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## **Palette**

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Explicit knowledge

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D.PAR.05 – Participatory Design Methodological Instruments and Good Practices

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#### **Summary**

This deliverable documents the implementation of Participatory Design within the PALETTE project. The document presents the unrolling of the project with an emphasis on two main different aspects:

- how the Participatory Design methodology was operationalised and instrumentalised; almost forty different instruments were specifically designed, implemented, trialled and assessed during the project life cycle;
- how the different actors of the project were involved in the participatory design process; the design of the generic scenarios is analysed from an Actor-Network Theory perspective; an emphasis is put on the role and activities of a given kind of actors who are typical of PALETTE spirit: the mediators.

The participatory Design Methodology (PDM) used for PALETTE is the result of a continuous participative process that took place all along the project and enabled all participants to reach the level of production that was required by the project with a high level of quality and efficiency.

This deliverable shows that an important outcome of PALETTE is the knowledge created by the team regarding a successful implementation of a PD methodology within a large European project

By playing a key part in the PD implementation process, by conducting a reflexive analysis with The ANT formalism and by finally reifying all this novel knowledge within this deliverable, we have developed new competences in the PD field, which might be valuable for further uses within the European Commission context, at different possible levels.

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# 1 – Introduction

This deliverable documents the implementation of Participatory Design within the PALETTE project.

The implantation of the PDM is the result of a collaborative construction process which took form at different levels: the production level (scientific outcomes, new knowledge on the CoP field and informal learning field, interoperable services, etc.), the evaluation level, the cross-cultural and relational level.

PALETTE is a place where three "cultures" have been working together for three years: the "P" culture, i.e. the culture of partners belonging to the social and educational sciences; the "T" culture, i.e. the culture of partners belonging to the computer sciences, and the CoP culture, i.e. the culture of the members of the different CoPs that were associated with PALETTE during its whole life.

The document presents the unrolling of the project process along three axis:

- the operationalisation of the methodology: the conceptual framework is synthesized; the different instruments which were specifically designed for the PALETTE PDM are described, along with the processes through which they were implemented, trialled and assessed during the different stages of the project;
- an ANT-based analysis of how the different actors took part in the PD process: some steps, activities and situation are described and analysed, using the concepts and framework of Actor-Network theory, in order to better understand both the pitfalls and key success factors of PD implementation in a large and complex project like PALETTE; the process of building the generic scenarios that in the end support and architecture the PALETTE productions is analysed as a boundary construction process;
- the role and activities of the mediators: mediators – CoP mediators and Service mediators – play a key and distinctive role in the way PALETTE implemented the participatory design; they were at the boundary of the three cultures mentioned above and symbolise the spirit of collaboration that enabled PALETTE to finally reach its objectives.

## 2 – Conceptual framework

In July 2006, one of the D.PAR.01 aims was to model our methodology of participatory design. We framed our approach by identifying the main processes carried out and the produced objects, and defining the roles of the involved actors. We also specified how a scenario approach could contribute to participatory design. In July 2007, we wrote a report aiming at accounting our continuous reflection and reification of our methodological processes in developing technological and learning services for and with CoPs (Daele et al., 2007). In addition, we presented several papers in conferences during these 3 years (Charlier, Daele, Esnault, Henri, & Saunders, 2008; Daele, Henri, Charlier, & Esnault, 2008; El Ghali, Giboin, & Vanoirbeek, 2008; Esnault, Zeiliger, & Vermeulin, 2006; Zeiliger, Vermeulin, Esnault, & Cherchem, 2008).

In this section, we summarize our approach and the progressive collective reification of how we worked together with CoPs. This summary is based on the different reports and papers we published throughout the project. This section can be read in parallel with section 4 which aims at reflecting on the implementation of the participatory design in PALETTE from an ANT point of view, and D.EVA.06 which presents and evaluation of the participatory design approach from the actors' point of view. In the next section, we will present more specifically the conceptual instruments we developed for conceiving, implementing, discussing, and evaluating our methodology.

In the July 2007 report, Daele et al. (2007) presented the main methodological processes and instruments developed in PALETTE in order to carry out participatory design. The rationale for developing such a methodology is related to the specific objectives and context of PALETTE:

- PALETTE aims at developing services that could support activities of CoPs. This does not only concern development but also (and mainly) the acceptance and concrete use of the services by CoPs in order to develop their functioning and members' learning and professional practices.
- CoPs are groups of professionals who share a common concern and intend to develop reflection and action on this concern. Many CoPs develop on the basis of informal processes and tacit knowledge.

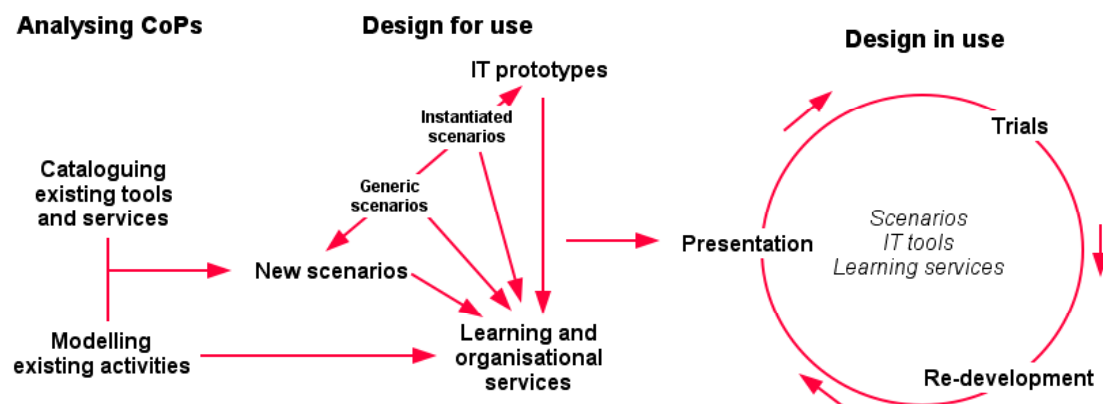
Regarding these two points, participatory design is interesting for working in close collaboration with CoPs both to ensure a good validity and potential acceptance of the services and to understand the informal processes and learning of CoPs. In addition, the scenario approach allowed working on concrete objects ('boundary objects' in Wenger's terms) and hence made concrete the collaboration and negotiation of meaning between PALETTE researchers and CoP members.

As summarized by Daele et al. (2008), three main processes have been followed:

"Without going too much in depth, our methodology is implemented by several key actors [...], and follows three main steps of design":

1. "Analysing" is related to the first processes of analysis of the PALETTE tools and CoPs activities, context and needs, to their modelling, and to the characterisation of tools and services. This is done through interviews and discussions with CoPs' members.
2. "Participatory design for use" concerns the development of the services and related scenarios of use, as well as the validation of the scenarios for each CoP and a reflection on the development of more generic activity scenarios. This is done through first tests of services by CoPs, common elaboration of scenarios, analysis of services usability, training of CoPs' members, etc.
3. "Participatory design in use" is related to the ongoing development of services and scenarios while the CoPs trial them. The observation and analysis of these trials, and especially the process of appropriation of the services into the CoPs' activities, allow to continuously developing the services and scenarios. This is done through "playing" the scenarios into real activities of the CoPs and ongoing discussions and negotiation between the CoPs and the developers."

In the D.EVA.06, WP6 depicted these processes in a meaningful figure:



*Figure 1 – General representation of the main processes of the PALETTE methodology (source: D.EVA.06)*

Daele et al. (2007, p. 11), on the basis of D.PAR.01 and analysis of literature summarized as follows the design principles that lead to the development of our own approach:

“For reminder, the ANT principles that inform the PDM<sup>1</sup> are (Latour, 1999; Monteiro, 2000):

- To take into account all the actors of the PDM both the human and non-human ones, and to provide them with means to negotiate their interests and collaborate.
- To make all the actors interested in the project actions and enrol them through negotiation and translation.
- To inscribe the outcomes of the negotiation into “durable material” that can be used for further discussions and project purposes.
- To formalize negotiation and actions into “black-boxes” that constitute the basis for going further into the project.

[...] The PD principles (Ehn, 2003; Triantafyllakos, Palaigeorgiou, & Tsoukalas, 2008) as well as principles from the instrumental approach (Béguin, 2003; Béguin & Rabardel, 2001) continuously inform the PALETTE design processes. PALETTE services developers are in the front line for the implementation of PD principles:

- Negotiation and consensual decision making;
- Sharing cultural backgrounds, ideas and needs (both of the developers and the CoPs);
- Ongoing interaction;
- Ongoing users’ and designers’ active participation and commitment;
- Ongoing reflection on process with the designers of the methodology;
- Mutual necessity to work together;
- Construction of a shared language and vocabulary.

The instrumental approach also informs the PDM:

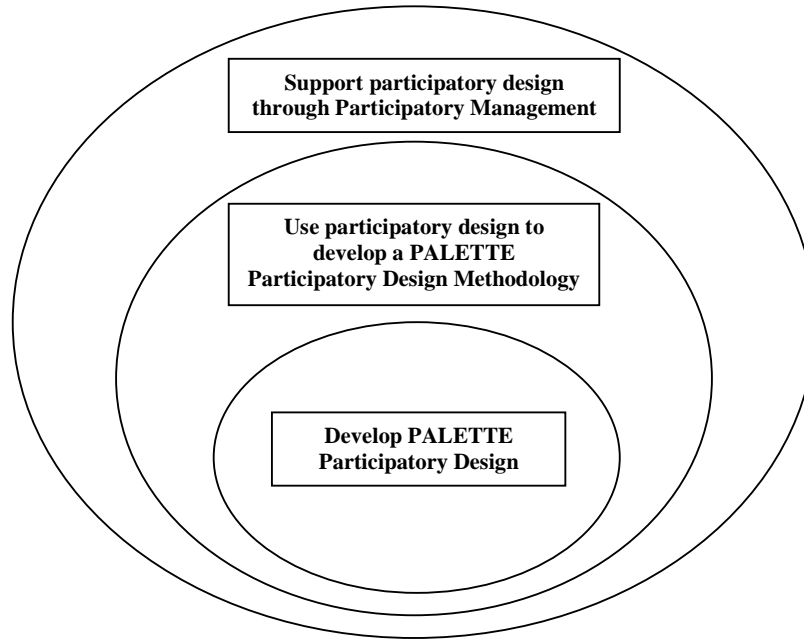
- Instrumental genesis [see D.PAR.08 for details];
- Organisation of ‘design-in-use’ constructive activities to allow for the appropriation of artefacts by users;
- Differentiation of tasks (users and designers carry out different actions) but interdependence of roles (they are necessary to each other);
- Production of intermediary objects (or ‘boundary’ objects) in order to make concrete the points of discussion between users and designers;
- Mutual learning between the users and the designers.

It is not our purpose in this section to analyse how far these principles really informed the implementation of our methodology or have really been applied. For further details, the reader can refer to D.EVA.06, section 4 below or papers already cited here (Charlier et al., 2008; El Ghali et al., 2008). However, in developing and implementing our participatory design methodology, we also tried to reflect on its development and implementation, as well as its negotiation with all the involved actors and its acceptance by them. This is suggested by Charlier et al. (2008, p. 503) in the following figure:

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<sup>1</sup> Participatory Design Methodology





*Figure 2 – Articulation of PALETTE objectives related to participatory design*

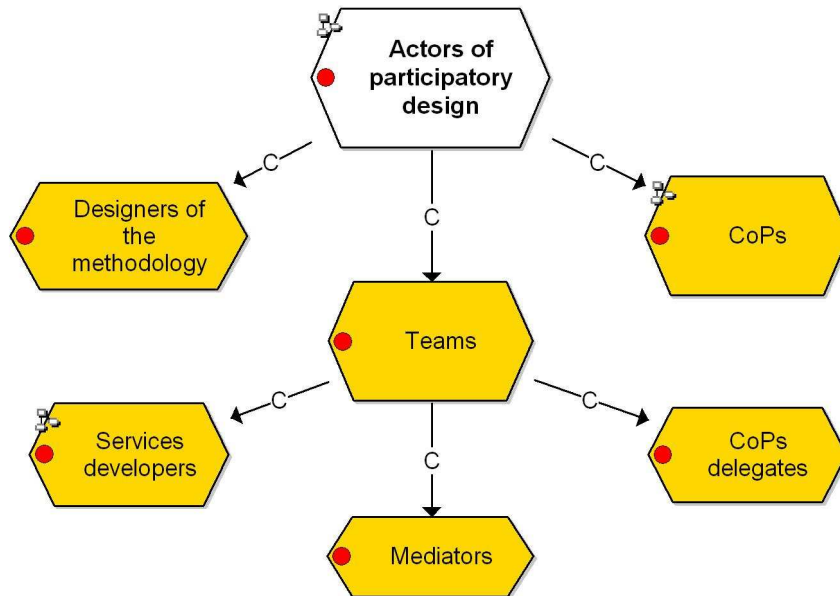
By proposing this figure, the authors' aim was: "More precisely, [this paper] describes the efforts developed to support the emergence of a common vision of the methodology among PALETTE researchers, and the persisting discrepancy in their representations of participatory design." (Charlier et al., 2008, p. 503). They add:

"Building a common vision of the methodology was a critical activity for the good functioning of the project. At the beginning, partners' vision of PALETTE was mainly focused on the intended results of the project for their own activities. It evolved progressively over the first half of the project through a steady and active participation of partners in the planned common activities of the project. But two main events had a decisive impact on the shaping of a common vision: the first PALETTE Summer School that was organized soon after the launching of the project, and the creation of Teams, transversal to the organisation in Work Packages (WP), each of them reproducing at a microcosmic level the composition of the PALETTE partnership." (Charlier et al., 2008, p. 504).

Indeed, the Teams have played an important role in the negotiation and sharing of a common vision of the project methodology, as Daele et al. (2008) explained:

"The actors of the methodology are depicted in figure 2. Most of the methodological steps are carried out by Teams that are composed of:

- Services developers (designers and computer scientists).
- "Mediators": they are PALETTE researchers who establish connection between one CoP and the PALETTE services. They are key-actors in PALETTE as they know very well the activities and organisation of one CoP and are also able to understand the functions and possible uses of the services.
- CoPs' delegates: they are the representatives of their CoP regarding PALETTE. They are the special interlocutors of the PALETTE partners (mediators, developers, researchers). They regularly give an account of PALETTE work to their CoP. The delegates can be a single person or a focus group.



**Figure 3 – Actors of the Participatory Design Methodology**

The CoPs themselves and their members participate in the project at different moments to validate analyses or scenarios, to test services, and to take part in trainings and implementation of scenarios.

In addition, the designers of the methodology are PALETTE researchers involved in the ongoing design and refinement of the methodology. The challenge is to depict the work of the Teams in order to discuss, build, and share a common view between all the actors. This is done continuously. In one sense, our participatory design methodology is itself participatory designed.”

The role of mediators appears as a corner stone in the implementation of the methodology. We further detail this aspect in the section 5 of this deliverable.

Finally, following Daele et al. (2008), the PALETTE project is a distributed project from three points of view:

- **Interdisciplinarity.** The PALETTE developers and researchers are from very different fields: computer science, educational science, design and ergonomics. This involves discussing, negotiating and sometimes creating common vocabulary, instruments of work, and organisation of tasks.
- **Time.** Different moments and stages are organised throughout the project: design for use (conception and validation of prototypes and scenarios) and design in use (implementation of the scenarios into real CoPs’ activities, observation, and development of the prototypes towards integrated and interoperable services). The different actors are involved at different levels in these stages.
- **Space.** The PALETTE developers and researchers are from 5 countries and the CoPs involved as well. Some CoPs are even themselves distributed in space. This involves working at a distance with distributed Teams and organising activities in which participants really feel committed.

In order to deal with these three distribution aspects, the actors – CoPs and developers – have organised different types of activities: interviews, internal workshops, face-to-face or remote meetings in order to elaborate and discuss the scenarios of use of the services proposed to the CoPs, validation of the process at key moments of the design

for use and in use, etc. At a meta level, our goal was also to document all these collaborative activities of elaboration, negotiation, validation, evaluation, etc. For this purpose, we have continually reified our methodological instruments and analysed their role as “boundary objects” throughout the project. They constitute specific outcomes of the project.

In conclusion, the reader could find details about each specific step of the participatory design methodology in D.PAR.01 and Daele et al. (2007). By presenting here our general framework we simply aimed at summarizing the various presentations and analysis that the PALETTE researchers have published in different publications. In the next section, we specify the methodological instruments we developed for implementing the methodology with all its actors.

### **3 – PALETTE Participatory Design Methodology: instruments**

We here present our instruments for developing and implementing our participatory approach with the PALETTE developers and CoPs. The presentation follows the Daele et al. (2007) report. Our aim is to describe our instruments for other researchers and designers who are working with ill-defined distributed groups such as CoPs for developing services and analysing their processes of functioning and learning. We think that by reifying our way to practise participatory design we can inform other similar projects. Our context of course is specific. Our objectives and target audience were particular. However, we think researchers and designers could adapt our instruments to their specific objectives and context.

Before presenting the 33 methodological instruments that have been designed and used by the PALETTE designers, it is important to define what we call an instrument. According to the Activity Theory (Béguin & Rabardel, 2001), an instrument is not only an artefact – or a tool – that is used by an actor in order to carry out an activity. It is a “mediator” between the actor and his/her activity.

“An activity consists of acting upon an object in order to realize a goal and give concrete form to a motive. Yet the relationship between the subject and the object is not direct. It involves mediation by a third party: the instrument.” (Béguin & Rabardel, 2001, p. 175).

As a mediator, the instrument is not neutral regarding the achievement of the activity by the actor. Depending on its use, it is able to change the activity... and the actor him/herself.

“Introducing an artifact in a given situation at best solves old problems. At the same time it changes the nature of the task, creates new problems for which new instruments are necessary, and so forth. Note that the process we need to define is twofold. First, novice users become experts [...], so we must examine how their activity evolves. Furthermore, users adapt and modify artifacts and their environment, whether temporarily or more permanently [...] in an attempt to solve unforeseen problems encountered in action, so we must take into account the inventiveness they bring to their activity.” (Béguin & Rabardel, 2001, p. 174).

This means that an instrument is composed both of an artefact and the actor’s psychological structure (or “scheme”) to use the artefact within a situated activity.

“An instrument cannot be confounded with an artifact. An artifact only becomes an instrument through the subject’s activity. In this light, while an instrument is clearly a mediator between the subject and the object, it is also made up of the subject and the artifact.” (Béguin & Rabardel, 2001, p. 176).

From this point of view, we can consider the PALETTE developers as actors and the implementation of the methodology as an activity. In order to carry out the methodology, the PALETTE developers have constructed their own instruments. These instruments are of different kinds. According to (Vygotsky, 1978) and the Activity Theory, they can be material (a technological tool) or symbolic (a model, a grid of analysis). Our methodological instruments have also different purposes, are produced and used at different moments, and are implemented by different actors. It is interesting to point out that these instruments have been designed “in use” by the developers, for meeting specific needs. They have been widely discussed. As such, they have worked as “boundary objects” between the developers to facilitate the appropriation and the implementation of the methodology within the Teams and with the CoPs. We can also see them as “intermediary productions” (Béguin, 2003, p. 713) that “act as a mediator between the designer and the object being designed [...]”. Such productions are also intermediaries because they play a role in the context of exchange between actors.”

Methodological instruments used as boundary or intermediary objects support the management of the negotiation within the Teams, and between the Teams and the CoPs: they possibly help to settle possible disagreement and conflicts with the CoPs’ delegates and members. According to (Béguin, 2003, p. 714): “Design is achieved within a community, where divergence legitimately surfaces”. Consequently, instruments for managing both the mutual learning that occurs within the Teams and the possible conflicts that could appear are critical working tools.

From these definitions and reflections about what an instrument is and why and how it is used, we can consider as instruments different kinds of “means” or “objects” that the developers have produced in order to implement the methodology that is both an activity of design and an activity of collaboration and negotiation based on intermediary products:

- Templates for the elaboration of text-based or graphical descriptions or analysis (templates of use cases, scenarios or functional specifications of PALETTE tools, interviews synthesis grids, etc.);
- Lists of categories for classifying or sorting tools or CoPs’ needs;
- Lists of criteria for the analysis of the scenarios, tools usability or scenarios technical feasibility;
- Different versions of services prototypes;
- Observation grids, guide for interviews or more generally methodologies for generating data from the CoPs;
- Instruments for formalising the collaboration between PALETTE and CoPs (declaration of intent, decisions for the trials of the services) or for organising this collaboration (forming Teams).

Table 1 lists the instruments and their main purposes. Then each instrument is detailed according to a template presented in APPENDIX 1. This is a particular way to consider the history of the project through the instruments of its actors. It is interesting to note that this history is not only about the instruments but also about the activities that they allowed the actors to carry out. We find here again the triangle actor-instrument-activity, as described in D.PAR.08: an instrument mediates the activity of an actor (individual or group) and the object produced through this activity becomes in turn an instrument for a further activity. For example, a questionnaire can be used as an instrument for analysing a situation. The results of the survey can then be used to inform further activities such as decision making or information to those who participated.

**Table 1 – Methodological instruments of the PALETTE methodology related to their main purposes**

N°	Titles of instruments	Motivation to collaborate with PALETTE	Validation and follow-on of the needs analysis	To better know the functioning of the CoPs	To support the development and use of tools for CoPs	To develop CoPs activities
1.	Categories of tools				X	
2.	Questionnaire for categorizing tools				X	
3.	Inventory and categorization of tools				X	
4.	Declaration of intent	X		X		
5.	Guide for interviews		X	X		
6.	Interviews synthesis grids		X	X		
7.	Filled synthesis grids (models of actions for each CoP)		X	X		X
8.	Appropriation of a common language (MOT)	X	X	X	X	X
9.	Forming and organising Teams				X	X
10.	Template of use cases					X
11.	Use cases for each CoP				X	X
12.	Template for specific scenarios	X	X		X	X
13.	Validated specific scenarios	X	X		X	X
14.	Categories of CoPs' needs related to categories of Integrated Technological Services and Learning Services		X			X
15.	Template for the functional specifications of the PALETTE tools				X	X
16.	Integrated Technological Services prototypes				X	
17.	Analysis of the scenarios for highlighting generic actions				X	X
18.	Template for the validators' accounts		X			
19.	Indicators, criteria and generic questions for the validation of the scenarios		X			
20.	Validators' accounts for each specific scenario				X	X
21.	Usability analysis criteria and methodology				X	
22.	Criteria for the technical feasibility analysis of the scenarios				X	

N°	Titles of instruments	Motivation to collaborate with PALETTE	Validation and follow-on of the needs analysis	To better know the functioning of the CoPs	To support the development and use of tools for CoPs	To develop CoPs activities
23.	Methodology and questions for generating data about learning events in CoPs		x	x		
24.	Decisions about the modalities of trialling with CoPs	x			x	
25.	PALETTE Integrated Technological Services, versions n, n+1, n+x				x	
26.	Functional and ergonomic recommendations				x	
27.	Observation grids of the trials			x		
28.	Recommendations for the use of the services and for the functioning of CoPs				x	x
29.	Template for the presentation of the Learning and Organisational Resources (LORs)				x	x
30.	Framework for the validation of the LORs		x		x	x
31.	Validation accounts of LORs		x		x	x
32.	Validation accounts of trials of services with CoPs		x	x	x	x
33.	Conceptual diagrams of integration between services				x	

### 3.1 Categories of tools

See APPENDIX 2- Categories of Tools.

<b>Objective</b>	To present the PALETTE tools from a user point of view on the basis of validated categories of CoPs' activities. The purpose has been stated in D.PAR.02 (p. 16): "the more the classification of tools will be centred on the relation between the users and the developers rather than solely user- or developer-centred, the more the communication and the collaboration should be efficient because based on common vocabulary and culture."
<b>Step of the methodology</b>	'Analysing'
<b>User</b>	Used by the PALETTE developers in order to present the tools under development, and analyse existing non-PALETTE tools for CoPs.
<b>Activity being supported</b>	Discussions between the developers in order to identify the categories and functions of tools from a literature review
<b>Kind and purpose of data produced</b>	Five categories (or functions of tools) have been identified by the PALETTE researchers (see D.PAR.02): <ul style="list-style-type: none"><li>▪ Exchange of resources;</li><li>▪ Experience sharing and expression or illustration of practices, reflection and analysis;</li><li>▪ Problem solving and depiction or (collaborative) creation of new knowledge;</li><li>▪ Debate, confrontation, argumentation, negotiation for decision making;</li><li>▪ Archiving, evaluation, coordination, awareness.</li></ul>

### 3.2 Questionnaire for categorizing tools

See APPENDIX 3 – Questionnaires for categorizing tools

<b>Objective</b>	A questionnaire is developed so that the developers describe the main functionalities of their tools and categorize them into the five identified categories (see D.PAR.02).
<b>Step of the methodology</b>	'Analysing'
<b>User</b>	PALETTE developers
<b>Activity being supported</b>	Use of the online questionnaire by the PALETTE developers and recording of the data in a common data base.
<b>Kind and purpose of data produced</b>	The description of the tools collected in a data base is used for drawing up their inventory.

### 3.3 Inventory and categorization of tools

This instrument is presented in D.PAR.02 (pages 15-29).

<b>Objective</b>	This inventory is the outcome of the categorization of the tools based on the identified categories. Its aim is to provide CoPs and PALETTE developers with a list of tools that CoPs can use for achieving their goals and carrying out their actions.
<b>Step of the methodology</b>	'Analysing'

<b>User</b>	Used by the CoPs in order to identify tools according their actions and by the developers in order to present their tools.
<b>Activity being supported</b>	Presentation of the outcome to the PALETTE partners and CoPs.
<b>Kind and purpose of data produced</b>	The inventory is presented in the D.PAR.02: synthesis of the answers provided to the online questionnaire, presentation of non-PALETTE tools, filled questionnaires available on BSCW (restricted for the project partners). At the end of the project, the inventory is largely disseminated for other CoPs in order to support them in choosing appropriate tools for their actions (see D.PAR.04 and the dedicated LORs in D.PAR.06).

### 3.4 Declaration of intent

See APPENDIX 4 – declaration of intent between PALETTE and the CoPs.

<b>Objective</b>	This document aims to specify the level of commitment of CoPs in the European PALETTE project, in relation to objectives negotiated with the European Commission and partners' expectations. It allows the PALETTE Consortium to estimate the level of involvement of each CoP and each CoP to specify how it plans to interact with the project.
<b>Step of the methodology</b>	'Analysing'
<b>User</b>	CoPs' members, CoPs' delegates, mediators.
<b>Activity being supported</b>	Meeting between CoP member, delegate and mediator for completing the document.
<b>Kind and purpose of data produced</b>	A document called "Declaration of intent" between PALETTE and the CoPs used for discussing the participation of the CoPs.

### 3.5 Guide for interviews

See APPENDIX 5 – Guide for Interviews

<b>Objective</b>	The objective is to design a common structure for the interviews to be conducted with the CoPs by the mediators. This is to generate same kinds of data from each CoP and to propose a common framework to the mediators. The guide is composed of (see D.PAR.01): <ul style="list-style-type: none"> <li>▪ The objectives of the interview to present to the interviewees, the ethical issues to allow for, a brief description of the interviews comprehensive approach, and a list of the special interests of the tools developers in interviewing the CoPs' delegates and members.</li> <li>▪ The list of questions for a semi-structured interview.</li> <li>▪ A list of tips for the mediators to conduct the interviews.</li> </ul>
<b>Step of the methodology</b>	'Analysing'
<b>User</b>	The guide is used by the mediators in order to conduct the interviews with CoPs' delegates and/or members.
<b>Activity being supported</b>	The guide has been designed in collaboration with the mediators. The interviews have been conducted individually with CoPs' delegates or members, most of the time in face-to-face.
<b>Kind and purpose of data produced</b>	The generated data are: audio-recorded interviews, possibly groups discussions, commented demos of uses of CoPs' tools, documents use or produced by CoPs, and CoPs interests in participating in PALETTE.



### 3.6 Interviews synthesis grids

See APPENDIX 6 – Template of interviews synthesis grids.

<b>Objective</b>	Once the raw data have been generated, it is needed to analyse, condensate, and present them to the CoPs for validation. The presentation is both text-based and graphical in order to model the actual actions of the CoPs. The common grid aims at structuring the analysis work of the mediators and preparing the validation with the CoPs. A template is circulated to the mediators.
<b>Step of the methodology</b>	‘Analysing’
<b>User</b>	It is used by the mediators in order to analyse the data, synthesize them, and present them to the CoPs in order to validate the analysis.
<b>Activity being supported</b>	The grid is not used in a participative activity with the CoPs.
<b>Kind and purpose of data produced</b>	The filled grids of synthesis are discussed with the CoPs for validation.

### 3.7 Filled synthesis grids (models of actions for each CoP)

An example of filled synthesis grid (CoP LEARN-NETT) is presented in the APPENDIX 7 – Example of filled synthesis grid.

<b>Objective</b>	The mediators fill synthesis grids describing the context and activities of the CoPs. The grids are then presented to the CoPs for validation. The goals are to validate the representation of the CoPs’ actions, to identify first CoPs’ needs, and to prepare the Teams’ work about the development of first use cases.
<b>Step of the methodology</b>	‘Analysing’
<b>User</b>	The filled grids are used by the mediators and the CoPs. The mediators update the grid after its validation.
<b>Activity being supported</b>	Face-to-face meetings with the CoPs (for example delegates, focus groups, coordination teams, etc.).
<b>Kind and purpose of data produced</b>	The outcomes of the validation are “Validated activity models” of the CoPs used for the elaboration of the use cases and scenarios, and for the development of the tools functional specifications.

### 3.8 Appropriation of a common language (MOT)

An example of this appropriation is the circulation of the filled synthesis grids among the developers and CoPs (see APPENDIX 7 - Example of filled synthesis grid).

<b>Objective</b>	In an interdisciplinary project such PALETTE (“P” and “T” developers), the objective is to understand each other when speaking about methodological processes or depicting CoPs’ actions and needs, or functionalities of the tools. The basic grammar of the MOT language is presented in D.PAR.01.
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<b>Step of the methodology</b>	‘Analysing’ and ‘Design for use’. The common MOT language is used in many methodological processes. It has been firstly addressed for filling the interviews synthesis grids. Then it is used for designing and validating use cases and scenarios, and depicting generic activity scenarios.
<b>User</b>	It is used by the mediators and developers in order to model the CoPs’ actions, and design use cases and specific and generic scenarios. It is also used by the CoPs in order to validate the depictions made by the mediators and developers.
<b>Activity being supported</b>	Throughout the project activities with the CoPs, the MOT representations are used as “boundary objects”: validation meetings and discussions about the tools functionalities. An internal training at the end of June 2006 has been dedicated to the MOT representations with all the PALETTE developers.
<b>Kind and purpose of data produced</b>	The outcomes are MOT diagrams and files that are shared between the developers and presented to the CoPs for validation or discussion purposes.

### 3.9 Forming and organising Teams

The description of this organisation is detailed in D.IMP.03 (pages 7-9).

<b>Objective</b>	The forming of the Teams is to facilitate the flow of crucial information, the coordination of activities, and exchanges between the R&D WPs (1, 2, 3, 4). The Teams play a major role in the methodology because they gather the various categories of actors and coordinate actions of the PD. More specifically the Teams have two major focuses: <ul style="list-style-type: none"> <li>▪ To support the interoperability between PALETTE services: in each Team at least two partners developing services (for instance WP3 and WP4) approach the CoPs together.</li> <li>▪ The creation of specific and more generic scenarios: each Team addresses at least two CoPs and negotiates two specific scenarios. With the integration of both, a more generic scenario can also be created.</li> </ul>
<b>Step of the methodology</b>	“Design for use”
<b>User</b>	The Teams are composed of the mediators, services developers and the CoPs’ delegates.
<b>Activity being supported</b>	Meetings, training, and collaborative writing of the scenarios and functional specifications.
<b>Kind and purpose of data produced</b>	Document “Description of the Teams”; documents produced by the Teams such as use cases, scenarios and functional specifications of the services.

### 3.10 Template of use cases

See APPENDIX 8 – Template of use cases..

<b>Objective</b>	The template aims at describing a set of possible sequences of interaction between PALETTE services and CoPs' members in a particular environment and related to a particular goal. It contains all the steps the user goes through in order to achieve a given goal using a combination of offered services. It has been designed by the mediators and developers within the Teams.
<b>Step of the methodology</b>	'Design for use'
<b>User</b>	Actors of the Teams.
<b>Activity being supported</b>	Meetings, collaborative process of writing within the Teams.
<b>Kind and purpose of data produced</b>	Use cases in HTML documents that are used as a basis for the elaboration of the specific scenarios for each CoP.

### 3.11 Use cases for each CoP

An example of use case is presented in APPENDIX 9 – example of use cases. The other use cases are stored in each Team directory at <https://bscw.ercim.org/bscw/bscw.cgi/100474> (access restricted for the project members).

<b>Objective</b>	The use cases act as “boundary objects” useful for the development of the use cases themselves and in a next step the development of the scenarios. Their aims are to describe the main functionalities of the PALETTE tools for the CoPs, and describe first possible uses of the tools by the CoPs according to their needs.
<b>Step of the methodology</b>	'Design for use'
<b>User</b>	Actors of the Teams.
<b>Activity being supported</b>	Meetings, collaborative process of writing, validation meetings with CoPs' delegates or members.
<b>Kind and purpose of data produced</b>	Templates completed for each CoP to be validated by the CoPs' delegates or members.

### 3.12 Template of scenarios

See APPENDIX 10 – Template of scenarios..

<b>Objective</b>	The template aims at supporting the description of CoPs' actions and their uses of tools within a specific context. The purposes are to meet the developers' information needs and to present structured information to the CoPs about their functioning and their activities. This template is presented in D.IMP.03 and D.PAR.03.
<b>Step of the methodology</b>	'Design for use'
<b>User</b>	Actors of the Teams.
<b>Activity being supported</b>	Meetings, training, collaborative process of writing.
<b>Kind and purpose of data produced</b>	HTML document called “Template for the scenario”, available for the Teams in order to elaborate the scenarios.

### 3.13 Validated specific scenarios

Six validated specific scenarios are presented in D.PAR.03.

<b>Objective</b>	The scenarios act as “boundary objects” useful for the negotiation of the scenarios themselves, the modalities of trials with the CoPs and the development of the CoPs’ activities. Specific scenarios (correspondent and answering the specific needs of a CoP) constitute a first step for the elaboration of generic one (answering similar needs of various CoPs, for instance to manage information).
<b>Step of the methodology</b>	‘Design for use’
<b>User</b>	Actors of the Teams and CoPs’ members who have validated the specific scenarios.
<b>Activity being supported</b>	Meetings, training, collaborative process of writing, validation meeting with the CoPs.
<b>Kind and purpose of data produced</b>	Description of enhanced or new CoPs’ actions supported by the PALETTE services. This informs the writing of generic scenarios.

### 3.14 Categories of CoPs’ needs related to categories of Integrated Technological Services and Learning Services

See APPENDIX 11 – Categories of CoPs needs related to categories of Integrated Technological services and Learning Services.

<b>Objective</b>	In order to identify and develop in PALETTE the “configuration of services” (technological and learning ones) that meets the development and learning needs of CoPs, we firstly develop a categorization of the PALETTE CoPs’ needs. Secondly these categories of needs are matched with the categories of services that could be offered in PALETTE.
<b>Step of the methodology</b>	‘Design for use’
<b>User</b>	Actors of the Teams, especially the mediators and services developers.
<b>Activity being supported</b>	Meeting with Teams, collaborative process of research.
<b>Kind and purpose of data produced</b>	These categories are presented in D.IMP.03. They are used in order to elaborate generic scenarios as well as develop the orchestration of the services functional specifications.

### 3.15 Template for the description of the functional specifications of the PALETTE tools

See APPENDIX 12 – Template for the description of the functional specifications of the PALETTE tools.

<b>Objective</b>	The aim is to present the functional specifications of the tools from a user perspective.
<b>Step of the methodology</b>	‘Design for use’
<b>User</b>	Used by the developers in order to describe their tools.
<b>Activity being supported</b>	Discussions between the developers.

<b>Kind and purpose of data produced</b>	Document presenting the functional specifications of each PALETTE tool are written by the developers for the mediators and the CoPs' delegates and members. The template and an example are presented in the D.IMP.03.
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### 3.16 Integrated Technological Services prototypes

The list of the PALETTE Integrated Technological Services prototypes is continuously updated on the PALETTE website: <http://palette.ercim.org/content/view/13/30/>. They are also presented in the website show room at [http://palette.ercim.org/component/option,com\\_alphacontent/Itemid,119/](http://palette.ercim.org/component/option,com_alphacontent/Itemid,119/).

<b>Objective</b>	Taking into account the CoPs' needs, the prototypes are developed in coordination with the elaboration of the specific scenarios. Their aim is to be trialled by the CoPs through little activities in order to inform them about their functionalities and thus support them in the elaboration and validation of the specific scenarios.
<b>Step of the methodology</b>	'Design for use', 'Design in use'
<b>User</b>	Actors of the Teams, especially the mediators, and CoPs' delegates and members.
<b>Activity being supported</b>	The mediators organise activities of trial or training with the CoPs and discuss with them their possible actions that the tools could support.
<b>Kind and purpose of data produced</b>	Software, services.

### 3.17 Analysis of the scenarios for highlighting generic actions

This analysis has been carried out in D.IMP.03. It is based on the categories presented in APPENDIX 11 - Categories of CoPs needs related to categories of Integrated Technological services and Learning Services.

<b>Objective</b>	On the basis of the instrument 14 (Categories of CoPs' needs related to categories of Integrated Technological Services and Learning Services), generic actions are generated from the specific scenarios in order to be disseminated to other CoPs.
<b>Step of the methodology</b>	'Design for use', 'Design in use'
<b>User</b>	The PALETTE developers analyse the specific scenarios and use the generic actions in order to elaborate generic scenarios for other CoPs.
<b>Activity being supported</b>	Meetings with the Teams and possible presentation of the generic actions to CoPs not involved in PALETTE.
<b>Kind and purpose of data produced</b>	Graphical representations of the activities with MOT schemas with brief descriptions.

### 3.18 Template for the validators' accounts

See APPENDIX 13 – Template for the validators' accounts

<b>Objective</b>	This template is elaborated for the PALETTE developers to write an account after the scenarios validation meetings with the CoPs.
<b>Step of the methodology</b>	'Design for use'

<b>User</b>	It is used by the PALETTE developers for elaborating a validation account and by the CoPs' members in order to formalize their opinion about the first version of the scenarios.
<b>Activity being supported</b>	Validation meetings with the mediators, services developers and CoPs' members, questionnaires to be filled by the CoPs' members.
<b>Kind and purpose of data produced</b>	Text-based account of the validation of the scenarios. The critical discussions are presented in the D.PAR.03 and are used for preparing the trials of the scenarios with the CoPs.

### 3.19 Indicators, criteria and generic questions for the validation of the scenarios

See APPENDIX 14 – Indicators, criteria ad generic questions for the validation of the scenarios.

<b>Objective</b>	The indicators and criteria are elaborated by the WP6 in charge of the evaluation in the project. The aim is to have same indicators and criteria for the validation of all the scenarios. The generic questions stemmed from the indicators and criteria are provided to the PALETTE developers in order to prepare questionnaires to present to the CoPs' members for the validation process.
<b>Step of the methodology</b>	'Design for use'
<b>User</b>	Used by the PALETTE developers (validators) in order to prepare questions for the validation of the specific scenarios.
<b>Activity being supported</b>	The questions are used for the validation meetings with CoPs' members.
<b>Kind and purpose of data produced</b>	Validation questionnaires. The indicators and criteria are then used for structuring the validators' accounts (see D.EVA.02 and D.PAR.03).

### 3.20 Validators' accounts for each specific scenario

An example is provided in APPENDIX 15 – Example of validators' account.

<b>Objective</b>	The accounts of validation of the specific scenarios aim at providing useful information for the Teams to develop the specific and generic scenarios, and prepare the modalities of scenarios and services trial with the CoPs.
<b>Step of the methodology</b>	'Design for use'
<b>User</b>	Actors of the Teams.
<b>Activity being supported</b>	The accounts are written after the validation meetings and are presented to the CoPs' members who have participated in the meeting for acceptance.
<b>Kind and purpose of data produced</b>	Description of the validation processes and outcomes, and critical discussions for the future development of and trials the scenarios. The accounts are presented in D.PAR.03.

### 3.21 Usability analysis criteria and methodology

This instrument and its use are completely described in D.PAR.04 and D.PAR.07.

<b>Objective</b>	Criteria and a methodology of analysis are developed in order to provide the developers with practical guidelines for enhancing the user interface of the PALETTE tools.
<b>Step of the methodology</b>	'Design for use', 'Design in use'
<b>User</b>	PALETTE developers in charge of the usability analysis and PALETTE developers in charge of the development of the tools.
<b>Activity being supported</b>	After having written a usability account for each tool, there is a discussion between the developers for modifying the interfaces of the tools.
<b>Kind and purpose of data produced</b>	The usability analysis approach and methodology are presented in the D.IMP.03 and D.PAR.03. The usability accounts are presented in D.PAR.04 and D.PAR.07. Usability accounts are regularly sent to the PALETTE developers in order to continuously enhance the tools interfaces.

### 3.22 Criteria for the technical feasibility analysis of the scenarios

See APPENDIX 16 – Criteria for the technical feasibility analysis of the scenarios.

<b>Objective</b>	Criteria and a methodology of analysis are developed in order to provide the developers with practical guidelines for improving the scenarios and integration of services from three points of views: availability of the necessary technology among the PALETTE services, development risk, and availability of human resources in order to develop the services functionalities required by the scenarios.
<b>Step of the methodology</b>	'Design for use'
<b>User</b>	PALETTE developers in charge of the technical feasibility analysis and PALETTE developers in charge of the development of the tools.
<b>Activity being supported</b>	After having written a general account of the scenarios technical feasibility, there is a discussion between the developers for planning the development of the tools.
<b>Kind and purpose of data produced</b>	The technical feasibility account is provided in the D.PAR.03.

### 3.23 Methodology and questions for generating data about learning experience in CoPs

See the questions in APPENDIX 17 – Suggested questions for eliciting CoP members' accounts. The methodology is detailed in D.PAR.06.

<b>Objective</b>	A methodology and a list of suggested questions are prepared by the PALETTE pedagogical developers in order to understand the learning processes in the CoPs. Understanding the conditions of "learning experience" at work in the CoPs informs the development of LORs (Learning and Organisational Resources).
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	PALETTE pedagogical developers and mediators.
<b>Activity being supported</b>	Individual face-to-face or online interviews or group discussions with CoPs' members.
<b>Kind and purpose of data produced</b>	The outcomes are CoPs members' accounts about "learning experience" they lived while participating in their CoP's actions.

### 3.24 Decisions about the modalities of trialling with the CoPs

The modalities of the trials are described for each participating CoP in the appendix 4 of D.APR.08.

<b>Objective</b>	After having presented the validated specific scenarios to the CoPs, the mediators discuss with them the practical modalities for the trials of the scenarios: what are the possible pieces of scenario that could be trialled during a significant period of time, how to plan these trials, with whom in the CoPs, etc.?
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	Actors of the Teams with the CoPs' members who have been involved in the trials.
<b>Activity being supported</b>	Virtual or face-to-face discussion.
<b>Kind and purpose of data produced</b>	Meeting report with a detailed plan for the trial of the scenarios (see D.PAR.08).

### 3.25 PALETTE Integrated Technological Services, versions n, n+1, n+x

The list of the PALETTE Integrated Technological Services prototypes is continuously updated on the PALETTE website: <http://palette.ercim.org/content/view/13/30/>. At the end of the project they are available in the PALETTE show room.

<b>Objective</b>	Taking into account the outcomes of the trials with the CoPs, the Integrated Technological Services prototypes are enhanced. The new versions inform the development of the scenarios. The last versions of the Integrated Technological Services are disseminated at the end of the project.
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	Actors of the Teams and CoPs' members during the trials and after the project ends.
<b>Activity being supported</b>	Concrete and realistic actions organised with the CoPs during the trials.
<b>Kind and purpose of data produced</b>	Software, services.

### 3.26 Functional and ergonomic recommendations

These recommendations are proposed in D.PAR.04 and D.PAR.07 from an ergonomic point of view and in D.PAR.08 from a functional point of view.

<b>Objective</b>	The trials of the scenarios by the CoPs are observed and analysed by the PALETTE pedagogical developers from the instrumentation and instrumentalisation points of view. They provide all the PALETTE developers with recommendations about the functions and interface of the tools, and the activities scenarios. The developers then modify and enhance the services and the scenarios.
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	PALETTE developers.



<b>Activity being supported</b>	The functional and ergonomic recommendations are produced thanks to the trials of scenarios with the CoPs. Then discussions are held with the developers in order to modify and enhance the services and the scenarios.
<b>Kind and purpose of data produced</b>	Accounts for the PALETTE developers.

### 3.27 Observation grids of the trials

The methodology of the observation and analysis of trials with CoPs is described in D.PAR.08. The common questions of research are presented in APPENDIX 18 – General questions of research for the observation of the trials.

<b>Objective</b>	Observations grids are prepared for the PALETTE pedagogical developers to observe and analyse the trials of scenarios and services by the CoPs from several points of view: instrumentation, instrumentalisation, and individual and collective learning carried out.
<b>Step of the methodology</b>	‘Design in use’
<b>User</b>	PALETTE pedagogical developers.
<b>Activity being supported</b>	The observation grids are used throughout the trials of scenarios and services with the CoPs that last towards one month.
<b>Kind and purpose of data produced</b>	Filled grids that are used for the analysis of the trials and for the production of functional and ergonomic recommendations addressed to the PALETTE developers.

### 3.28 Recommendations for the use of the services and for the functioning of CoPs

This instrument is presented in APPENDIX 19 – Template for the presentation of the results of the trials to the CoPs.

<b>Objective</b>	These recommendations are produced in order to enhance and adapt the scenarios and services in their last version, and prepare the documentation and training that is enclosed in the scenarios.
<b>Step of the methodology</b>	‘Design in use’
<b>User</b>	Produced and used by the actors of the Teams.
<b>Activity being supported</b>	Discussions within the Teams.
<b>Kind and purpose of data produced</b>	Accounts for the enhancement of scenarios and services, and the preparation of the dissemination of PALETTE outcomes.

### 3.29 Template for the presentation of the Learning and Organisational Resources (LORs)

Based on the model of learning in CoPs developed in D.PAR.06, this template aims at presenting the LORs for CoPs (see APPENDIX 20 – Types and structure of the LORs). The LORs are all presented in D.PAR.06 and online at <http://argentera.inria.fr:8080/swikipalette/data/Lor/LorHome.jsp>.

<b>Objective</b>	Proposing a common structure for presenting the different types of LORs related to the Generic Scenarios.
<b>Step of the methodology</b>	‘Design in use’

<b>User</b>	Produced and used by the Pedagogical designers.
<b>Activity being supported</b>	Discussions within the WP1.
<b>Kind and purpose of data produced</b>	Activities to be proposed to the CoPs in order to develop their members' learning, organisation and functioning, and choose and use of tools.

### 3.30 Framework for the validation of the LORs

This framework has been used for validating the LORs with CoPs. It is presented in APPENDIX 21 – Framework for the validation of the LORs.

<b>Objective</b>	To evaluate the LORs in real activities with CoPs.
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	Produced and used by the mediators.
<b>Activity being supported</b>	Organisation of activities with the CoPs based on the LORs, discussions with CoP members and delegates for evaluating the LORs.
<b>Kind and purpose of data produced</b>	Validation accounts of the trials in order to improve the presentation of the LORs.

### 3.31 Validation accounts of LORs

These accounts have been published in D.PAR.06.

<b>Objective</b>	To provide the pedagogical designers with evaluation of real implementations of LORs within CoPs.
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	Produced and used by the pedagogical designers and mediators.
<b>Activity being supported</b>	Discussions with CoP members and delegates for evaluating the LORs, discussions within WP1 for improving the LORs.
<b>Kind and purpose of data produced</b>	Validation accounts of the LORs in order to improve their presentation.

### 3.32 Validation accounts of trials with CoPs

These accounts are published in D.PAR.08.

<b>Objective</b>	To provide the pedagogical designers with evaluation of real implementations of LORs within CoPs. These accounts are also designed for the developers in order to improve the functionalities of their services and the CoPs in order to better know their functioning.
<b>Step of the methodology</b>	'Design in use'
<b>User</b>	Produced by the pedagogical designers and mediators for the developers and CoPs.
<b>Activity being supported</b>	Discussions within WP1, discussions with the developers and the CoPs within the Teams.
<b>Kind and purpose of data produced</b>	Validation accounts of the trials in order to improve the services and development of CoPs.

### 3.33 Conceptual diagrams of integration between services

These diagrams have been published in D.IMP.08. Examples are provided in APPENDIX 22 – Conceptual diagrams of integration between services.

<b>Objective</b>	To provide the developers and mediators with general diagrams depicting the functionalities implemented in the services and supporting integration between services.
<b>Step of the methodology</b>	‘Design in use’
<b>User</b>	Produced by the developers for themselves and the mediators.
<b>Activity being supported</b>	Discussions within Teams for designing the diagrams. Discussions between the developers to implement the integrated specifications.
<b>Kind and purpose of data produced</b>	Schemas representing the functionalities of the services for each Generic Scenario. This allowed the developers to implement different integrated functionalities in their services. This also allowed the mediators to depict the specific scenarios (or situations) of their CoP.

## 4 – Experiencing Participatory design: analysis of the actors from an Actor network theory view point

### 4.1 Narratives from the PALETTE Project

The elements in the following chapters are issued from the observations and reflection of a group of PALETTE researchers particularly interested in the use of Participatory Design and Actor Network Theory. It can be assimilated to an action research process within and upon the project: it starts with action observation, uses research processes and tools in order to understand, explicit, represent, share what is taking place and goes back towards action by suggesting improvements or simply providing the results of the observations to other project members. The data used for this action research come from different sources:

- the project deliverables, specifically from WP1, WP5 and WP6;
- the content of wikis used during the project;
- the participation in project meetings and training sessions;
- the participation to some project tasks in WP1 and WP5, specifically the tasks regarding the design and implementation of participatory design, the work within the three teams A, B and C, the task force for designing generic scenarios, the coordination of mediators (participative observation);
- the participation in the work of different CoPs, either as mediators, or members, or participant in workgroup fostered by the cooperation of these Cops with PALETTE.

This work was neither exhaustive nor strictly required by the project organization. It is more a voluntary based action. Thus, as the researchers involved had no specific mandate to act (on the contrary of the WP6 formative evaluation, for example), they do not claim to have had a complete comprehensive view of everything that happened in the project.

Nevertheless, this work was conducted during the whole unrolling of the project; it started with the first stages of PD implementation and training activities during the first Summer School of June 2006; it was of help to design the three teams reorganisation that led to the specific scenarios; it was fully used to model the generic scenario de-construction and re-construction process in Fall 2007; it led to

several publication and communications in different conferences (see bibliography); and it was fully discussed among both WP1 and WP5 teams at several stages of the project. Though some analysis, specifically those of section 4.6, are done now, at the end of the project, the whole process was engaged from the beginning and was recognised to be helpful by the project coordination and management team.

## **4.2 Rationale for using PD and ANT**

### **4.2.1 The socio-technical nature of PALETTE**

PALETTE gathers researchers from two main research fields: Social Sciences, namely Education Sciences and Computer Sciences, and members of Communities of Practice in different domains (Education, companies, etc.). The project aims both to develop knowledge on the socio-organisational side by researching on Communities of Practice, their process of emergence and growth, their ability to create knowledge and develop competencies, the way to successfully "cultivate" them to fulfil the hopes and wishes of their members; and to develop knowledge on the technical side by enabling to enhance research on the interoperability of social software intended to sustain and support the functioning of communities such as Communities of Practice.

PALETTE will provide innovative models and technical solutions with regard to the following dimensions:

- efficient reuse and sharing of information among the CoPs participants;
- user-friendly production and use of multimedia content to support the expression of practices (behaviour, rules, personal theory, etc.);
- efficient and effective support of the individual and organisational learning process, the incoming of new participants in a CoP, and the capitalization of knowledge.

According to the nature of PALETTE and to its main goals, Participatory Design seemed to the PALETTE team to be the best framework within which to develop a suitable project methodology (Esnault, 2006).

PALETTE involves a great number of participants, from different scientific fields and backgrounds (different scientific cultures) and also with different concerns regarding the possible outputs of the project; for example, the CoP members are more interested in the practical outputs, whereas researchers might be more interested in output of research value. The software elements that are implied in the project have a huge influence on how the project can evolve and how it will reach its goal. Thus they can be considered as main actors of the project in the sense of Actor-Network Theory (ANT). The complexity of the actor network in PALETTE, the multiplicity and diversity of the initial interests for all these actors to participate in PALETTE have led us from the beginning of the project to consider that ANT could be a good reference framework to look at and understand what is happening in the project, and help us design and implement the processes and tools for a successful Participatory design Methodology. The following development will hopefully show that it was the case.

ANT portrays an alignment that differs from the traditional system development one along crucial dimensions: there is an open-ended array of "things" that need to be aligned including work-routines, incentive structures, system modules and organisational roles. It follows immediately that there can be no strict top-down control over such a collection of things (Monteiro, 2000). Actors' heterogeneity is one of ANT main originalities. An actor is characterized first hand by its capability to act and interact, its influence. ANT thus clearly acknowledges that a lot of "things" - humans and non-humans - do have an influence (McBride). The notion of participation is extended to take into account the

participation/influence of non-human actors, such as artefacts and organisations. This is an interesting feature when describing a socio-technical system.

ANT concepts seem appropriate for preparing design strategies, in a Participatory Design context, that aim at "aligning the interests of the actor-network " i.e. having all their influences fit together. The alignment of the network is obtained through processes of translation: translation means both a move of some actor's interests and a translation - in the sense of change of language or representation - of those interests in order to align them with the interests of other actors. According to Callon (Callon, 1999), the translation process includes several steps, among which: intersement and enrolment. Intersement and enrolment focus on negotiating acceptable roles for the human actors.

The next ANT concept is inscription, meaning that "aligned interests [are] inscribed into durable material" (Law, 1992). A translation process supposes a medium or a material in which it is inscribed (boundary objects, for example, may support inscription). According to Akrich: "A large part of the work of innovators is that of inscribing their vision of the world in the technical content of a new object" (Akrich, 1992).

Finally, ANT introduces the concept of black-boxing. Back-boxes are "sealed actor-networks" (Stalder, 1997) whose alignment has been obtained, whose aligned interests have been inscribed in a stable association that is no longer questionable – except at a heavy cost. In this sense, a project plan is a black-box that has been sealed after a translation process has succeeded in aligning the interests of the project partners.

Furthermore, ANT has proved to act as a powerful tool to help us understand how and why the project might or might not have difficulties in its unrolling all along the three years of its life. As said in the beginning of this section, not everybody in PALETTE was a "daily" user of ANT. The WP6 evaluation workpackage, for example, did not rely mostly on ANT to support the evaluation methodology, but rather on other kind of methodologies. For us, this is not a problem. It does not, and did not throughout the project, prevent from using ANT as an analysis tool in complement with other methodological and evaluation tools. It gives another perspective that was of help to discuss what was happening in the project, and to support some decisions in project management; this is a sufficient *a posteriori* justification in our view.

#### **4.2.2 The construction of usefulness**

The Participatory Design approach may be considered as a process of negotiation of usefulness to be achieved through reconciling the contrasting perspectives of various stakeholders, including users, designers and others. There are different interpretations of the usefulness of technology. As stated by Abreu de Paula: "perception of usefulness is not statically embedded in its design, but is dynamically and constantly created and shaped by different social groups. In this respect, one important goal is to attempt to reconcile these often contrasting perspectives" (Abreu de Paula, 2004). While Participatory Design does not explicitly address the social construction of usefulness, it may be considered as framing the social interactions that eventually lead to a recognised useful system.

#### **4.2.3 The management of participation**

The main difficulty of Participatory Design remains the organization and management of an efficient participation – i.e. a participation that can truly influence the design process. Each actor of the design process is an expert of her domain and this expertise influences the design process. However actors are heterogeneous in respect to their disciplines, preoccupations and interests: they don't speak the same "language". For them to interact necessitates that they construct together a "common ground". This is

achieved through participative activities that mediate participation. Examples of such activities include brainstorming meetings, prototype demonstration, scenario performing, role playing, design games. Participative activities are often hampered by suspicion and even conflict.

Some of these activities may focus on creating boundary-objects (Bowker and Star, 1999; Gasson, 2006) i.e. objects "to-think-with" that facilitate mutual understanding and trust among participants with various backgrounds. A mock-up, an intermediate version of the final product, a use-case or a scenario are classical boundary-objects. This concept is closely related to what Wenger says about reification: "reification ... refer to the process of giving form to our experience by producing objects (...) In so doing we create points of focus around which the negotiation of meaning becomes organized"(Wenger, 1998).

#### **4.2.4 The implementation of the methodology**

By analogy with Mc Bride's seven steps methodology (Mc Bride), the following process were applied to implement the Participatory Design methodology (cf D.PAR.01 and D.PAR.02):

- the first steps consisted in identifying the various actors, their interests, the inhibitors and the promoters for the enrolment of these actors in the actor-network;
- then, by attempting to "align" these actors' interests, we have progressively built the actor-network and an ANT-based description of the issues related to the participatory approach in Palette;
- finally we have continuously proposed a set of activities – mainly participative activities with boundary objects – and selected a set of inscription medium with the aim to "enrol" the various actors and promote the social design and acceptance of the new technologies.

### **4.3 Building the Actor-Network**

The PALETTE Actor-network comprises the following types of Actors:

- Researchers from the education sciences (called "Ps" – like Pedagogy), from different institutions and different backgrounds, but with at least a common constructivist perspective;
- Learning theories, collaboration theories, and knowledge about Communities of Practice (CoPs), which are mostly commonly agreed in the "Ps" world;
- Researchers from the computer sciences (called "Ts" – like Technology), from different fields of research, like KM, mediation tools, multimedia authoring, document management and structuring, awareness, collaborative editing, etc.;
- Communities of Practice (CoPs), including different actors: CoPs members and CoPs mediators (representative of Cops in the PALETTE Project); CoPs mediators can be thought of as boundary actors, because they belong to the two different categories of "Ps" and CoPs; there are twelve CoPs implied in PALETTE as external partners.
- Existing applications or tools, previously developed by the "Ts" in their different contexts, and gathered in the project because of their possible usefulness for use in CoPs; these tools were developed mainly to implement research concepts according to innovative standards; they are in an on-going process of development, and could be improved, tuned or enhanced to better "match" to possible uses in CoPs;
- Technical standards; the "Ts" belong to the Open Source community; the tools rely on agreed standards like W3C , XML, REST, etc.
- Project, DoW, project coordination, project management, Work Packages, tasks groups, sub-tasks groups, management tools: (reports, time-sheets, deliverables)

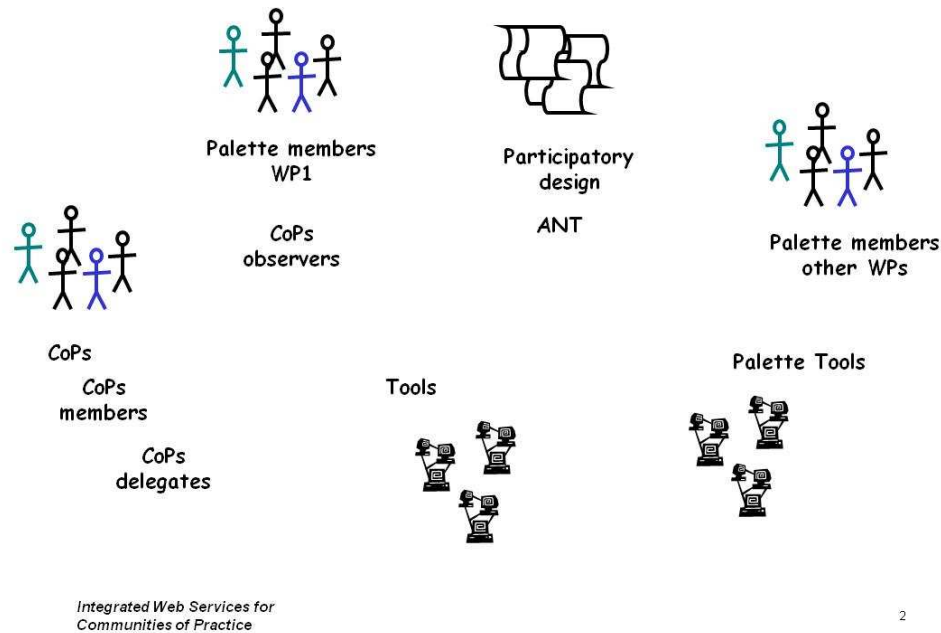
- Pedagogical tools: social sciences methodologies, interviews, scenarios, data collection methods, data representation methods...
- Methodological tools: PDM, ANT, MOT... and practices (from previous European projects, from research management, from IT project management, from previous socio-technical experience, etc.)

Most of them already existed before the project and will continue their life after the project: researchers, institutions, currently existing tools, some CoPs, etc. Some of these actors had already built relationship between themselves, some other not. Some actors exist only due to the project: the newly developed tools, the Work Packages, the deliverables, for example. The PALETTE actor-network is a dynamic entity which is made up of all the heterogeneous actors (meaning human and non human, but also of different levels of granularity ) and of all the links that dynamically tie these actors for the purposes of the project (and also for other possible reasons).

The situation of an actor within an actor network is not fully defined by the existence of the actor. Some links have to be knitted with other actors to materialize the presence of the actor in the network, through enrolment. Enrolling an actor within an actor-network means that there are some agreed common interests between this specific actor and the actor-network at some moment. Building the partnership between institutions (in fact groups within institutions) to submit a proposal to the European Call for Projects was a first kind of enrolment.

The Actor Network is not given by the fact that people and objects are designated as members of the project. Each actor has to be enrolled actively in the processes. Enrolling actors in an actor-network requires going through some participative activities where actors can discover and share their common interests. The CoPs are not members of the project, but it is really important that they become actors of the project. Thus, they have to be enrolled, by identifying some common interest between CoPs, and/or CoPs' members, and other actors of the PALETTE actor-network. The Participative Interview process that is used to gather data about the CoPs is the main step toward enrolling them.

Currently existing collaborative tools (like Lotus Notes or e-Rooms, or Moodle, etc.) are not partners of the project as well. But they are used by a lot of people and by CoPs outside the project. They have to be taken into account in the project, from a technical point of view - which is a matter of interoperability and standards - and from a user interface point of view as well. This is done through the Tool Inventory/Categorization process, which is the main participative activity through which tools are enrolled in the PALETTE actor-network. For "inside" tools (those developed by partners), the categorization is not the only enrolment process; another enrolment process is that they are used within the project (for example, a document management software is used to collaboratively publish project documents)



**Fig. 4 - Actor-Network at the launch of the project**

#### 4.3.1 Enrolment of Project Researchers

The enrolment of the main researchers is classically marked by the Kick-off meeting. It is a time to get to know each other and starting sharing the main concerns of the project: goals, organization, methodology, basic elements of knowledge, technological tools for collaboration, procedures relative to the European context, etc. Naturally the process starts even earlier, in the building of the Consortium during the proposal design and writing; then the Consortium itself comes from the rearrangement of parts of previous networks. Thus, the enrolment process started way before the Kick-off meeting for the core project members. However, the Kick-off is still a key landmark in the project team enrolment.

#### 4.3.2 Enrolment of methodological concertos (PD and ANT)

The PALETTE work plan explicitly mentions the use of a participatory design methodology involving the COP members and all the project researchers, "Ps" and "Ts". The Participatory Design Methodology (PDM) is brought into the project by a small team of "P" members, together with the idea of using Actor Network Theory (ANT) as a framework for expressing, representing, observing and analyzing the situations in the project. It is then necessary to enrol the methodology and the ANT framework themselves through a set of activities involving the other actors: presentations, internal trainings, writing of methodological deliverables, publications and presentations in conferences outside of the project.

This alignment was only very partially realized in the first steps of the project. Eventually, it has taken up to the two thirds of the project to have a sufficient understanding of the effects, positive advantages and impacts of the methodology, as we can still see from the work of the WP6 evaluation workpackage.



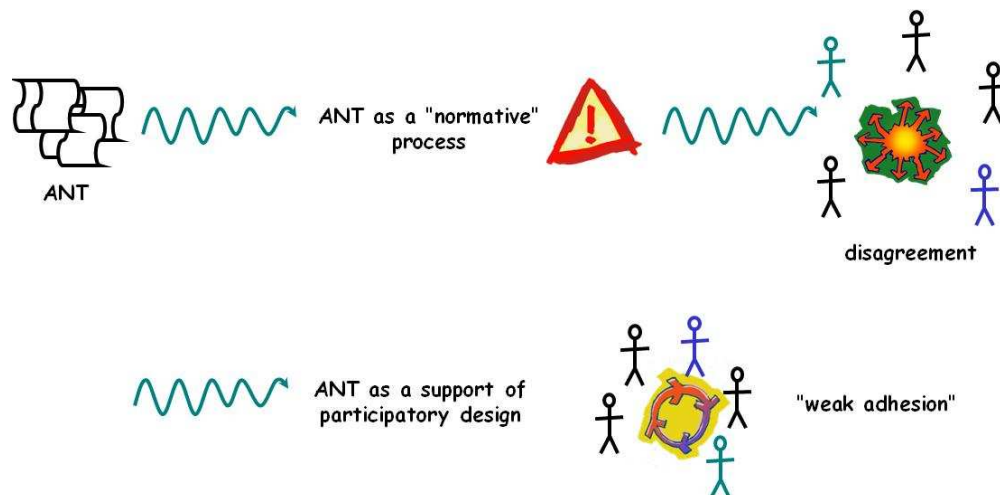
It was clearly stated from the beginning of the project that the interviews would not result in a list of needs leading to the writing of specifications, but that they would be used collaboratively by the "Ps", "Ts" and CoP observers to write scenarios of use.

If the "Ps" were rather satisfied by this process – except that they still used the idea of "CoP needs" as a structuring element of the data collected about the CoPs, the "Ts" partners seemed rather frustrated by formulation and recurrently attempted to re-create for themselves documents looking like specifications in order to improve their tools and services separately.



*Fig. 5 - Enrolment of PD*

We saw throughout the formative evaluation of PALETTE that some participants, though adhering progressively to it, are still not fully and intimately convinced of what participatory design is and how it really operates.



*Fig. 6 - Enrolment of ANT*

Finally, the main role of ANT in the project has been as a tool (a "pair of spectacles") to understand and analyse the unrolling of the project, the behavior of participants, the difficulties and successes of the implementation of PDM.

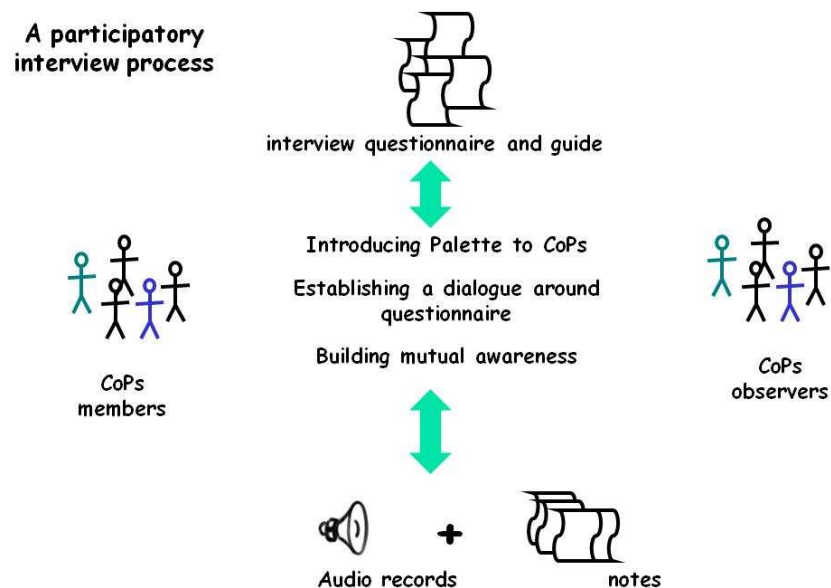
### 4.3.3 Enrolment of CoPs

CoPs are not members of the project – though they are very important actors – they are rather associated to the project. This creates a special situation that will need to be dealt with: CoP members are not participating on a regular basis in project meeting, they do not receive any financial compensation, for example.

At the beginning of the project, it was decided to have CoP observers who where project researchers mainly working with one specific member called the CoP delegate. Later, the Cops observers were "promoted" as CoP mediators, after a reflection about their role: the idea of being simply "observers" was not considered to reflect enough the importance of their role as "connectors" and "translators" between the CoP and the project.

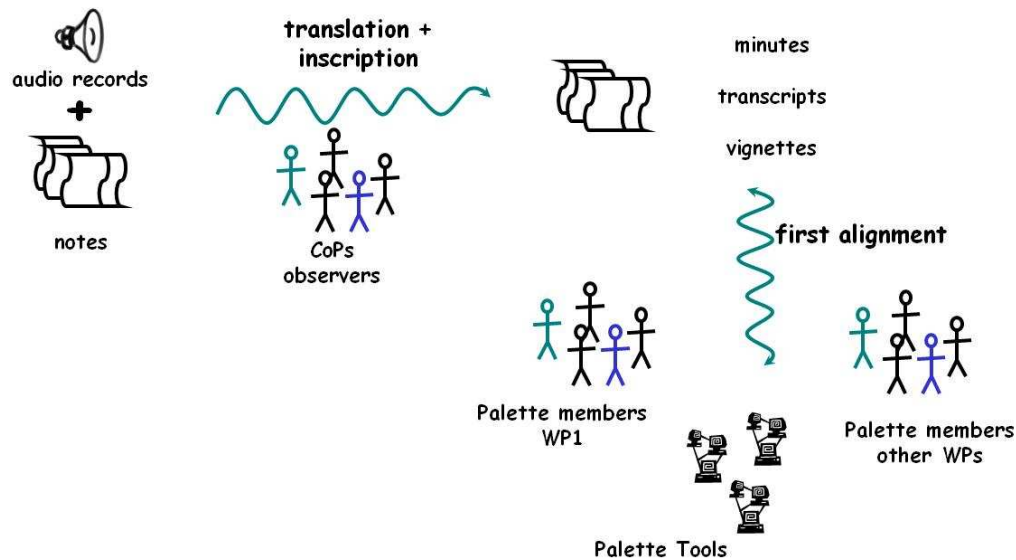
The first enrolment of CoPs, CoP members and CoP observers was done through a participative interview process. It was participative in the sense that

- the interview guide were designed jointly by the "Ps" and the "Ts" researchers;
- the interview process brought together a CoP observer and a CoP delegate (and/or other CoP members);
- the minutes of the interview were discussed and amended between the CoP observer and the CoP delegate;
- the final interview transcripts were adopted by both "Ps" and "Ts" as a basis for a transversal analysis of the CoP characteristics and for the writing of the use cases;
- at each step the CoP observer and the CoP delegate work together to discuss and validate the data used and/or produced.



*Fig. 7 - Enrolment of CoP members*

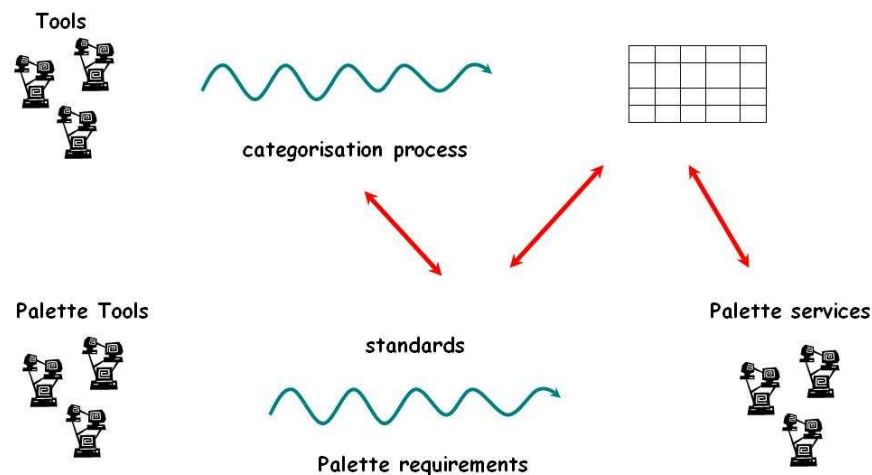
The way the interview process was designed, the way the interview guide was discussed and written, the way the interviews were conducted, the way they were exploited and the feed-back process to discuss, improve and validate them and the fact that a great part of the actor network was implied collaboratively at each step points to the participatory nature of the interview process realised in the early stages of PALETTE.



*Fig. 8 - First attempt of interests' alignment: transcripts of interviews*

The work of transcribing interviews and mining the data from the transcript to produce what was called a transversal analysis was conducted in a participatory way between the CoPs observers, the WP1 researchers and some CoPs members for validation of the transcripts. Then the transcripts were also discussed with the other WPs members (specifically the WP2, WP3, WP4 members that were concerned with the three kinds of tools).

#### 4.3.4 Enrolment of tools



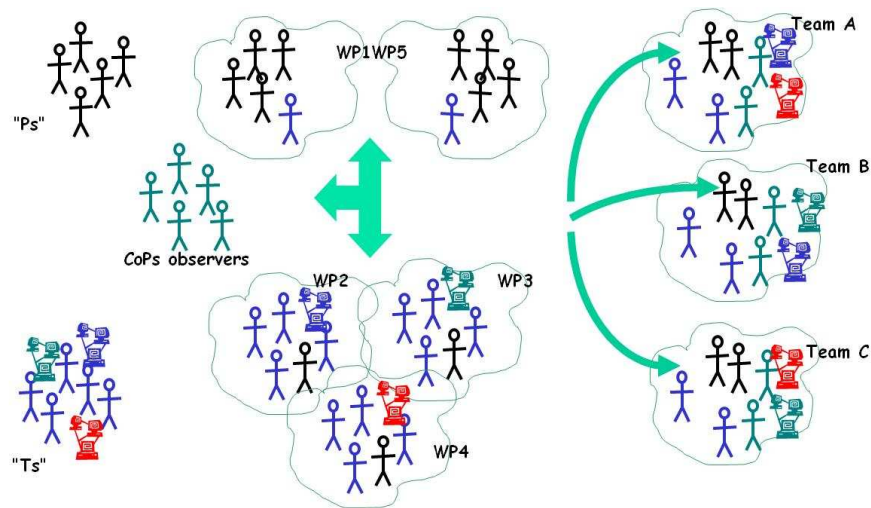
*Fi. 9 - Enrolment of Tools*

The PALETTE software were called "tools" at the beginning of the project, to refer to their current state at this stag, and also because it enabled the researchers to position them among other existing tools on the market.

The move from "tools" to "services" is a process in itself that testifies from the enrolment-translation-inscription process that specifically applied to this kind of actors. The PALETTE concept of service is the result of this process.

## 4.4 Examples of alignment of interests

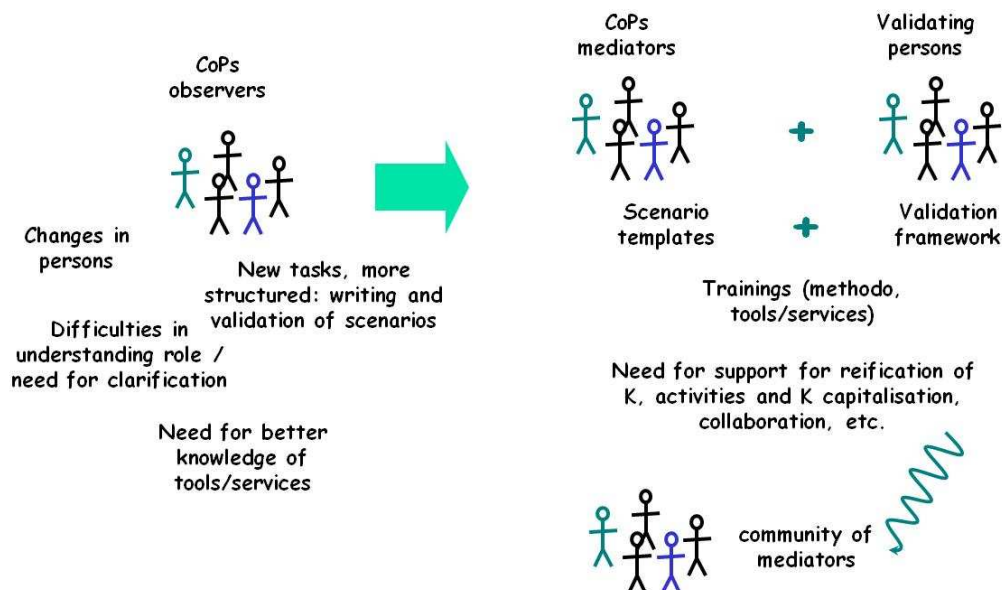
### 4.4.1 Alignment of project interests and organization: the building of the three teams



*Fig. 10 - An attempt in interests alignment: building the three teams*

After a while it appeared that it was too confusing to continue working as a "big" team (i.e. WP1-2-3-4-5 members plus the CoPs members plus all the tools). It was decided to divide into three teams: each team would gather some CoPs and some tools only, depending on the forecast uses that were emerging from the transcript of the interviews. Each team was thus able to issue a few scenarios of use typical of situations that were rather common to the CoPs represented in each team. Nevertheless, at this stage, the uses were mostly centred around one tool for each use.

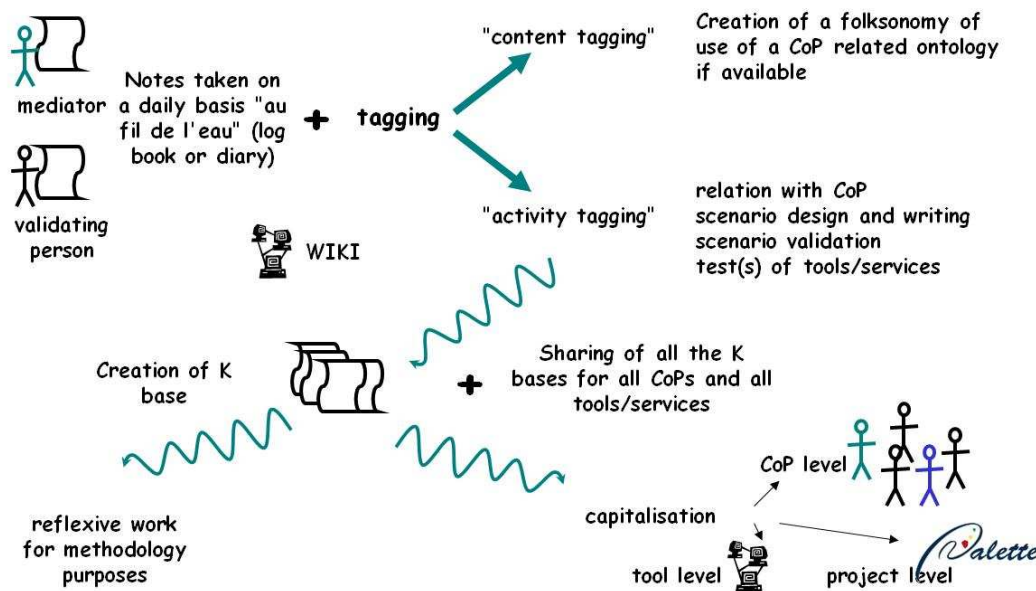
### 4.4.2 Better alignment of researchers' interests and CoPs interests: from CoPs observers to CoPs mediators



*Fig. 11 - From CoP Observers to CoP mediators*

It was then suggested by the CoPs observers themselves that the word "observers" did not reflect satisfactorily their role and position with respect both with the CoP and the project. They were both active CoP members and active project members trying to bridge the gap between the "outside" (the CoP members) and the "inside" (the project researchers). Their position was really that of mediators, i.e. people bringing insights about CoP life to the knowledge of project researchers and bringing information and knowledge about the project (and specifically the tools) into the CoP activities.

The movement from CoP observer to CoP mediator can thus be viewed as a successful recognition of the mediating role of these people. However, there always was a flaw in the perception of CoPs mediators by the other project researchers. Because of this "double membership", they were suspected to possibly introduce bias; "T" researchers, for example, always claimed that they wanted to have the point of view of "real" users, seeming not to trust the CoP mediators as "genuine" enough. Though sometimes it was possible to include other CoP members directly in the work of the teams, this was not always possible, thus creating some frustration for the "T" researchers.

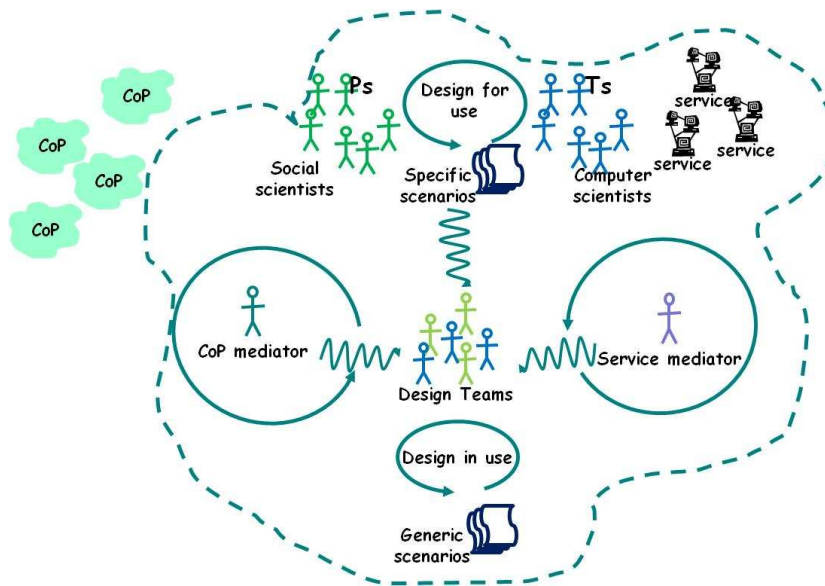


**Fig. 12 - Organization of the CoP mediators work**

The collaborative activity of CoP mediators has been supported throughout the project with a specific wiki <http://sweetwiki.inria.fr/swikipalette/data/Mediators/MediatorsHome.jsp>. An analysis of the work of mediators is given below in Part 5 of this document.

#### 4.4.3 Alignment of PDM and team organization: the creation of service mediators

One of the key aspects of PD is to maintain a balance (a symmetry) between the participation of "Ps" and "Ts" in the different activities. In order to manifest this will explicitly, it was decided to create Service mediators in a "symmetrical way" we had created the CoP mediators. Each service was assigned a service mediator in charge of conveying the communication between the service owners and developers and all the other actors; the service mediators were also responsible within the teams and able to make decision to answer to concerns of the teams and help realize the scenarios.



*Fig. 13 - The "symmetry" of CoP mediators and service mediators*

#### 4.5 Construction of Boundary Objects: the building of generic scenarios

This section presents a descriptive view of what we saw that took place. Section 4.6 will build upon this description to give our interpretation of what happened.

The initial state of the methodology used in the project was based on:

- participatory design principles, with the ANT view,
- the collection of data through interviews,
- the writing of scenarios of use,
- the test and validation of the scenarios of use by CoPs,
- the refinement of tools functionalities according to the scenarios of use,
- the trialling of the new developed services by CoPs.

This process was intended to loop several cycles (in an AGILE perspective).

After a while, it appeared that:

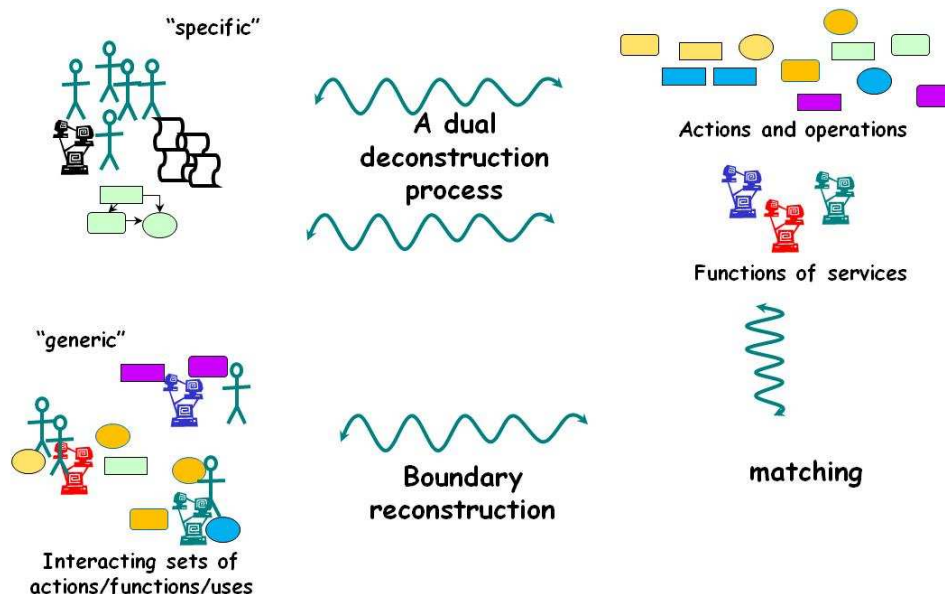
- the first loop was taking more time than expected, because, for example, of the complexity of the relationship and the heterogeneity within the large actor-network in PALETTE, the difficulties in the inscription-translation process, in the choice of a common representations, etc., which are very understandable pitfalls in a project like PALETTE was;
- the first trialling were more directed towards one tool, experiencing how this tool was able to support one or several activities within one CoP; it was very difficult for CoPs to try more than one tool, and then imagine crossed – or interoperated - uses of the whole set of tools;
- the scenarios of use designed were mostly describing the current activities of one CoP (a scenario for each CoP) and how some of these current activities could be done with the use of one of the current tools, on top of the other applications already used by the CoP; thus the scenarios were not suitable either to imagine how to enhance the functioning of the Cops (and not just understand their current state) or how to enhance the development of tools (suggest crossed uses in order to develop a whole set of interoperable services); there was an "attraction effect" from the current existing tools and current existing uses, preventing a real boundary construction to take place (Zeiliger, 2008)



- the boundary objects were considered as kind of "milestones" in the project, and this took over the main role of boundary objects which is to collaboratively loop on the process of translation/inscription in order to align the interests of as many actors as possible; thus the boundary object reification goal took over the collaborative boundary construction process;

Several further steps were then undertaken:

- the building of three "sub-teams" (Team A, B and C), regrouping some uses in some CoPs supported by some tools; each team was working on a cluster of relations CoP – activities – functionalities that did not cover the whole range of the possibilities but enabled to evidence some cross-utilisations of tools and some enhancement of practice, different within each team;
- the idea of Service mediators, to create the symmetry of functioning with the CoP mediators; each team was then built with a well balanced composition of "Ps" and "Ts", the CoP mediators as spokespersons for their CoP and the Service mediators as spokespersons for their service;
- the creation of a task force dedicated to the design of the generic scenarios, i.e. scenarios that could sustain the focus on uses requiring and illustrating the interoperability of services; this task force, having studied what has happened before in the previous steps of the project, and building over the literature about boundary construction processes in relation with Participatory Design (Holford, 2008), suggested a de-construction and re-construction process leading eventually to the choice of three categories of generic scenarios relevant for PALETTE further developments.



*Fig. 14 - From Specific to Generic Scenarios*

### A dual de-construction process

The necessity for every actor to emancipate from their current history (Hansen, 2006) led to two de-construction processes, one regarding the activities of the CoPs, the other the functionalities of the services (see also Esnault, 2008).

On the CoPs side, activity theory framework was used to describe Cops activities into actions and operations, in a way that enables to evidence, for example, that some typical actions are taking place more generally in CoPs, even if they are strongly context dependent.

On the technical side, the tools are decomposed into components, called services, which implement modular functions; they are regrouped into two categories: specific services (multimedia authoring, support of debate, ontology development and management, specific editing, etc.) and support services (single sign-on, global search, single store, notification, annotation and visual integration).

The "boundary zone" between both sides takes place around the matching between a functional description of actions (current and desired) on one side and services (current and potential) on the other side.

### The re-construction process leading to generic scenarios

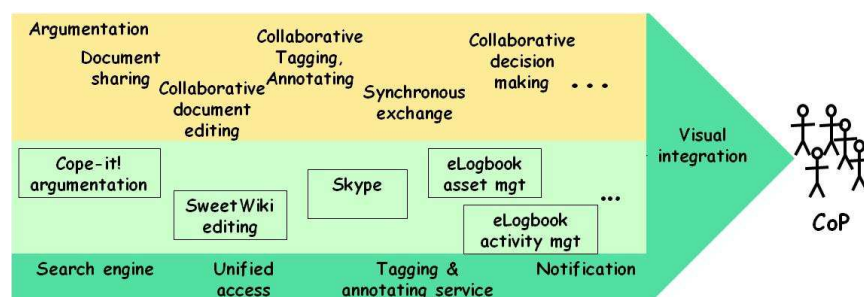
A generic scenario is the description of a set of activities and actions, supported by some specific services and the support services in order to achieve an intention; the intentions taken into account are those that concern mainly a CoP life: collaboration, facilitation, knowledge reification and document management. The generic scenarios are designed in teams gathering a reduced version of the Actor-Network suitable to the realization of each scenario. The work of the task force was thus mainly to start a dual emancipation process:

- from the current uses taking place within the CoPs, and the way these uses structured the current activities and prevented from thinking in a more innovative way about organizational enhancement;
- from the current state of development and integration of tools, which created barriers both to the use by users and to the interoperability construction process by the developers, prevented from a more proactive role of "Ts" regarding potential uses of modular "dis-integrated" services.

### The question of the representation of the generic scenarios

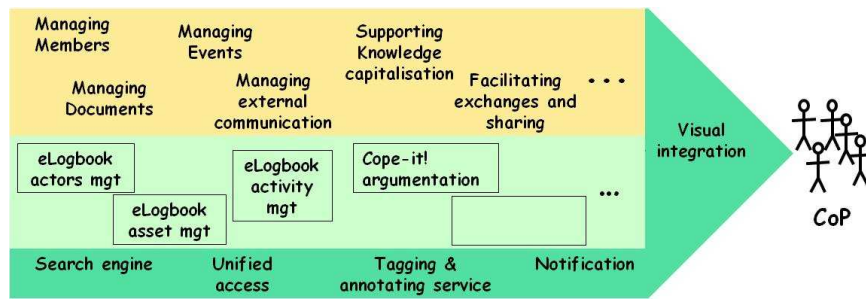
There was a vivid discussion around the question of how to represent the generic scenarios, how to picture them not only by text but possibly by drawings and schemata. The representations used at the beginning for the methodology description and some specific scenarios of use was not able to reach a consensus; neither were the representation issued from the IT development side such as UML. Finally one of us suggested to use a representation that was as external to the "P" side as it was to the "T" side, coming from the business culture and based upon the classical value chain representation (Porter, 1985).

Here are the representations used for the Three generic scenarios (from D.IMP.05)

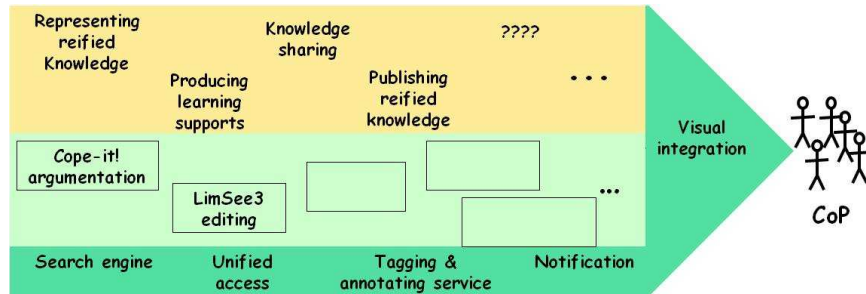


*Fig. 15 - Generic Scenario for Collaboration activities*





*Fig. 16 - Generic Scenario for CoP Animation activities*



*Fig. 17 - Generic Scenario for Domain Management activities*

This form represents the main activities included in the scenarios (the main "processes" in Porter's value chain) and the specific functions necessary to achieve these activities; they are supported by support functions (function that are transversal to the services and specific functions), and wrapped into the visual integration functions that enable to present a coherent view to the final users (cf to D.IMP.05 for further details on generic scenarios).

### **The success of generic scenarios as boundary objects**

In the final stages of the project, the existence of the generic scenario appears as being real "cornerstones": they are referred to equally in the two communities of the project; they are used as reference to classify other elements of productions, like the LORs, for example; they may be used in some CoPs to organise their activities (for example in Adira, the description of activities in order to write the specification file of the future collaborative web site uses a regrouping derived from the generic scenarios). The next section will discuss some aspects of this situation.

## **4.6 On the successful use of scenarios during the final stages of the PALETTE project**

The pitfalls we have described above certainly hampered the unfolding of the project during its early stages (Zeiliger, 2008). Then the project reached a stage we called "the definition of generic scenarios" and most stakeholders seemed to be happy with its outcome: the generic scenarios provided a new basis which enabled the project to proceed. This stage was an unplanned milestone in the project process. We now try to reflect on the role played by using scenarios in this key stage considering two aspects: i) the scenarios as an outcome and ii) the collaborative scenarios building as a collaborative process.

#### 4.6.1 Some fundamentals of design

Design is a process targeted at a product; when we discuss some aspects of design we should not focus on the product and forget the process (Bodker, 1997). Earlier in D.PAR.01 when we defined the usefulness of the designed product as resulting from a process of negotiation, we clearly stated that participatory design is not only a means to reach a better product but also a process that enable the participants confronted with design decisions to build a common understanding of the functional system and share some values. The final product does not necessarily keep track of the rationale of these agreements.

In design the "product" (which is going to be designed) is by definition new and unknown; so neither the designed product nor the design process can be fully known or planned in advance. Design simply cannot be a planned, stepwise, fully predictive process.

Design usually implies functional descriptions of the product, but these descriptions cannot be *the* central design tool. They cannot bridge the gap between the "abstract/theoretical" and "situated/practical" understandings of the product. They cannot bridge the gap between the "technical" and "social" perspectives. Design inevitably implies a change in work practice; this change is a *social phenomenon* that designers cannot handle. The functional descriptions cannot address the future situation of use because it is the result of this social phenomenon.

Now if we consider the process of design – and not solely the product - these traditional descriptions are also unsuitable to "serve as vehicles of communication because their proposed semantics is insufficient" (Bodker, 1997). The shared understanding of the functional system is created *in* the construction process, the semantics gradually emerge in the process of design; it is not inherent in the outcome: the product.

To tackle such uncertainties, Bodker says that design needs to "*relate the future to the past*" globally. In this perspective, she says that "system descriptions should be complemented with more "experience-driven" devices". Designers need to represent and hypothesize about the computer artefact-to-be and its use, and for that they need thinking tools. Tools that help relate the future of design to its present. We will try to show that it was one of the roles devoted to scenarios in Palette.

#### 4.6.2 Revisiting the role of scenarios in PALETTE design process .

The question of scenarios has been discussed in much detail in the D.PAR.02 deliverable, in the section entitled "Clarifying the notion of scenario". This deliverable was released during the early stages of the project, just after the CoPs interviews were made, and before the stage called "the definition of generic scenarios" was reached. Since then the project has progressed and it is not worthless to reflect on our experience as project members and discuss what the role of scenarios has been *in fine*. We will revisit *ex-post* the history of scenarios in Palette focusing on two aspects : the *quality* of Palette scenarios, and *to whom* they were relevant.

Scenarios are tools for envisioning the future. They convey stories that happen in the real world, as well as stories we imagine happening in possible worlds. The future of course is part of the "possible worlds". A quick Web search is sufficient to convince you that the future of say "the port of Amsterdam" or "the car market" were envisioned through scenarios. So they are for envisioning the social change related to advances in technology.

According to Carroll (Carroll, 1995) scenarios describe key situations of use, in terms of actors, goals, context, tools, actions and events; D.PAR.02 stated that scenarios are "about an activity". Although this is apparently a vague definition, we will see that far from being a weakness, this vague delimitation of the concept of scenario is what confers it its power. From this perspective the task of "clarifying the notion of scenario" should not be considered as fruitless or unsuccessful. It was indeed a useful stage in so far as we consider it a process, and do not focus only on its product. The semantics of the PALETTE scenarios was established in the course of the project collaborative activities. Here lies a first valuable aspect of scenarios: they do not come with a strong semantic; they require that their semantic be constructed. In the design process their vagueness is an affordance. It triggered the PALETTE process that led from the initial "scenarios of use" to the "specific scenarios" and then to

the final "generic scenarios" and some of their instantiations. This scenario-based evolution enabled most stakeholders to participate and contribute. It was stated in D.PAR.02 (section 3.1) that: "it was *necessary* for us to close the related gaps between partners to make sure that we *share a common view* of what scenarios could or should be in the project". When this task was planned the goal was to get an agreement on the definition of PALETTE scenarios. Task members reached an agreement whose inscription shaped the concept of "generic scenarios". From then on, the project would be able to proceed on a shared basis. With the passing of time we can see now that this stage was important, not merely for the clarification outcome, but also for its side effects on collaboration and participation. In that sense scenarios were useful as *boundary objects*, and as formal system descriptions as well. Classical functional descriptions of the envisioned system would have not been able to play this role.

Most of the remarks that follow are taken from J. Carroll's book "*Scenario-based design of Human-Computer interaction*", from S. Bodker and Christiansen's paper entitled "*Scenarios as springboards in design of CSCW*", and from L. B. Rasmussen's paper "*The narrative aspects of scenario building*".

A second important aspect of scenario descriptions is that - in a participatory design process - most stakeholders would understand them, even though they shed different perspectives on them. For the designers, "Scenarios are representations of the meaning they assign to embodiments of ideas of the future artefact and its use" (Campbell, 1992; Carroll, 1995); i.e. scenarios are thinking tools. Scenarios are not requirements – they are deliberately incomplete and easily revised. They embody concrete design actions. They facilitate the innovative (imaginative for Wartofsky, see below) exploration of design possibilities. For users, scenarios are meaningful because "the elements of the envisioned system appear embedded in the interactions that are meaningful for them to achieve their goals: they are more than technological capabilities! They describe the future system in terms of the work that people will have to achieve". In order to enrol all stakeholders, technological solutions are better "couched in the language of scenarios", says Bodker, than in the language of technical specifications. From this perspective scenarios have been proposed as an "integrative representation of work and technology for managing the patterns in which work and technology co-evolve".

Carroll summarizes the useful properties of scenarios in the design process:

1. they help developers coordinate design action and reflection; they help designers manage tradeoffs;
2. they are both concrete and flexible;
3. they help focus interaction among stakeholders in a PD process , by enabling multiple levels of details and multiple perspectives;
4. they afford multiple views of an interaction –helping developers to manage the consequences of design change;
5. they can be abstracted and categorized – helping developers in reuse-generalizations.

Part of the power of scenarios also derives from the way people naturally understand stories, according to Greymas semio-narrative theory (Greymas, 1966). Scenarios describe the use situations in schematic narrative form i.e. they describe the situation in terms of "what, where, by whom, when, by what means, in what way". Because they embed the support provided by the narrative scheme, scenarios help bridge the heterogeneous perspectives of users and designers, they help bridge the gap between the technical and social perspectives. But they also help relate the future to the past in framing our expectations. Narrative scenarios "weave together the relatively *certain* aspects of the future with imagination about the *uncertain*" (Rasmussen, 2005). This is how – according to Ricoeur (Ricoeur, 1988) – the scenario's narrative scheme shapes expectations: "*Scenarios exist in the borderland between experience and expectation (...) a story describes a sequence of actions and experiences done by a certain number of people (...). These people are presented either in situations that change or as reacting to such change. In turn, these changes reveal hidden aspects of the situation and the people involved, and engender a new predicament which calls for thought, action or both*". In his view expectation replicates narrative activity. In the project deliverable D.PAR.02 we already formulated the sound remark that scenarios may be "descriptions of an actual activity" or "descriptions of a possible set of events". What we now learn with Ricoeur is that "*It is because of*

*expectation in the present that future events appear as such*". Rasmussen states that "a well told story contain the power to create in our minds an image of a possible future"; because we form an expectation of the future with some structure of events derived from the present, once the future is here, we perceive it within the framework of this expected structure. As the future, just like the product of design, is uncertain, inherently new, we can but perceive it through a grid of known things. We can then understand that the use of envisioning tools during the process of design has a deep influence on the product of design, at least when we keep away from the user-centred design problematic of responding to user needs. Wartofsky talks about "imaginative artefacts", artefacts that broaden the range of our expectations. Analytically oriented tools alone would not play that role, because - Rasmussen says - something should carry stakeholders beyond "their conventional expectations of the future development". Scenarios may bridge the analytical vision and the imaginative one.

### **On scenarios as springboards and boundary objects.**

In the words of Engeström (Engeström, 1987) scenarios provide a *downward contextualization*: they relate design to the actual practices (the past or present of design) because their properties - as mentioned above - allow for describing actions contextualized in the current situation of use. But this is not sufficient, as the intention in design is to "*expand and transcend already known possibilities*" (Engeström, 1987). So an "*upward contextualization*" is needed as well, something that allow the anticipation of the new situation of use, something that provides a link with the future of design. This requires "*expansive tools*". Scenarios again can play this role of expanding our ideas; Engeström refers to such expansive tools as "springboards". His point concerns the *bootstrapping* of the imaginative activity: "A springboard is a facilitative image, technique or socio-conversational (...) misplaced or transplanted from some previous context". A springboard is something which help us "move away from stepwise derivations", yet it is anchored in the present situation of use.

As noted by Bodker: "an artefact intended to serve as a springboard must also (...) serve as a boundary object". The idea of boundary object (Star & Griesemer, 1989) is one of a "vehicle of communication" between the different stakeholders. While the idea of springboard is one of a vehicle for imagination to get away from the present situation. In a collaborative design process such as PALETTE, a springboard is necessary a boundary object because it has to play this very role of springboard for all stakeholders. On the other way round, however, all boundary objects cannot qualify as springboards. From this perspective, scenarios serve as springboards, and not merely as boundary objects. This provides us with a framework to revisit the evolution of scenarios in PALETTE: we started with interviews describing the current situations of use; then we derived what we called "CoP specific scenarios" through a stepwise process. The introduction of PALETTE envisioned services into those situations was a work of *downward contextualization* in the words of Engeström (or the construction of "secondary artefacts" in the hierarchy proposed by Wartofsky). Till that stage, scenarios had successfully played there role of boundary objects: they remained meaningful to users who were not led to venture too far from their current experience, while the developers accepted them - even if reluctantly - as substitutes in their eagerness to get system requirements (the talked about "implementable scenarios"). Then the project was blocked for a while. We now hypothesize (ex-post) that we were facing the gap corresponding to Wartofsky's imaginative level. Hopefully, the PALETTE scenarios played their second role: the role of springboards toward the imaginative level. During that stage the projects members (re-organized into the three A,B and C teams) were involved in intense interactions which eventually led to the elaboration of the so-called generic scenarios (GS1=Reification, GS2=Debate and decide, GS3=animation). This new kind of scenario was intended as a "*generalisation of the scenarios of use*": it was indeed a *generalisation* across several CoPs, but we will argue that it was also, at the same time, a more *imaginative* vision of what the envisioned services would achieve. Project deliverable D.IMP.08 mentions that the goal of generic scenarios is to i)"go further toward the genericity of the services in answering a generic CoP need or intention" and to ii)"demonstrate how [PALETTE] services can change CoPs practices". We note here an explicit articulation of the past and the future. We view it as a quest for more expansive tools although yet anchored into the present situation. Without denying the smart work of PALETTE stakeholders, we

also recognize here the sound power of scenarios used as springboards in an *upward contextualization* phase.

### On scenarios as tertiary artefacts.

Let us now reformulate - one more time - the history of PALETTE scenarios with the help of Wartofsky's framework. In his 1973 work on perception, Marx Wartofsky (Wartofsky, 1973) proposed a three level hierarchical categorization of artefacts that is quite widely used in Scandinavian studies on design and human computer interaction. Bodker suggests that Wartofsky's model is related to activity theory as it parallels Leontev's model of activity; and it is in line with Vygotsky concept of psychological tools. Wartofsky stated that human perception is historically variable: human perception changes in the course of practice, and in return changes practice. Wartofsky understands perception to be *mediated* by historically developed artefacts. He therefore distinguished three levels of artefacts:

- primary artefacts are used directly in productive activities (example: a hammer, a word processor);
- secondary artefacts are symbolic representations of modes of acting with the primary artefacts (example: a book about carpentry);
- tertiary artefacts are more abstract representations that are disconnected from a practical goal (example: artistic representations). Tertiary artefacts play a more imaginative role, they bear visions that transcend the one constructed in productive practice, but still they have the potentials for changing productive practice.

According to Wartofsky human perception is shaped by all three kinds of artefacts:

- it is shaped in the productive practice because primary artefacts broaden the range of what can be done;
- it is shaped by secondary artefacts because they determine the potential actions we perceive we can do - Ehn (Ehn, 1988) says they remind us of what can be done;
- it is shaped by tertiary artefacts because they help us "*break out of the conceptual limitations of purpose and function*" (Bertelsen, 2004).

In the context of the project, the PALETTE services (CopeIT, Amaya, SweetWiki ...) are primary artefacts; the MOT representations and the CoP specific scenarios are secondary artefacts; while the generic scenarios are probably a kind of tertiary artefact, even if they were not intended as such. What distinguishes generic scenarios from CoP specific ones is their so-called *genericity*. We are not saying so far that their generic character is a sort of abstraction which comes close to an artistic representation of their potentials for changing practice; but, rather, that our approach of the scenarios genericity is perhaps an hidden attempt toward breaking out of the present "*limitations of purpose and function*" in imagining the future services. The *creation/invention* of generic scenarios is more an imaginative act through abductive thinking ("*a qualified guess*") than an outcome of deductive thinking. Elements to support this argument may be found in the formulation of deliverable D.PAR.08: "*generic scenarios constitute the basis to demonstrate how services could change CoPs practices*", "*the description at the generic level is independent of a given service and of given artefacts or context*".

Let us proceed by questioning the notion of the so-called *generic needs* (and perhaps the concept of genericity in general): the question is whether the genericity of needs is approached through a work of refinement, or in crossing a gap through imagination (a guess). In an inductivist view of generics, the genericity of generic needs suppose the existence of a generic quantifier. In the case of PALETTE there is a relation between the generic needs and the observed needs of the CoPs. Presumably this relation is a quantification which considers that PaLETTE CoPs are *typical* of the needs of CoPs in general i.e. PALETTE CoPs needs account for *most* CoPs. The theory of generics teaches us that "*most*" is usually defined in relation to "*possible worlds*" or at least "*possible futures*" (rather than actual world) (Cohen, 2002), meaning that there is a hidden intention in establishing needs whose

genericity accounts for the needs of possible CoPs. In short we can state that genericity is always partly a project. As such it is *mediated by the use of "expansive" tools*.

It took us a while to acknowledge that scenarios could play that role of "expansive tools", and here layed our difficulty to overcome that stage. Then we proposed "*instances of these generic scenarios*" with a focus on application to concrete situations and this constituted a return to using secondary artefacts. The project could then proceed steadily.

To finish with this discussion of the use of scenarios in PALETTE, we have to recall Rasmussen proposal that "*scenario stories must balance between two powers of influence: identification and fascination*". Identification refers to the possibility for stakeholders to project themselves onto some of the actors or activities appearing in the stories; fascination refers to the way the stories can stimulate their "curiosity, imagination, expectation, and motivation to participate" in presenting something "*somewhat strange or unusual*". A balance is necessary because – says Rasmussen – curiosity alone may not necessarily lead to participation, and because identification alone is not sufficient to stimulate changes in consciousness. Something in scenarios stories should awake the curiosity of stakeholders, something "should be different from the present or from their conventional expectations of the future development". This may remind us of our initial remark about design itself being shaped by our expectations.

We have discussed how and why "design has to relate the future to the past". Considering our experience in the PALETTE project, we have proposed that this would not be achieved fully through a stepwise process which would analyze the present situation of use and construct descriptions of the future system. An act of imagination is necessary to envisage the future situation of use. This vision is shaped by an imaginative artefact. Scenarios - which afford the possibility to describe the future situation in the same terms as the present one – can play this role. PALETTE scenarios – whether they be specific, generic or instances – have a structure that is robust and plastic enough so as to obtain the agreement of most stakeholders. It is even plausible that – beyond the functionalities of the services that were designed - those very scenarios will help convey the *PALETTE design vision* among potential CoP users who did not experienced the PD process.

## **5 – The roles of the mediators: scenarios for activities**

In this section, the point is to present the specific and original roles and tasks of the CoP and Service mediators. It also aims at proposing some guidelines for coordinating a team of mediators. This section could be read in conjunction with the D.EVA.06 in which the mediators' job has been analysed in depth.

### **5.1 Roles**

In PALETTE, a CoP mediator is a researcher who builds a bridge between a CoP and some of the PALETTE services. She is a key-actor in PALETTE as she knows very well the activities and organization of the CoP very well and is also able to understand the functions and possible uses of the services.

On the one hand, she is in close relationship with the CoP, because she belongs personally to the CoP, or as the CoP delegate, or through one or other group created in the CoP to collaborate with PALETTE. On the other hand she participates in one of the teams A, B or C to gain information on the services, be able to use them and, in the future, to possibly demonstrate them to the CoP.

Her specific tasks are:

- to accompany the CoP throughout the PALETTE project: for example, elaborate a declaration of intent with the CoP, keep it informed about PALETTE developments, manage contacts for the organization of special events (meetings with developers, meetings with focus group to validate or trial the scenarios or services, etc.), organise training sessions, etc.;

- to understand the functions of the PALETTE services, to be able to handle the services and to present them to the CoP;
- to write the scenarios in close collaboration with the partners involved in the teams A, B, C; to adapt the scenarios during the validation process;
- to participate in the validation of the scenarios with the collaboration of a validating person;
- to participate in the validation of the CoP-oriented ontologies in collaboration with the WP3 developers;
- after month 18, to participate in the trials of the scenarios and services with the CoPs;
- to organise the trials in close collaboration with the CoP coordinators and members; to participate in the generation of data and their analysis; to organise a meeting with the CoP to discuss the results of the trials;
- to participate in the elaboration and writing of Learning and Organisational Resources (LORs). To participate in their trials and validation with the CoPs.

The means of action of a CoP mediator are of different kinds. On the one hand, there of course are technological means such as email and other communication tools. Some mediators also used the specific means of their CoP, for example the forums and videoconference system in Learn-Nett, the website of ePrep, the Yahoo! Group of CoPeL, etc. In addition, some mediators organised the use of PALETTE services for communicating and collaborating with their CoP: forums of the PALETTE website with ePrep or SweetWiki with Learn-Nett or Form@HETICE. On the other hand, the CoP mediators have specifically developed and used dedicated methodological instruments (see section 3 above):

- Declaration of intent
- Guide for interviews
- Filled synthesis grids (models of actions for each CoP)
- Appropriation of a common language (MOT)
- Use cases for each CoP
- Validated specific scenarios
- Integrated Technological Service prototypes
- Analysis of the scenarios for highlighting generic actions
- Validators' accounts for each specific scenario
- Decisions about the modalities of trialling with CoPs
- Recommendations for the use of the services and for the functioning of CoPs
- Validation accounts of LORs
- Validation accounts of trials of services with CoPs

All these instruments have been used by the mediators as boundary objects between the CoPs and the PALETTE project actors. They are concrete means for discussing CoP activities, negotiating the meaning of these activities and progressively developing the feeling of participating in and belonging to a common project among the CoPs. In addition, as Esnault, Zeiliger, & Vermeulin (2006) stated, the mediators can be considered as "boundary actors" in the sense that they play an active part in building and validating boundary objects such as the scenarios, the use cases, the functional specifications of the PALETTE services, or the specifications of the necessary interactions between services.

In addition, the main role of the Service mediators is to be the 'spokesperson' or delegate of a developers' team. They work closely with the CoP mediators and CoP delegates within the Teams. Their tasks are for example:

- to describe the main functionalities of the services they develop to the CoP mediators and delegates;
- to participate in the training sessions organised for the CoPs;
- to participate in the meetings with CoP mediators and delegates to develop scenarios of uses of the tools;

- to participate in the discussions with the pedagogical researchers and CoP mediators after the observation of the trials with the CoPs.

The Service mediators also used and participated in the development of specific methodological instruments in order to support their tasks and relations with the CoP mediators and delegates. For example:

- Questionnaire for categorizing tools
- Inventory and categorization of tools
- Filled synthesis grids (models of actions for each CoP)
- Appropriation of a common language (MOT)
- Forming and organising Teams
- Use cases for each CoP
- Validated specific scenarios
- Categories of CoPs' needs related to categories of Integrated Technological Services and Learning Services
- Integrated Technological Services prototypes
- Usability analysis criteria and methodology
- Decisions about the modalities of trialling with CoPs
- Functional and ergonomic recommendations
- Recommendations for the use of the services and for the functioning of CoPs
- Validation accounts of trials of services with CoPs
- Conceptual diagrams of integration between services

In the next sub-section, we briefly report the evolution of the roles of the mediators in PALETTE from their own point of view. For this purpose we base our analysis on the observations of WP6 (see D.EVA.06) and the accounts the mediators wrote at different moments of the project.

## 5.2 Evolution of the roles of the mediators in PALETTE

At the very beginning of the project, the term “mediator” was not used. It has progressively been used as we went along the project. The first task to achieve regarding the CoPs was to contact them for both elaborating specific needs and objectives of the CoPs in PALETTE and analysing their functioning and uses of tools. The researchers who took on this task were called “observers”. But progressively, it became clear that the tasks regarding the CoPs were wider, including collaborating daily with the CoPs, presenting them the PALETTE services, elaborating scenarios, discussing their activities and uses of tools, etc. The term “mediator” then seemed more appropriate (see also section 4 above).

In 2006, the WP6 highlighted a possible challenges regarding the communication and understanding between the ‘Pedagogues’ and ‘Technical experts’. This challenge was even twofold: between the ‘Ts’ and the ‘Ps’, and a second one between the developers and the members of the CoPs. This observation drove the project partners to find new ways of working together, and the teams were created, regrouping the different protagonists. Such an organisation implies the creation of real links between CoPs members, pedagogues, and developers (from different WPs). It was clear that it would not be possible, or not pertinent, to build multiple individual links without any efficient coordination and organisation. In some way, the idea of “CoP mediators”, and “Service mediators” responded to this issue. In summary, mediators are people that are either experts in the working of a CoP or someone with a good overview of a tool or set of tools.

We could consider that the mediators adapt a set of activities depending on the type of CoP, the needs and the interests of members of the CoP and the stage of development of CoP. We focus here on five main aims of the mediators (in line with the PALETTE objectives):

- supporting the CoPs to structure
- improving communication and collaboration between partners



- integrating tools into practice of CoPs through generic scenarios
- fostering awareness
- improving efficiency in collaboration with CoPs

In the following sub-sections, we consider each of these aims and we highlight the mediators' point of view.

### **5.2.1 Supporting the CoPs in their structuring process**

Structure and re-structure the CoPs to cater for more general needs following precise steps is one of the main challenges which mediators have to respond. This is related to the support to the CoPs to analyse their functioning and activities and to change through the use of new services and the development of new activities. To illustrate this challenge, we present here the Learn-Nett mediator's reflection: *"As mediator of Learn-Nett, I began to contact the delegate, the coordinator and a former coordinator for interviews. The difficulty in our first discussions was to identify the different groups involved in Learn-Nett: the coordination team, the tutors' group and the students. These three groups are actually mixed. Little by little, it appeared that the tutors formed a real CoP. However, if the tutors use the PALETTE services, the two other groups will be lead to use them also. In my view, the process of discussion, identification of Learn-Nett needs and validation took a few months, so it took time. While I think that the other CoPs have taken as much time, I think the use of a declaration of intent would have helped accelerate the process. This document came late (April 2007) and it was meant to be used only with the new CoPs getting involved in PALETTE. On one hand, it took time to negotiate a useful project with the CoP. On the other, this time was needed. I simply think that a more structured approach towards the CoP would have helped. This highlighted to me the fact that rhythm in the collaboration is needed. Regular discussions, or email communication keep people involved, even if there is no formal activity organized"* (November 6, 2007).

### **5.2.2 Improving communication and collaboration between partners**

By developing push mechanisms to improve communication about the project, providing overviews and summaries of longer texts or creating opportunities to meet face-to-face, the mediators have the power to change the behaviour of parties and motivate the CoP members to get involved in the project activities. The communication occurred through the organisation of seminars and training sessions for CoPs about the use of tools, resolving problems, tutoring, etc. It also occurred through invitations of CoP delegates to PALETTE meetings. The challenge here was to get to know each other in order to develop mutual trust and the willingness to develop activities together.

### **5.2.3 Integrating tools into practice of CoPs through generic scenarios**

The mediator works to create scenarios that try to integrate and develop the practices within CoPs, and on the other hand, to develop the technical and pedagogical activities that respond to their needs and interests. But also, one of the main roles of mediators in PALETTE was to create credible generic scenarios through integrating different tools together and imagine credible scenarios for those who are going to use them (in terms of "acceptability"). As there was a great deal to be done, finding the threshold of acceptability required pretty much effort. The CoP and Services mediators had to find compromises that were acceptable to users.

### **5.2.4 Fostering awareness**

This concerns the need for increasing awareness of the importance of procedures (like the organization of practices in CoPs) in developing services. Developing services and integrating them required time and the need to grant time was not necessarily understood by the users. For this purpose, the mediators set up a small Task Force (including developers) to draw up three generic scenarios and related work plans, base these generic scenarios on functionalities rather than tools, create Teams to develop the

generic scenarios, pay particular attention to being precise about specific issues so as to have a real impact on the way CoPs work, create awareness, provide a vision, ask questions, see what is happening, see what people write, ask more questions, tell CoPs to find new things, design and provide advice on (evaluation) frameworks, feed intelligence into the project, theorize some of that intelligence, and provide points of reference.

### 5.2.5 Improving efficiency in collaboration with CoPs

The mediators aimed at improving the efficiency of the functioning of the CoP:

- by enhancing motivation of members of the CoP: implement tools and their uses, ensure early releases, get feedback on tools, push people to experiment with tools, get feedback and carry out corrective design;
- by organizing training and giving support: organize proper training, assist training, help designers in more dynamic ways and make sure training sessions were efficient;
- by augmenting member participation: attend trainings, take part in one of the scenarios and increase involvement in reporting;
- by improving collaboration: link people together, improve and increase collaboration, and encourage people to speak to each other;
- by improving communication: make sure such meetings take place, see CoPs, see training, listen to problems, meet developers and be straight to the point.

### 5.2.6 The experience of the mediators

*“For groups developing tools, appoint mediators whose role is to compile, sort and prioritise requests and information. Develop push mechanisms to improve communication of project information, providing overviews and summaries of longer texts. Create more occasions for face-to-face meetings.”* (source: WP6, Report on “formative evaluation”). This organisation, based on CoPs and Services mediators, has been useful. One example of the application of these principles is the observation of the work with the CoPs: *“A group of experts from WP1 elaborated a protocol for the observation of use, including such conceptual axes as instrumentation, instrumentalisation and mediation. The observation and analysis are organised and carried out by mediators, that is to say people who are either experts in the working of a CoP or someone with a good overview of a tool or set of tools. Each mediator or group of mediators organises the observation as an independent research project following a protocol inspired by the general protocol mentioned above but adapted to the context in the CoP, the scenario being tested and the tools and services used. The aim of this process is to provide feedback both to developers and to CoP animators to help develop and improve tools and scenarios.”* (excerpt from D.EVA.05).

The protocol of observation (and analysis) was very formal, but the mediators had the possibility to adapt it as they wanted, according to the context. They played, thus, a very important role in this process. Moreover, it is the basis of the elaboration of the scenarios of use, and the mediators were, thus (and logically) highly implicated in this process. The trials, performed in 2008, are a good example as well: *“In the case of the Trials, negotiation is part of the structure of the work as much of the work is discussed and decided on in the framework of cross-disciplinary teams made up of pedagogues, developers, members of CoPs and mediators between the various groups of actors involved. These discussions take the form of online meetings, face-to-face meetings and online collaborative working (using a Wiki for example).”* (D.EVA.05).

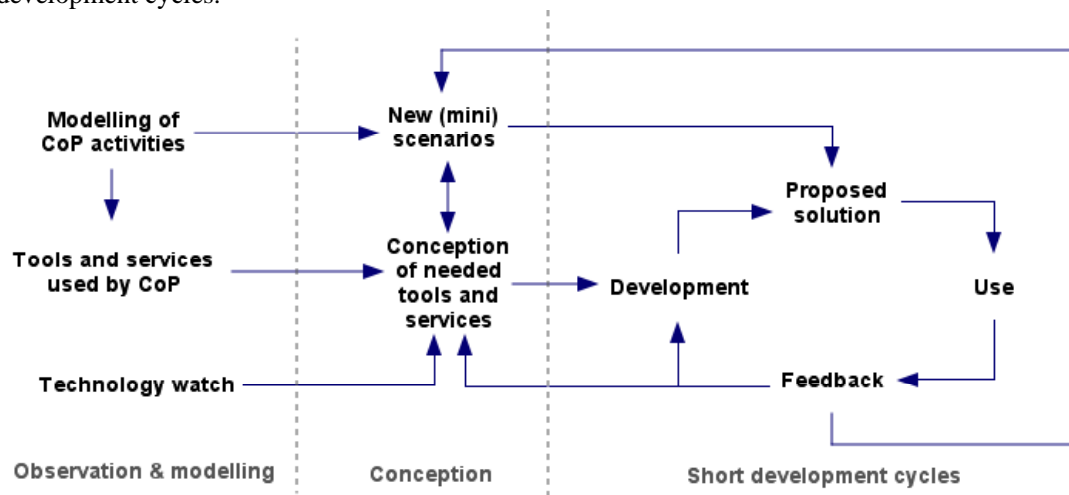
In June 2007, a report already compiled first remarks of the participants about this organisation. They pointed to the usefulness, (and, at the same time, the difficulties) of working together. More recently, the last evaluation questionnaire, sent to the project members in November 2008, shows that, for the technical partners, the CoPs needs, transmitted by the CoPs mediators, have been very helpful, and really enriched their work. This kind of method functions when all the participants interact at a relatively high frequency level, to obtain an iterative advancement of the work. It is something the

mediators contributed to. And this way of working has been beneficial for both the CoPs and the developers, as said, recently, by a CoP mediator: *“The technical researchers of PALETTE have developed LimSee3 beyond their initial purpose, and the members of the CoP (teachers) have been pushed to innovate in their pedagogy, because of the possibilities given by the tool.”* (D.EVA.05).

The alignment of interests had maybe not been completely made at the beginning of the project, but this introduction of the mediators brought a new opportunity to go further in the participatory design methodology of the project. Some new interactions are now possible, at the end of the project, between the members of PALETTE. This (relative) progress in the collaboration and in the efficiency of the project is probably due, for a part, to the CoPs and Services mediators.

### 5.3 Scenarios for activities with mediators

Here, the different activities organised for the CoP and Service mediators are described in the form of brief activity presentations. This is for use by other researchers and designers in R&D projects based on collaboration with users. The scenarios are presented similarly to the Learning and Organisational Resources (LORs) presented and discussed in D.PAR.06. The presentation of these scenarios is voluntarily short while their aim is to provide other researchers and designers with ideas of activities rather than wide descriptions of what has been done in PALETTE. To illustrate this framework, we reproduce here a schema proposed by WP6 in D.EVA.06 suggesting a possible streamlined version of the PDM. For our purpose, however, it is particularly suited to the description of the action of mediators in three steps: observation and modelling, conception, and organisation of short development cycles:



This figure also suggests that the mediator gets involved in many activities in collaboration with her CoP: analysis of CoP activities and needs at the beginning, technology watch, conception of scenarios, proposition of technological or organisational solutions, getting feedback, etc. These activities require various skills from the mediator. The short activities we propose here below could support them in developing their skills.

#### 5.3.1 Learning about the services

##### Objective

To train the CoP mediators to the use of the developed services in order that they master not only the functionalities but also the main concepts beyond the services. The CoP mediators should then be able to train the CoP members and inform them about using the services in their activities.

##### Scenario

We organised several short activities for this purpose:

- personal demonstrations by the developers;
- common training with the CoP mediators to learn the main functionalities;
- personal support by email or on forums;
- Summer school participation, where different sessions were dedicated to different services.

In addition, different days dedicated to the mediators were organised to support them in the pedagogical research aspects of PALETTE: validation of the scenarios with the CoPs, validation of the trials (generation of data and analysis), etc. The mediators also used some PALETTE services in their daily work, especially SweetWiki for producing collaborative documents and Amaya for editing structured documents (deliverables, documents for CoPs, etc.).

#### **PALETTE resources**

- the showroom, where the PALETTE services are presented:  
[http://palette.ercim.org/component/option.com\\_alphacontent/Itemid,119/](http://palette.ercim.org/component/option.com_alphacontent/Itemid,119/)
- an account of the training seminar organised in Liege in October 2007:  
[http://www.stecrifa.ulg.ac.be/PALETTE/october\\_2007\\_training/](http://www.stecrifa.ulg.ac.be/PALETTE/october_2007_training/)

### **5.3.2 Training CoP participants**

#### **Objective**

The CoP and Service mediators organised the training about the services for the CoPs. The objective was to make CoP participants aware of different important concepts lying at the basis of the PALETTE services such as the ontology, standards, structured documents, etc.

#### **Scenario**

Depending on the context of the CoP, several types of activities have been organised:

- awareness training: short trainings on transversal issues in PALETTE (knowledge management, ontology, standards, etc.). D.TRA.02 developed this concept;
- training sessions with a methodology focused on the development of scenarios of concrete uses of the services in authentic situations rather than demonstrations and handling;
- videoconference discussions about CoP ontologies, use of structured documents by a CoP, etc.
- follow-up of the training sessions through forums.

In addition, in some CoPs, the members were encouraged to use PALETTE services in their daily work: especially SweetWiki, Amaya, Limsee3.

#### **PALETTE resources**

- the showroom, where the PALETTE services are presented:  
[http://palette.ercim.org/component/option.com\\_alphacontent/Itemid,119/](http://palette.ercim.org/component/option.com_alphacontent/Itemid,119/)
- an account of the training seminar organised in Liege in October 2007:  
[http://www.stecrifa.ulg.ac.be/PALETTE/october\\_2007\\_training/](http://www.stecrifa.ulg.ac.be/PALETTE/october_2007_training/)
- an account of the training seminar organised by ePrep in January 2008 (in French):  
<http://www.eprep.org/communaute/activites/CR240108.html>

### **5.3.3 Meetings between mediators, developers, and CoP delegates**

#### **Objective**

These regular meetings aimed at reporting the work done, and elaborating and validating the successive versions of scenarios of uses of the services by the CoPs.

#### **Scenario**

These meetings took place in the Teams framework. They took different forms:

- participation of CoP delegates in a PALETTE plenary meeting in order to meet the developers and explain the needs, objectives and usual activities of the CoPs.
- email and forum discussions between a CoP mediator, the CoP delegate and the Service mediator in order to quickly give feedback about the last developments of the services.

#### **PALETTE resources**

- the mediators' hut, a SweetWiki space where the mediators were asked to describe their experience with their CoP:  
<http://argentera.inria.fr:8080/swikipalette/data/Mediators/MediatorsHome.jsp>
- D.PAR.03 about the validation of the scenarios. A section is dedicated to the different ways the CoP participants got involved in the elaboration and validation processes of the scenarios.  
<http://palette.ercim.org/images/stories/DocumentPDF/d.imp.03-final.pdf>

### **5.3.4 Meeting the CoPs**

#### **Objective**

Throughout the project, the CoP and Service mediators regularly met the CoPs in order to identify their needs and objectives, analysing their activities, validating successive versions of services and scenarios, getting feedback, etc.

#### **Scenario**

The meetings with the CoPs took various forms depending on the context of each CoP: number and dissemination of the participants, time, technologies at disposal, etc. Here are some examples of forms of meetings:

- use of videoconferences and discussion forums for training to the services functionalities, discussing the ontology of documents, answering questions of uses, etc. (Learn-Nett).
- regular face-to-face meetings for awareness trainings, discussions about the possible uses of the services and development of CoP activities (TIC-EF, TIC-FA, TFT).
- regular face-to-face meetings for developing the functionalities of services regarding the specific CoP needs and urges (Did@cTIC).
- regular training sessions with the participation of developers and Service mediators in order to both train to the use of the services and give feedback about the successive versions of the services (ePrep, Form@HETICE, @pretic, TFT).

#### **PALETTE resources**

- the Learning and Organisational Resources (LORs) propose various activities for CoPs:  
<http://argentera.inria.fr:8080/swikipalette/data/Lor/LorHome.jsp>
- the mediators' hut, a SweetWiki space where the mediators were asked to describe their experience with their CoP:  
<http://argentera.inria.fr:8080/swikipalette/data/Mediators/MediatorsHome.jsp>

### **5.3.5 Sharing mediators' experience**

#### **Objective**

Throughout the project, the mediators met at different moments in order to share their experience with their CoP, to evaluate the work done, to share resources, to train together, to elaborate scenarios of uses of services, to understand the CoP needs, to make decisions about the development of services, etc.

#### **Scenario**

For this purpose, several meetings were organised:

- the use of a SweetWiki space where the mediators were asked to describe and share their experience with their CoP;

- a meeting about the validation of the scenarios: a common methodology and schedule were set up together with the support of WP6 experts;
- a meeting about the evaluation of the trials: a common methodology and schedule were set up with the support of WP6 and external experts,
- a meeting about taking into account CoP needs and usual activities and context in the development of services functionalities;
- a meeting to elaborate a common methodology to understand the learning processes occurring within the CoPs.

#### PALETTE resources

- The mediators' hut, a SweetWiki space where the mediators were asked to describe their experience with their CoP:  
<http://argentera.inria.fr:8080/swikipalette/data/Mediators/MediatorsHome.jsp>
- D.PAR.03: common methodology for validating the specific scenarios with the CoPs:  
<http://palette.ercim.org/images/stories/DocumentPDF/d.par.03-final.pdf>
- D.PAR.08: common methodology for evaluating the trials with the CoPs:  
<http://palette.ercim.org/content/view/15/33/>
- D.IMP.03: common analysis of the CoPs needs and elaboration of the Generic Scenarios:  
<http://palette.ercim.org/images/stories/DocumentPDF/d.imp.03-final.pdf>
- D.PAR.06: common methodology for elaborating a model of learning in CoPs:  
<http://palette.ercim.org/content/view/15/33/>

## 6 – Conclusion

The participatory Design Methodology (PDM) used for PALETTE is the result of a continuous participative process that took place all along the project and enabled all participants, whether they come from the social sciences and education sciences side (the "P" partners) or from the computer sciences side (the "T") partners or from the communities of practice (the CoP associates) to reach the level of production that was required by the project (described in the Description of Work for the project and in the different reformulations during the three years of the project) with a high level of quality and efficiency.

The constant intertwining of the work between the PDM design and implementation processes and the evaluation process has proven to be a key success factor in the acceptance of the methodology on the part of the different partners and in the reactivity of the Project Management in reorganising the structure when necessary and maintaining a thorough inspiration for the project team.

Paraphrasing a well know sentence about democracy, we could say that "Participatory Design is the worst way of managing a project, apart from all the other ones". It is not the most efficient way of conducting and controlling a large and complex project; but is the *sine qua non* condition for success when it come to building joint knowledge by cross fertilizing disciplines and fields of research together with producing operational elements, with the constraint of real life conditions of use, in innovative contexts such as the CoP environment.

This deliverable shows that an important outcome of PALETTE is the knowledge created by the team regarding a successful implementation of a PD methodology within a large European project. All participants, but more specifically the members of the WP1 team that have been writing this deliverable, by reifying this knowledge in this document, have developed new competences in the PD field, which might be valuable for further uses within the European Commission context, at different possible levels.



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# APPENDIX 1 – Template for the description of the methodological instruments

PALETTE methodological instruments

**Purpose:** To structure the presentation of the methodological instruments used throughout the participatory design process. Each file appears in the MOT models and submodels of methodology in order to illustrate the implementation of each methodological step.

**Authors:** Amaury Daele (UNIFR) - France Henri (Téluq-UQAM)

**Date:** June 27th 2007

**Version:** 1

1. Name of the instrument
  2. Objective of the instrument
  3. Step of the methodology in which the instrument is used (Analysing, Design for use, Design in use)
  4. By whom is it used? Which actor does the instrument use?
  5. In what kind of participative activity is it used?
  6. What kind of data (document, feedback, information, etc.) does it produce and for which purpose?
-

## **APPENDIX 2 – Categories of tools**

(Excerpt from D.PAR.02, pp. 16-17)

The five criteria identified for our purposes were the following:

- Exchange of resources;
- Experience sharing and expression or illustration of practices, reflection and analysis;
- Problem solving and depiction or (collaborative) creation of new knowledge;
- Debate, confrontation, argumentation, negotiation for decision making;
- Archiving, evaluation, coordination, awareness.

### **Exchange of resources**

One goal of the CoPs is to create a social structure that fosters learning, develops competencies, and helps members to share knowledge. The question to deal with here is to explore how online repositories are used to store, share and reuse knowledge and content, and how taking the user perspective might challenge the emerging approaches to repository development. The key factors of success include easy uploading/downloading, awareness functionalities and tools to search.

### **Experience sharing and expression or illustration of practices, reflection and analysis**

We included under the same criterion the process (experience sharing) and the results of this process (reflection and analysis) because we aim to stress the interdependence that exists between them. The sharing of practices and experiences is often one of the first things to be carried out in a knowledge management initiative. During their activities, the members of CoPs share methods, tools, techniques, language, stories and sometimes behaviours. They share also emotions, reflections, ideas, motivation, perceptions, etc. The results of this sharing process are expressed by the degree of analysis and reflection about their own practices. The choice of appropriate technologies depends on the nature and objectives of CoPs and issues and problems on which they focus. So, information technology creates a bridge between geographically distributed members, and provides a space in which they can communicate their reflections, their analysis about their practices and their ideas.

### **Problem solving and depiction or (collaborative) creation of new knowledge**

In their activities, CoPs' members raise new questions and issues. They need to keep track of all ideas and related brainstorming. So, they can go back to this list later to get inspiration or to help in problem solving. In this process, the CoPs can exchange many ideas and create new knowledge. Knowledge is information about structured and relevant resources that is sharable and reusable. The ability to create and harvest knowledge is becoming a key factor in the activities of CoPs. According to a user perspective, for finding quickly any information, the CoPs could need a powerful tool for searching and locating information needed in their work.

### **Debate, confrontation, argumentation, negotiation for decision making**

Decision making is one of the most common thinking activities and one of the most crucial processes of any CoP. To decide, from a user perspective, usually means to make a choice among alternatives. We can have a debate about ideas or actions and everybody can argue about his/her point of view. Argumentation is another communicative activity in CoPs. Many argumentation technologies exist, such as mailing lists, group decision support systems, co-authoring, and negotiation support systems. Support for argumentation should include the specific conversational moves and it should also enable the design of these interactions, in terms of augmenting, shaping, guiding, and facilitating argumentative interaction. In this process, the negotiation for decision making may be about problem solutions or meanings of concepts. Negotiation can be backed up with the already agreed upon points of view and lines of arguments for developing or elaborating concepts.

### **Archiving, evaluation, coordination, awareness**

Acquiring, reproducing, reusing and storing information and knowledge requires special premises and skills. Firstly, awareness is important to facilitate a collaborative work. In the short term, awareness is a good way of "knowing about what is going on in the shared workspace", and in the long term, in this context, it means "knowing about what is going on with the shared knowledge". Archiving is an important activity too, for example to manage email archiving services, to reuse information or to keep tracks of what has been done and shared.

## APPENDIX 3 – Questionnaire for categorizing tools

(Excerpt from D.PAR.02)

### Description of tool for CoPs

---

[Return to Forms List](#) [Save Document](#)

#### Introduction

---

##### Purpose of this form :

The purpose of this form is to describe efficiently tools developed within the framework of the Palette project. This description will serve the project in order to produce a report. With the help of this form, we hope to know more on their state of development, and on the types of CoPs' activities these tools are able to support. In a second time, this form will be used to describe tools already used by some CoPs.

The parallelism (between tools developed by Palette and tools already in used by CoPs) will lead us to establish a kind of symmetry between the useful functionalities for CoPs' activities, and those proposed by the tools of the partners of the project.

##### How to use this form :

All the questions are suppose to be filled in by all the partners. However, some of questions have been written to describe generic tool developed by specific WP. Some of these questions are made as a series of questions requiring a boolean answer (ex. Can the tool manipulate formalized knowledge? Yes/No ). Given the answer to these questions, the user is required to fill in specific blocks of information related to the question (ex. What kind of knowledge? In which format or standards is it expressed? ...).

If you are unable to answer some of these questions, thank you to explain the reason of it or simply write "Useless for this tool" in the gap intended for the answer.

##### Some definitions :

---

- Generic tool (or tool) : a piece of software (application, platform, framework, ...) that can provide some functionalities and that can be used directly or indirectly by a CoP or to develop applications or services for CoPs.
- Formalized knowledge (synonym of explicit knowledge and opposite of implicit knowledge) : Explicit knowledge is knowledge that has been or can be articulated, codified, and stored in certain media. The most common forms of explicit knowledge are manuals, documents, shemas, procedures, and stories. Formalized knowledge also can be audio-visual.
- Direct use : the tool can be used without modification.
- Indirect use : the tool need some major modifications to be used.
- KM : Knowledge Management
- WP2 : Workpackage in charge of developing Information services
- WP3 : Workpackage in charge of developing Knowledge Management services
- WP4 : Workpackage in charge of developing Mediation services

#### General information

---

Name of the partner team ?

Name of the members'team in charge of describing the tool ?	<input type="text"/>
Who are the developers of the Software ?	<input type="text"/>
What is the context (institutional, in term of project, and so on) of the first development of the software ?	<input type="text"/>
Name of the tool ?	<input type="text"/>
Website of this tool ?	<input type="text" value="http://"/>
Could you provide a Demo or/and Screenshot of this software ?	<input type="text" value="http://"/>
<ul style="list-style-type: none"> <li>■ Could you comment it ?</li> <li>■ describe the screenshot or/and give login/passwd if needed</li> </ul>	<input type="text"/>

### Tool description

Tell us a small description of the tool	<input type="text"/>
Tell us about its functionalities ?	<input type="text"/>
What could be the context of use ? <ul style="list-style-type: none"> <li>■ For individual or/and group ?</li> <li>■ What is its main purpose ?</li> </ul>	<input type="text"/>
Could you describe an example of use ? <ul style="list-style-type: none"> <li>■ Could you describe one or more scenario of use ?</li> <li>■ Could you mention some details ?</li> </ul>	<input type="text"/>
Is the tool already in use ? <ul style="list-style-type: none"> <li>■ Could you determine how many people use it ?</li> <li>■ What sort of people use it ? in wich context ? (ie. its developers ?, web developers ?, only geeks ?, CoPs ?, etc. )</li> <li>■ Why do they use it ? (ie. there is no alternative, it a technical innovation ?, explain.)</li> </ul>	<input type="text"/>
Was the tool designed to be ... <ul style="list-style-type: none"> <li>■ used by people with special needs ?</li> <li>■ multilingual ?</li> </ul>	<input type="text"/> <input type="text"/>
Are there some components of the tool that can be used separately	<input type="radio"/> Yes <input type="radio"/> No

- If you answer "yes", give a small definition of the component

- If you answer "yes", what are the offered functionalities of the component ?

Under which license is the software release ?  
(If there is any)

### Technical description

What are the technologies used to program it ?

- (Programming language [php, C++, etc.] )

Is the code clearly written and commented ?

- (ie. Could new programmers easily take part in the project ?)

What are the technical requirement to run it ?

- (ie. WebServer or/and OS)

What are the competencies required to use it ?

- (ie. It needs that someone in the CoP knows the "(x)html" language)

### Tools (Generic or not) and their components

Can the tool manipulate formalized knowledge ?

☐ Yes ☐ No

Knowledge material #

What kind of knowledge ?

In which format or standards is it expressed ?

Is the knowledge material domain-dependent and what is the domain ?

Is the knowledge material reusable ?

Is the tool offering KM services ?

☐ Yes ☐ No

Service #

What kind of services ?

Which formats or standards does it use ?

Who/What are the recipients of the service (Human, Other services/applications) ?

Describe the Inputs/Outputs of the service ?

Are there some components of the tool that can be used Separately ? ☐ Yes ☐ No

Component #

Give a small description of the component ?

What are the offered functionalities of the component ?

Does the tool support Content Management ?

☐ Yes ☐ No

- Describe it  
e.g. Submit Raw Data and Upload Documents, Submit text based content through HTML forms, Upload file types including: .doc, .pdf, .xls, .ppt, .gif, .jpg to the content management system, Associate content with other "knowledge objects" on the site including previous content, discussions, events, and people, Search and Retrieve Content and Documents, etc.

Does the tools support any type of collaboration ?

☐ Yes ☐ No

- Describe it  
e.g. Discussion Boards, Create new discussion threads, Create new messages, Reply to messages, Message author information is available to users, Elect to post anonymous messages, Instant Messaging and Chat, View a list of all users who are currently online / view directory, Export conversation/meeting text records, etc.

Is the tool interoperable with other software ?

☐ Yes ☐ No

- Describe it  
e.g. Share active screen (other users can view the screen of any of the participants), Remote desktop sharing, interoperation with diverse chat tools etc.

Does the tool support User Profile Management ?

☐ Yes ☐ No

- Describe it  
e.g. Create user profile, Update user profile, etc.

Does the tool support Expertise Management?

☐ Yes ☐ No

- Describe it  
e.g. Expert Directory Linked to User Profiles, Update user profiles, Post description of need for



an expert, Respond as an expert to a need, etc.  
Note: this may be related to the previous question.

Does the tool offer personalized services ?

☐ Yes ☐ No

- Describe it  
Automatic reminders to update profile on a regular basis via e-mail notification, Administrator can set frequency for e-mail reminders, Searchable Expert Directory, Search and view contact information - integrated with user profile, Administrator can assign users to specified user groups,

Does it support awareness ?

☐ Yes ☐ No

- Describe it  
e.g. Does it provide E-mail notification about submitted items, change of discourse status, etc.

Does it support Global Search and Taxonomy ?

☐ Yes ☐ No

- Describe it  
e.g. search features about the content of collaboration, taxonomy of issues addressed, etc.)

Does it support Data Mining and Data Warehousing ?

☐ Yes ☐ No

- Describe it

Can it be integrated with an e-mail application?

☐ Yes ☐ No

- Describe it  
e.g. E-mail integration with e-mail application using standard synchronization features, Calendar integration, Task integration, etc.).

Users can access it while connected to Internet, or they can access and work with data without any Internet/network connection ?

☐ Yes ☐ No

- Explain.

Is the tool easy to use ?

☐ Yes ☐ No

- Describe it  
e.g. Pages are easy to understand and use, users can choose among existing templates

## Usability

Note each of these items regarding to the actual usability of the software, and then describe in the "Comment" area what are the further development of it ?

Evaluation the general usability of the tool

- ☐ ☐ ☐ ☒ ☐ ☐ +

- Comment, prerequisites

Interface

- ☐ ☐ ☐ ☒ ☐ ☐ +

<ul style="list-style-type: none"> <li>▪ Comment</li> </ul>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>
Help (internal) <div style="float: right;">           -       +         </div>	
<ul style="list-style-type: none"> <li>▪ Comment</li> </ul>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>
Documentation (external) <div style="float: right;">           -       +         </div>	
<ul style="list-style-type: none"> <li>▪ Comment</li> </ul>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div>
<ul style="list-style-type: none"> <li>▪ Link to documentation</li> </ul>	<div style="border: 1px solid black; padding: 2px;">http://</div>

### What is the target audience of the tools :

Do you think the tool can be used directly in a CoP	<input type="radio"/> Yes <input type="radio"/> No
Level of interest	
It helps the CoPs in general	-     +
It helps the organisational leaders interest in CoPs	-     +
It helps the coordinators of CoPs	-     +
It helps the facilitators (conversational coordinator)	-     +
It helps the members of CoPs	-     +

### Purpose in PALETTE

Can the tool be used to provide / develop applications or services for ?	
(WP2) Information services	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>
(WP3) Knowledge management services	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>
(WP4) Mediation services	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>

### Classify your tools in these categories of use :

Exchange of resources, "objects" (URL, documents?) <div style="float: right;">           -       +         </div>	<ul style="list-style-type: none"> <li>▪ "Typical" examples : Repositories</li> <li>▪ Comment</li> </ul> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>
Experience sharing (telling, retelling, discussing? stories about practices) <div style="float: right;">           -       +         </div>	<ul style="list-style-type: none"> <li>▪ "Typical" examples : Forums, weblogs, mailing-lists, chat, irc, ...</li> <li>▪ Comment</li> </ul> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>
Expression or illustration of practices (tracks of practice in various forms) <div style="float: right;">           -       +         </div>	

<ul style="list-style-type: none"> <li>▪ "Typical" examples : Supports for commented videos or annotated audios, pictures, moblogs, interviews, ...</li> <li>▪ Comment</li> </ul>	<div></div>
Reflection, analysis about experience sharing or illustration of practices <ul style="list-style-type: none"> <li>▪ "Typical" examples : ?... could be supports for discussions related on illustration of practices with specific questions of analysis</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>
Debate, confrontation, argumentation, negotiation for decision making <ul style="list-style-type: none"> <li>▪ "Typical" examples : Voting systems, argumentation supports, ...</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>
Depiction or (collaborative) creation of new knowledge <ul style="list-style-type: none"> <li>▪ "Typical" examples : White board, Wikis, ...</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>
Support for evaluation (quantitative or qualitative) <ul style="list-style-type: none"> <li>▪ "Typical" examples : Logalyzers, management of questionnaires, ...</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>
Awareness <ul style="list-style-type: none"> <li>▪ "Typical" examples : Who is online?, presentation of people (+ "trombinoscopes")</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>
Coordination <ul style="list-style-type: none"> <li>▪ "Typical" examples : Management of schedule, distribution of tasks, ...</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>
Archiving <ul style="list-style-type: none"> <li>▪ "Typical" examples : Zipped repositories, knowledge bases.</li> <li>▪ Comment</li> </ul>	<div>-       +</div> <div></div>

#### Using the tool to develop services for CoPs

Can the tool be used to develop services for CoPs ? ☐ Yes ☐ No

If you answer yes, please give some details about the services that implements the mentioned functionalities / improvements /

<ul style="list-style-type: none"> <li>▪ Small description of the services ?</li> </ul>	<div></div>
<ul style="list-style-type: none"> <li>▪ hat kind of services (information, knowledge management, mediation, other) and comment</li> </ul>	<div></div>

If you answer no, what your tool cannot do for the CoPs ?

- Could you describe some limitations of your tool ?

- Could you describe the improvements necessary for using your tool in PALETTE ?

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Comments on the questionnaire :

## APPENDIX 4 – Declaration of intent between PALETTE and the CoPs

Objectives :	To specify the commitments of the CoPs (currently involved and to come) according to the objectives of PALETTE.
Address :	<a href="https://bscw.ercim.org/bscw/bscw.cgi/272503">https://bscw.ercim.org/bscw/bscw.cgi/272503</a> (restricted access for project members)
Notes :	<ol style="list-style-type: none"><li>1. The first page of the declaration aims at introducing it to the CoP. It can be orally nuanced or if necessary adapted. For instance, if you think that the definition of the actors is not important you can remove it. But it's important to keep the table and to specify information related to people involved and concretization of the tasks for which the CoP commits.</li><li>2. This document is to complete with all the CoPs involved in the PALETTE project.</li></ol>

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### Declaration of intent between PALETTE and *name of the CoP*

#### Actors

- PALETTE partner: member of the PALETTE project, developer, researcher, mediator, etc. ;
- The developer: member of PALETTE, in charge of the development of the services of PALETTE ;
- The mediator: member of PALETTE, in charge of the negotiation and the working with one or several CoPs on expected tasks of PALETTE ;
- The CoP: a community of professionals or learners who share their practices ;
- The delegate/representative of the CoP: member of the CoP, eventually member of PALETTE, and privileged interlocutor of the PALETTE partners (mediators, developers, researchers).

#### Objective of this document

This document aims at specifying the level of commitment of CoPs in the European PALETTE project, in relation to objectives negotiated with the European Commission and partners' expectations.

It allows the PALETTE Consortium to estimate the level of involvement of each CoP and each CoP to specify how it plans to interact with the project.

#### Process of writing

This document is completed during a discussion between the mediator (PALETTE contact of the CoP) and delegate(s) of the CoP, representative(s) of the CoP particularly interested in the collaboration with the project.

It is discussed and completed with the CoP and could be re-examined and/or amended during the project.

#### Objectives of PALETTE and commitments of the parties

The table on the next page specifies PALETTE's objectives concerning the interactions with the CoPs, the activities, the way in which the members of the project will work on these activities and what is

expected from each CoP (with an estimation of workload). Expectations of PALETTE from the CoP are generally that the CoP makes available time and space for the tasks for which it commits.

The parties complete the table by indicating:

1. the name of people involved in PALETTE and in the CoP for each of the activities identified, to which the CoP commits. For the CoP, in the first phases of the collaboration, this involvement might include only one or more representatives, with more becoming involved during later phases of the project.
2. for each task to which the CoP commits, indicate how this task is operationalised, how it will be approached, and the timescale for completion (dates) taking into account that the PALETTE project ends on January 31, 2009.

Members of the CoP who are involved in the collaborative process with the project can take part in meetings of the PALETTE project. In this case, their stay and travelling expenses are met by the PALETTE project (within the limit of two participations per CoP).

<p><b>Objectives of PALETTE project</b> <b>Tasks to realise with the CoP,</b> <b>definition of the tasks and expected results</b></p>	<p><b>Representative(s) of</b> <b>PALETTE project</b></p>	<p><b>Representative(s) of</b> <b>the CoP</b></p>	<p><b>Commitment of the CoP</b> <b>Comments, planned calendar and expectations of the</b> <b>CoP</b></p>
<p><b>1. To establish the collaboration between PALETTE and the CoP</b></p> <ul style="list-style-type: none"> <li>- to inform the CoP of the objectives of PALETTE;</li> <li>- to complete the declaration of intent (to re-examine and amend if necessary during the project);</li> <li>- to establish the conditions of confidentiality of the data and the security of information held in the PALETTE services;</li> <li>- to establish the forms of interaction between PALETTE and the CoP throughout the collaboration.</li> </ul> <p><u>Expected results</u></p> <ul style="list-style-type: none"> <li>- setting up the collaboration where each party has a clear knowledge of the mutual commitments.</li> </ul> <p><b>2. To model the activities of the CoP</b></p> <ul style="list-style-type: none"> <li>- to collect data on the activities of the CoP through interviews with delegate(s) of the CoP (estimation: 1h to 2h/interview);</li> <li>- to present the results of the analysis and to validate with delegate(s) of the CoP (estimation: 2h).</li> </ul> <p><u>Expected results:</u></p> <ul style="list-style-type: none"> <li>- <i>for PALETTE</i>: a clear knowledge of the activities of the CoP allowing to propose new services, contribution to the analysis and the categorization of the tools developed by PALETTE partners or existing tools that are available and used by the CoPs;</li> <li>- <i>for the CoP</i>: a better knowledge of the way in which it operates and an interest in new situations of creation, communication and sharing of information, information about the tools which can support the development of CoPs (services from PALETTE or tools existing outside of PALETTE).</li> </ul> <p><b>3. To collaborate in the scenarios</b></p> <ul style="list-style-type: none"> <li>- via the mediator of the CoP, to propose scenarios of uses of new services in the context of the CoP and to negotiate them with the CoP so that they are realistic and acceptable: ongoing</li> </ul>			

process after the tests and the validation (tasks 4 and 5)  
(estimation: 3x 1/2j)

Expected results:

- *for PALETTE*: a scenario adapted to the needs of the CoP and transposable to other CoPs;
- *for the CoP*: a scenario adapted to its needs.

**4. To test and validate the scenarios and services**

- to test the prototypes of the services within the CoP (if necessary to adapt the scenario – task 3) (estimation: 1/2j) ;
- to prepare a test of the scenarios within the CoP: to present the scenarios (or mock-ups) and to discuss the conditions of the test (estimation: 1/2j);
- to test the scenarios and services through motivating and significant activities within the CoP and to validate them through various conditions of analysis (interview, questionnaire, etc.): two successive tests are expected (estimation: 2x1/2j).
- to present and negotiate the results of the analysis: the tests will provide functional and ergonomic recommendations on the tools to the developers and recommendations on the use of the services and the functioning of the CoP (estimation: 1/2j)

Expected results:

- *for PALETTE*: test of the scenarios and services in order to adapt them to the needs of the CoP and to give indications on their acceptability;
- *for the CoP*: test of the scenarios and services in order to make sure that they are adapted to the needs and if necessary to adapt them.

**5. Training and awareness tools**

- to offer training related to the issues and services of PALETTE as well as awareness tools for the CoPs, according to the needs showed during the tasks 2, 3 and 4 (on the request of the CoP).

Expected results:

- *for PALETTE*: transferable training and awareness tools;
- *for the CoP*: to be trained according to its needs.



## APPENDIX 5 – Guide for interviews

### Table of contents

- 1 Description of the first interview's aim
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- 3 Tips for interviewers
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  - 4.2 CoP's members
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    - 4.2.3 How do you describe the involvement of members? Tell us examples where members are very involved and other examples where not.
    - 4.2.4 How would you describe the relations between the members?
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    - 4.5.1 In your view, what is the future of the community?
  - 4.6 About the activities of the CoP
    - 4.6.1 Can you describe the activity of CoP compared to what it produces?
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    - 4.6.3 In your view, does the CoP create knowledge? If so, can you describe this process of creation?
    - 4.6.4 Can you describe how and where the community finds/retrieves information? Can you describe the process?
    - 4.6.5 Can you describe the mediation process (collaboration, negotiation, decision making on specific tasks)?
    - 4.6.6 How would you describe the learning activities (or the development of competencies) of the members in the community?
    - 4.6.7 Can you illustrate (with examples) some situations of uses of tools (technological and organizational)?
      - 4.6.7.1 Which tools (technological and organizational) are used by CoPs?
      - 4.6.7.2 How could you characterize the appropriation of the tools by members? Are they well accepted / used?
      - 4.6.7.3 Which tools (technological and organizational) could be useful for CoPs?

## 1. Description of the first interview's aim

1. To make a first contact with the community: To learn how the CoPs works, its activities (learning, collaboration, knowledge management, etc.)
  2. To collect the CoPs objectives regarding the PALETTE's ones (to establish a framework of collaboration).
  3. To collect a first list of persons to contact in the CoPs.
- The questions are designed for getting narratives or little stories, anecdotes and lived examples. It's not a questionnaire that the interviewees could answer in writing. They rather have to tell and describe their representations and personal experiences. The questions also try to get more 'objective' data (if written materials exist, the interviewee could give us a copy) but it's important that these data be placed in a situated context.
    - *For instance, if the interviewee describes the tools used by his/her CoP, it's important to know how the tools are used, for what purposes, how the CoP's members appropriate them and negotiate their use, and to get different lived examples.*
  - In our view, the more the interviewees' narratives will be detailed, the more the scenarios we will design afterwards will be valid and consistent and provide interesting guidelines for the conception of services. It will be our work to "translate" the processes and activities described in natural language by the interviewees in more formal forms as tables, schemas, mock-ups or vignettes (Rolland et al., 2001).
  - **Ethical issues:** the following points clarify matters concerning the interviews' ethical framework. These points should be explained to the interviewees from the first contact with the observers. A synthesis of the main ethical issues concerning research about virtual communities can be found in Pudelko, Daele and Henri (2006, pp. 149-150) or in Rourke, Anderson, Garrison and Archer (2001).
1. At first, the interviews are **anonymous**. The observers guarantee that the interviewed persons will remain anonymous. However, on the one hand, within the Palette project, the name of the CoPs will be used. On the other hand, outside Palette, the name of the CoPs could be revealed on condition that the name of interviewed persons or of members of the CoPs stays unrevealed.
  2. The collected **raw data will be treated by the group of observers** through a method of content analysis. The treated data will be anonymous and used by the different partners of Palette. These partners could access the treated data but not the raw data.
  3. The treated data **will be also used** for communicating and collaborating with each CoP **for validation purpose**.
  4. Interviewed people **must be approving to be interviewed**. The observer should ask people if they agree with the process of interview (including tape-recording).
  5. The observers **guarantee respect for persons** (especially private lives), non-maleficence and fairness.
  6. The observers work for **providing benefit to the interviewed persons**. The Palette project aims at providing tools, know-how, knowledge... to the interviewees and their CoPs notably by helping them to analyse their needs and by establishing an ongoing collaboration with them.
- **Some references about ethical issues :**
    - Pudelko, B., Daele, A., & Henri, F. (2006). Méthodes d'étude des communautés. In A. Daele & B. Charlier (Eds.). Comprendre les communautés virtuelles d'enseignants : pratiques et recherches. Paris: L'Harmattan, pp. 127-155.
    - Rourke, L., Anderson, T., Garrison, R. & Archer, W. (2001). Methodological issues in the content analysis of computer conference transcripts. *International Journal of Artificial Intelligence in Education*, 11.

## 2. Description of the PALETTE project

The observers should be able to answer to some simple questions:

- Who are you (PALETTE partners)?
- Who are they, their roles in the project (Cops partners)?
- What is PALETTE - Description of the relation (cooperation, collaborative...): Encounter the personal goal of the CoPs should be the framework of PALETTE.
- Why was my CoP chosen?
- Which interest does my CoP have to take part in the project?
- What can I (or the CoPs) gain (i.e. the concrete benefits obtained by improving my operation in technical, human and “political” terms)?
- How much investment will my participation imply? (in time, human resources to release, etc.)
- How will the cooperation works?
- Which is the schedule?
- Which are my duties and my “rights” if I accept?
- How can I make my members adhere to this project?
- What do the partners gain in the project?
- What could others (CoPs or not) gain in the future by the results of the PALETTE project?

## 3. Tips for interviewers

- See the document “Methodology” on the PALETTE intranet.

## 4. Questions

### 4.1 Origin of the community

#### 4.1.1 Could you describe the decision process by which the CoP has started?

This question tries to highlight the process by which the CoP has defined its domain and objectives, if this process has been done through a particular method or using a specific tool.

- Describe the decision process (who (*one person or group of persons*), when, where, why, with whom, what was the history of the decision...) that led to the creation of the CoP?
- At the beginning of the CoPs, what was its objective? and for which expected results?
- Is the objective still the same now? Did it change? If so, why?
- Which is the level of satisfaction towards the actual results?

### 4.2 CoP's members

#### 4.2.1 Tell us about the members

This question attempts to better know the members, who they are, how they know each other, how the individual objectives are taken into account and how the process of awareness is sustained.

- Who are they? How many are they? Where do they come from?
- How could we describe the heterogeneity or the homogeneity of the members of the group?
  - Motivation level, age, competences, education, training, personal interests, volunteers or obliged, status, ...
  - Give us some examples of ‘typical’ members.
- Can you describe their technical skills?
  - Can you give some information about level of Internet awareness?
  - Can you give some information about level of elearning awareness - what do they know about elearning?

- Are there some people with special needs in the CoPs (blind people for example)? Does the production of the CoPs need to be consult by people with special needs? Is the CoPs open to people with special needs?
- What are their personal expectations of the community activity (their interest and personal goals)? Are these interests explicitly clarified at a given time? How are they taken into account? Could you give us specific examples on how the personal interests are explained by the members and can influence the CoP's activities?
- How much time does people spend times in/for the CoPs? How much are they able/ready to spend for the CoPs? How much are they intended to spend time?

#### **4.2.2 Could you describe with specific examples the process by which new members enter in the CoP?**

This question specifically concerns the process of engagement of newcomers into the CoP and how they pass from a peripheral position towards a more central one.

- Who are they?
- What lead a new member towards the CoP?
- Which kind of person is it?
- Are they recruited? If so, how? By whom? (institution, delegate, coordinator... etc.)
- How do they accommodate? By whom?
- How could you describe the turn-over and the stability of membership?
- What are the procedures / entrance doors for new members?
- What are their personal expectations of the community activity (their interest and personal goals)? Are these interests explicitly clarified at a given time? How are they taken into account?

#### **4.2.3 How do you describe the involvement of members? Tell us examples where members are very involved and other examples where not.**

This concerns the 'enthusiasm' of the individual members, how it is expressed in the formal discussions or by socio-affective cues. The question also aims at understanding how this enthusiasm is sustained by specific tools or by actions of the coordinator or other members.

- What is the degree of involvement? How could you describe it (and what kind of clues do you use to describe it)?
- Are there particular events organized to stimulate members' involvement? (i.e.: *Get Together* on IRC-channel)? Tell us how they are organized and how they happen.
- How could you describe the relational link between a member and his/her community? Is there a shared common goal which is more important than the individual aspiration?
- What is the difference of investment between members who are considered as active one and others?
  - How important is this time (collaboration within the CoPs) compare to the time spend for other professional activities (Is there some members who the main activity is the CoPs participation?)

#### **4.2.4 How would you describe the relations between the members?**

This question focuses on the socio-affective dimension of the relations between the members, how they are sustained and managed.

- Could you give us examples of critical incidents (arguments)? Could you explain and describe them (context, involved members...) and how the CoP finally dealt with them?
- On the other hand, could you give us examples of harmonious time, where the members get along really well?
- Have CoP members developed identification and trust between them? When did this happen and how?

- Are there some formalized rules for behavior (a charter, a guide of good control, a netiquette)? How have they been formalized (who, which form...)? If that is not formalized explicitly, are there implicit or tacit rules?

#### **4.2.5 Could you give us examples of ‘central’ members and of ‘peripheral’ members? Which clues do you use for classify members as ‘central’ or ‘peripheral’?**

This question is linked to the precedent one. It attempts to identify the way the members feel themselves as members of the CoP and how this feeling is possibly supported.

- What the characteristics of ‘central’ or ‘peripheral’ members?
- What does belonging to this CoP bring to you?
- How can you define who belongs the CoP?
- What makes the difference between a ‘central’ member and of ‘peripheral’ member of the CoP?
- Are there tools used for increasing the feeling of membership or for helping members to pass from a peripheral position to a central one?
- In your own view, do you think there is a particular sense of community? Can you define it?
  - Does the sense of belonging in a CoP rise from the personal contact between members; the mutual benefits of participation, the common domain of interest or profession? Other?

### **4.3 Self organization and organigram**

#### **4.3.1 How does the community organize itself? Could you describe and give examples of:**

This concerns all the internal organization’s processes of the CoPs. It is really a question about processes: to make a decision, to regulate, to negotiate aims or views... and about the services used for sustaining these processes.

- Procedures of decision-making (for example about the organization of communication or about the choice of discussion topics...)?
  - Organization of vote?
  - Their leader/coordinator/facilitator/moderator decides.
  - They negotiate and reach a consensus
  - Silently!
- Distribution of tasks between the members?
- Deal with marginal behaviors?
- Agreement on the “common understanding” between members?
  - On the use of the common vocabulary?
  - On the use of the common language?
- Introduction of new topics?
  - *How open are the community to testing new ideas?*
- Introduction of new tools?
- Have they been aware of the forming of some kind of (explicit or implicit) hierarchy or authority between them? Could they describe it?
  - Do the members of CoP have a sense that there are distinct roles between them?
  - Can we draw a sort of organigram of the Cop?
    - Is somebody a leader (Is the leader the same as the technical moderator)? A peacemaker? A genius (has smart ideas)? A problem (imposes obstacles)? A lurker (is someone who read regularly the production of the community, but does not participate)? Other?
    - Could they characterize the other group members? Could they define categories of members or roles?

- Are roles related to the issue/task/problem/practice under consideration or are always the same?
- How does one member shift from one role to the other?
- Do they feel that their community would diminish if one (or more) certain members extinct? Are these people or roles?
- Would they agree in case that the “CoP leader” opinion would matter more in decision making situation?
- Should everybody’s opinion matter the same?

#### **4.3.2 Who is the coordinator? Could you describe his/her roles by giving some specific examples?**

The coordinator’s role is often central in a CoP and this question aims at understanding its roles, which questions s/he has to deal with (participation, authority, facilitation...) and which tools can support his/her tasks (grids of questions, of analysis or of evaluation, planning...).

- Does s/he intervene on:
  - The contents of discussions?
  - The organization of discussions?
  - The facilitation of communication?
  - The use of tools?
  - The introduction of new members?
  - The relation with the outside of the CoP?
- Is there a coordination team or is he (she) alone?

#### **4.3.3 Can you describe with examples how the CoP manages the crucial stages of its evolution (questions or problems)?**

The aim of this question is to collect examples of discussion themes and problematic treated within the CoP. The interviewee should be asked to detail these themes by explaining the processes of exchanges, experience sharing, analysis, debates, creation of new knowledge and the ‘objects’ shared within a discussion or project. So it aims at identifying different ‘periods’ of wide or little activity of the CoP and their reasons. It attempts to understand the process of stimulation and participation of the members.

- Tell us, what kind of problem does the CoP need to go through? (administrative issues, sensitive topics)
  - Tell us some examples of very sensitive topics that the CoP has had to deal with and how it reached a consensus or not.
  - Do you remember some internal discussions about the future of the CoP (for example the creation of a ‘break-away’ CoP, the decision making about a possible extension or narrowing of the CoP, the welcome of newcomers, the change of coordinator...) i.e. discussions about the existence or development of the CoP?
- Could you identify and describe more or less intense phases of activities since the birth of the community?
  - In your view, what are the factors influencing the stimulation of the community (particular period of the year, particularly stimulant topics...)?
- Could you identify and describe more or less intense phases of activities since the birth of the community?
  - In your view, what are the factors influencing the stimulation of the community (particular period of the year, particularly stimulant topics...)?

## 4.4 Organizational and outside context

### 4.4.1 How could you describe the relationships between the CoP and its organizational context?

This question aims at describing the relations between the CoP and its organization: support, evaluation, institutional expectations... and how the CoP deals with it.

- Could you give examples where your CoP has to deal with the organization it is a part of (at its beginning or at different moment of its life)?
- Does the organizational context facilitate the participation in CoPs? (management of time, logistic supports, recognition, etc.)

### 4.4.2 How can you characterize the relations between the CoP and the outside?

This is about the external visibility of the CoP, for future members, for the organisation in which the CoP takes place or for people interested in the outputs of the CoP. It also tries to evaluate the effects of the CoP on the larger professional community.

- What kind of information is given outside the CoPs? (In connection with its activities, its members, its products, its objectives, etc.)
- Does CoPs receive information about itself coming from outside? How is the CoP perceived outside, and how does the CoP evaluate this information coming from outside?
- What are the repercussions of the activity of CoPs outside?
- Are the CoP members implied in other CoPs? Which is the importance of this CoP compared to other CoPs?

## 4.5 Future

### 4.5.1 In your view, what is the future of the community?

This question concerns the future of the CoP at short- or long-term.

- Is the community in progression (in term of activity or size) or in recrudescence?
  - If it's in recrudescence, what can stimulate the activity of the CoP (new members, new tools, new topics, new danger)?
- About topics of discussion?
- About technical tools?
- About contact with the outside world?
- About new recruits?

## 4.6 About the activities of the CoP

### 4.6.1 Can you describe the activity of CoP compared to what it produces?

This question is about the outputs of the CoP : what they are and by which process they have been created.

- Describe tasks/practices of production within the CoPs.
- What are the outputs of the CoPs? What are its products?
- What kind of product is it? Documents (what kind of documents)?
  - What do they do with these documents? Are they archived, published? How? On a Web site? Printed? How are they distributed? To whom?
- From what?
- From what kind of collaboration do they result?

- Who produces it? A group? A sub-group? A person alone?
- What internal organization supports the production?
- Who/What is the customer of the product? (the members themselves, outside, the community as a whole, the organization, etc.)

#### 4.6.2 What are the current results (in a large sense) of the CoP's production?

This question attempts to understand the process of (self)-evaluation of the activities of the CoP.

- Comparing objectives and results of the CoPs, what can we say?
- Are these results measurable or not? Are they measured? How are results measured?
- Are the results related to the objects that the community produce and disseminate? How could you evaluate that the result is positive or negative? Does that relate to the satisfaction of the members or the regulator? (example: "Our community goes very well because members (or hierarchy) is happy!")

#### 4.6.3 In your view, does the CoP create *knowledge*? If so, can you describe this process of creation?

This question aims at describing the process of *knowledge management* from the informal expression of members knowledge or skills to their reification, storage and possible dissemination. This question is tied up with the WP3 services.

- What is your own representation of knowledge?
- Does the community create knowledge?
- How does the community create knowledge? Describe it with some examples.
- How does the community share its knowledge?
- How is it formalized and finally reified (so only, if it is)?
  - Who does it? Only one person or a team?
  - Which are the tools (if so) which are used for that goal?
- How is the created knowledge re-appropriated /re-used by the members in their daily activities?
- In your own representation, does the knowledge belong to the CoPs' members or to the CoPs itself?
  - Could the departure of a CoP member be problematic for the circulation of knowledge within the CoP?
  - If is not, could you explain the reason/the process why?
    - How would you define tacit or implicit knowledge?
    - Do you think implicit knowledge can and should be made explicit?
    - How is implicit knowledge made explicit?
    - How is explicit knowledge validated?

#### 4.6.4 Can you describe how and where the community finds/retrieves information? Can you describe the process?

This question aims at describing the process of *knowledge retrieval* from the informal expression of members knowledge, explicit knowledge out of the CoP or skills to their reuse, reification, storage and possible dissemination.

- Do they plan brainstorming?
- Do they have shared archives (electronic/paper)?
- Do the search on the CoP's Intranet, CoP's Forum, CoP's Website, CoP's Mailing-list, and Internet?
  - Where/How do they store information?
    - Do they record their sessions? Is the access restricted to certain members or not?



- Do they have common archives? (what type?)
  - How do they feel about sharing knowledge?

#### **4.6.5 Can you describe the mediation process (collaboration, negotiation, decision making on specific tasks)?**

With this question, we would like understand the process of mediation (in large sense)

- How do they value the issue of communication or “common understanding” between members?
  - Do they share the same ‘language’ (this does not mean if they all speak French)
  - Do they confront conflicts of interests? Goals? Priorities?
  - Do they share the same vision? (for the CoP/for something else)
  - Any ideas about how “common understanding” could be achieved?
- How do they find/retrieve information when wanted for CoP needs?
  - Brainstorming?
- Besides using technological means for communication/collaboration, in what other ways do they collaborate as a team?
  - They have face-to-face meetings?
  - They meet all in person or some people at a time?
  - Does anybody organize their meetings or facilitate collaboration? Who?
  - Are there intermediaries?
- Do they use already or need some tools for argumentation? Can you describe what?

#### **4.6.6 How would you describe the learning activities (or the development of competencies) of the members in the community?**

This question is linked with the precedent one and is focused on the members’ learning and professional development. It also focuses on the process by which the members appropriate the knowledge created into the CoP for their own practice.

- What kind of learning is it? (professional, technical, relational) ?
- What are the factors set up by community which are favorable to the development of competence? (i.e. available time for members) What are the obstacles?
- How could we evaluate these learning? (if it is possible)
- What do you know about e-learning? What is the CoP experience about it?
  - What are the beliefs about efficiency of e-learning?
  - What are the beliefs about collaborative learning vs. individual learning (specific learning path for each learner)?
  - What is the learning needs and expectations within the CoP (what do you think CoP’s members need to learn; what they want or expect to learn)?
  - If you are the coordinator: What do you want members to learn within the CoP ? What do you think about collaborative learning (including e-learning)? Do you believe in its efficiencies?

#### **4.6.7 Can you illustrate (with examples) some situations of uses of tools (technological and organizational)?**

##### ***4.6.7.1 Which tools (technological and organizational) are used by CoPs?***

With this question, we would like to list the functionalities and tools **used** by the CoP, generally and for all kind of purposes, not necessary technical tools but also methods (existing or ad-hoc) for coordination, negotiation, etc.

- **On the technological level** - Tools are used to :
  - Documents storage

- Communication
- Organization / Coordination / Collaboration
- Collaborative management of contents
- Negotiation tools
- Awareness
- Authoring Tools / Author system
- **On the organizational level** - Tools are used to :
  - Coordination
  - Animation
  - Facilitation
  - Organization of knowledge
  - Sustain of sociability
  - ...

*Some examples: Forums, e-Mailing lists, Common calendar, Common workspaces, other?*

- Which kinds of difficulties (if so) have people in using these tools? Describe it.
- **More concretely:** How does the community create documents? How are documents shared? Exchanged? What do they contain? Only text? Pictures? Drawings? Is video and audio used? Would these media be used with easy-to-use tools?

#### ***4.6.7.2 How could you characterize the appropriation of the tools by members? Are they well accepted / used?***

This question concerns the process of instrumentation of tools by the individual members, by little groups of members or by the whole CoP. The description of this process should highlight the usual uses of tools within the CoP and how these uses have been negotiated and structured.

- Tell us short stories showing how the tools are accepted/refused?
- Did the appropriation need a formation, a shared handbook?
  - *Could you describe scenarii of documents production and processing?*
- How the members are trained with the use of the tools?
  - Is this an individual or collective training?
  - Is it a contextualized training (in connection with the practice of the community) or not?
    - Who organizes the training? What kind of training is it? Would you need help from the outside for that? What kind of help?
- Clarify: Tell us a scenario of use? An example of negotiation of the use of a tool
- What is the acceptability of these tools among the members of the community?
- Are these tools differently used by the members of CoPs, or the groups of members?
  - How does the management of communication tools works? (moderation, manager, etc.)

#### ***4.6.7.3 Which tools (technological and organizational) could be useful for CoPs?***

With this question, we would like to list the functionalities and tools that **could be useful** for the CoP (the tools they would dream of), generally and for all kind of purposes, not necessary technical tools but also methods (existing or ad-hoc) for coordination, negotiation, etc.

- **On the technological level** - Some tools could be useful to :
  - Documents storage
  - Communication
  - Organization / Coordination / Collaboration
  - Collaborative management of contents
  - Negotiation tools

- Awareness
- Authoring Tools / Author system
- Argumentation and decision making tools
- **On the organizational level** - Some tools could be useful to :
  - Coordination
  - Animation
  - Facilitation
  - Organization of knowledge
  - Sustain of sociability
  - ...
- Could you describe the ideal tools for the collaboration, production of information, share of information etc? What (in term of technical tools) is needed in the CoPs? Do you think your CoP could need personalized tools (which does not exist)?
- What sort of tools could be useful for people with special needs (for example: blind people)?

## APPENDIX 6 – Template of interviews synthesis grids

**Name of the CoP:**

**Name of the observers:**

**Author of the synthesis:**

**Email:**

**Date(s) of the interview(s):**

**Date of writing this synthesis:**

---

### 1. Identification and brief description of the CoP

*This table (maximum 2 pages) presents information about the CoP as presented during the kick-off meeting at Lausanne (<https://bscw.ercim.org/bscw/bscw.cgi/100444> - follow the link « Descriptions of CoPs »). The information has to be enhanced following the interviews.*

Context: in which context is the Cop situated (institution, region, professional network, etc.)?

History: when did the community start? Would you say that it is a community in emergence? Or matured?

Focus: what is the domain of the Cop? On which content or project is the Cop focused?

Actors: who are the actors involved? How many are there? Are there people playing a particular role?

Practice: How would you describe the content of the exchange and production of the CoP? Could you give a typical example illustrating the content of the exchanges?

Communication tools: which virtual environment or communication software does the Cop use? For which purpose?

Archive: do you have archives for your CoP? How do you reify (formalize) the contents of your exchanges? Do you use specific tools or methodology to explicit and share your knowledge?

Cultures: how could you describe the value shared by the community?

Links: can you give some references to tools (Websites, forums...) that you use inside your Cop?

The PALETTE project has identified four categories of issues to be encountered, for each category choose a number between 1 and 5 indicating if you find this issue (5) very important or (1) not important.

### 2. Tools

*One table for each tool used by the CoP. Maximum 2 pages for each table. Points 1 to 4 are required. Points 5 to 7 are optional. For the points 3 to 6, it is expected to describe, to tell in a text (if possible not in a telegraphic style) the functioning and activities of the CoP.*

1. Name and type of the tool (brief description in case of CoPs own tools):

Type here

2. The tool is used by the CoP for:

- ☐ Information sharing
- ☐ Knowledge Management
- ☐ Mediation/Collaboration
- ☐ Other category (please explain)

3. Why is it used by the CoP? For what need?

Type here

4. How is the tool usually used?

Type here

5. Examples of use

Type here

6. How has the tool been chosen? For what reason/purpose?

Type here

7. Screenshots or possible additional information

Images here

### 3. Activities

*One table for each of the 3 main activities: Information Sharing, Knowledge Management and Mediation/Collaboration. This can be completed by the description of other activities of the CoP, specific to the CoP or particularly well described in the interviews, for example "production", "evaluation", "negotiation", "task sharing", "coordination"... For the points 1 to 3, it is expected to describe, to tell in a text (if possible not in a telegraphic style) the functioning and activities of the CoP. Maximum 2 pages for each table. Point 4 is optional.*

#### Activity of ... (Information Sharing)

1. Description of the activity. Why? How? When?

Type here

2. Possible problems encountered

Type here

3. Needs/Urges of the CoP

Type here

4. MOT graphical representation

Image here

#### Activity of ... (Knowledge Management)

1. Description of the activity. Why? How? When?

Type here

2. Possible problems encountered

Type here

3. Needs/Urges of the CoP

Type here

4. MOT graphical representation

Image here

#### Activity of ... (Mediation/Collaboration)

1. Description of the activity. Why? How? When?

Type here

2. Possible problems encountered

Type here

3. Needs/Urges of the CoP

Type here

4. MOT graphical representation

Image here

**Activity of ... (...)**

1. Description of the activity. Why? How? When? By whom? Products?

*Type here*

2. Possible problems encountered

*Type here*

3. Needs/Urges of the CoP

*Type here*

4. MOT graphical representation

*Image here*

## APPENDIX 7 – Example of filled synthesis grid

**Name of the CoP:** Learn-Nett

**Name of the observers:** Amaury Daele (UNIFR) – Nathalie Van de Wiele (ePrep)

**Author of the synthesis:** Amaury Daele (UNIFR)

**Email:** amaury.daele@unifr.ch

**Date(s) of the interview(s):** 05/24/2006 (2 interviews) – 06/01/2006 (1 interview)

**Date of writing this synthesis:** June and September 2006

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### 6.1.1 1. Identification and brief description of the CoP

*This table (maximum 2 pages) presents information about the CoP as presented during the kick-off meeting at Lausanne (<https://bscw.ercim.org/bscw/bscw.cgi/100444> - follow the link « Descriptions of CoPs »). The information has to be enhanced following the interviews.*

**Context:** in which context is the Cop situated (institution, region, professional network, etc.)? In 2005-2006 this community is a network of seven universities located in Belgium (Liege, Louvain-La-Neuve, Mons), France (Strasbourg, Mulhouse) and Switzerland (Geneva, Fribourg). The field is educational technology. The language used is French but at the beginning partners from UK and Spain have participated and the two languages were used: English and French.

**History:** when did the community start? Would you say that it is a community in emergence? Or mature? This community started in 1997 in Belgium between five universities. Until 2000, the project has been funded by the French-speaking Community of Belgium then by the EC as an action-research. Now the project is no longer funded, new members enter and go out each year. A few members are there from the beginning and compose the “coordination team”. We can consider that it is a community of researchers and teachers in the field of educational technology who build collective practice and share about it. The community is now mature in the sense that the members know each other very well and that the training they organize is considered as mature.

**Focus:** what is the domain of the Cop? On which content or project is the Cop focused? The community is focused on a shared course called Learn-Nett (Learning Network for Teachers and Trainers). This course prepares future teachers or trainers for educative uses of new technologies (ICT). Concretely, students from the different universities set up work groups that, supervised by tutors, collaborate at a distance on projects aimed at developing particular uses of ICT. A virtual campus is their work environment. Around this course, a reflection is lead about collaborative learning and its conditions.

**Actors:** who are the actors involved? How many are there? Are there people playing a particular role? Those involved in the community are the coordinator (a person who manages activities between the sites), the teachers (academic responsible people on each site), animators (local coordinators on each site supervising the local students) and tutors (from the universities involved, they supervise groups at a distance). In 2006 there are 22 people who can often take several roles.

**Practice:** How would you describe the content of the exchange and production of the CoP? Could you give a typical example illustrating the Exchanges concern the administrative and pedagogical preparation of the course (product: Pedagogical guide, Technical guide), the training of tutors (product: learning activities, shared views on the tutor's interventions profile), the regulation of the tasks of the tutors during the course, the evaluation and regulation of the course at the end. An example in 2006: a charter is currently in the process of construction. We try to

content of the exchanges?	explicit the implicit rules, concepts and methods used in this learning activity.
Communication tools: which virtual environment or communication software does the CoP use? For which purpose?	The “coordination team” meets before the course for preparation and after to evaluate. They also interact with an audioconferencing system before the course to prepare the tutors’ training. The entire community interact via email, videoconferencing system “Click to meet” (to train the tutors before the course), audioconferencing system (to regulate the tutors’ tasks during the course) and a virtual environment “Moodle” (to discuss some questions about the community and the tasks).
Archive: do you have archives for your CoP? How do you reify (formalize) the contents of your exchanges? Do you use specific tools or methodology to explicit and share your knowledge?	Guides for the course and activities for the tutor’s training are reused and adapted every year. We need to construct a charter to welcome new partners in better conditions. We also have archives of learners’ products and reflexive reports that can help us to illustrate the outputs of their learning and our goals. No specific tool or methodologies are used for this purpose.
Cultures: how could you describe the value shared by the community?	The culture between the participants is normally quite friendly. We share values about educational concepts (e.g. learners’), instructional design (e.g. collaborative learning) and research in the educational technology field.
Links: can you give some references to tools (websites, forums...) that you use inside your Cop?	<ul style="list-style-type: none"> <li>• In 2004-2006, virtual environment for the students: <a href="http://ute2.umh.ac.be/learn-nett/">http://ute2.umh.ac.be/learn-nett/</a> (includes several communication tools (e.g. chat, forums...), library, learner’s individual space, group space...)</li> <li>• In 2005-2006, virtual environment for the community: <a href="http://tecfa.unige.ch/moodle/">http://tecfa.unige.ch/moodle/</a> (forums devoted to interactions on different topics between the coordinating actors: coordinators, teachers, tutors).</li> <li>• Short presentation (in French) of the project : <a href="http://tecfa.unige.ch/tecfa/research/learnett/welcome.html">http://tecfa.unige.ch/tecfa/research/learnett/welcome.html</a></li> </ul>
The PALETTE project has identified four categories of issues to be encountered, for each category choose a number between 1 and 5 indicating if you find this issue (5) very important or (1) not important.	<ul style="list-style-type: none"> <li>• Express, represent and share practices and authentic problems: 5</li> <li>• Debate and reflect about the practices and about the life of the CoP: 5</li> <li>• Develop, reify and exploit knowledge inside and outside the CoP: 5</li> <li>• Facilitate engagement, participation and learning: 5</li> </ul>



### 6.1.2 2. Tools

*One table for each tool used by the CoP. Maximum 2 pages for each table. Points 1 to 4 are required. Points 5 to 7 are optional. For the points 3 to 6, it is expected to describe, to tell in a text (if possible not in a telegraphic style) the functioning and activities of the CoP.*

1. Name and type of the tool (brief description in case of CoPs own tools):

*Galanet – A distance training platform with different specific tools: repositories (general, for working groups, automatic archived chat discussions, publications of working groups...), awareness (who is here and where?, personal pages, list of users), forums (general, for groups, for the tutors), chats (“pub” and rooms for the working groups), internal email service, notice board, rooms for each group.*

2. The tool is used by the CoP for:

- ☒ Information sharing
- ☐ Knowledge Management
- ☒ Mediation/Collaboration
- ☐ Other category (please explain)

3. Why is it used by the CoP? For what need?

*This is not really the tools used by the CoP but the tools used for the project where the CoP evolves. In this platform, one tool is specifically used by the CoP: the forum. It is for organizing the work during the project, prepare the audio conferences between tutors and local coordinators, etc. This forum is public: the students could read the messages and files exchanged by the tutors. That’s why a private Moodle platform has been set up parallel to Galanet.*

4. How is the tool usually used?

*It is used at different specific moments: a little bit before the monthly audio conferences between the tutors, a thread is open where each tutor posts a summary of the work of his/her group, the problems encountered, the possible delays, the communication and collaboration processes...At the end of the project, a last thread has been opened for collecting the evaluation of each group by their tutors. Only one tutor tried to post a message about a question of real practice but nobody answered (in the forum).*

*Statistics about the use of the forum are available.*

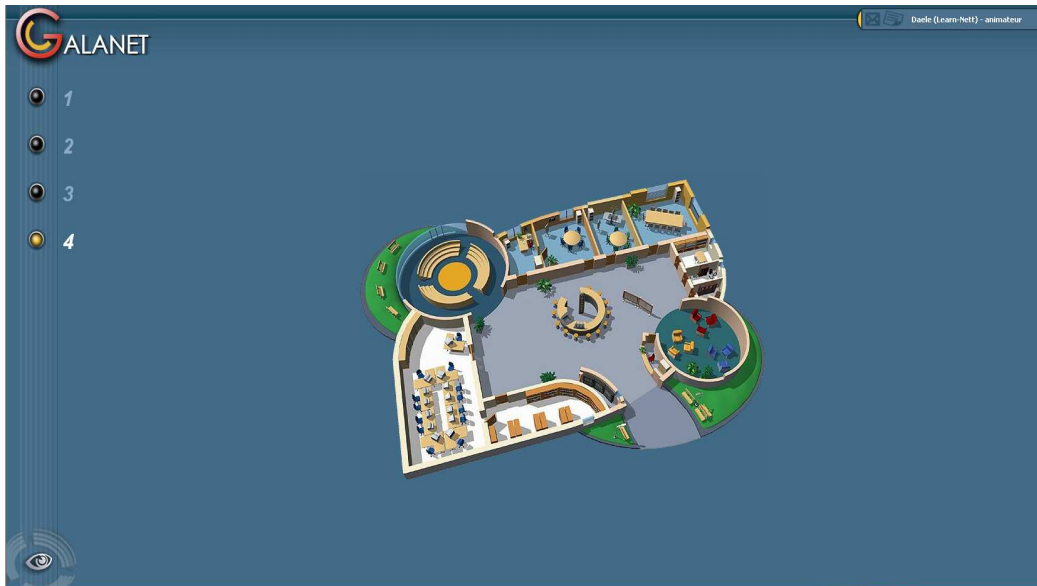
5. Examples of use

*See previous point.*

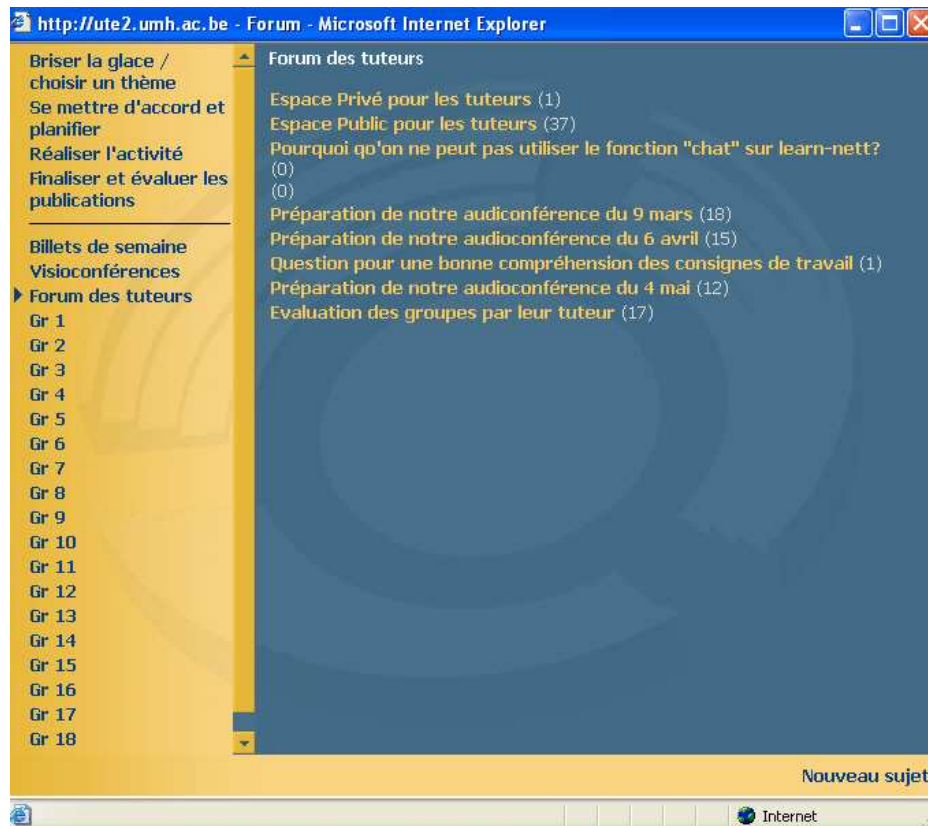
6. How has the tool been chosen? For what reason/purpose?

*For easiness: the forum is integrated into the platform used for the whole project. However, some tutors don’t like the openness of this forum. A Moodle platform has been set up during the project but without specific purpose. Hence during the year 2005-2006, it has not been really used. But at the beginning of the year 2006-2007, it is used.*

7. Screenshots or possible additional information



Welcome page of Galanet after login. The image is clickable for moving into the different rooms and tools. The numbers on the left correspond to the 4 stages of the training where different tasks are required and different tools are available for the students. The eye on the left is the awareness tool; when clicked, a pop-up opens with a list of “Who is here and in which room?”.



The list of topics in the Tutors' forum. The numbers in brackets correspond to the number of messages under each topic. It's possible to attach files to the messages. The coordinator can also moderate the forums.

1. Name and type of the tool (brief description in case of CoPs own tools):

*Moodle*

2. The tool is used by the CoP for:

- ☒ Information sharing
- ☐ Knowledge Management
- ☒ Mediation/Collaboration
- ☐ Other category (please explain)

3. Why is it used by the CoP? For what need?

*The aim is to have a private space for the tutors because the platform Galanet does not provide such space. It is for having a share space with discussion forums about the organization of the training and the sharing of tutors' practices with their group.*

4. How is the tool usually used?

*In 2005-2006, the space has been provided just after the training of tutors in December 2005 and its use has been discussed between the tutors and coordinators. The forums have been used essentially in December 2005 and January 2006 (just after the training where the tutors met together). At the beginning of 2006-2007, the space is used from September.*

5. Examples of use

*Examples of discussion in the forum:*

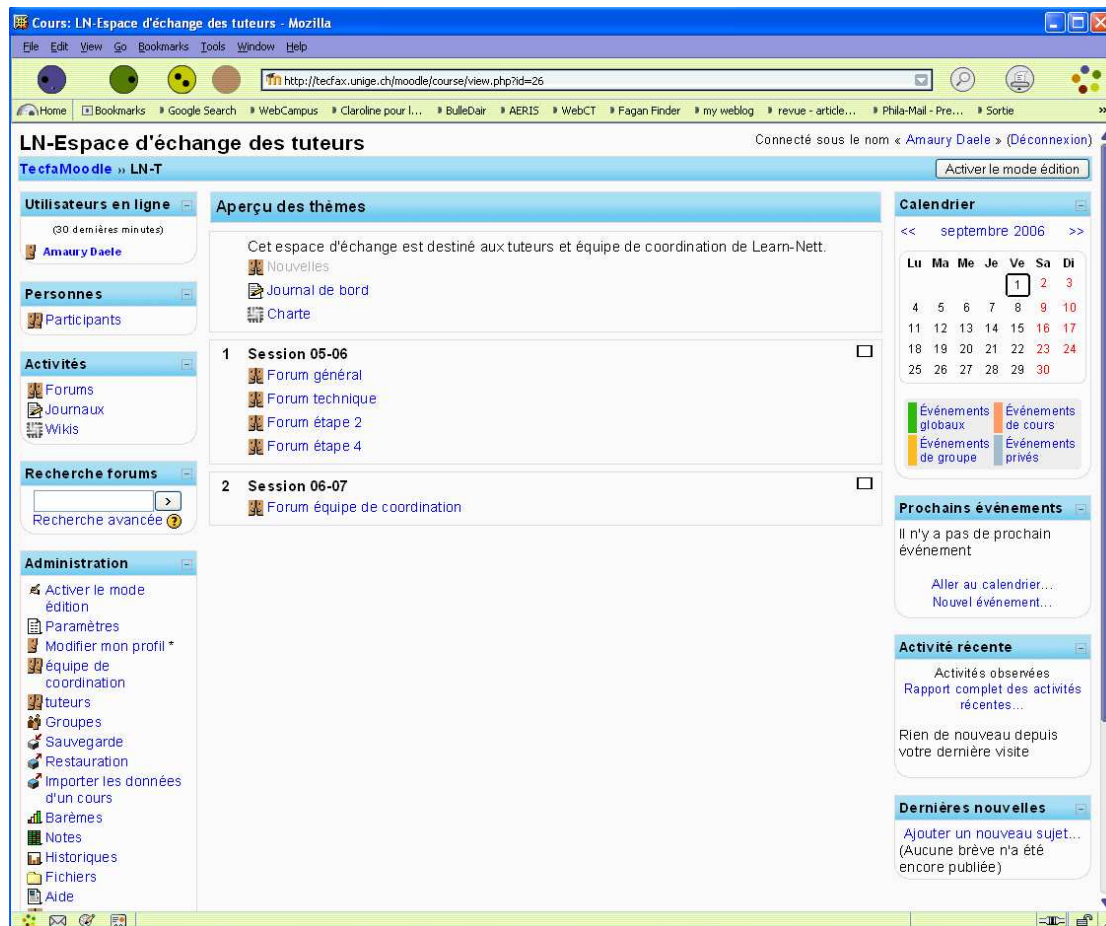
- *The tutor's profile in Learn-Nett. Based on specific tasks and attitudes, the tutors provided examples.*
- *The way to use the Moodle forums between the tutors.*

*Example of use of the wiki: the conception of Learn-Nett charter describing the skills, the technical basis, the people, etc. required for a new participant wishing to participate in the training with students. A plan is suggested but it is not developed.*

6. How has the tool been chosen? For what reason/purpose?

*See point 3.*

7. Screenshots or possible additional information



The welcome page of the tutors' space in Moodle.

1. Name and type of the tool (brief description in case of CoPs own tools):

*Standard communications tools: email, skype and telephone.*

2. The tool is used by the CoP for:

- ☒ Information sharing
- ☐ Knowledge Management
- ☒ Mediation/Collaboration
- ☐ Other category (please explain)

3. Why is it used by the CoP? For what need?

*Email: for any information to communicate between the tutors. But it's not clear which information is sent by email or by a message in the tutor's forum.*

*Skype: for synchronous communication between tutors and local coordinators, 1to1 or to many.*

*Telephone: audio conferences are organized monthly during the training with the students for sharing the tutors' questions and problems encountered with their groups.*

4. How is the tool usually used?

*See point 3.*

5. Examples of use

*Email: communication of dates or general information about meetings.*

*Skype: communication between a tutor and a local coordinator when students, in a university, are disconnected during a long period of time.*

*Telephone: monthly audio conferences. These meetings are prepared through the Galanet' forum: the tutors post their monthly report about the functioning of their group.*

6. How has the tool been chosen? For what reason/purpose?

*These tools are used by all the members of the CoP for any use in their daily work. They are integrated in their usual daily workspace. Email is in a way connected to the platform Galanet:*

forums messages can be received by emails.  
7. Screenshots or possible additional information  
---

### 6.1.3 3. Activities

*One table for each of the 3 main activities: Information Sharing, Knowledge Management and Mediation/Collaboration. This can be completed by the description of other activities of the CoP, specific to the CoP or particularly well described in the interviews, for example “production”, “evaluation”, “negotiation”, “task sharing”, “coordination”... For the points 1 to 3, it is expected to describe, to tell in a text (if possible not in a telegraphic style) the functioning and activities of the CoP. Maximum 2 pages for each table. Point 4 is optional.*

#### **Activity of use/reuse of documents (Information Sharing)**

##### 1. Description of the activity. Why? How? When?

*This MOT model (see below) aims at depicting the documents used (yellow) and the documents produced (pink) within Palette. Three kind of actors produce tools: students, coordinator of the project and the group of tutors of students groups and local coordinators.*

*Students produce their group documents and some of them produce researches for their dissertation (master). Both are validated by the coordinator and tutors/local coordinators. Students also produce personal documents which will be read by the professors, coordinator and tutors/local coordinators (logbooks which is optional and individual reflection report which is required).*

*For their part, tutors and local coordinators participate in the production of the pedagogical guide (pedagogical scenario of the students training), tools for the tutors (for accompanying their group) and some of them are involved in little researches. The coordinator participates in the production of these three types of documents. In addition, he is the author of the weekly reports posted within the training platform for informing all the actors about the project's life.*

*Two types of documents are used: scientific papers (documentation both for the tutors involved in researches and for the students involved in their respective group) and bookmarks (basically html texts or pdf).*

##### 2. Possible problems encountered

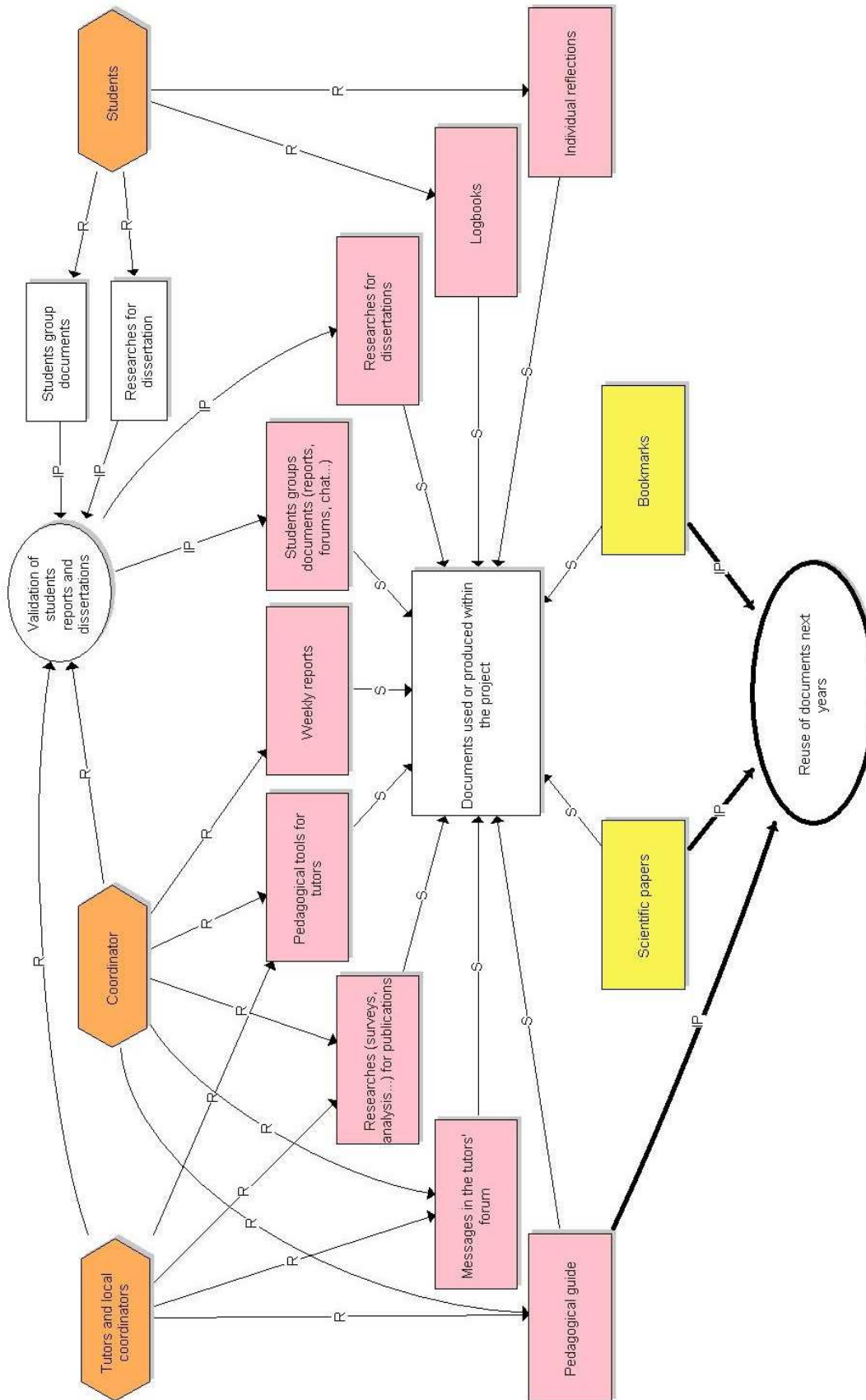
*It is interesting to note that there are a lot of documents produced which are not reused in the following years. For example, few researches of the students are reused for designing tools for the tutors while there are a lot of interesting data collected and analyzed in those dissertations. The pedagogical guide is also reused but essentially adapted for the next year.*

##### 3. Needs/Urges of the CoP

*Some questions could be asked:*

- *How to provide new pedagogical tools for the tutors by reusing some documents produced? Which internal organization or tool could be of help?*
- *How to keep track of the monthly meetings (the tutors' messages in the forum), which are probably the best moments for discussing about practice, and use them for providing tools or reflection on practices for tutors? Which internal organization or tool could be of help?*

##### 4. MOT graphical representation



### **Activity of use of tools for the different tasks/activities**

#### **1. Description of the activity. Why? How? When?**

*This model tries to depict three kind of knowledge:*

- *the tools used within the Learn-Nett project;*
- *the actors who use the tools;*
- *the activities supported by the tools.*

*Four types of actors are grouped in two categories: "Everybody" and the "Executive committee" for avoiding too much links between actors and tools.*

*8 tools are integrated within the distance learning platform (Galanet). 2 other tools are used: email (not a list of discussion) and audioconference (telephone).*

*2 tools are "orphan" (=not really used): a voting system which was integrated within the platform but "let down" and a private forum for tutors which was not integrated within the platform.*

*These 10 tools are used for specific purpose/activity. These activities are depicted in coloured procedures. The coloured links are IP links which can be read as "is used for".*

*7 activities are orphan: no tool is used for sustaining them.*

#### **2. Possible problems encountered**

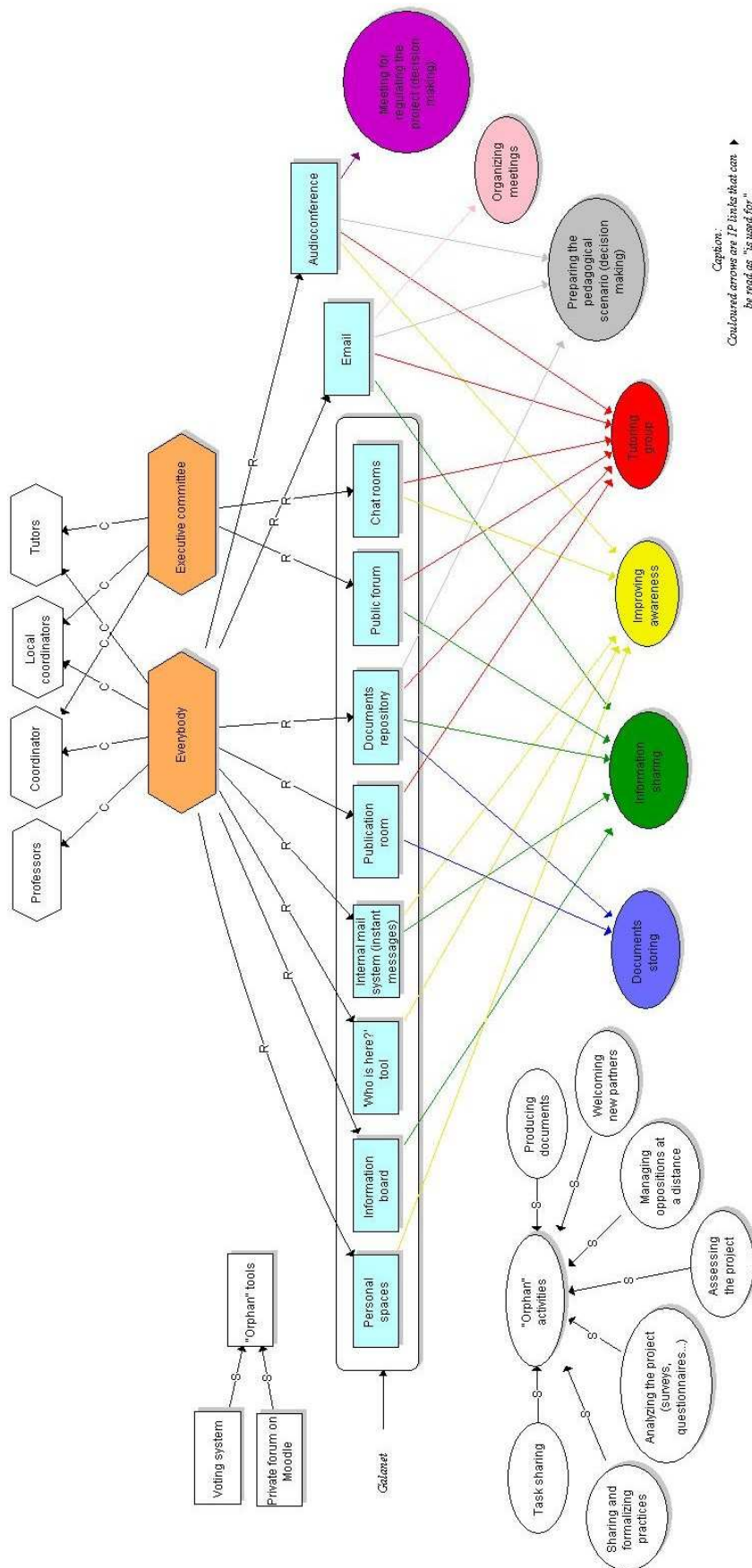
*For some of the orphan tools or activities, the interviewees complain: managing oppositions at a distance, producing (and searching for and into) documents, sharing practices and analyzing the project for improving it years after years. A question is also asked about the use of the private platform for the tutors' CoP.*

#### **3. Needs/Urges of the CoP**

*Some questions:*

- *How to better organize or provide useful tools for sustaining the orphan activities?*

#### **4. MOT graphical representation**





### **Activity of Decision Making (before and during the training project)**

#### **1. Description of the activity. Why? How? When? By whom? Products?**

*The two models below aim at depicting the decision making process before the Learn-Nett project begins, i.e. before the students involved begin to collaboratively work (from January to May) and during the training when some decisions must be made more quickly. Four kind of actors are involved: the tutors of the students groups, the local coordinators in each University, the coordinator of the project and the professors (academic representatives).*

*The decision making process before the training could be divided in 3 sub-processes:*

- 1) Discussion in f2f meeting: different topics of discussion are selected into an agenda and the goal of the meeting is to organize the work for producing the scenario and sharing tasks. The product of this activity is a meeting report.*
- 2) Following the meeting report, the tasks are shared and the actors work for proposing to the others the draft documents.*
- 3) A negotiation (comments and proposals of changes in the documents) then occurs for producing the final documents and organization which will constitute the architecture of the pedagogical scenario.*

*During the project, while students are involved with the tutors in working groups, decisions have regularly to be made relatively quickly.*

*The normal and negotiated procedure is to organize monthly meetings with the tutors and local coordinators with an agenda based on problems, questions and topics that occur within the students working groups. A meeting report is written by the coordinator and information about the decision made are given to all the participants (students, professors...).*

*However, it seems that sometimes, the project's coordinator has to make decision 'on the fly', very quickly, for answering a specific question or because it would be too energy-consuming to organize a meeting with all the partners. Some interviewed people complain about this 'parallel' process of decision making because they feel not involved in the process and they are not always informed about the decisions made by this way. This 'hidden' decision making process is depicted with the 'hidden' links in the second model (links appear in dotted lines).*

#### **2. Possible problems encountered**

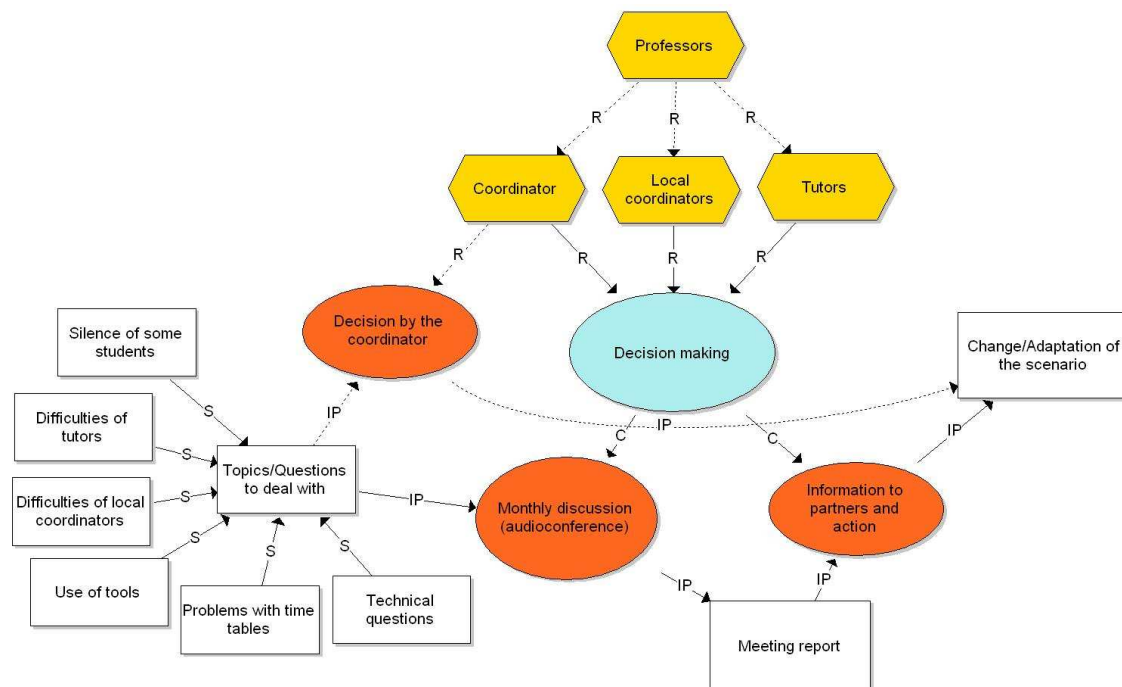
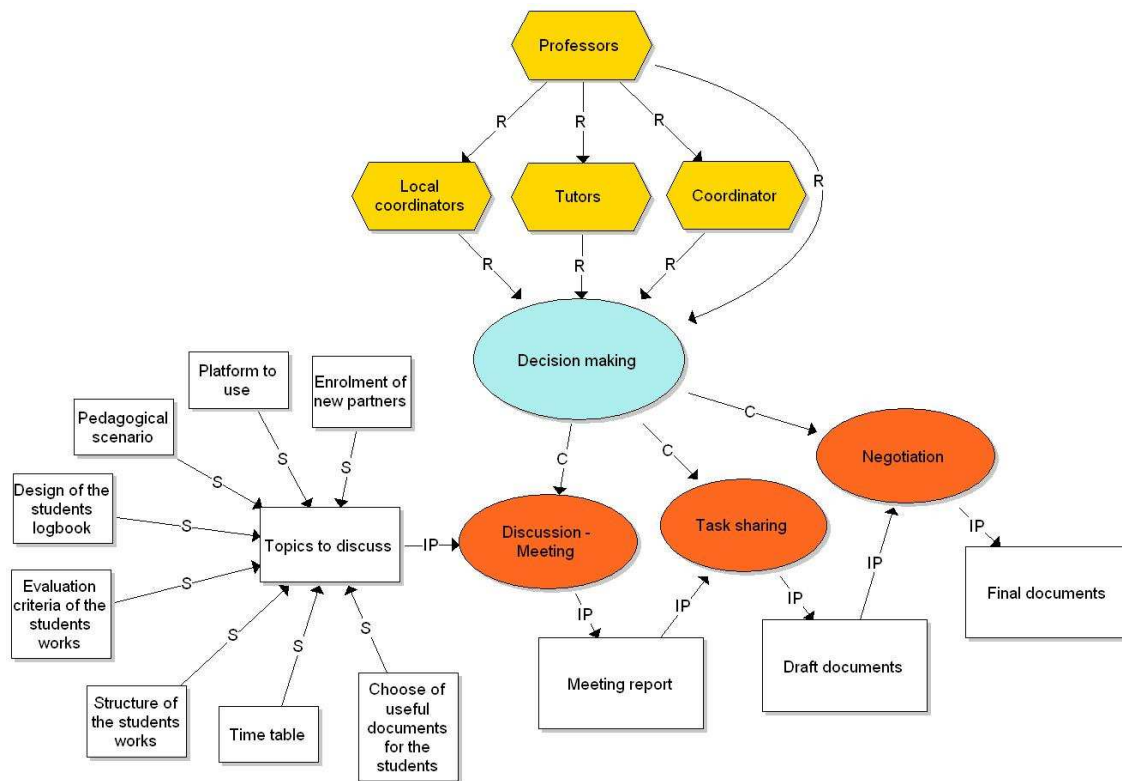
*See above.*

#### **3. Needs/Urges of the CoP**

*Some questions:*

- How to make clear the decision process and the shared responsibilities?*
- How to inform quickly and correctly the concerned people?*
- How to keep track of the decision processes?*

#### **4. MOT graphical representation**



## **APPENDIX 8 – Template of use cases**

CoP's name

Identified needs

Summary of the CoP's needs (to be produced from available CoP synthesis)

### **Name of tool 1**

Tool being proposed to the CoP

### **Description of the tool's functionalities**

Textual description and MOT model representation(s) of the tool's main functionalities.

### **Use Cases**

One or more use-cases involving one or several tools.

Each use-case

- describes the interaction of a user with the tool(s) in order to perform a specific task,
- specifies if it answers to an identified need or if proposes a new practice to the CoP,
- is composed of a textual description and MOT model representation.

### **Critical questions**

A very synthetic set of questions addressed to CoP members in order to clarify some issues for developers.

### **Possible awareness training**

Identification and description of the possible trainings the developers propose in order to demonstrate the use of PALETTE services in various scenarios.

### **CoP members' reactions to each section**

CoP member should have the opportunity to add comments and react to each field of the template.

\*\*It is important to notice that this template will serve as a support  
to meet CoPs (face-to-face) in order to collect their feedback\*\*

## APPENDIX 9 – Example of use case

CoP: Form@HETICE

Authors: B. Denis, R. Dieng-Kuntz, J. Mikáč, Y. Naudet, V. Quint, A. Vagner, I. Vatton

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    - 2.1.1. Current version
    - 2.1.2. Developments in progress
  - 2.2. Multimedia authoring: LimSee3
  - 2.3. Generis
    - 2.3.1. Current functionalities
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  - 2.4. Semantic document indexing service
  - 2.5. Semantic Portal
  - 2.6. Semantic Search Engine: CORESE
  - 2.7. Semi-Automatic Generation of Semantic Annotations from Texts: MEAT
  - 2.8. Semantic Web Server: SeWeSe
  - 2.9. Semantic Wiki: SweetWiki
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  - 3.4. Information research by a Form@HETICE member
4. Critical Questions
5. Possible Awareness training

### 1. Summary of CoP needs

The members of this CoP are "resource-persons in ICTE" and teachers of Higher Education, mainly of 23 educational departments (trainers of future teachers). They exchange about their practices of ICT uses through a network created in 2000 by universities and financially supported by the European Social Funds (until December 2006) and the Ministry of Higher Education (until 2002). The general Form@HETICE goal is to promote a critical use of ICT in educational practices of High School teachers. Five actions contribute to this objective: (1) elaboration and organisation of training sessions (about tools and technological supports, pedagogical scenarios using ICT,...) addressed to teachers and students, (2) production and updating of training and self-learning resources, (3) capitalisation of existing ICTE practices and their dissemination inside the Form@HETICE network, (4) follow up of teachers' innovative projects about ICTE and (5) stimulation, enlargement and making durable the exchanges network. Most of the actions of this network are going to be more "autonomous" in 2007 since a team of three teachers ("pérénisateurs") will take in charge their coordination.

The networking takes place through monthly face-to-face meetings that are much appreciated since participants can share ideas about practical activities. They are also the opportunity to introduce new members. A diffusion list supports the dissemination of information, mainly about the organisation of meetings, rarely about questions asked by the members or other types of information (products, external events,...). There are 92 members who are people who participated to at least one activity of the network. Since its creation in 2001, it counts more than 700 messages. Generally, members communicate through e-mail with the coordination team and with each other.

There are thematic groupworking on a specific problematic. Their members meet during a part of the day of the plenary meetings. Until June 2006, four groups had an animator who was a member of the coordination team. One of these groups ("Formation à Accès Permanent") counted 12 members in 2006. This topic still interests the teachers, and also some schools directors (institutional politics). This group uses a wiki. This tool has been introduced by the animator of the group (a researcher who left the project in November 2006) who is the main author of the available information. The idea of co-production of a course at a distance emerged among some participants of this group. They are debating on the Wiki about the choice of the topic: documents search, preparation of the students' final work ("thesis")...

Some members organise face-to-face training sessions that are mainly focused on the use of the distance learning platform named ACOLAD that is used in several High School.

Some courses are online. They are hosted on the server of a school where ACOLAD is installed, others use the CLAROLINE platform.

The resource persons organise and participate to face-to-face training sessions about the ICT and their uses in their educational practices.

Members' productions are mainly presentations (Powerpoint), guides and notes (Word or pdf formats, rarely html). They are (should be) placed on the Website. Capitalisation of resources is not the major preoccupation of resource persons. Their structuring is done by the website manager (a researcher), but the website should be managed by the "pérénisateurs" in 2007. One resource person uses a software allowing to mix presentation and video ("Vidéo cours" developed by Louis Pasteur University of Strasbourg).

The website was created to support the Form@HETICE target objectives. It contains information on the project, about the members, an agenda of the activities, folders with resources, access to spaces of thematic groups, ...Nevertheless, we observe it is under use (see Fontaine, 2006). It is mainly used by teachers to retrieve participants' names and addresses, to get information on the agenda of the activities, and sometimes to share (post or consult) resources. The forums are not or rarely used, even if their subjects have been negotiated and approved by the members' network. It is not amazing since there is a low critical mass of participants and that the most active members have the opportunity to meet and discuss elsewhere. The opportunity to submit their own articles or resources is not exploited, excepted for some members of the FAP group. But they have to login or to ask to the website manager to edit some information.

The members have not a lot of time to participate to such activities. Some of them have a part time (e.g. from 10% to 20%) dedicated to this role inside their school. It depends on the politics of the school and the support of the director. They like ready-made solutions and face-to-face meetings.

## References

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2. Diffusion list: [formhetice@yahoogroupes.fr](mailto:formhetice@yahoogroupes.fr) Access to archives of the list possible after subscribing to it (send a mail to Arnaud Milstein: [arnaud.milstein@ulg.ac.be](mailto:arnaud.milstein@ulg.ac.be))
3. Wiki: <http://www.stecrifa.ulg.ac.be/wiki>

4. "Rappel des objectifs du réseau Form@HETICE + quelques constats":  
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<https://bscw.ercim.org/bscw/bscw.cgi/d181444/Trans-FH-Unk-20060421-2.pdf>
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## 2. Functional Specifications

### 2.1. Web editing: Amaya

Amaya is a Web editor, i.e. a tool for creating and updating documents directly on the Web. Browsing features are seamlessly integrated with the editing and remote access features in a uniform environment.

#### 2.1.1. Current version

Web documents are structured documents described in HTML and more recently in XHTML. XHTML defines a set of structured elements like divisions, headings, paragraphs, lists, list items, inline elements, tables, cells, etc. The presentation of Web documents exploits the document structure and it is clearly separated. With CSS (Cascading Style Sheets), the user may attach presentation rules (colors, fonts, etc.) to selected elements in the document.

Amaya includes all editing functionalities of a word processor, but it also provides help to manage the document structure and its presentation. Users can easily insert, delete, copy, paste, and transform the XHTML structure of documents. A document generated by Amaya strictly follows the XHTML rules and is therefore accessible by any Web browser.

Amaya provides specific support for handling hypertext links. It allows the user to work on several documents at a time to facilitate linking by point-and-click. It allows users to browse and edit Web documents containing mathematical expressions based on the MathML language. Amaya is also able to display scalable and animated graphics encoded in SVG (a XML language to represent 2D vector graphics).

Finally, Amaya includes a collaborative annotation mechanism. Annotations are external comments, notes, remarks that can be attached to any Web document or sub-part of document. This mechanism lets one add information about a document he/she cannot edit.

#### 2.1.2. Developments in progress

With Amaya, it is possible to build a large variety of Web documents: institutional pages, technical reports and manuals, slide shows, curriculum vitae, address books, agendas, etc. All these kinds of Web documents have their specific conceptual components. For example, menus and events for institutional pages, chapters and sections for technical reports, slides for slides shows, etc.

To ease editing of documents with such components, Amaya is being extended with the notion of templates. A template is a document with some fixed contents and "holes" where the user can insert information. In some cases templates look like a form as those provided by content editors. A template defines the skeleton of the document. It declares components that are specific to the kind of document. For example, a slide show template could declare a slide component that is made of a division with a class attribute "slide" and includes a heading followed by a list of items. At the same time, a template indicates where components must or may appear in the document, how many occurrences are mandatory or possible, etc. A template comes often with a complete set of presentation rules.

Once an expert has described a template and its presentation, a user can quickly and easily generate a document instance according to this template. The document skeleton is automatically generated and the user has just to add personal information. In accordance with the template, components are proposed to the user to be inserted at the right position in the document instance being edited. With that approach, Amaya becomes a customized document editor for the particular type of document the user has to produce.

## 2.2. Multimedia authoring: LimSee3

LimSee3 is a multimedia authoring tool that proposes simple and efficient document editing through an extensive use of models (also called templates or patterns) and an adaptive user interface.

- \* Basically, a LimSee3 document describes the logical, spatial and temporal relationships that exist among some set of media assets (text, video, images, audio). These assets are referenced by, but not integrated into the document, so that they remain freely reusable. Furthermore, they can be local or distant, and then shared.

- \* LimSee3 puts a stress on the presentation logics rather than on its technical constraints. In order to be more than a mere collection of media assets, documents define a hierarchical structure that reflects the meaning of the presentation. Structuring makes the authoring process more intuitive.

- \* LimSee3 relies on a template mechanism which allows users to create and modify complex documents with minimal effort. A template can be seen as a structured “document-to-fill in”: some parts are provided and there is no need to worry about them, other parts are waiting for a user-supplied content. During the instantiation, the user is guided by the application.

- \* Finally, LimSee3 offers a graphical user interface which can be customized with user preferences. Moreover, the user interface can adapt to a particular template, making it more natural to use.

## 2.3. Generis

Generis is a knowledge management tool working as a web platform treating knowledge as information within some context. It is an ontology server able to work in a distributed way. Generis allows collaborative creation, edition and management of models representing the concepts of a particular domain as well as relations between these concepts and annotations of web resources according to these concepts and relations.

Once an ontology is created, resources (documents, e-mails, videos, web sites and also sentences or words in a document) which have been assigned an URI (Uniform Resource Identifier), can be annotated. This allows to add, modify or remove information related to the resource (meta-information), without actually modifying the resource itself.

### 2.3.1. Current functionalities

Current Generis services are:

- \* ontology management
  - o manual creation via trees construction
  - o storage
  - o visualisation
  - o edition
- \* possibility to add specific plug-ins for advanced use of ontologies
- \* Annotation of resources according to ontologies
- \* Form (GUI) filling for the instantiation of ontology’s concepts (ex: creating a CoP Member “toto” and entering its CoP profile, according to the properties defined for Member in the CoP ontology)
- \* API allowing to program specific applications, integrated in Generis and using ontology’s concepts

- \* Distant access of functionalities (ex: creating/removing a concept, a property, annotating, querying, etc.) via web services calls
- \* Querying and search facilities

Benefits for CoPs are exposed in the document describing Generis (in French). More information and examples are available in the chapter 7 of the deliverable D.KNO.03 (KM services).

### 2.3.2. New functionalities proposals

Additionally to the functionalities Generis is already able to provide, we propose some enhancements that would be developed in the framework of the Palette project, focused on an Advanced Ontology Edition service.

This service would be dedicated to user-oriented edition of ontologies based on a user knowledge about a CoP's domain or potentially on documents and information exchanged between CoP's members. The targeted user is the CoP supervisor, but other active members might be given an access to help refining the ontology. The edition of the ontology concepts (categories, entities, properties, etc.) will be provided through three different functionalities implying the user intervention at different levels:

1. manual creation and modification of concepts with a GUI using a tree view (like the current Generis-GUI, but simplified so as to use concepts a lambda user can understand),
2. manual creation of a labelled directed graph of concepts (e.g. boxes for concepts and arrows between them for links)
3. semi-automatic creation of the ontology by the user with a wizard proposing a sequence of actions to perform, based on user previous action choices.

An ontology creation methodology will be provided, made accessible for the user, and used by functionality 3) to drive the user through the ontology edition actions.

This service might also take input from other services or tools allowing to automatically create ontology pieces based on textual/linguistic analysis of information (documents, mails, etc.) exchanged in the CoP. This kind of input would facilitate the ontology creation by automate the process and allow the user to use the user-oriented ontology edition service to check and potentially modify proposed concepts and relations.

### 2.4. Semantic document indexing service

The following service is proposed to CoPs, and can be developed on the basis of Generis. It is not available for the moment but can be developed in the context of the Palette project.

This service mainly enables a user to categorize documents according to an ontology, and to use this categorization to search easily in the set of documents. This service does not exist for the moment and can be developed in the frame of the Palette project. This service is rather similar to software that indexes documents with keywords or "tags" (like flickr for pictures) but it solves the problems of ambiguous keywords (try searching for "python" on google, you will have some difficulties to find answers treating of an animal). On top of that, by the use of ontologies we have a direct link with others tools which are able to work with ontologies.

The main functionalities we have determined for the moment are :

- \* the categorization of a document according to an ontology;
- \* a search engine which can find documents indexed by one or more concepts;
- \* a multi-user categorization, enabling the users to share the categorization work;



\* a learning function based on bayesian inference: the software can learn from the decisions taken by the users, and try to guess the categorization of new documents by searching similarities with other already categorized documents.

## 2.5. Semantic Portal

The following service is proposed to CoPs, and can be developed on the basis of Generis. It is not available for the moment but can be developed in the context of the Palette project.

This service is a web portal which permits to search information in sets of documents by using categorizations and annotations based on an ontology. It does not already exist but it could be developed in the frame of the Palette project. As in any search engine, the responses are sorted by relevance but it has one important difference in the fact that it will use the ontology to compute a better relevance for each search answer. Another difference make possible filtering results through the concepts of an ontology (facet search): you can make a classical search by specifying keywords in a search box and cross this search with selected concepts in the ontology in order to make sure the document you are searching corresponds exactly the concepts you are thinking about.

## 2.6. Semantic Search Engine: CORESE

Corese (COnceptual REsource Search Engine) (<http://www.inria.fr/acacia/soft/corese>) is a semantic search engine offering information retrieval services. It enables to retrieve relevant resources (persons, organizations, documents, services, etc) annotated semantically with respect to an ontology. These semantic annotations enable to describe not only classic metadata, but also competencies of persons or of organizations, semantic contents of the documents, characteristics of services, etc. Inference rules enable to deduce new annotations from existing annotations.

Corese improves the relevance of the retrieved information, through the use of the ontology. It enables the user to express various queries for searching resources and grouping results according to various criteria. Moreover, it also offers approximate reasoning (in the case no exact answer exists, the use of semantic distances on the ontology enables to find the closest answers to the user's query).

Corese is based on W3C standards: RDF/S and OWL Lite for representing ontologies, RDF for representing semantic annotations, SPARQL as query language, etc.

Corese has been tested on more than 12 real-world, large-scaled applications with large ontologies, in fields such as telecommunications, automotive industry, building sector, medicine, biology, and for various scenarios: project memory, integration of a new employee, technological watch, intra and inter-enterprises competency management, memory of experiments, e-learning, semantic Wiki. For each application, relevant end-user oriented interfaces were developed.

Corese can thus be used for offering ontology-guided information retrieval in the context of the CoP use case. Corese will be hidden behind CoP-oriented interfaces.

## 2.7. Semi-Automatic Generation of Semantic Annotations from Texts: MEAT

MEAT comprises:

- \* MeatOnto, a modular ontology composed of 3 sub-ontologies:
  - o UMLS to describe the biomedical domain;
  - o MGED covering the technical aspects of the biochip experiments
  - o DocOnto which describes
    - + a) metadata about scientific articles and about annotations,
    - + b) structure of articles and links of documents with UMLS concepts.

\* MeatAnnot, a system for the automatic generation of ontology-based semantic annotations: starting from a scientific article in biology, it generates a structured semantic annotation, based on a domain ontology, and describing the semantic contents of this text. MeatAnnot relies on several Natural Language Processing (NLP) techniques; it extracts information from text, identifies in the text the terms corresponding to concepts and relationships of UMLS ontology. Then it generates RDF annotations for the document.

\* MeatSearch, the search module based on Corese: by using the query and rule languages of Corese, it allows to perform reasoning on the annotation base for retrieving relevant scientific articles.

In the framework of a CoP use case, MEAT will require to have created the CoP-dependent ontology and the corresponding relation extraction grammar (describing the possible linguistic expressions of this relation). Then the CoP-oriented MeatAnnot can be used to identify in the textual resources of the CoP (e.g. reports, mails, forums, etc) the terms corresponding to concepts and relations of the CoP ontology. The corresponding semantic annotations about these resources can then be generated automatically. As for MeatSearch, a CoP-oriented interface for querying the CoP resources through Corese semantic search engine using these semantic annotations will be developed.

To sum up, the MEAT system already exists for scientific articles in biomedical domain and needs to be adapted for mails / forums in the CoP domain: the CoP ontology, the relation extraction grammar and CoP-oriented search interfaces need to be developed for the CoP use case.

## 2.8. Semantic Web Server: SeWeSe

SeWeSe is a semantic web application development platform. The goal of such a platform is to provide reusable, configurable and extensible components in order to reduce the amount of time spent to develop new semantic web applications and to allow these applications to focus on their domain specificity.

SeWeSe is built upon Corese semantic engine and provides the developer with a set of functionalities like generation of interfaces for queries, edition and navigation, and for the management of the transverse functions of a portal (presentation, internationalization, security, etc.).

SeWeSe offers a customizable web-based ontology editor, a simple rule base editor and a generic annotation editor that can be used for development or administration purposes and that can be reused in dedicated editors. It also offers a basic rule editor.

SeWeSe allows the user to display global views of the used concepts and their repartitions and to cluster answers to a query at a chosen level of details. The result is the ability to control the precision/specialisation of the vocabulary used to answer your query.

In the framework of the CoPs use case, SeWeSe editors can be used for manual building of the CoP ontology and for manual creation of semantic annotations on the CoPs resources. The SeWeSe can also submit queries to Corese for information retrieval. Last, SeWeSe can be used for developing CoP-dedicated interfaces and in particular for generating the ontology forms, query forms or annotation forms needed for the CoP use case.

## 2.9. Semantic Wiki: SweetWiki

SweetWiki is a new semantic wiki engine (<http://argentera.inria.fr:8080/wiki>), developed using semantic web technologies.

SweetWiki implements the concept of "social tagging": using a WYSIWYG editor, the user can tag pages, pictures, add new tags just by typing them, etc. The semantic search engine Corese is then used transparently on these tags. If the user types a given tag in the tag search form, he/she will get all

objects tagged with this tag or its "sub-tags". The user will be proposed all the related tags that, in turn, link to other relevant documents.

SweetWiki also offers a folksonomy editor (the set of tags is called a "folksonomy"). Any user may "organize the tags".

SPARQL queries can be embedded in any page so as to provide dynamic content, for example all the pages about a given topics. The same mechanism is used for awareness: at the bottom of each page, a user can find the pages related to the tags he/she is interested in.

SweetWiki ontology defines the main concepts in a wiki and can be queried at any time using SPARQL requests. The user can even embed SPARQL requests in the middle of a document and display the results in a table or any other presentation. Users are provided with a library of queries that they can use to include dynamic content in their pages.

SweetWiki works with two search engines: the Lucene search engine (à la google) as well as the Corese semantic search engine for semantic search.

### 3. Use-Cases

#### 3.1. Organizing a Meeting

A CoP is organizing a face-to-face meeting and tries to be as efficient as possible in preparing the agenda and keeping the memory of what happened during the event.

##### 3.1.1. Preparing the meeting

A few people are involved in the preparation of the meeting. Sally is the coordinator. Bob, Ann and Jack help her in organizing the meeting. Sally opens her Web editor (Amaya) and chooses the Agenda template to create the initial version of the agenda. She provides the content of a few fields according to the decisions that have already been made within the organizing committee. In the appropriate fields, she enters the title of the meeting, the dates, the location. She creates a dozen time slots in a few keystrokes and she enters the provisional title and the speaker's name for some of them, leaving a few empty slots and question marks in the schedule.

When this initial draft is ready to be circulated within the organizing committee for comments and contributions, she clicks the "Publish" button. She is then presented with a form asking for the email addresses of the people who are supposed to work further on the agenda. She provides the addresses of Bob, Ann and Jack that she copies from her address book (she may have a distribution list for the organizing committee that makes this task still easier). The tool saves the document on the Web server of the CoP and sends an email to each of these people, telling them that the document is available for review and contribution. The document itself is not in (or attached to) the message. Only its URL is provided. Bob, Ann, and Jack receive this message in their mailbox.

Ann takes action immediately. She just clicks on the document URL displayed in the message. This opens the draft agenda in her editor (Amaya). She provides some more information, fixes a few typos, and makes some comments in the document itself. She may highlight a few parts in the document on which she wants to draw attention from other contributors. In a single click, she finally saves the updated document back onto the server and an email is sent to Sally, Bob and Jack. Ann has the opportunity to provide some more information in this email if she wants to associate some comments to the document without overloading the document itself.

Bob sees that message in his mailbox and, like Ann previously, he adds some more information, which is soon made available on the server, with email notification to his colleagues.

When he has read the emails from Sally, Ann and Bob, Jack opens the draft document with his usual Web browser. Whatever message he starts from, he sees the latest version, which includes the updates from Ann and Bob. He checks the current status of the agenda and prefers to just send his comments by email to the other organizers. When receiving this email Sally opens the document in Amaya and makes a few changes, as proposed by Jack.

After a few such iterations, Sally decides that the document is fine and she sends a message to the whole CoP, with the URL of the document. Each CoP member can now see the agenda in his/her favorite Web browser. If Sally or the other organizers have a few changes to make after the announcement, they can easily update the document on the server. Most participants check the latest status of the agenda before leaving for the meeting and are thus aware of any last minute change.

### 3.1.2. During the meeting

Just before the meeting starts, Sally nominates a few people for scribing. Each scribe is in charge of taking notes during a given part of the meeting. They just type plain text on the fly, and at the end of their session, they send this to Sally by email.

Sally also asks all speakers who use slides for their talk to give her a copy of the file they have used for their presentation. Some of them have actually already uploaded the file on the Web server; they just send Sally a short email with the URL of their presentation.

### 3.1.3. After the meeting

When she gets back to her office after the meeting, Sally finds in her mailbox all the notes taken by the scribes. With her editor she creates a new document with the specific template for minutes. She provides the content of a few fields, just by typing, but most of the content is taken from the messages sent by the scribes. When all pieces have been integrated in this document, she edits it a bit to make it consistent, she runs the spell checker, and she asks the editor to number sections and to build the table of contents. The document is now finished. She publishes it on the Web server (a single click) and sends a message to all CoP members, announcing the availability of the minutes. Everybody can now read the minutes of the meeting.

To help people browse through the minutes she has just published, Sally decides to update the agenda, by adding for each talk announced in the agenda a link to the corresponding part of the minutes. This is done in a few keystrokes and mouse clicks, as the template for minutes has already generated the required anchors in the document. She also uploads the files provided by the speakers, and creates links to these files from the agenda.

Tom could not attend the meeting. He is curious about what happened in his absence. When he receives the message from Sally, he opens the agenda in his browser. He remembers that, when reading the agenda a couple of weeks ago, he noticed a few talks that he was really sorry to miss. He now clicks on the links that Sally has just added and he can read the relevant minutes immediately, as well as the slides the speaker used during his presentation. Tom is happy to be able to reconstruct most of what happened during the meeting.

## 3.2. Authoring a multimedia document for teacher's use in class

### 3.2.1. Motivation

Today, it is easy to quickly gather a significant collection of images, texts, video sequences etc. that could be interesting to use in a course. These media can be third-party resources found on the web, or in a CD-ROM Encyclopedia, or even directly created by the user, since for example current digital cameras are already accessible to virtually anyone. Of course, third-party resources are often copyrighted or otherwise limited, but their use in teaching is generally tolerated, or permitted at some

reasonable extent. For instance, French law explicitly allows taking short excerpts from any copyrighted document for citation purposes.

The follow-up, however, is not so easy. In fact, two main issues arise:

1. How to efficiently combine the selected medias into a well-structured and nicely-looking document?
2. How to share such a document with other people: how to make it accessible by indexing it and how to make it reusable by not locking it for one particular use?

We propose to use LimSee3 to cope with the first and a part of the second issue.

### 3.2.2. Use-case

Paul is a "french-language-as-mother-tongue" teacher. He has stumbled upon an interesting set of documents that propose an image-based analysis of the Little Red Riding Hood folktale on the web site of the French national library (<http://expositions.bnf.fr/contes/pedago/chaperon/illustra.htm>). He likes the idea but he finds that the presentation that is made of the documents is not at all suitable for direct use in a class.

This is why he decides to create a slide-show and, to that end, he uses LimSee3 with a slide-show template. His idea is to treat one scene per slide (the encounter of the wolf and the girl, the wolf at the grandmother's,...): every slide would present several illustrations of the scene and a set of questions that would guide students in their analysis. The slide-show template automatically provides several useful settings:

- \* each slide will contain a navigation bar for easy manipulation
- \* several models of slides are pre-defined, so that if one of them is selected for a particular slide, the timing and the optimal spatial layout of the slide are automatically calculated
- \* using slide models would equally ensure a uniform look of the whole presentation

Paul selects a model suitable for his purposes: the corresponding slide would contain a mandatory title, up to four images and a piece of text. Every time Paul creates a new slide with this model, he is prompted for the title. After that, he can select the image(s) to be displayed on the slide, by browsing either his local disc or directly the French national library web site. Finally, he writes his questions into the reserved area of the slide.

This template-based mechanism allows Paul to proceed rather quickly. He mainly drags&drops textual or pictural information from the web site into the corresponding slots in his template.

After creating the slides for all key scenes, he returns at the beginning and inserts a "cover" slide of his own making which just gives his name and the title of his work. The slideshow is ready.

### 3.2.3. Possible further developments

Since Paul has provided a title for every slide, he has implicitly given a description to the embedded images. Furthermore, his questions give a sort of annotation to the pictures: for instance words as "fear", "danger" and "climax" would appear in the questions concerning the second encounter between the wolf (in grandmother's cloths) and the girl. Such implicit information could be used by knowledge-management tools to better index the images.

After analyzing the folktale, Paul could propose to his students to write their own version of the tale, based on images they select from his collection. In fact, students could reuse the presentation document Paul had created by erasing unwanted images on every slide and by replacing the questions by the piece of the story corresponding to the remaining illustration. The choice of the images would

make them write a horror-like version, a scary-but-happily-ended one, a comic parody etc. By re-ordering the slides, students could easily introduce style-effects, e.g. a story told backwards.

### 3.3. Treating a recorded lecture

#### 3.3.1. Motivation

Nowadays, teachers are all the more incited to make their pedagogical materials publicly accessible. Students are interested in various kinds of documents and appreciate actual lecture records, since these allow them to catch up with missed courses or to revisit difficult parts later on. Thus teachers are propelled to create such kind of documents, but are often hindered by technical and psychological difficulties.

Technically speaking, recording a lecture is an easy task, since one moderately good camera is sufficient. However, being video-taped is not easy to accept, so that some teachers may prefer an audio recording only. Yet, this first step taken, the real difficulties arrive.

Of course, it is possible to publish the video (or audio) sequence as is, but that presents little interest. It would be preferable to embed it into a more complex presentation containing for instance the slides used during the lecture and an interactive table of contents. All the medias involved in the presentation should be synchronized, so that a click on an item in the table of contents would directly start a particular slide and the corresponding part of the video (audio) sequence. Currently, creating such an interactive and multi-media document is not easy. LimSee3, with a suitable template, could facilitate the authoring process.

#### 3.3.2. Proposed use-case

Elizabeth has participated to an international workshop, and her presentation has been recorded. She finds that her master students would find her presentation profitable, since it gives some concrete realizations of the theory she discussed in course, but she is not willing to spend much time on setting up a complex document.

She opens LimSee3 and loads the Conference presentation template. This template already proposes a spatial layout suitable for her purpose: a main window to present the slides, a smaller window to show the video sequence and a box where the table of contents would appear. Some pre-defined interactive widgets (as stop, play, rewind buttons) are provided too.

The application prompts Elizabeth to import the video sequence, which she does by selecting the corresponding file on the disc or directly on the workshop web site. Then, she imports her slide-show in the same manner, since she had fortunately created it in an open document format (with Open Office). Yet, this is of little importance, since she could easily transform a PowerPoint presentation into such a format too.

The application automatically extracts the title of each slide and proposes an initial table of contents. The list of titles is already made interactive in the sense that clicking on a title brings up the corresponding slide. However, the slide-show is not yet synchronized with the video sequence.

To achieve the synchronization, Elizabeth has an easy option. She starts playing her video-recorded presentation in LimSee3 and every time she wants the next slide to appear, she hits a special "synchronizing" button in the application. The application associates slides and time-stamps in the video sequence on the fly, so that when Elizabeth finishes playing the video, all table-of-content entries are synchronized with a slide and with a portion of the video sequence. Of course, if Elizabeth wishes to go faster, she can take a more manual option: using LimSee3 in the manner of a media player, she can fast-forward, pause, rewind etc. through the video sequence, so to find the synchronization points in less time.

The presentation is now ready to be published. To make it even more user-friendly, Elizabeth decides to perform some improvements. She wants to provide a better structure to the table of contents: in fact she wishes to split the currently plain list of slide titles into several chapters. To this end, Elizabeth groups table entries into larger sets and provides a title for every set (such as "Introduction", "A first example", "Theoretical results" etc.). Now, the table of contents is organized in a hierarchical way, since it contains several chapters that contain the basic entries. If necessary, Elizabeth can keep going by splitting large chapters into several sections and so on. The immediate consequence of structuring the table of contents is an easier-to-read and easier-to-navigate presentation of its contents. Moreover, since all medias are synchronized, Elizabeth has also implicitly provided a chapter/section structure for the slides and for the video sequence.

Finally, Elizabeth saves the document on her computer for future reuse. Directly from LimSee3, she also publishes it on her web site, making it immediately visible.

### 3.3.3. Possible further developments

Since Elizabeth has synchronized slides, video and table-of-content items, she has implicitly provided a semantic information linking the three medias. Indexing tools can benefit from this information, so that for instance the audio track of the video record becomes researchable by a blind person.

### 3.3.4. Example

INRIA has already produced some multimedia presentations such as those we describe here. For illustration, the reader can play in RealPlayer the following document: <http://www.inria.fr/MULTIMEDIA/Didactheque/4-Docmnt-Didact/0006/GUITARE/GUITARE.RAM>.

## 3.4. Information research by a Form@HETICE member

Given the complexity of the Knowledge Management domain and the lack of 'one size fits all' solution, we have decided to keep the possibility of discussions with the CoP by setting up some alternative solutions in the following use cases.

As more described in the @pretic CoP form, this use case requires that the following processes have been performed in the whole system.

- \* The Form@HETICE ontology creation:
  - o manually and individually with the help of a user-centered editor like SeWeSe or Generis with the help of the actual building service and an ontology creation methodology or with the Generis advanced ontology edition.
  - o manually by several members of the Form@HETICE CoP constructing the ontology in a collaborative way (by using for example SweetWiki),
  - o semi-automatically by using a semi-automatic ontology creation service offered by Palette : for example, it is possible to use some linguistic techniques permitting to extract terms and relations from a text analysis of the documents exchanged in the CoP web site, wiki, forum and mailing list.
- \* The indexing process would be performed by a specific indexing service that constantly classifies new documents according to the terms of the Form@HETICE ontology.
- \* Annotations would have been added on the e-mails either manually using SeWeSe, or cooperatively using SweetWiki or semi-automatically using the MeatAnnot tool.

A search service based on Corese available on the CoP web-site or Wiki allows to perform searches on all indexed and annotated documents. For that, all documents (e.g. pedagogical resources, summary of a face-to-face meeting, or documents gathering mails exchange, or available on the forum, or being the object of an article on the web site) are indexed and annotated regarding to the Form@HETICE

ontology and are accessible by a unique search engine. This engine permits to search through a set of categories or concepts of the ontology and a set of custom keywords, the information the user needs among all documents written by the CoP.

Each document could be viewed with a display of all concepts to which it is related by annotation or indexing. An easy access (e.g. tooltip) to concepts definitions can be proposed. It could be also possible to access documents relating to the current document through hyperlinks if no annotations are present.

#### 4. Critical Questions

Will some CoP members be available to validate the ontology developed in the framework of WP3? Or will some CoP members be ready to develop themselves the needed ontology? In the case of creation by the CoP members and not by WP3, what process of creation of the ontology is preferred by the CoP: manual creation by one member responsible for it, cooperative creation by several members or semi-automatic creation? The same question must also be answered for the preferred process of semantic annotation: should it be manual, cooperative or semi-automatic? Will the CoP members be available to work on the ergonomic interface of the portal dedicated to the CoP?

#### 5. Possible Awareness training

INRIA/WAM:

- \* Editing guided by one or two existing templates
- \* Creation of a template
- \* Generation of a document style

CRP Henri Tudor:

- \* Use of Generis.
- \* Use of methodologies for manual ontologies creation.
- \* How to categorize documents.

INRIA/Acacia:

- \* Ontologies (principles, manual or (semi-)automatic creation method, semantic web and semantic annotations
- \* Use of Corese, MEAT, SeWeSe, SweetWiki tools from end-user viewpoint

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# APPENDIX 10 – Template of scenarios

## Scenario for \*\*\**Name of the community*\*\*\*

Document version:

Date:

Contributors:

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### 1. Document contents and target audience

Here is a brief description of the contents of the document as well as the target audience in the community (all the community? or only subgroup(s)? or only a coordinator?).

#### 1.1 Contents

#### 1.2 Audience

### 2. Community needs and scenario purposes

In this section, the validated needs that the scenario deals with are presented, with brief “vignettes” describing activities of the community in which the needs are particularly obvious. It is expected that the problems lived by the community be told and explained regarding its context. The objectives of the scenario regarding the identified needs are also presented. Note that this section fully complies with the “purposes” of a scenario as described in PALETTE D.PAR.02. (see p. 40).

#### 2.1 Group of needs

#### 2.2 Purposes of the scenario

Other groups of needs and scenario purposes can be described. In the example above, one PALETTE tool is proposed to deal with the chosen needs. But obviously, several PALETTE services can be interconnected (it is even strongly advised!).

### 3. Methodology

In this section, the “life cycle” of the scenario is described (see D.PAR.02., p. 40). Who participated in its elaboration, through which activities and when?

### 4. Scenarios design and description

Here, the scenario itself is described. The actors and the services offered by the PALETTE tools involved (see the Naudet’s paper about the connections between “tools” and “services” at <https://bscw.ercim.org/bscw/bscw.cgi/d199002/Services%26Tools%20meta-model.pdf>, restricted access for project members) are firstly identified. Then a range of plausible scenarios are presented. Finally, summaries of the scenarios are presented in tables and the use cases integrating the different services used in the scenario are depicted.

#### 4.1 Actors and services

This section specifies:

- the actors of the community who are involved in the scenario
- the services and functions offered by the PALETTE tools that are invoked in the scenario (with the functional design considerations such as the need for login/passwords, the URLs, the location of the documents stored if any, etc.)
- the services/tools that the community already uses.

## 4.2 Description of plausible scenarios

The scenarios are presented in a narrative form specifying the services offered by the PALETTE tools, the actors, the activities and their articulation. The description has to be as clear as possible indicating if need be a time line, locations, the relations (communication and collaboration) between the actors, the handling of the offered services, the connections between the services, etc.

Several scenarios can be developed, one per group of needs. In addition, several variations or alternatives in one scenario can also be developed.

It is also possible to propose pieces of scenarios without tools or services to be used! As the validated needs of the communities are related both to the uses of new tools and to the development of actions, it is possible to propose a scenario (or a part of it) that only deals with the development or the elaboration of actions or way to organize the work of the community.

## 4.3 Scenarios schematic representation

A summary of the scenarios and their alternatives are presented in tables. One table is required for each scenario or alternative. The goal is to quickly have in one table the time line of scenarios' sequence of events. Here are two examples of tables.

Scenario sequence of events

<b>Step</b>	<b>Sequence of events</b>	<b>Expected results and evaluation criteria</b>	<b>Tools requirements</b>	<b>Notes</b>
0.0	Opening a discussion			
1.x	Invite contributors			
1...n	Prepare resources			

Scenario time line

	<b>Event 1</b>	<b>Event 2</b>	<b>Event 3</b>	<b>Event 4</b>	<b>Event x</b>
<b>Face-to-face</b>	Objectives of and actors involved in the event 1 of the scenario.				Objectives and actors of the event x that takes place face-to-face after 3 events at a distance.
<b>At a distance</b>		Objectives, actors and services of the event 2 that is organized at a distance.	Objectives, actors and services of the event 3 that is organized at a distance.	Objectives, actors and services of the event 4 that is organized at a distance.	

## 4.4 Comments on the use of services in the scenario

This section allows adding comments or additional information about the services or software described in the scenario. For example, how will the PALETTE tools be connected together and be related to the community's existing tools? What does the user need to know about this? Another example could be the information that are not specifically chronological and that do not appear in the

time lines above such as possible alternatives or choices that the users could make during the scenario while in progress.

## **5. Conditions of participation**

This section is about the conditions required for implementing the scenario by the community: the specific technical skills required by the actors to use the PALETTE services, the competencies required to implement the scenario (for example communication or collaboration at a distance), the possible need for negotiation within the community for implementing the scenario, etc.

## **6. Validation procedures**

This last section is about how the scenario will be evaluated/validated with the community. The evaluation procedure that will be negotiated and carried out with the community will be described here (questionnaires, questions of interviews, indicators of evaluation from the D.EVA.02).

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# APPENDIX 11 – Categories of CoPs’ needs related to categories of Integrated Technological Services and Learning Services

(Excerpts from D.IMP.03)

**Table 2 – Categories of needs of the CoPs**

<b>Categories of needs</b>	<b>PALETTE CoPs Needs</b>
1. To support participation :	<b>Doctoral Program Lancaster</b> <ul style="list-style-type: none"> <li>- to tell students submit their work and to let tutors annotate them on-line</li> <li>- for discussion : easier to use and understand than LUVLE (institutional platform)</li> <li>- to engage members critically</li> </ul>
To support social interactions : verbal interactions (exchanges, experiences sharing, analysis, debate, confrontation, creation of new methods and practices) and presence	<b>@pretic</b> <ul style="list-style-type: none"> <li>- to share information</li> <li>- to improve cooperation</li> </ul> <b>Learn-Nett</b> <ul style="list-style-type: none"> <li>- Encourage the tutors to share about practice</li> <li>- task sharing, analyzing the project, assessing the project, managing different opinions at a distance, support argumentation</li> </ul>
	<b>Form@Hetice</b> <ul style="list-style-type: none"> <li>- To support argued discussion and decision making</li> </ul>
	<b>Didactic</b> <ul style="list-style-type: none"> <li>- to support exchanges in discussion groups (f/f meetings)</li> <li>- to support the communication within the communities of practice during distance work periods</li> </ul>
	<b>Adira</b> <ul style="list-style-type: none"> <li>- to create documents through debates in f/f and at a distance</li> </ul>
2. To constitute common resources:	<b>Doctoral Program Lancaster</b> <ul style="list-style-type: none"> <li>- for copyright clearance of articles available in LUVLE</li> <li>- to make documents available in LUVLE easier to access</li> <li>- to archive and make available anonymized students’ corrected assignments</li> <li>- to provide online presentation that can be annotated and updated</li> </ul>
To formalize tacit knowledge, to archive common resources and to make them retrievable and reusable	<b>Learn-Nett</b> <ul style="list-style-type: none"> <li>- To reuse students’ research papers and other documents for the design of tutors’ tools and for the work of the coordination team.</li> </ul>
	<b>@pretic</b> <ul style="list-style-type: none"> <li>- To structure shared information and resources</li> <li>- to retrieve archive content</li> <li>- to produce web, text and presentation documents easily and collaboratively</li> <li>- To make members aware of the benefit of accessible and retrievable knowledge</li> </ul>
	<b>Form@Hetice</b> <ul style="list-style-type: none"> <li>- capitalization of shared documents for reusing (categorization)</li> </ul>
	<b>Didactic</b> <ul style="list-style-type: none"> <li>- To capitalize discussions and documents shared during f/f meetings about teaching practices</li> <li>- To reuse illustrations of teaching practices</li> </ul>
	<b>ePrep</b> <ul style="list-style-type: none"> <li>- to create pedagogical resources</li> </ul>
3. To support commitment:	<b>Lean-Nett</b> <ul style="list-style-type: none"> <li>- Develop resources to better welcome new partners (the charter)</li> </ul>
To develop the membership, to help members to clarify their own project and see how it can interact with the project of the CoP, etc.	<b>ePrep</b> <ul style="list-style-type: none"> <li>- to welcome new members</li> </ul>
4. To support realization of the activities:	<b>Learn-Nett</b> <ul style="list-style-type: none"> <li>- to propose a way for the coordination team to have a "context aware view" about what happens in collaborative groups in terms of activities of the actors and use of documents</li> <li>- to decide for a new workspace for all the activities</li> <li>- A tool that integrates forum and email messages for tutors.</li> </ul>
To support organization, follow-up and management (the work of the coordinator(s), animator(s) or moderator(s))	<b>ePrep</b> <ul style="list-style-type: none"> <li>- to have a workspace for all the activities of the CoP</li> </ul>
To have a common environment for all the activities of the CoP	

In the Table 3 the categories of needs are matched with the categories of services that could be offered in PALETTE.

**Table 3 – Categories of needs and adapted services**

<b>Categories of needs</b>	<b>Categories of technological services</b>	<b>Illustrations of learning services</b>
1. To support participation	Collaboration and awareness <sup>2</sup> services	Pedagogical scenarios for technical and social training
2. To constitute common resources	KM and information services : Production, Restructuring, Metadata, Retrieval, Reusing, Awareness	Strategies to capitalize, retrieve and reuse information
3. To support commitment	Collaboration and awareness services	Methodological tool to support the definition and the regulation of CoP activities, illustrations of CoPs practices to define themselves, their identity
4. To support realization of the activities	Collaboration and awareness services	Methodological tool to support the choice of a technological environment and its adaptation to PALETTE services

(Excerpt from D.PAR.03)

By using these categories of needs, we try now to develop a complementary analysis of the activities proposed in the six validated scenarios and relate them with possible interactions of services (see D.IMP.03). The following table gives a summary of this analysis. Then we further explain what was seen as common about the four categories of needs and examples from the CoPs are given to illustrate these common points.

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<sup>2</sup> In the context of the collaborative work at distance and the use of a virtual environment shared by a group **awareness** indicates the perception which each people possesses of the presence, the localization, the identity, the availability of another people, at a moment, during the connection. It's also the perception of what was realized between two successive connections, in the history of the activity of the group. So awareness tools are tools which support this awareness.

**Table 4 – Categories of CoPs’ needs, activities proposed in the scenarios and examples of services interactions (see D.IMP.03)**

Category of needs	Activities (CoPs)	Requirements expressed in the scenarios	Technological services	Examples of interaction of services
<b>1. To support participation</b>  To support social interactions: verbal interactions (exchanges, experiences sharing, analysis, debate, confrontation, creation of new methods and practices) and presence	<b>LEARN-NETT and Adira</b>  To debate, to take a collective decision	Different aspects seem important: <ul style="list-style-type: none"> <li>• The activities should be organised with different possible levels of participation of the members to allow them a variety of choices.</li> <li>• Activities make a valorisation of the individual members in the group.</li> </ul>	CoPe_it! services e-Logbook services	CoPe_it! services should call e-Logbook services for awareness information about the discussions in CoPe_it!
<b>2. To constitute common resources</b>  To formalize tacit knowledge, to archive common resources and to make them retrievable and reusable	<b>LEARN-NETT, ePrep, Adira, Form@HETICE, @PRETIC</b>  To formalize tacit knowledge, to archive common resources and to make them retrievable	<ul style="list-style-type: none"> <li>• The activities will allow to capitalise all the resources produced by CoPs members and to make them retrievable.</li> <li>• It is important to recognise the diversity of data available.</li> <li>• It is important to allow participants to retrieve these resources easily.</li> </ul>	<b>Document Production:</b> services offered by Amaya, Limsee3, SweetWiki tools <b>Metadata production:</b> e-Logbook and, SweetWiki tagging services. Amaya, LinkWidget, Generis, BayFac annotation services <b>Information Retrieval:</b> Generis, Corese (LinkWidget and SweetWiki), e-Logbook search engines <b>Awareness:</b> e-Logbook services	Documents tagged within SweetWiki could be retrieved using Corese.
	<b>Did@cTIC</b>  To formalize tacit knowledge, to archive common resources and to make them retrievable and reusable	Different aspects seem important: <ul style="list-style-type: none"> <li>• The activities have the function of a recorder that keeps tracks of the discussions and documents.</li> <li>• The activities lead to an organisation of a structure of the knowledge of the CoP based on rules that define this knowledge.</li> <li>• The activities try to improve exchanges and to make easier retrieval and reuse of existing documents.</li> </ul>		Documents produced by Amaya should be consumed by DocReuse and restructuring services.

Category of needs	Activities (CoPs)	Requirements expressed in the scenarios	Technological services	Examples of interaction of services
<b>3. To support commitment</b>  To develop the membership, to help members to clarify their own project and see how it can interact with the project of the CoP, etc.	<b>Adira</b> <b>LEARN-NETT</b> <b>ePrep</b>	There are two fundamentals for the commitment of people into a CoP: <ul style="list-style-type: none"> <li>• Confidentiality</li> <li>• and « first hand ».</li> </ul> A CoP is not a public space. This is why CoP's members agree to deliver first hand information inside a CoP. And this is why people want to enter a CoP or an activity organised by a CoP.	e-Logbook	e-Logbook services could interact with external services (e.g.calendar)
<b>4. To support realization of the activities (common environment)</b>  To support organization, follow-up and management (the work of the coordinator(s), animator(s) or moderator(s)) To have a common environment for all the activities of the CoP	<b>Adira</b> <b>LEARN-NETT</b> <b>ePrep</b>	To support the realization of the activities, CoPs use their past activities and practices, as a human being group, to settle down new activities: <ul style="list-style-type: none"> <li>• Proposed activities appear as an evolution and an extension of activities created in the past.</li> <li>• The activities are also organised with different levels where presence remains a “cornerstone” of the activities.</li> </ul>	e-Logbook	

## APPENDIX 12 – Template for the description of the functional specifications of the PALETTE tools

### Functional Specification of PALETTE services Template

This document presents a template for Functional Specification of PALETTE services. The main purpose is to describe the offered services from a user's perspective (CoP member).

#### 1. Introduction

##### 1.1 Purpose of the service

This section provides a brief overview of a given PALETTE service and the motivation behind its development. It also describes functions related to the service and details how the service could work with other services (if necessary).

##### 1.2 Glossary and document conventions

This section defines technical terms used in the document (only include those with which the reader may not be familiar).

#### 2. General description

##### 2.1 Service' Functions

Describe the general functions of the service.

##### 2.2 User Characteristics

Describe the features of the user of the service (e.g., expected expertise with software and application domain).

##### 2.3 Example of use

This section should describe an example of use of the service from the user's perspective in order to have a collective understanding of the main functions of the service.

##### 2.4 Functional design considerations

Functional design considerations detail the attributes that affected the service's functional design. Examples of attributes include:

- \* Assumptions that were made
- \* Prerequisites for the correct working of the service (e.g., needed operating environments...)
- \* Resource requirements in terms of hardware, other software or equipment
- \* Installation
- \* Security

#### 3. List of functions

This section defines the complete list of functions offered by the service with their associated input/output arguments. This can be done as fully text section or using tables for each individual function. Each function' description includes:

- \* Purpose: the purpose of the function
- \* Input arguments: input format, who supplies the input
- \* Process: describes the main steps performed by the function
- \* Output arguments: desired output format, destination for the output
- \* Comments



## APPENDIX 13 – Template for the validators' accounts

Proposed by Amaury Daele and Manfred Künzel (UNIFR) - 4 June 2007

**Purposes:** The validators' accounts are expected to be part of the D.PAR.03 (scenarios and their validation). Their purposes are:

- to report how the validation process happened (organisation, participants, meeting, questions asked, etc.);
- to summarize the participants' answers to the validation questions;
- to discuss the results of the validation by proposing future actions for the development of the scenario and PALETTE services.

The validation consists in the formative evaluation of the scenario from the CoPs' point of view (according to the evaluation indicators provided by the WP6) and in a discussion of the results. The accounts will be integrated in the D.PAR.03 and will be used by the WP5 Teams for improving the scenarios and services and preparing the test-beds of the services after M20. As the validation is formative, it will be addressed to the authors of the scenarios as well as to the CoPs' participants for them to highlight the utility, pertinence, coherence, etc. of the scenarios.

### 1. Organisation and participants

In this section, the validator describes how the validation process has been organised (meeting-s, participants, possible methodology used such as rapid prototyping, etc.). The participants from the CoPs are also introduced (with their role in the CoP, why they have been asked to participate in the validation, etc.). The participants from PALETTE are also presented with their specific roles: mediator, validator, developers.

### 2. Validation questions

Here, the validation questions are presented. They are sorted per indicator (see excerpt of the WP6 D.EVA.02 at <https://bscw.ercim.org/bscw/bscw.cgi/233828>, restricted access for project members). In the excerpt, the indicators are presented with several examples of questions. The validators and mediators adapt these examples to their CoP. According to the organisation of the validation, the questions can be for instance verbally asked or sent to the CoPs participants as a written questionnaire.

### 3. Summary of the answers

The validator summarizes the answers of the CoP's participants to the validation questions.

### 4. Summary per indicator

For each indicator (preparation and expectations, enabling of learning, participation, etc.), the validator summarizes the answers of the CoP's participants.

### 5. Discussion

This section is very important. According to the generated answers, the validator proposes future actions in the short or medium term:

- For the organisation of the trials of the services with the CoP: what could be the best organisation, the appropriate piece of scenario to trial during 2 or 3 weeks, the roles of the participants, etc.
- For the development of the scenario, addressed to the mediator and developers.
- For the development of the services, addressed to the developers.

## APPENDIX 14 – Indicators, criteria and generic questions for the validation of the scenarios

Excerpts from D.EVA.02

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**Purpose:** this document proposes a general framework for the validation of the PALETTE scenarios and services. The validation team has to determine indicators for the evaluation as well as to organize in practical terms the validation of the scenario with each CoP.

### 4.0 Evaluation questions

The evaluation framework has four levels.

- The first underscores the evaluation and is composed of 9 meta-questions which constitute primary ‘focusing’ concerns for the developers-CoPs working groups. They have been derived from participant/evaluator discussions particularly with the WP1 participants. Their function is to aid the overall project in addressing the general value of the PALETTE services and scenarios and acting as an analytic framework. The WP1 team will make reference to them when the reports on the validation of services and scenarios are written.
- The second level is in the form of a series of generic indicators each of which will have,
- At the third level, specific indicators associated with them.
- Finally, specific questions will form the basis of the inquiry instrument which has been designed for each specific indicator. It is the data collected from the specific indicators that will inform the meta-questions.

### 4.1 The Meta-Questions

What is the validity of the services and scenarios?

#### Internal validity

1. Is the scenario or service valid regarding its objective/the community’s need or project that it is supposed to take into account?
2. Is the scenario or service complete? Are some aspects missing to fully express the need? Is the scenario or service not too redundant?
3. Is the scenario or service consistent? Are the proposed activities, steps and uses consistent together?
4. To what extent has the community participated in the elaboration of services and/or scenarios (distributed participatory design)?
5. Is the scenario or service realistic (or “credible”) regarding:
  - The technical skills of the community’s members and their social competencies or usual ways to communicate and collaborate?
  - The actual uses of tools in the community?
  - The actual types of activities and the actual functioning of the community?
  - The objectives of the community and of its members? Is it representative of the objectives of the community as a whole?

#### External validity

1. Is the scenario or service easily reproducible (“re-adaptable”) for other types of communities? Is it easily modifiable and open?

2. Is the scenario in line with the PALETTE project objectives and with the D.PAR.02 guidelines?

### **Pragmatic validity**

1. Do PALETTE services achieve a right level of interoperability, usability, utility and acceptability?
2. What are the actual uses of the PALETTE services and scenarios? (Communication practices, problem solving, knowledge building, learning)

## **4.2 Types of Indicator**

The concept of an indicator is not straightforward. It is helpful to understand them in the following way with three ‘modes’ of use.

**Mode 1: Indicators interpreted as the evidence focus** (i.e., areas, activities, domains or phenomena on which evidence will be collected).

[Indicators as a focus]

Example: the area of student achievement in assessment is identified in advance in an evaluation plan as an area on which data will be gathered

**Mode 2: Indicators interpreted as the evidence itself**

[Indicators as the evidence]

Example: actual student achievement data or results are identified ‘post hoc’ [this is the important difference to mode 1] as indicators of the performance of an intervention

**Mode 3: Indicators as pre-defined or prescribed states to be achieved or obtained. In this way indicators constitute desired outcomes**

[Indicators as prescriptions of good performance]

Example: grade C or above passes in national examinations are prescribed in advance as an indicator of good performance. Evaluation focuses on the ‘gap’ between actual performance and prescribed performance.

Within the PALETTE project, we suggest to predominantly using mode 1 indicators i.e. an indicator is an area or aspect of the project on which data and evidence will be collected. It is essentially using a series of descriptive categories. What is important to note is that they are not mode 3 indicators, i.e. indicators that are ‘normative’ but analytic/descriptive.

The plan suggests the timing of the evaluative activity in line with whether it is enabling, process or outcomes. This framework does have a ‘temporal’ dimension in that enabling indicators (see below) are likely to be the focus at the ‘front-end’ of a project, the process indicators are usually used in the middle stages and the outcome indicators are left to the latter stages or after the project ends. These foci therefore do have a logic that depends on when it is sensible or feasible to look for different types of project characteristics.

This model identifies the following definition of enabling, process and outcome mode 1 indicator:

**Figure 4 – Types of [Mode 1] indicators**

<b>Enabling</b>	<b>Process</b>	<b>Outcomes</b>
Aspects that need to be set up	Actions	Goals

Frameworks for action	Ways of doing things	What you want to see as a
Policies	Styles	product
Protocols	Behaviours	Services
Space	Practices	Numbers
Time		Impact
People		Changes
Resources		New practices

### 4.3 Generic Indicators

A list of generic evaluation headings have been derived from discussions amongst members of the evaluation team. See such headings below

#### Enabling

1. PREPARATION AND EXPECTATION

#### Process

2. ENABLING OF LEARNING
3. PARTICIPATION
4. ENABLING OF KNOWLEDGE BUILDING AND REIFICATION
5. ENABLING OF GOALS REALISATION

#### Outcomes

6. STATES OF KNOWLEDGE
7. NEW PRACTICES
8. EFFECTS ON INSTITUTION/ORGANISATION
9. INTEROPERABILITY, USABILITY, ACCESSIBILITY AND ADAPTABILITY

### 4.4 Core Questions/Indicators

The Core Questions and indicators will be derived from the generic indicators. See for each generic indicator the following examples:

#### 1. Generic indicator: Enabling

**Specific Indicator:** preparation and expectations

#### Questions

1. What are the perceptions of the PALETTE scenario aims and objectives by the communities?
2. What are the perceptions of the community about the understanding of their needs by the PALETTE developers?
3. What are the perceptions of the community about the process of elaboration of the scenario which is made explicit in the scenario?
4. Are the protocols easily understood?
5. Is the form of the scenario suitable and understandable by the community?

Target Group: Delegates or focus groups from the communities

Instrument: Group discussion, Semi-structured interviews

#### 2. Generic indicator: Process

**Specific Indicator:** Enabling of learning

### Questions

1. What the conditions that best support learning in CoPs (sociability, social links) and how are they fulfilled?
2. How do the PALETTE services and scenarios support these processes?
3. What kinds of institutional factors influence the scenario (policies, space and resources)?

Target Group: Delegates or focus groups from the communities

Instrument: Group discussion, Semi-structured interviews, Analysis of on-line discussion

### 3. Generic indicator: Process

**Specific Indicator:** Participation

### Questions

1. To what extent do all the actors of PALETTE participate in the scenario and services building?
2. How are the participatory activities perceived?
3. Is it possible to identify 'participatory' practices?
4. What are the factors that are most supportive of participatory practice?

Target Group: Delegates or focus groups from the communities

Instrument: Group discussion

### 4. Generic indicator: Process

**Specific Indicator:** Enabling of knowledge building and reification

### Questions

1. What factors are conducive to capturing and building knowledge?
2. Are the knowledge produced useful, and for whom?
3. In what ways are reified knowledge used?

Target Group: Delegates or focus groups from the communities

Instrument: Analyze of the uses of the Knowledge Management services, Group discussion

### 5. Generic indicator: Process

**Specific Indicator:** Enabling of goals realization

### Questions

1. Does the use of PALETTE services and scenarios support the achievement of CoPs' goals and how?
2. Were adapted PALETTE services and scenarios for the achievement of specific goals?
3. Was the wider institution aware of the role of PALETTE services and scenarios in achieving the CoPs' goals?

Target Group: Delegates or focus groups from the communities

Instrument: Group discussion

**6. Generic indicator:** Outcomes

**Specific Indicator:** States of knowledge

**Questions**

1. What are the new knowledge and skills developed by all the PALETTE actors? (human and non human)

Target Group: PALETTE partners, Delegates or focus groups from the communities

Instrument: Group discussion, analysis of the scenario and services provided

**7. Generic indicator:** Outcomes

**Specific Indicator:** New practices

**Questions**

1. What are the new practices developed by the CoPs and their members? (human and non human)
2. In what ways are the new knowledge and skills manifest in changed practices at individual level?
3. In what ways are the new knowledge and skills manifest in changed practices in groups?

Target Group: Delegates or focus groups from the communities

Instrument: Group discussion, interviews, analysis of on-line exchanges

**8. Generic indicator:** Outcomes

**Specific Indicator:** Effects on institution and organization

**Questions**

1. How is the institution or organization related to the CoP impacted?
2. In what ways are the new knowledge and skills manifest in changed policies?
3. In what ways are the new knowledge and skills manifest in changed systems?

Target Group: Delegates or focus groups from the communities

Instrument: Group discussion, interviews of members and non members

**9. Generic indicator:** Process and Outcomes

**Specific Indicator:** Interoperability, usability, accessibility and acceptability

Tricot et al. (2003, p. 394) propose a framework for the evaluation of these three quality dimensions in the field of the development of systems for learning. We adapt in the table below the framework and indicators for PALETTE services and scenarios validation.

**Table 5 – Evaluation of utility, usability and acceptability**

	<b>Empirical evaluation (by global observation)</b>	<b>Systematic inspection by an expert</b>
Utility	<ul style="list-style-type: none"> <li>▪ Appropriateness of the system's declared objective to the achieved objective</li> <li>▪ Appropriateness of the community's declared objective to the achieved objective</li> </ul> <p>Can be measured by organizing different tasks with the users:</p> <ul style="list-style-type: none"> <li>▪ Production</li> <li>▪ Detection of errors</li> <li>▪ Reminder of the contents/structure</li> <li>▪ Resolution of users' problems</li> </ul>	<p>Indicators:</p> <ul style="list-style-type: none"> <li>▪ Presentation of the system's objectives</li> <li>▪ Appropriateness of the functionalities to the objectives</li> <li>▪ Appropriateness of the suggested scenarios to the objectives</li> <li>▪ Regulation and feedback opportunities</li> </ul>
Usability	<ul style="list-style-type: none"> <li>▪ Management and prevention of errors</li> <li>▪ Memorization of the functioning by the user</li> <li>▪ Efficiency</li> <li>▪ Feeling of satisfaction</li> </ul> <p>Can be evaluated by observations, interviews or analysis of traces at different levels (members, animators, community as a whole).</p>	<p>Indicators:</p> <ul style="list-style-type: none"> <li>▪ Guidance</li> <li>▪ Grouping/Distinction of the items/menus</li> <li>▪ Nature of feedbacks from the system</li> <li>▪ Workload</li> <li>▪ Explicit control</li> <li>▪ Adaptability</li> <li>▪ Management of errors</li> <li>▪ Quality of messages</li> <li>▪ Homogeneity and consistency</li> <li>▪ Meaning of codes and labels</li> <li>▪ Appropriateness to: <ul style="list-style-type: none"> <li>○ Needs or objectives of the community</li> <li>○ Expectations of the users</li> <li>○ Characteristics of the users</li> </ul> </li> <li>▪ Compatibility with: <ul style="list-style-type: none"> <li>○ Organization of community's time</li> <li>○ Organization of community's place of work/meeting</li> </ul> </li> <li>▪ Clear and consistent planning</li> <li>▪ Visibility and communication of the results</li> <li>▪ Reliability</li> </ul>
Acceptability	<ul style="list-style-type: none"> <li>▪ Motivation</li> <li>▪ Affects</li> <li>▪ Culture</li> <li>▪ Values</li> <li>▪ Cost</li> </ul> <p>Can be evaluated by observations, interviews or questionnaires.</p>	

Regarding the evaluation of the interoperability, D.IMP.01 has provided clear guidelines (pp. 4-5). The notion encompasses both technological and operational capabilities.

Technological:

- Interconnection of services (exchange of pieces of information)

- Acceptation of standards
- Acceptation of specification of APIs (Application Program Interfaces)
- Consideration of users' needs and objectives in order to precise the functionalities

Operational:

- Consideration of different communities' profiles (domain, organizational aspects, etc.)
- Consideration of different members' profiles (member, animator, etc.)
- Consideration of technical constraints (software, servers or OS already used by the communities)

The inspection by an expert will be namely realized through a specific task suggested in the next work plan of WP1 by ULg.

## 5.0 Reference

Tricot, A., Plégat-Soutjis, F., Camps, J.-F., Amiel, A., Lutz, G. & Morcillo, A. (2003). *Utilité, utilisabilité, acceptabilité : interpréter les relations entre trois dimensions de l'évaluation des EIAH*. Actes du colloque EIAH 2003, Strasbourg, pp. 391-402.



## APPENDIX 15 – Example of validator’s account

(Excerpt from D.PAR.03, pp. 28-31)

### Validation of the scenario for Form@HETICE

#### Organisation and participants

The validation process has been organized around meetings and discussions with CoP’s members, the mediator of the CoP, developers of the service, and the validator. The validation was made for the part concerning the service BayFac. As explained in the scenario, the service Amaya is not meeting a present need for the CoP.

A first meeting has been organized in February 2007, with the mediator and the developers of BayFac, in order to present the functionalities of the service and the principle of operation of the Bayesian motor. During this meeting, no prototype was available, only some views of interface of the service were accessible. This meeting was intended to establish a first contact with the developers and to present the service.

A second meeting was organized in June 2007, to present the scenario of use of BayFac and the service itself to the core members of Form@HETICE.

The core members who attended this meeting are two of the four “Pérénisateurs” (persons making the CoP durable); they are invited to the validation because they are the most active members in the CoP, and will be the users of the service BayFac. A member of the developers’ team was there in order to respond to the technical questions of the “Pérénisateurs”, the mediator of the CoP who makes the link between the technical partner and the CoP’s members and the validator were attending this meeting.

This second meeting was planned around three activities:

- Presentation of the service BayFac to the “Pérénisateurs”,
- Presentation of the scenario to the “Pérénisateurs”,
- Discussions with the “Pérénisateurs” turned around the questions of validation presented below.

During the presentation of the service, the CoPs members attending the meeting began to ask questions and specifications on the service. This can show that they were interested in the service and its functionalities presented. At the end, the three activities were mixed.

A third meeting is planned in September 2007 to present a new version of the service, and to present it to peripheral members of the CoP, in addition to the core members. This third meeting aims at validating in a final way the part of the scenario concerning BayFac, and it could be considered as training to BayFac for the members of the CoP.

#### Validation questions

The validation questions are inspired from the deliverable produced by the WP6, D.EVA.02 - The PALETTE Evaluation Toolset (see appendix), but adapted to the context of the scenario of Form@HETICE.

The validation questions are classified in two categories by the validator:

- one part for the “Pérénisateurs”,
- the other part specific to the mediator.

Here below is the list of questions asked to the “Pérénisateurs”, sorted per indicator:

Preparation and expectations

1. Do the objectives of the scenario correspond to the needs identified by the CoP?
2. Are the activities presented in the scenario comprehensible?
3. Will the other members of the CoP understand them?

#### Enabling of learning

4. According to you, do these activities support learning within CoP? How?

#### Enabling of knowledge building and reification

5. Will the activities suggested in this scenario allow creating new knowledge? Which one? For who?

#### Utility

6. Will these activities allow increasing the exchanges within the CoP? To make the CoP more dynamic?
7. Will the activities suggested allow supporting the work of the “Pérénisateurs”?
8. Did these activities allow developing new competences?
9. According to you, which are the direct benefits of these activities for the CoP? For you?

#### Usability

10. Do you think it is necessary to have specific competences or knowledge to implement these activities?

#### Acceptability

11. As a “Pérénisateur”, are you ready to really implement these activities?

These questions were verbally asked to the “Pérénisateurs”; the validator discussed with them and oriented the discussion around these questions.

A written questionnaire has been sent to the mediator of the CoP. Here are the questions addressed in the questionnaire, sorted per indicator:

#### Preparation and expectations

1. Do you think that the different members who participate in the validation understood the objectives of the scenario?
2. Do these objectives correspond to the needs identified by the CoP?
3. According to you, are the activities suggested comprehensible for the other members of the CoP?

#### Participation

4. Do you have the feeling to be listened and understood by the developers?
5. How did you take part in the elaboration of the scenario?
6. Was the way in which you took part in the development and validation of the scenario appropriate to you?

#### Usability

7. Do you think it is necessary to have specific competences or knowledge to implement these activities?

### Summary of the answers

During the validation meeting, we can have, in live, the reactions of CoP’s members face to the service and the scenario.

The CoP’s members are very interested in the service proposed, and they consider it as a mean to answer their classification need. They feel in adequacy with the activities proposed in the scenario. They perceived very early the benefit they could have from the use of this service. At the end of the

meeting, they really want to be involved in development of the service for their CoP. However it remains technical issues to solve.

Since the need covered by the scenario corresponds to the need identified by the CoP, then the “Pérénisateurs” agree with the scenario, and validate it.

The mediator, who wrote in part the scenario, was inspired by his knowledge on the CoP and on the service. He participates in the validation meeting, both to make the link between the CoP’s members and the PALETTE researchers, and from the point of view of a CoP’s member. He could see that the service is not too complex to use, and that the scenario was realistic and correspond to a real need.

### Summary per indicator

#### Preparation and expectations

The objectives of the scenario correspond to an urgent actual need of the CoP, which is to classify documents posted on the Web site. Activities presented in the scenario are clearly described and comprehensible for other members. The meeting planned in September will allow us to affirm that the activities are clear and comprehensible by the other members.

#### Enabling of learning

The service allows sorting documents, so it simplifies the search of documents, and consequently supporting learning in the CoP. In fact, the main problem of the CoP is the non use of the richness of the documents, because it was too hard to retrieve a document stored in the site. So resolving this problem by sorting and classify the documents as relevant as possible will able to fully exploit the documents base, and thus to support learning within the CoP.

#### Participation

The contact with the technical team is good; the mediator can discuss and ask for information easily. Until now, all the remarks and requests have been taken into account. The participation of the mediator in the elaboration of the scenario was based on elements given by the developers for the service, and on his knowledge of the CoP. His role of point of contact between the CoP side and the technical side is well-done and useful to validate the scenario.

#### Enabling of knowledge building and reification

The activities presented in the scenario will permit to exploit in an efficient way the documents base of the CoP. By this way, it permits the creation of new knowledge, and to enhance exchanges between CoP’s members.

#### Utility

The activities presented in the scenario could increase exchanges within the CoP, and make it more dynamic. The work of the “Pérénisateurs” is to make the CoP durable, and to make the CoP active. In a first time, increase the exchanges and facilitate the access to the documents are main activities to support the “Pérénisateurs” work.

#### Usability

In order to implement correctly the activities presented in the scenario, it is necessary to have knowledge about the documents and about the CoP itself, in order to make a relevant classification. No specific competences are required to use the service, only to have access to the Web site.

#### Acceptability

The “Pérénisateurs” attending the validation meeting are motivated to implement the activities; they propose to begin classifying the documents, dated of this year and to take part in the elaboration of relevant facets for BayFac.

## Discussion

As previously stated, the validation proceeded by discussions with the CoP's members.

The future action for the short term is to use the BayFac prototype, in order to improve the facets, and to give feedbacks on its ergonomics.

During the summer, the CoP's members are not very available. The developers will improve their service, taking into account the first remarks made by the "Pérénisateurs", such as addition of new facets, reflect to have an easier access to the service, send a mail to the CoP's members when a new document is classified...

Another meeting is planned in September 2007, with the CoP's members and developers, to present the service BayFac and its new functionalities to other members.

The aim of this third meeting is to present BayFac to the whole of the CoP, and to show them how to use it. As this service is quite easy to use, a first session is organized. If a need of another session is identified, then a second session will be planned, according to the availability of the different participants.

The core team of Form@HETICE has to determine in which way the members could have access and use the service. In fact, CoP's members will be designed to validate the classification made by the other members, in order to have a precise and relevant classification. Indeed access rights will be different according to the role of each member.

Concerning the development of the scenario, a second validation concerning the Amaya service remains to do. Amaya was presented to the CoP's members, but it does not respond to an actual need of the CoP. So its integration in the CoP is delayed.

## **APPENDIX 16 – Criteria for the technical feasibility analysis of the scenarios**

(Excerpt from D.PAR.03, p. 36)

The feasibility analysis of the scenarios takes into consideration the following issues:

- Technology: Do the PALETTE tools provide the necessary technology and functionalities that will support the scenarios?
- Development risk: In case new functionalities or changes of existing functionalities are required, can they be designed and implemented so that the necessary functionality and performance are achieved within the given constraints?
- Resource availability: Is the staff competent and available to make these modifications and changes?

These dimensions are usually used in Computer Science projects (see Pressman, 2000).

## **APPENDIX 17 – Suggested questions for eliciting CoP members' accounts**

These questions are designed to elicit responses via email or an on-line discussion forum. If face-to-face interviews are preferred the questions can be used to guide the interview, with follow-up questions based upon the CoP members' responses.

As part of the PALETTE project [give a formal introduction to the project if necessary], we are interested in examining whether your involvement in [name of CoP] has resulted in your professional development. To investigate this, we would like you to respond to the statement below. Whilst you will be identified in order to facilitate the collection of additional data, in the reporting the outcomes of this research the anonymity of all respondents will be preserved.

What are your objectives in participating in [name of CoP]? What are you trying to achieve by participating?

Please describe an actual situation in which your involvement in [name of CoP] has led to you developing your professional knowledge and/or skills in some way. The following questions may help you to generate your description but please ignore any questions that seem irrelevant and include any relevant details that are not covered by the questions.

Where did the situation occur (on-line, in a meeting, in a classroom, in a work context)?

What did you do in the situation?

Who else was involved in the situation? What role did they play?

How did your professional knowledge and/or skills change as a result of the situation?

What was it about the situation that made you feel that you had developed your professional knowledge and/or skills?

## APPENDIX 18 – General questions of research for the observation of the trials

(Excerpt from D.PAR.08)

Regarding the PALETTE CoPs, the questions here are “how do CoPs collaboratively negotiate the use (and the meaning regarding their activities) of the PALETTE services?” (Or “how do they appropriate the services?”), “how do they deal with their former tools and ways of using technologies?”, “how do they adapt their activities while using the PALETTE services?” and “how do they influence the design of the services in order the services fit their use?”

In the PALETTE framework:

- **Instrumentation** is about the collective appropriation of a tool by a CoP.
  - How do CoPs collaboratively negotiate the use (and the meaning regarding their activities) of the PALETTE services? Or: how do they appropriate the services, how do they train, etc.?
  - How has the need for use been expressed, negotiated? By whom? Through their discussions, do they refer to possible scenarios? What decisions are made?
  - What are the impacts of the PALETTE service(s) on CoPs activities?
    - What level of adaptation of activities can we observe?
    - What is the (CoPs’ members) perception of the contribution and constraints of PALETTE services to their activities?
  - What level of appropriation of PALETTE service within the CoPs can we observe (in terms of representation of the use and real use by members – actors concerned, functions attributed to the services)?
  - Which conditions allow understanding the level of appropriation of the services by CoPs’ members? What is the perception of effectiveness regarding the purposes? How did the negotiation of the use happen? Modes of transmission of the uses (schemes)? Level of articulation with ways of using former tools?
    - What is the more effective service in order to realise the activities (PALETTE, former ones or others)?
    - How do CoPs’ members negotiate the use of PALETTE services and the meaning regarding their activity?
    - How do schemes of use be transmitted within CoPs (training, information, “awareness campaign”...)?
    - What is the level of articulation with ways of using former tools?
- **Instrumentalization** is about the evolution of a tool through its use by a CoP and construction of new uses of services by CoPs’ members.
  - How do the CoPs deal with their former tools and ways of using technologies? How do they conceive the interactions between their tools and the PALETTE tools?
  - How do CoP’ members influence the design of the services in order the services fit their uses?
    - Do CoPs’ members construct new uses of PALETTE services or use these services differently than expected by developers and mediators? At what time? For which purpose (economy, effectiveness, balance of tools)?
    - Do CoPs’ members ask for specific modifications on services to developers? What kind of modifications (articulation with former tools)?
- **Mediation** is about the way the CoPs plan and develop the use of the services regarding an issue or a need they concretely face.

What has changed while using the PALETTE services in terms of new knowledge acquired by the members or modification of members’ behaviours, attitudes and beliefs?

- In what extent the services and scenarios are means for the CoPs to achieve their activities?

- How do CoPs adapt their activities while using PALETTE services regarding their purposes? What kind of mediation process can we observe? What kinds of impact have PALETTE services on the activity?
  - Epistemic: how do PALETTE services allow being informed about the object of the activity?
  - Pragmatic: how do PALETTE services allow transforming the object of the activity?
  - Reflective: how do PALETTE services support reflexive process of the actor?
  - Relational: how do PALETTE services support relations between actors? How do they change relations between CoPs members?
- What has changed while using PALETTE services in terms of new knowledge acquired by members or modification of behaviours, attitudes and beliefs? What are the conditions of these changes?

These questions have been used for the observation and analysis of our seven cases. However, for each CoP, we only chose the most relevant questions regarding its context and particular interests. We detail the specific questions for each CoP in the following sections 7 and 8.



## **APPENDIX 19 – Template for the presentation of the results of the trials to the CoPs**

The structure of report for the CoPs would be focused on scenarios and activities that the CoPs could develop or enhance. It would contain:

- A brief description of the CoP context and needs, or a link to the D.PAR.03 scenarios.
- A description of the trial(s) with the CoP: the activities, the time line, and the services and CoP actors involved in the trial(s).
- A brief description of the methodology for the observation and analysis of the trial(s).
- A description of what happened in the trial concerning the use and appropriation of the services by the CoP: facts that highlight the collective instrumental genesis process and mediation of instruments with excerpts from data. These facts could be presented as stories lived by CoP members or moderators and highlight the problems or successes encountered by the CoP while appropriating the services and their scenarios of use.
- A set of recommendations focused on the use of the services regarding their needs and existing functioning. These recommendations would aim at proposing adjustments to:
  - The activities of the CoP;
  - The use of the services;
  - The possible use of other services (PALETTE or non-PALETTE).

## APPENDIX 20 – Types and structure of the LORs

(Excerpts from D.PAR.06)

		Types of Learning and Organisational Resources		
		Managing, supporting and evaluating (individual and collective, and informal and formal) learning	Organising, managing, developing, and evaluating CoPs	Choosing and (individually and collectively) appropriating tools, supporting CoPs in conceiving scenarios of tools uses
Types of Generic Scenarios	<b>‘Reification’:</b> - Producing CoP resources (e.g., documents) - Enriching CoP resources with semantic information - Searching for CoP resources - Reusing CoP resources - Build Cop memory	Identifying learning needs, suggesting ways for individual reification of practices-knowledge, evaluating the learning activities and events	Suggesting ways for collective reification of practices-knowledge; evaluating the activities	Suggesting scenarios of uses for reification of practices-knowledge
	<b>‘Debate &amp; Decide’:</b> - Debating about an issue - Arguing - Decision making - Keeping informed about the above third processes	Confronting arguments, changing one’s view, enabling cognitive conflicts and their positive resolution, etc.	Negotiating, discussing, and making decisions about the activities of the CoPs	Negotiating, discussing, and making decisions about the choices and uses of tools
	<b>‘Identity building’:</b> - Managing CoPs activities - Managing CoPs members - Managing CoPs events - Managing CoPs resources respecting to CoPs activities - Keeping informed about the above activities	Social learning, situating the members and their competences, developing collective activities that enable learning	(Auto)diagnosing CoP needs; elaborating and organising specific activities; analysing conditions for emergence and sustainability	Matching different types of activities with types of (PALETTE or non-PALETTE) tools and scenarios

Common structure:

1. Title (a short and smart title with possibly a longer sub-title)
2. A brief summary of the LOR (“bank card” format): its objective (1 line), target public, scenario (1 line), possible technological tool supporting the scenario (1 line)
3. Objective(s): purpose of the LOR as well as its target public (CoP members and/or coordinator)
4. Scenario: the story of its use within a CoP, highlighting the different steps, the possible aspects that happen at a distance or in face-to-face mode, the roles of the participants, the expected number of participants, etc.
5. Examples of technological tools (PALETTE or non-PALETTE) that could support the scenario
6. Examples of uses by CoPs from different domains (based on the specific scenarios)
7. Links to external further resources.

## APPENDIX 21 – Framework for the validation of the LORs

(Excerpt from D.PAR.06)

For the validation of the LOR with CoPs, a 6 steps process has been followed, similar to the validation process of the scenarios with the CoPs (see D.PAR.03):

1. Identifying CoPs interested in trialling some LOR (Doc. Prog. Lancaster, Did@cTIC, TIC-FA);
2. The mediator presents the LOR to the CoP coordinator and interested members. They choose a few LOR (2-3) that they would like to trial. The choice was informed by the needs and objectives of the CoP, e.g. if the CoP was interested in developing reification processes, then it could choose LOR related to the GS1 'Reification'; if the CoP needed to choose or decide how to use online tools, then it could choose in the LOR3 category.
3. Depending on the type and amount of LOR to trial, a plan was set up: who will use the LOR, with whom, how long will last the trial, etc.
4. The mediators prepared a questionnaire or planned short interviews. Information about the following questions had to be generated (these questions come from the D.EVA.02; other questions could be added by the mediators):
  - Is the LOR valid, complete, consistent and realistic regarding the CoP needs, objectives and usual functioning?
  - What are the direct outcomes of the use of the LOR? What are the expected outcomes in the medium/long term, for example if the CoP uses a LOR regularly for evaluating its processes?
  - Why does this LOR work well (or badly) with this CoP? What are the conditions for using this LOR appropriately (the conditions may be internal to the CoP – availability of some tools, role of the coordinator, opportunity to organise meetings, etc. – or external – role of the institution hosting the CoP, etc.)?
  - Does the use of the LOR enable generation of useful knowledge about the CoP? For whom, the coordinator and/or the members? What kind of knowledge?
  - Does the use of the LOR participate in the achievement of the CoP objectives or meet its needs in some way?
  - What are the possible effects of the use of the LOR on the CoP, its members, its organisation, its domain, etc.?
5. In addition, the CoP coordinator gave a direct feedback about the description of the LOR.
6. Finally, the mediators amended the LOR by editing the appropriate files in SweetWiki, especially by adding information in the section 'Examples of uses by CoPs'.

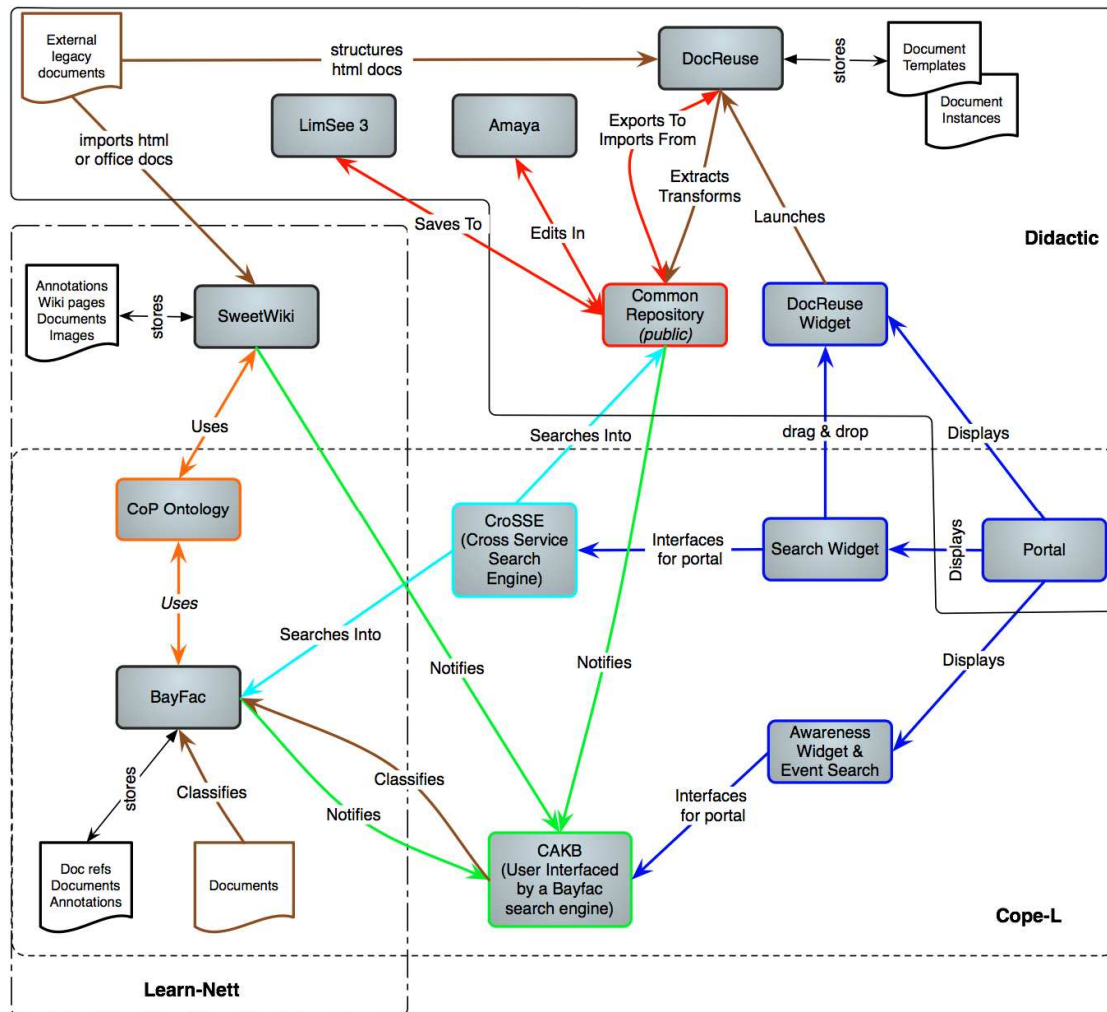
For each CoP having trialled LOR, a validation account has been written. They are presented in the next three sub-sections. Their purposes are:

- To report how the validation process occurred (organisation, participants, questions asked, etc.);
- To summarize the participants' answers to the validation questions;
- To discuss the results by proposing further developments of the LOR (scenario, tools used, description of a use by a CoP, further resources, etc.).

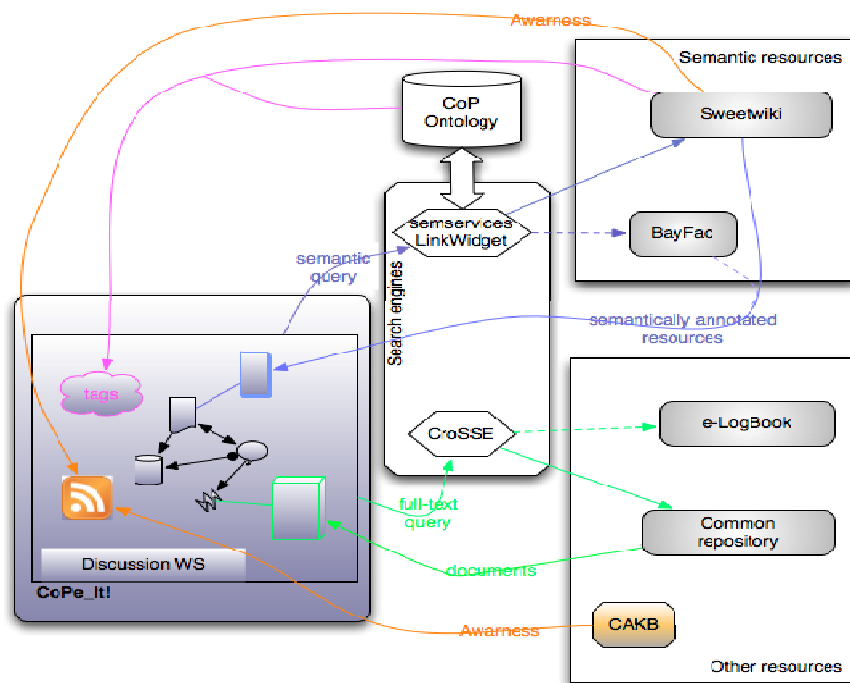
Each account is structured as follows:

1. Organisation and participants: how the validation process has been organised (LOR that has been tested, meetings organisation, participants, etc.) and specific method for generating data (questionnaires, interviews or group discussion, etc.).
2. Validation questions (see here above).
3. Summary of the answers: summary of the participants' answers for each question.
4. Discussion: regarding the answers provided to each question, to propose further developments in the tested LOR, a.o. use by a CoP, use of specific tools, amendments of the scenario, etc. Regarding the Generic Scenario that the LOR is related to, what can be said in terms of utility and ease to use?

## APPENDIX 22 – Conceptual diagrams of integration between services



Conceptual Diagram of Integration between services for the Reification Scenario.



Conceptual Diagram of Integration between services for Debate and Decide.