

INEIGHT GLOBAL CAPITAL PROJECTS OUTLOOK

July 2022 | Second Edition



TABLE OF CONTENTS

INTRODUCTION	03
METHODOLOGY	04
CONFIDENCE AND GROWTH	05
PROJECT CERTAINTY	11
TECHNOLOGY AND DIGITAL TRANSFORMATION	16
HUMAN-CENTRIC DIGITALIZATION	24
SPOTLIGHT ON EUROPE, APAC AND NORTH AMERICA	30
SUMMARY	42



INTRODUCTION

Here we are for the second edition of the InEight Global Capital Projects Outlook report. Once again, we find a global construction sector full of confidence, optimism and resilience against a tumultuous backdrop.

Whereas the impact of the COVID-19 pandemic has lessened in most places (but not all) versus last year, that gap has been filled by new challenges in the form of supply chain shortages, inflationary pressure, an energy crisis and the war in Ukraine.

But even as extreme circumstances seemingly become everyday occurrences, our sector marches on — not least in its digital transformation.

Last year we saw plenty of enthusiasm and belief in the power of digital technology to improve the construction sector. This year's results validate those findings and show they are no flash in the pan, but rather an observable trend, and that a sophisticated approach to digital transformation tends to correlate with organizational success.

This year however, we ask about the human impact of these changes. The construction sector, which fundamentally relies on boots on the ground, is particularly exposed to labor challenges; even as more technology is embraced, our sector is one that is more

human driven than many others. That doesn't have to be a weakness — it can be our sector's greatest strength, but that depends on developing and realizing a vision for the future of work, which excites those in the industry.

That's why we wanted to gauge the effect of technological changes not only on organizational success, but on people's working lives. Is it helpful? What can be done better? Does digital transformation constitute a threat or concern to people in any way? These are the questions we look to answer this year in addition to building on the findings of last year.

In the following pages, you'll find insights into the health of the industry, project certainty and digital transformation as it applies to both organizations and people. You'll hear a largely unified voice and message from the sector, but also subtle differences between capital project owners and contractors across regions versus last year.

What I'm confident you won't find is any sign of a sector buckling under the strain of the last few years. Quite the opposite — it's onwards and upwards for the global construction sector, with a bright future well within our grasp if we work together and stay committed to human-centric digitalization that benefits all stakeholders.



Jake Macholtz, CEO
InEight

METHODOLOGY

This report is based on a March 2022 online survey of 300 large enterprise, capital project and construction professionals.

The survey included 26 questions designed to gauge general confidence and optimism levels across the industry, and assess track records, plans and attitudes towards digital transformation.

Of the 300 respondents, 100 participants were drawn from each of our focus regions of the Americas, Europe and APAC, giving each equal weighting in the report. Globally, 67% of respondents are project owners and 33% are contractors.

All respondents work in construction, however, in order to get a true reading of the global construction sector worldwide, we included those working in construction roles within broader industries, including:

- **MANUFACTURING**
- **IT/COMPUTER SERVICES**
- **CONSTRUCTION**
- **MINING & MINERALS**
- **HEALTHCARE PRODUCTS & TECHNOLOGIES**
- **TELECOMMUNICATIONS**
- **CENTRAL GOVERNMENT OR NON-DEPARTMENTAL PUBLIC BODY (NDPB)**
- **HEALTH SERVICES**
- **UTILITIES**
- **TRANSPORTATION**
- **CHEMICALS/PHARMACEUTICALS**
- **LOCAL GOVERNMENT**
- **OIL, GAS & CHEMICALS**

The survey has been designed and conducted in conjunction with a specialized global enterprise technology market research partner, with results then analyzed and submitted to InEight experts for commentary based on their experiences and vantage points in the industry.

Where possible, results have been compared to our previous 2021 survey. However, it is not possible in all cases due to new questions and wording alterations in this year's edition.

1 CONFIDENCE AND GROWTH

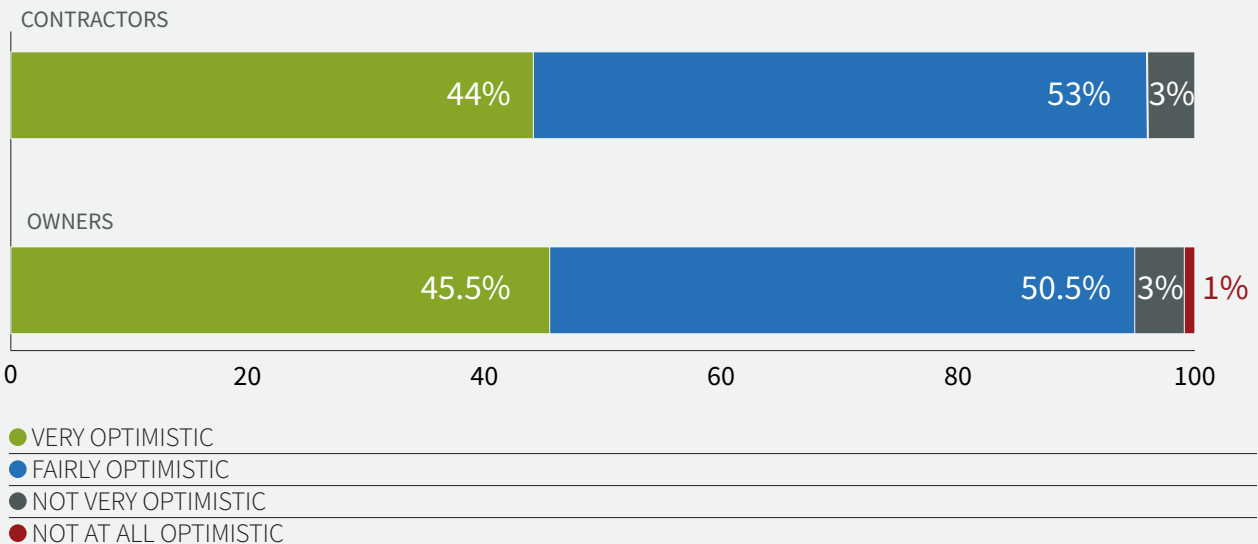
The world may be stepping out of COVID-19's shadow, but new threats loom large. Supply chains are still rebuilding themselves while reorienting to new consumer behaviors, inflationary pressures abound, and of course, the war in Ukraine has sent shockwaves through commodities markets and economies throughout the world. Yet, against this backdrop, the construction sector is highly confident. Capital projects owners and contractors alike report increased spending paired with an unshaken faith in their own resilience concerning the risks they face alongside abundant opportunities.

CONFIDENCE CONTINUES

In last year's inaugural *Global Capital Projects Outlook*, the construction industry was bullishly optimistic about its future, even against the backdrop of a global pandemic. Though the pandemic has somewhat subsided (in

some regions more than others), it still lingers and has since been joined by a host of other major challenges. Therefore, it is surprising that nothing in the past year has burst that bubble of optimism.

TO WHAT EXTENT ARE YOU OPTIMISTIC ABOUT YOUR ORGANIZATION'S PROSPECTS FOR GROWTH IN THE NEXT 12 MONTHS?



While last year, 92% of respondents said they were either *very or fairly* optimistic about their organization’s growth prospects for the next year, this year 96% say the same. This data includes responses from both owners and contractors, and interestingly, sentiment was near identical.

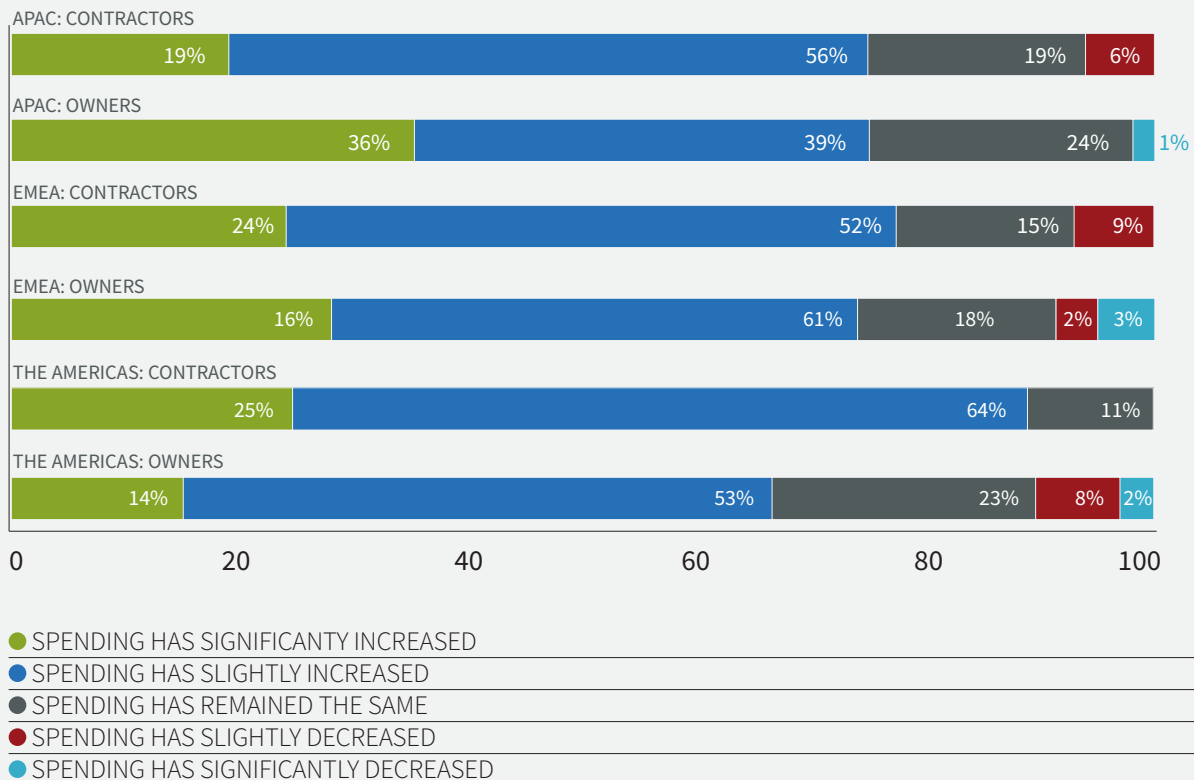
The context for this optimism is that 76% of respondents report having witnessed increases in construction and capital projects spending — up from 68% in 2021. This breaks down as 74% of owners and 80% of contractors.

It’s noteworthy, however, that of those who don’t believe their organization has a clear digital transformation

strategy in place, only 27% are *very* optimistic, 53% *fairly* optimistic, and 20% are *not very* optimistic at all.

“Optimism abounds,” says Jake Macholtz, CEO at InEight. “There’s plenty of work out there, with many projects waiting to be constructed. Infrastructure needs to be built, green initiatives are gaining momentum and economies worldwide are looking to inject some stimulus. Everyone we speak to is talking about growth opportunities on both sides of the owner-contractor line.”

THINKING SPECIFICALLY ABOUT CONSTRUCTION AND CAPITAL PROJECTS SPENDING, IN YOUR OPINION, HAS YOUR INDUSTRY SEEN AN INCREASE OR DECREASE OVER THE PAST YEAR?



OPPORTUNITIES AND THREATS

Growth opportunities are certainly top of mind. This year, respondents see digital technologies (selected by 57% of respondents), data collection, analytics and insights (53%), and economy growth/recovery (51%) as the top opportunities for growth within the next year — the same top three as in 2021, albeit in a slightly different order.

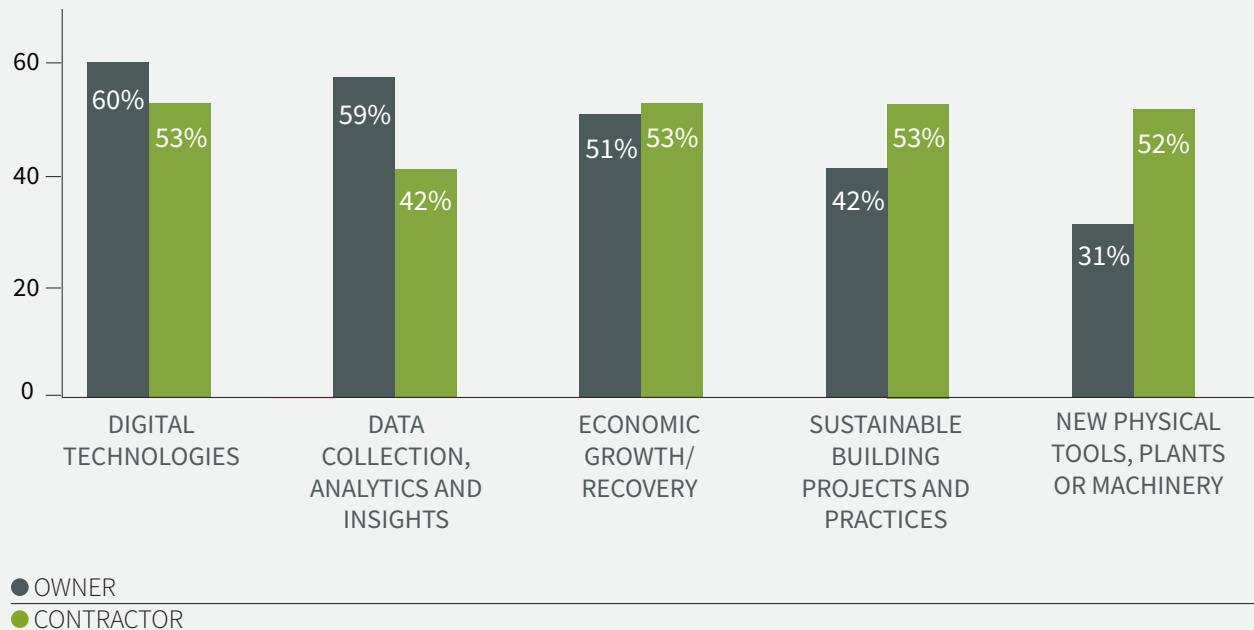
There are some notable year-over-year differences though. New building regulations are now seen as a key opportunity by 39% (up from 20%), new physical tools, plant or machinery by 38% (versus 24%) and the political climate by 27% (versus 17%).



EVERYONE WE SPEAK TO IS TALKING ABOUT GROWTH.

— JAKE MACHOLTZ, CEO
INEIGHT

WHICH OF THE FOLLOWING DO YOU THINK WILL PROVIDE THE BIGGEST GROWTH OPPORTUNITIES FOR YOUR ORGANIZATION IN THE COMING YEAR?



These opportunities, however, are counterbalanced by recognized potential risks over the same timescale. Economic stagnation/recession is seen as a threat by 42%. Encouragingly, this is down from 47% in 2021, yet this particular risk could be rising, with ominous rumblings in the media around the world about a potential recession.

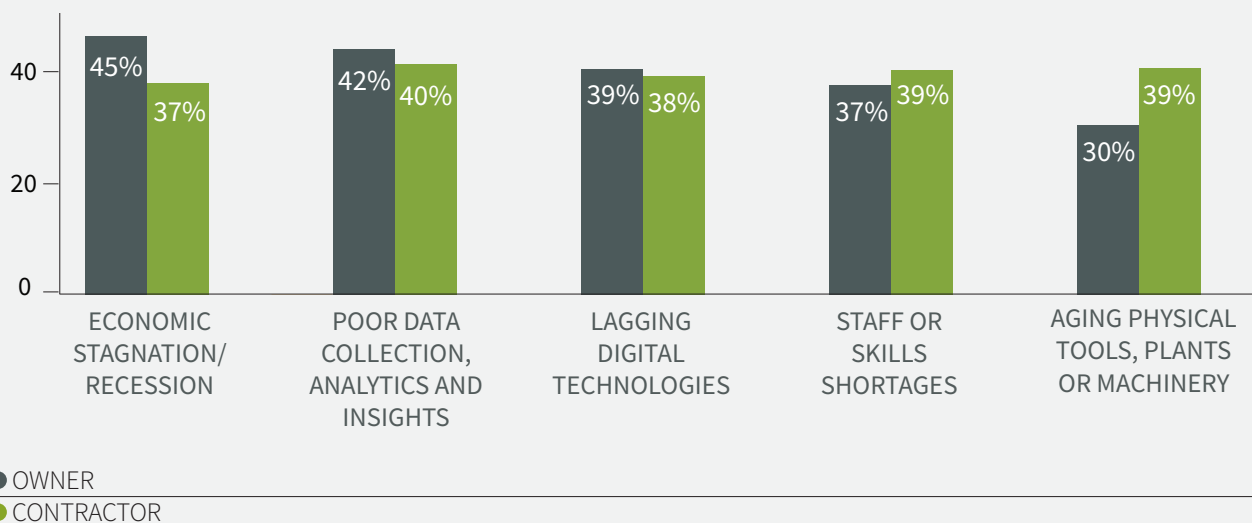
Concerns have also increased over poor data collection, analytics and insights (41% in 2022 versus 32% in 2021); higher concern over aging physical tools, plants or machinery (36% versus 24%); higher concern over new building regulations (33% versus 18%) and higher concern over climate change (28% versus 17%).

“The perceived threat from economic headwinds has receded — at least for now — as the immediate threat from the pandemic has subsided,” explains Brad Barth, Chief Product Officer at InEight. “That’s good and it’s allowed more controllable concerns to climb the agenda. Digital technology and use of data both rank as top opportunities and as risks, which tells you that people see the value these things offer and yet they worry about not capturing as much of that value as they — or their competitors — can.

“It’s good to see investment in new tools and machinery as an opportunity too — and aging ones as a risk, and also for building regulations to be more top of mind. Those hint at an industry getting back to normal after the pandemic, and the increase in concern over climate change shows a sector feeling able to refocus on long-term challenges after riding out the short-term threats.”

In fact, contractors are slightly more concerned by building regulations than owners are (39% versus 30%). Conversely, 45% of owners are concerned about the economic outlook versus 37% of contractors. This reinforces the idea that the industry is equalizing post-pandemic, with owners more interested in the macro investment environment and contractors focused on factors influencing delivery.

WHICH OF THE FOLLOWING DO YOU THINK WILL BE THE BIGGEST RISKS TO GROWTH FOR YOUR ORGANIZATION IN THE COMING YEAR?



REMAINING RESILIENT

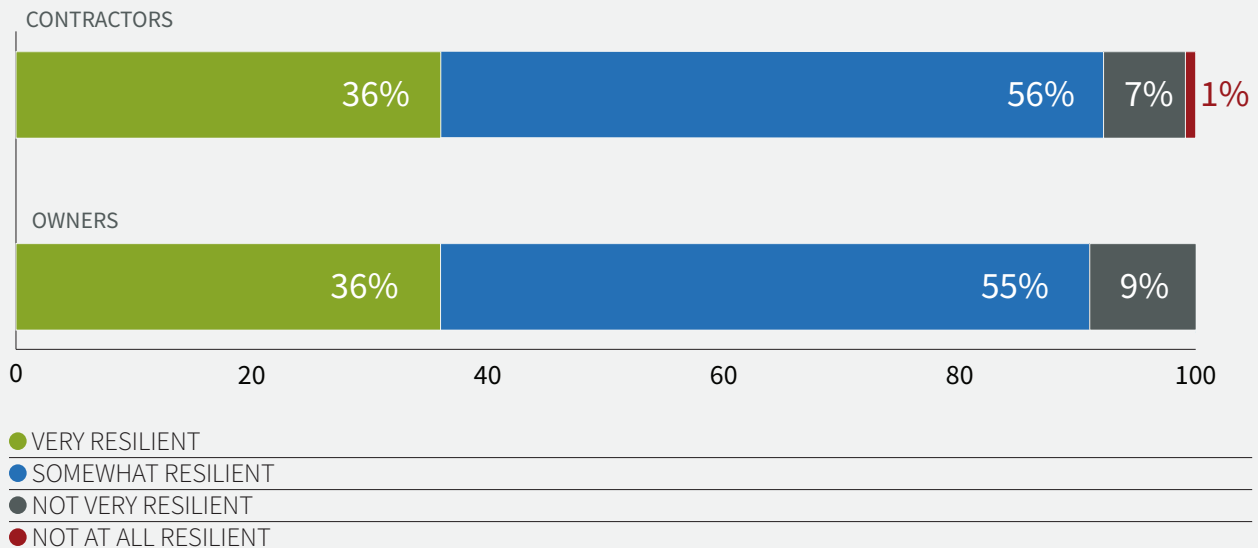
The industry should be well able to weather these risks, however, with 91% considering their organization to be either *very* or *fairly* resilient.

“These resilience numbers are almost identical year-over-year,” points out Barth. “The industry is confident in this respect, as it should be. Those responding to the survey have weathered the pandemic and the economic fallout and come out the other side. There’s every reason to believe they can handle whatever is thrown at them next.”

There are, however, some indications as to which organizations will be best able to react to future threats. Most notably, 93% of respondents at an organization with a clear digital strategy report resilience, while only 80% of those with no such strategy say the same. Those with low-tech spend are even less optimistic, with only 67% saying they are. Likewise, those who believe capital project spending has increased are more likely to report resilience (95%) than those who report spending has stagnated (79%) or decreased (80%).



GIVEN THE EVENTS OF THE PAST YEAR, HOW RESILIENT WOULD YOU CONSIDER YOUR ORGANIZATION TO BE?





IT'S NOT SURPRISING TO SEE AN EVEN MORE CONFIDENT CONSTRUCTION INDUSTRY THIS YEAR.

— JAKE MACHOLTZ, CEO
INEIGHT

CHAPTER SUMMARY

Taken as a whole, the global construction industry is even more confident than it was in 2021, which was a high bar to beat. Reported project spending is high, self-assessed resilience is high and opportunity abounds. Risks remain, but with the worst of the pandemic seemingly behind us, these risks are now more oriented to those within organizations' influence or control.

The unanimity isn't absolute though. There are clear correlations between those with mature digital transformation strategies and also optimism and resilience. In addition, those who report seeing increased capital project spending are also more positive in their outlook.

Macholtz concludes: "With such a strong showing from the sector last year in the middle of the pandemic, it's not surprising to see an even more confident construction industry this year. Encouraging, yes — but not surprising."

Macholtz continues, "What is more interesting is to start looking into the finer detail of who is the most confident and resilient. Here we start to see those who are thinking strategically about technology distinguish themselves as the cream of the crop.

We can argue about causality here. Are they more positive because of their technology, or do they feel able to invest in technology because they are so positive? In reality, it's probably a bit of both, creating a virtuous circle."

"And the thing about virtuous circles is that things keep getting better, allowing organizations to leave peers, who are without that feedback loop in the dust, says Macholtz. "And that's probably why digital technology and data-related issues are rated so highly as risks by some. Now more than ever, you need to get this stuff right."

2 PROJECT CERTAINTY

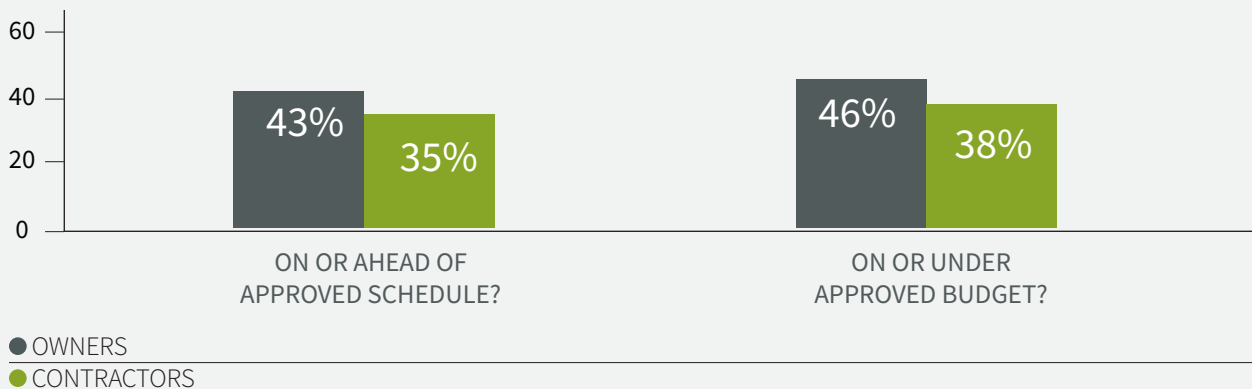
Despite heady optimism for the industry’s future, long lead times and rising materials prices are creating uncomfortable bumps in the road when it comes to delivering on time and on budget. While better insights fueled by digital transformation are helping to smooth the way, the path for many remains fraught with the perils of unmanaged risk, scope creep and overspending.

ON TIME AND ON BUDGET?

Faced with staffing and supply chain issues, the percentage of projects contractors report completing on or ahead of their original schedule has fallen since 2021 from 51% to 35%. Similarly, the ability to complete on or under the approved budget has also fallen from 51% last year to 38% this year. Owners are yet to see quite the same impact, reporting 43% of projects completed on time, and 45% on budget, though this may be a temporary discrepancy as the full effects filter through.

“Long lead times and rising prices are creating enormous pressure on contractors to source even basic building materials. In previous years, this may have hindered project delivery. However, better collaboration and information sharing between stakeholders has improved the industry’s resilience to such shocks, empowering respondents to remain optimistic in the face of adversity,” comments Jake Macholtz, CEO at InEight.

HOW OFTEN DOES YOUR ORGANIZATION COMPLETE CONSTRUCTION-RELATED PROJECTS?



Underpinned by robust supply chains and networks, and with the ability to wield greater influence, organizations with more projects on the books, and those with higher revenues typically outperform the average when it comes to on-time and on-budget performance. Respondents at organizations that work on more than 50 capital projects per year are happy to report that over half of their projects were completed on time (53%) and on budget (63%).

Companies that note an increase in capital project spend outperform the average for project delivery (42% on time and 45% on budget), while those not benefitting from an uptick are less likely to be keeping up with their peers (31% and 37%).

In good news, against a backdrop of rising prices and inflation in many economies, the industry is seemingly succeeding in the fight to curtail budget overruns — overspending was reported down to 17% from 20% last year.

Is this a sign that the industry is becoming more proficient in its estimating capabilities? Macholtz thinks so: “With such staggering cost increases year over year, there’s a heightened awareness that estimates should be

regularly revisited. It’s also put risk management firmly on the radar of owners who are increasingly cautious of falling victim to runaway overspend.”

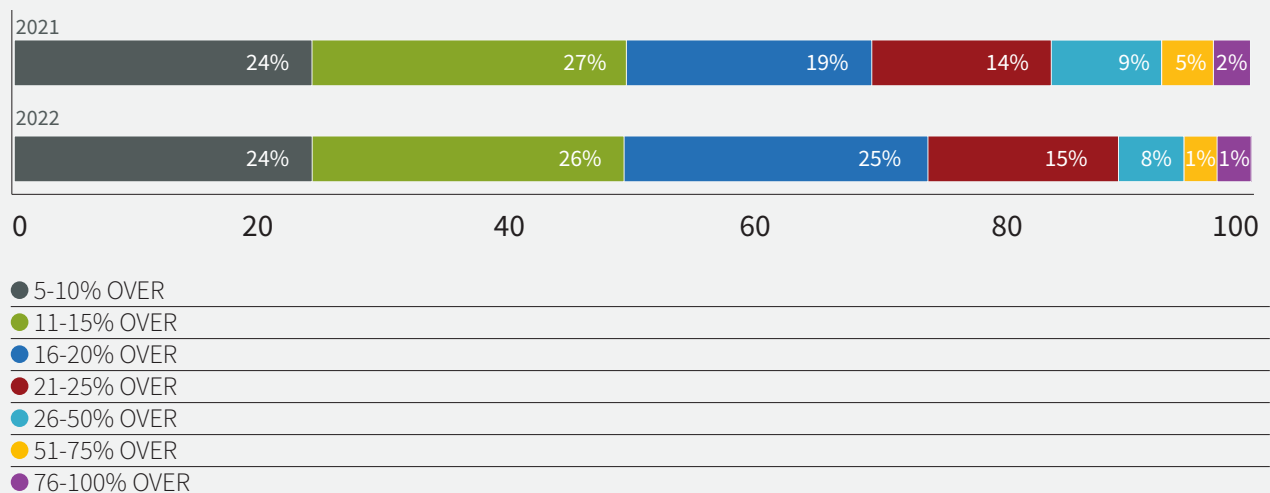
However, despite reporting superior on-time and on-budget results, respondents with turnover in excess of \$5 billion report being most acutely affected by overspend and scope creep.

Brad Barth, Chief Product Officer at InEight, suggests heightened levels of project complexity might be responsible: “A rise in alternative delivery models, coupled with the ongoing trend to push the boundaries of what is possible, sees more folks involved in a project simultaneously at any one time than ever before.

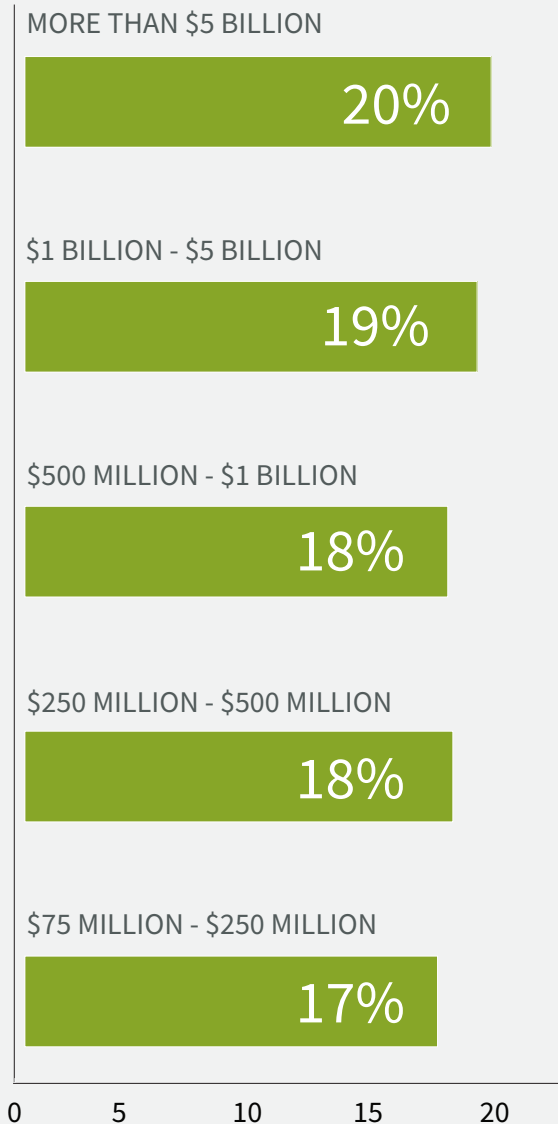
Collaboration, communication and consistent ways of collating data have become paramount. The Scotch-Tape and Band-Aid approach of times past will no longer cut it on these unique ‘higher-risk, higher-reward’ projects. Digital transformation is coming into its own.”

Across the board, organizations with a clear digital transformation strategy report less scope creep and overspend than their less strategic peers. Those who

WHAT WOULD YOU SAY IS THE AVERAGE FINAL COST OF CONSTRUCTION-RELATED PROJECTS THAT GO OVER BUDGET IN YOUR ORGANIZATION?



WHAT EXTENT OF SCOPE CHANGE DO YOU ESTIMATE YOUR ORGANIZATION EXPERIENCES ON A TYPICAL PROJECT?



EXAMPLES OF SCOPE CHANGE MIGHT INCLUDE CHANGE OF DESIGNS OR DELAY IN MATERIALS THROUGH SUPPLY CHAIN

have made negligible technology investments report overspend of 21% versus 17% for those with a strategy in place. Similarly, those without a strategy saw scope creep of 20% versus 18% for their more strategic peers.

Catie Williams, Vice President of Product Development at InEight, explains: “Without a digital transformation strategy, the decentralized nature of the work means the same overspend and scope creep issues will crop up time and again because learnings are not always being shared. This not only creates inefficiencies, but affects confidence in the sector while increasing risk.”

INFLUENCING FACTORS

Reflecting the general unease of an industry faced by supply chain, labor and climate change concerns, to name a few, unmanaged or unexpected risk is top of mind for both owners (56%) and contractors (55%) when it comes to completing projects on time and on budget.

“Increases in early contractor involvement, shared risk and alternative funding and delivery models are changing when and how both parties interrogate risk,” says Nate St. John, Director of Product Management for Schedule, Risk & Design at InEight. “The days of throwing a dart at an end date and hoping for the best are being replaced with contractual obligations that require a thoughtful approach that preempts and mitigates risk at regular intervals. This is particularly the case on projects where continuity of funding must be secured.”

The results indicate that transparency is high on respondents’ agendas, with 52% considering communication gaps with stakeholders and/or inadequate communication a highly influencing factor on project completion. However, organizations with revenue in excess of \$5 billion are less likely to report this as a pain point. Could the fact that 51% of contractors report an inability to see current project status and data at a detailed level partially explain this lack of communication?

One influence that owners (52%) and contractors (54%) agree on, although perhaps for different reasons, is that non-standardized systems and processes create inefficiencies that impact projects progressing on time and on budget. Organizations with revenue between \$250 million and \$1 billion more readily report this as an influencing factor versus their smaller and larger peers.

Williams comments: “Owners are driving standardization across the industry and are increasingly more explicit about their project expectations, sometimes right down to the software used. If a contractor wants to respond to an RFP, they have little choice but to go along with it.

Digital transformation should make processes quicker and easier, but without an integrated strategy, you can see a scenario where the opposite is the case — where a messy splatter of digital solutions overlap and create all manner of inefficiencies layered on an incongruous view of project reality.”

St. John adds: “For digital transformation to have the fullest impact, every technology, model or software choice should be capable of integrating into a centralized ecosystem where data is shared seamlessly without duplication. In such an ecosystem, owners and contractors are unified, but benefit from a tailored experience that serves their needs while maximizing insight and transparency for all.”

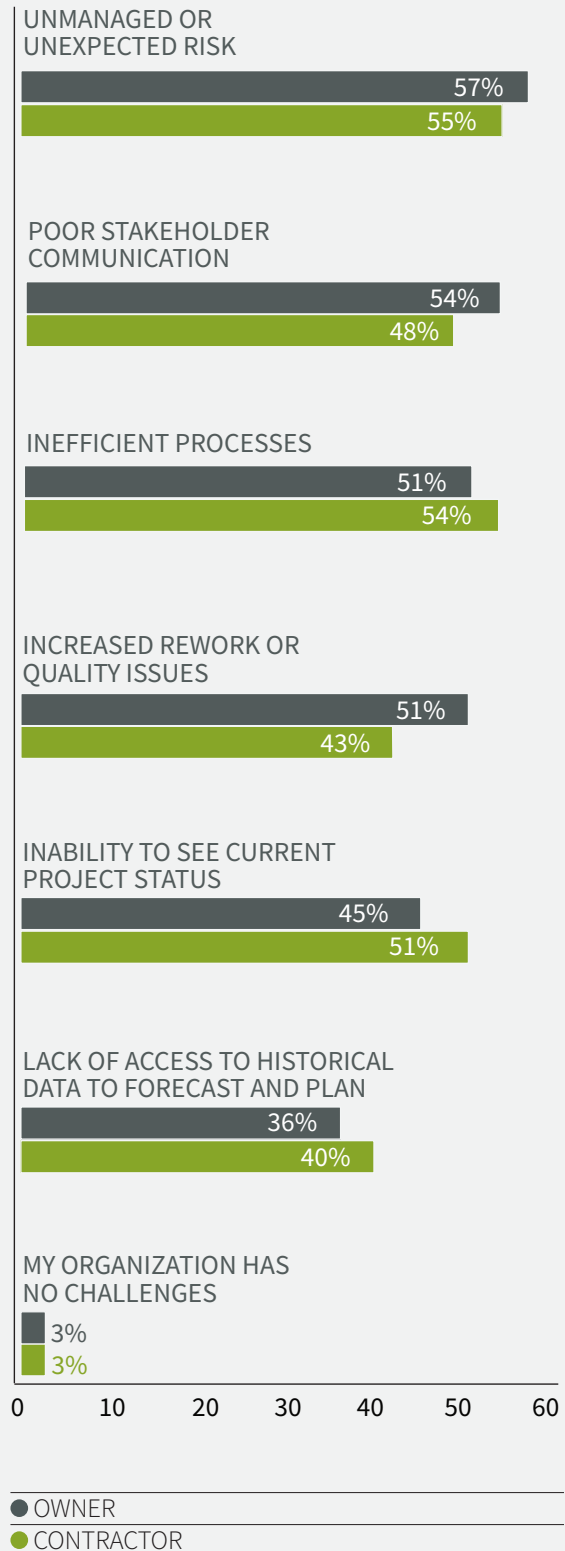
Organizations with lower project volumes are much more likely to report rework and quality issues as an influencing factor than their peers (48% average versus 35% for organizations with more than 50 capital projects). Organizations with greater project volumes also report having a better handle on project status and being able to see data at a detailed level (32% vs. 47% average).

However, despite sitting on a gold mine of historical data, respondents from busier organizations say that accessing historical data to forecast and plan is a challenge (32% for organizations with fewer than 11 capital projects versus 53% for those with more than 50 capital projects).

The results hint at several ways in which having a digital transformation strategy helps deliver projects on time and on budget. For one, organizations with a clear strategy are much less likely to report an inability to see current project status and data at a detailed level (60% vs. 42%) and are also less likely to experience issues with non-standardized systems than their peers without (52% versus 60%).

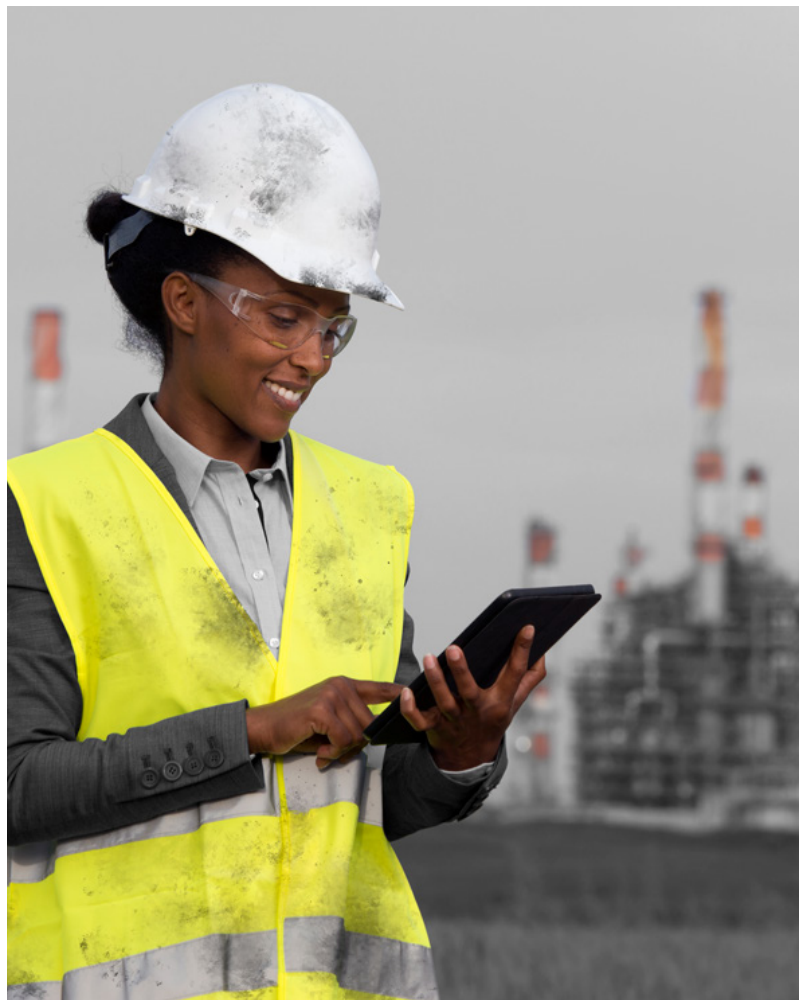
Curiously though, respondents without a digital strategy are less concerned about communication gaps with stakeholders and/or inadequate communication (33%

FACTORS INFLUENCING PROJECT CERTAINTY



vs. 52%) than those with a digital strategy. Equally, they are much less concerned about having access to historical data to forecast and plan than the average (20% versus 37%).

Macholtz explains: “If you’ve never had access to your historical data, it is unlikely that you’ll fully appreciate the depth of insight that analyzing it affords. In turn, this impacts how much you have to communicate. However, we are fast approaching a moment in time where those ‘nice-to-have’ insights will become a contractual obligation dictated by owners. Contractors that wish to remain in the running will have little choice but to invest in technology upgrades.”



CHAPTER SUMMARY

Last year, we said that the industry still has a long way to go before it achieves project outcomes and productivity on par with other comparable sectors. “That hasn’t changed,” says St. John. “Until cost and schedule are automatically synced, we aren’t maximizing the capabilities of project management software to support the delivery of projects on time and on budget. Data needs to be accessible in real time and to everybody, and for that reason, integration will win the day. Once we’ve cracked this, a whole world of innovation, critical thinking and problem-solving will be unleashed. With more people digesting data than ever before, spotting trends and capitalizing on opportunities to improve project outcomes will come ever more readily.”

3

TECHNOLOGY AND DIGITAL TRANSFORMATION

Last year, we found a construction sector hungry for technological transformation at odds with its reputation as a digital laggard. This year, we find that appetite undiminished, with year-over-year consensus pointing to data analytics, artificial intelligence and machine learning as key points of interest for an industry in flux.

CONSTRUCTION TECH: TODAY AND TOMORROW

Data analytics, artificial intelligence and machine learning (AI/ML) as well as project management and project controls software (PM/PC) are the technologies perceived as critical to the sector's success in the next one to three years.

Owners and contractors are united in pointing to these technologies as future-critical with only minor variations in prioritization. It's also worth noting that the busiest are also keenest on data's potential: Respondents from organizations working on more than 50 capital projects placed an outsized emphasis on both data analytics (65% vs. 52% average) and sensors as well as real-time physical data collection (IoT, RFID) (56% vs. 43%), whereas those involved in just 1-10 capital projects are extremely unlikely to select the latter versus the average (29% vs. 43%). For the biggest as measured by revenue, the same holds true for data analytics (73% vs. 52% average), and for AI/ML (60% vs. 50%).

For Brad Barth, Chief Product Officer at InEight, this reflects a growing trend: "Increasingly, you see a divide between those in the club and those outside of it when it comes to technology in construction. The organizations that are larger and have lots of projects tend to be more mature and invest in technology at a faster pace and get

more out of it. Then they succeed more and invest more. The smaller companies are then left with the task of making quite a leap to catch up."

This seems to bear scrutiny: If we cross reference with the perceived digital-strategic maturity of organizations, only 27% of respondents who say their organization lacks a clear digital strategy think data analytics will be near future-critical versus the 52% average — and the same proportion think that of AI/ML (versus 50% average). This supports the explanation that those who have already made smart technology investments are more likely to see the value in further development, and conversely, those with low digital maturity struggle to look ahead and see the value of the leading technologies.

However, does tech spend to date match respondents' views on which technologies will prove critical in the near future? For owners, 90%, 90% and 94% report some level of investment in their stated top three most critical future technologies. For contractors, 89%, 89% and 93% say the same.

In fact, across several technology categories — including those rated as most critical to success — the proportion of respondents reporting existing investment has

increased since 2021. Encouragingly, respondents also report high satisfaction with these investments, with around 90% saying they have experienced positive impacts across the technology categories.

Nate St. John, Director of Product Management at InEight, comments: “I like what I see from respondents here: Data analytics, AI/ML, then project management control — that’s a logical path.”

St. John continues, “Collect the data and analyze it. Then, when you are data rich, layer on some AI/ML algorithms to maximize value, then roll that up into project management. I’d put the word ‘advanced’ in front of project management because that will take organizations way beyond traditional PM capabilities. And the beautiful thing about that progression is that it’s repeatable and iterative, layering in sophistication in the AI/ML capabilities each time as you learn what works.”

Catie Williams, Vice President of Product Development at InEight, adds: “I’m really happy to see data analytics and AI/ML stay at the forefront after last year’s survey. It’s especially exciting this is confirmed by owners. If we want more standardization to drive tech adoption, that has to come from owners specifying what they want from their contractors. That’s the path through digital transformation.”

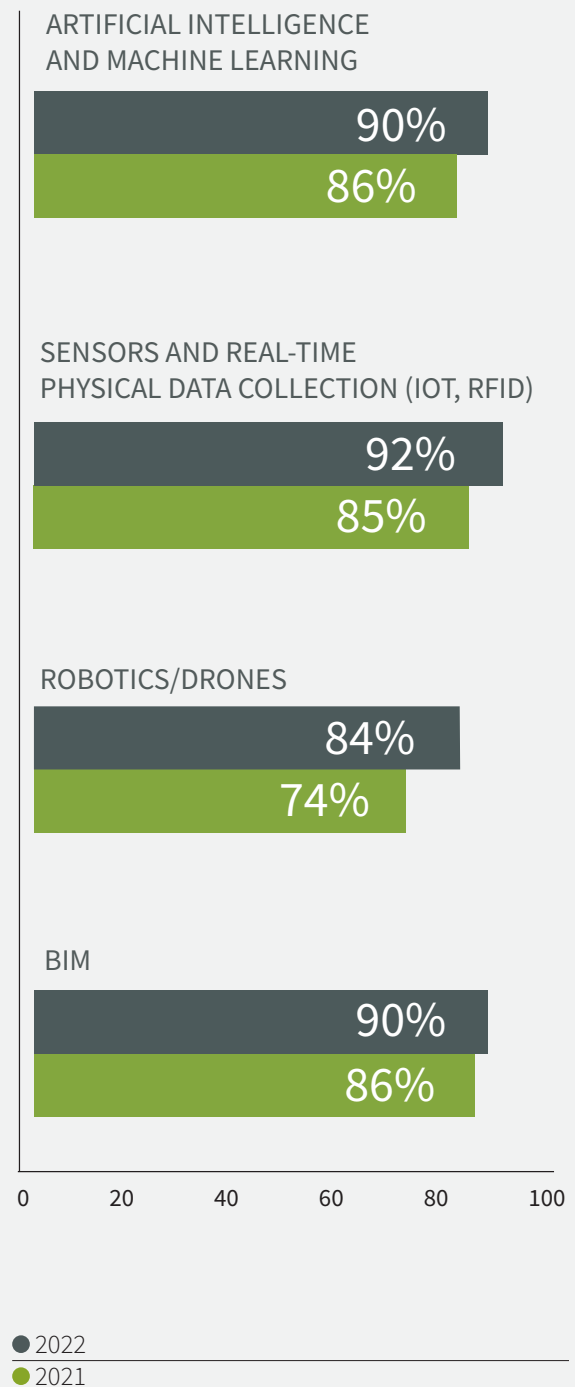
SIGHTS ON SOFTWARE

Looking specifically at the software categories viewed as essential for success in the near future, clearer disparities emerge between owners and contractors.

For owners, the most valued software categories relate to their specific concerns: maintaining an overview of project progress (when one step is removed), the crucial commissioning stage, and technologies like Building Information Modeling (BIM), which remain valuable when the site is operational and construction is complete. A greater focus on risk management (selected by 40% vs. 28% of contractors) is also understandable, given the project’s success or failure is ultimately theirs to own.

Contractors, by contrast, place far greater emphasis on engineering management and work packaging and planning than their owner counterparts.

TO WHAT EXTENT HAS YOUR ORGANIZATION COMMITTED FINANCIAL INVESTMENT TO THESE TECHNOLOGIES?



Williams comments: “Engineering management taking the top spot for contractors — that one stood out for me. It’s often not the contractor who is doing the engineering. That’s done by a separate engineering firm. Yet, it’s the contractor on the hook to make things right if the engineering is wrong. Owners are traditionally more hands off. So, it makes sense that contractors are focused on controlling the risk posed by a process that is out of their hands.

“That also may partly account for why risk management appears lower down the list for contractors than it does for owners. Contractors, here, have prioritized controlling one specific risk that looms particularly large. They also emphasize the importance of work packaging and planning on a more general level. Maybe there’s a feeling that if you’re specifically controlling for the risk you’re most worried about, and keeping on top of things generally with WPP (Work Package Plan), then you’re doing a good job managing your risk without a specific software piece. If that is the case though, contractors should look really carefully at whether that approach might allow other risks to slip through the net.”

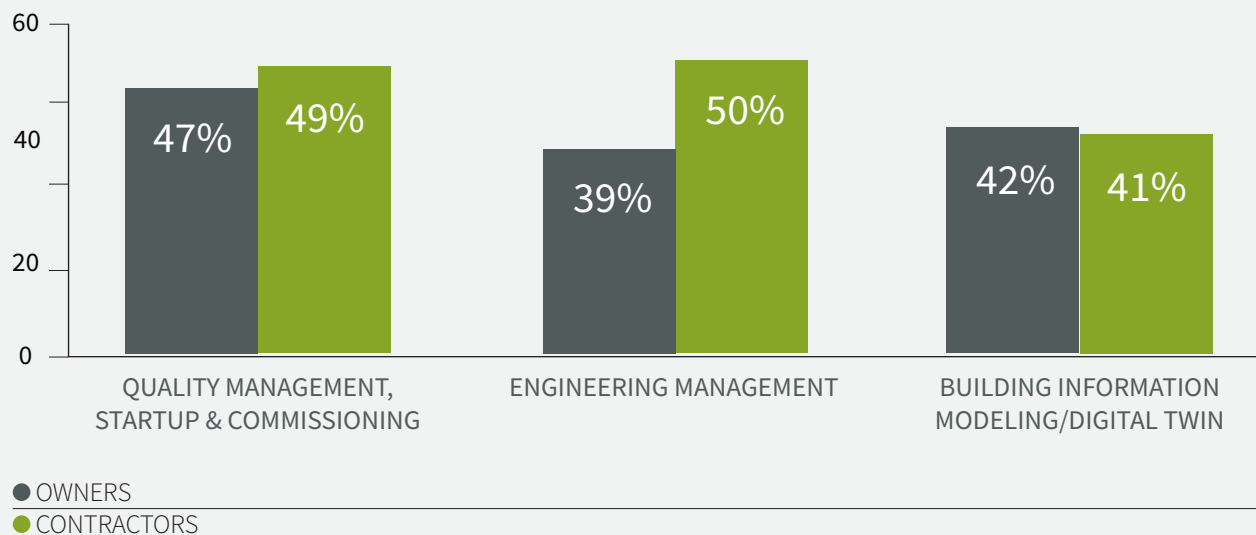
DIGITAL MATURITY AND INVESTMENT

There are also noticeable differences between owners and contractors when it comes to sophistication of their digital transformation strategies.

Overall, marginally more respondents reported that their organization had a digital strategy in place versus 2021 (94% vs. 93%). On the other hand, slightly fewer have a clear and integrated strategy across different parts of the business (53% vs. 55% in 2021), and slightly more report a siloed strategy where different parts of the business invest in digital transformation according to their own strategies (43% vs. 40% in 2021).

There are some clear groups among the respondents that appear to be more strategic. Owners are more likely to have integrated strategies (56% vs. 48% of contractors) and less likely to take a siloed approach (40% vs. 43%) or an ad hoc approach to technology investment (4% vs. 8%). Respondents from Europe are more likely to claim a clear strategy (61%) versus those in the Americas (51%) or APAC (47%). Organizations handling more capital projects are also progressively more likely to have clear strategies

WHICH OF THE FOLLOWING CATEGORIES OF SOFTWARE DO YOU SEE AS ESSENTIAL TO YOUR ORGANIZATION’S SUCCESS OVER THE NEXT 1-3 YEARS?



in place: 45% of those working on 1-10 projects, 46% for 11-20 projects, 64% for 21-50 projects and 71% for more than 50 projects.

But how do these strategies relate to self-reported digital maturity? Curiously, the discrepancy between owners and contractors here is narrow.

Looking to the near future, the two groups also appear to move in lockstep — or at least expect to. The general pattern seems to be that owners and contractors alike are most likely to describe themselves as “incidental” today, expect to progress to “intentional” by 2023, and then process quickly to “optimized” by 2024 and beyond.

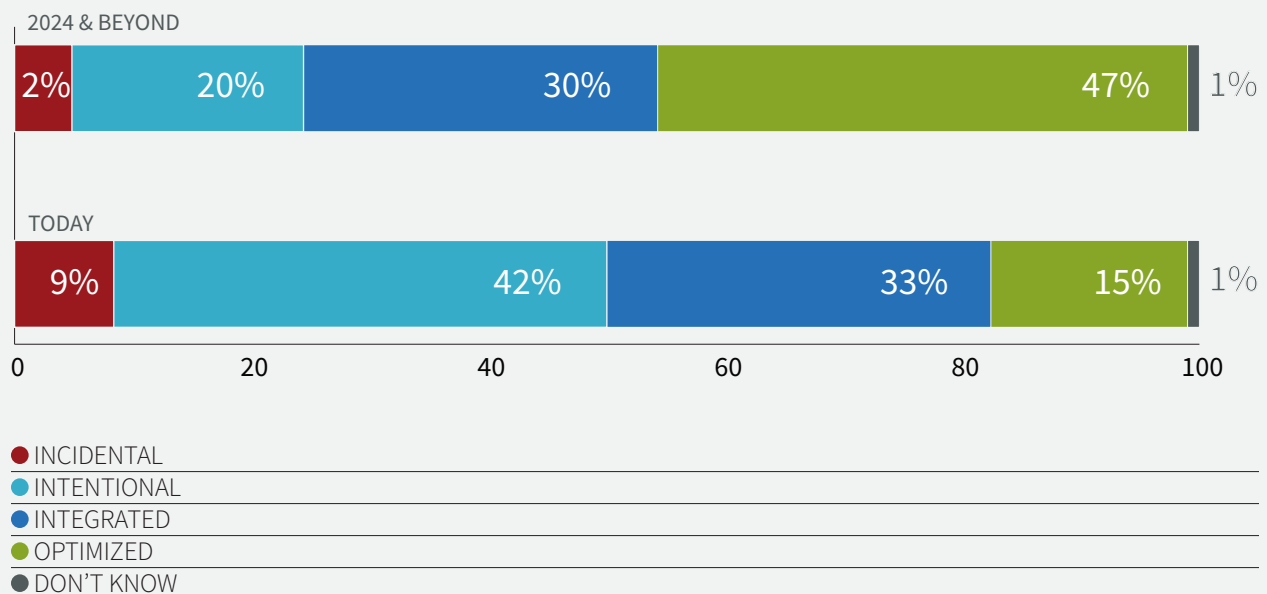
“The optimism is good to see, but those are high expectations for how fast organizations can ratchet up their digital maturity, says Barth. “The risk is if expectations aren’t managed properly, that could lead to disappointment when things don’t happen as fast as they hope.”

St. John agrees: “That looks a little overoptimistic and perhaps a little worrisome from what I see. We’re talking about implementing new technology, change management processes, taking groups of humans and fundamentally changing the way they go about problem-solving and doing their job. That’s not an overnight process.”

“However,” Barth adds, “it is getting easier to accelerate through the digital maturity curve today. Cloud technology has made implementation a lot easier, and as young blood steadily comes into the sector’s workforce and older folks retire, there’s a greater willingness — even expectation — to use technology.”

It’s important not to dampen the evident enthusiasm the sector has for greater digitalization though — the prizes are expected to be great. With greater technology investment, respondents are looking forward to organizational efficiencies and cost savings (selected by 36%), higher productivity (35%), a better risk profile (35%), greater confidence in project costs (35%) and safety improvements (36%).

WHICH OF THE FOLLOWING BEST DESCRIBES YOUR ORGANIZATION’S DIGITAL MATURITY TODAY AND WHERE YOU SEE IT IN THE FUTURE?



Contractors in particular seek organizational efficiencies and cost savings (40% vs. 34% of owners), as do those respondents working on more than 50 capital projects (53% vs. 36% average).

With all of that in mind, what is holding organizations back from a greater technology investment? Unsurprisingly, money is a major factor. Lack of return on existing investments is a top three factor for 46% of respondents and lack of available capital is for 42% — the two most popular responses.

Closely behind financial factors are change management ones. Difficulty of integrating with current systems as a top three factor for 42% of respondents, while 40% point to both difficulty of implementation and a lack of technically skilled talent (though the latter is far less of an issue for contractors at 33% vs. 43% for owners).

“Integration is a very valid thing for people to worry about when making investment decisions, says Barth. It’s sensible. But the good news is that it’s getting easier as the technology matures. You used to need to worry about servers and IT people running everywhere, now you don’t. You used to have 10 systems to integrate, now it can be one. And, with strong implementation programs, you’ll see the return on investment improve, and that’s when the purse strings tend to loosen and capital becomes available.”

SUSTAINABILITY

New for this year’s GCPO, respondents shared their views on construction organizations’ performance on sustainability. Encouragingly, 80% of respondents say their organization has invested in sustainability to date — a figure split fairly evenly across owners (81%) and contractors (78%).

Interestingly, Europe respondents are less impressed than their global peers, with 74% reporting such investment versus 82% and 83% in the Americas and APAC respectively — perhaps a surprise given the EU’s emphasis on sustainability. It may be that the more climate-conscious business environment causes respondents here to set higher expectations for what qualifies as an investment in sustainability.

Bigger companies also perform better on this metric. Those working on the most capital projects are greener

WHAT DO YOU SEE AS THE MOST SIGNIFICANT BENEFITS OF GREATER INVESTMENT IN TECHNOLOGY AT YOUR ORGANIZATION?



than average, with 88% reporting sustainability investment versus the 80% average. The biggest by revenue also outperform at 90% versus the 80% average.

Those organizations with a clear integrated digital strategy also appear to be forward-thinking in this respect — 82% report investment in sustainability versus 76% of those with a siloed strategy and 73% of those taking an ad hoc approach to tech spend.

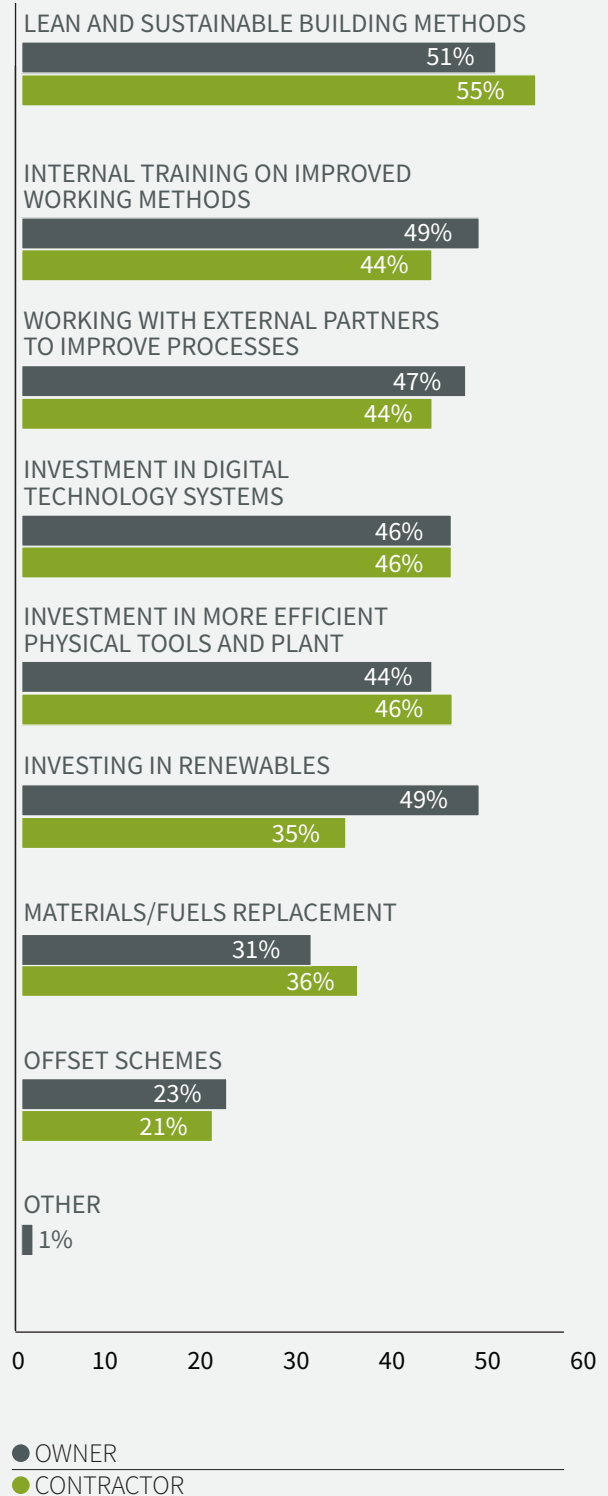
However, it's unclear whether this represents correlation or causation. Forty-six percent of both owners and contractors reference investment in digital technology systems when describing what those sustainability investments are. Those working on more than 50 capital projects are especially likely to have taken this route — 60% say this is the case.

The most popular sustainable investment though, has been in lean and sustainable building methods, followed by internal training on improved working methods, and working with external partners to improve processes.

Rob Bryant, EVP, Asia Pacific & Japan at InEight, offers that: “It’s good to see owners and contractors alike taking sustainability to heart. More and more we’re seeing these considerations factor into projects, so those who are making investments now are positioning themselves well for the future. It’s important to recognize the drivers and metrics for sustainability will differ between owners and contractors, though.

“For contractors, their area of focus is on the environmental impact of the construction process and the materials themselves — for example diesel emissions from machinery and the carbon intensity of concrete or steel. For owners, those things matter too, but are balanced against the ongoing energy and carbon efficiency of the finished site — and that difference in focus makes it difficult to set standards. It will be interesting to see what happens in the next few years from that perspective.”

WHAT METHODS DOES YOUR ORGANIZATION USE TO IMPROVE SUSTAINABILITY?





IT'S GOOD TO SEE OWNERS AND CONTRACTORS ALIKE TAKING SUSTAINABILITY TO HEART.

— ROB BRYANT, EVP, APAC
INEIGHT

CHAPTER SUMMARY

As was the case in 2021, respondents are enthusiastic about the tech investments their organizations have made to date, and even more so about the future.

The value of a more digitalized construction sector is clear to all, and the sector has an appetite for greater investment in data analytics and AI/ML in particular, which bodes well for the future.

Jake Macholtz, CEO of InEight, says: “Year over year, enthusiasm for digital transformation is undimmed. What’s more, those with the clearest digital strategies are also the most confident, resilient and optimistic, which is a clear endorsement of the power of technology in our sector. However, the one warning I’d sound is that there seems to be some naivety over how quickly an organization can work through the gears on digital maturity. It’s not a light lift and the change required needs careful management.”



4

HUMAN-CENTRIC DIGITALIZATION

The evidence that digital transformation is improving construction workers' lives, as well as organizational performance, is compelling. Yet that positivity is not without a measure of concern as effective change management has never been more critical. Keeping digitalization human-centric is not yet intuitive, so we must stay vigilant in keeping people at the heart of the sector's ambitious digital transformation strategies.

TECHNOLOGY: HELPING OR HINDERING?

Construction workers' day-to-day experience with technology is evolving rapidly. While accelerating the completion of mundane, day-to-day tasks was once the focus, the ability to gain better insights to improve decision-making is swiftly taking precedence. When asked the ways respondents find digital technology to be helpful in their roles, giving detailed and holistic information on projects and events (51%) and prioritizing tasks/managing project workflow (50%) score highly, alongside providing reassurance that environment, environmental health & safety (EHS) policies are being followed (54%).

Respondents working on more than 50 capital projects find most categories of technology more helpful than the average. Reflecting on the findings, Megan Siefker, Director of InEight Client Success at InEight, comments: "Simply put, the more work you have to manage, the more crucial technology becomes. It's easier for those working in smaller organizations to check in with their project managers to gain an insight into project progress and potential pitfalls. Whereas for larger organizations, it's much more cumbersome. Technology introduces the ability to interrogate performance across projects and share those learnings for the benefit of all stakeholders."

It is perhaps, therefore, not a surprise that respondents from the biggest organizations by revenue place a

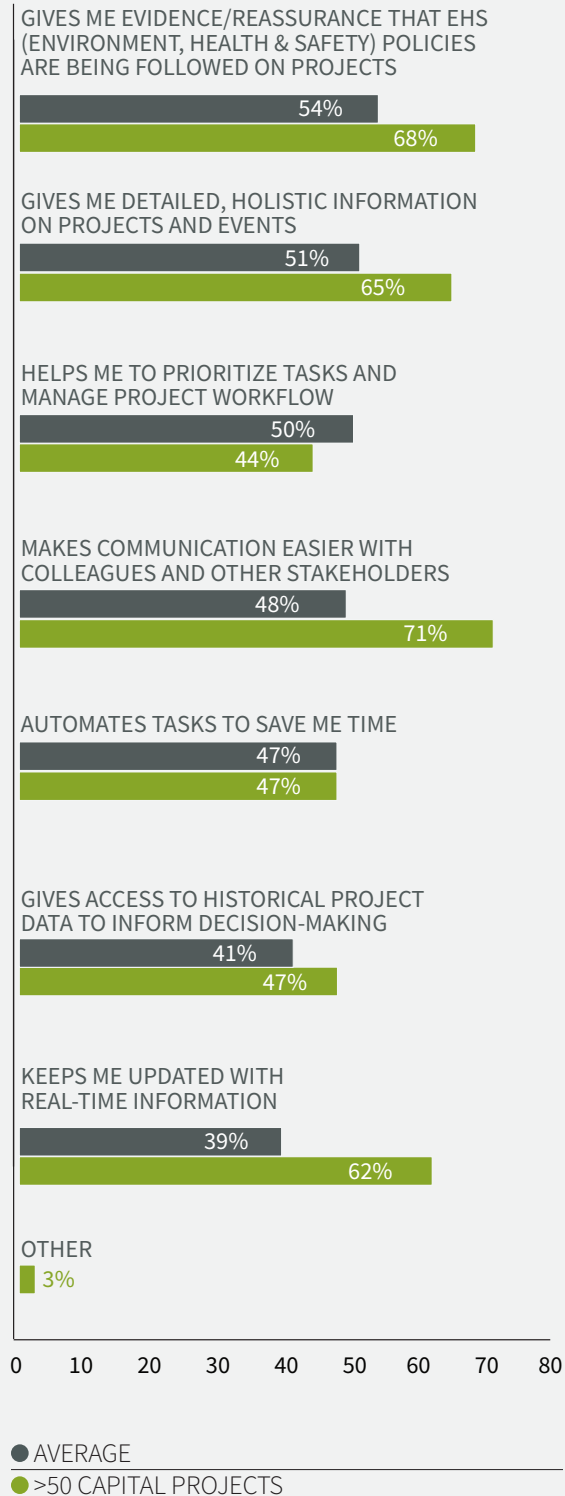
greater emphasis on appreciating technology that eases communications (57% vs. an average 48%).

Respondents from organizations with a clear digital transformation strategy already see benefits from technology in their roles, with numbers consistently above average across the options provided. While respondents from organizations with ad hoc approaches to technology spend are more enthusiastic about prioritizing tasks and workflow (53% vs. 50%) and automating tasks to save time (60% vs. 47%), they are less positive about the benefit of technologies to support EHS (20% vs. 54%).

Casting an eye to the future, when asked ways technology could help in their roles today, but which their organizations haven't yet invested in, respondents do not agree on any one frontrunner. Rather, five technologies are all of roughly equal interest. While EHS scores the lowest overall (26%), further analysis reveals that contractors return a greater interest in it than owners (34% vs. 23%). Owners, on the other hand, would prefer investments be made in technologies that support real-time information sharing (33% vs. 22%).

Jake Macholtz, CEO at InEight explains: "At first glance, it might be cause for concern to see EHS scoring the lowest. However, with the climate crisis accelerating, the onus has shifted away from sustainability reporting after

HOW IS DIGITAL TECHNOLOGY HELPFUL TO YOU IN YOUR ROLE TODAY?



the fact, towards actually moving the needle on carbon emissions and raw materials usage. Contractors still need to be able to provide EHS reassurance, but owners increasingly want to make decisions about how capital projects are built.”

When it comes to communications with colleagues and stakeholders, and automating tasks, respondents from the largest (by revenue) organizations and those with more than 50 capital projects, are confident they’ve already got it handled, with only a fifth or less selecting these as focus areas for future investment.

Respondents who identify with having ad hoc technology spend track above the average when it comes to hopes for further investments to be made, with increased interest in gaining access to historical project data to inform decision-making (40% vs. 33% average); detailed, holistic information on projects and events (40% vs. 28%) and easing communication with colleagues and other stakeholders (40% vs. 28%).

Siefker suggests a sense of anxious excitement about the results: “For those struggling to keep abreast of projects in their day-to-day roles, being at the mercy of an ad hoc technology strategy could be quite frustrating. But as the results show, it is also where much of the opportunity lies, and this desire for improved task prioritization and automation will be incredibly valuable when it comes to successfully creating change. Gaining buy-in for technology rollouts is half the challenge.”

WHAT’S STOPPING US?

It’s no secret that change can be incredibly tricky to manage for any organization. However, the survey results suggest a particularly steep hill to climb for those in construction. Only recently has the industry grown more accepting of digitalization, but it’s clear a shadow remains.

Legacy ways of working still present a significant challenge for the adoption of new tools and processes for nearly half of respondents (46%), making it the single biggest barrier to making greater use of technology in their roles. Respondents from organizations working on more than 50 capital projects feel this barrier most acutely (56% vs. 46% average). However, those busy organizations are also less likely to report insufficient investment (32% vs. 41%) or poor data collection (29%

vs. 39%) as challenges to making the most out of technology.

Insufficient investment in training and user adoption initiatives (42%) also ranks in the top three for limiting the usefulness of digital technology. Nate St. John, Director of Product Management for Schedule, Risk & Design at InEight reflects: “With any technology investment, there’s an eagerness to achieve ROI, but that doesn’t mean we should rush through training — quite the opposite, it needs to be resourced properly.”

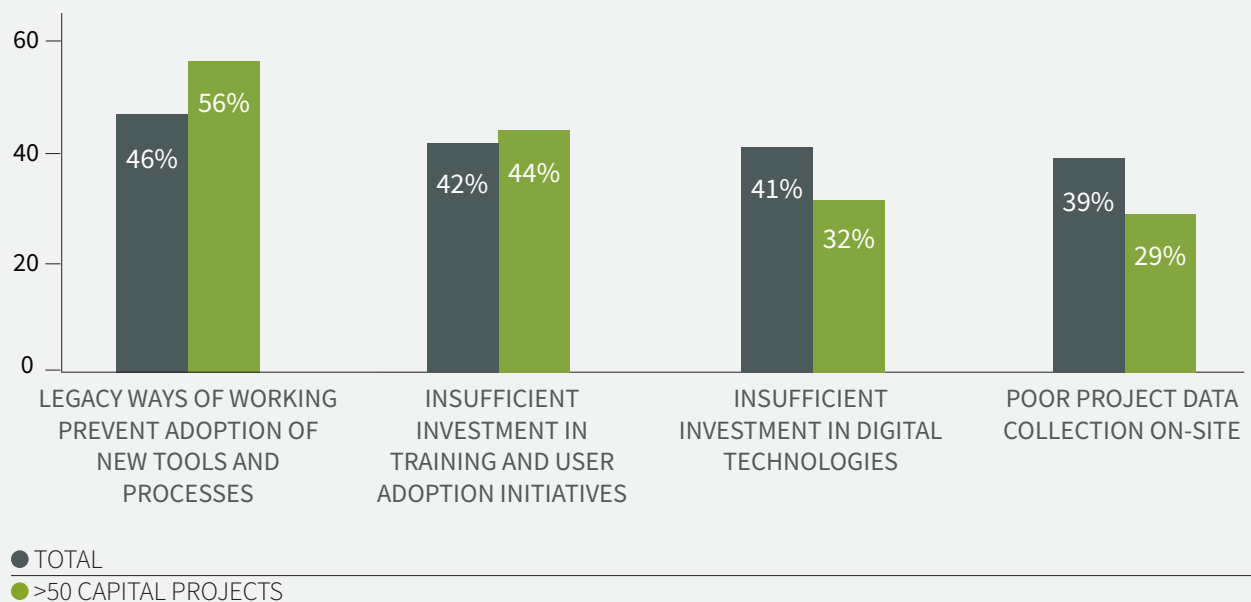
“However, many organizations are struggling to mobilize subject matter experts away from their day-to-day operational commitments to help deliver training. It’s a circle that needs to be squared. If we fail to invest in the end-user experience, then we will fail to deliver digitalization that is human-centric. Any investment will become another cumbersome piece of technology that creates more stress for workers rather than less.”

Those with clear digital transformation strategies are marginally more likely than average to say they have too many digital technologies (40% vs. 37%) to keep up with, which reduces their usefulness. For these organizations, the secret to increasing the impact of digital technology will not lie in adding more point solutions, but in creating a connected data environment. By integrating data solutions, organizations make space for true collaboration and improved transparency between stakeholders. At the same time, the ability to compare project work enhances insights and benchmarking, ultimately supercharging project certainty, both now and into the future.

CHANGE MANAGEMENT

Despite best intentions, it’s clear that the industry finds the implementation of new technologies somewhat painful. When asked about their experiences of change management, only 7% of respondents said that there

WHAT FACTORS LIMIT YOUR USE OF DIGITAL TECHNOLOGY IN YOUR ROLE, OR REDUCE ITS USEFULNESS TODAY?



was little room for improvement. More worryingly still, nearly a third (30%) of respondents say there's major room for improvement, while a further 9% say a complete overhaul of the process was required. The results come as somewhat of a surprise to Siefker: "As a project-focused industry, you'd think we'd treat it like any other capital project — define the resources, set a schedule and track against it. Instead, we're seeing sporadic, uneven implementation as a result of inadequate change management."

Organizations working on more than 50 projects seem to struggle the most, with the highest rates of request for complete overhaul (12% vs. 9% average) and major room for improvement (47% vs. 30%). Similarly, the biggest organizations by revenue are also more likely to say major improvement to the process was required (40% vs. 30% average). Although, these respondents are least likely to want a complete overhaul (3% vs. 9%).

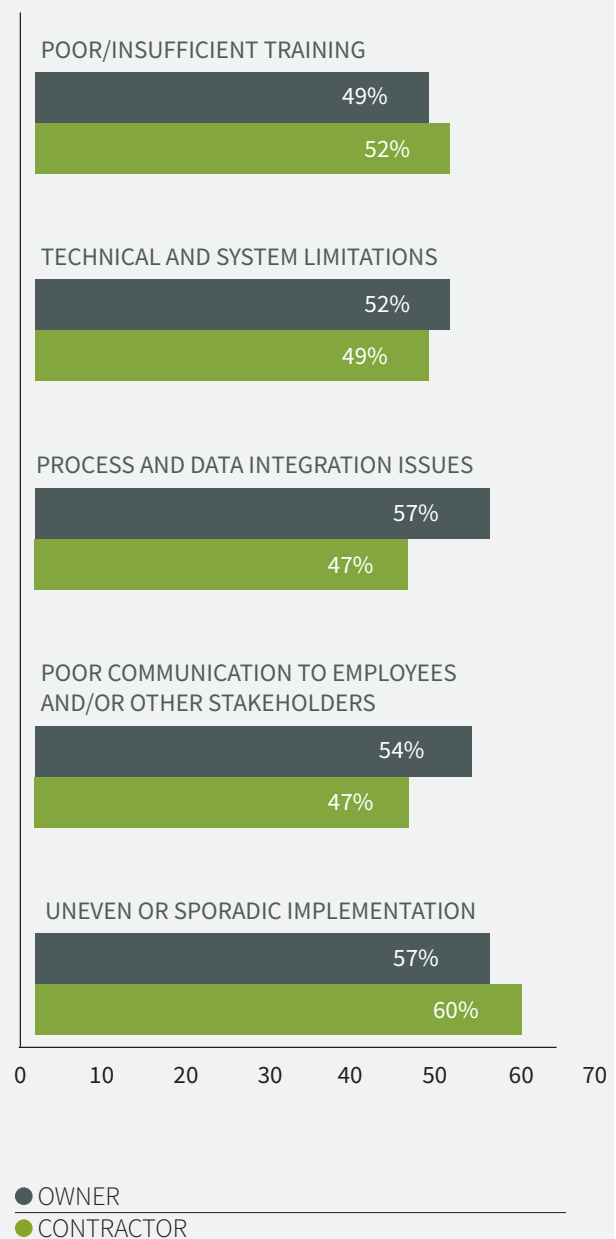
Macholtz explains: "Taking an organization through change often has pain points. Adoption might be slower than expected, integration at the user level may experience bugs and errors and the return on investment may take longer to materialize. Those issues take time to overcome. In the meantime, you need to keep everyone supportive of that change and the naysayers at bay. Users need to be able to connect with and see value in what that change means for them. For that, a change management plan, along with excellent communications, cannot be understated."

One surprise from the analysis is that having a clear digital transformation strategy does not appear to positively impact respondents' views on whether implementation of technology is handled well, with only one in 10 saying there is little room for improvement (vs. 7% average) and over a third (37%) saying a major improvement is needed (vs. 30% average).

Siefker suggests it might be a case of putting too much on people: "A strategy should have a clear vision, which prioritizes the various technologies and timetables. If you put too much on your workforce, it can leave a sour taste — timing is everything."

When asked what difficulties have come up in the implementation process or are a cause for concern for the future, respondents were in relative agreement. For all

WHAT DIFFICULTIES HAVE YOU EXPERIENCED DURING THE IMPLEMENTATION/CHANGE MANAGEMENT PROCESS FOR A NEW DIGITAL TECHNOLOGY AND WHICH CONCERN YOU FOR FUTURE PROJECTS?



options, between 40-60% of respondents say they have experienced the difficulties (usually clustered around 45-55%), and the same for expecting such difficulties in the future, with less than 10% saying neither.

In positive news, less than half of all contractors (39%) believe that process and data integration issues (e.g., disparate data formats and sources/data management) will continue into the future. Siefker explains: “What was once a small swell is becoming a tidal wave of integration. As an industry, we are increasingly moving away from point solutions towards a holistic approach, so with every implementation, data integration improves.”

Also looking forward, those with clear digital transformation strategies report low future concerns for poor communication (38%), a view that is shared with respondents from the largest organizations by revenue. With more technology at their fingertips, communication for larger companies is much easier than for their smaller counterparts — if change management is implemented at the onset.

Curiously though, respondents from organizations with an ad hoc approach to technology spend tend to have lower levels of concern across the board. Naturally, fewer, or less rigorous technology investments will create fewer implementation barriers.

IMPROVING THE HUMAN EXPERIENCE OF TECHNOLOGY

Will construction technology help to smooth the challenges many workers face in their day-to-day roles? The response is broadly positive, with hopes for more automation (49%), more control (48%), greater strategic insights (47%) and better communication (49%) highest on respondents’ wish lists.

In a departure from the variation seen in other answers to the survey, there is little difference in hopes between owners and contractors across regions, revenue bands, or across experience of capital project spending increase/decrease for this question. Only those working on more than 50 capital projects seem hopeful that digital technology will improve their experience at work.

St. John shares the enthusiasm of the respondents: “Taking mundane, time-consuming tasks and getting

HOW DO YOU HOPE THAT DIGITAL TECHNOLOGY MIGHT IMPROVE YOUR EXPERIENCE AT WORK PERSONALLY IN THE FUTURE?



technology to complete them in a fraction of the time is satisfying. But what's more exciting is the impact it has on the human experience: We're freeing up the mind to do more meaningful things, to explore through analysis, to have deeper conversations and to create connections that add strategic value — invaluable human-centric activities that can get washed away in the hustle and bustle of a construction project.”

Respondents from organizations with a clear digital strategy tend to be slightly more hopeful about the potential for digital technology to improve the human experience than average. Meanwhile, those with ad hoc technology spend have outsized hopes that digital technology will automate more of their role (67% vs. 49%), but are surprisingly pessimistic about the influence of all other factors. Perhaps, with limited exposure to the range of benefits that digital technology has to offer, those respondents are unaware of what they are missing.

Despite relative positivity, respondents are not without concerns about the future of digitalization. In fact, only 6% say they have no particular concerns. High on respondents' minds is the worry that digital technology may reduce in-person communication (45%) or replace professional experience and human intuition (43%). About the same percentage of respondents are concerned that digitalization might damage their work-life balance (41%) as well as whether automation could replace their job or reduce their hours (39%).

Macholtz reflects: “Digitalization doesn't encompass just a bunch of buzzwords. There is a very real need for human-centric change management, but some of this stuff is not intuitive. You don't want teams worrying about whether they will lose their job because of a new technology or whether to work extra hours to get a handle on it. Those are the types of concerns that can make change so difficult and why change management and clear communication are both so vital.”

On the subject of replacing professional experience and intuition with digital technology, there is an interesting divide. Those working on more than 50 capital projects are somewhat more concerned than average about it as a possibility (56% vs. 43%), while those with revenues more than \$5 billion are less concerned than average (30% vs. 43%).

The two demographics also do not agree on how it might affect communication, with respondents with more than 50 capital projects less concerned than average (29% vs. 45%) and those with revenues over \$5 billion somewhat more concerned (52% vs. 45%). However, the two do agree that it should not make understanding project reality more difficult (17% for over \$5 billion and 29% for over 50 capital projects).

Interestingly, those with ad hoc approaches to technology spend appear to be most concerned about whether digital technology will make it more difficult for them to understand site/project reality (53% vs. 42%), but are broadly less worried than their peers about its impact on other aspects of their roles.

CHAPTER SUMMARY

Respondents see the benefit of digitalization, but the potential for it to be divisive remains. “A focus on human-centric digitalization ensures value is derived both organizationally and by the individual,” says Brad Barth, Chief Product Officer at InEight. “But that's typically why implementation plans can fail because a vital step is missed in considering how all these technology changes add up for the user. This brings discord and resistance. Thankfully, a solid change management plan that is thoughtful in its communication and rollout, and thorough in its training and support, can make all the difference.”

SPOTLIGHT ON EUROPE

European companies in our survey are the largest by revenue and are involved in the greatest number of capital projects each year. The region is dominated by fewer, larger companies and is experiencing booming infrastructure development as nations rebuild from the pandemic. While these companies have more resources to invest in digital transformation, fundamental change is also more challenging for larger, less maneuverable organizations.

LEADING THE CHARGE TO CONSTRUCTION 4.0

European organizations are further along the digital transformation journey than any other region, yet they have also experienced the rockiest road to implementation.

These companies are the most digitally mature and most likely to claim they have a digital strategy in place. A higher proportion of European organizations have also integrated digital transformation strategies across the business with board-level backing or say that digital transformation is optimized and core to the company culture.

This could be explained by the fact that respondents here are involved in more capital projects: the data shows the number of companies with clear digital strategies in place rises in direct proportion to the number of capital projects they are handling. European respondents are also more easily able to access capital to invest in technology than firms in the Americas or APAC.

However, while Europe may be further down the road to digitalization, the region is paradoxically most concerned

about falling behind. Europe stands out as having far higher concern over lagging digital technologies than other regions (49% vs. 38% average).

However, more European respondents also say there was major room for improvement in past digital transformation efforts or that they underwent a complete organizational overhaul with disruptive effects on operations. Process and data integration, and uneven and sporadic implementation, are the most common difficulties experienced.

Brad Barth, Chief Product Officer at InEight, explains: “European firms are typically larger than those in other regions and the most advanced along the road to Construction 4.0. Yet introducing fundamental change at bigger organizations is like turning a tanker around. This explains the apparent paradox that European firms have gone further with digital transformation and therefore see the best results, while also experiencing the most disruption and difficulties along the way.”

There are similarly conflicting attitudes towards the benefits of technology for employees. Respondents appear divided on whether automation represents an opportunity to lighten the administrative load or a risk to their jobs.

On the one hand, European employees are the most likely to see AI and ML as the technology that is key to success in the next three years (59% vs. 42% in the Americas and 48% in APAC) and to consider automating more of their role to save time as having the most potential to improve their future work experience. Automation is also the workplace technology of choice for helping employees, among digital innovations their organization has yet to invest in. Yet, 42% of European employees also pinpoint the fear that automation may replace their job or reduce their hours as their third-biggest concern about further digitalization.

The fear that digital technology may replace/reduce in-person communication with colleagues and stakeholders features as their biggest concern amidst the post-pandemic rise of remote working, a finding consistent across all regions. This is followed by the impact of digitalization on work/life and family balance, indicating

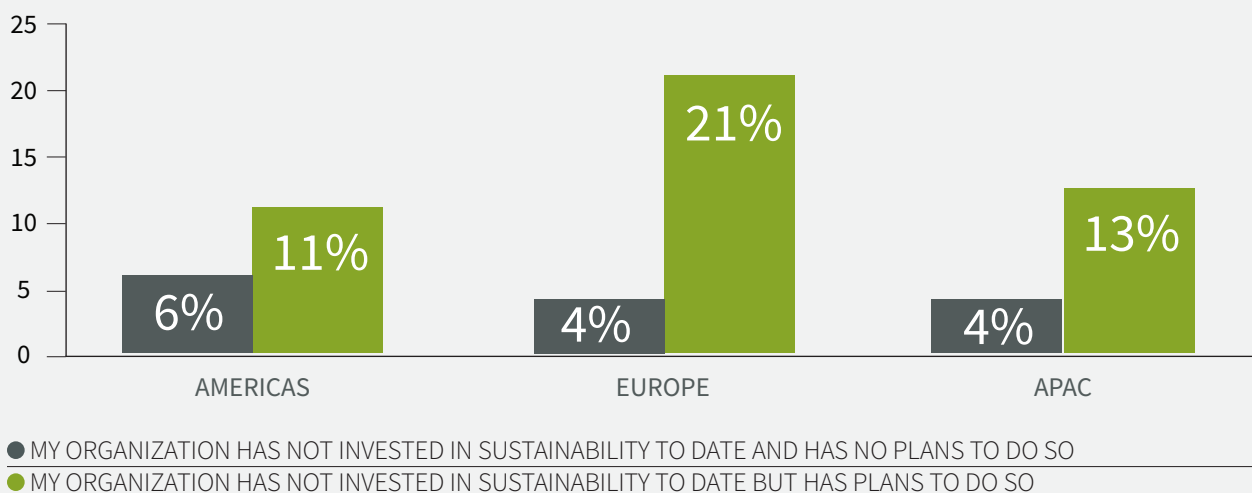
that technology is now perceived as a twin threat to home and working relationships.

Failure to factor in the human element also represents a barrier to technological transformation itself. European employees are most likely to cite insufficient investment in training and user adoption initiatives as the main limiting factor in the use or usefulness of digital technology. This indicates that successful investment in construction digitalization must be accompanied by parallel investment in digital skills.

Barth says: “Technology represents both a risk and an opportunity for employees depending on how it is exploited. Automation can pose a threat to jobs if used solely as a tool to boost efficiency, rather than as a source of data to augment and improve human roles and help companies scale.”

“For example, automating project measurement does not merely save time but can help identify opportunities to improve construction crew performance and accelerate project progress. Similarly, remote working can enable greater flexibility to boost work/life balance, while also creating an always-on world that increasingly impinges

WHAT METHODS DO YOUR ORGANIZATION USE TO IMPROVE SUSTAINABILITY?





THE KEY TO CONVERTING THESE RISKS INTO OPPORTUNITIES FOR GROWTH IS TO PUT HUMANS AT THE CENTER OF DIGITAL TRANSFORMATION.

on private life. The key is to implement hybrid forms of working that balance the best of both worlds. Crucially, successful digitalization will require parallel investment in employee training so that technological and employee development are aligned.”

When it comes to sustainability, European firms are also leading on digital transformation with companies more likely than peers in other regions to invest in digital technology to improve sustainability. The region is also investing heavily in the energy transition with Europe leading the world on renewables. Almost three quarters have now invested in improving sustainability, though this is lower than the 83% and 82% in APAC and the Americas, respectively.

When asked how digital technology is helpful in their roles, European employees also place less emphasis on environment, health and safety than their international peers, perhaps because they already feel standards to be high.

CHAPTER SUMMARY

Digital transformation represents a double-edged sword for Europe that illuminates many of the risks and opportunities inherent in the transition towards Construction 4.0. Digitalization is driving long-term benefits, but at the expense of short-term disruption. Automation contains the possibility of both augmenting and replacing existing roles. Digital technologies create the opportunity of greater workforce flexibility while paradoxically creating concerns about work/life balance. The key to converting these risks into opportunities for growth is to put humans at the center of digital transformation so that technology compliments, rather than conflicts with the existing construction workforce.



SPOTLIGHT ON APAC

Last year's leaders are this year's laggards — or at least so it seems at first glance. The reality is more complex, and it's possible that early-mover disadvantages are beginning to rear their heads. No challenges are insurmountable though — and the region's technology enthusiasm is undimmed, giving a cause for optimism. The industry is on the cusp of change; there is clear demand for more accessible and actionable insights among employees and digital transformation is now seen as the greatest opportunity for future growth.

APAC emerged last year as the most technologically forward-thinking region surveyed — an achievement it has been curiously unable to replicate this year. Is this a case of first-mover disadvantage? Or perhaps experience has given a more informed view that has tweaked the balance between enthusiasm and realism?

For example, APAC respondents are least likely to have a clear digital transformation strategy, yet they are most likely to take a disjointed approach where different parts of the business invest in technology according to their own needs. This contrasts sharply to last year, when the region was significantly more likely to work for an organization with a clear integrated digital transformation strategy. This fragmentation is reflected in the difficulties experienced during adoption with APAC respondents significantly more likely to experience uneven or sporadic implementation that varies, for example, between offices or jobsites. This also contrasts with the previous year, when APAC was more likely to collect a wider array of

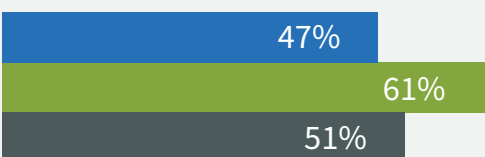
data using more modern, technology-led collection methods and apply it to a broader range of applications.

The current disjointed approach to digitalization is reinforced by the fact that difficulty integrating with existing systems is the biggest barrier to increased investment in technology alongside access to capital. Inadequate funding consistently emerges as an impediment to digital modernization with APAC respondents also most likely to cite insufficient investment in digital technologies as the key constraint on the use of digital technology in their role.

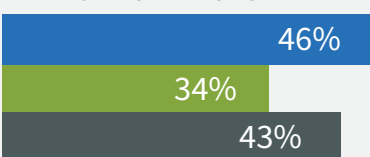
Rob Bryant, EVP for Asia Pacific & Japan at InEight, offers: “What we're seeing is a bit more sober thinking. As recently as last year, there was a lot of buzz and excitement around digital transformation and digitalizing processes. Now respondents are seeing the reality of what's involved and that it takes a lot more than just installing software. It's changing organizational processes. It's considering everything right through the supply chain to the construction methods used on-site.

TO THE BEST OF YOUR KNOWLEDGE, DOES YOUR ORGANIZATION HAVE A STRATEGY FOR DIGITAL TRANSFORMATION IN PLACE?

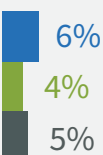
YES, THERE IS A CLEAR INTEGRATED STRATEGY ACROSS THE DIFFERENT PARTS OF THE BUSINESS



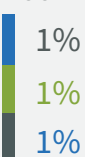
YES, DIFFERENT PARTS OF THE BUSINESS INVEST ACCORDING TO THEIR OWN STRATEGIES



NO, WE DO NOT HAVE A CLEAR INTEGRATED STRATEGY FOR DIGITAL TRANSFORMATION



INVESTMENT IN NEW TECHNOLOGY IS TOO INFREQUENT TO TELL



0 10 20 30 40 50 60 70

● APAC
● EMEA
● THE AMERICAS

So perhaps last year we caught the tail-end of a wave of initial enthusiasm that led to a lot of investments in point solutions, and now the next step is to recapture that enthusiasm and momentum and apply it to more integrated thinking.”

The possibility that APAC organizations may be grappling with the problems that come from early adoption is also reflected in the fact they are most likely to cite poorly maintained and updated technologies as the key constraint on the use or value of technology within their role. Concurrently, aging physical tools, plants and machinery are cited as the second-biggest risk to business growth, second only to economic stagnation or recession. Additionally, APAC respondents are less confident than other regions about future growth, despite seeing larger upticks in construction and capital project spending.

Disconnected digital adoption is also impacting communications, efficiency and project performance. When asked about the biggest challenges to projects being completed on time and on budget, APAC organizations are most likely to cite communication gaps and/or inadequate communication with stakeholders and inefficiencies arising from non-standardized systems and processes. APAC respondents are also most likely to want their organization to fund technologies that help keep them updated with real-time information, a feature of organizations with more integrated digital strategies and connected data.

Brad Barth, Chief Product Officer at InEight, says: “A patchy approach to digitalization hampers project-wide collaboration, communication and standardization. It also prevents organizations connecting the data dots to identify broader growth opportunities. Progressive project delivery models such as design-build and integrated project delivery increasingly demand a level of multiparty visibility, collaboration and integration that will require more integrated digital strategies. A typical project we worked on in Australia required real-time communication and oversight across a complex partner network spanning 12 design and delivery organizations.”

APAC companies also prioritize narrow, short-term concerns such as organizational efficiency or cost savings over holistic, higher-order needs such as improved

productivity or preserving knowledge when it comes to the benefits of a greater technology investment.

Barth explains: “When organizations see technology as delivering short-term individual benefits such as time or cost savings, this leads to suboptimal implementations. Those that view technology as fundamental to scaling the overall business, informing smarter decisions, and identifying broader business risks and opportunities adopt more holistic, joined-up strategies.”

Encouragingly, the region is now most likely to cite digital transformation as the biggest growth opportunity in the coming year. Improved data analytics is seen as the technology most critical to success over the next one-to-three years.

Yet one field in which APAC leads the world is sustainability. Eighty-three percent of APAC organizations have invested in improving sustainability compared

with 74% in Europe and 82% in the Americas. They are, however, most likely to achieve this through lean construction, internal training, or collaboration with external partners such as consultants to improve processes rather than investing in digital technology.

For Bryant, this is an exciting development: “There are a lot of sustainability leaders in APAC, and the recent election in Australia, for example, shows how the tides are shifting in the region. That said, in terms of construction, we’re at the start of this journey and a lot will depend on effective standardization. At the moment, stakeholders are pulling in different directions and lack a unifying framework for what good practice looks like. For example, owners prioritize things like energy efficiency and sustainability in the operational performance of the finished project, while contractors are more interested in the materials and construction processes used. There’s a big role for technology and data to provide some alignment right from the beginning.”

APAC SUMMARY:

APAC’s early digital lead has eroded as others have caught up and some of the early-mover disadvantages have come to the forefront. The next step will be for the region to regain its momentum and adopt more integrated approaches to digital transformation based in holistic thinking and higher-order needs. This will unlock the heightened efficiency, transparency, standardization and collaboration essential to many modern project delivery models and contracts. Fortunately, there is clear and unabated desire for new technologies among employees. The key will be aligning digital transformation across all departments and divisions based on a holistic view of technology as fundamental to collective performance.



SPOTLIGHT ON THE AMERICAS

Projects in the Americas have been buffeted by a perfect storm of crises from inflation to a supply chain crunch at a time when challenges such as climate change are increasing demand for high-speed, cost-efficient development. In a fast-fluctuating risk landscape, rich, real-time project data is more essential than ever. This will necessitate a fast-forwarded digital modernization of an industry still mired in legacy practices. However, buoyed by record planned infrastructure investment, the Americas are brimming with optimism about growth and see the future implementation of digital technology as pivotal to their success.

Project performance in the Americas is being affected by spiraling inflation, supply chain and skills shortages combined with a lack of project oversight. Companies in the region deliver more projects late or over budget than their global peers.

Respondents in the Americas are most likely to rank unmanaged or unexpected risks from supply chains to labor shortages as the key factors affecting project costs and timelines (63% vs. 56% average). Relatedly, they are also most likely to say project budget and timing is affected by the inability to see current project status and data at a detailed level (54% vs. a 47% global average). This indicates that digital data blind spots are hampering efforts to assess project progress and to predict and plan for risks. As a result, companies in the Americas are unique in identifying poor data collection, analytics and insights ahead of either economic recession/stagnation or lagging digital technologies as the biggest risks to growth.

Brad Barth, Chief Product Officer at InEight, says: “North America’s construction industry especially has been hit by rising inflation, as well as major materials shortages and energy price increases. This is compounded by the fact that many organizations admit to lacking rich, real-time data on project performance and progress, so they are repeatedly blindsided by emerging threats. This indicates that projects are late and over budget because of poor planning, not necessarily poor execution.

The key is to have connected data that can help understand and communicate risks across projects to inform smarter decisions that predict and preempt challenges. Comprehensive, current risk data is also the key to going one step further and converting risks into business opportunities.”

As with other regions, organizations in the Americas recognize digital transformation as most instrumental to growth in the coming year. However, they are the least likely to have invested in the technologies deemed

critical to success over the next three years. And the digitalization of processes is hampered by analog working practices, with the Americas more likely to cite legacy ways of working as restricting the use or value of digital technology (52% vs. a 46% global average).

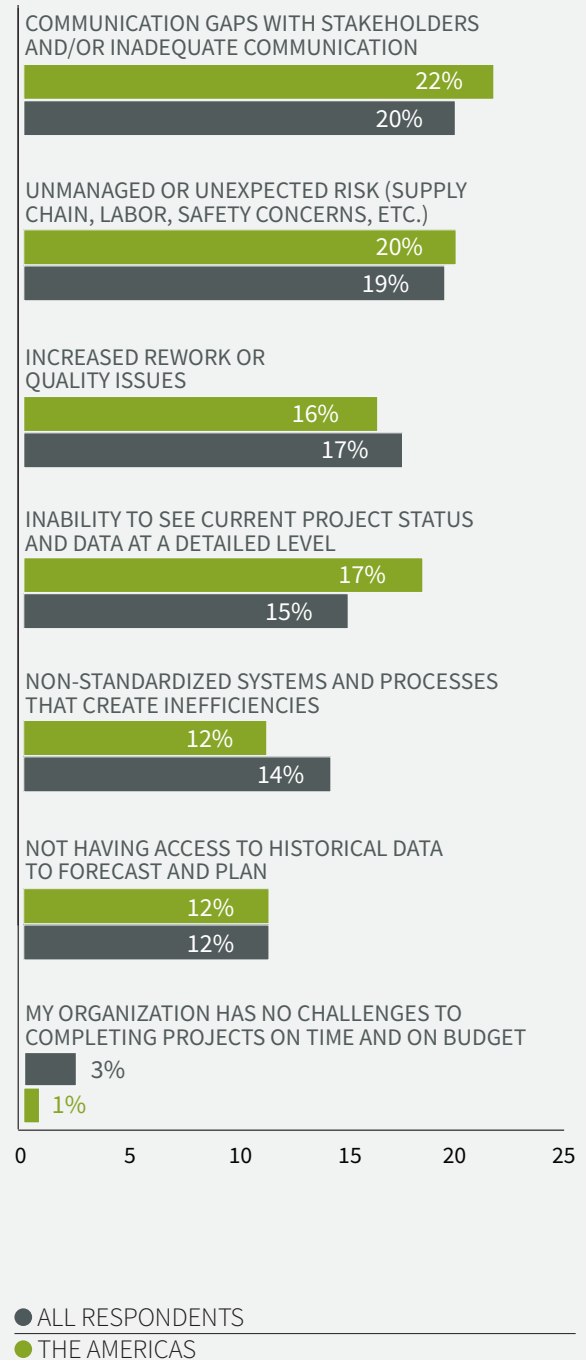
Perhaps relatedly, the region has experienced severe growing pains with digital transformation. Respondents in the Americas are more likely to suggest their previous implementation of digital technologies left some room for improvement with manageable disruption and impact to operations (59% vs. 50% in Europe, and 52% in APAC), or necessitated a complete overhaul with ongoing disruption (13% vs. 5% in Europe, and 9% in APAC). Respondents in the Americas are also significantly less likely to describe their organization’s level of digital maturity as optimized.

The preference for newer technologies may also create an added impediment to seamless digital transformation. Data analytics is pinpointed by 47% as the technology most critical to their organization’s success over the next three years, followed by AI and machine learning.

Barth says: “These organizations are moving from mature, widely used technologies such as project controls to newer innovations such as machine learning that require root-and-branch organizational reform. This creates a major change management challenge, especially at companies in the Americas that struggle more with legacy working practices. The key with digital innovations from data analytics to AI is to switch from traditional, siloed workforce cultures towards collaborative, integrated practices that are more conducive to connected data.”

Adoption of new technologies is accelerating with the Americas slightly more likely than APAC companies to have a clear digital strategy already in place (51% vs. 47%). However, they are adopting a more uncoordinated approach where digital investments are either ad hoc and on demand, splintered among different parts of the business serving their own technology needs, or too infrequent to tell (49% vs. 39% in APAC). Uneven and sporadic implementation is the most common current difficulty with digital transformation. This correlates with last year’s finding that APAC respondents tended to prefer specific, short-

HOW DO YOU HOPE THAT DIGITAL TECHNOLOGY MIGHT IMPROVE YOUR EXPERIENCE AT WORK PERSONALLY IN THE FUTURE?





BUOYED BY RECENT INFRASTRUCTURE INVESTMENT AND STIMULUS SPENDING, THE AMERICAS ARE THE MOST OPTIMISTIC ABOUT FUTURE GROWTH.

term technological benefits such as efficiency over higher-level business outcomes.

Barth notes: “A fragmented approach that prefers point solutions in each department over integrated platforms makes it harder to share data widely to give all project partners equal foresight of unplanned costs or delays. This is particularly vital as the Americas are seeing increased pressure to accelerate renewable infrastructure development from new offshore wind to electricity networks.”

Perhaps connected to the earlier challenges with delivering projects on time and on budget, confidence in project costs is now seen as the most beneficial outcome from technology investment.

Buoyed by recent infrastructure investment and stimulus spending, the Americas are the most optimistic about future growth. Conversely, respondents are the least concerned with organizational efficiency and cost savings as benefits from investment in digital technology.

CHAPTER SUMMARY:

The Americas are facing new project management risks from inflation to supply chain shortages. This poses a particular challenge with demands to accelerate infrastructure development such as renewables, and the prevalence of project delivery models requiring full transparency over costs and delays among all stakeholders. The region recognizes the potential for technology to improve project management, but legacy practices have presented barriers to digital transformation. The key is for a human-centric approach to digitalization that transforms working practices in parallel with systems and processes.



CLOSING SUMMARY

Last year was a uniquely challenging time and the global construction sector's buoyancy and resilience in the face of it was exceptional.

But, the headwinds have blown just as strongly this year. The pandemic is still with us, though the threat is fading, and life has returned to normal in some places. What's more, any breathing room that was gained from COVID-19 subsiding has been taken up by global supply chain shortages, inflationary pressure, an energy crisis and the war in Ukraine. Tough times no longer look like the exception.

While, the challenges have remained, so too have the confidence, optimism and resilience of the global construction sector. They also return this year to an equal, if not greater, degree than in 2021. Progress marches on, and this year we can reflect on four key themes:

Confidence remains based on strong growth prospects. The sector sees ample opportunity for growth and is confident of its ability to take advantage. Those with higher levels of technological maturity are best placed to do so and threaten to outpace their slower rivals.

Project certainty is still an aspiration for many. We still have a long way to go until we achieve productivity that is on par with other sectors, and the dented project certainty we see this year shows us that hard-won gains are easily lost. Nonetheless, project owners are demanding more data and insights, which will lay the foundation for improved project certainty.

Technology maturity and investment is highly valued. A highly strategic approach to digitalization and technology correlates well with metrics such as confidence and resilience. Respondents see this and are excited by the potential of technologies such as data analytics, artificial intelligence and machine learning. However, change management practices leave significant room for improvement.

Human-centric digitalization is vital. Digital transformation doesn't happen in a vacuum. Its success or failure depends on people. By keeping that top of mind, organizations can get the best out of their tech stacks and their workforces. Performance in this regard seems good so far, but there remain concerns to guard against.

The bottom line is that the construction sector — capital project owners and contractors alike — is investing in technology, seeing the benefits, and planning for bright, tech-led futures. The sophistication of an organization's digital transformation strategy is emerging as a reliable predictor for performance across a range of metrics from optimism to project certainty — we expect that to continue into the future.

All signs point to a sector prepared to weather any storm and seize the opportunities that come its way with the help of advancing digital technology — that is, so long as it continues to keep its people top of mind and place the human at the heart of digitalization.

Jake Macholtz, CEO
InEight



About InEight

InEight provides field-tested project management software for the owners, contractors, engineers and designers who are building the world around us. Over 575,000 users and more than 850 customers worldwide rely on InEight for real-time insights that help manage risk and keep projects on schedule and under budget across the entire life cycle. From pre-planning to design, from estimating to scheduling, and from field execution to turnover, InEight has powered more than \$1 trillion in projects globally across infrastructure, public sector, energy and power, oil, gas and chemical, mining, and commercial. For more information, follow InEight on LinkedIn or visit [InEight.com](https://ineight.com).

