PROJECT:

ICT Platform for Holistic Energy Efficiency Simulation and Lifecycle Management Of Public Use Facilities

DELIVERABLE TITLE:

HESMOS Architecture

Deliverable Number:

D 2.2 (public)

WORK PLAN:

The **objectives** of WP2 are the development of the software architecture for the **Integrated Virtual Energy Laboratory (IVEL),** the identification of required components to enable various energy simulations and lifecycle studies where a great part of the functionality will be provided via outsourced web services and remote access to third-party tools and, last but not least, the development of an energy-enhanced BIM framework (eeBIM).

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EXECUTIVE SUMMARY:

The IVEL is the overall HESMOS platform, which is developed using the service-oriented architecture (SOA) approach. It will include (1) services for energy and emission simulation that would typically precede decisions for design and retrofitting tasks initiated in result of detected under-performances in the facilities' management, (2) services for operative energy-related analyses regarding facilities control, operation and lifecycle management as well as (3) local background CAD and FM applications. The kernel of the platform will be provided by advanced BIM-based CAD and FM tools extended to support preliminary and final architectural design (including cost calculation and bills of quantities) but also capable of interacting with the energy analysis and simulation services.

This Deliverable covers two tasks of the overall work performed in WP2, namely:

- T2.1 Components Specification

- T2.3 Architecture of the platform and principal service orchestration

The deliverable report is structured into four parts:
In the **first part**, we present the overall concept of the IVEL and the technical scenarios for using it. This involves three principal ways to integrate the product of HESMOS in practice.
In the **second part**, the software architecture and its component modules are outlined. We define seven modules to cover the functionality of the user scenarios and the requirements identified in Deliverable D1.1. Three of these modules (Design, Facility Management, Public Access) are dedicated to the interaction of the end users with the IVEL, three others

Deliverable Partners:

(Monitoring, Energy Computing and Reporting) are responsible for the specific energy-related functionality of the IVEL, and one module (IVEL Core) provides the necessary basic and advanced integration and coordination components.

In the **third part**, the identified components are specified in detail using a harmonised template. These components include third-party off-the-shelve applications, local and batch applications that will be extended for HESMOS, as well as web applications and web services that will be developed from scratch.

Finally, in the **fourth part**, the technical processes taking place on the IVEL in the identified user scenarios are defined, to provide the basis for adequate information exchange, service orchestration and technically grounded workflows.
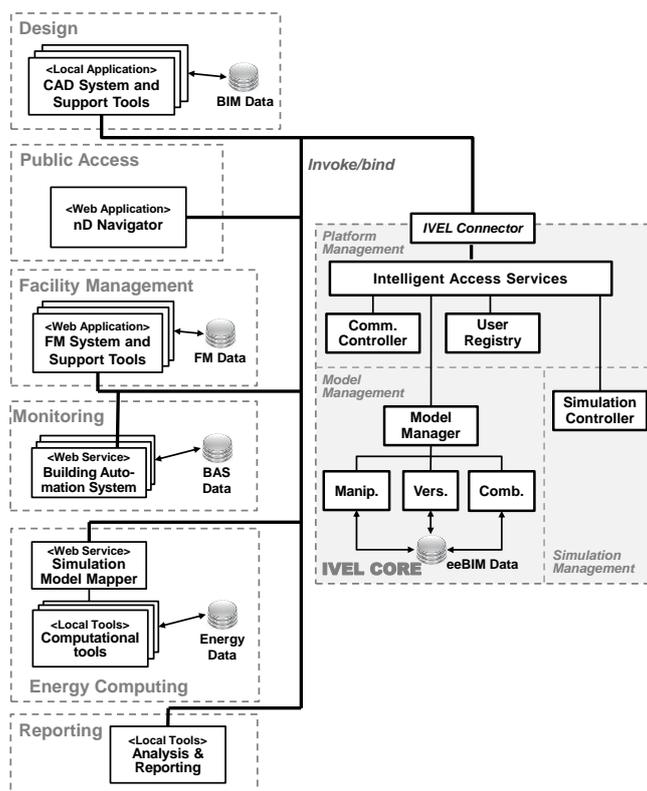

FIGURE: Architecture of the IVEL

WEB APPLICATIONS:

- nD navigator
- FM System and Support Tools

LOCAL APPLICATIONS:

- CAD System and Support Tools
- Reporting Tools

BATCH APPLICATIONS:

- Energy Solvers

WEB SERVICES:

- IVEL Core Services
- Building Automation System
- Climate Service

TAGS:

Virtual Energy Laboratory, Service-oriented architecture, Web service, Service orchestration, Service Workflow

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SEVENTH FRAMEWORK
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