awakening | relevant | innovative | scalable | equitable

D 6.3 Recommendations for adaptation of the proposed recognition

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Colophon

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1. Publishable executive summary

This report contains a set of recommendations for adaptation of the by ARISE proposed recognition on BIM and EE-skills. To facilitate the adaptation of the proposed recognition by national branches the following strategy is presented.

The use of the buildingSMART qualification system already accepted worldwide will be mapped against the micro learning units presented within the ARISE platform.

Once this has been accomplished, we can propose to DG growth, which is promoting the acceleration of the digitalization of the building permit, to use the same content for a more advanced training addressed to municipalities.

The DG growth initiative, in fact, is only the starting point of a process that begins with the maturity analysis of European municipalities in terms of competences of the technical offices and foresees the drafting of a roadmap to reach higher maturity levels. The training provided by ARISE could be included in this roadmap.

These opportunities need to be integrated with national specific needs that will be proposed, as example, in two or three countries.

The background

There is a strong pressure to accelerate the digitalization process in all Europe as it is recognized that it can improve the entire building process and supply chain interaction from both the quality and the time perspective.

The digitalization of the BIM permit together with the requirements of BIM in public tender has a high priority to make the tender assignment more transparent and less disputable during the construction process. To do this, the public administration must know that a design made in BIM at the start could cost a little more, but the advantages later on could be very important.
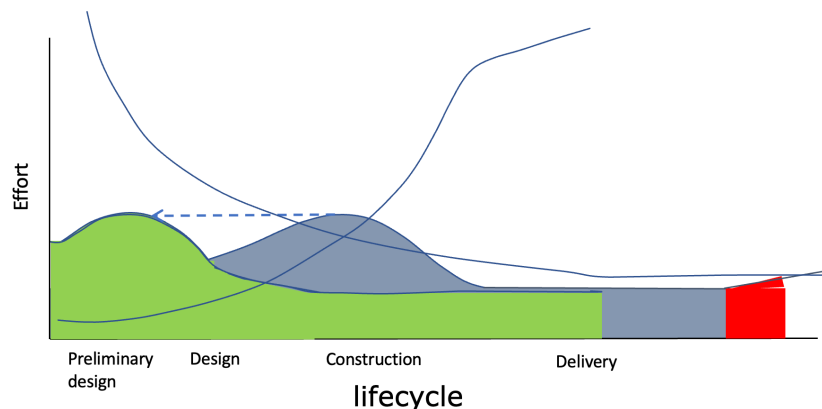
In the picture the well-known MacLaimy curve[1] that shows the advantages of having a higher effort in the preliminary design. If the preliminary design is shared with all the experts involved in the supply chain, that is energy experts but also producers and

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[1] en.wikipedia.org/wiki/ Patrick_MacLeamy

constructors, many decisions that usually are taken during the construction, can be taken in advance in the virtual world. This means that the construction process is better, faster and with less disputes which are one of the plagues of public tenders.

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# 2. The importance of the partnership with buildingSMART

ARISE is proposing a common and integrated approach to reach the market with the same qualifications to avoid the proliferation of similar initiatives bringing different systems for the recognition of the digital competences.

For this reason, IBIMI has set up a collaboration with buildingSMART International (bSI).

bSI is working since more than 20 years on the development of standards together with the main stakeholders at international level.

It is important to base the competences on open standards knowledge, as it is the only way for successful collaboration among the different actors and experts of the construction value chain.

In the following schema it is shown how buildingSMART[2] develop the standards. The process starts just with the identification of the needs for information exchange that brings to requirements for the software and therefore the standard to be used.
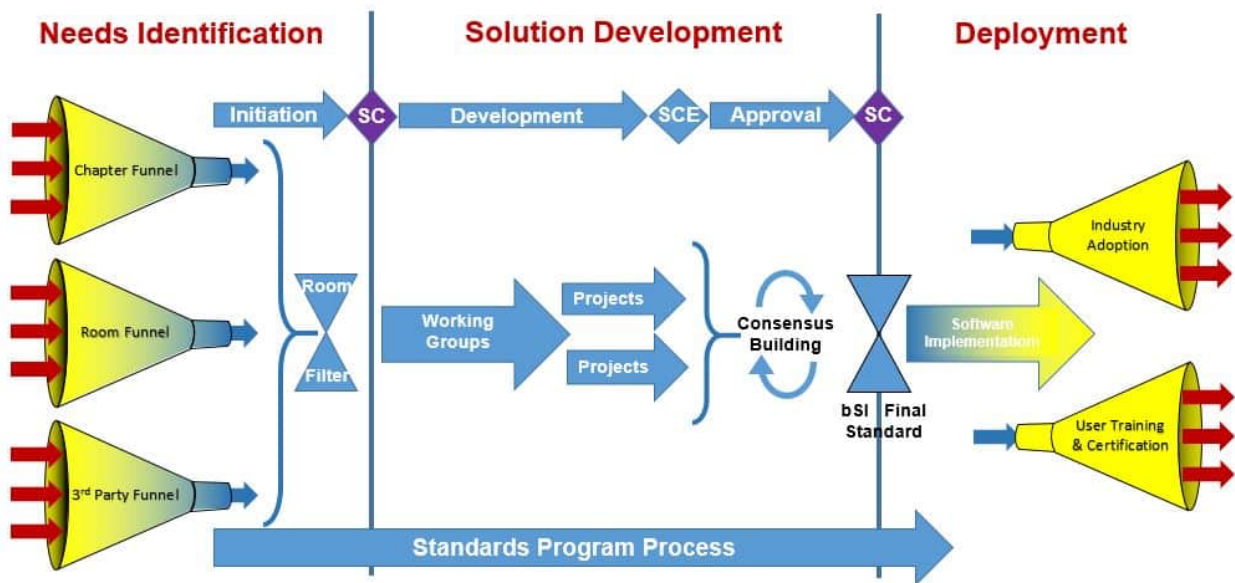
Once the consensus has reached among all the stakeholders, the candidate standard goes through the standardization process. The whole process for the standardization takes a few years as a wider consensus is required to become an international and European standard.

In the next schema the numerous links among different technical committee, all related to the digitalization. It is important to underline that ISO and CEN standards are completely "aligned" so the use of these standards in European market makes life easier

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for all the companies that work outside Europe.

Besides, the introduction of the standards within the European directives makes the use of standards compulsory for any company working in Europe.

VA = Vienna Agreement regulates the relationship between ISO and CEN
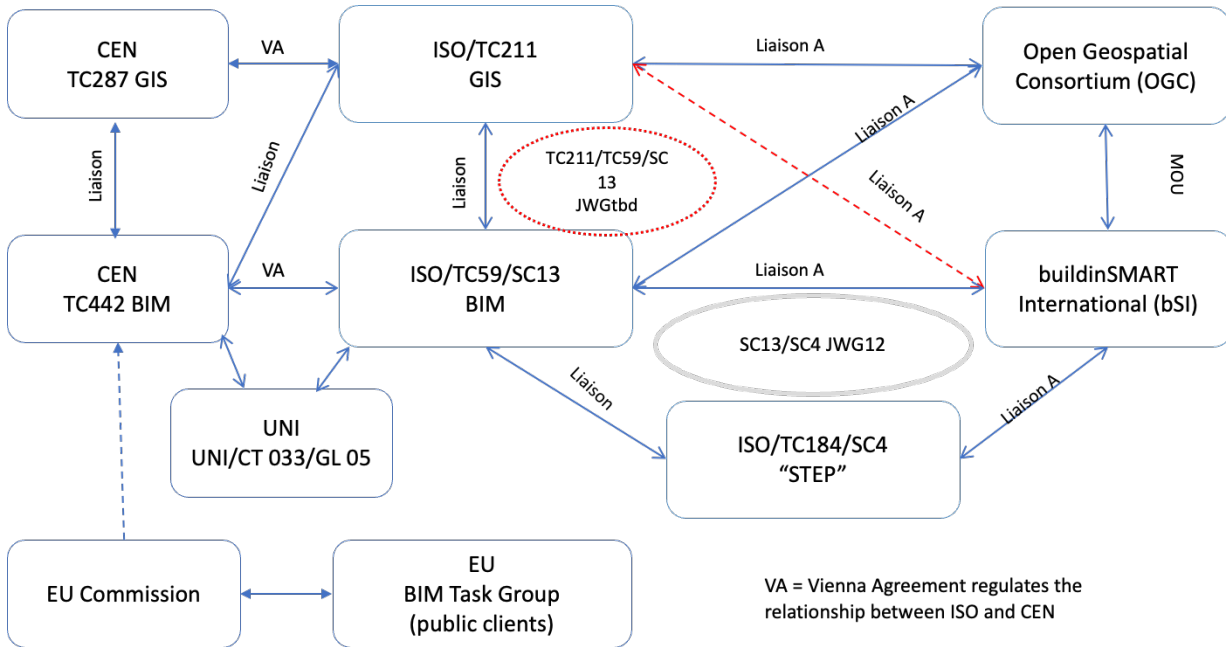
bSI has also developed the so called "fundamental qualification" that is accepted worldwide and already implemented in several European bSI Chapters (Austria, Benelux, Croatia, Czech Republic, France Germany, Italy, Netherlands, Slovenia, Spain) are promoting this qualification in Europe.

In the following picture the upskilling process set up by buildingSMART to ensure proper implementation of openBIM standards worldwide.
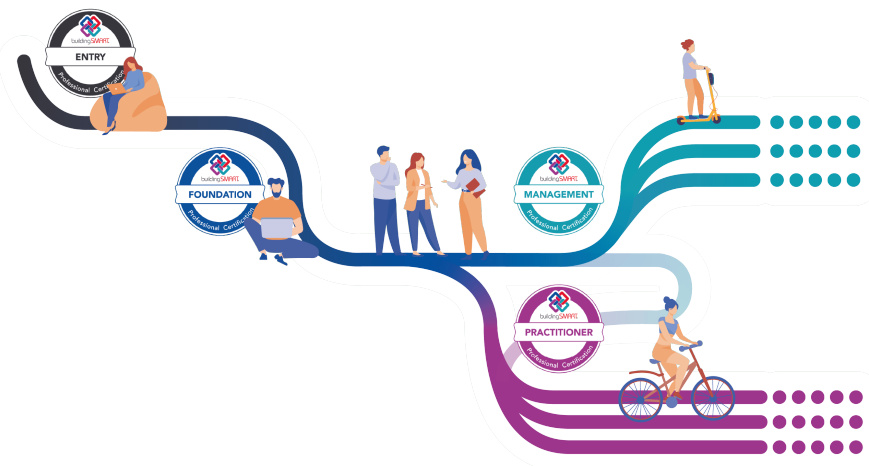
Very soon there will be an entry level freely open to any body that provides "awareness" of the open BIM and on the necessity to start a "BIM maturity level process". The following step is the foundation level which provides the fundamental knowledge on the advantages of BIM and of the open standards.

At that point the professionals need to follow specific path depending on his role in the building process. For instance, the course on BIM to improve energy performance is placed among the "management courses" while a professional who want to use BIM simulation tools to identify the best solutions to increase the energy performance of a

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building will need to become a "practitioner" and learn how to use the BEM, that is BIM for Energy Model.

However, not all the European countries have yet an active bSI chapter. For this reason, we are proposing an agreement with bSI to use the ARISE platform to promote the entry course of buildingSMART and fundamental knowledge on the use of open standards to increase the energy performance in buildings. This will enable ARISE to deliver more valuable learning pathways and bSI to grow interest at national levels for initiating new bSI national chapters.

3.   The role of the different actors

The bSI qualification is now awarded trough accredited training centers who receive part of the revenue coming from the people that undertake the buildingSMART online certification. In order to get accredited the training centers have to pay an entrance fee of about 2.500 euro which last two years. The training center, however, can train as many trainees it wishes.

The solution we are discussing involves the following actors:

- the buildingSMART European chapters which can provide accreditation to the training centers interested to promote the buildingSMART qualification

- the accredited training centers that organize the classes and provide:

    o the access to the micro-units of the ARISE platform that can be used to reach the maturity level required by buildingSMART

    o the access to the buildingSMART qualification system

- buildingSMART International providing the access to the online qualification system

- the ARISE platform managers who provides access to the micro learningunits and highlight the microunits that need to be acquired in order to gain the basic knowledge needed to access to the bSI qualification.

- IBIMI who is providing training materials to increasae digital competences to better manage the energy performance during the whole building life.

In this picture a scheme representing the inter-relationship among the different actors.

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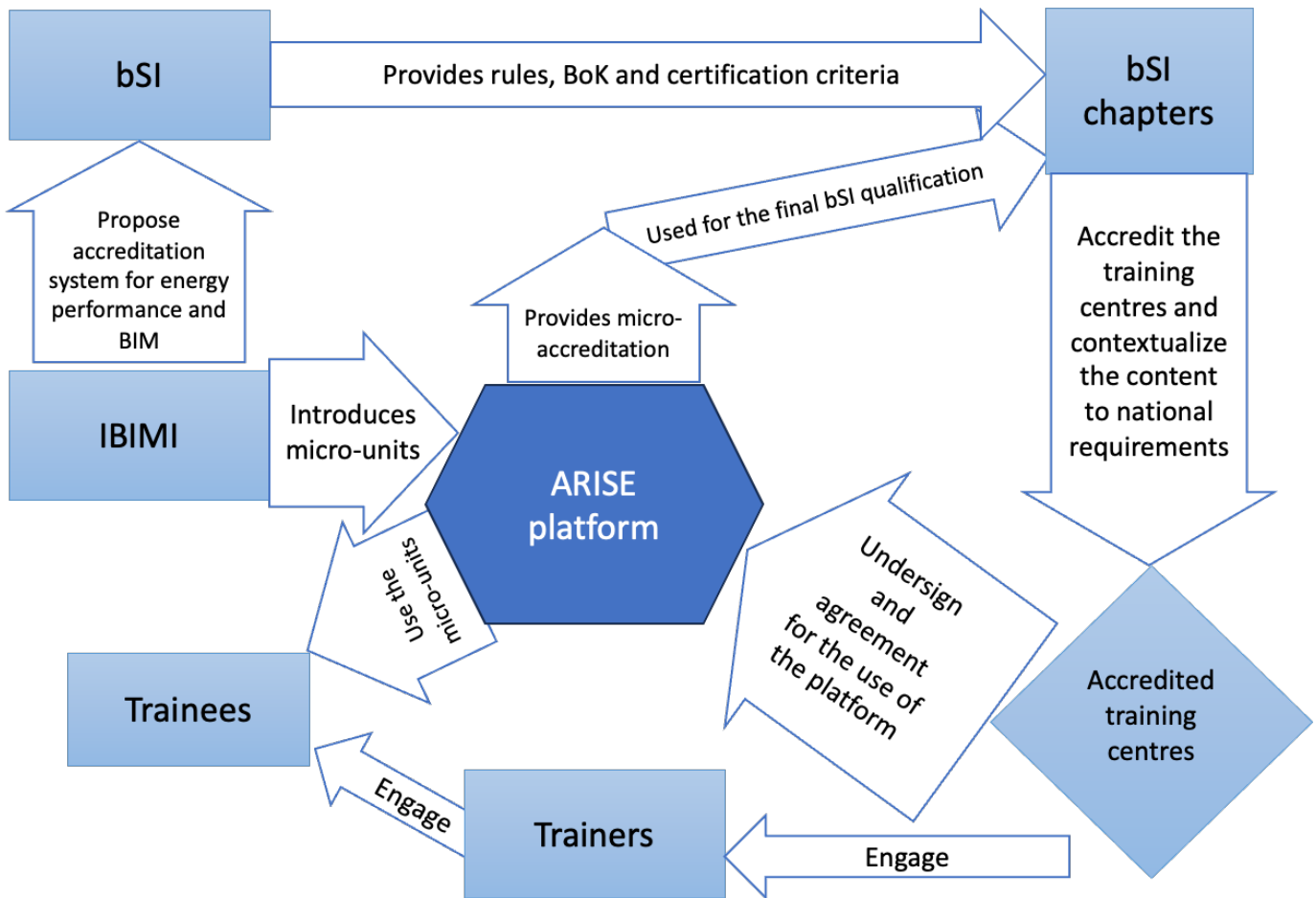
It is important that we share the same qualification scheme with the Unit of Learning Outcomes (ULO's) to ensure the use of open standards among all the actors. Once the maturity level of both SMEs and Public Administration has reached the fundamental level, the same standards could be recalled in the directives and in their implementation at national level so that the real interoperability will be achieved.

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4. The constitution of the European chapter forum to support the European policies

Several European chapters of buildingSMART International supported the development of national roadmaps for implementing openBIM standards in their respective countries. At the same time, the EU BIM Task group[3] promotes digital uses in construction for the public market. In this context, the idea of creating the European openBIM Forum emerged to propose initiatives aligned with the EU strategy in digital construction pathway and support the implementation of openBIM in European strategies.

The role of the European openBIM Forum is to support the development of a joint implementation strategy centered on openBIM and integrated with European policies.

Nowadays, commercial solution providers create new tools and IT interfaces at national and international levels. There is a need to have a common approach by standardizing how data is exchanged, managed, and secured, thereby advancing openBIM Standards for a digitalized and sustainable future.

This will enable best practices to be shared and adopted between countries to accelerate the implementation of openBIM-based regulatory processes. This will unlock vast potentials of digitization, such as automation, shareability, and adoption of processes. For example:

- Enable seamless information exchange using openBIM standards for the existing public procurement processes.
- Use openBIM standards to structure and standardize the carbon impact calculation model for all types of constructions. This will leave vendors free to compete, and it will be up to them to develop interoperable tools that meet the specifications.

The benefits of setting up a strategy will entail the following:
- Increase the relevance of openBIM standards in EU directives.
- Increase the relevance of openBIM standards within CEN and ISO committees.
- Recognition of openBIM in procurement for the benefit of the entire construction supply chain.
- Benefit from what is developed on an international level based on openBIM standards.
- Increase the cooperation between European buildingSMART chapters and the respective national governments.

The chapters in the buildingSMART community that have already agreed to establish the European openBIM Forum are the following: Austria, Benelux, Croatia, Czech Republic, Denmark, Finland, France, Germany, Italy, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland, UK and Ireland

Both buildingSMART International - through the CEO Clive Billiald - and the EU BIM Task group - through the Chair Jaan Saar - have confirmed their support.

In the following picture the support that standardization bodies can give to the European

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[3] A pan-European approach to best practice in BIM (building information modelling). Bringing together national efforts into a common and aligned European approach to develop a world-class digital construction sector. Mission : Support public clients responsible for the built environment to implement digital transformation in practice. Who's part of it : About – EU BIM Task Group

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Directives implementations and how the member of the European openBIM forum will be engaged to provide additional competences in the application of national or even regional legislation but… in a digital environment.
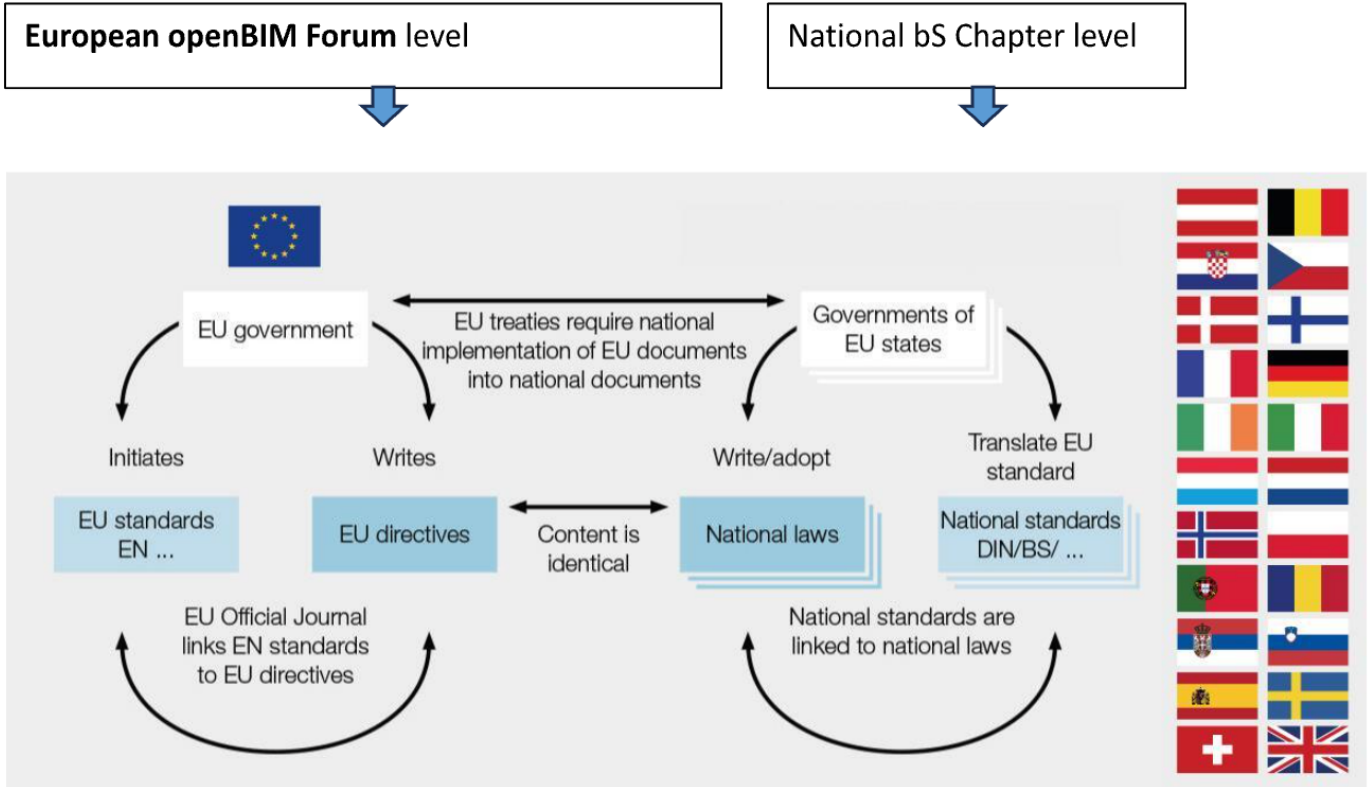
5. The buildingSMART Learning Outcome Frameworks

In the following we provide the Learning Outcome Framework (LOF) of buildingSMART fundamental qualification to underline the alignment of what has already done at international level that can be used also for European public administrations and SMEs. The buildingSMART LOF has already been explained in more detail in the deliverable D2.4 First overview of other EU wide certification schemes report.

The fundamental buildingSMART LOF is arranged in five sections:

1. Understand the definition, key terminologies and benefits of Building Information Modelling (BIM).

2. Recognise the advantages of BIM compared to traditional project delivery

3. Understand project information management, with BIM, according to the ISO 19650 series.

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4. Recognise the need for open and interoperable solutions.

5. Understand the terms and measures of BIM capability within an organisation

Each section has 5-6 learning units Each of them will become one or more microlearning unit in the ARISE platform and the trainee will have the opportunity to certify a single unit through a blockchain verifiable Open Badge (certcoin). The trainer will suggest the trainees which micro learing-unit s/he has to follow to reach the maturity level required by buildingSMART to obtain their qualification. The bSI chapter, through the accredited training center, will provide access to the bSI platform to undertake the examination. The role of the chapter is fundamental both to organize the test in the local language and to add a module which contain the national obligation as described in the last paragraph. To make sure that the ARISE qualification fits with the Unit of Learning Outcomes in the bSI LOF a mapping will be made between the LOF of bSI and ARISE; in this way all Open Badges issued linked to those Unit of Learning Outcomes will be valid for both ARISE and bSI.

IBIMI, through another European Project net-UBIEP, has developed an analogous LOF for the use of BIM to increase the energy performance of a building during all the life cycle.

This LOF is arranged in other 6 modules:

1. Understand the context around existing conditions modelling for energy performance analysis.

2. Summarize the specific activities to enable BIM to improve energy performance during the preliminary design stage.

3. Understand information requirements (e.g., specification, production, exchange, and maintenance). for a BIM – based technical design stage of energy efficient buildings.

4. Understand information requirements for the construction stage of energy efficient buildings - specification, production, exchange, and maintenance, based on a BIM work process.

5. Understand energy management at the operational stage of energy efficient buildings, enabled by BIM - principles, tools, and methods for smart energy management.

6. Outline the importance of identifying local and national legislation before performing the energy analysis.

Each of section has at least six learning units. Also, in this case the ARISE platform can contain the microunits with the possibility to gain a blockchain verifiable Open Badge for each unit. When the trainer will believe that the trainees have all the necessary micro-competences could suggest the trainees to undertake the examination in the bSI platform. Again, the role of the chapters will be fundamental not only for the translation into the local language but also to add the competences necessary to fulfil the national/regional rules.

6. The national implementation

The chapters need to make clear how they address the national specific elements of the bSI LOF when implementing the qualification on BIM for energy performance, at national levels. If necessary, additional Unit of Learning Outcomes will be formulated in an implementation dialogue between the ARISE team and the involved national bSI chapter(s).

7. Conclusion

The ARISE platform arrives at the right time. Because our platform offers a solution to challenges present in every single European country: that is how to accelerate the digitalization process of the construction industry which is at the same time the most polluting and the most traditional of all branches of industries. The demand and supply of digital tools and services must grow together. The solution must be reliable and mutually accepted by both businesses and public administrations. The collaboration between ARISE and buildingSMART partners provides a unique solution that will be accepted not only in Europe but all around the world. The process leading to the agreement is in the final stages and we are confident, also thanks to the extension of the duration of the project, to bring home this very strategic result.