BM6460 - How to Measure the Impact of Building Information Modelling on Your Business

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BIM Development Managers, Arup Building Engineering, London UK
Arup has developed a discipline-agnostic tool that seeks to measure just how much a project has used BIM and how successful this has been.

This session will detail why we chose to develop the tool; how it is actually used within the business; and how the data from it is used to focus our research, training, and software investment.

We have a version to share with you too.
Key learning objectives

At the end of this class, you will be able to:

- Learn how to measure different aspects of BIM on a project
- Learn how to use data collected from measuring BIM implementation to shape future investment decisions
- Learn how to use data to identify gaps in your enterprise's BIM implementation strategy
- Learn how to benchmark a project's performance against another project's performance
Your presenters today

- **Graham Aldwinckle**
  - Joined Arup 1994
  - Structural Engineer
  - BIM Development Manager, based in London
  - Projects:
    - High Roller, Las Vegas
    - Bill & Melinda Gates Foundation HQ, Seattle
    - Leadenhall Building, London

- **Andrew Duncan**
  - Joined Arup 2005
  - MEP Technician
  - BIM Development Manager, based in London
  - Projects:
    - Project Ove
    - Signature Architects
Our Class Today

- **Part 1: The BIM Measurement Tool**
  - Handouts:
    - Guidance notes for end users
    - Guidance notes for company BIM managers
    - The Tool

- **Part 2: The Reporting Tool**
  - Arup’s results from individual, diverse projects
  - See Arup’s results so far broken down by sector and discipline.
  - No handouts for Part 2 – that’s between you and us.
Part 1: The BIM Measurement Tool
Why Measure BIM Maturity?
Why Measure BIM Maturity

- Firstly, understand Arup
A little bit different …

- Owned in trust
- No shareholders
- Totally independent

Successful

- Sixty eight years of profitable trading
- Debt free
- 12000 staff
Why Measure BIM Maturity

- Firstly, understand Arup
- Secondly, what actually constitutes BIM?
MP2845: Virtually Human: Modeling the Human Body Inside and Out Using BIM Platforms
Why Measure BIM Maturity

- Firstly, understand Arup
- Secondly, what actually constitutes BIM?
- Thirdly, “BIM Wash”
Every company says they have high BIM credentials
This doesn’t help the average project to progress

We want every project to be a showcase….
We need to increase the average project’s BIM maturity
Why Measure BIM Maturity

- Firstly, understand Arup
- Secondly, what actually constitutes BIM?
- Thirdly, “BIM Wash”
- Lastly, Arup will do BIM on >80% of design projects by April 2015, regardless of any client or government mandate
Arup – We need a better measure.

- More than just 3D – what else are we up to?
- Need for consistency in the message internally and externally
- What is our project-level engagement in BIM?
- Identify and share the successes (and failures!)
So how do we measure BIM Maturity?
What other tools would help measure this?
Measurement tools

- Penn State University
  - Organisational BIM Maturity
Measurement tools

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- Organisational BIM Maturity
- US National BIM standard
- Capability Maturity Model
Measurement tools

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- Web-based tools ($)
  - www.bimscore.com
  - www.bimexcellence.net
Measurement tools

- Penn State University
- Organisation BIM Maturity
- US National BIM Standard
- Capability Maturity Model
- BIMScore
- www.bimscore.com ($)
- www.bimexcellence.net
- Indiana University
- Proficiency Matrix Spreadsheet
Why did Arup want something else?
Measurement tools

- Other Measurement tools are broadly:
  - High-level overview
  - Typically only filled in for high-achieving projects
  - Subjective – less easy to compare projects

- Arup wanted a tool that would:
  - Allow comparisons across all projects quickly
  - Help to identify trends or training needs
  - Be quick to fill out
Introducing the Arup BIM Maturity Measure
Introducing the **BIM Maturity Measure (BIMmm)**

- Comprehensive
- Project level interrogation
- User-friendly
- Multiple-choice responses
- Objective
- Collatable
- Shareable

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Introducing the **BIM Maturity Measure (BIMmm)**

**Features:**
- Project information directly filled in
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- Tracks:
  - Project stage
  - Disciplines scored
  - Extranet/CDE used
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- **Features:**
  - Project information directly filled in
  - Tracks:
    - Project stage
    - Disciplines scored
    - Extranet/CDE used
  - Scores:
    - Primary BIM Disciplines
    - Primary + Secondary
Introducing the **BIM Maturity Measure (BIMmm)**

- **Features:**
  - **Primary Scores** based on Project Information Management
  - Up to 4 ‘Primary’ Disciplines (eg: SMEP)
Introducing the **BIM Maturity Measure (BIMmm)**

- **Features:**
  - **Primary + Secondary** Scores based on
    - Project Information Management
  - Up to 4 ‘Primary’ Disciplines (eg: SMEP)
  - **Plus:**
    - Up to 21 ‘Secondary’ Disciplines, eg Lighting
BIM Maturity Measure

- Project Information Management
  - 11 questions
**BIM Maturity Measure**

- **Project Information Management**
  - 11 questions
  - 6 possible responses
### BIM Maturity Measure

- **Project Information Management**
- 11 questions
- 6 possible responses
- Suggested Target

![Image of the maturity measure diagram]

<table>
<thead>
<tr>
<th>Project BIM Maturity</th>
<th>0: Not existent</th>
<th>1: Initial</th>
<th>3: Developed</th>
<th>4: Measured</th>
<th>5: Optimised</th>
<th>Target Level</th>
<th>Current Level</th>
<th>Adjusted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>123456</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Suggested Target**

- BIM Maturity Measure
- 0.00
- 0%
Project Information Management

- 11 questions
- 6 possible responses
- Suggested Target
- Score 0 – 5

BIM Maturity Measure
BIM Maturity Measure

- Project Information Management
  - 11 questions
  - 6 possible responses
  - Suggested Target
  - Score 0 – 5
  - Weighting applied
BIM Maturity Measure

- **Project Information Management**
  - 11 questions
  - 6 possible responses
  - Suggested Target
  - Score 0 – 5
  - Weighting applied
  - Overall Percentage
- Project Information Management

And filled in...

eg: 53% (that’s a high score!)
Discipline Tabs, eg:
- Structural
- Mechanical
- Electrical
- Public Health
- Facades
- Geotecnics
- Lighting
And now to our live demo…
BIM Maturity Measure – Company set up

- Refer to handouts for specific instructions
  - Unprotect the spreadsheet (pwd = Arup)
  - Amend the email address for submission of scores
  - Update your company targets and weightings
  - Review specific data targets for each discipline
  - Add a company logo
  - Re-protect the spreadsheet (change the pwd if you must)
  - Roll it out
Top Tips for filling in the Tool

- Don’t think too hard about the answers. If you/your PMs/discipline-leads don’t understand the terms, chances are you’re scoring 0 or 1. Take the hint, and swot up on BIM!
- Scores should not be subjective – eg, you’re either able to score a 3 or you are not.
- Don’t worry about low scores.
- Don’t expect the tool to be absolutely perfect and applicable to 100% of all your projects.
Top Tips for filling in the Tool

- Do ask for scores to be submitted at each key project stage.
- Resubmit a project score as often as needed.
- Don’t forget to use the Submit button on the cover page so someone can collate the scores.
- The target scores are not, currently, definable by project stage. Next version.
- Enter the project stage, then fill in based on the snapshot of what you have done to this point.
Time to get on board with BIM
How can you get the BIM Maturity Measurement tool?

- From Arup.com:
  - www.arup.com/Services/Building_Modelling.aspx
Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2015 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time