



Project no. FP6-028038

20/02/2007

Palette

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

Integrated Project

Technology-enhanced learning

D.MED.05 – Functional Specifications of Argumentative Collaboration Services

Due date of deliverable: January 31, 2007
Actual submission date: February 20, 2007

Start date of project: February 01, 2006

Duration: 36 months

Organisation name of lead contractor for this deliverable: CTI

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

Keyword List: Collaboration Services, Mediation Services, Argumentative Collaboration, Functional Specifications

Responsible partner: CTI

| <i>MODIFICATION CONTROL</i> | | | |
|-----------------------------|-------------|---------------|------------------------------|
| <i>Version</i> | <i>Date</i> | <i>Status</i> | <i>Modifications made by</i> |
| 0.3 | 29/01/2007 | Draft | sent to all WP4 partners |
| 0.6 | 02/02/2007 | Draft | sent to evaluators |
| 1.3 | 13/02/2007 | Draft | sent to SC |
| 1.4 | 20/02/2007 | Final | sent to SCO and AFC |
| | | | |

Deliverable manager

§ Nikos Karacapilidis, CTI

List of Contributors

§ Nikos Karacapilidis, CTI
 § Manolis Tzagarakis, CTI
 § Dora Nousia, CTI
 § Christina Evangelou, CTI
 § Vassilis Kallistros, CTI
 § Spyros Christodoulou, CTI
 § Nikos Karousos, CTI
 § George Gkotsis, CTI
 § Denis Gillet, EPFL

List of Evaluators

§ Manfred Künzel, UNIFR
 § Yassin Rekik, EPFL

Summary

This document defines the functional specifications of the argumentative collaboration services to be developed within the framework of the IST project Palette. More specifically, it justifies the need for providing such services to communities and it describes the functionality of the specified services from a user's perspective.

Table of contents

| | |
|---|----|
| 1. Introduction..... | 4 |
| 1.1 Overview | 4 |
| 1.2 Operational Context | 4 |
| 1.3 Glossary | 5 |
| 2. General Description of argumentative collaboration services..... | 7 |
| 2.1 Overall functions and modelling approach | 7 |
| 2.2 User Characteristics and Objectives..... | 9 |
| 2.3 An Operational Scenario | 10 |
| 3. Functional Specifications | 12 |
| A. Collaboration Space..... | 12 |
| B. Management of collaboration objects..... | 13 |
| C. Content Repository..... | 14 |
| D. Searching..... | 14 |
| E. Diversity in Formalization of Collaboration..... | 15 |
| F. Decision Making Support..... | 16 |
| G. Awareness, Monitoring and Reporting..... | 17 |
| H. Knowledge Management..... | 17 |
| I. Argumentation..... | 18 |
| J. Registration..... | 19 |
| K. Identification and authorization..... | 19 |
| L. Visualization..... | 20 |
| M. Personalization..... | 20 |
| N. Integration/Interoperability from a user's perspective..... | 21 |
| O. User & Role Management..... | 22 |
| P. Management of CoPs..... | 23 |
| 4. Argumentative Collaboration Services Architecture | 24 |
| 5. References | 25 |
| Appendices..... | 27 |

1. Introduction

1.1 Overview

This document provides an overview of the functional specifications of the argumentative collaboration services to be developed within the framework of the IST project Palette. More specifically, it justifies the need for providing such services to communities and describes the use and the functionality of the specified services from a user's perspective. In other words, it specifies how members of a community are going to use the foreseen collaboration services and what the interactions between them and users will be. The document also provides hints for identifying and assembling argumentative collaboration services to support users engaged in collaborative work.

In order to define the appropriate set of Functional Specifications (FSs), an extensive literature review on the Communities of Practice (CoPs) (for indicative references, see [1-5]), Computer Supported Collaborative Work (CSCW) (for indicative references, see [6-17]) and Argumentation Theory (for indicative references, see [18-23]) research fields was first performed. Second, all interviews conducted with the – in the context of Palette - identified CoPs were transversally analysed towards the specification of their requirements (see [28] and Appendices A and B). Third, feedback received from the experimentation of diverse communities with the prototype version of the web-based tool supporting argumentative collaboration towards learning (see [27]) was taken into account. Through the above activities, we aimed at identifying and justifying the following:

- What kind of argumentative collaboration services are suitable to better address the needs of communities in general and CoPs in particular?
- What types of argumentative collaboration services exist, what do they try to accomplish and in what extend they succeed?

The description of the FSs listed in this document follows a user-centric approach. This approach is also followed in the specification of services concerning integration/interoperability issues¹.

1.2 Operational Context

The FSs presented in this document are the result of work carried out in the framework of the IST project Palette. Several CoPs on three domains (management, engineering and learning) are involved

¹ A deep and exhaustive analysis of interoperability issues for software communication with other (Palette and/or existing) services are outside the scope of this document (they are expected to be elaborated in D. IMP.03.)

and studied in the Palette project. The present work is situated in the context of Mediation Services (WP4), their ultimate aim being to support collaborative learning. The corresponding operational objective, for the first implementation plan of the project, concerns the “development of a web-based tool that supports argumentative collaboration towards learning”. CoPe_it! is the name given to this tool.

1.3 Glossary

Argumentation theory, or argumentation, studies the arts and sciences of civil debate, dialogue, conversation, and persuasion. It studies rules of inference, logic, and procedural rules in both artificial and real world settings. Argumentation is concerned primarily with reaching conclusions through logical reasoning based on certain premises. Although including debate and negotiation which are concerned with reaching mutually acceptable conclusions, argumentation theory also encompasses the branch of social debate in which victory over an opponent is the primary goal. This science is often the means by which people protect their beliefs or self-interests in rational dialogue, in common parlance, and during the process of arguing (from wikipedia.org).

Knowledge Management. Management of activities and processes aimed at amplifying the use and creation of knowledge on an organization with two complementary aims: a “patrimonial” objective and a durable innovation objective; these objectives are underlined by their economic, strategic, organizational, socio-cultural and technological dimensions. Management of knowledge resources of an organization in order to ease: (i) access, sharing, reuse of this knowledge (that can be explicit or tacit, individual or collective), with an objective of capitalization (ii) creation of new knowledge, with an objective of innovation (see glossary at palette.ercim.org).

Knowledge. Knowledge constitutes an information unit which may be contextualized and organized. It addresses a group of humans with common characteristics and interests as a mean to produce new meanings and data.

User. Commonly, a user is perceived as a person who uses a software system. However, it is more accurate to associate a user with a name, with which a person is known to a software system. In systems that support collaboration among real people, the differences² between the user as an actor who

² Typically, a user-name corresponds to one person, and one person uses one username. This does not always happen, e.g. when a person has created more than one usernames in a system. Also, a username may be not exclusively used by a specific person, i.e. when his account is used by more people. A username is used by more than one persons (in most cases, this is a bad practice; however, there are cases where this happens intentionally, e.g. when a person that uses a system changes and the existing username and data remain “as is” by another person replacing him). Finally, there exist operational environments,

participates personally in the collaboration and the name(s) he is (or may be) known (or represented) to the system are important and have to be accurately modelled.

Group. A group of users who collaborate in order to achieve a goal.

Object. An entity that has a well-defined role in the application domain and may have state, behaviour, and identity. Objects in a system are usually considered as information units.

Action. An action is a process of doing something. Actions in a system having users and resources (as is the case in argumentative collaboration services) usually evolve one or more actors and may affect one or more objects (e.g. posting a position in a discussion).

Privilege. A privilege is an authorized right for someone to perform an action. In this document, privileges are used to define “who can perform actions that affect particular objects”.

Role. A role, in general, is a character assigned to someone or a socially prescribed pattern of behaviour corresponding to an individual's status in a particular society. From a system perspective, a role can be implemented by associating a set of predefined privileges to a user.

User Modelling can be defined by answering a set of questions: “Who is being modelled; what aspects of the user are being modelled; how is the model to be initially acquired; how will it be maintained; and how will it be used” [24].

User Profile. “A user profile is a collection of personal information. The information is stored without adding further description or interpreting this information. It is comparable to a getting-setting mechanism of classes in object-oriented programming, where different parameters are set or retrieved. User profiles represent cognitive skills, intellectual abilities, intentions, learning styles, preferences and interactions with the system. These properties are stored after assigning them values. These values may be final or change over time” [25].

Identification, Authentication and Authorization (or Access Control). Identification is the procedure of identifying a requestor. It is taking place by sending identities. An identity can be defined as a claim made regarding origins of objects. Authentication is the provision of proof that claimed identities are true. Finally, authorization is the procedure of the determination of what a requestor is allowed to do. In simple words, these three terms are considered when aiming to answer the following questions:

Who are you?

Identification

where it is common that a person associated with a user of a system does never use the system himself; instead, he assigns the corresponding task to an assistant or representative.

How do I know you are who you say you are?

Authentication

What are you allowed to do?

Authorization

Single Sign On. A methodology that allows users to make only one sign-on while they enter a system and to participate in many tools, services and applications within the system context (without the need to sign-on for each individual tool). It is a critical integration issue in any Service Oriented Environment.

Collaboration objects. The term refers to a wide range of types such as documents, ideas, comments etc. that are used during argumentative collaboration. It also includes the relationship types with which objects can be related (e.g. object, agree, refine, justify etc.) Collaboration objects may be of different content types and can have arbitrary number of attributes.

Collaboration space. A virtual (software-based) environment, which enables and supports collaborative work between users and has well-defined conceptual boundaries.

2. General description of argumentative collaboration services

2.1 Overall functions and modelling approach

This section describes the general functionality of the argumentative collaboration services to be developed within the framework of the Palette project. The proposed functionality is intended to be used in the future development of CoPe_it!, a web-based software tool that facilitates argumentative collaboration towards learning. In the following, we present the conceptual framework on which the foreseen functionalities were based and an overview of them.

The functionality of the argumentative collaboration services to be provided by CoPe_it! builds on a conceptual framework where *formality* and the *level of knowledge detail* during argumentative collaboration is not considered as a predefined and rigid property of the system, but - rather - an adaptable aspect that can be modified in order to meet the needs of the tasks at hand. By the term formality we refer to all the rules enforced by the system, to which all user actions must comply with. Allowing formality to vary within the software environment provided for argumentative collaboration (henceforth called 'collaboration space'), *incremental formalization* can be achieved, i.e. a stepwise and controlled evolution from a simple collection of individual ideas and resources to highly contextualized and interrelated knowledge artefacts (see Figure 1).

| Informal | Formal |
|-------------------------------|-------------------------------|
| <i>Easy to use</i> | <i>Less easy to use</i> |
| <i>No time consuming</i> | <i>Time consuming</i> |
| <i>Generic types</i> | <i>Fixed types</i> |
| <i>Implicit relationships</i> | <i>Explicit relationships</i> |
| <i>Human understandable</i> | <i>Machine understandable</i> |

Figure 1: The foreseen incremental formalization in argumentative collaboration.

A *projection-oriented* approach forms the core of the proposed argumentative collaboration model (and corresponding services) and constitutes the ‘vehicle’ that permits incremental formalization of knowledge (and corresponding user actions) during argumentative collaboration. According to that, a collaboration space may be projected in a variety of ways so that it can provide the necessary mechanisms to support a particular level of formality (according to the user preferences), thus addressing different collaboration concerns.

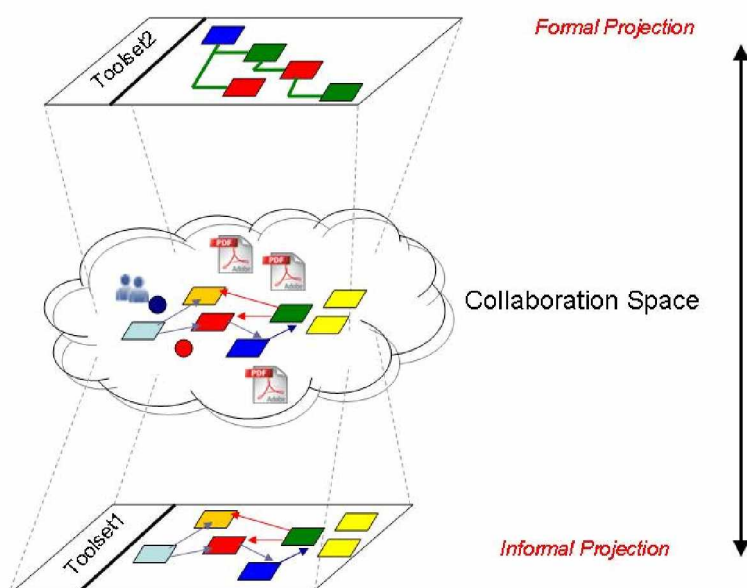


Figure 2: Projection oriented collaboration supporting different levels of formality.

Informal projections aim primarily at supporting *information triage* (Marshall & Shipman, 1997), i.e. the process of sorting through numerous relevant materials, and organizing them to meet the task at hand. During such a process, users must effortlessly scan, locate, browse, update and structure information units that may be incomplete, while the resulting structures may be subject to rapid and numerous changes. It is the informal nature of this aspect that permits such “natural” and unconditioned evolution

of information structures. Aim of the informal projection of the collaboration space is to provide a framework to structure and organize information units easily, and in a way that conveys semantics to users. In general, the informal aspect supports an unbound number of discourse types such as comment, idea, notes and resource. The informal aspect provides also abstraction mechanisms that constitute tools that allow the creation of new abstractions out of existing ones.

While the informal aspects of the collaboration space aid user-centred exploitation of information, the formal ones aim mainly at machine-centred exploitation of information. More specifically, the formal aspects of the collaboration space provide a fixed set of discourse and relationship types, with fixed semantics, that are interpretable by the system. The formal aspects ensure the consistency of the resulting structures so that advanced decision making support mechanisms can correctly operate.

Based on the above collaboration model, a main type of functionality to be offered by the proposed argumentative collaboration services regards the *sharing of resources*. Participants must be able to express themselves in synchronous or asynchronous discourses by posting in the collaboration space diverse types of resources (e.g. a picture, an extract of a conversation, a diagram, a reference to a documentation, etc.). Furthermore, argumentative collaboration services must provide with *problem reification functionality*. This refers to the identification and elaboration of the issue to be addressed, the consideration of the questions raised or observations made against theoretical or practical references, etc. The *provision of argumentation* is another core functionality that enables the expression of opinions, personal or public points of view, etc. *Knowledge management* functionalities must also be provided so that the collaboration spaces can be used as a media for the exchange of knowledge between the community members and be of help towards the creation of individual and organizational memories. In addition, user *profiling mechanisms* provide with personalized support towards learning, while a variety of *awareness services* should keep users informed about what is going on in specific areas of their interest.

2.2 User Characteristics and Objectives

The FSs for argumentative collaboration services described in this document correspond to the needs of CoPs' members. Nevertheless, the proposed FSs can also apply for other types of workgroups, organizations and communities in general (e.g. communities of interest).

As regards CoPs, three categories of domain have been investigated within the Palette project: teaching, management and engineering. The corresponding CoPs' members have different backgrounds, thus different levels of expertise and different perspectives in terms of acceptance of technology-based solutions (these conditions also apply for users that are members of other workgroups, organizations or

communities). The proposed FSs were specified accordingly, in that they cover a wide-range of user expertise levels.

Appendices A and B present the user needs considered (as identified after the transversal analysis of the corresponding interviews given by the CoPs currently involved in the project). In brief, the major requirements expressed by the users are:

- § User friendliness and usability
- § Collaboration support in terms of coordination and sharing of resources
- § Decision making support
- § Awareness and notification
- § Enhancement of the knowledge flow
- § Efficient management of private and public (group) working environments

2.3 An Operational Scenario

This section presents a realistic scenario, based on the work performed in the context of task T1.3, which illustrates, from the user's perspective, what will be experienced when utilizing the foreseen argumentative collaboration services [26]. The scenario comes from the teaching domain; the particular domain was selected through joint efforts with other WPs and in accordance with the currently participating CoPs in the project as it provides a context for analyzing current practices in these CoPs and an initial framework for validation. It is also stimulated by the large past experience of the deliverable's contributors on applied distance learning and collaboration in the teaching domain. We clearly argue, however, that the teaching domain might not be the best choice for the deployment of a scenario that exploits the full range of the foreseen argumentation and decision support functionality; issues discussed in domains such as health, management or engineering (their setting, structure, evolution, importance, and effects of choices) seem to be more challenging when using collaboration services. Efforts towards taking such domains into account are planned for the next implementation plan of the project. Nevertheless, the scenario presented below and its corresponding original sources from the teaching domain provided us a solid base for the formulation of the functional requirements presented in this deliverable.

In the following, we provide an example case assuming that a community of teachers wants to decide what methods to employ for supporting their students' collaborative work at a distance. The

characteristics of this setting are: semi-formal collaboration; great impact of the decision required; probably more than one discourses take place; probable conflict of opinions. Their main needs regarding argumentative collaboration services concern the exchange of ideas, exchange of resources, proposal of alternative courses of action (solutions) and decision making.

In this case, whenever a community member wants to discuss an issue with her peers or share with them a piece of information, a new shared working space will be created to host a discussion about this topic (the level of formality to be followed may vary – see Section 2.1). More specifically, every user can post an idea, a problem or any kind of an issue that he wants to share with his community. For instance, a common work space can be opened for defining a face-to-face meeting's agenda, for posting a summary of the students' work, for sharing a report on problems encountered, or for noting possible delays. The rest of the community members will be automatically informed about the opening of this issue, and will be invited via e-mail to participate (note that the provided alerts can be adjusted to the users' needs and preferences, e.g. spontaneous or daily mail notifications, notification only on specific subjects, etc.). All authorized members will be prompt to contribute to the solving of the issue under consideration by posting their ideas, proposals, solutions, doubts, objections, etc., by inserting their standpoints to the shared working (collaboration) space. For instance, a member can propose a solution, and support his post with an argument or through uploading a related document or a url link. Generally speaking, argumentation can take place in the form of linguistic description of ideas, solutions, arguments, etc. Users can then express their ideas, resources and standpoints in general, in a non-structured way. This means that all members of the community can deposit implicitly or explicitly their resources as well as their opinions in a common space and make them visible to their peers. For instance, community members can propose issues to be discussed in a face-to-face meeting, and disseminate material needed for preparing this meeting. In this way, it is possible to disseminate the necessary for the decision making input to all the interested parties. As regards to the sharing of resources, argumentative collaboration services can be used for the sharing of documents, multimedia files, and other types of resources. This means that the users are provided with a shared working space where they can deposit the resources of their preference, and allow their access to other users. Furthermore, the annotation and collaborative editing of these resources will be allowed. Organizing the resources according to the one's preferences is also desirable, so as to assist users visualize the available material in a way that is more usable to them. More specifically, users are provided with the means to organize categories of resources, while it will be possible to create links between them (i.e. links specifying the relation between resources). Moreover, whenever a new issue arises during a discussion, users can choose to open a new collaboration space for tackling this issue and relate it to the previous discussion. Finally, the foreseen working space offers

decision making support functionalities, which are to be exploited by the above CoP's members in order to reach a decision. This means that the above space interprets the information types and relationships in order to proactively suggest trends or even calculate the outcome of a collaborative session.

3. Functional Specifications

The following list of functional specifications illustrates what the foreseen system must accomplish. Specifications are clustered in categories whose criticality and interdependency are also commented. Criticality refers to how essential a requirement is to the overall system, while interdependency concerns interactions or overlapping with other requirements. Technical issues involved in the satisfaction of a particular specification are also reported, when necessary.

| Category | A. Collaboration Space |
|-------------|--|
| Description | <ol style="list-style-type: none"> 1. A Community of Practice may use multiple collaboration spaces, which may be interrelated. 2. A collaboration space should provide CoPs' members with the means to perform argumentative collaboration. 3. The system should support the creation of new collaboration spaces. 4. Only authorized users may be able to create new collaboration spaces for the CoPs they administer. 5. The creation of a collaboration space should be accompanied by the definition of a title for this space, the specification of initial access rights that users of the particular CoP will have on this space, as well as the specification of the tools that will be (initially) available at this space. For instance, such tools could offer the capability of sending e-mail messages, making VoIP calls, using instant messaging and web search engines. 6. The collaboration spaces should support diversity in terms of formality (multiple alternative projections). These variations of formality should be considered as different aspects on the same collaboration space. Configuration of formality may be set by both a CoP's administrator and a CoP's member. 7. The system should support the transformation from one projection to another as well as the incremental transition from informal to formal collaboration spaces (and vice versa). 8. The collaboration space should support different <i>collaboration paradigms</i> having structural differences. Some instances are the following: collaboration within a workgroup of identical professions (e.g. an assembly of medical doctors); negotiation between two distinct teams; collaboration in the framework of |

| | |
|--|--|
| | <p>a specific committee/board, involving people of diverse professions, possibly with different weights in their opinion (possibly involving diverse voting mechanisms); collaboration in order to perform a nationwide social dialogue (e.g. about the European Constitution).</p> <p>9. Each user may have his own personal workspace. A workspace enables access to various Collaboration Spaces (e.g. spaces associated to a particular CoP). Moreover, it comprises a particular user's toolset.</p> <p>10. Individual users may also create their own private collaboration space (as a medium to contemplate and organize their knowledge). This space may later be shared by more users, if desired.</p> |
| Criticality | High |
| Technical issues | The Collaboration Space must be designed so as to collaborate efficiently with both browser and system backend. |
| Dependencies with other specifications | Content Repository, User & Role Management, Diversity in Formalization of Collaboration |

| | |
|-------------|---|
| Category | B. Management of collaboration objects |
| Description | <p>1. Adding, deleting and updating of collaboration objects in collaboration spaces (according to user rights). Collaboration objects can be based on one or more information types. Supported information types include:</p> <ul style="list-style-type: none"> • File (such as MS Word, PDF, PS, etc) • Text • Link/URL • Transclusion (i.e the inclusion of part of a document into another document by reference) <p>2. Discourse objects are structured and follow a specific schema (upon the object) depending on the level of formality.</p> <p>3. Users may create relationships among collaboration objects.</p> <p>4. Depending on the formality level, different relationships types become available. For example, at an informal projection, objects may be linked to each other to denote a user-perceived interrelation; in a formal projection, these relationships should be also machine-interpretable.</p> <p>5. Adding of new attributes to any discourse object (taking into consideration the user's privileges).</p> |

| | |
|--|---|
| | <ol style="list-style-type: none"> 6. Private or public display of collaboration objects. 7. Storing of both visual and inherent information on discourse objects. Visual data includes information on the placement and style of the discourse object, while inherent data is information on the content-type of the discourse object, which is processed by the system accordingly (e.g. a URL is processed as a link opened through the browser). 8. All common content (file) types should be supported (.doc, .pdf, .xls, .ppt, .gif, .jpg etc.). |
| Criticality | High |
| Technical issues | The schema of discourse objects must be extensible and only minimal assumptions on their attributes and their types can be made. Even user defined attributes must be searchable |
| Dependencies with other specifications | Content repository, User & Role Management, Diversity in Formalization of Collaboration |

| | |
|--|---|
| Category | C. Content Repository |
| Description | <ol style="list-style-type: none"> 1. Users may store any collaboration object (such as files, URLs ideas, comments, notes etc.) into the system. 2. Users may use the reference mechanism to retrieve and deploy collaboration objects in different collaboration spaces, provided that they have the corresponding access privileges. |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | User & Role Management |

| | |
|-------------|--|
| Category | D. Searching |
| Description | <ol style="list-style-type: none"> 1. Any collaboration object can be searched and retrieved. 2. Searching should be possible on any field of a collaboration object as well as on combinations of them. 3. Searching should take into consideration the links (interrelationships) between collaboration objects so that pattern-based queries can be formulated. 4. Search based on global taxonomy parameters (and/or the associated ontologies, if any) should be supported. 5. Free-text search on the most popular content types should be supported. |

| | |
|--|--|
| | 6. The user directory should be searchable exploiting also the structure and contents of user profile, provided that the inquirer has the corresponding access privileges. |
| Criticality | High |
| Technical issues | Indexing structured documents and free text query support |
| Dependencies with other specifications | Collaboration space, Diversity in Formalization of Collaboration |

| | |
|------------------|--|
| Category | E. Diversity in Formalization of Collaboration |
| Description | <ol style="list-style-type: none"> 1. Collaboration spaces can adopt different levels of formality (aspects), ranging from fully informal to fully formal ones 2. Informal aspects provide a flexible environment for the users to insert, update, relate, structure, and organize collaboration objects 3. Formal aspects provide a controlled environment for the users to insert, update, relate, structure, and organize a closed set of collaboration objects (actions allowed are well prescribed and not arbitrary) 4. Informal aspects allow users to interrelate objects with arbitrary relations (selected from a default list or defined by them) 5. Formal aspects allow users to interrelate prescribed objects with specific relations (selected from a limited list) 6. Interrelation of objects in informal aspects could be accompanied by an explanatory comment and depicted using easily interpretable graphical elements and visual cues (e.g. by arrows of different colour and thickness; two strongly contradicted documents could be related with a thick red arrow) 7. Informal aspects provide means for creating high-level abstractions (e.g. aggregation, generalization) 8. Formal aspects provide a structured and controlled environment aiming at (semi)automating the decision making process (the reasoning and evaluation mechanisms are inherent properties of the aspect itself) 9. Conversion from one aspect to another (for a particular session of collaboration) is desirable |
| Criticality | High |
| Technical issues | The visualization of the various aspects will make use of graphic elements (such as nodes, arrows etc.) rendering the collaboration activity user friendly. This requires the use of technologies that are readily available for a wide range of platforms. Hence, the |

| | |
|--|---|
| | deployment of techniques such as Ajax must be taken into consideration. |
| Dependencies with other specifications | Content Repository, Collaboration Space |

| Category | F. Decision Making Support |
|--|---|
| Description | <ol style="list-style-type: none"> 1. The collaboration space should enable (explicitly or implicitly) decision making support, for a group or an individual. 2. The system is able to detect inconsistencies (e.g. among preferences of diverse users) and commitment violations (e.g. on deadlines), provided that the corresponding projection supports the related algorithms. 3. The system is able to inform users about the convergence (or not) of opinions (or related types of collaboration object), provided that the corresponding projection supports the related algorithms. 4. In formal projections of the collaboration space, the system is able to monitor the users' actions (and related objects), thus supporting diverse awareness issues. 5. In formal projections of the collaboration space, the system supports - in an automatic or semi-automatic way - the decision making process. 6. Upon the projection of the collaboration space, as well as the particular collaboration paradigm, the system enables the appropriate decision making support algorithms (e.g. a voting algorithm with equal weights to all in the consideration of a public policy issue, or a multiple criteria decision making algorithm when the issue concerns the purchase of a product). 7. Users can retrieve information about past decisions, i.e. people participating, final decision made, collaboration objects used for making the decision. 8. Decision making support should be accompanied by the appropriate visualizations in the collaboration space. |
| Criticality | Medium |
| Technical issues | Depending on the formality level (and the corresponding projection), different algorithms need to be implemented. |
| Dependencies with other specifications | Diversity in Formalization of Collaboration, Visualization |

| Category | G. Awareness, Monitoring and Reporting |
|--|--|
| Description | <ol style="list-style-type: none"> 1. Users to be notified about the following events: <ul style="list-style-type: none"> • the creation of a new collaboration space • the insertion of a new discourse item • a decision made • the registration of a new user • the participants of a collaboration and its presence 2. Users may monitor user actions. The CoP administrators should be able to watch the user traffic and the system responses. 3. Monitoring of system operations should be supported. 4. Authorized users - and in particular CoP administrators - may request reports depicting the CoPs activity that include statistics on number of logins, average connection time, basic participation metrics such as number of discourse moves etc. 5. E-mail reminders about specific tasks and events should be sent by the system. 6. Users may request to be informed about the participants' profiles. 7. User may schedule events (define deadlines etc.); users should be informed about these. |
| Criticality | High |
| Technical issues | The above specifications are optional (customized upon a user's preferences). |
| Dependencies with other specifications | User Modelling, Decision Making |

| Category | H. Knowledge Management |
|-------------|--|
| Description | <ol style="list-style-type: none"> 1. Users can share and reify their knowledge by stating their personal standpoints or by providing knowledge resources in the collaboration space. 2. Users can inter-relate collaboration objects with specific link types according to their personal perception on the issue. 3. Past discourses may be reused, fully (a discourse can be also considered as a single collaboration object) or partially (selected objects of the discourse). 4. Actions in collaboration spaces may be regulated by a CoP facilitator in order to better serve a particular learning activity (e.g. discuss about a questionable topic, elaborate an open issue, pursue someone, etc.). |

| | |
|--|---|
| | <ol style="list-style-type: none"> 5. User profiles are updated according to the users' behaviour during collaboration. 6. Additional Knowledge Management functionality will be provided by integrated external or Palette internal services. 7. Expertise Management should be provided (linked to User Profiles). |
| Criticality | Medium |
| Technical issues | |
| Dependencies with other specifications | Collaboration Space, Interoperability and Integration |

| Category | 1. Argumentation |
|-------------|---|
| Description | <ol style="list-style-type: none"> 1. During an argumentative collaboration session, users can express their individual standpoints along with supporting material (e.g. a file justifying their point of view). 2. During an argumentative collaboration session, users can propose alternative solutions to the issue under consideration. 3. During an argumentative collaboration session, users can assert arguments "in favour" and/or "against" an alternative solution, or a previously asserted point of view. 4. Arguments asserted by users can be also characterized as "neutral" or "unknown". 5. Upon the projection of the collaboration space, as well as the particular collaboration paradigm, the system enables the appropriate argumentation support algorithms. 6. Users can inter-relate types of collaboration objects (e.g. an argument with an alternative solution). Such relations may come from a closed list, in cases of formal projections, or can be freely expressed, upon the user's cognitive interpretation of the particular instance, in cases of informal projections. 7. The system keeps track of the evolution of an argumentative collaboration session (so that a replay of the whole session can be visualized). 8. An argumentative collaboration session can be conducted in more than one rounds, each probably leading to different conclusions (collaboration towards strategic decision making carried out at a large scale, e.g. a nation-wide dialogue, needs to be carried out through such discrete stages). The conclusions of each such round should be appropriately maintained by the system. |

| | |
|--|--|
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | Decision Making, Diversity in Formalization of Collaboration |

| | |
|--|--|
| Category | J. Registration |
| Description | <ol style="list-style-type: none"> 1. Users create username and password for accessing and using the system (alternatively, user accounts should be created by authorized users). 2. Users define personal, professional and contact information. 3. Users accept terms of use (regarding the system and the particular CoP). 4. Users may apply for accessing and participation in collaboration spaces of their preference. 5. System informs via e-mail the users on the acceptance or denial of their request after validating the provided information. 6. CoP administrators or authorized users should be able to accept or deny requests for registration, to communicate with the requestors and to be informed via e-mail whenever a new registration request is coming to their CoP. 7. Users can invite people for participation via an e-mail message. |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | User & Role Modelling |

| | |
|-------------|---|
| Category | K. Identification and authorization |
| Description | <ol style="list-style-type: none"> 1. The system requires the identification and authentication of all users. 2. Users should be identified and authenticated in a transparent way. 3. The system should remember users who have chosen to be automatically signed-in whenever they want to login. 4. The system should support a password recovery procedure in order to help users that have lost or forgotten their passwords. |

| | |
|--|---|
| | 5. The system should allow the adoption of a single sign-on procedure for the entire set of Palette services. |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | Diversity in Formalization of Collaboration |

| | |
|--|---|
| Category | L. Visualization |
| Description | <ol style="list-style-type: none"> 1. Alternative visualization options of a collaboration space will be supported. These may include collaboration ordered in time (forum-like), grouped by user, clustered according to the type of the collaboration object, etc. 2. Roles or isolated privileges of users that correspond to CoP members should be able to be visually represented in the collaboration space of the CoP. 3. Actions that affect privileges of users should be transparent and appropriately visualised (e.g. the change of a CoP leader, addition of a new member, deletion of a member, etc.). 4. Current or preferred visualization settings should be saved in the user's profile and preferences. 5. Alternative spatial representations of the collaboration are supported (e.g. hyperbolic tree, fishbone diagram, radar chart). 6. Alternative themes per CoP or individual user should be supported. A theme corresponds to the overall depiction of the collaboration space and concerns choices about its colour, fonts, layout etc. and are not to be confused with the foreseen (formal and informal) projections, alternative visual representations and collaboration paradigms. |
| Criticality | Medium |
| Technical issues | |
| Dependencies with other specifications | Diversity in Formalization of Collaboration |

| | |
|-------------|--|
| Category | M. Personalization |
| Description | <ol style="list-style-type: none"> 1. The system should enable personalization of user workspaces. More specifically, users may select the desired set of tools and services that will be visible and at their 'fingertips'. Also, they may subscribe to the events that are of interest to them. |

| | |
|--|---|
| | <ol style="list-style-type: none"> 2. Personalization services should take into consideration user characteristics such as expertise, preferences, skills etc. 3. Users can create their own collaboration spaces. 4. The system should send recommendations to users (e.g. to view different kinds of relative content such as important documents, related posts, etc.). |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | User & Role Modelling, Diversity in Formalization of Collaboration |

| | |
|-------------|--|
| Category | N. Integration/Interoperability from a user's perspective |
| Description | <ol style="list-style-type: none"> 1. Web-based address books can be available in the collaboration space. 2. Existing information services, such as annotation tools or web content editors, can be called from the collaboration space of a CoP. 3. Exchange and reuse of user profiles must be supported by the system (i.e. without retyping or manual copying). The system should be able to export the user profiles either in a format readable by other services or to provide them through web services. The system must be able to import a user's profile available in other communication systems, such as e-mail, Discussion Forum, portal, provided that either an export functionality is provided or a corresponding web service is available. 4. Authorized users may create users in a batch mode by exploiting (feeding the system with) an e-mailing list. 5. Users can create a collaboration space and grant access to existing users. 6. A collaboration object attached or linked to a collaboration space can be sent to one or more recipients (through e-mail). This action can be transparent to other users and properly visualized (information objects flagged as 'restricted' cannot be sent in this way). Along with the object sent, the system also copies all its associated meta-information (e.g. author, version, keywords, source, etc.) 7. Resources from e-mail tools, forums, blogs, etc. should be reused in a collaboration space along with their metadata (thus preserving its source and associations). 8. Information sources of collaboration performed through e- |

| | |
|--|---|
| | <p>mailing lists could be migrated to the collaboration space (along with the appropriate metadata).</p> <p>9. Single sign-in for integrated Palette services should be supported, provided that a person maintains identical user profiles to different systems.</p> |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | Collaboration space, User & Role Management |

| | |
|-------------|---|
| Category | O. User & Role Management |
| Description | <ol style="list-style-type: none"> 1. The system should support different types of user roles. 2. The system administrator cannot be a CoP member. His actions are not transparent to the CoP's collaboration space. He can do anything. 3. An administrator of the collaboration space of a CoP is different than a system administrator, even if the latter can virtually can do anything. 4. A CoP administrator corresponds to a specific user (member of the CoP), chosen or defined to do the job of administration (this includes mediation and/or moderation of the actions performed in a particular collaboration space of a CoP). More than one CoP administrators should be also supported (in any case, each CoP should have at least one administrator). 5. Roles or individual privileges can be assigned to users or user groups by the CoP administrator. 6. The system administrator can view, create, update or delete existing roles. The administrator of a CoP's collaboration space can attach particular roles to CoP members (including changing his own privileges). 7. Initially, the following fundamental roles are foreseen for users: a) CoP's collaboration space administrator / moderator / facilitator, b) CoP member and c) CoP associated member d) temporary visitor. 8. Apart from the defined roles, the system administrator as well as the CoPs collaboration space administrators can assign to the users one or more explicit privileges. 9. Each user can view his/her assigned roles and privileges. The assigned roles and privileges are visualized through the collaboration space. 10. The profile of a user contains meta-information that can |

| | |
|--|---|
| | <p>be made available to others upon the user's permission and/or explicit wish, e.g. availability or publicity of a user's photo to a particular CoP.</p> <p>11. System administrator can manage (create, update and delete) all users within the system.</p> <p>12. The system will support the dynamic creation of new user's characteristics and the filling of them in run-time (dynamic update of profiles).</p> |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | Collaboration space |

| | |
|--|--|
| Category | P. Management of CoPs |
| Description | <ol style="list-style-type: none"> 1. The system supports many CoPs, which may be interrelated or not. Each CoP comprises the CoP members and one or more collaboration spaces. 2. The system administrator or the CoP administrator have the responsibility to create, update and delete a CoP's collaboration space. 3. A single user can create a CoP account for his newly created CoP without intervention by a system administrator, and can invite other users to participate. 4. Besides the system administrator, at least one member of a CoP is defined as CoP administrator. 5. A CoP's administrator can change and be replaced by another CoP member (this replacement can be performed by the former, after the corresponding acceptance of the latter). |
| Criticality | High |
| Technical issues | |
| Dependencies with other specifications | User & Role Management |

4. Argumentative Collaboration Services Architecture

This section describes a high-level overview of the anticipated system architecture showing the potential system modules. Architectural components that are reused or 3rd party are also highlighted. The architecture comprises the following main modules: (i) Role & User Modelling, (ii) Collaboration Space (with features for reasoning support and visualization of collaboration, and multiple spaces representing distinct phases of a collaborative process), (iii) Content Repository (with a universal reference mechanism to the knowledge sources used), (iv) Awareness & Notification that provide pervasive services to users such as notifications and recommendations of resources. For the current progress of the development of each of the above modules, see [29].

The following figure depicts this conceptual architecture.

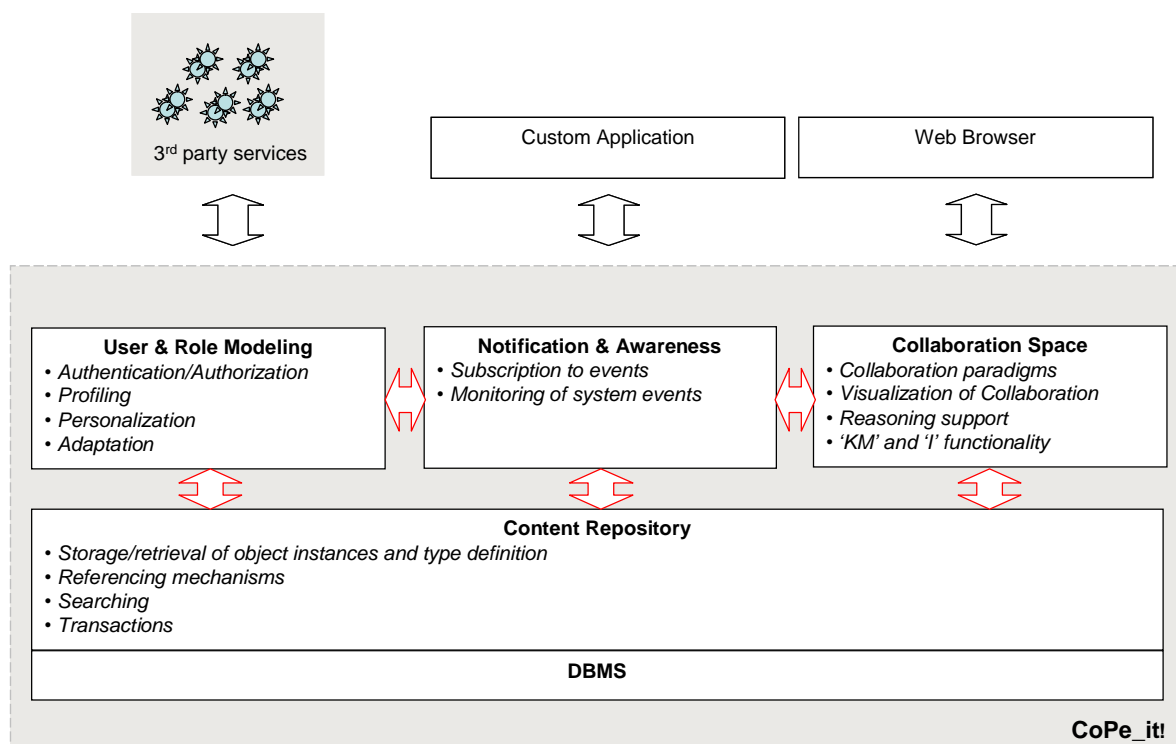


Figure 3: Architecture of argumentative collaboration services

5. References

- [1]. Gongla, P. and Rizzuto, (2001) C.R. Evolving communities of practice: IBM Global Services experience. *IBM Systems Journal* 40(4):842-862.
- [2]. Hoadley, C.M. and Kilner, P.G. (2005). Using Technology to Transform Communities of Practice into Knowledge-Building Communities. *SIGGROUP Bulletin*, Vol.25, No 1, pp. 31-40.
- [3]. Steeples, C. and Goodyear, P. (1999) Enabling Professional Learning in Distributed Communities of Practice: Descriptors for Multimedia Objects. *Journal of Network and Computer Applications*, Vol. 22, pp. 133-145
- [4]. Wenger, E. (1998). *Communities of practice: Learning, Meaning and Identity*. Cambridge University Press.
- [5]. Wenger, E. and Snyder, W. (2000). Communities of Practice: The organizational frontier. *Harvard Business Review*, Vol. 78, pp. 139-145.
- [6]. Conklin, E.J. and Begeman, M.L. (1987). gIBIS: A hypertext tool for team design deliberation. In *Proceedings of the Hypertext'89 Conference*, ACM Press, New York, pp. 247-252.
- [7]. Fischer, G., McCall, R. and Morch, A. (1989). JANUS: Integrating hypertext with a knowledge-based design environment. In *Proceedings of the Hypertext'89 Conference*, ACM Press, New York, 105-117 (1989).
- [8]. Jonassen, D.H. and Carr, C.S. (2000). Mindtools: Affording multiple representations for learning. In Lajoie S.P. (Ed.), *Computers as cognitive tools II: No more walls: Theory change, paradigm shifts and their influence on the use of computers for instructional purposes*. Mahwah, NJ: Erlbaum, pp. 165-196.
- [9]. Karacapilidis, N. and Papadias, D. (2001) Computer supported argumentation and collaborative decision making: The HERMES system. *Information Systems*, Vol. 26, No 4, pp. 259-277.
- [10]. Lee, J. (1990). SIBYL: A tool for managing group decision rationale. In *Proceedings of the CSCW'90 Conference*, ACM Press, New York, pp. 79-92.
- [11]. Reed, C. and Rowe, G. (2001). Araucaria: Software for puzzles in argument diagramming and XML. Technical Report, Dept. of Applied Computing, University of Dundee.
- [12]. Selvin, A.M. and Sierhuis, M. (1999). Case studies of project compendium in different organizations. In *Proceedings of Computer-Supported Collaborative Argumentation for Learning Communities Workshop held at Computer-Supported Collaborative Learning'99*, Stanford, CA.
- [13]. Smolensky, P., Fox, B., King, R. and Lewis, C. (1987). Computer-aided reasoned discourse, or how to argue with a computer. In Guindon, R. (Ed.) *Cognitive Science and its Applications for Human-Computer Interaction*, Erlbaum, Hillsdale, NJ, pp. 109-162
- [14]. Streit, N., Hannemann, J. and Thuring, M. (1989). From ideas and arguments to hyperdocuments: Travelling through activity spaces. In *Proceedings of the Hypertext'89 Conference*, ACM Press, New York, pp. 343-364.
- [15]. Suthers, D. Weiner, A. Connelly J. and Paolucci M. (1995). Belvedere: Engaging students in critical discussion of science and public policy issues. In *Proceedings of the 7th World*

Appendices

Appendix A. Relations between CoPs needs and the foreseen features & functionalities³

| CoP | features and functionalities | | | | | | | | | | | | |
|--------------------|------------------------------|---------------|-------------------|---------------|-------------------------|------------------------------------|-----------------------|------------------|-----------------------------|-------------------------------------|---------|-------|--------------------------|
| | collaboration space | user profiles | awareness /alerts | argumentation | common files repository | collaborative document preparation | personalized services | decision support | after collaboration support | public/private collaboration spaces | website | forum | embedded shared calendar |
| @pretic | | X | X | X | X | | | | | X | | | X |
| Adira/aradel | X | X | X | X | X | X | | | | | | | |
| ePrep | X | X | X | | | | | | | | | | |
| form@hetice | X | X | X | X | X | | X | X | | X | X | X | X |
| BADGE-INT CES - | X | X | X | | | | | X | | | | | |
| odysseia | X | | X | X | X | X | | | | | | | |
| eOmogeneia | X | | X | | | X | | | | | X | X | |
| ux11 | | X | | | | | | | | X | | | |
| lancaster doctoral | X | | X | X | X | X | | | | | X | X | |
| didactic | X | X | | | X | | X | X | | | | | |
| learnNett | X | X | X | X | X | X | X | | X | X | | X | |

³ See Evangelou, C.E. (2007). Cross Analysis Results from the Palette identified CoPs interviews towards the specifications of Collaborative Argumentation Services. Working Document of Task 4.2. Available on line at http://palette.cti.gr/forums.asp?forumid=1&topicid=88&page_no=1

Appendix B. CoPs' practices, wishes and problems: towards the features and functionalities of argumentative collaboration services

| Does /wish /problem Annotation | CoPs' needs | Argumentative collaboration services: features & functionalities |
|---|---|---|
| Source : Form@HETICE, interview(s): 21-04-2006, Synthesis: September 2006 | | |
| does | the group tries to find solutions, gather resources and advices, imagine new ways of doing, etc. | mediation services argumentation |
| does | there is a website that provides information on the project, on members, a calendar, general resources coming from plenary meetings, from previous training sessions, forums, specific spaces for thematic groups: there is also a diffusion list within this Mambo-based platform, the group has a forum and a repository tool as well as a list of the members where they explain their projects and their expectations. | website content repository calendar |
| does | Participants also often use email, rarely audio or video conference tools (e.g. skype). | email video conf |
| does | Pleasure to meet and discuss about their professional practices within a "private" space. | private spaces |
| wish | The CoP may need a way to organize its work after the end of the project, maybe a tool for carrying out some main roles of the facilitator (awareness, support for the decision making...) which should be integrated with the wiki tool. | awareness support for the decision making |
| does | Awareness: the list of the participants is available with their contact information, their personal projects and their expectations regarding the group + history of the group (decisions made, previous meetings, etc.) | user profiles |
| does | Repository of documents: organized in 4 categories (documents external to the group, documents for the functioning of the group, documents produced by the group, presentation of the personal experiences) | content repository |
| does | Forum (entitled "Optional tool for exchanges within the group"): used during a few days for discussing about what could be an action-research of the group | forum |
| does | A basic calendar of the f2f meetings with links towards the agenda | calendar |
| does | List of links towards interesting external websites. | related links à website |
| does | the writing of a text describing a "mini action-research" to be conducted by the group. A page "Debates" is open for collecting the opinions of the members about specific questions (objectives, methodology, grid of analysis...) The common writing of an "implementation guide of permanent access training into a High School". This document gathers the experiences of the CoP's members on different issues: technical, pedagogical, organizational, institutional... The tool has been extensively used during a few months for sharing ideas and debating. | argumentation |
| does | For the description of the action-research, two pages have been created: one for the description and one entitled "Debates" with a list of specific questions and were the members can add their first names with a comment. The comments are then debated during the monthly face-to-face meetings. The description is enhanced little by little by the members following the decisions made during the face-to-face meetings. | pre- mediation support argumentation awareness |
| wish | use of a wiki has made the participants very enthusiast but some technical solutions could enhance the use of the tool: • the possibility to add files and images (not possible for the moment due to server restrictions), • the wiki is also used as a tool for debates (a specific page is devoted to this and the "discussion" pages of the wiki are used): would it be easier or more relevant to us a forum integrated in the wiki? | mediation support argumentation awareness content repository |
| does | Activity of coordination/facilitation of the collaboration (Mediation/Collaboration) The facilitator carries out several roles: • expertise in ICT for teaching and learning, • support for the social enrolment of the members, • keeping up with the domain of ICT in Higher Education, • support for the decision making, • participation in the documents writing, • provides a framework and tools, • promotes the expertise of each member, • creates personal links between the members or with external people. | personalization |
| wish | The CoP may need a way to organize its work after the end of the project, maybe a tool for carrying out some main roles of the facilitator (awareness, support for the decision making...) which should be integrated with | personalization mediation support |

| | | |
|---|---|--|
| | the wiki tool. | argumentation awareness decision support |
| Source : eOmogeneia, interview(s): 30 May, synthesis: 22 Sept. | | |
| does | Distance trainings (web-based synchronous teaching environment + discussion forum (but their rather used their own personal e-mails accounts) | mediation support discussion forum argumentation awareness |
| wish | need for tools as chat rooms or for tools of collaborative creation of knowledge | mediation support awareness |
| wish | To participate to a training (members very involved) To exchange educational resources or discuss via the forum (not very dynamic, partly because of the short duration of the program and also because the labs were not often accessible after the end of school) | knowledge reuse mediation support awareness |
| Source: Odysseia, interview(s): 30 May, synthesis: 22 Sept. | | |
| does | Environment = e-mail list To exchange educational resources, to discuss problems, to find solutions through collaboration | integration of e-mail mediation support awareness content repository |
| does | e-mail tools collaboration and negotiation process, but it was not so advanced but they could use more complex environments | integration of e-mail mediation support awareness argumentation |
| wish | The needs have increased, and they need more than just a mailing-list, for example libraries (KM), discussion forums and chat rooms (Mediation). They would like to know about all the possible tools that could be employed by their CoP. Need for developing collaborativeness to be able to produce new materials collaboratively. | mediation support awareness argumentation |
| Source: Learn-Nett, interview(s): 05/24/2006 06/01/2006, synthesis: June and Sept. 2006 | | |
| does/wish | 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. We try to explicit the implicit rules, concepts and methods used in this learning activity. | integrate video conf mediation support awareness argumentation content repository |
| does | also interact with an audio-conferencing 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), audio-conferencing system (to regulate the tutors' tasks during the course) and a virtual environment "Moodle" | integrate video conf integrate e-mail |
| does | the forum 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. | integrate video conf integrate e-mail integrate forum private communication space |
| does | 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. | pre-mediation support content repository |
| Does/ problem | 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. | integrate forum user profiles private communication space personalization authorization |
| wish | to have a private space for the tutors because the platform Galanet does not provide such space. | user profiles private communication space personalization authorization |

| | | |
|---|---|---|
| does | Examples of discussion in the forum: <ul style="list-style-type: none"> • 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. <p>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.</p> | personalization authorization |
| does | 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. | integrate video conf integrate e-mail integrate forum |
| does | Three kind of actors produce tools: students, coordinator of the project and the group of tutors of students groups and local coordinators. | user profiles |
| does | Four types of actors are grouped in two categories: "Everybody" and the "Executive committee" for avoiding too much links between actors and tools. | user profiles |
| does | 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. | resources reuse content repository summaries/synthesis |
| problems | 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. | user profiles private communication space personalization authorization |
| wish | Some questions: <ul style="list-style-type: none"> • How to better organize or provide useful tools for sustaining the orphan activities? | interoperability |
| does | 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) | decision making support mediation coordination |
| wish | Some questions: <ul style="list-style-type: none"> • 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? | decision making support awareness |
| wish | 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. | decision making support |
| Source: ePrep, ppt by Nathalie VAN DE WIELE | | |
| does | Three layers the core 20 or 30 people specially involved in ePrep activities (the ICT Commission of CPGE teachers, the steering committees or programme committees of the ePrep Workshops...) near the core | user profiles |

| | | |
|---|---|---|
| | 150 or 200 people meeting and working together during the ePrep Workshops or other ePrep activities beyond | |
| does | Mission to promote, coordinate and develop actions, | |
| does | Activities International ePrep Workshop every two years - thematic Workshops more often ePrep.org Website Watch activities (ePrep Newsletter) Studies and researches | pre-meetings mediation support ?? |
| Source: ADIRA, Interview with the General Secretary of the Association – July, 20th, 2006 | | |
| wish | the objective of developing awareness went mainly through training actions. | awareness |
| does | There is a lot of freedom in how people are engaged. There are no obligations. Some people pay their membership but participate very little. They only receive the documents that are produced and seem to be satisfied with that. | user profiles |
| does | There are about ten groups working in parallel at one moment; each one gathering about 15 people on average First kind of group: permanent groups. Second kind of groups: thematic groups. Creating new groups: generally at the initiative of one or two members. Once a work group has finished its work, its production is available via the web site and presented in a dedicated event. Events: they are used to integrate members in the network. | user profiles authentication awareness |
| does | Participants come mainly to find practices. There is a good sharing of practice in the work groups. | mediation support argumentation |
| wish | ADIRA does not dismiss the possibility of opening internal debates, which was not the case up to now. Some important but not so attractive topics, like the statutes of the association, do not motivate enough people to have them present at the assembly. Tools for deliberating at distance could be interesting. There could be some interest from a group of participant to start a discussion after a conference, which would require keeping track of it. On the other hand, the fact that there is no recording of the discussion gives more freedom to express opinions. Some people would not talk otherwise. | mediation support argumentation awareness |
| does | The moderator knows members pretty well, and knows who could be interested in one initiative or the other. She can rely on those who "carry on" the work groups, inform people, and make links between them. | user profile mediation facilitation |
| wish | intelligent tools able to sustain reflection | user profile mediation facilitation |
| Source: ADIRA – ARADE, Thematic Work-groups, October, 25, 2006 | | |
| need /wish | to maintain the members' list and members' info sheets | user profile |
| need /wish | to publish/share the meetings schedule | awareness, alert user profile |
| need /wish | to call the members to meetings, to publish the agenda | awareness, alert user profile |
| | to publish/share meetings reports | awareness collaboration space |
| need /wish | to publish/share/store/retrieve information (documents of diverse kinds, links, reports, actions related to the work-group activities, videos, etc.) | content repository |
| need /wish | to create documents collaboratively | integration to groupTextEditors (e.g. writly) |
| need /wish | to debate about questions out of the f2f meetings | argumentation |
| need /wish | to send letters (mails) outside the group | e-mail integration |
| need /wish | to produce the final document, both paper (format may be specified by the association) and electronic (compatible to website charter) versions | |
| Source: Lancaster Doctoral Programme, synthesis: 7th June 2006 | | |
| does | There is interaction via email and a virtual learning environment between residentials and via the submission of assignments by participants who then receive feedback from the tutors. These assignments are all essay-based and range from short (1000 words) reflective pieces on the relation between professional practice and literature on professional practice and publishable journal articles of 5-7000 words. | integrate e-mail content repository |
| does | Environment (LUVLE) to allow students' to access course materials and for on-line discussions, which are | integrate e-mail |

| | | |
|---------------------------|---|---|
| | either forum or café style discussions. | integrate forum |
| does | There are currently no formalised and systemised archive systems beyond the keeping of copies of students' assignments and tutor feedback on these assignments. Each cohort gains access to the work of previous cohorts in the form of copies of anonymous sample assignments. The LUVLE sites are only accessible to registered users | content repository |
| does | Lancaster University Virtual Learning Environment – main discussion section This is used to discuss issues that arise for students in between the residentials It is used to raise questions about assignments, for students to suggest potentially useful resources to each other. They can import these resources into the VLE. It has been chosen because it is the virtual learning environment that is used throughout Lancaster University and as such was the most suitable vehicle to allow on-line discussions to take place. | argumentation mediation content repository |
| does | The CoP uses the LUVLE site to share information about readings and resources that they have come across. | awareness integrate site |
| problem | Not all students are confident in using LUVLE. Some find the format of the general discussion section quite difficult to interact with and find the presentation of the discussion threads unwieldy. | user friendliness |
| does | The students are given preliminary readings for each of the residentials. These are often accompanied with a note from the tutor outlining how they would like the students to approach the reading. | annotation |
| wish | An integrated system for copyright clearance and easy access to documents uploaded onto the virtual learning environment. These articles are normally text based research articles relating to researching Higher Education. | copyright ?? |
| does | Feedback on prelims. For their assignments for the core modules, which need to be of publishable quality, students first submit a draft assignment which is called a prelim. They then receive formative feedback on this assignment before they submit the final assignment. | rounds of collaborative work |
| problem | In some cases students misinterpret the feedback that they receive | ontologies |
| wish | For a simple assignment submission system, that also allows the tutors to provide online comments on the students' work | annotation |
| problem | For the f2f meetings to present progress. Not all students and tutors are able to attend these | asynchronous & distant communication |
| wish | It would be helpful to have an on-line version of these presentations that students can update over time and receive ongoing feedback on from their peers and from tutors. These presentations could be loaded onto the VLE but it would be would good if there was a tool to track work in progress so that the students and tutors could see how students ideas change in response to the discussions of their work. | content repository versioning mediation support |
| Source: @pretic Synthesis | | |
| does/pr oblem | A few members try to manage and structure information, knowledge, experience, but without success because the tools they used are limited and not very user-friendly. | user friendliness |
| does | diffusion list Very often, when a member put a question on the list, he get the same day, and a couple of days later, a lot of answers. Generally, the interveners adapt and correct the answers and sometimes, somebody summarize. | mediation support awareness |
| does/ problem | No archives. The contents are not very structured and reified. | content repository |
| problem | Each member is a bit isolated in his scholar establishment. | mediation support |
| does | Website for external visibility and the mailing-list for internal coordination / communication. | interoperability with mail provider |
| does | information sharing activity consists of well delimited periods of time. This happen when a resource person belonging to the @pretic community want to teach to the student the use of ICT (2) or try to elaborate course (for themselves or their colleague) with the use of ICT (3). | user profiles mediation support argumentation awareness time scheduling |
| problem | This is not easy to find the useful information elaborated through discussion in the mailing-list, because the information is not well organized. A solution could consist of a tool for managing discussion. Even if there are a lot of very useful and valuable information shared in the mailing-list, they are not enough diffused (maybe awareness functionalities could be useful). | user profiles mediation support argumentation awareness |
| does | In this community, the KM and Mediation/Collaboration activities consist in the participation of members to the Mailing-List. Through this medium, they exchange information, collaborate and create new knowledge. | user profiles mediation support argumentation awareness |
| problem | It's difficult to retrieve information because the archives are not easily accessible. The information are substantial but not synthesized. There is only one person that is allowed to edit the Website Apretic. Even if the information is valuable, there are not enough diffused. | information reuse diffusion annotation editing ... |
| wish | They need a tool that could help them to easily archive, synthesize, and retrieve the information they share | archive, synthesize, |

| | | |
|---|--|---|
| | through their discussion. They use a lot of specific tools for the management of the cyber media centre. But these tools are not shared among other resource persons because the diffusion is low and local. This could be resolve by better diffusion tools. | and retrieve the information they share through their discussion.--> km-based mediation support |
| Source: BADGE-INT CES – Synthesis, 20 of September 2006 | | |
| actors | There are three type of people : The CES manager (1 person) The teachers (about 15) And learners (about 6) | user profiles |
| does | Files posted for student information or for the work to be done by the teachers, for instance for practical training Files posted on the Forum, for discussions initiated by teachers or students, with a free choice of the subject, in the respect of the rules for using communication tools inside the INT. emailing from 1 to n emailing from 1 to 1 telephone conferences moderated by a teacher | mediation support argumentation reuse awareness |
| does | Each year, the content of discussion between teachers and students helps teacher to improve their course. | argumentation reuse awareness |
| does /wish | The KM and Mediation / Collaboration activities happened when they must exchange knowledge on the course given online for several reasons: they have homework to do, they need this knowledge for their professional activities. | mediation support |
| Source: Did@ctic, interview with facilitator | | |
| actors | There are participants, trainers, teachers who ask for services to the Centre, the students | user profiles |
| wish | - a regret for not going further into the concretisation of what is expressed in these groups. - On one side, they regret not to have concrete tools to help them in the implementation of the possible solutions that emerge from the exchanges in the groups. On the other side, they would like to go even further. That is to have a feedback after the concretisation of the possible solutions. That is to pursue this sort of activity. | argumentation reuse decision support awareness |
| wish | - precise objectives of the CoPs (learning groups): to learn, to be inserted into the courses, to make the link with the training projects of the participants, to start from their practise and problems. And through the exchange with pairs, reflexion on these practise, to try to find improvements' ideas, to solve problems they occasionally encountered, to contribute to their professional development | mediation decision making learning |
| problem /wish | a coherence or an organisation is missing, perhaps | |
| problem | one incident between participants and a trainer concerning what was waited in the module. There was an intervention needed. But we knew and could calm it very soon | conflict management |
| does | organisation through activities : training, research, projects' accompaniment, resources diffusion | mediation content repository |
| does /wish decision making | Decision process ?) - A proposition : « it would like to do this because I will soon be facing it”; the very informal vote and decision according to expressed propositions and priorities The only thing we bring is the operation modality, but it could be reviewed, and kind of ethical life rules that are often repeated in order to favour interactions between people | decision making |
| does/wish | meeting of all members of the team ; everybody introduced himself ; this was very useful in order to let know everybody what everybody does, want to do, projects | personalization user profile |
| ??? | regulation meetings with participants and arrival of new scientific collaborators are used as three processes helping the evolution of the CoP, that is the decision process lead to let the CoP Did@cTIC evolve (example for the improvement of the training organisation). | ?? |
| wish | - Confidential data are protected and will never be available from outside - But all the rest should be available to everybody via the web | security, authentication |
| wish | “I was thinking to the module “conflict management” | conflict management |
| problem /wish | (Mediation process to develop a « common understanding » ?) - motivation is the most common, or shared, think between people at the beginning, even if plenty of differences (list in interview). - To make this motivation explicit is part of our mediation process | motivation common understanding |

| | | |
|------------------------|--|---|
| | <ul style="list-style-type: none"> - To profit of the differences by learning from them is also part of it - Motivation + differences => links between people => continuity of work that leads to the creation of a real common understanding (about teaching) | |
| problem /wish | (Other elements concerning mediation) <ul style="list-style-type: none"> - Animation, not imposed is one of them, not imposed and not felt as being imposed - The will to understand the other person and the will of not changing her make the participants feeling they are respected as persons and in their practise - If they change, they are responsible for it | human/machine facilitation-intervention |
| problem /wish | (Other elements concerning mediation) <ul style="list-style-type: none"> - example of a participant who did not change his representation about learning because of the training. the mediation process is more to vary the different methods of learning so that he can find the one he wants. We did not say: come working in groups ; this is good for you. But rather: come in my office, bring your project and I will help you. - Mediation thus tries to take diversity into account and not to impose a single way to see or do the things, etc. | personalization |
| problem /wish | (Conclusive remarks on mediation) <ul style="list-style-type: none"> - There is a very large proposition of mediation so that people come and choose the one he thinks is efficient or come and discover another one. 1. Yes but according to his decision... and his characteristics. | personalization |
| problem | missing a hierarchical support as regards to learning | structure |
| problem | Too many tools that are not connected, integrated. Always another place and tool for another document and function. This is already difficult for us, using them everyday. But for people who use the tools from time to time. Forget it! | interoperability |
| wish | Tools to let communication efficient between members of the CoP Did@cTIC to manage participation to the training, mailing lists, asks for supports, etc. and to avoid the repetition of the same operation | mediation services |
| wish | Software of Knowledge management would be THE NEED | km-based mediation support |
| Source: ux11 synthesis | | |
| problem | Students don't like to post on the forum because they feel it's pretty oppressive - teachers are spying them and they don't like it. So they prefer to use the phone or their own tools (like MSN) to communicate with other students, whereas they directly ask questions to the teacher during practical training for unanswered questions. These tools are problematic not because of their lag of usability or functionalities, but because of their social uses. | user profiles private spaces |
| | There is a predefined procedure (4 rules) that is encouraged by teachers, but it appears that it prevents the students from collaborating in constructive way on the forum because they feel they are permanently lurked and evaluated by teachers. | user profiles private spaces |
| wishes | The clarification of the evaluation's criteria (for example : participation on the forum is not taking into account for the evaluation) | user profiles private spaces |
| wishes | That the tracing tools would be use for tracing the teacher too (there is a technical solution (for example tools provided by MediaWiki) | user profiles private spaces logs |
| wishes | The activities of the collaboration between students develop themselves in an "temporary autonomous zone" which would be unreachable by teachers. This is what actually happens with the use of their own tools (Phone, and MSN). | user profiles private spaces |