## Terms and abbreviations

The following definitions and abbreviations are used in this document:

<table>
<thead>
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<th>Term</th>
<th>Definition</th>
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<tr>
<td><strong>Body of Knowledge (BoK)</strong></td>
<td>A resource that provides explanatory content for all Learning Outcomes within a specific curriculum. A BoK will be provided for each curriculum offered within the Program.</td>
</tr>
<tr>
<td><strong>buildingSMART</strong></td>
<td>The worldwide authority driving the transformation of the built asset industry through the creation and implementation of open standards. This refers to both the international organisation (see buildingSMART International) as well as its regional Chapters.</td>
</tr>
<tr>
<td><strong>buildingSMART International (bSI)</strong></td>
<td>The central parent body that coordinates, manages and directs the worldwide buildingSMART organisation.</td>
</tr>
<tr>
<td><strong>Chapter</strong></td>
<td>A national (or regional) membership body representing the interests of buildingSMART at a local level.</td>
</tr>
<tr>
<td><strong>Committee</strong></td>
<td>The international committee mandated by bSI to develop the Professional Certification Program.</td>
</tr>
<tr>
<td><strong>Curriculum</strong></td>
<td>A product of the Foundation level that represents the learning content for a specific domain (e.g., Basic, or Facility Managers). Each Curriculum is defined by a set of 25-30 Learning Outcomes, a Body of Knowledge and Question Database.</td>
</tr>
<tr>
<td><strong>Foundation</strong></td>
<td>The first level of buildingSMART Professional Certification, representing a basic level of understanding, specifically in the form of ‘Knowledge and Comprehension’.</td>
</tr>
<tr>
<td><strong>Learning Outcome Framework (LOF)</strong></td>
<td>The entire learning structure (comprised of all modules, topics and individual learning outcomes) upon which the Foundation is based.</td>
</tr>
<tr>
<td><strong>Learning Outcome (LO)</strong></td>
<td>An individual learning objective that forms part of a Topic, within a Module, within the Foundation Learning Outcome Framework.</td>
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<tr>
<td><strong>Module</strong></td>
<td>A subset of a Curriculum, containing five to seven individual Learning Outcomes.</td>
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<tr>
<td><strong>Practitioner</strong></td>
<td>The second level of buildingSMART Professional Certification, representing a comprehensive level of competency including applied learning and practical expertise.</td>
</tr>
<tr>
<td><strong>Professional Certification</strong></td>
<td>the buildingSMART Program for individual learning and qualification. Also referred to as the ‘Program’.</td>
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<td><strong>Program</strong></td>
<td>See Professional Certification.</td>
</tr>
<tr>
<td><strong>Provider</strong></td>
<td>A training organisation, specifically one registered by buildingSMART to deliver approved training.</td>
</tr>
<tr>
<td><strong>Qualification Platform</strong></td>
<td>The online platform to be used by Students for a Foundation exam.</td>
</tr>
<tr>
<td><strong>Question Database</strong></td>
<td>A list of questions and answers used in a Foundation exam.</td>
</tr>
<tr>
<td><strong>Question Review Tool (QRT)</strong></td>
<td>An online tool developed by bSI for Chapters and working groups to evaluate and approve questions for the Foundation exam.</td>
</tr>
<tr>
<td><strong>Student</strong></td>
<td>Individual intending to sit the Foundation exam.</td>
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Preface

This document forms part of a series detailing buildingSMART Professional Certification – Foundation. The series defines the general structure, terms and conditions of the Program, as well as providing guidance for buildingSMART Chapters, Providers and Students.

The series is divided into four document sets, each containing multiple documents:

1. Policy and Process
2. Communication
3. Guidelines
4. Learning Content

More documents may be added to this series, as the Program expands.

Professional Certification – Foundation
Program Overview

Prepared by: bSI Professional Certification Steering Committee
Reviewed by: bSI Professional Certification Steering Committee
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Contact: education@buildingsmart.org
Foreword

In recent years we have witnessed an accelerated adoption of Building Information Modelling (BIM) around the world. However, there is still a lot of confusion and a lack of consistency in defining processes and agreeing on basic terms and concepts. There is also a great disparity in the competence of industry professionals who manage and deliver BIM projects.

For BIM adoption to be successful, we need:

- Consensus in the use of standardised terminology and processes
- A benchmarking mechanism against which the competence of individuals can be measured

With the publication of international standards for digital ways of working (such as the ISO 19650 series) an important contribution has been made to establish a consistent global language and clearly defined information management processes. buildingSMART supports the creation and adoption of these standards, and they feature as a keystone in the Professional Certification program.

As a leader in the development of standards and solutions for digital ways of working in the built asset industry, buildingSMART brings clarity to the definition and application of openBIM® principles. In this context, buildingSMART Professional Certification provides a global benchmark for BIM competency assurance.

The Program has already had a widespread impact across the global industry. It provides a reference point for professionals working with digital methods in the built asset industry. It assists employers in recruiting BIM professionals, as well as providing transparency for client organisations in procuring BIM competent project delivery teams.

Like all buildingSMART initiatives, the success of this Program is dependent on industry participation. I encourage you to engage with this Program at the level that is most suitable for you as an international sponsor, as a local partner or Provider within your Chapter, or as an industry professional seeking a globally recognised training.

Richard Petrie
Chief Executive,
buildingSMART International
Part 1
Introduction

The Professional Certification Program exists to support training organisations to deliver internationally standardised and recognised training content. buildingSMART International (bSI) is not, and will not become, a training organisation.

However, bSI will, through the Professional Certification Program:
1. Supports the standardisation of openBIM® training content.
2. Provides a registration mechanism for training organisations.
3. Enables the testing and qualification of individuals (who have undertaken these approved trainings).

Additionally, the Program:
5. Promotes buildingSMART, its standards and solutions.
6. Positions buildingSMART as a global brand and assurance of quality.
7. Create a revenue stream for Chapters and buildingSMART International.
1.1 Scope

The Program is divided into two levels. Level 1, Foundation, is the first release of the Program that focuses on knowledge-based learning. The Foundation level was developed based on the successful education Program from bSI Norway. In September 2017 this Program was officially launched by bSI and is now being adopted and implemented by Chapters around the world.

Level 2, Practitioner, is a more comprehensive approach that addresses applied learning and practical expertise within individuals. Currently in development, Professional Certification – Practitioner, is to be considered a true certification Program aligned with ISO 17024. It is expected to be market-ready in late 2022.

The current focus of bSI is on the Foundation level, as outlined in this document.

Figure 1: buildingSMART Professional Certification two skill levels, in reference to the Blooms taxonomy.

- Professional Certification – Foundation
  Knowledge-based learning

- Professional Certification – Practitioner
  Applied learning/practical expertise

Create
Evaluate
Analyse
Apply
Understand (comprehension)
Remember (knowledge)
Part 2
Foundation

Professional Certification – Foundation delivers in three areas:

• **Content Development**
  - defining learning outcomes and related resources

• **Provider Registration**
  - the procedure to review trainings and register Providers

• **Online Examination**
  - the testing and qualification of individuals who have undertaken an approved training

2.1 Content Development
Professional Certification – Foundation is delivered in multiple curricula. There are currently nine curricula planned (see figure 2). The Basic Curriculum, is the foundation of the Program and is mandatory for all Chapters to adopt.

Each curriculum is defined by the following three resources:
1. The **Learning Outcome Framework** (LOF), which defines the course learning objectives.
2. The **Body of Knowledge** (BoK), a resource that describes the content (references) of each learning objective. (The BoK is an important reference for Training Providers to develop their courses.)
3. The **Question Database**, to populate the Qualification Platform for Student exams.

Chapters who implement the Program cannot change the core learning content however, they can add additional local content to meet national standards or requirements.

Any Provider offering an extended Curriculum must also offer the Basic Curriculum¹.

2.2 Provider Registration
Providers who wish to deliver an approved course must apply to their local bSi Chapter. The review and approval of training organisations follows a four-stage process.

Course approval is delivered by the Chapter, or its nominated representative. Providers are obliged to pay a fee of between €1,500 – €2,500² for the approval process. Course approval will be valid for two years.

¹ Equally, from an end-user perspective, it should be noted that the Basic Curriculum is a prerequisite for Students who wish to be qualified in additional curricula within the Foundation level.

² buildingSMART International has set a fee range for Provider registration and Foundation Exam. This allows Chapters to determine their own fee (within this range) to best reflect their market conditions.
### Figure 2: buildingSMART Professional Certification – Foundation Curriculum plan

<table>
<thead>
<tr>
<th>Owner/Operator</th>
<th>Contractor</th>
<th>Designer</th>
<th>Facility Manager</th>
<th>Project/Information Manager</th>
<th>Manufacturer</th>
<th>Building Performance</th>
<th>COBie</th>
</tr>
</thead>
</table>

**Basic**

#### Figure 3: Curriculum Structure

- **Per Curriculum**
  - 5 Learning Outcome Modules
  - Module
  - Module
  - Module
  - Module
  - Module

- **Per Module**
  - 5-7 Learning Outcomes

- **Per Learning Outcome**
  - 5-10 Questions

- In total 150-300 Questions per Curriculum
2.3 Qualification

Students wishing to receive bSI qualifications must complete a bSI approved course from a registered Provider. Once the training is complete, the Student is eligible to sit an exam and become bSI qualified.

Testing and qualification is managed via an online Qualification Platform. This is a straightforward multiple-choice exam that can be completed within 30 minutes. Directly after completing the exam, the Student will be notified of their result. If they have passed, they will receive a digital certificate with their name, Provider, unique ID, date etc. which can be printed or shared digitally.

The cost of the individual assessment and qualification is between €75 – €125.2

Above: Foundation Examination Certificate

1 buildingSMART International has set a fee-range for Provider registration and Foundation Exam. This allows Chapters to determine their own fee (within this range) to best reflect their market conditions.
Welcome to the buildingSMART Professional Certification – Foundation Testing Platform

Please login by clicking the link in the top right-hand side of the page.

If you would like to enter a free trial quiz of the International buildingSMART Test on Basic BIM knowledge, then please click the Create New Account link at the top right of this page.

Above: Online Qualification Platform (https://qualification.buildingsmart.org/)
Part 3
Learning Outcome Framework

3.1 Methodology and Structure
The Program utilises Bloom’s Taxonomy to classify the level of learning required. The Foundation level has been designed to satisfy only basic knowledge requirements around BIM specifically the knowledge and comprehension learning levels of Bloom’s Taxonomy. In the Practitioner level more advanced learning levels (application, analysis, synthesis and evaluation) will be addressed.

3.2 Learning Outcome Framework
The Learning Outcome Framework (LOF) is a core component of the Program. Each Curriculum in the Foundation level has a minimum of 25 and maximum of 30 individual Learning Outcomes (LOs). The LOs define the minimum learning that approved trainings must convey within their course Curriculum and is subsequently the framework against which applicant courses will be assessed and approved. The LOs are also the basis for the testing and qualification processes.

The Basic Curriculum contains 28 LO’s. (see Annex A)

3.3 Question Database
A question database of a minimum 150 questions is to be created for each curriculum. The question database is used in the Qualification Platform to randomly select questions for each Foundation exam.

3.4 Body of Knowledge
A Body of Knowledge (BoK) will be created for each Curriculum. This is not a learning resource, but rather a reference for each learning objective and question content covered in a particular Curriculum. Chapters may also wish to translate this into their local language to support their local Providers in developing their course.

3.5 Purpose and Use
Providers are encouraged to use this LOF as a basis for developing BIM training content. However, it is not intended that the LOs alone will compose a full course Curriculum. The LOF represents the minimum learning and it is expected that approved courses will cover other content in addition to the LOs described within this framework. We suggest that the time required to sufficiently cover all content within the LOF is not less than six hours. This is designed to be implemented into training courses with a duration of 16 learning units.

The LOs define the minimum learning that approved trainings must convey within their course Curriculum and is subsequently the framework against which applicant courses will be assessed and approved.
Part 4
Organisation & Sponsorship

4.1 Organisational Structure
The Program is managed at an international level by the bSi Professional Certification Committee. This body, currently representing eight bSi Chapters (Canada, China, Germany, Norway, Spain, Russia, Switzerland and the UK and Ireland) reports to the bSi Standards Committee Executive (SCE) and coordinates all ‘down-stream’ development of the Program with the local Chapter committees. An Advisory Panel provides external input and peer review.

4.2 Sponsorship
The Program will have a huge impact on BIM education around the world. It will establish a benchmark for professional competency and will help raise the level of BIM delivery across the global industry. We are offering a select number of organisations to partner with us at an international level. Becoming an international sponsor enables an organisation to align itself with this important initiative.

Figure 4: Program Organisation
4.3 Sponsorship Plan

International sponsorship is available at three levels; Silver, Gold and Platinum, and is valid for two years.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Silver Sponsor €5,000</th>
<th>Gold Sponsor €12,000</th>
<th>Platinum Sponsor €25,000</th>
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<tbody>
<tr>
<td>Recognized as Program sponsor</td>
<td>Nationally (Chapter based)</td>
<td>Nationally and Internationally</td>
<td>Nationally and Internationally</td>
</tr>
<tr>
<td>Logo on website and informational material</td>
<td>Nationally (Chapter based)</td>
<td>Nationally and Internationally</td>
<td>Nationally and Internationally</td>
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<td>Status report</td>
<td>1/year</td>
<td>2/year</td>
<td>4/year</td>
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<td>Strategic Meeting</td>
<td></td>
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<tr>
<td>Seat on advisory panel</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Representation on international Professional Certification LinkedIn Page</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Option of attending meeting or working group and make suggestions</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Representation of company on (online) buildingSMART events in the context of education (e.g. company videos, interviews)</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>
Annex A
Professional Certification - Foundation
Learning Outcomes - Basic

1 Understand the definition, key terminologies and benefits of Building Information Modelling (BIM).
   1.1 Define the drivers that have led to BIM.
   1.2 Define BIM.
   1.3 Identify and Define key BIM terminology.
   1.4 Know the information management maturity stages, according to ISO 19650-1.
   1.5 Define what constitutes an Information Model.

2 Recognise the advantages of BIM compared to traditional project delivery.
   2.1 Know why collaborative and new ways of working are required.
   2.2 Identify the effects of poor information management on projects.
   2.3 Identify the processes and standards developed to mitigate poor information.
   2.4 Identify the benefits of BIM for design and construction professionals.
   2.5 Identify the benefits of BIM for facility owners and operators.

3 Understand project information management, with BIM, according to the ISO 19650 series.
   3.1 Understand why appointing parties need to clearly define their requirements.
   3.2 Understand the content and value of a BIM Execution Plan (BEP).
   3.3 Know why consistent information exchanges are required.
   3.4 Identify the key elements and benefits of using a Common Data Environment (CDE).
   3.5 Know why clearly defined information management roles are required.
   3.6 Know why assessing potential supply chain members before appointment is required.

4 Recognise the need for open and interoperable solutions.
   4.1 Know what buildingSMART is and what it represents.
   4.2 Define openBIM® and its benefits compared to using proprietary solutions.
   4.3 Know what IFC is and its benefits.
   4.4 Know what MVDs are and their benefits.
   4.5 Know what IDMs are and their benefits.
   4.6 Know what the bSDD is and its benefits.
   4.7 Know what BCF is and its benefits.

5 Understand the terms and measures of BIM capability within an organisation.
   5.1 Understand the potential benefits for a company in adopting BIM.
   5.2 Understand the factors that define an organisation’s level of BIM Maturity.
   5.3 Know why BIM adoption needs to align to organisational goals.
   5.4 Identify the benefits and challenges to BIM adoption.
   5.5 Know what the data security implications are for adopting BIM.
Contact Information

For further information on our sponsorship package please contact:
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Or visit: https://education.buildingsmart.org