



Project no. FP6-028038

PALETTE

Pedagogically sustained Adaptive Learning Through the exploitation of Tacit and Explicit knowledge

Instrument: Integrated Project

Thematic Priority: Technology-enhanced learning

D.MED.11 – Third version of e-Logbook

Due date of deliverable: 31 July 2008
Actual submission date: September 16, 2008

Start date of project: 1 February 2006

Duration: 36 months

Organisation name of lead contractor for this deliverable: EPFL

Project co-funded by the European Commission within the Sixth Framework Programme		
Dissemination Level		
P	Public	PU

Keyword List: communities of practice, collaboration, awareness, collaborative learning, activity management, asset sharing, social software.

Responsible Partner: Denis Gillet, EPFL

MODIFICATION CONTROL			
Version	Date	Status	Modifications made by
1	24 June 2008	Draft	EPFL (Michael)
2	August 15, 2008	Draft	EPFL (Evgeny & Sandy)
3	August 25, 2008	Draft	EPFL (Sandy & Denis)
4	August 27, 2008	Draft	EPFL (version sent to evaluators)
5	September 12, 2008	Final	EPFL (version sent to SC)

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Summary

e-Logbook is a collaborative Web-based environment deployed by the Swiss Federal Institute of Technology in Lausanne (EPFL) in the framework of PALETTE European Project and aimed at sustaining communication for communities of practice. It consists of an activity-oriented workspace where members of a community can form groups, conduct activities and collaborate around shared assets. The purpose of this deliverable is to present the third version of the e-Logbook tool by describing its refined functions and Web interface, as well as newly added features. This deliverable should be read as a continuation of the deliverables D.MED.03 (First version of the e-Logbook tool) and D.MED.07 (Second version of e-Logbook). The e-Logbook tool is accessible online at <http://eLogbook.epfl.ch>.

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1 Introduction

The purpose of this deliverable is to present the third version of the e-Logbook tool intended to support collaboration and communication for communities of practice. The e-Logbook is a general-purpose activity-oriented collaboration space that can be customized by users to serve as a task management tool as well as an asset management system allowing the collaboration around shared artifacts. Moreover, awareness services of different types are provided by e-Logbook, because awareness is crucial in collaborative environments.

e-Logbook is designed and implemented using a participative design approach with the primary objective of proposing adaptive and adequate solutions based on the expressed needs of communities of practice (CoPs). The description of e-Logbook's basic functions (i.e. invitation management, role management, deliverable management, asset rights managements, etc.) and additional features (i.e. email-based interface) can be found in D.MED.03 (First version of the e-Logbook tool supporting exchange of artifacts at both a community and a technical level) and D.MED.07 (Second version of e-Logbook: interoperable with CoPe_it! and integrating complete awareness views, contextualized feeds, as well as the e-mail interface), respectively. A usability analysis of e-Logbook can be found in D.PAR.04 (User Centered Description of PALETTE tools and services and first analysis of usability) and in D.PAR.07 (Second analysis of usability).

The deliverable is structured as follows. First the e-Logbook 3A model is revised. Then, the refinements of the e-Logbook context-sensitive view are presented. Next, the e-Logbook new awareness, synchronous communication, interoperability and other features are described. Last but not least, the future considerations for e-Logbook are summarized.

1.1 Acronyms

- API: Application Programming Interface
- CSCW: Computer Supported Cooperative Work
- CoP: Community of Practice
- OpenID: A decentralized single sign-on system
- REST: Representational State Transfer
- RSS: Really Simple Syndication
- XML: Extensible Markup Language

1.2 Reading conventions

References by author, like (Gillet D., et al., 2007), appear in a bibliography at the end of the deliverable. References by code, like (URL: CPI), appear in a "Webography" (list of Web links), also at the end of the deliverable.

2 The e-Logbook 3A Model

From a general point of view, **people** use interaction technology to socialize, work and learn together through informal or formal **activities**. For these purposes, they establish synchronous or asynchronous discussion threads using phones, chat, email, blogs or wikis. They also populate distributed or centralized repositories. In these frameworks, they exchange digital information (**artifacts** or **assets**) at any time or at specified deadlines (**deliverables**). They also keep informed regarding the presence, the emotions and the activities of others through audio or video conferencing, as well as through embedded dynamical **awareness** cues such as emoticons.

Without trying to provide a thorough classification of all CSCW solutions supporting the above situations/scenarios, we propose to map most of the mediated interaction alternatives using three fundamental entities: the actors, the activities and the assets. The definitions for these three entities and their possible relationships constitute what we call the 3A Model (Rekik, Gillet, El Helou & Salzman 2007). They are detailed thereafter and illustrated in Figure 1.



Figure 1: The 3A interaction model

An **actor** is any entity capable of initiating an event in the collaborative environment. It can be a person, a Web service, a software agent or even an online physical device. In that sense, the proposed definition of an actor is broader than the traditional definition of social software users or community members. From a constructivist perspective, an actor is an **artifact doing/producing** something, i.e. an agent or an instrument corresponding to “who?” or “which?”. Awareness related to actors can correspond to emotional, social or contextual statuses (i.e. online/offline, available/busy user or machine).

An **asset** is any kind of resource produced by or shared between community actors. The proposed definition goes beyond the typical digital assets like rich-text documents or multimedia resources. It can also include as example discussion threads or wiki pages. From a constructivist perspective, an asset is an **artifact done/produced** somehow, i.e. a product corresponding to “what?”. Awareness related to assets can correspond to preview, completion state (pending, under construction, completed, etc.), revision or moderation state, ownership, accessibility or historical data (trace) (Nutter D., Boldyreff C., 2003).

An **activity** is the formalization of a common objective to be achieved by actors such as discussing topics or completing tasks. From a constructivist perspective, an activity is an **artifact for doing/ for producing** something, with a purpose corresponding to “why?”. The activity’s objectives can be explicitly expressed through the creation of **deliverables**. Moreover, **roles** can be defined and distributed among the activity’s member.

Awareness related to such artifact could be associated membership, context corresponding to “where?” deadlines or milestones corresponding to “when?”. In the implemented e-Logbook interface, a **space** is reserved for each activity undertaken by an actor or a group of actor. A CoP main space can be subdivided into different subspaces corresponding to the different CoP activities.

Events or actions related to these three main entities are governed by **protocols** corresponding to “how?”.

3 Refinement of the Context-Sensitive View

The main Web interface of e-Logbook is called Context-Sensitive View (Gillet, El Helou, Salzmann, & Rekik 2007). It is has been described in details in the previous e-Logbook deliverables (namely D.MED.03 and D.MED.04). In this section, we summarize the main refinements of the context-sensitive e-Logbook Web Interface. These refinements take into account the usability analysis performed by PALETTE partners, and described in deliverable D.PAR.04 (User centered description of PALETTE tools and services, and first analysis of usability) and deliverable D.PAR.07 (Second analysis of usability).

Modification in the design of the central area

The central area was redesigned in order to make it more ergonomic. The information related to the central element and the actions that can be performed are now grouped in the upper region of the central area. The information displayed includes the central element’s name, url, last modification date, pictures, rating and tags. This leaves the main central area for the wiki field of the central element where it can be described and discussed. Figure 2 shows the actual layout design of e-Logbook and is followed by a snapshot corresponding to the case where a space is in the centre.

Top area (Banner, login/logout, search, help)		
Space area		
Actor area	Central element: Basic information, and available functions	Asset area
	Central element wiki	

Figure 2: Layout design of the context-sensitive view



Figure 3: An interface snapshot of the context-sensitive view

Option to hide public elements

Users were bothered by the fact, that in their e-Logbook home page, they could see all public people (even those who they are not related with), as well as public spaces. The option to hide public entities has been added to solve this problem.

Icons consistency across different windows

The views for managing space roles, space invitations and access rights, as well as pop-windows for setting notification preferences, creating new relations, new tags and new types all use the same icons for saving new items and canceling them.



Figure 4: Icons used respectively for saving and cancelling actions

Visual awareness indicators for new items

The names of new spaces, deliverables, and assets not yet visited by the logged actor, are now highlighted in bold.

Consistency in error handling across different views

The errors are now all displayed in the same way across different views. Moreover, the error messages displayed are more precise. In addition, when a user tries to visit a closed space s/he did not yet decide to join, a warning message is displayed reminding him/her that s/he should first join the space before being able to visit it, and inviting him/her to join it. If the user accepts to join it, then s/he is directed to the space.

Colored text fonts changed to black

To improve the readability of the wiki and meta data (creation date, tags) of the central entity, all the text fonts were changed to black, regardless of the class to which the entity belongs. Nevertheless, the background colors of the central element still serve as an indicator of whether it is an actor, an asset or a space.

New pop up window for establishing relations

Relating two items can now be done in a faster and more ergonomic way. The icon to relate spaces has not been changed but instead of directing the user to a new page, a pop-window appears, inviting the user to specify which item s/he wishes to relate to the central element, and the type of relation to establish between them. e-Logbook suggests to the actor, default types of relations, such as “subspace” for relating two spaces and “friends” for linking two actors. Still, the user can define new types and reuse the ones defined by other users. The figure below shows the pop-window as it appears when the user clicks on the “Relate” button in the context-sensitive view.

Figure 5: Pop-window for relating two spaces

4 New awareness features

In this section, the new features related to managing and receiving awareness information are described.

4.1 RSS interface of e-Logbook

In addition to the awareness information embedded in its Web interface, e-Logbook also supports notification delivery through non-intrusive email-based and RSS interface. The details of the email-based e-Logbook interface are described in D.MED.07 (Second version of e-Logbook). In this section, we describe the implemented RSS interface of e-Logbook.

RSS is a family of XML-based data format that is used to publish frequently updated content such as news headlines. RSS feeds contain items, each of which is composed of a title, a link and a description. A channel may also include an image and/or a rating. Items are grouped together to form a “channel”. By subscribing to RSS feeds of interest, the user can check, on a single screen, all the related news. In the following paragraphs, the motivation behind implementing RSS services in e-Logbook is briefly explained, and then the method in which it was done is described.

The information transfer within e-Logbook must abide by three primordial conditions: unobtrusiveness, relevancy and conciseness (El Helou, Gillet, Salzmman, & Rezik 2007). The display of the context and content of a space and/ or an asset in the e-Logbook interface was designed in such a way to take those three important aspects into account. Similarly, the RSS feeds were chosen as adequate notification delivery means especially for mobile users subjected to device constraints, because it allows meeting the three conditions mentioned above. To start with, unobtrusiveness is achieved because notifications are sent via a familiar user interface where users usually expect and intentionally check for updates. Secondly, the compact format of RSS feeds is particularly useful for mobile users subjected to device constraints. News is sent in a concise way and optional fields (such as images) are skipped for mobile users. Moreover, in order to meet the “relevancy” condition, information sent via RSS feeds to target users, will depend on his/her expressed interests (i.e., they can for instance choose to receive news about particular actors, activities or assets).

We have implemented RSS interface for receiving notifications for new actors, assets, and spaces. The figure below shows the RSS icons available from the context-sensitive view and allowing a user to subscribe to RSS feeds.



Figure 6: RSS icons in e-Logbook

Figure 7 shows an example of RSS feeds listing new spaces. For each space item, the RSS displays its title (name), description overview, URL (in e-Logbook), its creation or last update date, and author (creator of the space).



Figure 7: RSS feeds for e-Logbook spaces

In the same way, assets RSS feeds, display for each item, its title, description overview, URL (in e-Logbook), its last update date as well as its enclosed attachments. The same applies for the RSS feeds related to actors news.

Last but not least, in collaboration with the PALETTE cross search engine, e-Logbook has provided a Web service which takes a list of keywords as input, and returns back the corresponding newly created spaces or assets in the form of RSS feeds. This is a very useful feature as it allows to only return items related to the user's stated interest filtering out all unnecessary information.

4.2 Notifications Preferences

Previous research have shown that excessive notifications could have adverse effects such that the decrease in productivity (Spira and Feintuch, 2005). Consequently, a feature that allows e-Logbook users to specify their notification preferences is implemented. Now, users can specify whether or not they wish to receive a daily activity report. Moreover, they can specify the type of events for which they wish to be directly notified.

Daily eLogbook report on latest events	<input type="checkbox"/>
Separate emails notifications on	
Invitation to join a space	<input type="checkbox"/>
Modification of a shared space	<input type="checkbox"/>
Arrival of a new member in a shared space	<input checked="" type="checkbox"/>
Addition of a new deliverable	<input type="checkbox"/>
Modification of a deliverable	<input type="checkbox"/>
Reminder of a deliverable's deadline	<input checked="" type="checkbox"/>
Modification of a related actor's profile	<input type="checkbox"/>
Posting of a new Asset	<input type="checkbox"/>
Modification of a shared asset	<input type="checkbox"/>

Figure 8: Notification Preferences

5 New synchronous communication feature

In order to better support the interaction between CoP members, the current version of e-Logbook provides users with the opportunity to open synchronous discussion threads with a specific actor or as a contextual space of a dedicated type. It is possible to save a history of a discussion as a related asset.

5.1 Discussion initiation

Whenever a user wants to initiate a discussion with another user, he can find this user in the actors list and use a popup to start discussion (Figure 9). After clicking on the “Open discussion with ...” a new Space will be created with the name “Chat between User1 and User2” and invitation to the target person will be sent.

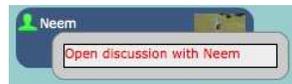


Figure 9: Initiation of a discussion

There is also another possibility to start a discussion among users. A user can create a new space and assign type “discussion” to it. Then this space is considered to be a discussion space and user can simply add his/her partners by sending invitations to them using the standard e-Logbook means.

5.2 Sending messages

When a new discussion space is created, users can send messages to each other. They type messages in the field for new messages and, after clicking on “Send” button, messages are sent and the others can see them in the discussion history field. Time, when message was sent, and the sender are also indicated there.

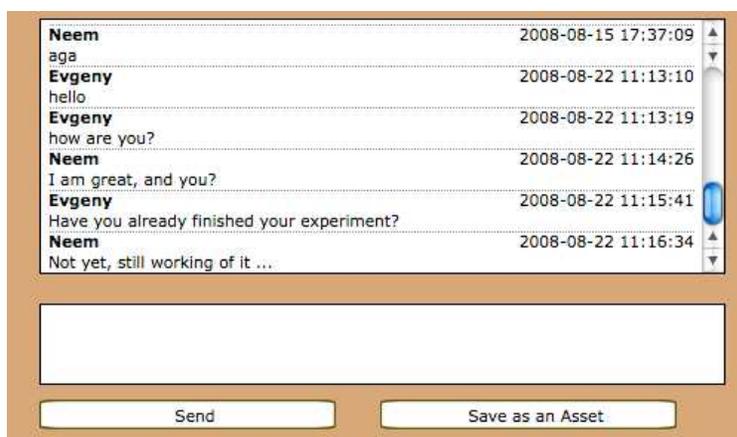


Figure 10: Discussion Area

5.3 Notifications for new messages

To make a user aware of new messages that appeared in the discussions where s/he is a participant, a new messages notification was added into e-Logbook. Whenever there are new messages, the blinking envelope icon appears in the spaces list area, attracting user's attention (Figure 11). If user clicks on this yellow icon, spaces list will be populated with discussion spaces, where new messages appeared. This allows users to be always in the contact with partners.



Figure 11: New message notification

5.4 Archiving discussions threads

A chat history is shown inside the space, however, users could want to save a current state of a conversation history if they believe it could be useful for them in the future, as discussion administrator can remove the space one day. In order to create a copy of the history, they just click on "Save as an Asset" button (Figure 10), and new asset with the name "chat_history current_time" is created. Discussion history is saved as a description of this asset and user can later edit it by removing unnecessary information or by adding some notes. The copy of the chat history saved as an asset is not populated with new messages that arrive after the asset was created.

It should be noted, that automatically generated names of discussion spaces or of assets with discussion history can be changed any time in e-Logbook.

6 New Interoperability features

Following the PALETTE iterative design scheme, the third version of e-Logbook has been enhanced with several features to support the PALETTE Generic Scenarios. The generic scenarios are referred into in the deliverable D.IMP.05 (First version of PALETTE integration: conceptual and technical integration) and in the third draft implementation plan (IP3). These new features are cross-tool profile synchronization, and login with OpenID and Rest-based Web services.

6.1 Cross-tool profile synchronization

Knowing that CoPe_it! (URL:CPI) and e-Logbook are stand-alone Web applications independent from each other, it would not be an optimal solution to centralize profile information in one place.

Nevertheless, users should still be allowed to choose to automatically or occasionally synchronize common profile data stored in the different PALETTE tools, as this would save them from the burden of repeating the same actions in two different places.

It is also worth noting that there are some application-dependent profile data, needless to be propagated from one tool to another. As an example, the option “public profile” in e-Logbook could be set to true or false, depending on whether or not the user wishes to make their account visible to all other e-Logbook registered users. This option does not exist in CoPe_it!, and so, there is no point in propagating any corresponding change. As for common profile data, such as home address, phone number, picture, and Website, an agreement between tools to follow the same naming conventions makes it easy for users to identify these common fields as s/he visits the different Web applications, and makes it easy for services to communicate the corresponding modifications (the presentation or visual integration level is concerned with this issue).

The cross-tool profile synchronization with Cope_it! function has been implemented. In the e-Logbook page where users can fill in their profile information, the options to always or occasionally propagate changes related to common profile data, to CoPe_it! are made available. Then, every time the user profile information is updated in e-Logbook, the latter checks whether any of the two options mentioned previously are set to true. If this is the case, then e-Logbook invokes an external REST Web service responsible of updating the user profile data in CoPe_it!. Figure 12 shows the bottom part of the edit profile page in e-Logbook. Users can choose to save their profiles in e-Logbook, in e-Logbook & CoPe_it!, or to import their profiles from CoPe_it! to e-Logbook.



Figure 7: Profile synchronization options in e-Logbook

6.2 Login with OpenID

The popularity of OpenID has grown very fast in recent years. Nowadays there are many OpenID-enabled Websites [URL:OSDIR]. Having an OpenID, a user can login to any OpenID-enabled site with single username and password. The easy deployment of OpenID is probably an important factor to its popularity. There are many public OpenID providers available. To become OpenID-enabled, Web applications can simply install OpenID consumer libraries to deploy authentication services from the OpenID providers.

PALETTE CoPs expressed their need to login with the same credentials to different tools. In response to PALETTE CoPs identity management needs, e-Logbook has implemented a new feature that allows members to login with their OpenID. To be able to do so, they should edit their profile by entering their OpenID URL. After that, users can login directly with their OpenID.

Figure 13 shows the login box of e-Logbook. Users can choose to login by their registered e-Logbook password or by their own OpenID URL. To use OpenID, an user needs to first sign up for an OpenID account in an OpenID provider. A list of public OpenID providers can be found in (URL:POPDR). Then the user needs to edit his/her e-Logbook profile to input their OpenID URL. Upon the profile saved, the user can use his/her OpenID URL instead of e-Logbook password to login. Figure 14 shows that a user inputs his OpenID into his profile in e-Logbook.

Figure 13: Login box in e-Logbook

Figure 14: Added OpenID in user profile

6.3 Restful Web services

e-Logbook currently offers REST-based Web services in order to allow third-party Web applications to get access to its features. The services are classified according to the following two divisions: entity management services and query services. The examples of the first type are “create activity”, “create asset”, etc. The second type of services allows retrieving information about e-Logbook entities: “get list of assets for actor”, “get list of deliverables for activity” and so on. The WADL description of services and human-readable XML-based document that contains description of services can be found at the following links respectively: <http://eLogbook.epfl.ch/eLogbook.wadl> and <http://eLogbook.epfl.ch/eLogbook.xml>. The following is an example of Web services utilization within e-Logbook. GET request with “space_id=215” returns an XML-formatted list of actors for the space which has an id equals 215.

e-Logbook Web services example:

Input:
GET <http://eLogbook.epfl.ch/spaces/215/actors.xml>

Output:
 <?xml version="1.0" encoding="UTF-8"?>
 <participants>
 <actor>
 <id>1</id>
 <name>Sandyh</name>
 <invitation>
 <role_id>558</role_id>
 <role_name>Administrator</role_name>
 <invitation_status>joined</invitation_status>
 </invitation>
 </actor>
 <actor>
 <id>104</id>
 <name>Evgeny</name>
 <invitation>

```

<role_id>558</role_id>
<role_name>Administrator</role_name>
<invitation_status>joined</invitation_status>
</invitation>
</actor>
</participants>

```

7 Other new features

7.1 Full-text Search option

This option is very useful for finding information in the context-sensitive view. It searches in the wiki, tags and names of all entities for words matching the one specified by the user, and then returns the corresponding entities. The user can specify whether s/he wishes restrict the search to the current contextual page instead of searching everywhere in e-Logbook. The picture below shows the search button as it appears in the top area.

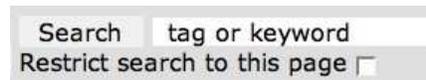


Figure 8: Full-text search dialog

7.2 Specification of entity types

In order to have an explicit separation between a space reserved for the community itself, and a space reserved for activity within that community, the option to specify the space type has been added to the space « creation » and « edit options » view. This is also possible for assets and actors. In the case of actors, this will help differentiate between non-human agents and « human » users. As for assets, it will help categorize assets according to their different types (e.g: report, discussion, minutes of a meeting). With respect to how this option was implemented, it is just a special kind of tag, which describes the entity type rather than its content. As it is the case for relations, actors can reuse the types already defined by other actors.

7.3 Prevention of the deletion of the last administrator

It has been reported that people sometimes mistakenly delete the sole administrator of a space. Consequently, it becomes impossible to perform administrative operations such as managing invitations and creating deliverables for the space in question. In an attempt to prevent such situations, it is not allowed anymore to revoke the role of a space administrator if s/he is only one to whom this role is granted. In the same way, if there is only one asset owner, then his/her right cannot be removed. In addition, every time there is an attempt to delete or change the rights of any asset owner or any space administrator, a dialog box is displayed asking the user to confirm whether s/he really wishes to reduce or eliminate the rights of the person in question.

8 Future Considerations

The future development plan of e-Logbook includes: refinement of current features based on users' perception of their usability, as well as the development of new features to better sustain collaboration.

The refinement of current features will be based on internal testing, feedbacks from users and experts. The targets of refinement include: user interfaces, awareness functions, search functions, Web services, logging mechanisms, etc.

Several new features of e-Logbook are under investigation such as the information ranking mechanisms and the interoperability with non-PALETTE tools, which are discussed below.

Information ranking

This feature concerns the development of ranking mechanisms for entities and events, with respect to a user in a particular context. The system will combine explicit and implicit indicators in order to rank the different entities and their related events. Explicit indicators are related to user's notifications preferences and ratings, and implicit indicators are related to the actions s/he does in the environment. For instance, a space, which has tags, which matches a particular's actor topics of interest, will be ranked high for that particular user. In the Web interface, the entities display order will then depend on their rank. In the same way, the events notifications sent via email or embedded into the Web interface, will also be affected by the ranking mechanism.

Interoperability with non-PALETTE tools

This feature concerns the feasibility study of the implementation of scenarios of information and services exchange with other tools such as Google Calendar, FlashMeeting, my.epfl and social networking applications. This feature also concerns the improvement of actual interaction scenarios such as the one with iCalendar.

It is worth mentioning that these features will not necessarily be implemented within the PALETTE framework but are part of the exploitation plan.

9 Conclusion

e-Logbook can be perceived as a task-oriented workspace, a discussion-platform as well as an asset repository intended to sustain collaboration and communication for communities of practice. Between the submission of D.MED.07 (Second version of e-Logbook) and the writing of this deliverable, several refinements of the e-Logbook Web interface have been implemented, to improve its usability. Moreover, several features mainly related to notifications delivery and management, communication as well as interoperability have been added in order to better support collaboration. e-Logbook was designed based on expressed CoPs needs and will evolve based on continuous users and experts feedback, and their perception of the usability and usefulness of the different features that e-Logbook provides.

10 References

10.1 Webography

All the Web references have been accessed in June 2008.

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- POPDR: Public OpenID Providers, at http://wiki.openid.net/Public_OpenID_providers

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