

# Technology and Risk Mitigation in the Built Environment

By Alyssa Menard and Ryan Howsam

Once you know what you want and need from your technology solutions, you can begin to extract meaningful insights to help your organization manage risk more effectively.

In today's age of digital disruption, it comes as no surprise that technology adoption is a critical aspect of managing risk. And while technology and data-driven insights have proven themselves to be great assets in the risk management battle, these innovations also present their own unique set of challenges for the engineering and construction (E&C) industry.

Here's why: In this traditionally slow-to-adapt industry, many organizations are either unprepared for or overwhelmed by the magnitude of new emerging technologies. As a result, executives often struggle to deploy useful technology solutions to help their firms effectively manage risk.

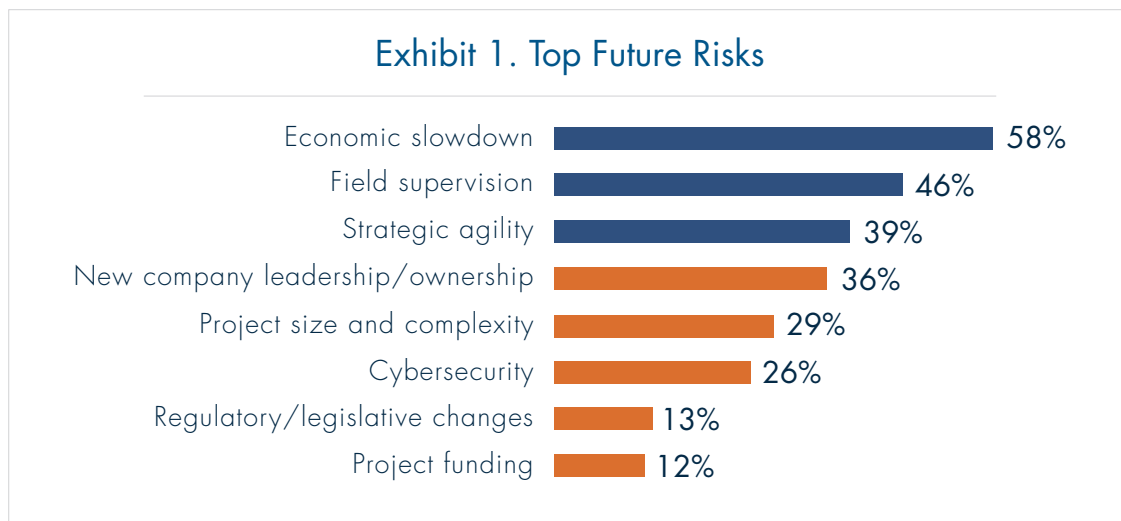
## Technology as the Great Enabler

Technology can be a useful tool for managing risk, but knowing which tools to use and how to implement them is still a big hurdle for many E&C firms. In a recent [Dodge Data report](#),<sup>1</sup> 68% of contractors rate "on-going project management risks" as medium or high difficulty, and 51% find identifying projects risks at least moderately challenging, demonstrating the need for more training and knowledgeable staff to aid in technology solutions.

---

<sup>1</sup> "Using Technology to Improve Risk Management in Construction." SmartMarket Insight. Dodge Data & Analytics. 2019.

Data from the [2019 AGC/FMI risk study](#) also reveals that over one-third (39%) of E&C organizations believe that strategic agility—or the ability to implement and leverage technology—will be a top risk for the next five years (**Exhibit 1**). But even in the face of this risk, just 19% of contractors have an established budget for risk data analytics and consulting, and few contractors have the expertise in-house needed to analyze such data.<sup>2</sup>



Source: 2019 AGC/FMI Industry Risk Survey

## Jumping the Hurdles

Despite the challenges associated with deploying the right technology within an organization, current trends show that the E&C industry is starting to place greater value on companies that are technologically savvy. For example, the [Dodge Data report](#) shows that around 40% of contractors are highly engaged with using technology to document safety incidents, analyze job site hazards and complete worker certifications. Because the construction industry is behind the curve in deploying technology solutions, E&C firms can leverage lessons learned from other industries to become more effective in selecting and implementing a technology strategy when choosing what tools to use for their business needs.

In our most recent [annual M&A trends study](#), 48% of respondents reported that the acceleration of technology adoption in the E&C industry will positively impact merger and acquisition activity over the next 24 months, and 46% of companies reported that they were considering acquiring a technology solution or commercializing in-house technology solutions. According to our survey, the verbatim reasons for this increased interest in tech-centric E&C firms include:

- “Companies that are perceived as having a technological advantage will become attractive targets.”
- “The potential for technology to be an enabler for a more disruptive entrant has encouraged private equity firms to become more active than they were in the industry. We believe this will continue to be a driver.”
- “Non/slow adopters of technology will be acquired for their construction capabilities by larger and more tech-focused competitors and GCs rounding out their self-performance portfolio.”

<sup>2</sup> Ibid.

- “Companies unwilling to make technology investments will have to sell at some point.”
- “Companies are targeting competitive advantages through technological advancement and trying to achieve through acquisition.”
- “Companies are looking to gain a competitive edge by leveraging technology for both revenue gains and efficiencies.”

As technology continues to penetrate every corner of the business world, expect to see even more E&C firms diving into the pool, experimenting with their options, and finding new ways to use these tools to manage risks. In fact, within the built environment, E&C firms are already recognizing the importance of effectively deploying technology to help manage organizational risk. For example, FMI’s research shows that 56% of organizations have a technology strategy and road map for implementing technology-based solutions for the business.<sup>3</sup>

## Searching for the ROI

While getting the right risk management tools in place may be as fundamental as buying a software program or investing in mobile devices, finding people who understand how to implement and use those technologies is more difficult. Right now, many E&C organizations need chief information officers (CIOs) or chief technology officers (CTOs) to help manage and implement new technology rollouts across the organization. In fact, recent industry research shows that 67% of E&C firms do not currently employ a CIO—an indication that E&C companies may need to look outside traditional labor pools to recruit the best talent for these types of roles.<sup>4</sup> Credit a lack of internal resources, budgets for new technology rollouts, and the challenge of demonstrating a measurable return on investment (ROI) to decision-makers with creating this dearth.<sup>5</sup>

In the E&C industry, less than 1% of annual revenue (on average) is funneled into research and development or innovation. This makes guaranteeing a good ROI challenging for two reasons:

- For starters, without strategic planning, jumping onboard with a new technology solution may produce less than desirable results and poor companywide implementation. This is especially true for organizations that don’t carefully consider the reasons (or “why”) they are implementing the new processes or technology in the first place.
- Moreover, the organization must invest not only in technology but also in the right people to help guide it through these changes. This can prove to be an expensive proposition, particularly for small to midsized firms. The current labor market and historically low unemployment rates can also impact a company’s ability to hire these C-level positions.

With the pace of innovation increasing, understanding how and when to implement new technology is critical. It’s particularly important for recognizing and managing the risks that may come along with these new technologies.

---

<sup>3</sup> Nonresidential Construction Index. Q2 2018. FMI.

<sup>4</sup> Ibid.

<sup>5</sup> “Using Technology to Improve Risk Management in Construction.” SmartMarket Insight. Dodge Data & Analytics. 2019.

This challenge isn't limited to smaller companies either. In 2018, 55% of E&C firms reported<sup>6</sup> that they were actively seeking new technology solutions, and nearly half of contractors reported frequently measuring overall project risk.<sup>7</sup> More specifically, our research<sup>8</sup> shows how E&C organizations are using technology more strategically to manage organizational risks in areas like resource allocation, productivity and efficiency, safety, financials, design and information security.



## Watching Out for Security Breaches

The more technology E&C companies utilize, the greater the chances of a security breach. And as digitization and interconnectedness continue to increase, these risks grow exponentially. According to recent research,<sup>9</sup> 83% of construction firms reported some type of fraud in 2017. Information theft, loss and attack were the most reported types of fraud (33%) that year in the construction industry, with regulatory breaches and vendor/supplier fraud close behind at 30%.

Cyberattacks on construction firms also increased by 13% in 2017.<sup>10</sup> The firms that don't leverage new tools and technology for managing such risks put themselves in greater danger of a security breach, compared to firms that deploy protective measures against these types of attacks.

This is a particularly big concern for E&C companies, which are prime targets for data breaches because not only do they have their own project data to protect (e.g., building plans, bids and customer data), but also they must guard their employees' sensitive information. The good news is that firms across the built environment are paying more attention to these types of risks and are deploying technology solutions to manage cybercrime and fraud. In this year's AGC/FMI risk study, 26% of organizations recognized cybersecurity as a top future risk (**Exhibit 1**), and another 39% of organizations said that they leverage data analytics to manage risk within their organization.

Managing risks around your organization's data and information is critical, and companies that don't protect their systems (and their customer data) can lose their customers' confidence, loyalty and support—all while losing business over time.

---

<sup>6</sup> Nonresidential Construction Index. Q2 2018. FMI.

<sup>7</sup> Ibid.

<sup>8</sup> 2019 AGC/FMI Industry Risk Survey.

<sup>9</sup> "Global Fraud & Risk Report: Forging New Paths in Times of Uncertainty." 10th Annual Edition – 2017/18. Kroll. 2018.

<sup>10</sup> "Global Fraud & Risk Report: Forging New Paths in Times of Uncertainty." 10th Annual Edition – 2017/18. Kroll. 2018.

## Six Steps to Success

Companies that take a reactive stance to technology adoption will find themselves playing catchup in a world where advanced technologies like the Internet of Things (IoT), artificial intelligence (AI) and machine learning (ML) are playing a larger and larger role. In fact, MIT Sloan Management Review<sup>11</sup> reported that companies that don't use technology to solve their problems are at risk for three times more loss in revenue versus the 25% of firms that are digital disruptors.

To successfully implement new technology solutions, assemble a team that has not only a background working within the built environment and understands the life cycle of project work, but also has strong research and analytical skills to best leverage your data to improve business performance.

It also takes a clear vision of the “bigger picture” to get all stakeholders working from the same playbook. As part of that process, utilize open communication to develop and apply a well-thought-out technology strategy that achieves that vision. Here are six ways to get started:

1. Refer to your company's existing technology strategy to ensure that the initiative aligns with it. If you don't have one, develop one.
2. Develop a business-use case for the technology (i.e., the business “need”), focusing on the details of the problem you are addressing.
3. Review the technology strategy to make sure it supports the firm's overall business strategy. If it doesn't, reconsider the business need before moving forward.
4. Determine the magnitude of the problem and define the scale that the solution must be able to handle.
5. Evaluate the company's culture and how employees will respond to technology as part of the solution.
6. Assess the company's and employees' level of technology and/or innovation fatigue. For example, has the amount of change (and/or new technology or innovation initiatives) been overwhelming to the organization? Does the company have an appropriate change management process when introducing new technology tools into its business processes?

In the end, it's about knowing which risk management technology solutions to use and then applying them to develop a strategic advantage—a mission that requires careful planning and a clear understanding of your organization's overall goals and vision. Once you know what you want and need from your technology solutions, you can begin to extract meaningful insights to help your organization more effectively manage risk.

---

<sup>11</sup> Bughin, Jacques and Nicolas Van Zeebroeck. “The Best response to digital disruption.” MIT Sloan Management Review. 2017.



**Alyssa Menard** is a market research associate with FMI. Alyssa is responsible for conducting primary and secondary research around market trends within the AEC industry and built environment. Her primary objective is to ensure best practices in the collection, management, analysis and interpretation of data for content development within the organization. She can be reached via email at [amenard@fminet.com](mailto:amenard@fminet.com).



**Ryan Howsam, CRIS®, LEED AP BD+C®** is a senior consultant with FMI. Ryan works across many disciplines with specializations in risk management services and strategic planning. He can be reached via email at [rhowsam@fminet.com](mailto:rhowsam@fminet.com).



for the Built Environment

## About FMI

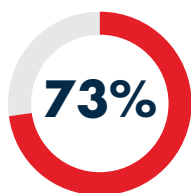
For over 65 years, FMI has been the leading **management consulting and investment banking** firm dedicated exclusively to **engineering and construction, infrastructure and the built environment**.

FMI serves all sectors of the industry as a trusted advisor. More than six decades of context, connections and insights lead to transformational outcomes for our clients and the industry.

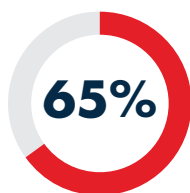
### Sector Expertise

- A/E and Environmental
- Building Products
- Construction Materials
- General Contractors/CM
- Energy Service & Equipment
- Energy Solutions & Cleantech
- Heavy Civil
- Industrial
- Owners
- Private Equity
- Specialty Trades
- Utility T&D

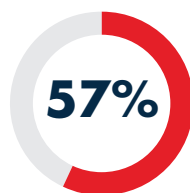
## FMI Client Highlights



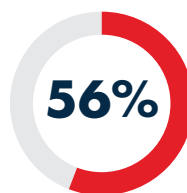
of the ENR  
**Top 400**  
**LARGEST**  
**CONTRACTORS**



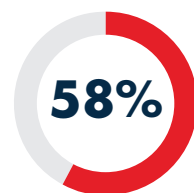
of the ENR  
**Top 200**  
**SPECIALTY**  
**CONTRACTORS**



of the ENR  
**Top 100**  
**DESIGN**  
**FIRMS**



of the ENR  
**Top 200**  
**ENVIRONMENTAL**  
**FIRMS**



of the ENR  
**Top 100**  
**CM FOR**  
**FEE FIRMS**



for the Built Environment

---

**Denver**

210 University Boulevard  
Suite 800  
Denver, CO 80206  
303.377.4740

**Edmonton**

Edmonton, AB  
780.850.2693

**Houston**

1301 McKinney Street  
Suite 2000  
Houston, TX 77010  
713.936.5400

**Phoenix**

7639 East Pinnacle Peak Road  
Suite 100  
Scottsdale, AZ 85255  
602.381.8108

**Raleigh** (headquarters)

223 S. West Street  
Suite 1200  
Raleigh, NC 27603  
919.787.8400

**Tampa**

308 South Boulevard  
Tampa, FL 33606  
813.636.1364

[WWW.FMINET.COM](http://WWW.FMINET.COM)