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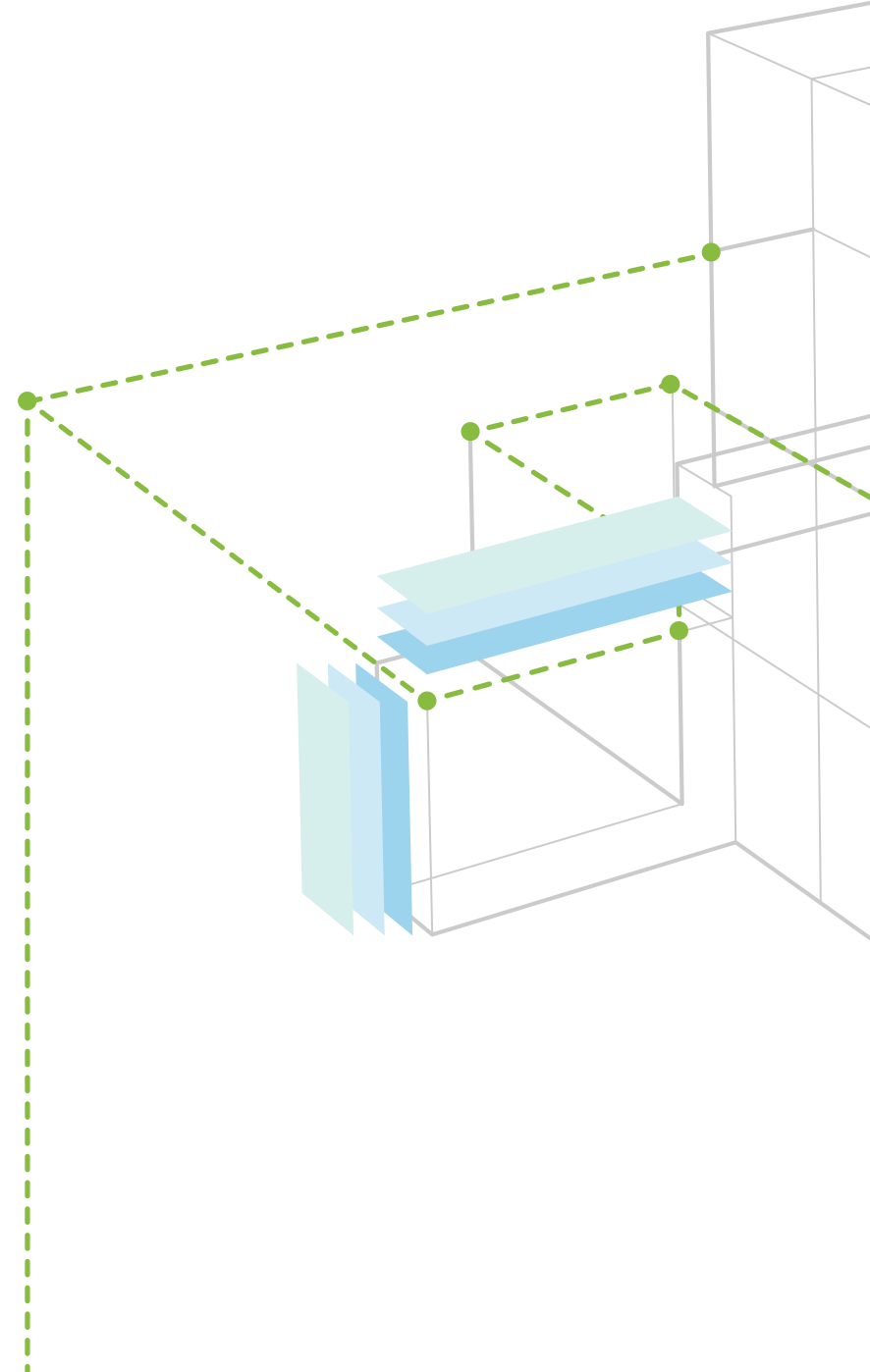
Winning with Digital Preconstruction:

How Leaders Can Drive Digital Transformation



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Introduction

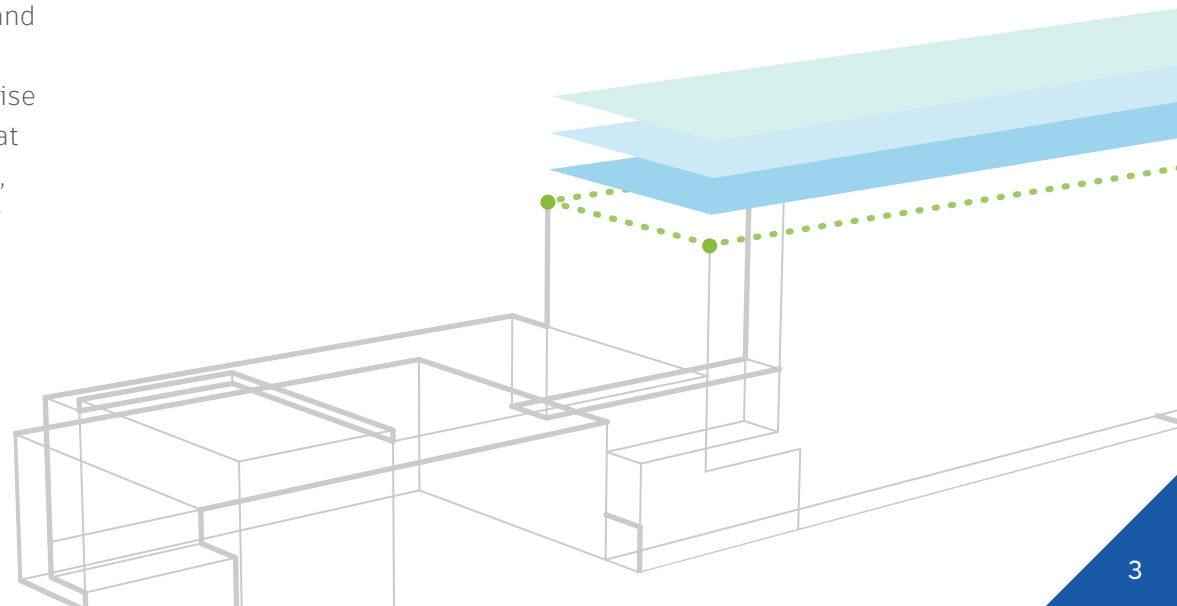
The construction industry is rapidly transforming. According to a survey by AGC and FMI, 58% of construction professionals expect to see more technology-driven change within the next five years than there has been in the last 50 years. To stay ahead, preconstruction teams must adapt to the industry's digital future.

To better understand where they stand today, we surveyed over 1,000 preconstruction professionals about their relationship with technology. With only 37% of respondents reporting that they're taking full advantage of the preconstruction software available to them, it's clear that successful digital transformation requires more than purchasing software.

When asked about the biggest roadblocks to adopting new technology, the #1 answer was interrupting current projects and objectives (24%), followed by resistance to adoption by end users (18.2%) and lack of training (15.9%). Still, teams recognise the value of making a change: 62% of respondents agreed that adopting new technology leads to more successful outcomes, and 63% believe that adopting new technology will give their company a competitive edge.

There's also a gap between individual and organisational desire for change. Preconstruction professionals look to technology to improve the way they work: 74% of respondents said they're open to learning about software that will help them do their jobs more effectively. However, only 18% feel their company is eager to adopt new software.

Facing these challenges, what does it take to achieve full-scale digital transformation in preconstruction? There's no quick fix or easy solution, but by focusing on three key categories—technology, people, and process—preconstruction leaders can maximise the value of their software.





Spotlight:

Sellen Construction

When evaluating preconstruction software, Sellen Construction focused on finding tools that would offer better collaboration, knowledge sharing, predictive analytics, and improved risk management. In the process, they also created what they called their “Digital Core”—a centralised technology stack that would help standardise workflows across teams.

After Sellen implemented their “Digital Core,” the company prepared for the next step of digital transformation: adoption. To be successful, they knew they needed a plan. Thinking creatively, Sellen turned the process of adoption into a literal game. The team created a board game with visual representations of the new “Digital Core.” Sellen used this game to engage and train employees on how to implement technology throughout the entire project lifecycle.

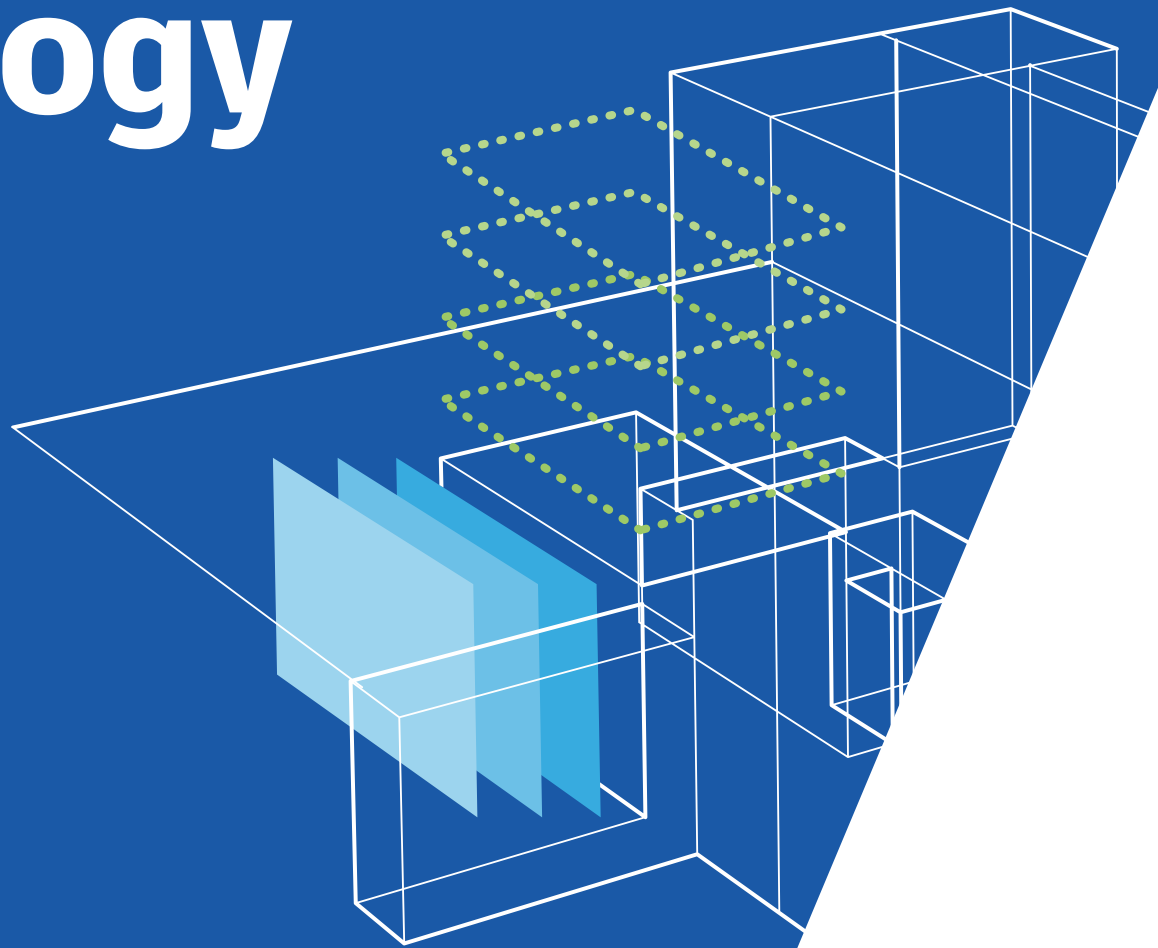
Sellen’s adaptive nature and proactive approach have led to incredible benefits, from improved collaboration to lowered risks. Sellen now enjoys consistent workflows across projects and can connect project data in a meaningful way that will shape the company’s future.

Digital Transformation in Preconstruction:

Technology

Poor preconstruction planning can cause budget issues, rework, and project schedules gone completely awry. At the same time, inefficient, paper-pushing processes waste time and hurt a company's bottom line. That's why technology has become crucial to ensuring both the preconstruction phase and a project itself runs smoothly.

A digitised preconstruction process has a cascading effect that sets the rest of a project up for success. With digitised preconstruction, teams can more easily gather project data, allowing every project partner to work together to more successfully predict outcomes and automate workflows. This makes it easier to plan, saves time and money, and helps eliminate needless risk upfront.

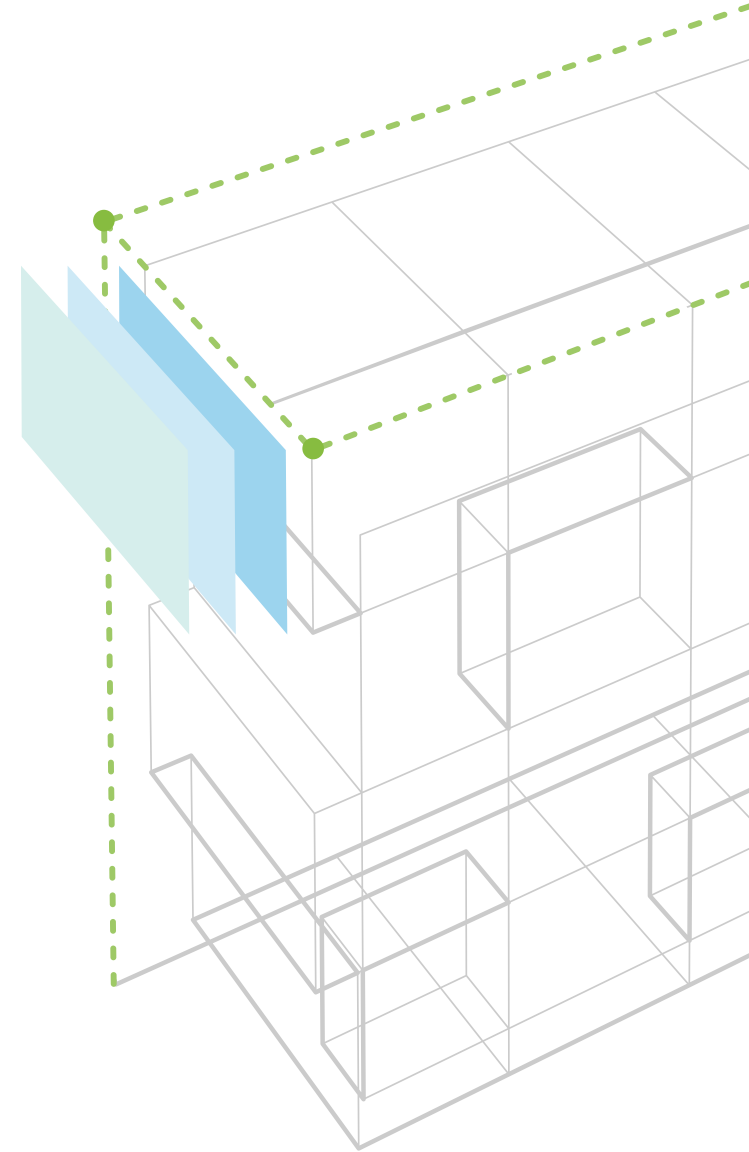


Approaching Digital Transformation

Even for construction companies who have already “gone digital,” many still struggle to capture the full benefits of technology. In [one McKinsey survey](#), just 16% of respondents said their organisations’ digital transformations had delivered sustainable performance improvements. Common challenges included unclear definitions of what digital means, an indistinct idea about what the transformation should accomplish, and poor integration of digital tools with business processes.

With countless software products available to today’s preconstruction professionals, companies must approach digital transformation carefully, shifting their focus beyond isolated pilots and cover up solutions. When companies fail to adopt technology, it’s often because they’ve chosen a solution that’s a poor fit for their end users. These companies deploy cutting-edge technology before they figure out how those tools can improve their operations or fit into their larger technology stack.

Before digital transformation can begin, preconstruction leaders must identify how new technology will improve existing workflows.





Choosing the Right Preconstruction Solution

What does the right technology look like for today's preconstruction teams? When evaluating software, leaders should focus on fixing challenges rather than installing the hottest IT solution of the week. According to McKinsey, "A tech-first approach can lead to digital 'organ rejection,' whereby a solution fails to deliver visible benefits, and the workforce, noticing this, does not adopt it." Identifying real frustrations from end users helps center each use case on a real business need while suppressing the impulse to chase technology trends.

The right digital preconstruction solution should be innovative, too: simply "going digital" is not enough. For example, although email is digital, it's easy to lose track of and leads to gaps in communication. Similarly, while Excel spreadsheets are a digital solution, they do not prevent siloed information.

In contrast, cloud-based software addresses common issues with communication and collaboration by allowing team members to access the same data in the same place.

How do you primarily collaborate with colleagues on preconstruction related tasks?

Via Email - We send documents back and forth

53%

Via online documents - we edit excel, work and other documents virtually together

29%

Via software - we use specific preconstruction tools

14%

Via mail - we send physical documents back and forth

2%



Preconstruction Workflows

Preconstruction workflows have historically been riddled with data silos, leading to tedious and error-prone processes. Cloud-based preconstruction software provides a way to break down these silos. Everyone operates from a single source of information, allowing all team members to stay connected throughout the entire project lifecycle.

Preconstruction leaders should look for cloud-based software that enables easier data transfer and collaboration. True digital transformation can have a positive effect on all the following preconstruction workflows:

- **Model Coordination:** Cloud-based systems allow for better collaboration between project partners and eliminates costly rework
- **Quantification:** 3D technology, when implemented well, allows for more accurate takeoffs, creating fewer budget errors
- **Estimating:** Real-time data creates precise estimates that no longer rely on outdated cost tables
- **Bid Management:** With a network-based solution, finding the best trade partners for projects becomes faster and easier
- **Qualification:** Modern software provides accurate and detailed information about potential trade partners, helping teams mitigate risk upfront

Ideally, a preconstruction solution should offer integrated systems over siloed tools and data. With the right technology partner, teams will get access to the best solution for every workflow, as well as technology that continues to improve as the industry advances. Seeing the big picture and focusing on how new tools can improve operations will translate to lasting benefits for preconstruction teams.

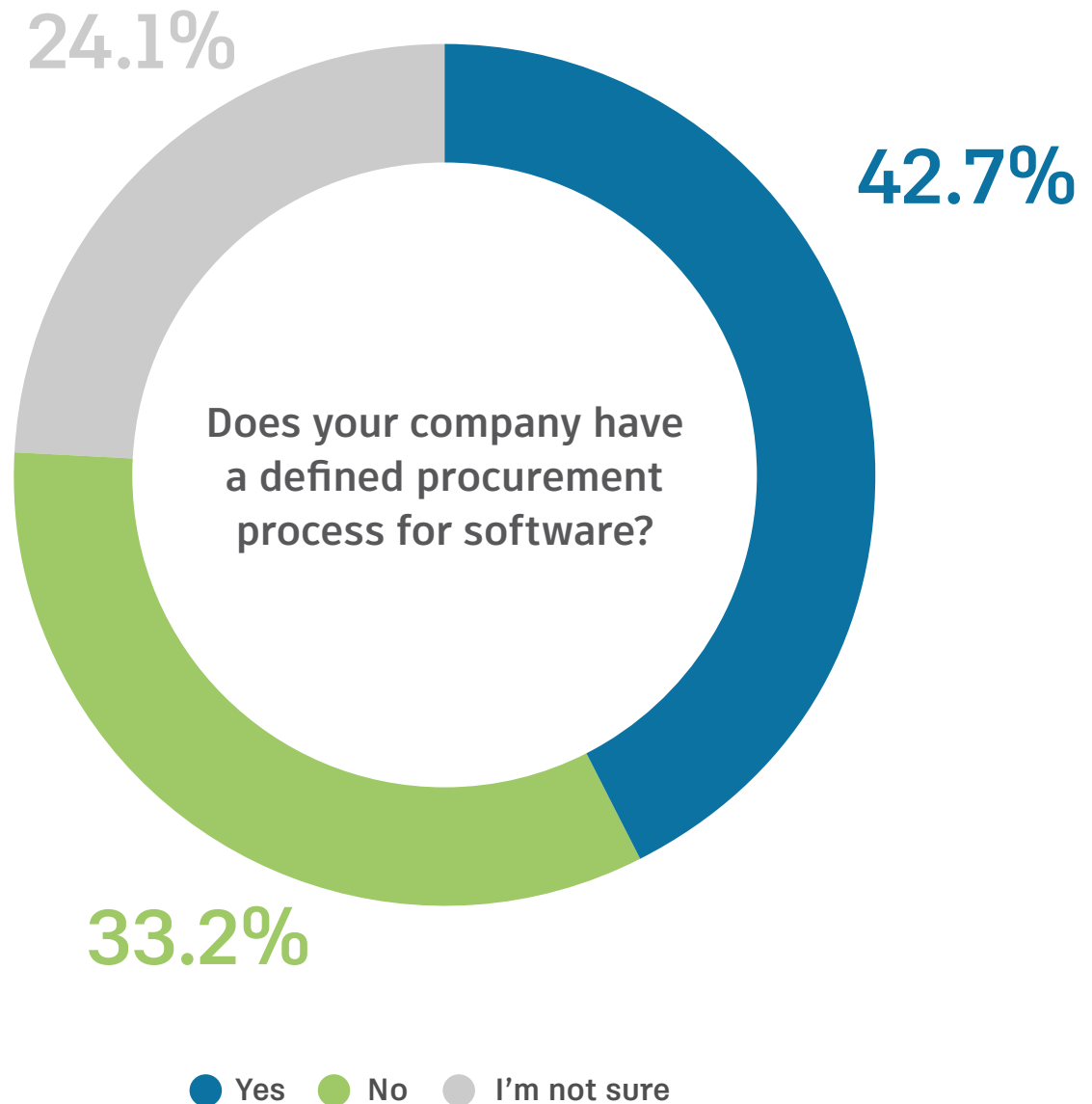


The Procurement Process

Even when a preconstruction leader recognises the need for a new digital solution, navigating the procurement process can be a challenge. Many construction companies don't have a clear process for purchasing new software, with 57% reporting that they either don't have a defined procurement process or aren't sure what it is.

The lack of a clear procurement process can make preconstruction leaders avoid implementing new technology altogether. However, proactively evaluating processes, as well as how they could be improved by technology, allows a team to get ahead of problems before they arise.

Developing a proactive approach begins with allowing individual contributors throughout the organisation to weigh in on the need for new technology. Remember: while 74% of preconstruction professionals said they're open to learning about software that will help them do their jobs more effectively, only 18% feel their company is eager to adopt new software. When the conversation is opened to a broader group, it proves a need and lays the groundwork for implementation.



Usually, the ultimate responsibility for evaluating preconstruction software falls on the head of preconstruction (24.7%) or department leads within the preconstruction team (36%). The following ideas can help preconstruction leaders build a more cohesive and proactive structure for evaluating and procuring software.

1. Do an annual software audit.

This provides a forum for users to raise a red flag if they're seeing process issues in their workflows and provide recommendations for software to evaluate. It also gives the team a clear avenue for kicking off the procurement process with leadership.

2. Provide concrete benefits of making a switch.

Take time to generate information about the benefits of implementing new software. Make sure to touch on the problems of the current process and the improved efficiencies using proposed technology upgrades.

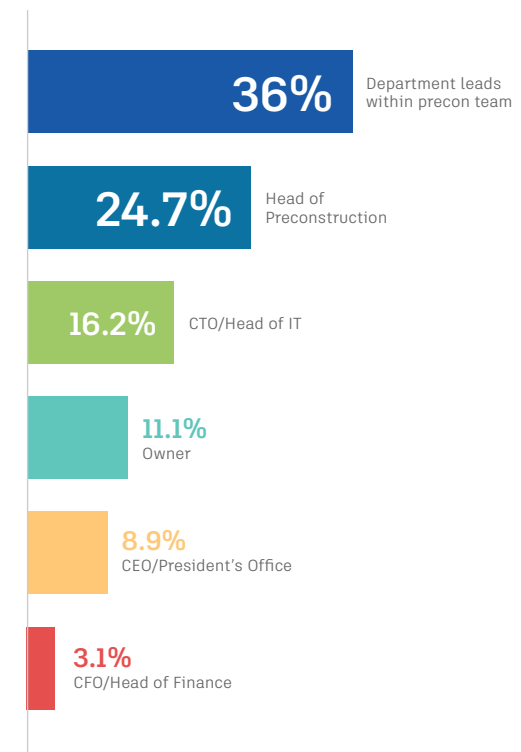
3. Involve all relevant stakeholders.

Engage the right stakeholders early in the process—and think beyond just the immediate team. Identifying all affected parties during the evaluation process ensures full support.

4. Form an implementation plan.

Choosing the right technology is not enough. 37% of construction professionals said that their company has invested in software in past year that they haven't adopted. A concrete plan for implementation and adoption ensures companies get the most from their technology investment.

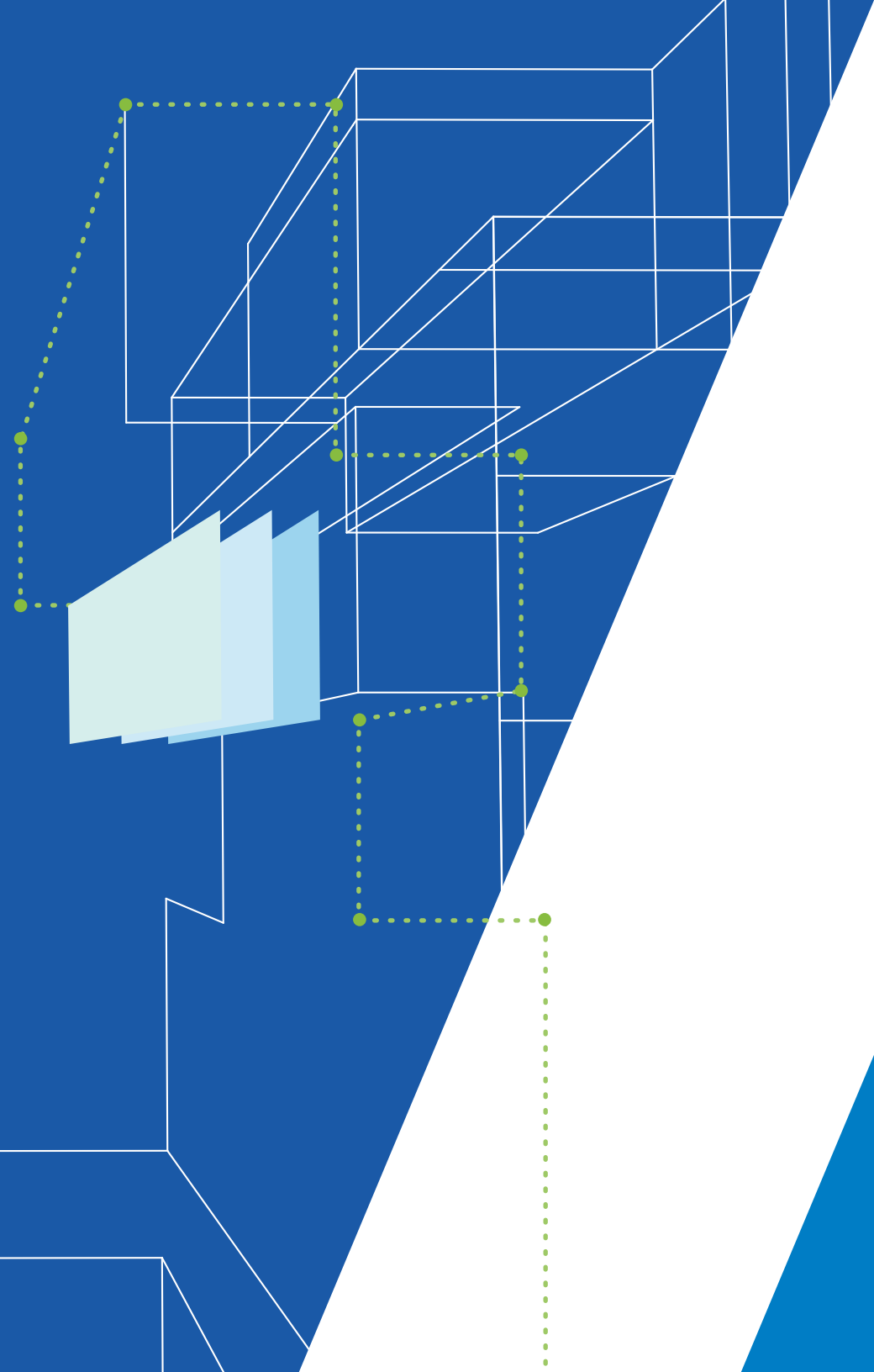
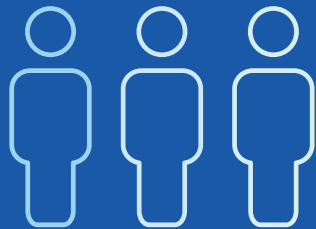
At your company, who is responsible for evaluating potential preconstruction software?



Digital Transformation in Preconstruction:

People

At the core of any organisational change is people. Simply put, no change will take place unless the people within an organisation are willing to engage, adopt, and eventually champion the change. In this section, we'll evaluate the people side of change through two key groups: change agents and an adoption team.



Becoming a Change Agent

First and foremost, for change to take place, there must be someone pushing to make it happen. When surveyed, 13.2% of preconstruction professionals reported that they actively search for new software to make existing processes better. These are the change agents in an organisation.

While many preconstruction leaders would identify themselves as technology champions, some would not—and that's fine. If leaders aren't particularly passionate about digital technology, they should identify the individuals on their team who are. Then, they should delegate responsibility to those people to surface new ideas and solutions.

These individuals can help drive meaningful digital transformation, regardless of their level of seniority. The combination of an individual contributor's passion for technology and a preconstruction leader's knowledge and experience allows teams to evaluate new software from all relevant angles.

Once a dedicated change agent is identified, they become responsible for fully understanding the need, and then advocating for a change with leadership and any affected parties. The initial change agents will build out the structure for adoption of new technology, then help bring supporters (50.5%), neutral participants (27.3%), and skeptics (9.1%) on board.

Adoption Groups

Adoption of new technology begins with mapping out a new process and identifying all affected parties. For instance: a new bid management solution will affect the bid management and estimating teams, but it will also affect risk teams, project management teams, and site teams. It's important to get early support from other departments to make sure everyone is aware of potential changes.

Building out a network of change champions across teams can help influence key stakeholders throughout the organisation. Look for early adopters who are willing to provide honest feedback through a pilot stage. These change champions can then help drive the adoption of new technology throughout later stages of implementation.

Which of the following statements do you most agree with?

50.5%

I'm open to hearing about any new software that can help me and my team do our job

27.3%

I'm only open to hearing about new software if it will make a big impact

13.2%

I'm skeptical about bringing on any new software

9.1%

I actively search for new software my team and I can use to do our job



Spotlight:

Mercury

Mercury, an Irish contractor, has built a culture focused on innovation and improvement. Before undergoing their digital transformation, the company was using multiple tools across projects. This led to an overlap of functions and inefficiency in the way they worked. Mercury recognised that a single software solution would offer more consistent data and allow for better benchmarks across projects.

Prior to selecting their integrated solution, the team built a roadmap for how they wanted to operate, then used the roadmap to assess and compare software. Once they landed on a clear winner, the company created an adoption plan. Even with an innovative culture, Mercury recognised that difficulties would arise in getting people, clients, and partners to adopt the new technology solution.

To support long-term adoption, Mercury carefully launched a pilot phase allowing key stakeholders to see the clear benefits of the proposed process change. With these people on board, Mercury implemented a full-scale adoption plan. This included training, communication, and measurable KPIs.

Through careful technology assessment, a clear plan for procurement, and a strategic people-focused approach to adoption, Mercury successfully transformed their preconstruction process.

Digital Transformation in Preconstruction:

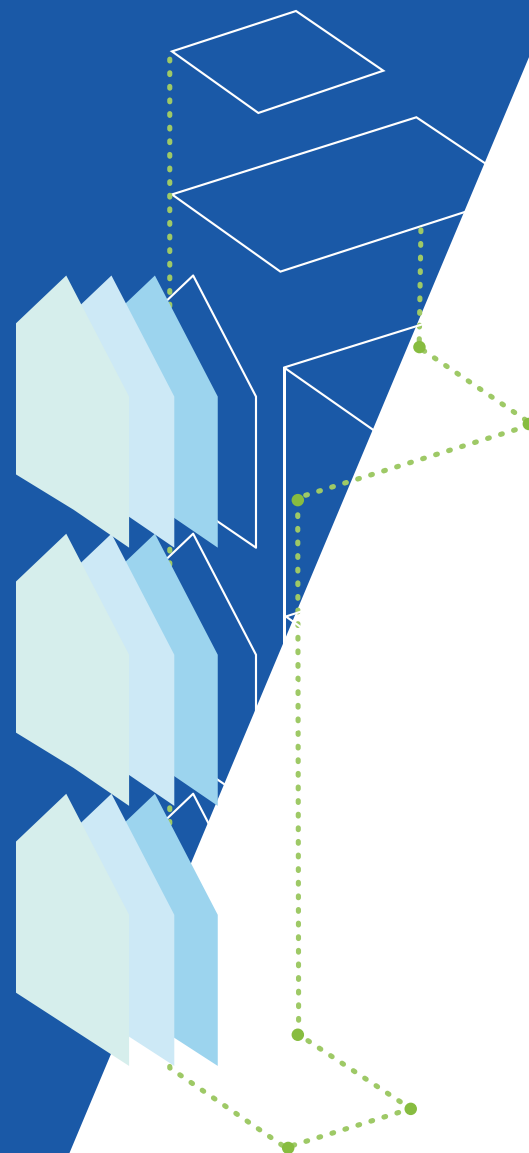
Process

While people are at the centre of change, for any change to occur, process must also shift. Handling process change effectively is key to the long-term success of any digital transformation. Even with the best implementation strategy, teams will undoubtedly face obstacles when shifting processes.

Most successful process changes begin with a pilot phase. This allows key stakeholders to work through potential issues before rolling out to the entire organisation. This pilot stage is a critical first step in new process adoption. However, even when tools succeed in the pilot phase, companies may still struggle to apply that technology at scale. While companies might spend hundreds of thousands of dollars on new platforms, they often don't spend the time and resources needed to train users and promote adoption.

“After switching to a new bid management solution, we set a three-month implementation period where we trained teams across the company and got them used to new workflows. Investing in training really helped our users become more confident with the software and promoted successful adoption.”

Neal Morton,
VP of Risk, Barton Malow





Fostering Adoption at Scale

Why is it critical to focus on an adoption plan? 37% of construction professionals said that in the past year, their company has invested in software that they haven't fully adopted. This highlights the clear importance of a well-thought-out adoption plan.

Think about it: How often do site and office workers grumble about having to adopt yet another new technology before abandoning it and returning to their old ways of working? According to a recent FMI study, there's a disconnect between the technology being implemented and people using it. While 52% consider the needs of site staff a top consideration for investing in technology, only 28% receive feedback from site staff before investing in technology. In turn, it's no surprise that when technology fails, 36% report it's due to a poor fit with current processes and procedures.

Clearly, it's crucial to solicit feedback from all affected parties—leadership, end-users, and users of integrated systems—during the procurement process and pilot phase. Active involvement in the process promotes investment in change.

In your opinion what is the biggest roadblock to adopting new software at your company?

Interruption of current projects/objectives

24%

Resistance to adoption from end users

18%

Lack of training

15%

Getting buy-in from leadership

12%

Lack of technical expertise

11%



Spotlight:

Mortensen

Mortenson is a family-owned firm with a solid focus on the continual improvement of exceptional customer experience. The team constantly looks to invest in technology that offers improved data management and information sharing.

Mortenson took the time to look for a digital transformation that would offer improved communication in design and preconstruction and help them work more efficiently. Through careful technology assessment, Mortenson opted to launch a new solution for integrated 3D modeling. This now allows the team to operate with a single source of truth.

The switch to a cloud-based digital preconstruction solution has allowed the team to take its one-model approach to the next level. Through their optimised approach, the team has now reduced redundancies, improved collaboration, and produced remarkable business results.



Conclusion

Over the past 20 years, construction productivity has only grown 1% a year, lagging far behind manufacturing (3.6%) and the economic average (2.8%). If construction-sector productivity caught up with that of the total economy, it would boost the sector's value by an estimated \$1.6 trillion, adding about 2% to the global economy.

Investing in digital processes provides a solution to construction's productivity problem. In fact, there's strong evidence that digital transformation can result in productivity gains of 14% to 15% and cost reductions of 4% to 6%. These remarkable numbers speak volumes about the importance of digital transformation in preconstruction. With the right tools, companies can turn efficiency gains into profit.

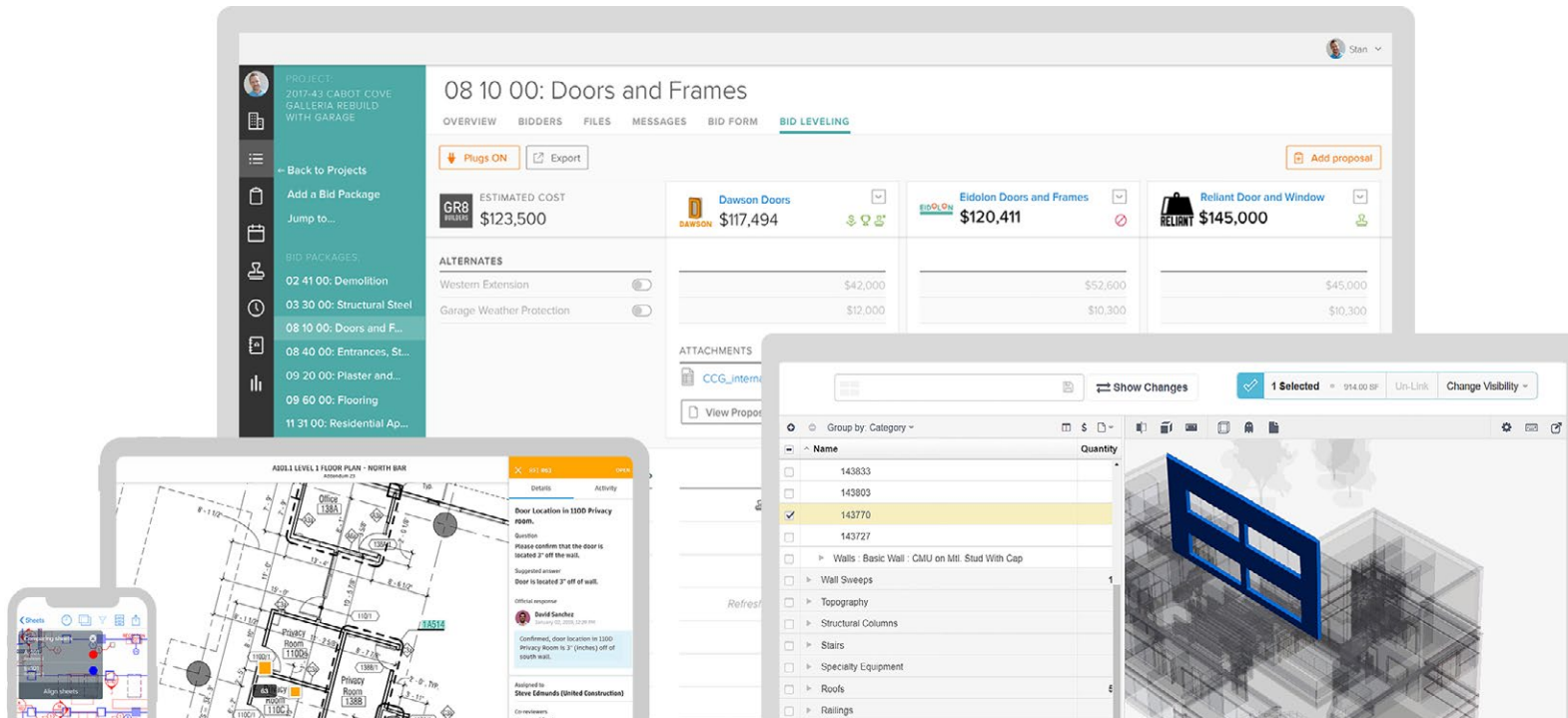
Without a doubt, now is the time for preconstruction leaders to embark on a digital journey. The technology is ready, preconstruction professionals are eager and open to new technology, and the benefits of adopting the right software are boundless. Preconstruction leaders should seize the chance to proactively seek out digital technology, gain a competitive edge, and ensure lasting success in the years to come.

See the Future of Connected Construction

construction.autodesk.com

In 2018, Autodesk announced that construction would be a key focus area to help our customers on their design and make journey. To capitalise on the opportunity, Construction became its own CEO-staff level organisation, Autodesk Construction Solutions. This unique structure is comprised of product development, customer success, marketing, and field operations. The organisation is designed to move at the speed of the market and serve customers on a level playing field with other solution providers. Autodesk Construction Solutions offers products that cover the entire construction lifecycle, from design through plan to build and operate, including the Autodesk Construction Cloud which brings together our cloud-based solutions Assemble, BIM 360, BuildingConnected and PlanGrid.

Our vision is to create a vibrant construction industry where predictability and productivity are exponentially increased, while construction site waste is proportionately reduced. The time has come for platform that will empower an industry transformation. Our mission is to help construction teams meet the world's rapidly expanding building and infrastructure needs, while making construction more predictable, safe and sustainable.





With Autodesk software, you have the power to Make Anything. The future of making is here, bringing with it radical changes in the way things are designed, made, and used. It's disrupting every industry: architecture, engineering, and construction; manufacturing; and media and entertainment. With the right knowledge and tools, this disruption is your opportunity. Our software is used by everyone - from design professionals, engineers and architects to digital artists, students and hobbyists. We constantly explore new ways to integrate all dimensions of diversity across our employees, customers, partners, and communities. Our ultimate goal is to expand opportunities for anyone to imagine, design, and make a better world.

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