

The CLAW BIM Toolkit for Clients

Procurement

A comprehensive suite of documents and tools to explain and enable deployment of a BIM enabled approach in line with standards and protocols, and to achieve Welsh Government adoption date of March 2016.

The Toolkit is devised to support officers and members articulate the BIM business case and efficient deployment and procurement practice of BIM enabled projects.

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Purpose

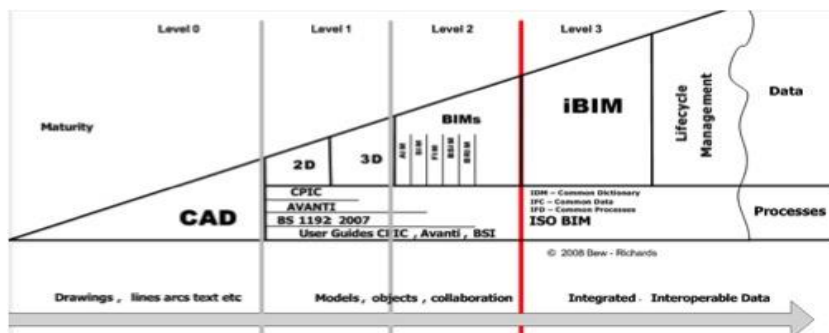
This guide has been prepared following a series of CLAW workshops to introduce Building Information Modelling (BIM) to CLAW and prepare an All Wales BIM Toolkit. This is part of a suite of documents which support cross authority client competency and consistency to deliver BIM in line with Welsh Government aspirations. It is a base from which each authority can develop their own local and project specific variations. The documentation has been drawn together as the output from a series of workshops contributed to by various CLAW members and does not represent advice or the opinion of any single party

This section is specifically tailored to support authorities and officers in the procurement process.

Introduction

This document is intended to set out:

- when BIM should be applied, the links between value and complexity and how to incorporate facilities and asset management requirements
- the relevant documentation needed to specify BIM requirements
- appropriate questions to ask suppliers
- further consideration such as assessing organizational maturity in terms of BIM



'BIM will be adopted to level 2 by 2016 on all Welsh Government funded projects, with Welsh Government department projects achieving level 2 by 2015.'



When to specify BIM

Framework Arrangements:

For framework arrangements it is likely they will be procured for a period of three to four years. BIM and its' use is evolving at such speed it is inevitable that both client and industry skills will change significantly. It is therefore important to consider this when procuring new framework arrangements by acknowledging that your requirements will evolve over time and also on a project by project basis. The potential for BIM to be a project requirement should be made clear in any long term procurement exercise. Framework periods now exceed the mandated deadline for adoption of BIM and BIM has become a necessary part of the Competency and Capability test requirements for framework providers.

Single Projects:

- By value. Projects over the OJEU threshold are likely to show benefits from the use of BIM and should therefore be analysed in greater detail against the following criteria. On smaller projects it is worth highlighting your intention to use BIM in the future and that information should be issued in a format that could be used at a later date to develop a BIM model.
- New build. Current evidence shows that new build projects are the easiest on which to specify the use of BIM. Most projects currently using BIM are in this category and the supply chain is rapidly gaining experience in how BIM works, and in delivery.
- Refurbishment. Evidence or previous experience from suppliers is more difficult to come by. The level of BIM and its benefit, appropriate to these projects should be carefully considered. As a minimum, it may be that agreed digital format documentation, drawings, manuals, and schedules are sufficient to achieve significant benefit. Increasingly Laser scanning is replacing physical surveying and this bridges the gap to BIM enabled working by providing an accurate digital virtual representation of an asset.

- Mix of refurbishment/significant interventions with an element of new build. Good evidence exists to demonstrate that BIM can deliver positive outcomes where the new build and/or alterations and interventions are significant.

Incorporating Facilities Management and Estate Management:

BIM models provide the potential to make the management of a facility more efficient post completion. If the client has an ambition to use the model in this way it may provide additional support for specifying the use of BIM. As a minimum, it may be that agreed digital format documentation, drawings, manuals, and schedules are sufficient to achieve significant benefit. BIM competency and capability will affect the selection and functional performance of both Asset and Facilities management service providers and the development and selection of CAFM provision in their respective procurement phases.

Compliance with EU Public Procurement Directive:

The European Parliament has approved new OJEU rules which are designed to promote the use of BIM, cut red tape and help SMEs win public sector work. The changes come into effect in March 2014 and will be mandatory for UK public sector clients once the UK government passes the appropriate legislation, which must be done within two years. This process compliance matches the mandated timescale for adoption of BIM on Projects.

Value and Complexity

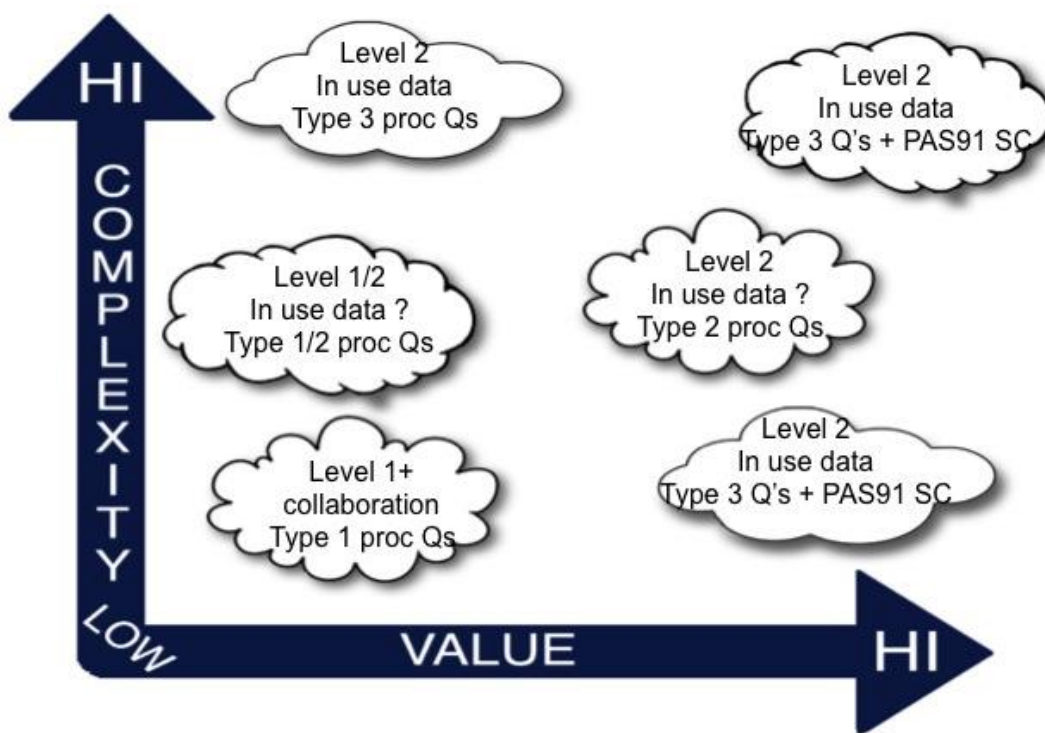
The below diagram shows how the value and complexity of a project influences the BIM level required of providers. High value and complex projects demand higher BIM competency in clients and suppliers – so more testing procurement questions are used and an expectation of BIM in tiers 2 and 3 of supply chain is expected. This cascades BIM capability to local SME suppliers.

Low value and low complexity projects may be delivered to lesser sophisticated BIM requirements (this may only be for a short period of time and the client and supply competency matures) therefore less testing questions can be used in procurement. This enables inclusion of local and SME suppliers and affords them time to change and adapt to the “normality” of BIM as its adoption matures.

Some low value and low complexity projects and adaptations may never require BIM and this should be recognised and communicated to the market through supplier days.

This joined up approach builds competency and capacity in local providers while reducing the risk of exclusion from the adoption of BIM as mandated.

The diagram helps officers in the selection process of levels of BIM and communicates the inclusive approach to non-technical officers and stakeholders. This document also refers to [procurement questions](#) which form part of the procurement process.



Documentation

With the involvement of CLAW and special interest groups from the CLAW membership, a number of standard documents have been published which will inform the procurement process and can subsequently be used to manage and monitor projects. The notes below provide guidance on how they should be used in the procurement process. All of the documents referred to below are accessible via the hyperlinks.

[Capability to Deliver PAS 91:2013](#)

PAS 91 is a standard construction prequalification that has been updated to include four simple questions which seek to assess the ability of an organisation to use and deliver BIM projects. The questions have been drafted to test BIM and collaborative working competence. The questions are in Table 8 and can be used whether the PAS is used or not. In order to assess the response a [scoring matrix](#) is available.

Further tiers of questions form part of this toolkit to accommodate higher value and more sophisticated projects, and a simple sliding scale of suitability is also included to assist in decision making.

[Employers Information Requirements \(EIR\)](#)

Defining your EIR is key to supporting a decision to include BIM in the project specification. EIRs are a separate module in the CLAW BIM pack and should be read in conjunction with this document. They have three elements – Technical, Management and Commercial. It is important to note that the development of an EIR has two distinct stages. Pre appointment will represent the client aspirations. Through the selection process they will inevitably be modified and refined to become the agreed project EIR which will be established post appointment. Acknowledging this process should be reflected in the tender documentation.

Defined Information Process

[CIC/INF MAN/S first edition 2013](#)

The document describes three key activities which are required for a BIM project: managing the Common Data Environment, supporting the production of project outputs and how this role contributes to the management of the project.



[The right to use data CIC/BIM Pro first edition 2013](#)

This document has been drafted explicitly to avoid creating additional liabilities over and above those which currently exist. It contains definitions and the priority of contract documents. The obligations of both Employer and Project team members are set out as are the models to be used and limitations on liability. At all times all parties should be signatory to a mirror copy of the document.

Appendix 1 covers model production and a delivery table including who does what and when. It is completed for each project and defines the level of detail required at each stage. This document will develop as the project proceeds.

Appendix 2 contains a definition of the Data standards, and the role of Information Management. It is where the EIR is confirmed and gives contractual effect to the requirements. The document also provides the information required to develop the project BIM Execution Plan.

[Specification for information management - Capital Phase PAS 1192-2:2013](#)

This document should be explicitly referred to in the tender documents. PAS 1192-2 provides specific guidance for the information management requirements associated with projects (capital/delivery phase) delivered using BIM. The information will need to be managed in a consistent and structured way to enable efficient and accurate information exchange. BS 1192:2007 provides details of the standards and processes that should be adopted to deliver these outcomes. The standard assumes that non-BIM information exchanges between a principal supplier and employer and within the supply chain will be managed using equivalent information standards. It also assumes that all project information will be shared using a single collaborative data environment (CDE).

[Specification for information management - Operational Phase PAS 1192-3:2014](#)

This document should also be explicitly referred to in the tender documents. PAS 1192-3 provides specific guidance for the information management during the operational phase of an asset or assets but also advises on client side information management before, during and after the project (capital/delivery) phase delivered using BIM. Client side information also needs to be managed in a consistent and structured way to enable efficient and accurate information exchange and information validation before use by the client. This standard is a sister document to PAS1192-2:2013 and BS1192:2007. It also assumes that all project information will be received and validated and shared using a collaborative data environment (CDE).

Questions To Ask

The three sets of questions below should be considered when compiling a PQQ or Tender. They can be used for Framework procurement, a single project or for a mini competition within a framework arrangement. All of the questions can be used for the procurement of consultants and contractors.

Level 1. For Authorities who wish to start integrating BIM into their procurement process and particularly when looking at engaging with SMEs and local providers it may be helpful to start with two simple questions.

- How will you support our desire to adopt Level 2 Building Information Modelling with collaborative 3d working across the design and project team from an early stage to project close out?
- Please provide evidence to support your response.

[Download questions here](#)

Level 2. The preferred approach is to use the questions contained within PAS 91 - they can be used with any PQQ. The scoring matrix will also provide a consistent base from which to evaluate the suppliers throughout Wales. The questions can also be used at ITT stage.

[Download questions here](#)

Level 3. A further set of 14 questions are attached – ‘Questions for potential tier one suppliers’. They allow a more detailed interrogation of a supplier’s ability by asking them to demonstrate progress in very specific areas. These questions are best used by Authorities who have developed some experience in procuring and using BIM on projects. They will certainly require knowledgeable people to analyse and mark the responses. They may also be asked of potential or existing suppliers outside a formal procurement activity.

[Download questions here](#)

Further Considerations

Assessing Collaborative Maturity

[Collaborative BIM assessment matrix](#)

The cultural and behavioral characteristics of both individuals and organisations are assessed through wider consideration of the whole submissions, CVs and interviews. However, use of the [Collaborative BIM matrix](#) should be considered in addition to the PAS tools available.

BIM is an enabling approach to facilitate the collaborative working of Project and Framework teams, bringing together what is traditionally a highly silo'd sector into integrated teams working in a collaborative manner. As with any toolkit, for it to be effective in its deployment and gather in the maximum benefits and efficiencies the technology and process need to be deployed with organisations and individuals who are receptive to and culturally aligned to Collaborative and integrated team working.

The public procurement process provides a framework within which a progressive assessment of collaborative behaviors and evidence can be used to support selection of appropriate organisations and individuals.

The CLAW All Wales [Collaborative BIM assessment tool and matrix](#) based approach has been created to assist procuring officers in assessing the evidence and messages regarding cultural alignment and practical deployment of collaborative working approaches by potential suppliers and bidders.

'Strong leadership will be required from clients and suppliers to ensure that robust processes in line with BIM conventions are delivered to these timescales'

Setting the BIM scene

When inviting PQQ's or tenders clients should seek to "set the scene" for prospective partners by explaining, in simple terms, the approach being taken to BIM. It is suggested that the following text be incorporated into relevant documentation.

This project is to be designed within a federated BIM environment and a model shall be maintained throughout the construction period of the project and handed over to the client as part of practical completion as defined in the Employer's Information Requirement (EIR).

Contractors are required to demonstrate that they can design/manage the project collaboratively within the BIM environment. They will be required to work with the Council to agree a set of BIM Standards for this project and develop templates for use by the design team. The BIM Standards will be aligned with BS1192:2007- Collaborative Working, which defines the process for sharing project information efficiently between all members of the project team. This is a disciplined auditable process that is both transparent and controllable.

The primary aim of the BIM Standards is to promote the effective collaborative use of data sharing within a BIM environment and establish a standard method of working. This will enable information to be produced in a consistent manner that can be easily recognised by all staff and any external parties to whom the information is issued.

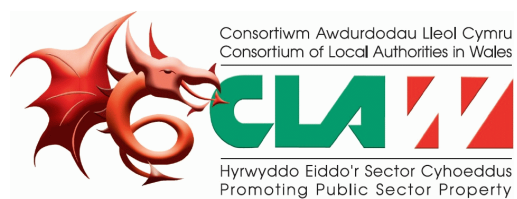
The primary objectives are to:

- Maximise production efficiency through adopting a collaborative coordinated and consistent approach to working in BIM.
- Define the standards, settings and best practices that ensure delivery of high quality and uniform drawing output across the entire project.
- Ensure that BIM files are structured federated and validated correctly to enable efficient data sharing whilst working in a collaborative environment across multi-disciplinary teams both internally and externally.
- Facilitate the production of 2D drawings and BIM information from the models that is able to support as many aspects of the design and construction process as possible; as well as provide the basis for future building management or refurbishment.
- Ensure information is captured within the model to allow automated schedules and data to be produced for various elements of the project such as door and window schedules, finishes schedules, M&E plant schedules and maintenance schedules.

It is recognised that these standards will evolve in parallel with the latest technology developments and recognised industry best practice, in relation to the application of the BIM methodology. An open collaborative approach to developing these standards is welcomed by all parties within the project team

The delivery of this project using the collaborative BIM methodology requires a significantly different approach to the development and management of project information.

To avoid unnecessary delays and ensure that the quality of information is suitable for its intended purpose, the contractor shall demonstrate how BIM will be set up and managed within their organisation, together with the name of the person responsible for developing and maintaining the company BIM strategy.



<http://www.claw.gov.uk/>