

# Context-Sensitive Awareness Services for Communities of Practice

Denis Gillet, Sandy El Helou, Yassin Rekik, and Christophe Salzmann

Swiss Federal Institute of Technology in Lausanne (EPFL)  
Station 9 – ME – EPFL – Ecublens  
CH 1015-Lausanne, Switzerland  
Denis.gillet@epfl.ch

**Abstract.** The eLogbook is a Web-Based collaborative environment particularly adapted to the needs of communities of practice. It is deployed at the Swiss Federal Institute of Technology in Lausanne (EPFL) and developed within the framework of the Palette European Project. This paper presents the eLogbook “Context-Sensitive View” intended to increase the environment usability and acceptability by communities of practice and to support collaboration and communication by embedding different types of awareness “cues” within an innovative user-friendly interface.

**Keywords:** Context-sensitive awareness, human-computer interaction, computer-supported collaborative work, community of practice.

## 1 Introduction

Defined by Dourish and Bellotti [1] as “an understanding of the activities of others, which provides a context for one’s own activity”, awareness is one of the most crucial needs expressed by communities of practice. [2]. Awareness of past and current actions in shared environments and over shared artifacts influences and guides the members decisions and course of actions. In an attempt to make the members “aware”, the eLogbook Context-Sensitive View was designed and implemented. First, the eLogbook is briefly introduced and then the Context-Sensitive view is discussed.

## 2 Description of eLogbook

The eLogbook is a collaborative workspace built upon the 3A model [3]. The model integrates three main entities, the actors, the activities and the assets. An actor is any entity capable of initiating an event in the collaborative environment. An asset is any kind of resource (e.g. text documents, images, graphs, simulation snapshots) shared between community actors. An activity is the formalization of a common objective to be achieved by a group of actors. Events or Actions related to these three main entities are governed by Protocols and can be either of an organizational or operational type. Figure 1 illustrates the 3A model.

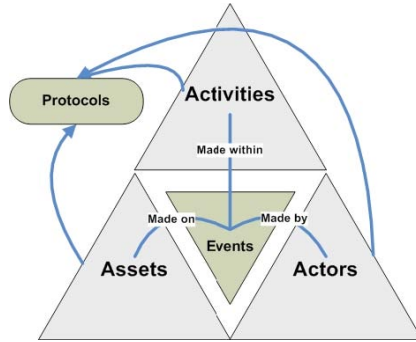


Fig. 1. The eLogbook 3A model

Organizational actions are related to structuring activities of the community (or the community itself) through defining common objectives, managing and assigning roles to actors, as well as scheduling its possible deliverables. Operational actions enclose all other kinds of non-organizational collaborative actions directly related with the purpose of the collaboration, such as explicit or tacit knowledge management.

### 3 The Context-Sensitive View

It is possible to interact with the eLogbook through 3 different GUI views: the Content view, the graphical view and the Context-Sensitive one. The Content view is similar to a mailbox that lists entities of a specific type (activities, actors, assets) based on the user's selection criteria. The graphical view can be best described as a social network map made of entities and displaying different types of relations existing between them. The Context-Sensitive view is detailed below.

#### 3.1 Description of the Context-Sensitive View

This view consists of a center or focal element chosen by the user, surrounded by four regions, each of which listing related entities of a special kind. Based on the previously mentioned 3A model, the center element can consist of an asset, an actor, an activity or a deliverable. In the surrounding areas, not only are the entities related to the center displayed, but also their relation with the center entity and the eventual related actions -that the current user is allowed to perform -are appended. Awareness "cues" of different types are seamlessly incorporated in every area through the use of symbolic icons, colors and the manipulation of the order in which information is displayed. Figure 2 presents an example where a specific activity is chosen as the focal element. Figure 3 shows how the interface changes as an asset displayed is clicked, thus becoming the new focal element placed at the center of the view.



**Fig. 2.** Example of the context-sensitive View, the focal element being an activity.



**Fig. 3.** Example of the context-sensitive view, the focal element being an asset

### 3.2...Embedded Awareness Cues

Awareness indicators serving different types of awareness are seamlessly incorporated in the Context-Aware view. The following table lists some of those indicator or cues and their display means and relates them, as it is can be seen from the third column below, to one ore more types of awareness, defined in the literature ([4], [5], [6]).

**Table 1.** Example of Awareness Cues

Awareness Cue	Display	Awareness Types
Indication of the users statuses	– When an actor is online, the associated “status” icon turns to green.	Social / Presence awareness
Indication of the average rating of an activity	– Average rating displayed below the item’s name when placed in the center, using stars.	Informal, conversational awareness
Reminder of deliverables deadlines	<ol style="list-style-type: none"> <li>1. Deliverables with close deadlines are highlighted in red &amp; appear first on the list</li> <li>2. Those with future deadlines appear next</li> <li>3. Those which deadline had passed appear last</li> </ol>	Task awareness / historical awareness

**Table 1.** (continued)

Edition of shared assets	– When a member is editing a specific asset, a “Lock” icon replaces the editing & deletion “icons” for other asset “editors” or “owners”.	Group structural, workspace awareness
Specification of the assigned rights over shared assets	Use of Icons: – An “editor” is indicated with a pen – An “owner” is indicated with a crown – A reader with an eye	Group structural, workspace awareness
Indication relative to an invitation for joining an activity	– A button indicates whether the actor has joined, refused or accepted the invitation – If the user has joined the invitation, a red cross allows the current actor to abandon the activity at any point in time. – If the invitation is pending or refused, a check mark allows the actor to join the activity.	Group structural, historical, workspace awareness
Indication of the roles assigned to activity members	– The Role is written under the actor’s name – The actions that the actor with this role is allowed to perform are listed through the use of icon	Group structural, historical, social awareness
Indication of the mostly used tags for a specific entity	– The more a tag is used, the bigger its font will be (Tags can be freely defined and shared)	Informal, conversational awareness

### 3.3 The Added Value of the Context-Sensitive View

The participatory design approach chosen within the Palette project brought eLogbook designers and developers closer to the needs of CoPs (communities of practice) members and representatives. As a matter of fact, the CoPs expressed their wish to work in an environment that can serve simultaneously as a task or activity, an asset management system and a discussion platform through a user-friendly interface which limits complications and pioneers ease of use and acceptability. Moreover, unobtrusive and relevant workspace, task, presence, informal and historical awareness were clearly expressed as crucial elements for successful coordination and collaboration. The Context-Sensitive view was designed mainly to respond to those needs. On one hand, just by changing the type of the focal point, the interface can serve a different purpose, keeping however the same overall skeleton and structure. Moreover the view is seamlessly augmented with pertinent awareness indicators. This being said, this view offers multiple functionalities through a reactive ergonomic interface, which embeds relevant awareness information of different kinds.

## 4 Conclusions and Future Work

The eLogbook Context-Aware view allows the user to choose a focal entity being an actor, an activity, an asset or a deliverable. As a result, the area surrounding this focal element is populated with the associated and complementary entities contextually related. The proposed view embeds different types of awareness important for

communities of practice. Filtering techniques will be suggested so that the user can explicitly state preferences and have a full control over what he/she wishes to see.

**Acknowledgments.** This work has been partially funded by the European Union through its Sixth RTD Framework Programme in Information Society Technologies (*Palette* Integrated Project).

## References

1. Dourish, P. and Bellotti, V.: Awareness and coordination in shared workspaces. Proceedings of the 1992 ACM Conference on Computer-Supported Cooperative Work (Toronto, Ontario, Canada, November 01 -04, 1992). CSCW '92. ACM Press, New York, NY, 107-114. DOI= <http://doi.acm.org/10.1145/143457.143468>.
2. Gillet. D., Salzmann Ch., Reikik Y.: Awareness: An Enabling Feature for mediated Interaction in Communities of Practise. 1st European Conference on Technology Enhanced Learning, Greece, 2006. (online version:<http://cnm.open.ac.uk/projects/ectel06/pdfs/ECTEL06WS9d.pdf>)
3. Reikik Y., Gillet D., El Helou S., Salzmann Ch.: The eLogbook Framework: Sustaining Interaction, Collaboration, and Learning in Laboratory-Oriented CoPs. International Journal of Web-Based Learning and Teaching Technologies (in press).
4. Gutwin C., Greenberg S., Roseman M.: Workspace Awareness for groupware. CHI Conference Companion (1996) 208-209.
5. Nutter D., Boldyreff C.: Historical Awareness Support and Its Evaluation in Collaborative Software Engineering. Twelfth International Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises (2003) 171.
6. Gutwin, C., Stark, G., and Greenberg, S.: Support for workspace awareness in educational groupware. First International Conference on Computer Support For Collaborative Learning (Indiana Univ., Bloomington, Indiana, United States). J. L. Schnase and E. L. Cunnius, Eds. Lawrence Erlbaum Associates, Mahwah, NJ, 147-15.