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OIKODOMOS

Consolidation and expansion of a Virtual Campus

WORKPACKAGE 2
CONSOLIDATION OF THE ICT PLATFORM
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Contents

1. EXECUTIVE SUMMARY

This report summarizes the work carried out in WP2 "Consolidation of the ICT Platform". The purpose of this work has been upgrading the existing learning platform consisting of Workspaces and the Case Repository environments. This upgrade entails creating a new environment called OIKOpedia for building collaboratively a knowledge base linked to the learning activities of the virtual campus; as well as giving rise to a communication platform to disseminate the activities to a wider audience. The report concludes with the integration of the different components of the digital platform in order to facilitate the access to its contents.

2. WEB PORTAL

The project web portal (www.oikodomos.org) has been completely redone. Graphic design has been streamlined whereas the distinctive features of the previous portal have been kept (Figures 1-4).

Figure 1. Previous version of the home page

Figure 2. Current version of the home page

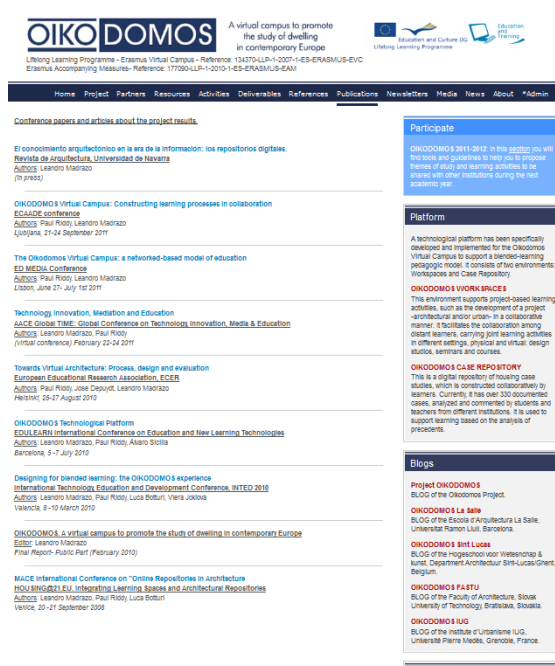Figure 3. Previous verion of the Publications section

Figure 4. Current version of the Publications section

The structure of the homepage menu has been redone. It consists of the following sections:

- HOME. Home page
- PROJECT. Description of the project outcomes and components
- PARTNERS. Partners who participate in the OIKODOMOS consortium, including associated partners who collaborate in the project activities.
- RESOURCES. Supporting materials for participant institutions
- ACTIVITIES. Learning activities implemented within the project.
- DELIVERABLES. Deliverables produced in the two LLLP funded projects
- REFERENCES. Related research projects
- PUBLICATIONS. Conference papers and articles about project results.
- NEWSLETTERS. Newsletters of the two projects: EVC 2007-2009 and EAM 2010-2011
- MEDIA. Media coverage of the project activities
- NEWS. News published during the project lifetime
- ABOUT. Description of the project development.
- ADMIN. Management resources for the project partners

On the right side menu, there is direct access to the other resources of the virtual campus: blogs and digital platform.

Finally, at the bottom page of the home page there is information about the on-going Learning Activities and Workshops (Figure 5).

Figure 5. Information about on-going activities

The new portal has been programmed using the open source PHP framework CodeIgniter. It has been operative since January 2011.

3. WORKSPACES

The objectives of the improvements carried out in this environment have been the following:

1   Supporting users with an on-line tutorial (available in the home page section as well as in the individual menus) and a FAQ section (available in the home page).
2   Facilitating the access to non-registered users, by displaying the structure of the learning activities and of the tasks and work of students performed in the home page.
3   Improving some of the functionalities which were not working properly in the previous version such as: distinguishing between teams and groups, visual representation of task networks.

To incorporate these enhancements, the home page of the *Workspaces* has been completely renewed. It is now structured in the following sections: Active Workspaces, Completed Workspaces, FAQ, Tutorial, News, About and System Admin (Figure 6).
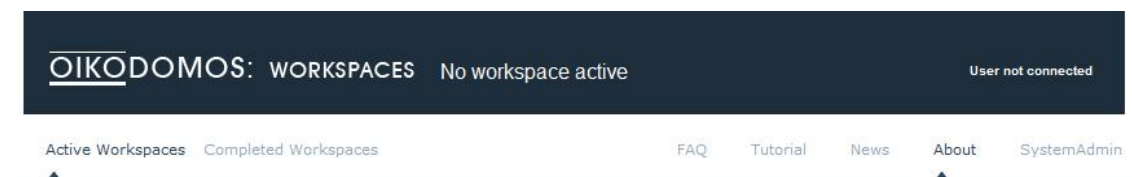
Figure 6. OIKODOMOS Workspaces. Home page menu.

While **Active Workspaces** display all Workspaces that are active at a given time, **Completed Workspaces** are those in which there is no learning activity going on., Both kinds of Workspace are displayed in the same way. The description of a Workspace includes: start and end date, description of the theme of study, participating institutions, and a randomly generated selection of the latest students' work (Figure 7).

Figure 7. OIKODOMOS Workspaces. Home page: description of a Workspace.

3.1 On-line tutorial

An on-line **TUTORIAL** is available in the Workspaces home page. It provides with a full description of the Workspace environment which is useful for both students and teachers. The structure of the tutorial table of contents is the following:

1. Introduction. Summary and structure of the tutorial content.
2. Platform architecture. It introduces the two environments that form Workspaces. These are the System Administration environment and Learning Workspace environment.
3. Interface. This section introduces users to the language of the interface: menu structure, icons.
4. System Administration. This section is structured according to the menu of the administration area. It provides information about the management of the data repositories. It is addressed to teachers.
5. Learning Workspace. This section is structured according to the menu of the environment where learning activities are designed, implemented and evaluated. It is addressed to both, students and teachers.

The tutorial menu is placed on the right side of the interface (Figure 8). It unfolds dynamically while navigating through the different sections. The selected topic is displayed in the main window.
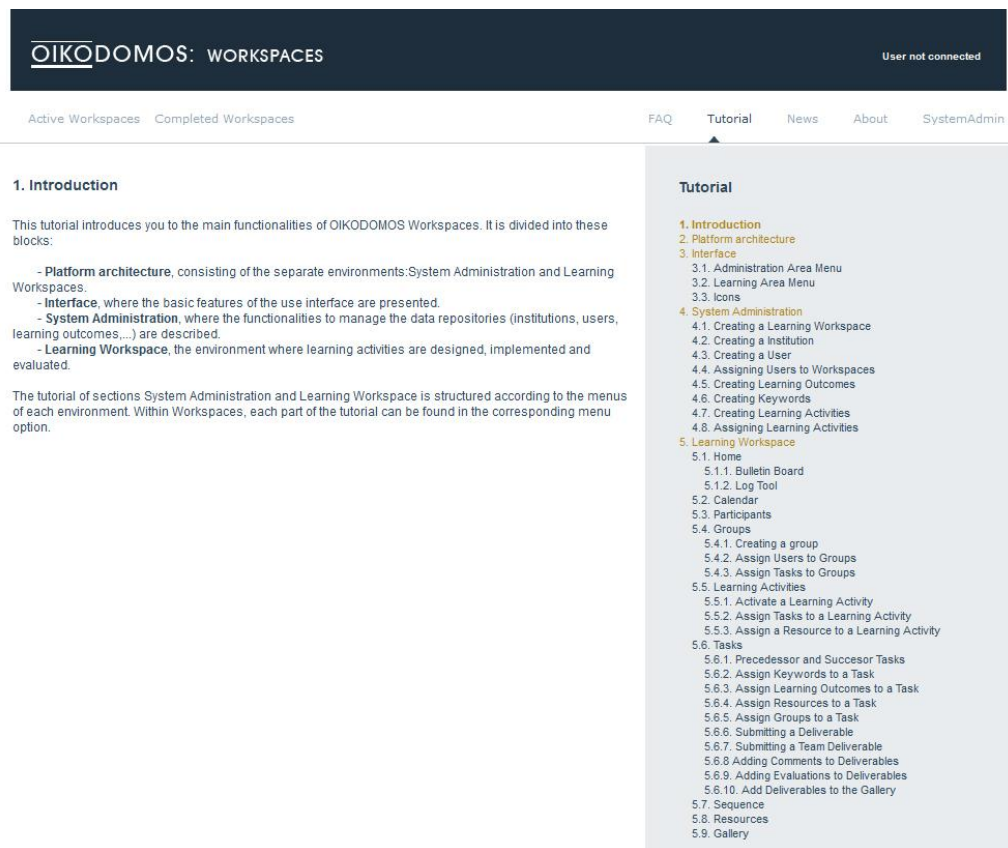

Figure 8. OIKODOMOS Workspaces. Home page: Tutorial menu.

Access to the tutorial is also possible once the user has logged in. In this case, when Tutorial is selected the content of the tutorial which is loaded corresponds to the item selected in the main menu. For example, if we were in Learning Activities, selecting Tutorial will load the content of this section (Figure 9).

Figure 9. OIKODOMOS Workspaces. Tutorial menu matching the selected topic in the main menu

3.2 FAQ section

The Tutorial is complemented with a FAQ section available in the Workspaces home page (Figure 10). The questions are grouped in two blocks, for students and for teachers. If a user has further questions, he or she can contact the platform developers (support@oikodomos.org, ARC Enginyeria i Arquitectura La Salle). Some of these questions have been identified through usability tests in which students and teachers of the associate partners who have participated in the project activities, were involved.

Figure 10. OIKODOMOS Workspaces. Home page: FAQ questions.

3.3 About

About provides a concise description Workspaces environment and a presentation slide, explaining its main features (Figure 11).
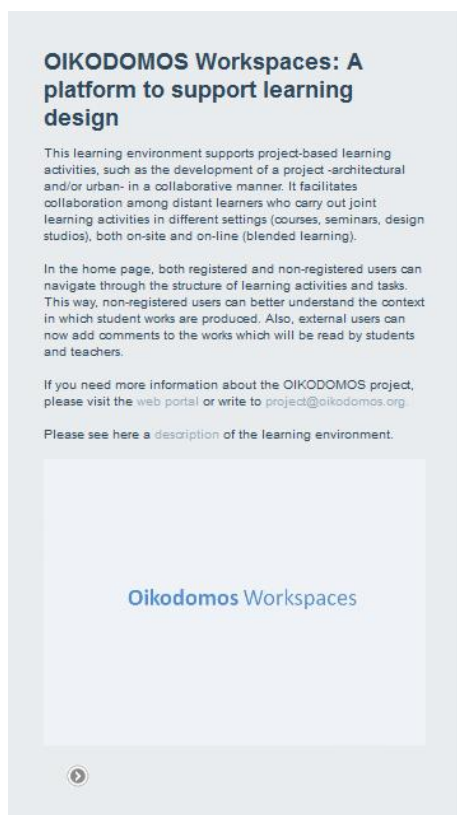
Figure 11. OIKODOMOS Workspaces. Home page: About

3.4 Facilitating access to non-registered users

One of the problems identified in the previous version of Workspaces was the difficulty for non-registered users to follow the activities in this learning environment. The solution we have implemented enables any Internet user to see the structure of learning activities and tasks, as well as the student outputs, both, in the active and in the closed Workspaces. Furthermore, in the new sections, external users can read the news published in the bulletin board of the active workspaces. As a result, sufficient information about the nature of the on-going activities to external users who might be interested in joining them, is offered.

Besides, there is an access to a shared document where the participating institutions describe the multiple interactions that occur between the learning activities and the tasks carried out at the different schools (Figure 12). This document is also accessible to the public so that all can have an insight of the activities going on in a Workspace

Figure 12. OIKODOMOS Workspaces. Home page: Document describing interactions between partners.

Under the block which summarizes the Workspace, external users can display the structure of the learning activities and tasks (▼ Leaning Activities). The navigation through the structure of learning activities is similar to the one a registered user can perform within the learning workspace, moving from the learning activity to its tasks and, finally, to the works produced by students. In this way, non-registered users can understand the context (learning activity, task description) in which a student work has been done (Figure 13).

Figure 13. OIKODOMOS Workspaces. Home page: Display of the structure of the learning activities, tasks and student' work.

The option **Direct Link** placed next to **Activity Description** and **Task Description** provides an URL to have direct access to this particular item of the learning structure (Figure 14).

Figure 14. OIKODOMOS Workspaces. Home page: Direct link to a Learning Activity and Task

Once a student work has been reached by navigating through the structure of learning activities and tasks, clicking on the icon of a student work displays it in a new window. In this window, an external user can see the content of the work, the description provided by the student as well as the comments made by students and teachers. In addition, external users can participate adding new comments to the selected work (Figure 15). This form of direct access can facilitate the participation of non-academic stakeholders (citizens, professionals) in the learning activities of a Workspace.
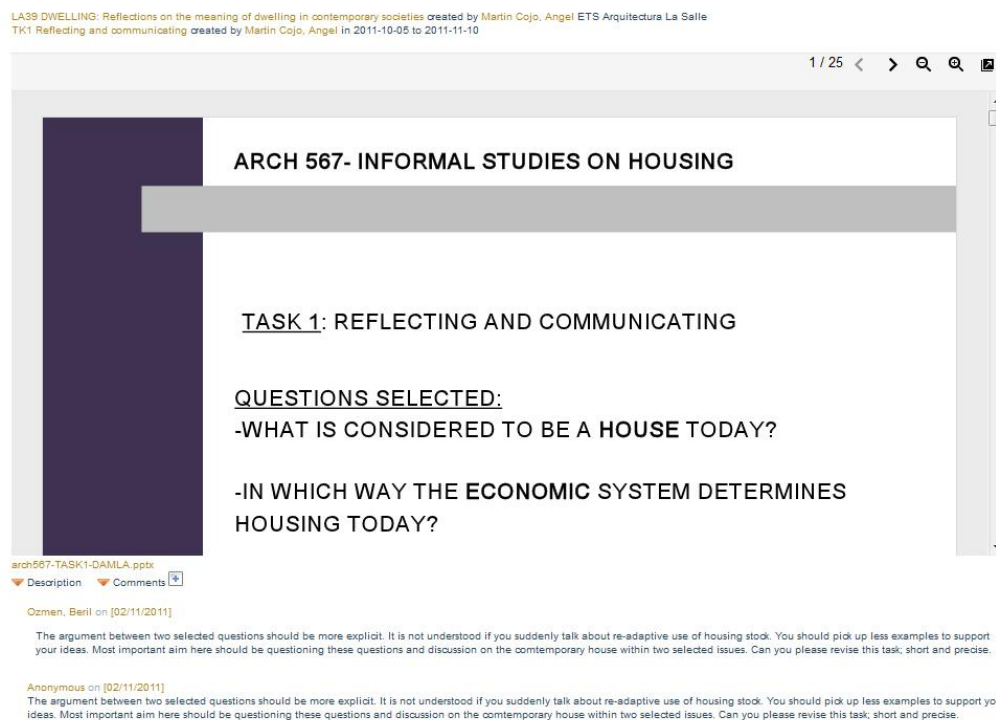
Figure 15. OIKODOMOS Workspaces. Home page: Display of a student work.

To complement the information that the external users obtain by navigating through the structure of the learning activities, there is a **News** section which pulls the most recent posts of teachers participating in the active Workspaces visualizing them in the home page (Figure 16). This information can encourage the participation of teachers who might decide to join the on-going learning activities.

Figure 16. OIKODOMOS Workspaces. Home page: News pulled from the active Workspaces.

3.5 Improved functionalities

While using the latest version of Workspaces in the learning activities of the project, several problems were detected: confusions between groups and teams, and poor visualization of the task network.

3.6 Groups and Teams

In the previous version of Workspaces, a Group was understood as a group of students working under the guidance of a tutor. However, it turned out that within a group some students were carrying out their tasks in teams, which were not recognized in the structure of the learning environment. For this reason, some teachers used the entity Group to define a "team giving rise to a series of misunderstandings. To solve this problem, a new entity called *Team* has been implemented. A Team is a sub-group of a group of students carrying out a task. With this new functionality, when a student submits a work it can be done as an individual work or on behalf of a team. In this second case, the student who submits the work should select the members of the team out of the members of the group (Figure 17).

Figure 17. OIKODOMOS Workspaces. Form to submit the student work that has been done individually or as a team.

Once a work has been submitted, it is possible to identify in the screen of Deliverables whether the work has been done individually or in a team. If the work has been done by a team, there is a number (e.g. "+3" to indicate the additional team members) next to the name of the student who has submitted the work (Figure 18).

Figure 18. OIKODOMOS Workspaces. View of a team work in the Deliverables screen.

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When the icon of the deliverable is selected, the next view shows the names of all team members (Figure 19).
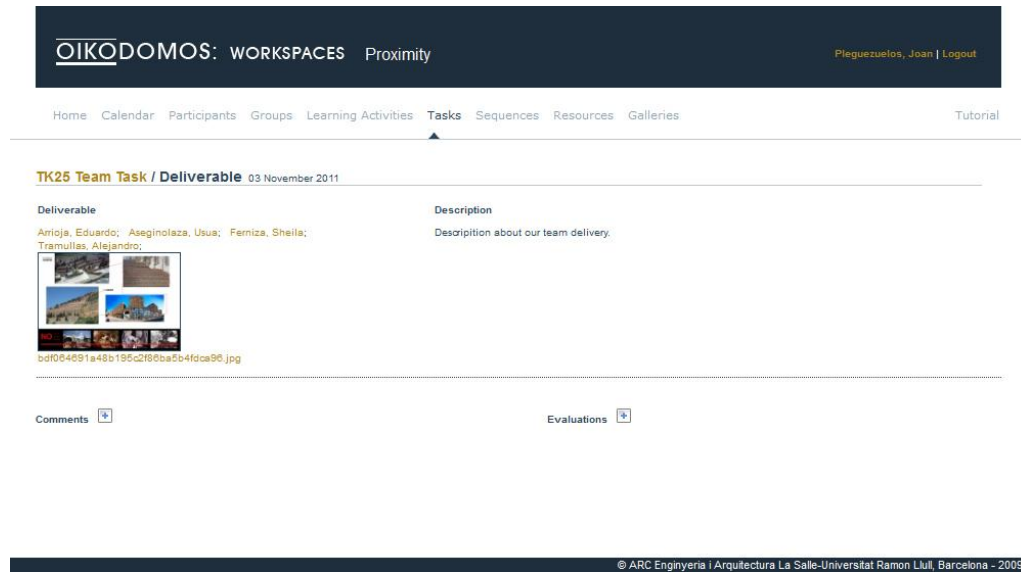
Figure 19. OIKODOMOS Workspaces. View a student work delivered by a team.

3.7 Sequences

In the previous version of the Workspaces, the way of displaying the relationships between Tasks (predecessor and successor) became very confusing as the number of relationships were increasing (Figure 20) making   the understanding of the relations between tasks difficult   and navigation complicate.
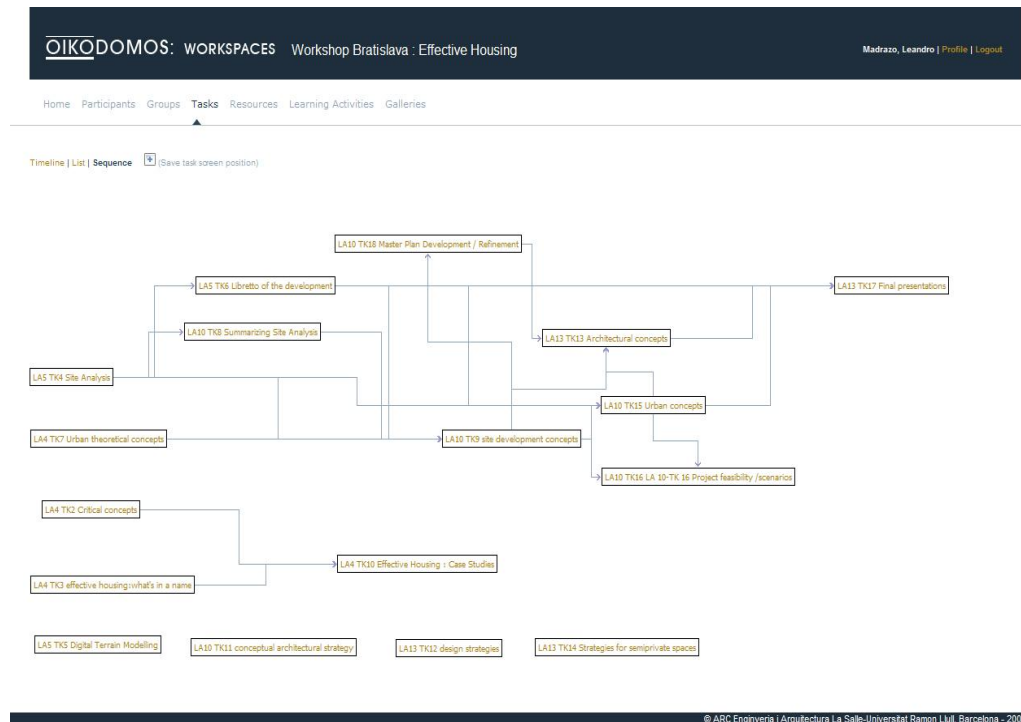
Figure 20. OIKODOMOS Workspaces. Map of tasks interactions (previous version).

To solve this problem, a new form of visualization has been devised and implemented (Figure 21). In the new interface, the view of the map is focused on a task selected from an already existed list of them.. The selected task is displayed at the center of the main window while the predecessor and successor tasks on its left and right sides.
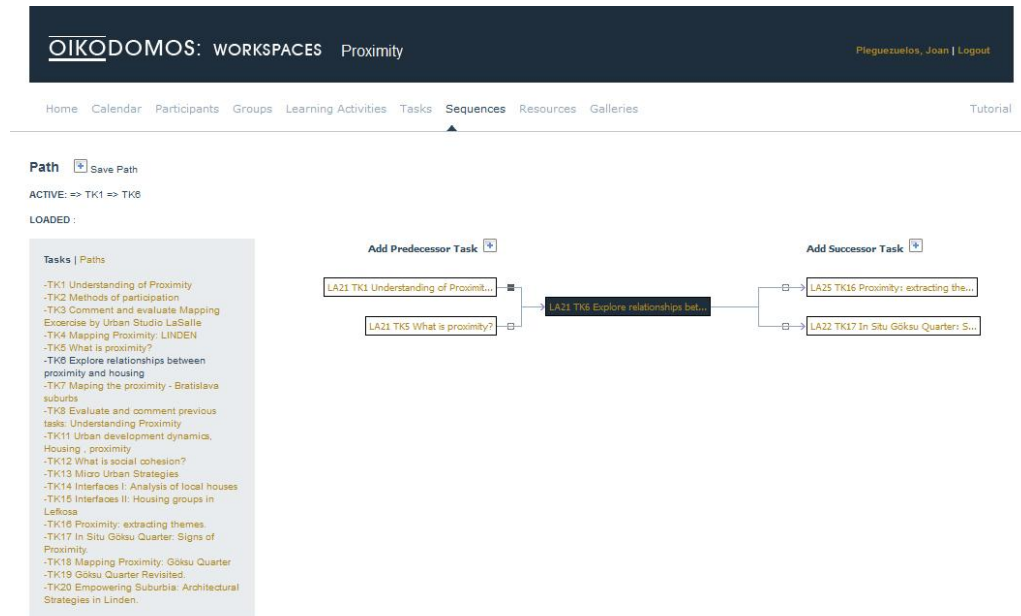
Figure 21. OIKODOMOS Workspaces. Map of tasks interactions (current version).

The user can navigate through this network by selecting any task displayed in the map. The chosen task will be placed at the center, with the predecessor and successor ones, displayed left and right. This way of navigating facilitates the understanding of the sequences of the tasks. Furthermore, new tasks can be connected using the functions **Add Predecessor Task/Add Successor Task** .

A new feature has been added to describe the relationships between tasks, something not possible in the previous version (Figure 22). This relationship is displayed in the map with □ (no description has been added yet) or ■ (a description has been added). A description can be read, placing the mouse over the icon.

Figure 22. OIKODOMOS Workspaces. Map of tasks interactions

4. CASE REPOSITORY

The objectives of the enhancements in this environment have been the following:

1. Supporting users with an on-line tutorial available in the Case Repository home page in the individual menus as well, and with a FAQ section available in the same home page
2. Facilitating the access to non-registered users, by displaying the most recent cases.
3. Improving some of the functionalities which were not working properly in the previous version: assigning multiple authors (architects and/ or offices) to a case, assigning multiple authors to a bibliographic entry, and making collections.

The home page has been completely renewed for making it compatible with the Workspaces home page described in the previous section. It is now structured in the following sections: Active Workspaces, Completed Workspaces, Tutorial, FAQ and About (Figure 23).
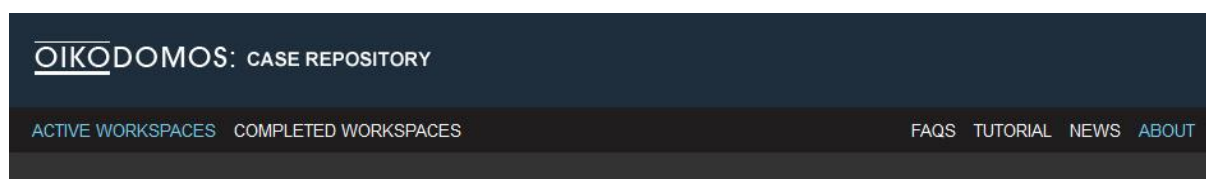
Figure 23. OIKODOMOS Case Repository. Home page menu.

4.1 On-line tutorial

An on-line **TUTORIAL** is available in the home page. It provides with a full description of the Workspaces environment which is useful for both students and teachers. The structure of the tutorial table of contents is the following:

1. Introduction. Summary and structure of the tutorial content.
2. Platform architecture. It explains the architecture of the Workspaces environment and the data structure.
3. Interface. This section introduces users to the language of the interface: menu structure, icons.
4. System Administration. It describes the functionalities in order to create users, institutions, and workspaces. It is addressed to teachers.
5. Learning Workspace. This section is structured according to the main menu of the case repository. It is addressed to both students and teachers.

The tutorial menu is placed on the right side of the interface (Figure 8). It unfolds dynamically while navigating through the different sections. The selected topic is displayed in the main window.
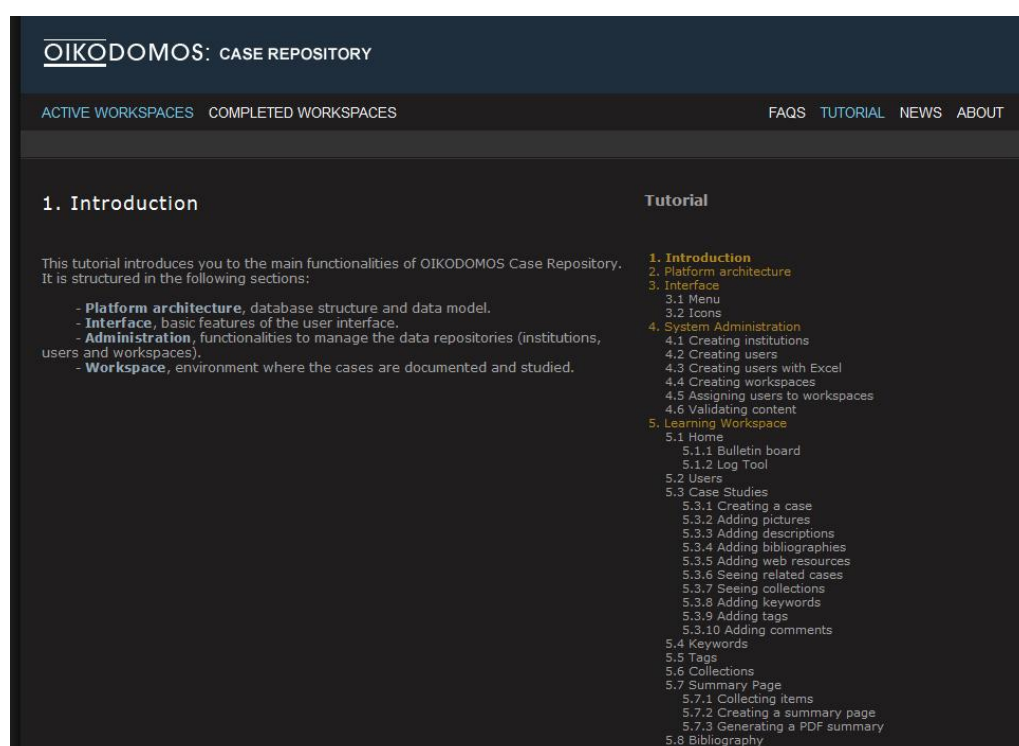
Figure 24. OIKODOMOS Case Repository. Home page: Tutorial menu.

4.2 FAQ section

The Tutorial is complemented with the FAQ section available in the home page (Figure 25). The questions are grouped in two blocks, for students and for teachers. If a user has further questions, he or she can contact the environment developers (support@oikodomos.org, ARC Enginyeria i Arquitectura La Salle). Some of these questions have been identified through usability tests where students and teachers of the associate partners who have joined the project activities, were involved. .

Figure 25. OIKODOMOS Case Repository. Home page: Tutorial menu.

4.3 About section

About provides a concise description of the Case Repository environment and a slide presentation of explaining its main features as well (Figure 26).
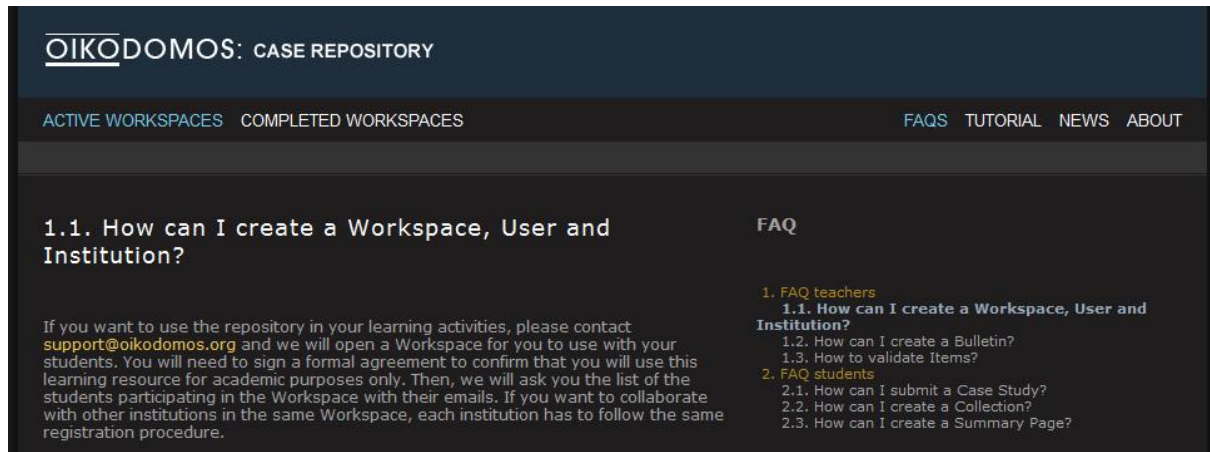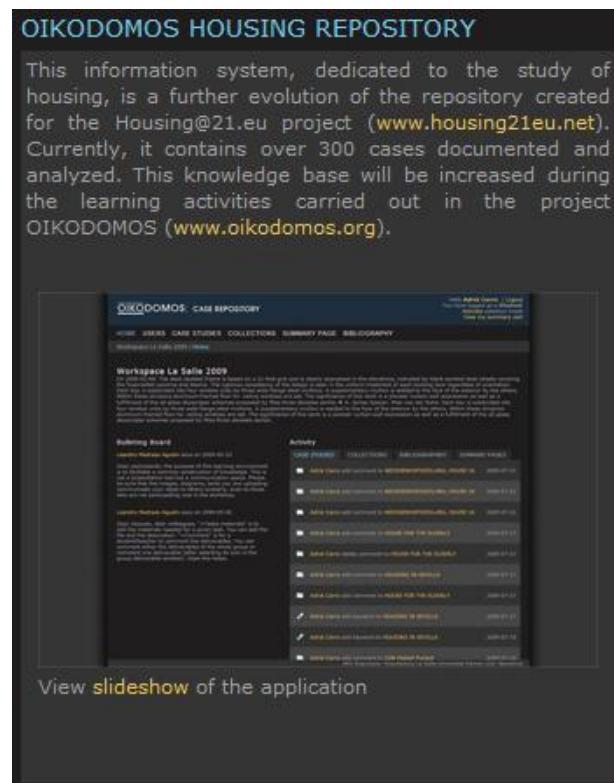

Figure 26. OIKODOMOS Case Repository. Home page: Tutorial menu.

4.4 Facilitating access to non-registered users

Following the model of the Workspaces home page, the Case repository home displays the active and completed learning workspaces. **Active Workspaces** display all Workspaces that are active at a given time. This is the default view mode of the home page. **Completed Workspaces** displays all workspaces which have been completed in exactly the same way as described above for the active workspaces. If there is no active workspace, then the completed workspaces are displayed instead.

To enable non-registered users to know about the learning activities being carried out in an active workspace, the home page displays the "Most recent cases" automatically. The user can also switch to the "Most documented cases" and to the "Most tagged cases" (Figure 27). However, non-registered users cannot have access to the full documentation of a case, only to the summary displayed in the home page.

Figure 27. OIKODOMOS Case Repository. Home page: displaying the most recent activity.

4.5 Improved functionalities

While using the latest version of the Case Repository in the learning activities of the project, several problems were identified: 1. There were inconsistencies in the database of bibliographic entries (e.g. the same author appeared described in multiple ways,…); 2. There were inconsistencies in the architect's database (e.g. the same architect and/or architectural office was described in multiple ways,…);   3. The process of creating collections was too complicated.

The following sections describe the work done to solve these problems.

4.6 Inconsistencies in the database Bibliography

In the previous version of the case repository three types of documents were identified: book, journal and web. Each type of document had a specific input form:

- Book: title, author, publisher, place and year
- Journal: title, author, journal, volume, number, first page, last page, place and year
- Web: title, author, publisher, URL, place and year

Also, in the earlier version there was only one field for an author of a certain bibliographic record, fact which caused many input errors since the users did not follow the recommended conventions (first name, second name). Now, after the changes we have introduced, the entry 'author' consists of fields; first name, middle name and last name (Figure 28).

Figure 28. OIKODOMOS Case Repository. New entry form to insert bibliographic entries.

Besides, now a bibliographic entry can have more than one author. By clicking on the "+" sign in the entry form, new entries for authors are generated.

Along with these modifications in the database structure and in the entry forms, it has been necessary to make a thorough revision of the database to correct existing mistakes and to make it compatible with the new structure. This has been a laborious process, involving a review of 381 bibliographic entries (Figure 29).

	author First_Name	Middle_Name	Last_Name	publisher	place	year	vol	num	pag-inici	pag-fi
2	Joaquim	Ruiz	Millet	Galería H2O	Barcelona, Spain	1995				
3			COAC	COAC	Barcelona, Spain	1998				
4				Domus	Italy	1964		421	44	46
5				Domus	Italy	1965		433	18	30
6				Casabella	Italy	1971		358	46	47
7	Gustau	Gili	Galfetti	Gustavo Gili	Barcelona, Spain	1997				
8	Andrea	Branz		Universe	New York, USA	1999				
9	Herbert	Muschamp		Universe	New York, USA	1999				
10	Willy	Boesiger		Les Editions d'Arch	Zurich, Switzerland	1991				
11	Oscar	Storonov		Les Editions d'Arch	Zurich, Switzerland	1991				
12			Le Corbusier	Les Editions d'Arch	Zurich, Switzerland	1991				
13	Hans	Girsberger		Les Editions d'Arch	Zurich, Switzerland	1991				
14	Deborah	Gans		Gustavo Gili	Barcelona, Spain	1988				
15	Josep M.	Rovira	Gimeno	Electa	Milano,Italy	2000				
16	Jaume	Freixa		Gustavo Gili	Barcelona,Spain	1979				
17	Joan	Busquets		Ediciones el Serbal	Madrid, Spain	2004				
18	Francesc	Roca	Rosell	Gustavo Gili	Barcelona,Spain	1975				
19	Enrico	Molteni		ETSAV,Edicions UP	Sant Cugat,Spain	1997				
20	William	J.R.Curtis		El Croquis Editorial	Madrid,Spain	1998		95		
21	Rosario	Alberdi		Ediciones Pronaos,	Madrid,Spain	1996				
22	Paloma	Poveda		El Croquis Editorial	Madrid,Spain	1992				
23	Josep Lluis	Solé		Ajuntament de Sar	Barcelona,Spain	1995				
24	Jordi	Amigó		Ajuntament de Sar	Barcelona,Spain	1995				
25	Warren	A.James		Gustavo Gili	Barcelona,Spain	1988				
26	Bartomeu	Cruells		Gustavo Gili	Barcelona,Spain	1992				
27	Manuel	Gausa		Actar	Barcelona,Spain	2001				
28	Marta	Cervelló		Actar	Barcelona,Spain	2001				
29	Maurici	Pla		Actar	Barcelona,Spain	2001				
30	Fernando	Márquez	Cecilia	El Croquis Editorial	Madrid, Spain	2002				
31	Richard	Levene		El Croquis Editorial	Madrid, Spain	2002				
32	Sofia	Cheviakoff		Rockport Publisher	Gloucester, Massachusetts, US	2002				
33	Alberto	Duarte		Rockport Publisher	Gloucester, Massachusetts, US	2002				
34	Josep	Llinàs		CAATEEB	Barcelona,Spain	1996				
35	Josep	Llinàs		ON: Diseño	Barcelona, Spain	1996		173		
36	Josep	Llinàs		El Croquis Editorial	Barcelona,Spain	1995		76		
37	Josep	Llinàs		Arquitectura Viva	Barcelona,Spain	1995		50		
38	Josep	Llinàs		Tanais	Barcelona,Spain	1997				
39	Alejandro	de la Sota		Tanais	Madrid, Spain	1997				
40	Alexandre	Chemetoff		Gustavo Gili	Barcelona,Spain	1992				
41	Pierrre-Alain	Croset		Gustavo Gili	Barcelona,Spain	1992				
42	Josep Lluis	Mateo		Ministerio de Fome	Barcelona, Spain	1998				
43	Aron	Betsky		Gustavo Gili	Barcelona,Spain	2003		25		
44	Manuel	Delgado		Gustavo Gili	Barcelona,Spain	2003		26		
45	Aleš	Moravanszki		Gustavo Gili	Barcelona Spain	2003		27		

Figure 29. OIKODOMOS Case Repository. Table generated to review the bibliographic database.

4.7 Inconsistencies in the database Architects

In the previous version, there was only one field to describe the architect and/or architectural office as authors of the case. This was a source of input errors which populated the database with inconsistent, duplicated names.

After the changes, the input "architect" has two fields: first name and last name. Besides, there is the option to distinguish between "architect" and "architectural firm". Multiple authorship of a case study are now feasible by using "+ " in the entry form. Architects and architectural firms can also be described as joint authors of a work (Figure 30).

Figure 30. OIKODOMOS Case Repository. New entry form to insert architects names.

Along with these changes in the database structure and in the entry forms, it has been necessary to upgrade the existing database to correct existing mistakes and to make it compatible with the new structure. This has been a ardous process, involving the review of 749 entries (Figure 31).

Figure 31. OIKODOMOS Case Repository. Table generated to review the architects database.

4.8 Creating collections

During the previous applications of the Case Repository, users have been reporting on difficulties when creating the collections of cases. The process of creating collections has been reviewed and simplified.

Just as in the earlier version, in order to create a public collection of cases, the user should first create a private collection and then make it public. In the menu **Collections** (Figure 32), the user can see the **Published** collections, the **Owned** collections (those which have not been published yet), and the **Private Library** (the cases selected and saved in the private space).

Figure 32. OIKODOMOS Case Repository. Improved interface to make collections.

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To create a Collection, the user selects first the case in the private library (Figure 32). Then, in *Assign cases to collections*, the selected cases can be added to existing collections or to a **New Collection.** If this second option is selected, a form pops up introducing the name and description of the collection (Figure 33).

Figure 33. OIKODOMOS Case Repository. Improved interface to make collections.

A collection created in this way is listed in the tab Owned which means that a new private collection has been created (Figure 34). To make it public , the toggle [publish] should be selected.
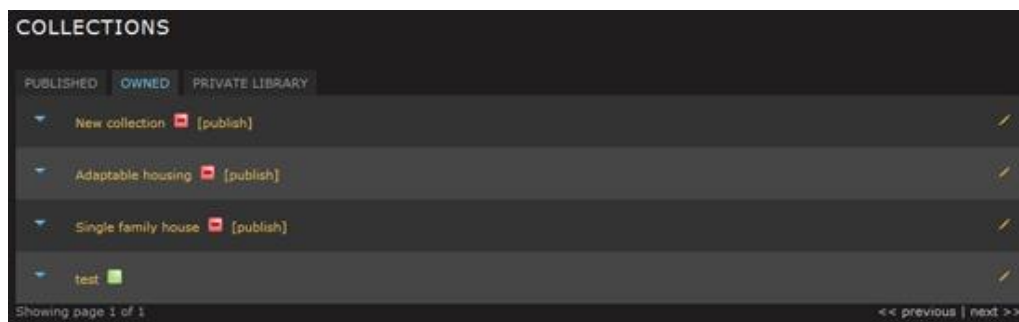
Figure 34. OIKODOMOS Case Repository. View of the private collections.

5. OIKOPEDIA

A new environment called OIKOpedia (www.oikodomos.org/oikopedia) was created as part of the digital platform. This environment contains the concept descriptions prepared for the compendium. Contents can be inserted by registered users, namely, teachers participating in the virtual campus activities (Figure 35).
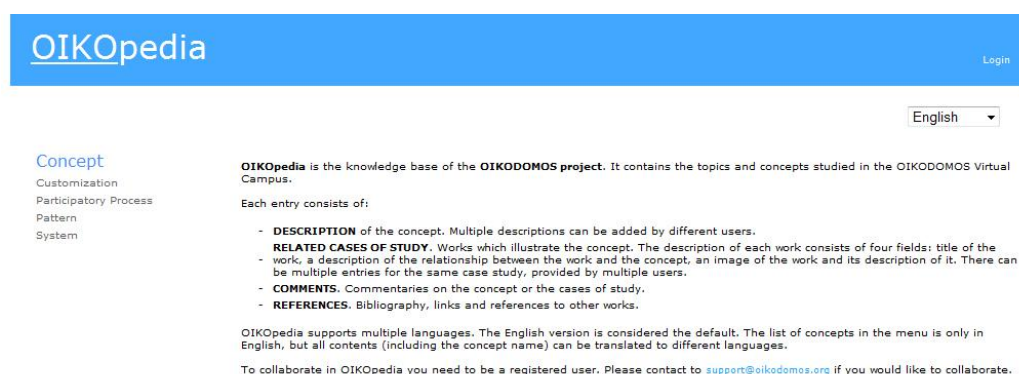

Figure 35. OIKOpedia. Homepage

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A registered user introduces a concept, in different steps: name, description, related cases, references. Other users can enhance this content later on, and contribute with their comments. The content is first inserted in English. Then, other users can translate it to other languages (Dutch, French, Spanish, Italian, Slovak and Turkish) and insert the translated blocks following the same procedure.

The header contains the title (left side) and the link to **login** the system (right side). Under the login is the list with the available languages (the default language is English). Under header on left side there are list of all concepts already inserted. Clicking on a concept name will display contents in the main window. To add a new concept +add needs to be clicked (Figure 36).

Figure 36. OIKOpedia. Concept menu

Figure 37. OIKOpedia. Content structure

The content area is structured in four blocks: description of the concept, works and projects that illustrate the concept, comments by other users, and bibliographic and on-line references (Figure 37). Each section can be introduced separately.

The user can later on delete and modify the content of each block, also separately (Figure 38).
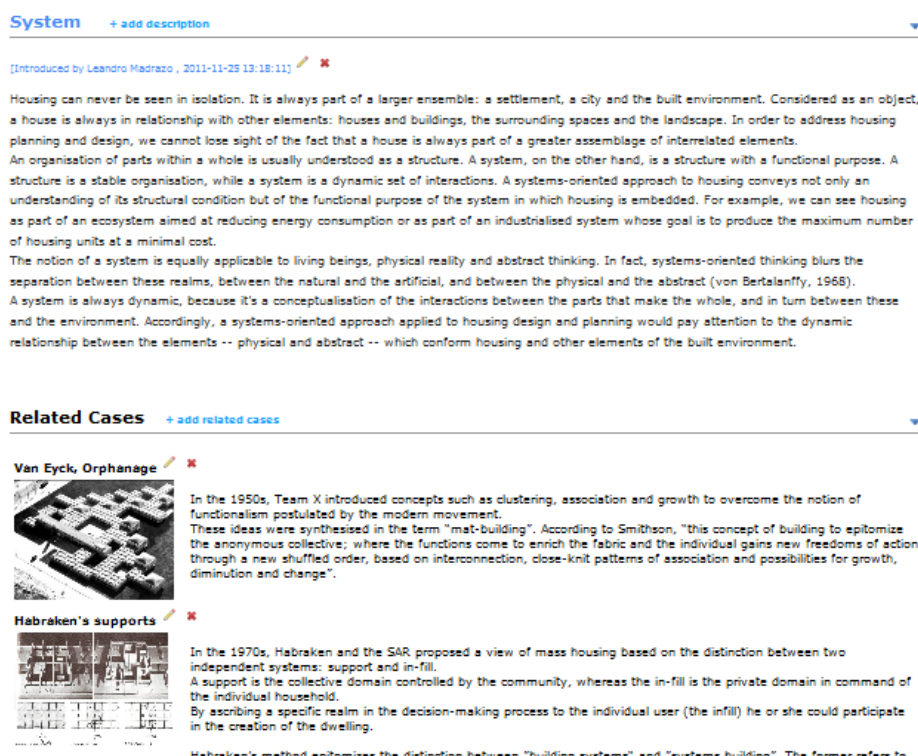
Figure 38. OIKOpedia. Editing mode.

6. OIKOblogs

A system of blogs has been created to facilitate the link between virtual campus activities and the Internet community. There is a Project OIKOblog (Figure 39) dedicated to the common activities ((conferences, workshops) linked to OIKOblog of every partner (Figures 40-41). These blogs are directly accessible from the home page of OIKODOMOS.

Figure 39. PROJECT blog.

It is possible to access each partner´s blog, from the general project blog. Conversely, from a partner´s blog it is also possible to access the general project blog and the blogs from all other partners, as well.

Figure 40. La Salle OIKOblog.

Figure 41. Sint Lucas OIKOblog.

Each partner has adopted a different strategy to create links between the different work produced in the collaborative digital platform (Workspaces, Case Repository) and the blog content. In the case of La Salle, students were asked to present in the blog the different work delivered in the learning activities in a different way. Whereas presentations of the work within the digital platform was addressed mostly to peers and teachers, presentations in the blog was addressed to the general public. This made them think about which was the most appropriate form of expression (media, content) to communicate better their ideas, taking into account the type of audience (professional and non- professional) (Figures 42-43).

Figure 42. Presentation of a student work in Workspaces.

Figure 43. Presentation of the same student work in the blog.

7. Further work

Nowadays, every environment of OIKODOMOS digital platform (Workspaces, Case Repository and Oikopedia) has its own database which is not accessible by other tools. This prevents future users from having access to the learning resources accumulated over time. For instance, future users might be interested in retrieving all the information related to a certain theme (e.g. flexible housing) which might be spread over different databases: a learning activity in a Workspaces which deals with the flexibility in housing; a case study in the repository which has the tag "flexible"; and a concept in Oikopedia called "flexibility".

The solution to this problem is to model the content of every database using semantic web technologies. In this way, it is possible to create a common language which enables users to extract information from a "virtual" database which contains information from all other databases (Figure 44).
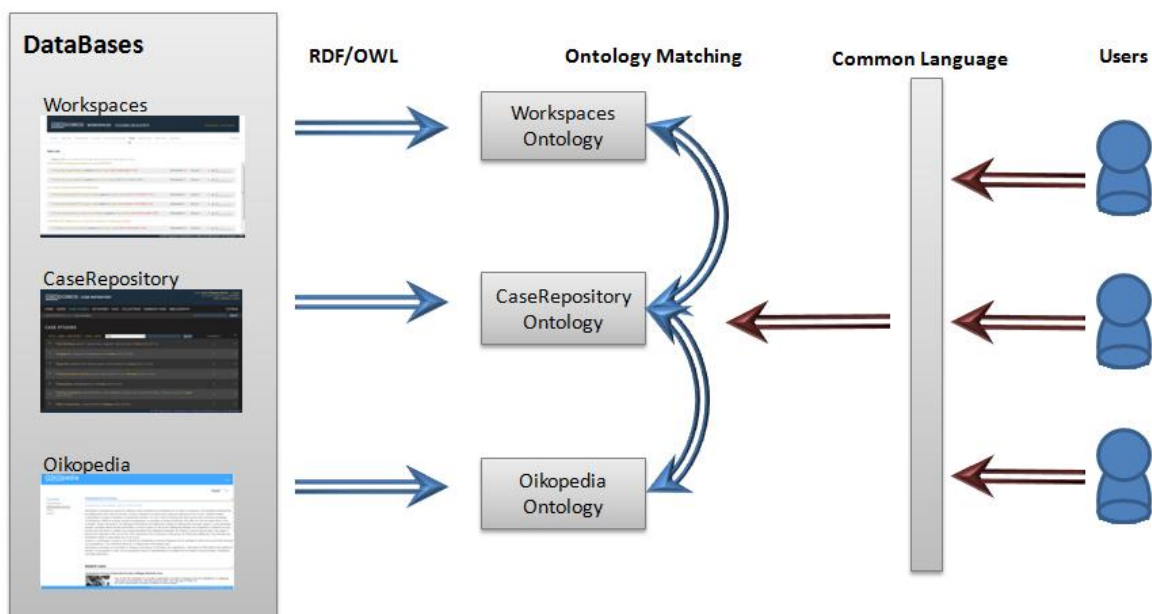

Figure 44. OIKODOMOS ontology model.

8. Acknowledgements