

## DELIVERABLE T3.1.5

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**D.T3.1.5 – Application of OnePlace (PA4) for  
improving EE in public buildings in Tolna (HU)**

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# D.T3.1.5: Application of OnePlace (PA4) for improving EE in public buildings in Tolna (HU)

## A.T3.1 Implementation of pilot actions for EE improvement

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## 1. Introduction and aims

This deliverable is a kind of investment report that contains information and data about devices and technology implemented in the pilot action buildings.

Analysis of selected energy efficiency improvement measures implemented in pilot actions is aimed at defining the possibilities of how to better manage/monitor energy and use/consume in a more rational manner.

This document is also about the testing of the OnePlace platform as a design tool supporting the acquisition and dissemination of knowledge on the improvement of energy efficiency in buildings.

The aim of the document is to present investment activities and goals to be achieved as part of the tasks undertaken for each pilot action.

## 2. Identification of problem areas

Each project or investment should be preceded by an inventory, analysis of the current state and identification of the biggest problems in the building, which cause its energy and ecological inefficiency. These aspects also affect the financial issue and are a consequence of higher operating costs for facility users.

Three buildings are subject to the Pilot Action in Tolna: the Sports Hall, the City Hall and the Cultural Centre “Lovarda”. There are quite different issues in each building, which can be described as:

- not having separate meters in different parts of the Sports Hall operated by different organizations. There is an energy-saving potential even by just being able to separate consumption of these operators which will make each of them more conscious and being able to avoid the current “tragedy of the commons” practice. This will also allow the Municipality to share the bills according to the actual consumption.
- The newly installed solar panels on the City Hall is not monitored thoroughly enough, the PA allows the efficiency of this PV capacity can be tracked.
- Gas meters will be installed in the Cultural Centre, which is a building erected in the XIX. Century as a stable in a garrison. The buildings are repurposed almost to their full extent, and the Centre being not only a big open space for various events certain parts can be monitored in better resolution potentially leading to improved usage patterns and ultimately, higher energy efficiency as it was reported by the operator that they consider the gas consumption of the building to be very high.
- All three buildings will receive electricity and gas meters therefore the Municipality, which keeps track of the consumption on a monthly basis will now be able to track energy flows automatically.

Each investment is the result of the assumptions made therefore the pilot action has defined its own goals, which it will achieve in the perspective of the duration of the BOOSTEE-CE project. The objectives also point to existing problems that need to be minimized or eliminated entirely. The goals in this pilot action are listed below:

1. Detailed measurement of the energy flows in the building in order to reveal lavish usage, leakages, malfunctions and to be able to monitor the consumption of the building parts with different functions
2. Increasing the comfort of the building use
3. Easier operation of the building
4. Promoting and disseminating knowledge about energy efficiency measures in buildings



### 3. Research on EE measures for the PA

Well-defined goals have allowed the right choice of measures and devices to improve energy efficiency. Analysis and review of available technologies that were used to implement the pilot action will allow for better understanding of what was done, how and why.

The energy consumption characteristics of the three buildings concerned by the pilot action was mapped to determine the optimal technical requirements of the investment, which will be the following:

- electricity metering in separately operated parts of the buildings and overall electricity metering;
- two smart gas meters will be installed on the currently operating 2 gas boilers in the Lovarda Cultural Centre, which also requires the plans to be submitted to the DSO, while the main gas meter is already equipped with a transmitter, however the data has to be acquired from the gas provider; also metering the air temperature in the arena is crucial in order to be able to set the heating parameters in a more efficient manner;
- the Municipality installed solar panels on the roof of the Town Hall, load data is transmitted to an online system which data has to be integrated into a common remote monitoring system.

The intelligent remote energy meters enable automatic data transmission on energy consumption to manage and possibly reduce energy bills and to finetune building use patterns, investment priorities using this detailed data.



Figure 1: Investment activities photos for the PA4. Source: TCDA

### 4. OnePlace platform testing

Implementation of the pilot action consists of two aspects:

- technical, i.e. installation of smart metering and energy monitoring system for electricity, heat and gas consumption (described in chapter 3);
- social / promotional like OnePlace platform use.

This chapter is devoted to the promotional aspect and describes the testing and structure of the project platform below.



The OnePlace platform consists 4 different modules: Living Energy Marketplace; 3D Energy Management System; Energy Efficient Cities; Financing Energy Efficiency.

The first one is an online database helping to understand all different kinds of energy efficiency measures, electronic devices and offering qualified contractors who can carry out energy efficiency investments.

The second one is a webGIS system which can navigate a map of an urban environment, select a 3D building of interest and retrieve the energy audit and other cadastral/building information. The 3D Energy Management System aims to harmonize the different data sources in one database and visualize them.

Next module enables the exchange of experience and good practices between regions for public authorities and other public actors.

The last one is an attractive visual presentation of the transnational strategy outcomes (financial road map), examples of best practices and practical steps to use the national and EU-level resources. This module also tries to capture and present the methods of financing energy efficiency investments that will be transferred to the participating regions' Energy Efficiency Roadmaps.

The current content of the OnePlace platform has been tested by project partners and selected stakeholders. The chosen method of reviewing is the questionnaire. This choice was considered optimal and the best. It included a short time to gather feedback and comments. Five respondents filled the questionnaire, two energy experts, and three Municipality staff members. They had difficulties with the majority of the content, because their English skills did not match with what the content required. With regards to the 3DEMS, users found it easy to understand the range of attributes, one commented however on the range of the metadata which was found to be lacking which is due to the lack of metadata available on general buildings (pilot buildings have more metadata). The acquisition of such data is not useful for Municipalities since they do not really deal with private buildings. More data (smart metering, energy audits) is demanded by the testers unanimously.

## **5. Application of OnePlace platform in PA4**

The OnePlace platform has also been tested in the conditions of the pilot action in Tolna. It has been confirmed that the platform works well and is useful to a certain extent. The visual representation of the buildings was deemed as optimal and attractive however the range of metadata was quite lacking due to the limited amount of data the Municipality has especially regarding private buildings. However, the Municipality does not really deal with private buildings, homes and there is no general database about the energy efficiency of private buildings. Energy certificate is required by the Government Decree 176/2008. (VI. 30.) when selling private buildings, therefore energy audits are not carried out necessarily for each building. D.T2.3.3, feedback on the 3DEMS has shown, that the majority of the users would use 3DEMS in their daily work as they could use it for prioritizing investments.

## **6. Conclusions**

The activities described in the pilot action in Tolna represent a good practice. They can serve as a model for carrying out investments aimed at improving energy efficiency consisting of installing smart metering and energy monitoring system for electricity, heat and gas consumption.

After the initial mapping of what could be useful for the Municipality of Tolna, a discussion started with the contractor, the Municipality, and with TCDA as the investor, which has revealed additional functions of the smart meters and especially the IT-background in particular. Whereas the currently installed meters mainly serve to control the energy flows and to indicate technical malfunctions, the system will



be future-proof in terms of being capable to accommodate more meters and even some automation function to (i) increase the ease of the buildings usage and (ii) to offer additional energy savings with programmed heating, sun protection, etc. Increased public awareness will be gained by displaying current energy consumption figures in visible parts of the buildings.

At this stage there are no conclusions to speak of however determining the technical details and the range of data to be collected can be described as a good practice in terms of using available data on consumption and personal consultations with the building operators on their needs to define what type of meters will be used for what purpose.

The information from this study will be useful and used for documents D.T3.2.1 and D.T3.2.2.