Experience from the UK Government’s BIM Programme

Tokyo, 13th October 2016

Adam Matthews
Director of International Development
UK BIM Task Group
• Misunderstanding of client needs
• Miscommunication
• Rework and recreation of data
• Poor or no information management
Traditional Projects

Project Information / Knowledge

Planning | Development | Design | Construction | Operate & Maintain

Print! | Print! | Print! | Print! | Paper based approach
Paper based silos
Declining productivity and low degree of digitalisation

Scale: 1 = mostly, 2 = partly, 3 = very little, 4 = rudimentary digitized

<table>
<thead>
<tr>
<th>Industry</th>
<th>Scale</th>
<th>Average</th>
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<tbody>
<tr>
<td>Telekommunikation</td>
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<tr>
<td>Medien &amp; Unterhaltung</td>
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<td>Automobilhersteller</td>
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<td>1,97</td>
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<tr>
<td>Elektronik &amp; High Tech</td>
<td>2,80</td>
<td>1,82</td>
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<tr>
<td>Dienstleister</td>
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<td>1,97</td>
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<td>Logistik &amp; Transport</td>
<td>2,80</td>
<td>2,35</td>
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<td>Maschinen- und Anlagenbau</td>
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<td>Pharma &amp; Medizingeräte</td>
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<td>Metall</td>
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<td><strong>Construction Sector</strong></td>
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<td>3,33</td>
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<tr>
<td>Öl &amp; Gas</td>
<td>2,80</td>
<td>3,82</td>
</tr>
</tbody>
</table>

QUELLE: TOF 500 STUDIE 2014
Reduce waste - flow of data using BIM
UK – Vision

**Lower costs**
33%
reduction in the initial cost of construction and the whole life cost of built assets

**Lower emissions**
50%
reduction in greenhouse gas emissions in the built environment

**Faster delivery**
50%
reduction in the overall time, from inception to completion, for newbuild and refurbished assets

**Improvement in exports**
50%
reduction in the trade gap between total exports and total imports for construction products and materials
Government Budgetary Goals

15-20% cost reduction on all centrally procured government construction projects within the 2010/15 parliament

Government will require fully collaborative 3D BIM ..... as a minimum by 2016
Construction Strategy

- Cost reductions
- Promote Early Contractor Involvement
- Improved Client Leadership
- Government imperative to use BIM (Building Information Modelling)

BIM Strategy

Government will require fully collaborative 3D BIM (with all project and asset information, documentation and data being electronic) **as a minimum by 2016**
£20bn/$30bn

Government purchasing power

Total project value c £9.6bn (2014)
(Returns exclude MOD, EFA, DoH, HS2)
Strategy

Industry Push
- Industry Engagement
- Development of standards

Get more value, transparency,
Use buying power
Use data across the lifecycle

Government Pull
- Demand for BIM from public client
- Public tenders require data
Foundation of Public Leadership

- Compelling drivers, vision and goals
- Aligned value proposition and strategy
- Sponsor, funded programme, stewardship team
Build a Common Collaborative Framework

Communicate Vision & Foster Communities

Grow Industry Capacity

Foundation of Public Leadership
Communicate Vision & Foster Communities

- Engage industry stakeholders
- Create regional and focus networks
- Media, events, web, social media
BIM4 COMMUNITIES CHARTER

Purpose of the BIM4 communities

The BIM4 communities are a collaboration of specialist interests groups who will champion BIM in their respective specialist areas. Their purpose is to raise awareness of BIM, promoting a shared understanding of the value proposition and issues affecting the implementation of BIM in their respective areas of interests.

The BIM4 communities will seek to develop consistency of messaging in a clear and concise manner to support both new and existing professionals in their respective BIM journeys.

What is BIM?

- **BIM** is a digital representation of the functional aspects of an asset and, as appropriate, its disposal and/or recycling.
- **BIM** is a process for creating and measuring cooperation; it enables greater levels of collaboration and better working practices across the industry and through the supply chain.
- **BIM** is an improved way of working; it reduces waste, mitigates risk and leads to tangible efficiency savings in both capital and operational expenditure.
- **BIM** is a shared knowledge centre for information about an asset and helps develop processes that cover the whole lifecycle of a building or asset.

Values of the BIM4 communities

- **BIM4 communities** will focus on the goal of promoting BIM adoption and providing support on an industry-wide basis with no single bias to any one platform, group or company.
- **BIM4 communities** work will be mutually supportive and collaborative; they will share instances of best practice to benefit the greater good.
- **BIM4 communities** will be the forum for all specialist interest groups aiming to coordinate BIM activities; they will do this by working together and pooling resources to provide an effective and practical conduit that is both knowledge-based and current.

Desired end result

Instilling the adoption of BIM across the communities is as much a cultural challenge as a technical one. The BIM4 communities have a vital role in facilitating culture change whilst ensuring that the industry is equipped with the skills required to take up the BIM challenge as it spreads into the digital revolution that will be a transformation for the industry.
Communication

Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org
Build a Common Collaborative Framework

- Legal and regulatory framework
- Data and process standards
- Skills, tools, guidance
What is BIM?
UK’s Framework for Collaborative BIM

Legal, Technical, Process & People

Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org
Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org
Grow Industry Capacity

- Early wins, pilot projects, training
- Increasing use of strategic lever to grow capacity
- Measure and monitor, case studies, embed change
Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org
HIGH SPEED 2
£0.5BN SAVING
LINKED TO BIM
Organisation productivity benefits SME
### MINISTRY OF JUSTICE

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**Trial project:** Cookham Wood

**New delivery model / procurement route:** Two Stage Open Book under PPC2000

**Cost savings achieved:** 20%

**Other key benefits achieved:**
- Increased cost and programme certainty, innovation and reduced prospective operating costs

<table>
<thead>
<tr>
<th>Trial report sequence</th>
<th>Key Milestones</th>
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</thead>
<tbody>
<tr>
<td>Kick off meeting</td>
<td>Brief / Team Engagement</td>
</tr>
<tr>
<td></td>
<td>Decision to Build</td>
</tr>
<tr>
<td></td>
<td>Build and Occupy</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost saving basis</th>
<th>Outline saving aspiration</th>
<th>Challenging cost target</th>
<th>Award Cost</th>
<th>Outturn Costs</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Project title</th>
<th>Cookham Wood Youth Justice Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client department</td>
<td>Ministry of Justice</td>
</tr>
<tr>
<td>Project value</td>
<td>£20 million (including construction costs, fees and escorts)</td>
</tr>
<tr>
<td>Form of project</td>
<td>New Build Young Offenders Institution</td>
</tr>
<tr>
<td>Main contractor</td>
<td>Interserve</td>
</tr>
<tr>
<td>Lead designer</td>
<td>Interserve supported by Arup</td>
</tr>
<tr>
<td>Key suppliers</td>
<td>SSCI – Pre-Cast Volumetric Cell Provider, EMCOR – Mechanical and Electrical Specialist, Faithful &amp; Gould – Client Representative, HLN: Client Architect/Technical Assessor, Fidex Design, Tier Consult, Aup, MJ Patch, ICL</td>
</tr>
</tbody>
</table>

**Executive summary:**

The Ministry of Justice have created a collaborative culture so as to bring together the consultants. Tier 1 and Tier 2 contractors at the earliest stage and to develop cost savings innovations and improved efficiency prior to start on site.

The Cookham Wood Trial Project combines collaborative working under Two Stage Open Book with the adoption of BIM, Project Bank Accounts and informal implementation of Government Soft Landings. A fully integrated team have worked to a tight timescale to commence delivery on site of a new build Young Offenders Institution that to date has exceeded cost savings targets.

Despite problems on site with severe weather, the originally contracted project works were completed within both the agreed timetable and the Agreed Maximum Price.
Building More for Less

- Encourage collaborative working including early engagement of FM and Operation
- Visualisation & Lifecycle solution testing & preconstruction stage
- Accurate and complete data improving quality of bids, reducing risk allowances in target prices and lump sum bids
- 3D model input into the assessment of the impact changes at all stages in a project lifecycle
- Input of a populated asset data set into CAFM systems – saving time and avoid duplication
Experience & Lessons Learned

Strategic Framework for Public Sector BIM Programs

Grow Industry Capacity
- Early wins, pilot projects, training
- Increasing use of strategic lever to grow capacity
- Measure and monitor, case studies, embed change

Communicate Vision & Foster Communities
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<table>
<thead>
<tr>
<th>Country</th>
<th>Program/Project</th>
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</thead>
<tbody>
<tr>
<td>Germany</td>
<td>planen bauen 4.0</td>
</tr>
<tr>
<td>Finland</td>
<td>Sennatti</td>
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<tr>
<td>France</td>
<td>Plan Transition Numérique dans le Bâtiment</td>
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<tr>
<td>Netherlands</td>
<td>Rijkswaterstaat Ministry of Infrastructure and the Environment</td>
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<td>Norway</td>
<td>STATSBYGG</td>
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<td>Spain</td>
<td>es.BIM Implantación del BIM en España</td>
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<tr>
<td>UK</td>
<td>BiM Building Information Modelling (BIM) Task Group</td>
</tr>
<tr>
<td>Denmark</td>
<td>BYGNINGSSTYRELSSEN</td>
</tr>
</tbody>
</table>

Others including: Sweden, Estonia and Lithuania
International Collaboration & Next Steps

• Global public leadership
  • Consistent client demand

• Shared industry vision
  • Digital construction sector

• Principles of collaborative framework
  • Legal, technical and process

• Build industry capacity
  • Common skills to enable growth of global trade

Source: BSI International Guide to UK BIM Programme, soon to be published on bim-level2.org
Thank You

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