Improving CoP Knowledge Sharing:
a CSCW Approach Based on Awareness

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Abstract. This paper seeks to analyze a CSCW (Computer Supported Cooperative Work) approach for supporting Communities of Practice; mainly we focus on discussing how awareness plays a central role for supporting knowledge sharing in a knowledge intensive community.

Introduction

Currently Communities of Practice have gained a particular interest in Knowledge Management since they are the basic organizational unit. "Communities of Practice (CoP) are groups of people who share a concern, a set of problem, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" [3]. Basically, CoP accumulate and share knowledge. CoP are knowledge intensive because of all of their activities are around the knowledge; the most often activity is knowledge sharing. Knowledge sharing is one of the best added values of participating in a CoP because it allows one to learn together. Each practitioner contributes to the CoP with his knowledge, experience and skills.

Therefore, significant attention must be paid to issues of process and people that allow communities to capture, share, and apply what they know in a coherent fashion across the community.

First of all we will discuss the nature of CoP's knowledge and propose a group memory development as a technological support. Secondly we will briefly present a groupware tool for supporting a collaborative group memory and finally will discuss how awareness plays an essential role at the moment of maintain the community in action, it means sharing knowledge.

CoP's Knowledge and Group Memory

Cop's knowledge can be shared or personal knowledge. Shared knowledge is the knowledge that the community captures collaboratively, whereas personal knowledge is individual knowledge, it is private to each person. Individual knowledge is a "view"

of the Cop's knowledge made up of shared knowledge plus of private knowledge. Most of the time, shared knowledge first appears as an individual knowledge (i.e. a personal idea, concerns, conclusion, passion), and then it becomes in shared knowledge.

CoP do not only shared and accumulate knowledge about a topic of interest, they also accumulate knowledge of colleagues, level of expertise, perspectives, smaller group of interest, competences and others. Following we classify these different natures of CoP's knowledge:

- Knowledge domain, it consists of conceptual elements and facts that describe the community domain of interest and competence.
- Knowledge of CoP organization. It is knowledge about member (who are) and their organization. Community members can be organized individually or in groups (smaller communities). Groups make up due to relationships of affinity, common interests, confidence or others. These relationships are the causes of shaping groups.
- Relationships established between the knowledge domain and members (individual and groups); i.e. relationships of interest (a member *is interest on* this concept), relationships of expertise (a member *is expert on* this concept), relationship of ownership (this concept *is a contribution of* this member), relations of privacy (this concepts *is private to* this member).
- Knowledge of the knowledge that members have i.e. knowing of "who knows who knows what".

The most traditional approach for supporting knowledge sharing is the development of a *group memory*. Group memory (GM) is a knowledge repository that represents CoP's knowledge. Group memory allows [1]: to avoid the loss of community expertise over the time, to explore and reuse the experience gained by practitioners, to improve the information circulation and communication across the CoP, to integrate the know-how from different sources, and ultimately to improve the process of individual and group learning.

We understand the group memory as a knowledge network made up knowledge artifacts (topic) and relationships. It also provides some view management tool for representing personal point of views and private space. However, it is out of the scope of this paper to look deeply into the group memory development.

Awareness as a Medium for Sharing Knowledge

On account of knowledge sharing is a collaborative activity, it is easy to imagine a CSCW solution for supporting the CoP's GM. A traditional groupware tool might be a shared workspace with functionalities for editing and browsing the GM or even some kind of collaborative tools for establishing, for example, discussion around a topic of interest. With GMG we name the group memory groupware tool.

However, one of the main challenges of this approach is to reproduce the dynamism that CoP have around the knowledge. CoP's knowledge is constantly growing and evolving, since any GM contribution might stimulate new knowledge

emerges from the community members and therefore to maintain the community "in activity". Any GMG must take into account these features.

Researchers in the CSCW community have long recognized the importance of awareness in facilitating collaborative work since it enables people on "knowing what is going on". As it was summarized in [3] and we have adapted to our concerns, awareness has four basic characteristics: awareness is knowledge about the state of shared group memory workspace, shared group memory workspace changes over time, so awareness must be kept up to date, community members maintain their awareness by interacting with the shared group memory workspace, and finally awareness is usually a secondary goal—that is, the overall goal is not simply to maintain awareness but to complete some task in the shared group memory workspace. Therefore, awareness is a natural tool for maintaining the community in activity. There two reasons why any GMG must provide with a good mechanism of awareness for sharing knowledge:

- because community members need to be aware of "what is going on" with the shared knowledge. It means, they need information about the existence of a new concerns, problems, comments, conclusions, discussion, or even any news about the community structure: new members, groups, etc.
- because the possibility of being aware of what is going on with the shared knowledge works as an stimulus for create new knowledge; it means awareness becomes in the source for emerging knowledge.

Following we will analyze how awareness information must be gathered and delivered in order of promoting community activity.

Actions, which are related with the basic functionalities of the GMG workspace, are good sources for gathering awareness information. Actions involve knowledge artifacts and people. Most general actions are: those related with changes and browsing of the GM and discussions over a topic of interest (a collaborative actions). When an action occurs information about *who* performs it, *what* it means and *where* it occurs can be capture. It basically is workspace awareness [3].

Although in short term, awareness is a good way of "knowing about what is going on in the shared workspace", in long term, awareness plays a essential role in the sharing knowledge process, since in this context it means "knowing about what is going on with the shared knowledge". It means knowing what is going on with: knowledge of the topic of interest, knowledge of community organization, knowledge of the relationships, knowledge of the knowledge that members have. Basically it is awareness about the knowledge: *knowledge awareness*. Knowledge awareness:

- allows a better understanding of the shared knowledge, since it gives information about the knowledge;
- promotes that emergent knowledge occurs, because constantly members are receiving knowledge information and this accumulated information is the seed for the generation of new individual knowledge;
- provokes, in some sense, the "curiosity" of community participants. Curiosity is well know as the source of emergent knowledge; and also
- allows understanding knowledge evolution.

These features are cue for maintaining the community in activity, because they are the basic stimulus that a knowledge intensive community needs for generating new activities and therefore new knowledge emerges.

Finally, awareness will be really effective for maintaining the community in action if the delivered awareness information is the necessary and enough to promote that emergent knowledge appears. Delivered awareness information is broadcasted to each community members but it must not exceed groups and individual needs. For delivering the just right amount of awareness information two features have to be taken into account: *interests* and *expertise*. Interests define group or individual concerns and they are even community knowledge. Interests can be an action itself, a topic of interest, a type of topic, to know who has performed an action. Interests can be defined as combination of more primitive interests. Interests allow us to calculate the appropriate awareness information according the receiver needs. Expertise means the level of competence that members have and it determines the quality of knowledge that the receiver needs. Even, Interests and expertise enable to adapt and personalize the given awareness information with the objective of being more effective in promoting individual activity, and in consequence community activity.

Conclusion

In this paper we have showed how awareness is an essential tool for supporting a knowledge intensive activity that takes place in a community of practice. We have proposed a traditional groupware approach for a collaborative development of the group memory and, on the top of it, we have not only analyze how awareness is "knowing about what is going on in the shared workspace", but also we have analyzed how awareness is "knowing about what is going on with the shared knowledge". In consequence, in long term, knowledge awareness plays an essential role in the sharing knowledge process, since it is the source of emergent knowledge that occurs in the community and allows community members to understand knowledge evolution. Finally, we discuss briefly that individual and group concerns and expertise are cue for delivering effective awareness information.

References

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