

THE BUSINESS VALUE OF BUILDING INFORMATION MODELING (BIM) IN NORTH AMERICA: Multi-Year Trend Analysis and User Ratings

Key Findings from McGraw-Hill Construction's New BIM *SmartMarket* Research Study

HOW HAS BIM ADOPTION CHANGED?

When McGraw-Hill Construction first began to track BIM adoption in 2007, only 28% of companies were BIM users. By 2009, that figure had grown to 49%, and in now in 2012, 71% of the firms surveyed report using BIM.

In the past, adoption also varied widely by profession, with architects leading the industry. However, in 2012, contractors became the leading adopters of BIM, with 74% reporting that they use the software. In addition, adoption is now more universal across the construction industry. Strong increases in BIM use by contractors and engineers have narrowed a 16% gap in the 2009 adoption levels to a mere 7% in 2012. These more uniform adoption rates clearly indicate the increasing acceptance of BIM across all company types.

The number of professionals who consider themselves advanced or expert BIM users also increased significantly—up from 42% in 2009 to 54% in 2012. This suggests that for many of these firms, BIM is now a fundamental part of their workplace.

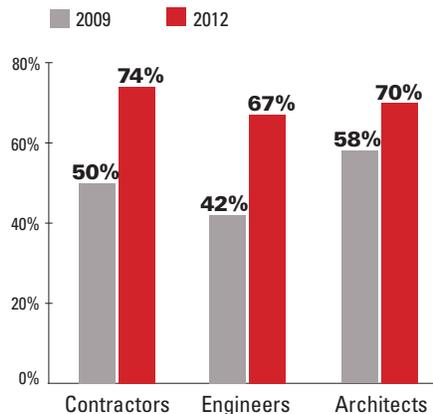
WHAT WILL ALLOW DIFFERENT PLAYERS TO SEE GREATER VALUE FROM BIM IN THE FUTURE?

Improved interoperability and functionality of BIM software are the top two BIM improvements all users believe would improve their BIM value, both in 2009 and 2012.

The percentage of companies using BIM jumped from 28% in 2007, to 49% in 2009, and to 71% in 2012.

For the first time ever, more contractors are using BIM than architects.

BIM Adoption by Player (2009–2012)



Source: *The Business Value of BIM in North America: Multi-Year Trend Analysis and User Ratings SmartMarket Report*, McGraw-Hill Construction, 2012.

Most Important Factor to Increase BIM's Value

PLAYER	TOP RESPONSE
Architects	More owners asking for BIM
Contractors	More clearly defined BIM deliverables between parties
Engineers	Improved functionality of BIM software
Owners	More clearly defined BIM deliverables between parties

HOW DOES BIM ALLOW DIFFERENT COMPANIES TO DO BUSINESS MORE EFFECTIVELY?

The growth in BIM expertise has led to a growth in the benefits experienced by BIM users. Compared to 2009, a greater percentage of users in 2012 report getting high to very high value from BIM on ten out of eleven evaluated benefits.

- The top two benefits of BIM use in both 2009 and 2012 were reduced document errors and omissions and the ability to market new business—over 50% of construction industry professionals on average report these benefits at high to very high value.
- The benefits of reduced rework and new services offerings were also widely noted as having value in both 2009 and 2012.

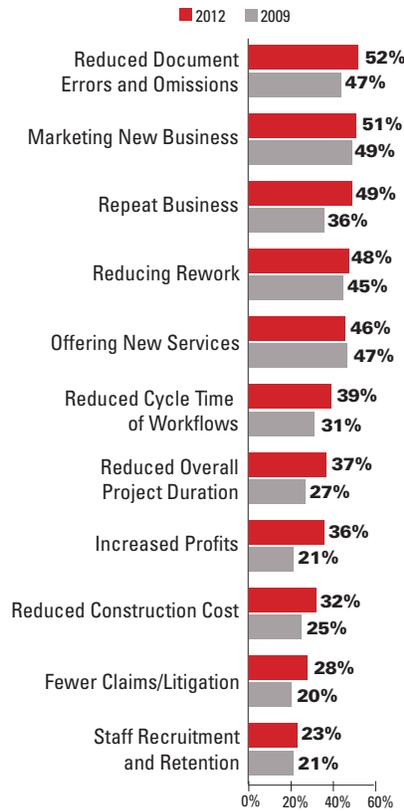
These top benefits are now widely recognized, and therefore, becoming expected by the industry.

Equally revealing are the benefits that a much higher percentage of firms in 2012 are experiencing versus 2009. One factor that distinguishes these from other benefits reported is that they each require an extended and intensive use of BIM across many projects to observe. The rise in these benefits suggests a maturing market, in which sophisticated users are able to take advantage of what BIM has to offer. They also demonstrate that BIM offers firms benefits across their business—not just process improvements.

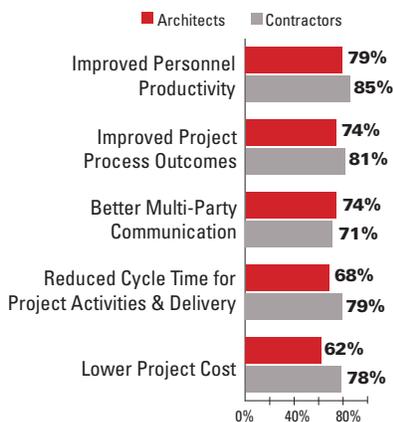
Benefits by Player

- Architects:** 57% achieve high or very high value from BIM by reducing errors and omissions in their documents, and 45% find BIM reduces rework. Both benefits directly impact and improve their work processes. The ability to market new business to new clients and offer new services are also strong benefits for architects, noted by 49% and 48% respectively.
- Contractors:** The top benefits for contractors follow those of architects. Reduced rework tops the list, reported by 65%. Reducing project duration is also noted by 53%, a factor that directly impacts contractor profitability. With well over 50% reporting achieving high value from these benefits, contractors are more enthusiastic about the value they achieve from BIM compared to architects.
- Engineers:** Engineers see more benefits in their ability to find new business and keep current customers than they do in their work processes.
- Owners:** Reduced document errors and omissions is by far the most widely reported benefit by owners, with 61% experiencing this compared to 36% or fewer reporting value in all other benefits.

BIM Benefits (2009–2012)



Top Factors Contributing to BIM ROI



WHAT ARE THE MOST IMPORTANT FACTORS THAT IMPROVE BIM'S RETURN ON INVESTMENT?

62% of BIM users report achieving a positive ROI in 2012, with contractors leading the pack at 74%. The five factors that were selected by over 50% of the survey respondents to improve BIM's ROI are listed in the chart below left. However, some factors carry particular weight with different players, selected by 75% or more as contributing to ROI.

- Architects:** The only factor selected by three quarters or more is improved personnel productivity.
- Contractors:** While improved personnel productivity is also the top factor for contractors—selected by 85%, what is most striking about contractors is the number of ways they extract value from BIM. Four other categories were considered important by more than three quarters: improved project process outcomes, increased fabrication, reduced cycle time and lower project cost.
- Engineers:** Engineers still lag in extracting value from BIM, with no factors selected by three quarters of the respondents. The strongest category for them was better multi-party communication, but only 65% cite this factor, the smallest percentage in that category for any player.
- Owners:** Like contractors, owners see strong payoffs from working with BIM. All owner respondents find that better multi-party communication and improved project process outcomes contribute to their BIM ROI. 83% also report it lowers project cost.

The findings are drawn from a McGraw-Hill Construction survey of architects, engineers and contractors, including an examination of BIM software adoption, benefits and impact on return on investment. The study will compare these results against data collected by McGraw-Hill Construction on these same topics in 2009. The study scope expanded in 2012 and now includes new, groundbreaking information on the use of specific BIM features and capabilities and how these contribute to the value of BIM. The sample was drawn from McGraw-Hill Construction's proprietary contacts from its Dodge BuildShare database and player lists as well as member firms of industry associations spanning the construction industry. The full results of this research will appear in *The Business Value of BIM in North America SmartMarket Report*, part of the continuing McGraw-Hill Construction SmartMarket Report series, to be published November 30, 2012 at http://construction.com/market_research.

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