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BOLOGNA MULTIPLIER EVENT

On March 31, 2023 the *Benedict Validation Workshop E3* event was held in Bologna. The event took place in Santa Cristina della Fondazza, an ex-Camaldolese monastery, that is now home to the Department of Visual Arts at the University of Bologna. The event was aimed at validating the overall BLE solution and documentation for disseminating and using the BIM Enabled Learning Environment BLE. The event was organized by the Alma Mater Studiorum University of Bologna in collaboration with the Ordine degli Ingegneri and the Ordine degli Architetti of the Province of Bologna. The target audience for the event was construction sector operators, professionals, companies, professors, researchers.



FIGURE 1 - SANTA CRISTINA DELLA FONDAZZA, BOLOGNA, ITALY





FIGURE 2 - AULA MAGNA, SANTA CRISTINA DELLA FONDAZZA, BOLOGNA, ITALY

KEYNOTE: LIMITI E POTENZIALITÀ DELLA DIGITALIZZAZIONE NEL SETTORE DELLE COSTRUZIONI

KEYNOTE: LIMITS AND POTENTIALITY OF DIGITALIZATION IN THE CONSTRUCTION SECTOR

ANGELO LUIGI CAMILLO CIRIBINI
UNIVERSITY OF BRESCIA, ITALY

INTRODUZIONE AL PROGETTO BENEDICT
INTRODUCTION TO THE BENEDICT PROJECT

EMLYN WITT
TALLINN UNIVERSITY OF TECHNOLOGY,
ESTONIA

BIM E GESTIONE DEI COSTI COMPLESSIVI
BIM AND TOTAL COST MANAGEMENT

ANDREA DEL GROSSO
ASSOCIATE PARTNER – AICE

BIM E GESTIONE DELLA COSTRUZIONE
BIM AND CONSTRUCTION MANAGEMENT

OMAR FERLONI
ASSOCIATE PARTNER – CMB CARPI

BIM E FORMAZIONE PROFESSIONALE
BIM AND VOCATIONAL TRAINING

MARTA BADIALI & GIAN LUCA ZOCCA
ASSOCIATE PARTNER – IIPLE
ALMA MATER STUDIORUM UNIVERSITY OF
BOLOGNA, ITALY

AMBIENTE DI APPRENDIMENTO BIM
THE BIM-ENABLED LEARNING ENVIRONMENT

KALLE KÄHKÖNEN
TAMPERE UNIVERSITY, FINLAND

LA PIATTAFORMA BLE E LE RISORSE DI
APPRENDIMENTO
THE BLE PLATFORM AND OPEN LEARNING
RESOURCES

RAIDO PUUST
TALLINN UNIVERSITY OF TECHNOLOGY,
ESTONIA

**FIGURE 3 - PRESENTATIONS
HELD IN THE MORNING SESSION**

The meeting day was characterized by a morning session and an afternoon session.

The morning session was attended by several speakers: Angelo Luigi Camillo Ciribini (University of Brescia, Italy) with the keynote: *“Limits and potentiality of digitalization in the construction sector”*; *“Introduction to the Benedict project”* by Emlyn Witt (Tallinn University of Technology, Estonia); *“BIM and total cost management”* by Andrea del Grosso (Associate partner – AICE, Italy); *“BIM and construction management”* by Omar Ferloni (Associate partner – CMB Carpi, Italy); *“Bim and vocational training”* by Marta Badiali and Gian Luca Zocca (Associate partner – IIPLE); *“The BIM-enabled learning environment”* by Kalle Kähkönen (Tampere University, Finland) and *“The BLE platform and open learning resources”* by Raido Puust (Tallinn University of Technology, Estonia).

In the afternoon session, the following presentations: *“BLE open learning resources: UNIBO repository”* by Marco Bragadin (Alma Mater Studiorum University of Bologna, Italy); *“UNIBO server for open learning resources”* by Pier Carlo Ricci (Artificio Digitale, Italy) and *“Teaching BIM”* by Caterina Morganti (Alma Mater Studiorum University of Bologna, Italy).



In addition, “*Pilot Modules And Learning Resources for the BLE*” was presented by Irene Lill (Tallinn University of Technology, Estonia) and supported by the presentation of the:

- PILOT MODULE 1 - DESIGN MANAGEMENT by TAU TEAM;
- PILOT MODULE 2 - RISK MANAGEMENT by TALTECH TEAM
- PILOT MODULE 3 - TIME MANAGEMENT by UNIBO TEAM.

Finally, the workshop was concluded with a structured discussion for knowledge sharing in which groups of people discuss a topic at several small tables like those in a café (*world café*) in order to ensure the involvement of all participants of the conference and to create time for joint discussion. The conference *BENEDICT validation Workshop E3* held in Bologna proved to be another important step in achieving the goals set by the Benedict project and its sharing and dissemination to a wide audience.

LE RISORSE DI APPRENDIMENTO BLE:
L'ARCHIVIO UNIBO
BLE OPEN LEARNING RESOURCES: UNIBO
REPOSITORY

MARCO BRAGADIN
ALMA MATER STUDIORUM
UNIVERSITY OF BOLOGNA, ITALY

SERVER UNIBO PER LE RISORSE DIDATTICHE
APERTE
UNIBO SERVER FOR OPEN LEARNING
RESOURCES

PIER CARLO RICCI
ARTIFICIO DIGITALE

L'INSEGNAMENTO DEL BIM
TEACHING BIM

CATERINA MORGANTI
ALMA MATER STUDIORUM
UNIVERSITY OF BOLOGNA, ITALY

MODULI PILOTA E RISORSE DIDATTICHE
PILOT MODULES AND LEARNING RESOURCES
FOR THE BLE

IRENE LILL
TALLINN UNIVERSITY OF TECHNOLOGY,
ESTONIA

**FIGURE 4 - PRESENTATIONS
HELD IN THE AFTERNOON SESSION**



FIGURE 4 - BENEDICT TEAM IN BOLOGNA, ITALY



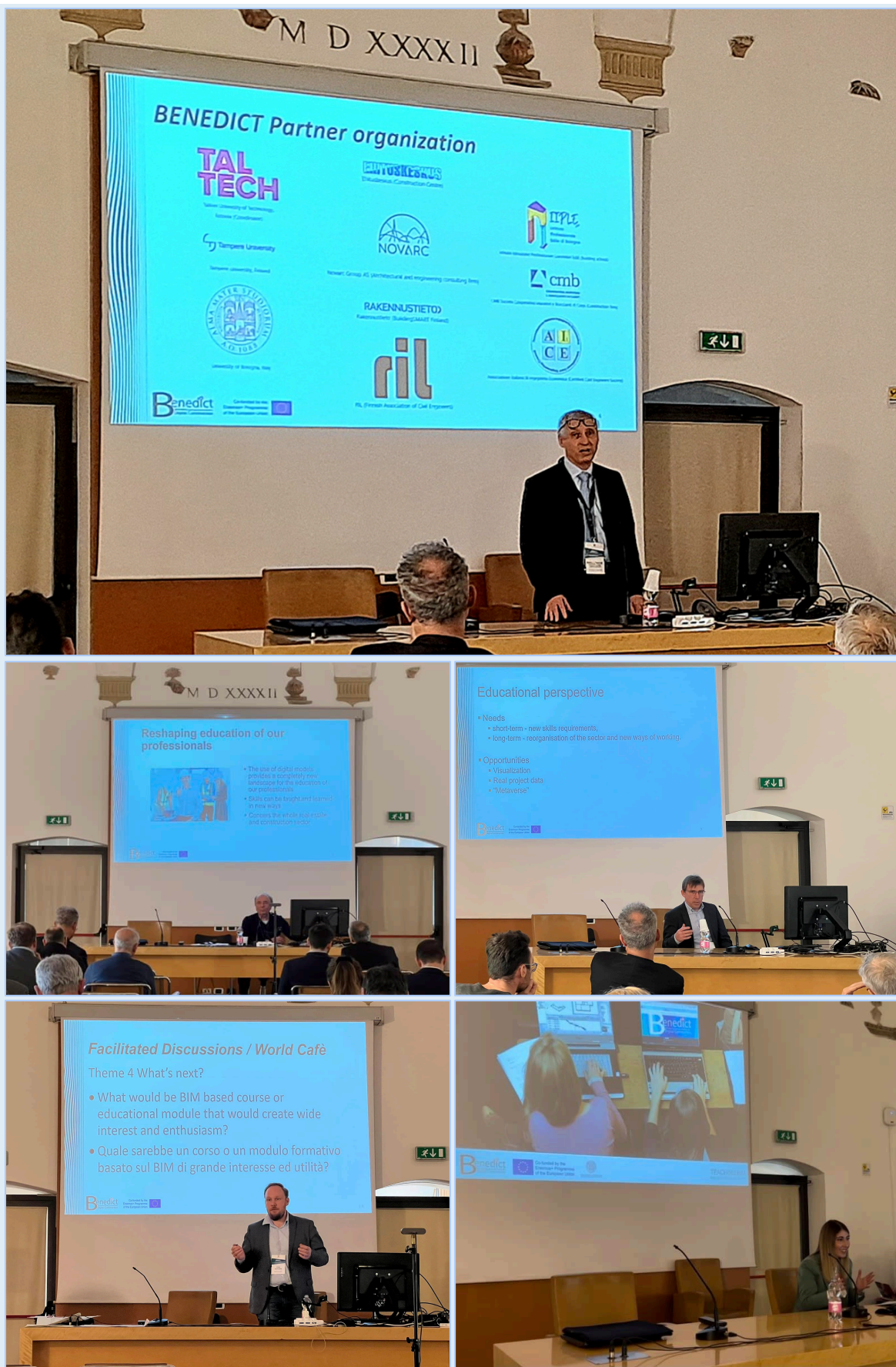


FIGURE 5 - SOME PHOTOGRAPHS OF THE SPEAKERS' SPEECHES



TALTECH RISK MANAGEMENT PILOT MODULE

The Risk Management pilot module was delivered in Tallinn University of Technology in March and April of the 2022/2023 academic year to a class of 26 students. The students comprised fourth year civil engineering students from a 5-year integrated master's in civil engineering programme and first year master's students in a 2-year master's in civil engineering programme. The module was taught as part of a larger (9 ECTS) course on Construction Investments and Project Management.

The module focuses on the project risk management process (including both qualitative and quantitative risk analysis) using real project data from a multi-storey car park building project within a BIM-based work flow. It addresses the:

- Terms and concepts of risk management
- The process of risk management in projects
- Tools and techniques for achieving each stage of the risk management process
- Project risk management standards
- Risk management within the BIM work flow
- Practical risk management on the basis of real project data
- How risk and risk management link to wider ideas in construction, science and society.

As shown in the figure below, the module consisted of:

- An introductory lecture – focusing on risk management principles and the project risk management process
- 3 risk management workshops with instructional mini-lectures:
 - I. At the project preparation stage – focus on qualitative risk analysis
 - II. At the pre-construction stage – focus on quantitative risk analysis
 - III. At the construction completion stage – focus on documentation and lesson-learning

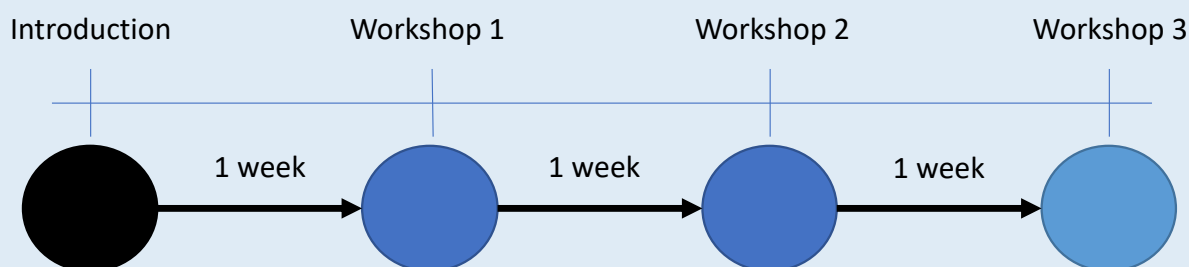


FIGURE 6 – RISK MANAGEMENT PILOT MODULE



For the Introduction lecture, and risk management workshops #1 and #3 together with their accompanying mini-lectures, the module was presented in an online-only format. Risk management workshop #2 together with its mini-lecture, on the other hand, were implemented in a face-to-face mode in a physical classroom to most of the students with the materials also made available online for those students who could not physically attend. This arrangement was necessitated by the module teacher's travel schedule in that the teacher was only physically available for risk management workshop #2. As this implementation arrangement proved fully acceptable and convenient to the students, it also served to demonstrate that online, hybrid and in-class delivery modes were all feasible for this module.

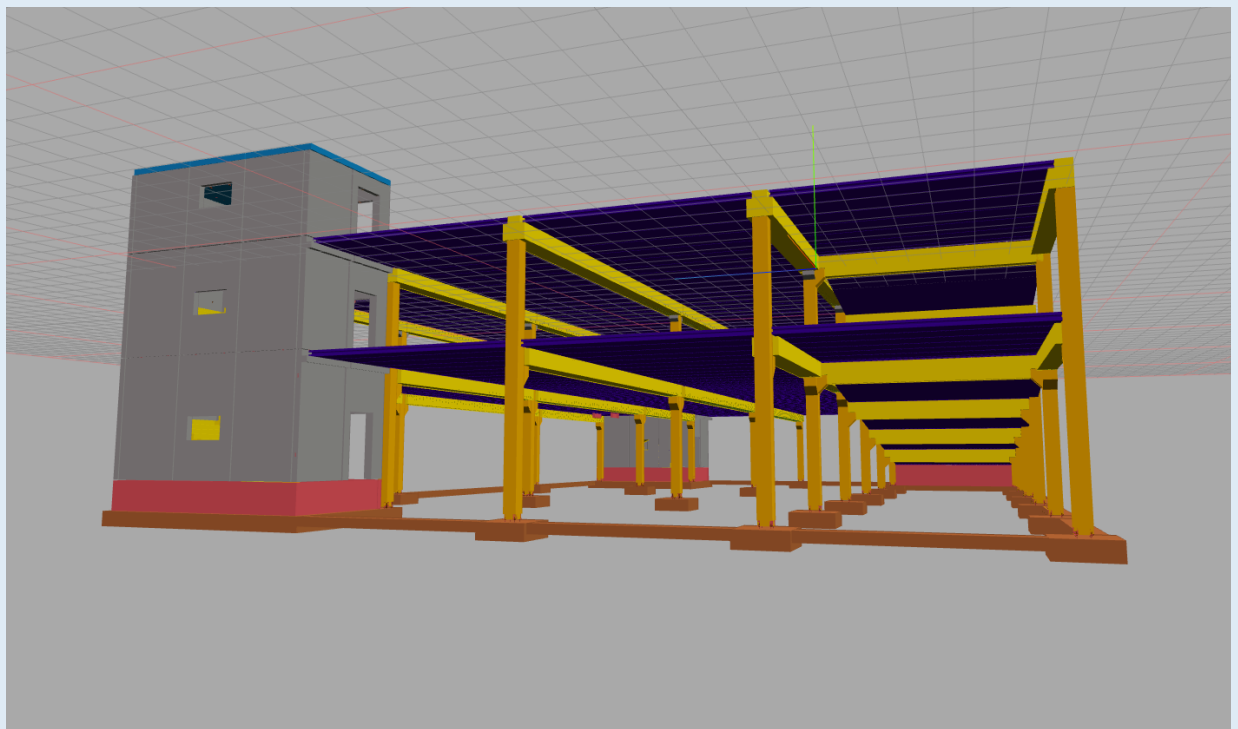


FIGURE 7 – MULTI-STOREY CAR PARK PROJECT BIM MODEL

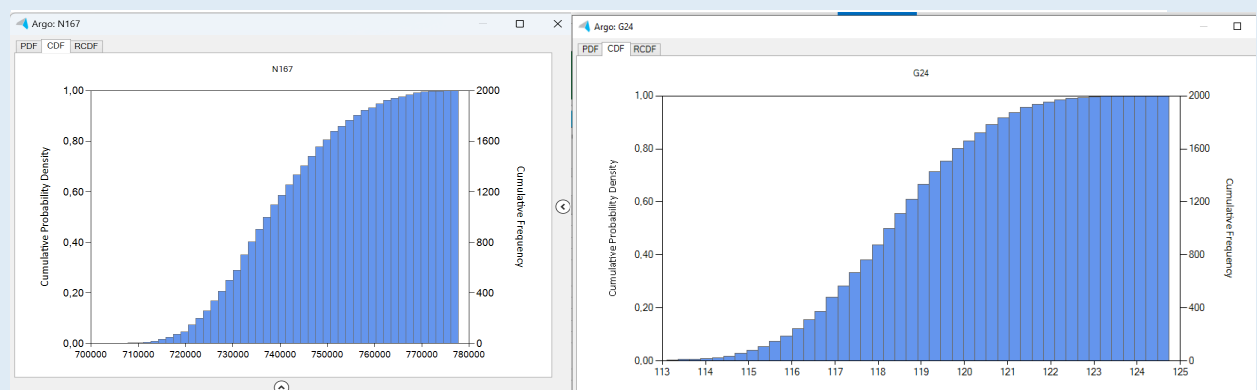
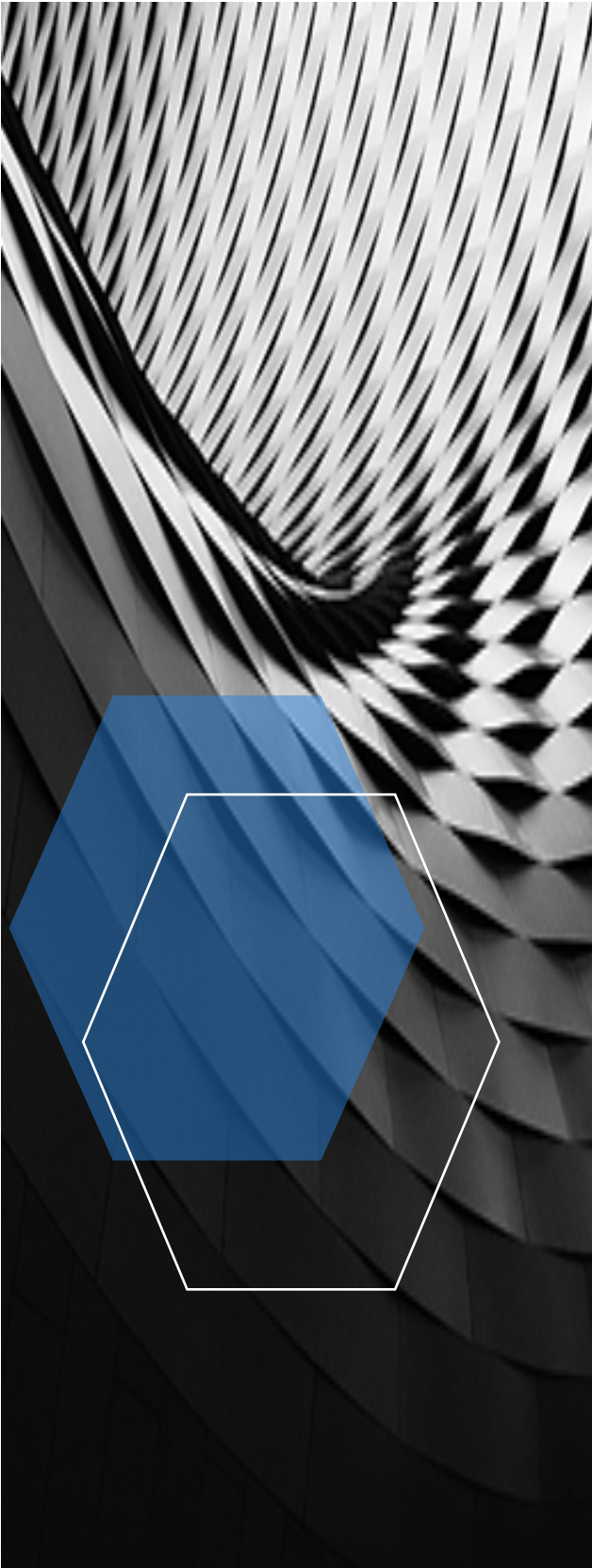


FIGURE 8 – STUDENTS' QUANTITATIVE RISK ANALYSIS RESULTS - PROBABILITY DENSITY OF COST AND TIME ESTIMATES





ASSOCIATE PARTNERS

ESTONIA

EHITUSKESKUS

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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BIM-enabled Learning Environment for
Digital Construction



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LOOKING AHEAD

SPRING / SUMMER 2023

STAFF TRAINING – JUNE 2023

At the end of this spring, we look forward to finishing off the project with an intensive staff training event: ***Training to use the BIM-enabled Learning Environment (BLE)*** which will take place from 19th – 21st June in Tallinn, Estonia. This event is intended to entrench BIM-enabled learning through the use of the BLE in learning activities in the partner institutions and throughout the REC sector. The training itself will ensure that delegates / trainees understand the BIM-enabled learning concept and are able to fully utilise the BLE (together with its content) to support their teaching and training activities. The event is also intended to act as a catalyst for establishing and encouraging the formation of a super-user group of BLE users who will have the network, interest and enthusiasm to take forward the possibilities of BIM-enabled learning beyond the project funding period.

Event participants will be teachers and trainers from all 3 project partner institutions as well as representatives from beyond higher education institutions and across the Real Estate and Construction (REC) sector.