5 Worker-Related Hurdles to BIM Adoption

— and How to Overcome Them

The real roadblock to BIM adoption may be more about people than technology.

Six years ago, Jarrad Faughn was determined to start a one-man BIM revolution. A large Midwestern mechanical-contracting firm had hired him to create a BIM-focused workflow and move the workforce into the 21st century.

"They were excited to get started and so was I," recalled Faughn, who's now a senior technical specialist with U.S. CAD.

The company translated that enthusiasm into investments in automated decoilers and plasma-cutting machines as well as a $45,000 measuring and positioning robot. Faughn himself spent hours examining workflows, putting together detailed process recommendations and showing field workers the promise of the new technology.

But despite making some impressive changes that moved the company forward technologically over a six year period, Faughn's quest to create a truly BIM-focused workflow ultimately hit a plateau.

Why?

It came down to one of the most basic elements of any job site, the workers themselves. "They couldn't fully make that transition," Faughn said. "You have to start with the people on the ground and have everyone on the same page from the beginning or it's less likely to succeed," Faughn said.

Experts say Faughn's experience — and the difficulty transitioning workers to BIM systems — is all too common. They say this phenomenon happens because companies don't know how to address the "human side of BIM." And like Faughn, many companies discover that the real roadblock to successful BIM adoption — and the better efficiency and higher margins it creates — is typically more of a "soft" people issue than hardware or technology issue. "BIM is 10% technology and 90% sociology," noted Scott Simpson, senior director at architecture and design firm KlingStubbins. That's why Simpson and other experts say, to achieve BIM success, companies must first address the human side of BIM.

Doing so is harder than it sounds, because, in many ways, workers have had poor experiences with new tech and techniques, such as asbestos and lead-based paint. A similar problem happened with early iterations of BIM technology, which promised to revolutionize construction but got bogged down in poor integration and execution.

"There are so many questions around adoption of new technology and how you get people to change their workflow," said Andrell Laniewicz, senior technical specialist with U.S. CAD. "There's a lot of attitudes like, 'This is how we've always done it.' So how do we convince people to try something new, especially when they've had problems with new technology in the past? In addressing that human side of BIM, you have to go back and say, 'We know there were some implementation challenges, but how can we earn your trust back?'"

Why BIM Is Growing

A good place to start is by showing workers how other companies use BIM to achieve impressive results. And studies abound on this subject:

According to a Dodge Data & Analytics (DD&A) and Autodesk report, "Leading the Future of Building — Connecting Design and Construction":

→ **60%** of firms give BIM a top rating for improved communication during the entire design-detailing-fabrication workflow, and faster/better coordinated designs and shop drawings.

→ **58%** say BIM leads to fewer field installation errors, which has enormous implications for reducing rework and material waste, along with improving productivity and schedule compliance.
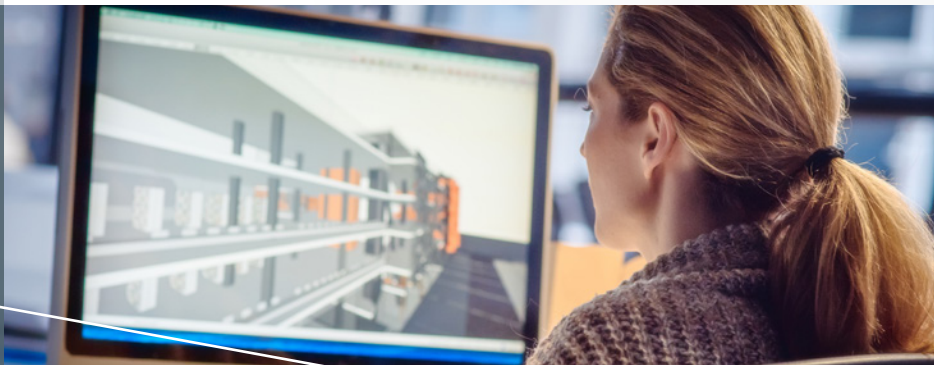
Another DD&A study, "Measuring the Impact of BIM on Complex Buildings," shows:

→ **74%** of contractors say BIM improves constructability of the final design.

→ **71%** of engineers say it improves quality/function of the final design.

→ **85%** of AEC pros say BIM results in a reduction in the final construction cost.

→ **88%** of AEC pros say BIM leads to an accelerated job completion.

And owners are just as enthusiastic about BIM:

→ **93%** say it improves the quality/function of the final design.

→ **73%** say it increased their understanding of proposed design solutions.

→ **70%** say it generated better construction documents.

→ **70%** say it improved their ability to plan construction phasing and logistics.

The Human Hurdles to BIM Adoption

While the benefits of BIM are unmistakable, many workers have yet to embrace the technology due in part to the reluctance to learn new tools. But experts say a larger problem exists: There simply aren't enough contractors with BIM skills to meet the demand for BIM-related work, as the DD&A and Autodesk report shows:

→ **More than 50%** of the high-engagement architects require BIM from MEP (mechanical, electrical, plumbing) and structural engineers.

→ **More than 80%** of high-engagement general contractors and construction management require BIM from MEP and structural steel trades.

At the same time, the study reveals:

→ **More than 50%** of AEC pros cite finding BIM-skilled personnel as a major challenge.

→ **63%** of trade contractors report that they must use outsourced BIM services to help fill this gap.

"Lack of BIM-skilled talent may influence the degree to which engineers generally lag contractors in BIM use and involvement in the integrated workflow," the study's authors write. "As BIM requirements proliferate, the industry needs to help these firms become more proficient."

That's more pertinent now than ever before. In fact, according to the Construction Financial Management Association, the average pre-tax net profit for general contractors is between 1.4 and 2.4 percent and for subcontractors between 2.2 to 3.5 percent. While other industries have seen dramatic productivity increases, the construction industry's productivity has remained stagnant for the past 50 years.

The pace of work will only increase as more and more people move to urban centers. In fact, contractors have to build an average of 13,000 buildings per day through 2050 just to keep up with the demand.

5 Worker-Related Hurdles to BIM Adoption — and How to Overcome Them

That's why more and more savvy contractors are turning to technological solutions such as BIM. But, as many contractors have discovered, the technology is only as good as the people using it. How can contractors address the human side of BIM? Experts say it starts with understanding the hurdles to adoption — and how to overcome them. Here are five to focus on:

1. ## General mistrust of new technology.

   As noted, many construction workers have struggled to implement new tech. At the same time, many don't understand how it works and suffer from what Laniewicz calls an "expertise gap."

   A good way to gain trust and bridge the gap is through grassroots efforts, ideally talking one on one with key personnel, but also at events such as company meals in which leaders give an overview of BIM-related success stories. For example, Laniewicz points to her experience with an MEP firm that was able to model twice as fast with BIM.

   "If you can get a few minutes just to talk about what BIM does, and you've been tracking metrics for your company, you'll win over more and more people as they start to see that. So it's very grassroots and similar to being a politician," she said. "You're going around. You're shaking everyone's hand at the door. Then you're going to a restaurant and talking about the benefits."

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>
> **Andrell Laniewicz,** senior technical specialist with U.S. CAD

2. Fear that technology will replace workers.

Many worry about becoming obsolete as the result of more efficient technology, not to mention AI and robots. So a bit of apprehension is understandable.

But as contractors know all too well, construction is in the midst of a serious and protracted labor shortage. So the challenge for the industry is how to get more done with fewer workers — and that's where technology can help.

"We have to communicate more positively," Laniewicz said. "The message is, 'It's not that we need to replace you. It's

that we need you to build faster because we have more to do,'" she added, referring to the need for more than 10,000 new buildings every day through 2050.

One approach gaining trust is assigning a BIM worker to two or three projects and having that person work directly with project managers (PMs) to determine how to make the technology work best for the PMs — and offset some of the labor-shortage concerns.

3. Difficulty showing ROI and creating buy-in.

Getting buy-in from skeptical workers may be the most important element of showing ROI. Why? No matter what studies show about the benefits of BIM, if workers don't use the tools properly, savings won't happen.

Laniewicz found success befriending one person on a work team and showing that person the latest tools and how they work. When other people on the team saw that person using the tools, they quickly bought in, too. Another method is to send select workers to trainings, such as Autodesk University, which creates BIM "evangelists."

"It's all about pulling low-value tasks off your plate and being able to put that effort somewhere else," Laniewicz said. "The sooner you can find something and say, 'Hey, look what BIM did!' the sooner they're going to start using it."

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4. Misunderstanding risk.

"People's discomfort with risk is a big problem when you talk about the human side of BIM," Faughn said. The first misunderstanding is around the cost of risk, or the cost of having more workers on a job than necessary when using BIM tools. Excess workers and inefficient workflows create injury-liability risk as well as rework issues. "Why have 10 guys out here in the blustery cold when, using BIM tools, you can have two guys laying out your stuff and be out of there with less risk?" Faughn asked.

But the other side of the risk coin is around the lack of confidence workers have in their abilities to use new technology combined with a fear that they will somehow "break" expensive equipment or systems.

"Executives and supers need to allow workers to have that risk and encourage them to not be afraid of it," Faughn said. "Because if you take that risk on the tech side, you'll get less risk on the liability side."

5. Lacking standardization.

The only way BIM technology and workflows can work is with standardization of processes to measure what's working and what's not. But one of the hurdles in the human side of BIM is that workers never buy into standardization.

Faughn said companies could address this roadblock first by documenting the current workflow and showing workers how inefficient it actually is. From there, it's vital to sit down with workers and develop the "ideal" workflow. Doing this process with workers is key because this is the time when they start to see the benefits of standardization.

"You need to show how it will make their lives easier, more efficient and profitable," Faughn said.

Best Practices for Successful Technology Adoption

Although there are many ways to roll out new technology, some user-adoption techniques work better than others. Here's a look at how well each method works, according to data from an Autodesk University article:

→ **38%** of users adopt new tech from the bottom up, meaning a colleague trains or tells coworkers about a new tool. If one person on the team starts using the tool — especially if that person is the best — the rest will follow.

→ **24%** of users adopt new tech through internal meetings. Lunch-n-learns and virtual demos are popular ways to push adoption to a captive audience.

→ **16%** of users adopt new tech through internal communication. Email blasts, Yammer posts, team notes all catch some people — if they're not ignoring those channels.

→ **11%** of users adopt new tech with a top-down approach. This method is typically less effective because of busy schedules, layers of bureaucracy and chains of command that prevent more people from hearing about it.

→ **11%** of users adopt new tech through open forums. These regular meetings are a great time to demo new tools, do impromptu training and address questions/concerns.

Clearly, many challenges exist in addressing the human side of BIM. But unless those hurdles are first overcome, contractors are unlikely to reap the benefits of this technology — and stay competitive. That's why thinking about the human side of BIM is the first place to start in adopting this new technology. Although workers may resist at first, showing them the benefits of BIM is usually enough to "humanize" even the most tech-phobic workers.

"Being able to give your super that little bit of extra time or to take some mundane, repetitive task off of their plate, frees them up to be both better on the job and in life," Laniewicz said. "Instead of endlessly copying and pasting between Excel files, they can get a little bit more time at home, so their brains are sharper for the next problem."

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