

Design in use – the case of two CoPs: ePreP and Did@cTIC

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Abstract

This paper aims to illustrate how the services developed within the Palette project, can answer specific needs of different CoPs. Through the analysis of two cases, the reader will discover how the involvement of CoPs in the project has had an impact on support for learning within CoPs (pedagogical interests, organizational...). The article shows also how the involvement of CoPs in the project, through the Participatory Design Methodology, helped to develop technical services that are relevant to communities of practice. In the ePrep case, it describes some Participatory Design Methodology events, involving, in term of Design in use, ePrep CoP members and PALETTE researchers. The outcomes of these events are first presented on a technological point of view, then on a pedagogical point of view. In conclusion, the benefits taken both by CoP members and PALETTE researchers, each of them increasing their own learning thanks to these experiences, are highlighted. The CoP Did@cTIC case highlights two main changes both to the CoPs practices and the PALETTE services infer from the PDM. The first one is the use of structured documents and the other one is the development of an effective information search.

Keywords

Community of Practice (CoP), Participatory Design Methodology (PDM), Design for use, Design in use, pedagogical scenario, tools, services, learning, learning event

Introduction

We present, in concrete terms, through two CoPs experiences, how the Participatory Design Methodology (PDM) promotes interactions between the technological and pedagogical domains and what are the interests of these interactions. As noted Daele & al. *“the point of view of both the developers and CoP’s members are closely interrelated through a distributed participatory design methodology in order to develop technological services that could support the CoPs’needs of information sharing, knowledge management and collaboration.”* (Daele, Charlier, Henri, Esnault 2008). Our article shows examples of improvement infer from the PDM through an iterative process.

Design In Use within the ePrep Community of Practice

ePrep is a non-profit French association founded in 2001. Its mission is to promote and coordinate activities, in France and abroad, aiming at developing technology enhanced learning in " Classes Préparatoires aux Grandes Ecoles " (CPGE), a first higher education cycle preparing students for the competitive entrance exams to the French "Grandes Ecoles".

The creation of the ePrep community of practice in 2006, arisen from the ePrep community of interest, has been inspired and facilitated by the PALETTE project (including ePrep in its partnership). The ePrep CoP today gathers around 40 members (CPGE teachers, representatives from "Grandes Ecoles", universities, research institutes, training organisations, etc.) from 8 French-speaking countries. It develops key projects under the guidance of the ePrep steering committee chaired by the President of the Conférence des Grandes Ecoles.

Cooperation between the PALETTE project and the ePrep CoP is based on mutual interest. The ePrep CoP offers PALETTE the "ideal case" of an emerging CoP, an important visibility in a renowned European higher education cycle, and a potential impact beyond Europe. PALETTE offers to the ePrep CoP guidance (the CoP really emerged thanks to the involvement of PALETTE researchers), and access to advanced tools and services well suited to CoP needs:

- e-Logbook: a collaborative work environment with awareness functionalities,
- SweetWiki: a semantic Wiki for the "Wikiprepas" project,
- Amaya: a Web editor-browser for the new ePrep francophone platform,
- LimSee3: a multimedia editor suited to the development of International cooperation between CPGE (Classes Préparatoires aux Grandes Ecoles).

The implementation of PALETTE tools and services inside the ePrep CoP is a clear example of the benefits of the Participatory Design Methodology (PDM), involving CoP members and PALETTE researchers. According to this Methodology, the "Design in use" phase took place after a "Design for use" phase.

The "Design for use" phase (Nov. 2006 – Jun. 2007), involving ePrep CoP members and PALETTE researchers, allowed to build the PALETTE scenario for the ePrep CoP in response to the CoP needs. The fig. 1 gives a MOT representation of this scenario, suggesting ways to further address interoperability issues between tools.

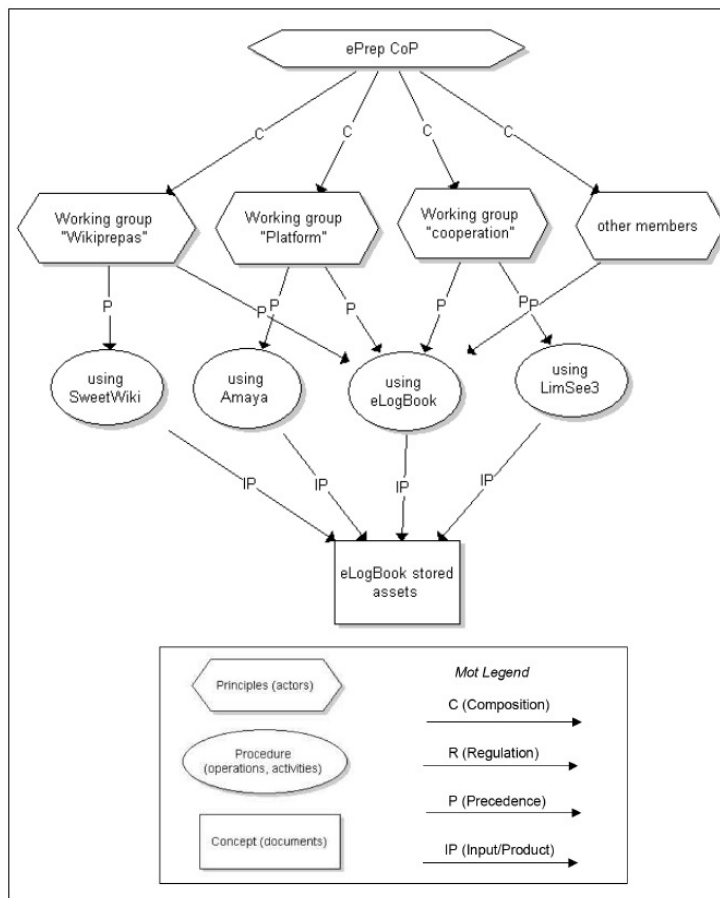


Figure 1: Design for use: MOT representation of the PALETTE scenario for the ePrep CoP.

The “Design in use” phase took place from June 2006 up to date, ePrep CoP members trialling PALETTE tools and services prototypes and interacting with PALETTE researchers for the improvement of these tools and services (see fig.2).

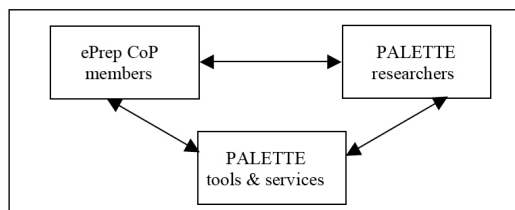


Figure 2: Design in use: human actors and non-human actors interacting in the PDM.

After a brief description of some “Design in use” events organised for the ePrep CoP, we will focus on the technological outcomes of these events (in term of tool improvements, involving more particularly PALETTE developers), then on their pedagogical outcomes (in term of professional practices, involving more particularly ePrep CoP members).

Some ePrep CoP Design In Use Events

According to the PALETTE scenario for the ePrep CoP, CoP members begun to use the specific PALETTE tools suited to their specific projects:

- on the occasion of face-to-face trialling sessions organised in cooperation with PALETTE researchers, including face-to-face “Design in use” meetings:
 - ePrep CoP day (Jun. 2007) - http://www.eprep.org/communaute/actu_CoP/CR020607.html
 - ePrep thematic seminar (Nov. 2007) - <http://www.eprep.org/seminars/seminar07/seminar07.php>
 - LimSee3 recording (Oct. 2007) - http://www.eprep.org/communaute/actu_CoP/CR171007.html
 - LimSee3 trialling (Jan. 2008) - http://www.eprep.org/communaute/actu_CoP/CR240108.html
- by their own, on their own computer, exchanging with PALETTE researchers through the dedicated PALETTE forum for distant “Design in use” steps: see <http://palette.ercim.org/forum/>

Technological Outcomes

The table 1 below describes, tool by tool, the principal ePrep CoP “Design in use” steps, highlighting for each one the technological outcomes (tool improvements).

Table 1: Technological outcomes

PALETTE tool	Actors involved	Technological outcomes (tool improvements)
e-Logbook	PALETTE developers and the coordinator of the CoP	In response to the CoP needs, two specific member roles were proposed in e-Logbook for each sub-activity - the role “active member” and the role “observer” – so that the coordinator of the CoP (administrator of the main activity “ePrep” in e-Logbook) can invite CoP members to join e-Logbook in order to be active in 0, or 1, or 2, or 3 specific activity.
SweetWiki	PALETTE developers and CoP members	CoP members, in conducting their “Wikiprepas” project with SweetWiki, had to specific needs: <ul style="list-style-type: none"> • to edit the Wiki through a private access, • to import LaTeX functionalities in the Wiki for editing mathematic equations. The developers satisfied the first need.
Amaya	PALETTE developers and CoP members	CoP members participated in discussions to improve: <ul style="list-style-type: none"> • the tool interface, • its MathML functionalities.
LimSee3	PALETTE developers and a CoP member	Thanks to the tight cooperation between the CoP member (JMW, History teacher in CPGE) and PALETTE developers in recording a real History course and then building a multimedia module, the tool evolved in a very positive way (see below).

Pedagogical Outcomes

For the ePrep CoP members, these PDM steps were pedagogically underpinned by their own professional practices, so, interesting pedagogical issues arose from these cases. We have chosen to describe below two representative examples quoted in the table above and described from a pedagogical point of view.

First pedagogical outcome: the example of “Wikiprepas”

When choosing SweetWiki instead of a classical Wiki for conducting the “Wikiprepas” project (Dec. 2006), the ePrep CoP members had no specific knowledge about semantic issues. The main objective of “Wikiprepas” was to build collaboratively a multidisciplinary dictionary well suited to the CPGE (Classes Préparatoires aux Grandes Ecoles) specific needs. So, after the SweetWiki trialling organised by PALETTE researchers for ePrep CoP members (Jun. 2006), the coordinator of the CoP decided to explore the tagging functionalities offered by the tool.

First, she tagged the pages edited by ePrep CoP members on the Wikiprepas Website: 1) a dozen of pedagogical pages -2) some pages edited by herself and PALETTE developers to provide ePrep CoP members with help on the SweetWiki tool -3) thirty-five ePrep CoP members’ home pages.

Then, she organised these tags using the SweetWiki ontology editor, discovering that three ontologies were naturally emerging: 1) an ontology related to the CPGE(Classes Préparatoires aux Grandes Ecoles) disciplines -2) an ontology related to the SweetWiki tool -3) an ontology related to the ePrep CoP (see fig. 3, left hand side).

To share her own experience with the ePrep CoP members and allow them to discover the added value of a semantic Wiki, the mediator of the ePrep CoP produced two articles (in French):

- a short presentation of SweetWiki to introduce social tagging, folksonomies, ontologies (<http://argentera.inria.fr:8080/wikiprepas/data/Main/AideRapide.jsp>),
- a “little semantic walk” through the ePrep CoP to allow CoP members to better know themselves (<http://argentera.inria.fr:8080/wikiprepas/data/Main/PetiteBaladeSemantique.jsp>).

This experience increased the CoP knowledge in the semantic field and may be considered as an interesting “learning event” for the whole CoP.

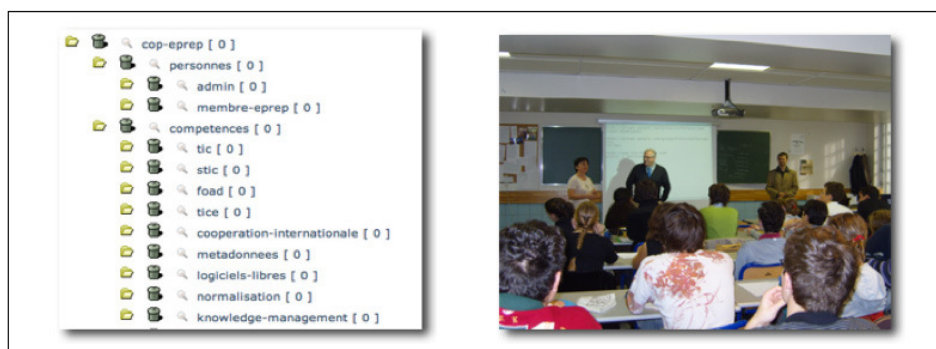


Figure 3: Pedagogical outcomes: a draft ontology for the ePrep CoP (left hand side), design in use session on the occasion of a real History course (right hand side).

Second pedagogical outcome: the example of a multimedia History course

The History teacher, in cooperation with PALETTE researchers, recorded a real History course in order to build, with LimSee3, a multimedia module (Oct. 2007) (see fig. 3, right hand side).

After the recording, as he worked with PALETTE researchers according to the PDM Design in use process, the History teacher asked them to add on LimSee3 a new window for text (to add key words), completing the three windows offered at the moment by the tool (one for the slide show, one for the video-audio recording, one for the plan of the course). The first pedagogical objective of the teacher was to provide his students with a complete multimedia course in order to reduce the time spent in his face-to-face course and to convert this time for the preparation of his students to their final exams. But, discovering the interactive functionalities offered by LimSee3, he realised that the possibility to play a specific chapter in the course (by a click in the window dedicated to the plan of the course) would be extended to the key words (by a click in the new

window dedicated to the key words): for his students, this would be an interesting post-production use of the course. For the developers it would be an interesting issue to explore.

The result of this Design in use experience is double: a new pedagogical interest for the History teacher, a new technological development for PALETTE developers. In that way, this experience may be considered as an interesting “learning event” both for CoP members and PALETTE developers.

Conclusion

When questioning ePrep CoP members about Design in use, one of them said: “It is not so easy to work with an ‘unfinished’ tool, but it is so interesting to have the possibility to intervene in its development!”. And, on SwikiPalette (the PALETTE researchers’ Wiki), we can read, about a Design in use event “We were rather amazed at the outcomes of this experience... the collaboration with a user actually brought in more usability and improved our understanding of our proper domain, in a surprising wide extent”. Then Design in use seems to be a fruitful way for developing tools and services for Communities of Practice, allowing both CoP members and technological researchers to increase their learning in their own field.

A case of design in use: the Did@cTIC CoP

Context

The « Centre de Didactique Universitaire » of the University of Fribourg in Switzerland offers continuous training in Higher Education and Technology. The aim of this training is to develop teaching and academic competences for the teaching profession. One part of this training is to give the possibility to the participants to enhance their practice through reflection, observation, sharing, analysis and debates on these practices according to the professional development model suggested by A. Daele (2004).

Several groups of about 6 persons (assistants, senior assistants or professor) meet 6 times a year for two and a half hours. During the first meeting, the participants describe one event recently lived in their teaching practices. A collaborative analysis leads to the identification of important topic that we examined during the next two following sessions. After three meetings, the same steps are repeated.

To analyse a specific subject (e.g. how to support a student for individual work?), the meeting begins with a reminder of the situation that defines this subject. After this first step, the methodological approach varies depending on the situation. Sometimes theoretical documents are used, sometimes we use video or role-playing...

The participants exchange their ideas and explain why one way is good or not for their teaching practice. At the end of the meeting, each participant presents the ideas they have chosen to keep and try in their own practice.

A New way to take notes during the meetings

The Did@cTIC team experiments the use of one of the services provided by the Palette project, Amaya, to take notes during CoP meetings. This change in the way to take notes has an impact on different levels. The use of Amaya templates leads the team Did@cTIC to think:

- in a detailed way about the essential elements to take into consideration
- the final goal of these notes

We will to develop a template structure capable of responding efficiently to the CoPs' needs. The final aim of these improvements is the reification (Wenger 2005) of the participants' teaching practice. Thinking about the use of templates makes people more aware of adjustments carried out when taking notes, like distinguishing what is description and what is interpretation. To some extent, using the instrumentation has modified the way CoPs animate their meetings. The templates' structure tends to go into the subject in greater depth. One result is that participants describe their teaching practices (context, perception, intention) in more detail (Charlier, to be published).

With participative design, the Palette project promotes a virtuous cycle where the introduction of services increases exchange in the Did@cTIC team about the meaning of the use of a new service. In return, the thought about the service gives information to the developers to improve the proposed service. For example, interactions with the COP will enable developers to introduce new functionality to the software Docrease in particular track fashioning a document by the marking of text already structured.

Currently, the difficulty is to provide a stable version of the template that ensures taking usable notes for the reification of practice. At the same time, we have to avoid some usability constraints so as to ensure the person takes quality notes. From a technical point of view, the structure has to enable efficient searching. We detail this point in what follows.

Targeted and efficient search

As the reader will understand, the way of taking notes during CoPs discussions is central to reification. Yet these written traces only make sense if it is possible to subsequently reuse them. Now, we are going to present the reasons why we have chosen to use the structure of a template to take notes.

In the Did@cTIC practice, note-taking has always been used during the meetings with CoP members. But until now, these notes simply recorded what happened in this meeting. They were chronological and were used to remember important information. The Palette project has led to a new direction. The notes taken during CoP meetings will serve to generate a repository of resources adapted to practice (Chanal 2000). That is to say, these structured notes provide contextual examples of practices that are sufficiently explicit to be used by a larger community of higher education teachers. On the one hand, these resources will be used by the Did@cTIC team to enhance the animation of CoPs. The resources will contain examples of teaching practices and the solutions developed by teachers to improve their practices. On the other hand, higher education teachers could make autonomous research through the available resources to find concrete ways that respond to their pedagogical needs. To achieve this goal, the quality of the notes is crucial but it needs to be matched by the quality of the search process.

We are convinced that the structured documents are a possible way to responded to this need. Effectively, these documents produce useful metadata that can be used to make specific requests. With this procedure we can quickly find a part of content that corresponds to our needs. This is a great advantage because it is quick and effective. We avoid the interference of a lot of useless text.

Moreover, the links between different parts of content are really useful. In our case, it is interesting because our goal is to obtain a constellation of experience descriptions particular to a pedagogical theme but also to link that to possible solutions.

The teachers can compare their practice to describe experience and find adapted situation that can help them resolve their question or problem. The pertinence of the content found depends highly of the template quality. The difficulty is to elaborate a template with an adapted structure. For this, the interactions between the service developers and the Did@cTIC team are essential. The developers require a detailed understanding of the needs. At the same time, the Did@cTIC team has to understand the technicalities of making the request so as to give useful information to the developers.

Two templates have been produced and tested during meetings CoP. Since then, the templates have been improved thanks to exchange between the Did@cTIC team and the technical team. The process improvement will continue until a satisfactory issue is found. The search process has not yet been tested. That will be the next step as soon as we have enough structured data and the service is sufficiently developed.

Another Palette software, called Doceuse (Document reuse tool), will be useful for the Did@cTIC team. It will help manually structure old documents or automatically change structured documents into another structure. It is a service to support the structuring steps. This service has been developed mainly through the interactions with the developers.

Perspectives

The practical experiments in structured document are a way to improve teaching practice, but other resources (theoretical, case analysis...) can complete this search for new practices. This is the reason why the structured documents are more interesting when there are linked with other unstructured resources. In the search step, we need to find the description of a situation, not only the way proposed by different teachers but also theoretical or other resources. To achieve this aim, we have to annotate unstructured documents with "tags" that are shared with the structured documents. For the moment, this is not possible. A number of technical questions are currently unresolved such as: should we to put all document together in the same repository or could we have them in different repositories? Will Palette services be able to interact so that one search request works for all types of document? These questions will be discussed during the following months.

In future, our team would like to increase teacher involvement in the process of practice reification in higher education. In this respect, for example, the Cope it Palette service could help us. We plan to use it before the face-to-face meetings to give participants the possibility to express themselves about a specific theme. Thus, during the meeting more time can be spent on negotiating the meaning and building shared resources (improving reification). Then everyone can adopt this resource and adapt it for himself. As you will have noted, the Did@cTIC case is a good illustration of the implementation of the PDM. Different experiments have been set up. We need time to really see their effects in the CoP.

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