ABC'S 2021TECH REPORT









ABC's Tech Alliance was built to help drive ABC members' ability to develop people, win work and deliver that work safely, ethically and profitably for the betterment of the communities in which ABC and its members work through improved utilization of technology. The alliance is a hand-selected group of 15 construction technology companies that add inherent value for ABC members and position ABC as a leading association for construction technology needs. These companies will collaborate on technology resources for the association, including a beta testing/free technology program and educational webinars focused on mid-sized contractors, in addition to providing chapters with access to companies supporting ABC's contractor members.

TECH ALLIANCE 2021 - 2022



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ABC CONSTRUCTION TECHNOLOGY AND INNOVATION COMMITTEE

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Founded on the merit shop philosophy, ABC is a transformational leader in advancing excellence in the construction industry. Our strategic focus includes helping our members to achieve world-class safety and deliver state-of-the-art education and career opportunities for the industry's talent so they can accomplish their career dreams.

In order to compete based on merit in a fair and open competitive environment, our members have to present the most robust value proposition to their clients.

ABC has invested in our construction technology and innovation strategy to help our members select the best construction technology available to them. This effort will, in turn, create the conditions for construction companies to innovate, differentiate, attract and educate their top talent and ultimately win and deliver their work safely, ethically and profitably for the betterment of the communities in which they work.

Michael Bellaman, President and Chief Executive Officer Associated Builders and Contractors



I am confident the 2021 ABC Tech Report will help you on your journey to innovation. Please feel free to share the report widely with your teammates, specialty contractors, clients and competitors. If we choose to lead, if we choose to commit and if we choose to innovate, together we will create the conditions for all to do their work without incident, be more profitable and win more work.

Matt Abeles, Vice President, Construction Technology and Innovation, Associated Builders and Contractors

ABC'S 2021**TECH** REPORT

Executing on ABC's commitment to world-class performance on jobsites requires ABC member contractors to continuously innovate. To be a top performer in safety and win and deliver more work, contractors need to keep their fingers on the pulse of innovation. ABC provides its members numerous resources on technology and innovation to help them build the workforce of the future. This includes the inaugural Tech Report, the annual ABC Safety Performance Report, the Tech Alliance, construction technology education, the Tech Marketplace and more.

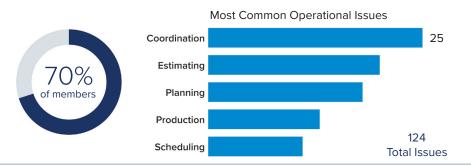
The technology survey was conducted from March through May 2021. The response rate was .88% of all ABC contractor members. The data was analyzed by the Construction Technology and Innovation staff, as well as members of the Construction Technology and Innovation Committee.

These tools provide leaders with a roadmap to understand how technology and innovation can help their businesses.

The Top Challenges Contractors Are Currently Facing That Technology Could Help Solve

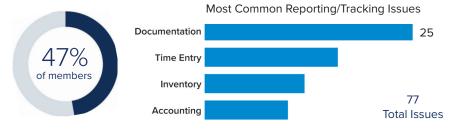
Operational

An overwhelming majority of member respondents listed an operational issue as one of their top three challenges. Of the operational issues listed, coordination of projects, estimating and planning are the top three.



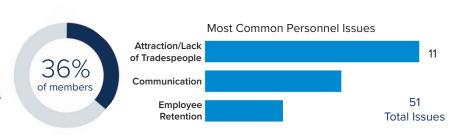
Reporting/Tracking

Managing and tracking documentation accounts for 32% of the reporting/ tracking Issues. Nearly half of all respondents listed reporting/tracking issues as their top three challenges.



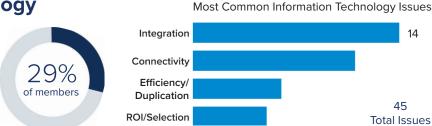
Personnel

The lack of skilled craft professionals was apparent in the survey results. More than one-third of all respondents listed personnel issues as one of their top three issues. The respondents had more issues attracting new talent (22%) than they had retaining employees (7%).



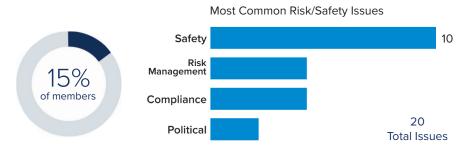
Information Technology

Synergy is a common thread between operational and IT issues. Between operational and IT issues listed, integration accounts for 31%. Furthermore, IT issues were reported by 29% of the respondents.

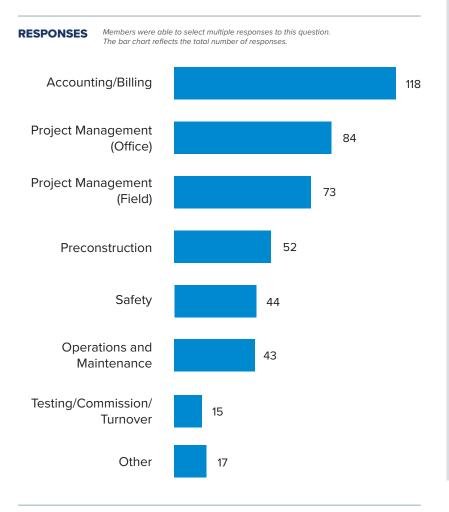


Risk/Safety

Safety is a core value of ABC members. Fifteen percent of member respondents reported having risk/safety issues. However, risk management and safety issues combined were reported as an issue by 50% of respondents.



What Technology and/or Software Are Contractors Currently Using?



INSIGHTS

- ► Accounting and billing software is used by most member respondents, with 95% relying on third-party software.
- ▶ More than half of member respondents rely on project management software, with 68% using it for office management and 59% using it in the field.
- ▶ About one-third of member respondents use operations or maintenance software.
- ▶ Only 12% of member respondents rely on software for testing, commission or turnover services, likely due to the high level of outsourcing.
- ► Nearly all member respondents rely on specialized accounting and billing software.



"I hope that this report and future versions of it can be a resource that allows members of ABC to skip a few steps when evaluating software and assessing key players in the industry that can provide real-world technical solutions. One of the biggest challenges with new products is implementation, so member feedback, participation and collaboration could also be a tremendous benefit to readers of this report."

- Joel Gray, Construction Services Manager, Nabholz

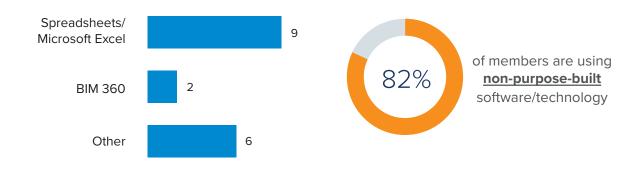
TAKEAWAY

Nearly all member respondents are using technology and software to help their company operate more effectively. Of the technology being used, almost all of member respondents rely on specialized accounting and billing software (95%). Member respondents are also heavily relying on technology for project management for both office and field applications.

Which Testing/Commission/Turnover Technology or Software Are Contractors Currently Using?

RESPONSES

Members were able to select multiple responses. The bar chart reflects the total number of responses while the donut chart reflects the percentage of members that are using non-purpose-built software in any capacity.



Are Firms Currently Outsourcing Services in Any of the Following Categories of the Business?

RESPONSES Members were able to select multiple responses. The bar chart reflects the total number of responses.



- "Many of the larger firms have been able to afford being on the cutting edge of technology in construction. This report will allow smaller companies to evaluate quality products and make better purchases. The Tech Alliance is going to help make technology purchases more affordable and allow us to add technology to other areas of our company. I am looking forward to what ABC and the Tech Alliance will bring to the construction industry in the future."
- Calvin Williams, President and Chief Executive Officer, Construction Contracting Services Inc.

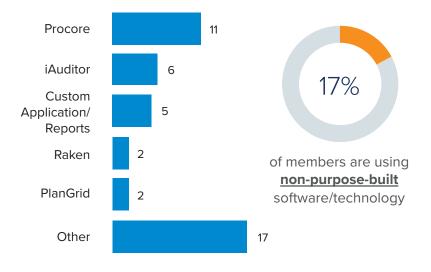
TAKEAWAY

Eighty-two percent of respondents are using non-purpose-built software (spreadsheets) to manage the testing/commissioning/turnover process on projects. Furthermore, the vast majority of respondents are outsourcing their testing/commissioning/turnover process either due to the lack of software options, research and development and/or low awareness of the technology options available.

What Safety Technology or Software Are Contractors Currently Using?

RESPONSES

Members were able to select multiple responses. The bar chart reflects the total number of responses while the donut chart reflects the percentage of members that are using non-purpose-built software in any capacity.





"The possibility for technology in safety is increasing exponentially. There is much work going on with robotics, sensors, data collection, wearables, artificial intelligence and augmented reality/virtual reality. In an environment where qualified craft workers are hard to come by, technology holds the key to improving the safety on sites, which leads to improved productivity as well. As a company, we have implemented the use of handheld data collection devices, as well as drones, and are continually evaluating new technologies."

- Scott A. Knowlen, Director of Health, Safety and Environmental, CIANBRO

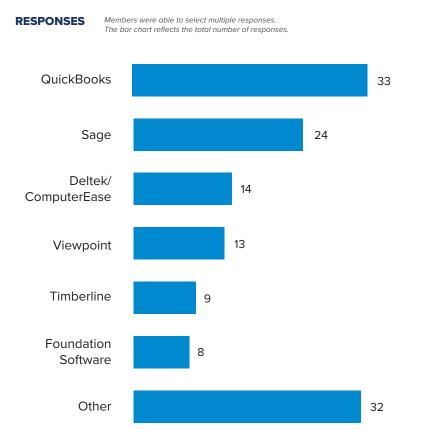
TAKEAWAY

Dedicated safety software can help manage the needs of a safety team. Software can efficiently and securely collect toolbox talks, task hazard analysis, worker certifications, accident investigations, loss runs and claims information. There are opportunities to create best practices for integrating technology into safety programs and reducing reliance on non-purpose-built solutions for safety. The top five results further highlight the preference by respondents for purpose-built safety software.

INSIGHTS

- ▶ Most member respondents rely on third-party firms to provide testing/commission/ turnover and safety services, suggesting a high degree of specialization may be required for these services.
- ▶ While they may rely on software to manage accounting or project management services, most member respondents complete these services internally.
- ▶ Procore is the most-used safety platform.
- ▶ Most members are using purpose-built software for their safety needs.
- ▶ Eighty-three percent of member respondents are only using purpose-built software to address their safety needs.
- ▶ Only two respondents listed purpose-built software solutions. This could be driven by the respondents not knowing what is available or that purpose-built software is not adaptable enough to meet the varied needs of members.
- ▶ There appears to be an opportunity for ABC to provide a platform where members and the industry can share information about purpose-built software solutions that are being used in today's construction environment.
- ▶ ABC members represent all sectors of the commercial construction market. This diversity in perspectives demands a diverse set of tools to respond to their individual needs. Based on the survey results, the top solutions among respondents are generic programs such as spreadsheets for managing one of the most important phases of a project.

What Accounting/Billing Technology or Software Are Contractors Currently Using?





"Our use of technology has evolved over the years and is now an integral part of everything we do. Real-time data collection and transmission between the jobsite, office, design team and our clients has improved our ability to run our projects efficiently, greatly enhanced our ability to collaborate, and has saved us hundreds of hours per year in the organization of critical data."

- Stephanie Schmidt, President **Poole Anderson Construction**

INSIGHTS

- ▶ QuickBooks® is the preferred solution for respondents, followed closely by Sage.
- ▶ Almost all of the survey respondents are using some software solution for their accounting and billing.



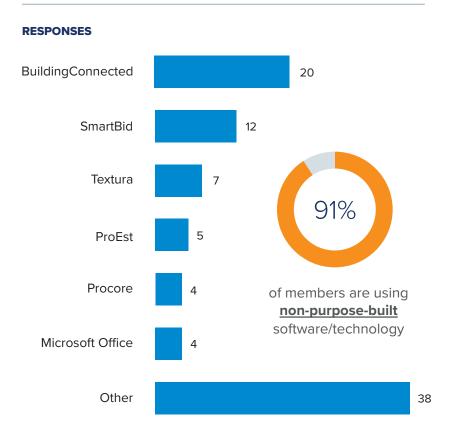
"As one of the foundational pillars of our organizations, proper accounting software can produce the data needed to successfully manage our businesses. While accounting principles remain constant, the technology available to manage accounting functions is continually changing. Companies that embrace technology will set themselves apart from their competitors."

- Willie LaFavor, Chief **Executive Officer and** President, Contractor Service and Fabrication

TAKEAWAY

Enterprise resource planning software solutions are automated business processes that provide insights on internal controls drawn from a central database. Many focus on accounting and human resources. These software products are helpful with onboarding new hires, paying employees, withholding taxes, vacation accrual and many other accounting needs. QuickBooks (29%), Sage (22%) and Deltek + ComputerEase (12%) are the top three choices among respondents.

What Preconstruction Technology or Software Are Contractors Currently Using?



INSIGHTS

- ▶ BuildingConnected by Autodesk is the preferred solution for survey respondents.
- ▶ 91% of members are only using purpose-built software/technology for preconstruction.
- ▶ ABC members have a wide-ranging view of what preconstruction services are. Some respondents focused on business functions during the estimating/ procurement process and others focused on functions between being awarded a project and the start of construction.



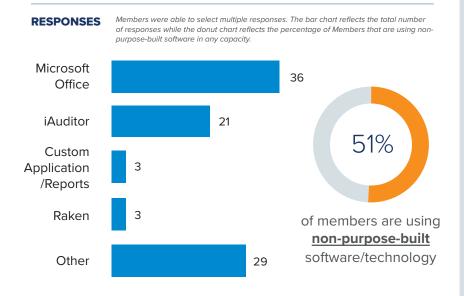
"Our online estimating software has revolutionized the efficiency of our estimating processes. We are able to get more estimates to our general contractors because the software organizes the calendar, take-offs and proposals in one place. The web-based feature of the software makes it easy to use remotely."

- Eli Ace, Chief Visionary Officer, Nexen Construction

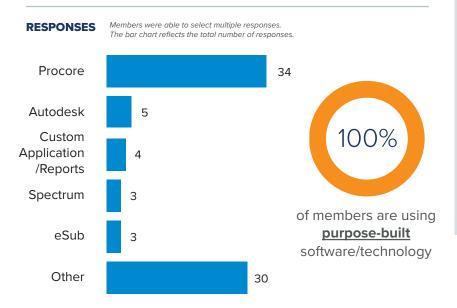
TAKEAWAY

Companies in the construction space need a way to quantify and price the services they offer. Some solutions simply quantify the items the contractor is bidding on in a set of contract documents. More complex systems can quantify the items that will be bid on, calculate the estimated labor and materials, complete the bid and help in managing the work once it has been contracted.

What Office Project Management Technology or Software Are Contractors Currently Using?



What Field Project Management Technology or Software are Businesses Currently Using?



INSIGHTS

- ► Half of respondents are using Microsoft® software (spreadsheets) for office-related project management functions.
- ▶ One-hundred percent of respondents are using purpose-built software for field project management.
- ► The disparity between use of purpose-built software for field project management and nonpurpose-built software for office project management may reveal a focus of members on their innovation efforts and an area of their business that can return the largest productivity benefits.
- ► Although Microsoft Office software functions well for basic office project management tasks, there is a real opportunity to enhance collaboration and sharing of information with purpose-built project management software that some members are missing out on.

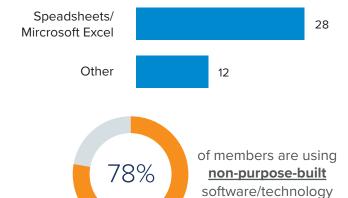
TAKEAWAY

Microsoft Office and Procore are leading the way when it comes to project management software in current use. The major difference between office project management and field project management is the use of purpose-built software. Using purpose-built software helps ABC members win work and deliver that work safely, ethically and profitably. Outside of that, member respondents' choices follow an industry trend of being fragmented, relying on a broad range of products to stay on top of daily tasks for managing projects.

What Operations and Maintenance Technology or Software Are Contractors Currently Using?

RESPONSES

Members were able to select multiple responses. The bar chart reflects the total number of responses while the donut chart reflects the percentage of members that are using nonpurpose-built software in any capacity.



INSIGHTS

▶ Respondents may be overly reliant on Microsoft Excel when purpose-built software exists that may be more effective for them.



"Our industry is composed of problem solvers. We build America. When a tool didn't exist to solve a problem, our users put in the sweat equity to build a spreadsheet that resolved their issues to the best of their ability. This investment has formed an emotional barrier against solutions that aim to replace the spreadsheet. However, there are many limitations to those spreadsheets that obstruct true innovation. For the most part, spreadsheets are static silos of data that can't be applied to future projects and problems."





"At Henley, we use project management software that helps with daily communication and record-keeping among our team, as well as with owners, architects and subcontractors, allowing us to collaborate and communicate project information in a highly efficient manner. Having this technology in place allowed us to remain in contact and work proficiently throughout the recent pandemic as we had to rapidly adjust to new arrangements among these various team members."

- Buddy Henley, President, Henley Construction

TAKEAWAY

For context, operations and maintenance is defined as maintenance and tracking of a contractor's international operations (e.g., fleet, buildings, etc.). Nearly 80% of member respondents are using non-purpose-built software (e.g., spreadsheets) to manage operations and maintenance processes. This illustrates that the vast majority of respondents intentionally tailored a solution to fit their needs, or they are unaware of the purpose-built solutions that are available to the industry. Of the other responses given, the technologies named have very different functions, which speaks to the diverse services member respondents provide.

Are Members Using Purpose-Built Software?

The member responses provided insight into the use of purpose-built vs. non-purpose-built software for the different aspects of their business functions. Purpose-built software can be defined as software that was designed to address specific business functions (e.g., safety, accounting, estimating, project management, etc). Non-purpose-built software is general software, such as Microsoft Office, that is adapted by a user to serve a specific business function.

SURVEY QUESTIONS	% of Members Using Purpose-Built Vs. Non-Purpose-Built Technology Vs. Members Using Both	% of Responses Purpose-Built Technology Vs. Non-Purpose-Built Technology
What Safety Technology or Software Are Contractors Currently Using?	17 13 97 	16 8 4
What Accounting/Billing Technology or Software Are Contractors Currently Using?	100	100
What Preconstruction Technology or Software Are Contractors Currently Using?	9	4 96
What Office Project Management Technology or Software Are Contractors Currently Using?	51 17 66	39 61 61
What Field Project Management Technology or Software Are Contractors Currently Using?	100	100
Which Testing/Commission/ Turnover Technology or Software Are Contractors Currently Using?	82 45 64	53 <u>47</u>
What Operations and Maintenance Technology or Software Are Contractors Currently Using?	78 8 31	73 28
List Up to Three Software Programs or Technologies That Add the Most Value to the Company.	28 26 28 98 98 98	12 88

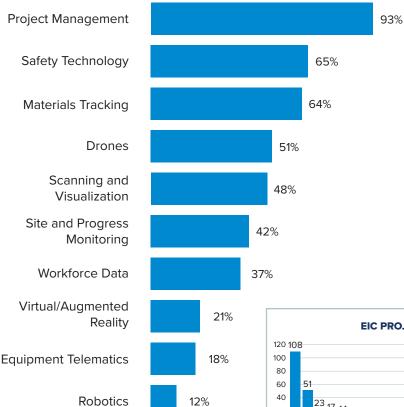
Member respondents are predominately using purpose-built software for core functions, such as safety, accounting and project management (field). In addition, the majority of software that is adding the most value is purpose-built. However, there is less purpose-built software used for project management (office), testing/commission/turnover and operations/maintenance.

Excellence in Construction® Award Winners Used More Technology Than Survey Respondents



RESPONSES

The ABC Excellence in Construction® Awards honor the nation's most innovative and highquality construction projects and safety programs. These were the highest-performing ABC member projects in 2021. EIC winners reported using the following technologies at higher rates than member survey respondents.



10%

INSIGHTS

- ▶ These were the highest performing projects in ABC's membership in 2021.
- ▶ Out of 267 Excellence in Construction Award project nominations, 93% of projects were built using management technology.
- ► Eighty percent (213) of the projects have contract value of \$47 million or less.
- ▶ More than 50% used drones, materials management, safety and/ or project management technology.



TAKEAWAY

Tool Telematics

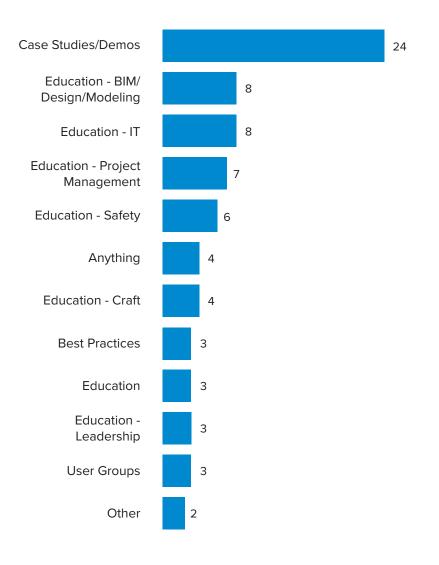
Construction innovation is ticking up among contractors of all sizes, with increased adoption, investment and a need to innovate based on factors like labor shortages, materials costs and the speed of innovation. According to a recent report from McKinsey and Co.,* from 2014 to 2019, investors poured \$25 billion into engineering and construction technology, up from \$8 billion during the previous five years.

To be a top performer, ABC members need to identify specific gaps they have in their businesses so they can choose, implement and adopt new technologies. Nearly all contractors that qualified to compete for ABC's Excellence in Construction Awards, the majority of them small to mid-sized contractors, used technology in their best-in-class projects and had a higher technology use rate than the landscape of ABC contractor member survey respondents. In many cases, this requires companies to identify technology champions from within, as most small and mid-sized contractors don't have a dedicated chief information officer or chief technology officer.

^{*}Report from McKinsey and Co: "Rise of the platform era: The next chapter in construction technology." View the report here: tinyurl.com/5cs3xkuj

What Technology Resources Could ABC Provide That Would Add Value to Contractors?

RESPONSES



TAKEAWAY

Nearly three-quarters of respondents would like to receive more support from ABC national via technology education, webinars and other resources. This shows that not only are member respondents interested in technology, they are also interested in implementing it in their companies.



INSIGHTS

- ► There is a passion for learning more about construction technology among ABC members.
- ► ABC technology initiatives should be tailored to the needs of members.
- ► ABC Tech Alliance and Marketplace resources should be the first stop for members who want to learn about construction technology.

RESOURCES

ABC UPCOMING WEBINARS

abc.org/academy

CE UPCOMING WEBINARS

webinars.constructionexec.com

ABC TECH MARKETPLACE

abc.org/techmarketplace

ABC TECH ALLIANCE NEWS

abc.org/technews

"In an effort to make ABC contractors safer and more profitable and help them win more work, ABC has made an investment in construction technology resources, partners, committees, educational opportunities and insights to help our members thrive in the construction industry."

Steve Klessig, Vice
 President of Architecture
 and Engineering/
 Co-Owner, Keller Inc.

Have Contractors Implemented New Technology or Software in the Past Two Years?

RESPONSES



of members have implemented new technology in the past two years

INSIGHTS

- ► The majority of member respondents are engaged in technology adoption today.
- ▶ Member firms are actively adapting and innovating to improve their businesses with software implementation as a key strategy.



"Pioneer has added a lot of new technology during the past year. Some of it was adopted due to the challenges of working with COVID-19 protocols and having to work remotely. While some of the change was easy to adopt, some of it was more difficult, and I had to keep pushing and committing to never give up. I was successful when I was taking my time and making myself available so that team members could ask questions. I feel that if the teams hear and see my passion for new technology, it will become contagious, and they will be more likely to adopt new things."

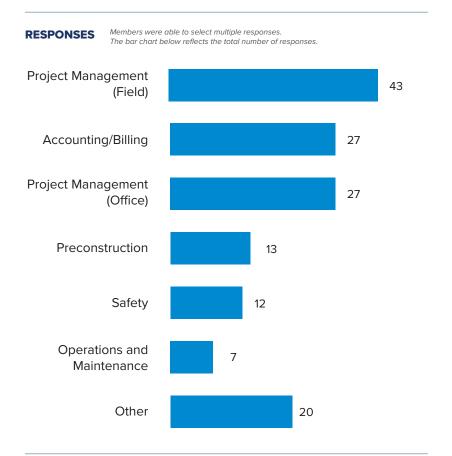
- Adam Gorlewski, Construction Technologist, Pioneer



TAKEAWAY

The majority (72%) of member respondents indicated that they have implemented new technology or software in the last two years, which indicates that they are heavily invested in innovating. One resource for finding new software and technology is Construction Executive magazine. Check out latest news in the tech field at ConstructionExec.com and in the CE This Week newsletter

What Category or Categories Have Contractors Added?



INSIGHTS

- ▶ Project management software is an evolving category, with many member respondents adopting new solutions.
- ▶ Many member respondents are still focused on improving the core functions of their businesses before moving to the peripheral functions.
- ► Approximately 20% of all respondents have changed their accounting and billing software system in the past two years.
- ▶ Preconstruction and safety are the focal point solutions that saw increased adoption over the past two years.



"Construction technology is reshaping the industry, and ABC is focused on informing and connecting members with technology solutions that make worksites safer and improve productivity. The efficiency gains achieved through the implementation of technology will be a key piece in bridging the talent gap."

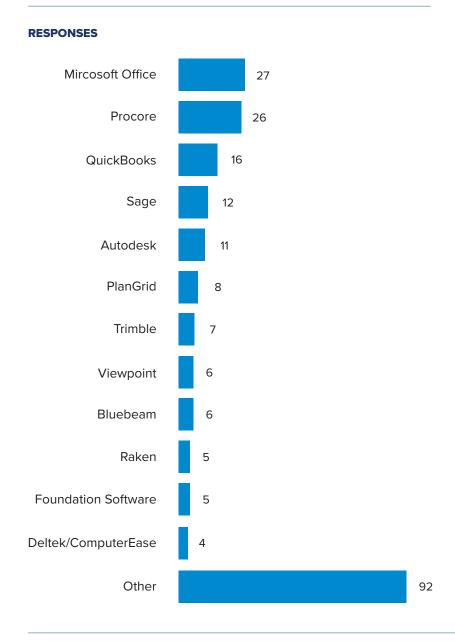
- Norm Brady, President, ABC Western Michigan Chapter

TAKEAWAY

Software platforms for project management and accounting have been prime focus of implementation teams during the past two years.

As the industry becomes more familiar with how technology can support standardization, automation, productivity, risk mitigation, project visibility and more, interest in software will only grow, especially as newer technologies mature.

List Up to Three Software Programs or Technologies That Add the Most Value

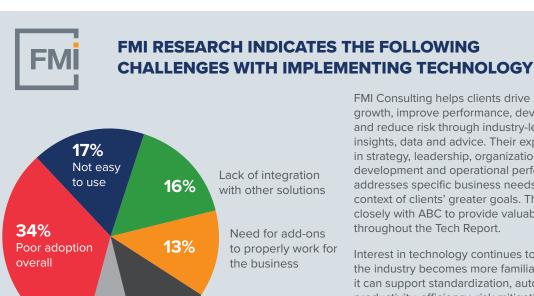


INSIGHTS

- ▶ There were more than 81 different technology solutions identified in responses to this question, which points to the diverse software/ technology solutions that are adding value for ABC members.
- ▶ The majority of member respondents are seeing added value through the implementation of software in operations. Although there is diversity in the software/ technology that is adding value for members, there is commonality around operations/coordination/ collaboration.
- **▶** Communication and coordination are critical success factors in the construction industry, and software technology is helping members improve this area of their businesses.

TAKEAWAY

The top 10 software programs/technologies identified in responses to this question represented more than 50% of the responses. These responses were related to two main categories: 80% operations and 20% reporting/tracking. The operations responses were comprised of three subcategories: 76% operational coordination, 13% estimating and 11% design. The reporting/tracking responses were comprised of two subcategories: 79% accounting and 21% documentation.



12%

8%

Other

Solution did not

deliver as stated

FMI Consulting helps clients drive profitable growth, improve performance, develop talent and reduce risk through industry-leading insights, data and advice. Their expertise in strategy, leadership, organizational development and operational performance addresses specific business needs within the context of clients' greater goals. They worked closely with ABC to provide valuable insights throughout the Tech Report.

Interest in technology continues to grow as the industry becomes more familiar with how it can support standardization, automation, productivity, efficiency, risk mitigation, project visibility and more. FMI's research highlights the challenges contractors face when implementing technology. This data further expands on the trends observed when members listed the top challenges they are facing that technology could help solve.

FINAL THOUGHTS

ABC's inaugural technology report is a member benefit and a resource to help contractors decide which areas of their businesses are ripe for tech upgrades and the solutions that are most widely used. Contractors are finding most of their inefficiencies and opportunities to improve within operations, specifically in project coordination, planning, estimating, production and scheduling.

While this study finds that technology is now becoming ubiquitous throughout contractors' business and operations workflows, nonpurpose-built technologies are being adopted and adapted in very specific functional areas beyond the technologies' core use case. Still, the majority of contractors seem to be focusing on core solutions such as project management and accounting tools, which topped the list of the solutions most recently implemented. Yet, many general purpose technologies, such as ERPs, are commonly only used for their accounting functions.

This study also points out that, though there are a few dominant software companies such as Autodesk, Microsoft, Procore and Trimble used across tech categories, there are many other solutions in use in the industry. This situation of active technology use, extension of tech beyond its purpose and an immense landscape of solutions speaks to the early stage of the industry's digital maturity. As contractors and the industry continue to mature in their understanding of their needs, software capabilities and an evolving definition of a high-performing technology stack, future reports will uncover deeper insights about why contractors are pursuing technology solutions in a particular way, pace or sequence.

ABC members stated that they learn about technology best through demonstrations and case studies. ABC will continue to help educate members on technology through these means, this report and through the ABC Tech Alliance.

RESOURCES

ABC TECH ALLIANCE

abc.org/techalliance

ABC TECH MARKETPLACE

abc.org/techmarketplace

CONSTRUCTION EXECUTIVE MAGAZINE

constructionexec.com/technology

TABLEAU PUBLIC

public.tableau.com

STORYTELLING WITH DATA: A DATA VISUALIZATION GUIDE FOR BUSINESS PROFESSIONALS

storytellingwithdata.com

PROCORE/FMI CONSTRUCTION TECHNOLOGY INDUSTRY REPORT ("WHERE CONSTRUCTION FIRMS ARE FINDING VALUE")

procore.com/fmireport

AUTODESK/FMI INDUSTRY REPORT ("TRUST MATTERS, THE HIGH COST OF LOW TRUST")

go.construction.autodesk.com/fmi-report

DODGE SMART MARKET REPORT ("PREFABRICATION AND MODULAR CONSTRUCTION")

tinyurl.com/4e24xez4

MCKINSEY AND COMPANY ("RISE OF THE PLATFORM ERA: THE NEXT CHAPTER IN CONSTRUCTION TECHNOLOGY")

tinyurl.com/5cs3xkuj

For a digital copy of the report, more resources, more in-depth data and to participate in future surveys, please scan the QR code below.

ABC'S
2021TECH
REPORT

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ABC'S 2021**TECH REPORT**



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