Exploring knowledge sharing in social structures: Potential contributions to an overall knowledge management strategy. *Advances in Developing Human Resources*, 11(3), 2009.
5. Anthony J. Bradley. Ten primary design considerations for delivering social software solutions: The plant seeds framework. Technical report, Gartner, 2009.
6. Andrea J. Casey and Fernando Olivera. Reflections on organizational memory and forgetting. *Journal of Management Inquiry*, 20(3):305–310, 2011.
7. Jeff Cobb and Celisa Steele. Association learning management systems, April 2011.
8. Jean-Luc Doumont. The Cognitive Style of PowerPoint: Slides Are Not All Evil. *Technical Communication*, 52(1):64–70, February 2005.
9. Nils Olaya Fonstad. Tangible purposes and common beacons: The interrelated roles of identity and technology in collaborative endeavors. In *OKLC (Organizational Learning, Knowledge and Capabilities)*, 2005.
10. Patricia Gongla and Christine R. Rizzuto. Evolving communities of practice: IBM Global Services experience. *IBM Systems Journal*, 40(4):842–862, 2001.
11. Anja Haake, Stephan Lukosch, and Till Schümmer. Wiki-templates: adding structure support to wikis on demand. In *Int. Sym. Wikis*, pages 41–51. ACM, 2005.
12. Norman Heino, Sebastian Dietzold, Michael Martin, and Sören Auer. Developing semantic web applications with the ontowiki framework. In *Networked Knowledge - Networked Media*, SIC, pages 61–77. Springer, 2009.
13. Markus Krötzsch, Denny Vrandečić, Max Völkel, Heiko Haller, and Rudi Studer. Semantic Wikipedia. *Journal of Web Semantics*, 5, 2007.
14. James Lewis and Jeff Sauro. The Factor Structure of the System Usability Scale. In *Human Centered Design*, volume 5619 of *LNCS*, chapter 12. Springer, Berlin, 2009.
15. Florian Matthes, Christian Neubert, and Alexander Steinhoff. Hybrid wikis: Empowering users to collaboratively structure information. In *ICSOFT (1)*, pages 250–259. SciTePress, 2011.
16. Debbie Richards. A social software/web 2.0 approach to collaborative knowledge engineering. *Inf. Sci.*, 179, 2009.
17. Sebastian Schaffert, François Bry, Joachim Baumeister, and Malte Kiesel. Semantic wikis. *IEEE Software*, 25, 2008.
18. Sebastian Schaffert, Julia Eder, Szaby Grünwald, Thomas Kurz, Mihai Radulescu, Rolf Sint, and Stephanie Stroka. Kiwi - a platform for c wiki social software. In *SemWiki*, volume 464. CEUR-WS.org, 2009.
19. Joselaine Valaski, Andreia Malucelli, and Sheila Reinehr. Ontologies application in organizational learning: A literature review. *Expert Systems with Applications*, 39(8):7555 – 7561, 2012.