SUSTAINABLE PLACES 2025

8-10 October 2025

*Milano*

Comune di Milano

RESEARCH TO MARKET SOLUTION

## Skills

# WORKSHOP

## Pushing on skills to address the current and future challenges: Learning solutions and trends across economic sectors

INPERSO project - R. Olivadese - A. Araldi

inperso

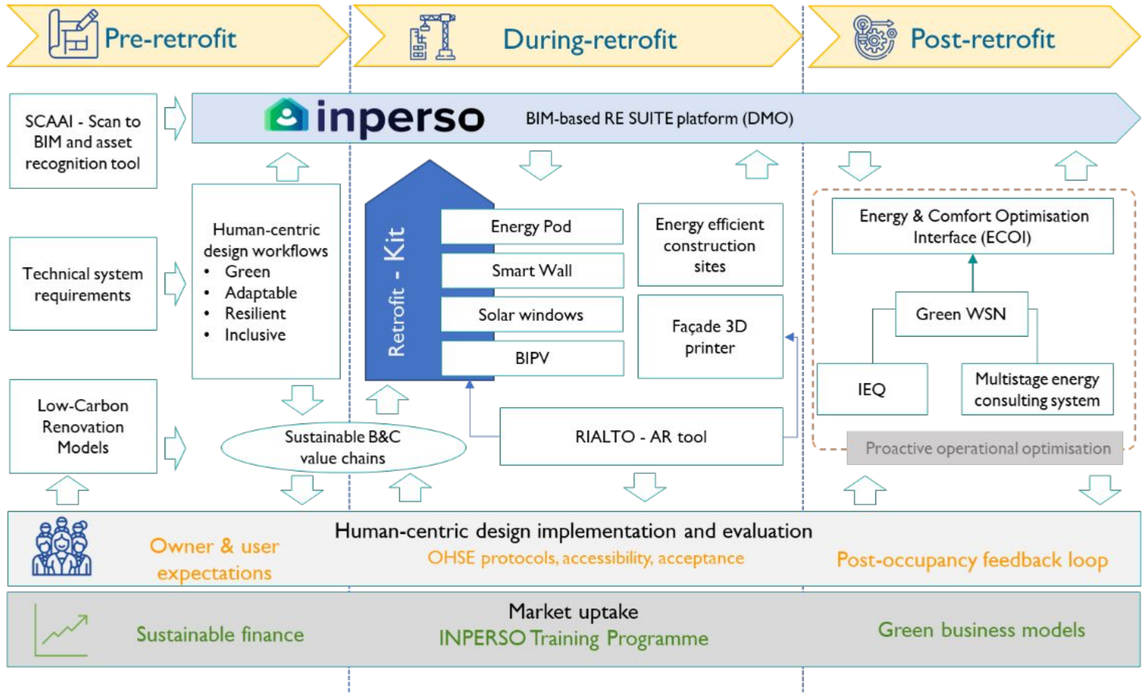
RESEARCH TO MARKET SOLUTION

# INPERSO

INdustrialised and PErsonalised Renovation for Sustainable sOcieties

## OBJECTIVES

The INPERSO project will deliver inclusive, affordable, efficient, and sustainable renovation which will be adaptable to various climate zones and building typologies but focused on residential and heritage buildings.




## PROJECT DURATION

48 months - started in July 2022

Co-funded by the European Union

Grant Agreement Nº:101069820

# INPERSO

INdustrialised and PErsonalised Renovation for Sustainable sOcieties

## 3 PILOTS

**Valencia, Spain**
Its goal is to carry out deep renovation of the building, improving building energy performance, focusing on indoor environment and ventilation, promotion of energy communities and adherence to the heritage status.

**Trinity Complex**

**Social Shelter**
A number of retrofitting actions will be carried out to this 60-year-old building such as replacement of old windows, installment of HVAC systems and improvement of insulation to maximize indoor comfort and energy performance.

**Calle Estella**

**Velp, Netherlands**
It entails three buildings, all of which are culture heritage buildings and protected by law. INPERSO will be an integral part of the design process to achieve a low carbon retrofit in the entire area.

## 22 PARTNERS

ita · Universitat Politècnica de València · CORE IC · Tampere University · Technology Centre CARTIF · Ebetam Irtec · IVE Institut Valencià de l'Edificació · R2M Solution · IRIS · DEMO Consultants · Eurocore Consulting · ams Advanced Management Solutions · AUMSA Actuaciones Urbanas de València · Ajuntament de València · Monumentenwacht Noord Brabant · Δήμος Βάρης Βούλας Βουλιαγμένης · University of Applied Sciences and Arts of Southern Switzerland SUPSI · iwin The sun keeps on rising · EPFL · ventive naturally intelligent ventilation · VIAS · acciona · metsolar

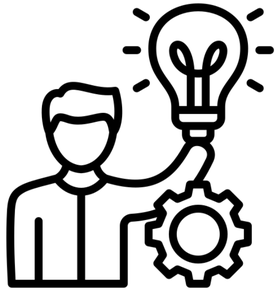
Co-funded by the European Union

Grant Agreement Nº:101069820

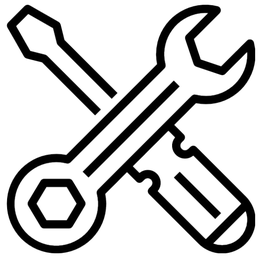
# Context and approach

## EUROPE AND ITS ROADMAP

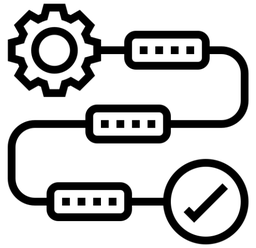
Goal: the BUILDUP portal is an european hub for energy efficiency knowledge sharing.



Initiative: BUILD UP Skills trains qualified construction professionals.



Tools: Projects and EU Exchange Meetings for skill sharing.



Approach: Community engagement and leadership through Ambassadors.



Co-funded by the European Union
Grant Agreement Nº:101069820

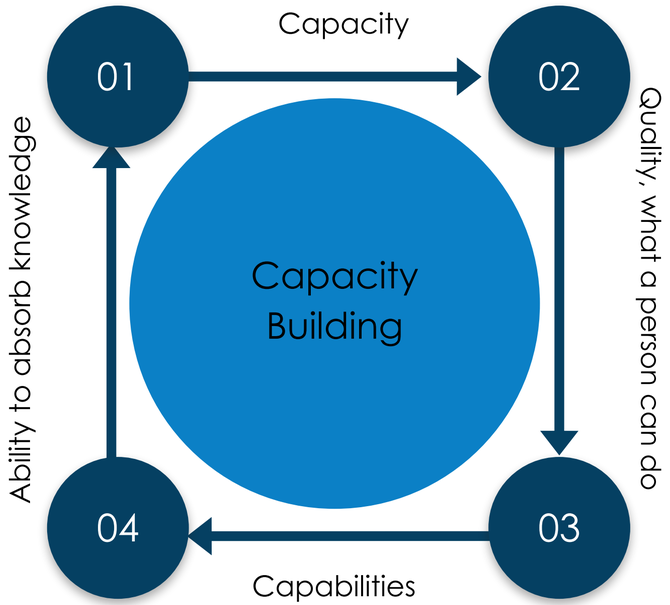
# Methodology

**Definition and research**

*"Capacity-building is defined as the **process** of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world"*[1]

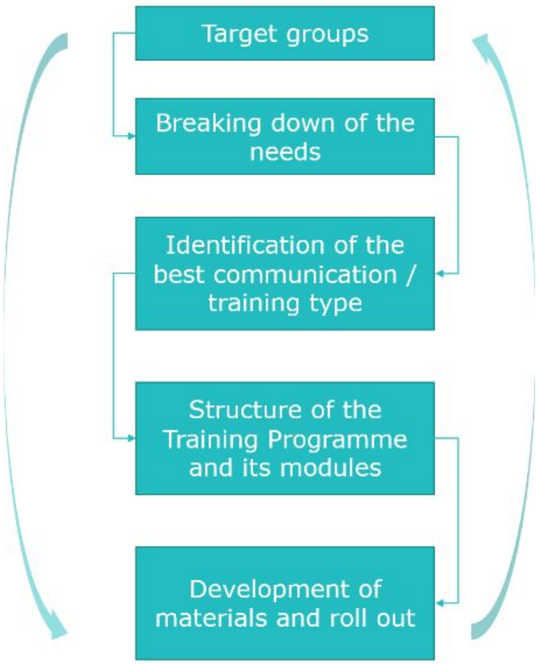
**Roll out of Trainings**

- 9 public training activities
- 14 confidential training activities
- 12 technical training activities (such as user manuals)
- 11 interactive training activities (such as workshops, webinars, etc.)




**Process at different levels**

- Target group and stakeholders
- Needs and aims for the capacity building
- Mapping and definition of the Training Programme

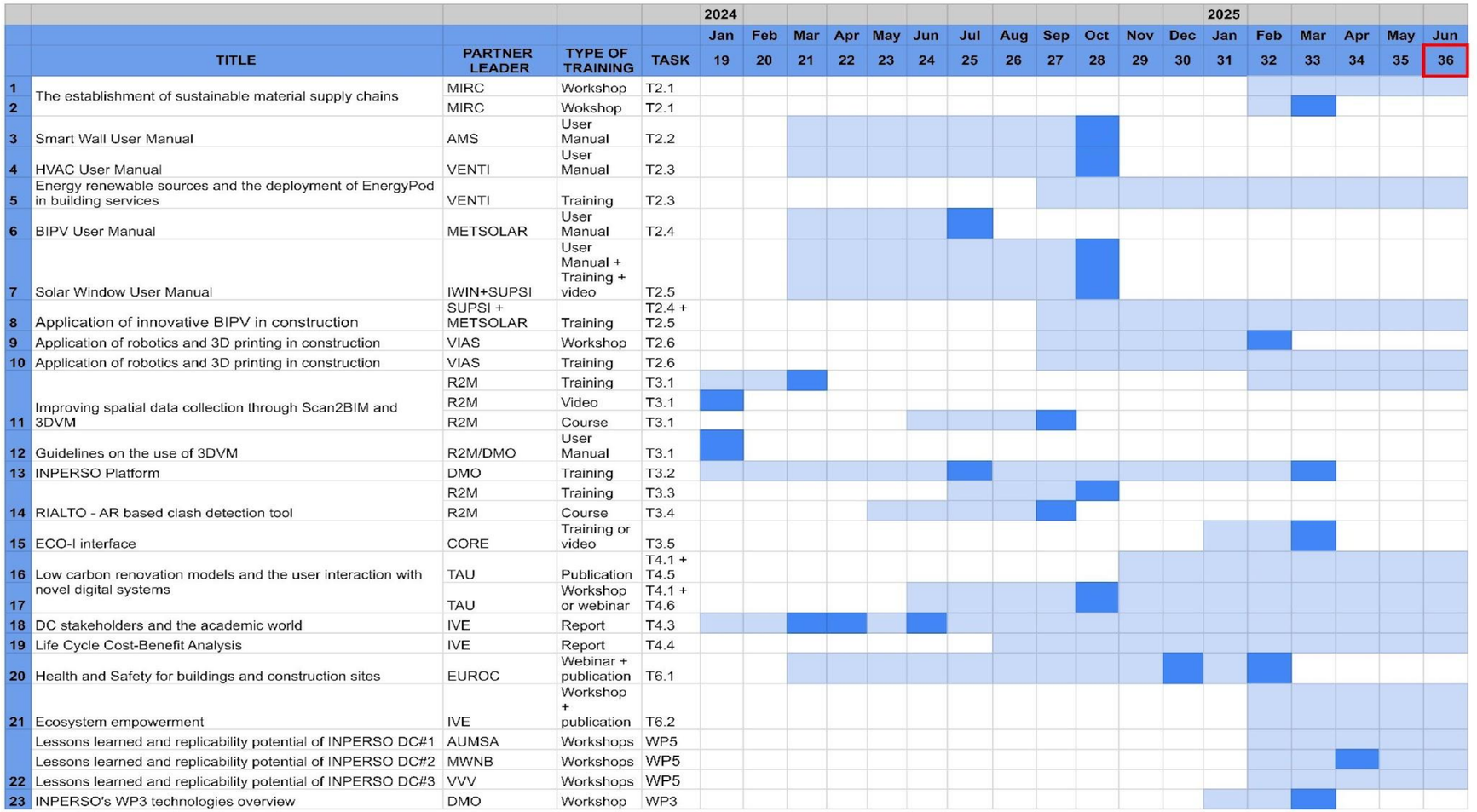





Co-funded by the European Union
Grant Agreement Nº:101069820

# Training Programme

| | TITLE | PARTNER LEADER | TYPE OF TRAINING | TASK |
|---|---|---|---|---|
| 1 | The establishment of sustainable material supply chains | MIRC | Workshop | T2.1 |
| 2 | | MIRC | Wokshop | T2.1 |
| 3 | Smart Wall User Manual | AMS | User Manual | T2.2 |
| 4 | HVAC User Manual | VENTI | User Manual | T2.3 |
| 5 | Energy renewable sources and the deployment of EnergyPod in building services | VENTI | Training | T2.3 |
| 6 | BIPV User Manual | METSOLAR | User Manual | T2.4 |
| 7 | Solar Window User Manual | IWIN+SUPSI | User Manual + Training + video | T2.5 |
| 8 | Application of innovative BIPV in construction | SUPSI + METSOLAR | Training | T2.4 + T2.5 |
| 9 | Application of robotics and 3D printing in construction | VIAS | Workshop | T2.6 |
| 10 | Application of robotics and 3D printing in construction | VIAS | Training | T2.6 |
| 11 | Improving spatial data collection through Scan2BIM and 3DVM | R2M | Training | T3.1 |
| | | R2M | Video | T3.1 |
| | | R2M | Course | T3.1 |
| 12 | Guidelines on the use of 3DVM | R2M/DMO | User Manual | T3.1 |
| 13 | INPERSO Platform | DMO | Training | T3.2 |
| 14 | RIALTO - AR based clash detection tool | R2M | Training | T3.3 |
| | | R2M | Course | T3.4 |
| 15 | ECO-I interface | CORE | Training or video | T3.5 |
| 16 | Low carbon renovation models and the user interaction with novel digital systems | TAU | Publication | T4.1 + T4.5 |
| 17 | | TAU | Workshop or webinar | T4.1 + T4.6 |
| 18 | DC stakeholders and the academic world | IVE | Report | T4.3 |
| 19 | Life Cycle Cost-Benefit Analysis | IVE | Report | T4.4 |
| 20 | Health and Safety for buildings and construction sites | EUROC | Webinar + publication | T6.1 |
| 21 | Ecosystem empowerment | IVE | Workshop + publication | T6.2 |
| | Lessons learned and replicability potential of INPERSO DC#1 | AUMSA | Workshops | WP5 |
| | Lessons learned and replicability potential of INPERSO DC#2 | MWNB | Workshops | WP5 |
| 22 | Lessons learned and replicability potential of INPERSO DC#3 | VVV | Workshops | WP5 |
| 23 | INPERSO's WP3 technologies overview | DMO | Workshop | WP3 |






Co-funded by the European Union
Grant Agreement Nº:101069820

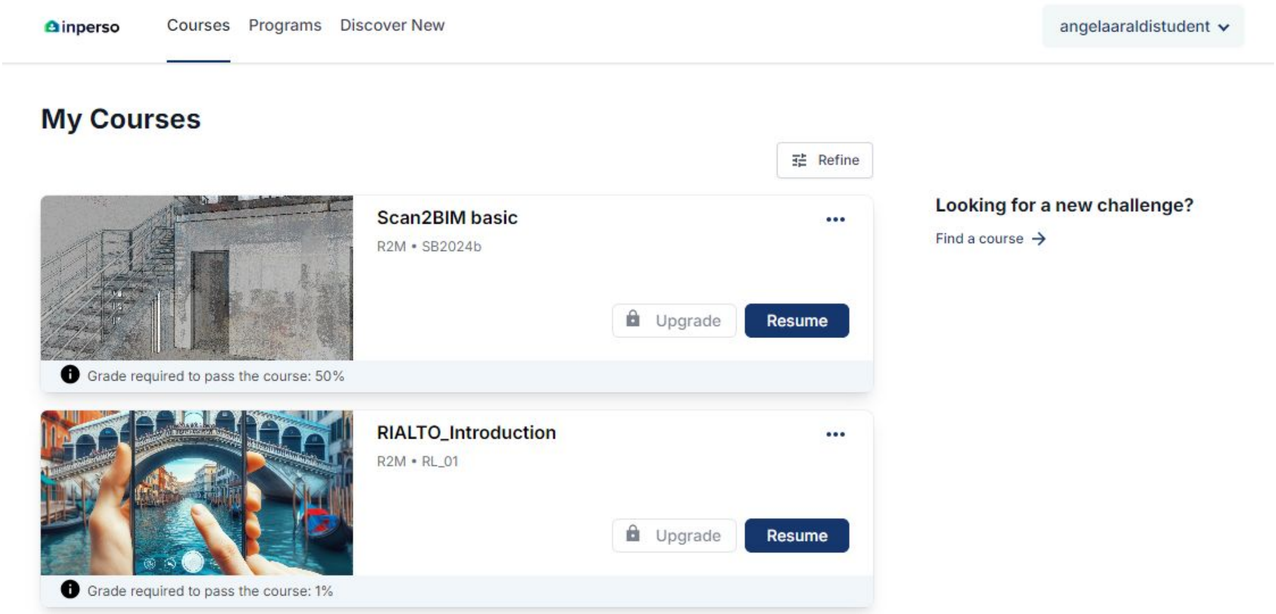
# Training Roll Out






Co-funded by the European Union
Grant Agreement Nº:101069820

# Implementing strategy




- A new implementation and deployment of a **Learning Management System (LMS)** proof of concept whose aim is to enhance the capacity building process and prove more practical tools.
- **Training pills** are small, visual and interactive courses, focused on a specific topic that seek to make learning more entertaining and accessible.



Co-funded by the European Union
Grant Agreement Nº:101069820

# Challenges

- Planning training on time and constant monitoring
- Collaboration with training's responsible partners and Dissemination and Communication strategies
  - Reach a large amount of stakeholders aiming to train the workforce and target groups
- Find the most suitable training type to address the project's aim
  - Beware of training languages, focuses and topics, confidentiality and training structure



Co-funded by the European Union
Grant Agreement Nº:101069820

# Thank you


**www.r2msolution.com**

**T: +39 0382 1726596+**

**Via F.lli Cuzio 42, 27100 Pavia, Italia**

**/r2m-solution**

**@R2MSolution**

# ET4Digital

## Setting innovative demonstrator for digital ecosystem

Sustainable Places 2025
Milano, 2025-10-09

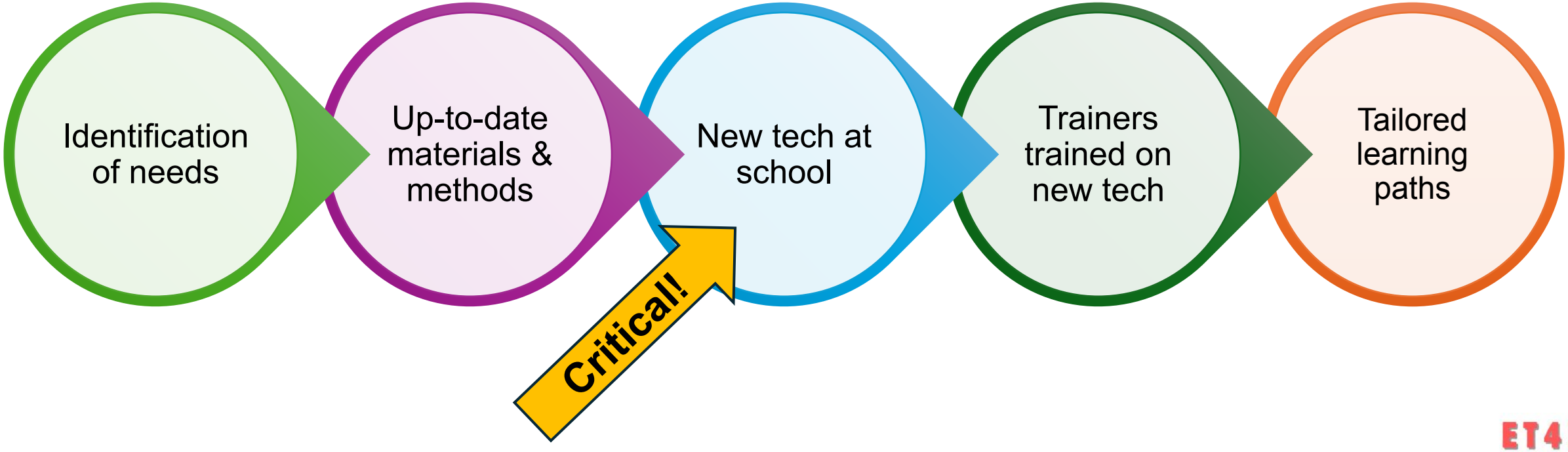
Co-funded by the European Union

Erasmus+
Agreement number: 2024-1-IT01-KA220-VET-000249119

# The challenge: a widening digital skills gap

- Construction sector rapidly digitizing
- New technologies like BIM, IoT, and DT…
- …workforce struggling to keep the pace
- Under-digitalized sector, especially SMEs
- Skills gap limits innovation and efficiency
- The solution: **training.**

# An effective «new tech training » requires…



# Acquire vs Require: the *VET paradox*

- Vocational Education & Training (VET) crucial to filling the gap
- Limited access to latest digital tools and training for trainers
- Consequence: Acquire vs Require potential mismatch between
  - what a learner studies and **acquires** (skills at school)…
  - …and what a modern digital construction site **requires** (skills at work)
- **Training limited to spot experiences, intense but rapidly fading**

# ET4DIGITAL: a different perspective

Mission: empower VET trainers with skills and tools to lead digital transition in constructions

Method: circular process from market needs to real-world training impact measurement

Focus: bridge between EU research and Market

Goal: strengthen links between industry needs and vocational training

Co-funded by the European Union

# Step 1: identify the real-world needs

Build curricula but first map sector's digital landscape

Method: analysis of digital ecosystem with surveys, literature reviews, focus groups, and an International Stakeholder Panel

Results:

Assessment of technologies in use
Identification of adoption barriers
Suggestions for a new training framework

# Step 2: measure before training (*ex-ante*)

- **A personalized training is an effective training**
- Assessing digital skills with **R2M Avanti** ecosystem:
  - Document-based skill assessment and AI-powered virtual interviews
  - Skill gap detection to identify strengths and areas of improvement
  - Tailored learning pathways, for maximum efficiency and engagement

# Step 3: hands-on, experiential training

- Core training
  - 2nd generation Digital Twin demonstrator
  - Based on a real construction site
  - Integration of laser scanning and IoT sensors

- Trainers can interact with a live digital model
  - A customized educational experience
  - An interactive laboratory
  - A live scenario where trainers annotate phases, challenges, solutions

# Step 4: measure the impact (*ex-post*)

Close the loop testing training effectiveness

Avanti Virtual Interviewer measures training impact

Results:

Data-driven evaluation for refining the model
Set of insights and lessons learnt
Guidelines for replicability in other VET systems

# Building the future of construction training

## A dual value:

- **Accelerate digital transformation** of a key sector
- **Train professionals** who lead that change

## A dual goal:

- Create a **sustainable** digital **training** ecosystem
- **Strengthens synergies** between research, market, training

ET4D

# Questions?

ET4D

R2M RESEARCH TO MARKET SOLUTION

SCUOLA EDILE DI BOLOGNA

IIPLE. COSTRUIAMO IL TUO FUTURO INSIEME

FORMEDIL ENTE UNICO FORMAZIONE E SICUREZZA

Erasmus+
Agreement number: 2024-1-IT01-KA220-VET-000249119

Co-funded by the European Union

# TEXIVOS:

## Skills about Virtual Reality for Learners and Trainers of Vocational Schools for the Construction sector


Sara Momi, R2M Solution Srl, Italy

09/10/2025, Monte Rosa 91, Milan, Italy

XR4ED eXtended Reality for EDucation

TEXIVOS

R2M SOLUTION

SCUOLA EDILE DI BOLOGNA

FORMEDIL

Funded by the European Union

# TEXIVOS: TEsting XR4ED in VOcational Schools

TEXIVOS is one of the 10 projects selected by the
**Call for Pilots of XR4ED Project**, Horizon Europe programme

It addressed the challenge **Content creation and exploitation** of:
Extended Reality (XR) tools, which covers **VR** = Virtual Reality

The XR4ED Project made available a:

- Platform
- World Builder visual editor

To test their potentialities in **real-world scenarios**.

<u>Consortium:</u>
a consultancy (R2M, Italy), a school (IIPLE – Scuola Edile di Bologna, Italy)

<u>Duration:</u> 14/10/2024 - 14/10/2026 (1 year)

XR4ED eXtended Reality for EDucation

TEXIVOS

Funded by the European Union

# TEXIVOS Objectives

**Contributing to innovate the Vocational training offer** for the construction sector by introducing **EdTech like Virtual Reality modules** in daily learning programmes.

**Specific Objectives:**

- **Teachers and trainers of VET schools get supported** on how to design new modules or empower existing courses thanks to VR and XR tools
- **Introduction of VR and XR tools** contributing to mitigate **school dropout rate** (by increasing the level of engagement of teenagers)
- Contributing to innovate current the construction sector in Europe by **embracing innovation and digitalization** at all levels, by professionals as well as **workers** and their opportunities for accessing to long-life learning that include digital skills
- Fostering existing/available solutions in the **EdTech sector for their wide deployment**

# TEXIVOS: focus on the EdTech

**EdTech = Education Technology sector** covers:

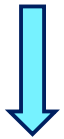
- **Hardware:** Tablets, interactive screens, and other devices used in the classroom.
- **Software:** Online learning platforms, Learning Management Systems (LMS), educational apps, and tools for creating digital content.
- **Content:** Digital textbooks, online course materials, interactive games, and **VR experiences**.
- **Infrastructure:** Data management and other technological systems that support digital learning environments.

**VR in Construction education** is among the most promising technologies **yet quite inaccessible to many schools** due to several burdens (costs, difficulty to develop XR learning materials; fear to access it, etc.)


Funded by the European Union

# TEXIVOS demonstration activities: context

**An uneven situation between building professionals & workforce**: workers operating at the construction site usually work without the support of any, innovative digital tool



Two target groups:

- **Teachers and trainers** to be empowered by receiving **dedicated training & support at IT level** *(Training the Trainers)*
- **Learners** (young students and senior) to **get access to VR experiences** integrated into existing (= recognized) learning programmes


Funded by the European Union

# TEXIVOS: learning modules in VR

Learners: participants of the following courses

1. The ***Education and Vocational Training (IeFP) Course – degree "Building and Structural Operator"*** (young students, 15-18 years old)

2. The ***Higher technical education and training (IFTS) Program – degree (valid in EU and Italy) Complex Construction Site Management Technicians*** (students that completed upper secondary education, university students & professionals)

3. The ***Bricklayers Training Courses*** (usually adults, including the unemployed and/or in need to acquire new skills or improve existing skills)

XR4ED eXtended Reality for EDucation
TEXIVOS
Funded by the European Union

# TEXIVOS Module 1 – Safety Competence

Understanding of construction site safety protocols and correct management of risky situations

Why is it strategic?

Construction is still a hazardous sector,
with high number of work-related injuries and fatalities

By using VR:

- **Stimulate the risk perception** like risk of falling from scaffolding and ladders; handling of loads; loading and unloading of vehicles on construction sites, etc.
- **Teach the correct sequences** to be put in place

Thanks to the immersive / 3D-perception of the work environment, people can understand the complexity of a building site while getting engaged in learning by gamification (quizzes, etc.)

XR4ED eXtended Reality for EDucation
TEXIVOS
Funded by the European Union

# TEXIVOS Module 2 – Technical Operational training

Get experience about construction techniques at the construction site.

Why is it strategic?

Acquiring operational skills (practical exercises at individual and group level) without the need to be on the construction operational environment

By using VR:

- Facilitate **daily operations** of workers
- **Overcome the traditional difficulties related to the abstractness of technical data used for construction** like correctly understand drawings in orthogonal projections, get spatial perception of complicated geometrical forms to be constructed OR components to be assembled on site

XR4ED eXtended Reality for EDucation
TEXIVOS
Funded by the European Union

# TEXIVOS: Training the Trainers

**10 teachers/trainers** of IIPLE received information about:

- Introduction to TEXIVOS project and goals
- Understanding of the activities scheduled for validating the learning/training modules empowered by XR to young and adults/professionals
- Access to a practical experience of the tools

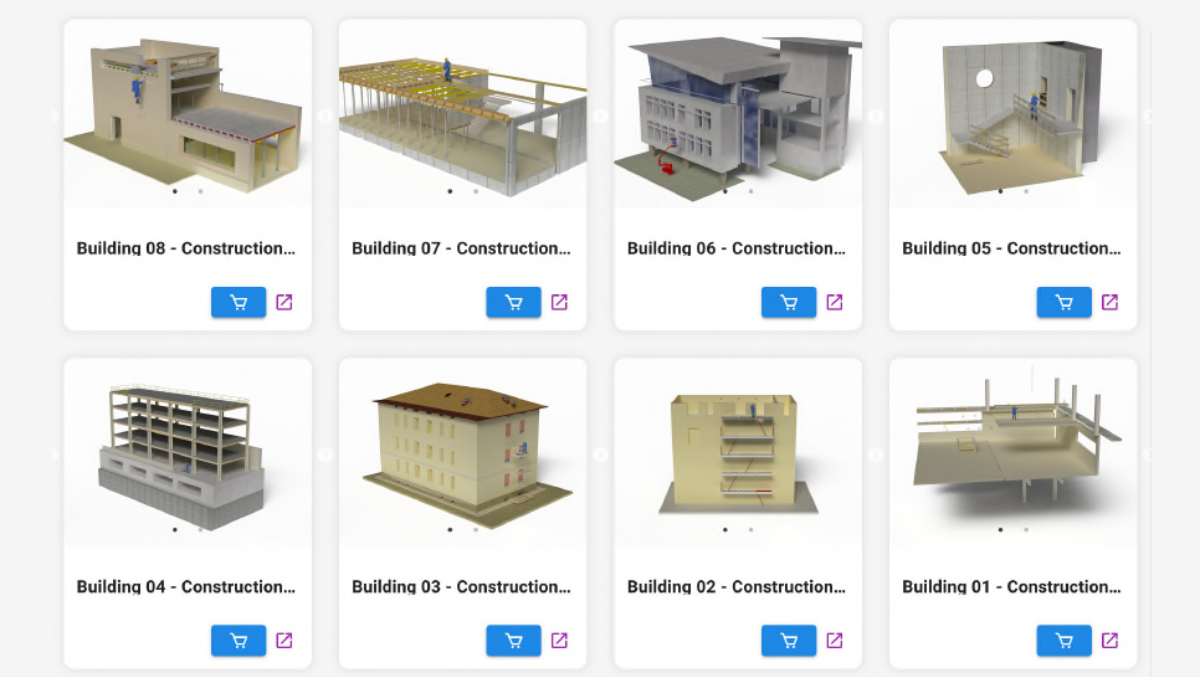
Listening to the teachers/trainers, the **most appreciated aspects** have been:

Technical and practical activities -> “making the experience”

- Opportunity to directly experiment with headsets
- Access to the simulation of realistic virtual environments

# TEXIVOS: VR elements

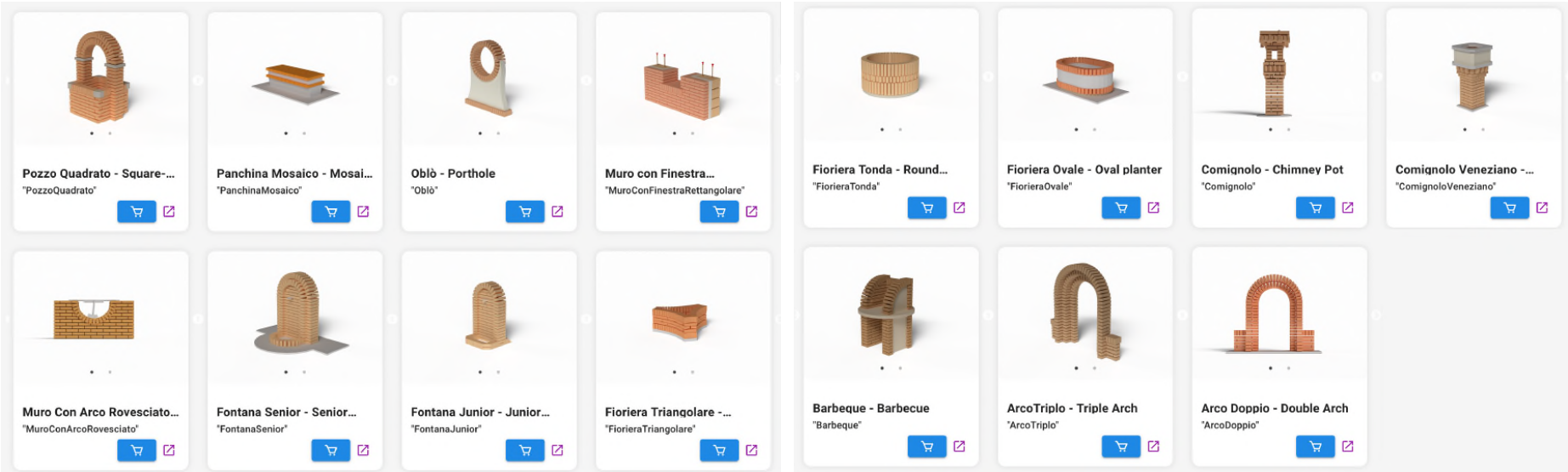
**8 full immersive scenarios** developed and made available on the XR4ED environment




XR4ED eXtended Reality for EDucation
TEXIVOS
Funded by the European Union

# TEXIVOS: VR elements

**15 models of reference** developed and made available on the XR4ED environment




XR4ED eXtended Reality for EDucation
TEXIVOS
Funded by the European Union

# TEXIVOS: video

The creation of this experience involved:

- 3D-asset creation and optimization using software like **Sketchfab** and **Blender**
- interactive logic and content integration within the **XR4ED World Builder**

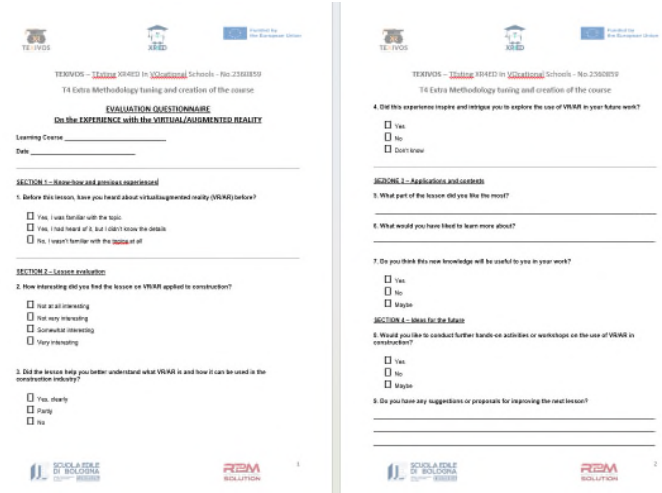
Demo video to show live


Funded by the European Union

# TEXIVOS: data collection – the traditional way

**Phase 1:** traditional questionnaires

## 51 learners



TEXIVOS – TExting XR4ED in VOcational Schools - No.2360859

T4 Extra Methodology tuning and creation of the course

**EVALUATION QUESTIONNAIRE**
**On the EXPERIENCE with the VIRTUAL/AUGMENTED REALITY**

Learning Course _____

Date _____

SECTION 1 – Know-how and previous experienced

1. Before this lesson, have you heard about virtual/augmented reality (VR/AR) before?

- ☐ Yes, I was familiar with the topic
- ☐ Yes, I had heard of it, but I didn't know the details
- ☐ No, I wasn't familiar with the topics at all

SECTION 2 – Lesson evaluation

2. How interesting did you find the lesson on VR/AR applied to construction?

- ☐ Not at all interesting
- ☐ Not very interesting
- ☐ Somewhat interesting
- ☐ Very interesting

3. Did the lesson help you better understand what VR/AR is and how it can be used in the construction industry?

- ☐ Yes, clearly
- ☐ Partly
- ☐ No

SCUOLA EDILE DI BOLOGNA

REM SOLUTION

1

TEXIVOS – TExting XR4ED in VOcational Schools - No.2360859

T4 Extra Methodology tuning and creation of the course

4. Did this experience inspire and intrigue you to explore the use of VR/AR in your future work?

- ☐ Yes
- ☐ No
- ☐ Don't know

SECTION 3 – Applications and contents

5. What part of the lesson did you like the most?

_____

6. What would you have liked to learn more about?

_____

7. Do you think this new knowledge will be useful to you in your work?

- ☐ Yes
- ☐ No
- ☐ Maybe

SECTION 4 – Ideas for the future

8. Would you like to conduct further hands-on activities or workshops on the use of VR/AR in construction?

- ☐ Yes
- ☐ No
- ☐ Maybe

9. Do you have any suggestions or proposals for improving the next lesson?

_____

_____

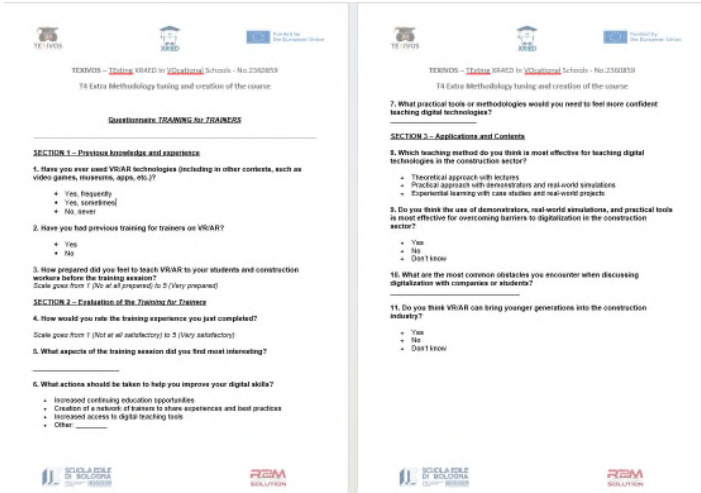
_____

SCUOLA EDILE DI BOLOGNA

REM SOLUTION

2

## 7 trainers



TEXIVOS – TExting XR4ED in VOcational Schools - No.2360859

T4 Extra Methodology tuning and creation of the course

**Questionnaire *TRAINING for TRAINERS***

SECTION 1 – Previous knowledge and experience

1. Have you ever used VR/AR technologies (including in other contexts, such as video games, museums, apps, etc.)?

- Yes, frequently
- Yes, sometimes
- No, never

2. Have you had previous training for trainers on VR/AR?

- Yes
- No

3. How prepared did you feel to teach VR/AR to your students and construction workers before the training session?
*Scale goes from 1 (No at all prepared) to 5 (Very prepared)*

SECTION 2 – Evaluation of the *Training for Trainers*

4. How would you rate the training experience you just completed?

*Scale goes from 1 (Not at all satisfactory) to 5 (Very satisfactory)*

5. What aspects of the training session did you find most interesting?

_____

6. What actions should be taken to help you improve your digital skills?

- Increased continuing education opportunities
- Creation of a network of trainers to share experiences and best practices
- Increased access to digital teaching tools
- Other: _____

SCUOLA EDILE DI BOLOGNA

REM SOLUTION

TEXIVOS – TExting XR4ED in VOcational Schools - No.2360859

T4 Extra Methodology tuning and creation of the course

7. What practical tools or methodologies would you need to feel more confident teaching digital technologies?

_____

SECTION 3 – Applications and Contents

8. Which teaching method do you think is most effective for teaching digital technologies in the construction sector?

- Theoretical approach with lectures
- Practical approach with demonstrators and real-world simulations
- Experiential learning with case studies and real-world projects

9. Do you think the use of demonstrators, real-world simulations, and practical tools is most effective for overcoming barriers to digitalization in the construction sector?

- Yes
- No
- Don't know

10. What are the most common obstacles you encounter when discussing digitalization with companies or students?

_____

11. Do you think VR/AR can bring younger generations into the construction industry?

- Yes
- No
- Don't know

SCUOLA EDILE DI BOLOGNA

REM SOLUTION

# TEXIVOS: data collection – the traditional way

Consolidated answers from the questionnaire to learners: exemplary feedback

| Questions | Consolidated answers |
|---|---|
| **Prior knowledge of virtual reality / augmented reality (VR/AR)** | Most of the participants had **already heard of VR/AR**, in contexts such as video games, architecture and medicine. Some had also had first-hand experience with augmented reality applications in the construction industry. |
| **Previous training on virtual reality / augmented reality (VR/AR)** | Most of the participants **did not do any specific training** on VR/AR before the course offered by TEXIVOS. Some felt poorly prepared, while others had a basic understanding through personal or professional experience. |
| **Course feedback** | The course was **generally considered satisfactory**. The most interesting aspects were the practical part, the use of digital tools and the opportunity to compare yourself with other trainers. Some participants suggested increasing the duration of the course and including more practical examples. |
| **Tips for increasing digital skills** | Participants suggested **several strategies to increase digital skills**, including:<br>1. More opportunities for lifelong learning<br>2. A network of trainers to engage with<br>3. More digital teaching tools<br>4. Greater integration of digital technologies into school curricula. |
| **Practical tools and methodologies** | The **most requested** practical **tools and methodologies** include:<br>**1. Practical lessons with simulations and real cases**<br>**2. Experiential learning** with case studies and real projects<br>3. The use of digital platforms for sharing materials and resources. |

# TEXIVOS: data collection – the traditional way

Consolidated answers from the questionnaire to learners: exemplary feedback

| Questions | Consolidated answers |
|---|---|
| **Best methods to teach digital technologies in the construction industry** | The **methods considered most effective** are:<br>**1. Practical lessons with simulations and real cases**<br>**2. Experiential learning with case studies and real projects**<br>**3. The use of interactive digital tools.**<br>Theoretical lectures are considered less effective if not integrated with practical activities. |
| **Role of demonstrators, simulations and practical tools** | Most participants believe that **demonstrators, simulations and practical tools** are key to overcome barriers to digitalisation in the construction sector. These tools help make abstract concepts more tangible and understandable. The consortium derived that they are always welcome no matter the type of learning experience offered (if in presence or remote or hybrid or physical + VR/AR). |
| **Resistance to digitalization** | The most **common resistances to digitalization** include:<br>1. The lack of basic digital skills<br>2. The fear of change<br>3. The lack of economic resources to invest in new technologies<br>4. The perception that digital technologies are complex and difficult to use. |
| **Virtual reality / Augmented reality (VR/AR) and the younger generations** | Most participants believe that **VR/AR can bring the younger generation closer to the construction industry**, making work more attractive and innovative. VR/AR can also help bridge the gap between education and the needs of the labour market. |

# TEXIVOS: data collection empowered by AVANTI

**AVANTI (R2M proprietary solution)**

AVANTI https://avantisolution.eu/ is an ecosystem of solutions for HR designed to evaluate and develop professional skills, currently under expansion.

The latest addition, currently undergoing validation tests, is the **Avanti Virtual Interviewer (AVI):**

- **AI-based solution** that conducts interviews, typically on work-related subjects but configurable for other tasks as well.
- After acquiring a list of topics to explore (the CV of the interviewee is optional), **AVI interacts with the candidate either via text (chat mode) or voice**. Questions are continuously adapted based on the answers and the evolution of the interview.
- Designed to be **user-friendly and conduct interviews professionally**, attempting to prevent any discomfort for the candidate. **Capacity of detecting manipulation and cheating attempts** that may compromise the interview.

# TEXIVOS: data collection –AVI

**Phase 2:** via AVI tool – key takeaways

- **Potential:** VR/XR is widely recognized as a **valuable tool** for enhancing teaching and student engagement, particularly in vocational and technical education like IIPLE.
- **Challenges:** initial **confusion or lack of familiarity** can be a barrier, but **structured training** effectively solves these issues and builds confidence.
- **Opportunities:** teachers are **eager to explore further applications** of VR/XR and integrate it into their curricula, but they ask to receive **ongoing support and resources**.
- **Psychological and pedagogical shift:** not surprisingly for a vocational school, participants declared a clear preference for **experiential, hands-on learning** rather than traditional theoretical approaches.
- **Safety and practical aspects:** VR/XR is seen as a **safe and practical** way to train in real-world scenarios, reducing risks associated with hands-on vocational training.


Funded by the European Union

# TEXIVOS: what's next?

Future initiatives might consider:

- Position the **Construction domain** (like safety and technical design at a construction site) **to a higher level of digitalization** starting already from learning experiences open to a varied audience (in terms of age, expertise, etc.)
- **Offer to people the chance to change mentality**:
  - **Young students** being involved in more engaging learning experiences
  - **Adult learners** approaching EdTech solutions and accept learning also via VR/XR tools
  - **Trainers & Teachers** learning to deliver nice contents via VR/XR tools as part of their daily activities
  - The **same SMEs** being open to integrate these and other digital tools in their activities
- Keep expanding the **EdTech sector** within the European TVETs ecosystem.

This is fully coherent with the national and EU strategies - Union of Skills, etc.) and ongoing initiatives by leading organizations like CEDEFOP, etc.

# Thank you!


XR4ED
eXtended Reality for EDucation

TEXIVOS

R2M
RESEARCH TO MARKET
SOLUTION

SCUOLA EDILE
DI BOLOGNA
FORMEDIL

Funded by the
European Union

SUSTAINABLE PLACES 2025

# Skills for the Energy Transition: Strategies, Professions, and Projects

ENGINEERS 4 EUROPE

repower regions

SMART 2

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

# About

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

## Skills Strategy for the Engineering Profession

ENGINEERS 4 EUROPE

## Approach to Upskill Heating and Cooling Professionals

repower regions

## Living Example- Boosting Smart Building Competences

SMART2

REHVA

Federation of European Heating, Ventilation and Air Conditioning Associations

is a professional organisation founded in 1963 representing 120.000+ building services engineers from 24 countries

SUSTAINABLE PLACES 2025

# Foreword

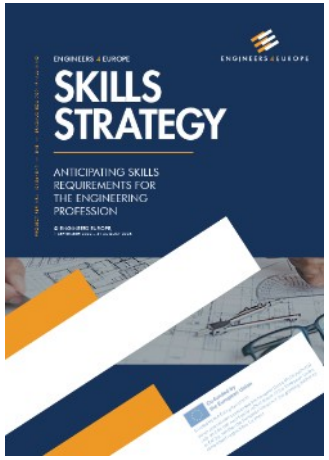
**15 million** technical & engineering workers in **today's EU workforce**

**8 million job openings** expected by 2035

**6 million replacements** as current employees retire or leave

**2 million new jobs driven** by economic growth

ENGINEERS 4 EUROPE




SUSTAINABLE PLACES 2025

Co-funded by the European Union

Funded by the European Union.
Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the 6 European Union or EACEA. Neither the European Union nor the granting authority can be held responsible for them

ENGINEERS 4 EUROPE

## Demand is surging

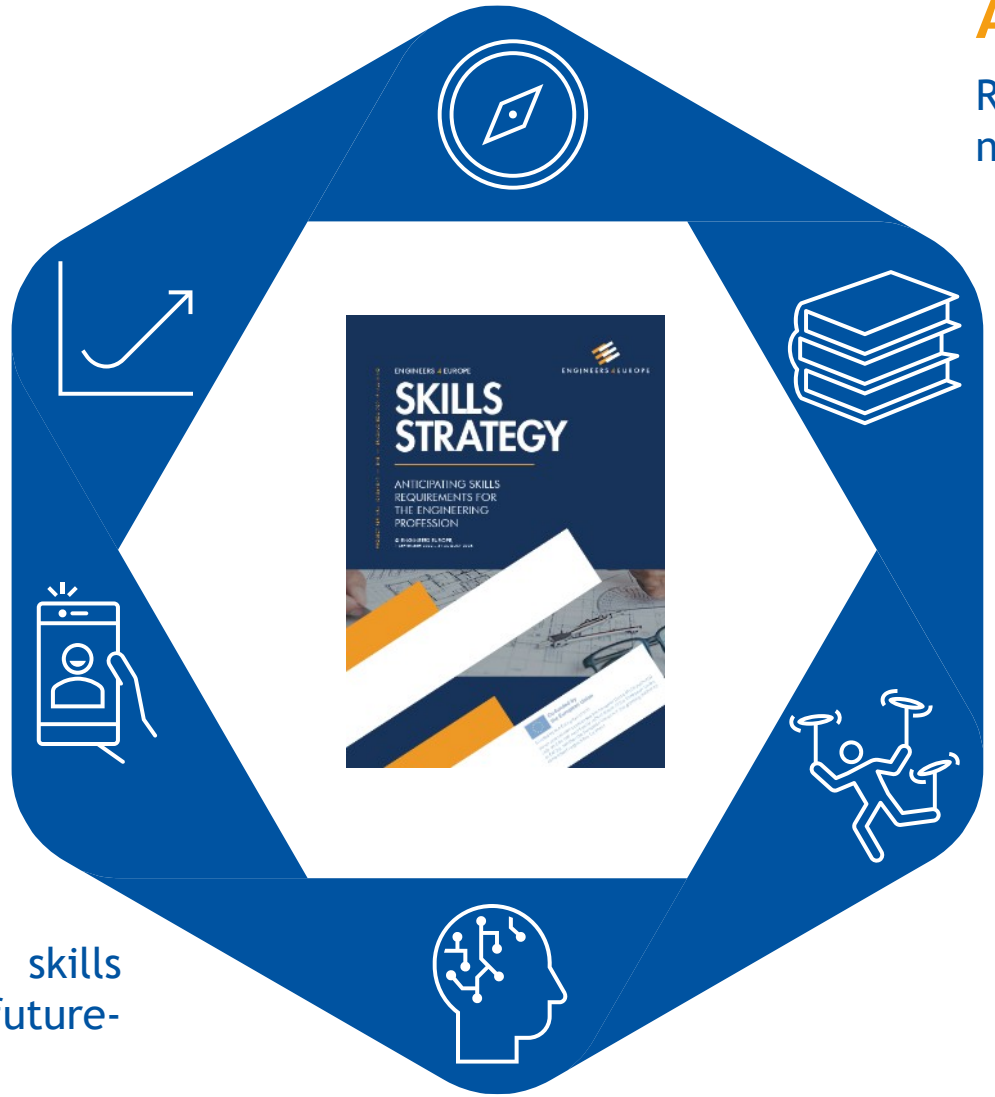
Especially for **green-tech specialists** — as sustainability and digital megaprojects scale across Europe

## Stronger image

The profession must sharpen its public image to lure wider talent pools

## Lifelong learning

Only CPD and LLL keep skills globally competitive and future-proof




## Adaptability Required

Roles mutate rapidly, so adaptability is non-negotiable

## Curricula shift

Curricula need a hard pivot to **competency-based learning** and **outcome-driven assessment**

## Interdisciplinary edge

Interdisciplinary collaboration and an entrepreneurial mindset rank alongside math and physics

Co-funded by the European Union

Funded by the European Union.
Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the 6 European Union or EACEA. Neither the European Union nor the granting authority can be held responsible for them

# Who needs to do what by 2030?

## Professional Orgs.

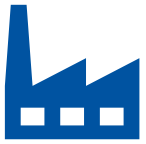
**Foster** entrepreneurial & interdisciplinary mindsets, lifelong learning, cross-border certification, policy advocacy, and EU-wide knowledge-sharing.

## HEI and VET providers

**Embed** SDGs & digital/green competences, expand micro-credentials & apprenticeships, integrate entrepreneurship, and co-create programs with industry.

## Policy Makers

**Reignite** youth interest in STEM, fund HEI & VET modernisation, ease mobility with visas/scholarships/talent platforms, and promote green & digital skills nationwide.



## Industry

**Co-design** curricula, offer apprenticeships & mentorship, invest in upskilling, retain senior talent, and diversify recruitment to close skills gaps.

Co-funded by the European Union

Funded by the European Union.
Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the 6 European Union or EACEA. Neither the European Union nor the granting authority can be held responsible for them

repower regions

Sustainable Skills for Heating and Cooling Professionals

# 3-year Erasmus+ Alliance for Innovation project

www.**repowerregions**.eu

Co-funded by the European Union

SUSTAINABLE PLACES 2025

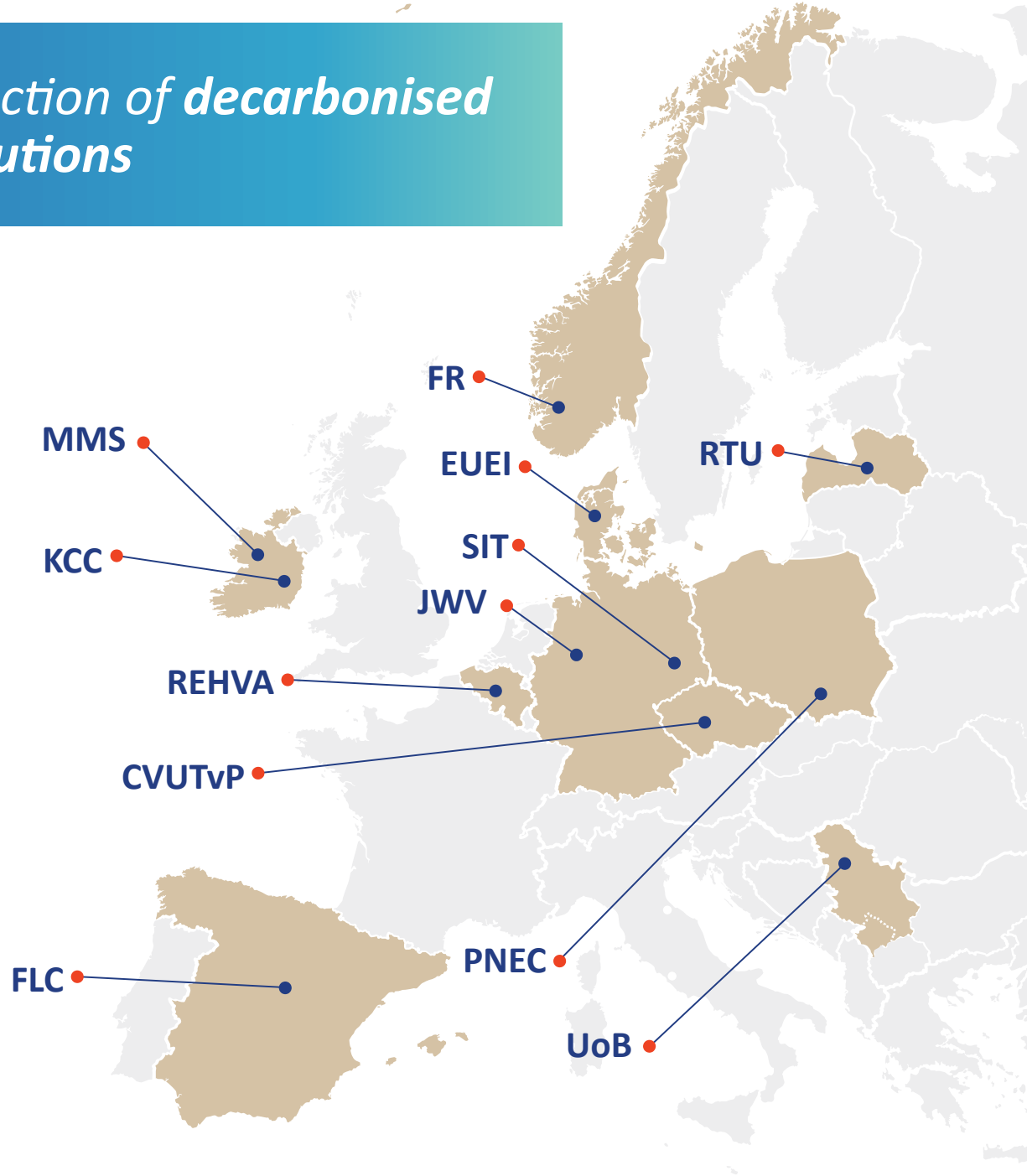
repower regions

Sustainable Skills for Heating and Cooling Professionals

# *Accelerating the introduction of **decarbonised heating** and **cooling solutions***

## OUR PARTNERSHIP

- Kildare County Council (KCC)
- FUNDACIÓN LABORAL DE LA CONSTRUCCIÓN (FLC)
- RIGAS TEHNISKA UNIVERSITATE (RTU)
- CESKE VYSOKE UCENI TECHNICKE V PRAZE (CVUTvP)
- European E-learning Institute (EUEI)
- Steinbeis School of Sustainable Innovation and Transformation (SIT)
- MOMENTUM MARKETING SERVICES Ltd. (MMS)
- Stowarzyszenie Gmin Polska Sieć „Energie Cités” (PNEC)
- Jaske & Wolf Verfahrenstechnik (JWV)
- Fagskolen Rogaland (FR)
- University of Belgrade – Faculty of Mechanical Engineering (UoB)
- REHVA – Federation of European Heating, Ventilation & Air Conditioning Associations (REHVA)



# 01

# INTRODUCTION

# Key Objectives

1. **Deliver** innovative and up-to-date **curricular & training methods**.
2. **Improve access to high-quality training** in sustainable heating and cooling systems.
3. **Create Regional Alliances** for skills development in the energy transition.

# 02

# PHASES

## Phase 1 - Knowledge Sharing

2025

# Build the foundation with shared insight

- Experts and educators **exchange real-world knowledge**.
- Case studies inform **local needs**.
- **Output**: a Landscape Analysis tailored to each region.

## Phase 2 - Skills Development

2026

# Train today’s workforce for tomorrow’s jobs

- **Create** flexible, EU-standard green **training programs**.
- **Micro-credentials** for workers; **toolkits** for trainers.
- **Output**: Free course + curriculum for universities & VET providers.

## Phase 3 – Regional Collaboration

2027

# Turn partnerships into long-term impact

- **Create Repower Alliances** that last beyond the project.
- **Link industry, educators, and**
- **municipalities**.
- **Output**: Ongoing funding strategies and green innovation.

# 03

# THE RESULTS

# Key Results

01 Repower Regions Landscape Analysis Report

02 Repower Regions CVET curriculum

03 Repower Regions Online course

04 Repower Curriculum & Resources

05 Teachers' Guides & Toolkit

06 Regional Alliance Guidebook

07 8 Repower Regional Alliances

08 8 Repower Regional Funding Strategies

09 8 National Outreach Events


# Follow our journey

www.repowerregions.eu

Co-funded by
the European Union

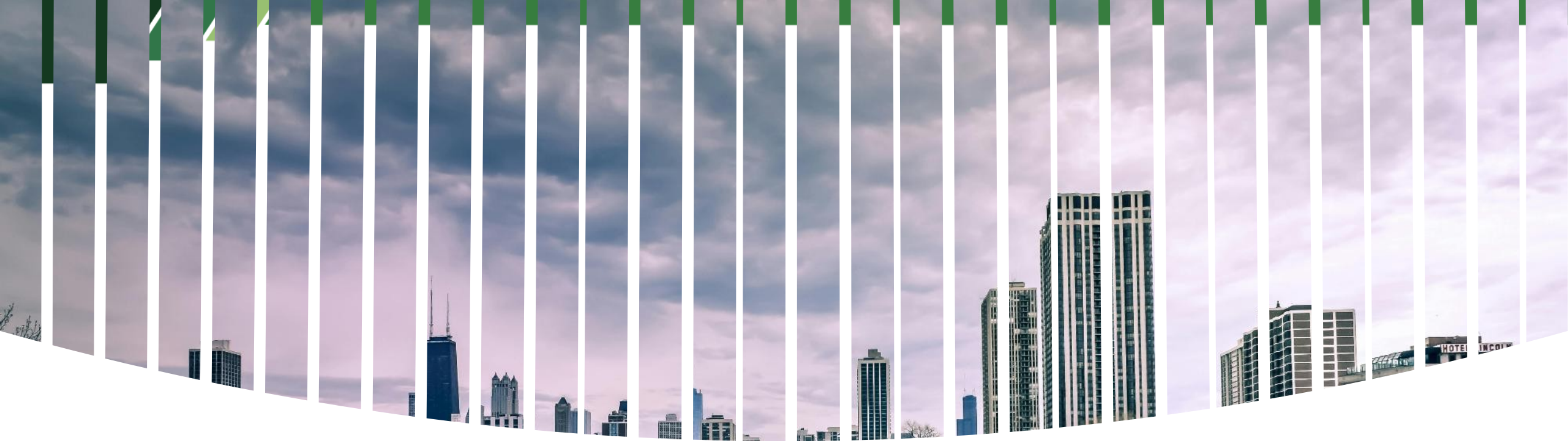
SUSTAINABLE PLACES 2025

# SMART READINESS

## VIRTUAL TRAINING CENTRE

brought by SMART2

ENHANCING THE INTELLIGENCE OF BUILDINGS IN EUROPE



# Future-proof your expertise!

Stay ahead of the curve and gain a competitive edge in the evolving landscape of **smart building practices**.

# MAIN FEATURES

Self-paced

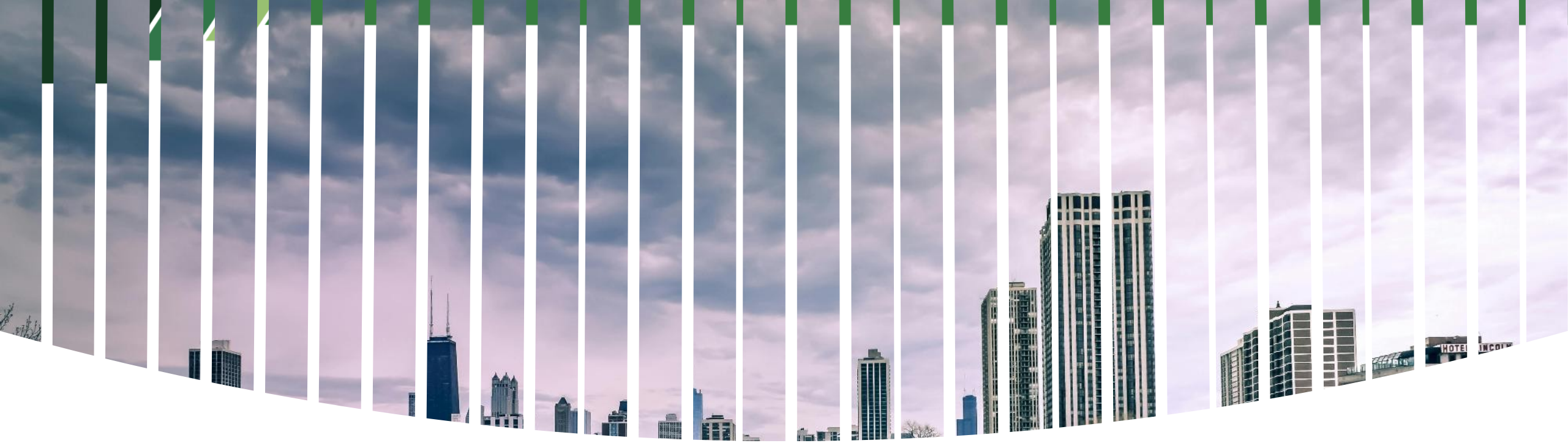
Practice-based

Accredited

Modular

Interactive

Responsive
*Moodle App*



# Effective learning strategies

8-hour, structured, progress-saving **content** Unlimited-attempt **quizzes** Realistic problem-based **exercises**

# COURSE BLUEPRINT

# MODULES

## 1 Smart Readiness Functions

Ass
functio vels within each technical domain's smart-ready services.

## 2 Smart Readiness Assessment

assessments, through a systematic audit of a building.

## 3 Accreditation

the abilities learned through the course in a real-life scenario.

# Smart Readiness Functions

1

Ass
functio vels
within each technical domain's smart-ready services.

Theoretic
al
M ls

Quiz

Badge

Smart Readiness Explorer

# Smart Readiness Assessment

**2**

assessments, through a systematic audit of a building.

Theoretic al M[illegible]ls

Quiz

Practic e E[illegible]is

Badge

Smart Readiness Assessor

# Accreditation

3

abilities learned through the course in a real-life scenario.

Applicati on

Diplom a

Credentia

Smart Readiness Specialist

# Engagement & Collaboration

Dissemination of policy **updates and news**

Participatory community **forum**

Continuous re-evaluation and **feedback**

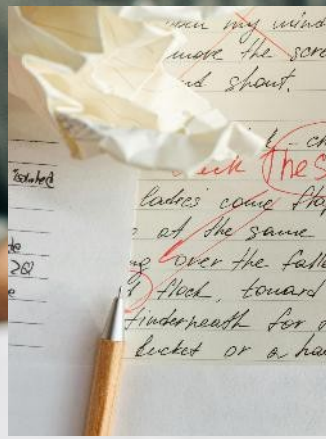
# VARIOUS RESOURCES

# NEWS & UPDATES

- Centralised hub for important **announcements**, **course updates**, and **news** from the world of smart-ready buildings.
- Managed by the **course instructors**.

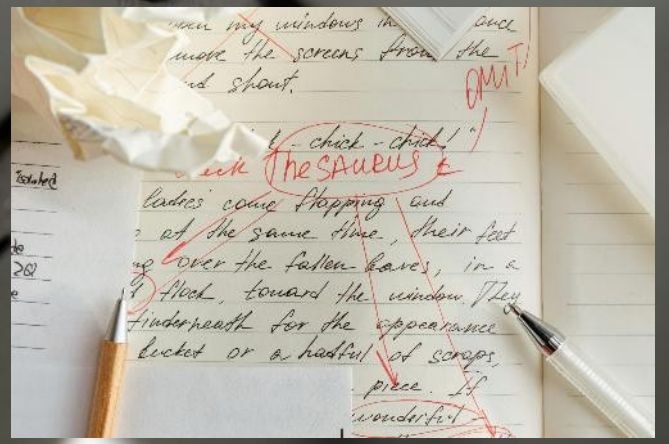
# COMMUNITY FORUM

- Go-to space for **collaboration**, **knowledge-sharing**, and **networking** with fellow learners and experts in smart-ready buildings.



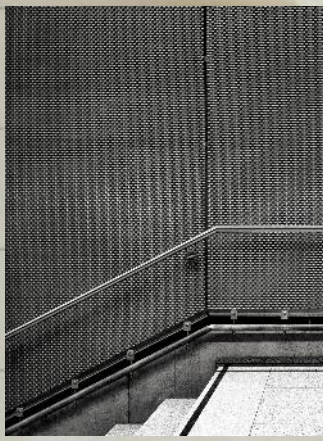
# GLOSSARY

- List of **acronyms**, **abbreviations** and **definitions** used in the modules composing the syllabus of the course.



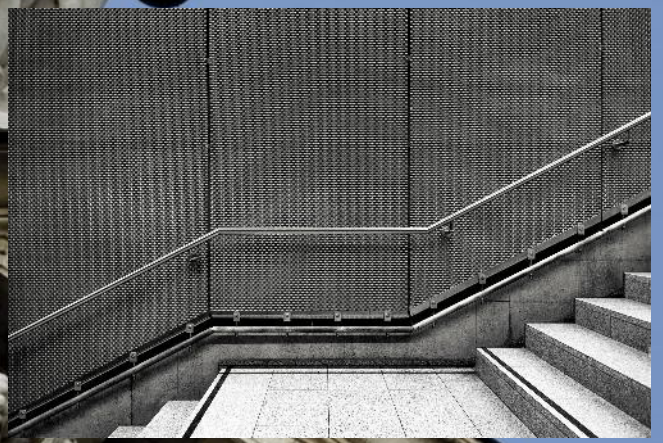

# SPOT & REPORT

- Contribute to maintain the highest quality of learning materials by reporting any errors you encounter, such as **typos**, **inaccuracies**, or **outdated information**.



# REGULATORY FRAMEWORK

- Familiarise yourself with the regulatory framework for smart-ready buildings.
- Learn about the key provisions as established by **the Energy Performance of Buildings Directive**.

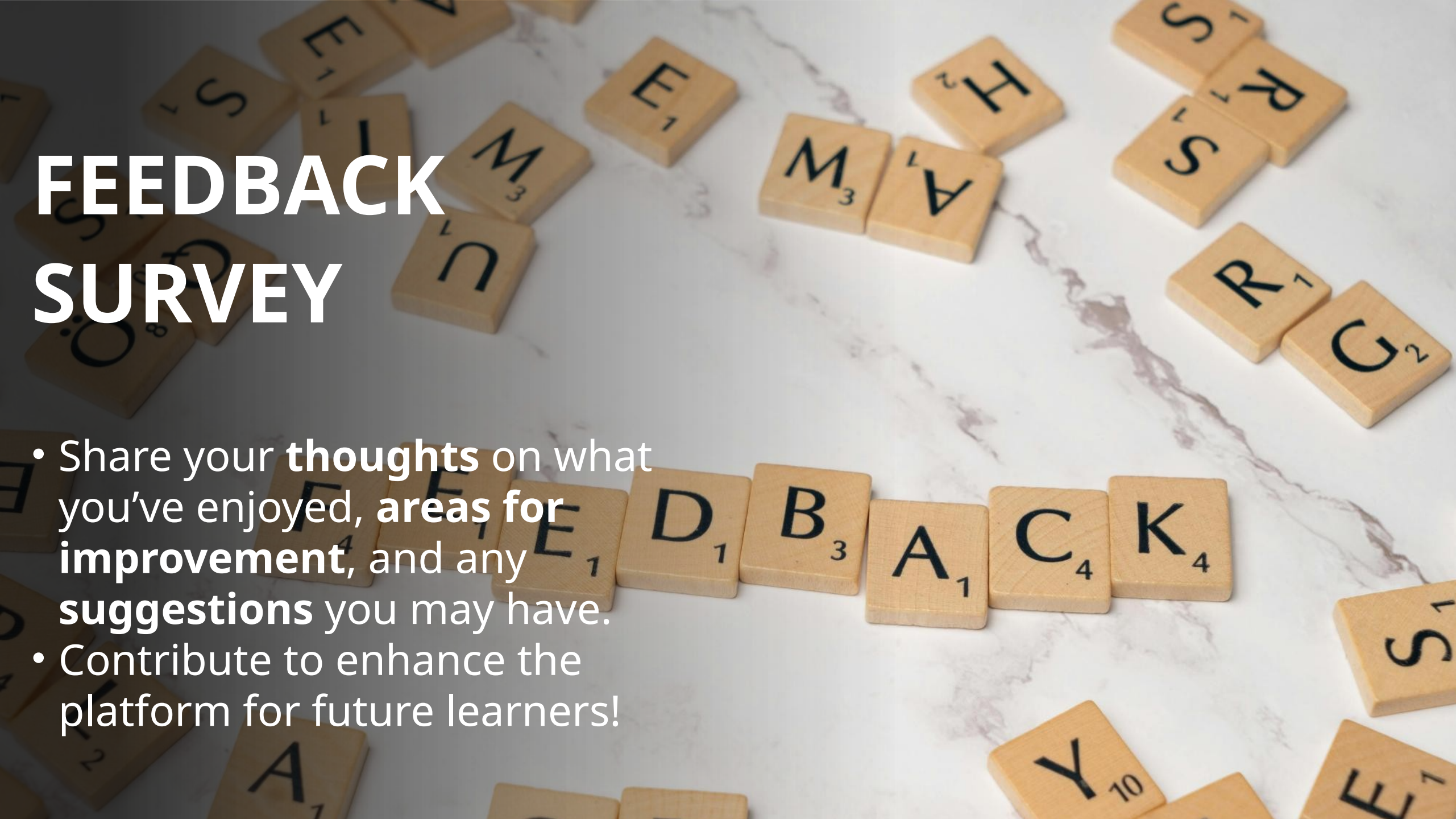


# TEMPLATES

- Template documents to facilitate the **professional practice** of smart readiness assessors and specialists.

# FEEDBACK SURVEY

- Share your **thoughts** on what you've enjoyed, **areas for improvement**, and any **suggestions** you may have.
- Contribute to enhance the platform for future learners!



# Make the smart move **Start today**!

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them”

Music by Bensound.com/royalty-free-music. License code: MW4G8GND8AES126I

# https://smartreadiness-training.eu/

Funded by the European Union, under the Grant Agreement Nº 101077241. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.


SCAN ME

SMART2

## Welcome!

Login with your username and password, or other services

Sign up with Google

pcm@rehva.eu

Password

Lost password?

Log in

English (en)

Cookies notice

# My courses

New course | Manage courses

## Course overview

All | Search | Sort by course name | Card


### Smart Readiness of Buildings

Take the lead and future-proof your expertise – enroll today!

Cursos

16%


### Smart Readiness degli Edifici

Prendi l'iniziativa e rendi le tue competenze a prova di futuro – iscriviti oggi stesso!

Hidden from students

Cursos

0%


### Έξυπνη ετοιμότητα των κτιρίων

Αναλάβετε τα ηνία και εξασφαλίστε το μέλλον της ειδικότητάς σας – εγγραφείτε σήμερα!

Hidden from students

Cursos

0%

Coming soon in other languages!

SCAN ME

# Thank you!

**Pablo Carnero** - pcm@rehva.eu
Technical EU Project Officer

SUSTAINABLE PLACES 2025

REHVA
Federation of European Heating, Ventilation and Air Conditioning Associations

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

# Pushing on Skills: Training Innovation Assistants for the Green Transition in Construction

## The STAR*track & Metabuilding Labs Approach

Germain ADELL – Metabuilding ASBL General Director

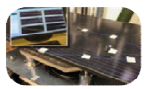
08/10/2025

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.

# Our OITB ecosystem

metabuilding asbl · R2M Solution · ekodenge · ecowise · be commons · IMPULSE PARTNERS Strategy | Innovation | Performance · université de BORDEAUX · BAŞAKŞEHİR LIVING LAB · minsait An Indra company · vipasa · CONSTRUCTION21 FRANCE · ECTP INNOVATIVE BUILT ENVIRONMENT · PTEC Plataforma Tecnológica Española de Construcción · European Network of Living Labs · HOUSING EUROPE · European Aluminium · FEDERCOSTRUZIONI

metabuilding labs



**RISE**
Borás
*SWEDEN*

**BAM**
Berlin
*GERMANY*

**ITB**
Warsaw
*POLAND*

**EMI**
Szentendre
*HUNGARY*

**BUILDWISE**
Limette
*BELGIUM*

**LIST / NEOBUILD**
Bettembourg
*LUXEMBOURG*

**U. of GALWAY**
Galway
*IRELAND*

**NOBATEK / INEF4**
Anglet
*FRANCE*

**IDONIAL**
Gijón
*SPAIN*

**CARTIF**
Boecillo
*SPAIN*

**AIT**
Vienna
*AUSTRIA*

**TEKNIKER**
Eibar
*SPAIN*

**UNIRC**
Reggio Calabria
*ITALY*

**STRESS**
Benevento
*ITALY*

**UPV / EHU**
Vitoria
*SPAIN*

- O3BET replication
- Living Labs
- Clusters & dissemination point
- Testing Infrastructure

+ EBETAM IRTEC · TÜRKİYE İMSAD · SINTEF

# Metabuilding Labs 5 highlights in Automn 2025

1. **Our ecosystem grows:** 40+ project partners; 20+ Metabuilding association members (3 external to project) ; Built4People Innovation Clusters network is over 35 clusters
2. **Our Digital Open Innovation Platform** ***metabuilding.com*** now handles a pilot buildings module and Digital Product Passports…
3. **Our management entity** *Metabuilding ASBL* in Brussels has a new Board of Administrators with 12 members
4. **Our new Affiliate Membership tier** will launch soon, every stakeholder in the value chain will be able to join the association!
5. **Our 7 O3BET innovative testbenches** are being built, some are already finished

# Our extended ecosystem

STAR*track
A Built4People Project

metabuilding labs

## B4PIC network: state of play

### The current B4PIC Network geographical coverage

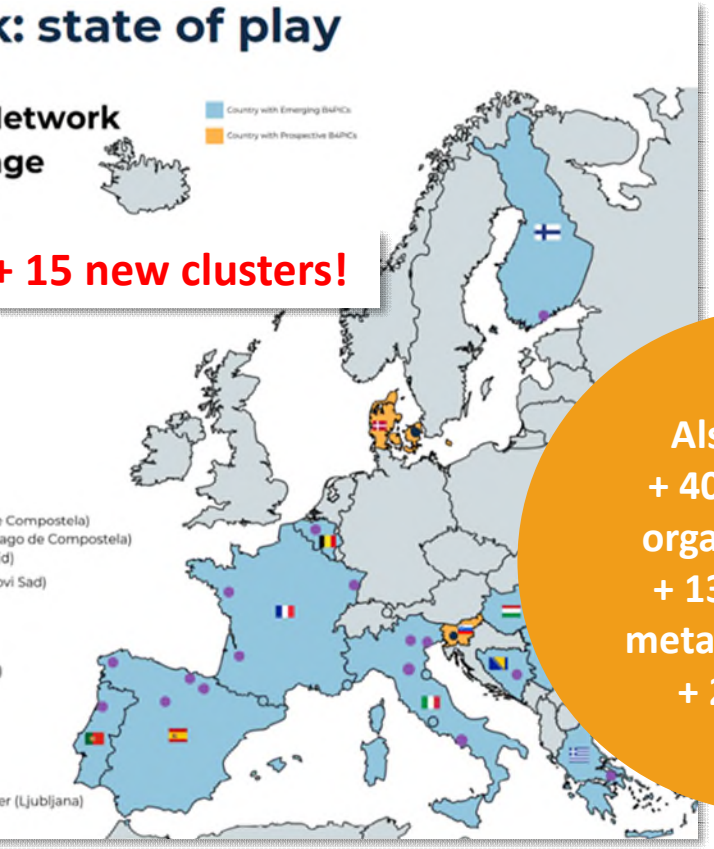
Country with Emerging B4PICs
Country with Prospective B4PICs

**Emerging B4PICs**

- Innovation 4 Society (Brussels)
- Green NET Finland (Helsinki)
- Archenerg International (Szeged)
- BUILT CoLAB (Porto)
- Novabuild (Nantes)
- Odéys (Bordeaux)
- NEB Forum BiH (Sarajevo)
- E-CODOMH (Schimatari)
- BUILD:INN (Bilbao)
- iCONS (Pamplona)
- Galicia Construction Cluster (Santiago de Compostela)
- Galician Wood and Design Cluster (Santiago de Compostela)
- AEICE Cluster Habitat Eficiente (Valladolid)
- Association of Balkan Eco-Innovation (Novi Sad)
- Clust-ER BUILD (Bologna)
- Habitech (Rovereto)
- STRESS (Naples)
- Venetian Green Building Cluster (Venice)

**Prospective B4PICs**

- We Build Denmark (Albertslund)
- Slovenian Innovation Construction Cluster (Ljubljana)



**+ 15 new clusters!**

**Also, already**
**+ 400 registered organisations &**
**+ 1300 users in metabuilding.com**
**+ 200 SMEs!**

**New ASBL members:**

EBETAM TIRTEC

TÜRKİYE IMSAD
İNŞAAT MALZEMESİ SANAYİCİLERİ DERNEĞİ

SINTEF — 75 years

# The B4PIC Charter contents

1. **Whole Built Environment ecosystem:**
   - Clusters must involve various stakeholders across the entire built environment value chain, from materials and construction to building use and renovation.
2. **Multi-objectives:**
   - Clusters need to address diverse goals, including scientific (holistic innovation), economic (decarbonisation), and societal (behavioural change) objectives.
3. **Cross-sectoral:**
   - Collaboration extends beyond traditional sectors to include a wide range of disciplines, fostering interdisciplinary approaches to innovation.
4. **Locally anchored with national and European outreach:**
   - Clusters have a local foundation and focus but also connect to national and European networks and policies to broaden their impact.
5. **Cross-border:**
   - Collaboration and exchange of good practices occur across different countries, facilitating the adoption of innovative solutions in diverse contexts.
6. **Access to testbeds and demonstration spaces:**
   - Clusters must have the ability to test and showcase new solutions and approaches, enabling demonstration of their effectiveness and feasibility.

# A Human-Centric, Two-Tiered Support System

We have designed a support ecosystem that combines powerful infrastructure with skilled human guidance. It relies on two key roles:

- **The Innovation Assistant:** Based at a local innovation cluster, they are the first point of contact. Their function is needs assessment, system navigation, and brokerage.
- **The Innovation Coach:** An expert engineer within a Research & Technology Organisation (RTO), they provide in-depth technical execution, testing, and validation.

This model ensures efficiency, reserving deep technical expertise for targeted, expert direct demands or qualified, high-potential innovations.

# The Innovation Assistant profile

## A Local Navigator for European Resources

- **Mandate:** To act as a proactive "on-ramping agent" and trusted guide for SMEs within their regional ecosystem.
- **Core Functions:** A clear workflow of Triage -> Needs Assessment -> Navigation -> Brokerage.
- **Profile:** They are not scientists, but skilled "technical translators" with strong communication, project management, and digital platform proficiency. They bridge the gap between the SME and the expert.

# The 5 days "Star*Track Certified Innovation Assistant" Training programme

## Core Curriculum: Mastering the Three Pillars of Support

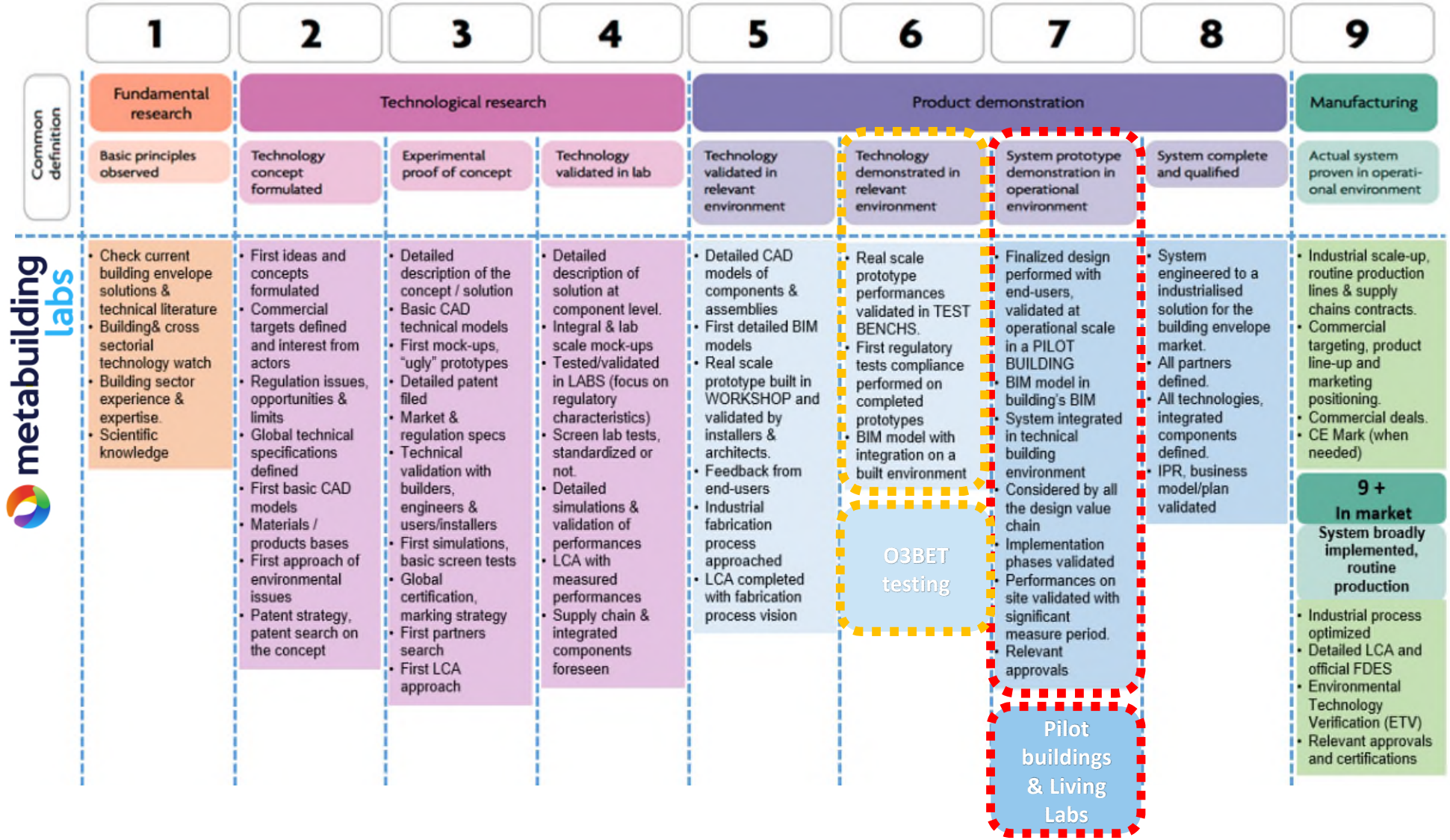
The training is structured to mirror the Assistant's real-world workflow:

1. **Understanding the Ecosystem (Day 1):** Grasping the strategic context of the Built4People Partnership, the Metabuilding Labs OITB, and the complete SME innovation journey.
2. **Mastering the Tools (Days 2-4):** Gaining proficiency in the core digital and analytical instruments for assessment and matchmaking.
3. **Mastering the Process (Day 5):** Practicing the client-facing skills for effective SME engagement, from the first interview to a successful hand-off to an Innovation Coach.

# Key Tool 1: The Construction-Specific TRL Scale

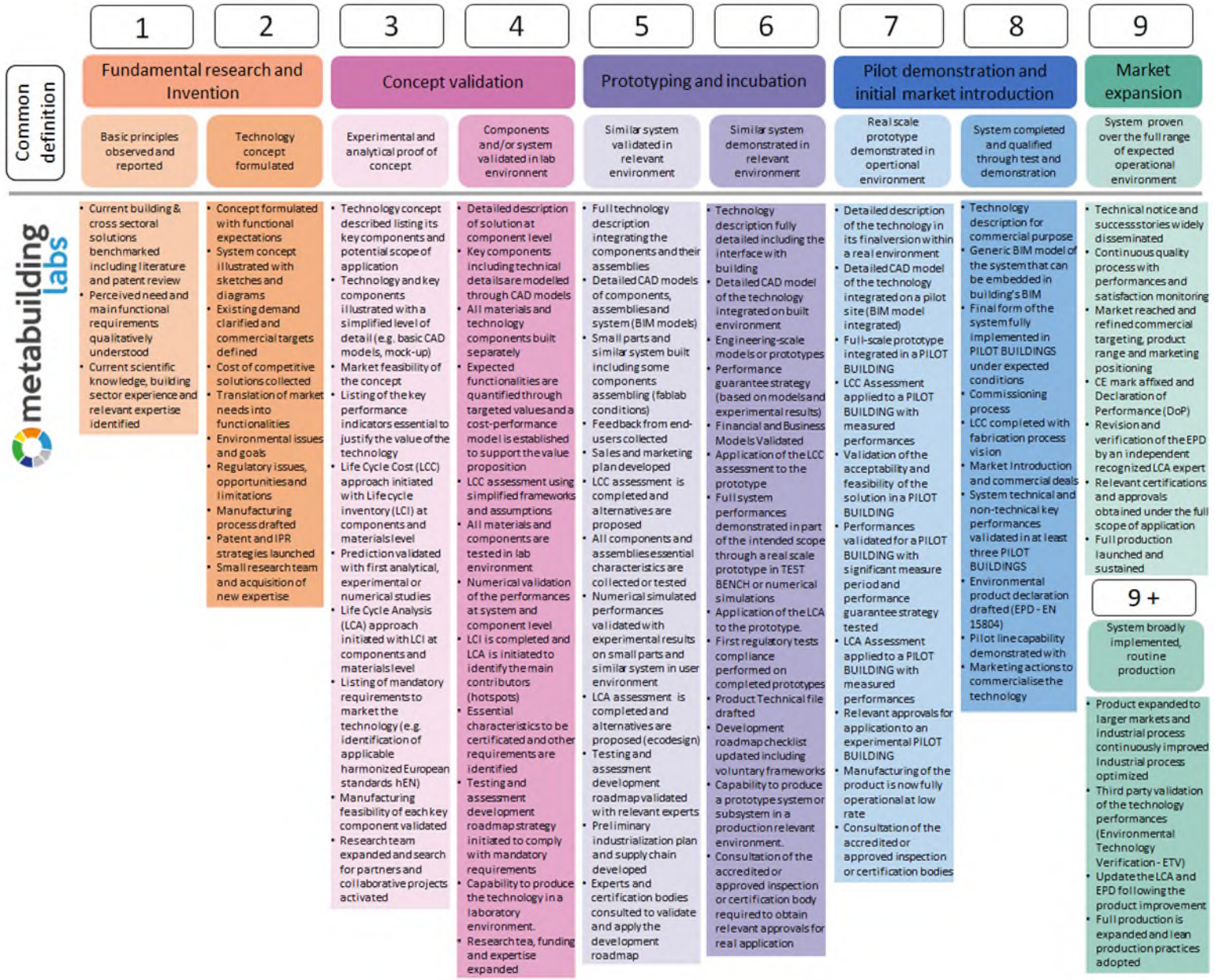
- The training provides mastery of the Technology Readiness Level (TRL) scale adapted by Metabuilding Labs specifically for the construction sector.
- This tool moves beyond a simple technology assessment to include criteria across eight categories, including **manufacturing, market, environmental, and regulatory readiness**.
- It enables the Assistant to conduct a standardized, holistic needs assessment, accurately pinpointing an SME's innovation maturity and identifying the next steps needed to advance.

# Our Construction sector adapted TRL scale (proposal version)



# Our Construction sector adapted TRL scale (project version)

metabuilding labs



# Key Tool 2: The OITB Service Catalogue & metabuilding.com Platform

- Assistants are trained on the back-end functionalities of the metabuilding.com platform, the Single-Entry Point to the entire Open Innovation Test Bed (OITB).
- They learn to navigate the **OITB's extensive catalogue** of (currently) over **749 testing services** across 13 countries to find the perfect technical solution for an SME's needs.
- This includes **searching for specific tests, checking facility availability, and analyzing expert profiles to match the SME with the testing services they need or the most appropriate Innovation Coach.**

# From Training to Impact: Building a Community of Practice

The program's impact extends beyond the initial training week.

- **Accreditation:** Creates a recognized quality standard and a public registry of certified professionals, building trust in the network.
- **Community of Practice:** We will be establishing a permanent online forum for all certified Assistants to share best practices, ask for advice on complex cases, and provide direct feedback for system improvement.

This transforms a one-off training into a living, continuously learning network that amplifies the success of the entire ecosystem.

# Conclusion: Building the Human Infrastructure for Innovation

The green transition in construction requires more than just new technologies; *it requires a skilled human network to connect innovators with the right resources*.

→ The STAR*track training program for the **Metabuilding Labs OITB** creates this vital network of local navigators, empowering regional SMEs to access world-class, pan-European expertise.

→ By "pushing on skills," we are building the human-centric support system around the **Built4People Innovation Clusters** across Europe that is needed to accelerate the next generation of sustainable solutions for the built environment.

# Our New Affiliate Membership tier coming soon!

*Your Gateway to Europe's Premier Built Environment Ecosystem*

meta building asbl

## Is This Membership For You?

This tier is for forward-thinking organisations of all sizes within the European construction value chain, including:

- Ambitious SMEs & Contractors
- Innovative Architectural & Engineering Firms
- Cutting-edge Materials Suppliers
- Technology Startups poised for growth

## Your Benefits: A Catalyst for Growth

- **Amplify Your Visibility**: Gain credibility with the "Metabuilding Affiliate Member" logo and a listing in our public Member Directory.
- **Gain Exclusive Intelligence**: Access a members-only hub with curated industry reports, market analysis, and strategic briefings.
- **Engage with Leaders**: Receive significant discounts on all Metabuilding conferences, workshops, and webinars to network with key decision-makers.
- **Unlock Opportunities**: Leverage our matchmaking platform to find project partners and be discovered by major industry players.
- **Accelerate Your R&D:** Get streamlined access to Metabuilding Labs services—including innovation coaching, testing, and certification—plus support for securing EU funding and joining R&D proposals.

## A Simple Path to Partnership

An annual investment provides year-round access to all affiliate benefits.

- Affiliate - SME: €250 / year (For SMEs and SME-sized Associations)
- Affiliate - Corporate: €1,000 / year (For Medium and Large Companies)

This is a non-voting membership, allowing you to focus 100% on leveraging the ecosystem for your business growth.

## Be the First in Line.

The official launch of the Metabuilding Affiliate Membership is just few weeks away.

By registering your interest today, you will be placed on our priority list. You will be the very first to receive the official invitation to join, securing your place in the ecosystem before the public announcement.

***Don't miss this ground-floor opportunity to connect your business to the future of construction***

**Join the Metabuilding Association as Affiliate Member**

**Register in our innovation platform for free**

**Contact us:** contact@metabuilding.com

Visit us at **metabuilding.com**

metabuilding

## An Exclusive Preview for Sustainable Places 2025.

**Connect. Innovate. Build.**

Metabuilding Labs project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 953193.

meta building asbl

***As a leader shaping the future of the built environment, you understand that collaboration is the key to progress.***

Metabuilding, Europe's premier innovation ecosystem for the construction sector, is excited to offer you, the insiders and innovators at Sustainable Places 2025, an exclusive preview of our next major evolution: the **Metabuilding Affiliate Membership** tier.

This is a new tier designed for the dynamic companies that drive our industry forward. At present, our association is made exclusively of testing facility operators and governance organisations. However, requests from industry have led us to understand that companies and associations want access to the brand and body of knowledge being constructed every day – so we are adapting.

**The official launch is just weeks away, but we are giving you the first opportunity to be part of it.**


## Your Exclusive Advantage:
## A Glimpse of What Awaits

Becoming a **Metabuilding Affiliate Member** places your organization at the heart of European construction innovation. This new, accessible tier is designed to deliver tangible value and a direct catalyst for growth.

**As a future member, you will be able to:**

- **Elevate Your Profile:** Gain instant credibility with the official Metabuilding affiliation and increase your visibility through our exclusive European member directory.
- **Access Insider Intelligence:** Tap into a members-only hub of market analysis, strategic reports, and curated insights that will keep you ahead of the curve.
- **Connect with the Community:** Enjoy privileged access and discounts for our high-level conferences, workshops, and networking events, putting you in the room with key decision-makers.
- **Forge Strategic Partnerships:** Leverage our powerful digital platform, **metabuilding.com**, to find project collaborators, discover new clients, and be found by major industry players seeking your expertise.
- **Supercharge Your Innovation:** Get streamlined access to the **Metabuilding Labs** Technical Services Network. Benefit from innovation coaching, world-class testing and certification services, and receive expert support to secure EU funding and join collaborative R&D proposals.

# Thank you for your kind attention

Contact: g.adell@metabuilding.com

SUSTAINABLE PLACES 2025

metabuilding labs

STAR*track
A Built4People Project

Join the Metabuilding Association as Affiliate Member

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.

The STAR*track project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101147509.