

BIM 2016 and the NEC

Simon Rawlinson, 20 April 2015



Presentation overview



- Commercial requirements of BIM
- BIM and NEC Working Together
- Government requirements for a collaborative digital model
- Supporting the asset lifecycle



COMMERCIAL REQUIREMENTS OF BIM

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What is BIM?



- Objects that have shape, geometry, relationships and attributes
- A managed process of creating and re-using shared, structured data
- Configuration of information for use and reuse by multiple parties
- New ways of working for design, construction and FM

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Source: ARCADIS



BIM AND NEC WORKING TOGETHER

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How could BIM be used on a project?

- Designers will **exchange geometry** to test the coordination of the work of different design disciplines;
- Designers will use **models as input into analysis software** for structure, building physics and regulatory compliance
- Cost Consultants and Project Managers will use the model to generate areas, quantities and programme sequences
- Contractors could use a client's models as the basis for a bid submission, including quantities, programme, logistics, health and safety and so on
- Contractors will use their models to organise and access the Operation and Maintenance documents

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What steps should be taken to enable this to work?



- Define the Employer's Information Requirements. To gain benefit from BIM, clients need to define what data they need;
- Define project stages. Consistent definition enables effective information exchange;
- Define how much information is needed at each project stage. Levels of Detail and Information ensure that sufficient definition work is completed and enable this to be validated;
- Mandate common Standards, Methods and Procedures (SMP) so that data is delivered consistently and effectively

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BIM and NEC Working Together



'How to' guide April 2013



Key issues to be addressed in connection with BIM

- Technical requirements
 - information deliverables
 - constraints that must be met
- Rights to use information
- Responsibilities of the parties for problems that may result from use of models

Technical Requirements are described in EIR Rights and responsibilities are in the Contract

The CIC BIM Protocol is compatible with this approach

- Definitions
- Priority of the Contract Documents
- Obligations of the Employer
 - Put a Protocol in place
 - Appoint to the role of Information Manager
- Obligations of Project Team Members
 - Produce the Specified Models
 - Collaborative working practice
- Electronic Data Exchange
 - No warranty for data integrity
- Use of models
 - Licences related to permitted purposes
 - Limitations related to the extension of a project
- Limitations on liability

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Practical issues in the alignment of the Protocol and NEC need to be addressed



- Priority of the Protocol
- Protocol incorporated into the NEC Contract via a Z Clause
- Requirement to distinguish modifications to the contract and stated requirements the will affect the Scope or Works Information
 - Protocol clauses only referred to in Z clauses
 - Model Production and Delivery Table included in the Works Information or Scope
 - Information Plan included in the Works Information or Scope
- Potential conflicts between defined terms
- Additional compensation events
 - Inability to comply with requirements to provide models
 - Revocation of rights to use models

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GOVERNMENT REQUIREMENTS FOR A COLLABORATIVE DIGITAL MODEL

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The BIM Mandate



- Collaborative BIM including data for construction and asset management (e.g. BIM level 2)
- Buildings and horizontal infrastructure
- New build and refurbishment
- Directly funded departments
- In place as Business as Usual by 2016



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The mandate is for Level 2 BIM



Source: BSi

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Impact of BIM and other initiatives



Rate of adoption

Cost reduction

2013/14

2014/15

2012/13

2011/12

2010/11



Highways Agency (1) Ministry of Justice (2) Environment Agency (3) Local Authority (4)



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The scope of BIM Level 2 is defined by 6 initiatives

Initiative	Key Features
PAS 1192:2 – BIM Processes and Roles for Capital Delivery	Project stages, Employers Information Requirements, Project Information Model, Common Data Environment (CDE)
PAS 1192:3 – BIM Processes and Roles for Operational Delivery	Asset management process, Organisational Information Requirements, Asset Information Requirements, Asset Information Model, CDE
BS 1192:4 – Standard for Digital Information Exchange	COBie for all data definitions
CIC BIM Protocol	Obligations, rights and liabilities, Employer's Information Requirements enforced
Government Soft Landings	Goal setting, process, performance measurement
NBS BIM Toolkit – Classification and Digital Plan of Work	Scope, defined geometry and information requirements, data classification

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• Definition of the scope of the appointment

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Source: RIBA Enterprises

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- Definition of the scope of the appointment
- Definition of levels of design detail

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Source: RIBA Enterprises

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- Definition of the scope of the appointment
- Definition of levels of design detail
- Definition of levels of specification detail

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Source: RIBA Enterprises

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- Definition of the scope of the appointment
- Definition of levels of design detail
- Definition of levels of specification detail
- Ability to test compliance with the scope





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SUPPORTING THE ASSET LIFECYCLE

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The asset lifecycle is at the heart of the BIM strategy





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Extension of Asset management thinking nec[®]



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Objectives of Asset management in Level 3



- Procure more whole life infrastructure capacity using less resource
- Maximise availability and utilisation of the assets that we already exist
- Reduce whole life carbon production
- Capitalise on wider development in the digital economy
- Create a source of competitive advantage in overseas markets

Level 3 aims to create a real-time digital market for asset delivery, operation and use



• Digital transactions

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- Portfolio-wide data utilisation
- Mobilise a market in data analytics
- Manage asset
 performance

Level 3 aims to create a real-time digital market for asset delivery, operation and use



Source: Digital Built Britain

Digital transactions

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- Portfolio-wide data utilisation
- Mobilise a market in data analytics
- Manage asset performance
- Smart-City interoperability
- Performance-driven • briefing



SUMMARY

Summary



- The impact of BIM-enabled working is spreading beyond the public sector
- As the use of BIM on projects becomes more varied, the employer has a key role in setting up the project for success
- NEC contracts are compatible with BIM but do need additional provisions
- The BIM Level 2 toolkit is now complete and is a sound basis for project management
- The future for BIM will be smart, portfolio-wide and paper-less.



Questions

