

Smart Building – Smart Grid – Smart City (3Smart)

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THIRD ENERGY SUMMIT IN BOSNIA AND HERZEGOVINA

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Project co-funded by the European Union

3Smart – project informations

- **Program: Interreg Danube Transnational Programme**
- Start: 1. 1. 2017.god.
- End: 30.6.2019.god.
- **Budget (€): 3.791.343,41**
- ERDF Contribution (€): 2.684.885,78
- IPA Contribution (€): 537.756,07
- **JP EP HZ HB budget (€): 321.413,96**

Project partners:

	University of Zagreb Faculty of Electrical Engineering and Computing	Lead partner
	Hrvatska elektroprivreda d.d.	ERDF partner
	E 3, ENERGETIKA, EKOLOGIJA, EKONOMIJA, d.o.o.	ERDF partner
	Municipality Idrija	ERDF partner
	Elektro Primorska d.d.	ERDF partner
	European Centre for Renewable Energy Güssing Ltd.	ERDF partner
	Municipality of Strem	ERDF partner
	Energy Güssing Ltd.	ERDF partner
	University of Debrecen	ERDF partner
	E.ON Tiszántúli Áramhálózati Zrt.	ERDF partner
	University of Belgrade Faculty of Mechanical Engineering	IPA partner
	JP Elektroprivreda Hrvatske Zajednice Herceg Bosne	IPA partner
	University of Mostar Faculty of Mechanical Engineering and Computing	IPA partner

Associated strategic partners:

	Croatian Energy Regulatory Agency	Associated strategic partner
	Jožef Stefan Institute	Associated strategic partner
	Goriška Local Energy Agency	Associated strategic partner
	Regulatory Commission for Energy in Federation of Bosnia and Herzegovina	Associated strategic partner
	Hungarian Energy and Public Utility Regulatory Authority	Associated strategic partner

- 13 project partners i 5 associated strategic partners from 6 countries
- FER Zagreb is lead partner

3Smart overall objectives

- **Overall objective:**

- ✓ provide a technological and legislative setup for cross-spanning energy management of buildings, energy grids and major city infrastructures in the Danube region.

- **Specific objectives:**

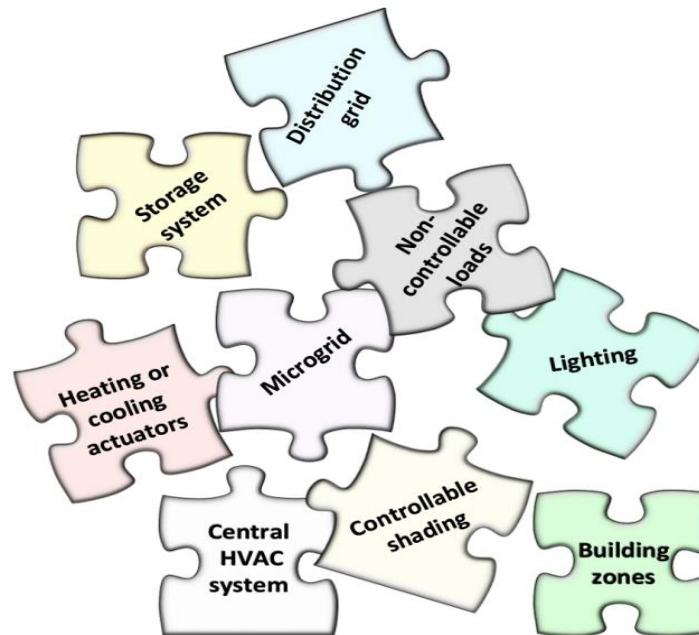
- ✓ SO1. Enable energy management between buildings and distribution grids
- ✓ SO2. Demonstrate effectiveness and feasibility of modular energy management (5 pilot projects: HR 1, SI 1, AT 1, B&H 1, HU 1)
- ✓ SO3. Enable take-up of the platform in buildings, grids and infrastructures.

Current situation and trends

- In most buildings in the Danube region there are no systems for energy management or are limited to certain subsystems within the building.
- Because of the development of distributed sources, buildings become potential producers / consumers of electrical energy (Prosumer).
- Trends: market liberalization, the smart grid, the establishment of the retail electricity market.
- The idea of the whole 3Smart EMS is to create a modular platform for interconnection of the building(s) with the distribution system based on available data from the subsystems of the building and the data from the network (tariff rates etc.) and meteorological data to optimize the behavior of the building as energy object and provide significant energy savings.

3Smart concept

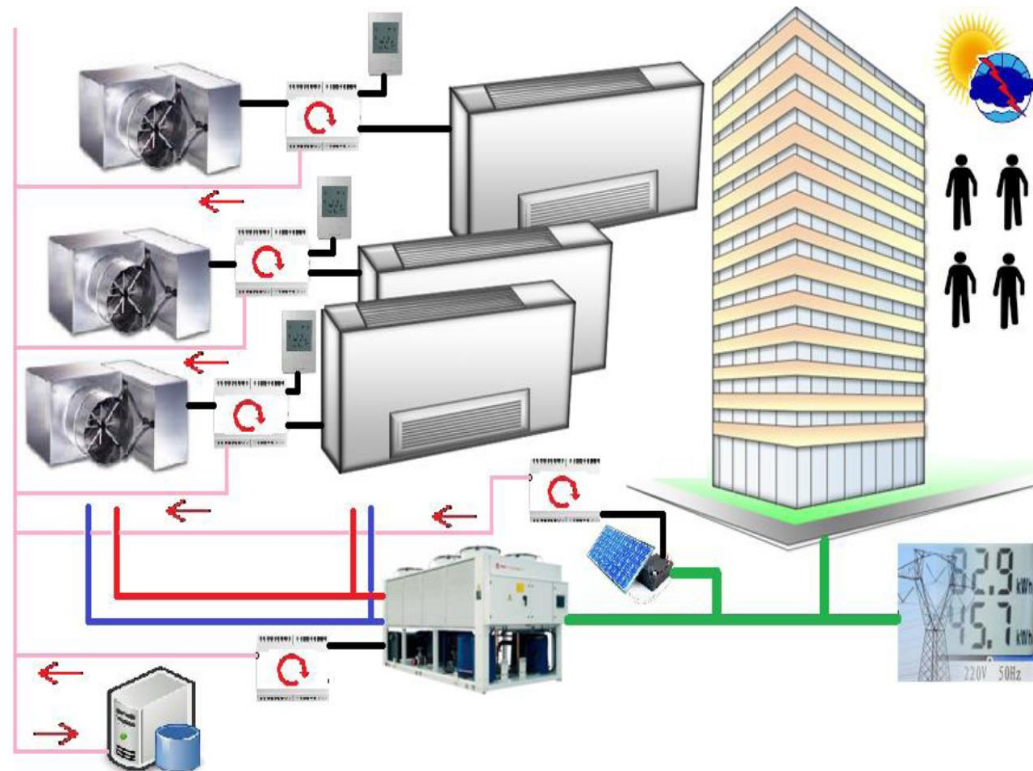
- Modern building - complex nonlinear systems consisting of various associated subsystems



Standard Building Energy Management concept

3Smart concept

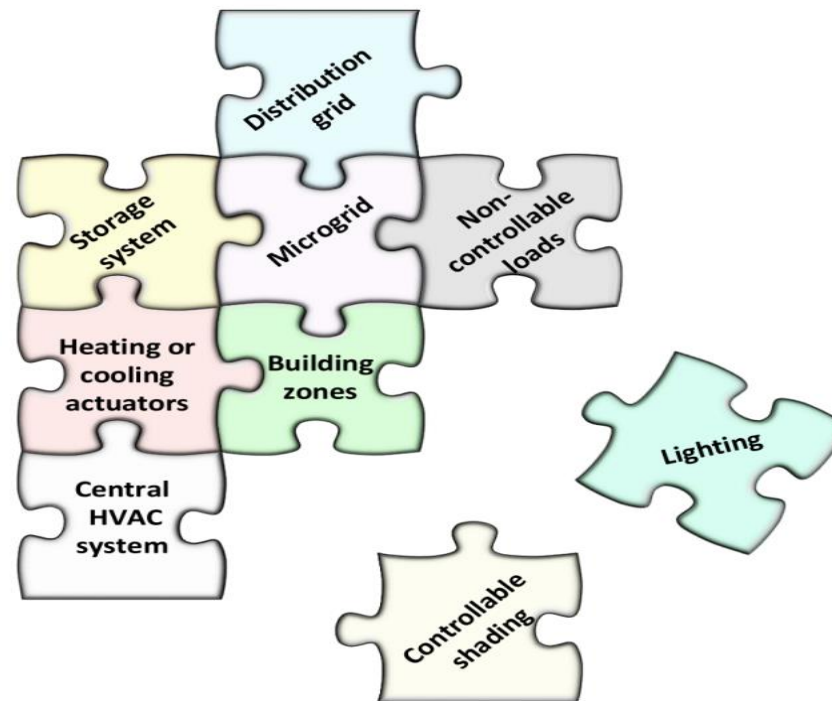
- The result is uncoordinated and non-optimal behavior of the building as energy object



Standard Building Energy Management concept

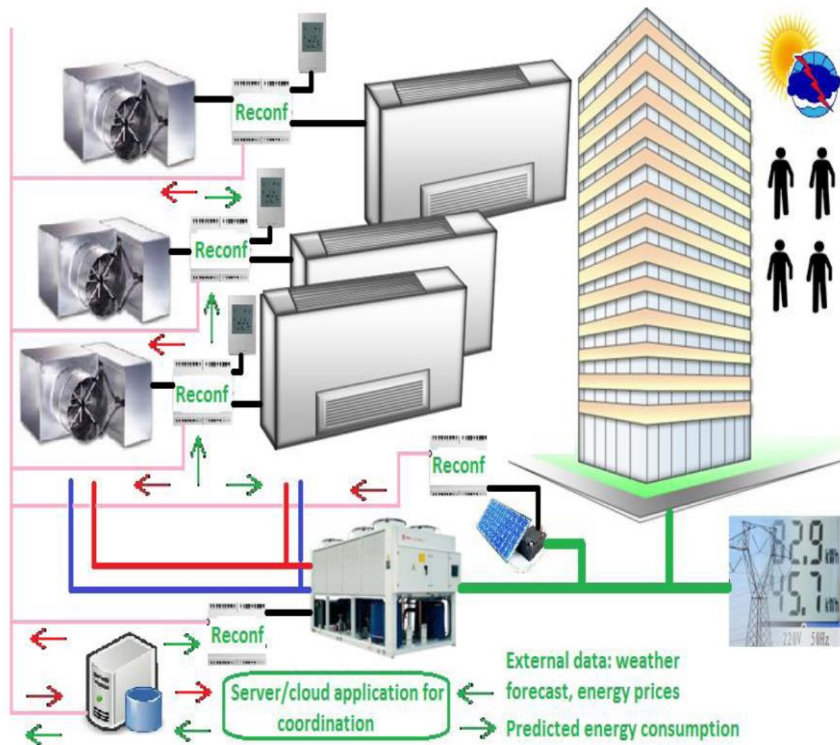
3Smart concept

- 3Smart EMS - connection and integration of the various subsystems of the building and integration of interfaces to the distribution network in a unified system of control and management
- The modular approach and flexibility - separate module for each subsystem while maintaining the primary functions of individual subsystems
- The aim of project - the minimum procedures to enable building efficient EMS, which will increase the level of energy efficiency of the building while retaining existing customers comfort inside the building



3Smart Building Energy Management concept

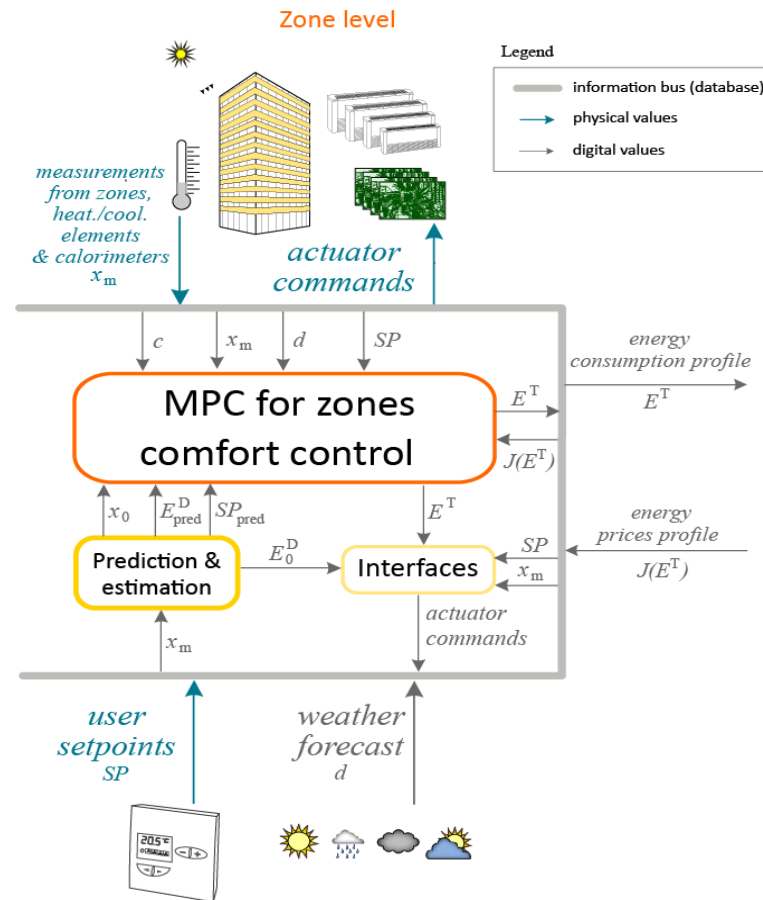
3Smart concept



3Smart Building Energy Management concept

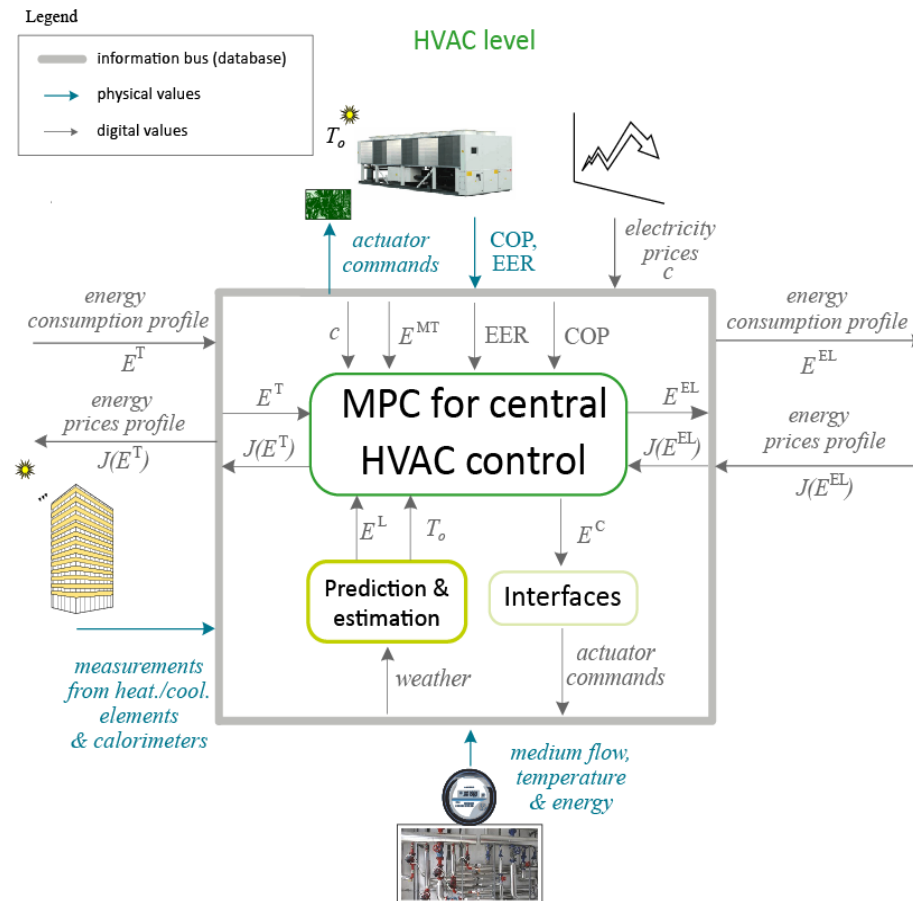
- The EMS for the building is divided into three coordinated levels:
 - (1) building zone level,
 - (2) central HVAC system level,
 - (3) building microgrid level.

(1) Building zones level



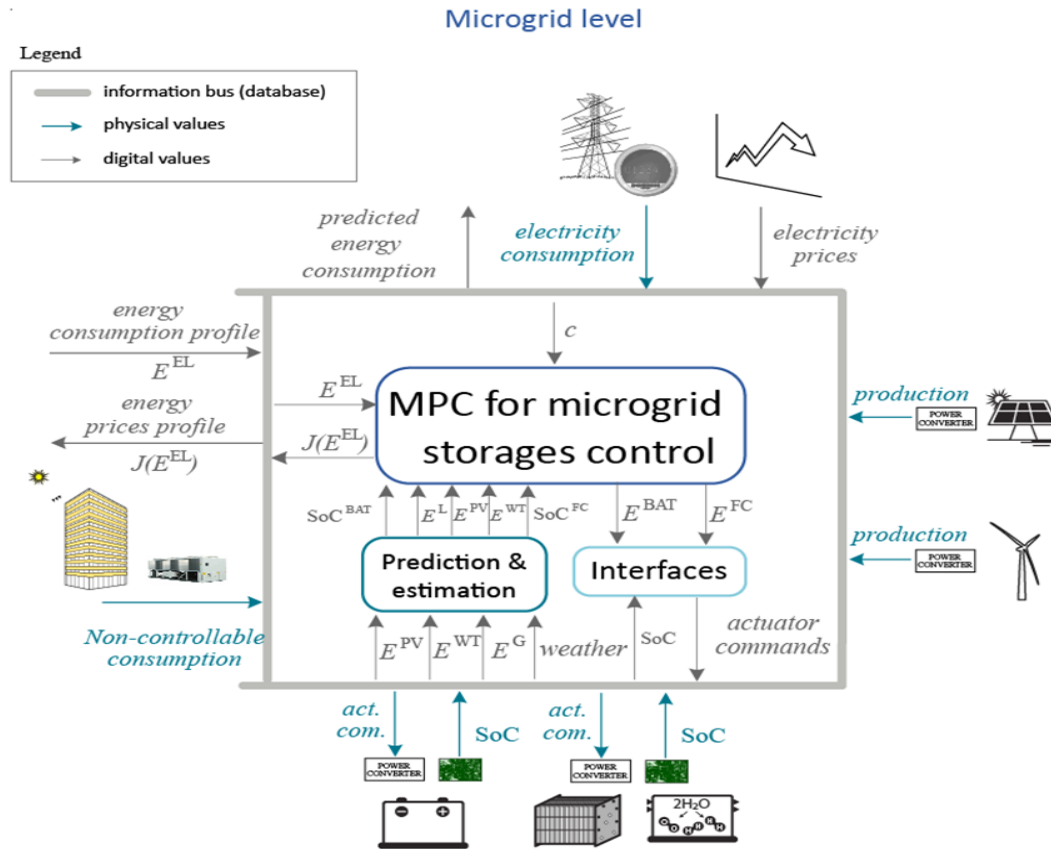
Building zones level concept

(2) Central HVAC system level



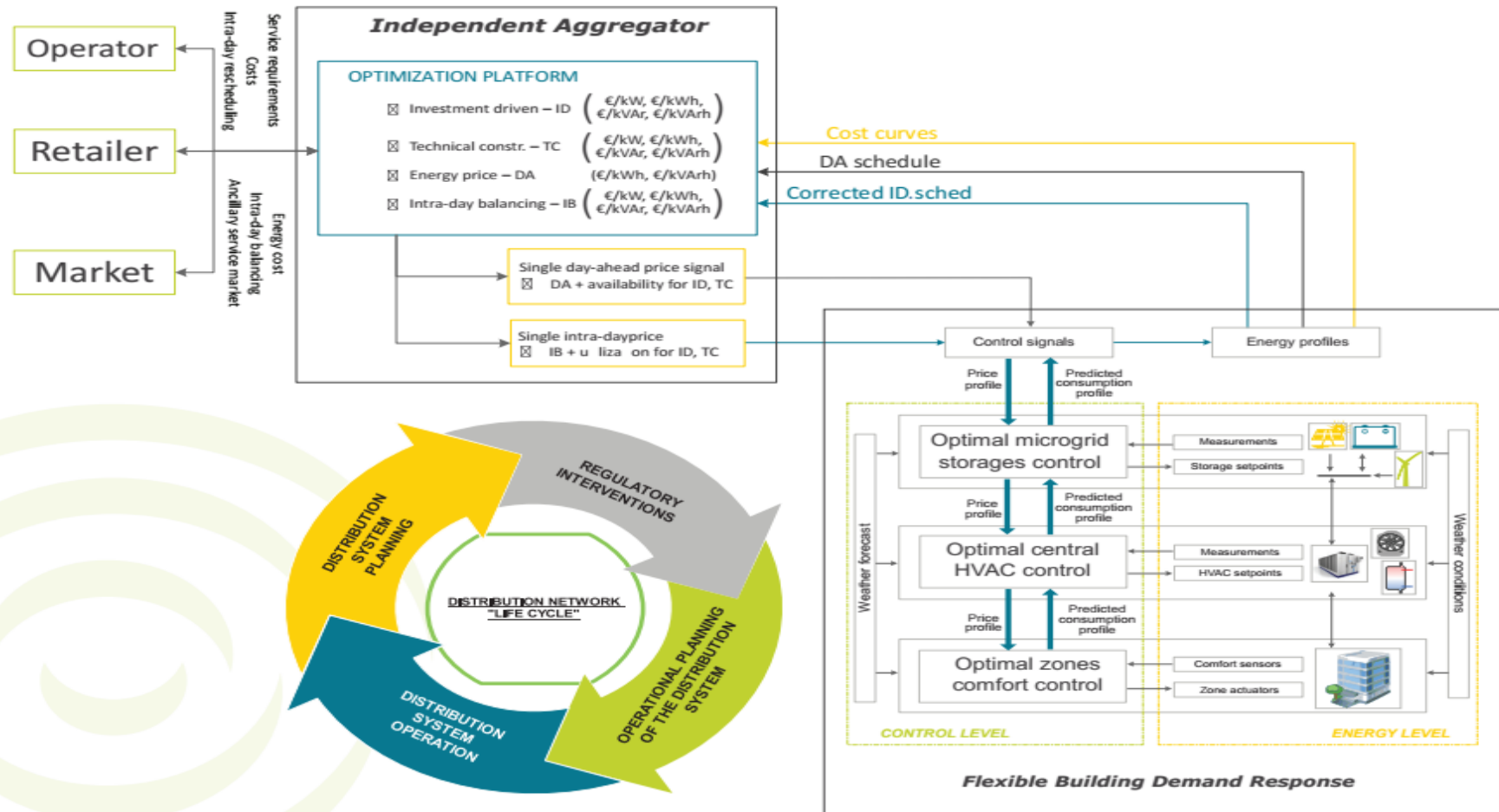
Central HVAC system level concept

(3) Building microgrid level



Building microgrid level concept

3Smart platform



Pilot projects

- 3Smart EMS system will be installed at five pilot sites in 5 countries:
 - HEP building and HEP C building (Croatia),
 - School and sports hall in Idrija (Slovenia),
 - School and nursing center in Strem (Austria),
 - New bussiness building JP EP HZHB in Mostar (Bosnia and Herzegovina),
 - Bussiness building EON in Debrecen (Hungary).
- Pilot project EPHZHB:
 - Installation of photovoltaic power plant 50 kWp for their own consumption and integration in EMS
 - Installation of battery systems for energy storage (integration into EMS)
 - Integration of the HVAC system in the building 3Smart system

Platform, education

- The platform will be modular and different project partners will participate in the development of individual modules;
- Project teams and teams at the pilot locations will be trained to install, control and maintenance the module;
- Towards the end of the project will be held public presentations 3Smart platform at pilot sites.

3Smart vision

- Enable economically optimal balance between energy efficiency measures and renewable energy sources in buildings;
- To initiate installation of distributed systems for energy storage in order to increase security of supply in the countries of the Danube region;
- To increase the share of renewables in the energy exchange.

Acknowledgement

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PROJECT WEB PAGE

www.interreg-danube.eu/3smart

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