

Project:
Smart Rehabilitation 3.0
Innovating professional skills for existing building sector

Programme: Erasmus Plus/Key Action K2

Type of Project: KA203 – Strategic Partnership for higher education

Summary

The intervention in existing buildings has been a very active construction subsector in every European country, with an average activity higher than 50% of the whole sector in Europe. However, it is acknowledged that the rates are not equal for each country: some reach the 20% while others goes beyond the 70% of the total activity, resulting into a general increment of the rehabilitation and maintenance activities on the improvement of the aged European building stock. This activity is much more efficient than the new edification from a social, economic and environmental point of view.

Rehabilitation activity has traditionally been oriented towards the structural and technical aspects of the buildings. Nowadays, the global concept of urban regeneration is considered one of the main sustainable development goals of the **United Nations 2030 Agenda** in order to make inclusive, safe, resilient and sustainable cities. EU Ministers for Urban Development approved in 2010 the **Toledo Declaration** focused on the importance of integrated urban regeneration and its strategic potential for a smarter, more sustainable and socially inclusive urban development in Europe, supporting the importance of the rehabilitation of the existing housing stock from different perspectives. At the same time, multiple international agreements, such as the **Climate Summit COP21** of Paris in 2015 or the recent actualization of the European **Directive on energy efficiency of buildings** (2018/844), have chosen to accelerate the renovation of existing buildings to reduce the energy consumptions and to reach a sustainable, competitive, safe and de-carbonized energetic system for the planet.

Currently, given the political and social commitment, indispensable changes are required for the construction sector, and it is an excellent opportunity to incorporate enhancements within the managing systems of the sector and to introduce the BIM as a standard working model of great utility. At the same time, building and construction professionals, have to be able to use up-to-date technologies for the intervention on the existing building stock. Unfortunately, this main subsector in Europe, concerning restauration, rehabilitation and maintenance, have an important need related to the lack of a specific professional experts, because most of the European universities focus their training in new construction activities and not in this field.

Answering to the wide and complex spectrum of exigencies that a correct rehabilitation must confront with is not an easy matter and the majority of professionals of the sector have difficulties facing it. The key aspect, since we are talking of existing buildings is, having a good knowledge of the latter and of their components acquired by the diagnosis. This knowledge permits to prepare a good rehabilitation/restoration project, following the international criteria and finding the best solution for each one of the building requirements. Nowadays, one important need of this sector, and the main objective of Smart Rehabilitation 3.0 project is related to the lack of a specific professional profile as “Rehabilitation expert”. An expert who can dialogue with the owners of existing buildings in order to understand their needs and with a technical capacity to prepare the rehabilitation/restoration project that will solve all kind of issues, using up-to-date technologies. The rehabilitation and the restoration project require two complementary professional disciplines: one technological and linked to the engineering and other a heritage and aesthetic one linked to the architecture. The expert has to lay out on a very consistent technological base of calculation, energetic behaviour etc., always taking into account the building conception, and its aesthetic, historical and heritage values.

The European construction market shows a trend of steady growth. Measures such as the **Construction 2020 Action Plan** and eco-innovation policy indicate the EU has and will continue to provide key incentives to stability, encouraging investment in building renovation, infrastructure and innovation with EU instruments for sustainable building renovation, taking-up of R&D results and deployment of innovative practices and governance for the construction sector. In addition, we want to follow the President Juncker words at the end of the Europe's leaders meeting in Gothenburg in November 2017: *“Education and culture are the key to the future – both for the individual as well as for our Union as a whole. It is how we turn circumstance into opportunity, how we turn mirrors into windows and how we give roots to what it means to be 'European', in all its diversity.”*

The project general aim is to deepen knowledge about existing up-to-date technological tools for building assessment through the collaboration among international partners, and consequently to upgrade existing training tools and professional qualifications curricula in order to create a renewed rehabilitation expert profile for existing building sector. The desired professional profile should include competences in the use of up-to-date digital tools and information, and in cross-disciplinary instrumental techniques. Is for it that we use the 3.0 concept, as a new paradigm in interaction and in how people interact with the information. As computer scientists believe, this new paradigm will further make online interaction easier and more intuitive for professionals, as smarter applications such as better search functions give users exactly what they are looking for as “digital literacy”.

At EU level, Smart Rehabilitation 3.0 takes into account **Construction 2020 Strategy for the sustainable competitiveness of the construction sector and its enterprises** (2012), in particular the related Action Plan aiming at the “improvement of specialized training and making the sector more attractive”. In addition, the Project intends to meet Europe 2020 growth strategy priorities on education, taking into account the **EU Roadmap Opening up Education** (04/2013). It means enhancing education and skills development through new technologies and underlining that “the world of learning and teaching in Europe is still traditional”, but in order to reshape education successfully, “Opening up education means taking advantage of the considerable benefits the digital revolution has to offer”.

Partnership

Smart rehabilitation 3.0 project is a partnership among 7 organizations:

- ✓ RehabiMed Association. Spain
- ✓ Polytechnic University of Catalonia (UPC Tech). Spain
- ✓ University of Palermo, Architecture Department. Italy
- ✓ Kauno Technologijos Universitetas. Lithuania
- ✓ University of Cyprus. Cyprus
- ✓ CESIE. Italy
- ✓ AEEBC Association of European Experts in Building & Construction. Ireland

Associated partners

Associated partners sustain the project and they are invited to local activities.)

Public entities:

- Generalitat de Catalunya. Agència de l'Habitatge. Spain
- Ayuntamiento de Barcelona. Spain
- Regione Siciliana. Assessorato regionale dei beni culturali. Italy
- Lietuvos Liaudies Buities Muziejus. Lithuania
- Ministry of Interior. Department of Town Planning and Housing. Cyprus
- Ministry of Transport, Communications and Works, Department of Antiquities. Cyprus

Professional associations:

- ICOMOS. Spain
- Colegio de Arquitectos de Cataluña. Spain
- Colegio de Aparejadores, Arquitectos Técnicos e Ingenieros Edificación de Barcelona. Spain
- Gremio de Constructores de Obras. Spain
- Ordine Architetti Palermo. Italy
- ANCE – Palermo. Italy
- Cepima. Italy
- Medzio Meistru Draugija. Lithuania
- Lietuvos Statybos InZinieriu Sajunga. Lithuania
- Statybos Produktu Bandymu Laboratoriju Asociacija. Lithuania
- ICOMOS. Cyprus

Private companies:

- PetroBIM. Spain
- BIMETRIC. Spain
- Panormedil-CPT. Italy
- Siqilliya. Italy

Project activities:

Smart Rehabilitation 3.0 project focuses on the following specific activities:

- **Definition of the profile for a “Building Rehabilitation Expert”** as a new professional qualification. This new professional qualification have to offer the appropriate skills in order to be able to answer to the real needs of the building rehabilitation and restoration sector.
- **Development of flexible Syllabus** for the training of the “Building Rehabilitation Expert” concerning the intervention, with up to date technological tools, on the existing buildings stock, in the four countries.
- **Development of 4 Massive Open Online Courses (MOOC)** as free online training courses, available for anyone and as an affordable and flexible way to learn new skills by quality educational experiences on the field of rehabilitation and restoration.
- **Creation of a Repository (Digital Library)** as a place where multiple “databases” and files will be located for distribution over a network as an open source, directly accessible to teachers, students and professionals experts on rehabilitation and restoration. It would be created with the engagement and collaboration of the specialised companies working in rehabilitation.
- **Development of a “Case study database”** as an innovative training material for rehabilitation and restoration at European level. It will be a practical tool for the training of the “Building Rehabilitation Expert” really linked to the real market activity and the specialised industry sector in the four countries.
- **Short-term joint staff training events**, in order to share knowledge and experiences with the partners about best practices in technical issues and in curriculum development and training tools for building rehabilitation and restoration.
- **Pilot training courses** on the developed Syllabus in the participating countries, with specific modules related to advanced technological tools and methodologies for building rehabilitation and restoration.
- **Creation of a network among training institutions and private companies** in order to generate synergies and facilitate training on the job and mutual mobility among the participating countries.
- **Organization of local and international dissemination events:** informative seminars and workshops for public administrations, professional associations, experts on rehabilitation and restoration, private companies, etc.

Intellectual outputs envisaged:

O1 – Development of Training programs for a new professional qualification. Definition of a new professional profile as “Building Rehabilitation Expert” and elaboration of the specific syllabus in order to train these experts, addressed to students and postgraduate professionals to learn new skills from rehabilitation and restoration sector.

O2 – Creation of On line training courses. Elaboration of an innovative and advanced technological tools and methodologies as Massive Open Online Courses (MOOC) addressed to students, postgraduate and available for anyone with an affordable and flexible way to learn new skills from rehabilitation and restoration sector, will be elaborated and implemented.

O3 - Tool for the access to technological and innovative interventions in Rehabilitation. As an interactive tool, where locate multiple “databases” and digital information for distribution over a network open source, directly accessible to teachers, students, and professionals experts on rehabilitation and restoration. It will be created in partnership with private specialised companies working in rehabilitation and restoration.

Training activities:

C5/6/7/8 – 5 days **Short-term joint staff training events** for ToT, respectively in Spain, Italy, Cyprus and Lithuania, for teachers / trainers / researchers (one from each university partner) about contents of the Syllabus and training tools for building rehabilitation and restoration + exchange of best practices.

Organizer event: local partners (UPC, UNIPA, UNICY and UNIKA)

Participants: RehabiMed and University partners

Multiplier events

Local Multiplier events

M1/2/3/4 – Pilot implementation of 4 Massive Open Online Courses (MOOC) created by O2, as open source available for anyone, where trainees learn how to use new advanced technological tools/methodologies for building rehabilitation and restoration projects and works.

Organizer: Event local partners (UPC, UNIPA, Cyprus Uni and Kaunas Uni)

Participants: 10 local and 10 international students and partners

International Multiplier event:

A final international conference in Ireland.

Organizer: AEEBC

Participants: all partners

Dissemination impact:

Network for Education-business agreements. Development of a network among training institutions and private companies focused on the training of the “Building

Rehabilitation Expert” by formal and vocational education and training for building rehabilitation and restoration. The network aims to promote synergies at local and international level and work-based learning for the initial experience of the experts. The leader partner will be the AEEBC, Ireland, with the collaboration of all partners.

All the partners will develop an important and permanent dissemination of the Project at local, national and International level, with different kind of activities and with the implementation of the results asap.

Expected results

The expected results are:

- Educational organizations, professional associations and public authorities have got a deeper knowledge of the different innovating activities organized in Europe about building rehabilitation and restoration.
- Educational organizations, professional associations, public authorities and construction companies have achieved the goal of getting their initiatives in existing buildings sector updated and in line with the job market demands.
- More effective higher education and vocational training in rehabilitation and restoration sector.
- Companies/employers’ and professional associations learned about the importance and advantages of collaboration among local stakeholders (companies, universities, VET providers, public authorities) in order to get a qualified expert in rehabilitation and restoration, available at local level.
- Participants (students) who attended local activities (pilot trainings) and MOOCs have got increased employability in existing building sector
- Participants (students) who attended the local activities learned relevant skills about advanced technological tools and methodologies for rehabilitation and restoration projects and works

DURATION: 30 months

START: 1st November 2019 – **END:** 30th April 2022