Project Title: DIGITAL PROCESS CHAIN FOR ENERGY RENOVATIONS USING PREFABRICATION.

Acronym: DigiFab

Project ID: 101192047

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Coordinate by: University College Cork, Tyndall National Institute (Irlanda)

Participants: PREHORQUI, S.A. (Spain), Institute for Sustainable Technologies (Austria), RINA Consulting S.p.A. (Italy), ACCIONA Construccion S.A. (Spain), Fundacion CARTIF (Spain), Centre for Research & Technology, Hellas (Greece), KU Leuven (Belgium), ASM Research Solutions Strategy (Poland), R2M Solution (Italy), RENEL I.K.E. (Greece), Universidad de Burgos (Spain), Rottenmanner Gemeinnutzige Siedlungsgenossenschaft (Austria), Towern3000 Projekt- & Medienagentur GmbH (Austria), Haas Fertigbau (Austria)

Overall Budget: 5.776.344 €

The DigiFab consortium will develop a renovation process consisting of:

- Digital process chain with detailed assessment and co-creation methodology to cover the entire renovation workflow.
- Choice of adaptable prefabricated modules with passive and active technologies to achieve near zero energy building (NZEB) levels and reduced environmental impact.
- Assessment and monitoring software with building information modelling (BIM) to automate the process.

Our solution transforms the renovation process by digitizing it from design brief to finalization. The approach, not widely adopted in the sector, offers significant cost and time reduction by accurately collecting and centralizing data at all stages, minimizing uncertainties that cause delays and increase cost.
Co-creation with occupants gathers expectations and best renovation times.
Building data is collected with accurate methods, transformed into a high-quality digital twin that automates energy and structural analysis, leading to design optimization with the best technology combinations according to project inputs.
Results from the analysis are used directly to manufacture the prefabricated modules using modern methods of construction (MMC) and "just in time" (JIT). The modules use novel lightweight concrete mixes with recycled materials, bio-based materials, active envelope heating technologies, energy generation and management including ventilation.
Installation follows specific site conditions, monitored through procedures such as laser scanning.
A worksite solution is used to manage and monitor levels of construction demolition waste, and noise. At the end of the commissioning process, energy performance documentation is provided. Three demonstration sites in Spain, Austria and Greece with diverse building typologies will showcase how the DigiFab solution benefits stakeholders.

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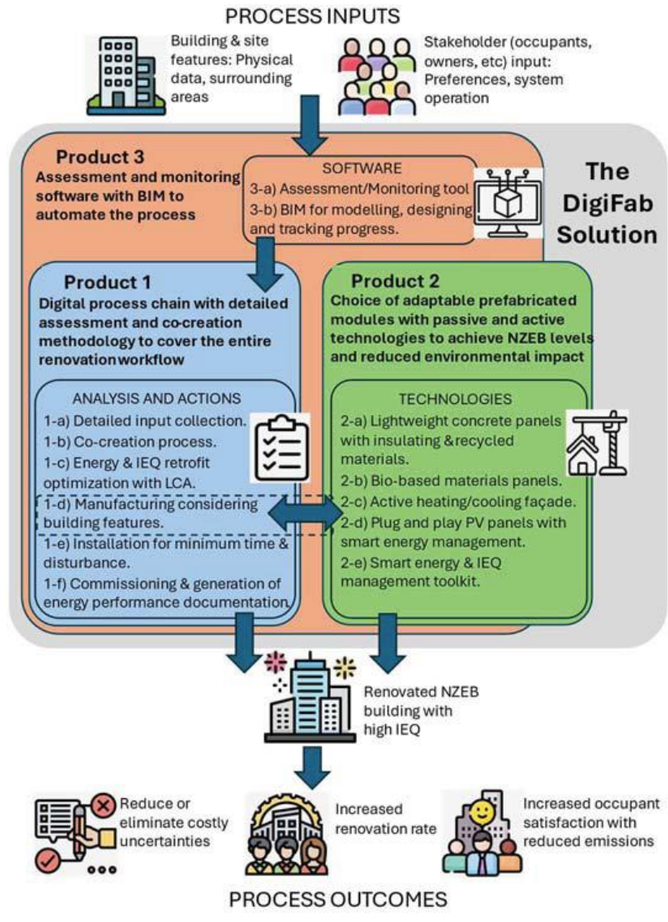

The "DigiFab" Concept