

A Semantic Wiki on Cooperation in Public Administration in Europe

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ABSTRACT

Authorities cooperate in various ways. The Web portal www.verwaltungskooperation.eu aims to share knowledge on collaboration projects. A semantic wiki approach was used to facilitate best practice documentation with Semantic Web and Web 2.0 technology.

Keywords: semantic wiki, intercommunal cooperation, public administration, best practice documentation, Web 2.0

INTRODUCTION

Cooperation between authorities has a long tradition in Europe, especially among municipalities. In Austria and its German-speaking neighbour countries, this issue has been intensely discussed in the last years. Apart from basic analyses of intercommunal cooperation in various scientific journals or the arrangement of expert meetings; the number of practical examples of cross-municipal cooperation is growing [1]. However, documentation of cooperation projects has always been quite fragmented.

The use of the latest semantic wiki technologies for the platform www.verwaltungskooperation.eu is an example of the emergence of Web 2.0 applications with semantic technologies, sometimes referred to as “Web 3.0” or “Social Semantic Web” [2].

KNOWLEDGE SHARING ON COOPERATION PROJECTS

Public administration bodies cooperate on different levels in order to share knowledge, reduce costs, and provide better services. The KDZ has participated in various cooperation projects in the past years, mainly on the level of local and regional government. The lessons learned from such cooperation projects were summarized in a KDZ publication in 2006, including a documentation of 50 cooperation projects between municipalities [3]. The search for suitable best-practice projects showed that a comprehensive and easy-to-use database did not exist at that time. Furthermore, existing documentation was quite fragmented because of varying levels of competence: the Austrian “Länder” (9 different state authorities) are in charge of projects of municipalities and district authorities in their state. Ministries collect information on projects related to their knowledge domain (sector of government). However, valuable lessons to be learnt from best practices are not always limited by a specific geographic region (not even country borders) or knowledge domain. Internal fragmentation between institutional levels, agencies, departments, often referred to as the silo effect, reduces the efficiency and effectiveness of government actions [4]. That is why the KDZ decided to aim for a new approach: a Web 2.0 platform was initiated to overcome geographic or sectoral boundaries and give control over the publishing procedure to the project owners without the need for a central editorial staff.

The platform’s main target group is civil servants from all levels of government who seek knowledge on previously executed cooperation projects or to publish information about their projects in order to make them more visible to other users. Secondary target groups are experts in the field of cooperation of public administrations as well as students, press and a broader public interested in the targeted topics. As the potential users are scattered over different (European) countries, reading and editing of content has to be easy enough to enable users to carry out required tasks on their own.

The steps toward cooperation of public administrations can be described as (1) (re)search, (2) initialising, (3) concept development and (4) realisation. Best practice documentation is focused especially (but not exclusively) on the research phase, where visions and ideas should be supported by systematic search possibilities for existing or similar solutions. [5]

THE SEMANTIC WIKI APPROACH

The power of wikis is impressively demonstrated by Wikipedia [6], which is by far the largest encyclopaedia edited by its readers. The power of wikis lies in the simplicity of their use and their implementation of the social software paradigm, exploiting the “wisdom of the crowd” by enabling everybody to easily participate in the content creation process.

The popularity of Wikipedia has led to the usage of wikis for other purposes including special-interest wikis, company-knowledge bases and even small Intranet solutions. However, regular wiki engines have major shortcomings: they only store text information without making knowledge usable for computers and they are searchable only by full text search. Information in wikis therefore can only be read (by humans), not processed. Semantic wikis try to add semantics (i.e. aspects of meaning) to wiki articles. From a number of freely available semantic wiki engines [7] we chose Semantic MediaWiki (SMW) [8]. The reasons for choosing MediaWiki [9] - the wiki engine used by Wikipedia - were its maturity, stability and security of investment. MediaWiki can be used on a variety of platforms. Prerequisites are a Web Server (Apache or IIS), PHP (version 5.0 or later) and a database server (MySQL 4.0 or later or PostgreSQL 8.1 or later). The Wikimedia Foundation [10] is a strong backbone for the further development of this wiki engine. Furthermore, the popularity of MediaWiki-based wikis adds a usability advantage with the look and feel it shares with Wikipedia. SMW is an extension for MediaWiki developed at the University of Karlsruhe, Germany. It seamlessly integrates into MediaWiki, leaving everything there untouched and adding the possibility to enhance the wiki markup by semantic annotations.

As the authors of SMW point out, SMW addresses the following core problems of today’s wikis: consistency of content (same information on many pages), accessing knowledge (finding and comparing knowledge from different

pages) and reusing knowledge (beyond reading the wiki in a browser) [11]. Since first experience with the use of Semantic MediaWiki for internal project documentation within KDZ was promising, the decision was made to initiate the "Plattform Verwaltungskooperation" (platform for cooperation in public administration) with semantic wiki technology.

THE PLATFORM VERWALTUNGSKOOPERATION.EU

The platform "Verwaltungskooperation" aims to provide knowledge on public administration cooperation in German language. Figure 1 shows an example of a project documented on the platform. As the initial content documents Austrian best-practice examples on a municipal level, the geographic region of Austria is a first starting point, but projects from other EU countries are certainly welcome. New countries and regions/states can be added, so the geographic scope can be expanded easily. Regarding the level of cooperation, most projects can be found at the municipal level, but there are also examples of cooperation between district and state authorities. The platform aims to expand its scope to all levels of cooperation in public administration.

Municipal IT center Carinthia

Figure 1: A project description on the platform Verwaltungskooperation.eu (partly translated into English).

The wiki focuses mainly on documenting projects, people related to these projects, topics related to these projects, institutions, literature and further resources. The content structure makes it easy for users to grasp the essential project information at a glance. Links to pages for topics, project partners, and contact persons encourage further exploration of the wiki, the external link to a project Web site invites users to go into further detail.

To prevent spamming, a captcha mechanism [12] has been included to identify whether or not real persons are manipulating pages at certain crucial moments (e. g. inserting hyperlinks or creating user accounts) by asking users to read distorted words and type them into a text box. Furthermore, the free Google Maps service has been included to identify the location of projects on a map [13].

The platform is free and open to all users. To make changes to content or to add new pages, users are required to create a user account in order to prevent spamming. The content of the platform is released under the creative commons "Attribution-Noncommercial-Share Alike 2.0 Austria" license, meaning that everyone is free to share (copy, distribute and transmit) and remix (adapt) the work under certain restrictions (e. g. non commercial use) [14].

BENEFITS FOR USERS

Users who want to add best-practice examples to the wiki simply use the designated form. The need for knowledge of wiki syntax can be minimized to simple markup-like list elements ("*" for unordered lists, "#" for numbered lists) or headings thus making collaboration as easy as possible. First, basic data about the project is added, e. g. topic, region and country, project partners, contact persons, year of project start and project Web site. For display of a Google Map, the project location can be added using geographic coordinates. Then, a free text input defines the rest of the page with suggested content sections "project description", "financing", "current status", "effects achieved" and further information on the project. An example form is shown in Figure 2. The online form features automatic completion of fields: the user in this example writes an "E-" in the topic section, and all topics that have been entered previously are suggested (here: "E-Government").

Edit cooperation: Municipal IT center Carinthia

Figure 2: New entries are facilitated by easy-to-use online forms (partly translated into English).

In addition to the project description, separate pages for contact persons and project partners (institutions) can be added. Furthermore, pages about countries and regions list projects in their geographical area as well as further information. Information about literature as well as tools and methods of cooperation further enhance the content of this platform.

FURTHER EXTENDING FUNCTIONALITY

In addition to Semantic MediaWiki, further extensions of MediaWiki enhance the features of the platform. Data input is facilitated by the use of the "Semantic Forms" extension that makes it possible to generate semantically annotated wiki pages based on simple online forms. [15] As shown in Figure 2 above, the input in the form fields (e. g. contact person) results in the

correct annotations for the semantic information without requiring the user to learn the correct markup.

The extension “Semantic Drilldown” [16] allows the user to browse through the data of the platform. The use of filters (e. g. countries, topics, year of project start etc.) reduces the amount of data displayed to the relevant elements without the need to formulate complex search queries. This method of faceted search has been described earlier [17] and shows benefits over fixed, linear presentation of data or the use of search queries that need to be re-formulated in order to improve search results. Users decide themselves how to start, and how to explore the content. This evokes a feeling of “browsing the shelves”. With facets, it becomes very easy to build up complex queries [18]. Figure 3 shows the drill-down interface of the platform with the Filter “Country: Austria” set. Therefore, only projects from Austria are shown and the other filters adapt to this selection: the new sub-filter “Region” shows the regions of Austria, only topics and project start dates are shown that are represented in the 69 resulting projects. Furthermore, the interface makes use of a tag cloud display, where tags with a higher number of occurrences are displayed in a larger font. In tag clouds, commonly used tags, which are more general, have higher proportions, and the varied, personally oriented tags that users may use can coexist with them [19].

Browse data: Projects

Projects > Country: Austria

Click on one or more filters to narrow the search results.

▼ Topic:

Abfallwirtschaft (2) · Bauen (2) · Bauhof (5) · Beschaffungswesen (4) · Bestattung (1) · Bildung und Kultur (6) · Breitbandtechnologie (1) · Bürgerservice (3) · Dienstleistungszentrum (1) · E-Government (5) · Feuerwehr (2) · Finanzen (1) · Freizeit- und Sport (2) · Fuhrpark (2) · Gebäude- und Liegenschaftsverwaltung (2) · Informationstechnologien (3) · Infrastruktur (1) · Kinder/Jugend und Familien (3) · Kleinregionale Zusammenarbeit (1) · Kommunales Benchmarking (2) · Kraftwerk (1) · Organisationsentwicklung (1) · Personalverwaltung (2) · Qualitätsmanagement (2) · Rechnungswesen/Finanzen (1) · Senioren (2) · Soziales (2) · Stadt- und Gemeindeentwicklung (7) · Tourismus (3) · Umwelt (7) · Ver- und Entsorgung (5) · Veranstaltungssaal (1) · Verkehr (5) · Verwaltungskooperation (2) · Webauftritt (2) · Wiki (1) · **Wirtschaft und Gewerbe (13)** · Wissensmanagement (1)

▼ Region

Burgenland (4) · Kärnten (11) · Niederösterreich (14) · Oberösterreich (19) · Salzburg (4) · Steiermark (3) · Tirol (7) · Vorarlberg (8) · Wien (1)

► Country: (choose other value)

▼ Project start:

1973 (1) · 1980 (2) · 1985 (1) · 1991 (1) · 1994 (1) · 1995 (1) · 1998 (2) · 1999 (2) · 2001 (2) · 2002 (4) · 2003 (9) · 2004 (12) · 2005 (16) · 2006 (5) · 2007 (4) · 2008 (5)

Here are 69 results, starting with number 1.

Show (previous 250) (next 250) (20 | 50 | 100 | 250 | 500)

A	G (contd.)	O
■ ARGE Raum Krems	■ Gemeindefinanzierungszentrum Kärnten	■ Organisationsentwicklung und Prozessanalyse – Kleinregion WIN Kremstal
■ Abfallbewirtschaftung Arnoldstein	■ Gemeindeverband Öffentlicher Personennahverkehr Osttirol	■ POKOV – Prozessoptimierung Salzkammergut
■ Abwasserverband Region Bludenz	■ Gemeinsames Amtsgebäude Oberndorf	
■ Anstellung eines baupolizeilichen Amtssachverständigen – Osttirol	■ Gemeinsames Kommunalfahrzeug	
■ Aufbau eines Expertenpools für die Modellregion Kirchdorf		

Figure 3: Faceted search enables users to browse through the database: projects from Austria (partly translated into English).

Current news items, newly added pages as well as the latest changes can be displayed as RSS feeds for further use [20]. External news sources (e. g. from regional public authorities) are displayed on the platform. From a special page in the wiki [21], data can be retrieved in OWL/RDF [22] encoding to be shared in external applications, thus contributing to the Semantic Web.

FIRST RESULTS AND OUTLOOK

After one year of operation, more than 70 users have signed up for a free platform account and some 80 cooperation projects have been documented. The statistics show up to 1,000 visitors per month. www.verwaltungskooperation.eu won a jury award at the ‘Austrian multimedia and e-business award’ in 2008. On

the downside, community involvement has not really picked up. User activity focuses primarily on updating basic information about projects and contact details, while the submission of new projects has not yet taken off. Furthermore, although there have been many positive reactions from cooperation experts in different authorities, official support of the platform has yet to be achieved (e. g. by a public administration body). However, there is a good chance that ongoing negotiations with the Federal Chancellery of Austria will result in cooperation, in the scope of which the documentation of 115 Austrian best practices, currently published in print [23], will be added to the platform. This will also be the first case of re-use of the (semantic) data, as there are plans of implementing an Austrian database of IT projects where the projects published on the platform will be submitted in the XML and RDF data structures provided by the wiki. Furthermore a project with UNDP is about to be launched to create a similar platform in the English language for municipal cooperation projects of south-eastern European countries.

A further demonstration of the benefits and features of Semantic MediaWiki for the creation of an online database with a focus on text information enriched with metadata (represented by semantics) can be seen at EPSA 2007: the submissions to the European Public Sector Award were published in a “fact sheet booklet” that is now available as a semantic wiki [24].

CONCLUSION

The platform www.verwaltungskooperation.eu facilitates the sharing of knowledge on cooperation in public administration by using the possibilities of Web 2.0. The use of a semantic wiki combines the power of semantic technologies with the ease of using wikis. Semantic MediaWiki and further semantic extensions for MediaWiki enhance the powerful features of a wiki for textual information with features of a web based database system. The platform aims to become the leading source of information on cooperation in public administration in Austria and other German-speaking countries and is an example of the use of wikis for public administrations.

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