The 1st BIM Roadmap (2010)

Challenges:
- Lack of demand for BIM
- Entrenched in the current 2D drafting practices
- Lack of ready pool of skilled BIM manpower
- Additional resources needed to build up BIM expertise

Strategies:
- Public sector taking the lead
- Promoting success stories
- Removing impediments
- Building BIM capability & capacity
- Incentivising BIM adopters
BIM Steering Committee (2011)

- **Chairman:** Mr Lee Chuan Seng, former BCA Deputy Chairman
- **Deputy Chairmen:** Mr Lam Siew Wah, BCA Deputy CEO; and Mr Lai Huen Poh, BCA Board Member

- Industry Representatives
- Government Procurement Entities
- Regulatory Agencies

**Objectives**

- To lead the development of BIM standards and supporting resources to facilitate the collaborative use of BIM;
- To advise on areas that would enable effective implementation of BIM at company, project and industry levels.
Key Achievements

102 GPE projects adopted BIM

115 projects met mandatory BIM e-submission requirements

Singapore BIM Guide and 6 Essential Guides

$17 million committed to 650 firms

with average of 21.5% efficiency gain

7000 industry professionals and technical personnel trained

2000 students trained before graduation
BIM Adoption Landscape
Public Sector Panel of Consultants

No of firms who adopted BIM (total no of firms in red)

<table>
<thead>
<tr>
<th>Panels</th>
<th>Architectural</th>
<th>C&amp;S</th>
<th>M&amp;E</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38 / 38</td>
<td>34 / 35</td>
<td>23 / 23</td>
<td>95 / 96</td>
</tr>
<tr>
<td>2</td>
<td>23 / 25</td>
<td>21 / 28</td>
<td>7 / 10</td>
<td>51 / 63</td>
</tr>
<tr>
<td>3</td>
<td>19 / 37</td>
<td>12 / 18</td>
<td>9 / 20</td>
<td>40 / 75</td>
</tr>
</tbody>
</table>

Notes:
- Figures updated as of 8 Oct 2014
- Tendering limits of the above panels range from $14 million (Panel 3) to $90 million (Panel 1)
- From July 2015, consultants’ regulatory submissions in the BIM format is mandatory for new projects > 5,000m²
BIM Adoption Landscape
Grade A1 – B2 Contractors

No of firms who adopted BIM (total no of firms in red)

<table>
<thead>
<tr>
<th>Grades</th>
<th>All Workheads</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>73 / 89</td>
</tr>
<tr>
<td>A2</td>
<td>41 / 58</td>
</tr>
<tr>
<td>B1</td>
<td>57 / 130</td>
</tr>
<tr>
<td>B2</td>
<td>41 / 159</td>
</tr>
</tbody>
</table>

Notes:
- Figures updated as of 8 Oct 2014
- Tendering limits of the above grades range from $14 million (B2 contractors) to unlimited (A1 contractors)
2010
1st BIM Roadmap Strategies

- Public sector taking the lead
- Promoting success stories
- Removing impediments
- Building BIM capability & capacity
- Incentivising BIM adopters

2013
IPE Key Recommendations

- Public sector taking the lead
- BIM for Facility & Asset Management
- Accelerating Process Transformation
- Building BIM capability & capacity
- BIM R&D
## Gap Analysis

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>State of BIM adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developers</td>
<td>• Detached from BIM process</td>
</tr>
<tr>
<td></td>
<td>• Lack of know-how to drive BIM process</td>
</tr>
<tr>
<td>Consultants</td>
<td>• Focus too much on e-submission</td>
</tr>
<tr>
<td></td>
<td>• Lack of time to perform design coordination</td>
</tr>
<tr>
<td>Main Contractors</td>
<td>• Lack of quality model from consultants</td>
</tr>
<tr>
<td></td>
<td>• Not maximizing full potential of BIM to resolve issues with consultants and sub-contractors</td>
</tr>
<tr>
<td>Specialist Sub-Contractors</td>
<td>• Lack of BIM skills</td>
</tr>
<tr>
<td>Facility Manager</td>
<td>• Lack of BIM usage for Facilities Management</td>
</tr>
</tbody>
</table>

### Lack of BIM collaboration

- Collaboration: 20%
- Firm-Based: 80%

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% of Applicants in each BIM Funding Scheme
The 2nd BIM Roadmap (2014)

- A: Drive BIM collaboration throughout value chain
- C: New training programmes at all levels
- D: Research & Development
- E: BIM for Design for Manufacturing & Assembly (DfMA)

- B: Building BIM capability of specialist contractors
- F: BIM for Facilities Management
The 2nd BIM Roadmap (2014)

- Building BIM capability of specialist contractors
- BIM for Facilities Management
- Drive BIM collaboration throughout value chain
- New training programmes at all levels
- Research & Development
- BIM for Design for Manufacturing & Assembly (DfMA)
Drive BIM collaboration throughout value chain

- **Increase funding level** from 50% to 70% for Project Collaboration Scheme
- **Review Singapore BIM Guide and Public Sector BIM Requirement** to include BIM coordination and model handover
- **Develop procurement method and contractual conditions** based on BIM
- **Work towards regulatory submissions and approvals** based on BIM
New training programmes at all levels

- **Leadership**
  - Stanford –BCAA Virtual Design and Construction Leadership Program for CEOs
  - Understanding BIM Benefits

- **Middle Mgmt**
  - Stanford –BCAA Virtual Design and Construction Program for Project Teams
  - Achieving Project Collaboration

- **Technical Level**
  - BIM and Process Planning and Coordination in BCAA Specialist Diploma in Construction Productivity for Construction Managers
  - Coordinated element and activity before construction
BIM for Design for Manufacturing & Assembly (DfMA)

• Work with NTU’s DfMA projects to **develop a BIM Guide for DfMA**
BIM Outreach

- BIM Awards
- IHLs’ Mentorship by BIM Managers
- IHLs BIM Competition
- IHLs BIM Shootout
- Government BIM Symposium
- BIM Conference
- BIM Survey
Thank You