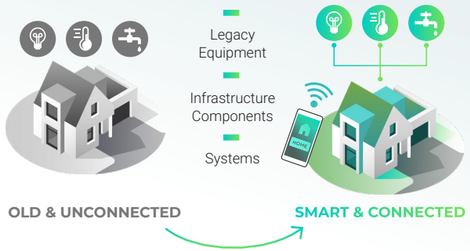
THE CHALLENGE

An important part of Europe's clean energy transition is to shift the role of buildings from energy consuming entities to structures that are conscious of and responsive to the occupants and their environment. This means that buildings need to be upgraded with equipment and applications that "understand" the occupants' needs in terms of energy requirements, services, safety and security.

INTEGRATION TO APPLICATIONS



THE SCOPE

To address this gap between generations of building equipment and systems, PHOENIX has come to develop solutions that turn existing buildings with legacy equipment into active structures, which have the ability to control and optimize their energy consumption, production and storage in order to increase energy performance, maximize the occupants' comfort and connectivity.

DEMONSTRATION ACTIVITIES OBJECTIVES

01 Improve the efficiency and energy management of the building

02 Enhance life quality & comfort feeling of the building occupants

03 Decrease cost for energy

04 Demand Response and Flexibility for grid optimisation

05 Consumer to Prosumer Transition

06 Data for building intelligence

USE CASES

01 Adapt & Play integration of domestic appliances, legacy equipment and building systems

02 Building knowledge enhancement to upgrade the smartness of buildings

03 Services for building occupants to maximise their energy efficiency and increase overall building performance

04 Provision of Comfort, and Wellbeing services to building occupants

05 Portfolio flexibility analysis and configuration to optimize grid operation

06 Flexible billing services and smart contracts for the retailer customers

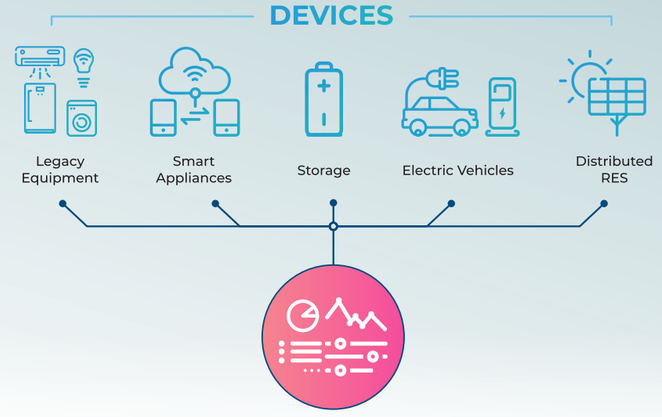
07 Advanced energy services to promote self-consumption optimisation

PHOENIX

PARTNERS

This Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 893079

PHOENIX



Adapt-&-Play Holistic Cost-effective and User-Friendly Innovations with high replicability to upgrade smartness of existing buildings with legacy equipment

www.eu-phoenix.eu

THE SOLUTION

The envisaged PHOENIX solution will be a Smartness hub based on ICT with modular components to integrate seamlessly the legacy equipment of buildings in order to offer user-friendly and cost-effective services adaptable to the specific needs of buildings users and grid utilities.

SELF-CONSUMPTION OPTIMISATION

The users are able to view analytics on energy consumption and energy production. EV charging schedule and battery charging schedule can be proposed on a day-ahead basis, leading to optimised EV and battery charging.

PHOENIX provides an ICT application for building comfort and well-being to enhance occupants' daily life. The goal of the application is to provide a decision system that correlates building contextual conditions with extracted comfort profiles and user settings, aiming to produce the appropriate comfort and well-being-related recommendations for buildings occupants.

COMFORT & WELL BEING

FLEXIBILITY

Flexibility Services: Phoenix offers the ability to make load shifts when necessary and beneficial. Using data analytics and grid signals, the consumption can be shifted to time periods in which the energy is cheaper, the CO_2 emissions are lower and the grid congestion is avoided.

Smart Tariffs Management: Energy purchase can be made in different situations (i.e., periods when energy is cheaper, use of energy when demand is low) considering different lifestyles, needs and energy demand. With Phoenix service, users will have access to information on smart tariffs and proposals adapted to the real consumption data retrieved from the smart meters to show.

Phoenix provides the Smart Readiness Indicator (SRI) framework. This framework allows the evaluation of the smartness of the building according to its characteristics, equipment, functionalities and available services represented by the SRI. The users can view the SRI results.

SMART PERFORMANCE ASSESSMENT & ADVISOR

ENERGY PERFORMANCE CERTIFICATE

Phoenix provides an automatic and dynamic approach for determining the energy performance certificate (EPC) of a building (differentiating between heating and cooling season energy efficiency), that can be updated as needed. The users can view their corresponding EPC calculated.

Phoenix provides alerts for potential malfuntions in devices, allowing critical failures to be proactively addressed and repaired in advance.

PREDICTIVE MAINTENANCE

DASHBOARD

Through the dashboard all the Phoenix services can be accessed. The dashboard provides information at a glance about the building.

IMPACT

The main impacts from the PHOENIX project:

- Provision of user-friendly services for building occupants to maximize comfort and well-being
- Minimization of costs for and building upgrades into smart ones
- Increase in energy savings and buildings' energy performance
- Achieving grid flexibility
- Efficient and easy flow of information between users and stakeholders

DEMONSTRATION CASES

Validation & Evaluation

GREEK PILOT SITE

KaMa in Thessaloniki

Self- generation and energy storage
- Black out support
- Optimised Electric vehicle charging

Grid Flexibility
- Simulated dynamic pricing

Comfort and Well-being
- Smart Notifications to occupants

SPANISH PILOT SITE #1

Region of Murcia

Flexibility Engine
- Automated control of HVAC settings
- Smart Tariffs/Dynamic pricing.

Comfort and Well-being
- Smart Notifications to occupants

SPANISH PILOT SITE #2

University of Murcia

Flexibility Engine
- Demand/Response strategy for flexibility extraction

Comfort and Well-being
- Ventilation Control for comfort and convenience

Smart Readiness Indicator Calculator
- Automatic SRI

Predictive Maintenance
- Predictive Maintenance Services to Building Managers

Energy Performance Certificate evaluation
- EPC automatic calculation.

SWEDISH PILOT SITE

Skellefteå

Flexibility Engine
- Smart Notifications to occupants for flexibility

Comfort and Well-being
- Smart Notifications to occupants for comfort and convenience

IRISH PILOT SITE

Rediscovery Centre, Dublin

Self- generation and energy storage
- Optimisation of Electric vehicle charging
- Maximisation of self-consumption from PV

Flexibility Engine
- Demand/Response strategy for flexibility extraction
  Smart Bills

Comfort and Well-being
- Dynamic envelope control & smart notifications