Picking the Right Technology for Your E&C Firm

By Russ Young

How to get everyone onboard with successful technology implementations that benefit your entire organization— from the field worker to the senior-level executive, and everyone in between.

This is an exciting time for the engineering and construction (E&C) industry, but it's also a time for trepidation over how to best integrate new technology tools and applications into an industry that's not exactly known for its forward-thinking ways when it comes to technology and innovation. Those companies that have dipped a toe in the pool are already seeing significant rewards: According to the World Economic Forum (WEF), E&C companies that invest in technology are seeing, on average, a 7-8% uplift in margins.

Many of the early "wins" are coming from digitization of paper process and workflow in project management and related software, but BIM, robotics, autonomous vehicles, and virtual and augmented reality are also starting to show some promising returns. Cumulatively, these and other innovations are helping E&C companies overcome the widespread labor shortage, tackle project complexity, work within tighter time frames and save money on costly rework.

So, if a small percentage of leaders is already posting bottom-line benefits from their technology investments, why isn't everyone else scrambling to invest more in technology right now? According to data from PlanGrid and FMI, which was collected from various studies over the past 18 months, the lack of maturity in E&C technology implementation is profound. Some of that could be directly related to the fact that companies don't do their homework or put energy into picking the best technology for their specific needs. Instead, they grab for the bright and shiny objects that are placed before them, hoping that those technologies will help them work more efficiently.

The problem is that when you don't invest enough resources into a detailed plan for any kind of change management, the result can be the costly, large-scale, failed implementations that we hear about so frequently. Fearful about moving forward with their own implementations, companies fall into a sort of "technology purgatory" that keeps them from realizing the full benefits of today's tech tools, platforms and applications.

Getting Field Staff Onboard

FMI recently partnered with PlanGrid to survey nearly 600 construction leaders worldwide. According to the survey, 52% of general contractors (GCs) and subcontractors said the needs of field staff are a top consideration when investing in technology. However, just 28% of those firms gather feedback from those potential users of new technology before buying.

From the PlanGrid study, we also learned that 75% of GCs and subcontractors provide mobile devices to project managers and field supervisors, yet just 18% of GCs and subcontractors consistently use applications on mobile devices to access project data and collaborate with one another. So the devices are in managers' and supervisors' hands, but those upper-level employees aren't really using the technology for its intended purpose. This obstacle can be overcome by ensuring that field users are properly trained on the devices and shown how those tools can make their work lives easier (versus adding yet another responsibility or burden to their to-do lists).

When asked why technology fails them, 36% of construction leaders said poor fit with current processes and procedures is the main culprit. Twenty-five percent blamed low adoption rates. Other issues included inadequate training, difficulty using the technology, and the fact that it doesn't always integrate well with existing software and solutions. And despite what some may assume, these usually involve implementation and planning failures versus technological limitations.
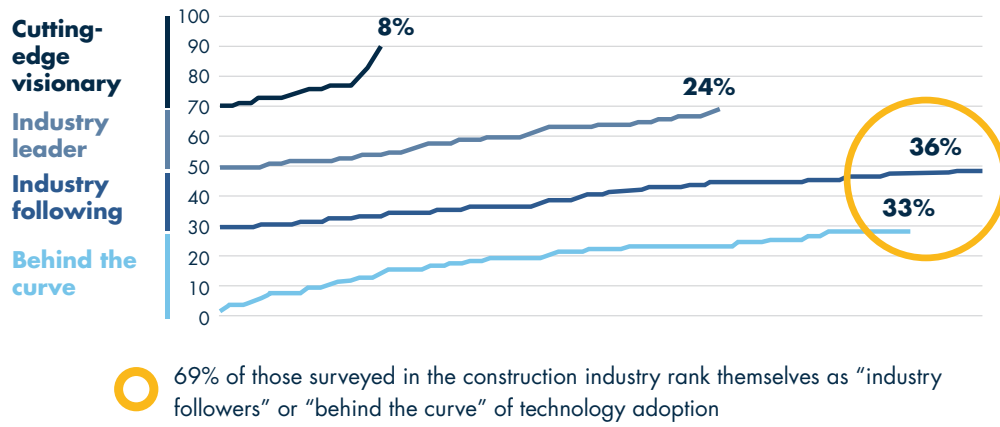
Adopting and Adapting

The way contractors use technology hasn't changed much over the last 10-15 years. This needs to change, according to Oracle, which says that those companies that are willing to adopt new technologies and adapt to a changing landscape will hold the biggest competitive advantage in the future. Often considered a "laggard" when it comes to technology adoption and digitization, the E&C industry is in a prime position to turn this tide and start benefiting from the many different advantages provided by technology and digitization.

The recent PlanGrid/FMI study also found that the industry is well-positioned to leverage some of the hard lessons learned by other industries whose digital transformation is already well underway. This is one instance where being more of a "follower" than a "bleeding-edge leader" can be a significant advantage for a very traditional, established industry where…
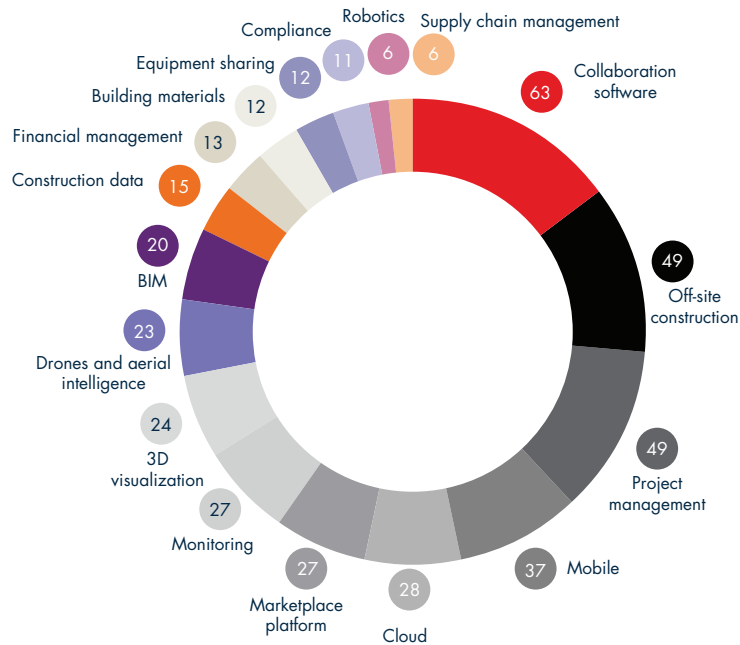
- Construction employees spend up to 14 hours a week—roughly 35% of their time—looking for project data or information, dealing with mistakes or rework and handling conflict resolution, according to the PlanGrid Study.

- 52% of all rework is caused by poor data and miscommunication, costing around $31.3 billion in the U.S. alone in 2018.

- 57% of the PlanGrid survey respondents said that they spend time on nonoptimal activities due to difficulty gathering data, lack of responsiveness around information/data delivery, and lack of confidence in the accuracy of the data/information they've received.

Exhibit 1. Technology adoption spectrum

Cutting-edge visionary — 8%

Industry leader — 24%

Industry following — 36%

Behind the curve — 33%

69% of those surveyed in the construction industry rank themselves as "industry followers" or "behind the curve" of technology adoption

Source: Acute Construction Intelligence

Exhibit 2. Where innovation is happening in construction technology.

Collaboration software 63
Off-site construction 49
Project management 49
Mobile 37
Cloud 28
Marketplace platform 27
Monitoring 27
3D visualization 24
Drones and aerial intelligence 23
BIM 20
Construction data 15
Financial management 13
Building materials 12
Equipment sharing 12
Compliance 11
Robotics 6
Supply chain management 6

Source: CB Insights, JLL Research

Find the Weakest Link and Fix It

E&C firms that want to turn the tables and start maximizing their technology investments can use a simple survey to figure out what is and isn't working. Start with a single implementation and focus on finding the weakest link and fixing it. If, for example, you invested in a great piece of technology that was put out into the field and never used, figure out why that happened. Were the users not properly trained? Did you not involve them in the technology selection process? Were they already using something that did the job perfectly well?

In our mobile-focused world, we've seen companies invest in hundreds of tablets that field supervisors and managers were supposed to start using to gather and report project data. Even with that technology at their fingertips, those employees continued submitting paper forms. The same issues apply in the information retrieval world, where people spend an inordinate amount of time searching online and offline every day. A simple survey will surface these gripes and help you make better technology investment choices—the kind that no CIO sitting in an office, talking to vendors, can make on his or her own.

Another good strategy that E&C firms can use is to learn from the lessons of those who came before us. As a laggard industry in technology, we can study the models that have proven successful over the past 20 years in technology adoption. We can look at the early and successful movers in our industry to learn how to invest properly to be successful.

These leaders regularly gather all survey data from everyone that's going to be touched by the technology. They also know their specific business needs—and the needs for each role—intimately. They understand the benefits and limitations of the technology that's being purchased. Most importantly, they have a detailed plan for how they implement new technology, including training, new workflow, integrations and agreed-upon key performance indicators (KPIs) for measuring success.

Here are eight ways you can borrow a page from technology leaders and start using them in your company right now:

1. **Uncover some of the easier "wins" that your company can act upon right now.** A Technology Readiness Assessment (TRA) can help you identify where you are now and what technology your company needs to be able to improve processes, gain efficiencies and enhance its bottom line.

2. **Assemble a technology selection team.** Be sure to include representation from all office and field roles that will interact with the technology that you're buying and implementing.

3. **Identify the initial areas for change.** Then build a business case for the technology that will support those changes. Translate your business needs into the "must have" features and functionalities that the technology must provide.

4. **Use "create and run" surveys.** Gather data from everyone who will be touched by the technology (and the processes that it will enable), including the field, office, plant, shop and so forth. The survey may also include input from the ecosystem that your firm works with (i.e., other general and specialty contractors, engineers, architects, owners, developers and trusted technology partners).

5. **Break down the silos.** With 56% of contractors using at least three or more different software applications, according to JB Knowledge, and 30% of firms using software programs that do not integrate with any other programs, the data silos they're creating interrupt information flow, reduce accuracy levels, and can negatively impact intercompany collaboration.

6. **Analyze the data.** According to the FMI/PlanGrid study, 71% of construction firm owners find that capturing and retaining more data during design, construction and closeout either "reduces" or "significantly reduces" life cycle operation costs. Incorporate data with your current technology and tool stack to come up with ways to improve your technology over the next one or two years.

7. **Factor in your implementation needs.** This should include change management needs like training, data migration, integrations and any support needed during this transition period.

8. **Find the right technology partners.** Look for vendors that have teams in place to support your company for the long term. Key questions to ask include: Do you offer 24/7/365 customer support? Will we have a named account manager and/or customer success manager? Do you have user groups in our geographic region and/or industry vertical?

If you think of buying new technology like buying a new house, remember that this move requires detail, preparation and planning to execute successfully. Construction companies that cut corners in the implementation process take on additional risk, and that risk of failure is expensive. Our industry routinely creates and executes daily and weekly detailed plans with multiple partners on our building projects; we need to quickly mature to the same level of detail and planning with our technology implementations.

Russ Young is a senior consultant and leads FMI's technology partnering program, having worked with tech partnering programs his entire career. Russ also provides experienced consulting to stakeholders in the E&C industry, enabling them to maximize the benefits of technology solutions in their business. He can be reached via email at *ryoung@fminet.com*.

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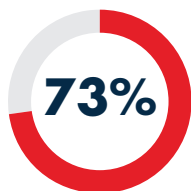
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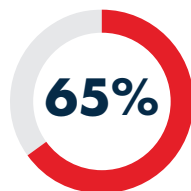
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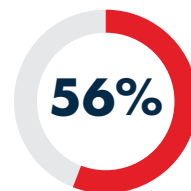- Specialty Trades
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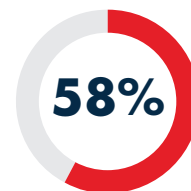
FMI Client Highlights

73%
of the ENR
Top 400
LARGEST
CONTRACTORS

65%
of the ENR
Top 200
SPECIALTY
CONTRACTORS
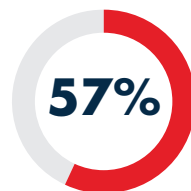
57%
of the ENR
Top 100
DESIGN
FIRMS

56%
of the ENR
Top 200
ENVIRONMENTAL
FIRMS

58%
of the ENR
Top 100
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