

A Case Study of Wiki-based Experience Repository at a Medium-sized Software Company

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ABSTRACT

The poster presents an exploratory case study on the use of a Wiki-based experience repository (MASE) that utilizes both informal and formal knowledge representations. The results provide evidences for the need of knowledge sharing tools to incorporate not only codification-oriented repository technologies but also those that facilitate communication and collaboration among people, and to support not only structured but also unstructured knowledge representation. It reveals that an informal knowledge authoring tool such as MASE is used for sharing content for problem understanding, instrumental, projective, social, expertise location, and content navigation purposes. We also observe self-organized maintenance of the repository content among the ordinary repository users as a result of the open-edit nature of the Wiki-based repository.

Categories and Subject Descriptors

I.2.4 Knowledge Representation Formalisms and Methods
– *representation languages, semantic networks.*

General Terms

Management, Documentation, Human Factors.

Keywords

Organizational Learning, Authoring Tools.

INTRODUCTION

The need for an improved mechanism of sharing experiences among multiple software development teams in an organization is echoed by recent studies indicating that such teams are often prone to repeat past mistakes or duplicate effort in “re-inventing the wheel” [2]. Based on reported practitioners’ experience, there are two general strategies to organizational learning [6]: the personalization strategy and the codification strategy; the latter being followed by the semantic net initiatives recently.

In software engineering, existing literature on knowledge management focuses mostly on implementation of the Experience Factory concept [1] in the form of knowledge repositories [5]. These repositories vary in the technologies

used, but most of them share in common in that they implement the Experience Factory concept based on the codification strategy. Most reports on experience factories also stem from large organizations that can afford to create centralized organizational units for organizational learning [10,7]. However, such resources may not be available to small- and medium-sized software companies. Hence, it is our opinion that small- and medium-sized software organizations need more lightweight means of creating these knowledge bases with minimal overhead, especially in a dynamic environment where customer requirements change frequently and unpredictably, and new technologies constantly emerge.

Despite the substantial number of Experience Factory implementations, few evaluate the use of such knowledge repositories. Of the few experience reports, the study contexts are often in large organizations, or the repositories studied are only based on either the codification strategy [10,7] or the personalization strategy [8] but not both. In comparison, the context in our case study is in a medium-sized software organization and our case study evaluates the use of MASE—a knowledge repository based on Wiki [4] technology—that supports the Experience Factory concept by using both the codification and personalization strategies. More details about MASE and the methodology of this case study can be found in [3].

OBSERVATIONS / INTERPRETATIONS

For this case study, we observed that users make use of the tool to: exchange ideas on domain and technical problems; record decisions made and their rationales during meetings; following instructions from answers to FAQs; share social information like the internal dart throwing competitions; identify experts; self-coordinate themselves for collaborative work; and, track progresses on project tasks. In fact, 80% of all read-accesses were concentrated to just over 20% of the pages (170/815) and about 25% of read-accesses were to the top 10 most visited pages. Of these 10 pages, 8 of them were created by project teams at empolis spontaneously to share knowledge unique to their project or team. Of the other 2 pages, the “ListUsers” wiki page lists contact information for other users; provides the means to contact and interactively message those users.

We also observed that project teams at empolis primarily used the Wiki-based tool for asynchronous collaboration (>90% usage). While the number of synchronous interactions is low, it is more an indication that synchronous communication is primarily done outside of MASE. It shows our inability to capture the amount of such communication; it does not indicate that synchronous communication is not happening. Furthermore, empolis staff's urgent demand for a private messaging system and the intense use of features such as the "ListUser" wiki page provide strong evidence that it is critical for knowledge sharing tools to support not just the codification strategy but also the personalization strategy by providing means for easy communication and collaboration.

Another observation is that over half (58%) of the content is annotated in purely unstructured form; the remaining 23% and 19% annotated in either semi-structured or totally structured formats respectively. This finding demonstrates that there is a greater need for unstructured than structured knowledge. It provides clear evidence that it is insufficient for knowledge sharing tools to support only structured/formalized content; there needs to be built-in support for both structured and unstructured content.

Given the open-edit nature of the Wiki-based tool, over half of the users contributed content. In total, 75% of contributions were by the top 10 users, of which 8 were developers and 2 were technical writers, and 55% were by the top 5 users who were all developers. While managers account for 10% of all users, it should be highlighted that they were noticeably absent from the list of top 10 contributors. In a sense, the developers and the technical writers formed a self-organized experience factory unit while still working on their normal development tasks. This self-organization process of running the experience factory may have the benefit of avoiding the ivory tower syndrome that is sometimes attributed to centralized experience factory units. Members of such a typical centralized experience factory units are often not involved in the day-to-day software development tasks and the content that these members put in an experience repository is often perceived as out-of-touch with reality and therefore not used. This leads some users of existing experience bases to raise concerns about the usefulness of such experience bases—sometimes polemically calling them "write-only memories" [9]. This was certainly not the case with the use of MASE at empolis given that only 15% of wiki pages are created and not accessed again.

The users indicated that the largest motivating factors of using an informal knowledge sharing tool such as MASE for knowledge sharing and organizational learning were (in decreasing importance): presence of required information; contributing information to MASE is very easy; desire to help others; and, encouragement from management

Based on informal feedback from the empolis users, many of them found that with MASE, "*contributing is very easy, nothing before did the job that easy*". This may be attributed to the simplicity of the wiki markup language and we believe it is this simplicity that facilitates efficient collaboration between information contributors and readers. At empolis, one user even stated that Wikis are great to "*get people involved and make them having fun while writing*".

CONCLUSION

In this poster, we presented results of a 3-month long exploratory case study on the Wiki-based experience repository—MASE—at empolis, a medium-sized software organization. In general, feedbacks from the end-users provide encouraging support for the continuing use of MASE for knowledge sharing purposes. Details of this case study are further elaborated in [4].

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