



PLURAL

PLUG-AND-USE
RENOVATION
WITH ADAPTABLE
LIGHTWEIGHT SYSTEMS



SUSTAINABLE
PLACES 2021

Sep. 28 - Oct. 1, 2021 | Rome, Italy

Speaker

Maria Founti

Organisation

National Technical University of Athens

Start / end date of project

01/10/2020 to 30/09/2024

Funding

H2020

Project website

<https://www.plural-renovation.eu/>



Project key objectives



- Design, validate and demonstrate a palette of versatile, adaptable, scalable, off-site prefabricated “Plug-and-play” solutions that take into account user needs named “**Plug-and-Use**” (PnU) kits
- Select and incorporate renewable energy technologies in prefabricated façade components
- Optimize the PnU performance for different building types, climates and socio-economic conditions.



Concept & Challenges



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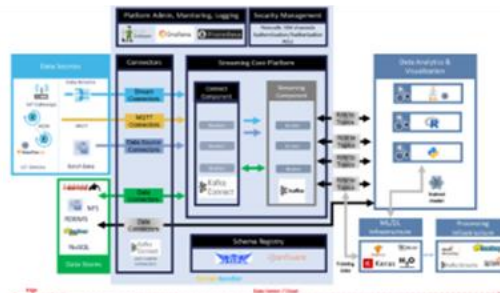
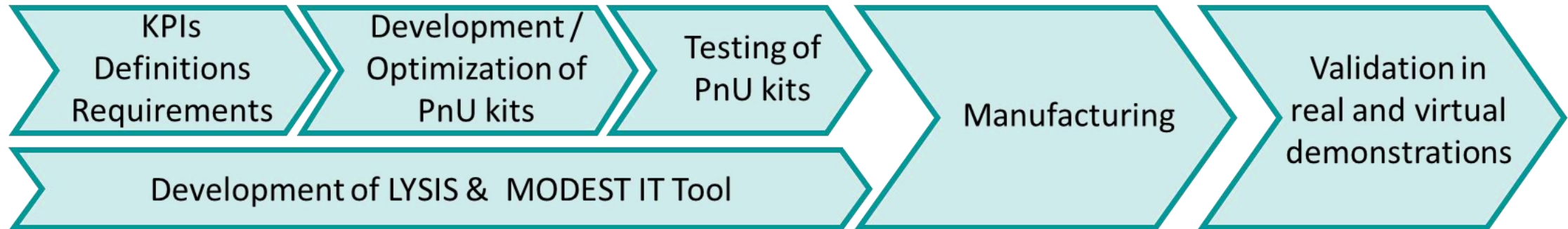
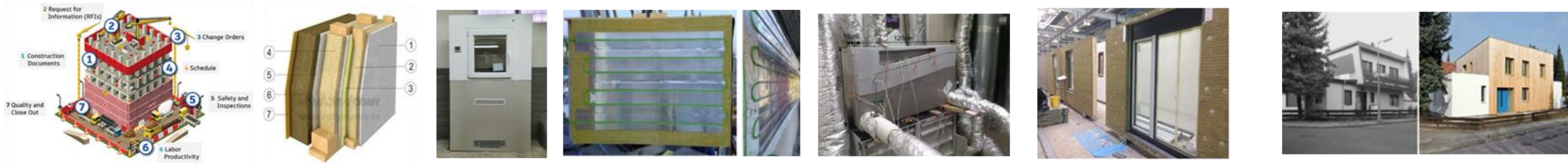


Figure 1.21 – Big data Platform - Streamhandler



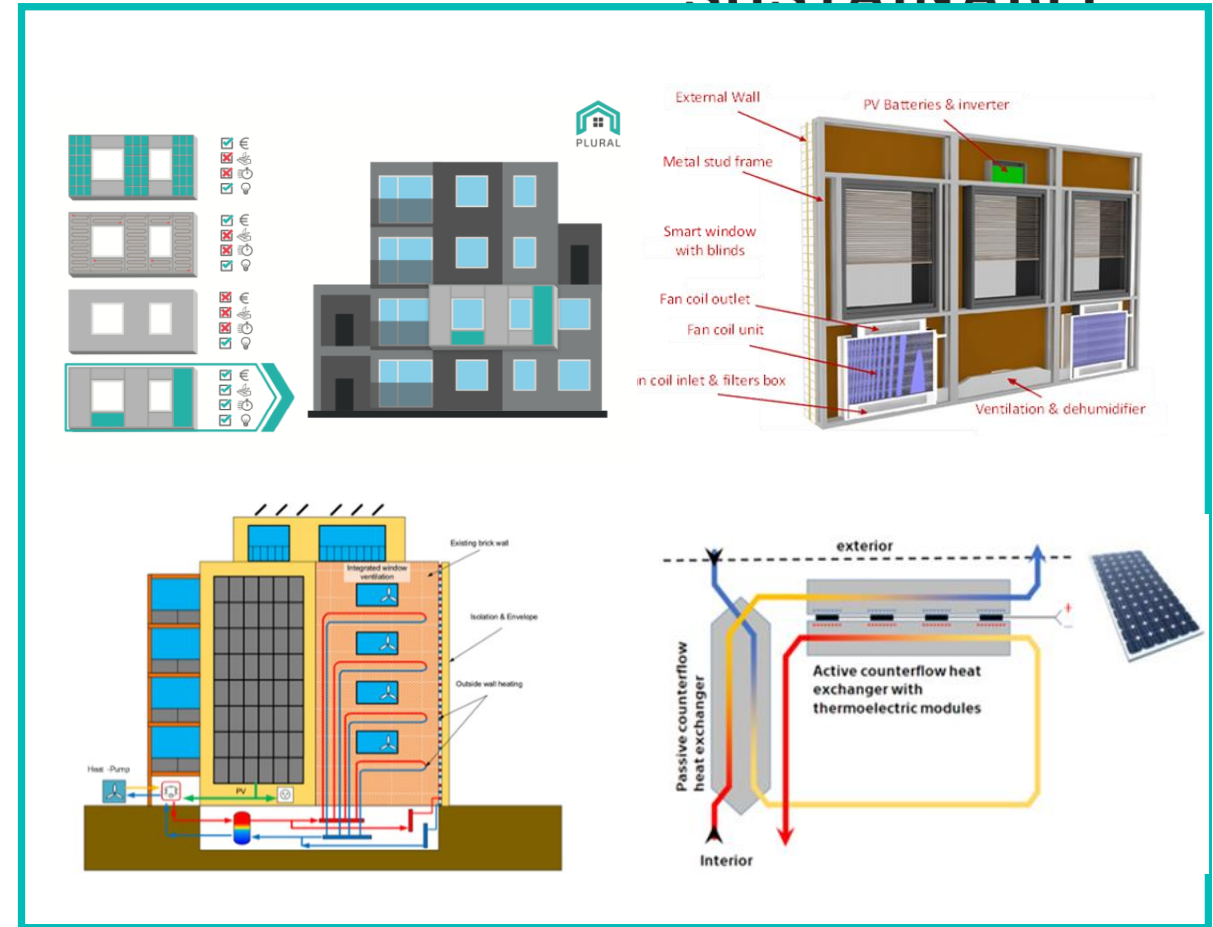
The solution-Technologies



3 core technologies:

Smart Wall, e-WHC, e-AHC

Components: timber façade with solar integration; ventilated facades/sunscreens/aesthetics skins; heat harvesting windows with ventilation functions; 3D printed structural elements; low-e coatings/films; multifunctional coatings; sensor platform for monitoring & control; toolbox; Big Data Management platform; BIM platform & DST.



Key Barriers - challenges



Barriers:

1. **Lack of knowledge by key stakeholders:** No market demand; compliance with local regulations; lack of trained people/companies to implement such solutions.
2. **Compatibility of technologies:** RES to match prefab environmentally friendly façade solutions

Challenges:

1. **Information - Training of key stakeholders:** professionals (architects and engineers), contractors-construction companies whom, at the end, must act as prescribers of these solutions. How: Demo projects; national motivation policies
2. **Assessment tools:** IT, design tools for flexible integration, advanced manufacturing technologies