PHOENIX

Adapt & Play Holistic Cost Effective and user-friendly Innovations
with high replicability to upgrade smartness of existing buildings with legacy equipment

PHOENIX Presentation

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This project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement no 893079.

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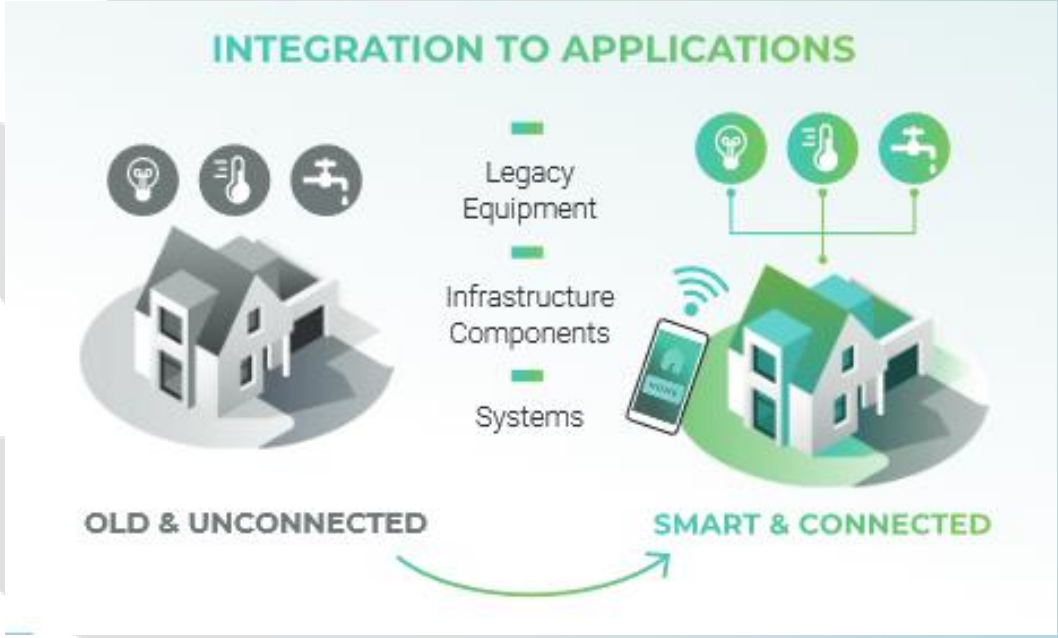
Project Overview

Mission and Objectives

Mission:

PHOENIX aims to provide a portfolio of ICT solutions to increase the smartness of legacy systems and appliances in existing buildings which will increase the SRI and energy efficiency. These improvements will translate in human-centric new services for building users and an improvement on both execution of grid operations and data sharing.



Mission and Objectives

OBJECTIVES

- Seamless Adapt & Play
- Innovative Technologies
- Real-time Communication
- Human-centric approach
- Cost-Effective Services
- Security and Building Privacy
- Suitable Building Strategies

PROJECT DURATION:

36 months

PROJECT TEAMS:

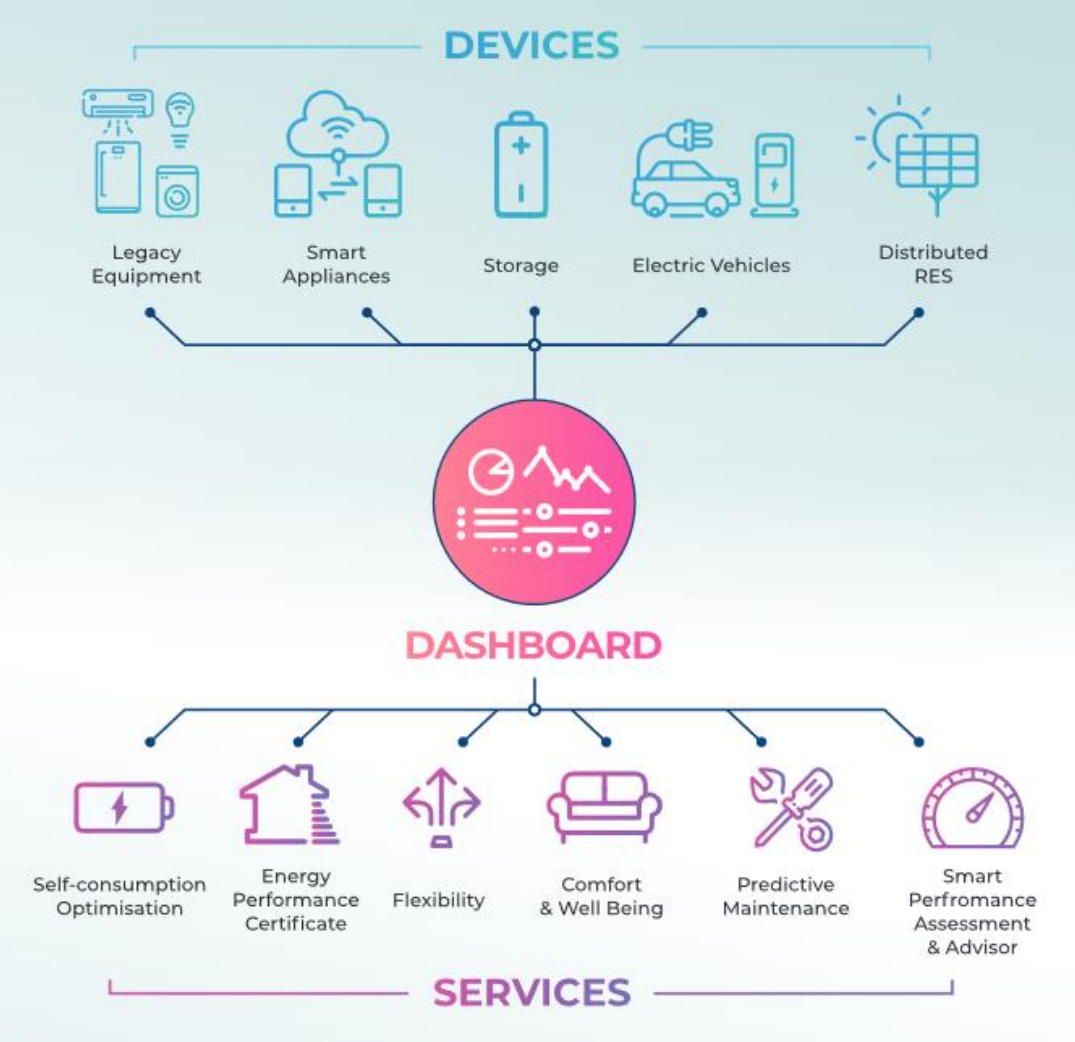
12 partners
From 7 member states

DEMO PILOTS:

5 pilots
From 4 different countries

PARTNERS

Solution and Services



PHOENIX Solution

- Smartness Hub based on ICT
- User-friendly and cost-effective services adaptable to the specific needs of buildings users and grid utilities

Impact Goals

- User-friendly services to maximize comfort and wellbeing
- Upgrade of buildings into smart ones and minimization of costs
- Energy savings and increase of buildings' energy performance
- Grid flexibility
- Efficient and easy flow of information between users and stakeholders

Solution and Services

PHOENIX services

SELF-CONSUMPTION OPTIMISATION

Energy consumption and production analytics
EV and battery charging schedule proposed on a day-ahead basis

COMFORT & WELL BEING

Correlation of building contextual conditions with extracted comfort profiles and user settings, to produce comfort and well-being-related recommendations

DASHBOARD

Access to all the PHOENIX services through the dashboard, providing information at a glance about the building

FLEXIBILITY

Ability to make load shifts when necessary and beneficial: cheaper energy, lower CO2, grid congestion avoidance

SMART PERFORMANCE ASSESSMENT & ADVISOR

Evaluation of the smartness of the building according to its characteristics, equipment, functionalities and available services represented by the SRI

PREDICTIVE MAINTENANCE

Automatic and dynamic approach for determining the energy performance certificate (EPC) of a building
Alerts for potential malfunctions in devices

ENERGY PERFORMANCE CERTIFICATE

Pilots and Services Deployment

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

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

IRISH PILOT SITE

RISEC, Dublin city

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

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.

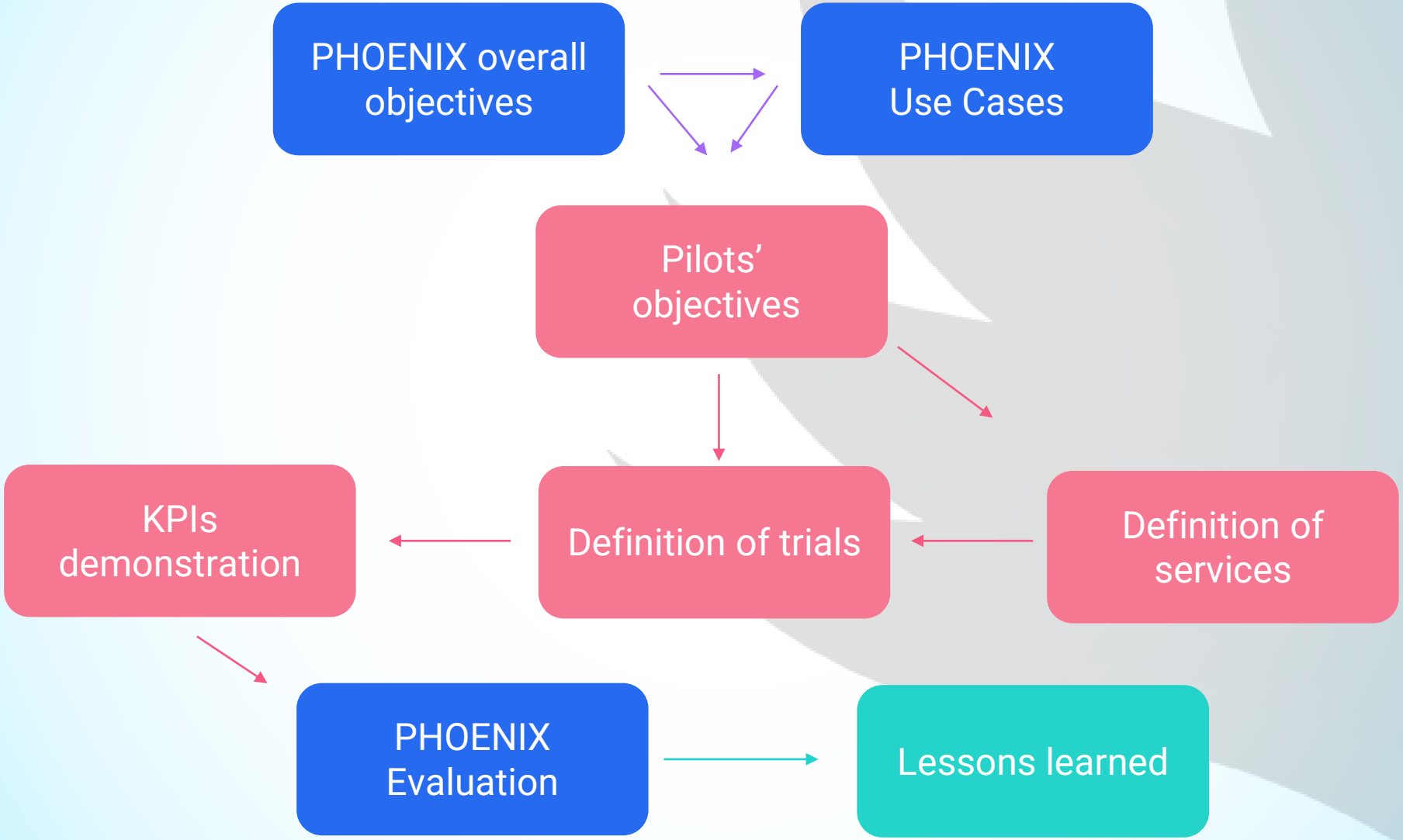
SWEDISH PILOT SITE

Skellefteå

Flexibility Engine
- Smart Notifications to occupants for flexibility

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

Project Development



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Trials and Results

University of Murcia (PoC)

- DR Strategy for Flexibility Extraction
- DR Strategy for Energy Saving
- Ventilation Control

Energy Cost Reduction	18%	36%
Energy Savings	15%	35%
Demand Shifted	15%	31%
Peak Load Decrease	20%	24%
Registered Users	100	155

- Blackout Support
- Electric Vehicle Usage
- Simulated Dynamic Pricing
- Comfort and Convenience

Energy Cost Reduction	30%	37%
Blackout Support	90%	100%
Self-Sufficiency	30%	48%
Usage of EV	10%	74%
Resident Satisfaction	>3	4

Flexibility Extraction - preheating or precooling

Flexibility Extraction (w/o preheating)

Comfort, Convenience and wellbeing

Load Shifted

15%

74%

Energy Savings

20%

24%

Improved SRI (commercial)

+15%

+38%

Improved SRI (residential)

+15%

+18%

Cost Reduction Flexibility Benefits

Domestic building case

Flexibility Benefits

Commercial building case

Self-Consumption evaluation

Domestic building case

Comfort and Convenience evaluation

Demand Shifted

30%

39%

Peak Load Decrease

30%

86%

Domestic case

Peak Load Decrease

30%

61%

Commercial case

Residents' Engagement

Flexibility Recommendations

Comfort and Convenience

Energy Cost Reduction	20%	21%
Energy Savings	20%	21%
Comfort Feedback	60%	65%
Users' Acceptance	60%	69%
Connected Devices	80%	100%

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PHOENIX Dashboard Tour

Final Comments

Impact Goals Achieved?

- User-Friendly Services
- Buildings' upgrade to smart ones
- Increased energy savings and buildings' energy performance
- Comfort and well-being maximization
- Grid flexibility with DR strategies
- Efficient exchange of information between users and stakeholders

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Any Questions?

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