



**OIKODOMOS: a virtual campus to promote the study of dwelling in contemporary Europe**

Final Report

Public Part

## Project information

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## Executive Summary

OIKODOMOS (<http://www.oikodomos.org>) is a pedagogic research project financed by the Lifelong Learning programme (2007-2009) carried out by higher education institutions and research centres from Belgium, France, Slovakia, Spain, Switzerland and the United Kingdom. The goal of OIKODOMOS a Greek word for "the builder of a house", is to create a virtual campus to support and promote the study of dwelling at a European scale. For this purpose, we have developed, implemented, tested and evaluated a pedagogic framework focused on the collaborative design and implementation of on-line and off-line learning activities. The blended learning approach adopted in OIKODOMOS combines learning activities carried out in virtual environments specifically developed for the project with seminars and design studios taking place at the participating universities.

The purpose of the OIKODOMOS Virtual Campus is the creation of a space of collaboration among schools of architecture and urban planning where they can design and implement innovative learning models in the field of housing studies which overcome the boundaries between formal and informal education, promoting the interaction between academia and professional organizations and seeking the participation of citizens and adult learners.

The learning activities carried out in the OIKODOMOS Virtual Campus are based on a simple conceptual structure composed of workspaces and tasks. A "Workspace" is the learning space created by a group of teachers who decide to develop joint learning activities around a specific theme over a specified period of time. It is composed of "Learning Activities" which, in turn, are made up of "Tasks". Tasks can be single or grouped in sequences. Sequenced tasks can be constrained to a single Learning Activity or cut across different ones. This learning structure is flexible and neutral enough as to support different kinds of activities – from the collaborative development of a project to course assignments– which can be carried out by students working individually or in groups, and by schools working independently or in collaboration with others.

The teaching and learning processes implemented in the OIKODOMOS Virtual Design Studios combine on-line and off-line learning activities carried out collaboratively in synchronous or asynchronous ways using different ICT tools. The implementation of the learning activities have been structured around three Joint Workshops –based on Ghent, Grenoble and Bratislava– each one dealing with a specific theme: life-long dwelling, housing for diversity and effective housing. These topics have been addressed in an interdisciplinary manner, combining architectural and urban planning subjects. Learning activities around each theme have taken place in the virtual environments, in design studios at the participating institutions as well as in the joint workshops. Community representatives, local authorities and housing experts have participated in these activities in different ways: contributing to identify design projects, formulating the program needs, and assessing the project results.

A web-based learning platform has been specifically created to support the OIKODOMOS pedagogic approach. It consists of two environments: Workspaces and Case Repository. The first one supports project-based learning activities, such as the development of a project –architectural and/or urban– in a collaborative manner. The second one is a digital repository of housing case studies, which is constructed also collaboratively by learners. Each environment has a distinct technological infrastructure so that they can be used independently or in combination.

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More information in the project website: [www.oikodomos.org](http://www.oikodomos.org)

**Table of Contents**

- 1. PROJECT OBJECTIVES ..... 6**
- 2. PROJECT APPROACH ..... 8**
- 3. PROJECT OUTCOMES & RESULTS .....12**
- 4. PARTNERSHIPS .....23**
- 5. PLANS FOR THE FUTURE .....26**
- 6. CONTRIBUTION TO EU POLICIES.....27**

## 1. Project Objectives

The starting point of OIKODOMOS is a previous project –HOUSING@21.EU ([www.housing21eu.net](http://www.housing21eu.net))– developed in an Erasmus Intensive Programme between 2003 and 2006. The purpose of that programme was twofold: architectural –studying the forms of dwelling in contemporary European societies; and pedagogic – integrating innovative teaching methods with ICT. One of the results of the project was an on-line repository containing 300 cases of study documented and analyzed using a learning platform specifically created for this project. The experience gained with the HOUSING@21.EU intensive programmes was a motivation to create a new consortium to develop a virtual campus to study dwelling at a European scale.

According to the glossary of the Life Long Learning Programme 2007-2013, a Virtual Campus conveys: “Cooperation between higher education institutions in the field of e-learning, regarding: design of joint curricula development by several universities, including agreements for the evaluation, validation and recognition of acquired competences, subject to national procedures; large-scale experiments of virtual mobility in addition to physical mobility and development of innovative dual mode curricula, based on both traditional and on-line learning methods. This broad definition involves many issues from partnerships between traditional and/or distance universities and HEI with a view to offering joint certifications (for undergraduate and/or postgraduate levels) and cooperation with learning support services. This might also include collaborative activities in strategic areas of education or research through cooperation involving researchers, academics, students, management, administrative and technical personnel. 'Virtual campuses' should not be confused with e-learning platforms.” From all topics included in this broad definition, OIKODOMOS has been mostly concerned with promoting the cooperation among higher education institutions in architecture and urban planning to develop a common pedagogic framework based on a blended learning model which has been applied and tested in a large scale experiment involving virtual and physical mobility. Teachers, researchers, technical and administrative staff have participated in the development of the virtual campus.

The distinctive features of the OIKODOMOS virtual campus are:

- Innovative pedagogic methods, which interweave on-line resources with traditional classroom activities to study housing from a multidisciplinary perspective by means of seminars and studio projects, analysis of cases, and joint design workshops taking place both at in virtual environments (Virtual Design Studio, web-based learning activities) as well as in the participating institutions.
- Multi-national and multi-professional activities planned in conjunction with community representatives and local authorities, to study the problems of dwelling and to propose solutions to it.
- Bologna compatible courses (ECTS credited) aimed at supporting the creation of future European Master's programs, which combine physical and virtual mobility of both teachers and students.

The creation of this Virtual Campus has involved undertaking the following tasks:

- Developing, implementing, testing and validating an innovative pedagogic methodology integrating on-line activities with the curricula at each partner institution.
- Implementing large-scale experiments which increases virtual and physical mobility through the participation of learners in the learning activities
- Carrying out a critical analysis of e-learning methods and tools applied to architectural education (virtual design studios, repositories of cases of study).

- Designing a joint curricula including agreements for the evaluation, validation and recognition of acquired competences and learning outcomes.
- Creating the appropriate learning platform to support the adopted pedagogic model
- Conforming educational open resources stemming from the learning activities to standards.
- Proposing innovative housing embracing architectural, urban and environmental scales, developed collaboratively by the participating institutions in conjunction with social and professional organizations, citizens and local authorities.
- Assessing the pedagogic methods and the learning technologies employed and the results obtained.
- Reporting good and bad practices and recommendations for other partners to join the virtual campus in the future.

## 2. Project Approach

A Virtual Campus –according to Van Dusen<sup>1</sup>– can be defined in the following terms: “The virtual campus is a metaphor for the electronic teaching, learning, and research environment created by the convergence of several relatively new technologies, including but not restricted to, the Internet, World Wide Web, computer-mediated communication, video conferencing, multimedia, groupware, video-on-demand, desktop publishing, intelligent tutoring systems, and virtual reality.” In this definition, the focus is placed on the technology that allows the creation of a “virtual” learning space. For the BENVIC study ([www.benvic.odl.org](http://www.benvic.odl.org)), dedicated to analyze virtual campuses implemented at five European universities, a virtual campus “refers to a specific format of distance education and on-line learning in which students, teaching staff and even university administrative and technical staff mainly ‘meet’ or communicate through technical links.”<sup>2</sup> According to this definition, a virtual campus is a surrogate of the traditional university, which facilitates communication between members of the academic community (teachers, students, staff).

Furthermore, there are other definitions contained in the BENVIC report which stress the unique characteristics of a virtual campus, those that go beyond the reproduction of existing academic structures and practices in a virtual environment. Thus, for example, a virtual campus can be understood as a “dynamic entity that permits the creation of a community dedicated to training and education”<sup>3</sup> and as a flexible learning environment which facilitates access to education to different kinds of learners. In this sense, a virtual campus can be seen as something in-between a virtual class and a virtual university: a space of research, communication and collaboration among institutions and people committed to share ideas and resources to transform education using information and communication technologies. Accordingly, the purpose of the OIKODOMOS virtual campus has been the creation of a space of collaboration among schools of architecture and urban planning where they can design and implement innovative learning models in the field of housing studies which overcome the boundaries between formal and informal education, promoting the interaction between academia and professional organizations and seeking the participation of citizens and adult learners.

### 2.1 Blended learning: reconceptualising the relationship between teaching and learning

The pedagogic model of the OIKODOMOS virtual campus is based on blended learning. In the simplest sense, the term “blended learning” refers to any combination of face-to-face instruction with computer-mediated instruction. More generally, it is also used to refer to any combination of media, pedagogic methods, and theoretical and practical works. Heinze & Procter<sup>4</sup> have described blended learning as “the effective combination of different modes of delivery, models of teaching and styles of learning”. However, the vagueness of these definitions raises some doubts about the usefulness of the term to convey an identifiable model of education.

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<sup>1</sup> Van Dusen, G.C. (1997) *The Virtual Campus: Technology and Reform in Higher Education*, ASHE-Eric Higher Education Report, 25/5, Washington D.C.: The George Washington University

<sup>2</sup> BENVIC, *Benchmarking of Virtual Campuses*. Retrieved on 27/01/2010 from

<http://www.benvic.odl.org/>

<sup>3</sup> BENVIC, *Benchmarking of Virtual Campuses*. Retrieved on 27/01/2010 from <http://www.benvic.odl.org/>, deliverable 1, p. 7

<sup>4</sup> Heinze, A. & Procter, C. (2004). *Reflections on the Use of Blended Learning*. Proceedings of Education in a Changing Environment. Conference Proceedings.



For Garrison and Vaughan, the real significance of blended learning lies in its potential to transform education, since “(it) questions conventional practices and the belief in the lecture as an effective approach to engage students in critical and creative thinking and learning”<sup>5</sup>. Furthermore, they contend that “Blended approaches to educational design recombine concepts that were previously considered contradictory, such as collaborative-reflection and asynchronous-community”<sup>6</sup>. Therefore, blended learning represents “a fundamental reconceptualisation and reorganization of the teaching and learning dynamic, starting with various specific contextual needs and contingencies (e.g., discipline, developmental level, and resources)” which conveys “rethinking and redesigning the teaching and learning relationship”<sup>7</sup>. In OIKODOMOS we have understood blended learning in this last sense, as an opportunity to create new learning environments which transcend existing boundaries – physical, institutional, disciplinary– to create a space of interaction where teaching and learning are the result of the interactions among learners.

The blended learning approach adopted in OIKODOMOS combines on-line learning activities carried out in on-line environments specifically developed for the project with seminars and design studios taking place at the participating universities. Housing studies developed in the two-year project have focused on three issues: life-long dwelling, housing for diversity and effective housing. These topics have been addressed in an interdisciplinary manner, combining architectural and urban planning subjects. Learning activities around each theme have taken place in the virtual environments, in design studios at the participating institutions, as well as in the joint workshops carried out each semester at a different institution. Community representatives, local authorities and housing experts have participated in these activities as well.

## **2.2 Learning structure: constructing sequences of learning activities**

In recent years, the design of learning activities which can be used independently or brought together into sequences have been encouraged by the set of specifications evolved by the IMS Global Learning Consortium<sup>8</sup>. Learning Design is the name of one of the specifications, but is also a more general term used to describe a process which gives attention to student centred learning, putting the student at the centre of the learning process. In the latter context, as used in this paper, learning design emphasises careful attention to the selection and ordering of learning resources, the choice of Learning and Teaching processes and ensuring an evaluation of the effectiveness of the learning process is completed. The use of *learning sequences* stresses more the process of learning than the learning content; they emphasize the interaction between learners rather than between learners and content; and they foster the use of multiple tools in different environments to carry out learning activities<sup>9</sup>.

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<sup>5</sup> Garrison, D. R., Vaughan, N. D. (2008) Blended learning in higher education: framework, principles, and guidelines, San Francisco: Jossey-Bass, p. 146

<sup>6</sup> Ibid., p. 148

<sup>7</sup> Garrison, D. R., Kanuka, H., (2004) Blended learning: Uncovering its transformative potential in higher education, The Internet and Higher Education, Volume 7, Issue 2, p. 99

<sup>8</sup> IMS (2010), IMS Global Learning Consortium web page. Retrieved on 30/01/2010 from <http://www.imsglobal.org/specifications.html>

<sup>9</sup> Dalziel, J. R. (2003) Implementing Learning Design: The Learning Activity Management System (Lams) In G.Crisp, D.Thiele, I.Scholten, S.Barker and J.Baron (Eds), Interact, Integrate, Impact: Proceedings of the 20th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education. Adelaide

The pedagogic model of OIKODOMOS adheres to these basic tenets of learning design. The learning activities carried out in the OIKODOMOS Virtual Campus are based on a simple conceptual structure (Fig. 1). A “Workspace” is the learning space created by a group of teachers who decide to develop joint learning activities around a particular theme over a specified period of time. It is composed of “Learning Activities” which, in turn, are made up of “Tasks”. Tasks can be single or grouped in sequences. Sequenced tasks can be constrained to a single Learning Activity or cut across different ones. This learning structure is flexible and neutral enough to support a variety of learning activities –from the collaborative development of a project to course assignments– which can be carried out by students working individually or in groups, and by schools working independently or in collaboration with others.

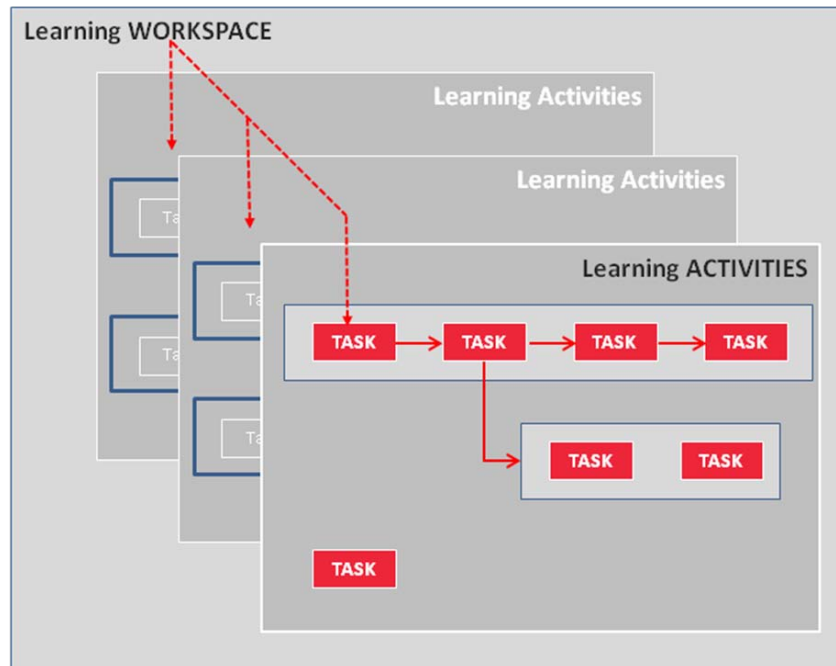


Fig. 1. Structure of the learning activities

## 2.2 Design studio: a paradigm of constructivist pedagogy

The Design Studio is a well-established methodology in architectural education which embodies a creative environment in which students are supported in developing their design projects. Learning occurs as students develop a project through its design phases: identification of the problem, sketching, developing a solution, analyzing results, and presenting a final project to be critically assessed. Teaching staff provide guidance which offers students the opportunity to expand their existing knowledge base and evolve new understanding through pragmatic engagement with the task in hand supported by expert input. As Schön contended, in the context of a Design Studio designing can be considered “a conversation with the materials of a situation”<sup>10</sup> in which the expert guides the apprentice in the process of reflecting-in-action “on the construction of the problem, the strategies of the action, or the model of the phenomena, which have been implicit in his moves”<sup>11</sup> [11]. Constructivist based learning is thus at the core of Design Studio work.

The pedagogic model underlying the design studio was taken as a backbone for OIKODOMOS. Learning activities are the result of a reflective dialogue among the teachers

<sup>10</sup> Schön, D. (1983) *The Reflective Practitioner*. Basic Books, p. 78

<sup>11</sup> *Ibid.*, p. 79

who participate in their design. Unlike many eLearning projects, OIKODOMOS was not constrained to teaching online some basic concepts, leaving the practical work for the face-to-face activities, but it has ventured in the development of distributed blended design activities to be carried out both on-line and on-site.

### 3. Project Outcomes & Results

The project results encompass three different areas: the ICT Platform specifically developed to support the pedagogic model; the implementation of the learning activities around three Joint Workshops; and the methodology to carry out the pedagogic evaluation and quality assessment of the learning outcomes.

#### 3.1 OIKODOMOS ICT Platform

The OIKODOMOS web-based platform is one of the major outcomes of this project. At the outset, it had to be decided which ICT platform would be used to support the learning activities of the virtual campus. After reviewing some of the existing learning environments, we came to the conclusion that they were either too much focused on managing the pedagogic activities (e.g. Moodle) or too restrictive in the modelling of the tasks (e.g. LAMS). Therefore, we decided to create the OIKODOMOS platform to support a pedagogic model focused on learning activities which are collaboratively created and dynamically developed by a group of learners.

The OIKODOMOS platform (Fig. 2) consists of two environments: Workspaces and Case Repository. The first one supports project-based learning activities, such as the development of a project –architectural and/or urban- in a collaborative manner. The second one is a digital repository of housing case studies, which is constructed also collaboratively by learners. Each environment has a distinct technological infrastructure so that they can be used independently. They can also be jointly used during some of the learning activities (for example, generating in the Case Repository a report from the analyzed cases and using it as an input to a learning process in Workspaces).

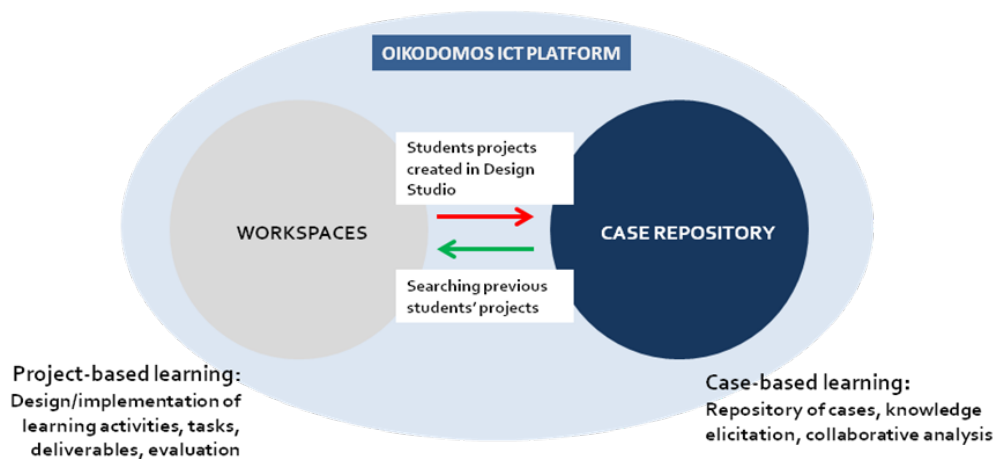


Fig. 2. OIKODOMOS platform

##### 3.1.1 OIKODOMOS Workspaces

It is a web-based learning environment which facilitates the collaboration among distant learners, carrying joint learning activities in different settings, physical and virtual: design studios, seminars and courses.

The environment is divided into two areas: Virtual Campus and Learning Workspace (Fig. 3). The Virtual Campus area contains the tools to create and manage the different Learning Workspaces which are created throughout time, as well as the repositories of data which can be reused in subsequent Learning Workspaces (Institutions and users, Learning Activities, Learning Outcomes, Keywords). This way, when a new Workspace is set up learners can benefit from the data previously gathered, as well as from the experience and the results obtained in previous Workspaces. Once a Workspace has been set up in the Virtual Campus area, it is possible to define and execute the Tasks. Any number of Learning Workspaces can be opened at once, each one dedicated to the activities developed by different institutions and learners during a period of time.

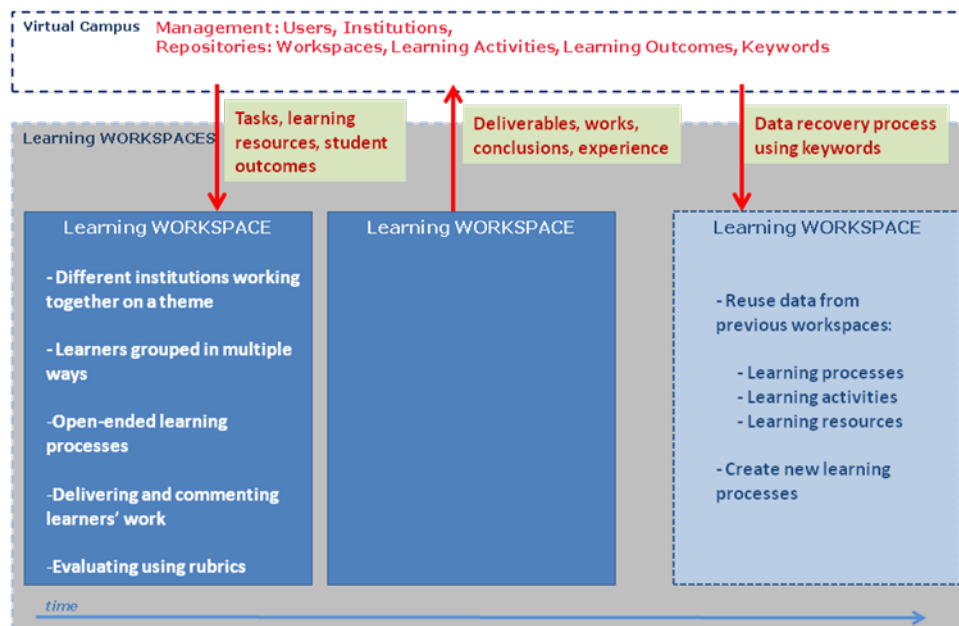


Fig. 3. Structure of the Learning Workspace

The interfaces have been designed to facilitate the design and execution of learning activities and tasks which are at the core of the adopted pedagogic model (Fig. 4). Tasks can be defined together with marking grids (rubrics) which are used for different kinds of evaluation (by teacher, by peers, by oneself). Works uploaded by students –done individually or in group– are visually displayed and can be commented by peers and teachers. Works done by groups of students or by institutions can be easily visualized. The activity of the learning system is captured by a log which can be customized in order to access quickly the tasks and deliverables in which a learner is interested.

The screenshot displays the OIKODOMOS workspace interface. At the top, the header shows 'OIKODOMOS: WORKSPACES Workshop Bratislava - Effective Housing' and user information 'Madraza, Leandro | Profile | Logout'. Below the header, a navigation bar includes 'Home', 'Participants', 'Groups', 'Tasks', 'Resources', and 'Learning Activities'. The main content area features a task titled 'LAs TK4 Site Analysis' by 'Martin Gajdo, Angel', with a date range from '24 September 2009 to 31 November 2009'. The task description states: 'The objective of this activity is to read and interpret the area and program of the project to be developed in the Bratislava workshop. The knowledge acquired in this task will facilitate the work to be done in the workshop.' Below the description, there are filters for 'Description', 'Predecessor Task', 'Successor Task', 'Keywords', 'Learning Outcomes', 'Materials', and 'Groups'. A section titled 'Seminar La Salle' shows 'Deliverables of Seminar La Salle (12)' with a grid of thumbnails for various documents, including 'Czornicka, Rona', 'Oliveri Vidal, Marc', 'Romero, Bruno', 'Sánchez, Abiá', 'Díaz, Elena', 'Zelquey, Bóiana', and 'Fernández, Ester'. At the bottom, there is a 'Comments' section with an 'Add Comments' text area and a rich text editor toolbar.

Fig. 4. Deliverables submitted to a Task by the different Groups/Users

### 3.1.2 OIKODOMOS Case Repository

This repository is a further development of one created in a previous project, HOUSING@21.EU ([www.housing21eu.net](http://www.housing21eu.net)) carried out under the auspices of the Erasmus Intensive Program from 2003 to 2006. The existing repository contained over 300 documented cases, created by students from five European Schools during the activities of the program. As first step, the quality of content was thoroughly reviewed: irrelevant information was removed, and English texts were edited and corrected. Then, following a usability test of the existing repository and a technical evaluation of the existing implementation, a full-fledged repository was designed and programmed and the upgraded content ported to it.

The new repository consists of a central database with linked Workspaces (Fig. 5). This Workspace – which is different from the Learning Workspace described above– enables a group or learners to work with the content of the repository, adding new information to it. Before the new content is added to the central repository, a validation process takes place: responsible tutors for the Workspace need to validate the quality of the new content: appropriateness of the case, and correctness of the text (in form and in content). This way, we can guarantee that the content of the repository will have the necessary level of quality to make it a valuable learning resource.

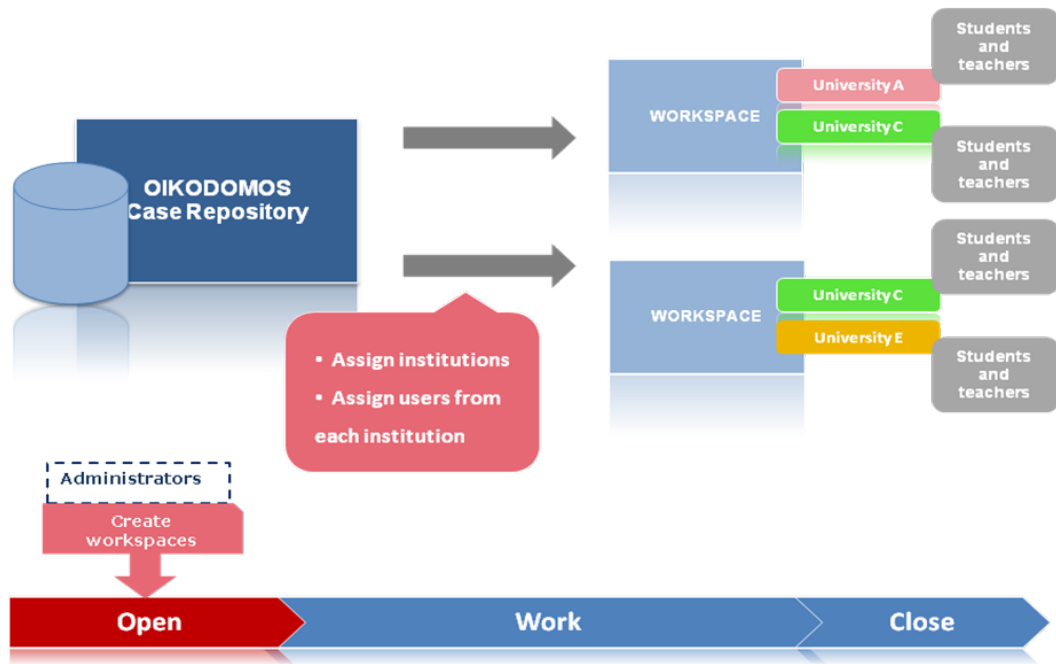


Fig. 5. Working processes in the Case Repository

The basic data structure of the repository is the “case study”, which is composed of descriptions, images, bibliographic references, comments, web links, tags and keywords (Fig. 6). “Tags” are words that users attach to a case (folksonomies) while “Keywords” are categories built-in the system to describe a case (ontologies)<sup>12</sup>. A “collection” is a group of cases studies sharing some characteristics, and they can be “private” or “public”. A “summary page” is a format-free document created with the data retrieved from the repository.

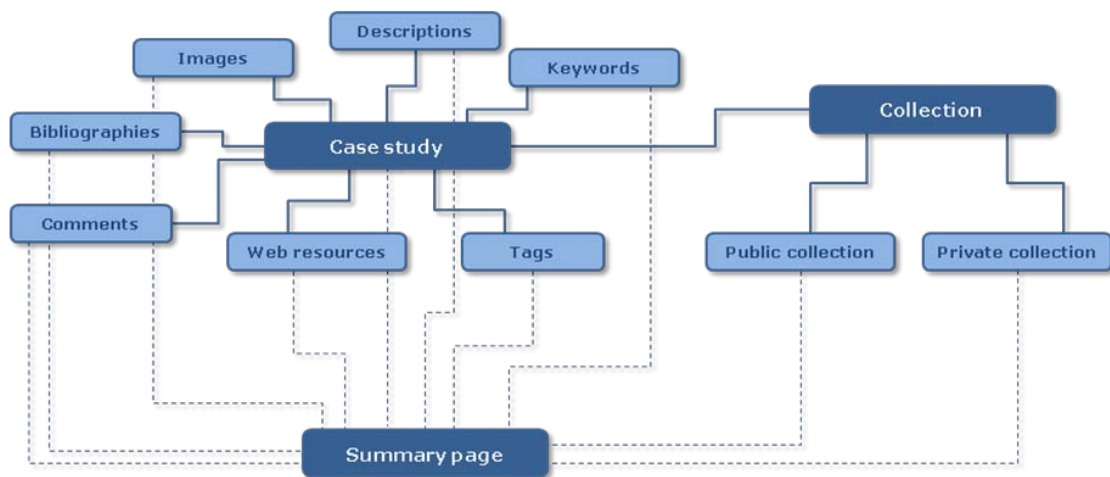


Fig. 6. Data structure of the Case Repository

<sup>12</sup> Folksonomies refer to tags that users freely assign to documents, as the ones that are used in social web applications. In contrast, ontologies are conceptualizations of a knowledge domain created by experts and expressed as systems of concepts. See Katrin Weller, “Folksonomies and ontologies: two new players in indexing and knowledge representation”, Applying Web 2.0 Innovation Impact and Implementation, Online Information 2007, Conference Proceedings.

Case studies are displayed in a concise form, showing all relevant information: representative icon, basic data (architect, place, author), description, keywords and tags (Fig. 7). The description of a case includes: plans, sections, elevations, renders/perspectives, details, sketches, diagrams, photos, 2-d drawings, and 3-d models, and geographic location in Google maps. A case can be commented by learners, thus facilitating the discussion and critical analysis. Also, other learners can add new images, bibliographic references and tags.

The screenshot displays the OIKODOMOS Housing Repository interface. At the top, the user is logged in as Leandro Madrazo Agudin. The navigation menu includes HOME, USERS, CASE STUDIES, KEYWORDS, TAGS, COLLECTIONS, SUMMARY PAGE, and BIBLIOGRAPHY. The current view is 'EFFECTIVE HOUSING / Case Studies / 56 houses in Vijfhuizen'. A search bar is visible on the right. Below the navigation, there are filters for various types of content: Floor-plans (7), Sections (6), Elevations (5), Renders/Perspectives (4), Details (0), Sketches (0), Diagrams (2), Photos (9), Drawings (0), and Models 3D (0). A grid of thumbnails shows various architectural drawings, all attributed to Elena Gimeno and dated 2009-12-01. Below the grid, a detailed card for '56 houses in Vijfhuizen' is shown. The card includes a small image of a house, the architect (S333), country (Netherlands), city (Vijfhuizen), address, number of dwellings (50), and completion year. The description states that the project is the first phase of a large Vinex urban plan for 700 new dwellings. Below the card is a Google Maps view of the location in Haarlem, Netherlands. The footer of the interface reads 'ARC Enginyeria i Arquitectura La Salle-Universitat Ramon Llull, Barcelona'.

Fig. 7. View of selected case of study

From the existing cases, users can create “collections” which can be stored in their individual working spaces ( private collection) or be shared with other learners (public collection). This functionality fulfils a double purpose: it enables a user to select from the repository those cases that are relevant for the task at hand, and it generates additional knowledge from the existing cases by discovering some common features in a group of projects (Fig. 8). Furthermore, with the “Summary Page”, users can insert previously selected data (a description, an image, a tag) in a free-format document whose content is linked to the repository. This information can be complemented with other data (texts, images, links) to create a report and export it in .pdf format. This document can be, for example, be an input in a task carried out in OIKODOMOS Workspaces. The Summary Page gives the user the opportunity to free from the repository structure and to gain expressive capacity in order to explain ideas or concepts derived from the repository data.



The screenshot displays the OIKODOMOS Housing Repository interface. At the top, the user is logged in as Leandro Madrazo Agudin. The navigation menu includes HOME, USERS, CASE STUDIES, KEYWORDS, TAGS, COLLECTIONS, SUMMARY PAGE, and BIBLIOGRAPHY. The current path is EFFECTIVE HOUSING / Collections / Residential housing. The main content area is titled 'Residential housing' and includes a description by Victor Peña, dated 2009-11-12. Below the text are five image thumbnails of residential buildings, each with a caption: 'Victor Peña add \*LANDSTEINERLAAN ..', 'Victor Peña add \* HOUSING COMPLEX..', 'Victor Peña add \*CASPAR', 'Victor Peña add \*WIENERBERGGR?NDE..', and 'Victor Peña add \*ACHSLENGUT RESID..'. A Google Maps section shows a world map with a red pin in Europe, and a list of project names: LANDSTEINERLAAN HOUSING, HOUSING COMPLEX, ROTTERDAMERSTRASSE (not located), CASPAR, WIENERBERGGR?NDE ESTATE, and ACHSLENGUT RESIDENTIAL PROJECT. The footer mentions ARC Enginyeria i Arquitectura La Salle-Universitat Ramon Llull, Barcelona.

Fig. 8. View of selected case of study

### 3.2 Implementation of the learning activities

The housing studies embraced in the learning activities carried out in the project have focused on three issues: life-long dwelling, housing for diversity and effective housing. Each of these topics have been addressed in an interdisciplinary manner, combining architectural and urban planning subjects. Learning activities around each theme have taken place in the virtual environments, in design studios at the participating institutions, as well as in the joint workshops carried out each semester at a different institution. Community representatives, local authorities and housing experts have participated in these activities

During the two-year project activities, three design projects have been carried out in the design studios –virtual and physical– organized around each one of the three joint workshops taking place at Sint-Lucas/Ghent, IUG/Grenoble and FASTU/Bratislava. The projects were located in the region of the school responsible to host the workshop. As preparation for the learning activities to be carried out in the Joint Workshop some tasks started earlier requiring the collaboration of the participating students and teachers (Fig. 9). These preparatory activities were carried out with OIKODOMOS Workspaces as well as a variety of ICT tools to support Virtual Design Studio teaching (EVO, Teamviewer, Sametime Unite, Skype). These preparatory activities significantly contributed to increase the quality of the learning carried out afterwards in the workshops. After the Joint Workshops, work continued locally in the participating institutions and collaboratively in Workspaces. This way it was possible to integrate both physical and virtual design studio work, with seminars and courses in different institutions working on a common theme during one semester.

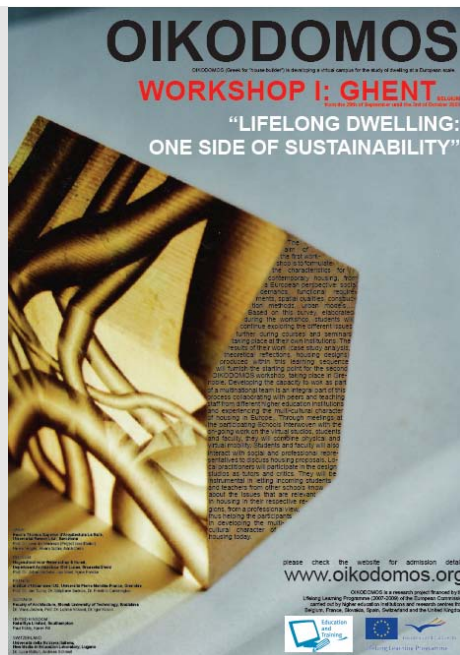


Figure 9. Students, using EVO, Skype and Sametime Unite tools.

This is a summary of the topics developed in each one of three Joint Workshops:

**WORKSHOP 1: "Lifelong dwelling: one side of sustainability".**

Hogeschool voor Wetenschap & Kunst, Sint-Lucas, Ghent (September 29-October 3, 2008)



The aim of the first workshop was to formulate, from a European perspective, the characteristics of contemporary housing, attending to social demands, functional requirements, spatial qualities, construction methods, and urban models, among others.

Lifelong dwelling has to do with the design of a built environment adapted to young and old, to the inhabitants in their youth and later on in their old age. The workshop focused on developing different forms of housing (in new or existing structures, communal and individual housing) that are sustainable at different levels and degrees: Lifelong living as structural element for new housing for young people (affordable and accessible for all); and re-design of existing houses and housing blocks for young people, elderly and people requiring help.

## WORKSHOP 2: "Housing for diversity"

Institut d'Urbanisme de Grenoble, Université Pierre Mendes (April 22- 29, 2009)



The second workshop was designed as a combination of conferences and teacher presentations plus a design studio. Students carried out their project work on the GIANT site -an area of 350 ha located at the west of the old center of Grenoble that is subject to a regeneration programme. In this way, the OIKODOMOS program could connect with the realities and practice of current preoccupations with sustainable urban in an academic context opened to the participation of the administration, professionals, investors and citizens.

## WORKSHOP 3: "Effective Housing"

Faculty of Architecture, Slovak University of Technology, Bratislava (October 14- 20, 2009)



The third OIKODOMOS Joint Workshop –dedicated to the theme “Effective Housing”– was aimed at the planning and design of an urban and housing development in a suburban area of Bratislava: Dúbravka Big Camp. The site was selected in close cooperation with local representatives in order to obtain the involvement of the local government, experts, practitioners and citizens. The project scope was chosen to accommodate both urban and architectural issues so that both Architecture and Urban Planning schools could participate and, eventually, collaborate in the design studios.

The activities generated around each workshop were closely interwoven with project promotion and dissemination work and have helped to engage target groups beyond academia. Local authorities, and professional bodies were engaged in the preparation of the design project and participated in the evaluation of results. Local media covered some of the events related to the Joint Workshops.

### 3.3 Pedagogic evaluation and quality assessment

This section summarizes the results of evaluating assorted data which has been collated during the project, reviews the effectiveness of the outputs against key questions and sets the results in a broader pedagogic context. The questions are designed to answer the question “how close did Oikodomos come to achieving its goals?”

#### 3.3.1 Methodology to carry out the pedagogic evaluation and quality assessment of the learning outcomes.

The pedagogic evaluation has been conducted from the viewpoint of a participant observer, inputs being used to support the evolution of the Learning and Teaching (L&T) methodology and its implementation via the platform, as the project developed. This included acquiring feedback from students after Joint Workshops to inform modifications in the L&T process in later workshops. The evaluation is also outputs based<sup>13</sup>, and the final discussion mainly reflects feedback from the last Joint Workshop, as this represents the culmination of the developments through the project. The discussion below therefore reflects the evolution process as well as providing an overview of the final evaluation results, more details being available within the QPLN work-package report.

As indicated above the underpinning model of learning within Architecture is constructivist, theoretical concepts being explored and understood by placing them in a practical context. The approach is embodied in the “Design Studios” of architectural education, project based explorations of individual’s ability to apply theoretical knowledge, to synthesise newly learned and tacit knowledge, to demonstrate the synthesis of these elements and to demonstrate their ability to link between their world of vision and practical reality. The design studio is the medium by which fundamental practical ability and creativity are fused into more solid forms, in some cases literally. OIKODOMOS has explored the use of a blended model of learning and teaching which brings students together in face-to-face Joint Workshops and uses the platform developed to enable completion of the Learning Activities and Tasks. The Joint Workshops have many of the characteristics of Design Studios but are delivered via a blend of virtual and face-to-face activities, hands on and working in an electronic space, made possible by use of the OIKODOMOS platform.

Discussion showed that partner schools were generally similar in their overall conceptual approach to the L&T processes used in their discipline. In common with outcomes from the work of TUNING<sup>14</sup>, aims and competences were used as a basis for defining their students learning, but there were significant variations in the way these were articulated. Taking the lead from the Bologna process (Bologna,2003), the partners agreed to adopt the use of learning outcomes as a basis for defining what students would learn in Joint (face-to-face and collaborative) Workshops. Kolb’s<sup>15</sup> learning cycle was used as a model to begin reflection on the learning process within partner schools and to guide the linking of tasks set within institutions and Joint Workshops. Bloom’s<sup>16</sup> taxonomy was used for reflecting on the level of students learning activities and selection of the appropriate verbs used for writing the learning outcomes. Starting from the aims of Learning Activities and Tasks, a set of LOs appropriate to the scope of L&T being discussed were developed. These were evolved from

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<sup>13</sup> Cupitt, S, and Ellis, J (2007). *Your Project and it’s Outcomes*, Charities Evaluation Service, London.

<sup>14</sup> Bologna (2003). *Realising the European Higher Education Area*, Communiqué of the Conference of Ministers responsible for Higher Education, Retrieved 22/01/2010 from [http://www.bologna-bergen2005.no/Docs/00-Main\\_doc/030919Berlin\\_Communique.PDF](http://www.bologna-bergen2005.no/Docs/00-Main_doc/030919Berlin_Communique.PDF), p. 4

<sup>15</sup> Kolb, D. A (1984). *Experiential Learning: experience as the source of learning and development*, New Jersey: Prentice-Hall .

<sup>16</sup> Bloom, B. S (ed.) (1956). *Taxonomy of Educational Objectives, the classification of educational goals – Handbook I: Cognitive Domain*, McKay, New York.

initial proposals followed by several cycles of feedback and refinement. After agreeing on the LO's partners were also asked to review the scope and requirements of student assignments to complete an aligned approach to their design of L&T <sup>17</sup> Once the LO's had been finalised, they were embedded within the Workspace as a list from which partners could select and assign those appropriate to their learning activities.

### 3.3.1 Evaluation Process

The evaluation focussed on the main questions below:

- 1) Do the students experience the intended pedagogy?
- 2) How blended have the Learning and Teaching (L&T) process been?
- 3) Do the Workspace and Housing Repository fulfil their intended roles?
- 4) Are students disadvantaged by the use of this blended learning model?
- 5) How do the learning and teaching models used in other environments compare with those of OIKODOMOS?
- 6) What has been the wider impact of OIKODOMOS?

This evaluation employed a student focussed questionnaire based around Likert questions combined with open comment boxes. Alongside information on their perception of the environments, the spread of questions was designed to look at students learning and teaching experiences pre and post workshop, their experience of the final workshop, how the students had used the environments, their response to the overall experience and the difference between virtual and face-to-face working. This wider spread of questions was mapped against the main questions above and the results collated as appropriate.

The questionnaire was mounted online and distributed to 54 students. A total of 49 students responded.

A staff focussed questionnaire was used to gather feedback from colleagues of the co-ordinating individuals, the latter being asked to participate in a structured interview. The findings from these interviews were incorporated into the overall evaluation.

### 3.3.2 Summary of the Evaluation Results

The student questionnaire results indicate that OIKODOMOS has enhanced their learning experience. Despite variability in views expressed through the comments, the mode values for all questions fall within the strongly agree/agree range for both students who participated in the Joint Workshop and for those who didn't, and of those only 4% at the less positive level of agree(mode=2). Examples of comments which bring out more details of where aspects of the platforms and L&T process can be improved are given in the QPLN report. Less than 1% of the scores associated with negative comments were also scored at negative values. The comments are a useful source of information, but in general can not be considered as indicating the view of a significant number of respondents. The detail comments bring is worth further investigation but the conclusion based on these results is

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<sup>17</sup> Biggs, J.B. (2003). Teaching for quality learning at university. Buckingham: Open University Press/Society for Research into Higher Education. (Second edition)

that the students experience of participation in OIKODOMOS has been overwhelmingly positive, that they have experienced a constructivist learning model, supported by a well designed learning and teaching platform which has been used to facilitate blended learning experiences.

Staff feedback indicates similar conclusions. Their informed opinions are that students have been engaged by the learning and teaching processes within OIKODOMOS, that they have achieved similar assessment scores to working in other contexts and that the platform supports the pedagogical processes well.

Areas for development/reflection include:

- Better integration of local learning and teaching activities with those in the Joint Workshops. This has been difficult on the timescale of OIKODOMOS as it can take up to a year for changes in institutional curricular to be put in place.
- A common understanding of the language and process of learning and teaching is difficult to achieve and requires space for partners to specifically engage with the topic. Further integration of partners curricula will require a significant time commitment to allow time for views to converge and mutual trust to develop.
- Better integration of peer feedback within the Learning Activities. There is a tendency for the Workspaces to be used as a file repository, so peer feedback needs to be more explicitly built into LAs assessments.
- Both students and teachers commented on the need for face-to-face interaction, although the strongest comments came from participants in the Joint Workshops. There is more to explore here but it's possible the comparison between distant working and face-to-face accentuated individuals reaction to the absence of their fellow students. This also raises the question on what can be done to improve the distant experience, to improve the feeling of presence of distant participants.

OIKODOMOS has been a journey of exploration and development for everyone involved and has been very productive in it's 2 year lifespan. The project has achieved all it's major objectives and put much in place to support further development of collaborative programs between the schools.

#### 4. Partnerships

##### **-Escola Tècnica Superior d'Arquitectura La Salle, Universitat Ramon Llull, Barcelona, Spain**

Prof. Dr. Leandro Madrazo (Project coordinator), Mireia Vergés, Angel Martin Cojo, Álvaro Sicilia, Adrià Carro, Joan Pleguezuelos, Jose Torralba

The research group ARC Enginyeria i Arquitectura La Salle (<http://www.salle.url.edu/arc>) coordinated the project. The group had already acquired expertise coordinating the three-year Erasmus Intensive Programme HOUSING@21.EU, the precedent of this project. The group has brought the pedagogic and technological experience acquired in the previous Erasmus programme to the OIKODOMOS project. As coordinator, it has provided a holistic view of the project, ensuring that the key components of the virtual campus –content, pedagogy, technology– are interwoven.

ARC Enginyeria i Arquitectura La Salle has been responsible for the design and programming of the OIKODOMOS ICT platform, including OIKODOMOS Workspaces and Case Repository. It has also provided the web portal of the project as well as the on-line tools to manage the project (file sharing system, blogs, forums, wikis and shared documents)

Members of the group have been actively involved in the design of the joint curriculum, as well as in the different publications of the programme (papers, articles, book).

##### **-Hogeschool voor Wetenschap & Kunst, Department Architectuur Sint-Lucas, Brussels/Ghent, Belgium**

Prof. Dr. Johan Verbeke, Jose Depuydt, Jao Smet, Hans Foncke, Tomas Ooms

The School of Architecture Sint-Lucas has participated in all the activities of the project and contributed from its own rich design environment and competencies in the fields of housing design and architectural pedagogy. Moreover, it has participated in and coordinated many international relevant projects –such as META-University programmes, Erasmus and curriculum development programmes, and Alfa project– from which the current project benefited.

Sint-Lucas is leading the design and implementation of the design curriculum and the implementation of the learning activities. During the first half of the project, a working group led by the School has studied the housing courses in the curricula of the participating Schools and developed initial proposals for a joint curriculum structure. The School has organized and hosted the first workshop of the programme in Ghent. It has also been a driving force in the development of the pedagogic model of the project.

The School was applying its know-how in order to improve on the quality of the case repository HOUSING@21.EU. Sint-Lucas staff were actively involved in the upgrade of the content of the repository HOUSING@21.EU, which has been successfully completed. They are also in charge of the publications of the project, including the flyer and the book.

##### **Institut d'Urbanisme de Grenoble IUG**

Prof. Dr. Jan Tucny, Dr. Stéphane Sadoux, Mathieu Panel

IUG participated in the learning programme preparation and implementation (joint curricula, Virtual studio, workshops, seminars). It has organized a Joint Workshop in Grenoble in 2009, and has participated in the learning activities of the other two workshops in Ghent and

Bratislava. As the only planning school in the consortium, IUG opened the teaching programme to a transversal dimension of urban context. Actively involved in national and European academic networks, IUG supported the dissemination process and transfer of project outcomes to academic partners through APERAU (French Urban Planning Schools Association) and AESOP (Association of European Schools of Planning).

IUG has shared the experiences of ICT learning principles with other European member schools and tested the compatibility with common standards on EU teaching programmes on Urban and Spatial planning. Strong involvement of IUG members in cooperation with professional bodies allowed IUG to associate national and regional representatives with the dissemination activities. The first example of this process was tested during the Pilot Virtual Design Studio OIKODOMOS, in spring 2008, associating professionals and representatives of Local Authorities in studio group work.

Integrated as a Faculty in Grenoble University UPMF, IUG also tested the common learning curriculum integration into the study programmes of a public university. The Grenoble University ICT and Multimedia Platform -a regional e-learning resource provider- worked together in the implementation and maintenance of the web environments used in the learning activities.

**-Faculty of Architecture, Slovak University of Technology, Bratislava, Slovakia**

Prof. Dr. Viera Joklova, Prof. Dr. Andrea Bacová, Prof. Dr. Marián Maľovaný, Prof. Dr. Lubica Vítková, Prof. Dr. Henrich Pifko

Faculty of Architecture Slovak University of Technology Bratislava, the largest educational institution for architects in the Slovakia, participated in all activities of the OIKODOMOS Virtual Campus. They brought to the partnership their experience on the application of ICT in distant learning, particularly in Virtual Design Studios, as well their expertise on sustainable and low energy design on architectural and urban design level.

FASTU organized the programme of the design studios for the Pilot Study Bratislava-Grenoble, participated in the learning activities related to the workshops Ghent and Grenoble and coordinated the OIKODOMOS Joint Workshop in Bratislava. The project activities were supported with the engagement of local authorities, citizens and professional bodies.

FASTU led the review and analysis of virtual education in architecture and urban design, especially in the scope of the Design Studios. Along with these activities they cooperated in the design and programming of the Workspaces platform, and promoted and disseminated the project proceedings in public and professional media and associations.

**KataliSys Limited, Portsmouth, United Kingdom**

Mr. Paul Ridy, Mrs. Karen Fill

KataliSys is a small consultancy company, concerned with high quality publication, project management, and eLearning development / evaluation projects. KataliSys staff have considerable experience of the design and use of technology based applications for education and of employing these skills in the evaluation of e-learning applications. Staff also acts as consultants in pedagogical design, including designing and delivering programmes for the associated staff development.

KataliSys carried out a retrospective evaluation of the learning and teaching process in HOUSING@21.EU, and the application and effectiveness of the technology in its delivery. KataliSys have conducted a similar evaluation within OIKODOMOS, providing feedback after



each workshop on the educational aspects of process and delivery, and collating data to report on the overall effectiveness of the learning and teaching process. KataliSys has also provided pedagogic input, including information on approaches to design for learning and engaging in discussion with the partners on ways to achieve a common understanding and shared implementation of their contribution to courses/modules. Katalysis has been actively involved in project dissemination activities and writing and have contributed to the discussions and data collection for exploring the difference between virtual and physical design studios.

**-Università della Svizzera Italiana, Lugano, Switzerland**

Dr. Luca Botturi, Andreas Schmeil

The NewMinE Lab of the University of Lugano has collaborated in the design of the assessment of the HOUSING@21.EU project, and has carried out the usability study. Together with La Salle-URL, it has contributed to the design of the OIKODOMOS technological platform and to the development of its specifications. Also with La Salle-URL, the NewMinE lab is currently developing some modules in the case repository, including enhancements based on Web2.0 paradigms. University of Lugano is also collaborating in the dissemination of the project.

## 5. Plans for the Future

In the immediate future, the main objective is to consolidate the collaboration of the partners around the pedagogic model (interrelated learning activities, joint courses) and the associated ICT platform developed in this project. At the same time, the partnership will seek to expand the application of this model to other institutions across Europe. This demands a strategic plan for dissemination and exploitation that goes beyond the scope of the current project.

The subsequent development of the technological platform would contribute to systematize the knowledge acquired in the implementation of the learning activities with the purpose of re-using it. This could be done in a different way in each one of the two environments:

1. OIKODOMOS Workspaces. It will be necessary to implement procedures to store the student works along with the process and the context where they were produced. The information will then be stored and retrieved in the Administration environment of Workspaces. Teachers and students working in subsequent Workspaces could have access to this information to define and carry out tasks respectively.
2. OIKODOMOS Case Repository. More powerful searching techniques based on case-based reasoning would facilitate the knowledge elicitation from the repository of cases.

Furthermore, setting links between the OIKODOMOS platform and some widely used LMS such as Moodle would contribute to the broad dissemination and exploitation of the platform's potential.

A major undertaking for the future development of the platform would be the creation of additional communication spaces connected with the Workspaces and Case Repository that would enable non-participants (professionals as well as general public) to interact with the learning activities. For example, by presenting the results of a Design Studio in a format that is both appealing and comprehensible for non-professionals. In this way, the ties between formal and non-formal education would be reinforced and the objective to reach different target groups could take be expanded into the wider Web.

## 6. Contribution to EU policies

### - Lifelong Learning Programme

The project addresses the eight key competences for Lifelong Learning described in the European Reference Framework ([ec.europa.eu/dgs/education\\_culture/publ/pdf/ll-learning/keycomp\\_en.pdf](http://ec.europa.eu/dgs/education_culture/publ/pdf/ll-learning/keycomp_en.pdf)), in the following way:

#### **1. Communication in the mother tongue**

Communication in the mother tongue is the ability to express and interpret thoughts, feelings and facts in both oral and written form (listening, speaking, reading and writing), and to interact linguistically in an appropriate way in the full range of societal and cultural contexts — education and training, work, home and leisure.

A diversity of learning scenarios have enabled learners to develop their written and oral communication skills, in a variety of situations. Design critiques have offered students an opportunity to demonstrate their ability to convey their ideas to a variety of audiences: professional critics, citizens, and peers. Similarly, public presentations of projects have demanded from students the proper use of a vocabulary to name architectural elements, spatial qualities and housing concepts.

#### **2. Communication in foreign languages**

Communication in foreign languages broadly shares the main skill dimensions of communication in the mother tongue: it is based on the ability to understand, express and interpret thoughts, feelings and facts in both oral and written form (listening, speaking, reading and writing) in an appropriate range of societal contexts — work, home, leisure, education and training — according to one's wants or needs. Communication in foreign languages also calls for skills such as mediation and intercultural understanding. An individual's level of proficiency will vary between the four dimensions, different languages and according to their background, environment and needs/interests.

English has been the common language used in most activities of the OIKODOMOS project. Students who have participated in the Joint Workshops had the opportunity to practice English in all contexts, social and academic, oral and written. Proficiency in written expression has been fundamental to carry out on-line work, like describing and documenting a case of study, and to engage in forum discussions.

#### **3. Mathematical competence and basic competences in science and technology**

A. Mathematical competence is the ability to use addition, subtraction, multiplication, division and ratios in mental and written computation to solve a range of problems in everyday situations. The emphasis is on process and activity, as well as knowledge. Mathematical competence involves - to different degrees - the ability and willingness to use mathematical modes of thought (logical and spatial thinking) and presentation (formulas, models, constructs, graphs/charts).

B. Scientific competence refers to the ability and willingness to use the body of knowledge and methodology employed to explain the natural world, in order to identify questions and to draw evidence-based conclusions. Competence in technology is viewed as the application of that knowledge and methodology in response to perceived human wants or needs. Both areas of this competence involve an understanding of the changes caused by human activity and responsibility as an individual citizen.

Learners participating in this project have been encouraged to carry out their work with method and rigor. In the process of documenting cases of study, they have been introduced to basic research techniques. They have been trained to discern valuable data from superficial information as they sought for references in books and in on-line resources. By working with case repositories and virtual design studio environments students could learn to structure knowledge differently.

#### **4. Digital competence**

Digital competence involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet.

A variety of digital tools have been used in the programme's activities, including multimedia authoring tools (power point, image and video editing, CAD programs, animation software) and web-publishing (web pages, .PDF documents). Collaborative activities have been developed using shared documents, and project repositories. Communications have been supported by a variety of tools: email, videoconferencing, and intranet.

#### **5. Learning to learn**

'Learning to learn' is the ability to pursue and persist in learning. Individuals should be able to organise their own learning, including through effective management of time and information, both individually and in groups. Competence includes awareness of one's learning process and needs, identifying available opportunities, and the ability to handle obstacles in order to learn successfully. It means gaining, processing and assimilating new knowledge and skills as well as seeking and making use of guidance. Learning to learn engages learners to build on prior learning and life experiences in order to use and apply knowledge and skills in a variety of contexts – at home, at work, in education and training. Motivation and confidence are crucial to an individual's competence.

The learning activities that have been implemented place the student at the centre of the learning. Teachers have played the role of pedagogic designers and tutors, rather than lecturers. Learning activities have been designed to encourage students to investigate subject-matters in an independent manner, working individually and in collaboration.

#### **6. Interpersonal, intercultural and social competences, civic competence**

These competences cover all forms of behaviour that equip individuals to participate in an effective and constructive way in social and working life, and particularly in increasingly diverse societies, and to resolve conflict where necessary. Civic competence equips individuals to fully participate in civic life, based on knowledge of social and political concepts and structures and a commitment to active and democratic participation.

The subject matter of this program –housing studies– necessarily requires from participants a special awareness of the social consequences of architectural design and planning. The goal of the learning activities designed in this programme –particularly the topics addressed in the Joint Workshops– have made students aware of the complexity of issues –social and economic– that the design of the built environment convey.

#### **7. Entrepreneurship**

Entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day to day life at home and in society, employees in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by entrepreneurs establishing social or commercial activity.

This quality is inherent to the architect and planner professions. Society expects from architects and planners to take a leading role in the definition of critical issues regarding the built environment and in the proposal of solutions.

#### - European Space for Higher Education

The project has made a significant contribution to achieve the goals established in the Bologna declaration ([http://www.bologna-bergen2005.no/Docs/00 Main\\_doc/990719BOLOGNA\\_DECLARATION.PDF](http://www.bologna-bergen2005.no/Docs/00_Main_doc/990719BOLOGNA_DECLARATION.PDF)):

- Adoption of a system of easily readable and comparable degrees, also through the implementation of the Diploma Supplement, in order to promote European citizens employability and the international competitiveness of the European higher education system.

One of the goals of the OIKODOMOS Virtual Campus has been to create a shared curriculum on housing studies. This curriculum, after being tested and validated in this project can now be expanded to other European schools of architecture and urban planning.

- Adoption of a system essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.

The participating institutions are already operating on the basis of two-cycle model (with the exception of the Spanish partner). The learning activities implemented have spanned across different cycles, from undergraduate to graduate, with the intention to promote the transfer of knowledge across cycles.

- Establishment of a system of credits - such as in the ECTS system – as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by receiving Universities concerned.

Learning activities developed in the programme are ECTS credited. The work carried out within the Joint Workshops, and also the learning activities around them, has been credited in two different ways: as an independent course, or as work being done within other courses.

- Promotion of mobility by overcoming obstacles to the effective exercise of free movement with particular attention to:

- for students, access to study and training opportunities and to related services
- for teachers, researchers and administrative staff, recognition and valorisation of periods spent in a European context researching, teaching and training, without prejudicing their statutory rights.

Virtual and physical mobility have been promoted by the activities developed within the programme. In the three Joint Workshops planned in the programme, in Ghent, Grenoble

and Bratislava have participated around 120 students and 50 teachers. Virtual mobility has been implemented in conjunction with these learning activities, for instance, by developing pre and post Workshop learning activities in the virtual environments.

- Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies.

Setting awarding criteria for evaluating activities carried out in the Virtual Campus has been one of the main objectives of the programme. The partnership has elaborated shared criteria to define and assign competences to the joint learning activities. To achieve this, partners had to reach a common understanding regarding definitions of competences and learning outcomes.

- Promotion of the necessary European dimensions in higher education, particularly with regards to curricular development, inter-institutional co-operation, mobility schemes and integrated programmes of study, training and research.

Housing has been addressed at a European scale, encouraging learners to carry out comparative studies of living conditions and housing project at three different European countries: Belgium, France and Slovakia.