

Chatting in the Wiki: Synchronous-Asynchronous Integration

Robert P. Biuk-Aghai
University of Macau
Faculty of Science and Technology
Av. Padre Tomás Pereira
Taipa, Macau
+853-83974375
robertb@umac.mo

Keng Hong Lei
University of Macau
Information and Communication Technology Office
Av. Padre Tomás Pereira
Taipa, Macau
+853-83978640
kinlei@umac.mo

ABSTRACT

Wikis have become popular platforms for collaborative writing. The traditional production mode has been remote asynchronous and supported by wiki systems geared toward both asynchronous writing and asynchronous communication. However, many people have come to rely on synchronous communication in their daily work. This paper first discusses aspects of synchronous and asynchronous activity and communication and then proposes an integration of synchronous communication facilities in wikis. A prototype system developed by the authors is briefly presented.

Categories and Subject Descriptors

H.4.3 [Information Systems Applications]: Communications Applications – *computer conferencing, teleconferencing, and videoconferencing*. H.5.3 [Information Interfaces and Presentation]: Group and Organization Interfaces – *computer-supported cooperative work*.

General Terms

Design, Human Factors.

Keywords

Instant messaging, wiki, communication, synchronous, asynchronous.

1. INTRODUCTION

Wikis have become popular tools for collaborative document production in recent years. The success of the Wikipedia project in creating a user-contributed encyclopaedia is only the most visible example of this trend, but many other instances of wikis exist, both public and private.

Working together remotely presents its challenges and affects both effectiveness and efficiency of completing joint tasks. Popular internet applications, together with rising internet literacy, however, allow many users to overcome these obstacles

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

WikiSym '10, July 7-9, 2010, Gdańsk, Poland
Copyright © 2010 ACM 978-1-4503-0056-8/10/07... \$10.00

and work together across a distance.

Wikis typically support the collaboration process through two means: an editing facility for preparing the wiki content, and a discussion facility for reflecting, planning, and commenting on the content production. Traditionally both of these have been asynchronous tools, i.e. assuming that their users will use these at different times from one another without same-time interaction. This stands in contrast to the habit of many people who are accustomed to communicating synchronously through instant messaging and other communication tools. Collaboration often requires a mix of both synchronous and asynchronous activity, yet wiki systems remain exclusively asynchronous platforms. Among others, Öner [2] identified the need for synchronous communication during wiki-based document production by small groups. In our own use of wikis in teaching we received similar feedback from our students. Communicating synchronously appears to be a more desirable mode for today's internet-savvy generation.

To address the incongruence between many people's preferred way of communicating and the support provided by wiki systems we have defined a model of integrating synchronous communication within the asynchronous activity in wikis. Our aim is not merely to add an instant messaging (IM) component on to a wiki system but to achieve a deep integration of the instant communication with both the wiki content and the user interface.

2. SYNCHRONOUS VS. ASYNCHRONOUS ACTIVITY

Synchronous and asynchronous activity are often seen as two opposites, which is evident in the use of these terms in the context of collaboration systems. However, the real world seldom makes such clear-cut separations. Activity often moves between synchronous and asynchronous modes, with various degrees of synchronicity in between these two extremes. The divergence-synchronization model of Dourish [1] articulated the idea that collaborative activity consists of separate streams of activity that diverge from one another as attention is directed to individual work, and then are synchronized as attention is focused on group work. Cycles of both divergence and synchronization are repeated as work unfolds. In this sense the usual distinction of synchronous and asynchronous activity merely becomes a measure of the length of these cycles – if short we call it synchronous, if long it is considered asynchronous. That is, rather than being a dichotomy, a case of black and white, synchronicity is more like a spectrum, a range of shades of gray from dark to light.

Collaboration systems provide *channels* for carrying out collaborative activity, be it a shared editor, a communication tool, or any of the variety of tools available to support collaboration. For highly synchronous and highly asynchronous activity, a different channel provides an adequate and suitable form of support. These channels each provide their own specific affordances, which can strongly influence the activity conducted:

Highly synchronous channels provide real time feedback, offer low time flexibility (i.e. imply an expectation of immediate response), exhibit fast content cycles (i.e. progress toward completion of collaboratively produced content is rapid), provide for instantaneous communication, but also make content more difficult to manage due to continuous real time feedback and the rapid growth of information.

Highly asynchronous channels provide delayed feedback, offer high time flexibility as collaborators can take their time to make their next contribution, exhibit slow content cycles, provide delayed communication, but make content more easy to manage.

3. WIKI-IM INTEGRATION

Wikis traditionally provide only asynchronous channels for collaboration and communication. In order to better facilitate cooperative activity in a way congruent with popular communication habits, we propose an integration of wiki (asynchronous) and IM (synchronous) platforms. However, rather than simply adding an IM component to an existing wiki system, we integrate these at a deep level, including both within the interface and the underlying information. IM messages are related to wiki articles, either to the article as a whole or to a specific section within it. Contents of IM chat sessions belong to the related article, in the same way as the discussion page does, and as such should be presented through a connected wiki page. Figure 1 shows a conceptual model relating these entities.

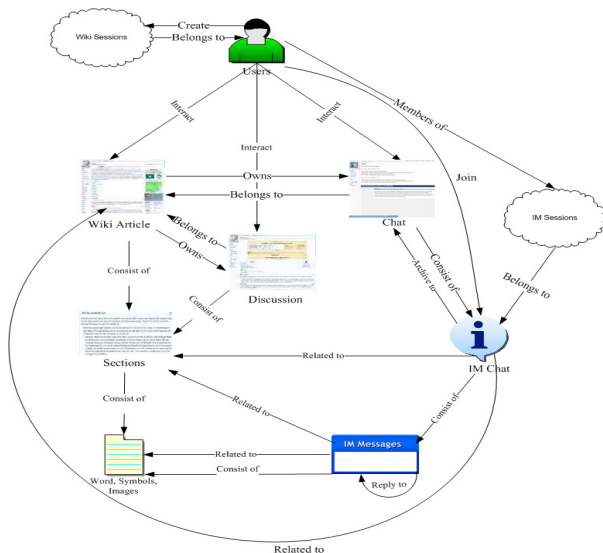


Figure 1. Conceptual model of wiki and IM entities

Our implementation of this model uses the Openfire Jabber/XMPP server to provide IM functions and MediaWiki to provide wiki functions. An integration layer between the two servers allows automatic user account creation and login of wiki

users on the IM server. On top of the respective wiki and IM server, the interface presents their respective functions in an integrated way. “Chat” links are provided for the page as a whole and for each section, clicking on which causes an IM chat window to pop up at the bottom of the page as shown in Figure 2.

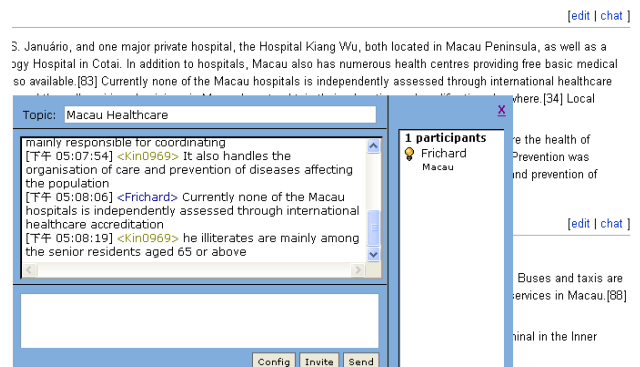


Figure 2. Section chat links and IM chat window in wiki page

The integrated chat client is a heavily modified version of the open-source JWChat component, integrated in the page as an HTML element displayed on top of the main page content. That is, the user does not need to install dedicated chat client software external to the wiki, as the chat function is integrated within the wiki page itself. IM chats are actually multi-user chat sessions (XEP-0045), and chat messages are archived by the Jabber server. This chat archive is viewable from within the wiki through a special page linked to the article as an additional tab at the top of the article page. This special page retrieves the requested chat archive (separated by page, section and date) from the Jabber server and presents it as an immutable wiki page. In addition, the user is given the possibility to edit a chat summary for any given chat archive, which is stored as an editable (versioned) wiki page in a special chat namespace.

4. CONCLUSION

Our presented integration of wiki and IM affords wiki users the possibility to instantly communicate with each other from within the wiki page they are currently viewing. This is mainly of use to small highly collaborative work groups. We have completed implementation of the presented conceptual model of wiki-IM integration and are currently planning deployment on our production wiki servers for use in our courses. At the same time we are preparing the public release of our MediaWiki extension and related code in open source form. In the near future we will conduct user evaluations of our integrated wiki-IM system.

5. REFERENCES

- [1] Dourish, P. 1998. Using metalevel techniques in a flexible toolkit for CSCW applications. *ACM Trans. Comput. Hum. Interact.* 5, 2 (Jun. 1998), 109-155. DOI=<http://doi.acm.org/10.1145/287675.287676>.
- [2] Öner, D. 2009. Pre-service teachers' experiences with Wiki: challenges of asynchronous collaboration. In *Proceedings of the 5th international Symposium on Wikis and Open Collaboration* (Orlando, Florida, October 25 - 27, 2009). WikiSym '09. ACM, New York, NY, 1-2. DOI=<http://doi.acm.org/10.1145/1641309.1641353>.