Highly Innovative building control tools tackling the energy performance gap. A new OS+Apps for building energy management.
An overview of the performance gap

Before Construction

Design Phase

Operational Phase

Building Simulator

After Construction

Operational Building

- Inaccurate simulations
- Construction errors
- Commissioning errors
- Inadequate operation of buildings
An overview of the performance gap

Design Phase

Before Construction

Building Simulator

Simplifications and inaccurate assumptions in design process +10-20%

GAP

Operational Phase

After Construction

Operational Building

hit2gap
An overview of the performance gap

**Design Phase**
- Before Construction
- Poor quality of construction +10-30%

**Operational Phase**
- After Construction
- Operational Building

**GAP**

Building Simulator
An overview of the performance gap

**Design Phase**
- Building Simulator
- Inadequate, rushed or incomplete commissioning of systems +15-30%

**Operational Phase**
- Operational Building

**GAP**

*Before Construction*

*After Construction*
An overview of the performance gap

Inadequate exploitation of buildings, limited data analysis, impact of occupants +30-120%
A solution to the performance gap

Design

Improvement of Future Design & Construction

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Improvement of Commissioning & Operation

Operation

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Objectives

• To reduce the energy performance gap between predicted and real building performances, focusing on the operational phase of buildings.

• To propose a new paradigm for the development of energy management platforms in buildings, integrating existing expertise and resources: open approach for A NEW GENERATION OF BMS SOLUTIONS with plug and play analytics tools and modular services using a win-win strategy.

• Significant reduction of the energy performance gap using enhanced data treatment modules for monitoring real-time building operation and occupancy data and real-time meteorological and building performance data that will be used to continuously calibrate the models to more accurately represent the real energy behaviour.

- a data platform – collection and storage of data
- modelling – e.g. energy predictions, users’ behaviour modelling
- modules – data mining, EnMS and visualisation
What is addressed by the project?

• Challenges on energy and environment: 30% energy savings based on data collected in buildings and advanced data treatment approach
• Open, modular, extensible and scalable platform aiming at create a community through providing added value basic services
• New services associated to a win-win strategy with external developers
• Advance data treatment serving energy optimisation based on calibrated simulation module, forecasting module, Fault Detection and Diagnosis module, Users behaviour modelling module, ISO50001 module
What is HIT2GAP?

The applications/modules are physically implemented outside the HIT2GAP core platform.
Basis Functionalities of HIT2GAP

- **Management**
- **Connectivity**
- **Visualisation**
- **Data processing & statistics**

**Basis functionalities**
- Forecasting (TBC)
- Calibration
- Data pre-processing and consolidation
- Alerts on data
- Data structuration (data model)
- Data Storage
- Provision of data to the Apps

**Data Pre-processing and consolidation**
- Data structuration (data model)
- Provision of data to the Apps
- Alerts on data
- Calibration

**Forecasting (TBC)**
- Calibration
- Alerts on data
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**Calibration**
- Alerts on data
- Provision of data to the Apps

**Alerts on data**
- Provision of data to the Apps
Advanced data treatment modules

- Management
- Connectivity
- Visualisation
- Data processing & statistics

Added value Services:
- Fault Detection & Diagnosis
- Calibrated simulation
- Behaviour modelling
- Forecasting
- IPMVP
- ISO 50001

Logos:
- Nobatek
- Cylon
- Abo Data Srl
- Fraunhofer ISE
- ESRU
- University de Groningen
- hit2gap
Visualisation modules

- Management
- Connectivity
- Data processing & statistics
- Visualisation

Visualisation tools suited for the different targeted users
Fault detection: “Are there any failures in the system?”
Fault diagnosis: “Which component is involved?” and “What is the exact reason for the failure?”

Faulty sensors
- Impact on control loops
- Additional energy consumption
- Comfort problems

> Energy management: identification of current energy uses, objectives and targets
> Action management

> Information directly acquired from the occupants via monitoring devices and questionnaires.
> User behaviour models combined with building information to generate a dynamic, adaptable and holistic recommendation and decision support system.
Who is targeted?

Main end-users/Customer segments:
1. Building Owner, estate manager
2. EM / FM / MM (EPC, awareness raising of occupants)
3. ESCo /FM organisations
4. EE Consultant/ Professional (e.g., engineers, designers)
5. BMS providers (to enrich the existing offer)

Contributors segments (win-win strategy):
1. External developers
2. Actors in the value chain associated with monitoring and building energy performance measurement
HIT2GAP project in short

www.hit2gap.eu

Months Project
Start: 01/09/2015

Eu contribution: 6,675 M€

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A complementary partnership

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