

First operational version of the web-based tool supporting argumentative collaboration towards learning

Nikos Karacapilidis, Manolis Tzagarakis, Dora Nousia, Vassilis Kallistros, Spyros Christodoulou, Nikos Karousos, George Gkotsis, Christos Mettouris, Panayiotis Kyriakou, Tassos Matos, et al.

▶ **To cite this version:**

Nikos Karacapilidis, Manolis Tzagarakis, Dora Nousia, Vassilis Kallistros, Spyros Christodoulou, et al.. First operational version of the web-based tool supporting argumentative collaboration towards learning. 2007. hal-00257169

HAL Id: hal-00257169

https://telearn.hal.science/hal-00257169

Submitted on 18 Feb 2008

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Palette
Pedagogically sustained Adaptive Learning through the Exploitation of Tacit and Explicit Knowledge

Information Society Technologies

Project no. FP6-028038

Palette

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

Instrument: Integrated Project

Thematic Priority: Technology-enhanced learning

D.MED.02 – First operational version of the web-based tool supporting argumentative collaboration towards learning

Due date of deliverable: July 31, 2007
Actual submission date: September 14, 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		
P	Public	**PU**

Keyword List: Collaboration Services, Argumentative Collaboration, CoPe_it!
Responsible partner: CTI

MODIFICATION CONTROL			
Version	***Date***	***Status***	***Modifications made by***
1.0	July 31, 2007	Draft	CTI (version sent to 2 evaluators)
2.0	September 5, 2007	Draft	CTI (version sent to the SC)
3.0	September 13, 2007	Final	CTI (version sent to SCO and AFC)

Deliverable manager

- Nikos Karacapilidis, CTI

List of Contributors

- Nikos Karacapilidis, CTI
- Manolis Tzagarakis, CTI
- Dora Nousia, CTI
- Vassilis Kallistros, CTI
- Spyros Christodoulou, CTI
- Nikos Karousos, CTI
- George Gkotsis, CTI
- Christos Mettouris, CTI
- Panayiotis Kyriakou, CTI
- Tassos Matos, CTI
- Anna De Liddo, CTI

List of Evaluators

- Christine Vanoirbeek, EPFL
- Bernadette Charlier, UNIFR

Executive Summary

This document reports on the first operational version of CoPe_it!, the web-based tool supporting argumentative collaboration towards learning, which is being developed in the context of the Palette project. CoPe_it! is available on the web, at http://copeit.cti.gr. We present the functionality of the tool, the basic concepts behind it, as well as the various views and projections available for the visualization of the argumentative process. Some first results from the use of the tool are also provided; these concern two real cases of use of the tool by two distinct CoPs. We conclude with a set of new functionality items, which will be examined for inclusion in the next operational version of the tool.

CoPe_it! implements a series of functional specifications of argumentative collaboration services, which have been described in detail in D.MED.05. It addresses the related CoPs' needs, as these have been identified through the work performed in the context of WP1. Much work has been also performed towards the integration of

the tool with e-Logbook (the current status of integration is reported in detail in D.MED.04).

Table of contents

0. At a glance 5
1. Introduction 7
1.1 Overview 7
1.2 Short History of Development 7
1.3 Our approach towards argumentative collaboration 8
2. Functionality 12
2.1 Participation and Registration 12
2.2 Basic concepts 13
2.3 Description of the environment 14
2.4 Collaborating in workspaces 18
2.5 Workspace management 20
2.6 Views and Projections 21
2.7 System Management 23
3. Use of CoPe_it! 28
3.1 First concrete scenarios of argumentative collaboration through CoPe_it! 28
3.2 Preliminary evaluation remarks 38
4. Future Development Plans 40
5. References 42
Appendix A: Some figures about the tool's active use 43
Appendix B: Towards optimizing performance 44
Appendix C: License & Code information 46
Appendix D: Agenda for one-day training seminar on CoPe_it! 48

0. At a glance

CoPe_it! is a tool that is being implemented in the context of the Palette project

- It offers a series of collaboration services.
- Much attention is being paid to its integration with other tools (developed inside or outside the Palette context).

CoPe_it! is a tool of the "Web 2.0 era".

- It lets members of CoPs easily collaborate by sharing opinions and resources.
- It enables and encourages participation in private or public community workspaces.
- It augments individual and collaborative learning.

With **CoPe_it!**, you can:

- Create a personal or collaborative workspace.
- Join and contribute to a workspace.
- Add and share new content through a workspace.
    - Content may consist of ideas, comments, notes or any other type of multimedia documents that exist on a local PC or around the Internet.
- Explore the existing content of a workspace.
    - Content may be moved around the workspace, thus serving visualization and organization purposes.
    - Content may be meaningfully grouped or interrelated.

CoPe_it! is a simple, scalable and sensible tool.

- Simple interfaces enable even non IT-experienced users to contribute and explore input.
- A scalable approach has been followed to accommodate the diversity of users' requests; features and functionalities offered range from merely human-understandable to machine-interpretable ones.
- Sensible conclusions can be produced by exploiting the diverse views of a workspace.

CoPe_it! fosters the growth of and augments the collaboration within communities.

- It enhances the production and overall management of collective knowledge.
- It builds on an argumentative collaboration approach that allows communities' members to express their point of view on the opinions and resources of a workspace.

To participate: http://copeit.cti.gr

CoPe_it! Quick Guide: http://copeit.cti.gr/site/quickguide.html

1. Introduction

1.1 Overview

CoPe_it! is a web-based tool aiming at assisting and enhancing collaboration activities held among members of Communities of Practice (CoPs). It provides a cognitive argumentation environment which stimulates reflection and discussion among CoPs participants, giving emphasis on the provision of various visualizations (views and projections) of the argumentation discourses, and on the use of reasoning mechanisms in more formal representations of the collaborative workspace. Users may join or create new communities, and collaborate in different (public or private) workspaces. CoPe_it! enables CoPs' members to better organize and depict their points of view in an ongoing knowledge exchange and creation process. Emphasis is given on allowing members of CoPs to assert and elaborate their arguments in varying levels of formality: users may start with an informal (human understandable) assertion of their positions and arguments, while they are then able to refine, structure and link them with those of their peers, using semantics which are also interpretable by the system. This last feature enables the exploitation of advanced decision making support mechanisms.

1.2 Short History of Development

The current release of CoPe_it! (v2.03) was developed from scratch, following the functional specifications described in deliverable D.MED.05. A prototype version of the tool was developed during the first months of Palette, and was available to the project's partners for experimentation (this version is described in deliverable D.MED.01). This prototype had followed a rigid argumentative approach and supported only a tree-like visualization of discussions (one of the projections supported in the current version actually builds on this prototype).

Work being performed towards the development of the tool takes into account the progress and outcomes of WP1 and WP5. More specifically, the development of the tool follows the participatory design methodology and addresses the CoPs needs that

are reflected in the scenarios produced in the context of WP1 (see D.PAR.03). It is also coherent to the functional specifications of services and guidelines for services orchestration that are elaborated in the context of WP5 (see D.IMP.03).

Developers involved in the development of CoPe_it! are: Manolis Tzagarakis, Nikos Karousos, Spyros Christodoulou, George Gkotsis, Vassilis Kallistros, Christos Mettouris, and Panayiotis Kyriakou.

1.3 Our approach towards argumentative collaboration

Effective argumentation, being embedded in the collaborative practices of a community, is essential for its success [de Moor and Aakhus, 2006]. The collaborative practices of CoPs exhibit great fluctuation and range – within a single problem solving task – from initially gathering and collecting information, to structuring and filtering of the collected resources and, finally, to their evaluation in order to make a decision. Hence, systems and infrastructures aiming at supporting argumentative collaboration within CoPs must co-evolve along with the prevailing collaboration practices and forces [Andriessen *et al.*, 2003]. One aspect in collaboration systems that is in particular important during such an evolution is their level of formality.

In most current collaboration systems, the level of formality is rigid and fixed, without offering the ability to be changed or modified. By the term formality, we refer to all the procedures that prescribe and in essence constrain the users' collaborative actions. This may refer to both the system-supported actions a user may perform (e.g. types of discourse or collaboration acts), and the system-supported types of argumentative collaboration objects (e.g. one has to strictly characterize a collaboration object as an idea or a position). The fixed level of formality in systems supporting collaboration not only prohibits their ability to support the changing needs of CoPs, but it has been also the source for errors and misuses, basically due to the overhead involved in getting acquainted with the corresponding formalism [Marshall and Shipman, 1997; Shipman and Marshall, 1994].

CoPe_it! attempts to overcome such issues by permitting a varying level of formality, so that the tool co-evolves with the needs of CoPs. Variations may either be imposed

by the nature of the task at hand (e.g. decision making, joint deliberation, persuasion, inquiry, negotiation, conflict resolution), the particular context of the collaboration (e.g. legal reasoning, medical decision making, public policy making), or the group of people who collaborate each time (i.e. how comfortable people feel with the use of a certain technology or formalism). The above advocate an *incremental formalization approach*, which has been thoroughly adopted in the development of CoPe_it! [Shipman and McCall, 1994].

In CoPe_it!, projections constitute the "vehicle" that permits incremental formalization of argumentative collaboration (Figure 1). A *projection* can be defined as a particular representation of the collaboration space, in which a consistent set of abstractions able to solve a particular organizational problem during argumentative collaboration is available. With the term abstraction, we refer to the particular knowledge items, relationships and actions that are supported through a particular projection, and with which a particular problem can be represented, elaborated and - ultimately - be solved. The adopted approach enables the switching from a projection to another, during which abstractions of a certain formality level are transformed to the appropriate abstractions of another formality level. This transformation is rule-based; such rules can be defined by users and/or the facilitator of the collaboration and reflect the evolution of a community's collaboration needs. According to our approach, it is up to the community to exploit one or more projections of a collaboration space (upon users' needs and expertise, as well as the overall collaboration context).

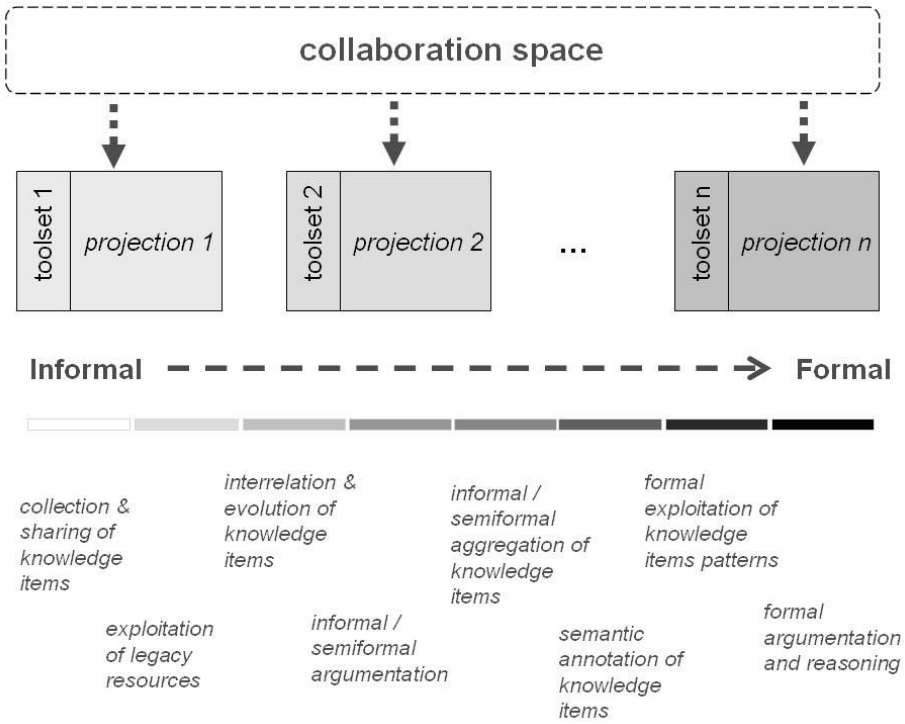


Figure 1: Incremental formalization in CoPe_It!

Each projection of the collaboration space provides the necessary mechanisms to support a particular level of formality (e.g. projection_1 may cover only needs concerning collection / sharing of knowledge items and exploitation of legacy resources, whereas projection_n may cover the full spectrum of the functionalities shown at the bottom part of Figure 1). The more informal a projection is, the more easiness-of-use is implied; at the same time, the actions that users may perform are intuitive and not time consuming (e.g. drag-and-drop a document to a shared collaboration space). Informality is associated with generic types of actions and resources, as well as implicit relationships between them. However, the overall context is human (and not system) interpretable. On the other hand, the more formal a projection is, easiness-of-use is reduced (users may have to go through a long training session or read lengthy manuals in order to comprehend and get familiar with sophisticated system features); actions permitted are less and less intuitive and more time consuming. Formality is associated with fixed types of actions, as well as explicit relationships between them. The overall context in this case is both human and system interpretable.

As derives from the above, the aim of an informal projection of the collaboration space is to provide users with the means to structure and organize knowledge items

easily, and in a way that conveys semantics to them. Generally speaking, informal projections may support an unbound number of knowledge item types (e.g. comment, idea, note, resource). Moreover, users may create any relationship among these items (there are no fixed relationship types); hence, relationship types may express agreement, disagreement, support, request for refinement, contradiction etc. Informal projections may also provide abstraction mechanisms that allow the creation of new abstractions out of existing ones. Abstraction mechanisms include: (i) annotation and metadata (i.e. the ability to annotate instances of various knowledge items and add or modify metadata); (ii) aggregation (i.e. the ability to group a set of instances of knowledge items so as to be handled as a single conceptual entity; this may lead to cases where a set of knowledge items can be considered separately, but still in relation to the context of a particular collaboration); (iii) generalization/specialization (i.e. the ability to create semantically coarse or more detailed knowledge items in order to help users manage information pollution of the collaboration space); (iv) patterns (i.e. the ability to specify instances of interconnections between knowledge items of the same or a different type, and accordingly define "collaboration templates"). An informal projection also aims at supporting the *information triage* process [Marshall and Shipman, 1997]. It is the informal nature of this projection that permits such an ordinary and unconditioned evolution of knowledge structures. While such a way of dealing with knowledge resources is conceptually close to practices that humans use in their everyday environment (e.g. their desk), it is inconvenient in situations where support for advanced decision making processes must be provided. Such capabilities require knowledge resources and structuring facilities with fixed semantics, which should be understandable and interpretable not only by the users but also by the tool. Hence, decision making processes can be better supported in environments that exhibit a high level of formality. The more formal projections of a collaboration space come to serve such needs.

2. Functionality

Following the functional specifications of CoPe_it!, which were reported in deliverable D.MED.05, the tool supports (in some cases, only partially in the current version): Collaboration Spaces supporting diverse formalization and visualization features, argumentation mechanisms, management of diverse collaboration objects stored in the content repository, a basic search facility, decision making (through a formal projection of the collaboration space), user registration, identification and authorization and, finally, management of users, roles & CoPs. The functionality of the system is described in more detail below.

2.1 Participation and Registration

Users may register in the tool by providing their username, password, e-mail address (mandatory fields), first and last name, photo and address (Figure 2). In the case of a forgotten password, CoPe_it! provides a password reminder service through e-mail. A Quick Guide to the system, related documentation (including technical descriptions and related publications), a "What's new" section (outlining the new features of each tool's release), as well as an evaluation form for users (intended to provide feedback to the development team) are also available in the main tool's web page. Users may also request the tool to remember their credentials, so that they will not have to login again in their following visits. Registration is activated immediately (no approval is required) and an informative e-mail is sent to the registrant's e-mail address.

New users, by default, join a Community named "Earth". This is intended to be an environment that serves the experimentation of new users to the tool's features and overall functionality; a private workspace is automatically created in "Earth" containing a tutorial on CoPe_it! (named "Welcome to CoPe_it!"). A user may collaborate with other users in the public workspaces. Once registered in the system, a user may request to join an existing community or create a new one, awaiting

approval from the Community Leader of the particular community, or the CoPe_it! Administrator, respectively.



Figure 2: Login and Registration

2.2 Basic concepts

Two basic concepts in CoPe_it! are the Community and the Workspace. Around them, three basic roles have been implemented, namely: CoPe_it! Administrator, Community Leader and Community Member (in future releases of the tool, a full-fledged role management system will be available, which will allow dynamic roles to be defined and assigned to users).

CoPe_it! is organized around **Communities**. Each Community has a non-fixed number of **Community Members,** who are all registered users of the system. One or more of the Community Members is/are assigned with the role of **Community Leader.** A Community Leader may accept requests for membership from non-members or invite new members. Collaborative work is being performed in the **Workspaces** (also referred as Collaboration Spaces) of a Community. Each Workspace contains an autonomous thread of collaborative work within the community. All Community Members may create new Workspaces (within the Community), which may be either public or private. Every member may view and author in the public spaces, while only the creator may view his/her space (this last

restriction is expected to be modified in future releases, by allowing the creator of a private space to invite other system users to his/her space).

A special system user is the **CoPe_it! Administrator** who is authorized to create new Communities, assign the role of Community Leader to user(s) and view all workspaces (except private ones). The CoPe_it! Administrator may not be a Community Member.

2.3 Description of the environment

When a user logs in the system, he/she is located in the context of a Community; there is no way to work in the tool outside a Community. Every Workspace belongs to a single Community. An instance of a working environment inside a Community is depicted in Figure 3.

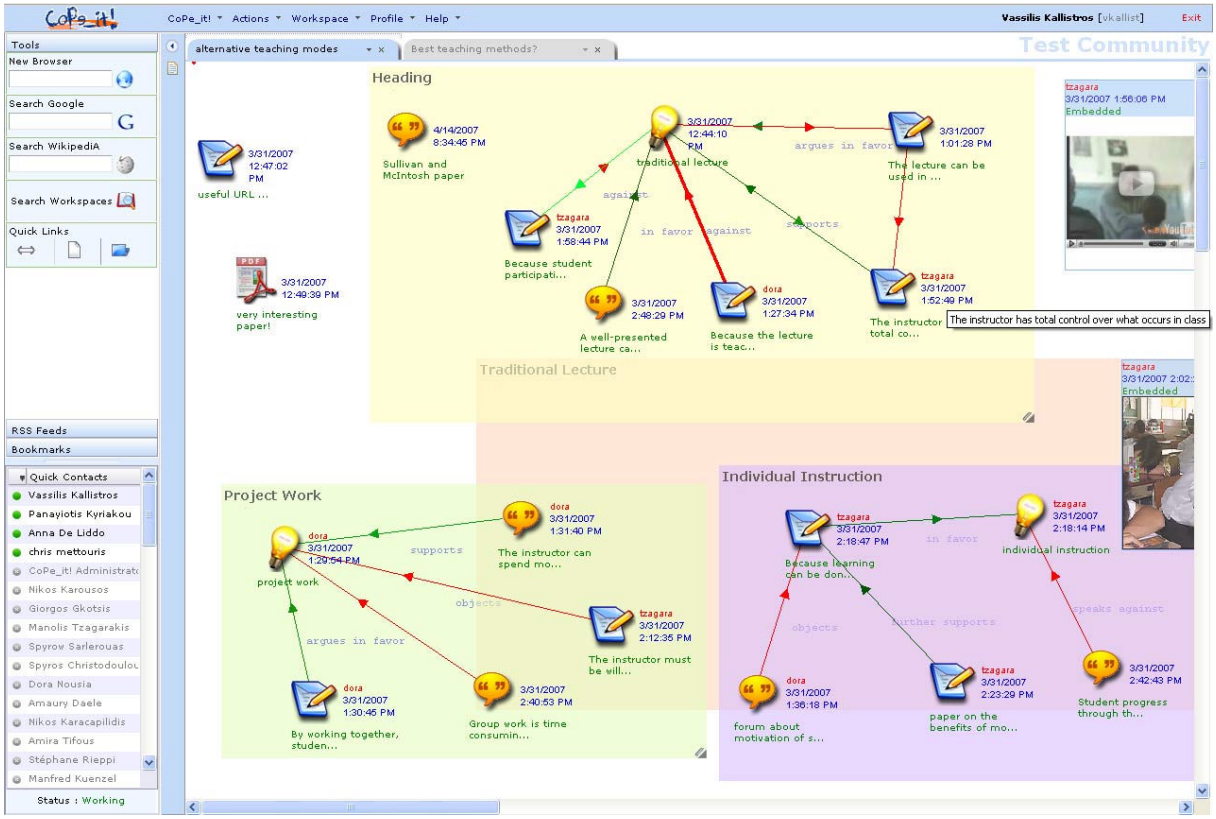


Figure 3: Community Environment

The top horizontal bar contains the tool's basic menu. At the far right part, the full name and username of the logged-in user are displayed. Just below the username, one may see the name of the Community that the user is currently being logged-in. It is possible to switch Communities either from the *Quick Links* or from the *Action* menu. A user may declare the default login Community through the *Profile* menu; this Community could be one of those he/she is member of or the last visited one.

The overall working environment is split into two panes: the right pane is the main working area for the user and contains the workspaces he/she opens and works at. Each open workspace occupies one tab; the user may open/create new workspaces (for the Community that he/she has joined each time) either from the *Quick Links* or from the *Workspace* menu. Changing view within a projection (see *2.6 Views and Projections*) affects the current visualization of the projection, while changing view to another projection creates a new tab (leaving intact the originating tab). The user may also expand this pane to full screen in order to increase his/her working area.

The left pane contains tools which may be particularly useful to a Community Member:

- A basic web browser and search browsers for Google and Wikipedia (Figure 4). The user may find convenient to perform browsing and searching inside CoPe_it! rather than opening an extra internet browser tab/window.



Figure 4: Browsing inside CoPe_it!

- A "Search Workspaces" utility, which currently locates (in a fill-as-you-type mode) the filled-in term in the workspace objects appearing in all the - accessible by the user - workspaces of the Community (Figure 5).

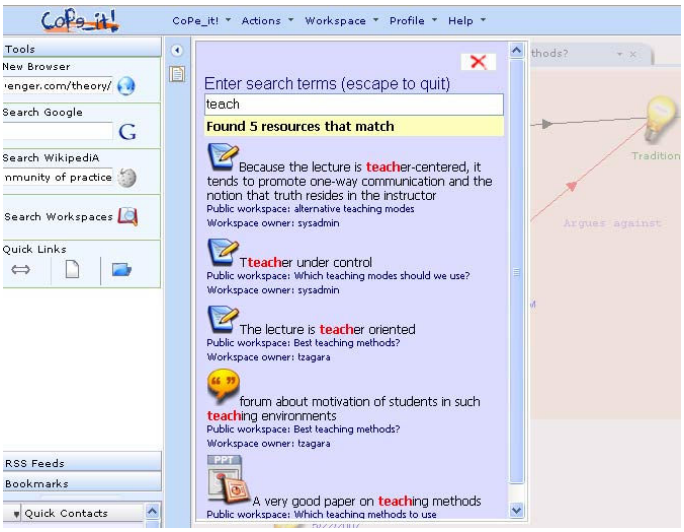


Figure 5: Workspace Search

- A Quick Links bar, which provides a shortcut for functions also available through the top menu.

- An RSS feeds area, where a user may add his/her own links to RSS feeds, open and browse them (Figure 6).

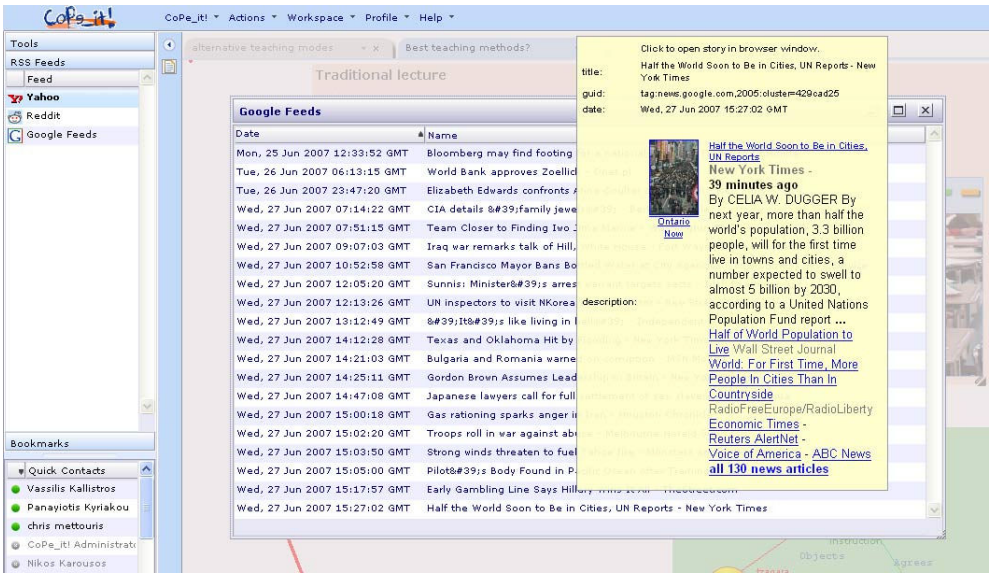


Figure 6: RSS feeds

- A Bookmarks area, where a user may add his/her own bookmarks to web pages and open them through the built-in web browser.

The browsers and RSS feeds appear on the right pane, over the Workspaces on top of a semi-transparent layer. It is possible to hide this layer (in order to work in the Workspaces) and restore it back.

The bottom part of the left pane displays the members of the Community as well as who is online. In future versions, users will also be able to send e-mails and chat with online users. The full environment (open workspaces, browser windows, bookmarks, rss feeds) is auto-saved every 10 minutes and restored upon the next user's visit to CoPe_it!.

2.4 Collaborating in workspaces

Cope_it! workspaces provide a flexible environment for users to collaborate. A user may express his/her opinion by adding a Collaboration Object (also referred as Knowledge Item) on the collaboration space (Figure 7). A Collaboration Object may be a Document, a Comment, an Idea, a Note, or even an embedded object (such as an image or a video).

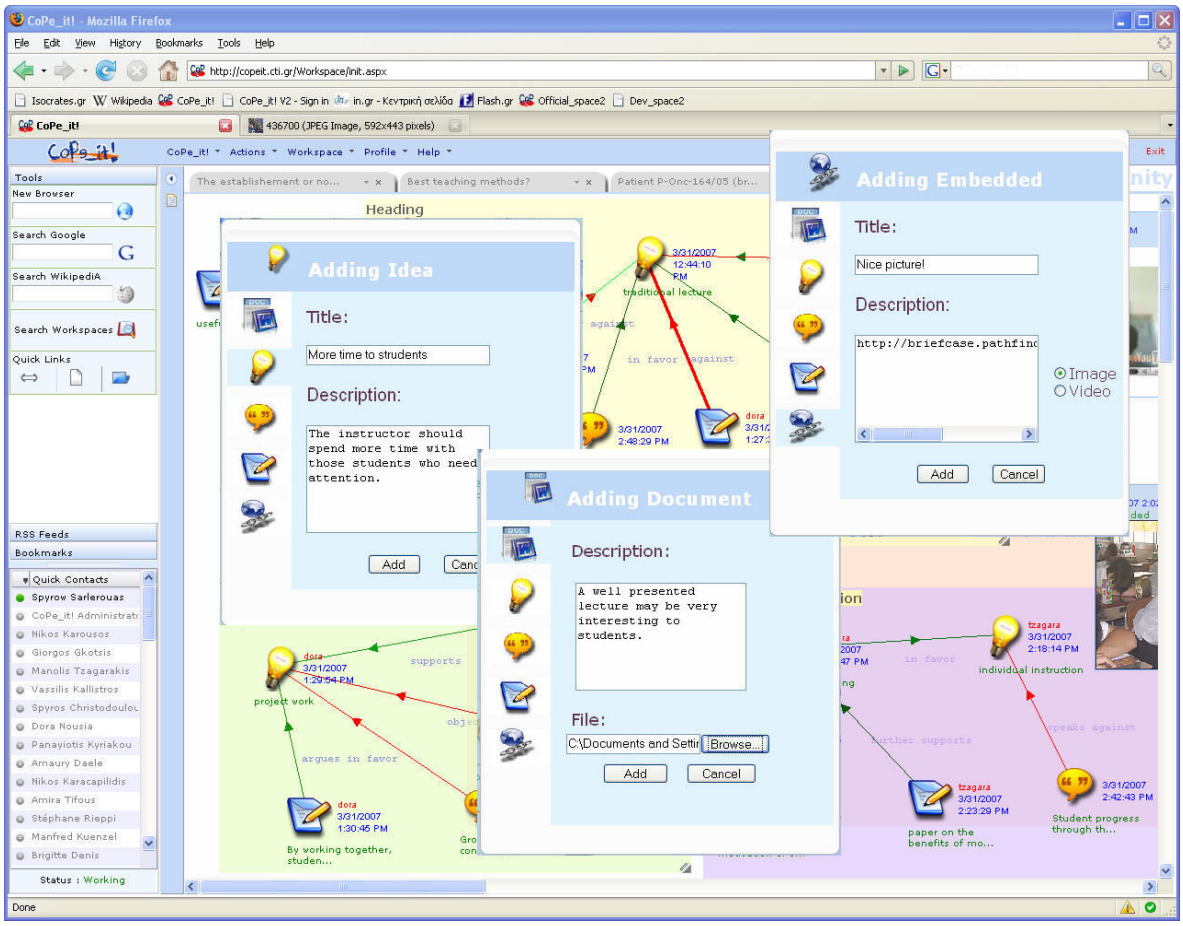


Figure 7: Adding Idea, Document, Embedded Object

Certain types of Collaboration Objects may be efficiently transformed to other types of Collaboration Objects, i.e. a Note may be transformed to an Idea or a Comment and vice versa. A Collaboration Object depiction on a Collaboration Space includes its creation date, the name of the user that created it and the name of the object (granted during the object's insertion process in the Collaboration Space).

Two or more Collaboration Objects may be grouped together using a particular type of adornment. More specifically, colored rectangles can be used to group together

related objects. For instance, such a grouping may be useful in putting together objects that are related to a particular alternative to be considered; in such a way, alternatives may be better identified. The color and title of these adornments are user-defined. Moreover, these adornments may share one or more documents (overlapping adornments, Figure 8)

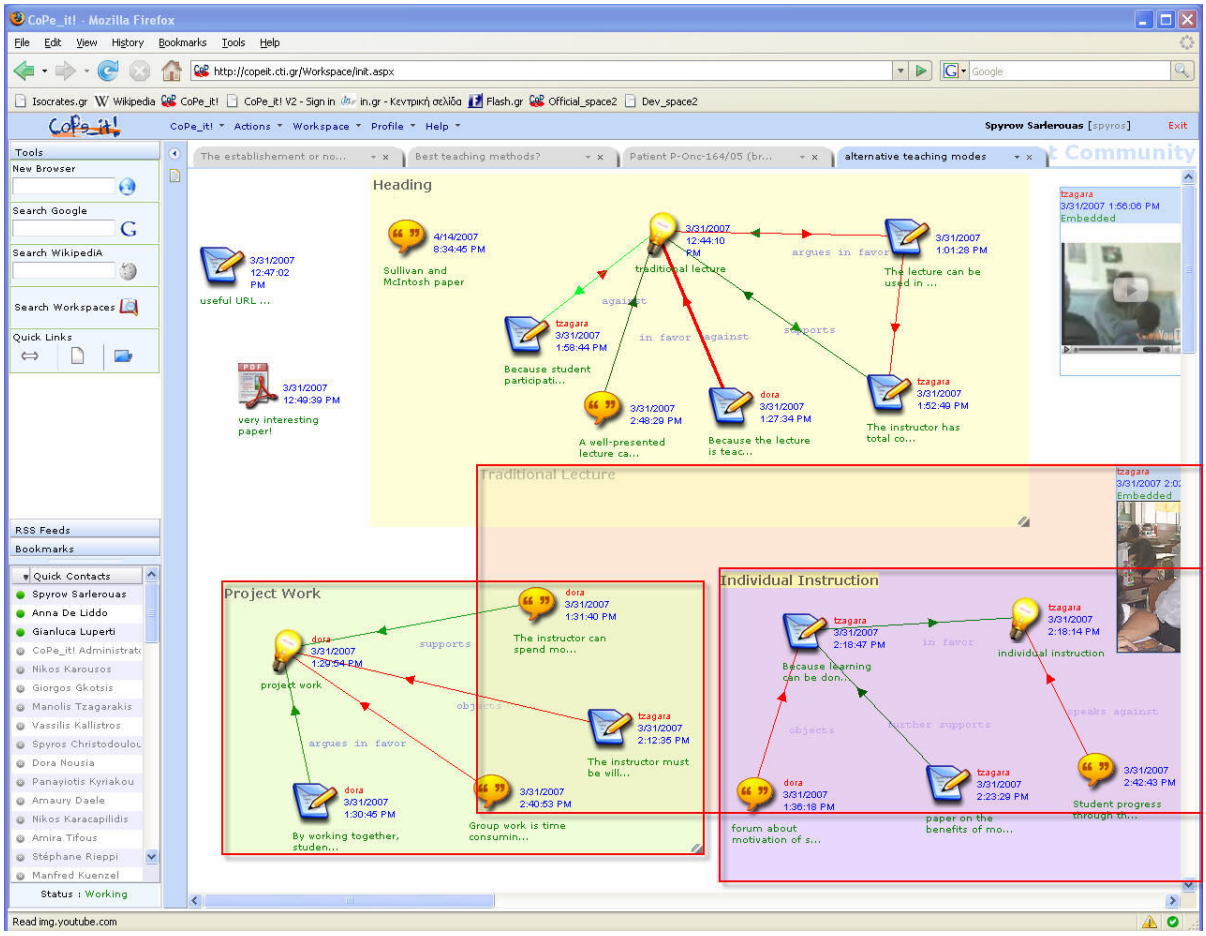


Figure 8: Overlapping adornments

Two Collaboration Objects can be interrelated using connecting arrows. The CoPe_it! user may appropriately choose the width and color of the arrow to express a specific relation between two such objects. For instance, a heavy red arrow connecting two documents, for most users, would denote a strong contradiction. A legend can be also added on the interrelation (link) drawn between the two objects stating further details (thus revealing further the meaning of this interrelation).

2.5 Workspace management

All Community Members are able to create Workspaces (Figure 9) within a Community. A workspace can be either public or private and is identified by the title given during its creation process.

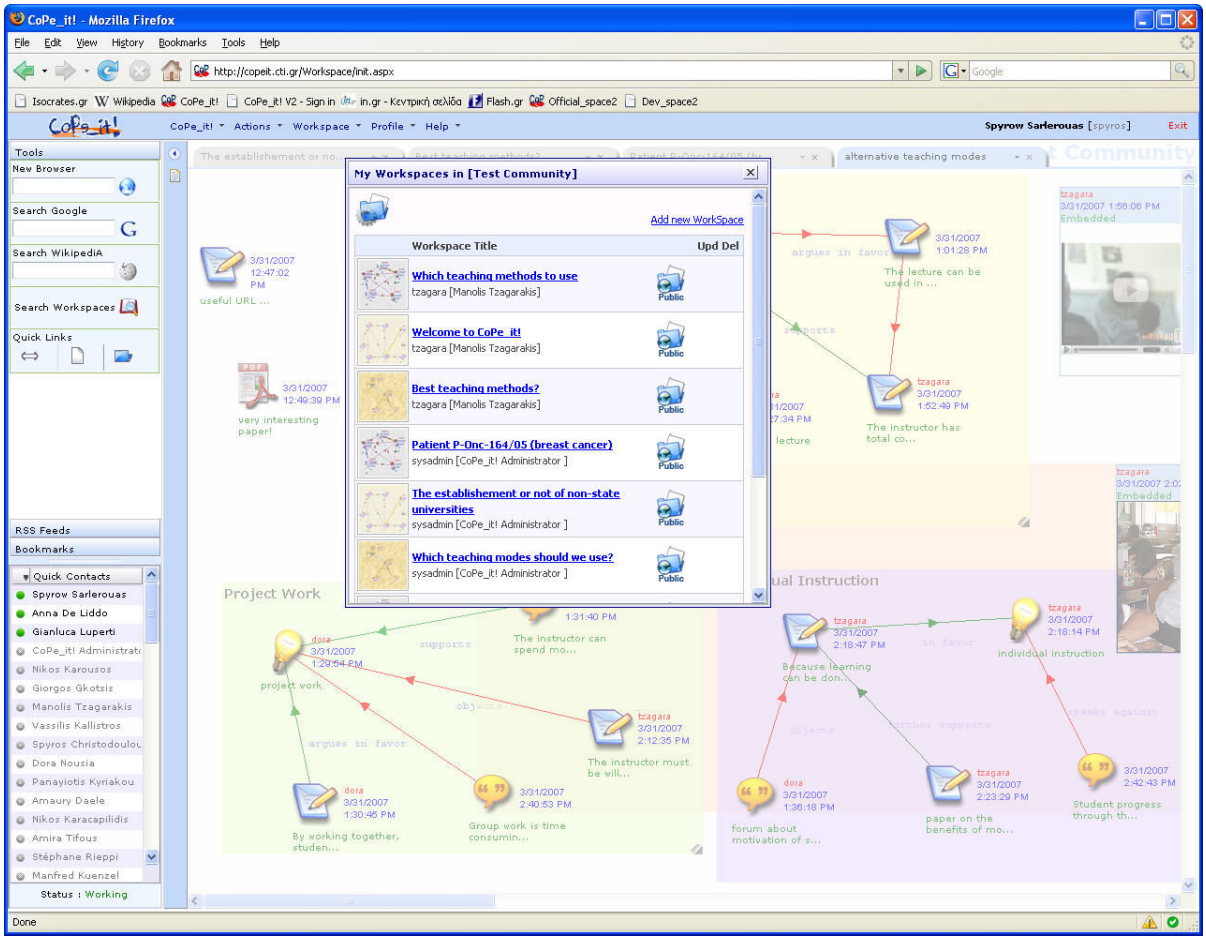


Figure 9: Viewing a community's workspaces

A public workspace is accessible by all community members, while a private workspace may be authored/viewed only by its creator. An authorized CoPe_it! user may access all the public workspaces of a community that he/she is member of, as well as the private workspaces that he/she has created. The creator of a public workspace can transform the workspace to a private one and vice versa. A workspace's title and type (public/private) are editable by workspace creators after their creation.

A workspace can be deleted by the user who created it. Workspace deletion forces the deletion of all the collaboration objects created in the workspace. A workspace can be copied resulting in a new workspace under name “copy of WORKSPACE_NAME” where “WORKSPACE_ NAME” is the name of the initial workspace. A workspace can be also cleared. In such a case, all collaboration objects and interrelations that have been added in the workspace are deleted resulting in a workspace with no objects and interrelations.

2.6 Views and Projections

Within a Workspace, Community Members are able to collaborate by making use of different visualization environments. Alternative *projections* (see also Section *1.3 Our approach towards argumentative collaboration*) will be available during the evolution of the tool. The current version implements two, namely an *informal* and a *formal* one. Each projection consists of its own abstractions, types and actions allowed; in each projection a model is presumed, where information units carry different semantics. Each projection supports a number of *views;* users are able to interact with the environment in *one* of the views of each projection, while the rest views are (currently) read-only visual representations of the projection. All changes made to the “interactive” views are reflected on the same dataset (an exception of the current version is that changes made to the formal projection are not depicted in the views of the informal projection).

- **Desktop view**

  Desktop view (described in *2.4 Collaborating in workspaces*) is the default view of the tool; it is actually the interactive view of the informal projection. Users may insert items of various types through different ways. Users may insert ideas, notes or comments, upload documents or provide links to web resources. Each of these item types is visualized accordingly in a 2D “canvas”. Items may be placed in arbitrary positions through drag and drop actions. Moreover, items may be linked together through relationships, to denote items coherence and/or interrelation. Relationship types may appear in different color and thickness (revealing the type

of relation – such as agreement, opposition, etc. – and its weight or importance), while the related links may be accompanied by a caption.

- **Forum view**

This is a read-only view of the informal projection. Its visualization principles derive from traditional forums. Items are placed one after the other in a vertical direction, with respect to their creation date.

- **Formal view**

This is the interactive view of the formal projection, where formal argumentation discourse takes place. Items of this view may be alternatives, positions or preferences. Positions may support or refute one position or alternative, while preferences weigh the importance of two positions.

The formal view structures the items in a hierarchical way. Items follow a tree structure where the root is the name of the view. Nodes of 2nd degree are actually the ideas being produced in the desktop view. All items linked to the ideas are parsed (like a genetic tree) to complete the tree structure. On the produced tree, the relationship parent-child may be either positive or negative (argument in favor or against). This information is extracted, through parsing relationships in the desktop view (this is performed by following some transformation rules, i.e. a green link refers to a positive argument, the keyword “disagree” refers to a negative argument, etc.).

While working in the formal view, users may add preferences in order to express their opinion about the relative importance of one position over another. The tool (following a scoring mechanism that computes the number of positions and their weights) highlights the dominating (better argued so far) alternative.

- **Context view**

This is a read-only view of the formal projection, depicting the items according to the e-Logbook 3A (actors, activities and assets) model. This view is actually

derived by invoking a web service of the e-Logbook tool. It is currently partially implemented* and not yet available in the current version.

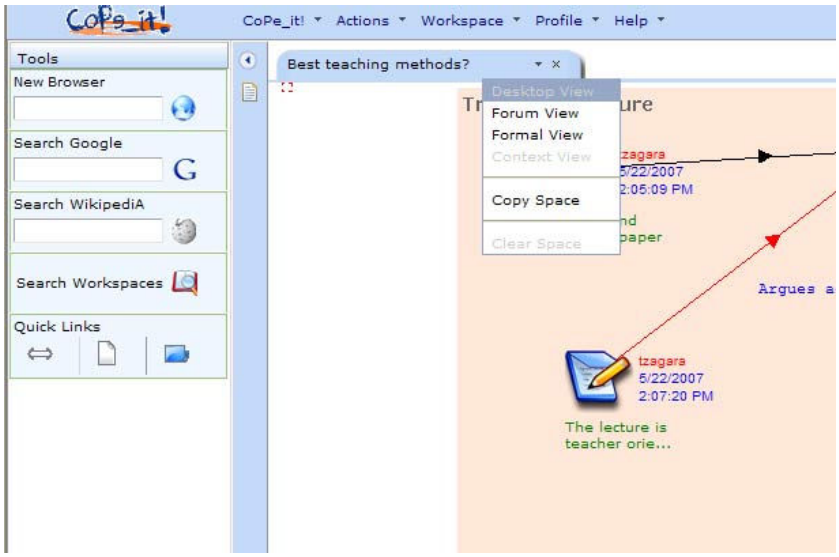


Figure 10: Changing Views

When opening a Workspace, the default view is the Desktop view. After opening a workspace, switching among different views is performed through the context menu located in the tab of the view (Figure 10).

2.7 System Management

Community management in CoPe_it! is currently supported for the CoPe_it! administrator. In particular, the CoPe_it! administrator can create new communities, delete existing ones and modify a community's profile through a community management form that is available on the CoPe_it! main menu (under the CoPe_it! option – see Figure 11). The creation of a new Community can be triggered either directly by the CoPe_it! administrator, or by a user's request for a new Community. Users can easily make a request for a new Community through the "Create new Community" option in the menu (under the CoPe_it! option). In such case, an e-mail is automatically sent to the CoPe_it! administrator, who examines the request and decides whether to proceed to the creation of the Community or reject the user's request.

* A scheme for the integration of e-Logbook and CoPe_it! is presented in deliverable D.MED.04

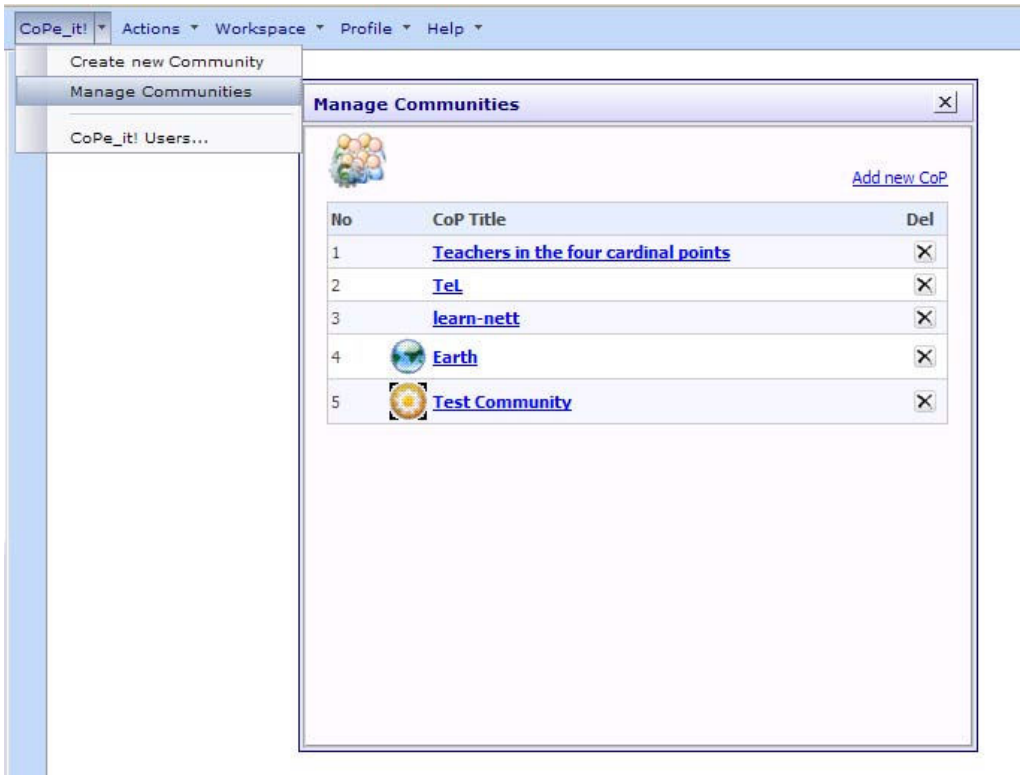


Figure 11: Manage Communities

In order for the members of a new Community to start collaborating, an initial Community leader is required. This assignment is another task of the CoPe_it! administrator and takes place through the "CoPe_it! Users" option under the CoPe_it! selection in the menu (Figure 12). In this form (which is available only for the CoPe_it! administrator), a list of all CoPe_it! users is provided, regardless if they belong to a Community or not. By selecting a user, the CoPe_it! administrator is able to view his/her membership in Communities, assign/de-assign the Community leader role to him/her and add/remove Community membership. Through this form, the CoPe_it! administrator can create or remove a user from CoPe_it! as well.

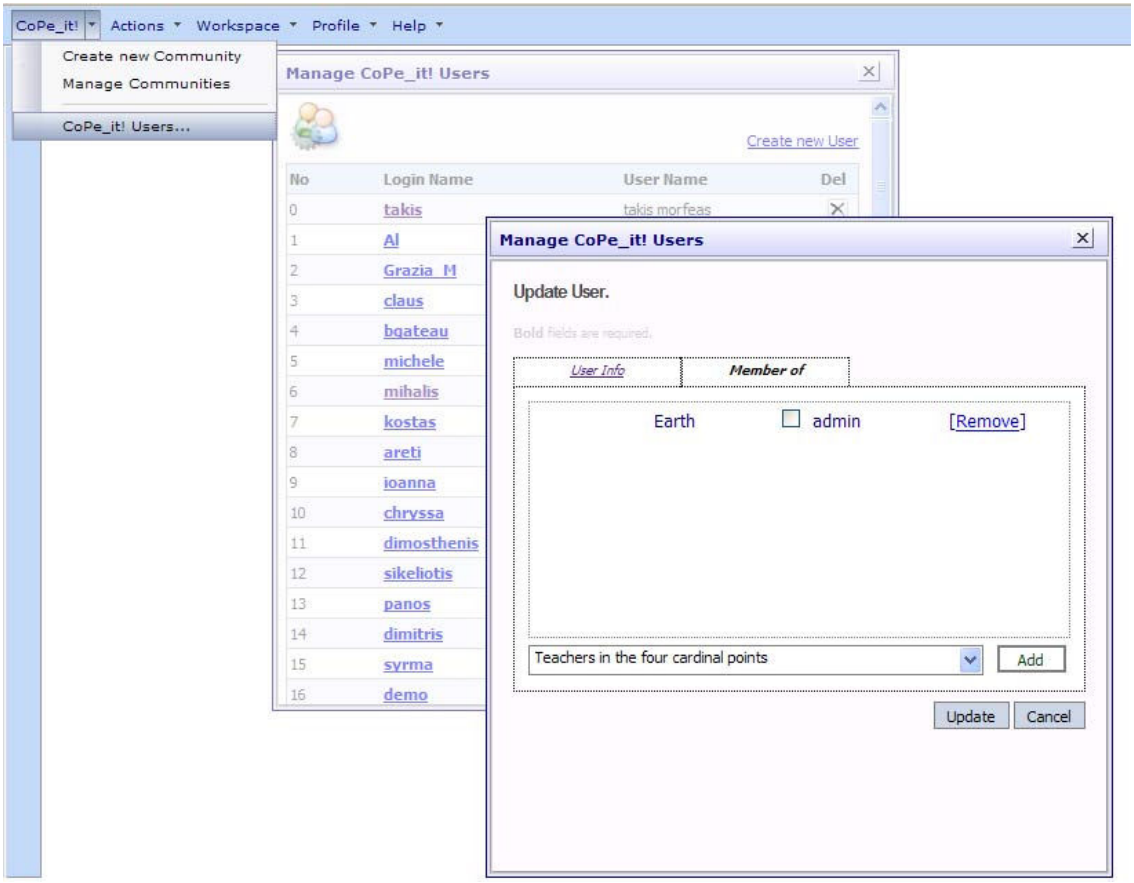


Figure 12: CoPe_it! users → Change Memberships

Apart from the CoPe_it! administrator, Community leaders can also manage all the members of their Communities. More specifically, a Community leader can view the Community members, create new Community members and add (or remove) existing CoPe_it! users to (from) their Community he/she leads. That option is given through the "Action" selection in the main menu (Figure 13). In practice, the creation of a new Community member from the Community Leader is not the commonly followed procedure. Each person who wants to participate in a particular Community usually performs the following steps: First, he/she registers himself/herself to the tool (and also by default to the Community "Earth") and then he/she makes a request to participate to the desired Community (Figure 14). That request is sent to the Community leader who accepts or rejects the particular person's participation to the Community. The management of the "pending" users (waiting for the Community leader's decision) is provided through the form called "Community Users" (available by selecting "Community Users" from the "Actions" menu).

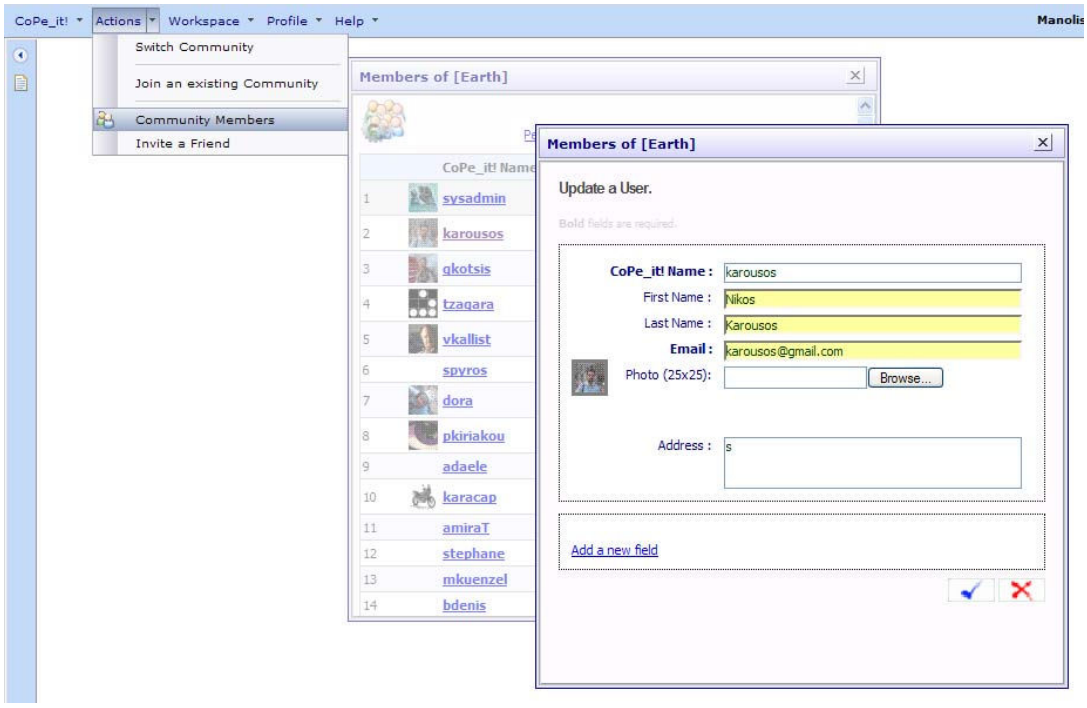


Figure 13: Manage Community Members

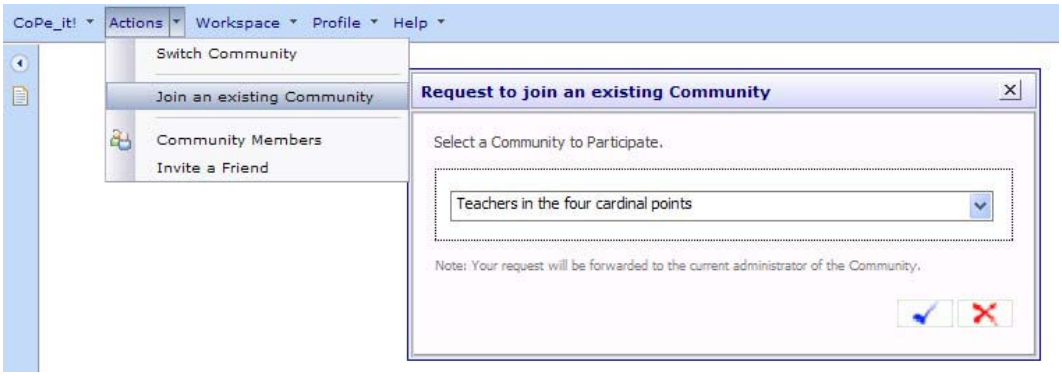


Figure 14: Request to join an existing Community

Finally, the functionality of "inviting a friend" in a Community is also supported. This action is available to all Community members and is used whenever a member wants to invite a person (who is not a registered user) to participate in the Community (Figure 15). An invitation e-mail, on behalf of the CoPe_it! tool, is sent to the user inviting him/her to participate in the Community.

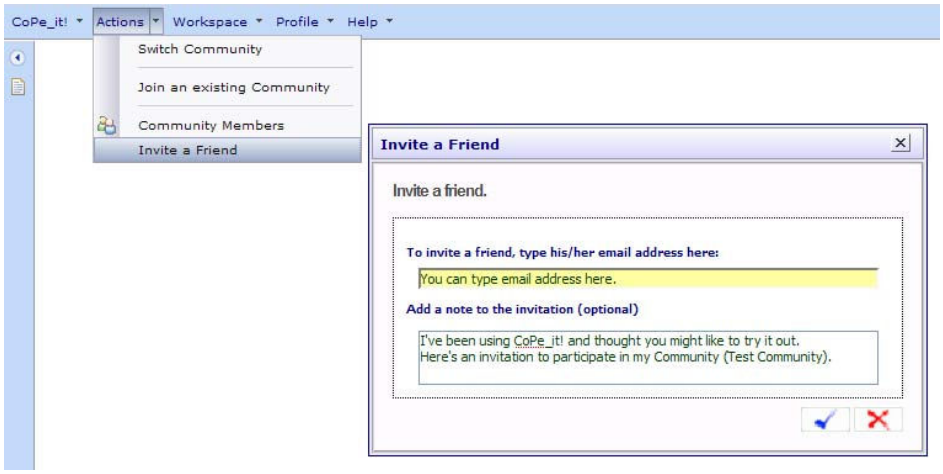


Figure 15: Invite a Friend

3. Use of CoPe_it!

3.1 First concrete scenarios of argumentative collaboration through CoPe_it!

Following the release of CoPe_it!, two Communities of Practice, namely "Teachers in the four cardinal points" and "Parco Agrario degli Ulivi", used the tool and implemented one scenario of use each[†].

This action provided us with preliminary feedback about the ease-of-use and usefulness of the tool (see milestone M.MED.02), and shaped its current, fully operational, version. As described in the project's Implementation Plan 2 (concerning months 13-30 of the whole project's duration), CoPe_it! will be thoroughly evaluated through selected Palette's CoPs; this action will provide further feedback towards the production of the second operational version of CoPe_it! (to be reported in deliverable D.MED.06 – due in M24).

A detailed report from the abovementioned initial two scenarios follows.

[†] These two communities are expected to join the list of CoPs associated with the Palette project. Other CoPs currently involved in the project have already prepared scenarios to be implemented through CoPe_it! – this is expected to take place in the next few months (such cases will be reported in D.MED.06: Second operational version of CoPe_it!).

Scenario of "Teachers in the four cardinal points"

Introduction:

Users can access this application by clicking in: http://copeit.cti.gr/Login/Default.aspx. After login they can click on **Actions** tab → **Switch Community**. In the **Select a Community to participate** dialogue window they can select **Teachers in the four cardinal points**, and from the **Workspace tab**, → **My workspaces** → **Greeklish … … and Greekness**.

"Teachers in the four cardinal points" community is consisted of 44 teachers (linguists) who are assigned by the Greek Ministry of Education to teach Greek as a Foreign Language in Universities all over the world. Community members along with people of the "Centre of the Greek Language" (a research-academic Institute) which is in charge of the project articulate jointly the concerns and the goals of the enterprise. In parallel with the fact that members started with small average computer literacy, they seek to:

- develop competency in new computer-related literacy and new writing and publishing environments,
- get mutual support (they work in various environments different from those they were accustomed and find the proper answers in several pedagogical, administrative etc. questions
- build a common storehouse of material useful for teaching Greek as a foreign language, which will be very useful taking into account of the turnover within the community.

Members have great motives to collaborate: (a) they are isolated in different countries, (b) having to build their own curriculum for teaching Greek as a foreign language, and c) the virtual community is not mediated by their hierarchical seniors (the Department of Education) but from a research center.

Fryktories and CoPe_It!

Workspace:	Greeklish and Greekness
Participants:	10 teachers
Interaction period:	11 months

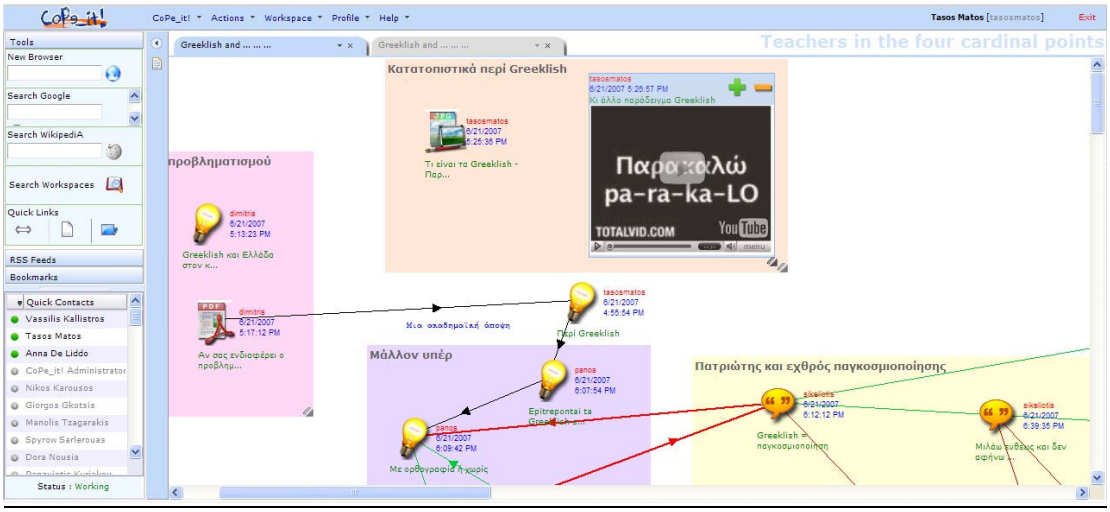


Figure 16: Community "Teachers in the four cardinal points" → Workspace "Greeklish … … Greekness → Desktop view

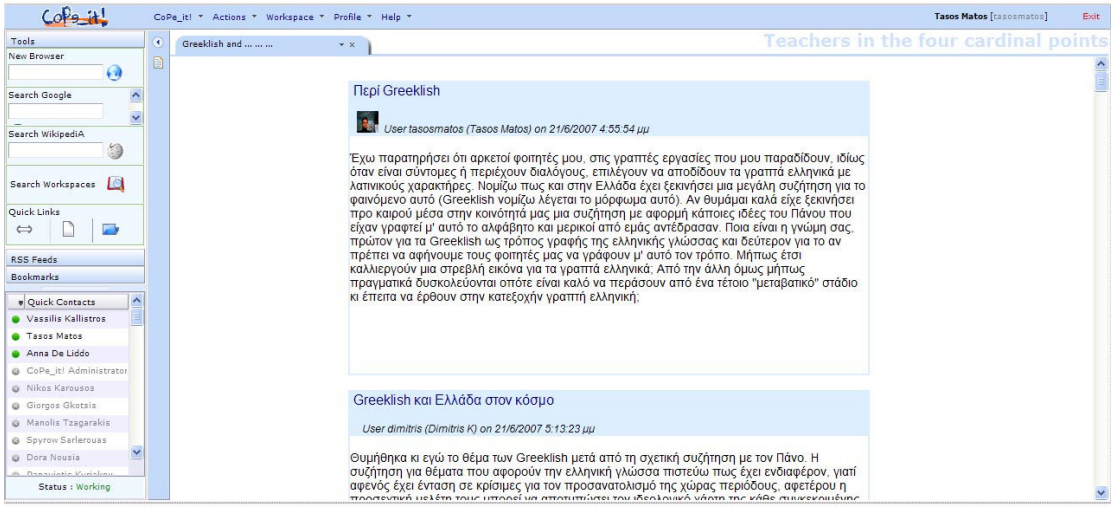


Figure 17: Community "Teachers in the four cardinal points" → Workspace "Greeklish … … Greekness → Forum view

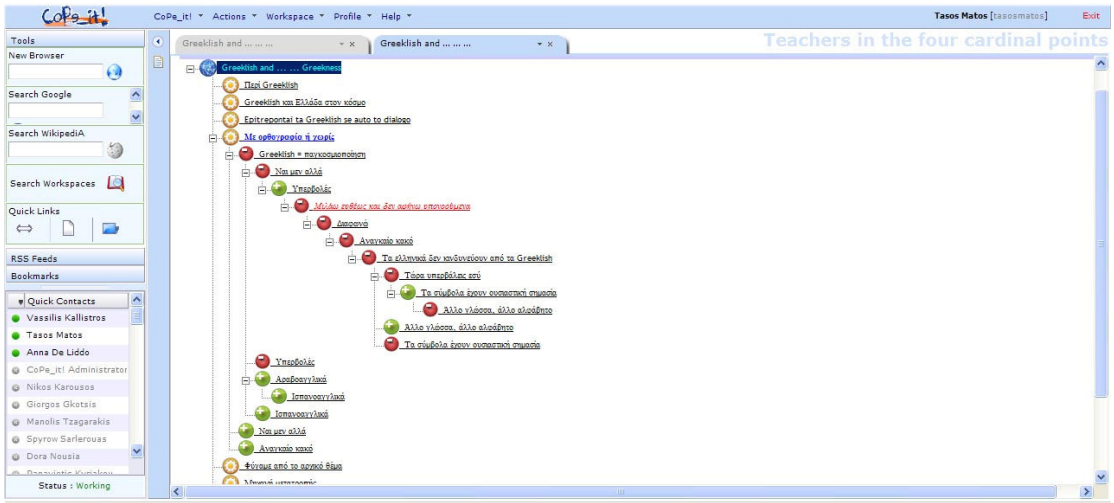


Figure 18: Community "Teachers in the four cardinal points" → Workspace "Greeklish … … Greekness → Formal view

Discussion contents

Tassos, a teacher – member of the Fryktories community teaches Greek as a foreign language in an Australian University. He has noticed that many of his students prefer to write their Greek texts using the Roman alphabet instead of the Greek one. This phenomenon is also familiar to him from the time he was in Greece. Many young Greeks use to write SMS or chat messages in Greeklish (this is the newly invented term for this "hybrid language")

This matter appeared lately and none can give him a clear advice. Tasos is a professional that keeps being informed about the later advancements in his subject specialty. He follows the impassioned conversation about this issue, held in Greek newspapers and journals, but he cannot make sense about what to do in the particular case, because the discussants are academicians who have no real school experience. He is convinced thought that he has to adopt a more rich pedagogical and learned stance, because:

- As a teacher of Greek (a language spoken only by 15 million people in a globe of 6 billion populations) feels that he has the duty to protect this unique, in many senses, language.
- Ministry of Education assigned him to teach Greek with the Greek alphabet and not Greeklish.
- He feels responsible for the fact that his students will be considered almost illiterate when they will continue their studies in Universities in Greece.

Tasos created the workspace "Greeklish … and Greekness" in the community "Teachers in the four cardinal points" in the CoPe_It! environment, 11 months ago. He invited all the community's members and the "Centre of the Greek Language" coordinators to participate in the joint work, in order to reach a settlement on how to cope with the Greeklish issue and learn more about it. He hoped that coordinators from the C.G.L. would help the community with their expertise on teaching Greek Language. On behalf of the C.G.L., Dimitris, an associate professor in Applied Linguistics, contributed with a journal paper and a set of initiatory thoughts and questions. It was obvious to all participants that there was no concrete answer in the Greeklish issue and that they had to share all available team knowledge and experience, as well as to build new knowledge and if possible to learn more about how to deal with such a pedagogical matter.

Panos, a young Greek PhD student in the field of the electronic communities, whom Dimitris invited n the discussion, contributed in the discussion, in order to give the young peoples' point of view. He said that many young Greeks or students of the Greek language use the Roman alphabet when they write in Greek, because either their computer does not support Greek fonts, or they consider as more easy to write this way. He informed participant teachers that the main way of writing for young Greek Internet users (in e-mails, chat rooms, etc.) is Greeklish.

Teachers realize that they are in front of a serious, urgent, and thorny issue and begin to exchange several arguments with regard to either the linguistic or the pedagogical side of it. There were those who support that they should not be rigid if their students use Greeklish. Instead of getting them in front of the difficulties of the hundreds of spelling rules of Greek, they would encourage them to write more in Greek, even in the Roman alphabet. In a later phase they could ask them to use the Greek alphabet. Others advocate the original use of Greek alphabet because they believe that gradual dominance of the Roman alphabet was a clear sign of cultural imperialism and globalization. Finally there were two or three who provide with clear linguistic arguments that support the use of original alphabets as signs of a particular language.

Discussion outcomes

Discussion is still going on. Up to now:

- There is no particular decision taken about this matter, because this wasn't their initial

objective. None the less they participate in a knowledge building procedure.

- The workspace in which they contribute their arguments, comments, ideas, illustrative videos, photos etc. is a place where any other current or future member of the community can refer and enrich his/her thoughts, learn much, take a more critical stance, or help them focus in a more strong point of view. **It is like an arena of ideas and not an arena of warriors.**
- After some months of interaction, many combatant positions and ideas appeared in the workspace. This fact created an image of equivalent and interesting points of view. Some members feeling happy that they participate in a fruitful controversy, contributed with postings in literary style, which are very expressive.
- Spatial organization of positions and ideas kept away the forming of teams that opposed each other in a destructive way.
- Forum view allow participants to have a temporal image of the positions' sequence, while formal view make possible for them to acknowledge the dominant opinions

Final consideration

Generally speaking, members build new knowledge and produce new ideas. This workspace is probably the only place up to now, that so much thought and brainstorming has been gathered, about (a) greeklish, (b) the future of Greek language, and (c) the appropriate teaching methods on this issue. All this stuff can be exploited by the coming teachers, while their own contributions are welcomed in order to get knowledge further.

Scenario of "Parco Agrario degli Ulivi"

Introduction:

The "Parco Agrario degli Ulivi" (PAU) Community of Practice born in 2001 when a research group (professors and researchers) from the Polytechnic of Bari (DAU: Dipartimento di Architettura e Urbanistica) decided to discuss the environmental issues about an illegal practice of setting out of the ground 'olive oil' trees in order to commercialize them. These are secular trees which are environmental patrimony of the region so the research group started a campaign to make students aware of the implication of this bad practice.

The first action of the group was to start a consultation with local actors in order to:

i. inform local community and agency about the side effect of such a practice;
ii. identify possible project proposal and new partners.

This event determined the emerging of the PAU community. A heterogeneous group of researchers, students, professors, citizens, NGOs, cultural and social associations and schools join the campaign. The community objective becomes to stop this bad practice and defend the Olive oil area as a Natural Park Area. Ten thousand people signed a petition to found a PAU protected area. Then the community started to enlarge and many associations started to support the initiative advertising about the PAU community on their web-sites. The community performed other actions like: a congress to present the community initiatives (July 2002, participants: 500), meetings, informative days etc. In 2003, an official PAU association is founded. Participants who signed the act are: local administrators, farmers, businessmen, university researchers, tourist operators, environmentalists and citizens. Some first documents of action priorities are signed and many other initiatives are organized to disseminate information. Nodaway the community is born and it auto-organized itself giving a clear structure and objectives.

The role played by the DAU group is a key role. It is the starting actor and he is still playing a coordination role in order to promote and organize new activities and detecting and encouraging the self-emerging activities within the community. The objective now is to push the community in a more operative phase of action on the territory. So new operational objectives and planning actions need to be defined and new initiatives to be explored. So the DAU group wants to discuss new operational objectives and priorities within the group and then enlarge the discussion to the entire community.

PAU community and CoPe_It!

Workspace:	PAU CoP scenario
Participants:	Two researcher, one PhD student
Interaction period:	One day meeting (almost in a synchronic way)

Discussion contents

Adele, a researcher of the DAU group, triggered the discussion posing two main background questions about:

i. strategic actions to enhance environmental conservation;

ii. how to follow the lines of development suggested from the community until that moment.

Francesco, another DAU researcher, pointed out that the community in past meetings wanted to focus on the environmental valorization more then on the protection. He outlined that unluckily the regional low is focused only on environmental parameters to preserve then on the economic and social valorization of environmental resources. Grazia agreed with him and then the three members started to discuss the valorization problem. As we can see in the desktops view this topic came back in the discussion several times as a key point. Two other main ideas were suggested from the three members in order to sort out strategic actions to implement: i. to push institutions in order to define official a PAU Natural Protected Area; ii. to suggest and discuss changes of the regional low. Slowly during the discussion the three members understood there were doubts about the main objective the Community should have.

Discussion outcomes

At the end of the discussion the members defined a new operational objective: the organization of a meeting putting together all the social actors and institutions (one for each province interested). The objective of the meeting should be to define a new common objective for the community between three options:

i. creating a new Natural Park;
ii. changing the regional law,
iii. focusing on the valorization of environmental resources.

The main outcome of the discussion is the decision to enlarge the discussion to the whole community.

Final consideration

The use of CoPe_it! helped community members to reorganize their ideas after the discussion. The general overview offered from the Desktop View helped them to reorganize main ideas, arguments and counterarguments and then it helped them in establishing priorities. So the discussion started with the objective to define strategic actions, but during the discussion the three members discovered that they didn't agree on the main objective for the PAU. So they decided that one priority should have been the organization of a meeting in which they enlarge the discussion to the whole community members.

To reach this objective CoPe_it! can be a valuable support, especially because of the large number and heterogeneity of community members and the

difficulties to have them all present in the same meeting. This is why un asynchrony web-based discussion can be suitable in order to ensure a wider participation to the topic of discussion (member can enter and add comments and idea whenever they are available).

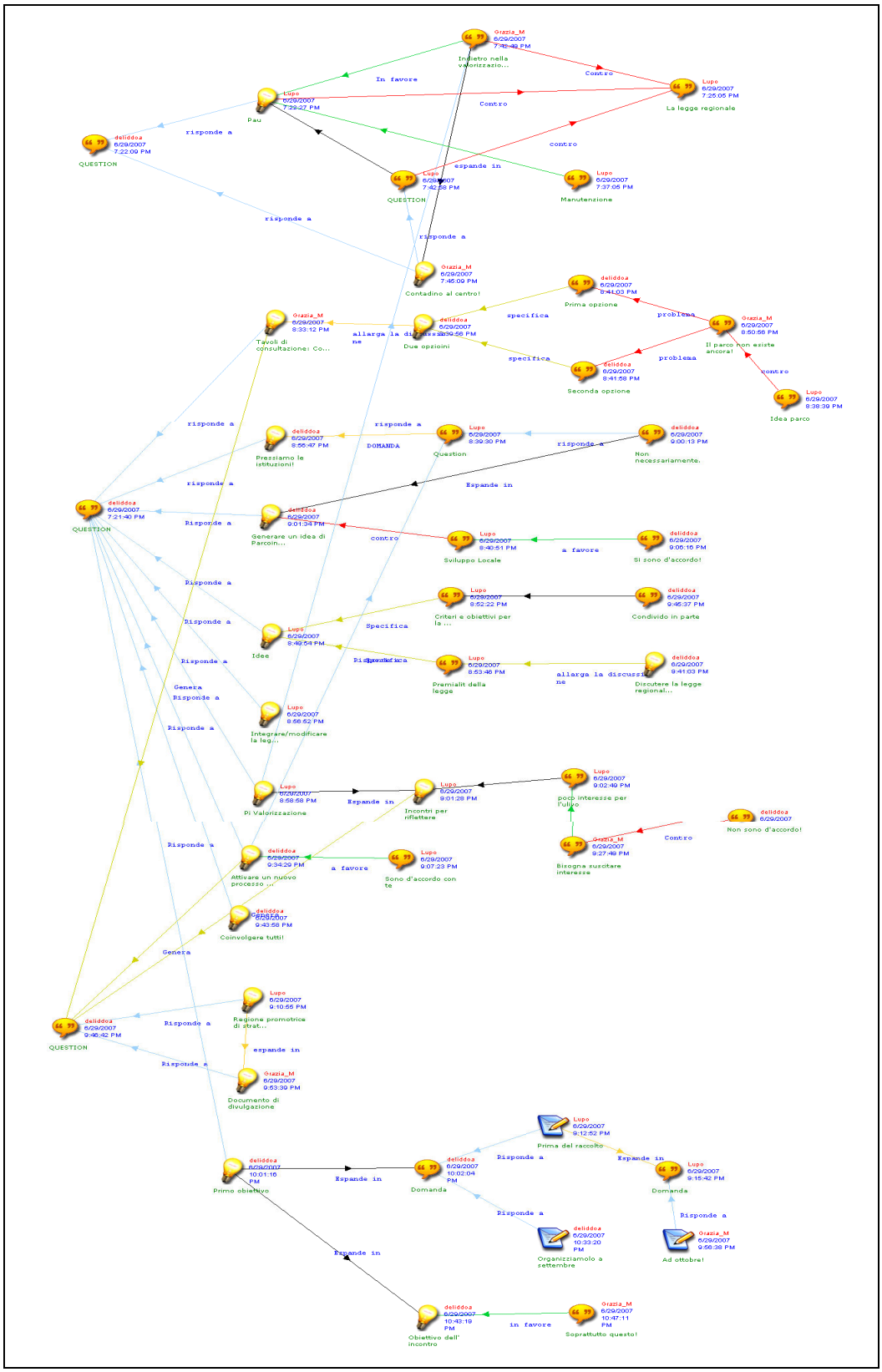


Figure 19: Desktop View - Scenario of “Parco Agrario degli Ulivi”

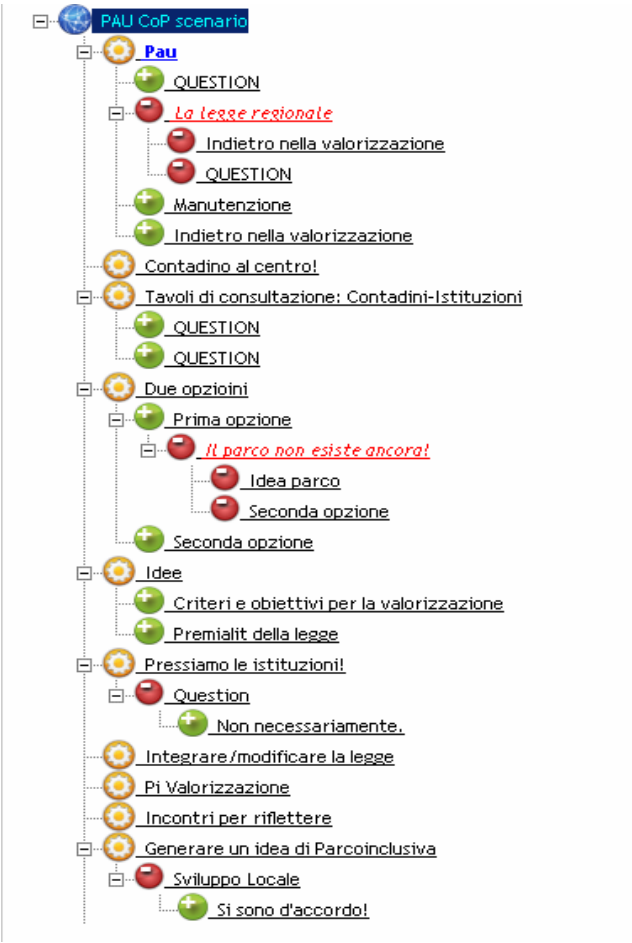


Figure 20: Formal View - Scenario of “Parco Agrario degli Ulivi”

3.2 Preliminary evaluation remarks

The following evaluation questionnaire was distributed to the users of CoPe_it! that participated in the implementation of the two initial scenarios reported in the previous section.

CoPe_it! preliminary evaluation questionnaire

This questionnaire has the aim to evaluate the usefulness and ease-of-use of CoPe_it!, referring to the on line discussion you have been involved in.

The questionnaire has three parts: the first two are divided by objective of evaluation (Perceived Usefulness, Perceived Ease-of-Use) and they require your answer to be in a fixed range of values. You are also kindly requested to motivate your answer. The last part refers to open questions you can decide to answer freely, indicating point of views and suggestions.

Part 1. Perceived Usefulness (PU)
Choose between these ranges of values (Absolutely Yes - Yes – Neutral - No - Absolutely No) the answer to the following questions.

Please try to give arguments for your answers (motivate the choice)
1) Do you think the software helps to organizes the discussion efficiently
2) Do you think it is easy to learn?
3) Do you think it is easy to use?
4) Did you enjoy using the software?
5) Do you think you would like to use it again?

Part 2. Perceived Ease-of-Use (PEU)
Choose between these ranges of values (Yes – Neutral - No) the answer to the following questions.

Please try to give arguments for your answers (motivate the choice)
1) It is easy to find out the available options?
2) The functions, menus and icons are easy to understand?
3) The interfaces are easy to read and use?
4) The content is easily understandable?
5) What you had achieved was clear?
6) What you had to do was clear?

Part 3. Open questions
Please answer freely to the following open questions
1) What, if any, helped you in understanding better how to understand and use the tool?
2) Can you say, if any, the main advantages you see in using the tool?
3) Can you say, if any, the main limits of the tool?
4) Where you able to express all the contents you need to express in your discussion?
5) How long it took to learn the main functionalities of the system? (Please try to quantify in terms of: hours, days etc)
6) How long it took to start to use the tool properly? (Please try to quantify in terms of: hours, days etc)
7) Which are the main obstacles, if any, you encountered in learning and using the system?
8) Do you imagine, if any, possible ways to overcome these obstacles?

Preliminary evaluation results[‡] show that CoPe_it! receives very positive remarks in terms of usefulness and ease-of-use, while it covers requirements concerning argumentative collaboration among community members. It has been also admitted that the tool stimulates interaction, makes users more accountable for their contributions, while it aids them to conceive, document and analyze the overall collaboration context in a holistic manner.

The filled-in questionnaires can be found at BSCW (https://bscw.ercim.org/bscw/bscw.cgi/100468). The number of people involved in the implementation of these two scenarios – and the corresponding number of filled-in questionnaires – is limited; there were eight people involved in total (five for the first one and three for the second one[§]). However, these people were fully committed to the entire process, they possessed diverse levels of expertise in using any kind of social software, they have different professions, and they were distinct from both the tool's development team and the Palette's consortium. For these reasons, we consider their opinions as important.

[‡] It is noted that a thorough evaluation of the tool has been scheduled for the near future; a related section will appear in D.MED.06: Second operational version of CoPe_it!, due in M24).
[§] One person has not yet sent back the filled-in questionnaire.

4. Future Development Plans

There are two main directions for the future development of CoPe_it!: to tackle known limitations and bugs of the current release and enhance the tool with new features and functionalities. The issues to be considered in the former category include the following:

- Provision of a number of new reasoning mechanisms, which will be available to Community Members in the formal projections; we have to examine to whom these mechanisms shall be available for application.
- Enhancement of the access control system through the support of the dynamic creation of roles, application of roles to system objects (Communities, Workspaces, etc) and assignment of roles to users. This will have repercussions in the functionality of the whole tool: i.e. creators of private Workspaces will be able to invite other system users to view or participate in them.
- Currently, when users work in formal projections, changes are not reflected in the informal ones; effort shall be put in overcoming related problems.
- Advanced Search facility.
- Bugs related to specific browsers.

As far as new functionality is concerned, the issues to be elaborated are:

- Synchronous collaboration in Workspaces (changes in workspaces to be immediately depicted to all connected users).
- Additional Views and Projections.
- Handling of personalization, awareness and notification issues.
- Automatic import of discussions from existing forums to Workspaces.
- Integration with e-Logbook and other Palette tools through the development of the appropriate mechanisms (issues about the current integration with e-Logbook are reported in D.MED.04).
- Development of a number of web services
- Instant/asynchronous communication of online/offline users.

An issue which is also going to be thoroughly addressed concerns the overall visualization scheme of the tool. The colors, fonts, themes, icons, logos used in the UI are going to be reconsidered and redesigned in order to achieve uniformity and enhance user experience (this also implies collaboration with work being performed in the context of WP5).

The abovementioned development plans are the outcome of an ongoing brainstorming process within the CoPe_it development team, which takes into account the Palette project's participatory design approach. The priorities regarding their implementation are defined and revised through this very process.

5. References

Andriessen, J., Baker, M., Suthers, D. (2003). Argumentation, computer support, and the educational context of confronting cognitions. In: Andriessen, J., Baker, M., Suthers, D. (eds.) Arguing to learn: confronting cognitions in computer-supported collaborative learning environments, pp. 1–25. Kluwer Academic Publishers, Dordrecht.

Marshall, C., Shipman, F. (1997). Spatial Hypertext and the Practice of Information Triage. In: Proceedings of the 8th ACM Conference on Hypertext, Southampton UK, pp. 124–133. ACM Press, New York.

de Moor, A. and Aakhus, M. (2006). Argumentation support: from technologies to tools. ACM Communications, Vol. 49, No 3, pp. 93-98.

Shipman, F.M., Marshall, C.C. (1994). Formality Considered Harmful: Issues, Experiences, Emerging Themes, and Directions. Tech. Rep. ISTL-CSA-94-08-02, Xerox Palo Alto Research Center.

Shipman, F.M., McCall, R. (1994). Supporting knowledge-base evolution with incremental formalization. In: Proceedings of CHI'94 Conference, Boston, MA, April 24-28, 1994, pp. 285–291.

Appendix A: Some figures about the tool's active use

From **30/05/07** (CoPe_it! v2 launch date) until **30/07/07**:

- Eighty eight **(88)** different users from **176** different IPs have participated in CoPe_it!.
- Total actions (create, open, move, update, link, or delete a collaboration object) performed in the Desktop View workspaces are **19,418**.
- Three hundred forty five **(345)** different workspaces have been totally created (some of them have been deleted), while **1,366** items have been uploaded on these spaces.
- The active workspaces are one hundred seventy one **(171)**, out of which one hundred seventeen **(117)** are private and fifty four **(54)** are public.
- Six **(6)** communities have been created ("Earth", "Teachers in the four cardinal points", "TeL", "Learn-Nett", "Test Community", "Real E-learning"), with **67**, **13**, **6**, **10**, **10** and **2** members, respectively (many members are currently participating in more than one communities).

Appendix B: Towards optimizing performance

Several tests have been performed in order to optimize the loading performance of the tool's workspaces. Experimentations indicated that workspaces including a large number of relations need more time to load than workspaces with a small, or even no, number of relations: drawing a relation on the browser of the client is, technically (from the browser's point of view), equivalent to drawing a number of objects (Ideas, Notes, Embedded objects, etc) on the workspace. This explains the reason why workspaces with many relations take more time to load, especially on low performance client machines. Each object loading takes about 0.35sec (Figure 21), average time, on a client machine located in a nearby network area with server, while a relation needs about 1.5 sec (Figure 22). These tests have been conducted using a Pentium IV machine equipped with: 3GHz CPU, 1 GB of RAM, Microsoft Windows XP Professional SP2 and Mozilla Firefox v2.0.

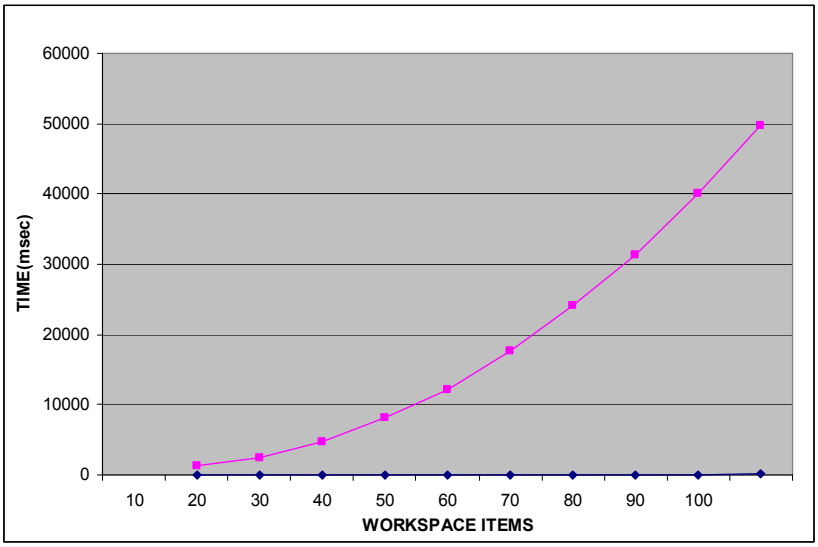


Figure 21: Workspace loading time with variable items number

Actions such as object creation or object update (rename, transform to other object type) depend on the server-client connection speed and the browser's ability to redraw the object (or objects) updated. In general, such actions are quite fast, as far the connection speed is acceptable. Assuming that an object is connected to other objects of the workspace (through links), the most time consuming action on the workspace is moving this object. In such a case, the client's browser has to redraw all the relations starting from and ending to this object. The total time needed is equal to

the time the browser needs to draw the relation plus the time needed for the client to communicate with the server.

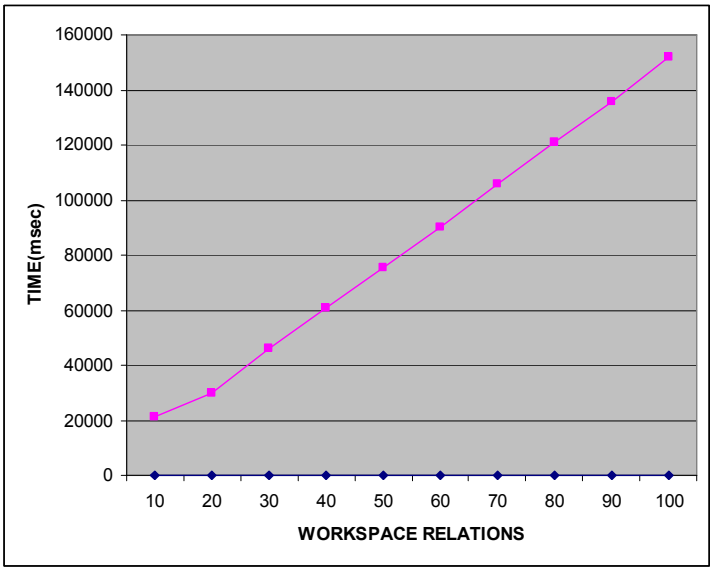


Figure 22: Workspace loading time with variable relations number (workspace items = 30)

We are currently conducting tests using proxy servers in different geographical areas of the world, with different network characteristics, in order to thoroughly measure CoPe_it! performance under various environments. We are focusing on optimizing the average loading of a workspace and issues concerning relations' drawing.

Appendix C: License & Code information

CoPe_it! is a web based tool. Its current version (v2.03) is provided to everyone for free and "as is" for evaluation and experimentation purposes. The copyright owner (©2007 CTI / eLearning and Social Software Sector) has the right to change it without any prior notification to the users. The owner of the copyright is not liable for any damages including loss of information related to, or arising out of its use. The source code of CoPe_it! can be provided through a CVS (Concurrent Versions System).

CoPe_it! is built using mostly C# code for the application logic and Javascript for the front-end. The list of SW needed for a new installation of a **CoPe_it! server** includes the following:

- **Internet Information Server (IIS)**

Purpose: Web server hosting CoPe_it! Web application
Licensing: proprietary (comes with Windows Operating systems. For non-server versions, the number of sessions is limited to 10).

- **Microsoft .NET Framework 2.0.**

Needed for executing the CoPe_it! Web application.
Purpose: run/execute application logic (written in C#)
Licensing: Freeware (free download, install and deployment of the framework for commercial or non commercial uses).

- **Microsoft SQL Server 2005**

Purpose: database back-end.
Licensing: Commercial with various licensing options (per CPU etc).
Installation of Microsoft SQL Server 2005 requires clients to purchase licenses. The SQL Server 2005 Runtime permits redistribution of SQL Server 2005 along with CoPe_it! to clients without obligating the client to purchase licenses. In this case, the SQL Server 2005 Runtime is permitted to be used only by the application (CoPe_it!). The client of the application cannot use this SQL Server product to run other applications or to develop new applications, databases, or tables. The vendor (CTI is vendor for the CoPe_it! current installation) have a Product Integration Agreement so that it is able to redistribute the SQL Server 2005 Runtime. For more information see: http://support.microsoft.com/kb/917400

- **TIBCO General Interface v3.4.1**

Purpose: javascript library,
http://www.tibco.com/software/rich_internet_application/general_interface/default.jsp

Licensing: Open source BSD License (http://www.opensource.org/licenses/bsd-license.php)

- **Script.aculo.us v1.7.0**

Purpose: javascript library, http://script.aculo.us/
Licensing: MIT license. Allows reuse within proprietary applications, as well as in free and open source software (http://wiki.script.aculo.us/scriptaculous/show/License).

Appendix D: Agenda for one-day training seminar on CoPe_it!

Aim: *Introduce key features of CoPe_it! to community members, including hands-on experience*

1. Introduction to CoPe_it! *(15 min)*
Why CoPe_it!
Distribution of related material

2. Look & Feel Experience *(25 min)*
A scenario based example of collaboration in CoPe_it!

3. Features Demonstration *(60 min)*
Participation and Registration in CoPe_it!
Fields, links. Forgot password? Remember me.
Basic Roles
CoPe_it! Admin, Community Leader, Community Member
Environment Description
Users, Community, switch community, default community, user profile.
Workspaces (public – private).
Join existing community.
Browser windows, rss feeds, links, search workspaces.
Auto-save of state.
Authoring in a Workspace
Document, Idea, Comment, Note, Embedded.
Workspace Management
Opening-closing workspaces.
Views and Projections
User Management
Manage Communities, CoPe_it! Users

4. Practical tips for a Community Leader *(20 min)*

5. Hands-on experience *(120 min)*
Experimenting with the tool (in lab) – people grouped in teams
Elaboration of a scenario
Production of formal and informal workspaces and related collaboration items

6. On potential features and functionalities *(30 min)*
Issues concerning Visualization, Synchronous collaboration, Access control – Role Management, Support for multilingualism, Views and Projections of workspaces, Collaboration Paradigms, Interoperability with other tools (e.g. Compendium).

7. Discussion & Conclusions *(30 min)*
Feedback from participants (comments, suggestions, wish-lists)

Two seminars, following the above agenda, have been already held in June 13th and July 18th, 2007 (at CTI), with the participation of ten and six people, respectively.