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ET4D

ET4DIGITAL NEWSLETTER

Project Name: ET4DIGITAL – *Empowering Trainers for Digital Innovation in the Construction Ecosystem*

No. 1, May 2025

AIMS

ET4Digital aims at increasing the quality, effectiveness and innovation of training for trainers and teachers in the field of digital technologies **to support the digital transition of SMEs in the construction sector**.

Project overall objective

The main objective of ET4Digital is to empower trainers, teachers and professionals in the construction sector by providing them with innovative tools and training courses on digital technologies. This includes the development of a digital technology framework, a skills map and a demonstrator based on a Digital Twin. The aim is to increase their ability to guide SMEs in the construction sector through the digital transition.

Specific Objective

Enhance the digital competencies of SMEs in the construction sector, aligning their capabilities with European standards and fostering their integration into the broader digital transition of the industry.

PROJECT no. 2024-1-IT01-KA220-VET-000249119

Co-funded by the European Union

ET4D

Lead partner:
IIPLE, Istituto Istruzione Professionale Lavoratori Edili della provincia di Bologna, Italy

Eight Project Partners
(IT, EL, ES, DE, MK, EE, AT)

Project budget in EUR:
400.000,00

Project Duration:
24 months

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ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA A.D. 1088

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INTRODUCTION

Role and Vision

Digital innovation is at the core of the construction industry's rapid transformation. A lack of internal skills, outdated training models, or a lack of knowledge about emerging technologies are some of the obstacles that many small and medium-sized businesses (SMEs) still face when attempting to implement digital tools. Herein lies the role of ET4DIGITAL - Empowering Trainers for Digital Innovation in the Construction Ecosystem.

A European Erasmus+ project, ET4DIGITAL aims to assist the construction industry's digital transformation by concentrating on a major force behind change: trainers who specialize in vocational education and training, or VET.

Many VET professionals are still not fully equipped for teaching technologies like Building Information Modelling (BIM), Digital Twins, and IoT even if they are becoming more and more popular. Simultaneously, SMEs sometimes find it difficult to know how digitalisation might raise their competitiveness, environmental impact, and output.

By preparing trainers with the tools, knowledge, and confidence to guide the sector into the digital age, ET4DIGITAL seeks to close this gap in expertise.

The project has direct and indirect targets. The direct targets include vocational education and training (VET) trainers, teachers at technical institutes, surveying institutes and universities, professionals and trainees working in the construction supply chain and offering consulting services to companies, and digital technology suppliers.

These groups will benefit directly from the tools created, such as the digital technology framework, the digital skills map and the Digital Twin demonstrator, and will also participate in the Capacity Building programme.

Indirect targets include the construction industry, with a focus on SMEs. The goal is to overcome the digital divide between large and small businesses by raising awareness among the latter about the importance of digital technologies in remaining competitive, construction workers, young people aspiring to enter the construction sector, and students interested in these fields of work. The goal is to improve the sector's image by making it more modern and attractive through digitalization.

PARTNERSHIP

Istituto per l'Istruzione Professionale dei Lavoratori Edili della provincia di Bologna, **Italy**

Fundacion Laboral De La Construccion, **Spain**

Westdeutscher Handwerkskammertag, **Germany**

Knowledge And Skills Management Centre K&S Skopje, **Republica of North Macedonia**

Pedmede, **Greece**

Tallinna Tehnikaulikool, **Estonia**

Alma Mater Studiorum - Università Di Bologna, **Italy**

R2M Solution Srl, **Italy**

European Center Of Entrepreneurship Competence & Excellence, **Austria**

Achievements:

The results achieved so far in the ET4Digital project mainly stem from the activities carried out in Work Package 2 (WP2). This WP has been defined as the exploratory and fundamental phase of the entire project, providing the knowledge and operational basis for the design of the training framework (WP3) and educational content (WP4).

The **main activities carried out in WP2** to collect data and obtain these results include:

• **Two online surveys** aimed at professionals in the construction sector (technicians, entrepreneurs, designers), collected data on the adoption and perception of digital technologies. It involved 70 participants.
The second, aimed at VET trainers and teachers (vocational education and training), explored their level of digital competence and training needs. It collected 76 complete responses

• **14 national focus groups**: Two in each of the seven partner countries. These enriched and validated the questionnaire data, highlighting cultural, operational and systemic differences. They involved over 40 professionals and trainers.

The integration of these tools made it possible to explore both the technological and educational dimensions, offering a multi-level view of the European context. Although participation in the questionnaires was voluntary and non-probabilistic, and the focus groups were influenced by local specificities, the work was characterised by methodological transparency and attention to data reliability

Finally, a **stakeholder panel to share emerging results** and promote dialogue has been held in mid-April in Athens, hosted by Pedmede.

The **key results** obtained from these activities are:

1. **Analysis of the state of digitalisation in the AECO** (Architecture, Engineering, Construction and Management) sector:

The construction sector lags significantly behind other industrial fields in terms of digitalisation, despite its substantial potential for transformation. While awareness and interest in digital tools—particularly for surveying,

design, and safety—are growing, actual implementation remains fragmented and limited, especially among small and medium-sized enterprises (SMEs) and training providers who often lack the necessary infrastructure and skills. The most widely adopted or familiar technologies include Building Information Modeling (BIM), 3D design software, IoT sensors, collaborative platforms, and site monitoring technologies. However, more advanced and innovative tools such as Artificial Intelligence (AI), Digital Twins, Augmented/Virtual Reality (AR/VR), and 3D printing remain underutilised, though they are widely regarded as strategically important for the future. Key barriers to broader adoption include high costs, a shortage of in-house digital expertise, cultural resistance to change, insufficient training opportunities, and challenges in integrating new technologies with existing processes

2. Definition of a **framework of relevant digital technologies**:

Technologies in the construction sector have been classified into five functional areas: detection and monitoring tools, design and simulation software, construction site management tools, innovative technologies, and complementary tools. Among these, Building Information Modeling (BIM) emerged as the top priority for the future of the sector, with 50 out of 70 respondents to the first questionnaire identifying it as essential. Other technologies highlighted as priorities include drones and laser scanners, Digital Twins, robotics and automation, 3D printing, IoT sensors, augmented and virtual reality, and sustainability software. These preferences indicate a mature and evolving demand for innovation—one that moves beyond the isolated use of individual tools and instead seeks integrated, interoperable, and systemic solutions.

3. Preliminary **mapping of digital skills for VET trainers**:

A varied picture has emerged regarding the level of digital competence among trainers in the construction sector, with some professionals demonstrating high levels of expertise and others having received only limited training. While trainers generally show good familiarity with basic digital tools, such as online platforms and learning management systems (LMS), they often face challenges when using more specialised technologies like BIM, virtual reality, and data management tools. A significant gap exists between the recognised importance of technologies such as BIM and their actual integration into everyday training practices. Technologies like Digital Twins remain poorly understood, particularly in terms of their functionality and educational applications. Similarly, the integration of IoT sensor data into training is still fragmented, and the use of immersive technologies (VR/AR) remains largely experimental, hindered by high costs and technical complexity. At the same time, there is a strong demand among trainers for targeted and accessible upskilling opportunities. Key areas of expertise for trainers have been identified as operational skills with digital tools, instructional design and methodologies, adaptability and continuous learning, and relational or facilitation skills.

These results constitute a solid, evidence-based foundation that will inform and guide the next phases of the project. In particular, WP3 and WP4 will build on the technological frameworks and skills mapped in WP2 to ensure consistency, technical relevance and alignment with the real needs of the sector.

What's next:

🔧 Spotlight on WP3: Shaping a New Educational Pathway for Digital Construction

Work Package 3 (WP3) marks a pivotal step in the ET4DIGITAL project, as it sets out to design an innovative educational framework aimed at accelerating the digital transformation of the construction sector. The core ambition is to empower a new generation of well-prepared teachers and trainers while helping construction companies—particularly small and medium-sized enterprises—adopt and integrate digital technologies into their daily operations.

At the heart of WP3 lies a powerful concept: using Digital Twins (DTs) as hands-on learning tools. By blending advanced technologies such as Building Information Modelling (BIM), the Internet of Things (IoT), sensors, Artificial Intelligence, Augmented Reality, and RFID systems, WP3 introduces a dynamic and immersive educational approach. This model allows trainers and learners to simulate real construction site conditions, monitor workflows, and gain practical insights into digital project management and planning.

The University of Bologna plays a central role in this work package. It will deploy its BLE platform—initially developed under the BENEDICT project—as a repository for BIM models and datasets essential to building the DT. Simultaneously, the Open Project BIM platform will be tested to facilitate collaborative work on 3D models, task breakdowns, and planning—all from any device, at any time. One particularly exciting element is the creation of a pilot construction site: a physical mock-up of a small house designed and built by IIPLE students. This model will include real finishes and demolition phases, serving as the physical basis for the DT. The structure will be updated using photogrammetry and environmental sensors that track both site conditions and worker safety.

Beyond technical development, WP3 places strong emphasis on training. A transnational training course will be delivered to help VET trainers understand and use the DT demonstrator effectively. Participants will also receive practical guidelines to help them replicate the model in their own institutions. To ensure lasting impact, physical and virtual labs will be set up across partner facilities, enabling hybrid learning environments and long-term knowledge sharing.

By the end of WP3, the project will deliver a fully functioning Digital Twin demonstrator for educational use, supported by a European-wide training course and accessible digital resources. Open-access formats such as IFC files will be made available to ensure that other institutions and SMEs can adopt the tools without barriers.

While the technology is already within reach, the real challenge lies in enabling educators and professionals to use it confidently and effectively. WP3 addresses this gap with a strong focus on usability, real-life applicability, and inclusiveness—laying the groundwork for a smarter, more digital construction industry.

ABOUT ET4DIGITAL

ET4DIGITAL is a transnational Erasmus+ project co-funded by the European Union under the KA220-VET action, which supports cooperation partnerships in the field of Vocational Education and Training (VET). The project brings together public institutions, training providers, research organisations, and innovation-driven SMEs from different European countries, working collectively to strengthen digital competences in the construction sector.

Through coordinated Work Packages and cross-border collaboration, the project addresses common challenges in digital upskilling and supports the development of a shared European training model. Activities are designed to deliver practical solutions, such as methodological frameworks, competence maps, training modules, and pilot experiences, all aimed at empowering VET trainers as key enablers of digital transformation.

ET4DIGITAL is co-financed by the European Commission, with each partner contributing in line with Erasmus+ rules. The project reflects the broader goals of the EU Digital Education Action Plan (2021–2027) and is fully aligned with key reference frameworks like DigComp, DigCompEdu, and ECSO, ensuring high-quality and future-oriented results.

With a duration of 24 months, ET4DIGITAL builds on the results of previous EU-funded initiatives while introducing innovative tools and methodologies specifically tailored to the needs of construction SMEs and vocational training institutions. The project has a strong focus on sustainability, inclusion, and impact, contributing to the European Union's twin transitions—digital and green—by equipping trainers with the competences needed to support modern, resilient, and environmentally responsible practices in the construction industry.

ET4DIGITAL will serve as a blueprint for future European capacity-building initiatives, offering scalable models and resources that can be adapted at national and local levels to support the evolving needs of VET ecosystems.

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