awakening | relevant | innovative | scalable | equitable

D.6.3 Package of selected digital tools for pilot

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List of acronyms and abbreviations

BIM – Building Information Modelling

BIM-EPA – BIM Energy Performance Alliance

BEM – Building Energy Modelling

CPD – Continuous Professional Development

EE – Energy Efficiency

GSL – Guided Self Learning

ICT – Information and Communication Technologies

NZEB – Nearly Zero Energy Building

PBL – Project-Based Learning

WP-Work Package

D – Deliverable

T-Task

MS- Milestone

WIP-work in Progress

BMC- Belfast Metropolitan College

IST-Instituto Superior Técnico

LO- Learning Outcomes

OA- Ordem dos Arquitectos

ULO- Unit of Learning Outcome

Table of Contents

Abstract

This report gives a summary of the selected digital tools for the trial pilot test of the ARISE training, based on the Framework developed by WP3.

The digital tools are created to be integrated with the resources and capacities of the ARISE Digital Platform-Arise Training (ariseplatform.eu) developed by WP4. The material was developed by WP5 for delivery on the platform, and moderated by WP6. The work involved contribution, and collaborative symbiosis between WPs 4, 5 and 6, supported by dissemination action from WP8.

This report highlights the selection strategy and summarises the general contents of the tools deployed.

The work carried out is associated with activities of Tasks 6.4 and 6.5:
Task 6.4 focused on the development, quality control, and then Task 6.5 on the deployment of those digital training tools and piloting upskilling schemes.
Task 6.4 concentrated on the pre-production for market readiness of the materials for digital tools. This involved a very close collaboration with Work Packages 4, 5, to integrate outputs, and create robust training tools and assessment materials for the ARISE pilots. It went through several iterations, correction, and amendments, based on internal testing, as well as feedback and comments from early trial users.
Task 6.5 related to the actual deployment and testing of these tools. demonstrating their environmental, economic, and energy benefits. Again, this phase involved improvements to the platform based on internal testing and feedback from trial participants. Improvements included minor realignment of training methods, enhancement of the training materials, and improvements in the platform's tools. The aim was to facilitate the delivery and management of the trials, and to prepare them for exploitation in WP8.

The deployment of the trials has been facilitated organically through the ARISE platform, and additionally assisted by webinars, blended tutorials, and social networks. It was further supported by international and regional events organised to help engage the audience with training.

This report highlights the collaborative efforts between partners and WPs, moderated by WP6, that aimed to ensure that these digital tools were effectively developed, tested, and primed for market introduction. The work that was carried out, related to the creation and deployment of this package of digital tools, and included:

- Moderating training and assessment materials for ARISE pilots, based on other WPs outputs.
- Organising trials in collaboration of all partners

The package of materials was deployed with phased releases, to support participants with bite-sized and stepped learning. It also enabled the team to manage participants expectations as well as collect early feedback to facilitate improvements as necessary with the next release. This provided further testing and feedback on the amendments once implemented and facilitate positive reception from the market stakeholders upon release.

1. Introduction

This report outlines the achievement of D.6.3 - the delivery of a set of selected digital tools for use in the pilot delivery phase of the project, obtained by the combined actions of *Task 6.4: Development, Quality Control, and of sample digital training tools and pilot upskilling schemes package*, and of Task *6.5: Deployment of Trials /test and delivery of a digital training tools and pilot upskilling schemes package*. This work was carried out towards achieving *MS20- Completion of a round of direct market upskilling intervention pilots, with package of digital tools testing materials.*

The selected pilot package related to the overall goals of:

- The Validation of the developed matrix of competences and qualifications to increase market competence, including digital tools of delivery and certification, in terms of meeting market demand and industry needs concerning transferability and recognition.
- Building the capacity of the market drivers and actors, on both demand and supply side, to appreciate the benefits of the developed digitalisation skills and certification program, and to apply them in mutual collaboration.

The pilot round involved the development and testing of pilot samples, based on the matrix of competencies, and learning outcomes developed by WP3; and training the models, tools and materials developed by WP5; deployed via the ARISE platform.

WP6 moderated the implementation of these packages, in a wide-scale demonstration, that was made available and accessible to all European regions and users, “organically” via the ARISE platform, developed by WP4.

The preparation and deployment of these package of digital tool pilot run allowed WP6 to sample-test the following:

- the suitability and flexibility of the Framework,

- the training materials,
- the approach and methodology,
- the delivery format/ medium.
- The ability to increase upskilling of market stakeholders.

We tested the integration and the application of a method for representative recognition of competences, supported by digital open badges, in sustainable energy skills trials, upskilling and capacity building.

2.Scope and context

2.1 ARISE's pilot aligned to Measurable Objectives

WP6 worked closely, and interdependently with other WPs, particularly WP4 and WP5 to develop and deploy selection digital tools pilot. The selection and deployment of training materials was intended to assist in achieving the project objectives of *Table 1: ARISE Measurable Objectives, Validation means and Key Performance Indicators, from the Grant Agreement*.

The following table indicates some of the aspects that were focused with more emphasis during this de development and deployment of the digital tools package.

D6.3 work towards Measurable Objectives	D6.3 work towards Validation Means	KPIs D6.3 aimed for
1.0 Increased the number of skilled building professionals via direct market action.	1.1 Increase uptake of digital, BIM, and sustainable energy construction skills.	Ensured participation by AEC Industry individuals, professional associations, SMEs, and other AEC stakeholders, such as owners and PAs.

Developed and delivered training/ upskilling and other support actions to AEC Workforce and stakeholders, fitted to their different roles. Pilot digital tools deployment aimed to lead towards more efficient and sustainable ways of designing, constructing, and running building, by having increased the number of professionals using/ making use of better materials, products, and energy sources, enabled via digitalisation with BIM processes, tools and technology	Increase the skills to use BIM modelling, 4D & 5D BIM quantification & scheduling tools, and awareness of 6D simulation tools energy performance. Increased the awareness and integration of digital technology tools for assessment energy performance. Increase the skills to use of digital methods for collaboration in construction. Increased the knowledge to use digital construction tools to assist processes, design, simulations, validation, and decision making towards sustainability and energy efficiency	Increased levels of BIM adoption and digitisation from participants via participation on the training.
2.0 Digital tools for pilot were developed were developed to help to increased opportunity for vocational mobility, competitiveness, and employability of the AEC workforce, across Europe and beyond, with the mutual recognition of energy and digitalization skills (and its transferability), gained with further	2.1 Digital tools for pilot and trials helped to receive support, and endorsement by professional organisations/ workers associations for the ARISE programme.	2) Developed microlearning (bite-size/small units with short term delivery) with digital badging to activate engagement across a range of AEC sectors.

education and upskilling, delivered by ARISE. Lead to further increase of the number of skilled AEC professionals. Via the:		
a) Development of an acceptable mechanism to recognize skills and roles	Pilot materials were based on Matrix of competences with maturity level and micro-learning.	Pilot and associated digital tools helped to engaged and gain the endorsement, from national professional organizations and workers" associations, with assistance of WP8
b) Development of a digital learning transaction register, with micro accreditation/ digital CV as a way of recognition of professional skills across regions.	The Pilot scheme package was based on the development and deployment of cumulative micro learning units allows for "customised" digital curriculum for the AEC sector, with a digital badge/certificate	Gamification and Digital badging were setup. The issuing of digital badges was tested
4.0 Developed, upscaled and/or combined a range of tools and initiatives into a more cohesive and holistic approach. Updated, further develop, and created new training and assessments up to date with market changes	4.1a) Updated/ revised suite of training material and assessment, in line with new ARISE validation mechanism, procedures and platform delivery format	In the pre-production of the training modules, materials were identified, upgraded and utilized to cover the ARISE competences. Pilot package worked on a set of potential 40 micro-learnings, uploadable and deliverable via ARISE platform.

and with gap requirements between regions, not previously addressed in past projects (namely BIMcert).		Deployed a sample of those for pilot trials and improvement
	4.1b) Associated LOF with the training materials and /or body of knowledge	Micromodules developed were linked to new Framework-matrix of LOF, skills, and materials.
	4.1c) ARISE digital tools were setup to allow mutual recognition of Digital competences for the use of BIM to improve energy performance of buildings based on the outcome of BIM alliance projects. (via an equivalence process)	
	A Pilot package was developed to facilitate recognition and/or Certification.	Conceptual training plans were developed to incorporate the micro module units, based the Matrix and framework developed previously by Wp3. Training schemes across regions were compared further with Package of digital tools to facilitate mapping and potential recognition too.
a) mutual recognition of professional roles in the building life cycle,	4.2a) Pilot package was based on the competences matrix to allow mutual recognition of skills	Developed Specific training contents (microlearning) used in direct upskilling actions in the market. They can cover content to cater for several target groups. Content included energy efficiency, digitalisation.
b) improved sustainable energy skills supported by digital technologies of the future.	4.2b) Training sample cover Digital competences for the use of BIM to improve	

	energy performance of buildings.	benefits in terms of energy performance and indoor quality. Developed and Deployed pilots to improve capacities of 1professionals, on energy skills, and to support SMEs
c) provide measurable and confirmable results of improved energy performance of buildings,	4.2c) Materials, contents, and training to demonstrated benefits of application of skills in improved energy performance	
d) pilot package took into consideration of the user's end needs including the quality of indoor environment, and improved operation and maintenance	4.2d) Also included benefits for end user in terms of quality of space.	
6.0 Pilot packages included content aimed to Increase capacities of the demand side, to understand the need for (benefits) and, the technical issues of sustainable energy skills., to stimulated and support the recognition, request these skills, in procurement procedures for new as well as renovation projects	6.1 Provided capacity on the Demand side to motivate and support the demand of will focus digitalisation and energy skills enabling design, build and operate NZEBs and other energy efficiency standards. Achieved via:	Demand side capacity increase measured by adopting ARISE.
	6.1b) ARISE engagement with Public Administration and public/private owners, to recognise the importance of energy digital skills required to design, build, and operate in NZEBs.	

	6.1c) ARISE package of materials developed to suit PA and public/private owners upskilling	Developed training micromodules that address and refer to NZEB and retrofit
	6.2 Package of digital tools promote raises awareness of home/ building owners and tenants about the benefits of sustainable energy skills	Enrolled over 500 Individuals in micro learning in pilot trials.
7.0 Digital tools were design to help improve capacities of the Supply side so that the certified skills can be recognized, appreciated, requested, and stimulated in procurement procedures (for both private and public projects), for new as well as renovation projects	7.1 Increased capacities on the supply side for implementation of sustainable energy skills leveraged by digital skills.	Developed training to AEC professionals (architects, engineers, blue collar, technicians/workers, etc.). At least 12 representative schemes, covered different levels of skills maturity (basic, intermediate, and advanced). Matched digital badging with the associated micro module.
	7.2 Increased the supply of such skills in the market, stimulating competition, and consequently more demand and pressure to the supply chain due to further and continuous improvement of skills.	

Table 01. Measurable Objective addressed via the work developed in T6.4 and T6.5

"(…) Improvement of sustainable energy skills supported by digital technologies of the future (…)."

This was considered in the Framework development, which is the guideline to the content of the training material showcasing the use of digitisation and promoting and increasing awareness of new software and methodology. It is addressed and covered by the following materials:

- "Introductory set "of micro module of BIM and Digital Construction,
- "Benefits set" of micro modules contents.
- "Requirement set" for software.
- "Modelling set" of micro modules of BIM modelling skills

More detail about these "set" can be found later this report.

"(…) Digital competences for the use of BIM to improve energy performance of buildings. And provide measurable and confirmable results of improved energy performance of buildings, („)"

The benefits for energy performance achieved via the employment of digitalisation processes is widely recognised. The sample for pilot scheme was delivered to various stakeholders- more than 300 individuals enrolled. Learners were engaged with the training towards to achieve recognition.

WP6 work carried out on D.6.3 facilitated the engagement with stakeholders, and delivery of training digital tools has had an impact on improved energy performance of buildings,

*The Training Materials and contents demonstrated benefits of application of skills in improved energy performance. ". C*overed also by the:

- "Introductory set "micromodule to BIM and Digital Construction,
- "Benefits set" of micromodules contents.

"Consideration of the user's end needs, including the quality of indoor environment, and improved operation and maintenance (….) "Emphasise benefits for end user in terms of quality of space ", covered on the:

- "benefits" set of micromodule contents.
- 5D related modules

2.2 Facilitating future mapping and implementation towards mutual cross region recognition.

Additional to ensuring the development of the digital tools for pilot actions related to the ARISE Framework, when developing the subdivision into micro units of learning, and related training contents, we researched and continued to cross-reference with other recognised Training Programmes across Europe, related to Digitalisation and BIM. Including, but not exclusively:

- Building Smart Training (cross regional)
- OA's-BIM CPD programme- Portugal
- RIBA-BIM CPD programme- UK
- RIAI's-BIM Pack-Republic of Ireland
- BRE Academy BIM Courses- UK
- NI Framework (OCN NI Digital constructions courses)- UK
- Lucene University-Bachelor's degree in digital construction-Switzerland
- Graphisoft-BIM coordinators program
- Universidade do Minho and Politecnico di Milano-BIMA+ (Italy, Portugal)
- Universita di Bologna-73940 - BIM Modelling
- As well as updates and changes on the current delivery of related training content in the consortium partners' institutions (BMC, TUD, KEA, IST)- UK, Ireland & Denmark, Portugal

The intention was to further facilitate the mapping of our framework, and of its correspondent digital training tools (micro modules), to enable a potential

acceptance of ARISE (content, standard knowledge, skills, and competencies) package, for future implementation.

It also assisted the moderation process, ensuring quality and validity of the content developed, along with the correspondent training material. This demonstrated that the material developed was comparable with recognised and widely accepted internationally training programmes. An effort was made to coordinate the contents, to allow for future dissemination and implementation. This would ensure the potential for the ARISE modules be mapped against other frameworks, and training programmes across regions, to facilitate future receptions and facilitate a route for a mutual recognition method.

2.3 Integration, inter-relation, interdependency, coordination, and synergies with other ARISE WPs outputs.

WP6 worked closely, and interdependently with other WPs, particularly WP4 and WP5 to develop and deploy selection digital tools pilot. Worked with WP5 it developed and moderated a selection of digital training materials, that were used and trailed in the pilot to the market. This was specifically related to Task 6.4 Development, Quality Control, and of sample digital training tools and pilot upskilling schemes package.

Worked with WP4 enabled upload and employment of those digital delivery training tools via the platform, including and the implementation of the gamification, quality control of materials, and assessment tools, and implementation of certification and recognition (digital badging) into the pilot modules. This was specifically related to assist both T6.4 and T6.5.WP8 supported WP6 in the deployment of the pilot package to a wide number of AEC stakeholders.

The following is an example of stakeholders and categories table, as defined in *D3.2's Maturity levels skills mapping spreadsheet*.

Profession	ARISE Category
Civil Engineer	Contractors
Mechanical Engineer	Designers
Electrical Engineer	Designers
Structural engineer / Construction engineer	Designers
Data analyst / Software engineer	Designers
Landscape Architect	Designers
Material Purchaser / Material Scout	Contractors
Project Manager	Contractors
Onsite Manager	Contractors
Foreperson	Contractors
Procurement Coordinator (Tenders)	Contractors
Building Owner / Operator	Clients
Project Developer	Clients
Financial Manager	Public Administration
Building Energy Consultant	Public Administration
Policy Maker	Public Administration
Public Procurement Advisor	Public Administration
Building Inspector	Public Administration
Quantity Surveyor	
Engineering Manager	

Table 02. Diagram of ARISE profile category

3 Pilot package -Approach -Implementation- Methodology and Selection - Deployment and Improvement

3.1 -Task 6.4: Development, Quality Control, and of sample digital training tools and pilot upskilling schemes package

3.1.1 Inception works- early intended approach:

Method:

The Matrix and Framework developed in WP3 was analysed, as well as the list of learning outcomes. It was integrated into the platform and forms the base to generate the pilot digital tools, including micro module definitions and content.

Samples of the Framework and its Learning Outcomes were selected to be addressed in new training material, that could focus on the measured objectives referred previously on 2.1 section of this report.

A set of micro-modules was developed to include these samples. These Micro learning modules were created to help professionals gain the skills to perform certain tasks and subtask identified on the Framework.

We aimed to sample across the four Specialisation Groups of the framework as represented in Fig 01.

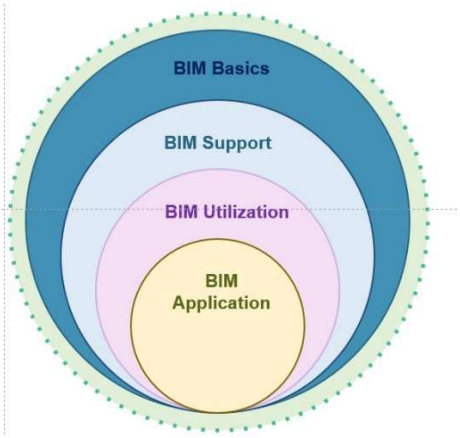

Fig 01. Diagram of the 4 Framework Grouping

The testing of digital tools via the micro-modules was intended to target the Framework 4 Curriculum Areas.

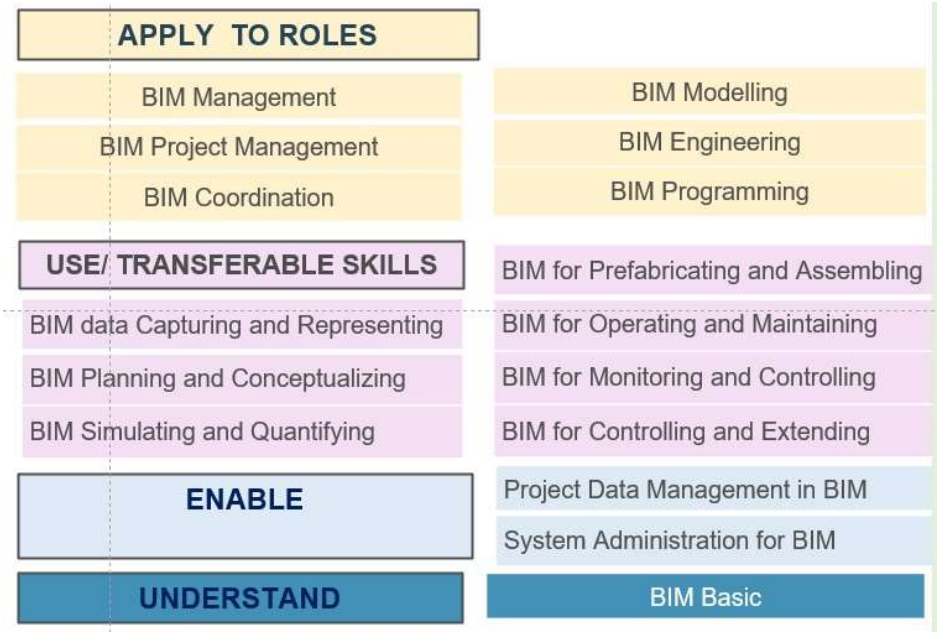

Fig 02. Diagram of the 4 Framework Grouping Specialisms

When making use of the feedback from the matrix of competence, and skills gap (this will be address in more detail in the upcoming D6.4 report) it was noticed that the profile of market users enrolled for trials were, in great number, lacking basic BIM skills or with limited basic ones and experience. We interpreted that, in some regions, there was still necessity of building skills from the base up, to level-up the market. Then those skills will become a norm, and act as leverage for further skills demand, driving then furthermore complex and specific skills demand in the market. We also wanted to drive cooperation and integration between professions. This included raising awareness of what digital skills could be used to improve their workflows and enable energy efficient building construction. Additionally, we wanted skills that could be built from the base up, and sustain several growth pathways. We developed a set of BIMS basic testing units, including platform instruction methods.

3.1.2 Moderation of contents assessment

As the ARISE framework was based on previous AE H2020 Projects, the new Learning outcomes and framework task and subtask, could be included in existing modules to form those legacy projects.

WP5 used the base of some of those project's modules, for example BIMCert, to organise the content. However, the pilot delivery material as customised, updated, and modified of ARISE.

For example:

- All references of PAS1192 were reviewed and updated to relate to ISO1650.
- Re-Recorded demos were replaced with new versions.
- New PPT presentations created to present contents.
- Books, pages, and lessons were modified or recreated.

WP6 helped in the process, and moderated/ verified and amendments and updates had been done.

Also moderated if materials matched the Learning outcomes.

3.1.3 Moderation of methods of assessment

We moderated the assessment created for the modules, to ensure quality control, and the validity of training results and skills achievement. We worked closely with WP5, to ensure the following:

Firstly, to validate the type of assessment, complexity, as well as to ensure the assessment has robust quality control considering it is completed online. For example, in some initial module versions, the assessment was done by a single multiple-choice quiz, and then potential a new one for referral purposes. Quiz would use option of swapping order of questions. But still, it would not be robust enough to ensure it is the learner's individual work.

Also, the division of practical units and training, into smaller micro modules, and separating the basic, functional operation knowledge/ skills with from the advance practical application. Different practical assessments, with varied complexity to ensure also that ARISE modules and training can be adaptable to different intended EQF level implementations.

Having a base core set of micromodules, and then adding to it others comprised mainly of additional more complex assessment and more advanced specific training material,

3.1.4 Proposed Selected Package of Materials

Initial considered sample selection list of micromodules for Pilot Trails presented in the following table:

Name (*)	Generic description
00a WELCOME -trainees	Manual and introduction for Trainees
00b WELCOME-trainers	Manuel and introduction for Trainers
The Core Basics	
01 What is Digital Construction	Intro do Digital Construction
02 Digital Construction Benefits	Overall benefits with intro to energy efficiency benefits
03 What is BIM- BIM Basics	Intro to BIM Concept
04 BIM Terms I	BIM Basic Glossary terms
04a BIM Terms II (**)	Additional complexity Terms and explanation (to upgrade level -based of EQF reference)
05 BIM Benefits	Overall, BIM benefits with intro to energy efficiency benefits
06 BIM Dimensions	Explanation of Bim Dimensions
07 Bim Maturity Stages	Explanation of Bim Dimensions
08a BIM Standards	Intro do Bim Standards
**08b BIM Standards II	Additional complexity of Standards explanation (to upgrade level -based of EQF reference)
BIM Requirements	
09 BIM Requirements -Impacts	Changes of workflow- support implementation including Data

10 BIM Requirements -Technical	Hardware & Software- support implementation
11 BIM Requirements -EIR	
12 BIM Requirements_ EIR II-Practical **	Compose EIR (BIM Project manager)
13 BIM Requirements -CDE	Intro to CDE
**13a BIM Requirements -CDE II	Setting and managing a CDE
14 BIM Requirements_ BEPI	
14a BIM Requirements_ BEPII-Practical **	Compose BEP (BIM) Project manager)
15 BIM Requirements -Impacts BIM Information Management & Application	Changes of workflow- support implementation- Manage project data
16 BIM Requirements -Technical	Hardware & Software- support implementation
**17 Digital Security I Overview	General Digital security Guidance's to assure Data security
18 Digital Security II-BIM	Manage Bim security Intro
***19 Digital Security III-BIM Practical	Manage Bim security assuring BIM security (add on to raise EQF level)
***20 BIM Requirements_ Loi Lod & LoD-I	Intro to legacy concepts of LOI and LOD
***21 BIM Requirements_ Level of information needed-II	Intro to ISO1650 Level of Information needed
**21 BIM Requirements -File Naming	File naming for data management and other
22- H&S in a Digital Environment I Site Basis	H&S good practice while using digital devices
23- H&S in a Digital Environment II-Office based	H&S good practice while using digital devices
Benefits Awareness	
22 BIM Benefits- Supply Chain Coordination	Overview of BIM specific benefits for Supply chain
23 BIM Benefits- Project Management	Overview of BIM specific benefits for Project Manager
24 BIM Benefits- Energy efficiency	Overview of BIM specific benefits for Energy efficiency
Digitalisation tools & Energy Efficiency	
25 Digitalisation enabling tools for energy efficiency	Overview Digitalisation tools for EE
**26 Data Capture -Thermal reading	Thermal imaging scan for retrofit
**27 What is a BEM?	Intro to NZeb
*** 27a BEM & NZEB?	BIM as helper towards NZeb
**28a Preparing a BEM I	Preparing a BEM (conceptual)
***28b Preparing a BEM II-Practical (numerous software specific)	Preparing a BEM (practical application—based on specific software solutions)

***29 Open and Energy performance (numerous software specific)	Open Bim tools for energy assessment (conceptual)
BIM Application- Project and Bim management	
30 BIM Coordination Intro	Concept of Discipline coordination with BIM
31 BIM Coordination-Model review - Intro	Model review concept
*** 31a BIM Coordination-Model review - Federation I (native- software specific versions)	Model review concept advanced (software specific
***31b BIM Coordination-Model review - Federation I (multi-platform-software versions)	Model review concept & practical within same software
32 BIM Coordination-Model review - Open BIM	Model review concept & practical across different software
Interoperability	
**33 Interoperability -Data Structure I	Explain importance of proper data structure
**34 Interoperability & Open BIM I (intro building Smart)	Intro to Building Smart
**35 Interoperability & Open BIM -IFC	Export to IFC
**36 Interoperability & Open BIM - Cobies	Export to Cobies
BIM Application- Bim Modelling	
37 BIM Modelling BIM Object UI (Revit)	Set of micromodules covering BIM Software UI (subdivided)
38 BIM Modelling BIM Object Methodology	Bim Object purpose and creation method
39 BIM Modelling BIM Object Modelling tools	BIM tools for modelling Objects
40 BIM Modelling BIM Object Parameters & variations	BIM tools to edit parameters
41 BIM Modelling BIM Object Export Import	BIM tool to export objects
42 BIM Modelling Title Blocks	BIM tools connected to module title content
43 BIM Modelling Workflows Setup Templates	BIM tools connected to module title content
44 BIM Modelling-Software UI (software version specific- several micro modules)	Set of micromodules covering BIM Software UI (subdivided)
45 BIM Modelling-Coordinates	BIM tools connected to module title content
46 BIM Modelling-software Datum Elements I - Levels & Ref Plans	BIM tools connected to module title content
BIM Modelling- Standard building elements	BIM tools connected to module title content
47 Walls	BIM tools connected to module title content
48 Floors	BIM tools connected to module title content
49 Roofs	BIM tools connected to module title content

50 Windows	BIM tools connected to module title content
51 Doors	BIM tools connected to module title content
52ceilings	BIM tools connected to module title content
53 import BIM Objects	BIM tools connected to module title content
BIM Modelling-Customised components I	
54 Curtain Walls	BIM tools connected to module title content
55 Stacked walls	BIM tools connected to module title content
56 Columns & Beams	BIM tools connected to module title content
57 Beam Systems	BIM tools connected to module title content
58 Stairs	BIM tools connected to module title content
59 BIM Modelling-Import references	BIM tools connected to module title content
60 embedding data	BIM tools connected to module title content
61 Editing & customising I	BIM tools connected to module title content
61 Editing & customising U values	BIM tools connected to module title content
Preparing data	
61 5D- extracting data-schedules	BIM tools connected to module title content
62 BIM Modelling-Annotations	BIM tools connected to module title content
63 BIM Modelling-2D details	BIM tools connected to module title content
64 BIM Modelling-Setting views	BIM tools connected to module title content
Publishing	
65 BIM Modelling-Setting Sheets & Publishing	BIM tools connected to module title content
66 BIM Modelling-Exporting to 2D formats	BIM tools for publishing data
67 BIM Modelling-Exporting to IFC	BIM tools for exporting to Open BIM
Materials	
68 BIM Modelling-material creating I	BIM tools connected to editing materials
69 BIM Modelling- material creation II-Visuals	BIM tools connected to editing materials (visual purposes only)
70 BIM Modelling-material creation & Building Fabric- Data input 4 energy performance	BIM tools connected to editing materials specifically the energy performance
71 BIM Modelling-Arch Residential Dwelling Type I-Practice (basic)	Add-on module, practical overall BIM modelling course practice exercise
72 BIM Modelling-Arch Residential Dwelling type II-Practice (intermediate)	Add-on module, practical overall BIM modelling course practice exercise
***73 BIM Modelling-Arch Residential Dwelling type III-Practice (Advance)	Add-on module, practical overall BIM modelling course practice exercise
74 BIM Modelling-Arch Industrial or Commercial Practice	Add-on module, practical overall BIM modelling course practice exercise
**75 BIM Modelling-Solar studies	Using Bim authoring software to simulate sun path and check solar gains
4D & 5D	

76 BIM 5D-Quantification I (revit)	Within Bim authoring software create schedule
77 *** BIM 5D-Quantification I (Navisworks)	Using Industry standard software - import model and extract schedules
78 BIM 4D-Project Timeline (Navisworks)	Using Industry standard software - import model and create 4D animation

* Note: Names and number reference of modules and temporary, and can be subject to change

** Note: Under consideration if required or relevant

*** Note: Not a priority

action, to obtain effective feedback.

3.1.5 Gamification integration and certification recognition

We also integrated and tested training sampling that was uploaded into the platform the use of the gamification XPs, Stars and Badges (both internal and Open Badge issuing). It was detected that some improvements on the platform capacity were required. WP4 facilitated updates on the Platform capacity to assist the continuation of the pilot deployment and to assist on the future implementation.

As module improvements were implemented during initial deployment, the final set of the XP and stars value was paused. Once finalised and updated correctly on the final pack of material, to match final contents learning activities an assessment, Users dashboard and records will be updating with final values based on their achievements. The ability to change and adapt the gamification values and make full scale update to user leaderboards was one of the additional features required to the platform to accommodate modules ongoing re-development and

3.2 Deployment of Trials /test and delivery of a digital training tools and pilot upskilling schemes package.

3.2.1 Deployment Phases

Early Pre-platform launch stage

Testing of initial materials, using a blended delivery format. video recordings, annotation and flipped class.

Throughout 2022-23: Controlled limited target cohort groups of blue collar works. (mainly UK)

Deployed early material related to:

- Bim Basics,
- Bim requirements,
- BIM Awareness,
- BIM Application (BIM modelling & BIM objects), 5D Benefits Awareness

Late Pre-platform launch

Followed the first stage. In first half of 23-24

Limited cohorts.

Controlled limited target group of blue collar works. (UK).

Re-iterations/ Re-Deployed early material related to:

- Bim Basics,
- Bim requirements,
- BIM Awareness,
- BIM Application (BIM modelling & BIM objects), 5D Benefits Awareness

Webinars and events-

Participation in virtual events including for example Buildup events, OA events (UK, PT (cross region)

Post Platform launch.

From October 2023, with cross region wide (with bigger uptake in UK and PT)

Continuous monitoring and support

Fig 03. Some of the Modules displayed on the platform.

2024 onwards

Deployed to OA and other professional in Portugal, as well as open to all European regions-23-24.

Selection of basic, support and awareness modules deployed via platform, after integration and improvement.

3.2.2 Reassessment Correction and realignment

Materials were subject to iteration and improvements, based on new research on subject development and on comments and feedback from user.

3.2.3 Language

The Digital tools package for pilot trial was to be officially in English.

However, audience engagement shown that learners prefer or require training in their language. Materials were translated to Portuguese. And some of initial modules were translated in Italian.

4. Next steps

4.1 Target audience – maintaining engagement and monitoring.

Continue engagement with target audience.

Keep promoting upskilling. Learners will continue to be monitored and assisted by WP6, until project closure, potential until end of final report period. Collect feedback for continuous improvement.

4.2 continuous improvement, expansion of material and user support

Continue to improve materials, according to feedback provided.
Present detail of feedback in upcoming D.4 report

5. Conclusion

Deliverable 6.3 encompassed the Development, Quality Control, and Deployment of Sample of Competences Training Scheme Package,

It involved the Pre-production of pilot training digital tools for market testing of the competences/ qualification scheme matrix that had been developed by WP3.

It was a joint effort of WP4, Wp5, WP6 and Wp8 regarding the:

- Preparation, and selection of sample materials package
- engagement with target audience
- Deployment and delivery of training
- Monitoring and support

5. Bibliography

Not applicable in the context of this report.