

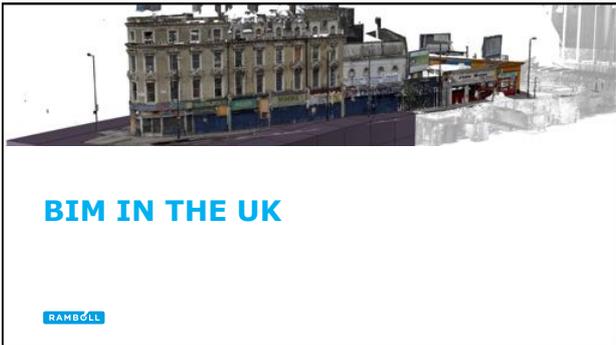


**INTRODUCTIONS** **Graham H Stewart**  
 Director, Head of BIM UK

- MSc EngTech MICE T1StructE
- 29 years industry experience, 5 with Ramboll
- Sectors – commercial, education, residential, industrial & sports to name but a few
- Ramboll UK Integrated Business Technology Leader

**AGENDA**

- BIM in the UK
- What does BIM look like today?
- The Clients Role
- Conclusion



**RETHINKING CONSTRUCTION (1998)**



- More commonly known as the 'Egan Report' after the chairman Sir John Egan.
- It was prepared by the 'Construction Task Force' for the Dept for Trade and Industry.
- Its scope was focused on improving the Quality and Efficiency of UK Construction.
- *At it's best the UK Construction Industry displays excellence...there is no doubt that substantial improvements are possible"*

**RETHINKING CONSTRUCTION (1998)**

To summarise, the Task Force wishes to emphasise that we are not inviting UK construction to look at what it does already and do it better: we are asking the industry and Government to join with major clients to do it entirely differently. What we are proposing is a radical change in the way we build. We wish to see, within five years, the construction industry deliver its products to its customers in the same way as the best consumer-lead manufacturing and service industries. To achieve the dramatic increases in efficiency and quality that are both possible and necessary we must all rethink construction.

'Re-thinking Construction – Summary Statement'

GOVERNMENT CONSTRUCTION STRATEGY (MAY 2011)



- The aim of this report was to ensure that the UK government got a 'good deal' for its public sector projects (and the tax payer).
- This 'lack of adoption' had led to potential benefits and efficiencies not being exploited.
- The GCS mandated "fully collaborative 3D BIM" on its publicly funded projects by 2016...this was a really important step!

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CONSTRUCTION 2025 STRATEGY (JULY 2013)



- Set out a clear 'Long Term' Vision for where the UK Construction Industry will be in 2025.
  - It wanted the Industry to be efficient and technologically advanced.
  - BIM, Digital Design and Smart Construction were all identified as being key to achieving these targets.
- "The vision will provide the basis for the industry to exploits its strengths in the global market"*

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CONSTRUCTION 2025 STRATEGY (JULY 2013)

- Lower costs**  
33%  
CAPEX & OPEX
- Lower emissions**  
50%  
Reduction GHG
- Faster delivery**  
50%  
Inception to Completion
- Improvement in exports**  
50%  
Reduced Trade Gap

Government will mandate BIM for all centrally procured Government contracts from 2016. Industry must therefore meet the challenge – only through the implementation of BIM will we be able to deliver more sustainable buildings, more quickly and more efficiently. BIM is also critical to the successful implementation of a wider offsite manufacturing strategy.

“ Industry must embrace technological progress to meet the demands of a rapidly changing world. Innovations like Digital Engineering and Design for Manufacture and Assembly will be fundamental to delivering a higher quality, more sustainable built environment for future generations. ”  
Anna Stewart, Group Chief Executive, Laing O'Rourke

Long term targets shared by Industry and Government.

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WHAT DOES BIM LOOK LIKE TODAY?

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“Building Information Modelling is a set of technologies, processes and policies enabling multiple stakeholders to collaboratively design, construct and operate a facility”

(Succar, B, 2013)

“BIM is a technology-enabled collaborative information modelling and management process used in the whole lifecycle (planning, design, construction and operation management) of building, plant and infrastructure projects”

(Ramboll Group, 2016)

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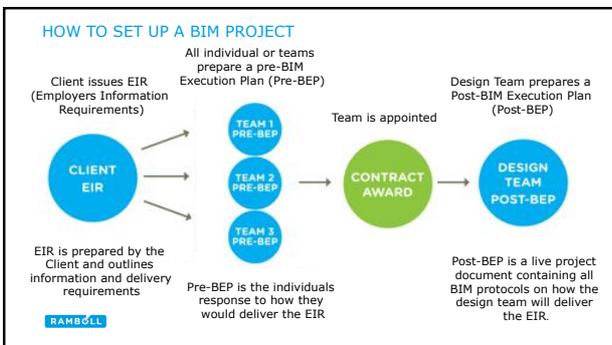
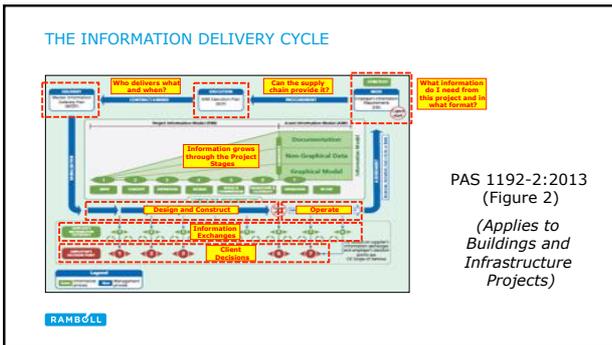
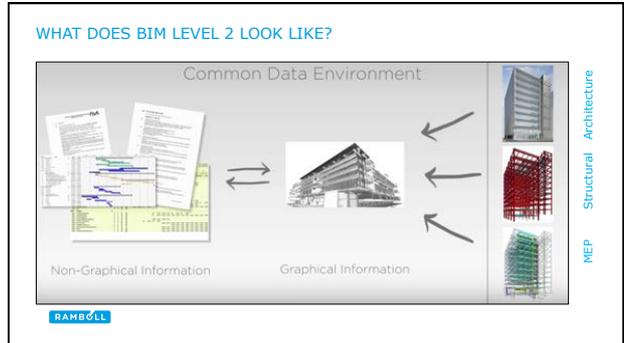
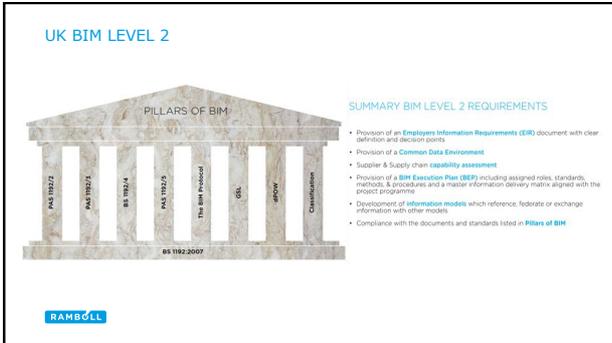
THE BIM LIFECYCLE PROCESS

BIM covers full 'Cradle to Grave' approach to buildings & Infrastructure.

Concept/Design, Build and Operate



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### ASSESSMENT AND NEED FROM THE CLIENT

**THE EMPLOYER'S INFORMATION REQUIREMENTS (EIR) DOCUMENT (CONSISTING OF 3 STANDARD CATEGORIES)**

Technical	Management	Commercial
<ul style="list-style-type: none"> <li>Software Platforms</li> <li>Data Exchange Format</li> <li>Co-ordinates</li> <li>Level of Detail</li> <li>Training</li> </ul>	<ul style="list-style-type: none"> <li>Standards</li> <li>Roles and Responsibilities</li> <li>Planning the Work and Data Segregation</li> <li>Security</li> <li>Coordination and Clash Detection Process</li> <li>Collaboration Process</li> <li>Health and Safety and Construction Design Management</li> <li>Systems Performance</li> <li>Compliance Plan</li> <li>Delivery Strategy for Asset Information</li> </ul>	<ul style="list-style-type: none"> <li>Data drops and project deliverables</li> <li>Clients Strategic Purpose</li> <li>Defined BIM/Project Deliverables</li> <li>BIM-specific competence assessment</li> </ul>

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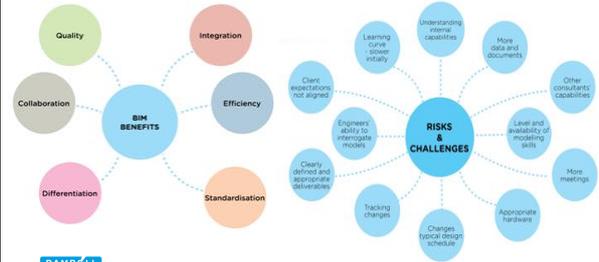
## VALIDATION OF DELIVERABLES TO THE CLIENT

Management	Planning and Documentation	Standard Method and Procedure	IT Solutions
<ul style="list-style-type: none"> <li>Roles, responsibilities and authorities;</li> <li>Major Project Milestones consistent with the project programme;</li> <li>Project information model deliverable strategy;</li> <li>Survey strategy including the use of point clouds, light detecting and ranging (LiDAR) or global navigation satellite systems (GNSS);</li> <li>Existing legacy data use;</li> <li>Approval of information;</li> <li>Project Information Model (PIM) authorisation process.</li> </ul>	<ul style="list-style-type: none"> <li>Revised Project Implementation Plan (PIP) confirming the capability of the supply chain;</li> <li>Agreed project processes for collaboration and information modelling;</li> <li>Agreed matrix of responsibilities across the supply chain;</li> <li>Task Information Delivery Plan (TIDP);</li> <li>Master Information Delivery Plan (MIDP).</li> </ul>	<ul style="list-style-type: none"> <li>Volume strategy;</li> <li>Project Information Model (PIM) origin and orientation;</li> <li>File naming convention;</li> <li>Layer naming convention;</li> <li>Agreed construction tolerances for all disciplines;</li> <li>Drawing Sheet templates;</li> <li>Annotation, dimensions, abbreviations and symbols.</li> </ul>	<ul style="list-style-type: none"> <li>Software Versions;</li> <li>Exchange formats;</li> <li>Process and data management systems.</li> </ul>

CONTENTS OF POST-CONTRACT BEP (PAS 1192-2:2013)

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## BENEFITS, RISKS & CHALLENGES



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## IT'S ALL ABOUT VALUE PROPOSITION

### Why should we do BIM:

- ❑ Mandated on ALL Government funded (Public Sector) projects in the UK from April 2016 and where Appropriate in Scotland from April 2017.
- ❑ Private sector clients have also recognised the benefits and are asking for BIM to be used on their projects too.
- ❑ Well planned BIM brings efficiencies.
- ❑ Well planned BIM reduces errors.

### What does good BIM require:

- ❑ Understanding of the end use of the asset (*begin with the end in mind*).
- ❑ Early stage engagement with stakeholders (incl. clients FM team).
- ❑ Clearly defined targets/aspirations for BIM and how this will be used to add value.
- ❑ Well defined protocols describing the roles, responsibilities and deliverables for the project.

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## CONCLUSION

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## A SUMMARY FOR THE DESIGN TEAM

- ❑ BIM is about the effective management of project information.
- ❑ BIM impacts on all aspects of business process.
- ❑ BIM will require behavioural change across all levels of the business.
- ❑ BIM affects anyone involved in the design and delivery of projects.
- ❑ BIM is about optimising the design, construction and operation of the asset.
- ❑ BIM will enable the reduction of waste resulting in more sustainable solutions.

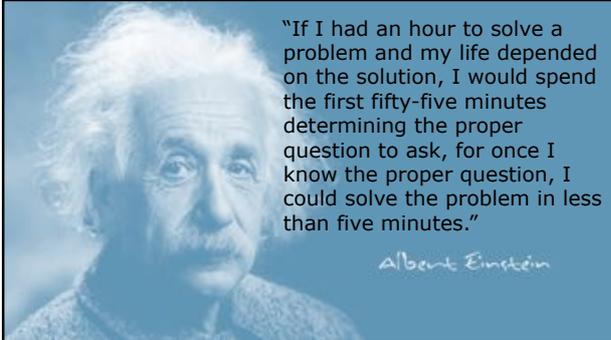
*'BIM is all about delivering better buildings and infrastructure'*

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## A SUMMARY FOR THE CLIENT

- ❑ It is essential to fully understand and drive the EIR document, this is what you are asking your design team to deliver.
- ❑ Remember to allow sufficient time for the design team to plan, roles and responsibilities, understand their digital requirements, input into BEP's etc..
- ❑ New roles and responsibilities are identified in PAS1192-2 and these need to be understood and appropriately allocated within the teams.
- ❑ It is important the design team only deliver what is required for each stage and not over produce.
- ❑ The post-contract BEP will be a live document throughout the life of the project which will be used to validate their deliverables and they align with the EIR.

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We are engineers, scientists and consultants who place trust in the power of design **to** create a better future.

At its best, good design can regenerate communities, protect natural environments, connect people across vast distances; it can provide new energy solutions and create buildings that people feel happy to be in.

RAMBOLL **THANK YOU**