

Research Project Fact Sheet

Title of Project	A novel decentralized edge-enabled PREsCriptive and ProacTive framework for increased energy efficiency and well-being in residential buildings- ongoing
Project Acronym	PRECEPT
Funding Program	H2020 - Building a low-carbon, climate resilient future (LC)
Project Identifier	Call Identifier H2020-NMBP-ST-IND-2018-2020, Topic LC-EEB-07-2020
Total Budget	7654025 €
Starting – Ending Date	10/2020-09/2023
Consortium	<ol style="list-style-type: none"> 1. Watt and Volt A.E. (GR) 2. Centre for Research and Technology Hellas (GR) 3. Kaunas University of Technology (KTU) 4. Frederick Research Center (FRC) 5. Cleopa GmbH (DE) 6. Nuromedia (DE) 7. Odin Solutions S.L. (SP) 8. DEMO Consultants bv (NL) 9. Austrian Standards International (AT) 10. LC Innoconsult International (HU) 11. State Higher Educational Institution Prydniprovsk State (UA) 12. Contecht GmbH (DE) 13. Private Construction and Assembly Enterprise (UA) 14. My Energia Oner SL (SP) 15. Politecnico di Milano (IT)
Project Objectives	<p>General: PRECEPT ambitiously aims to set the grounds for the deployment and operation of proactive residential buildings. The proposed framework introduces a “plug-n-play” Pred(scr)ictive and Proactive building energy management system (PPBMS) installed locally at building level, at the Edge-Enable Proactiveness (E EP) device. The proposed PP-BMS is self-adapted, self-learned, -managed, -monitored, -healing and -optimized, requiring no (or minimum) installation costs and no maintenance. PP-BMS transform traditional reactive buildings to proactive ones, increasing their performance (both energy efficiency and occupants’ well-being), exploiting RES, storage, forecasts and energy tariffs. PRECEPT also targets to the development of a real-time digital representation of the intelligent proactive residential buildings by employing 6D BIM technology. Further to that, a set of novel indicators leveraging on the smart readiness rationale will be introduced for rating the Smart Proactiveness of buildings. The proposed indicators will enable the introduction of a reliable framework under which the comparative assessment of the level of smartness and proactiveness of buildings can be regulated and assessed. Also, PRECEPT approach will deliver advanced data visualizations, utilizing big-data and visual analytics techniques, which in conjunction with a social collaboration platform will engage stakeholders to exchange best-practices. Interaction with the grid will be supported in a secured (Hyperledger Fabric) manner through the decentralized EEP device, supporting the implementation of D/R strategies. To maximize its potential impact, PRECEPT demonstrates novel sustainable business models for rendering traditional reactive buildings to proactive buildings that go beyond the energy-related benefits and cost optimal analysis but include occupants’ well-being, and other services. PRECEPT framework will be demonstrated in relevant environments in 5 use cases, including 250 apartments.</p>

Work Packages

WP1 PRECEPT Requirements, Specifications and Architecture
WP2 BIM & Digital Twin Technologies
WP3 PRECEPT Distribution, Modelling and Security Technologies
WP4 Pred(scr)ictive and Proactive Building Management System
WP5 System Integration, Demonstration & Impact Assessment
WP6 Dissemination, Exploitation & Promotion
WP7 Project Management

External References
