man+machine

buildingSMART Professional Certification

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Introduction

Man and Machine Limited is an Approved Training Partner (ATP) of buildingSMART UKI and offer the four day **buildingSMART BIM Management Professional Certification** course to prepare you for the buildingSMART Professional Certification Foundation (Basic) exam. The course covers 28 Learning Modules which are each around 45-60 minutes.

On the afternoon of day four you are invited take the online exam; it is a 36-minute multiple choice exam, comprising 30 questions and has a pass mark of 75%.

The purpose of this document is to provide attendees with the Learning Outcomes that underpin the Professional Certification Foundation curriculum.

Why the buildingSMART Professional Certification?

The buildingSMART Professional Certification program enables training organisations to train and certify individuals according to an industry-recognised global learning framework. It is a proof of competence for professionals working with Information Management using BIM, certified professionals can demonstrate their knowledge is consistent with international standards and best practices.

The buildingSMART UK & Ireland Professional Certification Foundation (Basic) programme has the following objectives:

- To support the standardisation of openBIM training content;

- To support the standardisation of UK BIM Framework training content

- Enable the approval of training organisations

- Enable the testing and qualification of individuals (who have undertaken the approved training)

International openBIM Training Content

This is covered through the buildingSMART International core program. Approved training providers are provided with a guidance document (Body of Knowledge) which is the foundation of their course content.

The Body of Knowledge is constructed with content, international standards and guidance that supports the international Learning Outcome Framework, which comprises five distinct modules.

UK BIM Framework Training Content

Under the UK and Ireland program a sixth module has been created with its own set of Learning Outcomes. Approved Training Providers are provided with this additional Body of Knowledge (BoK) to provide guidance on course content. At its core is the UK BIM Framework, but it also includes content on other important national standards and guidance, such as:

- ISO19650-2:2018 incorporating corrigendum February 2021

- Government Soft Landings, 2019

- Construction Playbook, 2020

- Transforming Infrastructure Performance Road to 2030

- Construction 2025

- Uniclass 2015

- Information Management Mandate

The training content is in line with current best practices and provides the necessary content to successfully navigate the exam. There is no guarantee that attendees will pass the exam as they will need to have absorbed and retained the knowledge taught in the course.

Learning Outcomes

The training providers will deliver training content that covers the BoKs provided to them. They are underpinned by two sets of Learning Outcomes and are described in more detail here:

International Learning Outcomes

The international Learning Outcomes that underpin the international BoK, covering modules 1-5 of the Professional Certification curricula are:

1) Understand what BIM is, why it is needed, and recognise its specific terminology.

1-1)   Define the drivers that have led to BIM

1-2)   Define BIM

1-3)   Identify & Define key BIM terminology

1-4)   Define BIM maturity levels;

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 standards developed to mitigate poor information

2-4)   Identify the benefits of BIM to construction professionals

2-5)   Identify the benefits of BIM adoption to clients, and facility management

3)   Understand the project information development cycle (and its key terms); specifically how project information is specified, produced, exchanged, and maintained.

3-1)   Know why employers need to clearly define their requirements (EIR)

3-2)   Understand the content and value of a BIM Execution Plan (BEP)

3-3)   Know why consistent exchanges of information is required

3-4)   Identify the key elements and benefits of using a collaborative exchange platform (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)   Define who buildingSMART are

4-2)   Define openBIM and its benefits compared to using proprietary products and systems

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) Identify an organisations capability in working with BIM

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 Organizational goals

5-4)   Identify the benefits and challenges to BIM adoption

5-5)   Know what the data security implications are for adopting BIM

INTERNATIONAL LEARNING OUTCOMES

UKI Learning Outcomes

The additional UKI Learning Outcomes developed to support our national standards and guidelines, that underpin the second BoK, covering module 6 are as follows:

6) Understand the national standards and guidance with regards to the management of information on UK projects, within the context of the UK BIM Framework

6-1)   Recognise the contextual requirements for the UK BIM Framework and its connection to the UK Government Construction and UKI Industrial Strategies, including any Government Mandates.

6-1-1)   Describe the roles and responsibilities of the 'parties' and teams as part of the UK BIM Framework delivery (cultural / behavioural/ contractual) and the implications on Scopes of Services.

6-1-2)   Define the external context for information management using BIM, nationally and globally including support communities.

6-1-3)   Define the scope of the UK BIM Framework; the standards, guidance and supporting documentation, and the context in which it is delivered, including its relationship with the Construction Playbook (8th December, 2020) and the Transforming Infrastructure Performance, (6th December, 2017).

6-1-4)   Outline the challenges and barriers to successful adoption of the UK BIM Framework and how to create the conditions for success through project or business performance measures

6-1-5)   Recall the concepts of Soft Landings / Government Soft Landings (GSL) as part of project delivery including creating and maintaining an accurate and up to date Golden Thread record of information.

6-1-6)   Recognise the structure of the UK BIM Framework and the participating organisations (Centre for Digital Built Britain, bSI, UK BIM Alliance) and their involvement in the international BIM standards supported within the UK BIM Framework, including anticipated changes to current guidance.

6-2)   *Understand UK specific information requirements for the management and exchange of information and the associated localised annex information (Capital Delivery)*

6-2-1)   Describe the scope of the information management requirements as described in BS EN ISO 19560-2:2018 & UK National Annex

6-2-2)   Recognise the requirements for information model exchange in a collaborative manner as described in BS EN SO 19560-2:2018 National Annex NA.5.1

6-2-3)   Recognise the requirements for the organisation of information meeting a standardised classification system in accordance with National Annex NA.4.4 and Uniclass 2015.

6-2-4)   Define information delivery milestones within principal work stages as described in BS EN SO 19560-2:2018 National Annex NA.6.1

6-2-5)   Describe how a Common Data Environment (and its components as described in the BS EN ISO 19560-1:2018 & BS EN ISO 19560-2:2018) can be managed and controlled using the functions illustrated in the UK National Annex naming requirements NA.2, NA.3 and NA.4

6-2-6)   Recall the technologies and methods for creating, using and maintaining structured information and the value and benefits of Open data formats to support the successful exchange of information with other technologies

6-2-7)   Explain how the Incorporation of project and discipline specific UK professional bodies scopes of works (RIBA, ACE, BSRIA etc.) are part of the continued development of standardised processes and methodologies for information management, delivery and operational use.

6-3) *Understand additional UK information requirements in relation to whole lifecycle management (including organisational and asset management) and the application of relevant project handover deliverables, including ISO55000 requirements (Operational Management)*

6-3-1) Outline the scope of the information management requirements as described in BS EN 19650-1:2018, BS EN ISO 19650-3:2020 and supported by BS 8536 and ISO 55000:2014.

6-3-2) Recognise the importance of competence within an organisation and its supply chain to deliver information in a collaborative manner. Include the understanding of the value in the assessment of technology and the interoperability of the organisation and the supply chain (IT systems, data security, accessibility etc).

6-3-3) Describe the purpose and communication of level of information need as described in BS EN ISO 19560-2:2018 using the principles of BS EN 17412-1:2020.

6-3-4) Explain the technical, technology and interoperability requirements of the UK BIM Framework (Information Management/CDE, model-based design and analysis) including UK naming conventions and UK classification systems.

6-3-5) Recognise the value in Digital delivery of information between supply chain members and with clients in context of BS 1192-4:2014 (COBie) and information delivery planning.

6-3-6) Recognise the value, benefits and investment associated with the implementation the UK BIM Framework within an organisation including the value of high-quality structured data and information using industry standards.

6-4) *Understand the nature of UKI contractual and legal requirements including the usage of the Information Protocol in the built environment.*

6-4-1) Recall the contractual documents and key terms required to support the UK BIM Framework and the implications of the UK BIM Framework on existing forms of contract.

6-4-2) Explain the ownership and permitted use of information and related issues of intellectual property, copyright, insurance and potential liabilities.

6-4-3) Understand the role of the UK BIM Framework Information Protocol in the parties' appointments.

6-4-4) Recognise the legal and commercial contractual implementation implications for of the introduction of the UK BIM Framework and its Information Protocol on an organisation and its supply chain (e.g. commercial stakeholders)

6-5) *Understand the need and delivery of security and secure data requirements within the UKI built environment.*

    6-5-1) Recall the policies and processes which enable the implementation of mitigation measures to address identified security risks in a consistent and holistic manner in accordance with BS EN ISO 19650-5:2020.

    6-5-2) Understand the potential security threats to physical and digital assets, and the need for the development of security-minded approach as set out in BS EN 19650-5:2020.

    6-5-3) Understand the controls required to reduce the risk of the loss, misuse or modification of sensitive information, that can impact on the safety, security and resilience of:- assets; products; the built environment; or the services provided by, from or through them.

6-6) *Understand the requirements for the inclusion of Health and Safety information in the UK and CDM regulations within a managed project information exchange.*

    6-6-1) Understand the requirements for inclusion of data management and incorporation of CDM deliverables into the information model environment in line with PAS 1192-6 guidance from the UK BIM Framework

    6-6-2) Understand the importance of the Incorporation of project specific risk assessments including requirements set out within ISO19650 regarding information risk assessments and reviews.

UKI LEARNING OUTCOMES
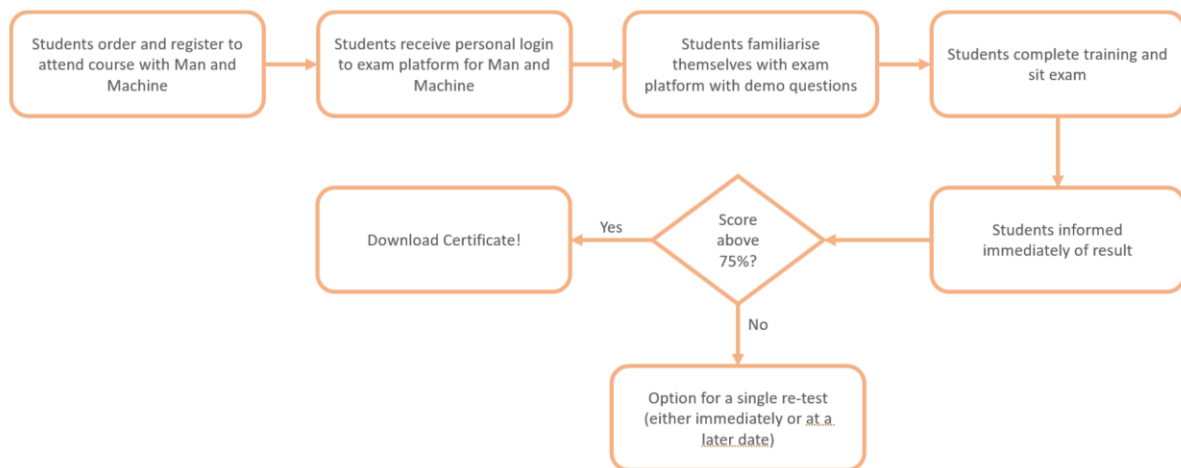
Professional Certification for Attendees and Employers

Attendees

Why is the Professional Certification valuable to me?

- It enhances your value to your employer
- Gives you best-in-class training content to the latest standards and guidance in the UK and Ireland
- Raises your competence level to work on digital projects in the built environment
- Develops your career and your skills

How do I get certified?

The route to certification is summarised in the diagram below:

Employers

Do you want to deliver capital projects well?

By supporting your staff to obtain their buildingSMART Professional Certification, they will be trained according to a recognised global learning framework. Successful certification is proof of competence for professionals working with Information Management using BIM, enhancing your chances of winning bids.

Your Qualified and Certified professional employees will be able to demonstrate that their knowledge is consistent with international standards and best practices; and they will have the confidence and competence to add more value to your capital delivery.

Do you want to manage your assets more efficiently?

On the buildingSMART BIM Management Professional Certification course your staff will learn how to create quality data during capital delivery, which can be used to greater effect during the operational phase of the asset.

The outcome should be a more efficiently run asset, saving time and money.

Introduction to Man and Machine

About Man and Machine UK

Man and Machine UK Limited is part of the Mensch und Maschine Group, specialists in the provision of CAD/CAM/CAE/BIM and data management solutions to the manufacturing, architectural, engineering, construction and process industries.

As a digital solutions provider, our job is to understand our customer's workflow issues, identify opportunities and deliver solutions that will help them drive productivity and efficiency gains.

Autodesk is the predominant software at the core of our solutions. As one of the largest Platinum accredited partners in Europe, we hold Specialisations across the entire software portfolio. These Specialisations include Construction Cloud, Architecture & Engineering, Product Design & Manufacturing, Media & Entertainment, Industrial Design & Visualisation, Advanced Material Analysis, Product Lifecycle Management and Manufacturing Cloud. We are also one of only a small number of partners in Europe to have received the Autodesk Construction Cloud Elite Specialisation, indicating a high degree of competency in this area.

In addition to Autodesk, we have relationships with many other key vendors including Sketchup, PNY, Bluebeam, Enscape, Twinmotion, Leica, Dell and others.

To ensure we make the most of the software solutions, our customer facing engineers deliver extensive consulting, support, training and implementation expertise in the following areas:

- BIM & Information Management Consultancy
- BIM Assessment and Certification Readiness (to ISO19650 standards)
- BIM and Data Management Deployment Programmes
- BIM Training Solutions & Programs
- Autodesk ACS Deployment & Onboarding
- CAD Standardisation Programmes
- Engineering Document Control
- Design Process Reviews & Workflow Analysis
- Program & Project Management
- Skills Gap Analysis
- Factory and Plant Design Programmes
- BIM Content Creation and Development Programmes
- Software & Hardware Deployment Services
- Data Migration Programmes
- Software & Infrastructure Optimisation Services
- System Health Checks
- Vault Integrity & Performance Optimisation