

The Vienna History Wiki – a Collaborative Knowledge Platform for the City of Vienna

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ABSTRACT

The Vienna City Archive and the Vienna City Library have joined forces with several other institutions in Vienna, Austria to create the “Wien Geschichte Wiki” (Vienna History Wiki), a knowledge platform for the history of Vienna with more than 34,000 articles and 120,000 visits per month. The wiki is powered by Semantic MediaWiki and serves not only as an online encyclopedia, based on a digitized printed publication for everybody to use and contribute to, but also as a central knowledge base for several administrative departments of the city administration. In a peer-review process, wiki edits are checked before they become visible. The paper highlights the unique aspects of the Vienna History Wiki related to content creation, governance structures and technology choices. A usage log analysis and an online survey have been carried out to gain first insights after six months of operation.

Categories and Subject Descriptors

H.5.3 [Information Interfaces]: Group and Organization Interfaces – *collaborative computing, computer-supported cooperative work, web-based interaction*, H.3.5 [Information Storage and Retrieval]: Online Information Systems, K.4.3 [Computers and Society]: Organizational Impacts – *computer-supported collaborative work*.

General Terms

Management, Human Factors.

Keywords

Wiki, MediaWiki, Semantic MediaWiki, semantic wiki, structured wiki, collaboration, open government, OpenGLAM, social computing, crowdsourcing

1. INTRODUCTION

The “Vienna History Wiki” was built up by the Municipal and Provincial Archives of Vienna (short: City Archive) and the Vienna City Library. It was opened to the public on September 11, 2014. It is a geo-referenced, historical knowledge platform of the city of Vienna aiming to combine knowledge from the city administration with those of external experts.

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Compared to other and better researched wiki projects like Wikipedia, the Vienna History Wiki has some unique aspects regarding content creation, governance structures and technology choices that are highlighted in this paper. A usage log analysis and an online survey provide first insights after six months of operation. Based on the available literature and these first insights, some conclusions can be drawn that lead to further research questions.

1.1 Content

The cornerstone of the wiki consists of more than 27,000 articles (31,000 entries) of the six-volume encyclopedia “Historisches Lexikon Wien”. As it did not seem feasible to update the encyclopedia and re-release a printed version, the content of the printed publication was digitized and formed the initial content of the wiki.

1.2 Governance

In contrast to other wikis, the Vienna History Wiki does not rely solely on a voluntary community, but is governed by an editorial team formed by several administrative departments of the Vienna city administration as well as several external project partners such as the Wien Museum, the Jewish Museum Vienna, the Association for the History of Vienna, the Austrian Institute of Historical Research, the Centre for Environmental History, and the Austrian Mediathek [26]. Edits by users are not displayed immediately; they are subject to revision by the editorial team before they are accepted, using a method similar to the German Wikipedia [32]. Not only do the partner institutions provide the editorial team to revise user-generated content, but they also provide staff to do regular edits, upload images and write new articles.

The resulting Vienna History Wiki is not only of general interest, it is also a leading IT system for several departments of the city administration regarding historical information.

1.3 Technology

The wiki was implemented by KDZ - Centre for Public Administration Research using the open source software Semantic MediaWiki (SMW) [26]. The approach was chosen mainly for the sake of SMW's capability of handling data inside the wiki for automatically generated lists, overview pages or query forms as well as outside of the wiki through several export formats with the potential of re-using data from the wiki in other applications.

2. RELATED WORK

MediaWiki is broadly used for special interest wikis that operate independently of Wikipedia. However, there are not many city and regional wikis in Austria and none have been initiated or governed by a city administration. Recently, a special wiki about Vienna failed. Work on analyzing user behaviors in semantic,

structured or hybrid wikis is scarce, opening up a wide field of research possibilities for this collaboration area. In Open Government initiatives, wikis can be used as collaboration tools, allowing citizens to interact with and contribute to wiki content.

2.1 City and Regional Wikis in Austria

MediaWiki is broadly used for special interest wikis independent of Wikipedia. The Website WikiApiary collects statistical data of more than 25,000 active MediaWiki installations [31]. Especially in Germany, wikis on geographical regions are very popular, they are referred to as “city wikis” (“Stadtwiki”) or “regional wikis” (“Regiowiki”) [22].

One of the first city wikis in Austria (founded in 2007) was the Salzburg wiki¹, which addresses not only the city of Salzburg, but also the federal province. It is operated by a newspaper publisher “Salzburger Nachrichten”. The WienWiki², founded by the newspaper “Wiener Zeitung” in 2012 was made read-only in April 2014 and finally removed completely by January 2015 due to lack of resources [30]. Other than that, some smaller city or regional wikis exist.³

Another example is the JSPWiki-powered encyclopedia “Austria Forum” that aims to combine openness and collaboration aspects of Wikipedia with approaches to build a structured, quality-inspected, and context-sensitive online encyclopedia in educational settings [25]. In contrast to other regional or city wikis, the Austria Forum has chosen a rather closed approach: user contributions are allowed mostly as comments to existing articles. For other contributions, a special community section in the wiki is available. The section “AustriaWiki” imported Austria-related articles from the German Wikipedia (last import December 2012) which likewise can only be commented. The community section lists 8,060 entries [1].

2.2 Semantic, Structured and Hybrid Wikis

Traditional wikis have the capability to support collaborative authoring of content, mostly by linking wiki pages that follow a document-oriented structure by using titles, headlines, paragraphs, lists, etc. However, they lack the possibility of presenting structures and relationships in a partly automated fashion. Voigt et al. [29] describe semantic, structured and hybrid wikis that enable users to add structured information to the wiki. Also the wealth of numerical data is only available as plain text and thus cannot be processed by its actual meaning. [17]

While there are many published analyses of wikis (especially of Wikipedia) focusing on various topics such as content, edits, user behaviors or governance mechanisms, work on analyzing user behaviors in semantic wikis is scarce. An initial analysis of twenty semantic wikis was carried out by Gil et al. [7] who analyzed how many editors created or changed semantic properties in the wikis. Bry et al. give an overview and comparison of semantic wikis [2]. In the case of the Vienna History Wiki, the structure of the wiki is fixed by the wiki configuration and users are not aware of the “semantics” applied in the wiki, they simply enter semantic annotations by filling in data in online forms (see Figure 1).

2.2.1 Semantic MediaWiki

Krötzsch et al. introduced Semantic MediaWiki in 2006 [17] which has since then established a vital community, with more than 50 other extensions around SMW that build the SMW ecosystem⁴. SMW is an extension to MediaWiki, the software used for Wikipedia and many other projects. 1,684 out of 25,399 active sites listed on WikiApiary use SMW, which is around 5% [31]. SMW is not only a semantic wiki, but with the extension SemanticForms⁵ (see Figure 1) it can be extended to allow users to implicitly provide semantics by filling out data in particular fields of a form, as described for hybrid wikis [19].

Bearbeite Topografisches Objekt: Ringstraße

Figure 1. Users enter annotations by filling out a form.

The data entered in the forms can be used inside the wiki for lists, overview pages or query forms as well as outside of the wiki through several export formats, such as RDF⁶.

2.3 Open Government and OpenGLAM

In the current Open Government environment, wikis allow citizens to interact with the content or to contribute their own content. Mergel and Greeves [21] have identified three information-sharing situations in which wikis are typically used in the public sector: (a) within organizations, (b) across organizational units, and (c) with the public. The Vienna History Wiki covers all three approaches.

In the Open Government Implementation Model [18], the Vienna History Wiki can be seen as an initiative of the collaboration phase, where government institutions collaboratively work on a specific output with other civil sector institutions and private persons: the documentation of the History of Vienna. Rather than a bottom-up approach in which a community of historians sets up a wiki, the city administration as the authority responsible for documenting Viennese history has decided to choose an open and collaborative approach by implementing the wiki and inviting the community to join in.

Openness as the standard for the GLAM sector (Galleries, Libraries, Archives, and Museums) is the aim of OpenGLAM, an international grassroots movement originating from the Open Knowledge Foundation. The concept of GLAM has been consolidated via digital initiatives such as Europeana, the EU Commission’s joint portal to European digitized libraries, archives, and museums; The Digital Public Library of America, a US equivalent initiated by Harvard University; and GLAM-Wiki,

¹ <http://www.salzburg.com/wiki/>

² <http://wienwiki.wienerzeitung.at>

³ <http://www.grazwiki.at>, or an overview at <http://allmende.stadtwiki.info/wiki/Node:Portal>

⁴ <https://www.openhub.net/p/smw> and <http://www.semantic-mediawiki.org>

⁵ http://www.mediawiki.org/wiki/Extension:Semantic_Forms

⁶ <http://www.w3.org/RDF/>

which cooperates with cultural institutions worldwide to share digitized resources on Wikipedia [24].

3. THE VIENNA HISTORY WIKI

3.1 Project History: a Digital “Czeike”

The initial project idea was to implement an online version of the six-volume encyclopedia "Historisches Lexikon Wien" edited by Felix Czeike. It was published by Kremayr & Scheriau, Wien 1992–2004 in five volumes with an additional sixth volume for updated entries [5]. As with the swift and steep decline of the printed reference book [14] it did not seem feasible to update the encyclopedia and re-release a printed version, the decision was taken by the Vienna City Archive in agreement with Kremayr & Scheriau to digitize the encyclopedia and publish it online. The Vienna City Archive together with the Vienna City Library formed a project team that continuously expands outside of the city administration with aforementioned partners. Figure 2 shows an original entry in the Czeike encyclopedia about the famous “Ringstraße” (Vienna Ring Road).

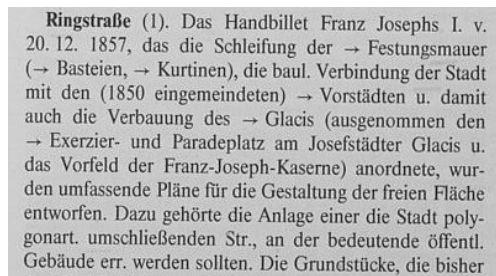


Figure 2. Original entry of “Ringstraße” in Czeike [5]

In May 2013 the wiki installation was ready for internal users of the city administration. After adding the digitalized articles to the wiki, the wiki content was expanded beyond the original encyclopedia’s 27,000 entries. At the official launch of the wiki on September 11th, 2014, the wiki was opened to the public not only for viewing, but also for editing. Every new contribution to the Wiki is checked by the editorial team formed by the project members [4]. Figure 3 shows the significantly expanded article of “Ringstraße” in the Vienna History Wiki.



Figure 3. “Ringstraße” in the Vienna History Wiki

More than six months after the launch, the wiki now holds more than 34,000 articles and 2,500 images edited by 363 users in 164,000 edits (around 4 edits per page, as there are around 41,000 total pages in the wiki) [28].

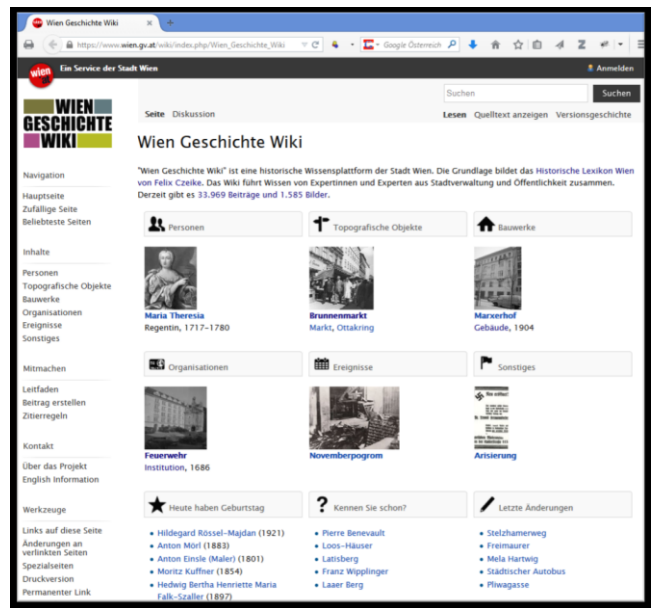


Figure 4. Main Page of the Vienna History Wiki

The main content categories of the wiki are persons, topographical objects (streets, parks, cemeteries, districts, waters, etc.), buildings (houses, churches, bridges, monuments, etc.), organizations (companies, institutions, associations, etc.), events, maps and other entries (such as special Viennese German language terms). The distribution of content elements is shown in Figure 5.

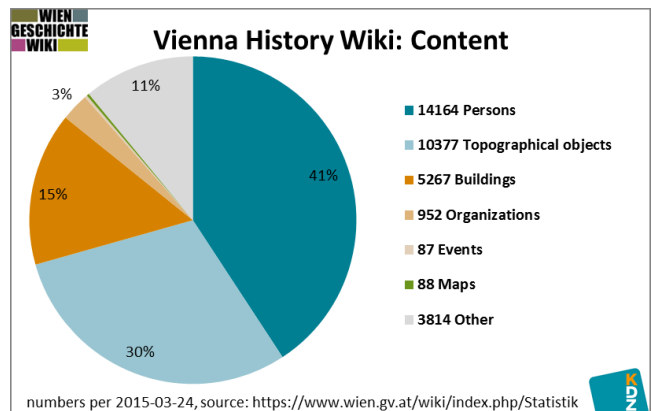


Figure 5. Content of the Vienna History Wiki

3.2 A special wiki project

The Vienna History Wiki makes use of MediaWiki, the software that is used for Wikipedia, with the same user interface (a slightly modified skin, based on the “Vector” skin used in Wikipedia). But several aspects make the Vienna History Wiki a special wiki. Hacken describes it as “large, free, scholarly, semantic, georeferenced, browsable and searchable, fun and enlightening, and Viennese” [10].

3.2.1 Differences to Wikipedia

In contrast to Wikipedia, which is governed by an editorial community with distributed authority [23], the quality of edits in the Vienna City Wiki is not determined by consensus of editors and administrators, but by approval by a relatively fixed editorial team. Similar to the German Wikipedia, edits are visible to editors

immediately, but to readers only after approval. Technically, it is implemented by using “Approved Revs”⁷ rather than the “Flagged Revs” extension that is used in German Wikipedia. [20] According to Hacken, this peer-reviewed editorial procedure makes it a “scholarly wiki” [10].⁸

In contrast to Wikipedia, which uses an open CC-BY-SA-3.0 license, the Vienna City Wiki does not grant any license on textual information and uses the rather restricted license CC BY-NC-ND 4.0 for images. Furthermore, it forces users to grant all licenses of uploaded or edited content “exclusively and worldwide” to the city of Vienna [27].

The restrictive approach has resulted in criticism (e. g. Graf [8]), but it should be noted that the aim of the Vienna History Wiki is not to be a Viennese version of Wikipedia, but as Hacken puts it: *“It stands as an example for the variety and utility a carefully curated knowledge platform for local history — void of politics or pundits or polemics of the day — can provide for local citizens and international scholars.”* [21]

3.2.2 Public Management Aspects

Hilgers and Ihl [12] argue that the concept of “Citizensourcing” is likely to unleash the energies of citizens to solve public tasks when network innovation practices are applied to public administration.

The Vienna History Wiki is not only a publication of the city of Vienna, rather it serves as a knowledge platform for administrative departments, changing the way public tasks are delivered: the Vienna City Library annually publishes a memorial day index (“Gedenktageindex”) on paper and CD-ROM that lists all historically relevant persons whose birth or death date have e.g. 100th, 150th, 200th... anniversary in the following year.



Figure 6. Memorial day index on paper for 2014

⁷ http://www.mediawiki.org/wiki/Extension:Approved_Revs

⁸ see also <http://www.scholarpedia.org>

It is planned for 2016 to give up on the printed publication, but provide the other departments of the city administration with a link to an online version on the Vienna History Wiki based on the information stored in the wiki. The data of the database that was used up to now has already been transferred to the wiki.

3.2.3 Semantic MediaWiki Technology

As mentioned above, SMW allows not only easier entry of data using online forms, but it also allows the querying of data and the re-use of search queries inside the wiki for automatically generated lists of query forms. This is extensively used in the Vienna History Wiki, as the following examples illustrate:

- Objects like streets or buildings can indicate a person they were named after (e.g. the street “Schubertring” was named after “Franz Schubert”). On the person pages, all objects are shown automatically that are named after this person, without the need for manually editing the list.⁹
- In a query form for topographical objects, users can select 13 different object types (e. g. district, circulation areas, cemeteries, parks) and the districts of Vienna and receive a list of objects that can be exported. A similar query form exists for buildings (5 types of buildings like houses, bridges, monuments).
- In a query form for buildings, values for an old numbering scheme for buildings used in the 17th and 18th century can be entered and the resulting buildings are displayed.
- Events and other time-related data can be displayed on interactive, movable timelines.
- The online version of the above-mentioned memorial day index is implemented using a query form, where the year of the planned memorial can be entered and a list of persons with memorial days is presented (see Figure 7).

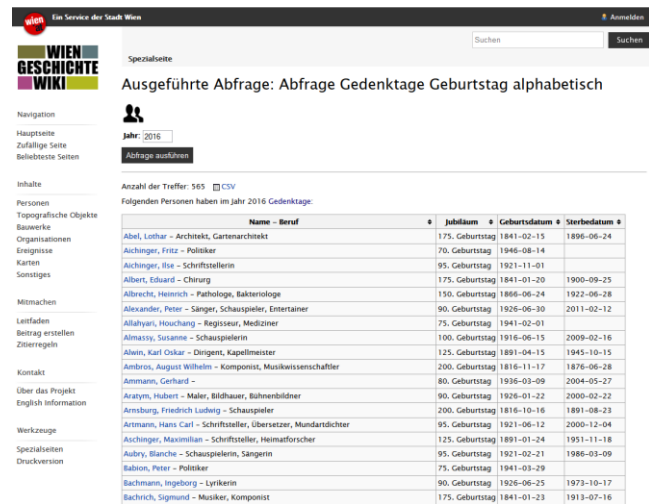


Figure 7. Memorial day index online for 2016¹⁰

⁹ See the page for Franz Schubert that currently lists 21 objects: https://www.wien.gv.at/wiki/index.php/Franz_Schubert#tab=Name_spatron

¹⁰ <https://www.wien.gv.at/wiki/index.php/Gedenktage>

4. METHODS

In order to gain more insight on the first six months after the official launch of the wiki, a mixed methods research strategy has been followed, combining usage log analysis and survey results.

4.1 Usage Log Analysis and Statistics

An analysis of web server log files is available on the Intranet of the Vienna City Administration. The analysis is based on a configuration of the log file analysis software Webalizer V. 2.23. As the numbers were collected on March 23rd, monthly numbers for March 2015 were extrapolated from daily averages.

4.2 Online Survey

An online survey was conducted, which was available to visitors of the Vienna History Wiki for a period of four weeks (February 26th to March 26th). In a site notice¹¹ on every wiki page, users were invited to take part in the short online survey. 242 users clicked on the survey, 215 completed it. The population of all users of the wiki that visited it during the online survey can only be estimated: 108,472 visits from 58,783 unique IP addresses which would result in a response rate ranging from 0.2 to 0.4 percent. As Harley and Henke (2007) [11] have pointed out, a comprehensive picture of users is not generally possible even when combining transaction log analysis and online surveys. Response rates of online surveys and therefore validity of web-based surveys have been discussed [9], [11] including different sources of error such as non-response. Hence, the online survey has to be considered biased. The data from the online survey is available at the Open Data portal of KDZ [15].

5. ANALYSIS

5.1 Usage Log Analysis and Statistics

The usage logs show a steady increase of visits per month from 53,000 in September 2014 to more than 100,000 in January 2015. With 3,874 visits per day in March it can be expected that more than 120,000 visits will be counted for March 2015 (see Figure 8).

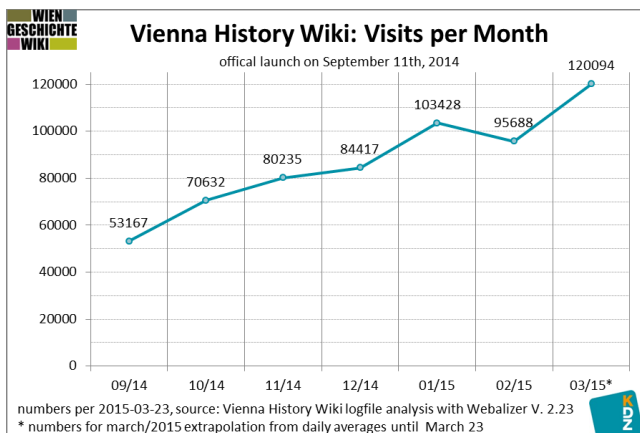


Figure 8. Visits per Month

The number of edits is continuously increasing as well, as statistics from WikiApiary show (see Figure 9) [31].

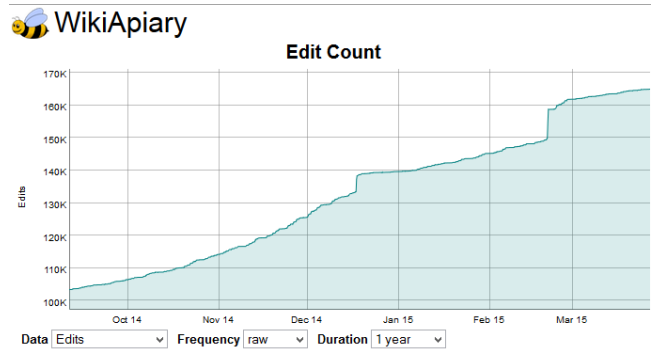


Figure 9. Edit Count

There are 363 users; 170 accounts (47%) have done at least one edit, 42 (12%) were active in the last 30 days, 21 from the Vienna city administration. 228 accounts (63%) are from external users, 128 (35%) from the city of Vienna. Figure 10 shows the different departments of the city administration that have user accounts. 36 users (10%) have administrative privileges, 33 are from the city of Vienna [28].

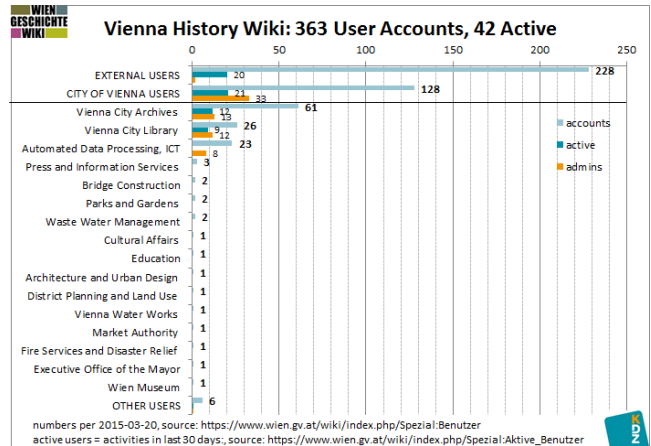


Figure 10. User Accounts

5.2 Online Survey

The demographics of survey participants (see Figure 11) show that respondents are rather old (16% between 65 and 74) and male (66%). As expected, 50% of respondents are first-time visitors.

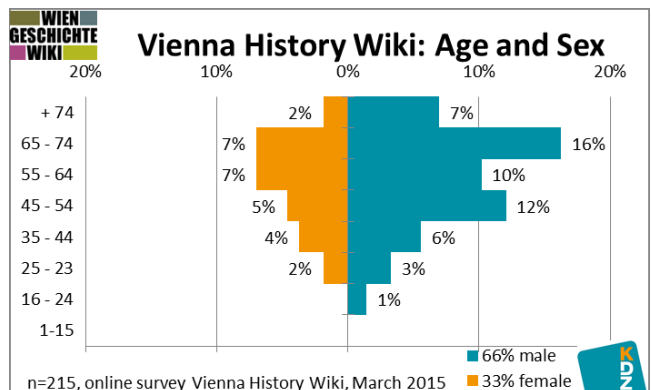


Figure 11. Demographics of Survey Participants

58% of respondents found the wiki by searching on the internet, only 1% by reference on a social network. 12% were pointed to

¹¹ A message that is displayed on all wiki pages, see <http://www.mediawiki.org/wiki/Manual:Interface/Sitenotice>

the wiki from a website of the city of Vienna¹² and 10% from newspaper articles (see Figure 12).



Figure 12. Visiting Sources

71% visited the wiki as private individuals, 13% as researchers/historians. Only 10% of all respondents have ever edited the wiki, the main reason being that they did not know this was possible (65%).

The agreement (“agree” and “tend to agree”) to general statements about the wiki regarding quality (80%) and speed (71%) are quite positive. 30% think that Wikipedia is better, while 47% disagree or tend to disagree. 91% of the respondents will visit the wiki again (see Figure 13).

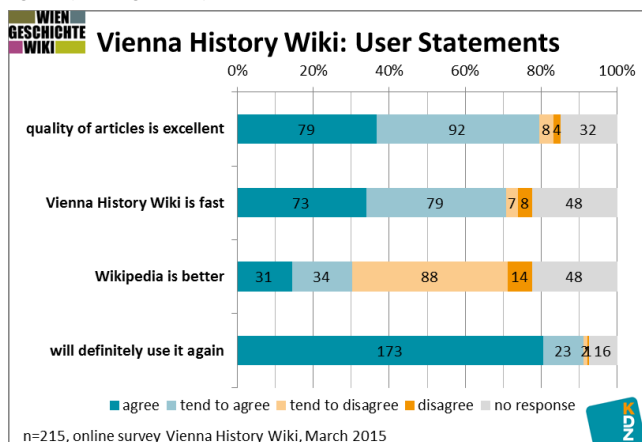


Figure 13. General User Statements

6. CONCLUSION AND FUTURE WORK

The Vienna History Wiki is a successful collaboration effort of the city administration with several external institutions and the general public. After six months of operation, an analysis produced some first insights. Hence, the following recommendations can be derived:

Social networks. Only 1% of the users found the wiki by reference on a social network. The city administration should include communication about the wiki and its content in social networks to attract a younger audience. This can be done either through existing channels, such as *Wien.at*, *Smart City Wien* or

wien.info on Facebook or *Rathauskorrespondenz* or *Smart City Wien* on Twitter¹³. Additionally, setting up specialized social media channels for the Vienna History Wiki might be an interesting option, taking into consideration the success of projects like Vintage Vienna [13].

Awareness of editors. For the vast majority of users, it was not obvious that they can participate in editing the wiki. Therefore it is recommended to improve communication, e. g. by using a site notice asking for participation. As attracting more editors might not automatically lead to improved article quality and can result in increased coordination effort, a more open approach to governance of the wiki should be considered [16].

Open license. The restrictive license model chosen is not a barrier for current users, but it contradicts the Open Government initiative of the City of Vienna [3]. It should be possible to use and re-use content provided by voluntary users (along with the existing content) more freely, thus contributing to the OpenGLAM initiative. As Dobusch puts it “Free of economic and governmental constraints, cooperation in a digital community is based on rules chosen by the members themselves, voluntary collaboration and ongoing open access to jointly-created works.” [6]

Conduct research. Many aspects of the Vienna History Wiki are rather unique and existing research of wikis might not be applicable without extra consideration as it is mostly focused on Wikipedia. Therefore, further research should be applied in order to provide insights into how to proceed successfully.

7. ACKNOWLEDGMENTS

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¹² A link to the wiki is prominently placed on the homepage of the city at www.wien.gv.at.

¹³ see <https://www.facebook.com/wien.at>, <https://www.facebook.com/SmartCityWien>, <https://www.facebook.com/WienTourismus>, https://twitter.com/rk_wien_at, <https://twitter.com/smartcitywien>

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