DELIVERABLE D.T2.2.3

Functionality testing and validation of the 3D city models with energy audit functions

Version 1
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D.T2.2.3: Deliverable

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

Feedback on 3D EMS

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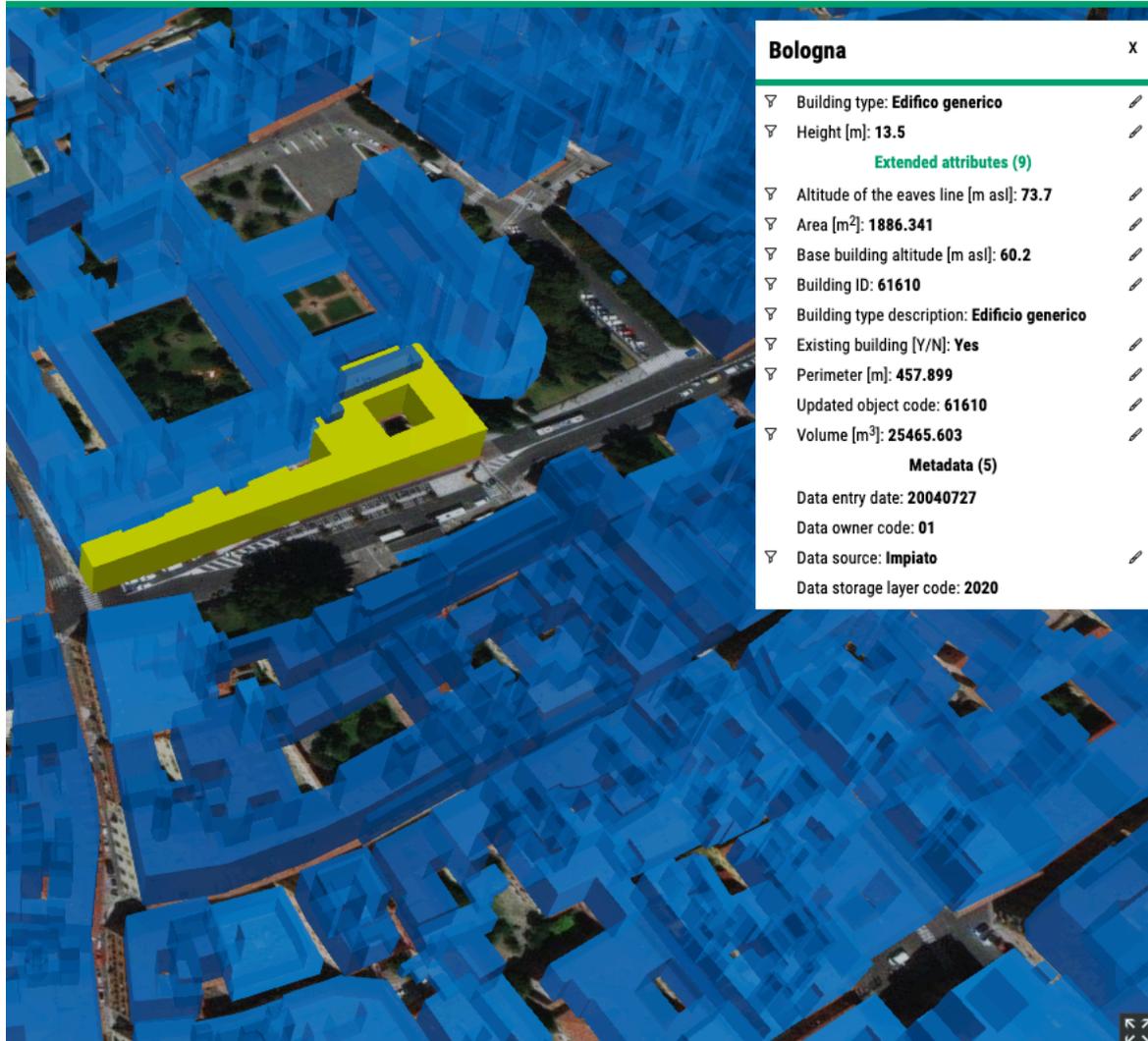| Authors		
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1. Introduction

The 3D Energy Management System (EMS) is one of the four modules of the BOOSTEE-CE OnePlace platform. 3DEMS is probably the most important and technological tool developed by the project consortium. It is a simple yet powerful 3D GIS-based tool that provides a 3D representation of a selected set of buildings and is able to display energy-related information (i.e. consumptions, energy audits, building attributes, solar power potential, etc.) available for a building, just clicking every 3D geometry and grabbing information from external geospatial databases.

Why create such an online system?

The main advantage of the 3DEMS over more traditional applications is its simpleness and intuitive online solution that building operators, energy planners and municipality staff can use everywhere and every time without the need of special expertise. It is accessible without having to install any program, as it is a web-based tool requiring only a web browser to function.

What is it useful for?

The main function of the 3DEMS is to help building operators, energy & urban planners, municipality staff to better understand energy use and flows within a building in a much more graphical way, having a view also to the surrounding of a building and its location in the city. 3DEMS allows to share, visualize and query energy-related information to citizens and public authorities. It can be combined with smart metering live energy data and, being customizable, a wide range of data can be stored, displayed and managed within the platform. 3DEMS combines the most important functionalities of a GIS/CAD application into an easy-to-use web application which can be easily replicated and adapted to any municipality.

2. Questionnaire

Please select your country

☐ Austria
☐ Croatia
☐ Czech Republic
☐ Hungary
☐ Italy
☐ Poland
☐ Slovenia

1. Do you find the display of attributes of pilot buildings

	1	2	3	4	5	
not understanda ble	☐	☐	☐	☐	☐	easy to understand

Do you have any suggestion for improvement?

_____

_____

2. Would you prefer the attributes in local language?

☐ Yes
☐ No

Where the numerical attributes or attributes with coded or text values are available for more than just one building, the analysis / comparison can be performed.

Two different analyses are available:

- *Filter analysis:*
  On numerical attributes the following operations are possible: Equal
  Not equal
  Less than
  Less or equal
  Greater than
  Greater or equal

  On attributes with coded values the following operations are possible: Equal
  Not equal

  On attributes with text values the following operations are possible: Equal
  Not equal
  Regexp*

  *regular expression – matching a pattern in text

- **Colour coding** of attribute classes: Visualisation based on colour coding of attribute values segmented into classes.
  Possibility to choose number of classes or class values and visualisation of single class.
  On numerical attributes and attributes with coded values filtering according to the classes is possible.

3. Do you find the analysis of the attributes easy to perform?

	1	2	3	4	5	
Not easy at all.	☐	☐	☐	☐	☐	Very easy

4. Do you find these two analysis (filtering, colour coding) useful?

	1	2	3	4	5	
Not useful at all.	☐	☐	☐	☐	☐	Very useful

Do you have any suggestion for improvement?

_____

_____

5. Would you prefer having additional documents attached to the building like thermal acquisition photo or energy audit document, if available?

□ Yes
□ No

6. If more energy data would be available, do you find the 3D EMS useful for estimating energy performances in public buildings and producing visualizations?

	1	2	3	4	5	
Not useful at all.	□	□	□	□	□	Very useful.

7. If more energy data would be available, do you find the 3D EMS useful for delineating and prioritizing intervention areas/districts for large-scale, concerted and cost-effective investments aimed at building refurbishment?

	1	2	3	4	5	
Not useful at all.	□	□	□	□	□	Very useful.

8. Do you see an opportunity for using 3DEMS in your daily work?
    □ Yes
    □ No

9. Would you attend a training seminar on using the 3DEMS tool, if it was organized in your country?
    □ Yes
    □ No

3. Questionnaire results

Some 10 replies arrived from potential users (city planners, managers, energy experts, etc.). Overall, the comments show that there is a lot of interest in 3DEMS module of OnePlace and its practical use. The module could be improved / extended for a real daily use in public administrations.

In summary, the replies underlined that:
- 3DEMS GUI and functionalities are easy to be understood and used;
- PV visibility could be in 3D instead of 2D;
- 3D buildings are seen as an added-value of the tool as they allow a better understanding of the urban situation;
- ideally, the displayed attributes could be more and more specific to energy, maybe not only for buildings (e.g. streets lights);
- attribute in Italian would be preferable, although English is fine;
- filtering options could be improved;
- a daily use of 3DEMS, if extended with more attributes, is foreseen.

4. Conclusions and recommendations

Recommendations were passed to developers and will be taken into consideration in the next project meeting.