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PROJECT PROGRESS: THE VIEW FROM TAMPERE

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During the last months, the BENEDICT team at Tampere University has been busy with the Design Management pilot, industry dissemination and conference presentation. The BENEDICT results are already now providing very interesting and useful stepping-stones for various educational needs and academic collaboration. Educational needs are there within the academic partners of BENEDICT project and within industry. Continuing education and other training based on digital models is still in its infancy and clearly there is much we can contribute towards this arena from the BENEDICT project.

INFRABIM open conference

The International InfraBIM conference was held in Tampere on January 30 - February 1, 2023. It was a highly successful conference in which over 400 people participated in person and over 200 people remotely. Strong industry participation in the main programme and product exhibition clearly demonstrated the strong presence of BIM-technologies in the realizations of infra-projects, and also gradually entering the maintenance of completed infrastructures. <https://www.ril.fi/en/events/infrabim-open-2023.html>

The BENEDICT team had a strong presence in the InfraBIM conference. Professor Raido Puust (Taltech) gave a presentation entitled "CCI-EE: TOWARDS DEVELOPMENT OF STANDARDS-BASED CONSTRUCTION CLASSIFICATION SYSTEM FOR BIM-ENABLED



BUILT ENVIRONMENT”. Professor Kalle Kähkönen (Tampere University) gave a presentation entitled “BIM-ENABLED LEARNING ENVIRONMENT AS AN EDUCATIONAL SOLUTION”. Both presentations were included in the main programme of InfraBIM conference.

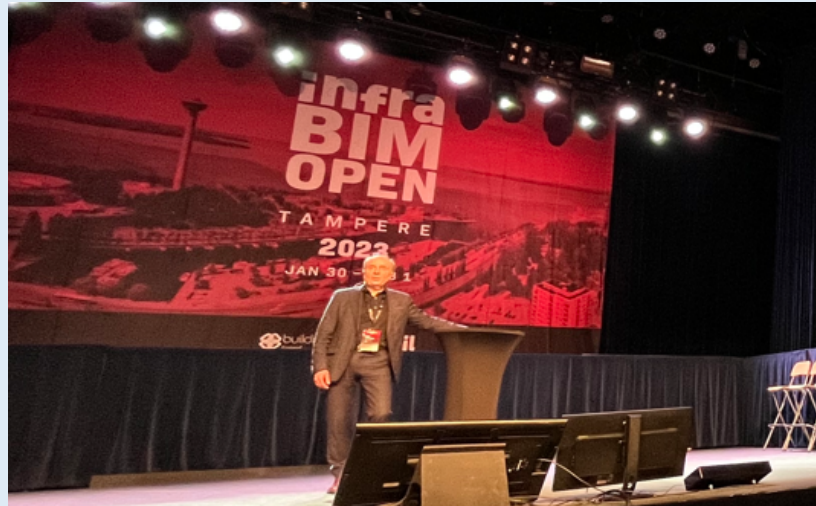


FIGURE 1 – KALLE KÄHKÖNEN SPEAKING AT THE INFRABIM CONFERENCE

DESIGN MANAGEMENT PILOT COURSE

The University of Tampere-led pilot module, Design Management, as introduced in Newsletter #3, was delivered to a group of Sustainable Urban Development degree students in late September to early October 2022. The pilot, which consisted of four design management meetings, simulated the concept design stage of a construction project using the BIM-enabled Learning Environment (BLE). Each student chose a role for themselves, e.g., client, client’s project manager, architect, BIM coordinator, or cost estimator. The experience was positively engaging for both the students and the facilitators. Students enjoyed the autonomy and the role-play. They were also quickly comfortable with the BIM model as the representation of the design and a communication vehicle. The group was relatively small, with 13 students. This made the module delivery easily manageable and flexible for the facilitators and therefore suited well for the pilot. This flexibility allowed some additional individual guidance to be given and also some small changes to be made already during the delivery.

During the time after the delivery, our team has worked on evaluating the delivery and on developing facilitator instructions for future module deliveries. As the main part of the evaluation, the student feedback and facilitator diaries have been analysed. Students were asked what they liked about the module, what did not work well, about the guidance and material, and about communication and collaboration within the group. Students liked the independence they were given, and the different delivery format compared to their other courses. There are also improvements to be made. These were evident not only through the student feedback, but also through the facilitator diaries. The improvements include providing wider descriptions of the roles and the related tasks at the beginning of the



module to reduce some of the initial confusion and ensuring that the workload is more even between the roles. The facilitator diaries have been valuable not only in improving the module, but also in developing the facilitator instructions. This student feedback captures the positives and negatives well and it also provides a glimpse into the student experience itself: *“I think everybody was really confused throughout the process. But actually, that was not half as bad as it first seemed and I feel like we were quite comfortable in our confusion. I for sure learned more than I would have learned with lectures only.”*



FIGURE 2 – GROUP OF STUDENTS WHO PARTICIPATED IN THE DESIGN MANAGEMENT PILOT COURSE

UNIBO PILOT MODULE EXPERIENCE

Marco Bragadin, University of Bologna, Italy

Ugo Maria Coraglia, University Bologna of, Italy

Caterina Morganti, University of Bologna, Italy

The UNIBO-led Pilot Module, entitled Time Management in Construction Project, as previously introduced in Newsletter #3, was delivered to the students of the Ravenna campus of the course of Building Engineering, bachelor’s degree, of the Alma Mater Studiorum - University of Bologna during the first semester of the academic year 2022/2023 within the Building Site and Production course held by Professor Marco Alvise Bragadin.

On a theoretical level, the Module focused on the Project Time Management Process, including all the main topics related to Construction Job Site Design, supported by the use of real project data, managed within a BIM-based workflow.

The goal of the Pilot Module was to create a 4D BIM model of the construction process of a case study. The input data, i.e., project location, building detailed design, were given as an input by using the design projects delivered by students in the previous academic year. Having assimilated the theoretical aspects by introductory lectures concerning Building Information Modelling, Work Breakdown Structures, activity duration estimation and resource allocation, tools and techniques for project scheduling and control, and occupational health and safety standards for construction, the students were able to immerse themselves in the dynamics involved in and characterising each construction phase of a building thanks to the 4D BIM modelling of the entire construction site.

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Therefore, for two months, each week students participated in workshops addressing the following topics:

- Planning, addressing WBS, WP durations and sequence, resource estimation;
- Job-site Design, including temporary provision and equipment design;
- Project Scheduling, addressing project schedule creation with activity networks and bar charts, and 4D BIM creation.

The course participants, divided into working groups of 3-4 students, were tutored by the UNIBO team (M. Bragadin, U.M. Coraglia, L. Stefanini and M. Calistri) in each workshop, giving weekly feedback concerning their progress. For this pilot module of the Erasmus Plus Benedict project, however, the most interesting records were strictly those related to the 2D layouts (two of which were compulsory, excavations/foundations and elevated structures, and one to be chosen from roofing, finishes, scaffolding elevation, emergency) and the 4D BIM model of the construction site.

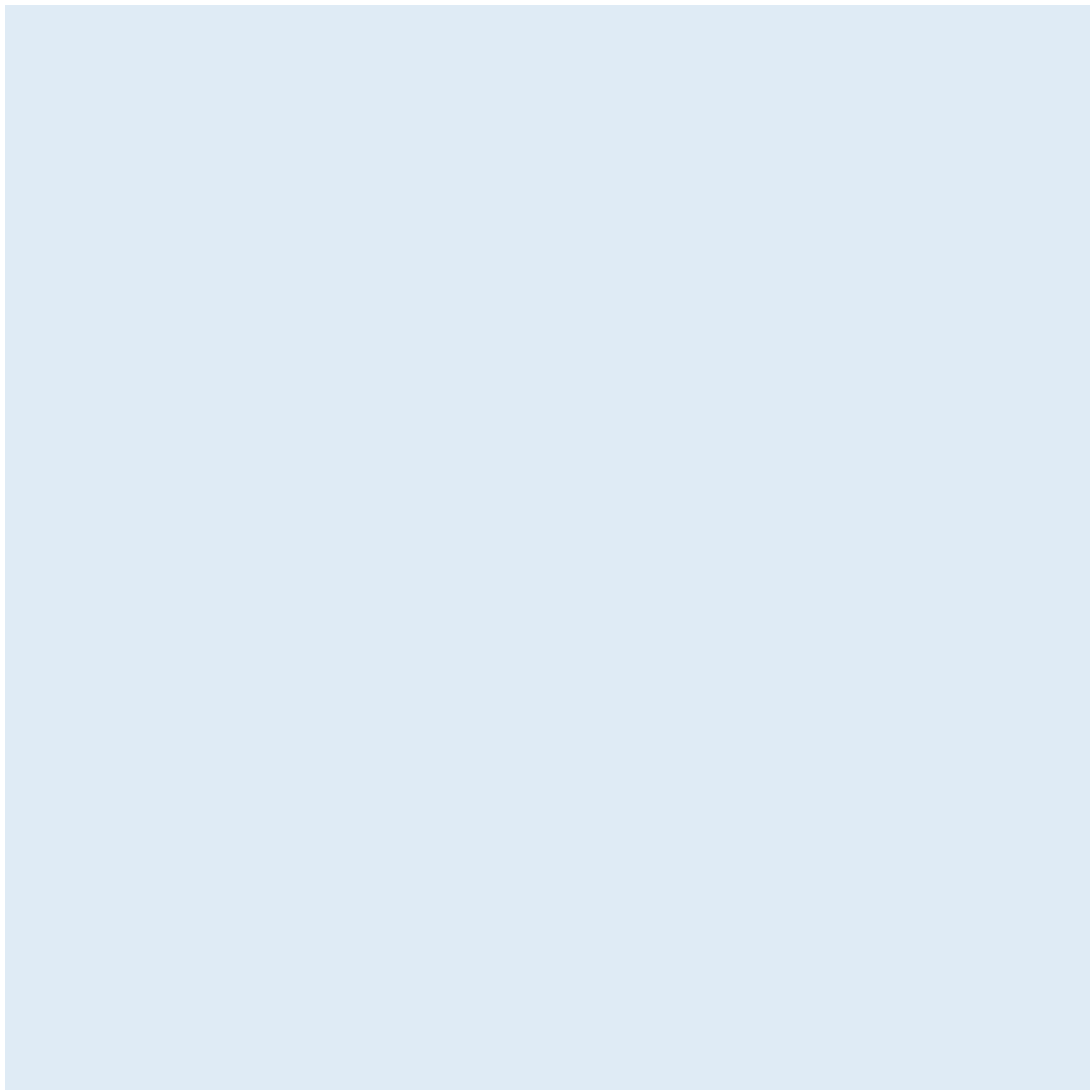
Regarding the latter, students were required to provide, in addition to the BIM model, the video showing the evolution of the site phase by phase, as shown in figure 3.



FIGURE 3 - BIM 4D DESIGN SCREENSHOTS FROM UNIBO STUDENT VIDEOS

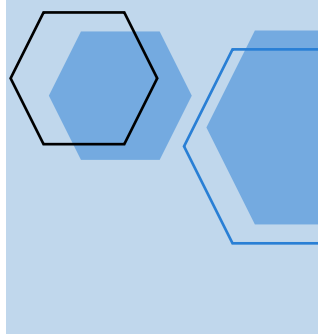
In addition to enabling the student to have a 360° view of all aspects and phases characterising the entire construction process of a building site, these records form an important basis for the data that will contribute to the database of the BIM-enabled learning platform (BLE).





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LOOKING AHEAD

SPRING 2023

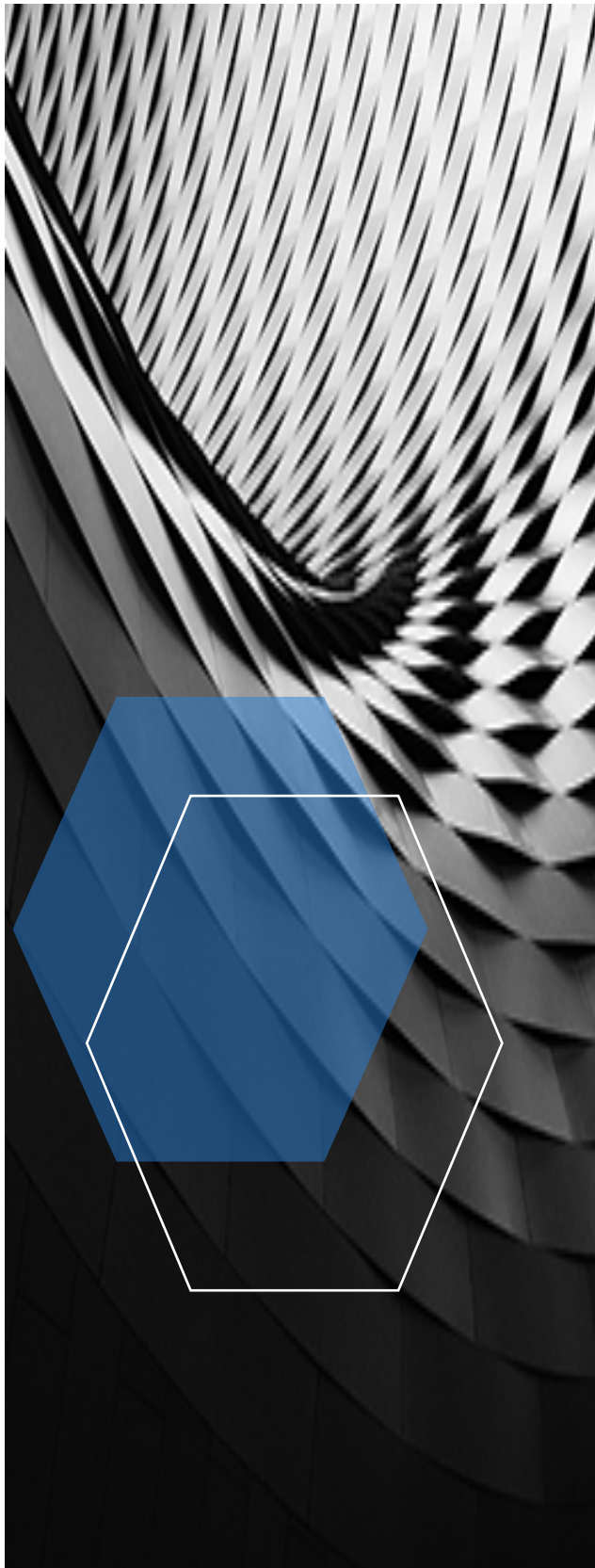
MULTIPLIER EVENT E3 IN BOLOGNA – MARCH 2023

This spring, we look forward to our third and final scheduled Multiplier Event which will take place on Thursday, 30th March 2023 in Bologna, Italy. The Multiplier Event is intended to demonstrate and validate the BIM-enabled learning environment (BLE), learning approaches, tools and materials that have been developed within the BENEDICT project with associated partners and stakeholders.

A full day event is planned at the University of Bologna with a morning session of keynote addresses on the limits and potentiality of digitalization in the construction sector, the potential for BIM in construction management, cost management and vocational training as well as an introduction to the BENEDICT project. After lunch, the BLE will be demonstrated together with examples from the developed pilot modules. The event will culminate in facilitated discussions between the stakeholders and project team members.

ERASMUS STAFF EXCHANGE – MAY 2023

Under an Erasmus+ Mobility Agreement - Staff Mobility for Training agreement, TalTech plans to host a UNIBO staff member for 2 weeks in May 2023. This mobility is aimed at cooperation on the development of BENEDICT project outputs and preparations for the Staff Training Event which is scheduled to be held in Tallinn in June 2023. This is another excellent example of the close collaboration that BENEDICT project continues to foster between our partner institutions.



ASSOCIATE PARTNERS

ESTONIA

EHI TUSKESKUS

Ehituskeskus (Construction Centre)

Novarc Group AS



FINLAND

RIL (Finnish Association of Civil Engineers)



BuildingSMART Finland



ITALY

Istituto Istruzione
Professionale Lavoratori Edili
(Building school)



CMB Societa Cooperativa Muratori e Braccianti di Carpi



Associazione Italiana di Ingegneria Economica (Certified Cost Engineers Society)



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