UK BIM Framework

Learning Outcomes

UK BIM FRAMEWORK

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Learning Outcomes

The UK BIM Framework Learning Outcomes identifies desired learning outcomes of introductory training in information management using building information modelling (BIM). We intend it to be used by training providers to support training course design, and by those seeking training to help them to understand the outcomes which will support the UK BIM Framework and the ISO 19650 series of standards.

This completely refreshed schedule, updated for the BS EN ISO 19650 series, is based upon the BIM Academic Forum's 'Learning Outcomes Framework' originally developed in 2012. This work, which has stood the test of time, was led by Jason Underwood, Farzad Khosrowshahi, Steve Pittard, David Greenwood and Tim Platts.

This schedule has been revised to support the UK BIM Framework and is aligned with buildingSMART UK Chapter's Professional Certification (PCERT)[1] which is expected to be published in the autumn.

Also soon to be published is BS EN ISO 19650-3, for the operational phase of assets (due August 2020) which will replace PAS 1192-3 in the UK BIM Framework. Anticipating this, we have replaced references to PAS 1192-3 with references to BS EN ISO 19650-3. Many aspects of the Learning Outcomes already support the new standard, but any detailed changes that are needed, particularly in outcomes 3 and 4, will be provided in an update in due course.

The learning outcomes are arranged in five sections:

- Why information management using BIM is required, and its strategic context in the UK.

- The implications and value of information management using BIM for your organization.

- How information requirements are identified and communicated.

- How information is shared between organizations.

- Understanding the legal and security implications of the UK BIM Framework and its interfaces with other important processes such as health and safety management.

For the foundation level, we are looking for an understanding of the above. As competence increases, we would expect to see the ability to apply this understanding.

We encourage the industry to adopt this schedule to improve standards of information management using BIM.

We are keen to gain feedback on its usefulness in application. Please do contact us with your comments: learningoutcomes@ukbimframework.org

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1   Thanks to Phil Read and Richard White (both from Man and Machine UK Limited) for their significant work to ensure that the buildingSMART UK Chapter's Professional Certification (PCERT) and the UK BIM Framework Learning Outcomes are aligned.

Learning Outcomes

1   Why information management using BIM is required and the strategic context in the UK, including an understanding of:

1.01   Drivers of collaborative working (removing: waste; errors and poor quality/ incomplete information) underpinning the management and production of information during a project and asset life cycle.

1.02   The value of a whole-life and whole-estate / systemic approach (rather than capital-led and single-asset) and how BIM supports this, including the capture and transfer of information from capital projects to facilities and asset management.

1.03   Creating and maintaining an accurate and up-to-date 'Golden Thread' record of information, and ensuring that asset information supports the purpose(s) it is required for.

1.04   The concepts of Soft Landings / Government Soft Landings (GSL).

1.05   Roles of 'parties' and teams in the context of UK BIM Framework delivery (which includes the BS EN ISO 19650 series) and the implication on the Scope of Services.

1.06   The scope of the UK BIM Framework; the standards, guidance and supporting documentation, and the context in which it is delivered, including support communities.

Learning Outcomes

2   The implications and value proposition of information management using BIM for your organization, including an understanding of:

2.01   The impact of the UK BIM Framework on your organization and supply chain (eg skills, processes and systems) and how it can be measured and tracked (eg project or business performance measures).

2.02   How the introduction of the UK BIM Framework can be a driver for business process review and improvement.

2.03   The competence within your organization and your supply chain to deliver information in a collaborative and co-ordinated manner.

2.04   Assessment of technology and interoperability of your organization within your supply chain (eg IT systems, data security, accessibility).

2.05   The scope, requirements and working methods of the information management function as described in BS EN ISO 19650-2 and BS EN ISO 19650-3[2].

2.06   The way in which the UK BIM Framework can benefit decision-making for design management.

2.07   The key vulnerability issues that arise and the nature of the controls required to manage the resultant security risks to a level that is tolerable.

2.08   The concept, purpose and implementation principles of Project Information Models (PIM) & Asset Information Models (AIM) and the relationship and interchange between them.

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2   Publication of BS EN ISO 19650-3, expected in August 2020, replaces PAS 1192-3.

Learning Outcomes

3 **How information requirements are identified and communicated, including an understanding of:**

3.01   The concepts and principles of information management and requirements, as described in BS EN ISO 19650-1, and the concepts and principles of a security-minded approach and how these are reflected in information requirements, as set out in BS EN ISO 19650-5.

3.02   The requirements of an information standard as described in BS EN ISO 19650-2.

3.03   Information requirements, including organizational information requirements (OIRs), asset information requirements (AIRs), project information requirements (PIRs), exchange information requirements (EIRs) and security information requirements in the context of the UK BIM Framework.

3.04   The purpose and communication of level of information need as described in BS EN ISO 19650-2.

3.05   Resources supporting information delivery planning - responsibility matrices, task information delivery plans and the master information delivery plan.

Learning Outcomes

4   How information is shared between organizations, including an understanding of:

4.01   The concepts and principles of organization and digitization of information, including BIM, as described in BS EN ISO 19650-2, and the concepts and principles of a security-minded approach and how these are reflected in requirements around information sharing, as set out in BS EN ISO 19650-5.

4.02   The generation, review, authorization, security, acceptance (or rejection) and distribution of information in accordance with the information production methods and procedures, and the information standard.

4.03   Requirements for information delivery planning and information exchange between delivery teams as described in BS EN ISO 19650-2 and UK BIM Framework documentation.

4.04   BIM Execution Plan (BEP) in the context of BS EN ISO 19650-2 - the related concepts, purpose and implementation principles.

4.05   The process for information exchange and digital delivery of information between supply chain members, and with clients, in the context of BS 1192-4 (COBie) and classification systems.

4.06   The value and benefits of open data formats to support the successful exchange of information between technologies.

4.07   Technical, technology and interoperability requirements for a Common Data Environment (CDE) and its components as described in the BS EN ISO 19650 series.

4.08   The implementation of management and status control of information containers to communicate their permitted use, including technologies and methods for generating, using and maintaining information.

Learning Outcomes

5   The legal, security and health and safety requirements of the UK BIM Framework, including an understanding of:

5.01   Contractual interventions required to support the UK BIM Framework and the implications on existing forms of contract and appointments.

5.02   Legal and commercial implications of the UK BIM Framework on your organization and supply chain (eg commercial stakeholders).

5.03   The role of an Information Protocol when contracting for appointments.

5.04   Ownership and permitted use of information and related issues of intellectual property and copyright, insurances and potential liabilities.

5.05   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.

5.06   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.

5.07   The nature of 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.

5.08   Incorporation of CDM and Health and Safety workflows in to the digital delivery environment in accordance with PAS 1192-6, including the purpose and requirements of an information-based risk assessment to be incorporated within an overall risk management approach.

Your views are important

We are keen to gain feedback on the usefulness of the UK BIM Framework Learning Outcomes in action. This will help us to keep it current and relevant, and to make improvements.

Please do contact us with your comments: learningoutcomes@ukbimframework.org

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