



1st European conference, 'BIM and energy performance of buildings'

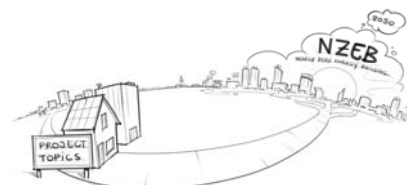
25 June 2018, Brussels, Belgium



Ana Tisov, Project Engineer and Researcher, BIMplement Coach
Huygen Engineers & Consultants, Maastricht, The Netherlands



Structure of today's presentation



- The current situation in the EU construction sector
- EC initiatives to move buildings towards nZEB
- Introduction to a new H2020 Construction Skills project: BIMplement
- Towards enhanced quality control over entire value chain by using BIM
- How to implement the BIMplement?



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Current situation in the EU construction sector



- The construction industry is one of the largest European industries (9 % of the GDP of the EU and 18 million jobs and 3.1 million enterprises). According to [EUROCONSTRUCT](#), by 2020 the renovation sector is expected to see stronger growth than new construction for the first time since 2014.
- The construction industry is seen as relatively inefficient in both process and service delivery. Evident gap between the designed level of energy efficiency and the level of energy efficiency actually realized also due to a lack of built quality and skills gap.
- A lack of skilled workers in general, while nZEB constructions & renovations require even additional competences and qualifications. According to the [BuildUP Skills Initiative programme](#):
 - There will be a shortage of building workers by 2020 in most European countries;
 - 3-4 million workers will require upskilling on energy efficiency or renewable energy sources by 2020;
 - The need for training of the current workforce is much stronger than the estimated need for additional workers;
 - It is important to look at transferable and cross-trade knowledge and skills (knowledge transfer).



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- A lack of skilled workers in general, while nZEB constructions & renovations require even additional competences and qualifications.
- Despite all the policy efforts (e.g. EPBD, EPC) insufficient quality assurance can jeopardize these efforts.

“No energy efficiency without quality. No quality without trainings.”

No qualified workforce without required upskilling and trainings.

Jens Laustsen, Concerted Action EPBD
‘Getting our homes future ready’ Housing Europe conference as part of the PROF/TRAC project, 8 Mar 2017
Brussels, Belgium



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Under European Commission's 'Europe 2020' strategy initiatives:

- IEE BuildUP Skills Pillar I and Pillar II;
- H2020 Construction Skills E04-2014/2015; ➤ [PROF/TRAC](#) (EE04-2014)
- H2020 Construction Skills E14-2016/2017; ➤ [BIMplement](#) (EE14-2016)



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PROF/TRAC (H2020 Construction Skills EE04 – 2014) *PROFessional multi-disciplinary TRaining and Continuing development in skills for NZEB principles*



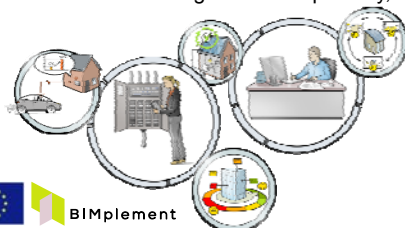
PROF / TRAC
www.profrac.eu

Objective: To develop a European training and qualification scheme as part of a life-long learning process for continuous development and up-skilling of professionals.

Level: Middle and senior professionals with a higher education degree (white-collars).

Main outcomes (project finished in Feb 2018):

- **PROF/TRAC minimum skills levels per work field** for each nZEB technology and interdisciplinary skills (cross-trade);
- PROF/TRAC [European qualification scheme](#);
- **EU Train the Trainers programs** and guidelines on how to start national trainings;
- PROF/TRAC training material repository, methodologies for skills mapping, roadmaps etc.



Available on the project's website!
www.profrac.eu



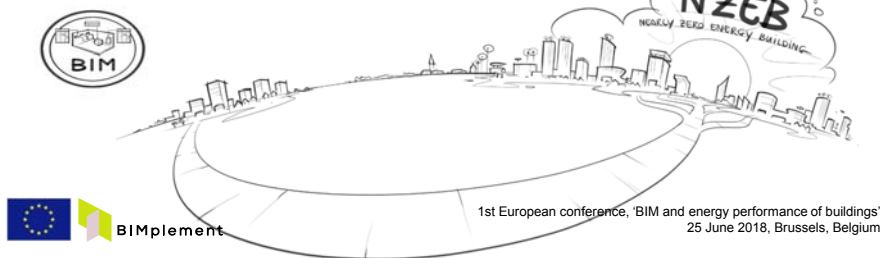
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From PROF/TRAC to BIMplement...

....by realizing that nZEB construction and renovation needs an *enhanced systematic approach for the quality control over the whole process!*

BIMplement paves a road towards an improved quality for nZEB construction & renovation by:

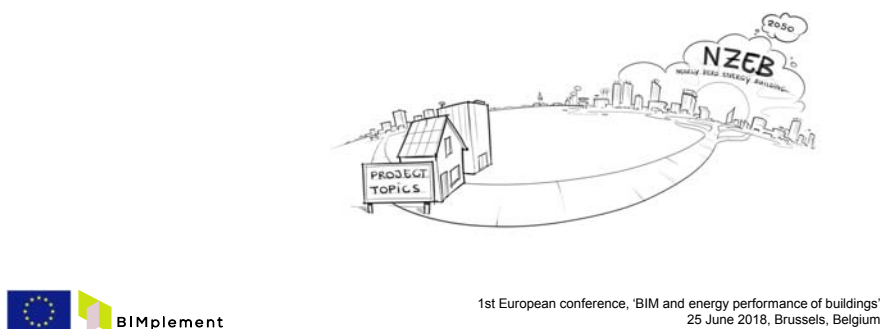
- Addressing the *entire value chain* of the building sector and the *total construction process* (from pre-design to in use phase);
- Improving skills of professionals as blue-collar workers for nZEB quality (*cross-trade & cross-level*) via *large scale trainings and continuous professional development (CPD)*;
- Developing a *flexible qualification methodology* that is able to anticipate new products and processes (*cross-time*) in different countries (*cross-country*);
- *By empowering BIM.*



BIMplement - a journey towards the upgrade of the *quality of the work* needed to meet nZEB targets

The BIMplement steps:

1. **Methodology development** based on BUILD UP Skills, PROF/TRAC qualification methodology



BIMplement - a journey towards the upgrade of the *quality of the work* needed to meet nZEB targets

The BIMplement steps:

1. Methodology development
2. **Testing the methodology** by implementing it for the area of air-tightness and ventilation

To keep focus the implementation within the project is dedicated to implementation of *ventilation systems* and ensuring the *air-tightness*.



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BIMplement - a journey towards the upgrade of the *quality of the work* needed to meet nZEB targets

The BIMplement steps:

1. Methodology development and **using BIM as an information carrier**
2. Testing the methodology by implementing it for the area of air-tightness and ventilation



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BIMplement methodology development with tools and learning content

Qualification framework (QF) development and implementation for the area of ventilation & air-tightness

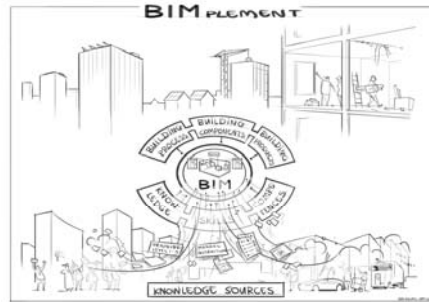
Objective: to develop BIM-enhanced qualification framework empowering nZEB construction and renovation, adaptable for blue and white collars, with an implementation into learning tools and methodology (robust and flexible for national adaptation).

Based on PROF/TRAC Qualification scheme framework and utilizing BIM to connect the knowledge sources with the building process, building components and building products.

BIMplement Qualification Framework (QF)	
Type of knowledge needed	
Relation with other disciplines	
Task description	
National knowledge repository	
BIM related tools	



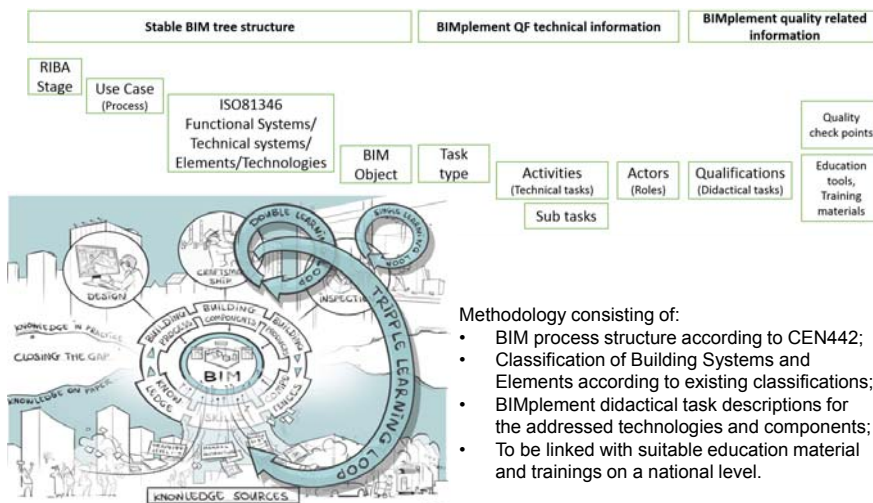
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BIMplement methodology development with tools and learning content

Qualification framework (QF) development and testing for the area of ventilation & air-tightness



Methodology consisting of:

- BIM process structure according to CEN442;
- Classification of Building Systems and Elements according to existing classifications;
- BIMplement didactical task descriptions for the addressed technologies and components;
- To be linked with suitable education material and trainings on a national level.



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BIMplement - a journey towards the upgrade of the *quality of the work* needed to meet nZEB targets

The BIMplement steps:

1. Methodology development and using BIM as an information carrier
2. Testing the methodology by implementing it for the area of air-tightness and ventilation
3. **Pilots demonstration and validation**



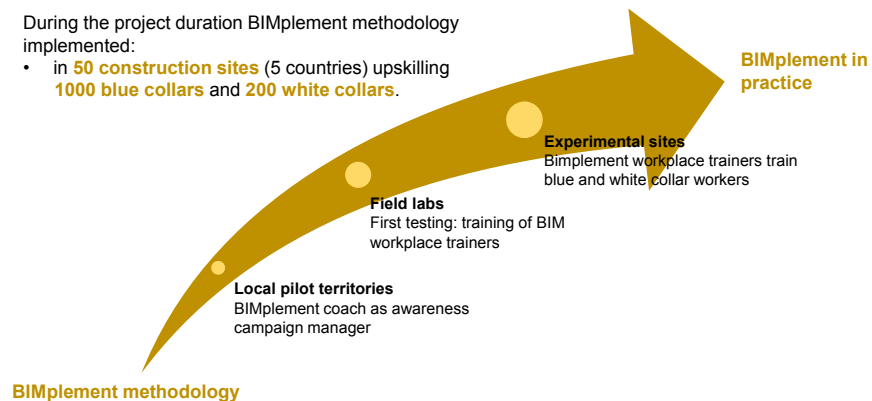
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BIMplement demonstration and validation

How to implement BIMplement?

During the project duration BIMplement methodology implemented:







- in **50 construction sites** (5 countries) upskilling **1000 blue collars** and **200 white collars**.



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BIMplement demonstration and validation

BIMplement QF Matrix will be linked with 'real' projects, documented in BIM.
 BIMplement methodology implemented in collaboration with BIM-learning centres or national BIM experts in order to:

-  Make agreements with the BIM learning centres
-  Train relevant users in the BIM centres
-  Draw 3D-BIM models, linked to quality control aspects for manufacturers and suppliers (i.e., design, working, installing instructions, etc. will be linked with BIM models, including the necessary qualifications to come to a final guaranteed quality)
-  Enrich BIM-models with process or learning related metadata
-  Write additional content or validating content
-  Develop awareness campaigns and pop-up teams

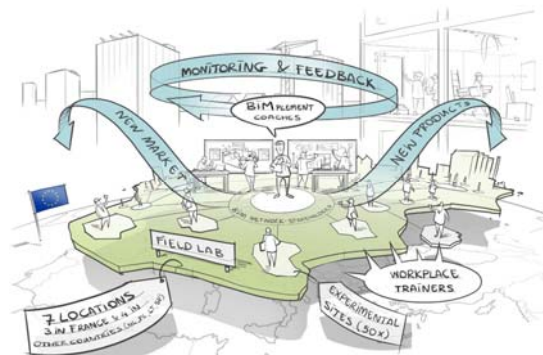


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3. Pilots demonstration and validation
4. **Exploitation and replication**



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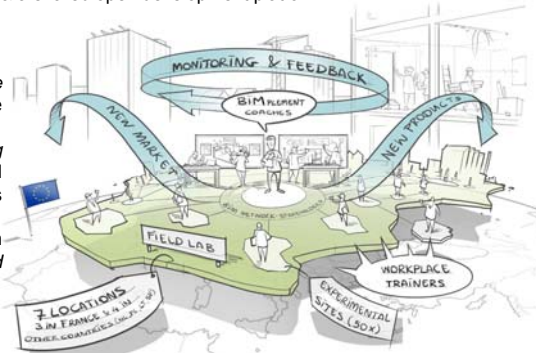
BIMplement exploitation and replication phase

The **replication & exploitation strategy** facilitates:

- Horizontal up-scaling of the methodology to other or new topics;
- Sustaining the used content within existing tools;
- Cross-country up-scaling of the methodology to other identified Member States by a free and open methodology, implementation services & a shared open development platform.

BIMplement addresses these aims by:

- Developing of a *self-instruction guide* being used as a standard to adopt the BIMplement methodology;
- Making use of the *BIM-learning Centres* in which SME's and enterprises can learn with as low as possible financial barriers;
- Collaboration and connection with *European umbrella associations and technology suppliers*.



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Conclusions and recommendations so far

BIM is not the goal...

...improved quality for nZEB construction & renovation and a more efficient systematic process are the goals!



BIM seems to be the best approach to reach these goals because:

- While sufficient, current knowledge is fragmented. – Utilizing BIM allows storing relevant learning and process metadata in an efficient way.
- BIM can be enriched by definition of quality levels, needed skills and linked trainings – BIM can serve as a multidisciplinary data repository.
- Enhancing BIM models with didactical information can enable and facilitate the learning process over the whole value chain.
- BIM can improve a collaboration between different disciplines and management of works – BIM allows synchronization of design and construction phase.



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BIMplement

Towards a learning building sector by setting up a large-scale and flexible qualification methodology integrating technical, cross-craft and BIM related skills and competence

www.bimplement-project.eu






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COLOFON
BIMplement

Thank you for your attention!

Contact information:
Ana Tisov, a.tisov@huygen.net
Peter op 't Veld, p.optveld@huygen.net






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