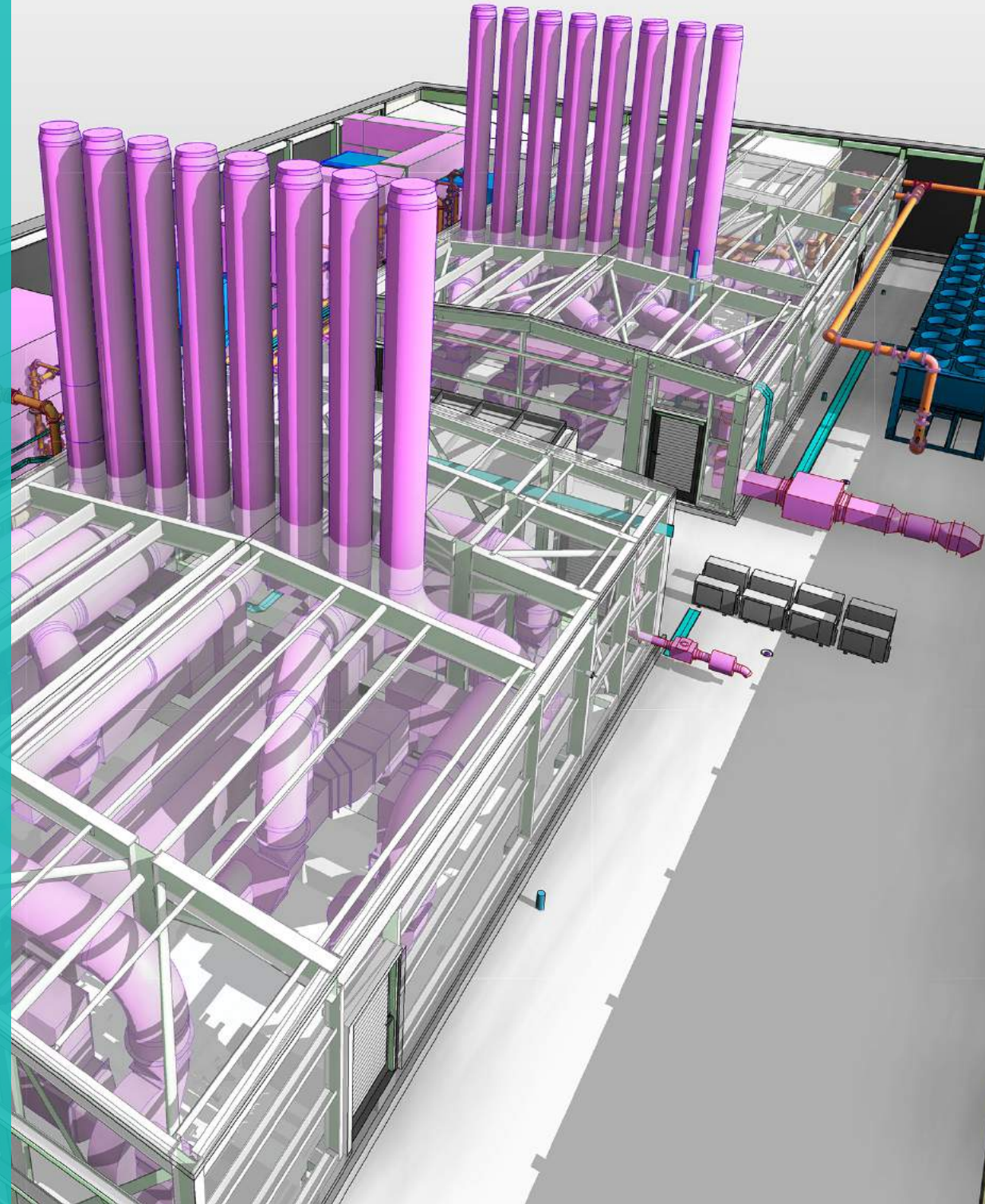


cpmg

BIM Capability Statement



Mission Statement

Building Information Modelling (BIM) is not simply about producing drawings from 3D Models, it much goes much further than that. BIM goes beyond the planning and design phase of the project and extends throughout the building life cycle - from early concept through to demolition.

The BIM process embraces not just new technology but critically a new philosophy of working. Traditional work processes are supplanted with all parties now operating within a common information pool. This collaborative working realm aligns with new work practices and enables higher quality output and more efficient communication. The resulting single source of co-ordinated information on a common platform provides tangible benefits to all parties throughout the design and construction process and an ongoing resource for building owners and occupiers.

The delivery of a first class service to our clients is paramount to us and the principles of BIM align with this ideal.

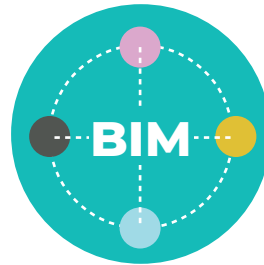
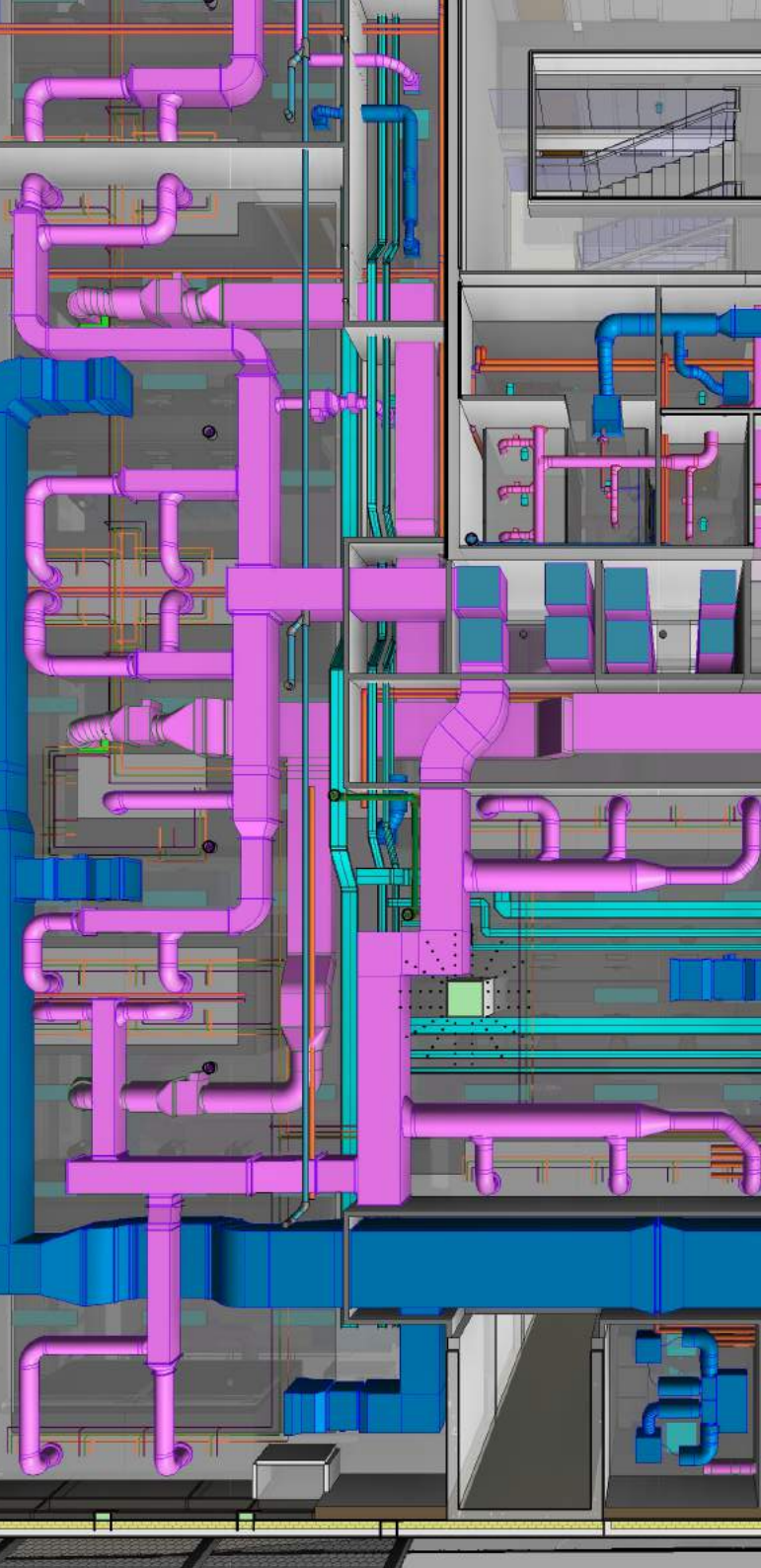
We recognise that by embracing its core values we will deliver a well-designed

project that will be more efficient and better coordinated. The benefits will be tangible throughout the design, construction and occupation of the building.

We have been recognised by BSI (British Standards Institution) for our capability in the use of BIM to PAS 1192-2:2013, joining just a small group of other British architects to hold this prestigious accolade.

We are now striving to develop our service along Level 3 lines prior to its formal implementation.

This is an ambitious target and is about much more than the adoption of new technology. The implementation of BIM is essentially a change in cultural approach requiring us to fully engage with the values of collaboration to ensure that the maximum benefits are realised for all parties.



BIM Services

We offer a wide variety of Architectural, Interior Design & Visualisation services supported by use of BIM technologies.

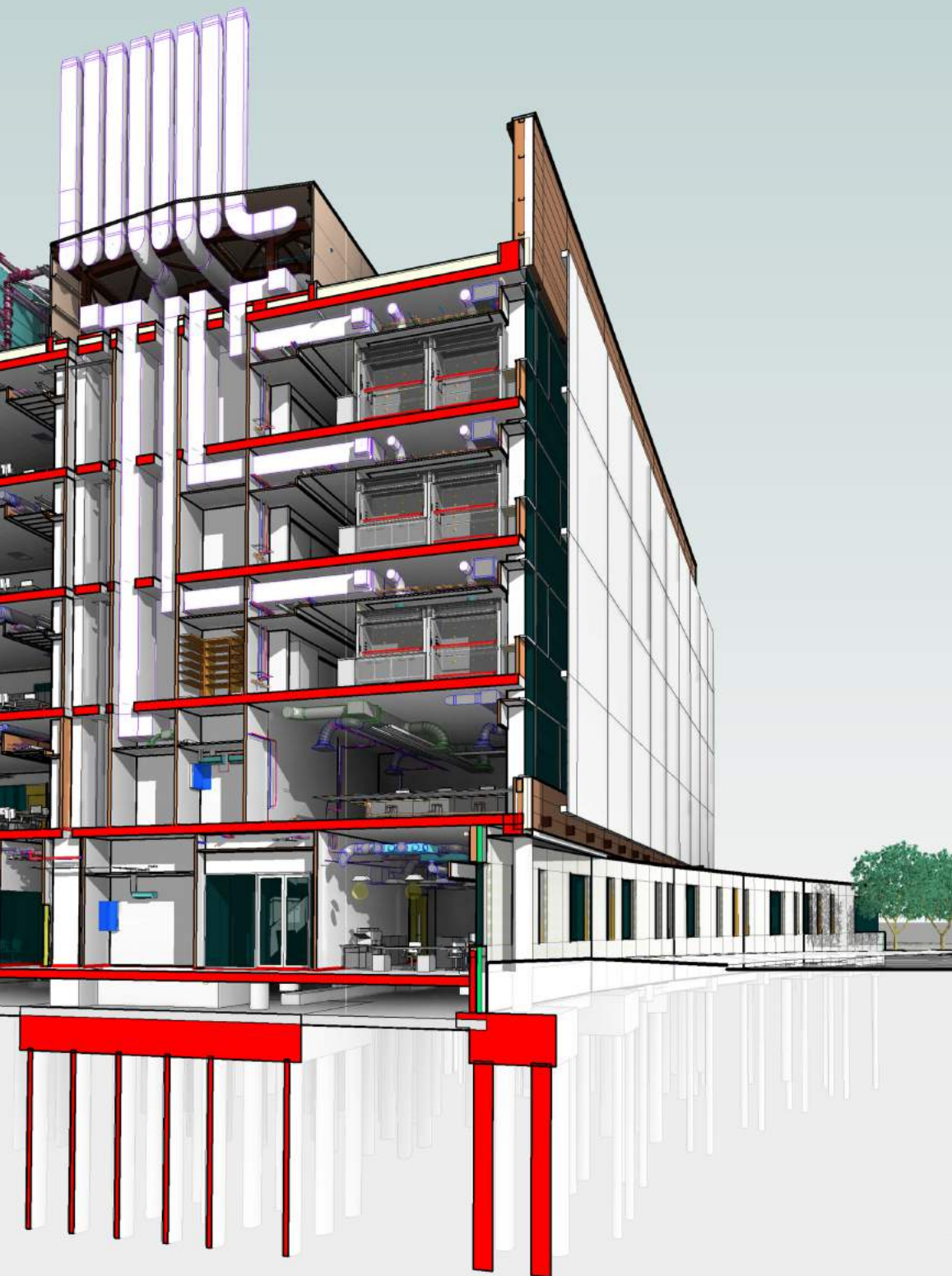
- massing studies
- visual impact assessments
- photo-real imagery
- fly-through animations
- construction documentation
- model federation
- clash rendition
- verification / validation (EIR)
- bespoke software applications
- virtual reality (experimental)



Quality Assurance

Since 2005 we have continually invested in BIM with an experienced BIM management team.

- Documented delivery strategy.
- Integrated BIM & IT team
- ISO9001 Quality Management System
- ISO 14001 Environmental Management System



BIM Management

We are able to assist the employer prior to appointment of a project team and assist with BIM management processes

- A Employer Information Requirements
- B Defining key roles & responsibilities
- C Use of Common Data Environments
- D BIM Execution Planning (BEP)
- E Assessment of BIM capabilities & training requirements
- F Authoring - definition of conceptual placeholders to accurate digital representations of real world assets.
- G Collaboration - verification of design & associated information against the Employer's Information Requirements (EIR)
- H Supply Chain integration
- I Asset management
- J Technical Support

Employer Information Requirement

We aim to work closely with the employer to establish contractual deliverables and promote use of lean design workflows.

Technical

- research & development
- software platform(s)
- exchange formats
- restrictions
- level of development

Management

- roles & responsibilities
- information approval
- security measures
- document standards
- collaboration processes
- compliance planning
- asset delivery strategy

Commercial

- strategic definitions
- timing of data drops
- scope of deliverables
- competency assessments

BIM Maturity

We support the use of recognised BIM metrics to describe the method, capability and scope of information exchanges.

Level 1 – managed 2D CAD

Environment incorporating a degree of spatial coordination, standard structures and formats. May include 3D massing geometry for visualisations.

Level 2 – a managed 2D / 3D

Environment federating single disciplinary models via neutral file formats to enforce spatial coordination between disciplines. Outputs may include (4D) construction sequencing and (5D) cost information.

BS EN ISO 19650-1:2018

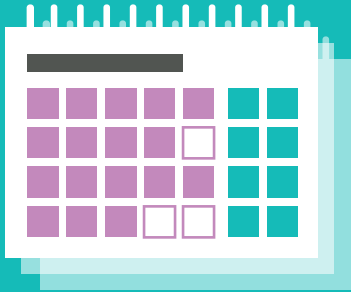
a fully collaborative design environment with asset information, documentation and data captured in a digital form.

Typical Workflows

Facilitating re-purposing of project information to encourage use of digital processes to inform key decision-making.

- | | |
|----|--|
| 2D | traditional documentation and drawings supported by BS EN ISO 19650-2:2018 |
| 3D | use of smart elements providing a virtual digital prototype of the facility suitable for clash rendition & quantity take-offs. |
| 4D | time based construction & logistics planning. |
| 5D | cost control through distinct classification of elements to ensure specialist applications can access information directly from our models. |
| 6D | operational applications, capturing relevant data during the design and construction phases and providing opportunities for a digital transfer of information for life cycle management. |

Benefits of BIM



Efficient construction time on projects

We're able to deliver projects with more clarity and efficient use of resources.



Reduces the risk factor by having information modelled

Automation errors are identified on screen before they reach the building site.



Improved collective understanding of the project

Everyone works on the same model and all work feeds the outcome.

Key roles & responsibilities

Project roles

We're able to perform the following information management roles throughout RIBA Workstages 1-4.

Roles & responsibilities

- **Information Manager**
primary role in establishing & managing the Common Data Environment (CDE)*
- **Delivery Manager**
assisting the employer with the specification of deliverables, determining the methodology, capabilities & competence and approach required of the supply chain to meet objectives
- **Interface Manager**
to federate single disciplinary models & ensure spatial coordination between disciplines.

Lead Designer

By moving away from 2D paper drawings and use 3D interactive environments, we see opportunities for providing an enhanced level of service.

Use of 3D digital mock-ups in lieu of drawings & spreadsheets presents a more familiar view of the design. The mock-up is often a pivotal communication tool to discover end user's aspirations for the facility.

We encourage participation from end users who might otherwise not feel comfortable engaging within a 2D CAD driven approach.

As Lead Designer, we are better placed using BIM to ensure granular levels of coordination between disciplines through use of specialist collaboration tools.

Of key importance is a contribution to the EIR to ensure deliverables are adequately specified within tender documentation.

Task Team roles

Each discipline should nominate personnel to support collaborative processes & coordination of information particular to their specialism.

We will typically appoint the following roles & responsibilities

- **Task Team Manager**
an experienced Architect or Interior Designer who will be the primary point of contact for the design.
- **Task Information Manager***
a skilled BIM Technologist acting as the 'BIM Lead'.
- **Task Interface Manager**
key to identifying & resolving spatial conflicts prior to construction on site.

* CDE infrastructure provided by others.

Note: We would typically expect the contractor manage above roles at Stages 5 & 6.



Common Data Environment (CDE)

We're experienced in utilising web enabled information repositories to promote exchanged of controlled documentation.

Benefits;

- live design information
- multi-site/team collaboration
- avoidance of waste & duplication
- trusted resources
- reduction in emails
- online mark-ups & approvals
- long term asset management
- archive of project history

We recommend the use of management processes in accordance with BS EN ISO 19650-2:2018.

Use of recognised AEC standards promotes clarity & interoperability of design information with stakeholders & software systems.

Subject to the service provider a CDE may otherwise be known as an Extranet or Fileshare.

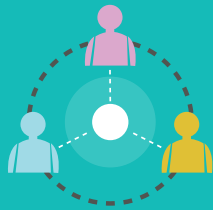
BIM Execution Plan

We will typically respond to the Employer Information Requirement via a BIM Execution Plan (BEP).

The BEP will identify key responsibilities and roles, as well as providing a robust technical specification for the authoring and exchange of project information.



BIM Capabilities



Key to the success of BIM is the ability of project stakeholders to work together within a collaborative framework.



We are able to assess the capabilities of the employer's supply chain and help to resolve information bottlenecks and the effects of 'BIM Wash'.*



We offer the employer project specific workshops to ensure their team is up to speed with BIM and able to gain the benefits of the technology.



We can host technical workshops with Supply Chain members to ensure specialist manufacturing applications export any information suitable for employer's needs and utilise model-based collaboration.

* BIM wash: A term used to describe an inflated or misleading claim of the capabilities of delivering BIM, which may later compromise the delivery of project information.

BIM Authoring

Wherever possible our information is prepared using the The National Annex to BS EN ISO 19650-2:2018 Code of Practice to promote clarity and interoperability of design information with other stakeholders.

Authoring tools

- Autodesk Revit
- Autodesk Navisworks
- Solibri Model Checker

Visualisation tools

- Lumion, Enscape and Formit
- Autodesk 3ds Max
- Adobe Photoshop

Network infrastructure

- Specialised BIM workstations
- Virtualised server (Hyper-V)
- EMC Storage Area Network (SAN)
- Cloud Disaster Recovery
- Subject to a 3 year refresh program

Licensing & support

- Subscription contracts
- Use of Platinum vendors wherever possible

Exchange formats

We provide support using a wide variety of workflows. We support a wide range of document exchange formats to ensure interoperability with other designers systems.

- Microsoft Office
- Portable Document Format (.pdf)
- Industry Foundation Classes (.ifc)
- Autodesk Revit (.rvt / .rfa)
- Autodesk Navisworks (.nwc / .nwd)
- Autodesk AutoCad (.dwg / .dxf)
- Extensible Markup Language (.xml)
- Excel (.xlsx)
- Joint Photographic Experts Group (.jpg)
- Motion Picture Experts Group (.mp4)
- COBie

Support can be extended to use additional exchange formats where specified within an Employer Information Requirement.

Level of Development

'Level of Detail' (LOD) and the 'Level of Information' (LOI) for each BIM asset will typically be managed in the BEP. These work together to provide defining models for exchanging information and timings in design planning.

Master Information Delivery Plan (MIDP)

A granular delivery matrix forming part of the MIDP is key to ensuring successful validation of digital mock-ups and minimising of real world issues on site.



Level of Development (LOD) objectives



To assist teams to get a clear idea of what will be included in the BIM deliverables



Help the design managers to explain and deliver the level of detail that is needed over various points of the design process



Provides a standard that can be referenced by the BEP and contracts.

Collaboration

We have a wealth of experience utilising digital mock-ups which allows us to visualise and verify spatial coordination of design teams prior to construction.

A 'federated model' is typically re-issued on a fortnightly basis incorporating changes submitted by the design team. This enables the employer, end users, designers, contractor/supply chain to visualise, walk around and comment on change events (or proposed changes) prior to accepting information for construction.

We can issue a number of federated model formats, which in many cases can be accessed using free software and minimal user training.

Typical benefits include;

- Enhanced user engagements *
- Interactive design coordination
- 'Visual' progress reporting
- Clash rendition, conflict tracking
- Data mining

*We use immersive technologies such as Virtual and Augmented realities.

Supply Chain Integration

Typically the supply chain take ownership of the majority of FM deliverables at RIBA Work Stages 4/5 in accordance with an agreed Master Information Delivery Plan (MIDP)

However, we are able to continue coordinating information issued by the Supply Chain prior to commencing construction activities on site.

Use of fabrication detailing within a federated environment ensures a clash free installation and subject to the BIM Maturity model can form the basis of a digital 'O&M' manual upon handover.





Asset Management

We are able to facilitate interim FM data exchanges & contribute to FM handover packages for use with Computer Aided Facility Management Systems (CAFM).

Including;

- Construction Operation Building Information Exchange protocol (COBie)
- Issue of interim 'Data Drops' to assist with monitoring costs, carbon and business cases
- Contribute to asset management prior to and post-handover of the facility
- Provide information exchanges using native, neutral or use of spreadsheet formats
- Provide validation of data drops in accordance with the EIR

Technical Support

As an early adopter of BIM CPMG has acquired significant levels of expertise in managing BIM projects.

We often consider our 'real world exposure' to BIM matches & in many cases surpasses advice offered by BIM Consultancy firms.

A particular specialism is where 'off the shelf' software does not support an employer's specific business need. CPMG is able to engineer custom plugins or new applications to bridge the gap between disparate information systems.

- Bespoke software engineering (Microsoft.net framework).
- Custom plugins for Autodesk Revit (API)
- Connectivity with a wide range of 'non BIM' information systems



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Contact us

If you require any further information regarding our BIM capabilities, or how BIM can be utilised on your project, please do not hesitate to contact us.

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