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

HESMOS Virtual Energy Lab

DELIVERABLE TITLE:
BIM Enhancement Specification

Deliverable Number:
D 2.1 (public)

WORK PLAN:
The **objective** of the Deliverable 2.1 "BIM Enhancement Specification" is to provide a formal conceptual specification of an open and extensible energy-enhanced BIM framework (eeBIM), to support the data flows for energy efficient design and lifecycle management of complex facilities. It is based upon the HESMOS Deliverable 1.1 "Gap Analysis, Use Case Scenarios and Requirement Specification", which stated eight important data flows for which the user and application viewpoints are considered and the modelling requirements are highlighted.

Deliverable Main Authors:

Thomas Liebich, AEC3
Konrad Stuhlmacher, AEC3
Peter Katranuschkov, TU Dresden
Romy Guruz, TU Dresden

Co-Authors:
Nicholas Nisbet, Jens Kaiser, Burkhard Hensel, Raimund Zellner, Tuomas Laine, Marie-Christine Geißler

EXECUTIVE SUMMARY:
The Deliverable D2.1 covers the overall work performed within **task** T2.2 “BIM enhancement specification” of WP2. It is structured into **five parts**.
In **part one**, the conceptual framework of eeBIM is presented. It is based on the important data flows of the TOBE processes being the outcome of Deliverable 1.1.

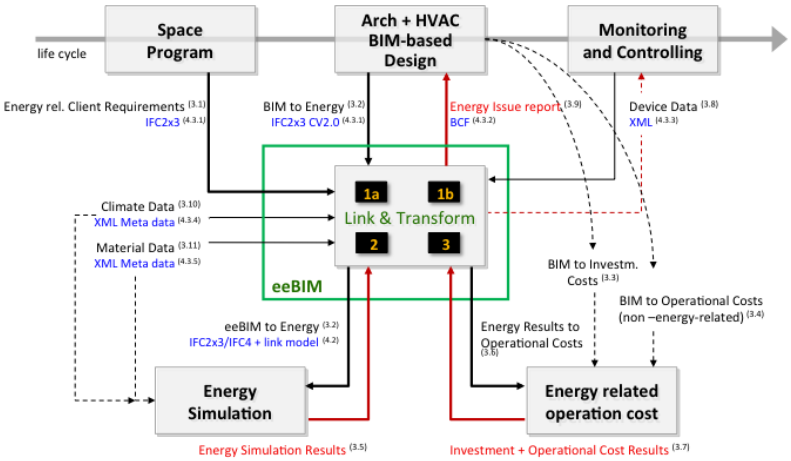

FIGURE: Generalised view of the suggested eeBIM framework

Deliverable Partners:

bam
TECHNISCHE UNIVERSITÄT DRESDEN
NEMETSCHEK
GRANLUND
AEC3

In **part two**, the overall development roadmap towards the realisation of an industry exploitable eeBIM framework following the Information Delivery Manual [ISO 29481-1] is outlined. This includes the specification of the eeBIM, but also the software architecture of the HESMOS Integrated Virtual Energy Laboratory (IVEL) and its prototype implementation.

In **part three**, the eeBIM kernel and the identified main multi-model links and model transformations are presented. A flexible link model is thereby favoured over a single all-encompassing schema.

Part four comprises the main section of the deliverable report. It focuses on the data requirements imposed by the defined data flows stipulated in part one. For each data flow, the information needs, the data source, the data format and its importance to eeBIM are shown.

Part five provides the resulting specification section explaining the components of the eeBIM framework as elementary models and the overarching link model. The main BIM data schema is based upon the international openBIM standard IFC [ISO 16739], with linked XML schemas to cover device data and other non-BIM information, and XML Meta data to supplement the data flow for external climate and material data bases. Enhancements are proposed to those selected standards and a link schema to combine them as the input for energy simulation, and investment and operational cost calculation. These enhanced and inter-linked formal data schemas constitute the energy enhanced BIM (eeBIM) specification.

Data requirements are specified by using the following subcategories:

USER INPUT – detailing what kind of data are needed to properly execute the related processes

DATA SOURCE – explaining where this data is expected to come from

DATA FORMAT – specifying the computer-interpretable syntax and form in which the data is exchanged or shared, such as IFC2x3 or XML

REMARKS – complementing the requirements description with additional details, if necessary.

The Deliverable D2.1 contains 11 tables detailing the HESMOS requirements related to various lifecycle aspects of PPP projects using the above categorisation

TAGS:
Energy-efficient building management, eeBIM, Enhancement, Process and model integration, public-private-partnership (PPP) projects, life-cycle, IDM, ISO 29481-1 ,BIM, openBIM, IFC, ISO 16739

HESMOS is a 36-month project that started in September 2010 and comprises a Consortium of one university and five industry partners.

Financially supported by

and the project partners.