BaaS

05 · TARGET

- **Building** and construction companies
- **Process** and systems integration engineering at buildings
- **Building** Automation and Building Management Systems companies
- **Software** developers
- **IT Services** and networks providers
- **Energy** providers and utilities companies
- **Facility** managers
- **Energy** Services Companies
- **Public Authorities** and Regulatory Bodies
- **Building** Owners

Fundación CARTIF

Fraunhofer IBP

Honeywell Prague Laboratory

NEC Laboratories Europe

Dalkia Energía y Servicios

Technical University of Crete

University College of Cork - IRUSE

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BaaS

Buildings as a Service

(Ecosystem)

FP7-ICT-2011-7, Collaborative Project, GRANT AGREEMENT No. 288409

BaaS

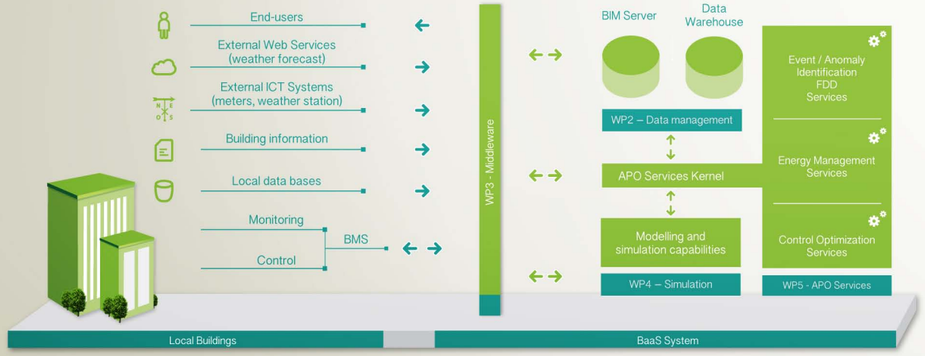
01 · BACKGROUND

There are a number of important elements in designing of building energy management systems – when data collection, aggregation and management is usually well addressed by existing building management systems, actual analytical components allowing to diagnose a behavior leading to excessive energy consumption and/or compromised occupants' comfort are far less mature. Developing a smart hosting platform supporting these services naturally leads to a concept of the building as a service eco-system (BaaS) where any new tool can be plugged in the system and can benefit from already existing components.

02 · OBJECTIVES

The BaaS system aims to optimize energy performance in the application domain of "non-residential buildings, in operational stage. A generic ICT-enabled system will be developed to provide integrated assess, predict, and optimize (APO) services that guarantee harmonious and parsimonious use of available resources. BaaS is supported on four objectives:

- **Data Management from various in- and out-of-building sources:** An (IFC-based) BIM server, a DWH and other ICT systems and external web services.
- **System integration and interoperability concepts** based on standards and open source projects, on an Event-Driven SOA-based platform.
- **Building thermal modeling and simulation** for energy performance estimation, baselining, model assisted design of control and FDD.
- **APO services:** Anomaly identification (e.g. fault detection) and diagnosis services using sensed and simulated data; and Integrated and fully automated building automation and control design services.



03 · DEMONSTRATION SITES

The complete **BaaS** system will be deployed and validated in real operating conditions in five demonstration sites.

Upon verification of component interoperability and implementation of an IPMVP-based measurement and verification plan in real buildings, the BaaS system behaviour will be analyzed as an Energy Conservation Measure and energy savings will be validated by an Energy-Services Company.

End-user acceptance will be accomplished by analyzing the replication potential in tandem with the results of a sensibility study.

Kassel (Germany) · Area: 1,348 m2

Exhibition area, offices and experimental laboratory

- Situated on an old urban neighborhood.
- Extensive utilization of passive and natural systems for heating, cooling and ventilation.
- District heating system.
- Central DDC for control with decentralized automation stations.

Centre for Sustainability

A · OFFICES

Chania (Greece) · Area: 450 m2

Offices and meeting space

- An atrium in the entrance is lit by a glazing area at the roof.
- Split-type air conditioning units
- Central heating system.
- A BEMS from SAIA-Burguess with extensive sensing with wireless sensors.

Technical University

B · OFFICES

Valladolid (Spain) · Area: 7,500 m2

Offices

- Very low energy consumption building.
- Several renewable energy sources installed (PV and a closed-loop geothermal heat-exchangersystem).
- Complete energy management system Lonworks-based.

Cartif 1 Offices building

C · OFFICES

Madrid (Spain) · Area: 35,000 m2

Hotel

- Originally built to house the Spanish National Railway company offices, was transformed into a hotel (378 rooms).
- It is equipped with heating, cooling and DHW energy services, using individual terminal units on rooms.
- TREND-based energy management system for controlling energy systems.

Husa Chamartín Hotel

E · HOTEL

Granada (Spain) · Area: 7,670 m2

School

- Primary School for 650 students integrated by 3 separated buildings.
- Integration of renewable energy sources through the utilization of biomass boilers for thermal generation.
- TREND-based energy management system for controlling the heating generation and distribution.

Sierra Elvira

D · SCHOOL

04 · EXPECTED IMPACT

- Significant reduction of energy consumption and CO2 emissions reaching or even surpassing the target of 15% reduction.

- Utilizing harmoniously and most effectively all installed systems in a building, taking into account human factors and adapting the decisions in real-time.

- Strengthen and consolidate European excellence in engineering at the intersection of control, thermal simulation, communication technologies, middleware platforms, energy, and building technologies.

- Contributing towards a unified European Methodology for a verifiable quantification of Energy Savings and CO2 reduction in buildings.

- Contributing to European Energy Policy and to the analysis and further investigation and enhancement of European Standards.

- Impacting the evolution of standards for communication, interfaces, data models, methods of measuring energy performance, energy savings and CO2 reduction in the standardization bodies for building standards.