

DELIVERABLE T2.2.2

**D.T2.2.2 – Information integration & visualization into 3D
Energy Management System (EMS) webGIS**

10/2018





D.T2.2.2 – Information integration & visualization into 3D Energy Management System (EMS) webGIS

A.T2.2 Development of an advance 3D Energy Management System

Issued by: Partner Nr. 01
 Date: October 2018

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1. Introduction and aims

The deliverable T2.2.2 belongs to the activities related to the development of a web platform to consult manage and access energy information using 3D building models (A.T2.2). In particular the document reports how the 3D Energy Management System (EMS) module of OnePlace is used to display and query energy-related info in the pilot actions (PA) of the project. The quantification of the deliverable is 7 but we report 8 results in the 8 pilot areas. The document is restricted to project partners (PP), reviewers and JS.

2. 3D EMS architecture and web viewer

The 3DEMS module (Energy Management System) of OnePlace relies on FME and Cesium tools. FME software is used to transform the shape file with the 3D building information (D.T1.2.3) in 3D tiles. The 3D tiles are important in order to extrude the buildings and to extract all the data information of each building. Then the Cesium viewer renders online all 3D data on top of geographic information (maps, orthoimages, etc.). For texturing the buildings with PV maps (D.T1.3.2) the georeferencing information of the maps are used in order to project the raster information on top of the 3D geometries.

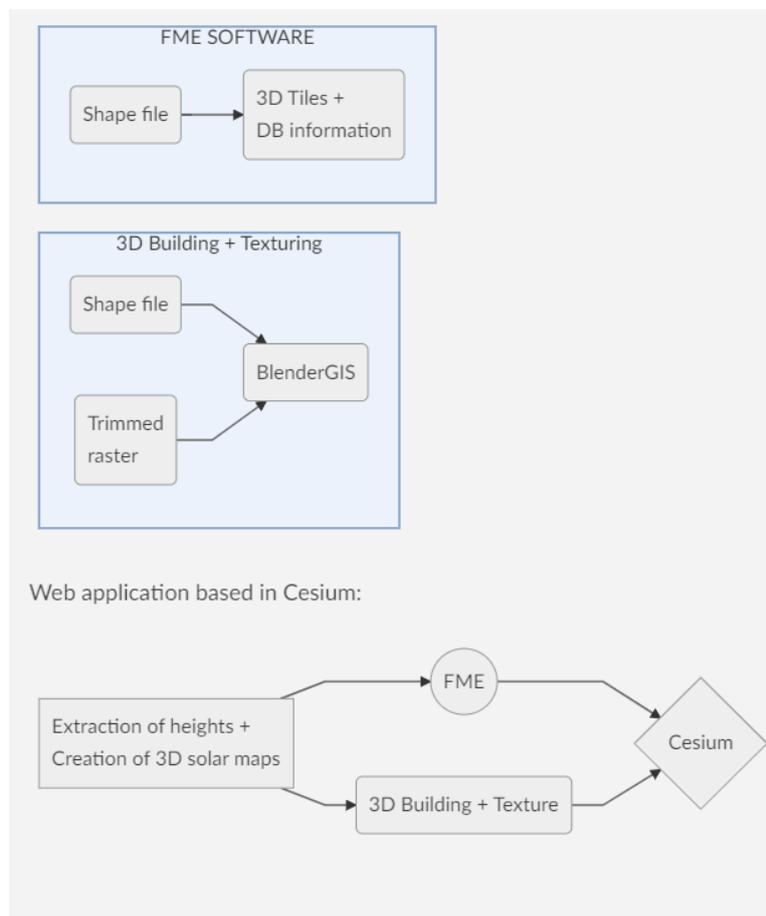


Figure 1: Architecture of the 3DEMS module in OnePlace.



The URL of the OnePlace (Figure 2), so far, is <https://oneplace.max.si/> (with the specific 3DMES module accessible at <https://oneplace.max.si/3d>). Once all developments of the entire platform and modules will be over, the platform will be transferred under the LP/PP1 server.

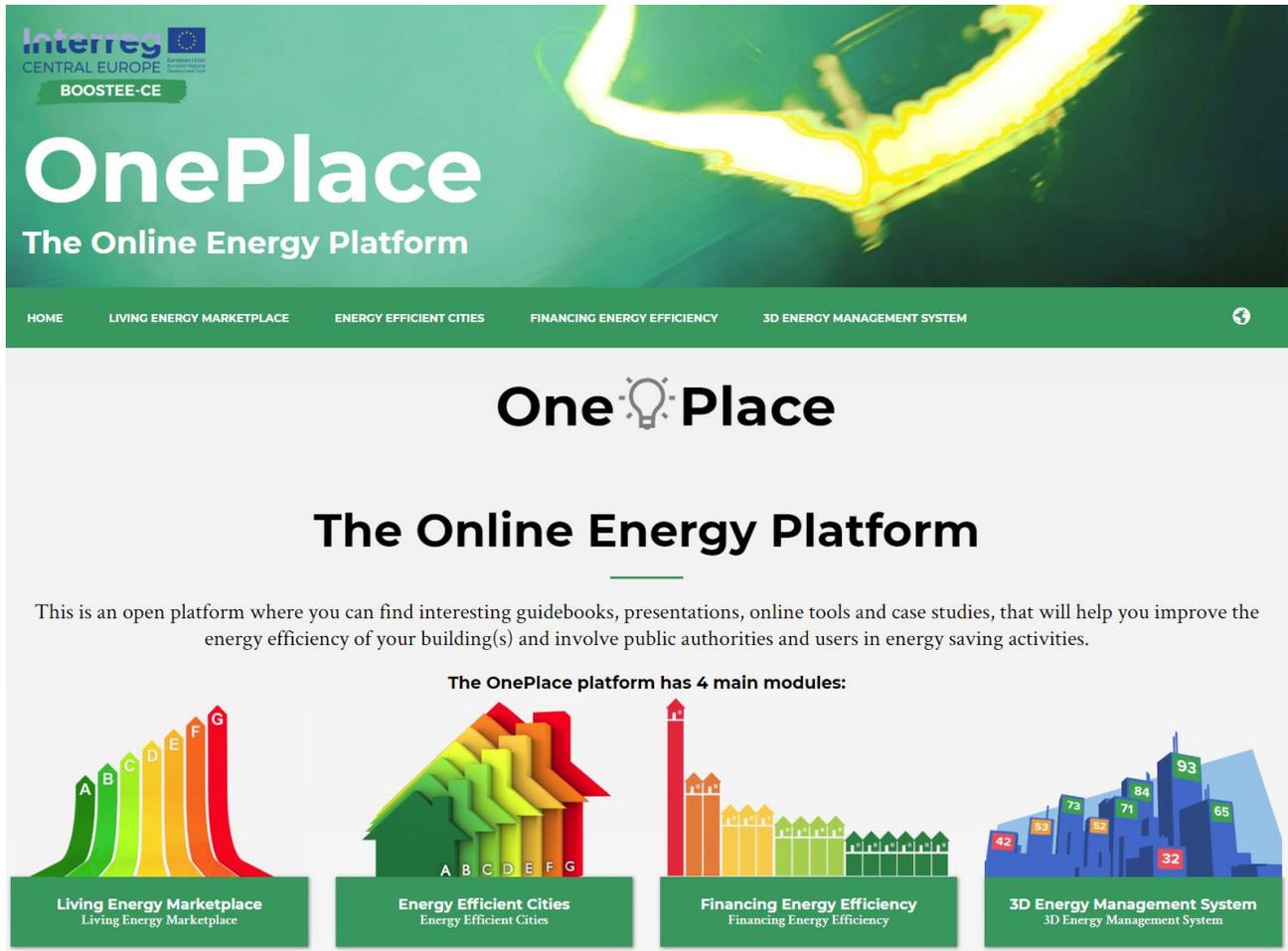


Figure 2: The entry page of OnePlace in its actual layout. The 4 modules (Living Energy Marketplace – LEM, Energy Efficiency Cities – EEC, Financing Energy Efficiency – FEE and 3D Energy Management system – 3DEMS) are visible and accessible from the main page.

3. Visualization of 3D building models and heterogeneous information

The OnePlace module 3DEMS (Figure 3) allow users to access pilot locations in a web viewer that renders a 3D representation of the landscape based on satellite imagery or map information together with 3D geometries of buildings (D.T1.2.3). Such 3D building can be “clicked” in order to pop-up and access heterogeneous information (D.T1.1.3), including energy audit certificates

In the following figure, some of the generated queryable 3D city models are shown as screenshots of the developed web platform. The platform allows to visualize more than 7 locations (as requested target in the project Application Form) as for the CZ/PL cross-border area we have two municipalities (Zacler and Lubawka) and for the Zlin area we have 5 municipalities.



BOOSTEE-CE

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3D ENERGY MANAGEMENT SYSTEM

Cities

Home

Color by attribute

- Default
- By height
- By area
- By perimeter

Filter

By height
 Larger than
 Value for filter

 Filter

Display options

- Shadows

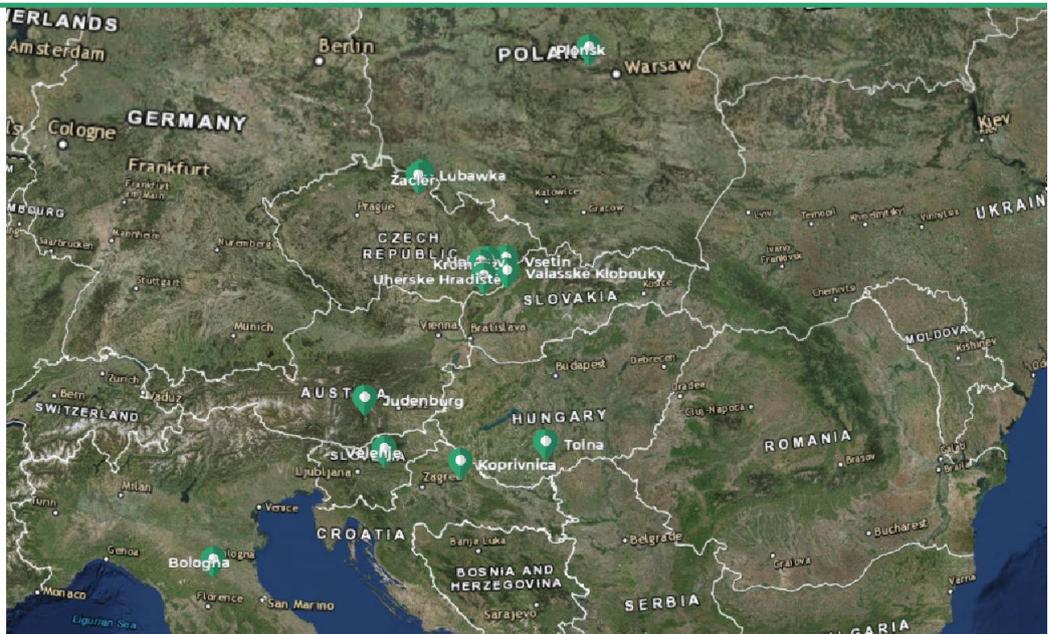


Figure 3: The entry page of 3DEMS module in OnePlace. The pilot areas are pointed out and accessible to see the generated 3D building models which can be queried to access the collected energy-related information.

OnePlace
 The Online Energy Forum



3D ENERGY MANAGEMENT SYSTEM

Cities

Bologna, Italy

Color by attribute

- Default
- By height
- By area
- By perimeter

Filter

By height
 Larger than
 Value for filter

 Filter

Display options

- Shadows



Figure 4: 3DEMS on PA1 – Emilia-Romagna region, Italy (PP7)



3D ENERGY MANAGEMENT SYSTEM

Cities

Judenburg, Austria

Color by attribute

- Default
- By height
- By area
- By perimeter

Filter

By height

Larger than

Value for filter

Filter

Display options

- Shadows



7fcb62da-163f-41d1-9f93-57515b1c7e8c

STAND: 07.12.2015
 KGNAME: Judenburg
 HERKUNFT: BEV
 BEZNR: 608
 OBJECTID: 3178
 LANDNR: 6
 GEMNR: 60806
 BEZNAME: Judenburg
 SHAPE_Area: 416
 SHAPE_Leng: 113
 GEMNAME: Judenburg
 KG: 65013
 KGNR_C: 65013
 heigh: 13
 KGNR: 65013
 LANDNAME: Steiermark

Figure 5: 3DMES on PA2 – Judenburg, Austria (PP10).



3D ENERGY MANAGEMENT SYSTEM

Cities

Plonsk, Poland

Color by attribute

- Default
- By height
- By area
- By perimeter

Filter

By height

Larger than

Value for filter

Filter

Display options

- Shadows



126e4c0b-9ebb-4f89-8e78-723643a0620a

koniecWers:
 x_aktual_1: 2015-10-26
 x_doklGe_1:
 x_informDo:
 wersjald: 2015-10-26T00:00:00
 funOgolnaB: 1122
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 x_aktualno: 2015-10-26
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 x_zrodloDa: EGIB
 x_kodKar_2: 0050_316_2
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 x_rodzajRe: ZP
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 x_kodKar_3:
 x_doklGeom: 0
 EGIB_lokal: 142001_1.0217.121/9_4_BUD
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 gml_id: OT_BUBD_A.20511
 x_katDoklG: Dok
 x_uzytkow: Uzytkownik14.xml
 x_kodKar_1: 0025_317_1
 funSzcz: 2

Figure 6: 3DMES on PA5 - Plonsk, Poland (PP13).

OnePlace
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3D ENERGY MANAGEMENT SYSTEM

Cities

Koprivnica, Croatia

Color by attribute

- Default
- By height
- By area
- By perimeter

Filter

By height
 Larger than
 Value for filter

Display options

- Shadows

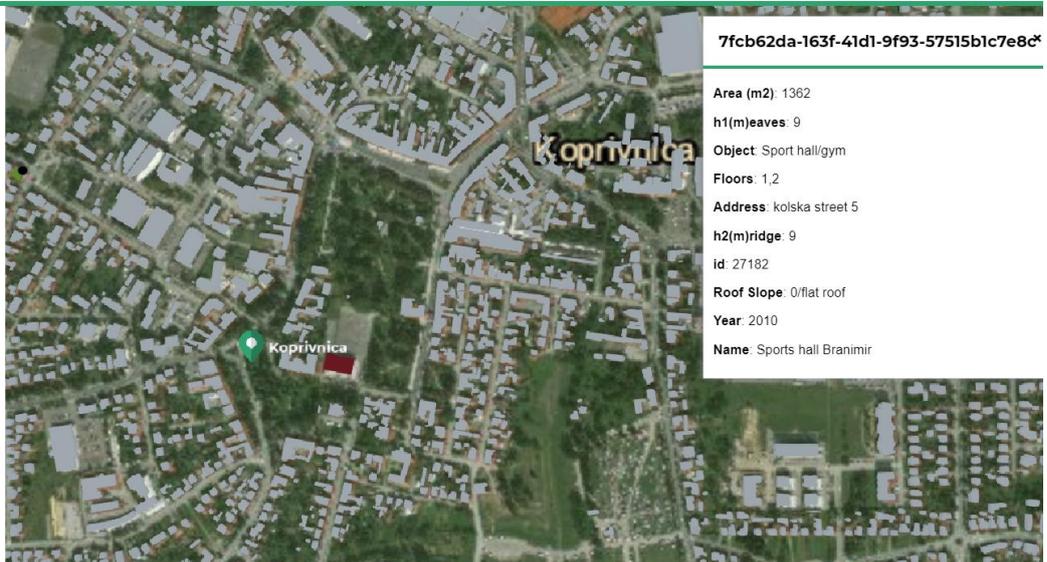


Figure 7: 3DMES on PA6 - Koprivnica, Croatia (PP9).

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3D ENERGY MANAGEMENT SYSTEM

Cities

Velenje, Slovenia

Color by attribute

- Default
- By height
- By area
- By perimeter

Filter

By height
 Larger than
 Value for filter

Display options

- Shadows

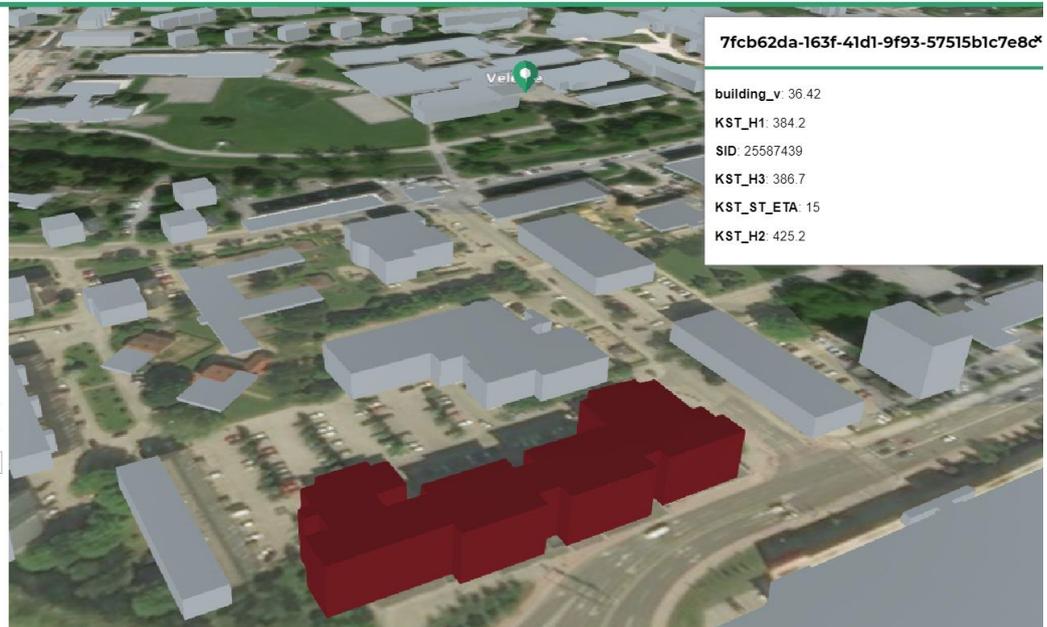


Figure 8: 3DMES on PA7 – Velenje, Slovenia (PP8).

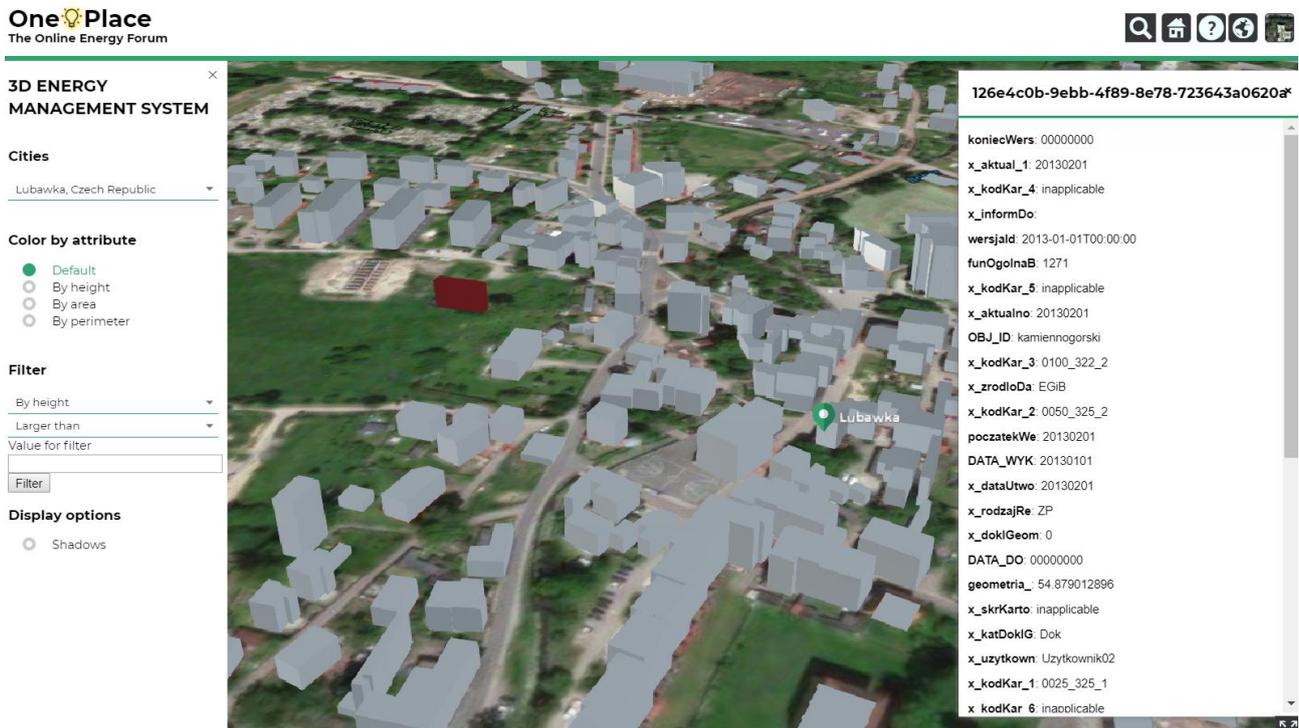


Figure 9: 3DMES on PA8 - the CZ-PL cross-border region (PP12).

4. Conclusions

The document reported the realized 3D city models (D.T1.2.3) accessible in a web viewer (3DEMS module of OnePlace) with some query functionalities. The viewer is basically a kind of webGIS that allows users to interactively navigate a map or 3D building models of a pilot location, select a building of interest and retrieve energy and other cadastral/building information, including non-spatial data. The platform is under finalization and, at its final stage, will allow to access to various type of energy information that public buildings have.