BIM Client Maturity Levels: Review of different EIRs within the AEC sector
Innovations supporting sustainable growth in the buildings sector session

Dr Michael Crilly
Studio UrbanArea LLP, 31-39 High Bridge, Newcastle upon Tyne, Tyne & We.ar, NE1 EW2

David Craggs
SPA Architects, The Design Studio, Ellerbeck Court, Stokesley Business Park, Middlesbrough, Teesside TS9 5PT
Theory - Reflective

BIM-Maturity


**Theory - Architectural “Plan of Works”**

**BIM Overlay to the RIBA Outline Plan of Work**

### RIBA Work Stage | Description of Key Tasks | Core BIM Activities
---|---|---
**A** | **Approval** | Identification of client’s needs and objectives, business case, sustainability, project team and management. Preparation of contract documents. Preparation of feasibility studies and assessment of options to enable the client to decide whether to proceed. | **Advise client on purpose of BIM including benefits and implications, agree level and extent of BIM including 4D (time), 5D (cost) and 6D (sustainability) software assessment. Agree client’s integrated team scope of service in totality.** | **BIM pre-start meeting. Initial model sharing with Design Team for strategy analysis and options appraisal.** |
**B** | **Preparation** | Development of initial statement of requirements into the Design Brief or on behalf of the client, confirming key requirements and constraints. Identification of procurement method, project sustainability and BIM providers. Building Design Designers and project team and stakeholders to be engaged for the project. | **Define key long-term responsibilities including ownership of model.** | **Define BIM inputs and Outputs and scope of post-occupancy evaluation (SOE).** |
**C** | **Design** | Implementation of Design Brief and preparation of additional data. Preparation of Concept Design including outline designs and specifications. Preparation of Concept Design including outline design and formal outline specifications. Review of procurement route. | **Await approval from client for design route.** | **BIM pre-start meeting. Initial model sharing with Design Team for strategy analysis and options appraisal.** |
**D** | **Design Development** | Development of design concept and preparation of design concept and specification. Completion of Project Brief. Application for detailed planning permission. | **Data sharing and integration for design co-ordination and detailed design including data links between models.** | **BIM used for environmental performance and area analysis.** |
**E** | **Technical Design** | Preparation of technical design and specifications, sufficient to co-ordinate components and elements of the project. | **Integration/development of generic design such as components and materials.** | **BIM used for environmental performance and area analysis.** |
**F** | **Pre-Construction** | Preparation of production information. Co-ordination of design and production. Preparation of design and tender documentation. | **F5 Export data for BIM model.** | **Export data for BIM model.** |
**G** | **Tender Documentation** | Preparation and/or collation of tender documentation. | **Review construction sequencing (CIS) with contractor.** | **Review construction sequencing (CIS) with contractor.** |
**H** | **Tender Action** | Identification and evaluation of potential contractors and/or specialists for the project. | **Export data for BIM model to contractor(s).** | **Export data for BIM model to contractor(s).** |

**RIBA Work Stage | Description of Key Tasks | Core BIM Activities
---|---|---
**J** | **Mobilisation** | Identification of key tasks including BIM. | **Agree timing and scope of “Soft Landings”.** | **Agree timing and scope of “Soft Landings”.** |
**K** | **Construction to Practical Completion** | Administration of the building contract to Practical Completion. Review of information provided by contractors and specialists. | **Use of 3D/4D BIM data for data administration purposes.** | **Use of 3D/4D BIM data for data administration purposes.** |
**L** | **Post-Occupancy** | Administration of the building contract after Practical Completion and final inspections. | **Data drop 5.** | **Data drop 5.** |
**M** | **Model Maintenance & Development** | Review of project performance in use. | **Analysis of database for current future projects.** | **Analysis of database for current future projects.** |

### Current Plan of Work
The current version of the RIBA Outline Plan of Work is available to download at:


### Green Overlay
To allow the BIM Overlay to sit alongside the Green Overlay to the RIBA Outline Plan of Work, the suggested amendments to the ‘description of key tasks’ included in the Green Overlay have also been included in the BIM Overlay. The Green Overlay text is highlighted in green, and to avoid confusion the BIM Overlay text is shown in purple.

In reality, many of the changes in the Green Overlay are pertinent to the BIM Overlay. For example, subjects such as Soft Landings are relevant from both a sustainability and BIM perspective. The Green Overlay of the Outline Plan of Work, that also contains additional valuable guidance on green issues, can be downloaded from:


---

### Theory - Employer Information Requirements (EIR)

**BIM-Client maturity**

#### Specimen Production and Delivery Table for CIC BIM Protocol

<table>
<thead>
<tr>
<th>Overall form and content</th>
<th>Drop 1 Stage 1</th>
<th>Drop 2a Stage 2</th>
<th>Drop 2b Stage 2</th>
<th>Drop 3 Stage 3</th>
<th>Drop 4 Stage 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Originator</td>
<td>Architect 1</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
</tr>
<tr>
<td>Level of Detail</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design strategies</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Physical security</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Disabled access</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Maintenance access</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>Architect 1</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
</tr>
<tr>
<td>Structural</td>
<td>Architect 1</td>
<td>Str Eng 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td></td>
</tr>
<tr>
<td>MEP systems</td>
<td>Architect 1</td>
<td>MEP Eng 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td></td>
</tr>
<tr>
<td>Regulation compliance analysis</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Thermal Simulation</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Sustainability Analysis</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Acoustic analysis</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>4D Programming Analysis</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>5D Cost Analysis</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Services Commission</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOD definitions (from PAS 1192)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Brief</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>2 Concept</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>3 Developed Design</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>4 Production</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>5 Installation</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>6 As constructed</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>7 In use</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage definitions (from APM)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Strategy</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>1 Brief</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>2 Concept</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>3 Definition</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>4 Design (production information)</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>5 Build &amp; Commission</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>6 Handover &amp; Closeout</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>7 Operation and end of life</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

| Model Originators identified by name      |                |                 |                 |                |                |

<table>
<thead>
<tr>
<th>Elements, materials components</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Specifications</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>MEP systems</td>
<td>Architect 2</td>
<td>Contractor 2</td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction proposals</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phasing</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Site access</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Site set-up</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health and safety</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td></td>
<td></td>
<td>Contractor 3</td>
<td>Contractor 6</td>
<td></td>
</tr>
</tbody>
</table>

---

Research Methodology

BIM-Client maturity

Technical Workshop(s)
Mixed training events / knowledge transfer meetings and professional networking addressing the range of BIM processes with client-side professionals (commissioning / planning / contract management / design review / facilities management) within a mix of construction sectors (commercial / social housing / public health / education / industrial & leisure).

Documentation Review(s)
Overview of a mix of commission brief, client instructions (verbal / email / written), minutes of kick-off meeting, contract document(s) including a mix of EIR, pre-BEP and BEP.

1-2-1 In-depth Interview(s)
Follow-up discussions with client-side professionals.

**EIR**
- Implicit / explicit requirements for project information.
- Content of 'written' project brief.
- Supporting documentation (OIR / AIR) & requirements.
- Project management processes

**Standards**
- Building regulations, planning & funding requirements.
- Compliance with statutory & voluntary BIM / information standards.

**Skills**
- Current client organisation BIM capacity and / or awareness.
- Internal roles & responsibilities for ICT / digital information.
- Expectations for additional technical support or training.

**Applications**
- Anticipated use of digital information. Requirements for geometric models & associated parametric data sets.
- Relationship of BIM (model / data) with project programme.
Overview

BIM-Client maturity

Level 0
Passive-BIM Client

Un-informed client organisation
Lack of client-side engagement
Lacking skills & capabilities
Limited expectations

Level 1
Self-Interest-BIM Client

Un-informed client organisation
Lack of client-side engagement
Lacking skills & capabilities
Limited expectations

Guided client organisation
Object-orientated model
Digital drawings issued
Standardised BEP
Building Execution Plan

Client compliance with best-practice guidance
Requirements for public sector commissions
Outcome focussed

Level 2
Devolved-BIM Client

Informed client organisation
Client-side responsibility
In-house skills & capabilities
Bespoke BIM 'objects'
Shared model ownership

Object-orientated model
Digital drawings issued
COBie data drop

Level 3
Heuristic-BIM Client

Informed client organisation
Client-side responsibility
In-house skills & capabilities
Bespoke BIM 'objects'
Shared model ownership

Federated object-orientated model
Current digital model issued
Building data in use

Client Attributes

BIM Attributes

3D geometric model
Digital drawings issued

2D geometric model
Printed drawings issued

Informed client organisation
Guided client organisation

Un-informed client organisation
Lack of client-side engagement

Client Attributes

BIM Attributes

2D geometric model
Printed drawings issued

3D geometric model
Digital drawings issued

Standardised BEP
Building Execution Plan

Object-orientated model
Digital drawings issued
COBie data drop

Shared object-orientated model
Digital model (version control) issued
Validation standards for third-party 'objects'

Building data in use

Federated object-orientated model
Current digital model issued

Overview
BIM-Client maturity

Level 0
Passive-BIM Client

- Un-informed client organisation
- Lack of client-side engagement
- Lacking skills & capabilities
- Limited expectations

Level 1
Self-Interest-BIM Client

- Guided client organisation
- 3D geometric model
- Digital drawings issued

Level 2
Devolved-BIM Client

- Client compliance with best-practice guidance
- Requirements for public sector commissions
- Outcome focussed

Level 3
Heuristic-BIM Client

- Informed client organisation
- Client-side responsibility
- In-house skills & capabilities
- Bespoke BIM 'objects'
- Shared model ownership

Client Attributes

- Community-based charity
- Strategic health service provider
- Regional housing ALMO
- Development trust
- Local health service provider
- Higher education provider
- International developer
- Private housing developer
- Housing charity
- Commercial industrial multinational

BIM Attributes

- 2D geometric model
- Printed drawings issued
- Object-orientated model
- Digital drawings issued
- Standardised BEP
- Building Execution Plan
- Shared object-orientated model
- Digital model (version control) issued
- Validation standards for third-party 'objects'
- Federated object-orientated model
- Current digital model issued
- Building data in use

Small-scale private developer
- SME design practice
- Strategic health service provider
- Community-based charity
- Regional housing ALMO
- Development trust
- Local housing ALMO
- Housing association
- Local authority housing department
- Higher education provider
- International developer
- Private housing developer
- Housing charity
- Facilities management company
- Commercial industrial multinational

Passive-BIM Client
BIM-Client maturity level 0
"I'm not really sure who is in charge of these sort of issues... but I'll try and find out if you think they are important..."

"It (BIM) all just looks too complex for us to make any informed decision at this stage. We'll probably just wait until the government makes it an actual requirement... we don't want to make any unnecessary investment in ICT or training..."

"We're not too worried about the process. We're just interested in the outcomes... getting the development done... to be honest, we are just interested in the visualisation, and perhaps a fly-through..."
Self-Interest-BIM Client
BIM-Client maturity level 1
“I'm doing the model (BIM) for myself and don't expect to have to share it with anyone else. If we thought that was the case, then we’d look a lot closer at the quality of the BIM model and the standards required ...”

“You'll know better than us what is needed to deal with all of the compliance issues ... although if it is about self-assessment and self-validation then we are happy to do this and follow your recommendations ....”

“If you're able to set out what we have discussed ... and call it a brief or EIR or whatever if you want ... as the basis for the project ...”

“To be honest we're not totally convinced of the value and the commitment required to make it work. We don't need to understand it (BIM); that's why we are employing you ....”
Devolved-BIM Client
BIM-Client maturity level 2

“We know how important the cultural change attached to BIM is … we totally understand that, but many of the senior management don’t share this understanding yet. So we will try and progress and show the benefits as we go along …”

“We do have a standard EIR that we use on all of our development and construction jobs now …”

“There are a few people joining us now who have the skills to actually benefit from BIM, but we are lacking in many of the longer-term employees and they resent having to change the way we are doing things …”

“If it helps us understand the impact to refurbishment is making in terms of energy efficiency, then we would be interested in the results … we think that quality control is critical in the construction, so anything you can add to the project manager on site to maintain control is of benefit …”
Heuristic-BIM Client
BIM-Client maturity level 3
Heuristic-BIM Client
BIM-Client maturity level 3

“Getting confidence in the quality and certification processes using BIM will be of benefit given the scale of the task ... we don't expect the architects to know all of the standards but we do expect them to be part of the BIM model, embedded from the brief with the correct LOD so we can check internally at the appropriate project stage ...”

“We are getting the right information specified for the last few projects ... the architects have been surprised in what we have been asking for and how the COBie sheets are proving to be more critical for our property management than the 3D geometric model ... we're all about knowing our costs and assets ...”

“If it helps us understand the impact to refurbishment is making in terms of energy efficiency, then we would be interested in the results ... we also think that quality control is critical in the construction, so anything mobile you can add to the project manager on site to maintain control is of benefit ...”

“We've been taking our time to get the right people together to make the business case for investing in BIM across our projects ... it's taken time but we're getting the buy-in from the management at last to make the right sort of investments ...”

“We've been taking our time to get the right people together to make the business case for investing in BIM across our projects ... it's taken time but we're getting the buy-in from the management at last to make the right sort of investments ...”
Level 0
Passive-BIM Client

Client Attributes
- Un-informed client organisation
- Lack of client-side engagement
- Lacking skills & capabilities
- Limited expectations

BIM Attributes
- 2D geometric model
- Digital drawings issued

Level 1
Self-Interest-BIM Client

Client Attributes
- Guided client organisation

BIM Attributes
- 3D geometric model
- Digital drawings issued

Level 2
Devolved-BIM Client

Client Attributes
- Client compliance with best-practice guidance
- Requirements for public sector commissions
- Outcome focussed

BIM Attributes
- Object-orientated model
- Digital drawings issued
- COBie data drop
- Standardised BEP
- Building Execution Plan

Level 3
Heuristic-BIM Client

Client Attributes
- Informed client organisation
- Client-side responsibility
- In-house skills & capabilities
- Bespoke BIM 'objects'
- Shared model ownership

BIM Attributes
- Shared object-orientated model
- Digital model (version control) issued
- COBie data drop
- Validation standards for third-party 'objects'
- Shared object-orientated model
- Current digital model issued
- Building data in use
Overview

BIM-Client maturity

Level 0
Passive-BIM Client

Client Attributes
- Un-informed client organisation
- Lack of client-side engagement
- Lacking skills & capabilities
- Limited expectations

BIM Attributes
- 2D geometric model
- Digital drawings issued

Employer Information Requirements (EIR)
- Unwritten
- Limited client instructions
- Designer created brief

Level 1
Self-Interest-BIM Client

Client Attributes
- Guided client organisation

BIM Attributes
- 3D geometric model
- Digital drawings issued

Employer Information Requirements (EIR)
- Standardised client instructions
- Designer-focussed BEP
- Designer created EIR

Level 2
Devolved-BIM Client

Client Attributes
- Client compliance with best-practice guidance
- Requirements for public sector commissions
- Outcome focussed

BIM Attributes
- Object-orientated model
- Digital drawings issued
- COBie data drop

Employer Information Requirements (EIR)
- Standardised BEP
- Building Execution Plan

Level 3
Heuristic-BIM Client

Client Attributes
- Informed client organisation
- Client-side responsibility
- In-house skills & capabilities
- Bespoke BIM ‘objects’
- Shared model ownership

BIM Attributes
- Federated object-orientated model
- Current digital model issued
- Building data in use

Employer Information Requirements (EIR)
- Bespoke client instructions
- Client created brief / EIR
- Designer adapted EIR

Overview

BIM-Client maturity

Level 0
Passive-BIM Client

Level 1
Self-Interest-BIM Client

Level 2
Devolved-BIM Client

Level 3
Heuristic-BIM Client

Client Attributes

Un-informed client organisation
Lack of client-side engagement
Lacking skills & capabilities
Limited expectations

Guided client organisation

2D geometric model
Digital drawings issued

3D geometric model

Object-orientated model
Digital drawings issued

Standardised BEP
Building Execution Plan

Shared object-orientated model
Digital model (version control) issued

Validation standards for third-party ‘objects’

Informed client organisation
Client-side responsibility
In-house skills & capabilities
Bespoke BIM ‘objects’
Shared model ownership

Federated object-orientated model
Current digital model issued
Building data in use

Employer Information Requirements (EIR)

Default
Unwritten
Limited client instructions
Designer created brief

Adapted
Standardised client instructions
Designer-focussed BEP
Designer created EIR

Bespoke
Bespoke client instructions
Client created brief / EIR
Client adapted EIR

Conditional
	

Unwritten

Standardised client instructions
Designer created brief

Unwritten

Bespoke client instructions
Client created brief / EIR
Client adapted EIR

Advisory

Professional Liability

Project management & process standards
RIBA 2013 Plan of Works
RIBA Digital Overlay / NBS Toolkit

Requirements for funding
PAS 1192-2:2013
British Standards Institution (BSI)

BS 7000-4 & BS 1192-5 (Security)

BS1192-6 (Health & Safety)

BS1192-2 (ISO 12006-2) / OmniClass (OCCS)

BS1192-7 (Digital construction product information)

BS1192-6 (Health & Safety)

BS1192-2 (ISO 12006-2) / OmniClass (OCCS)

BS1192-7 (Digital construction product information)

Overview
BIM-Client maturity

Level 0
Passive-BIM Client
- Un-informed client organisation
- Lack of client-side engagement
- Lacking skills & capabilities
- Limited expectations

Level 1
Self-Interest-BIM Client
- Guided client organisation
- Object-orientated model
- 3D geometric model
- Digital drawings issued
- Standardised BEP
- Building Execution Plan

Level 2
Devolved-BIM Client
- Client compliance with best-practice guidance
- Requirements for public sector commissions
- Outcome focussed
- Shared object-orientated model
- Digital model (version control) issued
- Validation standards for third-party 'objects'

Level 3
Heuristic-BIM Client
- Informed client organisation
- Client-side responsibility
- In-house skills & capabilities
- Bespoke BIM 'objects'
- Shared model ownership
- Federated object-orientated model
- Current digital model issued
- Building data in use

Client Attributes
- BIM Attributes

Employer Information Requirements (EIR)

Default
- Standardised client instructions
- Designer-focussed BEP
- Designer created EIR

Adapted
- Bespoke client instructions
- Client created brief / EIR
- Designer adapted EIR

Bespoke
- Dynamic client instructions
- Client BIM manager EIR

Standards
- Advisory
  - Project management & process standards
  - RIBA 2013 Plan of Works
  - RIBA Digital Overlay / NBS Toolkit

- Conditional
  - Requirements for funding
  - PAS 1192-2:2013
  - British Standards Institution (BS)
  - Data security standards
  - BS 7000-4 & BS 1192-5 (Security)

- Statutory
  - Document management standards
  - Construction Project Information Committee (CPIC)
  - Classification systems
  - Uniclass2 (ISO 12006-2) / OmniClass (OCCS)
  - BS1192-7 (Digital construction product information)

- Professional Liability
  - Organisation information requirements (OIR)
  - BS1192-6 (Health & Safety)
  - Asset information requirements (AIR)

Client Skills
- Drawing / Model Viewing
  - 2D Plans / elevations
  - 3D & Parametric modelling
  - Data exchange

- Model Manipulation
  - Project management
  - Accessing parametric data

- Model Editing
  - BEP training requirements of client team
  - Post-occupancy ‘Softlanding’ assessment
  - Dynamic / agent-based modelling

Overview

BIM-Client maturity

Level 0
Passive-BIM Client

Level 1
Self-Interest-BIM Client

Level 2
Devolved-BIM Client

Level 3
Heuristic-BIM Client

Client Attributes

Un-informed client organisation
Lack of client-side engagement
Lacking skills & capabilities
Limited expectations:

Guided client organisation
Object-orientated model
Digital drawings issued
GOBie data drop

Standardised BEP
Building Execution Plan

Shared object-orientated model
Digital model (version control) issued
Validation standards for third-party 'objects':

Informed client organisation
Client-side responsibility
In-house skills & capabilities
Bespoke BIM 'objects'
Shared model ownership

Federated object-orientated model
Current digital model issued
Building data in use

Employer Information Requirements (EIR)

Unwritten
Limited client instructions
Designer created brief

Standardised client instructions
Designer-focussed BEP
Designer created EIR

Bespoke client instructions
Client created brief / EIR
Design adapted EIR

Dynamic client instructions
Client BIM manager EIR

Standards

Advisory
Project management & process standards
RIBA 2013 Plan of Works
RIBA Digital Overlay / NBS Toolkit

Conditional
Requirements for funding
PAS 1192-2:2013
British Standards Institution (BSI)
Data security standards
BS 7000-4 & BS 1192-6 (Security)

Statutory
Document management standards
Construction Project Information Committee (CPI)
Classification systems
Uniclass2 (ISO 12006-2) / OmniClass (OCCS)
BS1192-7 (Digital construction product information)

Professional Liability
Organisation information requirements (OIR)
BS1192-6 (Health & Safety)
Asset information requirements (AIR)

Client Skills

2D Plans / elevations
3D & Parametric modelling
Data exchange

Model Manipulation
Project management
Accessing parametric data

Model Editing
BEP training requirements of client team
Post-occupancy ‘Softlanding’ assessment
Dynamic / agent-based modelling

Applications

Business Case
Visualisation
Marketing & communication

Design
Design integration
Compliance checking

Construction / Fabrication
Integrated supply-chain
Quality controls

Facilities Management
Post-occupancy management
Adaptation & upgrading
Finance / funding & insurance