BIM 4 Manufacturers and Manufacturing

BIM Adoption by Product Manufacturers
Survey conducted July to October 2014
updated 03 February 2015
"In setting up BIM4M2, it was crucial that we knew where the sector was in terms of knowledge, capability and willingness to deliver digital product information to enable us to provide the right level of support and guidance. We needed to get underneath the skin of the issues that manufacturers were facing to understand the real level of adoption, potential barriers to investment and in order to ascertain where BIM4M2 needs to focus the guidance and support that we offer. The survey has been an invaluable source of information in developing the group’s strategy, and the activities of each of the working groups. It’s also great to see that the majority of manufacturers are already on their journey, or eager to start, and see the benefit in getting this right both for now and for the future.”

Steve Thompson RIBA
Chair, BIM4M2
Market Manager, Construction & Infrastructure and BIM Programme Manager, Tata Steel
Manufacturers’ Strategic BIM Forum Member
PDT Steering Group Member

"The BIM4M2 working groups commissioned this research so that they had quantitative information to inform their priorities and decision making. The findings clearly show that manufacturers want to understand if BIM is right for them and also need advice on how to move forward. They want to know how to make the right software selections and hosting options. These are some of the topics which BIM4M2 is now working to provide guidance on. The research supports the perceived wisdom that BIM is an important marketing tool. More than half of respondents said that providing BIM content had given them a commercial advantage. They consider it an important differentiator with many saying the investment was definitely worthwhile.”

Chris Ashworth
Chair, BIM4M2 Promotions Working Group
BIM4M2 survey lead
Managing Director, Competitive Advantage Consultancy Ltd

"Having well-structured digital information is becoming a key requisite for manufacturers, driven by commercial advantage and clients at all levels seeking computational information on product technical data such as warranty details. BIM is helping this journey and we are seeing increasing awareness, mobilisation and implementation in the manufacturing community as demonstrated in the survey findings. Communities such as BIM4M2 and the Manufacturers Strategic BIM Forum are helping build both capacity and capability in the market. The fact that 90% are already offering BIM or plan to invest in BIM is a strong indicator of increasing digitalisation of manufacturing information.”

David Philp
Head of BIM, Cabinet Office
Chair, Manufacturers’ Strategic BIM Forum
<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive summary</td>
<td>1</td>
</tr>
<tr>
<td>Objectives &amp; methodology</td>
<td>4</td>
</tr>
<tr>
<td>About the respondents</td>
<td>5</td>
</tr>
<tr>
<td>BIM investment decisions</td>
<td>9</td>
</tr>
<tr>
<td>BIM Information requests</td>
<td>28</td>
</tr>
<tr>
<td>BIM Provision</td>
<td>33</td>
</tr>
<tr>
<td>Information formats</td>
<td>37</td>
</tr>
<tr>
<td>Conclusions</td>
<td>42</td>
</tr>
<tr>
<td>About BIM4M2</td>
<td>44</td>
</tr>
<tr>
<td>About Competitive Advantage</td>
<td>48</td>
</tr>
<tr>
<td>Contact</td>
<td>50</td>
</tr>
</tbody>
</table>
A total of 188 individuals responded to the survey. The majority (85.6%) of respondents were manufacturers, mostly holding Sales (16.5%), Marketing (26.8%) or Technical (41.8%) positions.

Organisations had a wide spread of sizes, from the SME with less than 60 employees (26%) to the corporate employing more than 1200 (16.7%).

In addition to the UK, 51.9% of respondents sell into other European countries, 39.0% into the Middle East and 22.9% to the USA. A wide range of product categories were represented, the largest (29.0%) offering Building Areas, Systems and Materials.
Executive Summary - the results

40% already invested in BIM

50% plan to invest in 2015

10% have no plans to invest in BIM

Do you see your investment in BIM as worthwhile?

- Definitely: 58%
- Possibly: 24.6%
- Remains to be seen: 17.4%

Do you see an investment in BIM as worthwhile?

- Definitely: 38%
- Possibly: 39.2%
- Remains to be seen: 20.3%
- No: 2.5%

Barriers to investing in BIM (1-10, 10 being a significant barrier)

- Concerns about IP: 3
- Inadequate return on investment: 4.6
- No money available in budget: 5
- Don’t know which software to use: 5
- Too busy to research requirements: 5
- Too many products required: 5.4
- Lack of in-house expertise: 5.7
- No demand from contractors: 6.2
- No demand from consultants: 6.3
- Too expensive to develop: 8.6

Reasons for investing in BIM

- For commercial advantage: 40.7%
- Customer demand: 11.9%
- To get specified: 6.8%
- Business efficiency: 8.5%
- It’s the future: 5.9%
- Increase influence: 3.4%
Of those that completed the survey, 10.1% had no plans to introduce BIM, 49.7% plan to before 2016 and 40.2% already offer BIM.

The main reasons for deciding to invest in BIM are for commercial advantage (40.7%) and in response to customer demand (27.1%). The decision to invest in BIM is evenly spread between Marketing, Sales and Technical with Finance having an input in 9.7% of organisations.

The principal barriers to offering BIM were the resource required, creating an understanding of its importance and understanding the software options. Although the investment required was also a barrier, it ranked behind the other factors for both those with BIM and those planning to offer it. The organisations that have no plans to invest in BIM sited the cost of development as the principal barrier.

58.0% of those who have BIM and 38.0% of those investing consider the investment was definitely worthwhile.

Although a significant proportion (24.6%, 20.3%) say it remains to be seen, none that have made the investment and only 2.5% that are investing said it was not worthwhile.

Similarly, 78.6% of those with BIM and 34.9% of those planning BIM strongly agree that it is an important differentiator. Of those who have BIM, 47.1% said it had helped them to secure business and 75.8% plan to extend the range.

39.1% of companies with BIM objects available regularly receive requests from architects and engineers, this compares with only 5.8% of companies planning BIM. Similarly 21.4% regularly receive requests from contractors compared with only 4.7% of companies planning BIM. This suggests that once BIM objects are available requests increase significantly.

Requests are fairly evenly spread over the types of products, but a higher proportion of requests from specifiers are linked to Communications, Transport, Security and Fittings & Furniture. Also, for Electricity Supply & Lighting from building owners and Structural Frames & Walls from contractors.

38.4% of manufacturers use external hosting sites to help develop BIM objects and 35.6% internal resources. The most popular location for objects is organisation's own websites (56.3%).

Of the organisations with BIM, 62.3% are asked for BIM objects and only 6.5% are asked for structured data. 65.6% of respondents currently provide BIM content which supports Level 2.

In terms of the forms of BIM content and what is required to support the UK government requirement, understanding is limited with large proportions of respondents lacking a full understanding.

The most widely used software is Autodesk Revit (73.8%) with three quarters of respondents not planning to offer additional formats. Those that do are mostly planning to add an alternative to Autodesk Revit.

82.1% of organisations with BIM and 57.5% planning BIM have a person responsible for BIM in their organisation. This is evenly spread across organisations of all sizes.
Objectives & methodology

Objectives

- To inform the process of helping manufacturers to implement BIM and prioritise activity for BIM4M2.
- To understand the proportion of manufacturers who have, or are planning to offer BIM objects.
- To identify the barriers to offering BIM
- To know how BIM is being implemented by manufacturers
- To have data to quote about the provision of BIM by manufacturers

Methodology

An online questionnaire was developed and remained open for completion from July until the end of September 2014. Manufacturers were encouraged to complete the survey through promotion using various channels. There were a total of 188 responses, of which 161 (85.6%) were manufacturers.

The survey was developed by the BIM4M2 Promotions Working Group, with the survey being led by Competitive Advantage Ltd on behalf of the group.
About the respondents
What is your business activity?

- Manufacturer: 85.6%
- Distributor, Merchant, Wholesaler: 8.0%
- Construction: 1.1%
- Architect: 1.6%
- Software Vendor: 0.5%
- Regeneration: 0.5%
- Engineering Solutions Provider: 0.5%
- Education: 0.5%
- Consultant: 0.5%
- BIM Content Creator: 0.5%
- Trade association: 0.5%

Base: 188

What is your job function?

- Technical: 41.8%
- Marketing: 26.8%
- Sales: 16.5%
- Mkt/Sales/Tech/Finance: 2.6%
- Mkt/Finance: 2.6%
- Sales and Marketing: 1.0%
- Marketing and Technical: 1.0%
- General Management: 1.5%
- IT: 0.5%
- Engineering: 0.5%
- Design: 0.5%
- Chairman: 0.5%
- CEO: 0.5%
- Training: 1.0%
- Engineering Solutions Provider: 0.5%
- Multiple-business owner: 0.5%
- Managing Director: 0.5%
- Project Management: 0.5%
- Operations: 0.5%
- Research: 0.5%

Base: 194
The Respondents

How many employees do you have?
Base: 204

- 1 – 59: 26.0%
- 60 – 299: 14.7%
- 300 – 599: 16.2%
- 600 – 1199: 6.9%
- 1200 or more: 2.0%
- 2000 or more: 0%

Does your company promote to architects, engineers or other specifiers?
Base: 201

- No: 100%
- Yes: 0%
In which of the following categories are the products you manufacture?

Base: 210

- Already invested
- Planning to invest in 2015
- No plans to invest
Do you currently offer BIM content for your products?
Base: 199

- Yes, 40.2%
- No, 10.1%
- Plan to in 2015, 49.7%

Barriers to implementing BIM
(score 0-10, where 10 is significant)
Base: 69

- Concerns about intellectual property: 4.7
- Investment required: 5.6
- Understanding the software options: 5.8
- Creating an understanding of the importance of BIM: 6.0
- Resource required: 6.1
Why did you decide to invest in BIM?
Base: 69

- Increase Influence: 3.4%
- It’s the Future: 6.8%
- Business Efficiency: 8.5%
- To Get Specified: 11.9%
- Customer Demand: 27.1%
- For Commercial Advantage: 40.7%

Functions involved in the decision to invest in BIM
Base: 155

- Senior Management: 0.6%
- Sustainability Team: 1.3%
- Finance: 9.7%
- Sales: 26.5%
- Technical: 29.7%
- Marketing: 32.3%
Because of the Government’s 2016 plans. Plus other major contractors deciding that BIM was the way they would go on major schemes
By 2016, there will be more demand for BIM. We will not be investing before then.
December 31st 2015 - BIM mandate
Due to Government requirements as our products are specified on many Government projects
Given the government’s desire to promote the use of BIM and mandating it’s use we have found that a large number of clients have invested in BIM capability. We ree keen to be amongst the early adopters to see our products suitably positioned to take advantage of developments in BIM and its usage.
Government guidelines, feedback from LEAs & Architects that they will only specify products with BIM objects in the future, and presence of competitor BIM objects in the market
Government initiative.
It is a government led change that is unlikely to go away, and likely to be adopted quickly by the private sector.
Mainly down to government mandate for 2016 3D BIM requirement for centrally procured projects.
Market/government demand
To be 2016 compliant
To ensure that we were ready and knowledgeable before the 2016 deadline.
To pre-empt the forthcoming legislation.
To promote and develop our products in line with government requirements.
Understand that it is requirement for BIM to be in place and operational for all new public sector buildings by 2016
50% of our products are supplied to the public sector; Health, Education, HMP etc... Our supply chain partners require this information for their BIM requirements.
To enable our products to be specified in Government funded projects
to enable us to secure government funded projects
Architects were telling us they will be using them.
As we are being asked to supply BIM files by our customers
As we supply to Projects that will require BIM
Because customers are asking for BIM objects. BIM objects are available for some of the range.
Being driven to by clients
Clients & Customers will demand it from us.
Marketing profile.
Customer needs. Marketing benefit.
Customer requests & Government requirements
• Demand from architects, not currently in high demand but some major house builder customers are beginning to implement. Main interest from them is the 3D model part, not so much the data.
• Demand from customers
• In order for our Commercial products to be specified by Designers/Architects and improve sales.
• In order to strengthen our offering to architects, FM. We were led to believe Manufacturers own authored objects would be particularly valuable, particularly in the run-up to 2016.
• Increase market size
• Increased specifications
• It gives us a competitive advantage, makes it also easier to market and promote products.
• Keep up with Market, and client need
• Maintain leadership position in our sector and drive the market.
• Market edge
• To lead the market and engage with Architects and Main Contractors
• Necessity
• No option
• Opportunity to differentiate and lead our sector
• Potential Commercial benefits.
• Realized benefits, customer requirements.
• Because our business plan involves securing new work from the nuclear sector, which falls into the government mandate for BIM compliance 2016
• We think it will help keep us as the market leader. It will also give us an advantage if others do not.
• We can see the importance of our product being specified
• We decided to invest in BIM as some of our products are installed into a wall and we thought these products would ideally be suited for BIM modelling. We also felt that as early adaptors we could gain a foothold with this new technology to gain competitive advantage over the competition.
• We don’t want to jeopardise our chances of getting our products specified for government building projects post 2016.
• To promote and develop our products in line with government requirements.
• To provide our customers with the drawings they require. To be early adopters.
• To reinforce our brand position as market leader and be the first to market BIM objects in our sector.
• To test market reaction to our BIM launch.
• Because we knew Specifiers were creating their own BIM objects of our products and wanted better control on the accuracy of objects.
• Because with the Government commitment it was obvious that BIM was here to stay in the UK and we felt we should jump in and learn along with the Industry rather than falling behind.
• To remain the market leader in our industry & to embrace the Government's vision
• To respond to the growing interest in BIM as a construction methodology and to stimulate interest in the role that the manufacturers can play in delivering information in a BIM enabled project to help achieve the best possible outcomes. Due to what seemed to be a lack of interest from the wider industry in what the supply chain could offer.
• To safeguard our future through architect specifications
• To lead the market and engage with Architects and Main Contractors
• To ensure we are not restricted when supplying our products.
• To ensure we don't lose business. Because it makes a lot of sense to - BIM is the future of the construction industry!
• To help members seize the commercial opportunity to get on to project plans.
• To keep up to date with the changes happening within the construction industry. Products are more likely to be specified if they are easily available in BIM format.
• To ensure architects have the ability to specify our products
• To ensure product data is accessible in all formats
• To ensure relevant up-to-date information is available in the design, manufacture and supply of insulation products and solutions for high thermal performance, structural stabilisation, wall-tie replacement and flood resilience protection and sharing of knowledge, learning and experience.
• To ensure specifiers have the information they need in the correct format and to be leading the way
• To ensure that the business offers the full set of resources required by the industry specifiers.
• To aid specification of our products
• So that our company's products can be integrated into specifications and the BIM process
• We can see the importance of our product being specified
• We don't want to jeopardise our chances of getting our products specified for government building projects post 2016.
• To be an early adopter
• To be better able to engage fully in the design process, rather than only making product available to designers.
• Provide additional tool to clients which eases their workload and answers most technical questions about our product, easing ours as well.
• Get ahead of competitors and offer designers better tools to use our products
• As competitors do, fear of lost specifications
• To keep up with competition
• Because it is important to have the correct and consistent information for consultants and architects to use. BIM provides that consistency.
• Better interface management, asset maintenance
• Business process efficiency
• Digitisation of sales is the future
• Efficiency before we get to site
• Hopefully better collaboration between all parties
• Improve efficiency of manufacturing workflow
• Less chance of mistakes and to stay ahead of some competitors
• Reduce errors
• We decided to invest in BIM as some of our products are installed into a wall and we thought these products would ideally be suited for BIM modelling. We also felt that as early adaptors we could gain a foothold with this new technology to gain competitive advantage over the competition.
• We first became involved through the Landscape Institute's working group
• We have been involved in BIM for a while to gain an upper hand on the competition. We see it as a driving force in the future.
Has offering BIM helped you to secure business?
Base: 68
- Yes, 47.1%
- No, 39.7%
- Don't Know, 13.2%

We use BIM as a differentiator
Base: 70
- Strongly Agree, 78.6%
- Slightly Agree, 20.0%
- Strongly Disagree, 1.4%
How much of a barrier is investment required?

Score 0-10, where 10 is significant
Base: 69

How much of a barrier is creating an understanding of the importance of BIM?

How much of a barrier is understanding the software options?
Do you consider your investment in BIM worthwhile?

Definitely, 58.0%

Remains to be seen, 24.6%

Possible, 17.4%

“BIM is here to stay and manufacturers who engage with BIM will be the winners in the long run. Collaboration and data sharing through BIM will result in more efficient design, construction and use of buildings and their internal engineered systems. Manufacturers are very well placed to help this process as they know the characteristics of their products in detail and can ensure their data is consistent in its richness and availability. All manufacturers need to get on board because BIM will be the main way to do business in the future.”

Terry Rowbury – Member Services Director, BEAMA

Definitely

- Already reaping benefits
- As a market leader we feel it is vital to be ahead of the game
- BIM is the future for all new Government buildings and major contractors will demand BIM objects / design in the future.
- BIM models are already expected by many building designers, irrespective of whether the buildings are Government funded or not.
- Client has a more complex understanding
- Competitive advantage and increased customer intimacy
- Demonstrable improvements in accuracy, communication and presentation. More benefits and developments are planned over the next few years.
- Don’t think you can operate without it
- Helped to secure our market leading position
- High number of BIM downloads from our website and, as users are willing to register before downloading, a good quality database of users. We conducted a survey of those downloading our files and 80% of downloads were for use on current projects.
- I offer BIM across the whole supply chain
- In 9 months we have had over 3,200 objects downloaded from our BIM library page
Do you consider your investment in BIM worthwhile? (continued)

Definitely (continued)

- In order to progress and keep up with development and procurement of all public works will be done using BIM by 2016.
- Increased efficiency, reduced cost, less waste, move to a manufacturing business
- Investing in BIM has required us to review the way in which we do business and how we present and delivery information/data to our customers. It has also provided us with the opportunity to engage with our customers on a level where we speak the same language, to try and understand their requirements.
- It has opened new relationships within customer channels that traditionally were hard to break down
- It has shown us as forward thinking and meant we have been specified on projects.
- It illustrates our system's advantage and makes it easier for clients to understand/see what they are purchasing.
- Offering BIM has opened doors and quickened our entry into the higher end commercial customers
- Other manufacturers in our industry offer BIM objects, and we have been told by our customers that unless we have BIM objects they cannot specify our products. This requirement will only become more important over the next 2 years.
- Our organisation has always been a leader in technological developments
- Our products and systems have always had a positive impact on whole life performance of services.
- This is always said to be an important client requirement, but often is not defended or pursued on behalf of a client. BIM provides more visibility to design impact on whole-life, and so we welcome it for that reason.
- Simple - the investment was made to first and foremost improve the business internally.
- The markets are changing - we need to look to the future.
- There is not going back for manufacturers if they want to be included in projects in the UK or overseas
- This is the way the industry is going and the larger architects are starting to use BIM. We are the first in our industry to use BIM and I think it will help the highest quality building product manufacturers gain a competitive advantage.
- To offer specifiers a complete package of product/solution information is valuable to us
- Understanding the requirements of the market make the company the go to business to use. As experts our customers will look to us for support required in early days of use and we will gain new business opportunities.
- We are already being asked to provide BIM objects, both generic and project specific
- We are involved in projects we would not have been able to have been involved in without our BIM objects.
- We are seen as a leader in this field within our chosen market sectors
- We have been able to secure specifications where the client insisted on BIM design, and we seemed to be the only people with anything to offer.
- We have to go up a steep learning curve, and the best way to learn is to do.
- We would have lost certain key clients without BIM, it will be mandatory in most areas in the near future.
Do you consider your investment in BIM worthwhile? (continued)

Possible

- A lot of benefit will be in FM, if data is used correctly
- Can't do a cost basis analysis
- It has been very difficult to trace whether a BIM object has been used on a live project and whether the investment is worth the return.
- It is difficult to analyse whether we have secured business as a direct result of having the BIM footprints, we know and monitor the traffic for BIM downloads, but where they are going or whether they are being used is unrepresented data.
- It will make our products easier to specify.
- Not sure of the exact return on the potential cost of not investing
- Objects have been regularly downloaded but an absence of feedback from clients leaves some uncertainty regarding how extensive the actual utilisation of the objects has been.
- Slow take up and slower production of information
- There are currently a handful of live projects with our BIM content, however our analytics show our content has been downloaded hundreds of times.
- We made 2D CAD details available for download from our website over a decade ago and there was not much uptake

Remains to be seen

- Because it's too soon to be sure that BIM has made any positive difference in sales, but long term, yes. but still early days
- Difficult to quantify where BIM has made the difference, we see object downloads but how many of these projects would have happened regardless?
- No definitive proof, as the system is in its early stages with many architects.
- No evidence of increase in sales due to BIM.
- Not enough clients are aware of the benefits which means that it is difficult to highlight the differentiators.
- Only introduced recently.
- So few requests or interest in BIM objects. If we raise it with architects very few have made the investment in BIM software themselves or are even considering it.
- The take up has been slow
- We continue to hear conflicting reports from industry colleagues. I would consider the architectural community to be underwhelmed by Manufacturer objects, preferring generic models. I do however believe the FM and contractor demands will become a differentiator for our detailed objects and potentially a valuable revenue source when fully modelled buildings become more common.
- We have had downloads but yet to see a project where it has been used. We only launched our objects a month ago
**BIM investment decision - planning to invest**

**When do you plan to invest in BIM?** Base: 85

- **2016**: 5.9%
- **2015**: 49.4%
- **2014**: 44.7%

**Barriers to investing in BIM?** Base: 87

- **Investment required**: 5.9%
- **Understanding the software options**: 6.8%
- **Creating an understanding of the importance of BIM**: 6.7%
- **Resource required**: 7.2%

**Do you consider an investment in BIM worthwhile?** Base: 69

- **Definitely**: 38.0%
- **Possible**: 39.2%
- **Remains to be seen**: 20.3%
- **No**: 2.5%

**BIM can be an important differentiator for our business** Base: 86

- **Strongly Agree**: 2.3%
- **Slightly Disagree**: 10.5%
- **Slightly Agree**: 52.3%
- **Strongly Agree**: 34.9%
BIM investment decision - planning to invest

How much of a barrier is investment required?

Score 0-10, where 10 is significant
Base: 87

How much of a barrier is creating an understanding of the importance of BIM?

How much of a barrier is understanding the software options?
Which of the following functions were involved in the decision not to invest in BIM?

Base: 4

Sales: 25.0%
Finance: 0.0%
Technical: 25.0%
Marketing: 50.0%

Summary of barriers to adopting BIM

Base: 6

- Too expensive to develop: 8.6
- Concerns about intellectual property: 3.0
- Inadequate return on investment: 4.6
- No money available in budget: 5.0
- Don't know which software to use: 5.0
- Too busy to research requirements: 5.0
- Too many products or combinations: 5.4
- Lack of in-house expertise to develop: 5.7
- No demand for BIM objects from: 6.2
- No money available in budget from: 6.3
- Too expensive to develop: 8.6
### BIM investment decision - no plans to invest

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<tr>
<th>Barriers</th>
<th>Score</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lack of demand for BIM objects from Architects and Engineers</td>
<td>0-10, where 10 is significant</td>
<td>33.3%</td>
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<tr>
<td>Too many products and combinations</td>
<td></td>
<td>16.7%</td>
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<tr>
<td>Lack of demand for BIM objects from Contractors</td>
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<td>16.7%</td>
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<tr>
<td>Too expensive to develop</td>
<td></td>
<td>40.0%</td>
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**How much of a barrier is lack of demand for BIM objects from Architects and Engineers?**

**Score 0-10, where 10 is significant**

**Base: 6**

**How much of a barrier is lack of demand for BIM objects from Contractors?**

**How much of a barrier is too expensive to develop?**

**How much of a barrier is having too many products and combinations?**
How much of a barrier is inadequate return on investment?

Score 0-10, where 10 is significant
Base: 7

How much of a barrier is lack of in-house expertise to develop?

How much of a barrier is having no money available in the budget?

How much of a barrier is too busy to research requirements?
BIM investment decision: no plans to invest

How much of a barrier is don't know which software to use?

Score 0-10, where 10 is significant
Base: 7

What is the principle reason for not developing BIM objects?

- Don't know if BIM has any relevance to our work. Each product is custom-made for the end user.
- Not at all sure what is required
- We develop our own generic placeholders
- Lack of information on the core of what's required
- No demand for it or awareness of it
BIM Information Requests
BIM requests - who is asking you for BIM content?

How often do you receive requests for BIM content?
- Those who already have BIM content
Base: 69

- Contractors: 21.4% 52.9%
- Architects or Engineers: 39.1% 53.6%
- Building Owners: 13.0% 31.9%

How often do you receive requests for BIM content?
- Those planning to invest
Base: 86

- Contractors: 4.7% 36.0%
- Designers: 5.8% 53.5%

“Without manufactured parts, no construction project can be made real. The BIM process is one of inclusion and better communication and as such, the information from manufacturers will be absolutely critical. The ability for a consultant or contractor to have real-world data, at their fingertips, will help drive the Government’s aim to reduce time, costs and carbon on projects. Further to this, the ability of a designer to see, use and process a manufacturer’s data may well prove to be a differentiator in this difficult time for the construction market.”

Carl Collins – CAD Manager, Arup Associates

Is anyone else in your supply chain asking for BIM objects?

- Architectural Ironmongers in the UK Government Ministers overseas
- BIM model sub-contractors, i.e. BIM Technologies
- Door manufacturers (supply chain partners)
- Door Manufacturers who also ask for 3D models in an effort to make their own BIM objects in Inventor etc.
- Facilities Managers
- Funding organisations, energy suppliers, green deal funders
- House Builders / Consultant Engineers
- I note the merchant database exact plan to host BIM Objects but no merchant has ever asked us for objects.
- Major infrastructure companies
- Occasionally we do have surveyors asking what BIM objects we provide so that they can promote.
- OEM Customers
- Our customers ask for objects as parametric systems to be used by them with our software
- Procurement Groups
- Research partners
- Sales
Some Architects are beginning to explore
Sub-Contractors
Suppliers
Supply chain partners, fabricators, cladding contractors
Systems suppliers and door manufacturers
There is now, wasn’t when we first started our BIM object journey. Now end users such as
Education, Government are asking for it, as well as Architects, Main Contractors
third party manufacturers who use our products in there assemblies
Tier 1 distributors and supply chain partners
We are asking our supply chain for BIM objects
Within the commercial side of the business, Large contractors are asking for compliance
Yes - but we are pursuing this as a commercial opportunity and not prepared to disclose.
We do not think that there is enough knowledge in the supply chain yet
We have only had two requests for BIM via our Customer Services centre as far as we are aware.
No but we suspect our supply chain will start to need them in 2015
No not in the UK, but in every other market
No not yet, however are anticipating our merchant and distributor customers to come on line with
BIM very soon, as more house builders and contractors are adopting it.
None as yet however all our suppliers are in Europe
Not as yet, although people are becoming more aware of BIM
Not asking, we do not see it as a must to fulfil for anyone, we see it as a great opportunity for our business to be part of today’s technology, leaving the last century behind us, finally, like the car industry did, 25+ years ago. Finally time for the construction industry too.
Frequency of requests for BIM content from asset owners (Base 154)

- Building Areas, Systems and Materials
  - Doors, Windows and Accessories
  - Heating, Cooling, Ventilation and Air
  - Structural Frames and Walls
  - Electricity Supply and Lighting
  - Floors, Stair Finishes and Structures
  - Sanitary Fittings
  - External Works
  - Communications, Transport and Fittings and Furniture
  - Wall and Ceiling Finishes
  - Roof Finishes and Structures
  - Ceilings, Rooflights and Roof Windows
  - Insulation and Sound Control
  - Roof Finishes and Structures
  - Ground and Substructure
  - Insulation and Sound Control
  - Refuse Disposal, Drainage and Water

Regularly: 0%
Occasionally: 20%
Never: 80%
Frequency of requests for BIM content from designers (Base 154)

- Refuse Disposal, Drainage and Water: 16.7% Regularly, 50.0% Occasionally, 33.3% Never
- Fittings and Furniture: 40.0% Regularly, 60.0% Occasionally, 0% Never
- Communications, Transport and External Works: 11.1% Regularly, 44.4% Occasionally, 44.4% Never
- Sanitary Fittings: 30.0% Regularly, 30.0% Occasionally, 40.0% Never
- Ground and Substructure: 21.4% Regularly, 42.9% Occasionally, 35.7% Never
- Wall and Ceiling Finishes: 23.5% Regularly, 52.9% Occasionally, 23.5% Never
- Roof Finishes and Structures: 31.3% Regularly, 25.0% Occasionally, 43.8% Never
- Ceilings, Rooflights and Roof Windows: 23.1% Regularly, 61.5% Occasionally, 15.4% Never
- Insulation and Sound Control: 15.0% Regularly, 55.0% Occasionally, 30.0% Never
- Floors, Stair Finishes and Structures: 23.5% Regularly, 52.9% Occasionally, 23.5% Never
- Electricity Supply and Lighting: 19.0% Regularly, 61.9% Occasionally, 19.0% Never
- Structural Frames and Walls: 33.3% Regularly, 42.9% Occasionally, 23.8% Never
- Heating, Cooling, Ventilation and Air: 29.6% Regularly, 40.7% Occasionally, 29.6% Never
- Doors, Windows and Accessories: 20.6% Regularly, 61.8% Occasionally, 17.6% Never
- Building Areas, Systems and Materials: 25.0% Regularly, 52.1% Occasionally, 22.9% Never

BIM 4M2
Frequency of requests for BIM content from contractors (Base 156)

<table>
<thead>
<tr>
<th>Building Area</th>
<th>Regularly</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refuse Disposal, Drainage and Water</td>
<td>16.7%</td>
<td>50.0%</td>
<td>33.3%</td>
</tr>
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<td>60.0%</td>
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<td>22.9%</td>
</tr>
</tbody>
</table>
"We deal with many manufactures, and we expect to see the same level of graphical and non-graphical data from them as much as our clients want to have from us. If it helps Balfour Beatty deliver better projects, it will no doubt enable manufactures to deliver better products."

Neil Thompson, Deputy Chair CIC BIM2050, Principal BIM Integrator, Balfour Beatty.

"As an offsite modular building business the delivery and use of structured data is vital to our BIM strategy and overall process flow. Working with BIM4M2 and engaging the manufacturers and supply chain is key to developing these deliverables."

Peter K Foster Jnr – Head of Digital Implementation - Premier Interlink (Waco UK Ltd)

"From a BIM4Housing perspective we have ascertained that the role of the manufacturer, indeed the whole supply chain, is vital if the business benefits are to be fully realized. However it is important that the manufacturers listen to the needs of their clients and don’t provide too much information which 'clogs up' the system."

Andrew Carpenter – Chair, BIM4 Housing
BIM Provision

How do you develop your BIM objects? By size of organisation

- By size of organisation

Base: 73

How do you develop your BIM objects?

- Internal resource
- Internal resource/external hosting sites
- Internal resource/external consultants/no hosting
- External hosting sites
- External consultants/no hosting capability

Size of organisation

- 0-59
- 60-599
- 600-1199
- 1200 or more

38.4 %

35.6 %

6.8 %

4.1 %

8.2 %

5.5 %
Where are your BIM objects available?

- **Our website**: 56.3%
- **The National BIM Library**: 33.8%
- **The BIM Store**: 22.5%
- **On request**: 18.8%
- **BIM Object**: 3.8%

Base: 80

Your organisation has someone responsible for BIM?

- **Have BIM**: 82.1%
- **Planning BIM**: 57.5%

Base: 154
Are you aware of the following?

- BS 8541
- Product Data Templates
- BS 1192:2007
- PAS 1192-2:2013
- PAS 1192:2:2013
- COBie

What do you understand manufacturers need to support the UK Government’s 2016 requirements?

- 3D Models
- Structured info and data to PAS 1192-2:2013
- BIM Objects

PAS 1192-2:2013 Specification for information management for the capital/delivery phase of construction projects using Building Information Modelling

The UK Government have set a strategic objective to achieve BIM maturity Level 2 on all public sector asset procurement by 2016, with equal applicability to private sector building, infrastructure, refurbishment and new-build projects. The purpose of PAS 1192-2 is to support the objective by specifying requirements for achieving Level 2, setting out the framework for collaborative working on BIM enabled projects and providing specific guidance for the information management requirements associated with projects delivered using BIM.

PAS 1192-3:2014 Operational Asset Management – Processes and data for commissioning, handover, operation and occupation stages

The purpose of PAS1192:3 is to act as a partner to PAS 1192:2 and support the Level 2 BIM objective by setting out a framework for information management for the whole life cycle of asset management. PAS1192:3 addresses the operational phase of assets irrespective of whether these were commissioned through major works, acquired through transfer of ownership or already existed in an asset portfolio. The framework includes the creation of an Asset Information Model to manage information exchanges to and from a Project Information Model created in accordance with PAS1192:2, external asset information models e.g. Computer Aided Facility Management systems, direct supplier inputs e.g. digital surveys and other enterprise information systems e.g. financial reporting.

COBie (Construction Operations Building Information Exchange), BS 1192-4:2014

COBie is the UK Government’s chosen information exchange schema for BIM maturity Level 2 (federated BIM), alongside BIM models and PDF documents. It can also be used within Level 1 projects.

COBie provides a common structure for the exchange of information about new and existing Facilities, including both buildings and infrastructure. BS 1192-4:2014 defines expectations for the exchange of information throughout the lifecycle of a Facility. It ensures that the information exchange can be reviewed and checked for compliance, continuity and completeness.
Information formats - awareness

**BS 8541 - Library Objects for Architecture, Engineering and Construction**

- **BS 8541-2:2011 Library Objects for Architecture, Engineering and Construction: Recommended 2D symbols of building elements for use in building information modeling.** Predominantly for use at Level 1, this document provides symbol definitions for the presentation of 2D information.
- **BS 8541-1:2012 Library Objects for Architecture, Engineering and Construction: Recommended 2D symbols of building elements for use in building information modeling.** This introduces library objects, represented in appropriate formats for use at Level 0 (blocks, cells) through to Level 3 (IFC objects).
- **BS 8541-3:2012 Library Objects for Architecture, Engineering and Construction: Shape and measurement.** This defines 3D symbols in multiple levels of detail. This is essentially focused on Levels 1 and 2. The standard includes functional and geometric measures (volume, projected area, plan area, effective length etc.)
- **BS 8541-4:2012 Library Objects for Architecture, Engineering and Construction: Attributes for specification and assessment.** This defines properties and multiple levels of information. This essentially focuses on Levels 2 and 3, and includes properties required for specification / selection and environmental, cost and social impacts.
- **BS 8541-5:2014 Library Objects for Architecture, Engineering and Construction: Assemblies.** This will cover the sharing of sub-models representing combinations of components [with their associated types and systems] and spaces [with their associated levels and zones]. It will cover naming, classification and nesting.
- **BS 8541-6:2014 Library Objects for Architecture, Engineering and Construction: Assemblies.** This will cover the sharing of data expected from product declarations, labeling and environmental tables.

**BS 1192-2:2007 Collaborative production of architectural, engineering and construction information – Code of practice**

This provides the structure required to achieve BIM maturity Level 1. It establishes the methodology for managing the production, distribution and quality of construction information, including that generated by CAD systems, using a disciplined process for collaboration and a specified naming policy.

**Product Data Templates (PDTs)**

Conceived by the CIBSE BIM Group, Product Data Templates (PDTs) are standard product ‘questionnaires’, one for each equipment type, that manufacturers only complete once for each of their products, to serve the needs of all people, projects and purposes. Written in simple Excel format, PDTs are usable with all BIM platforms.
The definitions of Level of Maturity described here are taken from the British Standards Institute B/555 Roadmap. Level 2 is required for all public projects from 2016.

**Level 0**

Unmanaged CAD probably 2D, with paper (or electronic paper) as the most likely data exchange mechanism.

**Level 1**

Managed CAD in 2 or 3D format using BS 1192:2007 with a collaboration tool providing a common data environment, possibly some standard data structures and formats. Commercial data managed by standalone finance and cost management packages with no integration.

**Level 2**

Managed 3D environment held in separate discipline “BIM” tools with attached data. Commercial data managed by an ERP. Integration on the basis of proprietary interfaces or bespoke middleware could be regarded as “pBIM” (proprietary). This approach may utilize 4D Programme data and 5D cost elements.

**Level 3**

Fully open process and data integration enabled by IFC / IFD. Managed by a collaborative model server. Could be regarded as iBIM or integrated BIM potentially employing concurrent engineering processes.
What Level of Development do you currently provide your content to (using AIA definitions)?
Base: 76

In which software platforms do you provide your BIM content?
Base: 80

Do you provide BIM objects in accordance with PAS 1192-2:2013?
Base: 66

Do you have plans to extend your content to other formats?
Base: 80
Conclusions

In summary, the health-check on product manufacturers from this survey is that many (40%) are ready for April 2016 and most of the rest (50%) intend to be. However, there is still some knowledge building required even amongst those that have launched their own BIM content.

The results, and in particular the commentary has proven invaluable in developing the activities of BIM4M2. It has provided a clearer picture of where the industry is, and the journey that we need to make to get to Level 2, which gets us to basecamp in terms of the potential that can be achieved. To operate at Level 2 we need structured, accurate, reliable and accessible product data that not only clearly describes what a product is and how it performs, where it comes from and how it needs to be maintained, but also helps in the specification, supply and construction stages of its lifecycle. The challenge for the manufacturer amongst others is to provide the right information in a suitable format to support a vast range of players, across different sectors and in different territories, using different approaches. These are challenges that the BIM4M2 Data Templates Working Group are working with other BIM4 communities and industry bodies to resolve.

The BIM4M2 Education Working Group are already using the survey results as part of evidence-based tools we are developing for product manufacturers and the supply chain. The first tool addresses the most basic question – do we need to respond to the BIM challenge? This is an evidence based tool and looks at a number of areas to work out the likelihood of a manufacturer needing to respond. These areas include:

- Level of business in different Market Segments
- The type of product which is manufactured
- The route to market that is pursued
- The level of requests for BIM content

The tool provides a “likelihood of need to respond” score and also evidence based response notes for each of the areas. This has proved very useful to provide direction and also to gain initial buy-in from board members who may not yet have grounding in the BIM arena.

The second tool will allow the manufacturer who wants to learn more to find resources which will help. One of the things we hear most from manufacturers is that they feel many of the BIM providers are speaking from a place of self-interest and so we will make sure that these resources will have been checked for accuracy and independence.

The third tool main tool will be an outline for how to put together an implementation plan for BIM development. This will include sections on Business Planning, Implementation and Review processes.

BIM4M2 will continue to engage with the broader industry through surveys such as this, and through other activities of the Promotions Working Group to track the industry’s journey, and to support product manufacturers and the broader sector in preparing for BIM and beyond.
About BIM4M2
Vision

For the UK construction product manufacturing sector to be recognised as a world leader in the integration of BIM and manufacturing technologies to supply the products and solutions for a sustainable built environment.

Values

- BIM4M2 will be a forum where all those involved in the design, manufacture and supply of construction products and solutions can share their knowledge, learning and experience in order to help achieve the group vision.
- BIM4M2 will demonstrate the opportunities inherent in BIM, which allow the full realisation of the benefits of linking design and manufacturing information, to the widest range of individuals and organisations including government and other policy makers.
- BIM4M2 will promote case studies from manufacturers of manufacturing systems that demonstrate the integration of BIM data and manufacturing technologies to supply the products and solutions for a sustainable built environment.
- BIM4M2 will work with research funders to increase research and development funding for manufacturers who wish to develop the integration of BIM and manufacturing technologies.

Structure

BIM4M2 represents product manufacturers on the BIM4 Steering Group, working directly with the UK Government’s BIM Task Group.

BIM4M2 has three main Working Groups focussing on Education, Data Templates and Promotions. In addition, we have a Supports of BIM4M2 group, which provides wider consultation and further resource and expertise where required to deliver key outputs. These groups are overseen by the BIM4M2 Steering Group, as identified on page 46 of this report.

Background

BIM4M2 is a working group consisting of people and organisations concerned with BIM for manufacturers (the organisations) and manufacturing (the process). Developed to support the work of the BIM Taskgroup, BIM4M2 was formed by the Construction Products Association (CPA), but is separate to and independent from it. Members include a healthy mix of manufacturers (SMEs and multi-nationals), consultants and content providers.
# About BIM4M2 (BIM for Manufacturers and Manufacturing) - Working Groups

## Education Working Group

This Working Group is developing a series of new tools to support product manufacturers on their journey.

The aim of these tools will be to educate, inform and encourage action. In short to put manufacturers back in the driving seat as they look at how they should respond to the BIM challenge.

## Data Templates Working Group

This Working Group is working with others across the sector to develop data templates, to make it easier for manufacturers of any scale and starting point to provide useful data at low cost.

The main focus is to support manufacturers in getting to Level 2 basecamp, and preparing for the future whilst maximising value that can be created.

The templates that are being developed map to open standards to maximise their use and consistency, but also to support the large percentage of manufacturers that export and are looking to provide and maintain their data in a common format.

We are working with other groups, including the Manufacturers Strategic BIM Forum (MSBF) to ensure that manufacturers benefit from the use of digital information, both now and in the future.

## Promotions Working Group

The Promotions Working Group are responsible for developing and carrying out this survey, but also provide a voice for the group. The group promotes outputs from the other Working Groups, manages the Group website and social media and encourages product manufacturer participation in BIM4M2.
About BIM4M2 (BIM for Manufacturers and Manufacturing) - Steering Group

Steve Thompson - BIM4M2 Chair
Market Manager, Construction & Infrastructure,
BIM Programme Manager, Tata Steel

Richard Blakesley - Chair, Education WG
Managing Director, Howitt Consulting

Chris Witte - BIM4M2 Steering Group Member
Marketing Director Northern Europe, Knauf Insulation

David Rich - Co-Chair, Data Templates WG
Sustainable Construction Engineer, Lafarge Tarmac

Paul French - Co-Chair, Data Templates WG
Market Manager - Commercial, British Gypsum

Robert Daniel - Chair, Supporters Group
Technical Advisor, Marley Eternit

Chris Ashworth - Chair, Promotions WG
Managing Director, Competitive Advantage
About Competitive Advantage
The survey and analysis has been carried out by Competitive Advantage.

Founded in 1999, Competitive Advantage is a marketing consultancy implementing strategy, undertaking research projects and providing sales and marketing training in a construction industry context.

Other published reports include the Construction Media Index, Adoption of BIM and Designing with Sustainable Products.

For full details visit our website at www.cadvantage.co.uk.
Contact

Website: www.bim4m2.co.uk

Twitter: @bim4m2

LinkedIn: https://www.linkedin.com/company/5162677

Email: info@bim4m2.co.uk
      chair@bim4m2.co.uk