

## WELCOME

This is the first issue of the biannual newsletters created to keep you informed about our project: “*Collaborative Holistic Design Laboratory and Methodology for Energy-Efficient Embedded Buildings*” (*eeEmbedded*). It is funded by the 7<sup>th</sup> Framework Programme (FP7). Its duration is 4 years. It started on the 1<sup>st</sup> of October 2013 and has a budget of nearly 11 M€. The *eeEmbedded* consortium features 14 partners from 9 European countries, covering the whole knowledge transfer chain and all key areas of research and development relevant to the project goals.

## eeEmbedded OVERVIEW

The **eeEmbedded vision** is that “*each architect, engineer and facility manager can be able to do an energy analysis and forecasts the return of invest of his building at any design and operation phase*”.

To meet this goal, *eeEmbedded* will develop an open BIM-based holistic collaborative design and simulation platform (virtual lab) to design energy-efficient buildings and their optimal energetic embedding in the neighbourhood of surrounding buildings and energy systems. The platform will be composed of several simulators covering multiple physical and mathematical models as well as information models. A new ontology-based Link Model will provide the bridge between the multi-models.

In addition, a related holistic design methodology based on hierarchical key performance indicators (KPIs) will be developed. This new methodology aims at guiding and controlling the progress of the multi-disciplinary design process. Knowledge-based templates will allow the executions of energy simulations since the early design phases.

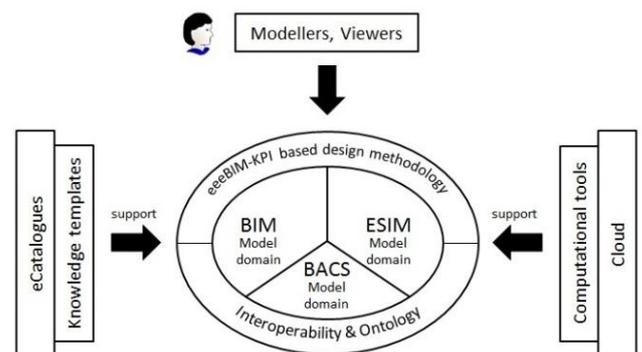
An integrated BIM –based management framework will facilitate the interoperability among the whole variety of experts and multi-models (physical and information ones) of the different domains, such as architectural, HVAC, BAS, simulation or lifecycle costs among others, during all

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the design phases, since the very early urban design up to the very final detailed one.

The virtual lab will forecast the energy performance of the building and its systems (heating, cooling, ventilation and control system) not just at building but also at district level supporting the different types of decision to be taken during the design process. Stochastic methods will also be used to minimize the risk and the vulnerability of the estimations.



eeB Concept

To validate the *eeEmbedded* technologies, two real buildings of different types and its embedding into the neighbourhood will be used as a test bench. The validation period is whole year to allow for a pre-market validation of the system.

## BASEL INTENSIVE WORKSHOP

10-12 February 2014

The whole *eeEmbedded* team had an intensive workshop for three days at the premises of partner Sauter AG in Basel. The goal of the Workshop was getting deep in the requirements, the scenarios and the interoperabilities identified in *eeEmbedded* as it was scheduled in WP1.

35 participants from 14 entities (universities, research institutes, software companies, BIM consultants and end-users) participated in this productive workshop.

Partners BAM (leader of WP1) and Technical University of Dresden (Project Coordinator) led the three days of intensive knowledge and view exchanges among partners to define the requirements and specifications of the virtual lab and its corresponding KPI-based holistic multi-disciplinary design as well as to select the most relevant use cases scenarios

To maximize the effectiveness of the Workshop, it was organized in a set of thoroughly defined parallel sessions, each attended by a small number of participants to facilitate brainstorming, followed (or preceded) by plenary sessions to inform the other participants of the results of the parallel sessions and/or motivate the discussions that would take place in the following parallel sessions.

The different topics discussed were grouped as follows:

- Simulations
- BACs
- Facility Management
- Multi-models
- KPIs
- ee-Templates
- Interoperability
- Use Cases
- Previous project
- Level of Details definition

One of the main challenges of the workshop was to identify the interdependencies between all the domains and the design phases. A big matrix (our *storyboard*) was displayed on the wall showing four design phases (urban, brief, concept and detailed designs) and eight domains

(architectural, HVAC, BAS, eSIM, Simulation, FM and lifecycle cost domains). After parallel sessions, the wall matrix was pinned with figures, sketches and ideas that were summarized in the plenary sessions. At the end of the workshop, our storyboard was fully pinned and showed a clear vision the multidisciplinary *eeEmbedded* design methodology pursued by the project.

	A: Urban Design	B: Design Brief	C: Concept Design	D: Detailed Design
1. Architectural Domain	A.1 Architectural BIM	B.1 Architectural BIM	C.1 Architectural BIM	D.1 Architectural BIM
2. HVAC Domain	A.2 HVAC BIM	B.2 HVAC BIM	C.2 HVAC BIM	D.2 HVAC BIM
3. BAS Domain	A.3 BACS	B.3 BACS	C.3 BACS	D.3 BACS
4. eSIM Domain	A.4 eSIM	B.4 eSIM	C.4 eSIM	D.4 eSIM
5. Simulation Domain	A.5 SIMULATION	B.5 SIMULATION	C.5 SIMULATION	D.5 SIMULATION
6. Construction Domain	A.6 CONSTRUCTION	B.6 CONSTRUCTION	C.6 CONSTRUCTION	D.6 CONSTRUCTION
7. FM Domain	A.7 CAFM	B.7 CAFM	C.7 CAFM	D.7 CAFM
8. Lifecycle Cost Domain	A.8 ERP	B.8 ERP	C.8 ERP	D.8 ERP
KEY PERFORMANCE INDICATORS (1) domain; (2) LoD; (3) phase				
Information Management				

Initial *eeEmbedded* storyboard



In this picture, a partner contributes to the storyboard

The Workshop ended successfully with a clear and comprehensive **overview of domains and design phases** and, on the other hand, the **definition of the initial use cases scenarios**.

## MEETINGS SO FAR

### KICK-OFF MEETING (DRESDEN)

14-15 October 2013

The project's kick-off meeting took place on the 14<sup>th</sup> and the 15<sup>th</sup> of October, 2013 in Dresden (Germany).

Day One of the kick-off meeting began with the partners introducing themselves and their working fields. The Project Coordinator gave a comprehensive project overview before the day ended with a discussion regarding administrative decisions.



*The eeEmbedded Consortium*

At Day Two the working schedule was set for the first 9 months focusing the efforts on WP1 on *Requirements, Specifications and Platform Architecture* (led by BAM) and WP2 on *Holistic KPI-based eeeDesign Method* (led by CEMOSA).

### WORKING GROUP MEETING (AMSTERDAM)

29 November 2013

The first coordination workshop took place at the premises of BAM in Bunnik (The Netherlands). The goal was the visualization and creation of a shared view on the *eeEmbedded* project scope.

Separated into three working groups (end users, energy experts, and modelling/IT experts) participants came together in parallel brainstorming sessions.



*In this picture: a moment of the meeting*

Besides, all members attended on the precious day the **Final HESMOS workshop**, another FP7 project, also coordinated by TUD and participated by some other *eeEmbedded* partners. It was a very profitable Workshop because HESMOS is a good starting point for *eeEmbedded*.

## UPCOMING MEETINGS

### WORKING GROUP MEETING (MUNICH)

12-13 May 2014

The third working group of the *eeEmbedded* project will be held in Munich (Germany) and will be hosted by the partner Nemetschek AG.

## UPCOMING/RECOMMENDED EVENTS

### 4<sup>th</sup> Workshop on Impact of the Energy-efficient Buildings PPP

Brussels (Belgium), 1-2 April 2014

The European Commission, with the support of the Energy Efficient Buildings Association (E2BA), organize a Workshop every year to analyse the impact of the projects funded under the *Energy efficient Buildings PPP* and to promote and facilitate clustering among involved projects. The workshop includes some parallel sessions where related projects are clustered together and presented with the aim of achieving synergies and plenary sessions where common impacts and views on the Energy Efficient Buildings field are discussed and success stories are presented.



The *eeEmbedded* project will be presented by the coordinator Prof. Dr.-Ing. Raimar J. Scherer (TUD) into the parallel session *on Integration and demonstration of technologies for EeB* (Session 3) and in the field of: *Optimised design methodologies for integration in the neighbourhood energy systems* (Area 6).

### 2<sup>nd</sup> Conference on Building Simulation and Optimization (BSO14)

London (UK), 23-24 June 2014

This biennial conference, organized by IBPSA-England and CIBSE, will be hosted by UCL (University College London). BSO14 provides a forum for the exchange of knowledge on the development and application of building performance simulation to the optimum design and operation of buildings



### 5<sup>th</sup> Workshop on eeBuilding Data Models. Semantic Interoperability for eeB

Vienna (Austria), 18 September 2014

The *eeEmbedded* Project Coordinator, Prof. Dr.-Ing. Raimar J. Scherer, together with Mr. Rogelio Segovia (Scientific Officer from European Commission), organize this workshop in the *European Conference on Product and Process Modelling* (ECPPM2014). The initial *eeEmbedded* results will be presented.



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