Too Many Varied User Requirements for Digital Humanities Projects

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Introduction

The development of tools plays an important role in the Digital Humanities. With the increasing quantities of digitised as well as born-digital source material, computational tools have become available for exploring, analysing and enriching this material. While many tools have been and are being developed, adoption by the target-audience, i.e. humanities scholars, does not always reach its potential (Warwick, Terras, Huntington, & Pappa, 2007). In order to create tools that will be adopted by scholars, development should take into account the practices and conventions adhered to in subdisciplines of the humanities (Kemman, Scagliola, de Jong, & Ordelman, 2014). Collaboration between scholars and computer scientists/technology specialists is therefore a vital aspect of Digital Humanities research and development. This approach of focusing on the users, actively involving them during development and evaluating designs is known as *user-centred (systems) design* (Gulliksen et al., 2003). One of the tasks of this approach is to uncover the needs and wishes of the user group, commonly referred to as *user requirements*. Asking users for their requirements leads to a multitude of ideas; some of these are relevant, while others are out-of-scope of the project. However, the assumed ability of targeted users to voice their needs and wishes is met with scepticism in literature. Users supposedly don't know what they want, and cannot predict their own future behaviour (Nielsen, 2001). Moreover, innovation is said to be driven by focusing on new technology, even though people don't yet need such technology, nor have a clear use case for it (Norman, 2010). Therefore, our research question is: *do humanities scholars know what they want from computational tools?*

This paper will address this question by discussing the user requirements elicitation of two Digital Humanities projects, PoliMedia and Oral History Today and investigates which requirements can be considered out-of-scope given the aim of both projects.

This paper is structured as follows: first, we will introduce the research projects and their scopes. Second, we will explain how users were involved in these projects to voice their needs and wishes. Third, we will review the user requirements that were collected and how these were determined to be relevant or out-of-scope. Finally, we will discuss what we learned from the user requirements that were out-of-scope, and how we addressed the lessons learned in a third Digital Humanities project, Talk of Europe.

1. User requirements for PoliMedia and Oral History Today

The PoliMedia project[1] aimed to facilitate large-scale cross-media analysis of the coverage of political debates (Kleppe et al., 2014). Investigating how political debates are covered in the media required scholars to explore three distinct collections: 1) the Dutch Hansard, 2) Dutch newspapers and 3) Dutch radio bulletins. Additionally, a fourth dataset of interest is the Dutch television broadcasts, but due to a lack of links found between the proceedings and television broadcasts, this dataset was dropped. Although much has improved already with the digitization of the three sources, each collection still required scholars to learn and use three different user interfaces. To better facilitate this process, PoliMedia provides a search user interface where scholars can explore the Dutch Hansard with integrated links to media coverage, see figures 1 and 2.
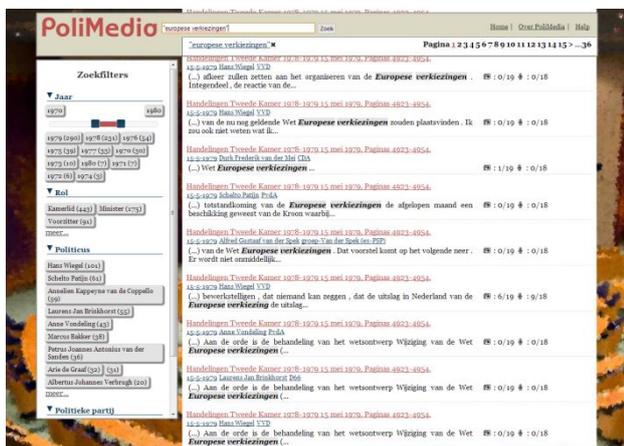

Figure 1: PoliMedia search results page

Figure 2: PoliMedia debate page with links to media items

(on the right)

[1] http://www.polimedia.nl

For each speech in the Dutch parliament, information was extracted to represent the speech; the speaker, the date, important terms (i.e. named entities) from its content and important terms from the description of the debate wherein this speech is held. This information was then used to query the archives of the newspapers and radio bulletins, and links were created to items that correspond to the query (Juric, Hollink, & Houben, 2013). The debates and links were then represented as RDF, a Semantic Web standard (Juric, Hollink, & Houben, 2012). The scope of the project could thus be described as follows: automatically creating links between debates of the Dutch parliament to media items, made available in a search user interface in which debates of the Dutch parliament can be explored.

The Oral History Today project[2] aimed at facilitating exploration and searching of aggregated, heterogeneous oral history content (Kemman et al., 2014). Discovering interesting oral history interviews is a difficult task, as many small collections are available at many different locations: sometimes digitized, sometimes annotated by archivists, and sometimes available through an online portal. To better facilitate this process, Oral History Today provides a search user interface where scholars can search through a multitude of oral history collections, enabling scholars to discover interviews across several collections, see figure 3. The collections were aggregated and are hosted by DANS[3], where the collections were annotated to fit the archive's schema. The metadata was then indexed and made searchable through a search user interface with a focus on usability; the search system was designed to be like 'a Google for oral history interviews'. The scope of the project could thus be described as follows: a search user interface similar to Google in which oral history interviews and collections can be searched and explored to discover topics across a multitude of collections.
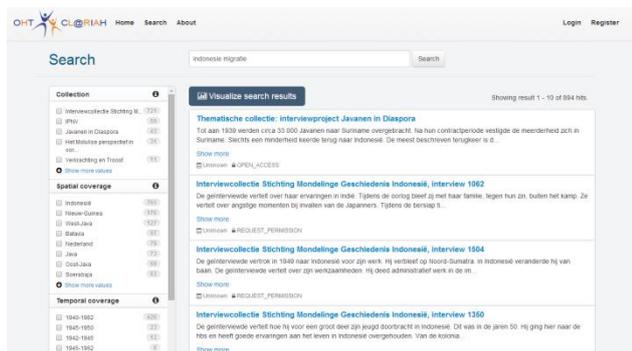

Figure 3: Oral History Today search results page

2.   Methods

In the PoliMedia project, five scholars were interviewed face-to-face regarding their research questions, methods

and requirements for a portal for cross-media analyses. One interview was with two scholars simultaneously, and is treated as a single interviewee, thus leading to four interviewees in our data. After the interviews, all statements were categorized into user requirements, where similar requirements were combined. After developing the user interface, 24 scholars evaluated the usability of the portal, with additional eye tracking to investigate which interface elements received the most attention (Kemman, Kleppe, & Maarseveen, 2013). Feedback voiced during this evaluation led to an improved final version of the search interface.

In the Oral History Today project, fifteen scholars were interviewed via Skype regarding their research questions, methods and requirements for a federated search engine for oral history collections. A very rudimentary search user interface was already available on which the scholars could provide feedback. All statements were categorized into user requirements, where similar requirements were combined. After each incremental update of the search interface, five scholars were interviewed via Skype to explore the collections, try search questions of their own interest and provide feedback. The results of these evaluations were then considered for the next update; a process we repeated a second time leading to the final version of the search interface.

3.   Results[4]

Here we report the results of the initial interviews for user requirements elicitation. The interviews for PoliMedia led to 39 user requirements. A total of 21 requirements were deemed within-scope of the project, and were related to functionality such as gaining insight into contextual information, the frequency of terms, search operators, and analysis of the debates. 18 requirements were deemed out-of-scope. These requirements were related to automatic analysis of media items, such as image processing of newspaper pages (e.g. size of headers, number of columns, presence of photographs), audio-visual processing of television programmes (length of talk, presence of music, use of filming techniques) and automatic analysis of debates such as sentiment analysis and interruption-networks. Moreover, 27 requirements were unique, i.e. voiced by a single interviewee. The most common requirements were the inclusion of media output from *before* the debate, names of people involved and location in the newspaper, each mentioned by three interviewees. The first two were deemed within-scope, while the third was deemed out-of-scope due to required image processing.

The interviews for Oral History Today led to 75 user requirements. A total of 33 user requirements were deemed within-scope of the project, and were related to more instructions and clearer details of functionality,

more advanced searching through filters, and bookmarking search results. 42 user requirements were deemed out-of-scope. These requirements were mainly related to additional metadata on the interviewee, interviewer and contents of the interview (which were simply unavailable to us), and features of the search technology such as search operators, synonyms and other more complex queries. Moreover, 34 user requirements were unique, i.e. voiced by a single interviewee. The most common requirement was a filter for time period, voiced by ten interviewees, and was deemed within-scope.

4. Discussion

What can we learn from the elicited user requirements? To some extent, our results agree with the criticisms of asking users about their requirements (Nielsen, 2001; Norman, 2010): in the case of PoliMedia only three uniquely voiced user requirements[5], out of 39, were related to the technological goal of the project of linking debates and media items and publishing these as RDF. Yet on the other hand, the user requirements appear to show that our users, the humanities scholars, are very aware of what they want. In PoliMedia many user requirements reflect the research methods of the interviewed scholars, who would like their heuristic process simplified, i.e. the discovery of primary and secondary sources for investigation. Automatic analysis was perceived as helpful for this process, to easily discover e.g. debate sentiments, framing of topics by media, and topic importance. In Oral History Today, the requirements reflect the fine-grained control oral historians require during their heuristic process: being able to find interviews related to a specific place, time and event. Additionally, insight into the background of both the interviewee and interviewer is desired to properly understand the interview.

The out-of-scope user requirements can inform us whether the scope of the project is appropriate according to the target users. In the case of Oral History Today, the idea of a simple Google-like search box that leads to many search results ranked by relevance did not appear to match the fine-grained, database-like searching of the participating oral historians. Interviewees explained they could not trust the search ranking in a way to be confident search results further down the list would not have to be looked into.

Finally, in both projects, many user requirements we found were unique. This also demonstrates how the user requirements reflect the expectations of scholars; as each interviewee had different research questions, each had different datasets and methods that require different tools for analysis.

5. Conclusion

Do humanities scholars know what they want from computational tools? In our investigation of user requirements for two Digital Humanities projects, we found scholars have a clear idea how they perform their research, and how tools could simplify some steps in the process of discovering and analysing sources. On the other hand, we hardly saw scholars immediately adopt the full potential of the projects' goals: i.e. semantic web possibilities in the case of PoliMedia, and simple Google-like searching in the case of Oral History Today. Whether this means that scholars are unaware of how such facilities might help them, or whether scholars are aware that such goals do not match with their method, remains an open question.

Moreover, we learned that these requirements can be very different between scholars. Different research questions lead to different methods, which is reflected in different requirements from computational tools.

This outcome raises the question to what extent it is wise to create one-size-fits-all portals as we have done for PoliMedia and Oral History Today. Instead, we might publish the dataset itself and invite scholars to collaborate for the development of tools specific to their research questions. As a first step to this, the PoliMedia project published all RDF data and made these available online through a SPARQL-endpoint.[6] However, in the follow-up project Talk of Europe,[7] we aim to take this a step further. We will publish the proceedings of the European Parliament as RDF online, enriched with contextual information of the speakers. Instead of creating links to other collections or developing a portal for exploration ourselves, we organize three *creative camps*. For these meetings, researchers and developers from across Europe are invited to collaborate and develop links and tools that they find useful for their own particular research. The goal then is that the dataset of the proceedings of the European Parliament is used in ways we could not have thought of ourselves, and which would have been unable to be implemented within the scope we would have set for our development.

In short, the Talk of Europe project designs its data to be *repurposable*. As such, the task of this Digital Humanities research project is broadened. Not only is the development of a tool that may or may not fulfil the user requirements of importance, but creating data and technology that can be repurposed to allow scholars to satisfy their own requirements.

6. Acknowledgements

7. References

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[5] See PoliMedia user requirements 4, 5, and 6 of in the data

[6] http://data.polimedia.nl

[7] http://www.talkofeurope.eu

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