

TAKING
COOPERATION
FORWARD

BOOSTEE-CE

**“Boosting Energy Efficiency in Central European Cities
through Smart Energy Management”**

Fabio Remondino, FBK Trento, Italy

BOOSTEE-CE - what is about?

- The project deals with **ENERGY EFFICIENCY** in public buildings
- The project aims to offer **ICT solutions** (i.e. 3D city models) to facilitate the governance of energy efficiency in existing public buildings and reduce energy consumption
- BOOSTEE-CE solutions include the **OnePlace web-platform** and a transfer of knowledge to other regions of Europe
- Timeline: 1 Jun 2017 - 31 May 2020
- Budget: 2.2 mil Eur



BOOSTEE-CE - video

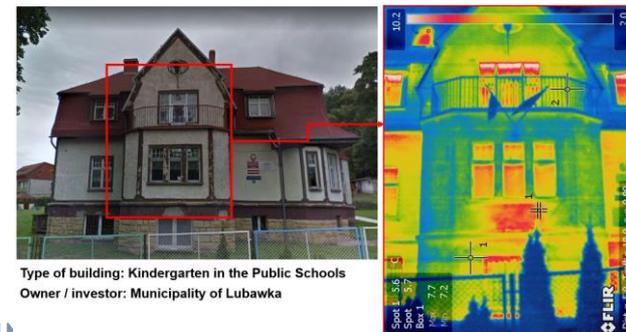


**GEOSPATIAL DATA
SMART ENERGY MANAGEMENT TOOLS**



BOOSTEE-CE - overall objectives

- ❑ Provide innovative **ICT solutions, best practices, financing roadmaps and guidelines** to improve the governance of EE in existing public buildings and reduce energy consumption
- ❑ **Raise public awareness** related to EE / energy saving
- ❑ Reducing know-how disparities in CE and disseminate the **EE concepts**
- ❑ Realize a web-based platform (**OnePlace**) in order to
 - (i) collect energy-related info (consumptions, requests, losses, etc.)
 - (ii) facilitate energy audit based on 3D buildings and webGIS technologies
 - (iii) visually present transnational energy strategy
 - (iv) showcase good practices for policy / energy makers
 - (iii) transfer knowledge and solutions to other regions



WPT1 (FBK) - Transn. tool for energy audit of public buildings

- collect and harmonize geospatial data
- realize a geoDB
- create 3D building models in PA areas
- create PV potential map & heating losses information

WPT2 (EZVD) - The Online Energy Platform "OnePlace"

WPT3 (MAE) - Boosting energy efficiency in pilot actions

- PA preparation and guidelines
- OnePlace testing
- Handbook for energy planner about OnePlace

WPT4 (EAZK) - Energy efficiency financing strategies in CE

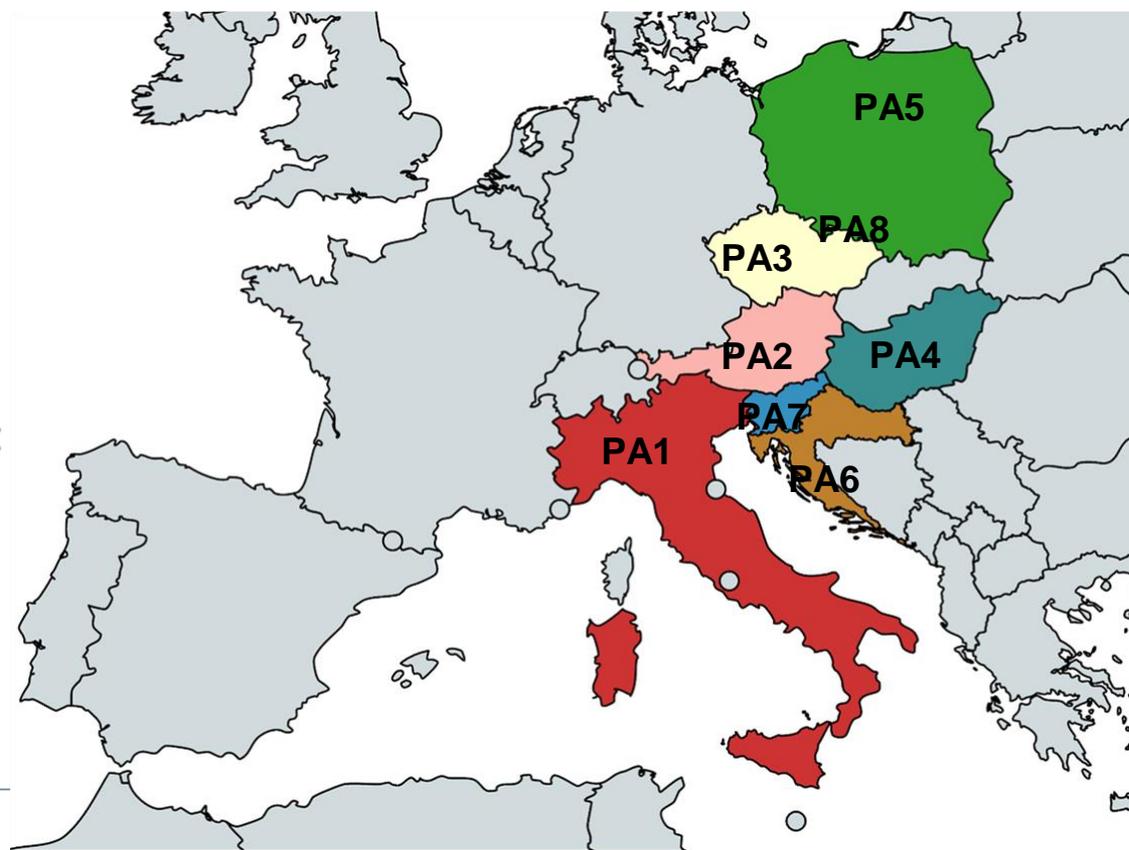
- EE financing strategies
- EE financing roadmap
- Inclusion of results in OnePlace



BOOSTEE-CE - Pilot Actions

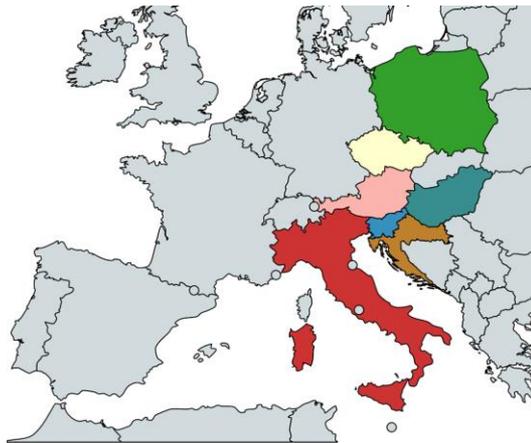
- ❑ 8 Pilot Actions (5 with funds for investments, 2 without funds and 1 with internal funds) where
 - ❑ implement EE solutions in public buildings
 - ❑ test / validate OnePlace project platform & widespread / disseminate the concept of EE

PA1			Italy
PA2			Austria
PA7			Slovenia
PA5			Poland
PA3			Czech Republic
PA4			Hungary
PA6			Croatia
PA8			



BOOSTEE-CE - Consortium

- **Research institutes:** FBK (PP1/Coordinator), Italy; EZVD (PP2), Slovenia;
- **Sectoral agencies:**
 - Energy agencies: EAZK (PP3), CZ; REAN (PP4), Croatia; MAE (PP5), Poland; EAO (PP11), Austria;
 - Development agencies: TCDA (PP6), Hungary; EUWT/NOVUM (PP12), Poland
- **Public authorities:**
 - regional: RER (PP7), Italy;
 - local: Velenje (PP8), Slovenia; Koprivnica (PP9), Croatia; Judenburg (PP10), Austria; Plonsk (PP13), Poland; *Zlin (PP14), CZ; Tolna (PP15), Hungary;*



BOOSTEE-CE - Liaisons

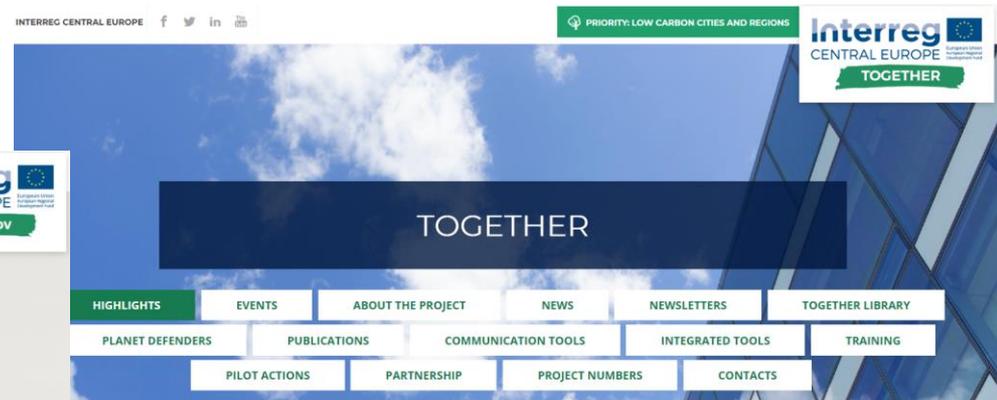
Liaisons with other Interreg CE projects to exchange good practices, data and participate at joint events:

- **TOGETHER:**

<https://www.interreg-central.eu/Content.Node/TOGETHER.html>

- **Citiengov**

<http://www.interreg-central.eu/Content.Node/CitiEnGov.html>



BOOSTEE-CE - OnePlace web platform

The Online Energy Platform

OnePlace

<https://oneplace.fbk.eu>



MARKETPLACE
LIVING ENERGY MARKETPLACE
MORE



CITIES
ENERGY EFFICIENT CITIES
MORE



FINANCING
FINANCING ENERGY EFFICIENCY
MORE



3D EMS
3D EMS
MORE



One Place

The Online Energy Platform



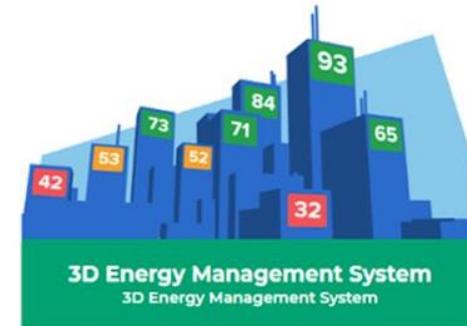
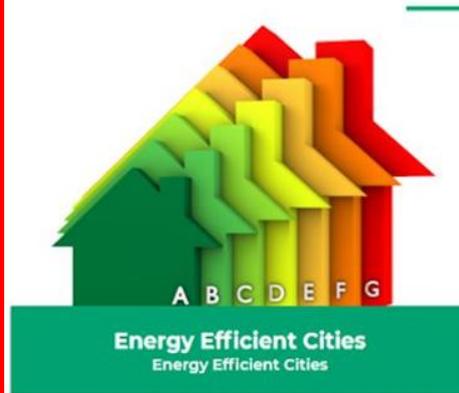
4 interlinked modules, freely accessible to citizens, policy makers, scholars and energy planners in order to improve the governance and understanding of energy efficiency in (public) buildings.

Modules provide (i) information on energy devices and experts, (ii) good practices within energy efficiency sector, (iii) national & EU resources for energy efficiency planning and (iv) 3D city models to access and visualize energy-related data



One Place

The Online Energy Platform



Living Energy Marketplace (LEM) aims to connect customers interested in energy efficiency projects to qualified contractors (architects, engineers, auditors, craftsmen, technicians and installers, energy agencies etc.) in order to scale up investments in energy efficiency and to reduce information barriers. It is basically a **database of devices and experts** to empower potential investors to make energy-wise decisions.



Living Energy Marketplace

Living Energy Marketplace aims to connect customers interested in energy efficiency projects to qualified contractors (architects, engineers, auditors, craftsmen, technicians and installers, energy agencies etc.) in order to scale up investments in energy efficiency and to reduce information barriers. It also contains links and information covering the electronic & electric appliances to empower potential investors to make energy-wise decisions.



Device database

Here you can find links to databases covering the electronic & electric appliances. This databases can help you to make energy-wise decisions if you are considering buying this kind of products.

[View more](#)



Experts Database

Contains database of links to experts in the field of architecture, engineering, energy efficiency, renewable energy sources etc. This database is meant to serve as a connection point between customers interested in energy efficiency projects and qualified contractors.

[View more](#)

It contains links and **information** about the **electronic & electric appliances** to empower potential investors to make energy-wise decisions as well as **links to experts** in energy efficiency projects and qualified contractors.



One Place

The Online Energy Platform



The **Energy Efficient Cities (EEC)** module is an **exchange platform of experiences** and identification of **good practices** within energy efficiency sector for public authorities and other public users. It demonstrates the range of approaches and measures various cities have used to undertake efficiency improvements and thus helps to guide cities in designing effective urban energy efficiency policies and programs.



BOOSTEE-CE - OnePlace - EEC module



Smart metering system in kindergarten Loptica

Koprivnica, Koprivnicko - krizevacka County, Croatia

The whole process of SM system implementation in kindergarten Loptica started with the first month of 2018 when the needs have been defined. Current state of the building was analysed. After that, market research was conducted in March 2018 to explore possibilities of available SM systems. In April, tech guys... [...Read More](#)



Low energy reconstruction and repurpose of existing building in former military complex

Koprivnica, Koprivnicko, Croatia

The subject of this project was the reconstruction and repurpose of existing building in the former "ban Krsto Frankopan" military complex in Koprivnica for the purpose of forming a study space for the Media University - journalism studies, media design studies and business and management studies in media. Former military... [...Read More](#)



Thermo-modernisation of educational buildings

Warszawa, Masovian Voivodeship, Poland

The investment included thermal modernization of selected educational buildings in the Capital City of Warsaw. Warsaw. Through this undertaking, energy efficiency has improved in 4 educational facilities. During the investment, the sources of thermal energy were replaced for satisfying the needs for domestic hot water as well as thermo-modernization works... [...Read More](#)

It contains some 20+ (constantly updated) **Best Practices** from 7 CE countries about **energy efficiency of buildings** and smart metering. Each best practice contains basic information, system characteristics, financial sources and financing details and project implementation benefits.

One Place

The Online Energy Platform



The **Financing Energy Efficiency (FEE)** module is the visual **presentation** of the transnational **strategy** outcomes, **financial road maps**, examples of the **financial best practices** and practical steps how to use the national & EU-level resources.



BOOSTEE-CE - OnePlace - FEE module

Financing Energy Efficiency

The Financing Energy Efficiency module is the visual presentation of the transnational strategy outcomes, financial road maps, examples of the best practices and practical steps how to use the national & EU-level resources.



Comparative analysis

[View more](#)



Transnational EE financing strategy

[View more](#)



Transnational methodological framework

[View more](#)

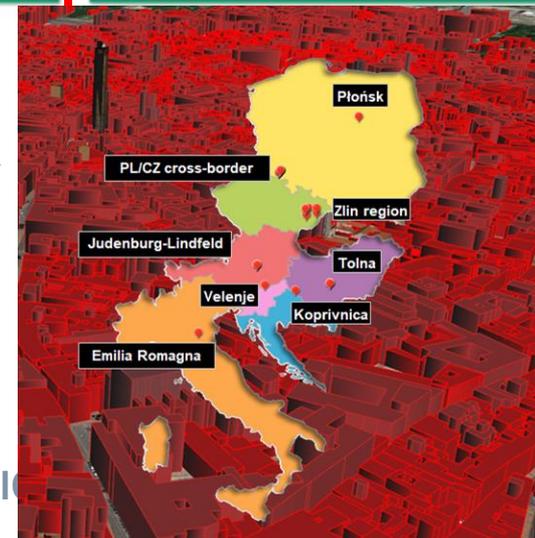
It contains comparative analysis of **financial schema** in CE countries, transnational EE **financing strategy**, **EE financing roadmaps** for public infrastructures in CE municipalities, **best practices** and investments return models in energy efficiency financing, an **EE financing project calculator** to plan investments, etc.

One Place

The Online Energy Platform



3D Energy Management System (3DEMS) is a module (viewer) to visualize energy information / uses / losses / PV potential / audit certificates of (public) building using 3D building/city models.



BOOSTEE-CE - OnePlace - 3DEMS module

OnePlace
The Online Energy Platform

Pilots and cities ▾ PA3 - Zlin_Kroměříž, Czech Republic



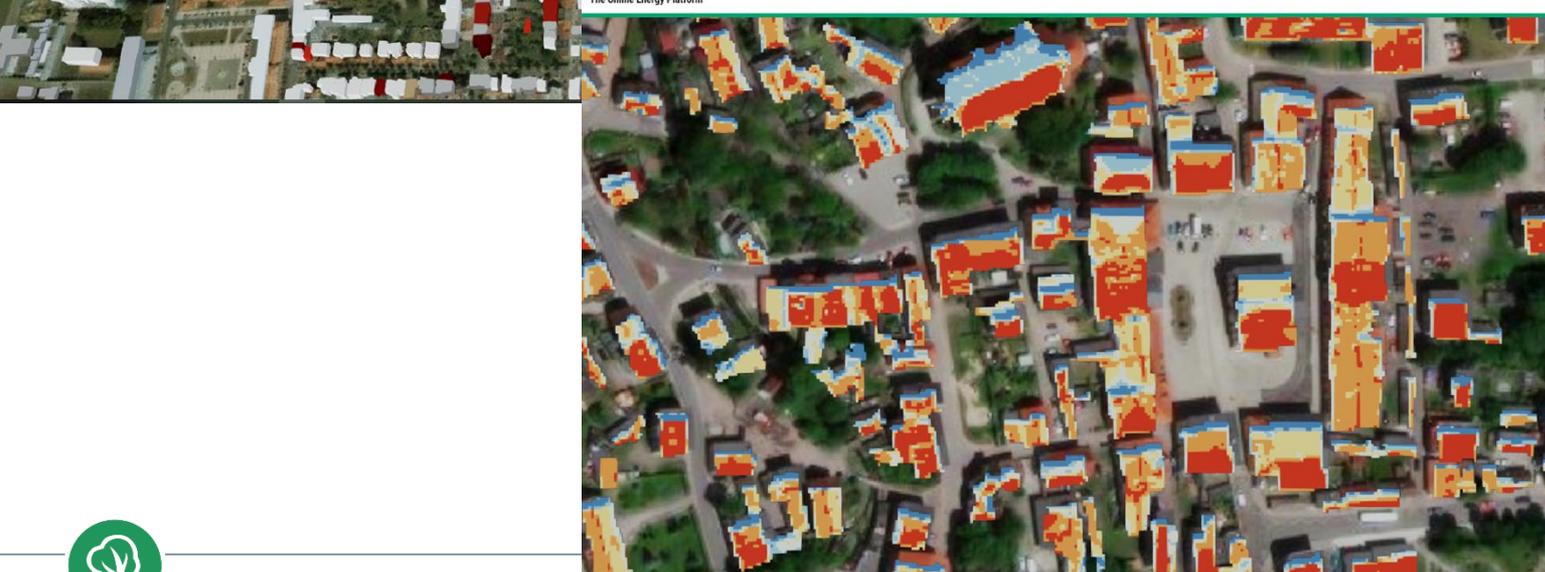
Zlin X

- Building type: Building for living ✓
- Height [m]: 10.38 ✓
- Extended attributes (11)
- Area [m²]: 200.8329 ✓
- Building ID: 20526 ✓
- House number: 194 ✓
- House number class: Building with a house number ✓
- Number of flats: 2 ✓
- Number of floors: 2 ✓
- Perimeter [m]: 78.14841 ✓
- Type of construction: Combination of materials ✓
- Type of heating: Local heating for flats ✓
- Set of 5 Elements
Orange, Red

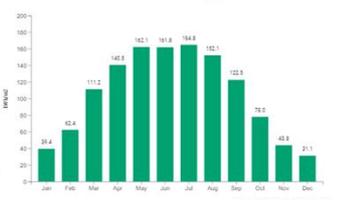
Clear Apply

OnePlace
The Online Energy Platform

Solar maps ▾ PA3 - Lubawka, Poland



Solar irradiation through year

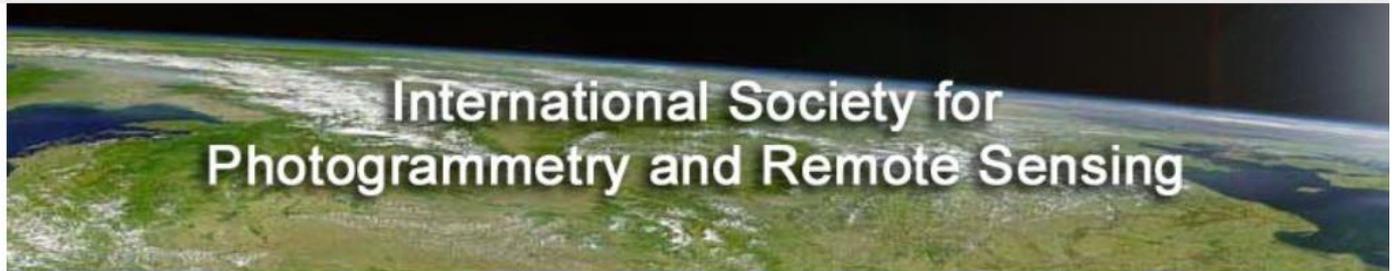
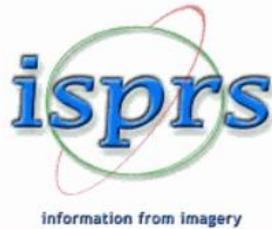


Month	Solar irradiation [kWh/m ²]
Jan	38.4
Feb	42.4
Mar	111.2
Apr	142.8
May	152.1
Jun	161.8
Jul	164.8
Aug	121.1
Sep	72.0
Oct	42.8
Nov	21.1
Dec	21.1
Sum	1269.6

Sum: 1269.6 kWh/m²

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Sum





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GEOSPATIAL DATA FOR ENERGY EFFICIENCY AND LOW CARBON CITIES – OVERVIEW, EXPERIENCES AND NEW PERSPECTIVES –

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Keywords: GIS, energy efficiency, light pollution, spatial planning, geodatabase, 3D city modeling

Abstract. The use of Geographic Information Systems (GIS) and their integration with 3D city models have become a common and powerful asset of cities for planning, visualization and decision-making operations in the fields of energy management, energy efficiency as well as transportation, public infrastructures, etc. The use of such solutions in urban spaces is still confined and mainly applied to visualization purposes (e.g. Google Earth) although geodata and spatial analyses can solve many problems towards the creation of smart cities. This paper presents an overview of various activities using spatial and non-spatial energy-related data integrated with 3D city models into GIS environments. It reviews existing solutions and reports two ongoing projects which deal with geospatial data for better planning and management of energy efficient public lighting and almost zero-consumption public buildings.

