EFFICIENT COMMUNITY MANAGEMENT IN AN INDUSTRIAL DESIGN ENGINEERING WIKI
Distributed Leadership

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Abstract: Industrial design engineers use a wide variety of research fields when making decisions that will eventually have significant impact on their designs. Obviously, designers cannot master every field, so they are therefore often looking for a simple set of rules of thumb on a particular subject. For this reason a wiki has been set up: www.wikid.eu. Whilst Wikipedia already offers a lot of this information, there is a distinct difference between WikID and Wikipedia; Wikipedia aims to be an encyclopaedia, and therefore tries to be as complete as possible. WikID aims to be a design tool. It offers information in a compact manner tailored to its user group, being the Industrial Designers. The main subjects of this paper are the research on how to create an efficient structure for the community of WikID and the creation of a tool for managing the community. With the new functionality for managing group memberships and viewing information on users, it will be easier to maintain the community. This will also help in creating a better community which will be more inviting to participate in, provided that the assumptions made in this area hold true.

1 INTRODUCTION

Industrial design engineers are constantly searching for information. Usually these designers turn to technical literature or special websites provided by developers or suppliers and more and more Wikipe dia is used. When using books, they are often con-fronted with a recurring problem: the information found in technical literature (or many websites for that matter) is often too detailed and sometimes out dated. Industrial design engineers use a wide variety of research fields when making decisions that will eventually have significant impact on their designs. Obviously, designers cannot master every field, so they are therefore often looking for a simple set of rules of thumb on a particular subject (Chowdhury, 2001), (Vroom et al., 2004). For this need C-DET (acronym for Conceptual Design Engineering Toolbox), an information database, has been set up to accommodate the vast amount of information an industrial design engineer might need, and aims to do this in a way to help designers find information more easily (Vroom, 2003). To enable quick navi-gation an appropriate entrance structure in C-DET is required. After several studies for determining the

knowledge structure for C-DET (Vroom et al., 2005 & 2006a), we decided to include at least the following entrance categories to the database:

- Design Process Phases for including: Design theories, techniques and Design tools
- Design aspects (such as Ergonomics, Materials, Aesthetics, etc.),
- Product domains (Children, Medical, etc.)

Besides these categories, C-DET includes a search function using keywords (search engine). Three prototypes for C-DET were built, tested and evaluated. These evaluations have shown that a few major issues remained. The main issue was the labour consuming nature of collecting, selecting, structuring and updating the knowledge for the database. Several studies have been carried out addressing a variety of solution directions for this contents issue. Amongst these were the use of so-called start-pages (Vroom et al., 2006b), and the use of tools such as web robots, agents and spiders (Legerstee et al., 2004).

In 2006 the decision was made to use wiki-software for building and maintaining the database so that the users themselves could select and

maintain the contents of the design knowledge base (Zinkstok et al., 2007). A prototype of C-DETwiki has been built using MediaWiki software. After evaluating and testing the prototype a number of research questions arose including: 1) What is the most convenient lay-out for the materials section 2) Other wiki projects show that approximately 1 to 2 percent of the users contribute to the wiki (Usemod, 2007) and therefore a main issue is how to reach a critical mass for the viability.

For studying these issues, we used a question naire amongst 70 respondents. The results of this questionnaire gave us a clear idea of the elements that need to be implemented in a template. Further more we found that our targeted user group is willing to use a Wiki based Database, and has limited fears of finding faulty information.

The results of these studies are implemented in C-DETwiki. And because a wiki can only be a real wiki when users are able to access and edit the contents, the wiki is put online: www.wikid.eu. For the online version the name WikID (a portmanteau of wiki and industrial design) is used.
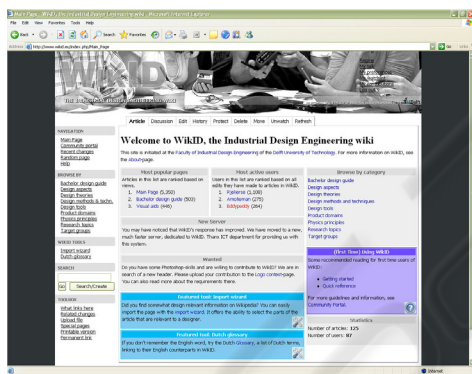

Figure 1: The main page of the industrial design engineering wiki: WikID.

WikID is an Industrial Design Engineering Wiki that aims to offer information in a compact manner, especially targeted at industrial designers. Whilst Wikipedia already offers a lot of this information, there is a distinct difference between WikID and Wikipedia; Wikipedia aims to be an encyclopaedia, and therefore tries to be as complete as possible. WikID aims to be a design tool. It offers information in a compact manner tailored to its user group, being the Industrial Designers.

2 PROBLEM AREA

When creating an industrial design engineering wiki, certain problems arise; such as how to reach a large enough user base or how to manage the community once it has been established, although it will also need managing during the process of establishing a community. A problem indicated by the results of a recent questionnaire states that people are somewhat conservative in trusting information found on a wiki (Jelierse et al., 2008), so it will be necessary to establish a base of trust to the visitors of such a wiki, in our case WikID, which is something that should be looked into as well.

Also, since MediaWiki - the software used for Wikipedia (amongst others) and WikID (after a selective study) - is not by default equipped to easily manage a user base, it will be necessary to create a new tool for managing users and their rights. Along with said tool, an efficient structure for defining groups needs to be established. It is also necessary to determine how the different rights within WikID should be distributed amongst the groups.

Along the course of this paper, several assumptions will be made, which will have to be reviewed in a later stage. That, however, goes beyond the scope of this paper.

The main subjects of this paper are the research on how to create an efficient structure for the community of WikID and the search for – or the creation of – a tool for managing the community.

3 METHOD

For this research, a search has been conducted for articles already published on this subject, and some related areas. Most conclusions and assumptions will be made in comparison to Wikipedia and its sister projects within Wikimedia, since this family of wikis is the most successful. Because of its success, its policies and structures have been tested extensively and a lot a research on that subject is available. What also has a factor in the relevance of the Wikimedia software is that WikID uses the same wiki-software: MediaWiki.

Alongside the research on creating an efficient structure for the WikID community, the options for a tool for managing user rights were evaluated, by searching for already existing extensions for MediaWiki and investigating into creating custom options, which will then be tested and evaluated by a small group of users (known as the Pioneer Group on WikID).

4 USER RIGHTS IN WIKIPEDIA

All visitors of Wikipedia are considered to be potential contributors to the encyclopaedia; therefore the threshold to edit an article has been kept low. Even anonymous users are able to edit articles, only registering their IP-address as the author's name. Because everyone is able to edit articles, provided they are not locked by the administrators, and some subjects inhibit a certain amount of controversy, people can become active in so-called edit wars (Kittur et al., 2007). Mostly these edit wars are simply resolved through discussion and mediation from the community itself; should the dispute be irresolvable by the community, it can be put through arbitration with a special board appointed for such cases. Their ruling is binding. (Kriplean et al., 2007)

Whereas all users can edit and reverse each other's edits, it may be necessary to remove multiple edits by a user at once, or even block a user due to multiple attempts of abuse. For this reason, a group of administrators, known as sysops in default Media Wiki installations, has been created. Among other technical abilities, administrators can protect and delete pages, block other editors, and undo these actions as well (Wikipedia contributors, 2008). Some rights can also be granted individually, such as the right to rollback several edits by the same user (rollbacker) or the right to view and remove revisions of an article (oversight).
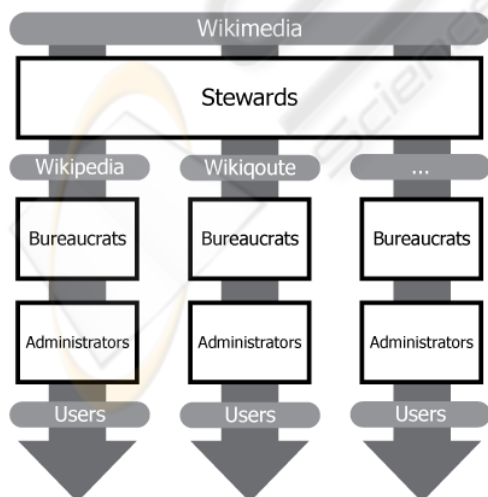
5 GROUP STRUCTURE IN WIKIPEDIA

Figure 2: Schematic representation of hierarchy in Wikimedia-projects.

During the years, as Wikipedia evolved and spawned various sister-projects, the way rights were granted has changed as well (Butler et al., 2008). Currently a number of user levels exist within the Wikimedia-projects: Stewards have the ability to grant and also remove bureaucrat, oversight, check user and several other rights to users after their application has been approved. They also function as bureaucrat within the Wikimedia-projects where no bureaucrats have been appointed. Bureaucrats have the ability to grant but not remove sysop-rights to users that had their application approved. They can also mark accounts as bots or rename accounts. Administrators those that have been granted the sysop-right are the users that moderate the workings of the project that they were appointed on. They should not be seen as different from regular users, they merely have more technical abilities to maintain a functional wiki (Wales, 2003). Next to these main groups within the hierarchy, a few small groups exist, which are used to grant only a single right to a user. For example, the right to view all known IP-addresses used by a certain user of Wikimedia. These rights are bound to very strict policy and are only granted after a thorough review by the stewards. (Reagle et al., 2007), (Roth et al., 2007).

6 USER RIGHTS IN WikID

Whereas Wikipedia depends on the users to correct almost all of the erroneous input by other users, it is assumed that in WikID certain groups of users may prefer to have extra rights in securing their contributions, as some of them may have obligations against the editing of their writings by users with less experience with or knowledge about the subject. This assumption was formulated after orientating talks with a number of potential users of WikID, who would like to use certain sections in the wiki to refer to in their own tools, and stated their fear that some relevant information might be deleted by edits from others. Since we are looking towards having contributors from the academic field, we want to make sure that they find it worthy to invest their time into writing and updating articles, something that could be improved by offering this ability. This should also help in getting the other visitors of WikID to trust the content of an article; in a questionnaire conducted for a previous research subject, several respondents indicated that they were afraid to find unreliable information in a wiki (Jelierse et al., 2008). However, no matter how well protected the wiki content may be, no guarantees can ever be given on the correctness of any given article.

7 WikID'S GROUP STRUCTURE

In WikID, the group structure will have some similarity with the hierarchy of Wikipedia, but there will also be some major differences.
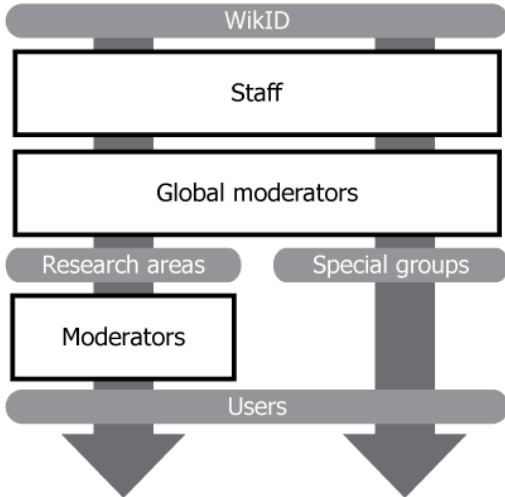

Figure 3: Schematic representation of proposed hierarchy in WikID.

7.1 Staff

The staff is the group that will incorporate some of the functions of bureaucrats in Wikipedia, as well as the stewards of the Wikimedia-projects. They will guide the project, especially during the first period, in which WikID will be growing. As WikID grows on, it will become harder to control for the staff, creating the need for a group of global moderators, allowing the staff to operate more in the background. In the beginning the staff will establish most of the policies, which will later become something that will be directed by the community as a whole; however, the final saying over these matters lies by the staff. When it comes to distributing rights, they will be the only group with full authority over WikID, like the stewards on Wikipedia.

7.2 Global Moderators

This group should be consisting of at least one highly regarded member of each research area, and, as WikID grows and the group needs to expand. The global moderators are somewhat similar to the administrators of Wikipedia in some ways. They have the authority to intervene in serious disputes and mediate between the parties in the dispute, but they will also function as the arbitration committee. Unlike the role of administrators in Wikipedia, the

global moderators should not be viewed as normal users with more advanced technical abilities. They are an authoritative group created to uphold the policies as established by the community. They are also involved in managing group memberships. It is their task to monitor the members of the research area groups and ascertain that they are acting according to policy, not abusing their given rights. If the situation requires it, they will be able to remove misbehaving users from the specific research group.

7.3 Special Groups

These groups will serve a motivational measure in WikID, appealing to users for the status that comes along with membership to a group in this category. Work on wikis is voluntary, and this is a way of rewarding people that have put a lot of effort in WikID. For example, before WikID was announced to the public, a group of pioneers was established, which would help fill the wiki with content. In order to honour their contribution, a special group was created for them, which, so it was assumed, would motivate them to contribute. As WikID will eventually grow, this would still be a way for the members of the group to attain a special status within the community, commemorating their contributions to bring the wiki to where it is. Other reasons for creating such a group may also come along. Membership of these groups, however, does not give the user extra rights in WikID, they function merely as a reward.

7.4 Groups for Research Areas

Groups will be created based on industrial design engineering specific areas, such as ergonomics, mechanics and production. The members of these groups should have a certain authority based on their position within their area of research. In the first stages of WikID, they will be appointed by the staff, but eventually these groups will become self-sustaining, with the ability for the members of the group to grant membership to other users as well. Members of these groups will have the role of moderator within their respective area of expertise, as they are considered experts in their field and will therefore be able to correct erroneous content more easily than a standard user. For this to function correctly, they will receive the rights for protecting pages and performing rollbacks. They will not be able to remove users from their group, an option that only staff and global moderators have.

8 MANAGING USER RIGHTS

For efficiently managing the rights of all users in WikID, an interface is required that is easy to use and understand by an average user. It would also be useful to directly view which users have registered recently. The default tools supplied by MediaWiki, Special:Listusers and Special:Userrights, do not suffice. They are not user friendly and require too much effort for doing something as simple as changing the group membership of a user (see Figure 4). Also, the default list of users in MediaWiki does not show anything about when the user has registered.
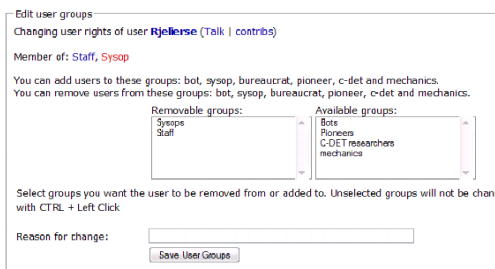

Figure 4: The interface for modifying group memberships in MediaWiki 1.12.0 with Special:Userrights.

When looking through the extensions on the MediaWiki-website, no existing solutions were found to resolve the encountered problems with the default situation. Therefore, it was decided to write a custom extension for WikID. This new extension should have at least the following features: 1) It should have a more intuitive system for settings group memberships. 2) It should present the community as a list of users with multiple options for sorting and filtering. 3) It should have the possibility of adding multiple users to a group at once.

Work was started on writing the extension, first by browsing through the manual, the API-reference and, later, the source of MediaWiki. During review of the source, it was discovered that even the authors of MediaWiki themselves were not particularly happy with the current user rights page: @*todo Use checkboxes or something, this list thing is incomprehensible to normal human beings, (MediaWiki Source, 2008)*

The main entry point in the draft of the new extension Special:Advanced-Userrights had become a sortable list of users, with a pager for improved manageability when having a large community. Features already include more intuitive group membership management (see Figure 5) and the ability to view extra information about a user.

Also, to increase the usability of the extension, a patch had been written for the Skin-Template-class, adding a hook to the build-NavUrls-function, allowing for the modification of the array containing the navigation URLs. This was then used to add extra toolbox items in the User-namespace to link to the user information and group membership pages, providing anyone with the necessary rights a direct link to the newly created functionality of the extension.

During the first few weeks the new tools have been available to the WikID staff it has already proven itself worthy in the process of building the community. The new list interface provides the ability to quickly see whether new users have registered with WikID, allowing the staff to monitor the growth of the community as well as checking the validity of the newly created accounts.
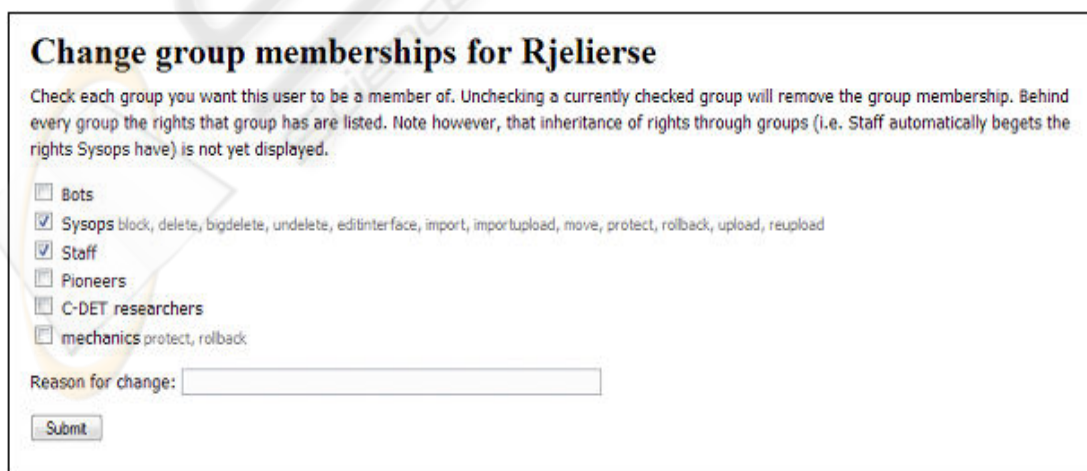

Figure 5: Interface for modifying group membership in MediaWiki 1.12.0, Special:AdvancedUserrights.

9   DISCUSSION

Several assumptions have been made during the research on this subject, most of which have yet to be tested. For example, misuse of the protect-right could lead to stagnation in the use of WikID and should be carefully monitored. Actions to be taken accordingly can be either diminishing the amount of users with access to the right or better instruction on when to use it for the users that have the right.

Also, users should be made aware of the fact that they can request groups for a certain research area, if it does not yet exist. The process of joining an existing group could also be more concrete.

During the writing of this paper, version 1.13.0 of MediaWiki was being developed. Upon reviewing the changes to the software, it was discovered that the user rights management system had been over hauled (MediaWiki source, trunk, 2008), and that the system as implemented by MediaWiki somewhat resembles the system as implemented by the newly written extension.

10   CONCLUSIONS

Through the creation of a clear hierarchical structure for WikID, several issues concerning the quality of the content as well as the ability to modify the content will, at least partially, have been resolved. With the new functionality for managing group memberships and viewing information on users, it will be easier to maintain the community. This will help in creating a better community which will be more inviting to participate in, provided that the assumptions made in this area hold true.

For the correct functioning of the system, several policies on the usage of certain rights will have to be drafted. For examples on what they might look like, Wikipedia can serve as an interesting example, as their policies seem to work quite well.

Also of importance to the correct functioning of the system is the way users with extended rights behave towards each other and regular users. Especially in the early stages of WikID it will be of utmost importance that every event of abuse will result in action taken by the staff.

The functionality of the created extension can also be expanded further; several demands have not yet been met. Conjoined with the work on this, it will also be interesting to see how MediaWiki can be extended to have moderators that can only operate on certain sections of WikID instead of the current situation where every moderator is allowed to exercise their rights site-wide.

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