Building a Strategy for BIM: A roadmap for Clients

• Introduction
• Conditions for Success
  • Why?
  • What
  • How?
• Next steps?
• How can we help?
• Q&A
Introduction

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BIM Steering Group Chair
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Chartered Project Management / Quantity Surveyor
Introduction


• DL initial response / strategy paper, July 2011

• BIM Steering Group formed Autumn 2011

• Mimic proposed “push” (top-down) / “pull” (bottom-up) approach

• Target operational capability:
  – In a BIM environment by end 2012
  – To Level 2 maturity by end 2013
  – To Level 3 maturity by end 2014…..?
Building a Strategy for BIM – A Roadmap for Clients
Introduction
Introduction

Operational Requirements / CoBIE Data

BIM

Project Execution

Client Guide

Strategy Development

Collaboration with NBS

Model Content Plan (NRM) Data Extraction Protocol

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Introduction.....
Identifying the Conditions for Success

- Structured framework for development and delivery
- Why.....
  - Are we here?
- What.....
  - Are we trying to achieve?
- How.....
  - Will we achieve it?
- Governance and control going forward
Why are we here?

• **Purpose:**
  - why is a strategy required?

• **Appraisal:**
  - have we identified and mapped our overall targets/objectives?
  - have we identified a well argued and robust business case?

Why BIM?
Improved design reliability Reduced design risk Reduced waste More time to get the design right Enhanced coordination and fewer errors Improved decision making Greater productivity Higher quality of work Downstream uses for facilities management Supports sustainability Improved safety Computation of material quantities Improved planning, control, management of construction Enhanced communication Effective resource utilisation and coordination of activities Reduction in costs associated with planning, design and construction Reduced number of RFIs Improved collective understanding of design intent Less time documenting more time designing Quantity takeoff Client engagement Improved spatial coordination

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Why....?

• Step-change in industry narrative

• Mandated uptake and adoption of BIM as key facilitator across the Government estate

• Government as “intelligent” Client

• Recommends structured approach to delivery via a “Push-Pull” strategy, but crucially...

• Detail left to supply chain
Why….?

• Client-side “Push”:

  - Facilitate the greater use of BIM by the Supply Chain
  
  - Address myriad of vendors within the market, all purporting to offer the best (ICT) solution
  
  - Address lack of guidance, training and common processes
  
  - Adoption of common “Maturity Model”
  
  - Level 2 maturity by 2016
Why....?

The Bew-Richards BIM Maturity Model

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Why….?

- Client-side “Pull”:
  - Specify required “functionality”:
    - 3D
    - 4D (scheduling)
    - 5D (cost)
    - nD (carbon, energy, FM plus…..)
  - Specify the exact information required from the supply chain…and when (lifecycle)
  - Require consistent digital handover to enable assessment of design, cost and carbon performance of the asset, eg: CoBIE, IFC etc
### Why....?

BIM adoption is further ahead in the USA than in Europe.

The rate of BIM use has grown rapidly in the USA between 2007 and 2009.

Contractors in the USA appear to be adopting BIM more than their European counterparts.

Some 70% of expert BIM users in Europe are already committing a large proportion (>60%) of their project portfolios to BIM.

Most BIM users in Europe expect a positive ROI on their investment in BIM.

All BIM users in Europe expect significant future growth in the use of BIM.
## Why....?

### Where’s the business case?

**NBS – National BIM Report 2012**

<table>
<thead>
<tr>
<th>Statement</th>
<th>%age agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM is the future of project information</td>
<td>77%</td>
</tr>
<tr>
<td>BIM improves productivity due to easy retrieval of information</td>
<td>67%</td>
</tr>
<tr>
<td>BIM brings cost efficiencies</td>
<td>65%</td>
</tr>
<tr>
<td>BIM increases speed of delivery</td>
<td>59%</td>
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</table>
Why....?

NBS – National BIM Report 2012

<table>
<thead>
<tr>
<th>Statement</th>
<th>%age agree</th>
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</thead>
<tbody>
<tr>
<td>We currently use BIM</td>
<td>41%</td>
</tr>
<tr>
<td>In one year we will use BIM</td>
<td>75%</td>
</tr>
<tr>
<td>In three years we will use BIM</td>
<td>90%</td>
</tr>
</tbody>
</table>

So...

- Next year 34% more businesses using BIM
- 3 years time, 49% more businesses using BIM
- Why wait.....why get left behind?
Why....?

• Where’s the business case?

“Can I be bothered to do the business case (for BIM)? I remember when we voted on whether we wanted to move to email. The investment required to do so at the time was about £4m and the immediate cost saving was to our post bill – about £100k. But we knew it was the future: unstoppable.”

Paul Morrell - Chief Construction Adviser
What are we trying to achieve?

• Is the definition comprehensive
  - One size doesn’t fit all.....what might “BIM” look like for you?
  - Is this a project strategy or a change management programme?

• What is the precedent
  - have exemplar processes / examples been researched?
What....?

• BIM in brief:

“BIM provides the opportunity for radical improvements in building design, construction and operation through advances in computer-based modelling technologies”
What....?

Client

Designers

Constructors

Operators

Constructors

Designers

Project Manager

Cost Consultant

Constructors

Sub-contractors / Trade Contractors

Manufacture / Supply

Designers

FM Consultant

FM Provider

Occupier

Knowledge database
Company
External

Rules and regulations
Building; Health and Safety; planning

Functional description
Functions
Calculations
Requirement
Demolition
Reconstruction

BIM software
Architecture; structural/civil engineering; building services

Reuse
Refurbishment
Demolition
Reconstruction

Virtual reality modelling language (VRML)
Visualisation
3D models

Simulation
Comfort
Air, heating
Life-cycle costs
Light; sound; insulation; use; fire; environmental; impact; life expectancy

Description
Including cost estimates

FM
Renting, sale and use
Maintenance
Warranty

4D Schedules
Logistics

Sourcing
Product database
Price database

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What....?

• Key Benefits
  – Design
    • Improved Coordination
    • Visualisation
    • Cost Estimating
  – Construction
    • Off site manufacture
    • Sequencing
    • Clash Detection
    • Reduced change orders
  – Operation
    • Improved understanding of estate
    • Access to relevant / useable information
  – “Hindsight before site”.....the ability to prototype the asset lifecycle
What….?
What....?

- What does Level 2 really mean?
  - Project Strategy
  - Baseline 2D model
  - Separate 3D models for each discipline
  - Information exchange
  - Project extranet
  - Emerging role of BIM Model Manager (design co-ordination)
How will we achieve it?

• Is the appropriate *management* in place?:
  - have internal/external stakeholders been identified?
  - is there a clear structure?
  - are roles and responsibilities clear?
  - is decision making clearly articulated and understood?
  - have internal leadership, governance and control been put in place?
How....?

• Are the most suitable *people* involved?:

  - formalise BIM roles and responsibilities
  - undertake gap analysis to establish existing capabilities / need for external hires
  - develop training plans at each staff level
  - talent acquisition and development
How....?

• How will good *communications* be achieved?:
  - Is there a clear comms plan / protocol in place?
  - Internally – to staff
  - Externally – to the market / supply chain
  - Is there a clear schedule of deliverables?
  - Sales and marketing requirements
How...?

• **Procurement – define your “push”:**
  
  - Confirm required maturity level
  
  - Engagement with the supply chain...are you / they ready?
  
  - Change to existing workflow process / management?
  
  - Response to new forms of procurement , eg: GCS trials?
  
  - Service development?
How....?

Design effort/effect

Ability to impact cost and functional capabilities

Cost of design changes

Source: Patrick MacLeamy, HOK (presentation)

Key
- Traditional design process
- Integrated design process

Phases

Requirements
Design concepts
Detailing and engineering
Construction documentation
Approvals and bidding
Construction
Operation

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How....?

- **Quality – define your “pull”:**
  - Confirm required functionality (..*nD*..)
  - Process / protocols:
    - PEP-4-BIM
    - Data definition / capture
    - Hard / software requirements
    - Open vs closed protocols?
    - QA procedures
  - Legals:
    - Model ownership / IP / copyright
    - Forms of appointment
    - Scope(s) of Service
    - Forms of Contract
    - Insurances
  - Service delivery?
### How.....

<table>
<thead>
<tr>
<th>Activity / BIM Vendor</th>
<th>Main Product / Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARCHITECTURE</strong></td>
<td></td>
</tr>
<tr>
<td>Autodesk</td>
<td>Revit Architecture</td>
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<tr>
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<tr>
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<td>Gehry Technologies</td>
<td>Digital Project</td>
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<tr>
<td><strong>STRUCTURAL ENGINEERING</strong></td>
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<td>Revit Structures</td>
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<td>Building Electrical Systems</td>
</tr>
<tr>
<td></td>
<td>Building Mechanical Systems</td>
</tr>
</tbody>
</table>
How....?

• How will *costs* be defined and controlled?:
  - Have the costs of delivery been identified?
    - Internal:
      - Training
      - Comms
      - ICT
      - Process / protocols / legals etc
    - External:
      - Model set-up costs
      - Supply chain development costs
  - How will costs be monitored?
  - Where’s the data?
How....?

• How do *programmes/plans* contribute....?:

- Is the strategic programme realistic, can we achieve it?

- Are assumptions realistic, recorded, understood and agreed?

- Does the programme clearly identify the correct phases / targets / milestones?
How....?

• How are *risks* identified and managed?:
  
  – Haven’t we been here before?

  – Leading edge vs bleeding edge
    - Lack of standardisation
    - Procurement / workflow
    - Legals / contracts / IP
    - ICT interoperability
    - Lack of precedent / empirical data
    - Supply chain competency
    - Training and development

  – Expectation management.....?
Next steps....?

• Commit to developing a BIM strategy

• Identify overall business case defining objectives and required outcomes

• Treat BIM as a change programme
  – Aligned at corporate level
  – Deliverable at the project level
  – Define your own “push” and “pull”

• Identify a roadmap for delivery built around:
  – Why, what and how?

• Identify a model project to road-test the strategy
How can we help?

1. Why is the construction project needed - is the PURPOSE clear?
2. Why is this solution appropriate - has a thorough APPRAISAL been carried out? What are the Targets?
3. What should the project deliver - is the DEFINITION comprehensive?
4. What is the PRECEDENT - have exemplary processes and projects been researched?
5. How is the project structured - are appropriate MANAGEMENT arrangements in place?
6. How well suited are the PEOPLE chosen to undertake the project?
7. How are good COMMUNICATIONS achieved?
8. How appropriate is the chosen PROCUREMENT approach?
9. How is the DESIGN QUALITY described - what are expectations?
10. How will COSTS and budgets be defined and controlled?
11. How do PROGRAMMES and plans contribute to project success?
12. How are RISKS identified and managed?
Thank You