Collaborative Moderation — Fostering Creativity with a Corporate Wiki

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Abstract. Voluntary participation in a corporate Wiki can be low due to personal priority preference. But high participation of professionals is necessary to enable group innovation through a Wiki. We present a tool that offers rewards to committed users, and triggers a sportive competition that fosters the creativity process through knowledge exchange.

1 Introduction

Creativity is the human's ability to solve problems in a way that is initially novel but ultimately acceptable in a culture. Finding such solutions often depends on the collaboration of multiple individuals. Modern means of communication open up opportunities for entirely new ways of computer supported collaboration in creativity processes. Creativity processes are characterized by different dimensions like synchronous vs. asynchronous communication, long vs. short term, or planned vs. ad-hoc processes. De Bono's "Six Thinking Hats" method [1] is a typical example of a synchronous, short duration, face-to-face and planned creativity process. Recent achievements in information technology such as video conferencing support such creativity processes or even enable all new ones.

This paper investigates on employing a Wiki as a creativity process that is typically asynchronous, long term, remote, and ad-hoc. In 1995, Ward Cunningham invented the Wiki principle [2] aiming at replacing static web pages with dynamic ones that can be edited online. A Wiki supports the free exchange of ideas in a group of people that are spatially distributed. All they need is Internet access. As the largest and most popular Wiki, Wikipedia represents a success story and covers more than 2.7 million English articles written by over 285,000 users[1]. Wikipedia interlinks the knowledge of many different people, and thus, combines own knowledge and views with those of others.

Fig. 1. A simple Wiki review form

However, a Wiki is not geared towards solving a specific problem, since the writers cannot anticipate what results they will finally obtain. All participants share their knowledge voluntarily and in their spare time (see Section 2). A Wiki requires a moderation process, in order to channel the contributions and ideas

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[1] http://stats.wikimedia.org/DE/TablesRecentTrends.htm January, 20th 2007

into a certain direction, and thus, become a support mechanism for creativity. Moderation also helps to reduce destructive conflicts among engaged individuals, prevents the discussion from getting polluted with superfluous information, and ensures a fair distribution of attention. Numerous social rating tools exist for Wikis (e.g. MediaWiki *Review*[2] extension, see figure 1) but the feedback is confined to an article and does not touch the authors; going beyond this border is hence necessary for moderation.

This paper presents an approach towards collaborative moderation in a corporate Wiki that enables a group of professionals to collaboratively drive the creativity process (see Section 3). Instead of an external moderator prescribing the discussion of certain topics, the group moderates and manages itself. The impressions and comments of the group are fed back into a rating system that takes over moderation and thereby gears the Wiki's evolvement towards the right direction (see Section 4). The paper describes the initial phase of a study of a long-term creativity process supported by a collaboratively moderated Wiki.

2 Participation and Moderation in a Wiki Process

Thousands of people worldwide use Wikipedia; willing to share their knowledge and manpower for free or for the reputation of participating creatively and actively in such a huge project - a world wide online encyclopedia. In contrast, the users of a corporate Wiki represent a small working group consisting of employees. If the Wiki principle should work for a company information system then active contribution of every workgroup member is required.

Conducting an inquiry and observing long-term usage of our department corporate Wiki revealed interesting findings. The Wiki's content does not display much variety of topics, articles have a short length and their number is quite small. Much content should be upgraded or extended so that the meaning of the current subject becomes clearer. Readers, who are not familiar with the subject, are unable to quickly understand such articles and extract valuable information from them. Furthermore, there are obsolete articles that have not been updated for a long time, and therefore represent inappropriate or outdated knowledge.

Members of the workgroup use the Wiki very little, and thus, new entries are written infrequently and only few extensions to existing articles are made. Due to heavy workload and an unknowable benefit from investing one's own time in sharing knowledge, people typically put a lower priority on working with the Wiki. They experience few individual benefits or rewards for themselves as individuals compared to the effort and time they invest, which results in decreased motivation. When analysing the inquiry, we identified five key requirements:

- a *continuous participation* in extending the Wiki content must be achieved to change the users' attitude from consumption towards contribution,
- an *increased amount of topics* in the Wiki is necessary to extend the information not only quantitatively but also thematically,

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[2] http://www.mediawiki.org/wiki/Extension:Review

- an *increased motivation* of the participating users is necessary to take the initiative of extending the Wiki content by themselves,
- an *improved article quality* is required to allow for more effective and more efficient knowledge transfer between participants, and
- an *increased knowledge exchange* is needed to direct and guide creativity within the group.

We think that lacking moderation in a corporate Wiki leads to insufficient communication, collaboration and cooperation between the team members. A certain organization body which controls the working process and encourages the writers would increase efficiency and the quality of results. The following chapter describes how a collaboratively moderated corporate Wiki addresses the enumerated requirements and unleashes the creativity of the working group.

3 Utilizing Community Feedback for Wiki Moderation

An important issue in the companies is how to motivate personnel to high performance. Basically, the workforce can be motivated through the promotion of inner satisfaction with the own work and identification with joint norms; or through external rewards, punishment or force [3]. However, it is practically impossible to directly influence the intrinsic motivation of humans. It is only possible to try to motivate humans with the aid of external factors, and to awaken their interest for the activity itself or its subject. Yet enforcing a certain kind of behavior would require issuing instructions by superiors. This would be contradicting to the idea of self-organizing groups and self-reliant creativity.

There are two methods to motivate the employees extrinsically namely by rewards and punishments, which are based on negative or positive stimulus valence. Better results are achieved with rewards because the personnel gets the impression that it earns something for its efforts [4]. Punishments are inherently unpleasant and easily become a dead end for motivation.

Our concept is to reward individuals who provide the community with interesting, valuable and high quality contributions. In a Web 2.0 fashion the consumers of information review the quality of the articles they read and feed this information back into an information system. The information system then accumulates the different opinions and thereby democratically determines the *quality* of an article. This kind of interaction is quite common in the various Web 2.0 applications. We take the concept one step further, and not only determine the quality of articles but also find out who is *responsible* for an article and assign different *weights* to articles. Combining article quality, responsibility and weight we are able to determine individual contribution scores for every user.

We hope to trigger a beneficial and sportive competition for high quality information exchange among contributors. Depending on quality and quantity of their contributions users win awards (e.g. gain levels that are presented as funny icons similar to the levels of Wakoopa[3] depicted in Figure 2, and described in Section 4.2).

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[3] http://wakoopa.com/about/reputation\#awards

Fig. 2. The reputation levels from Wakoopa.

4 Realizing Collaborative Moderation

This section explains the implementation, including calculations performed by the backend, and shows how user interfaces work.

4.1 Determining Personal Scores

CollabReview is a rating tool for an increasing source code quality. Developers while working with code form an impression of it. The tool then enables them to capture their impressions and manifest them in a rating which is then used to identify good and bad code. In combination with the responsibility determination this should effectively prevent cowboy-coding [5].

Personal scores are the basis on which rewards are granted. Similar to CollabReview the scores are obtained through combination of three values:

The Quality of an article is determined democratically. It is the average rating users gave to the article by writing reviews (see Figure 3(b).) Every user has at most one review per article at a time but is able to update his review whenever he wishes to. As an article is considered to be under continuous change a review might refer to an earlier revision of it; a review might be no longer completely accurate but also not be completely out-of-date. We therefore determine how much an article has changed since submission of the review and weight reviews by *timeliness*.

The Responsibility describes how much an individual contributor influenced the collaboratively written article. This value enables distributing scores to contributors and is the percentage of sentences he modified or added. Responsibility information per author is obtained by comparing the different article revisions. It is computed at a textual level using a modified Levenshtein distance: we determine the sentence insertions and deletions that transform one revision into the next. The user who added or modified a sentence is its author.

The Weight is an article's importance. Articles with higher importance score more points and thereby attract attention and commitment. Determining interesting articles is crucial for collaborative moderation as it sets the Wiki's evolution direction. We considered several strategies but have not yet decided which ones are best to combine:

 – *User-defined:* users provide feedback on how important they deem an article.

- *Viewing frequency:* attracting attention from users indicates importance.
- *Change frequency:* frequent changes indicate importance in a similar way.
- *Search:* many queries for article or its key words through the search menu.
- *Keywords:* presence of designated keywords makes articles more important.
- *Navigation paths:* important articles appear early in navigation paths.
- *Timeliness:* recent changes indicate current interest for an article.
- *Length:* for fairness reasons longer articles should award more score points.
- *Backward links:* referenced articles are deemed important by other authors.
- *PageRank:* advanced weighting of *Backward links* method.
- *Forward links:* interconnecting the Wiki by references makes important.
- *Viewing time:* articles that keep users attracted are more interesting.
- *Observers:* being on many people's Watch List indicates article importance.

4.2 User Interface

This is the description of the user interfaces that are integrated into the MediaWiki software to provide the new functionalities.

Collecting User Feedback Reviews are submitted using a form embedded in all article pages. The form consists of several rating buttons and a text area to add comments on how the page could be improved (see Figure 3 (a)). It is directly visible hence users can easily submit new reviews or update earlier ones.

Fig. 3. Wiki extensions: (a) reviewing an article, (b) showing ratings, (c) user ranking.

Presenting Scores and Awards to Users Our reward system gives points to users for contributing to important and well-rated articles. The system includes the following components:

– *Level hierarchy:* Every user has a level, initially starting as a newbie. A new level is reached if the user has acquired a certain number of points. Each level has an indication and a corresponding funny icon.
– *Ranking List:* The ranks of all users are listed in a table, which is announced on the Wiki main page so that everybody can see it (see Figure 3 (c)).
– *Awards:* Users can win awards for outstanding performance (in a certain time interval), e.g. "Wiki-Author of the Week", that are attached to their accounts. Award winners are published on the main page of the Wiki using their photo, level-icon and awards.

5 Conclusion and Future Work

Writing articles in a Wiki constitutes a creativity process. Yet voluntary participation in a corporate Wiki turns out to be very low due to various reasons. We present *collaborative moderation* as a way to motivate group members to actively contribute to the exchange of ideas in order to foster creativity and group innovation. The concept builds upon rewarding individuals who provide the community with interesting, valuable and high quality contributions. Our Wiki plug-in allows participants to provide feedback for an article. Quality, responsibility and weight values determine which rewards authors receive.

In the next step we prepare and conduct an appropriate user study. The results will reveal how the rewarding system triggers a sportive competition among Wiki users. Furthermore, we will analyse to which degree such a collaborative moderation fosters the creativity process through knowledge exchange.

Acknowledgment

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