



BIMEET Project

Sylvain Kubicki, Luxembourg Institute of Science and Technology

2020/10/28

The logo for BIMEET, featuring a stylized green leaf icon above the word "bimeet" in a lowercase, sans-serif font.

<http://www.bimeet.eu>



**SUSTAINABLE
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LIST



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PRESENTATION OUTLINE

1. Introduction
2. BIMEET Training
3. Qualification framework and training modules
4. BIMEET Tools





Introduction

The logo for bimeet, featuring a stylized green leaf icon above the word "bimeet" in a lowercase, sans-serif font. The "bi" is in dark grey and "meet" is in green.

<http://www.bimeet.eu>



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ID Card BIMEET

- H2020 / EE14 / 753994
- 01/09/2017 > 29/02/2020 (2,5 years)
- Website: <http://www.bimeet.eu>
- Twitter: @bimeetEU



The graphic features a stylized green landscape with various icons representing sustainable living and energy: wind turbines, modern buildings, people walking, a dog, a child with a stroller, a person on a bicycle, and a person on a scooter. The scene is set on a green hill with white flowers.

Partners

UST CSTB VTT bre INOS Metropolis

With the financial support of

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bimeet
www.bimeet.eu

BIM-based EU-wide Standardized Qualification Framework for achieving Energy Efficiency Training

BIM-BASED EU-WIDE
STANDARDIZED QUALIFICATION
FRAMEWORK FOR ACHIEVING
ENERGY **E**FFICIENCY **T**RAINING



BIMEET Training

**bimeet**

<http://www.bimeet.eu>



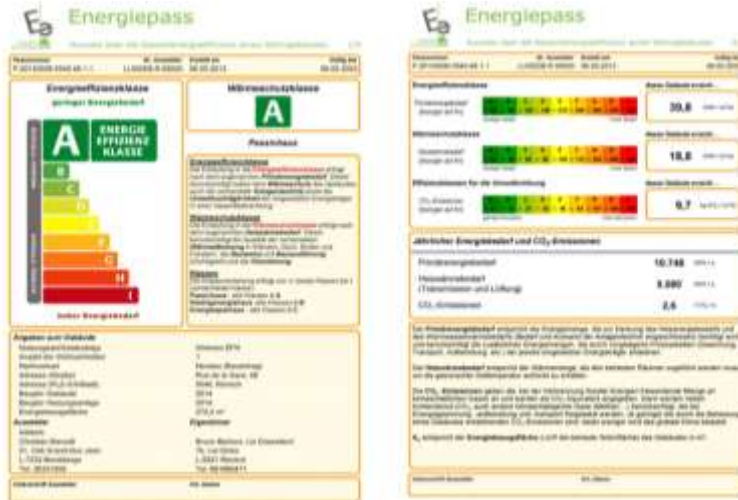
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POLICIES AND REGULATIONS

Energy Efficiency in Buildings

Energy Performance Building Directive (EPBD)

- Certification: Energy Performance Certificate, sustainability assessment
- NZEB, Renovation: novel materials, design principles, construction techniques



Revision of the EPBD (June 2018)

- **Digital & ICT** to play a major role in new generation **EPCs and smarter buildings**

CLEAN ENERGY FOR ALL EUROPEANS

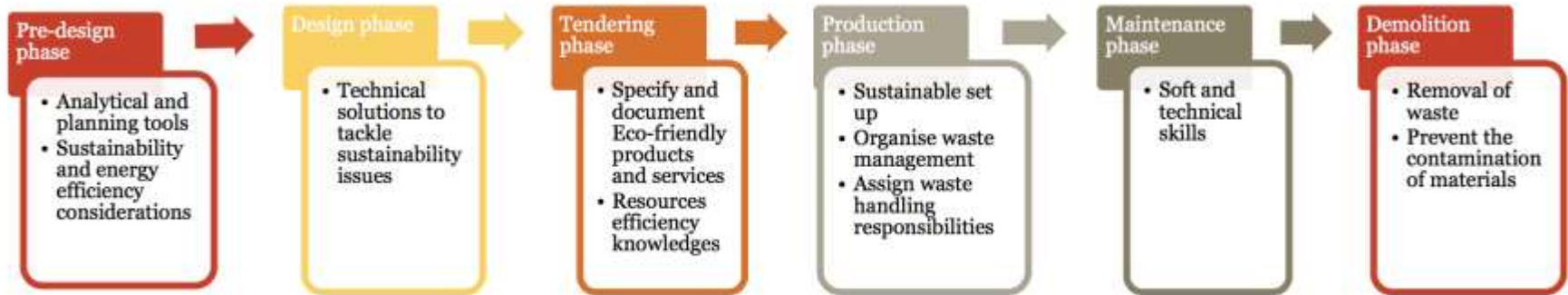
Main outcomes of the revision

A STRENGTHENED DIRECTIVE

- ✓ Stronger **long term renovation strategies** for Member States, aiming at decarbonisation by 2050 and with a solid financial component.
- ✓ A **Smart Readiness Indicator** for buildings.
- ✓ Targeted support to **e-mobility** infrastructure deployment in buildings' car parks.
- ✓ Enhanced **transparency** of national building energy performance calculation methodologies.
- ✓ Reinforcement of **building automation**: additional requirements on room temperature level controls, building automation and controls and enhanced consideration of typical operating conditions.



- Sustainable construction and energy efficiency open up **significant market opportunities** for EU construction companies



Source: PwC analysis.

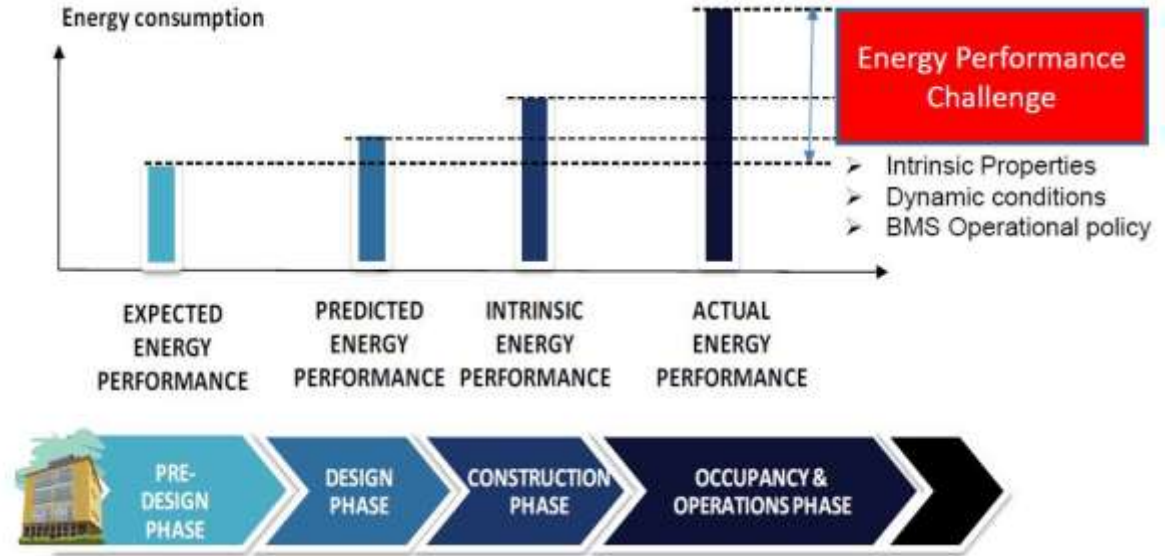
CHALLENGES

The "energy gap"

Energy use **predicted in the design** stage of buildings vs. the energy use of those buildings **in operation**

- Intrinsic properties
- Dynamic conditions
- Environmental uncertainties
- *Workmanship*
- *Occupants* behaviour
- BMS Operational Policy
- ...

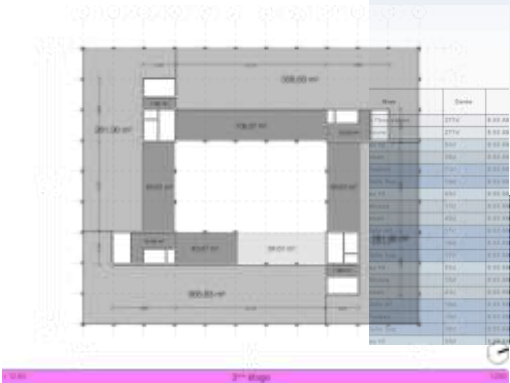
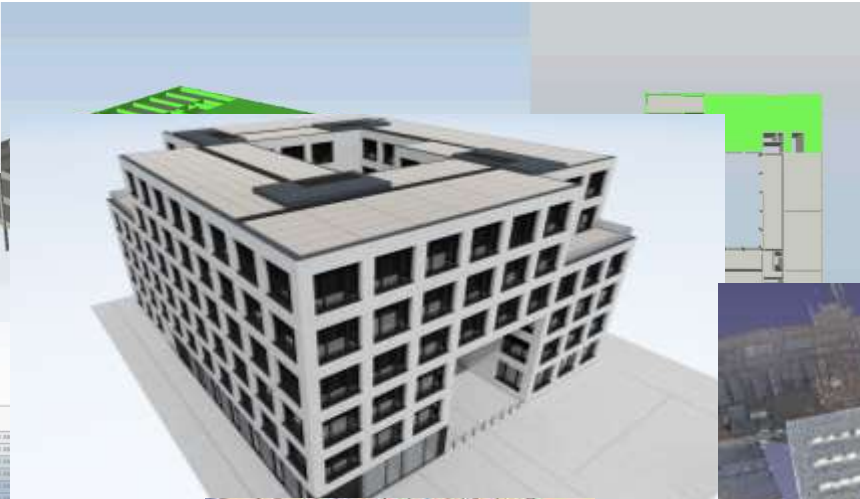
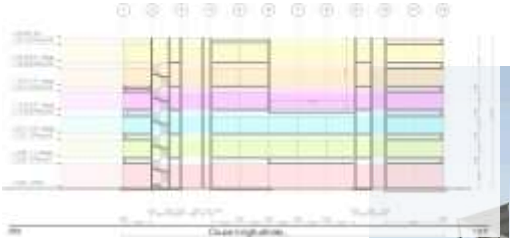
https://en.wikipedia.org/wiki/Performance_gap



Extract from: Prof. Yacine Rezgui, Cardiff University. *Sustainable Places A Multi-disciplinary Perspective to Built and Natural Environment Challenges in the 21st Century*. Presentation. LIST Seminar. August 2016.

BUILDING INFORMATION MODEL(S)

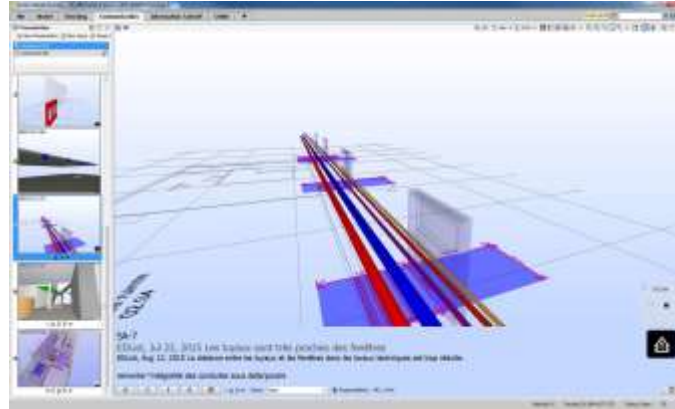
Authoring



BUILDING INFORMATION MODELING

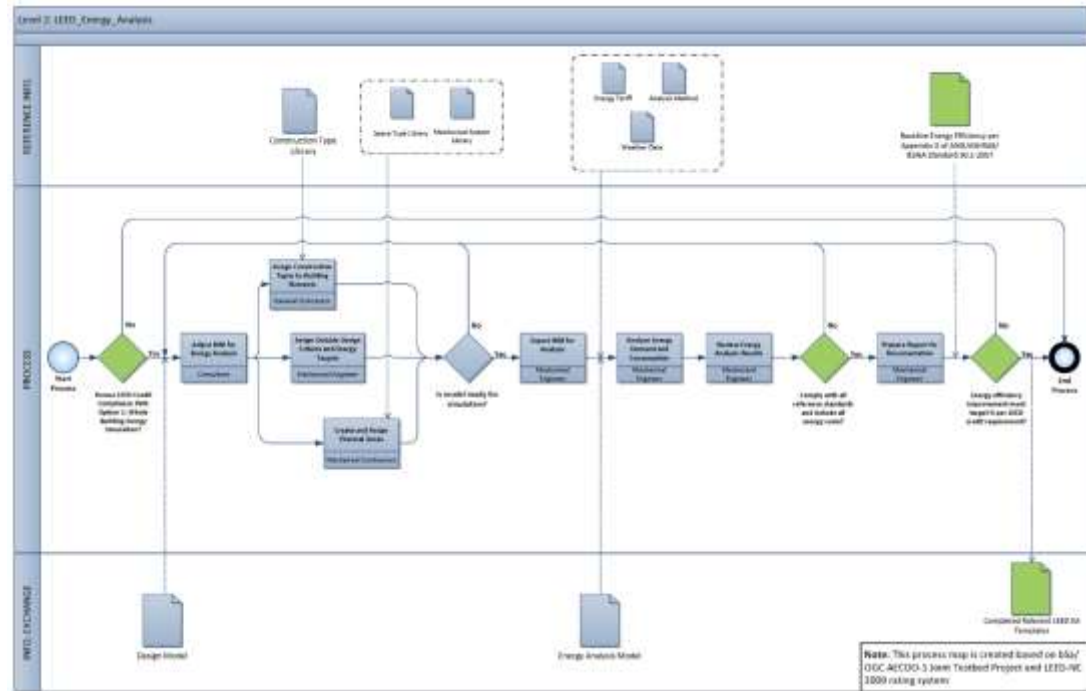
Improved coordination process

- **Lean design and construction**
 - Quality control
 - Issues management
- Embodied **energy and carbon** reduction
 - Simulation capabilities
- **Digital Twin**
 - Build virtually before building physically
 - Operation and management support



Management of BIM Processes

- Management of **Information Exchanges**
 - Project BIM Requirements
 - Follow-up and control
- **Challenges** to integrate the whole **value chain**
 - Contractual implications, **regulatory** framework
 - New **roles** and missions
 - **Technology maturity**
- **...White collar professionals & blue collar workers**



Integrated Process Mapping For BIM Implementation In Green Building Project Delivery. Wu, W. & Issa, R. (2013). 13th International Conference on Construction Applications of Virtual Reality.

BIM SKILLS

Outcome of BIM4VET EARSMUS+ project (2015-2018)



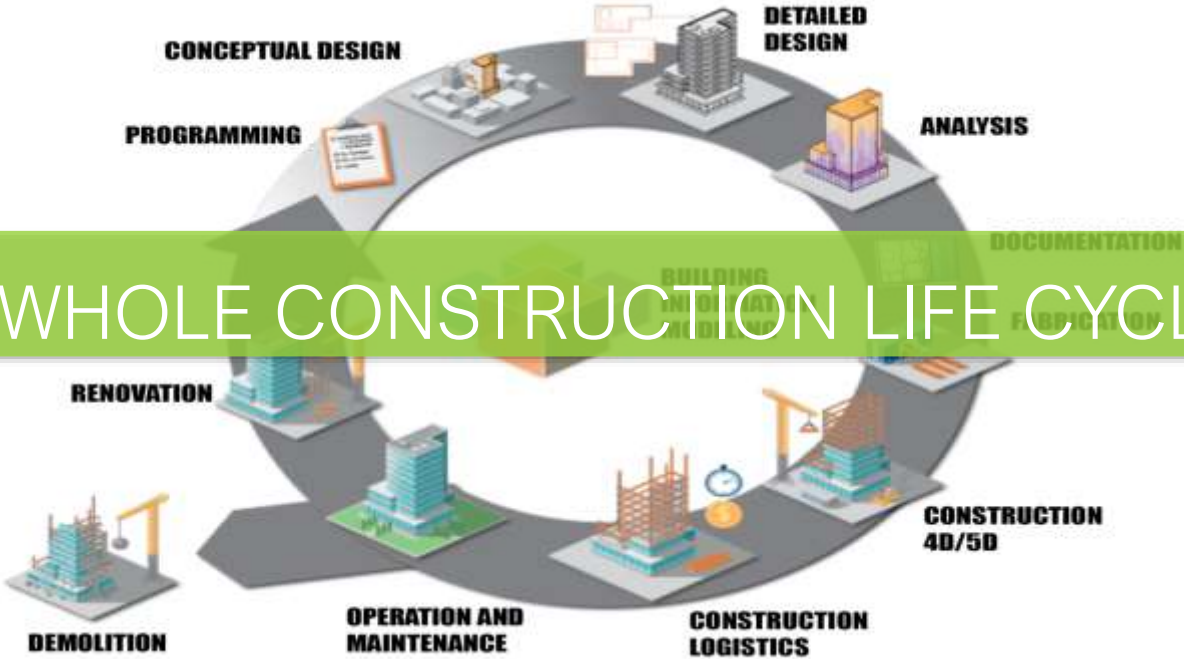
- Erasmus+ BIM4VET
 - Key action 2: coopération pour l'innovation et l'échange de bonnes pratiques
 - 2,5 years / 272 872€
- Partners
 - LIST, Luxembourg Institute of Science and Technology (LU)
 - Cardiff University (UK)
 - CEA LIST, Commissariat à l'Énergie Atomique et aux Énergies Alternatives (FR)



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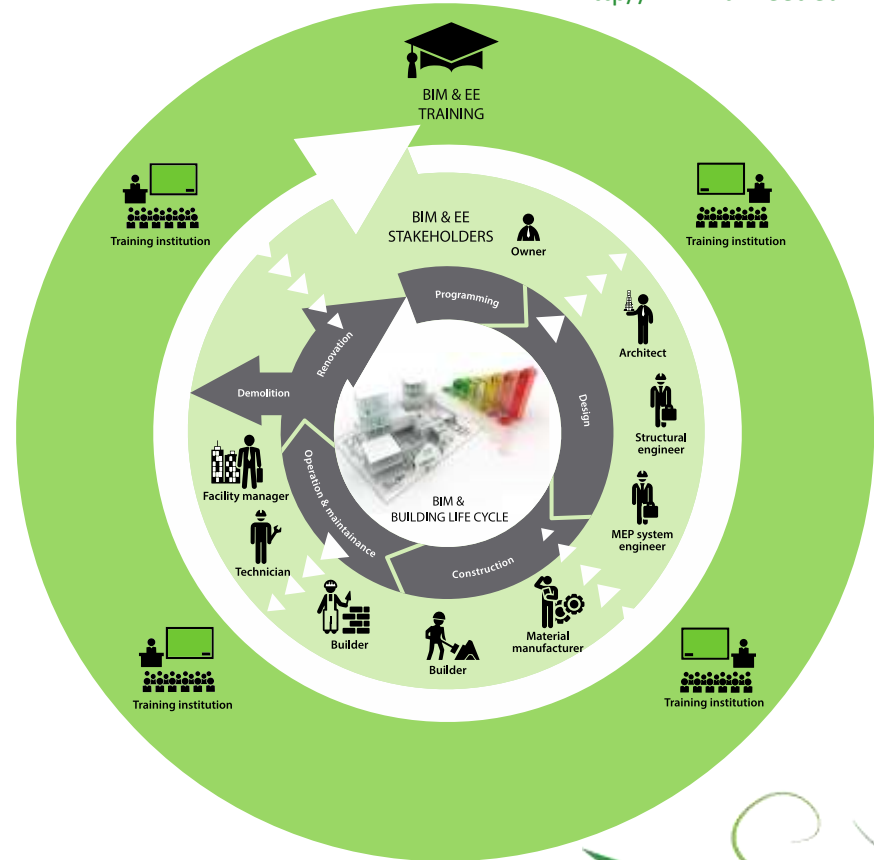


BIMEET, THE CONCEPT



BIMEET, THE CONCEPT

- BIMEET considers
 - **Each stage** of building's life-cycle
 - **All actors** involved
- To highlight specific skills required
 - For a global BIM approach
 - Enabling **achieving EE in buildings**
- BIM as a tool for improved multi-disciplinary approach across trades
- BIM-based material for enhanced learning



STATUS OF BIM & BIM/EE TRAINING



BIM training		Clients	Facility and asset management	Design consultants (inc. technicians)	Contractors (inc. site managers)	Sub-contractors (inc. blue collar workers)	Students
RIBA stage	Awareness	Reasonable	Reasonable	Reasonable	Reasonable	Reasonable	Reasonable
	0. Definition	Limited	Limited	Not relevant	Not relevant	Not relevant	Limited
	1. Brief	Limited	Poor	Poor	Not relevant	Not relevant	Limited
	2. Concept	Poor	Poor	Reasonable	Not relevant	Not relevant	Limited
	3. Design	Poor	Poor	Reasonable	Not relevant	Not relevant	Limited
	4. Technical	Poor	Poor	Reasonable	Reasonable	Poor	Poor
	5. Construction	Poor	Poor	Reasonable	Reasonable	Limited	Poor
	6. Handover	Limited	Limited	Reasonable	Reasonable	Limited	Poor
	7. In use	Poor	Limited	Not relevant	Limited	Limited	Poor
	Demolition	Poor	Poor	Poor	Poor	Poor	Poor

Integrated BIM and energy efficiency training		Clients	Facility and asset management	Design consultants (inc. technicians)	Contractors (inc. site managers)	Sub-contractors (inc. blue collar workers)	Students
RIBA stage	Awareness	Limited	Limited	Limited	Limited	Limited	Limited
	0. Definition	Poor	Poor	Not relevant	Not relevant	Not relevant	Poor
	1. Brief	Poor	Poor	Poor	Not relevant	Not relevant	Poor
	2. Concept	Poor	Poor	Limited	Not relevant	Not relevant	Poor
	3. Design	Poor	Poor	Limited	Not relevant	Not relevant	Poor
	4. Technical	Poor	Poor	Limited	Limited	Poor	Poor
	5. Construction	Poor	Poor	Limited	Limited	Poor	Poor
	6. Handover	Poor	Poor	Limited	Limited	Poor	Poor
	7. In use	Poor	Poor	Not relevant	Limited	Limited	Poor
	Demolition	Poor	Poor	Poor	Poor	Poor	Poor



Figure 20. Traffic light summary of BIM and energy efficiency training (Top: BIM training, Bottom: BIM and energy efficiency training)





BIM for Energy Efficiency

Qualification framework & Training modules

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<http://www.bimeet.eu>



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• Disciplines & Learning Outcomes

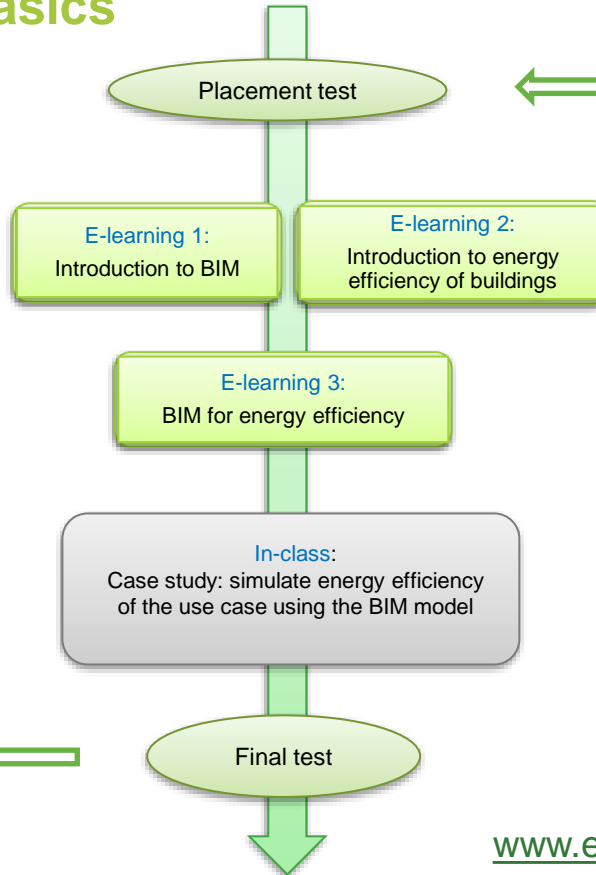
Stakeholders					
D3.1	Finland	France	Luxemburg	Greece	UK
Client	Owner Client Project manager BIM coordinator BIM manager	Owner Final user Project manager / owner BIM coordinator / BIM manager	Manager Owner advisor BIM coordinator BIM manager	Owner Client Project manager	Client Client Advisor Project Lead
	Chief designer Designer / architect Structural engineer Building services engineer Design consultant	Architect Structural engineer Construction engineer Geometer	Architect Structural engineer Energy Engineer Construction engineer Geometer	Designer / architect Structural engineer Building services engineer	Lead Designer Architect Civil & Structural Engineer Building Services Engineer
Contractor/Sub-contractor	Construction site manager Construction site engineer Construction site workers	Site work supervisor Site workers	Site work supervisor Site workers	Site manager Construction site workers	Construction Lead Contract Administrator Building services installer
Facility / Asset management	Property manager Maintenance technicians operator Maintenance man Care taker	Facility manager Maintenance technicians Asset Manager	Facility manager Maintenance technicians Asset Manager	Property manager Maintenance operator	Health & Safety Advisor Junior energy manager

bimeet		ECF level		
No. Learning outcome		CD	ARCH	ASS
Architectural design roles Architectural design and BIM Coordinator (arch), Chief designer (CD), Architect (ARCH), Assistant designer (ASS)				
Learner is able to explain the fundamentals of BIM and the underlying principles of uses with respect to building life-cycle.		6	6	3
LO1				
1.1	Recall essential contents, summarize and give examples of BIM terminologies, definitions and standards.	6	6	3
1.2	Recall essential contents, summarize and give examples of overall BIM process for a building's life cycle.	6	6	3
1.3	Explain and use standard information exchange processes for different design domains in general and especially in detailed technical design.	5	5	2
1.4	Explain the essential issues related to information management, data transfer and sharing.	5	5	2
1.5	Explain the added value of using open file formats (i.e. IFC) to ensure interoperability.	5	5	2
1.6	Recall, summarize and explain essential contents and relevant parts of national BIM guidelines.	6	6	3
Learner is able to explain the fundamentals of sustainable and energy-efficient buildings and building performance.		4	6	2
LO2				
2.1	Explain and give examples of aspects and terminologies of energy and building performance.	6	6	2
2.2	Describe the financial and environmental aspects and related indicators, benchmarks and certification systems of energy and building performance.	2	6	2
2.3	Explain the issues that affect energy performance of buildings and demonstrate competence in domain specific solutions.	4	6	1
2.4	Explain relations between life-cycle costs, energy performance and building performance.	4	6	2

BIMEET TRAINING #1

BIM for Energy Efficiency - Basics

Fundamentals of BIM and
energy efficiency
Theoretical contents



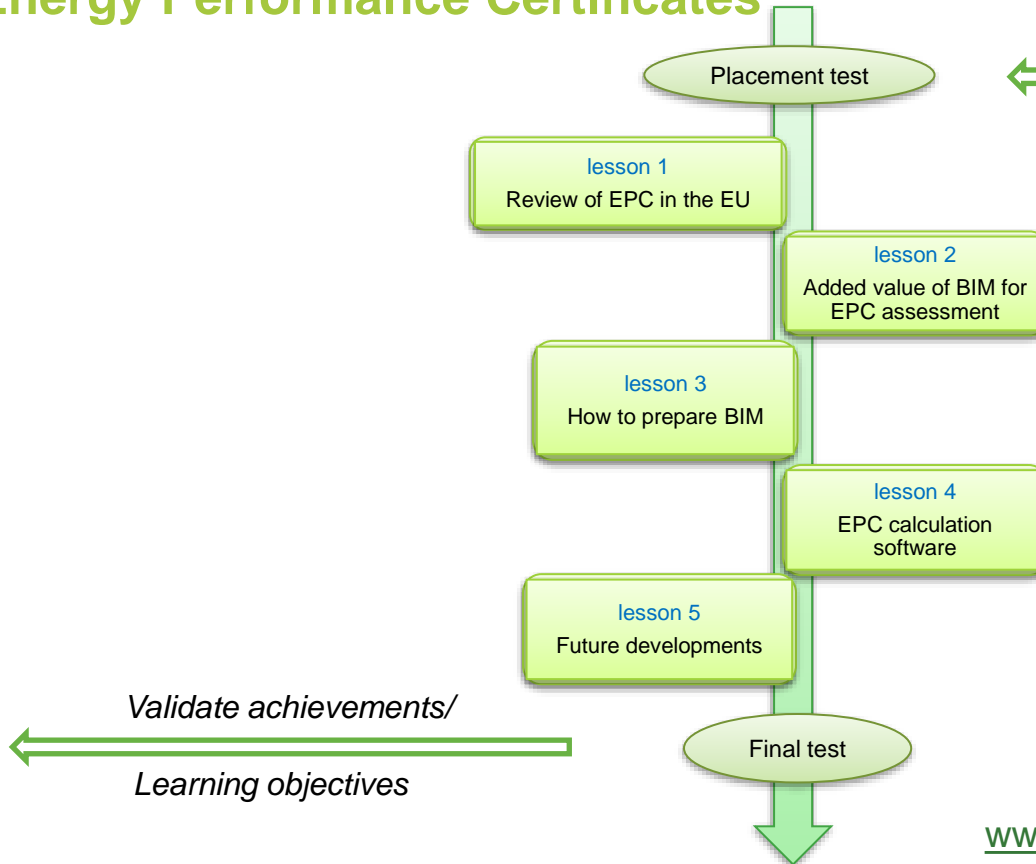
Validate achievements/
Learning objectives

Software skills using
3D modeling/thermal
software

BIMEET TRAINING #2

BIM for Energy Performance Certificates

*Position oneself at the
Global level*



Validate achievements/

Learning objectives



BIMEET Tools

**bimeet**

<http://www.bimeet.eu>



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BIMEET VIRTUAL COLLABORATIVE PLATFORM

www.energy-bim.com

bimeet
http://www.bimeet.eu

The screenshot shows the BIMEET website interface. At the top, there is a navigation bar with 'Home', 'Contact', 'About', and 'FAQ' links. Below the navigation bar, there are several main content areas:

- Welcome to BIMEET!**: A section with the BIMEET logo and a description of the platform as a 'one-stop-shop' solution for access to BIM for energy, training, and education.
- Building Information Modelling**: A section with a search bar and a list of BIM use cases, including: 'Reduce the Gap Between Predicted and Actual Energy Consumption in Buildings', 'Minimizing operational costs and carbon emissions through matching supply with demand of heat and electricity production', 'Innovative Information and Communication Technologies (ICT) platform able to support the optimization of water networks and to enable change in consumer behavior', and 'Intelligent management and control of HVAC system'.
- Professional Networking**: A section with a search bar and a list of partners, including 'Jeni Soriano' and 'JVT/Innovative/Innovative - Energy/Innovative/Innovative'.
- Event Calendar**: A section with a calendar view for December 2018, showing events on the 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, and 31st.
- Recently Updated**: A section with a list of updates, including: 'A Professional Networking Widget', 'A Widget to locate BIM related suppliers of sustainable products', 'More Widgets are now searchable via the search box at the top of the page', and 'A New Updated design'.

Building Information Modelling

Search for use cases:

Name:

Select Options

Search

BIM - Building Information Modelling:

- Reduce the Gap Between Predicted and Actual Energy Consumption in Buildings
- Minimizing operational costs and carbon emissions through matching supply with demand of heat and electricity production.
- Innovative Information and Communication Technologies (ICT) platform able to support the optimization of water networks and to enable change in consumer behavior
- Intelligent management and control of HVAC system
- Rural Regeneration Centre, Hadlow College

Next page

[ADD NEW USE-CASE](#) | [SEE USE-CASES](#) | [USE-CASE ANALYSIS](#)

Event Calendar

View: My Calendar | All Events

December, 2018						
S	M	T	W	T	F	S
23	24	25	26	27	28	29
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

Today: Dec 4, 2018

My Upcoming Events
Add Events

You don't fit in calendar. Add the icon

Training

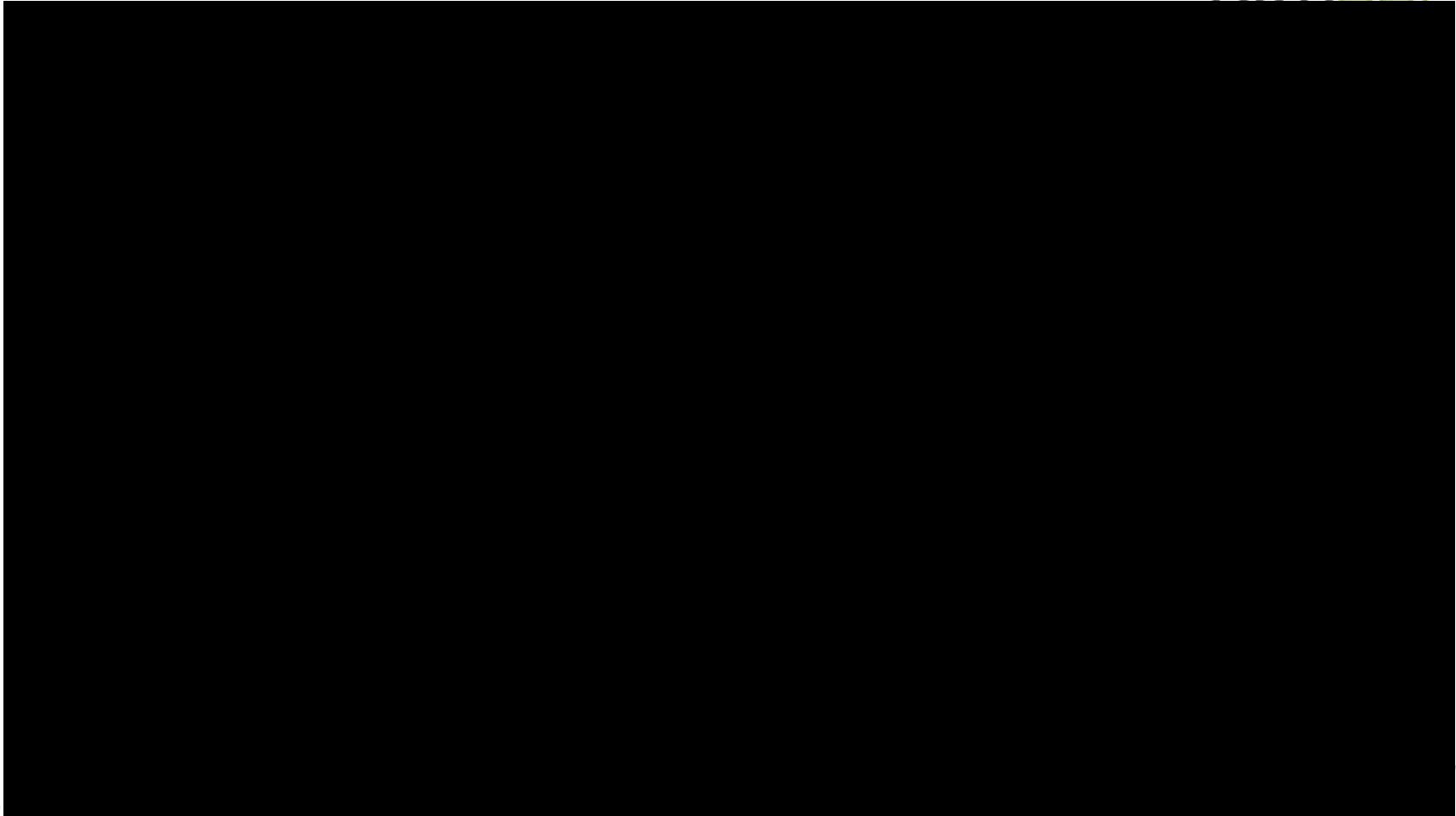
Search by Course Name:

View Results View on Map

Search by Type: Higher Education | Apprenticeship | Distance Education | In-House | Class, Practice Centre

Search by Level: Dry Level | Subjects | Graduate | Professional | Management

Search by Interest: Sustainable Construction | Traditional/Heritage | Regeneration | Specialist | Housing | Specialist Housing | Professional Development | Careers





Thank you for your attention

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