

GLOBAL CAPITAL PROJECTS OUTLOOK, 2021:

Optimism and Digitization



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INTRODUCTION

Welcome to the first Global Capital Projects Outlook from InEight, focusing on optimism and digitization. We have honed in on these topics because we believe they represent the two most important themes in the short- and long-term development of our industry.

In the short term, economies around the world are still only just finding their feet after the worst pandemic in living memory. That has real consequences for the construction sector, and we felt it important to take the pulse of our industry as we come out on the other side of COVID-19. On that front, I'm pleased to report that ours is a sector in good health and with a great deal of enthusiasm for what comes next as economic recoveries build momentum.

In the longer term, there have been far too many outside commentators quick to accuse our industry of being slow to reap the benefits of digital transformation. Those of us inside this industry, including you the reader, have always seen these takes as the uninformed opinions they are: tone deaf to the complexities and realities of the work we do. We knew that these opinions were wrong, but we wanted the data to prove it — so we went out and asked 300 of the world's largest capital project owners and contractors exactly what they think about the subject.

This is a study of digital transformation of capital projects, both the sentiment that leans toward it and the priorities embraced within active change. Based on this study and the conversations I regularly have, there is no lack of support for the *concept* of digital transformation. What I'm hearing is more on the *how*.

We are a resilient industry that is optimistic and ready to embrace the change needed to improve outcomes. I see the challenge lies in finding an approach that is proven, not a repeat of the traps of the early 2000s ERP technology era.

As we explore these topics from various angles through the following report, I hope you find a perspective here to take with you into your digital transformation strategy. As many of you look to define the how, InEight stands uniquely apart from the crowd in our depth and breadth of approach to transformative outcomes.

Resilient and optimistic,

Jake Macholtz, CEO
INEIGHT

METHODOLOGY

This report is based on a survey of 300 large enterprise, capital project and construction professionals, conducted over six weeks in February and March 2021, via an online survey.

The survey included 25 questions designed to gauge general confidence and optimism levels across the industry (especially important during the pandemic), and assess track record, plans and attitudes towards digital transformation.

Of the 300 respondents, 100 each are drawn from our focus regions of the Americas, Europe and APAC, giving each equal weighting in the report. Globally, 64% of respondents are project owners and 36% 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 construction roles within broader industries, including:

- **POWER AND UTILITIES**
- **COMMERCIAL AND VERTICAL**
- **INFRASTRUCTURE**
- **MINING AND MINERALS**
- **WATER AND WASTE**
- **OIL, GAS AND CHEMICAL**

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.

1 CONFIDENCE AND GROWTH

When asked — at the height of the COVID-19 pandemic — whether it was optimistic about its future prospects, the global construction industry responds with a resounding “yes.” Companies believe themselves to be resilient, equipped for growth, and on the cusp of better days. However, optimism shouldn’t be mistaken for naivety — the industry is well aware of the challenges to come.

CONSTRUCTING CONFIDENCE

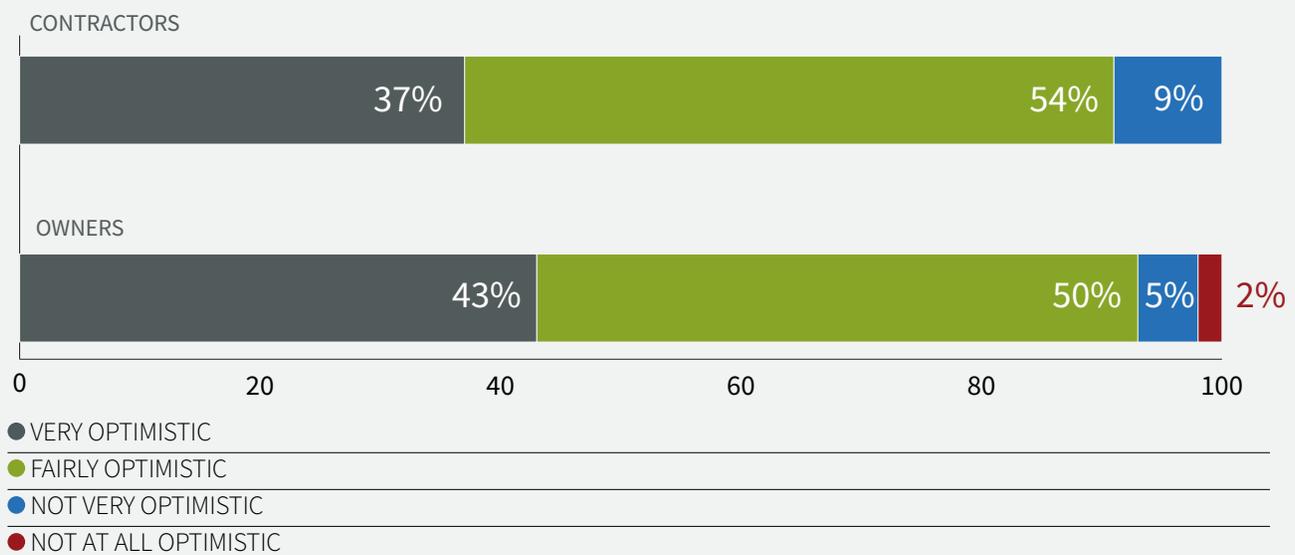
The entirety of the *Global Capital Projects Outlook* is underpinned by — and must be interpreted in light of — one simple fact: The global construction sector is bullishly optimistic about its prospects.

When asked how optimistic they are about their organization’s growth prospects for the next 12 months, 93% of owners and 91% of contractors report that they are either *very* or *fairly* optimistic. Respondents in the Americas are especially confident, and more likely to

describe themselves as *very* optimistic than *fairly*, whereas peers in Europe are the least positive — with 87% of European contractors positive about the future — the lowest proportion of any group.

This can be interpreted in light of recent spending promises. In the U.S., the Biden administration has promised a \$2.3 trillion American Jobs Plan, off the back of a \$1.9 trillion American Rescue Plan, which should translate into significant capital project spending on infrastructure. In Europe, the EU promised a €1 trillion

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





AS MANY AS 93% OF OWNERS AND 87% OF CONTRACTORS CONSIDER THEIR ORGANIZATIONS TO BE EITHER FAIRLY OR VERY RESILIENT.

(\$1.21 trillion) European Green Deal shortly before the pandemic, and a €1.8 trillion (\$2.17 trillion) recovery plan in the wake of COVID-19. Similar examples abound around the world, and compound additional capital project spending drivers.

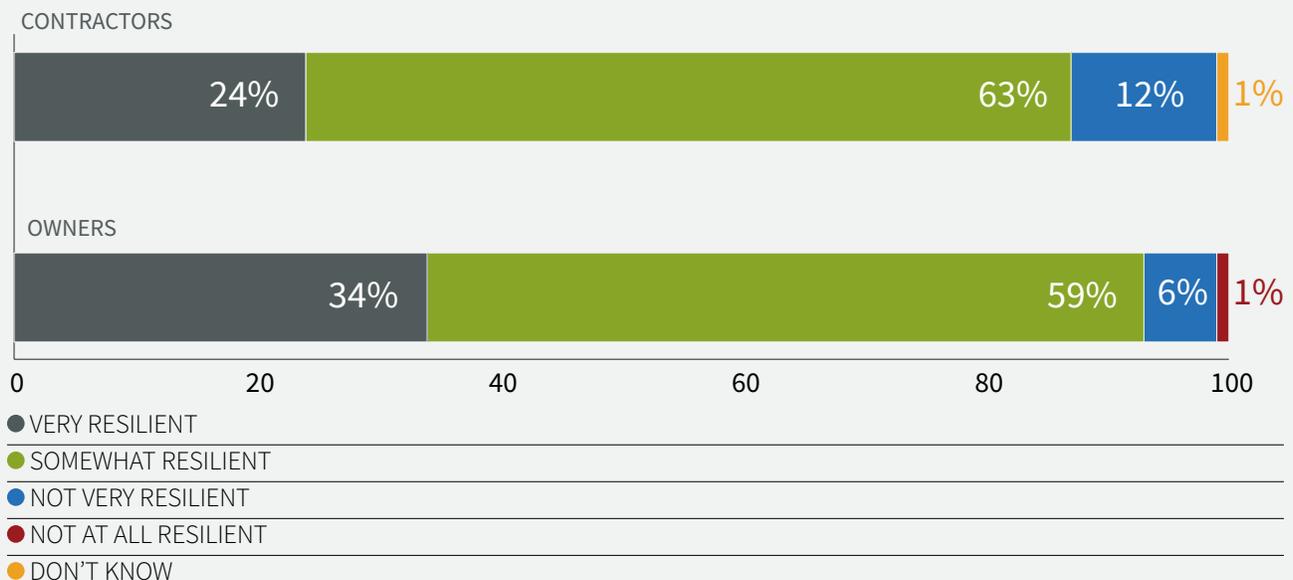
Dan Hicks, Chief Operating Officer at InEight, with oversight of Europe, speculates: “There is some minor variation in how confident different regions are, but the key takeaway here is that confidence levels are high everywhere. I suspect that’s a combination of pre-existing drivers — such as the EU’s lofty climate leadership ambitions — with pandemic recovery projects on top. While many sectors of the economy have taken a hit from COVID, capital projects tend to be seen as a way to kickstart things again.”

REPORTING RESILIENCE

Unsurprisingly, a sector confident about its prospects is also one that feels secure about its resilience. As many as 93% of owners and 87% of contractors consider their organizations to be either *fairly* or *very* resilient.

It is worth noting that respondents were surveyed at the height of the pandemic. In this context, it seems remarkable that resilience levels are reported so highly. It may be that there is an element of survivors’ bias at play — those businesses which did cease operating would not have been surveyed.

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



However, the more optimistic interpretation is that respondents rate their businesses as resilient because they have proved it, this year more than any other. This interpretation is supported when combined with the overwhelming sense of bright optimism described above, which we would not expect to see were our respondents survivors amid a struggling broader industry.

OPPORTUNITIES AND THREATS

Aside from a post-pandemic bounce, what factors specifically are making respondents optimistic? And, conversely, what are the threats the sector is keeping a wary eye on?

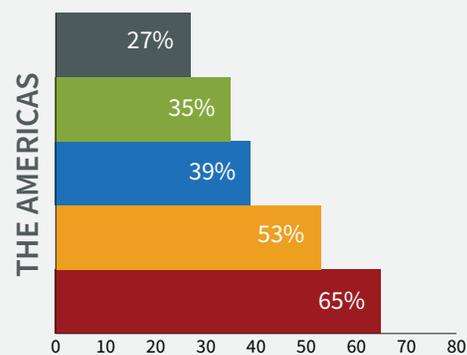
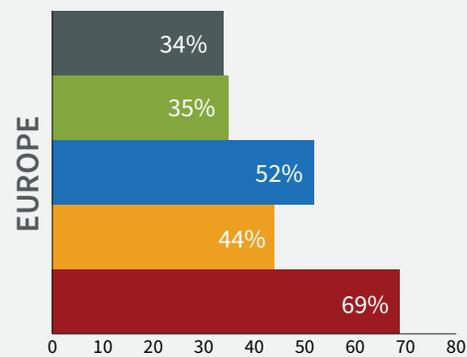
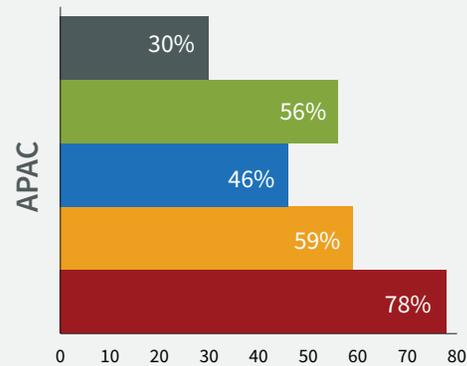
Encouragingly, digital transformation is seen as the biggest source of opportunity for the coming year across all three regions. In the Americas, respondents see economic growth and improvement in data collection, analytics and insights as the second and third most important factors, respectively, and their peers in Europe point to the same two responses, only in reverse order. In APAC, economic growth again ranks second, though sustainable building projects and practices are third.

On the other side of the coin, respondents are not blind to risk factors. In fact, the two most commonly cited risk factors mirror the top two sources of opportunity: economic stagnation/recession (selected by 46% of owners and 50% of contractors), and lagging on digital transformation (38% of owners, 44% of contractors). For owners, the next most prominent risk is staff and skills shortages (31%).

“The industry has always proceeded cautiously with digital transformation,” says Brad Barth, Chief Product Officer at InEight. “Ours is a lean industry with thin margins, so very rarely do you see separate teams focused squarely on innovation, as you might in other sectors. The people driving change here are the same people keeping the day to-day show on the road, and they’re thinking: ‘How do I do this while at the same time continuing to deliver on my existing project commitments?’ To a large degree, the past year has forced many in the industry to make the jump into digitalization or risk getting left behind.”

These trends are broadly similar across the regions, with one key exception: Both owners and contractors in Europe identify lack of access to capital as a top three risk whereas their peers do not. However, there is nothing

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



- PEOPLE/SKILLS
- SUSTAINABLE BUILDING PROJECTS AND PRACTICES
- DATA COLLECTION, ANALYTICS AND INSIGHTS
- ECONOMIC GROWTH/RECOVERY
- DIGITAL TRANSFORMATION

to suggest that access to capital is a major stumbling block for this part of the world, with a large number of projects underway across the region. It may simply be that respondents here are comparatively less concerned by staff shortages and data collection, allowing access to capital to rise up the rankings.

Occupying top spots for sources of both opportunity and risk, the economic backdrop and digital transformation appear to be double-edged swords for the industry. There is general optimism about the economic situation — and the capital project spending that entails — but recognition that it represents a major risk should economies not rebound from the pandemic as expected.

As for digital transformation, it represents a similar ‘make-or-break’ factor for the industry. The upside of successful investment is well-recognized, but conversely, so is the risk of being left behind if competitors do it better.

As Rob Bryant, Executive Vice President for APAC at InEight, phrases it: Digital transformation may “divide the industry into the ‘haves’ and ‘have-nots’ in the next few years. Those who have invested will attract the best talent — which is important in the context of labor shortages. Tech-led contractors will put together more compelling bids, owners will be more attractive collaboration partners — and others will fall behind.”

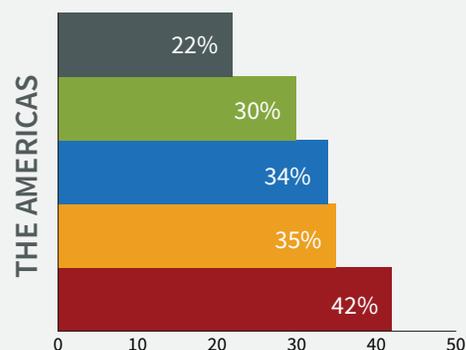
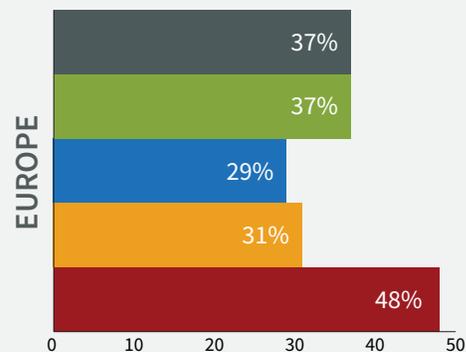
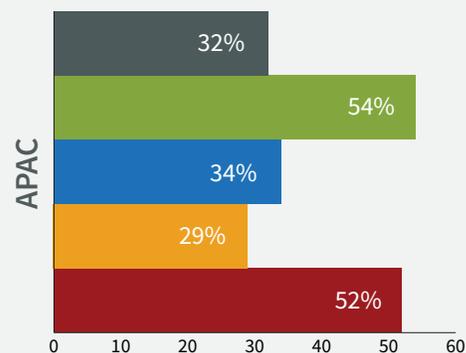
A PLATFORM FOR GROWTH

It is important to note that the industry’s confidence is based not just on respondents’ own company’s performance, but on perceived growth of the sector as a whole.

Asked whether construction and capital project spending had increased or decreased over the last year in their sector, 68% of overall respondents say that it has increased (significantly or slightly) and 13% have seen no change and only 19% think spending has decreased. This is fairly consistent across owners and contractors, though contractors are slightly more likely to report a decrease (22% versus 16%).

Curiously however, while contractors in the Americas are more likely to report an increase than their international peers, owners in the region are *less* likely than their Europe and APAC equivalents to do so. Considering that owners have more insight into project pipelines, and that contractors have a more reactive role, this may mean that

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



- LACK OF ACCESS TO CAPITAL
- LAGGING DIGITAL TRANSFORMATION
- POOR DATA COLLECTION, ANALYTICS AND INSIGHTS
- STAFF OR SKILLS SHORTAGES
- ECONOMIC STAGNATION/RECESSION

owners are factoring spend on upcoming projects and are less bullish on these than contractors — though the overall picture remains one of growth.

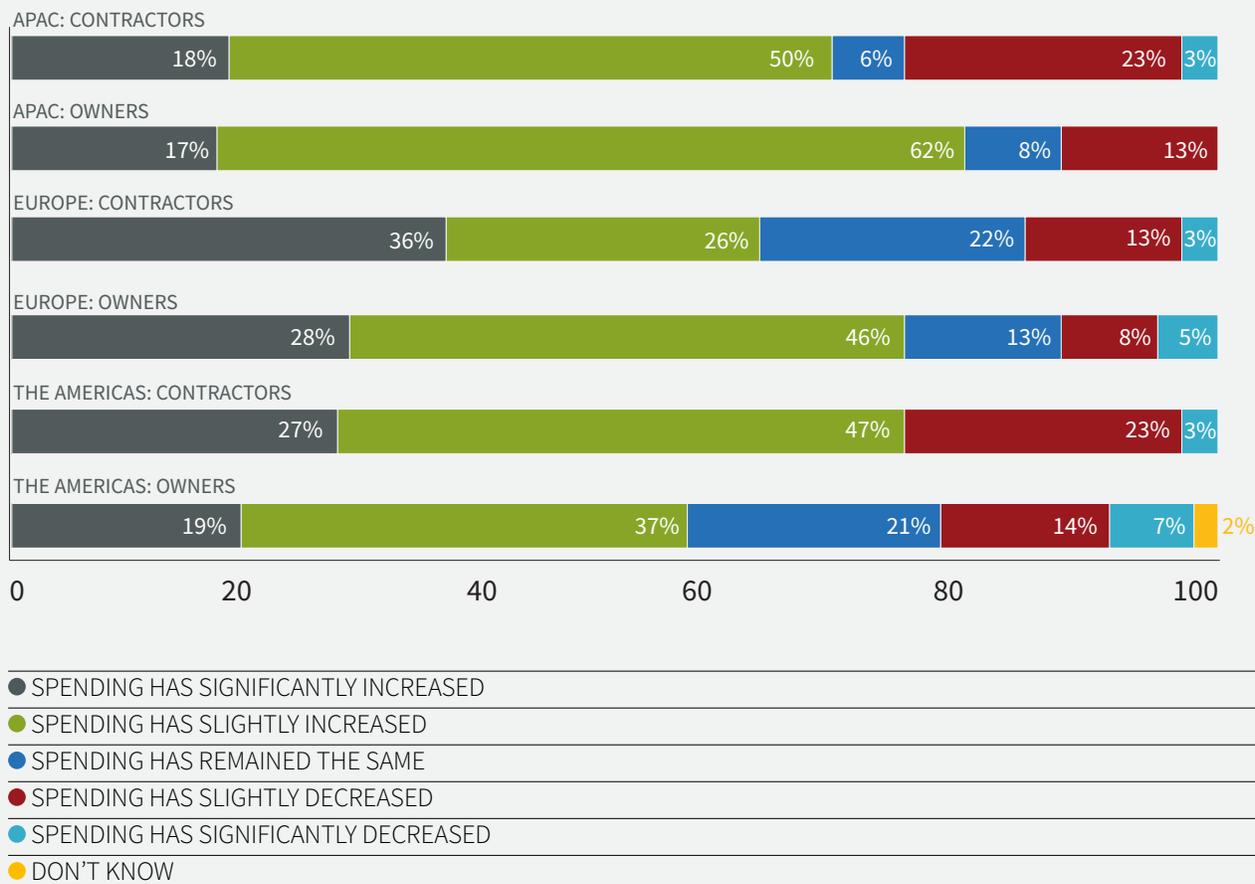
What is clear is that the construction sector — project owners and contractors alike — see a market environment rife with opportunity, with multiple InEight experts pointing to promised programs of post-pandemic spending around the world as a key reason why.

IN SUMMARY

Confidence and growth are in ample supply, and a demonstrably resilient construction sector is riding high having endured the worst of 2020, with better days ahead to look forward to. Digital transformation emerges as a key strategic priority, recognized by most respondents as a critical source of strategic advantage and important ground not to cede to competitors.

Jake Macholtz, CEO at InEight, concludes: “When we put these results together, what we see is an optimistic construction sector, but also a realistic one. Yes, respondents see opportunities, but they also see threats to navigate; they know it isn’t all smooth sailing. Likewise, they’re not just looking at their own performance as cause for positivity, they’re looking at a successful sector that’s growing the size of the pie for them to take slices out of. It’s an astute kind of optimism.”

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





WHEN WE PUT THESE RESULTS TOGETHER, WHAT WE SEE IS AN OPTIMISTIC CONSTRUCTION SECTOR, BUT ALSO A REALISTIC ONE. YES, RESPONDENTS SEE OPPORTUNITIES, BUT THEY ALSO SEE THREATS TO NAVIGATE; THEY KNOW IT ISN'T ALL SMOOTH SAILING.

— JAKE MACHOLTZ, CEO
INEIGHT



2 PROJECT CERTAINTY

While delivering projects on time and on budget has always been the holy grail for owners and contractors, achieving it has remained a challenge for many in the construction industry. But that might be about to change. Confidence in project certainty is expected to soar in the next three years thanks to new digital tools, shared risk models and the ability to use historic and real-time data to better manage expectations and create more accountability.

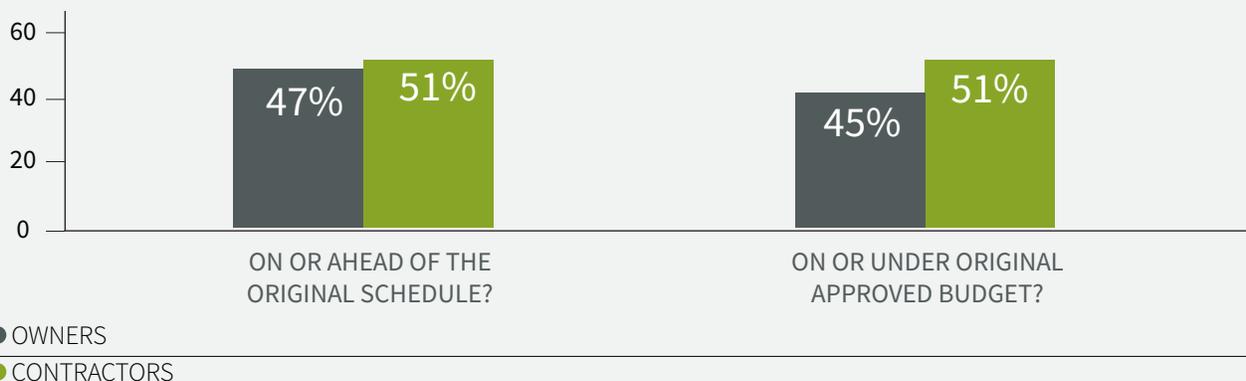
ON TIME AND ON BUDGET?

The self-reported nature of the survey gave the construction industry every opportunity to overstate the improvements that it is making, so it is striking that respondents return a divided result when it comes to reporting their performance in achieving on-time and on-budget project delivery — a depth of truth only afforded to us through the survey’s anonymity. When asked about the proportion of construction projects that are delivered on or ahead of their original approved schedule, owners report that they achieve this on average 47% of the time, and contractors say 51%. Similarly,

owners and contractors say their projects are delivered on or under the original approved budget 45% and 51% of the time on average, respectively.

The small difference noted between owners and contractors could be down to the number of times schedules and budgets are subject to change orders throughout project delivery. A general industry trend is that contractors are becoming more proactive at tracking these adjustments and reporting against the latest version, although the gap suggests an opportunity

HOW OFTEN DOES YOUR ORGANIZATION COMPLETE CONSTRUCTION-RELATED PROJECTS?





A GENERAL INDUSTRY TREND IS THAT CONTRACTORS ARE BECOMING MORE PROACTIVE AT TRACKING THESE ADJUSTMENTS AND REPORTING AGAINST THE LATEST VERSION, ALTHOUGH THE GAP SUGGESTS AN OPPORTUNITY TO BETTER MANAGE EXPECTATIONS TO ENSURE OWNERS REMAIN ON THE SAME PAGE.



to manage expectations even better to ensure owners remain on the same page.

When asked whether this represents an improvement, respondents are moderately positive. Sixty-one percent of owners and 50% of contractors say that, in the last three years, the number of projects delivered on or ahead of schedule has increased. Similarly, 56% of owners and 51% of contractors say the same for projects on or under budget.

While the results indicate that there is still room to grow, there is a positive trend of improvements being made in how owners and contractors collaborate and communicate, partly fueled by the industry's digital transformation. The industry is becoming increasingly open to trying different approaches to delivering projects and looking to other industries for inspiration on how to become more agile. A spirit of innovation and new methods of completing the work are bringing optimism to the industry.

But are these new working methods driving results in the right places? With an industry perennially challenged with schedule and budget overruns, it may be the *how* rather than the *why* that limits the adoption of advanced budgeting and scheduling tools to address widespread challenges.

Respondents report that on projects that do go over budget, they do so on average by 20%, although owners in the Americas report being more severely affected by overspend, with projects over budget by an average of 25%. This overspend looks particularly high when compared to only 17% in APAC where owners and contractors may be more efficient at identifying and mitigating risk before a project commences. Equally, a low-bid culture in the Americas (especially in the U.S.), coupled with heightened labor costs and more fluctuation in steel and concrete prices also contribute to the gap. While an honest reflection of projects today, owners should expect to see a marked decrease in overspend in the near future as contractors implement digital technologies that set realistic expectations from the start.

Nate St. John, Head of Product for Planning, Scheduling and Risk at InEight, explains: "A paradigm shift is happening. The construction industry is beginning to move away from a competitive low-bid, and sometimes unrealistic scenario to a transparent and collaborative



TRACKING PAST PROJECT OUTCOMES AT A MORE DETAILED LEVEL CREATES NEW OPPORTUNITIES TO HARNESS MACHINE LEARNING FOR INTELLIGENT RISK IDENTIFICATION; AND THE GROWING USE OF ALTERNATIVE DELIVERY AND SHARED RISK CONTRACTING MODELS IS ALSO DRIVING GREATER ACCOUNTABILITY.

— BRAD BARTH, CPO
INEIGHT

way of working where risk, project decisions and project data are shared. Owners and contractors are noticing the significant improvements that data and digital tools can make to project outcomes and are coming together in ways not seen before to improve schedule and budget performance.”

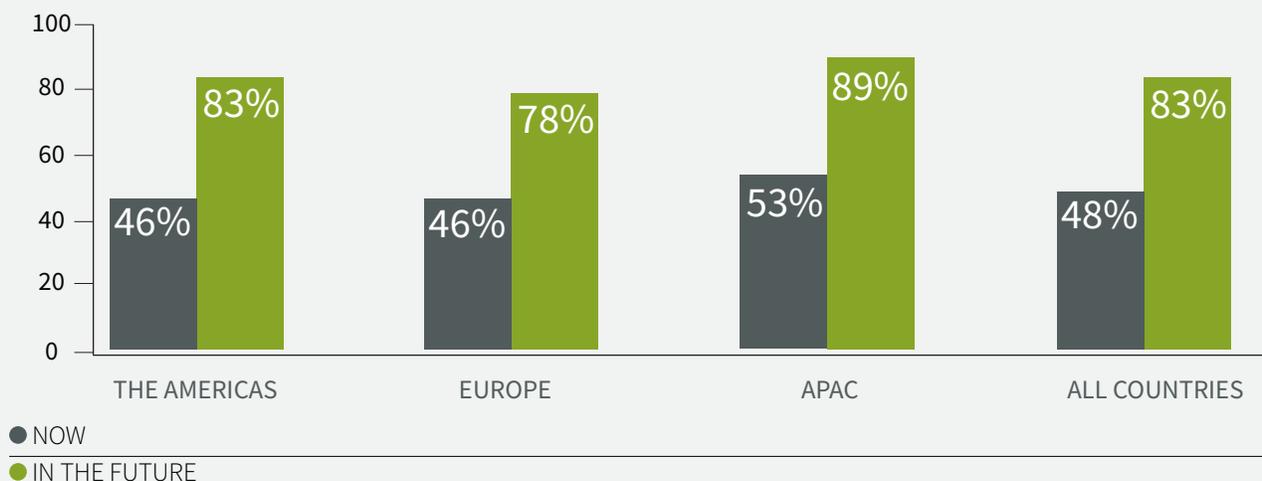
THE OUTLOOK FOR PROJECT CERTAINTY

The shift in how projects are being delivered has positive implications for project certainty. Eighty-three percent of respondents are confident of completing future projects on or ahead of schedule, and 82% are confident of doing so on or under budget — a huge leap compared to what the industry reports today (48% for on or ahead of schedule and for on or under budget). Unsurprisingly, APAC respondents are even more confident than their American and European peers having already made marked improvements on reducing overspend.

What is the root of this optimism? The overarching theme of digital transformation and with it, the big uptake in digital project planning and control tools could be one reason. The industry is becoming far more adept at planning and estimating as well as identifying risks upfront to create more reality-based budgets and schedules.

Brad Barth, Chief Product Officer at InEight, explains: “Thanks to digital tools, and the move away from low-bid contracting toward alternative delivery models, the days of setting an aggressive target and then running like crazy to execute are gradually moving behind us.

CONFIDENCE IN PROJECTS BEING DELIVERED ON OR AHEAD OF SCHEDULE AND ON OR UNDER BUDGET NOW VS. IN THE FUTURE



There is growing recognition of the value of combining historical project data with sophisticated risk assessment to set more meaningful expectations for project delivery up front. That powerful combination gets even more impactful as the trove of data increases.

Collecting more data on past projects makes for more accurate estimating and scheduling of future projects. Likewise, tracking past project outcomes at a more detailed level creates new opportunities to harness machine learning for intelligent risk identification. Additionally, the growing use of alternative delivery and shared risk contracting models is also driving greater accountability. Ultimately, this creates an incentive to set realistic expectations that can build project certainty and confidence.

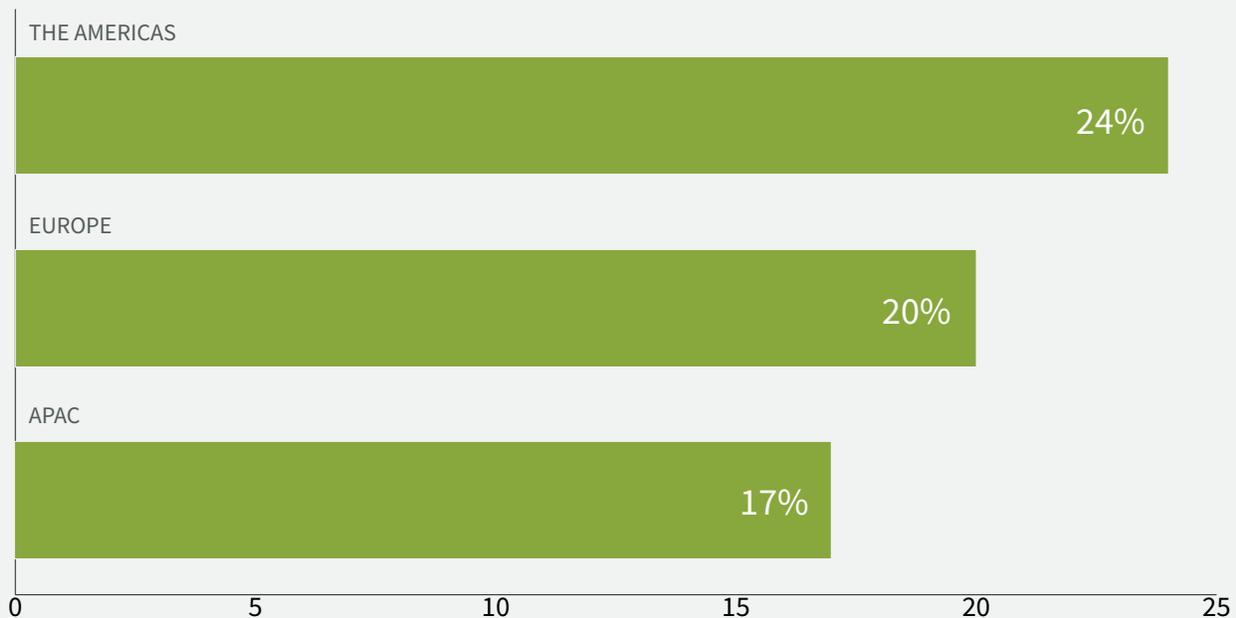
MAKING IMPROVEMENTS

Perhaps unsurprisingly, when casting an eye over what may be affecting their organization’s ability to deliver projects on time and on budget, respondents say the

most influential factor is planning and scheduling (selected by 53% of respondents). Project execution (48%) and resource management (46%) complete the top three challenges.

However, there are some marked regional differences. With contractors in the Americas faced with a low-bid culture and a more competitive landscape, estimating accuracy is considered more influential than project execution (selected by 50% versus 43% of contractors respectively). And, despite not typically being considered an expensive place for craft labor, APAC owners place resource management (53%) in pole position — which encompasses labor costs alongside the challenge of commodity prices. The result is indicative of the growing globalization of project expertise — experienced foreign engineers are sought out by APAC developers to play a supervisory role as they look to keep up with a fast-moving project pipeline — which comes with a premium price tag. Data transparency and visibility (52%) also enters the top three for APAC owners, ahead of project execution (45%).

WHAT WOULD YOU SAY IS THE AVERAGE FINAL PERCENTAGE OF CONSTRUCTION-RELATED PROJECTS THAT GO OVER BUDGET?



IN SUMMARY

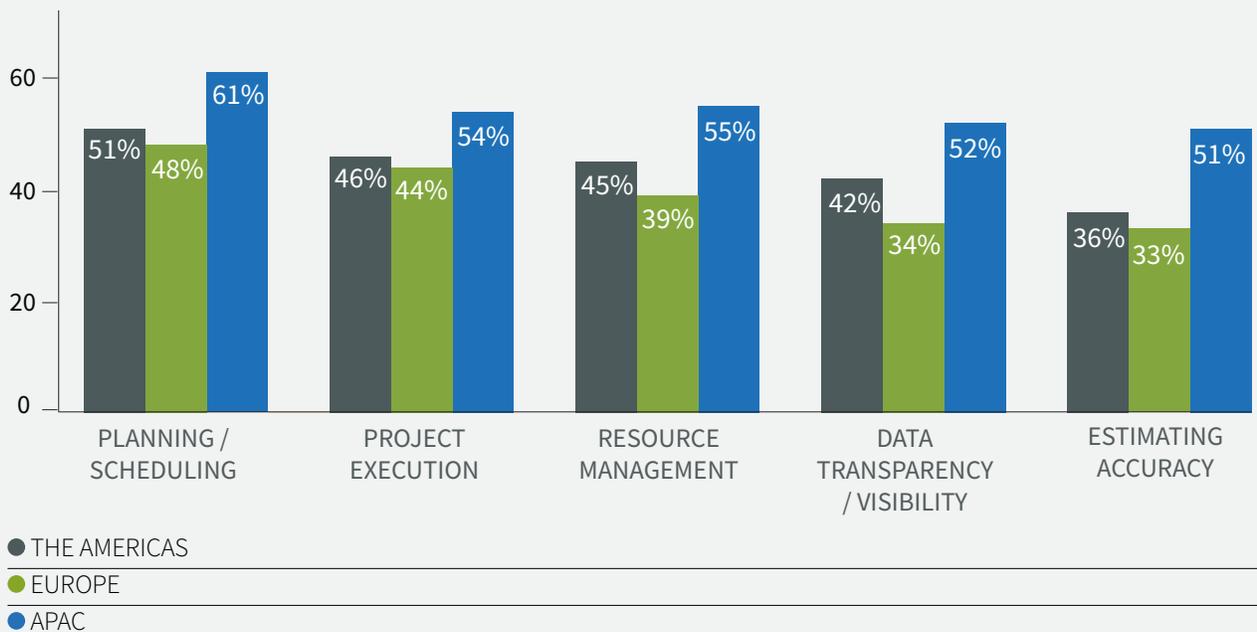
Historically, you could flip a coin on whether a project would be delivered on time or on budget. Now, a self-reported trend of improvement indicates the sector sits on the cusp of becoming more often reliable than not. Given the industry's low starting point, there is still a long way to go before it achieves project outcomes and productivity on par with its peers. However, the industry is broadly confident in the improvements it will make over the coming years.

Jake Macholtz, CEO at InEight, concludes: "Much of the industry is sitting on the cusp of digital transformation, so it is especially encouraging to see the extent to which project certainty has improved over the last three years and the confidence that respondents have in this trend continuing. This is undoubtedly underpinned by the success of digital tools and it is clear that respondents understand the depth and breadth at which digital transformation can positively impact project delivery — from improving collaboration across project stakeholders, to providing insights for now and for next time. These capabilities will be particularly valuable as the industry continues to push the boundaries of project complexity."



TO A LARGE DEGREE, THE PAST YEAR HAS FORCED MANY IN THE INDUSTRY TO MAKE THE JUMP INTO DIGITALIZATION OR RISK GETTING LEFT BEHIND.

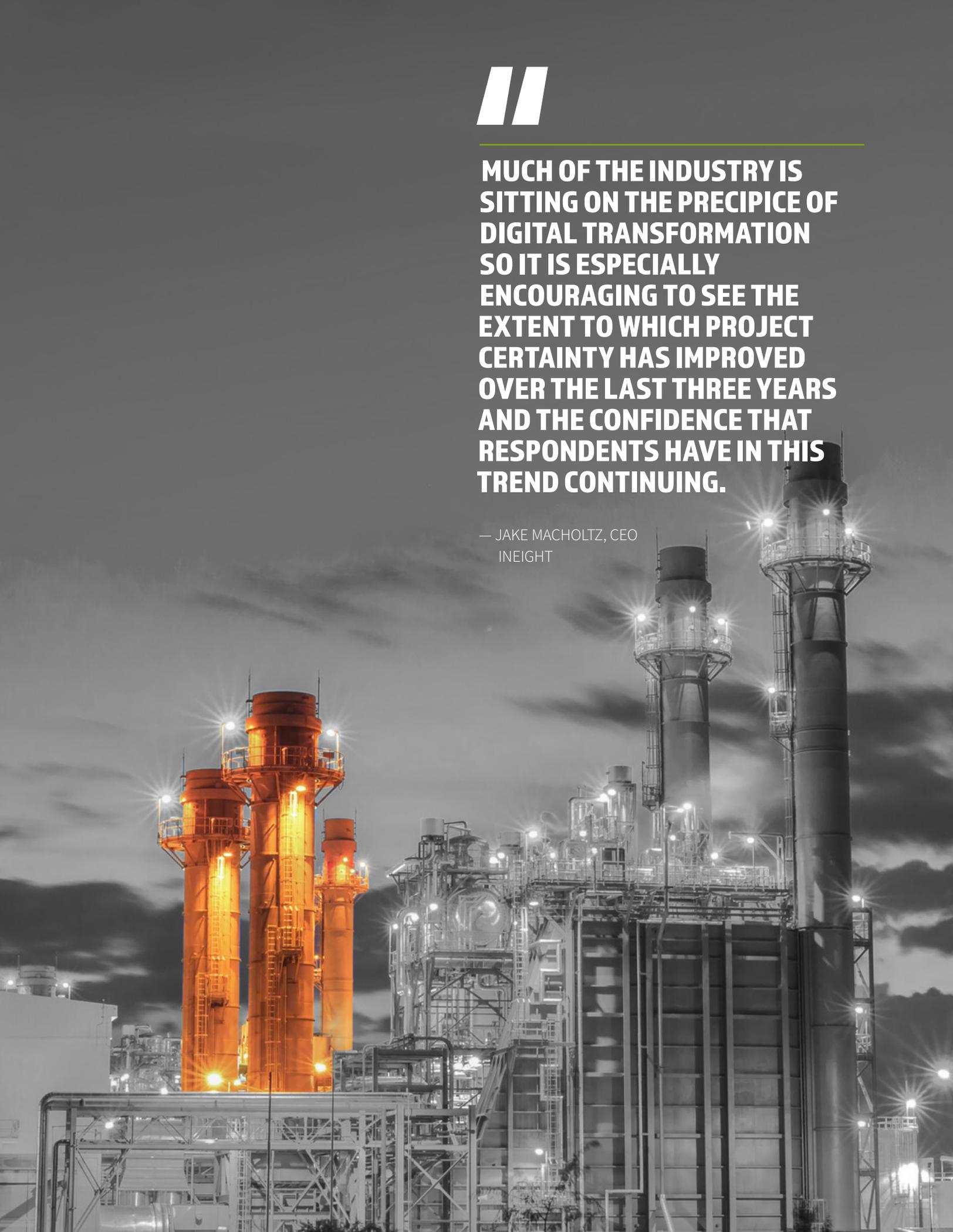
WHAT FACTORS INFLUENCE YOUR ORGANIZATION'S ABILITY TO DELIVER CONSTRUCTION-RELATED PROJECTS ON-TIME AND ON BUDGET? (TOP FIVE)





MUCH OF THE INDUSTRY IS SITTING ON THE PRECIPICE OF DIGITAL TRANSFORMATION SO IT IS ESPECIALLY ENCOURAGING TO SEE THE EXTENT TO WHICH PROJECT CERTAINTY HAS IMPROVED OVER THE LAST THREE YEARS AND THE CONFIDENCE THAT RESPONDENTS HAVE IN THIS TREND CONTINUING.

— JAKE MACHOLTZ, CEO
INEIGHT



3

TECHNOLOGY AND DIGITAL TRANSFORMATION

Construction may have been slower to digitally transform than some other sectors, but our respondents show the tide is turning. The construction industry today is populated by techno-optimists who recognize the value technology can add and — crucially — put their money where their mouths are by investing — which hasn't always been the case. That said, there are some gaps between where the industry is today and where it wants to be, and significant regional variation on technological uptake.

BELIEF AND ACTION

The construction sector is united in its belief that technology can help improve productivity — 96% of respondents have faith in the potential of technology to do so, including 71% who think it already has led to improvements.

What technologies specifically will be most helpful? When asked to consider which technologies will be critical to their organization's success in the next 1-3 years, respondents look to cutting-edge solutions to make the difference.

For project owners, the most popular technologies are data analytics, artificial intelligence and machine learning (AI/ML), and sensors and real-time physical data collection technologies, as selected by 52%, 52% and 39% of respondents, respectively. Contractors make similar predictions — 58% point to data analytics and 51% to AI/ML — but are more likely to prioritize project management software (57%) than sensors and real-time physical data collection (39%).

The point of difference perhaps reflects the different day-to-day realities of the two groups. Whereas the contractor is concerned with doing the job — and therefore managing it as tightly as possible in order to conserve

margin — the owner is removed from the front line and seeks to narrow the gap with greater data collection.

Most remarkable however, is the high esteem that the entire industry has for AI/ML technologies. Unlike data analytics or project management technologies, these do not represent iterative improvements on solutions available today, but rather fundamentally new technologies. They are unknown quantities, only at the early stages of real-world application, yet clearly the industry has seen enough to be convinced by their transformative potential. This is especially true in APAC, where 63% of respondents select AI/ML — more than any other option.

Catie Williams, Director of Connected Analytics at InEight, theorizes why this might be: “On the one hand, AI and machine learning technologies are still maturing, so you might think the industry is moving too soon on it. But on the other hand, these are technologies that are well suited to being trialed on discrete, contained use cases.

For example, you might plug in historical data for initial estimates versus final costs combined with one or two parameters like location or sector, and apply some relatively simple AI algorithms to predict where costs may



IF WE WERE SEEING RESPONDENTS SHOOT FOR THE STARS WITHOUT CONSIDERING THE PRACTICALITY OF THEIR AMBITIONS, THEN WE MIGHT HAVE TO THINK THERE'S MORE HYPE THAN HASTE TO INVEST IN DIGITAL TRANSFORMATION. THE FACT THE INDUSTRY IS INVESTING TODAY TO GET THE FOUNDATIONAL STUFF RIGHT IS GREAT TO SEE.

— BRAD BARTH, CPO
INEIGHT

overrun in current projects as a result. If that goes well, it's both incredibly exciting and easy to start imagining the possibilities for the future."

However, is stated optimism about the future matched by action today? Organizations certainly think of themselves as technology pioneers — in fact, 90% of respondents think theirs is innovative (and 38% go so far as to say "very innovative").

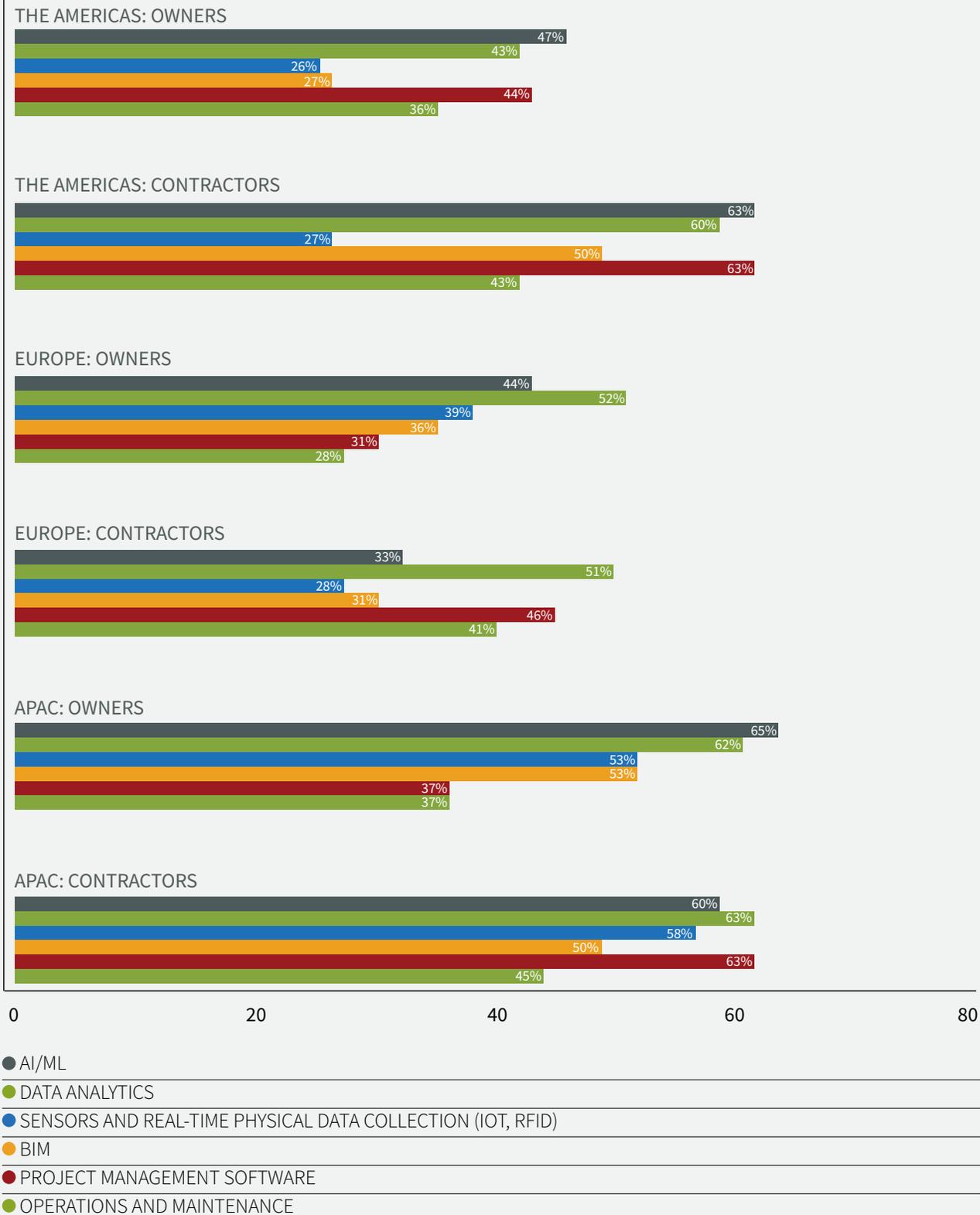
This is especially true in the Americas, where as many as 92% of respondents consider their organization to be innovative, versus 91% in APAC and 87% in Europe. Further, 46% rate their organization as "very innovative" — more than anywhere else. However, it cannot be taken at face-value that companies in the Americas are therefore more innovative, as respondents will no doubt rate themselves in the context of their peers — self-ratings will be relative. In fact, it is in APAC where reported investment is highest, as we will see.

This evident self-belief is backed up by reported investment in technology — however, some fault lines appear between organizations' investment priorities to date and their predicted future-critical technologies. This is clear when we look at the technologies respondents are most likely to have invested in.

Among owners worldwide, the top three technologies considered as critical to success in the near future rank in first and joint sixth place when looking at investment to date. A critical interpretation of this discrepancy is that not all organizations are following through on their beliefs with action. However, a more likely explanation is that companies recognize there are categories of technology that are essential to invest in today, which won't necessarily be the most transformative for the future, but are vital, nonetheless.

The same holds true for contractors, though there is a slightly stronger correlation between technology investment to date and future-critical options. Project management software is viewed as indispensable for success today and tomorrow, as are data analytics and AI/ML technologies. Operations and maintenance solutions and connected worksite communications have been popular investment categories so far without ranking highly as being vital for the future.

WITHIN YOUR SECTOR, WHAT TYPES OF TECHNOLOGIES DO YOU THINK WILL BE CRITICAL TO YOUR ORGANIZATION'S SUCCESS IN THE NEXT 1-3 YEARS?



It is notable here that contractors in APAC seem to be ahead of their counterparts in the West in terms of tech investment made to date. A full complement of respondents (100%) report already having invested in project management software, connected worksite communications, and operations and maintenance solutions. And more than 90% say they have invested in every category, save for AI/ML and digital twins.

“APAC is a heterogenous region in many ways,” explains Rob Bryant, Executive Vice President for APAC at InEight. “But one thing that’s common to a lot of the region — albeit for different reasons — is a culture of embracing technology. Here in Australia, for example, federal and state governments — which are major project owners — have pushed contractors to adopt technology in a way that isn’t always seen elsewhere in the world. Then you have countries like Japan and South Korea, which have tremendously technology-led consumer cultures, which inevitably bleed into peoples’ work lives too.”

Importantly, respondents are overwhelmingly satisfied with the investments they have made so far. No category of technology has fewer than 87% of respondents rating its impact as either “very” or “fairly” positive, based on their experiences.

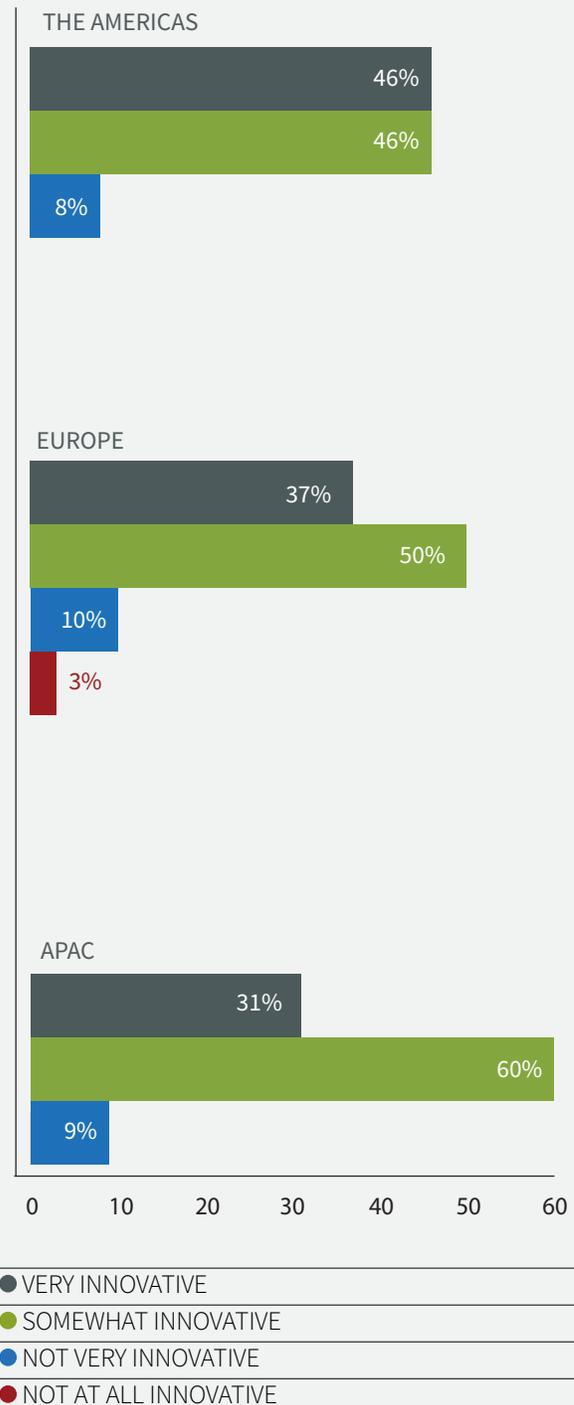
SETTING STRATEGIES

With loose correlation between the technologies rated as future-critical and invested in to date, an observer might conclude that the sector is light on digital transformation strategy. Respondents themselves are far more bullish.

Both owners (92%) and contractors (95%) think their organization has a digital transformation strategy in place. Even more encouragingly, 54% of owners and 57% of contractors believe there is specifically an integrated strategy in place. By contrast, around four in 10 of each group think their organization has a siloed strategy, where different parts of the company pursue their own strategies — an easier approach but one less likely to yield the full benefits of digital transformation.

This is borne out by future investment intentions. For both owners and contractors worldwide, the technologies respondents feel their organization should invest more in over the next five years are most often data analytics, project management software, and operations and maintenance solutions. Plus, in a sign of positive momentum, respondents are more likely to call for

IN YOUR OPINION, HOW INNOVATIVE IS YOUR ORGANIZATION WHEN IT COMES TO USE OF TECHNOLOGY?



investment in these technologies in the next six months than farther down the track.

However, if we compare the top technologies that respondents call for investment in within the next one-to-five years with those they believe to be critical to their organization’s success over a similar timeframe, there is a mismatch. This suggests that respondents feel there is still important work to do on “today” technologies before moving onto critical “tomorrow” ones, emphasizing the urgency of digital transformation.

Brad Barth, Chief Product Officer at InEight, comments: “This discrepancy isn’t one that should be cause for concern. In fact, it’s good to see the industry knows it must walk before it runs and is considering the practicality of its ambitions, rather than getting swept away in the hype. The fact the industry is investing today to get the foundational stuff right is great to see.”

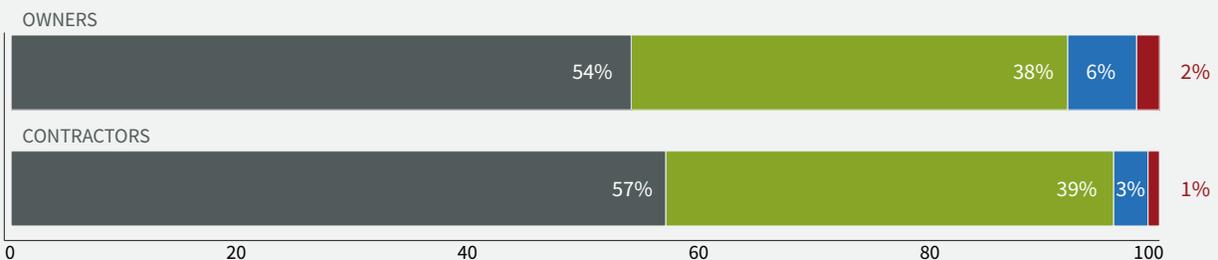
Respondents in the Americas are more likely overall to call for short-term investment than their international peers, with those in Europe least likely to do so. However, these two groups differ from the average in other ways, too. Contractors in the Americas rank Building Information Modeling (BIM) software as the second-most important immediate investment priority after operations and maintenance. This is not replicated elsewhere, perhaps

due to regional differences in how the term is interpreted. Or perhaps this is because BIM tends to already have had wider uptake in those regions. In Europe, contractors diverge from their peers by pointing to robotics and drones as the joint third-highest priority — possibly due to historically high labor costs in the region.



90% OF RESPONDENTS TODAY THINK THEIR ORGANIZATION IS INNOVATIVE AND 38% GO SO FAR AS TO SAY “VERY INNOVATIVE.”

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



- YES, THERE IS A CLEAR INTEGRATED STRATEGY FOR DIGITAL TRANSFORMATION ACROSS THE DIFFERENT PARTS OF THE BUSINESS
- YES, DIFFERENT PARTS OF THE BUSINESS INVEST IN DIGITAL TRANSFORMATION ACCORDING TO THEIR OWN STRATEGIES
- NO, WE DO NOT HAVE A CLEAR INTEGRATED STRATEGY FOR DIGITAL TRANSFORMATION, INVESTMENT IN TECHNOLOGY IS AD HOC/MADE AS NEED ARISES
- INVESTMENT IN NEW TECHNOLOGY IS TOO INFREQUENT TO TELL

THINKING SPECIFICALLY ABOUT CONSTRUCTION-RELATED PRODUCTIVITY, WHAT DO YOU SEE AS THE BENEFITS OF GREATER INVESTMENTS OR THE BARRIERS TO INVESTMENT IN TECHNOLOGY AT YOUR ORGANIZATION? (ALL REGIONS)

BENEFITS



BARRIERS



- OWNERS
- CONTRACTORS

Across the board, however, respondents have high expectations of the investments they do make. Owners are looking forward to reduced risk/better risk management (selected by 51%), higher productivity (50%) and organizational efficiency or cost savings (48%) as a result of investment in digital technologies. For their part, contractors expect to gain the upper hand through investment with higher productivity (selected by 61%), competitive edge (53%), and reduced risk/better risk management (48%) as the most anticipated benefits.

However, despite the success of investments to date, and confidence in the need for and benefits of future investments, the path is far from clear to further spending. In fact, 45% of owners and 35% of contractors identify difficulty of integration with current systems as a barrier to investment, while 32% and 39% respectively worry about difficulty of implementation. This tells us that the specter of legacy tech looms large, and that reassurances on interoperability from the vendor community will be critical.

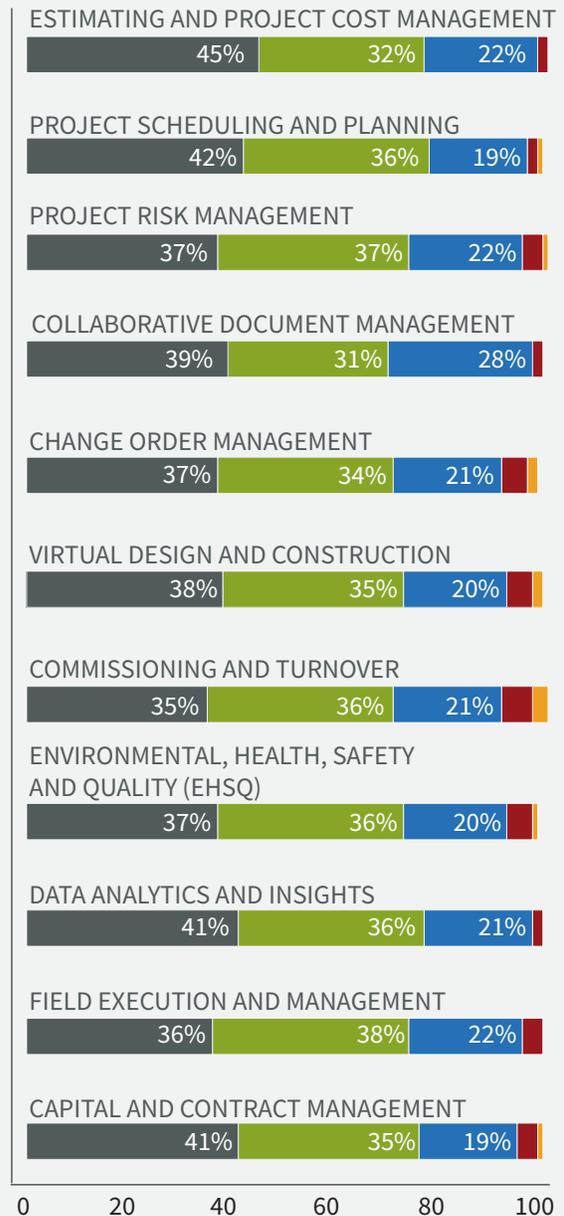
The advent of the Cloud Age and software/platform-as-a-service models may smooth these wrinkles in years to come. Even if it does so however, 41% of owners and 31% of contractors fret about lack of access to capital. The demand is clearly there — the industry is clamoring for digital investment — but the onus is squarely on technology providers to make a compelling business case and smooth the implementation path for their solutions.

SPOTLIGHT ON SOFTWARE

While the digital transformation applies as much to the worksite as the office, it is worth paying specific attention to how organizations are thinking about and utilizing software.

As with the broader enthusiasm for technological solutions, respondents are vocal about software being essential to their organization’s success in the near future. The most important categories are judged to be estimating and project cost management (57%), planning, scheduling and risk management (54%) and connected analytics and data management (50%), with safety, quality and commissioning just behind (48%). Reassuringly, a majority of respondents report already using software to help with all of these tasks — as indeed they do for all categories of software listed.

DOES YOUR ORGANIZATION USE SOFTWARE TO HELP WITH ANY OF THE FOLLOWING FUNCTIONS/TASKS? (ALL RESPONDENTS)



- YES, WE USE GENERAL BUSINESS SOFTWARE (E.G. MICROSOFT EXCEL)
- YES, WE USE A SEPARATE, PURPOSE-BUILT SOLUTION
- YES, WE USE PART OF AN INTEGRATED SUITE OF SOLUTIONS
- NO, WE DO NOT USE SOFTWARE FOR THIS TASK
- DON'T KNOW

However, when we scratch the surface of what respondents mean by the term “software,” there is less cause for encouragement. Almost across the board, respondents are more likely to say that their organization relies on general-purpose business software, such as Microsoft Excel, to help with these functions, as opposed to purpose-built solutions. Applying generic tools like Excel to the nuances of construction project controls most often results in a patchwork that only delays implementation of more industry-astute solutions that can control complex business processes, while enabling real-time reporting and benchmarking.

That said, there are some exceptions from which we can be encouraged. Owners are more likely to use purpose-built tools than general ones for project risk management, and field execution management. For their part, contractors are more likely to go purpose-built for virtual design and construction, and for environmental safety, health and quality (ESHQ) functions.

“Although software uptake is high, there continues to be a reliance on spreadsheets and siloed tools,” says Catie Williams, Director of Connected Analytics at InEight. “That said, when you look at the areas where owners and contractors do invest in purpose-built solutions, it’s in some of the most fundamental software categories to their operations, and if you wanted the industry to invest in the best anywhere, it’s there.”

IN SUMMARY

The construction industry is optimistic about the potential of technology to transform its businesses. Investments made so far have paid off, and most respondents plan to invest in line with their strategic technological priorities, if they haven’t already. However, respondents are under no illusion it will be an easy transition to make. Obstacles remain, and the industry is optimistic yet realistic about surmounting them.

Jake Macholtz, CEO at InEight, comments: “Digital transformation is many things — opportunity, threat, evolution, revolution — but one thing it isn’t is a silver bullet. At least, not without pulling out all the stops to establish the plan and then carefully managing the organizational change. The construction industry is quite accustomed to tough work though — no one ever started out in this sector for an easy ride. Ours is a sector more than equal to the challenge.”

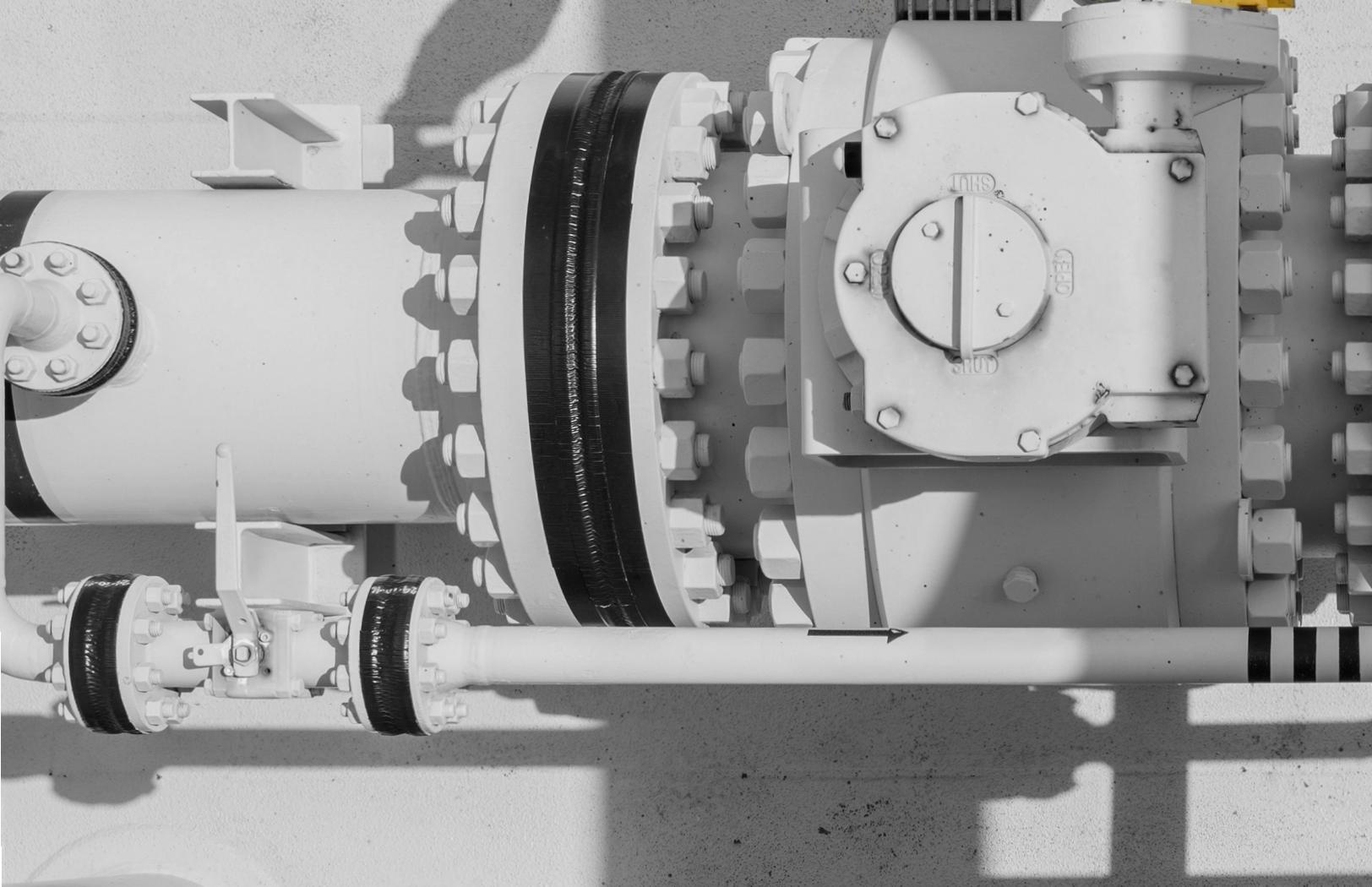
WHICH OF THE FOLLOWING CATEGORIES OF SOFTWARE DO YOU SEE AS ESSENTIAL TO YOUR ORGANIZATION’S SUCCESS OVER THE NEXT 1-3 YEARS?





THE CONSTRUCTION INDUSTRY IS QUITE ACCUSTOMED TO TOUGH WORK THOUGH — NO ONE EVER STARTED OUT IN THIS SECTOR FOR AN EASY RIDE. OURS IS A SECTOR MORE THAN EQUAL TO THE CHALLENGE.

— JAKE MACHOLTZ, CEO
INEIGHT



4 CONNECTED DATA

Data should sit at the center of a construction company’s digital transformation. And while it is becoming easier than ever to gather data, organizing it and leveraging it to make decisions is where the true value lies. The industry needs a sophisticated, connected approach that collects the highest quality, most relevant project knowledge in order to get the most value from it. So how are organizations performing on this front?

COLLECT TO CONNECT

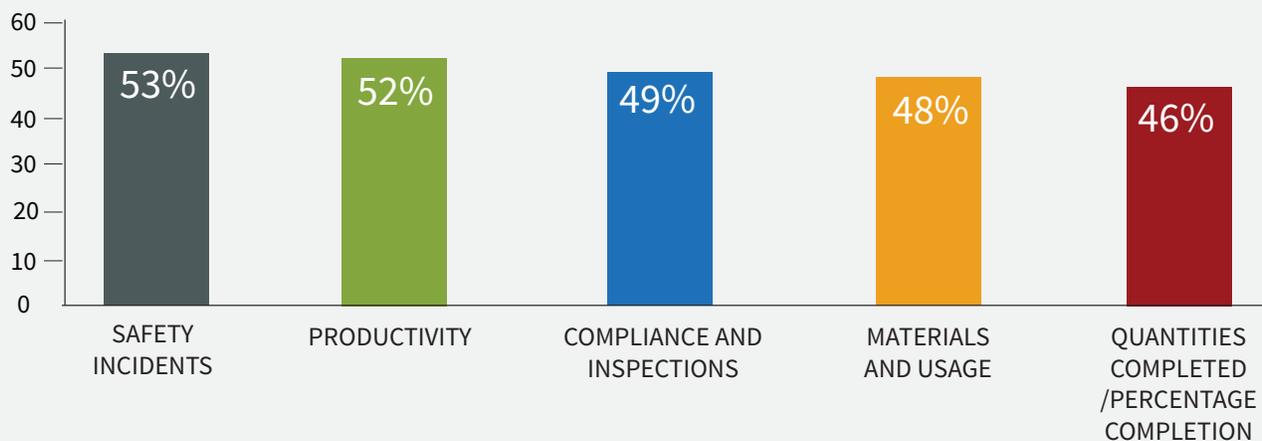
Every construction company obviously wants visibility into its projects, but how do the differing priorities of owners and contractors filter down into the types of data that they want to collect electronically? Top priority for owners is safety data, although the same cannot be said for contractors, where other data interests shuffle safety out of the top five.

This is not necessarily the cause for concern it might seem to be at first glance. Contractors are already accustomed to collecting safety data, so instead, their answers reflect what is most important when it comes to

better identifying what could most heavily impact project outcomes: productivity (selected by 62%), materials usage/tracking (54%), and plant and machinery use (52%). Aside from reporting a heightened interest in safety, the story is not dissimilar for owners, who are all interested in the same elements only to a lesser extent.

Owners also show a keen interest in collecting productivity data in different guises, including materials usage and tracking (48%) and quantities complete or percentage complete (46%), in addition to the industry non-negotiable: compliance and inspections (49%).

ON WHICH OF THE FOLLOWING DOES YOUR ORGANIZATION CURRENTLY ELECTRONICALLY COLLECT FIELD DATA? (OWNERS)





THIS IS A HUGE POSITIVE SIGN OF CHANGE AND THE DIRECTION WE NEED TO CONTINUE TO MOVE IN IF WE WANT TO BRING ABOUT A NEW LEVEL OF OPENNESS AND TRANSPARENCY ACROSS PROJECTS.

— CATIE WILLIAMS, DIRECTOR OF CONNECTED ANALYTICS INEIGHT

Brad Barth, Chief Product Officer at InEight, explains: “The heightened interest in productivity we see from owners reflects the fact that owners are realizing that for best results, they need to be more involved in projects at a more detailed level. Owners are becoming more active, real-time collaborators in order to better understand what might affect their project’s budgets and schedules. The growth of cloud technologies is supporting them to make this change and with it comes better data insights, which

means fewer surprises and more certainty around project outcomes.”

Mirroring a general theme across this report, APAC owners and contractors alike appear to be more advanced than their peers in other regions when it comes to collecting data. For example, while productivity data does not even make the top five for owners in the region, they are still more likely to collect this data than their counterparts in the Americas (where it is third) and are within a percentage point of European owners (where it is first).

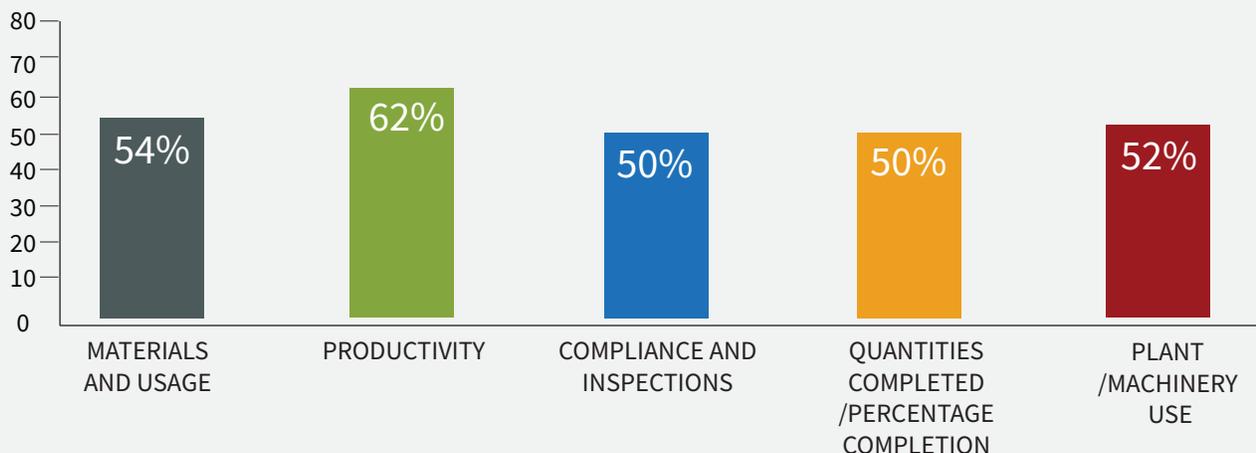
Similarly, contractors in APAC are more likely to be collecting data across all categories besides productivity. While neither safety nor environmental data make the top five in the region (a matter of global concern), contractors here are still more likely to track this data than any of their international peers. When even lower-priority data categories attract more attention than top-priorities elsewhere, it’s safe to say that the APAC industry is more data-led than its peers.

TRADITIONAL VERSUS ELECTRONIC METHODS

Equally important to what data respondents are tracking, is how they are tracking it. It is clear that there have been some modernization efforts in this respect. However, there remains work to do. After all, Microsoft Excel is electronic, but is not designed to connect and flow data throughout a project or organization.

That said, it’s encouraging that nearly six in 10 of respondents say they collect electronic data from workers

ON WHICH OF THE FOLLOWING DOES YOUR ORGANIZATION CURRENTLY ELECTRONICALLY COLLECT FIELD DATA? (CONTRACTORS)



using connected devices in the field, in real time — simple, plug-and-play apps are driving small productivity gains in a big way.

“This is a hugely positive sign of change and the direction we need to continue to move in if we want to bring about a new level of openness and transparency across projects,” says Catie Williams, Director of Connected Analytics at InEight. “While we might still be reliant on using PowerPoint to communicate key results to the board, the fact that companies are beginning to leverage on-site workers to gain real-time insights, rather than wait until a project meeting to collect the same data, shows that the industry understands the importance of being collaborative and connected.”

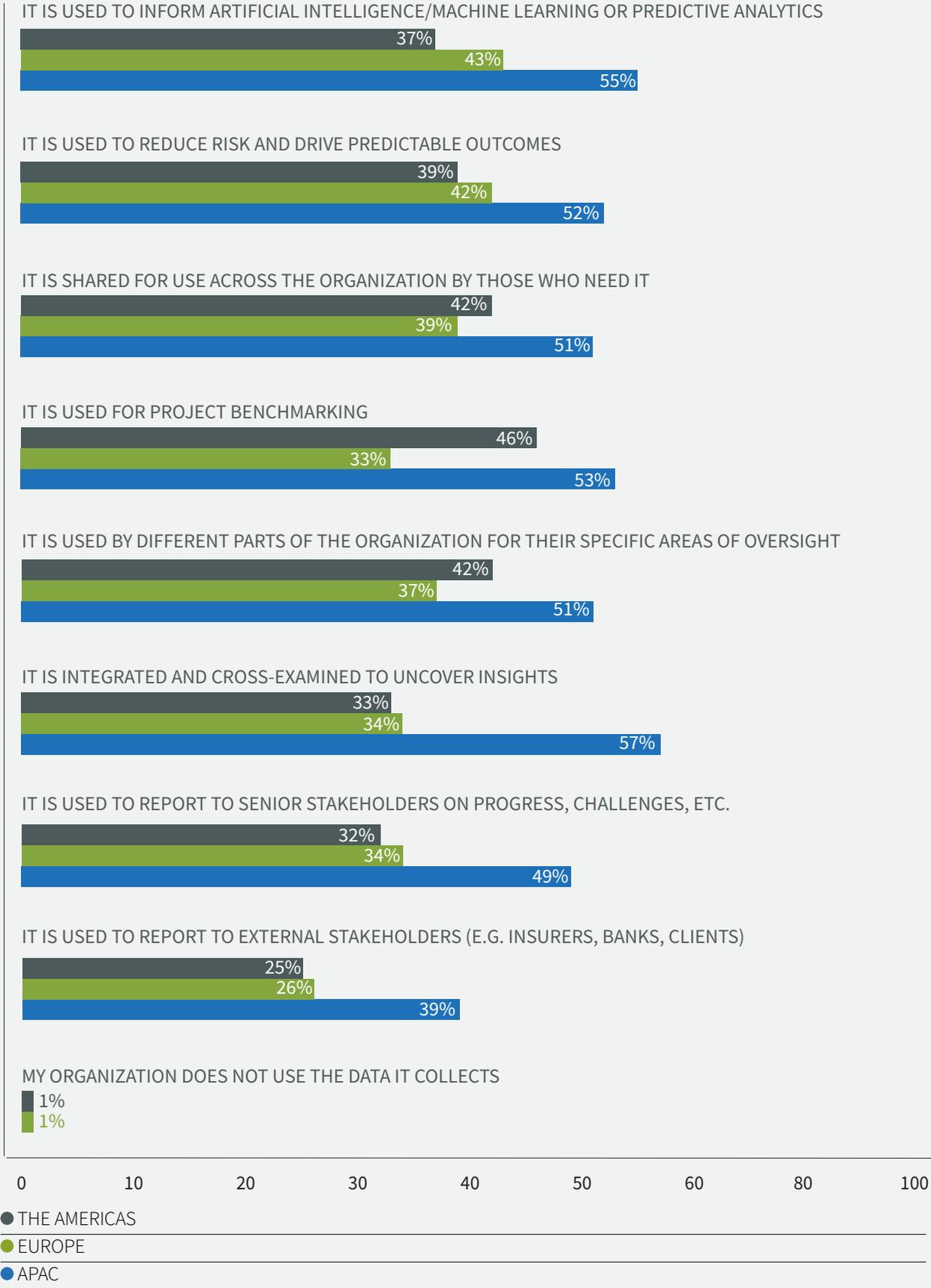
For true digital transformation, it is critical to have widespread rollout of enterprise-level mobile software that can make these productivity improvements and collect and connect data in a holistic way. However, while the technology exists, one of the key barriers is hardware. We know that many on-site workers are accessing apps on their personal devices and as such, may be reluctant to make space for an enterprise-level platform.

While the concept of digital transformation remains open to interpretation, the fact remains that more traditional methods of collecting electronic data remain stubbornly ubiquitous. Meetings (53%) and end-of-project reviews (49%) continue to be used (even if respondents record their outputs electronically) while more modern approaches, such as using in-field sensors (44%) for automatic data collection are less popular, except in APAC where a shade over half (51%) of respondents use them.

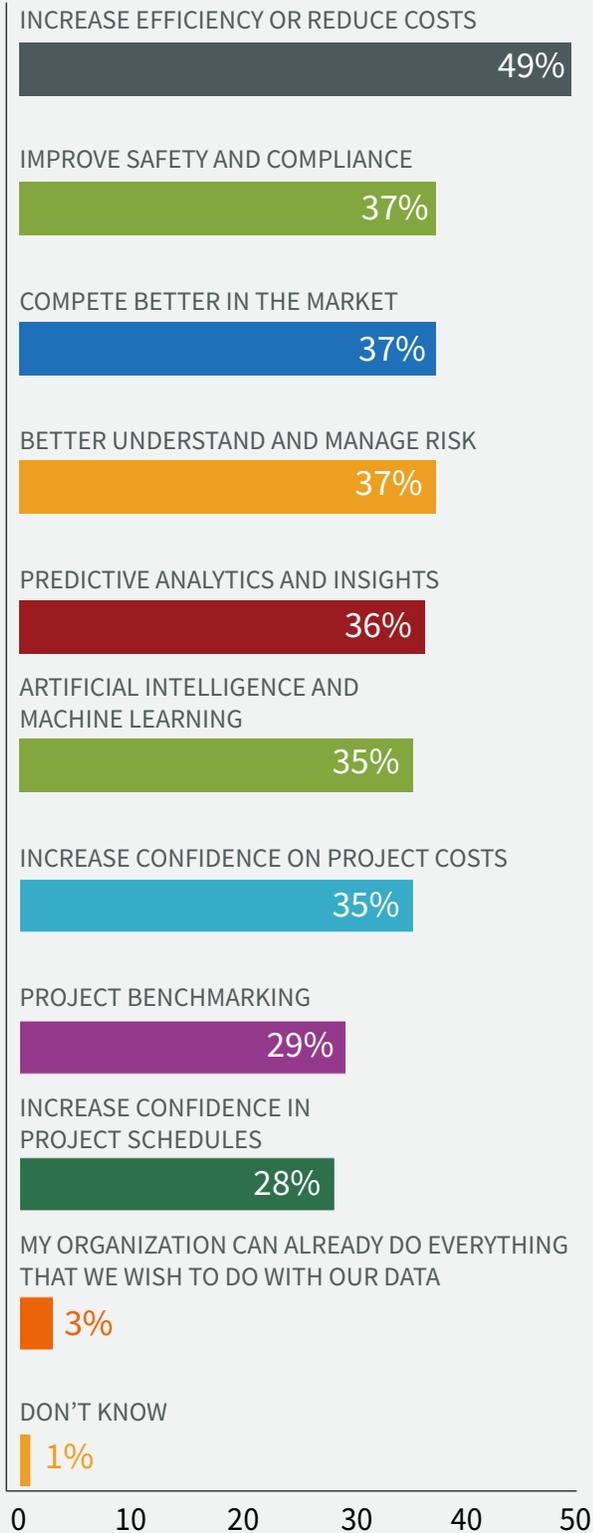
Rob Bryant, Executive Vice President for APAC at InEight, summarizes: “Every company’s path to digital transformation is unique, shaped by its needs, motivations and the speed at which it can move. But it is clear that there is one job that all companies will need to do first, and do well, and that is to get the basics down: capture, organize, cleanse and most importantly, connect the data. The more hyped elements of digital transformation — the predictive analytics, the artificial intelligence — will only be as good as the data and the processes that underpin it.”



HOW IS DATA CURRENTLY USED IN YOUR ORGANIZATION?



WHAT DO YOU WISH YOU COULD DO WITH DATA WITHIN YOUR ORGANIZATION THAT YOU CANNOT DO CURRENTLY?



CONNECTING IT TOGETHER

When thinking about the future of project data, there is more for construction companies to dig into other than simply digitalizing paper processes and creating neat dashboards and reports. Substantial value stands to be unlocked by connecting data all the way through the life cycle of a project and between projects. So, it is encouraging to see that 44% of owners claim the data they are collecting is shared across the organization.

When asked to explain what the data is being used for, aside from feeding into specific department objectives, respondents say they are sharing data to inform artificial intelligence, machine learning or predictive analytics (45%), to reduce risk and drive predictable outcomes (44%) and for project benchmarking (44%).

Ultimately however, although organizations are making big strides in capturing data, almost all (96%) admit they could be doing more with it. Most often, they wish they could use data to increase efficiency or reduce costs (49%), improve safety and compliance (37%), and compete better in the market (37%) and better understand and manage risk (37%) — all worthwhile pursuits when considering where next to invest time and resources.

IN SUMMARY

Construction companies are becoming more comfortable with unlocking the true value of data and are prioritizing resources to focus on developing data capabilities around the industry's key challenges. However, is there a missing piece of the puzzle that will limit the impact of this effort?

Jake Macholtz, CEO at InEight, thinks so: "The industry is still at the point where most data is siloed. Single-point solutions have got us some of the way in transforming how we work but will never have the same impact on productivity or return on investment that a connected data approach offers. The construction technology industry has this big vision of a fully connected platform where project control tools — from scheduling, planning and forecasting through to digital twin, and everything in between — interact, adjust and make decisions seamlessly to improve project outcomes indefinitely. But, from a technology point of view, we are not quite there Yet. We can only just see the tip of the iceberg, so we need to be mindful of the bigger connected data picture."



THE CONSTRUCTION TECHNOLOGY INDUSTRY HAS THIS BIG VISION OF A FULLY CONNECTED PLATFORM WHERE PROJECT CONTROL TOOLS — FROM SCHEDULING, PLANNING AND FORECASTING THROUGH TO DIGITAL TWIN, AND EVERYTHING IN BETWEEN — INTERACT, ADJUST AND MAKE DECISIONS SEAMLESSLY TO IMPROVE PROJECT OUTCOMES INDEFINITELY.

— JAKE MACHOLTZ, CEO
INEIGHT

5A SPOTLIGHT ON EUROPE

Europe as a region presents diversity of opinion on this topic, in some respects closer to the Americas and in others to APAC. This is borne out by the data, where for many findings Europe emerges as the “mediator” of the survey, usually with responses somewhere between that of neighbors to the East and West.

A LAND OF GIANTS

The first thing to note when interpreting our European results, is that there is an interesting demographic difference compared to the Americas and APAC.

When it comes to the size of company as measured by global revenue, European respondents to our survey were likely to represent larger organizations by revenue, demonstrating the region is dominated by fewer, bigger players.

This certainly fits with our anecdotal experience, where our work skews towards larger firms who must manage the region’s often comparatively high labor costs. These are mature economies, home to many of the world’s preeminent engineering giants and investing in infrastructure and projects aimed at decarbonization, driven by the EU’s world-leading focus on the topic.

ASSESSING EUROPE’S DIGITAL TRANSFORMATION PROGRESS

This demographic difference is vital in making sense of what at first appears to be a confusing picture for Europe’s digital transformation.

Looking at the technologies in which respondents’ organizations have already invested, European companies consistently place between the lower-spending Americas, and higher-spending APAC, with only minor variations. Equally, Europe is sandwiched by the other two regions

when it comes to respondents’ perceptions as to whether their organization has a clear digital transformation strategy.

Given this fact, enthusiasm and confidence often seem more muted than we might expect. Local respondents are least likely to rate their organization as innovative, much less likely to have seen productivity improvements from the tech investments they have made so far, and less tempted by the prospects of greater digital transformation — yet, curiously, most hopeful that tech may improve productivity in the future.

Dan Hicks, Chief Operating Officer at InEight with oversight of Europe, contextualizes this with his experience: “What we’ve seen in Europe — especially in some of the more affluent areas such as Scandinavia, is a lot of companies that were once tech frontrunners and invested a lot in what were best-in-class point solutions at the time, now have a fairly large technology estate that doesn’t necessarily comfortably hang together.

“This would explain why there’s less positivity around the impact of investments already made, and less ardent faith that tech will radically improve the situation. Nonetheless, they recognize digital transformation is important — it’s just that enthusiasm is tempered by lived experience.”

This interpretation helps make sense of other findings where Europe differs from other regions. For example,

organizations in the region are more likely to have used general business tools such as Microsoft Excel for various functions (as opposed to purpose-built solutions) than their international peers. They are also less likely to use in-field, real-time data collection devices or automated sensors to collect data. These are consistent with the technology investments that would commonly have been made five to 10 years ago.

This also sheds some light on why respondents here are most likely to cite lack of access to capital as a barrier to further investment in digital transformation. Though the region skews towards larger companies (which in theory should have greater access to capital), this also makes the task of investing in next-generation tech more expensive, and places more of an onus on demonstrating clear ROI, having seen mixed performance in this regard from past investments.

Finally, it also makes sense of what would otherwise appear as a glaring anomaly. Despite being overall less impressed by the impact of technology investments made so far, European respondents were most likely to positively rate the impact of investments in digital twins.

The region most likely to use general business tools and least likely to employ advanced data gathering techniques is already investing in and seeing the benefit of a technology at the vanguard of today's digital transformation. It seems anomalous, but in fact chimes perfectly with Hicks' observation that large European organizations face challenges integrating legacy solutions with new technology. Done correctly, digital twins are a unifying technology and central repository of information.

IN SUMMARY

Europe is a region dominated by fewer, larger players which have been early tech-adopters in the past. They have gained a measure of realism from their experience to temper their enthusiasm for the current wave of digital transformation — but not to extinguish it. Larger companies often have wider turning circles, and further transformation won't be easy, but this balance of optimism and realism may yet prove a critical advantage in the years to come.



EUROPE RESPONDENTS ARE LEAST LIKELY TO RATE THEIR ORGANIZATION AS INNOVATIVE, MUCH LESS LIKELY TO HAVE SEEN PRODUCTIVITY IMPROVEMENTS FROM THE TECH INVESTMENTS THEY HAVE MADE SO FAR, AND ARE LESS TANTALIZED BY THE PROSPECTS OF GREATER DIGITAL TRANSFORMATION.



5B SPOTLIGHT ON APAC

Like the sun, the digital transformation rises in the East, at least according to our respondents. Across the board, APAC organizations rank highest for their interest, investment and faith in technology to effect change. The region is far from uniform, but for various reasons, different parts of it seem to be driving in the same direction — and it's a positive one for the industry.

ENAMORED BY TECHNOLOGY

Time and time again throughout our survey, respondents in APAC voice their whole-hearted support for digital transformation in construction.

For almost every technology category, APAC respondents are more likely to rate it as critical to their organization's success in the next one to three years, and are more likely to have committed investment already. They are significantly more likely to work for an organization with a clear integrated digital transformation strategy, more likely to use purpose-built solutions (as opposed to general business software) and more confident in technology's capacity to deliver a range of benefits to the sector.

In terms of data, APAC respondents are more likely to collect data over a wider range of relevant metrics, to do so using more modern, technology-led collection methods, and to use it in a broader variety of ways throughout their organization. They are also even more ambitious on how to get even greater value out of their data in the future.

Why such a strong showing on digital transformation? Different parts of the region may be arriving at the same outcome for different reasons.

For example, Australia and New Zealand are

geographically, politically and culturally quite separate from the rest of the region. National and state governments there have invested heavily in major infrastructure projects over recent years, including road, rail, energy and mineral extraction projects, creating a steady flow of projects and a healthy pipeline for owners and contractors alike.

One aspect where these countries differ — not just from their regional peers but from comparable Western countries in Europe and North America — is a healthy encouragement for tech adoption by the public sector. Often taking a role as a project owner or sponsor, state and federal governments have prompted contractors to invest in improving their operations, aided in part by a less formal and structured business environment. Equally, these countries benefit from access to an array of experienced international talent, often lured from Europe and North America.

Rob Bryant, Executive Vice President for APAC at InEight, describes Australasia as a region that, “has always punched above its weight — and largely succeeded. There's a culture in this part of the world of having a go, and people are given the freedom to do so. This is evidenced amongst asset owners as well as contractors. For instance, Transport for NSW, Transport and Main Roads for Queensland, and offices of the Major Transport



ONE ASPECT WHERE THESE COUNTRIES DIFFER — NOT JUST FROM THEIR REGIONAL PEERS BUT FROM COMPARABLE WESTERN COUNTRIES IN EUROPE AND NORTH AMERICA — IS A HEALTHY ENCOURAGEMENT FOR TECH ADOPTION BY THE PUBLIC SECTOR.

Infrastructure Authority in Victoria are each shaping standards for what they expect in digital engineering and collaborative solutions. You don't see too many governments around the world setting the bar for the technology they want to see adopted and how it should be used — that's usually left to the private sector."

There are other drivers which fulfill the same purpose for nations across the broader region.

Like in Australia and New Zealand, there is a robust pipeline of project demand driving transformation in the region. The economies of the likes of Malaysia, Thailand and the Philippines, are in the ascendancy, and investing heavily in energy, mining and civil engineering projects to support their growing populations.

Equally, there are many countries in the region characterized by high labor costs twinned with a strong consumer tech-culture. Japan and South Korea especially are home to many of the world's technology giants, and workers in the space naturally carry over some consumer tech-focus into their professional lives, raising technological expectations across the board.

It should be noted, however, that this is a heterogeneous region that also includes struggling developing economies. It is likely that technology adoption is far lower here, due to both affordability and cheaper labor

rates de-emphasizing productivity. However, the greater volume of projects and active companies in more developed economies means that these will naturally be more represented among the survey respondents and results.

ENTHUSIASM BLENDED WITH REALISM

Encouragingly, the ubiquitous tech-enthusiasm exhibited by our APAC respondents is matched by a healthy streak of realism, which lends credibility to their self-reported results.

For example, though APAC respondents were almost equally likely to rate their organization as innovative to at least some degree as those in the Americas (91% versus 92%), they are well measured in their responses. Only 31% said their organization was *very innovative*, compared to 37% in Europe and 46% in the Americas. By contrast, 60% said they were *somewhat innovative* — more than elsewhere.

It is also illuminating to consider what respondents expect from technology. If we merely look at, for example, the fact that APAC respondents are most enthused by artificial intelligence and machine learning, we might conclude that they are focused on blue-sky possibilities.

However, when asked to predict the benefits of technology investment, APAC respondents show themselves to be firmly practical. While peers in the Americas and Europe most look forward to higher productivity by a wide margin, APAC's top factors are far more tightly clustered. Alongside productivity, which ranks second, are things like risk management, efficiency and cost-savings, and confidence in project schedules.

Bryant comments that, “productivity is crucial for the industry’s future, but it’s a higher-order need in the context of day-to-day operations. Respondents in APAC have their feet on the ground and heads firmly in the ‘right here, right now.’ Their well-founded enthusiasm for digital transformation is embedded in today as much as it is tomorrow — which is a healthy approach for any organization.”

However, there are some challenges for respondents in the region to be wary of. More than in the Americas or Europe, the APAC construction sector is reliant on a highly mobile, often transient workforce. The downside of being able to draw talent from around the globe is that

when global travel is hindered, such as it has been by the COVID-19 pandemic, there may not always be enough specialized local workers to meet project demand — further highlighting the need for technological investment that can lessen that burden.

Respondents are also mindful of political risk, with nearly a third (31%) citing this as one of the biggest risks to their organization’s growth in the coming year. This compares to 27% in both the Americas and Europe, perhaps reflecting the region’s less settled geopolitical climate beyond Australia and New Zealand.

IN SUMMARY

APAC is fertile ground for the construction industry’s digital transformation. For various reasons, project owners in the region are keen to see tech-led work practices, and contractors are happy to oblige, if only to stay competitive. There are challenges to manage, but respondents are clear-headed, focused on a flavor of digital transformation that is firmly grounded in reality.



5C SPOTLIGHT ON THE AMERICAS

There are two stories to be told about the Americas' construction industry's digital transformation: the simplistic snap analysis, and the more nuanced explanation. In one interpretation, we see hesitancy in tech adoption with a gap between confidence and performance, but in the other we see a rightfully optimistic sector surmounting its challenges and in the brink of an age of opportunity. As is usually the case — the nuanced interpretation is the right one.

COMMENSURATE CONFIDENCE?

The Americas' construction industry defies easy analysis. Respondents in this part of the world are supremely optimistic about their organizations' growth prospects in the next year, despite being less likely to report having seen capital project spending increase (and more likely to have seen a decrease).

Respondents are also most likely to consider their organization resilient, and to view it as innovative, despite generally having committed less spend to technology to date.

And in fact, it's not just tech spend to date where respondents lag their international peers. Respondents are consistently less likely to rate technology categories as critical to future success than their peers in APAC — and often those in Europe. The same holds broadly true for using purpose-built solutions for functions instead of general business software (though the gap is narrower). They are also less likely to believe their organization is working according to a clear digital transformation strategy.

In short, according to respondents' own reported data and perceptions, the Americas' construction industry trails its international counterparts. Yet it is unshakeable in its confidence and self-belief. How can the two be reconciled?

Some factors may be cultural and contextual. For example, in many organizations there can be a culture of celebrating all advancements and investments in technology, even if small increments, especially in North America, which may contribute to an outsized perception of innovation. It may also be the case that organizations are more likely to compare themselves with local competition, rather than take a global view. Therefore, seeing the same relatively low level of tech advancement our respondents report, a company that might be quite average in digital transformation progress globally rightfully recognizes itself as a leader in the domestic context.

Jake Macholtz, CEO of InEight, also believes, "It's important to bear in mind this isn't the first time around the block when it comes to these companies investing in technology. It's not so long ago that the industry invested in a whole swathe of point solutions with varying degrees of success. That has led us to a place where some have done very well from technology, and others have had their fingers burned."

Indeed, this is supported by the fact there are more bullish respondents here than elsewhere — those likely to call their organizations very optimistic or innovative.

DIVING DEEPER

It is unfair to conclude though, that respondents' confidence is unwarranted. Instead, a more accurate picture emerges with more considered analysis.

A number of InEight experts pointed to a very competitive landscape in the Americas — both between equivalent organizations and, in a sense, between owners and contractors. Dan Hicks, Chief Operating Officer at InEight, explains: “In the Americas, especially the U.S., there is fierce competition between owners and between contractors. It’s a very entrepreneurial culture, so not only do you have the multinationals everywhere, you also have a greater number of national and local players in the mix. That translates into a hyper-competitive bidding culture, which affects the relationship between the owner and contractor, with each pushing hard to get what they want from the transaction — more than you might see in, say, Europe.”

It’s a setup arguably not conducive to exploration of and investment in new technology, keeping stakeholders laser-focused on the margin of the current project. However, there are signs that these relationships might be changing and becoming more collaborative. For example, the alliance project contract model is beginning to appear in the U.S., wherein all stakeholders share benefits and risks equitably. And, as technology drives project transparency, accountability increases, forcing a more open and collaborative working relationship.

That changing relationship has the potential to create an environment that is still competitive, but also more collaborative and conducive to pushing the boundaries

of technology. This goes a long way toward validating the confidence and optimism in the sector that looks puzzling at first glance.

However, perhaps the biggest vindication for that optimism is the tantalizing capital project pipeline that promises to materialize in the near future. The U.S. has endured decades of under-investment in infrastructure, as evidenced by the 2021 American Society of Civil Engineers (ASCE) Infrastructure Report Card, which graded the nation’s infrastructure a C-minus — only incrementally better than 2017’s D-plus. However, the country is on the brink of a multi-billion-dollar program of capital project investment as the Biden administration looks to create post-pandemic stimulus and meet its climate change obligations having re-entered the Paris agreement. For its part, Canada is already in the midst of a massive investment in clean energy projects, even as it continues to spend on large-scale fossil fuel projects, such as the LNG Canada project in British Columbia. To the South, the likes of Brazil are investing heavily in energy and infrastructure projects as well. No wonder then, that economic growth and recovery is seen as the second biggest source of opportunity in the coming year.

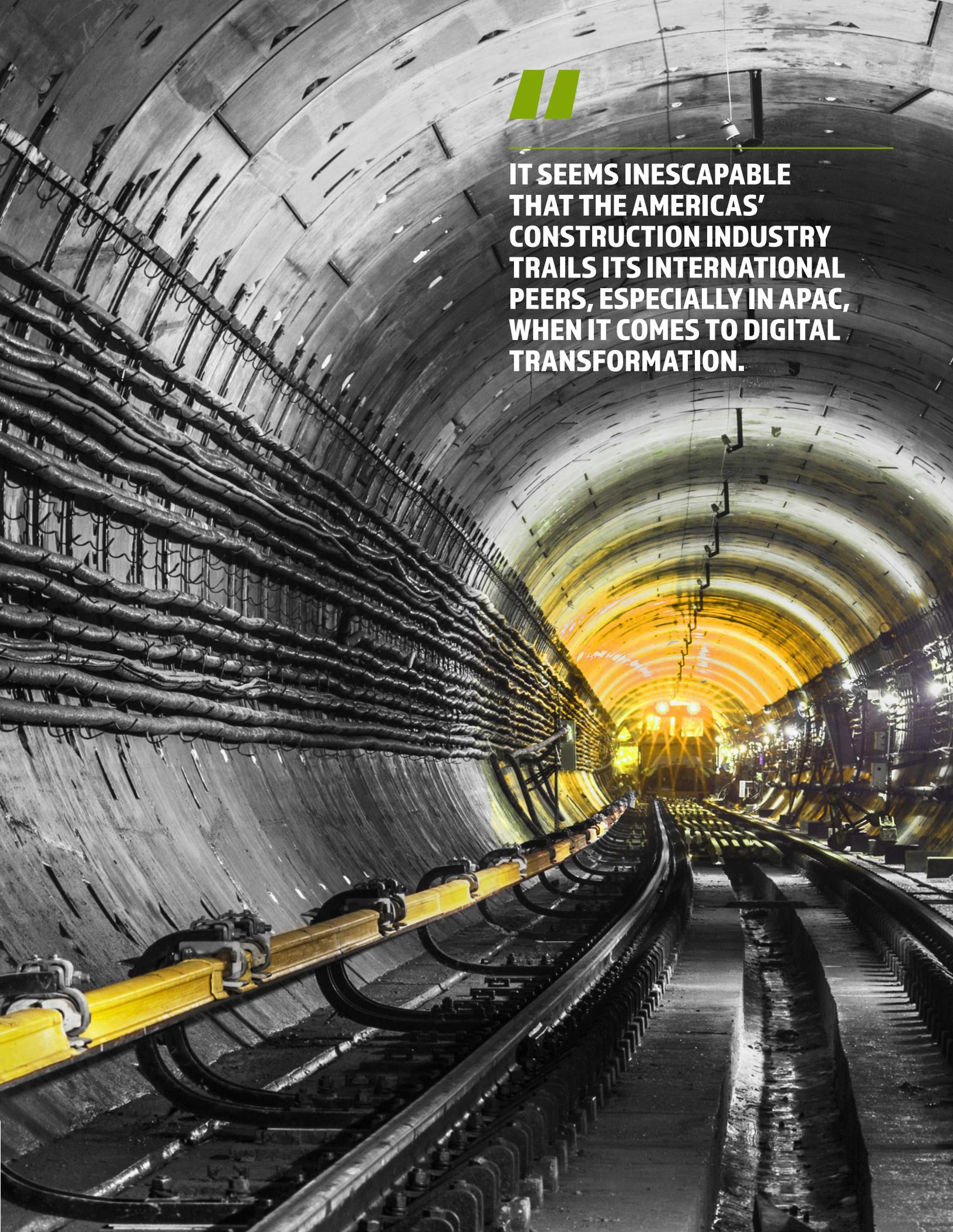
IN SUMMARY

It seems inescapable that the Americas’ construction industry trails its international peers, especially in APAC, when it comes to digital transformation. At first glance, it therefore seems that the sector’s organization confidence and optimism are misplaced, but a closer look at changes to the competitive landscape and an abundant upcoming capital project pipeline tells us that these convictions are built on a more solid foundation than it might first appear.





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CLOSING SUMMARY

If you were to condense the findings of this report into three words, the first two would undoubtedly be “optimistic” and “transitioning.”

As Chapter One of this report shows, the construction sector remains unbent and unbroken by the year of the COVID-19 pandemic. Optimism levels are high for the future, and when respondents tell us their organizations are resilient and committed to a digital transformation, we should believe them — they have passed some pretty stiff tests, after all.

Chapter Two details how this momentum and self-belief is translating into improved project performance, with optimistic takes on the direction of travel for on-time and on-budget delivery — the twin holy grails of our industry.

But we still need to pick that third word for our summary. In years gone by, that might have been “analog,” “unproductive,” or even “old-fashioned.”

Based on our respondents’ views, we can emphatically reject every one of those. However, we are not yet at a point where we could confidently state their opposites, describing the construction industry as “digital,” “especially productive,” or “futuristic.”

Instead, what we find is an industry in transition, at a fascinating point of flux. Chapter Three takes a deep dive into the technologies that are viewed as critical to



THE GLOBAL CONSTRUCTION INDUSTRY IS OPTIMISTIC, TRANSITIONING AND DIGITIZING — AND IT’S DOING SO RAPIDLY.

organizations’ future success, those in which it has already invested, and the return it has seen, and what barriers remain to true digital transformation.

Chapter Four takes this theme further, examining how respondents’ organizations collect, connect and use their data to improve project outcomes. Again, the results are encouraging, but show that the work is far from over.

APAC emerges as a technological leader (see Chapter Five for regionally focused analyses), and around the world the sector appears to be on the brink of major change. Yet there remains a lot to be done before we can describe the construction sector as a digitally enabled one that puts data at the heart of everything it does.

So, what could that third word be? “Improving,” “evolving,” and “innovating” might all be candidates, but lack specificity. A more descriptive, more useful option would be “digitizing.”

So that’s our three-word summary: the global construction industry is optimistic, transitioning and digitizing — and it’s doing so rapidly.

This is the first Global Capital Projects Outlook from InEight, and we hope to dig deeper on some of these topics in the future. For now though, it’s heartening after a difficult year to see respondents validate what we’ve believed all along: This is one of the most vibrant, vital and innovation-minded industries out there — the rest of the world just doesn’t know it yet.

One day that will change, but in the meantime, we’re here to help the world’s construction and capital projects industries meet their challenges head-on and step into that digital future.

Jake Macholtz, CEO

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