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# PROJECT PROGRESS: THE VIEW FROM TAMPERE

The main target of the BENEDICT project is to create a **basis for novel educational services for the built environment sector**. With these services, digital building models are to be used in an extensive manner for various needs pertaining to educating new professionals and providing new solutions for continuing education and training.

**During this year**, we have been busy in the development of the technological basis and functional principles for these new services. This technological basis is called the "BLE" which stands for "BIM-enabled Learning Environment". The functional principles provide, for example, flexibility for organizing and running educational courses for various needs and organizational set-ups. For the organizers, it would be possible to arrange courses as face-to-face, hybrid or fully online events. The pilot courses under development are intended to demonstrate the possibilities of the BLE for a wide-range education of degree students. It is worth noticing that rather than focusing on teaching the actual modelling aspects of BIM (Building Information Modelling) itself, the use of the BLE and the first pilot courses are addressing fundamentals of civil and building engineering education such as construction management and relating more specific knowledge by leveraging the models of BIM.

**Now we are moving closer to the stage where the first pilot course trial is about to be started** in Tampere University. This pilot course is about building design management at the concept stage of a building project. Naturally, the learning experience is built around a digital building model that is to be analyzed and further developed by the students. The realization of our first pilot course is going to take place during this autumn as part of our Sustainable Urban Design BSc program. The results and experiences from this trial are to be reported during spring 2023. We are closely and continuously connected to the main public and private stakeholders in the built environment sector. They are naturally interested in our tangible results and achievements such as the pilot courses, their implementation results, and the potential for wide use of the BLE and the concepts that it represents.

**Kalle Kähkönen - Tampere University**





# DEVELOPMENT OF THE BIM-ENABLED LEARNING ENVIRONMENT (BLE)

We have gradually moved from the conceptual and generic stages towards implementation of the first version of the BENEDICT BLE (BIM-enabled Learning Environment) platform. The resultant BLE platform will provide the infrastructure for a systemic solution for BIM-enabled learning.

The key fundamentals of the BLE can be briefly explained as follows. First, the BLE includes a Hosting frame (HF) for different course implementations. Certain software solutions have been selected that represent widely used IT in different universities and other institutes providing educational service in the built environment sector. Examples of selected software packages (but not limited to these) for the first pilot courses include Moodle, Office365 and Panopto. However, openness and being software vendor independent as much as possible are important principles behind the core BLE. Second, the versatile interplay with BIM is essential and for this purpose, a browser environment together with IFC.js functions are to be used, for example, for model viewing and data extraction from BIM models. Third, the BLE is to act as a learning resource repository encompassing example building models and project data including specific documentation explaining construction project cases and the content of the models in detail.

The BLE solution is under development as an iterative development and learning exercise (FIGURE 1). This includes creation of three pilot courses by the BENEDICT partner organisations:

1. **Design management for building construction** by Tampere University (TAU)
2. **Construction project risk management** by Tallinn University of Technology (TalTech)
3. **Scheduling of construction site operations** by University of Bologna (UNIBO).

Results and experiences from the pilot courses, their development and realizations will enable us to develop the BLE solution further.

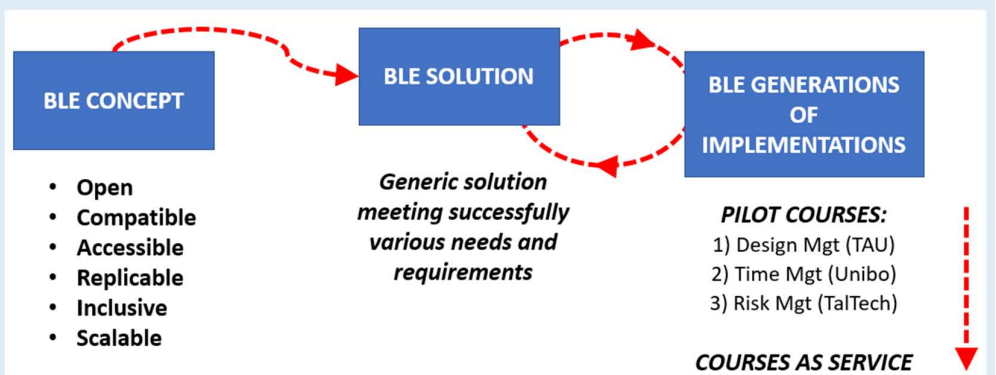
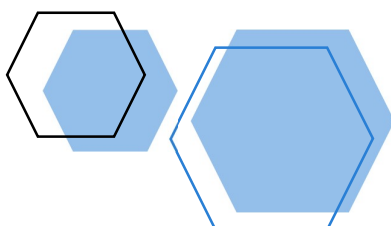


FIGURE 1 – ITERATIVE DEVELOPMENT OF THE BLE PLATFORM

# MULTIPLIER EVENT #2: DEMONSTRATING THE BIM-ENABLED LEARNING ENVIRONMENT

TALLINN 2<sup>ND</sup> JUNE 2022



Multiplier Event 2: Demonstration of the BIM-enabled Learning Environment took place on the 2nd of June 2022 at the Mektory Innovation Hub on the TalTech campus in Tallinn. This was an opportunity for the project team to engage with stakeholders and to demonstrate the BENEDICT project developments to them.

The event was attended by 29 delegates from government, industry, training organisations and educational institutions (whose representatives included programme directors, teaching staff and students). The Dean of the School of Engineering at TalTech, Fjodor Sergejev, gave a welcome address and Jaan Saar, Head of Digital Construction at the Estonian Ministry of

Communications and Economic Affairs delivered a key-note presentation on Digital Construction developments in Estonia. The BENEDICT project was then introduced and demonstrations of the BIM-enabled Learning Environment (BLE) were presented by the project team. This was followed by facilitated, round-table discussions amongst the delegates where the opportunities and challenges of BIM-enabled learning were deliberated from the perspectives of industry, technology, teaching and learning.



PROJECT TEAM AT THE FIFTH TRANSNATIONAL PROJECT MEETING AT MEKTORY, IN TALLINN ON 3RD JUNE 2022

The following day, the BENEDICT project team held its fifth (but only second face-to-face) transnational project meeting - Progress Meeting 4 - also at the Mektory venue. The current status of project progress and details of the next steps in project implementation and reporting were discussed and agreed.



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## LOOKING AHEAD

### AUTUMN 2022

A key project activity this coming autumn will be the testing of pilot BIM-enabled learning modules with students. As part of the project's Intellectual Output O4 - Pilot Modules, each partner university has developed a module that utilizes the BIM-enabled Learning Environment:

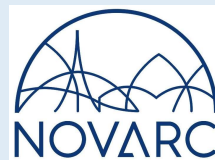
- BIM-enabled Design Management at Concept Design Stage (developed by Tampere University)
- BIM-enabled Time Management in Construction Projects (developed by University of Bologna)
- BIM-enabled Risk Management in Construction Projects (developed by TalTech)

These modules will now be tested by students and their learning value assessed and evaluated using the BIM-enabled learning Evaluation Toolbox developed by the Centre for Engineering Pedagogy at TalTech (also as part of the project's Intellectual Output O4).

## ASSOCIATE PARTNERS

### ESTONIA

Novarc Group AS



**EHITUSKESKUS**

Ehituskeskus (Construction Centre)

### FINLAND

RIL (Finnish Association of Civil Engineers)



### ITALY



Istituto Istruzione Professionale Lavoratori Edili (Building school)



CMB Società Cooperativa Muratori e Braccianti di Carpi



Associazione Italiana di Ingegneria Economica (Certified Cost Engineers Society)

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