
Integrating Twitter into Wiki to Support Informal Awareness

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Abstract

In the current study, we explored Twitter as a useful and practical extension to a wiki-based collaborative work space. A two-week experiment and a survey study shed some light on the potential benefits of integrating Twitter, or other existing social networking tools with a formal collaborative work space in encouraging meta-data level communication and promoting informal awareness.

Keywords

Twitter, wiki, informal awareness

General Terms

Design, Experimentation

ACM Classification Keywords

H.5.3 Group and organizational interfaces: *Computer supported cooperative work*.

Introduction & Related Work

In addition to planned and formal interactions, team members often find themselves in need of more informal updates from each other [4], especially when they are involved in distributed collaborations [9]. However, there are costs associated with exchanging informal awareness information. For example, users often need to switch between the formal work tool (e.g. collaborative writing tool) and the informal communication tool (e.g. IM); they don't know who they should talk to in order to get valuable awareness

information; the exchange of informal awareness information is not always visible to the entire group.

Along with the rapid development of social media, micro-blogging has become an effective tool that encourages group-level informal communication at work [10]. However, most studies on micro-blogging only focused on its light-weight mechanism when exploring its usefulness in online collaboration spaces [e.g. 5]. The primary contribution of this paper is the integration of not only the micro-blogging function, but also a pervasive real-world micro-blogging service – Twitter, with a formal wiki-based work space. Inspired by studies on Twitter use as an awareness tool [6] and designs to address the problem of managing multiple channels of information [e.g. 2, 3], we propose integrating Twitter into a wiki-based work platform and study how two disparate design principles behind these tools interact with each other, which is not studied by previous work. The design philosophy of Twitter is to encourage users to freely express their thoughts and feelings for purely social purposes [6, 7]. We aim to explore whether this well-defined design principle of Twitter affects how team members appropriate their use of the tool on a formal platform for collaborative work, and whether the integration of an informal communication tool reduces the cost of exchanging informal awareness information.

We choose to integrate Twitter with Dandelion, a Wiki-based tool developed and deployed in 2009 to support coordinated collaborative writing [1]. We grounded our design of the new Dandelion on a field study with 15 employees from one global IT company’s research lab located in China. After designing and developing the system, we conducted a two-week field experiment and

a survey study to provide a preliminary system evaluation.

The New Dandelion Wiki

As Figure 1 shows, the new Dandelion wiki interface is a combination of the work space (area B), where users can work on a collaborative document, and the Twitter panel (area A), where users can post status updates to share with others (as shown in area 1). The Dandelion server runs behind the enterprise firewall, and acts partially as a Twitter proxy which can interact with the Twitter website through the developer API. We developed the Twitter proxy under the help of Twitter4J (<http://twitter4j.org/>), which provides a good integration of Java application and Twitter developer API. The functionalities which Dandelion server provides include tweeting status messages to the Twitter website and querying the latest status messages from Twitter website. In order to provide a way to group tweets relevant to one wiki page, an ID is automatically generated for each wiki page and attached to any tweets from that wiki page as a relevant hashtag, such as #docABCD. With the help of the Twitter developer API, we can retrieve all the relevant tweets when a wiki page is rendered. Dandelion users are also able to update their status from another Twitter client (such as mobile phone) by attaching such hashtags.

The new design allows users more control over the level of awareness information they want to disclose. User could set a message to be “private” (only visible to user self) or “protected” (only visible to wiki users). When users click “save” or “save and close”, their edited content will not be visible to others but users will have the option to publish a tweet along with the saving action and let others know they have made



Figure 1: User interface of the new Dandelion

some progress. The new design also supports users' needs for both "pulled" and "pushed" status updates. In the default situation, users could visit Dandelion to track (or pull) all status updates from others. In the meantime, the "send this tweet to" option in the Twitter panel allows users to send an email directly to specific members to attract their immediate attention or to ask for their immediate actions (as shown in area 3).

Methods

In the current study we propose two research questions:

RQ1: How do users interact with the Twitter panel?

RQ2: How well does the Twitter panel support users' needs and practice of maintaining informal awareness?

In order to answer these two questions, we conducted a two-week experiment with one distributed project team which consists of 9 members located in two major cities in China. During the experiment, all actions taken by users were saved as server logs. Besides the log data, we conducted post-interviews and let participants reflect on their user experience. All interview data are transcribed and three independent coders coded these transcripts together into different themes. An online survey was disseminated to collect more user feedback towards the Twitter panel's usefulness in supporting collaboration awareness. Twenty four participants recruited from the enterprise intranet tried out Dandelion and provided with their survey responses.

Results & Discussion

Results of the preliminary post-evaluation showed that users in general value the ease of use and the usefulness of Twitter in filling the awareness gap in between scheduled communications. Server log data shows that the users are actively updating status in the

Twitter panel and are actively checking Twitter panel for updates from others. One aspect most valued by our participants is the unobtrusive nature of Twitter updates, meaning that updates could be "pulled" when needed, but not be "pushed" to users. Twitter as an application that runs in the backend to manage all members' status/progress does not always require users' immediate attention and therefore could potentially mitigate the problem of information overload.

Interview results show that Twitter is a unique medium that promotes informal awareness. As one subject puts it, *"If I want to send a reminder before the deadline, I probably won't choose email because it's too formal and might seem intimidating. I will probably not choose IM because I might be interrupting others. In such cases Twitter reminder might make the person feel better because it is indirect."* Other interviewees also mentioned the reduced psychological costs before updating status via Twitter: *"You don't need to think about whom you should update this message with, because you can simply share the message with the entire group."*

However, participants also expressed their concerns about applying Twitter in the work context. Our design puts a social tool and a work tool together, which generates an interesting discussion about whether Twitter itself could be used for work-related purposes or if there is some better way to integrate the useful parts of Twitter-like functionality into a work tool. One commonly mentioned concern is the lack of motivation to tweet work-related messages. Another concern is the lack of guidelines for posting messages in the Twitter panel. The design philosophy of Twitter is to encourage users to freely express their thoughts and feelings for

social purposes. Once deployed in the work context, users might become confused about “what’s appropriate to post.” As mentioned by one interviewee who never posted tweets in the experiment, “*I’m just not so sure what to tweet about. When I use Twitter I don’t need to ponder on this, but in a work context I need to think about the language I use, what’s appropriate and so forth.*” Privacy is another important concern. One manager mentioned, “*We don’t want to disclose too much confidential information on Twitter.*” Some participants also set many of their status messages as private to themselves only. Later in the post-interview, he said, “*I feel some status messages are only useful for me... This helps me to create a personal record for my own benefits.*”

Future Direction

We are still in the process of collecting more user data to explore our research questions. Results of this preliminary study inspired us to think more about how cross-channel work tools/spaces could leverage not only different functionalities, but also the design principles attached to existing tools, to positively influence users’ perception and behaviors. This study also informed future designs from several perspectives. One of the issues is how could the system allow users to easily manage all updates from different group members. Future designs should provide some tagging functions to allow users to categorize their updates, or provide some filtering functions based on users’ preferences to prioritize some updates. Another issue brought up is whether the content in Wiki and status updates in the Twitter panel could be more closely linked. Future designs should be able to provide some mechanism to sync the relevant part of the document when users update their status. In the future, we will

work on creating some semantic linkages between the document and status updates, to make two panels seamlessly rendered in a wiki page.

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