

Web portal (second stage)- Vocabulary- Case study library- ESR profiling (first stage)

Deliverables 5.2-5.5-5.6 and 5-7

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www.re-dwell.eu



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RE-DWELL

Deliverable 5.2 Web portal (first stage)

Deliverable 5.5 Vocabulary

Deliverable 5.6 Case study library

Deliverable 5.7 ESR profiling (first stage)

Version 1

Authors:

Álvaro Sicilia (FUNITEC-La Salle URL)

Marta Salgado ((FUNITEC-La Salle URL)

Laura Membrado (FUNITEC-La Salle URL)

Leandro Madrazo (FUNITEC-La Salle URL)

Version	Date	Changes
1	October 28, 2021	First version

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Executive summary

This report contains the work corresponding to four deliverables:

- Deliverable 5.2 Web portal (second stage), follow-up of Deliverable 5.1 “Web portal (first stage)”
- Deliverable 5.5 Vocabulary, online glossary of the networks’ research
- Deliverable 5.6 Case study library, online collection of documented references
- Deliverable 5.7 ESR profiling (first stage), continuous reporting of the work done by ESRs

The four deliverables refer to components of the project website that are interrelated. To facilitate the understanding of these interrelationships, the four deliverables are presented in a single document.

1. Introduction

This document provides a description of the interfaces and functionalities of the RE-DWELL website, in its second stage of development. A previous release of the website was reported in Deliverable 5.1 “Web portal (first stage)” in month 6.

The design and programming of the website has been undertaken by the ARC Engineering and Architecture research group from La Salle-URL (FUNITEC), coordinator of the project.

The second stage of the web development was carried out in successive iterations, starting in June 2021 with the version reported in Deliverable 5.1, and ending with the latest release in September 2021. During this development process, mock-ups of the website were shared with partners to get their feedback.

The development of the website has run in parallel to the project activities of the project (e.g., ESRs profile, Career Development Plan, and the creation of the vocabulary). In addition, as new needs emerged during the implementation of the work programme, the development of the digital platform had to be continuously adapted to respond to them.

2. Project website

A first version of the website (www.re-dwell.eu) was operational in the first months of the project (see Deliverable 5.1). In successive developments, the initial structure was upgraded with new functionalities. Although it can be considered completed, the website described in this report is still subject to further improvements during the remainder of the project.

2.1. Homepage

The home page (Figure 1) is vertically structured in the following areas:

- Menu and sub-menus
- Header, composed of two parts:
 - o A carousel of reference examples on affordable and sustainable housing
 - o Events and news highlights
- Latest blog entries, created by ESRs and supervisors
- News
- Information about the consortium
- Brief description of RE-DWELL, highlighting the main features of the project
- Footer with shortcuts to main menus, legal disclaimers

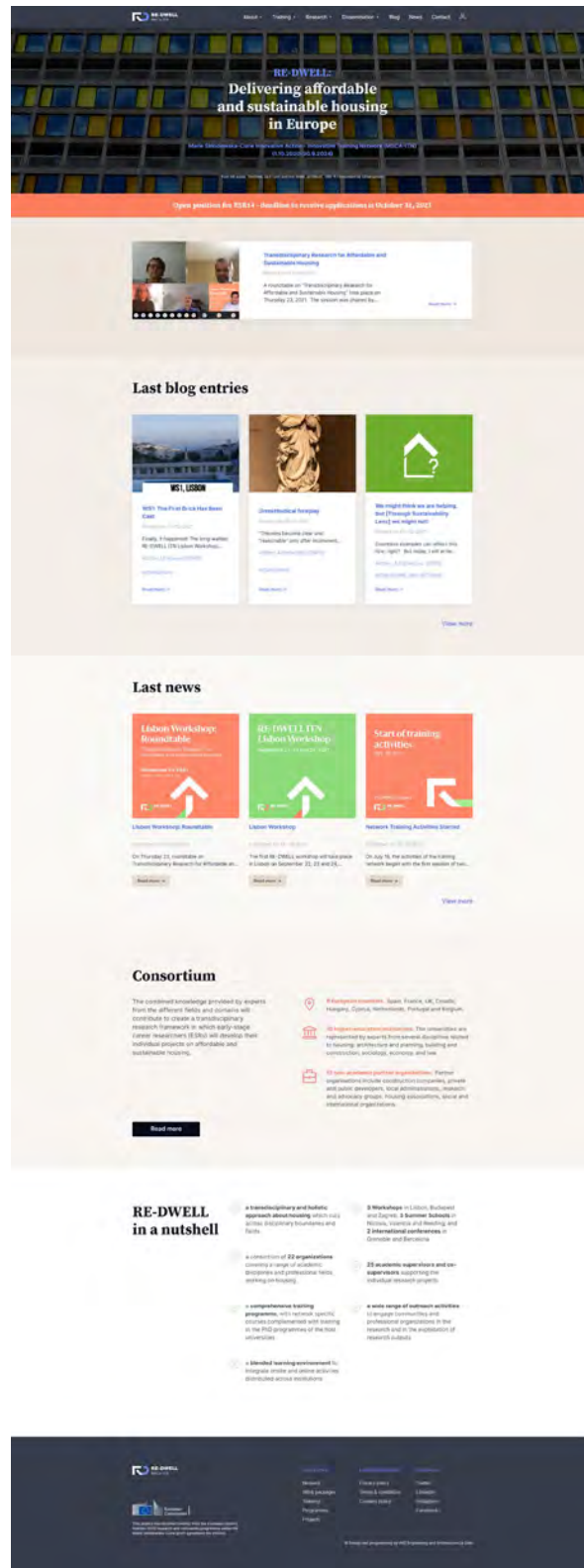


Figure 1. RE-DWELL Homepage

2.2. Main menu

The main menu is structured in the following sections and sub-menus:

About

- Network: Description of the network objectives, its methodological approach, and research areas.
- Work packages: Description of the five work packages of the project and how they are related to the research areas. Each work package is introduced, and a detailed description can be downloaded in PDF format.
- Selection process: Explanation of how the recruitment process was carried out at the beginning of the project. The number of applicants of each stage is shown for transparency purposes.
- Consortium: beneficiaries and partner organizations, within and outside the consortium, engaged in the project activities.
- Early Stage Researchers (ESRs): List of the ESRs participating in the project.
- Supervisors: List of supervisors from higher-education institutions and experts from partners organisations in which ESRs will carry out the secondments.

Training

- Courses: Description of the courses to provide basic knowledge to carry out research on affordable and sustainable housing and the basic skills required to carry out individual research projects.
- Activities: Network activities such as workshops, summer schools, conferences, and secondments in which ESRs, supervisors and secondments will meet regularly in person during the project lifetime.

Research

- Programme: Description of the three research areas in which the individual research projects will be carried out.
- Projects: Description of the fifteen research projects to be carried out by the ERSs.

Knowledge base

- Vocabulary: List of terms and descriptions provided by ESRs in the course of their research.
- Case studies: List of case studies described and compiled by ESRs for their personal research projects.

Blog

Entries written by ESRs and supervisors.

News

Information about the network activities and events such as recruitment process, courses, and workshops.

Contact

A contact form to send a message to the official email address of the project.

2.3. About

About contains a sub-menu including network, work packages, the selection process, and consortium.

The **Network** page contains information about the research programme, its holistic approach to the affordability and sustainability of housing through a transdisciplinary perspective (Figure 2).



Figure 2. Network page

The **Work packages** page contains the list of work packages with their main components: title, description, main beneficiary, duration, and a downloadable document with a detailed description of tasks, subtasks, and deliverables (Figure 3).

The work to be carried out during the project is structured in five work packages:

1. Management and planning of network activities
2. Integrated training activities
3. Network training activities
4. Transdisciplinary A&S housing research framework
5. Dissemination, communication and exploitation

The WP structure will support the creation of the research framework, with three work packages devoted to planning, design and delivery of training activities (WP1, WP2, WP3), and one dedicated to design and implementation of a novel transdisciplinary research framework for affordable and sustainable housing (WP4). ESRs research projects will interlink the different subject areas, across disciplines and sectors. To assure the interdisciplinarity, each ESRs project will have a primary research area and a second/third related area.

Work Package 1 (WP1)
Management and planning of network activities

[Read more](#) [Download PDF 1](#)

Work Package 2 (WP2)
Integrated training activities

Lead Beneficiary	Duration
LX-Sabo-FUNTEC, UCY	M7-M16

Objectives

To design and implement a joint training structure applying a blended-learning methodology which combines courses from the beneficiary institutions delivered f2f and online and intertwined with the network-wide activities. To create shared learning resources (syllabus, video lectures, literature) for each of the courses included in the training structure. To establish joint evaluation criteria for the training activities across the network.

For more information about the Tasks and Deliverables of WP2 download the pdf.

[Read more](#) [Download PDF 2](#)

Figure 3. Work packages page

In the **Selection process** contains information about the recruitment process, preselection (November 2020 – March 2021) and final selection (mid-march 2021). For each stage, there is a summary of the number of applicants and countries, and the number of selected fellows (Figure 4).

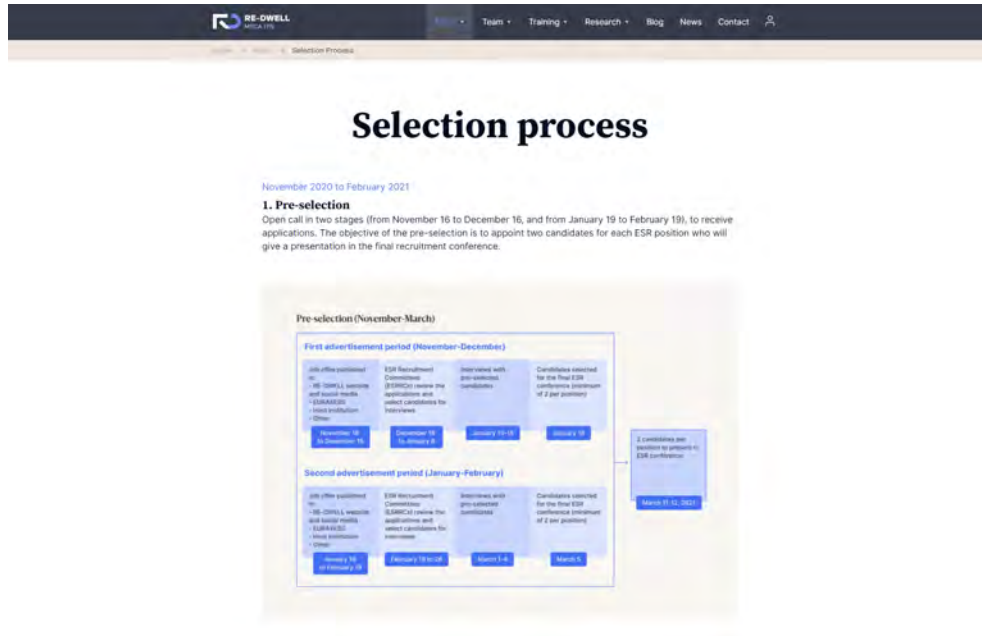


Figure 4. Selection process page

The **Consortium page** includes the profiles of the 10 beneficiaries from higher education institutions and the 12 partner organisations where the ESRS will carry out their secondments. (Figure 5).

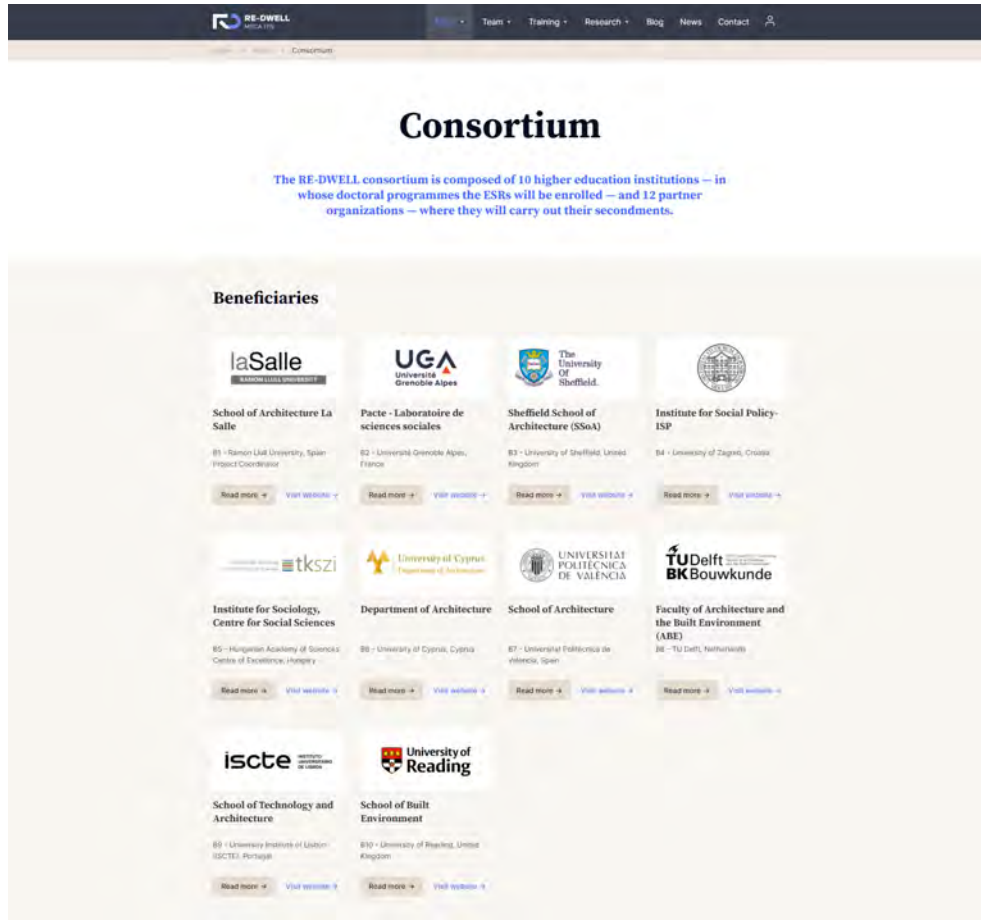


Figure 5. Consortium page

2.4. ESRs

This section provides information about the ESRs (Figure 6).

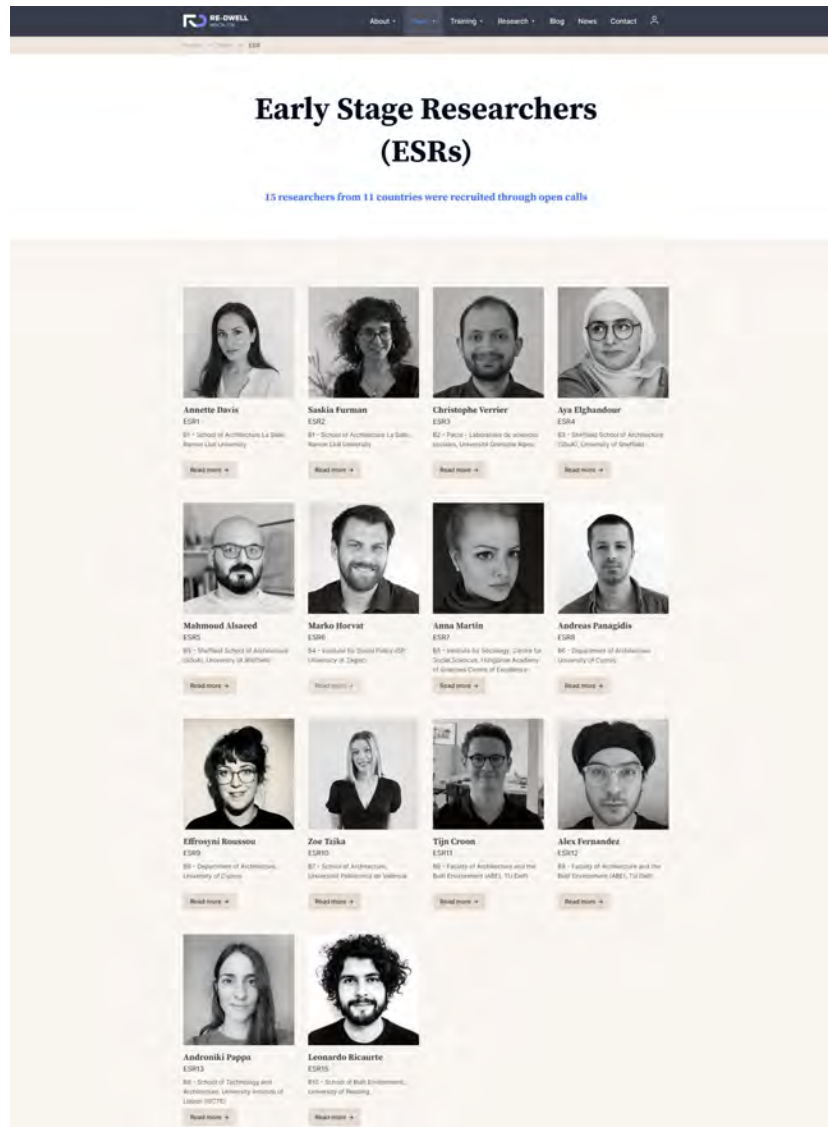


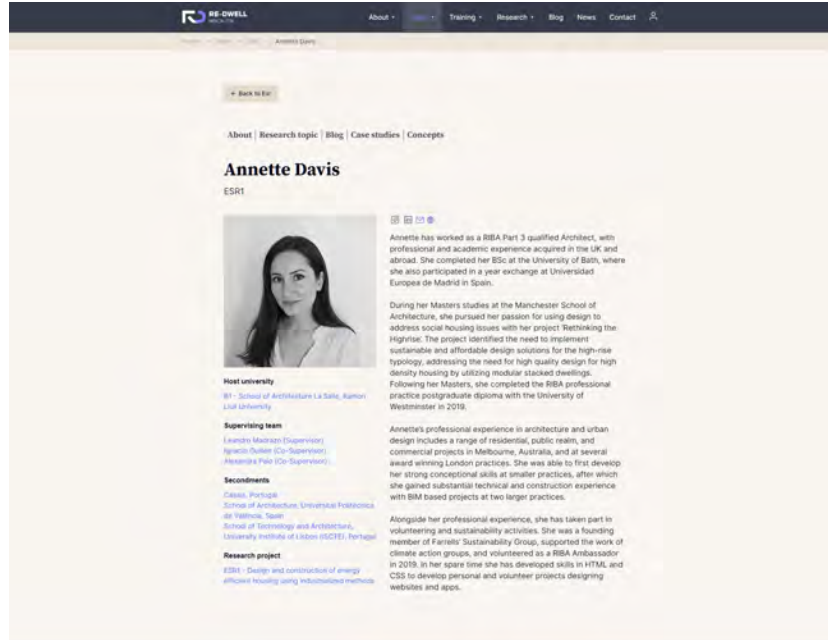
Figure 6. ESRs list page

2.4.1. ESR profile

The single view of an ESR profile contains the following information (Figure 7):

- Name of the ESR and a picture
- Host university
- Supervising team: one supervisor and two supervisors (Linked to supervisors' profile)
- Secondments (Linked to partners organisation profile)

- Related research project (Linked to research section)
- Social media links (Instagram, Twitter, LinkedIn, email) of the ESR
- A short CV of the ESR



Research topic

Updated summaries

September 14, 2021

A framework for sustainable development of housing using Industrialized Construction

Industrialized Construction (IC) is a broad term which encompasses systematic and controlled production. IC is no longer synonymous with mass production and prefabrication, and novel methods are more often taking place on site. Today IC is used to deliver customer-oriented housing through mass customization and is increasingly used in combination with ICTs such as BIM to implement lean methods. IC raises the question of what constitutes a 'home'; arguably some of the innovative methods intended for other purposes such as travel, military use, or product design, which have been adapted to housing are inherently unsuitable.

There is growing attention on utilising IC to provide innovative solutions for today's housing challenges in sustainability and affordability, in addition to managing building complexity and coordination with various fields. Recent ambitious EU targets to deliver Net Zero Energy Buildings and to incorporate Circular Economy have put increasing pressure on the construction industry to shift from the current paradigm to a more sustainable one. When used in conjunction with economies of scale IC can improve build quality, minimise waste, and reduce cost and time of construction. However, there needs to be a greater understanding of IC by both technical and non-technical stakeholders for its benefits to be fully realised.

This project will investigate the benefits that a combination of industrialized methods and ICTs can provide in delivering sustainable and affordable housing. The research will seek to establish current methods suitable for housing within a framework, demonstrating the benefits in terms of sustainable development supported with case studies in collaboration with construction company Grupo Casals. Using a systems approach, the methodology will include establishing indicators in conjunction with Life Cycle Analysis (LCA). The analysis will cover all building stages, including beyond the end-of-life stage for a circular approach in line with the Level(s) framework. The proposed outputs will include a framework and guidelines for actors involved in the delivery of housing.

Blog

Recent activity



Figure 7. Individual profile of a ESR

Furthermore, the following sections publish the outcomes of the ESR:

- Research topic section describes the research of the ESR. It might include different version when the ESR makes progress on her/his research.
- Blog section shows the latest entries written by the ESR (linked to the blog page)
- Case studies section containing the case studies initiated by the ESR
- Concepts sections that describes the concepts described by the ESR

2.5. Supervisors

This section provides information about the supervisors and co-supervisors (Figure 8).

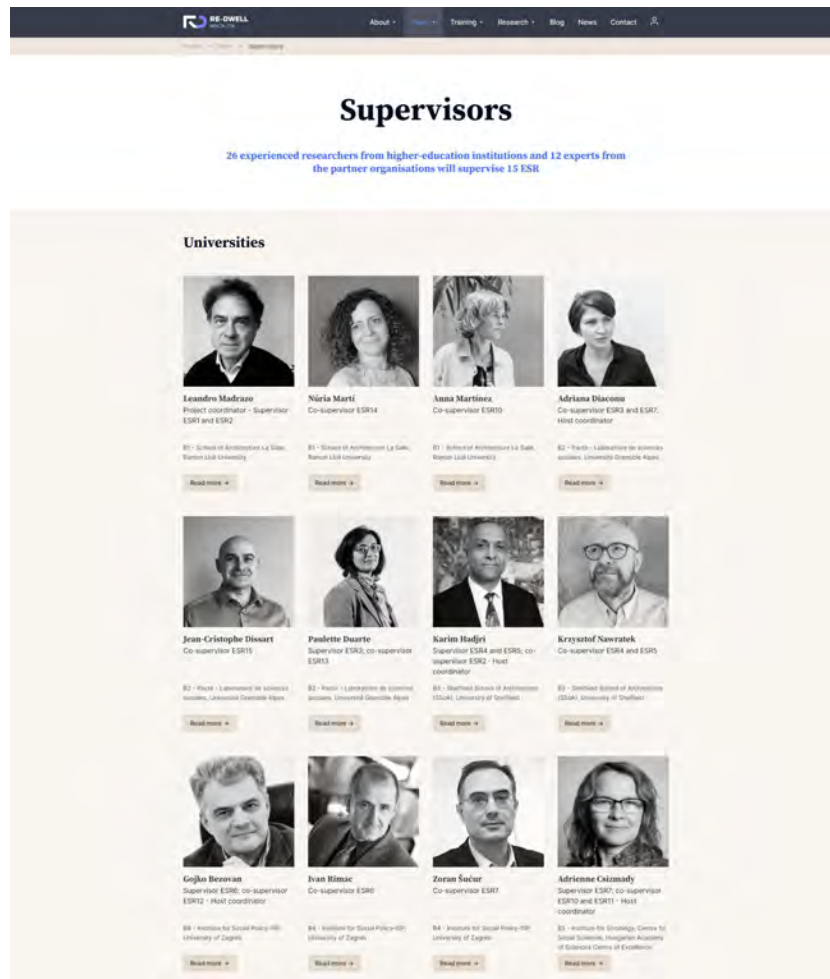


Figure 8. Supervisors page

2.5.1. Supervisor profile

The single view of a supervisor profile contains the following information (Figure 9):

- Name of the supervisor and picture
- Roles in the project (e.g., coordinator, host coordinator, supervisor, co-supervisor)
- Host university
- A short bio of the supervisor

Furthermore, there are sections to highlight the activity carried out by the supervisor within the project such as:

- Courses that the supervisor has participated in as lecturer
- Activities that the supervisor has participated in
- Blog section shows the latest entries written by the supervisor (linked to the blog page)

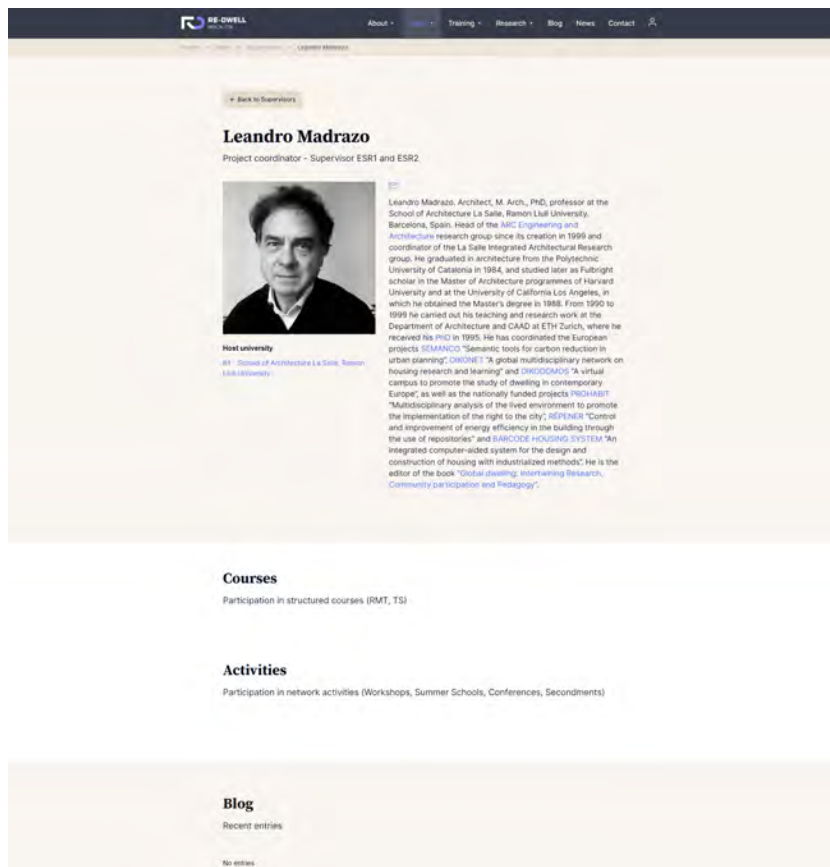


Figure 9. Individual profile of a supervisor

2.6. Training

This section is divided into courses and activities to be carried out in the network. (Figure 10).

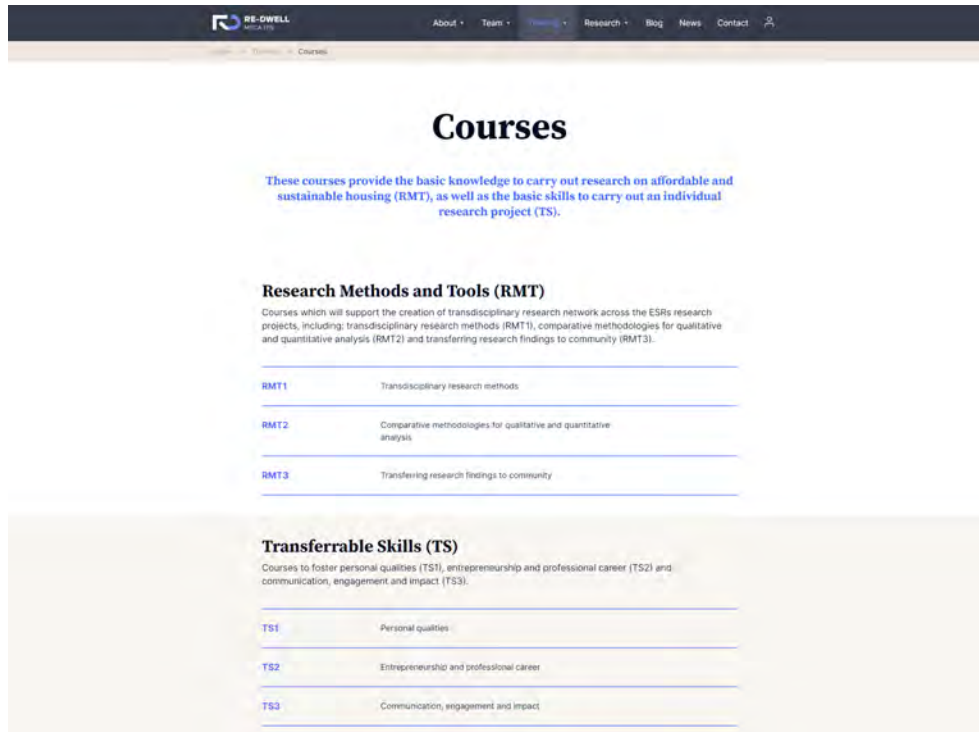


Figure 10. Courses page

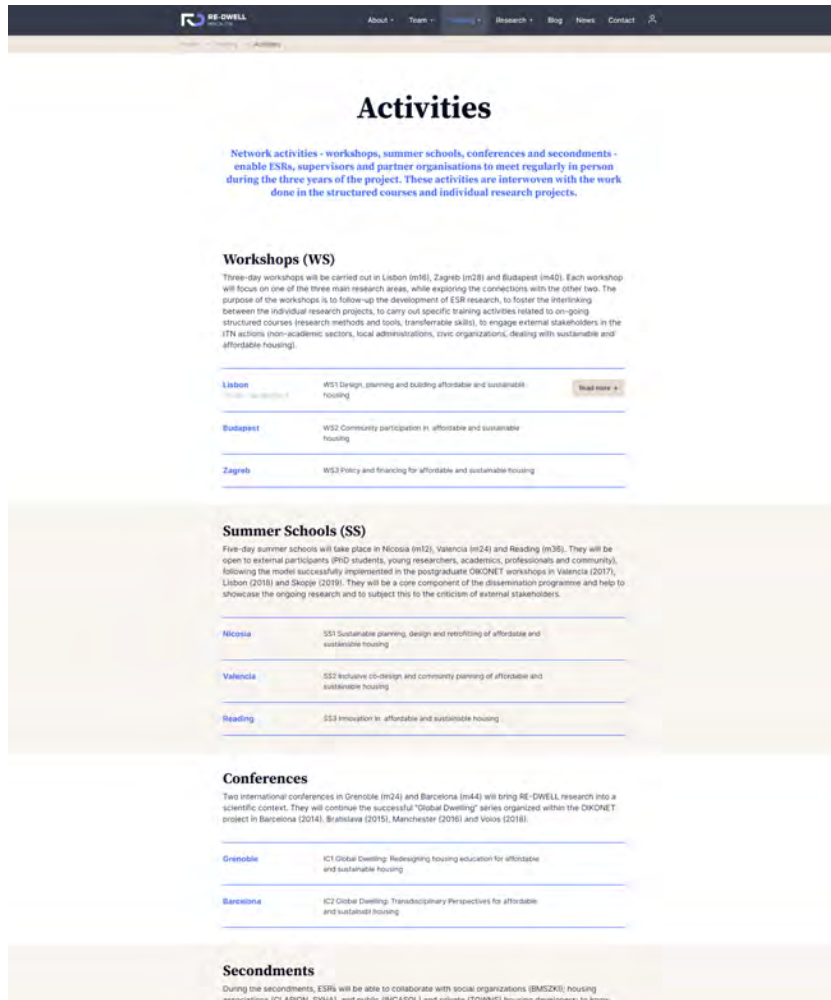


Figure 11. Activities page

2.7. Research

This section is divided into the research programme and the individual research projects. The programme page describes the three areas in which the research projects will be conducted: “Design, planning, and building”; “Community participation”; and “Policy and financing” (Figure 12).

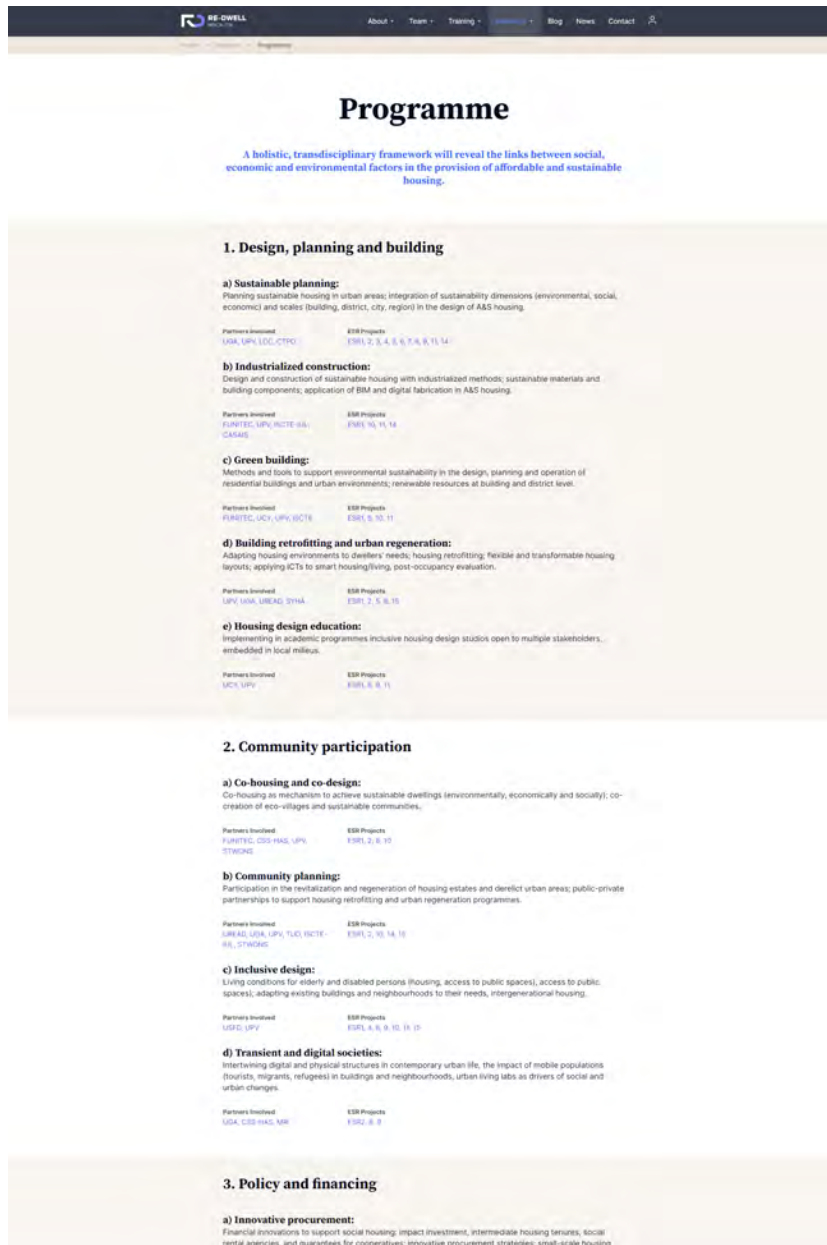


Figure 12. Programme page

In the research projects ESRs projects are summarized, as they were written in the proposal. (Figure 13).

RE-DWELL RESEARCH

About • Team • Training • Research • Blog • News • Contact

Home • Research • Research Projects

On 1 June 2021, the appointed ESR fellows have started their activity in the RE-DWELL network

Research Projects

Individual research projects to be carried out by early-stage researchers (ESR)

<p>ESR 1</p> <p>DESIGN, PLANNING AND BUILDING</p> <p>Design and construction of energy efficient housing using industrialized methods</p> <p>School of Architecture La Salle, Ramon Llull University, Barcelona, Spain</p> <p>Read more →</p>	<p>ESR 2</p> <p>DESIGN, PLANNING AND BUILDING</p> <p>Adapting existing social housing to the needs of today's dwellers</p> <p>School of Architecture La Salle, Ramon Llull University, Barcelona, Spain</p> <p>Read more →</p>	<p>ESR 3</p> <p>POLICY AND FINANCING</p> <p>Housing governance beyond city boundaries</p> <p>Université Grenoble Alpes, Pactis - Laboratoire de sciences sociales, Grenoble, France</p> <p>Read more →</p>
<p>ESR 4</p> <p>DESIGN, PLANNING AND BUILDING</p> <p>Lifecycle cost analysis and socioeconomic impact of existing social housing construction methods</p> <p>School of Architecture, University of Sheffield, Sheffield, United Kingdom</p> <p>Read more →</p>	<p>ESR 5</p> <p>DESIGN, PLANNING AND BUILDING</p> <p>Environmental sustainability of future social housing</p> <p>School of Architecture, University of Sheffield, Sheffield, United Kingdom</p> <p>Read more →</p>	<p>ESR 6</p> <p>POLICY AND FINANCING</p> <p>Comparative analysis of social housing policies' modernization impacts in selected post-socialist countries</p> <p>Institute for Social Policy, Faculty of Law, University of Zagreb, Croatia</p> <p>Read more →</p>
<p>ESR 7</p> <p>POLICY AND FINANCING</p> <p>Housing crisis and its impact on adequate housing</p>	<p>ESR 8</p> <p>COMMUNITY PARTICIPATION</p> <p>Urban living labs and the role of users in the co-creation of sustainable</p>	<p>ESR 9</p> <p>DESIGN, PLANNING AND BUILDING</p> <p>The challenge of change in living environments: implications and</p>

Figure 13. Research projects page

The individual research project page contains the details of the project (Figure 14):

- Supervising team (supervisor, co-supervisors, and secondments)
- Description of the project
- List of tasks to be carried out
- Description of the host university
- Contact person.

RE-DWELL

[About](#) · [Team](#) · [Training](#) · [Research](#) · [Blog](#) · [News](#) · [Contact](#)

Home > ESR 1

ESR1
Design and construction of energy efficient housing using industrialized methods
 School of Architecture La Salle, Ramon Llull University, Barcelona, Spain

[← Back to Projects](#)

Supervisor
 Dr. Leandro Madrazo

Co-supervisors
 Dr. Alexandra Palo, School of Technology and Architecture, ISCTE - University Institute of Lisbon, Portugal
 Dr. Eduardo de Miguel, School of Architecture, Universitat Politècnica de València, Spain

Secondments
 CASAIS, Braga, Portugal
 School of Technology and Architecture, ISCTE - University Institute of Lisbon, Portugal

Research project

The delivery of energy efficient residential buildings is a holistic problem, which needs to be addressed with a systematic approach. The information generated throughout the design, construction and operation of housing needs to be integrated in a seamless manner in order to understand the impact of the decisions taken at each stage in the overall design and building lifecycle. In order to use this information to design and build affordable and sustainable housing, it is necessary 1) to take advantage of the interlinking of BIM with product catalogues and energy simulation tools, 2) to foster the application of industrialized processes to produce more energy efficient buildings and more sustainable living environments, and 3) to involve users in the decision making throughout the various stages of the whole building lifecycle.

Offsite modular construction of residential units can help to reduce the environmental impact and energy use in the construction phase: using dry construction methods, reducing transport and pollution, reducing waste of materials, using sustainable products and efficient assembly techniques. Likewise, the application of lean methods (i.e. Integrated Project Delivery, IPD) in the construction sector can contribute to improving the collaboration between contractors, clients and architects by facilitating the concurrence of the decisions from all stakeholders involved rather than separating their specific decision-making realms linearly throughout the building lifecycle.

The purpose of this project is to investigate the benefits that a combination of ICT technologies and industrialized methods bring to the delivery of affordable and sustainable housing; and to propose measures to increase their impact. The expected results are guidelines for actors involved in housing delivery using industrialized methods to optimize working processes using ICTs, and methodologies to assess the efficiency of the proposed methodologies.

Tasks

- To conduct individual research project, interlinked to the other ESRs projects, focusing on:
 - ↳ Analysis of best practices in design and construction of housing with industrialized methods (lean construction, open systems) to deliver energy efficient buildings (green building)
 - ↳ Methodologies to analyse the impact of industrialized processes, materials throughout the overall building lifecycle (whole building approach)
 - ↳ Establishing indicators to assess the performance of sustainable and affordable housing during the whole building lifecycle (life cycle analysis)
 - ↳ Integration of BIM, component catalogues and energy simulation tools in the overall design, construction and operation phases.
 - ↳ Involvement of dwellers in the whole building lifecycle to reduce energy performance gap
- To participate in the network-wide activities (workshops, summer schools, conferences)
- To carry out the training required by the PhD programme of the host university.

As part of the individual research project, ESRs will carry out two secondments, each of 2 to 3 months, in partner organisations.

ESRs are expected to have completed a doctoral thesis that can be defended at the host institution within or shortly thereafter the project lifetime.

Host university

FUNITEC, a member institution of the Ramon Llull University, governs the La Salle Schools of Architecture, Engineering, Digital Arts and Business. Research in architecture is structured in three lines of work: 1. The design and implementation of building and urban development tools, processes, and strategies to achieve a sustainable built environment 2. The rehabilitation of buildings and urban environments to adapt them to current demands, and 3. The improvement of the energy efficiency of buildings through passive design strategies and the application of ICT technologies.

The group ARC Engineering and Architecture La Salle has over 20 years' experience in the fields of modular housing and building energy efficiency which have been carried out over national and international research projects. Some examples are the BARCODE HOUSING SYSTEM, the ECOCHIES platform developed in the FP7 SEMANCO project, the BALJONGM product catalogue compatible with BIM technologies and the ENERHAT and ENERPAT applications to assess the state of the residential building stock and implement rehabilitation measures.

Contact
 Prof. Leandro Madrazo (leandro.madrazo@lalle.urll.es)

Figure 14. Individual research project page

2.8. Knowledge base

This section is divided into the Vocabulary and the Case studies sections.

2.8.1. Vocabulary

The vocabulary contains a list of terms that are related to the research conducted in the network (Figure 15). Each term can have multiple definitions related to the three research areas.

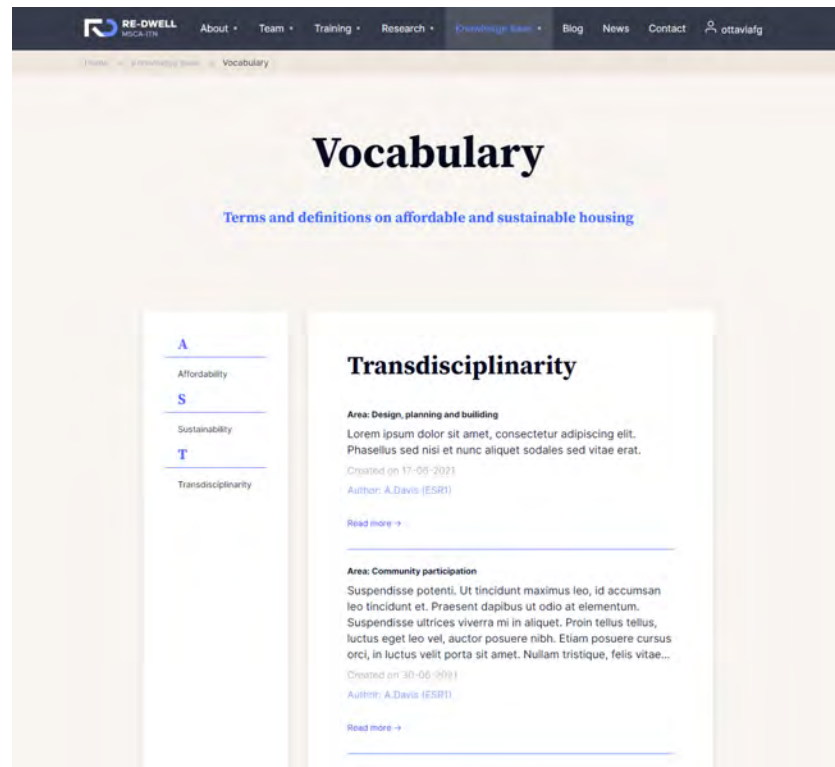


Figure 15. Vocabulary page

The single view of a term definition contains its name, description, research area and the author of the entry (Figure 16).

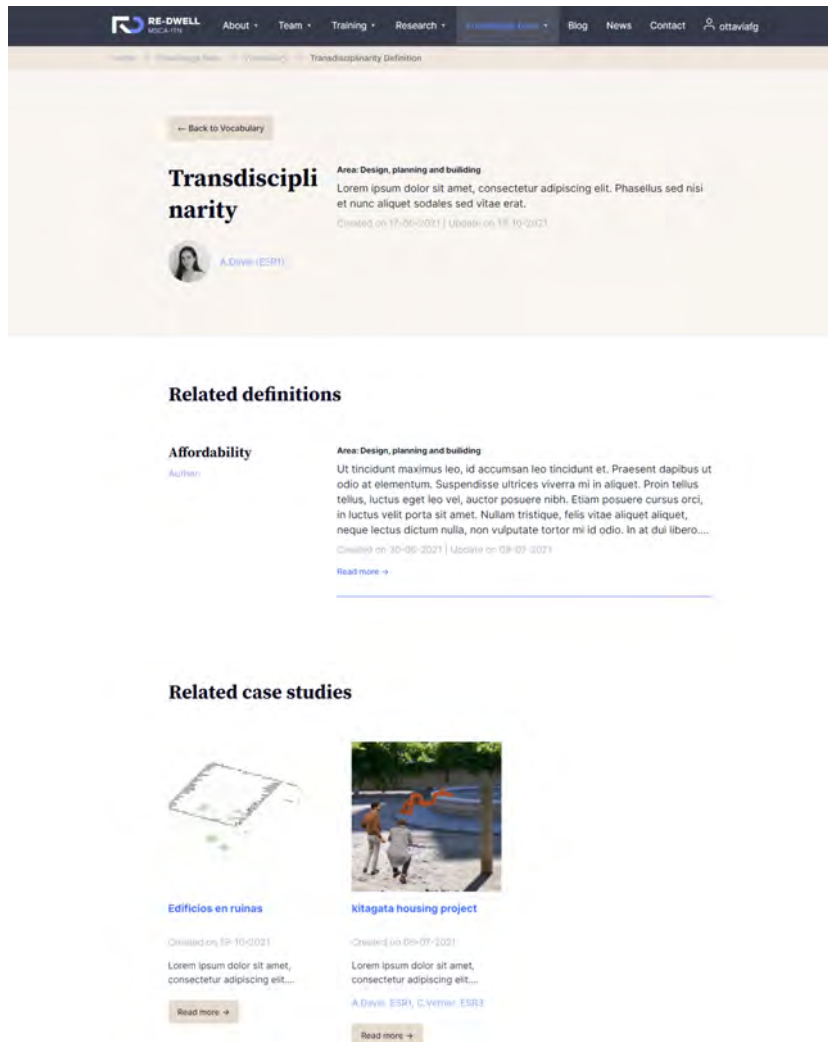


Figure 16. A term definition page

2.8.2. Case Studies

This section is a library of documented examples collected by the ESRs in the course of their research on affordable and sustainable housing.

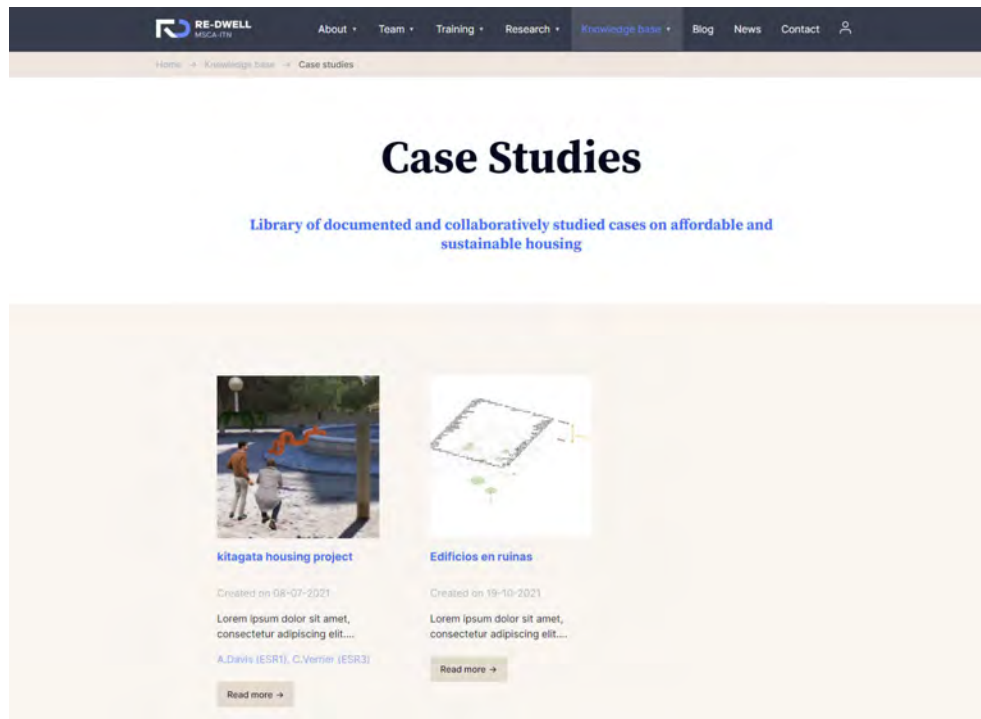


Figure 17. Case studies page

A single view of a case study contains the title, description, owners, an iconic image, and other images to document the case. There are also sections for the related concepts, reference documents and related blog entries.

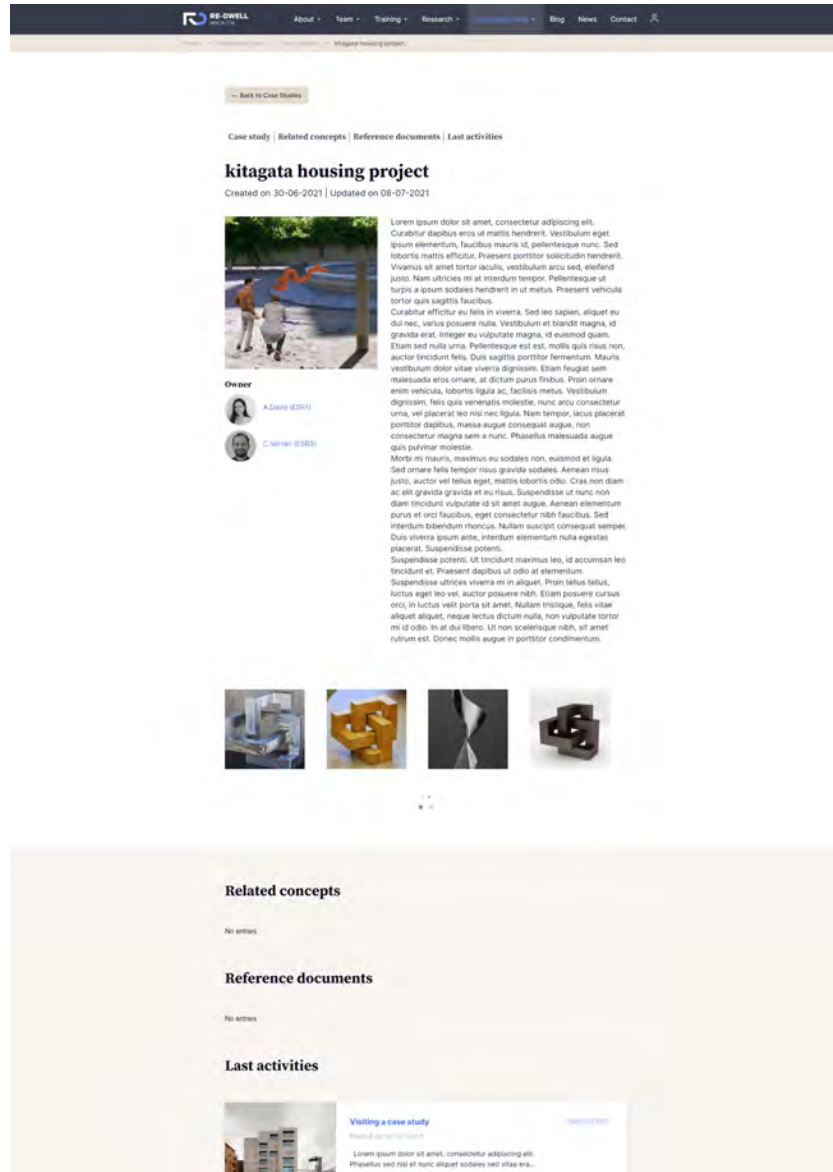


Figure 18. A case study page

2.9. Blog

The blog posts are intended to contain the findings and reflections of ESRs and supervisors in the course of the network's research activities. (Figure 19).

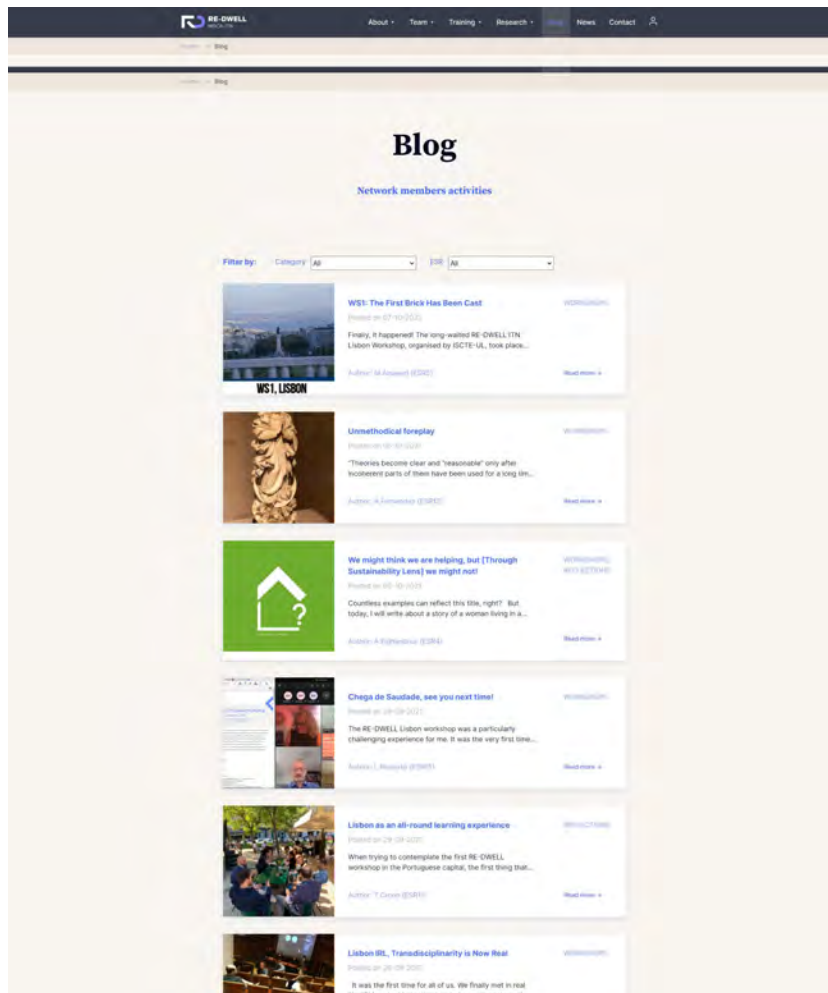


Figure 19. Blog page

The single view of the blog includes the related information (Figure 20). The blog entries are classified into categories (e.g., workshops, reflections...), can have attached documents, and can be related to case studies.

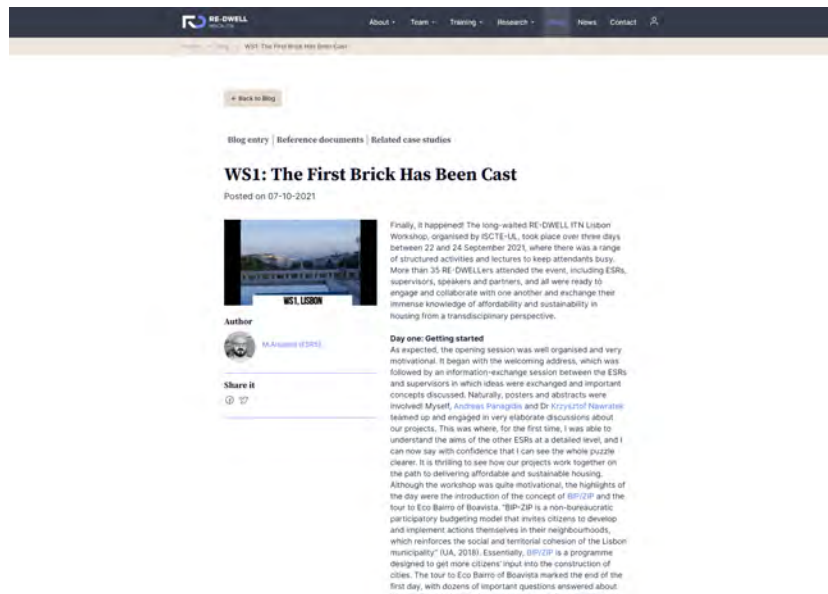


Figure 20. View of one of the posted blog entries

2.10. News

News items are published in the website as well as in the social media channels (Figure 21).

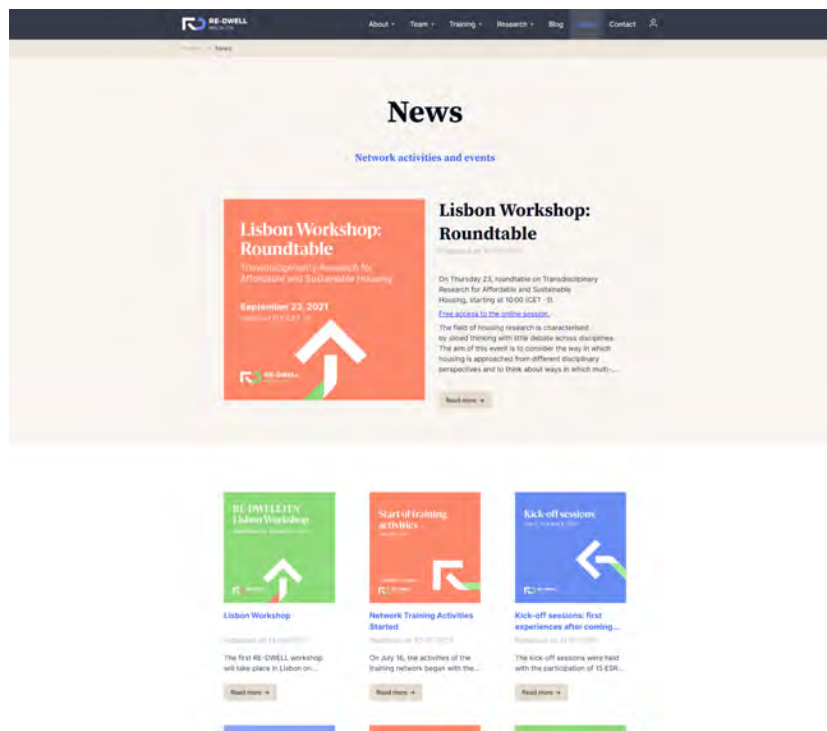


Figure 21. News

The single view of the News includes the related information (Figure 22).

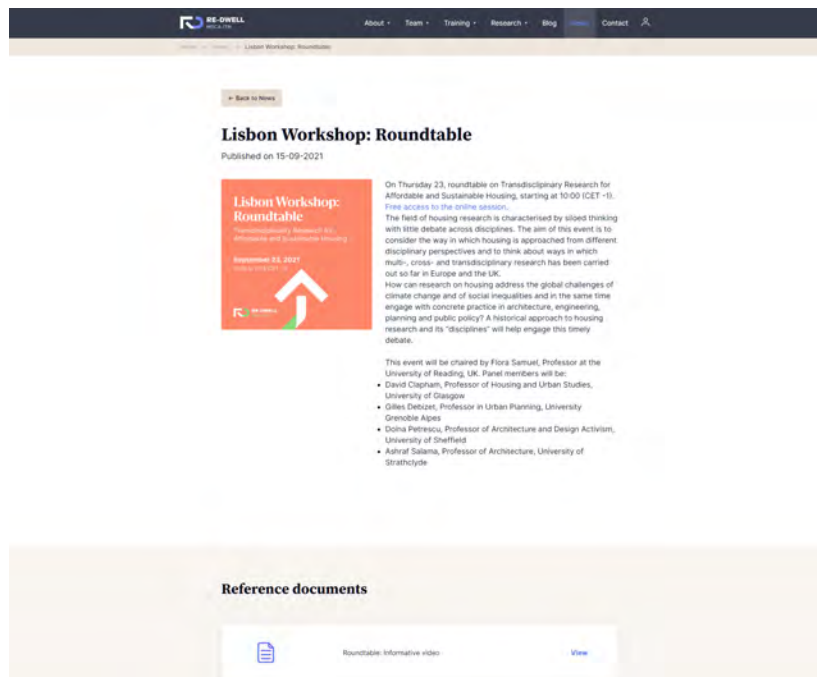


Figure 22. View of one of the posted news

2.11. Contact

Visitors of the web portal can write an email to the official mail address (info@re-dwell.eu) using an integrated form (Figure 23).

The image shows a contact form on the RE-OWELL website. At the top, there is a dark navigation bar with the RE-OWELL logo and menu items: About, Team, Training, Research, Blog, News, and Contact. Below the navigation bar, the word "Contact" is centered. The main content area features a heading "Contact" and a sub-heading "If you need more information, please fill in this form or contact us at info@re-owell.eu". The form consists of three input fields: "Name", "Email", and "Message". Below the "Message" field is a Captcha code with the text "Captcha code" and "E6,SR". A blue "Send" button is located at the bottom right of the form.

Figure 23. Contact form

2.12. Back office

The contents of the web portal are introduced by registered users (ESRs and supervisors) using a back office. For each content type (e.g., blog entries, vocabulary, case studies, news) there is a table for listing the contents (Figure 24) and a form for adding/editing them (Figure 25).

ID	Date Created	Title	Date Posted	Actions
13	15/09/21	Lisbon Workshop: Roundtable	15/09/21	Edit Delete
12	15/09/21	Lisbon Workshop	14/09/21	Edit Delete
11	30/07/21	Network Training Activities Started	30/07/21	Edit Delete
9	21/07/21	Kick-off sessions: first experiences after coming together	21/07/21	Edit Delete
8	07/07/21	Kick-off sessions: start of the network research activities	29/06/21	Edit Delete
7	07/07/21	15 Early-Stage Researchers selected	30/04/21	Edit Delete
6	07/07/21	Second recruitment call closed	17/03/21	Edit Delete
5	07/07/21	Second call for recruitment opened	21/01/21	Edit Delete
4	07/07/21	Call for recruitment closed	18/12/20	Edit

Figure 24. An example of table to list the news

With the adding/editing form, the related information can be introduced. For example, when a case study is created, it can be related to existing terms and blog entries (Figure 25). Through the interwoven forms, it is possible to create the networked contents.

The image shows a web form for creating a new case study. At the top, there is a navigation bar with the RE-DWELL logo and menu items: Admin, Case Studies, Concepts, Blog, News, Network Events, and M. Salgado Rodríguez. Below the navigation bar, the breadcrumb trail reads 'Case Studies > New Case Study'. The form itself consists of several sections:

- Title:** A simple text input field.
- Description:** A rich text editor with bold, italic, and link icons.
- Icon Case Study:** A file upload field with the text 'Seleccionar archivo | Ningún archivo seleccionado' and a note '* max. file size 6MB'.
- Owners:** A text input field.
- Concepts Related:** A text input field.
- Posts Related:** A text input field.
- Images:** A section with a blue link '+ Add image'.
- Files:** A section with a blue link '+ Add file'.

 At the bottom right of the form, there are two buttons: 'Cancel' and 'Publish'.

Figure 25. Case study new form

3. Technical specifications

To develop the RE-DWELL web portal, we have used the Symfony PHP framework. This framework will enable the further development of the website components, without having to redo the entire application. It will also facilitate the maintenance and upgrading of the system.

Symfony was chosen among other options because:

- Its modularity enables the creation of a complex system based on small components.
- Its bundle system provides functionalities that can be used in different projects, which makes it easy to extend the system without having to redo everything.
- Its stability; it has a large active community of user that assures its continuous improvement.

Symfony follows an MVC (Model-View-Controller) software architecture model, that is to say, it separates the data, the event and communication management from their representation in the application. Twig is used as the application template system. Symfony is linked to a library called Doctrine, a set of tools to facilitate the interaction with the MySQL database. For the front-end we have opted for the use of Javascript libraries, which facilitate the

required dynamism of the user interaction. Finally, to comply with the graphic design specifications we have adopted the CSS3 graphic design language, using Sass compiled extension language which facilitates the management of styles in complex applications.

To improve the quality of the RE-DWELL web portal, tools are used to audit performance, accessibility and optimisation for different search engines. These tools perform a test according to current standards and recognised best practices, and the result tells you which points can be improved in order to increase the quality of your system. Currently, A-Place uses the open-source tool Google Lighthouse to obtain an overall assessment of the application and a specific tool to measure accessibility, called axe DevTools - Web Accessibility Testing. Further usability tests have not been performed at the moment of writing.