# metabuilding labs

EU wide network of Testing facilities & Innovation services for new building envelope technologies & products

# Project Presentation

METABUILDING LABS Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 953193. The sole responsibility for the content of this document lies entirely with the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

# Metabuilding Labs

## The OITB

# Metabuilding Labs

## OITB

METABUILDING LABS Open Innovation Test Bed - Main Intention

### WHAT ?

Support to develop and test **innovative systems and solutions for next generation buildings**

### WHY ?

To improve competitiveness and boost market impact of the small- and medium-sized enterprises **(SMEs)**

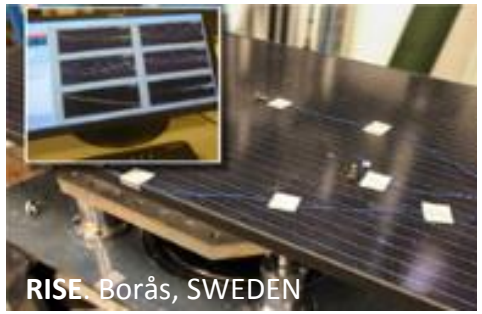
### HOW ?

By providing an easy access to a wide network of high-value **testing facilities**

**ITB**. Warsaw, POLAND

**NOBATEK/INEF4**. Anglet, FRANCE

**AIT**. Vienna, AUSTRIA


**RISE**. Borås, SWEDEN

# Metabuilding Labs

+ 100 Testing Facilities for Building Envelopes across 12 European Countries

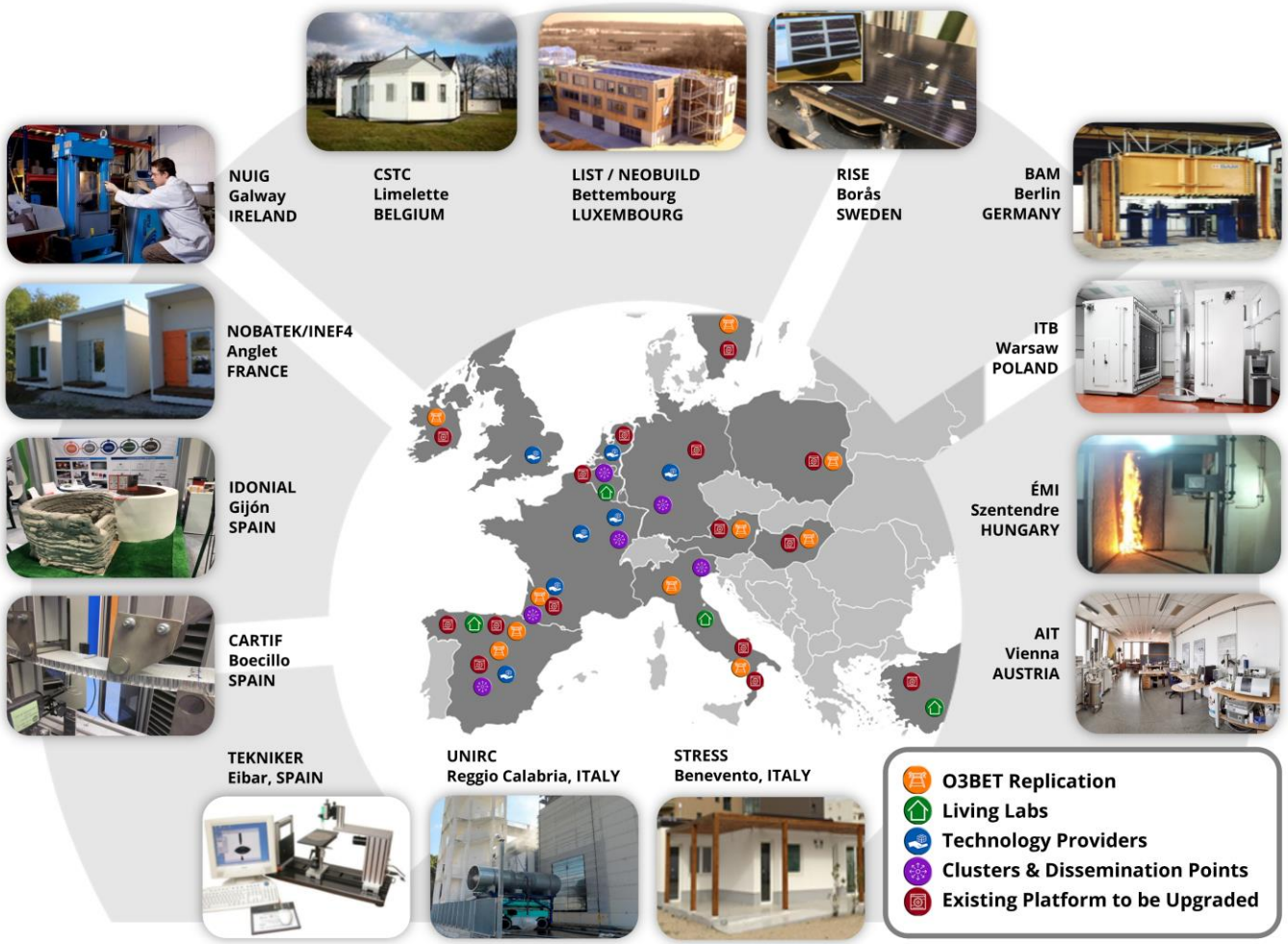
The **METABUILDING LABS** network of +100 testing facilities include:

- Laboratories
- Test benches
- Pilot buildings
- Living labs

**WHERE ?**

Across the following countries:

AUSTRIA · BELGIUM · FRANCE GERMANY
HUNGARY · IRELAND · ITALY · LUXEMBOURG
POLAND · SPAIN · SWEDEN · TURKEY



# Metabuilding Labs OITB

## Metabuilding Association OITB Brokerage Business Model

- Access to the **METABUILDING Platform** and basic services are **free of charge**.
- Testing and innovation services contracted / implemented by the OITB will be subject to a **brokerage fee**.

metabuilding asbl

The Single-Entry Point to manage the OITB

### WHAT DOES IT OFFER ?

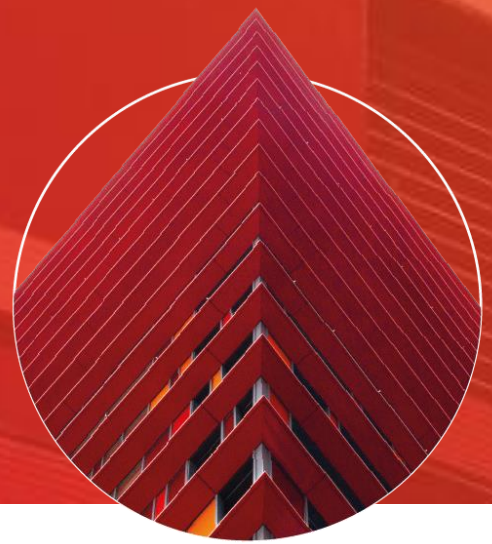
Flexibility, facilitated service design, transparency and trust. SMEs receive a guided experience through the testing / innovation service process facilitated by a digital platform.

### WHY IS IT USEFUL ?

- For testing facilities, incoming requests are pre-curated and quicker through the planning process.
- For SMEs seeking services, they can self-educate first and work with an innovation coach to get to the correct requests and potentially facilitated by programs they didn't know about.

### HOW DOES IT WORK ?

One registers within the platform, accesses available information, and if testing or a service is required, contact is made via the platform to a national innovation coach to start the process.



# Our digital Open innovation platform: metabuilding.com

**metabuilding**

The platform brings free ecosystem services

**metabuilding labs**

The platform serves as a virtual selling point for Metabuilding Labs services

Funding & Financing

Product & Technology

Collaboration Opportunities

Cluster & Innovation Systems

Innovation & Testing Support

Innovation Coaching

# Metabuilding Platform

The Digital Home of the Metabuilding Labs Single-Entry Point

## Service Offer:

Development and Testing from idea to market

- Facilitated **access to testing** and certification thanks to the **Virtual Single Entry Point** metabuilding.com
- Innovation support **from idea to the market**.
- Structured **access** for innovators **to pilot / demonstration sites**.
- **Due diligence** on innovative solutions **for investors**.
- **Easy access / low-cost development testbench** - Open access|Open data|Open source (O3BET).

## Added Value:

Direct access to the Innovation Ecosystem and end users

- Metabuilding **Open Innovation Platform** linked to Built4People Partnership
- **Integration in EU wide innovation ecosystem** providing access to clients and financial sustainability for the OITB.
- **Involvement of end users / inhabitants** in development process.
- Access to **investors / financing.**

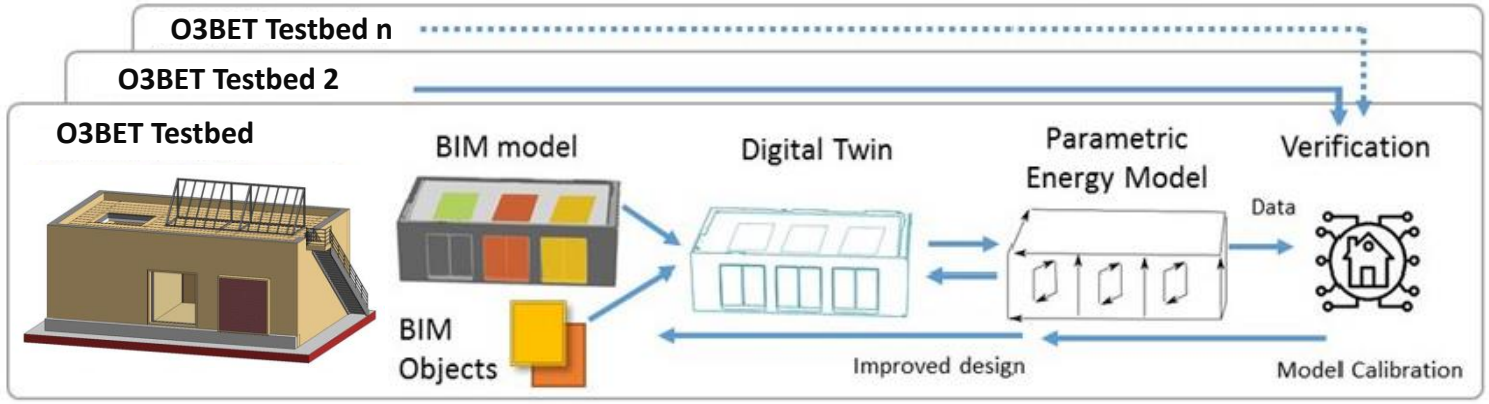
# Metabuilding Labs

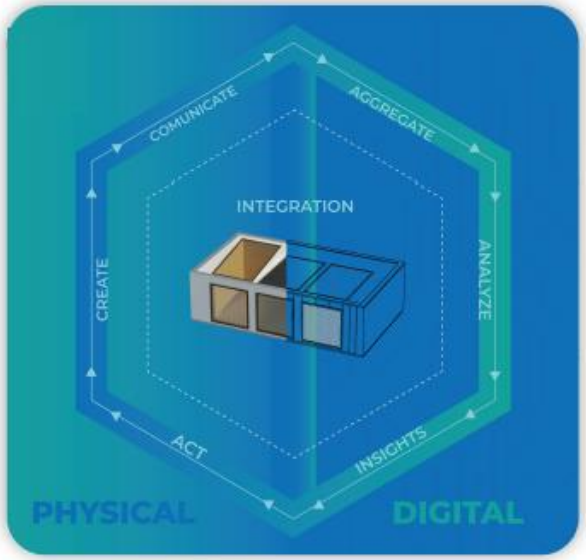
ОЗВЕТ

# Metabuilding Labs O3BET

Provide at least 7 New Innovative Test Benches

**O3BET** | Open Source Open Data Open Access | **Building Envelope Testbench**




## O3BET Creation / Purpose

Under the need for real conditions testing of envelope technologies during the product development process, as part of its Open Innovation Test Bed (OITB) services, and complementary to the existing test beds at partners facilities, the project works to **design, develop and provide 7 innovative O3BET installations**.

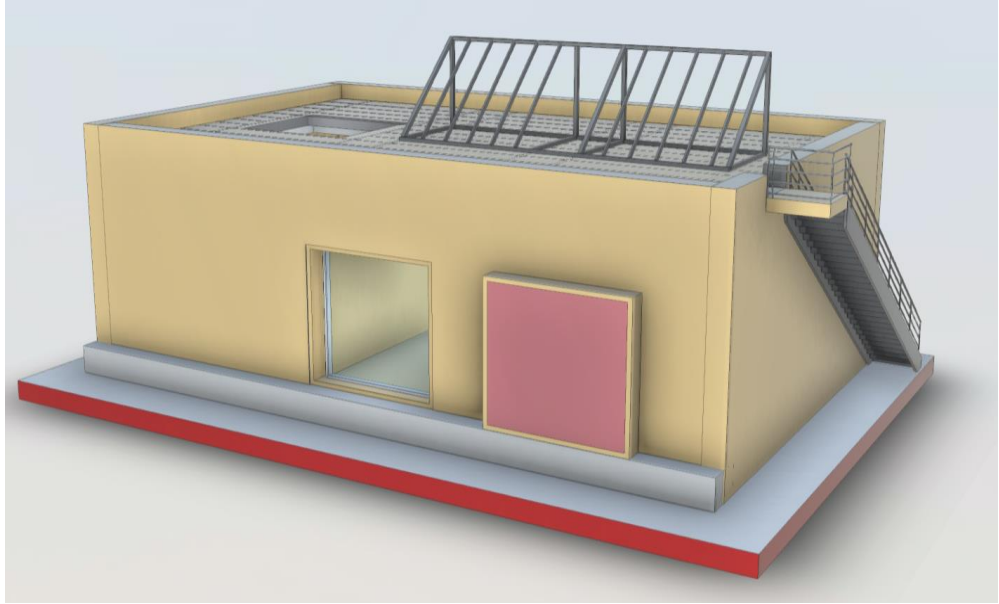
## O3BET Benefits

- A 1:1 scale,
- Standardised and fully replicable,
- Cost-effective,
- Timber based and industrialised,
- Mountable/dismountable low environmental impact kit,
- Digital twin enabled,
- Including all necessary sensors/hardware for virtual testing.

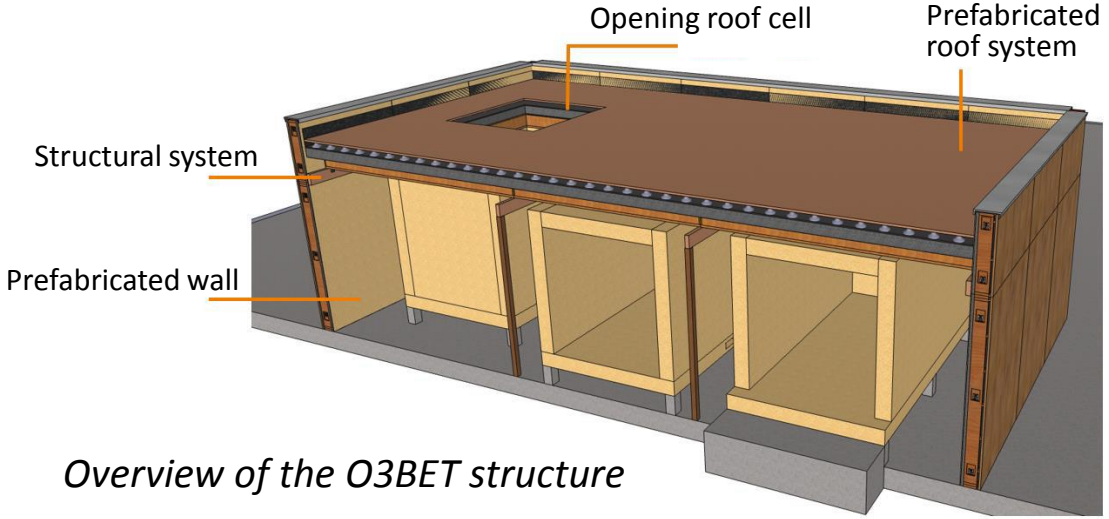
# Metabuilding Labs

## O3BET

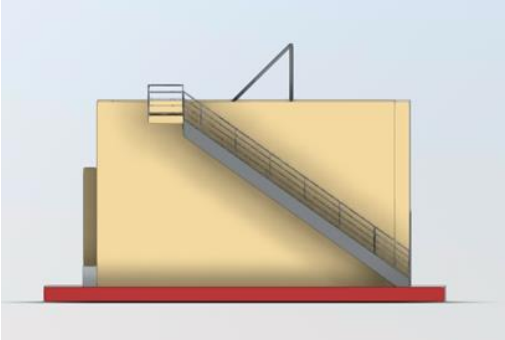
Design of the O3BET dismountable and movable module

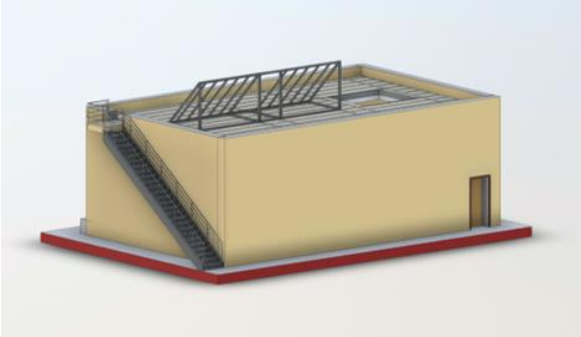


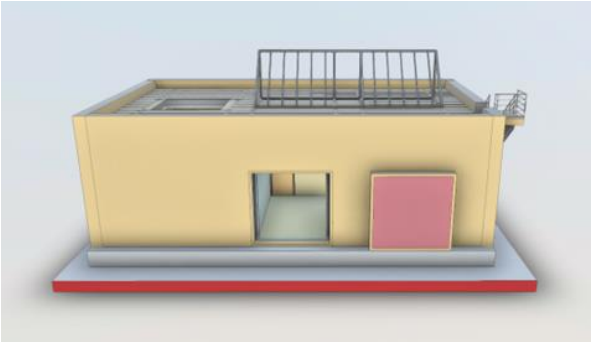
*Alternative with two façade cells and one roof cell*

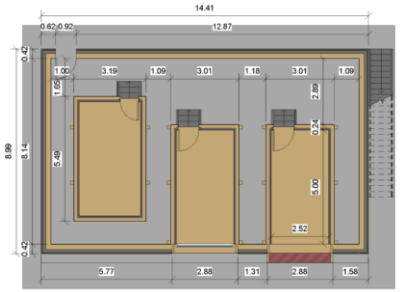



*Overview of the O3BET structure*



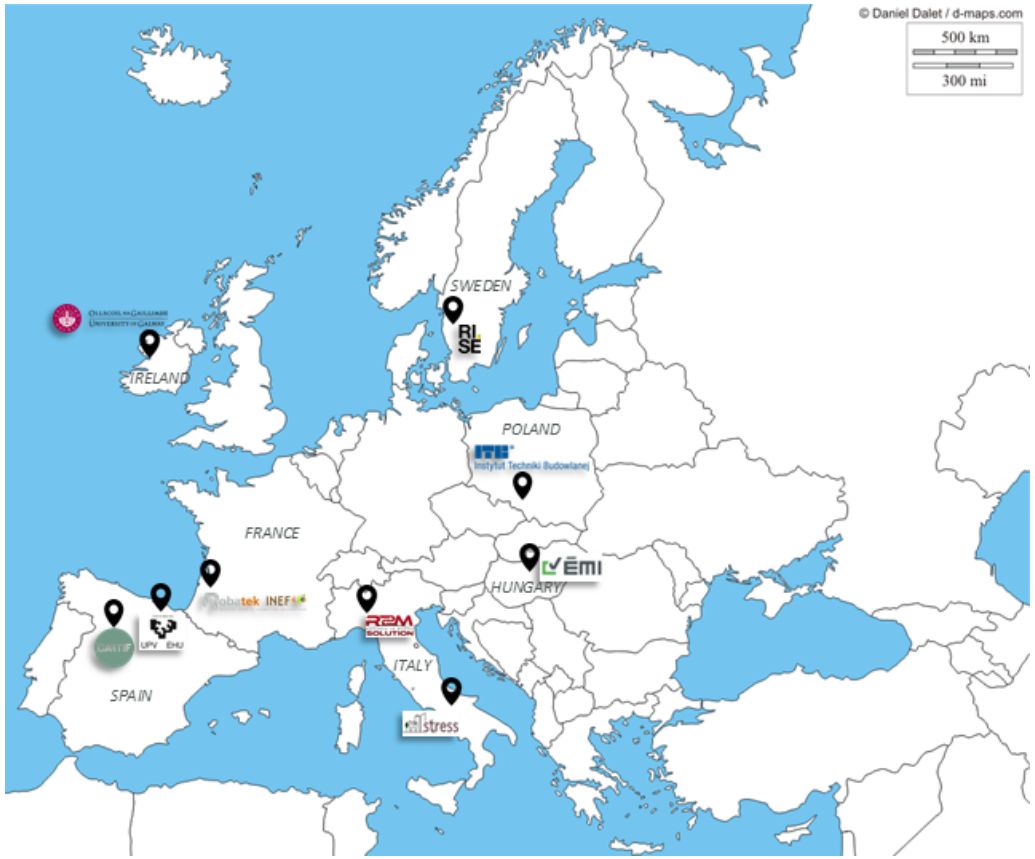






# Metabuilding Labs O3BET

Location of the O3BET modules around Europe

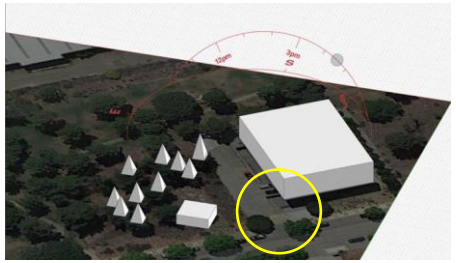


- **CARTIF O3BET**: Boecillo, SPAIN [Warm mediterranean climate Csa]*
- **STRESS O3BET**: Térmoli, ITALY [Warm oceanic climate Cfa]*
- **ITB O3BET**: Katowice, POLAND [Temperate humid continental climate Dfb]*
- **NOBATEK/INEF4 O3BET**: Bordeaux, FRANCE [Temperate oceanic climate Cfb]*
- **RISE O3BET**: Borås, SWEDEN [Temperate humid continental climate Dfb]*
- **UoG O3BET**: Galway, IRELAND [Temperate oceanic climate Cfb]*
- **EMI O3BET**: Budapest, HUNGARY [Temperate humid continental climate Dfb]*
- **R2M Solution O3BET**: Pavia, ITALY [*Warm humid oceanic climate Cfa*]*
- **UPV/EHU PASSYS CELLS**: Vitoria-Gasteiz, SPAIN [*Temperate oceanic climate Cfb*]*

*Köppen climate classification.

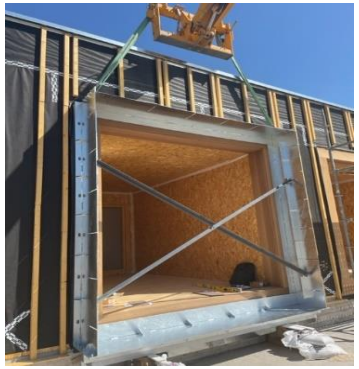
# Metabuilding Labs O3BET – CARTIF (Valladolid, Spain)

Construction process of the 1st O3BET dismountable and movable module



*From June till mid-July 2023 the ground has been prepared and the O3BET concrete foundations have been constructed.*

*From mid-July till mid-August 2023 the structural wooden panels installation has been executed.*



*Along the following month, an intense period of work was carried out inside and outside the O3BET timber structure to prepare this module to receive the specific technical installations.*

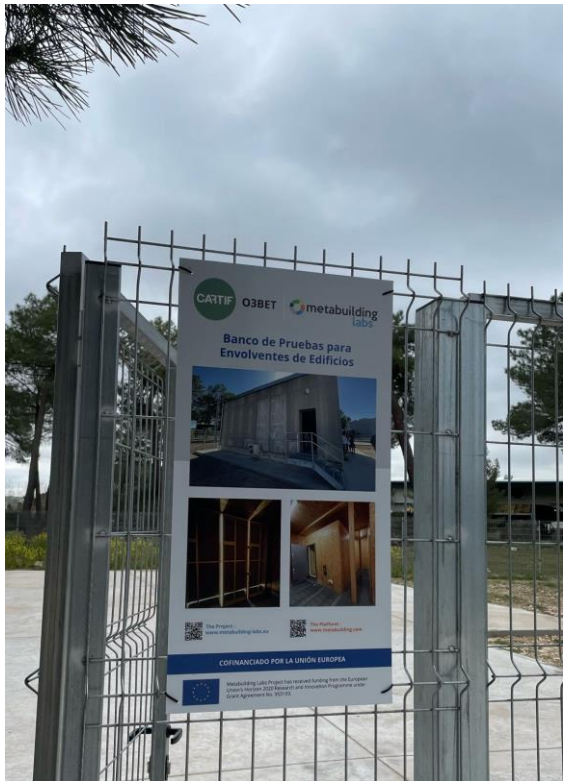
# Metabuilding Labs O3BET – CARTIF (Valladolid, Spain)

Construction process of the 1st O3BET dismountable and movable module

The construction process of the 1st Metabuilding Labs O3BET has been completed!

# Metabuilding Labs O3BET – CARTIF (Valladolid, Spain)

Construction process of the 1st O3BET dismountable and movable module



# Metabuilding Labs O3BET – STRESS (Termoli, Italy)

Construction process of the 2nd O3BET dismountable and movable module

Comune di Termoli

Regione Molise

Questo progetto ha ricevuto supporto dal programma di ricerca e innovazione dell'Unione Europea H2020 attraverso il Grant Agreement No. 953193

**COMUNE DI TERMOLI**
(Provincia di Campobasso)

**Infrastruttura di prova denominata "O3BET" da realizzarsi nell'ambito del progetto di ricerca Europea METABUILDING LABS-Grant Agreement n. 953193 - CUP E52C21000640006**

**SCIA N° 2024.42145 del 25/06/2024**
**PERMESSO DI COSTRUIRE N° del**

**COMMITTENTE:** Università degli Studi del Molise - STRESS S.C.A.R.L.

**PROGETTISTA:** Ing. Fabio CIARROCCHI

**DIRETTORE DEI LAVORI:** Ing. Fabio CIARROCCHI

**RESPONSABILE DEI LAVORI:** Ing. Carmine PASCALE

**COORD. DELLA SICUREZZA IN FASE DI PROGETTAZIONE:** Ing. Chiara BASSANO

**COORD.DELLA SICUREZZA IN FASE DI ESECUZIONE:** Arch. Isabella LANZONE

**CALCOLATORE STATICO:** Ing. Fabio CIARROCCHI

**COLLAUDATORE IN CORSO D'OPERA:** Ing. Angelo FRATINI

**RESPONSABILE DEL CANTIERE:** Patrizio GALANTE

**IMPRESA DI COSTRUZIONE OPERE IN C.A.:** P.G. Edilizia S.r.l.s.

**IMPRESA DI COSTRUZIONE OPERE IN LEGNO:** PROGETTO LEGNO s.r.l.

**IMPORTO DEI LAVORI:** 180.000,00€

# Metabuilding Labs O3BET – STRESS (Termoli, Italy)

Construction process of the 2nd O3BET dismountable and movable module

# Metabuilding Labs O3BET – STRESS (Termoli, Italy)

Construction process of the 2nd O3BET dismountable and movable module

# Metabuilding Labs

## The Pilots as Living Labs

# The Pilots as Living Labs

Streamlined access to Living Labs & pilot matchmaking

metabuilding labs

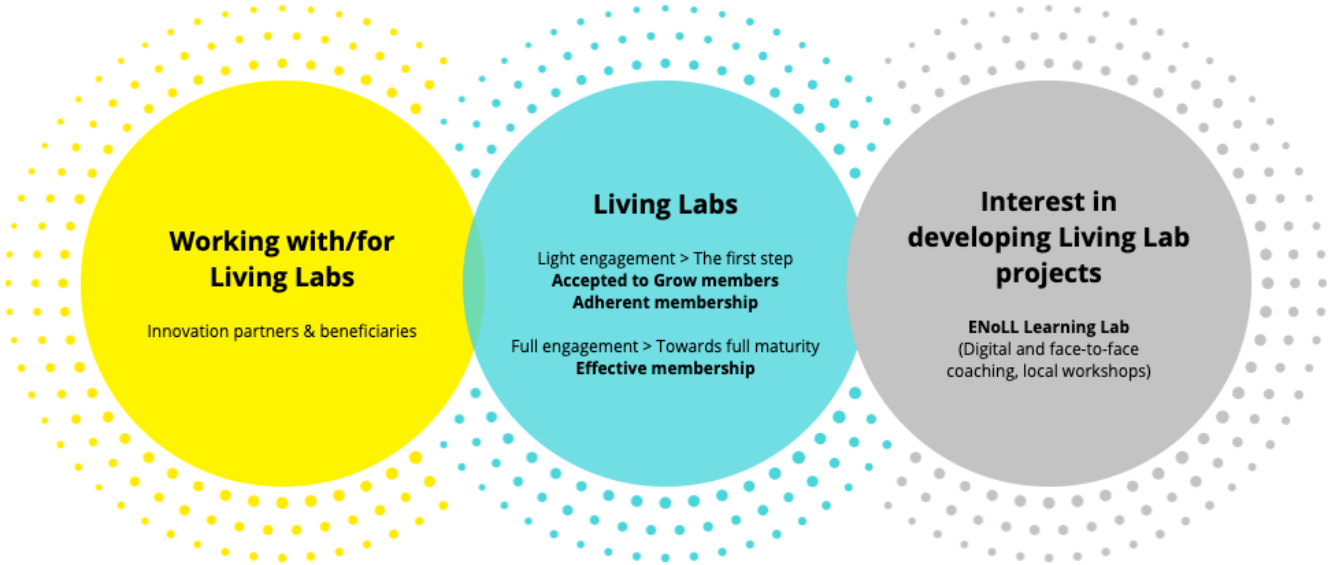
European Network of Living Labs

## What is ENoLL?

The European Network of Living Labs is **an international non-profit association** which aims **to promote and enhance user-driven innovation ecosystems**, more precise the Living Labs concept globally.

An **Organization**

**An Approach / Methodology**




## What are Living Labs?

- Living Labs operate as **intermediaries/orchestrators** among citizens, research organizations, companies & government agencies/levels.
- Living Labs are open innovation ecosystems in **real-life environments** using **iterative feedback processes** throughout a **lifecycle approach** of an innovation to create **sustainable impact**.

# The Pilots as Living Labs

Streamlined access to Living Labs & pilot matchmaking

European Network of Living Labs

## The Living Lab Methodology

Adapted from the Living Lab Integrative Process (Mastellic, 2019), we are developing a methodology to promote active user involvement during the testing and scaling up of technologies in METABUILDING LABS. This methodology will also provide tools to emphasise with stakeholders and define their requirements, work with stakeholders in co-designing solutions and implementing the solutions in the long term.

## Key points on Living Labs (LLs)

- LLs are **not always** building owners.
- LLs **can work with** building owners, offering the service-user-center approach.
- LLs **will always promote** "Active user involvement" ensuring feedback is captured and implemented throughout the whole lifecycle of the innovation.

# Demonstration Pilots for testing in real-life conditions

**Pilot Site:** Technology and Innovation Centre, Başakşehir Living Lab office, **TURKEY**

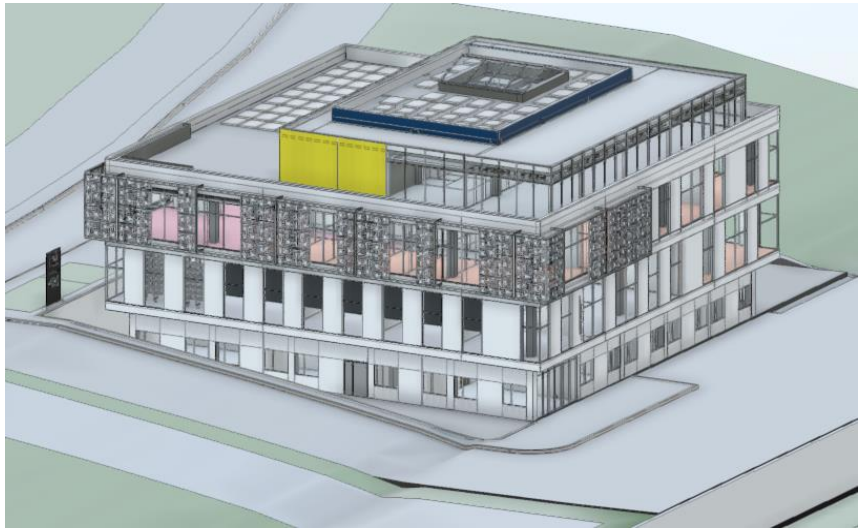
**Pilot Owner:** BAŞAKŞEHIR BELEDİYESİ — BAŞAKŞEHIR LIVING LAB

**Başakşehir Municipality** is one of the largest districts of İstanbul Metropolitan City. It hosts a structured Living Lab and includes a large Organized Industry District with nearly 30.000 SME's.

**Typology:** 4 floors R&D and technology building.

**Tested Technologies:**

- ***ONYX*** *"BIPV Insulating Glazing Unit Modules with Bifacial Cells and Argon Chambers".*
- ***EDILIANS*** *"Aesthetic Photovoltaic Sun Shading System (APS3)".*



# Demonstration Pilots for testing in real-life conditions

**Pilot Site:** Salgueiras, Asturias, **SPAIN**

**Pilot Owner:** vipasa

**VIPASA** is a public provider of social and affordable housing in the Principality of Asturias, reporting to the General Directorate of Housing - Regional Ministry of Social Affairs, and is a member of the Spanish Association for Social Housing (AVS).

**Typology:** 3 floors residential building.

**Tested Technology:** HORMIPRESA

***HORMIPRESA*** *"Precast Insulated Panels for Residential and Industrial Building Retrofit"* will be tested to improve the external thermal insulation of the actual envelope conditions, incorporating the facade to the panel and avoiding in-situ finishing works and maintenance.

# Demonstration

Pilots for testing in real-life conditions

**Pilot Sites:** Fontenay-sous-Bois, **FRANCE**

**Pilot Owner:** Groupe Polylogis | LogiStic

**POLYLOGIS** is a non-profit company for the construction and maintenance of social housing, manages social housing for low-income families, students, young workers, the elderly and the physically handicapped.

**Typology:** 4 floors residential building.

**Tested Technology:** EDILIANS

***EDILIANS*** *"Aesthetic Photovoltaic Sun Shading System (APS3)"* to control heat gains due to solar radiation through windows enhancing the building's thermal comfort and minimising cooling needs.

# Demonstration

Pilots for testing in real-life conditions

**Pilot Site:** New ROOM2030 Prototype, Avilés, **SPAIN**

**Pilot Owner:** ROOM2030

**ROOM2030** is an innovative SME, designing and producing sustainable prefabricated residential modules representing the intelligent home of the future that can be used as test laboratories, considering nature-based materials, circularity, energy efficiency and IOT systems through renewable production.

**Typology:** Residential module equivalent to a single-family housing, containing the most innovative and advanced technologies.

**Tested Technology:**

Smart building envelope component to be defined, manufactured through IDONIAL additive manufacturing technologies.

# Demonstration Pilots for testing in real-life conditions

**Pilot Site:** Hormipresa offices, Tarragona, **SPAIN**

**Pilot Owner:** HORMIPRESA

Since 1972 the company has been offering precast concrete building design, production, and assembly. The emergence of Cross-Laminated-Timber (CLT) has opened a new horizon of hybrid construction for the company.

**Typology:** Small office building.

**Tested Technology:** HORMIPRESA

***HORMIPRESA*** *"Hybrid Wall Panel"* will be used to test their own technologies to have a direct, constant and real time monitoring and characterization of their related performance.

# Demonstration

Pilots for testing in real-life conditions

**Pilot Site:** Immocov Office, Le Haillan, **FRANCE**

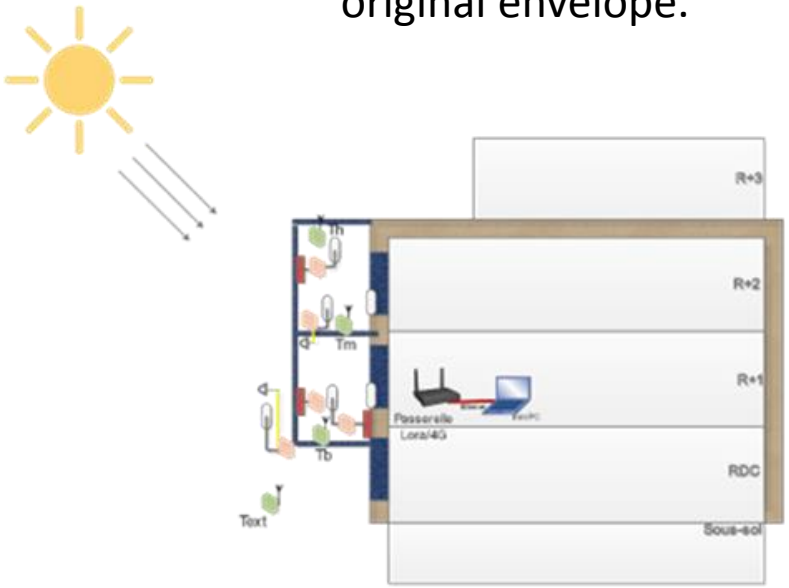
**Pilot Owner:**

**COVERIS** is specialized in the construction of architectural glazing façade based in Bordeaux. Mainly focused on the new construction, the company wants to expand its activities to the renovation sector. The double skin glass façade is a solution that they want to provide efficiently to this market.

**Typology:** Three-storey office building.

**Tested Technology:**

***COVERIS*** *"Renovation Oriented Active Double Skin Glass Façade"*, to test their innovative technology in their own building under specially controlled conditions, to improve the thermal insulation of the original envelope.



# Demonstration Pilots for testing in real-life conditions

**Pilot Site:** IMAGO Student Housing, Bordeaux, **FRANCE**

**Pilot Owner:**

INSTITUT DE MÉCANIQUE ET D'INGÉNIERIE I2M BORDEAUX

Université de BORDEAUX

IMAGO

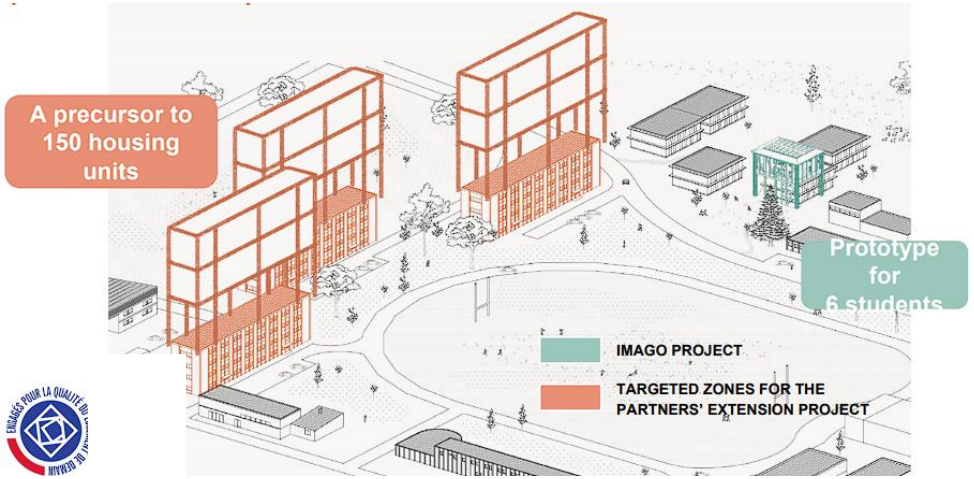
A Living Lab experience participated by the University of Bordeaux proposing alternative approaches in designing socially responsible and environmentally sustainable student housing by using an exoskeleton wooden structure to build around existing buildings.

**Typology:** Environmentally sustainable student housing.

**Tested Technology:**

URBAN CANOPEE

The **URBAN CANOPEE** greening system contributes to protecting the prototype and creating a microclimate and comfortable conditions for the use of the outdoor walkway and building protection.



# Thank you for your kind attention

metabuilding labs

The Project
www.metabuilding-labs.eu

The Platform
www.metabuilding.com

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