BST Global™

AI + Data Insights 2025:
Global AEC Industry Report

Table of Contents

Foreword
Provided by ACEC's Technology Committee

As the AEC industry navigates rapid advancements in AI, understanding how firms are responding to and integrating these technologies is crucial. Committed to providing insights and strategies that drive the engineering sector forward, ACEC's Technology Committee was pleased to support BST Global's AI + Data Survey.

AEC firms are moving toward a data-driven future, making this survey a valuable resource for informing AI integration decisions. The report that follows offers insights into the state of our industry as we tackle today's unique challenges. The ACEC Research Institute will apply these findings to its **Firm of the Future** initiative, shaping the firm of 2035. ACEC remains committed to advancing AI education, using surveys like this to inform firms of all sizes — especially the 80% of member firms with fewer than 100 employees.

We are pleased that ACEC member firms lent their voices to the discussion, accounting for nearly 60% of the survey's respondents. Data collected from ACEC member firms that participated in the survey revealed the following trends:

○ **General Sentiment Toward AI**

Fewer than **5%** of ACEC member firms are concerned about AI's recent impact on work. An overwhelming majority are curious, optimistic and even confident that AI technology could enhance their business.

○ AI Importance

Almost **90%** of ACEC member firms expect AI to transform their business models, providing insights and efficiencies.

○ AI Adoption

ACEC member firms are **3X** more likely than non-member firms to be at an advanced level of AI technology adoption.

○ Future Priorities

Most ACEC firms **(85%)** expect to increase their investment in AI technologies over the next year, with **50%** citing AI-enhanced client solutions as a top priority.

As a leading source of knowledge and thought leadership for the built environment, we are excited to participate in initiatives like BST Global's AI + Data Survey. Opportunities like this allow us to stay at the forefront as the AEC industry evolves in the age of artificial intelligence.

On behalf of the ACEC Technology Committee, we appreciate BST Global's partnership in elevating the awareness of AI in the AEC industry.

Raj Arora

Chair

ACEC Technology Committee

Dave Mulholland

Chair, Data & AI Subcommittee

ACEC Technology Committee

Executive Summary

The rapid advancement of artificial intelligence technologies has propelled the world headfirst into the Fourth Industrial Revolution — the Data Revolution. For the AEC industry, AI brings promising capabilities for innovative design, more sustainable practices, expedited workflows and more. It also introduces a broad set of challenges, known and unknown.

To gain a deeper understanding of these potential benefits and barriers, BST Global surveyed AEC firms about their current and planned AI initiatives, expectations and obstacles. This report presents the findings from the BST Global AI + Data Survey, underscoring the need to harness AI's potential while managing risk and bridging the digital skills gap. In it, we examine:

- ✔ **Current AI adoption levels**
- ✔ **Strategic business implications of AI integration**
- ✔ **Different types of AI and their applications for AEC**
- ✔ **The critical role of data governance**
- ✔ **AI's far-reaching impacts on the workforce**

The insights in this report provide a perspective on the current state and future impact of AI and data advancements specific to the AEC industry.

AI for AEC

Artificial intelligence (AI) is a broad term for programs and systems that can perform tasks that would otherwise require a human. While many AI subsets can apply to AEC projects, this report focuses on firms' sentiments and strategies around the following:

Machine Learning (ML)

Uses algorithms against data sets to identify patterns; accuracy improves with continuous training against more data

Generative AI

Applies ML algorithms to broad data sets and considers specified parameters to create new content, including text, images, video, audio, code and more

Large Language Models (LLMs)

Leverages ML models trained against text data to create text-based content that aligns with specific prompts and mimics natural human language patterns
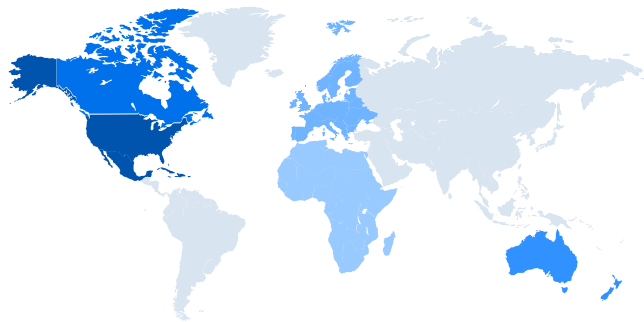
Predictive Analytics

Leverages data mining and ML to analyze historical data and identify patterns that predict future risks and opportunities
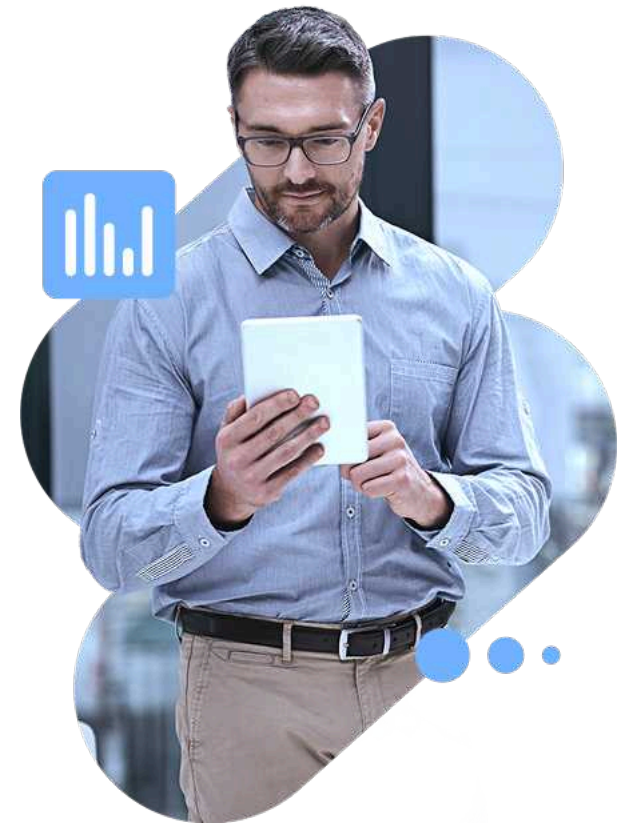
About the Data

BST Global partnered with the AI + Data Consortium and ACEC's Technology Committee on this research initiative. Available from October 22, 2024, through December 13, 2024, the 38-question survey was sent to a curated list of director- and executive-level AEC professionals around the world.
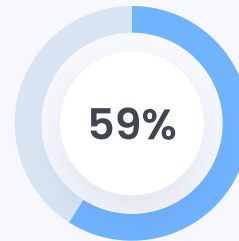
59%

Tech Leaders

(Leadership titles related to data, information, technology, digital, AI, and innovation)

📍 United States

📍 Canada
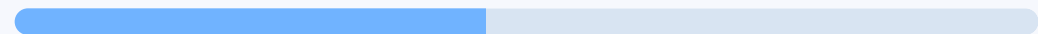
📍 Australia

📍 Europe

📍 Africa

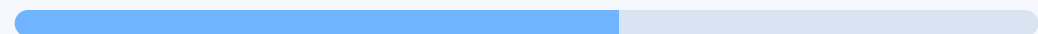**Small/Medium Firms** (≤ 500 employees)   **54%**
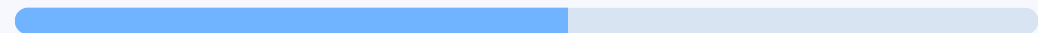
Large Firms (> 500 employees)   **46%**

ACEC Member Firms   **59%**

5 Key Takeaways

The AEC industry is at a critical juncture, tackling higher demand with fewer employees, while evolving tech and more complex projects collide with training and budget deficits. Within the survey data, we identified five main themes that encompass the industry's sentiments, readiness and strategy regarding AI technology and its role in these emerging industry concerns. We hope this report serves as a resource to help firms join the AI conversation and work toward a data-driven future.

01 **Importance & Adoption of AI**

We examine the disparity between the broad recognition of AI's value to AEC operations and the limited readiness to integrate these technologies.
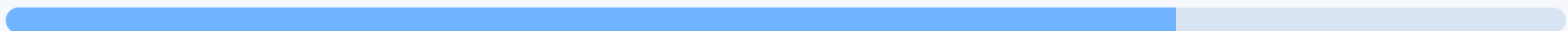
20% feel highly prepared

02 **Business & Strategic Impact of AI**

Since most respondents believe AI will significantly boost profitability, we take a closer look at those expectations and explore how firms are (or aren't) planning to prioritize AI investments.
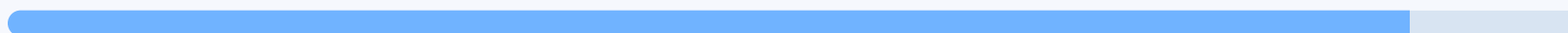
75% expect AI to boost profitability

03 Technology & Generative AI Use Cases

A variety of use cases are being explored, from knowledge management to generative design and operational utilities. We dive into firms' current and planned initiatives.
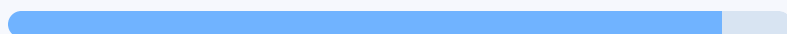
**89%** of respondents name project design and delivery as a top area for AI-driven revenue gains

04 Data Governance & Security

When it comes down to it, data is a barrier and an enabler. In this section, we break down some of the industry's biggest concerns about AI and the data processes involved.

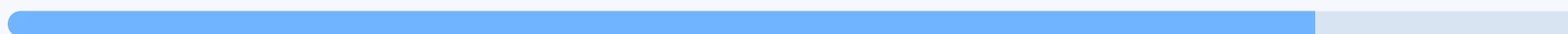**91%** cite data governance as a top challenge

79% worry about compliance and privacy
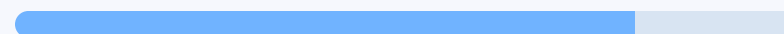
05 Workforce Impact

We explore firms' expectations for how AI will affect employees and their plans to mitigate concerns, adjust hiring practices and upskill the workforce.

83% expect AI to augment or transform roles

01
Importance & Adoption of AI

Evolving AI technologies have the potential to transform the AEC industry's day-to-day operations and overall business model. Survey respondents shared their predictions and indicated their firms' current and planned AI adoption activities.

Transformation Potential
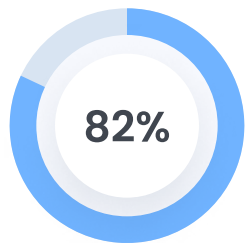
82% Expect AI-Driven Industry Transformation
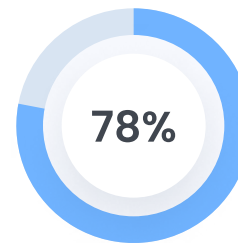
78% Expect It Within 5 Years

77% of respondents believe AI will transform their firm's business model.

Large firms are **about 25%** more likely to expect AI-driven transformation within their organization than small/medium firms.

	Large Firms (>500 employees)	Small/Medium Firms (≤500 employees)
	86%	69%

Adoption Reality

Only about **20%** of respondents claimed readiness at a mature or advanced level, with most indicating that their firms are still in the pilot or exploration stage.
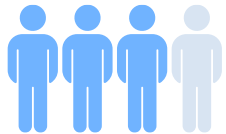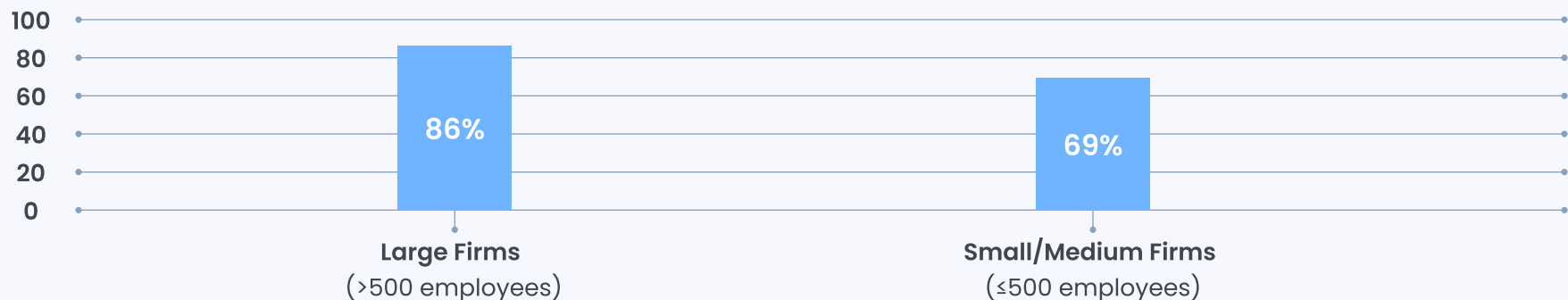
Leading Challenges
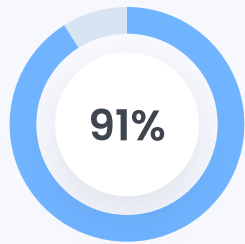
91% Almost all respondents cited "identifying use cases with business value" or "proving business value" as a top barrier to AI adoption.

Implications

While the industry clearly recognizes AI's strategic weight, most firms are still in the "awareness and exploration" phase of adopting and integrating AI technology. To overcome the primary hurdle of identifying and proving its business value, AEC leaders must ensure that all initiatives are driven by business outcomes rather than novelty and excitement.

Darren Martin

Chief Digital Officer

AtkinsRéalis

"

It's not a question of *if* AI will disrupt design — it's how quickly. Already, we see that **20%** of our time can be affected by these tools in the near future, leading us to reexamine business models.

Bonus

Top Drivers for GenAI Adoption in AEC Firms

Efficiency Gains

Approximately **90%** of respondents noted their top GenAI adoption priorities include:

- Integration with business systems
- Reduction of core business costs

New Service Offerings

At least **80%** of respondents indicated their top GenAI adoption priorities as:

- Creating new business or revenue sources
- Increasing the value of offerings with AI-based features or insights

Potential Task Automation Potential

More than **3/4** of respondents believe that up to or more than 20% of work tasks can be automated.

| 0% | 25% | 50% | 75% | 100% |
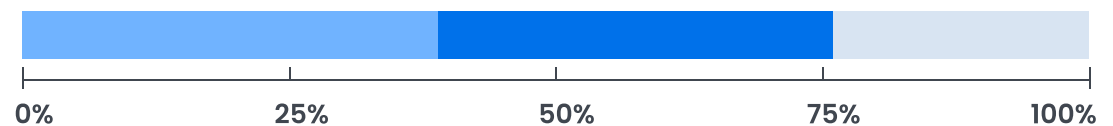
■ Estimate Up to **20%**   ■ Estimate More Than **20%**

Recommendations

01 **Create a Shared AI Vision & Roadmap**

Host an AI "vision workshop" with senior leadership, operations and digital teams to define how AI supports the organization's broader mission and growth objectives. Document outcomes into a concise AI roadmap, linking each AI exploration or pilot to specific business goals.

02 **Conduct an AI Readiness & Talent Assessment**

Perform an internal readiness audit, using the findings to build AI competencies through targeted upskilling and/or external partnerships. An audit should evaluate:

- Data infrastructure
- Workforce digital literacy
- Existing pilot successes

03 **Demonstrate Value With Quick-Win AI Pilots**

Select two or three feasible, high-impact use cases — internal knowledge chatbots, AI-aided proposal generation, basic design automation — and implement them swiftly. Capture ROI metrics (time saved, cost reduction, etc.) and use those success stories to champion larger-scale AI initiatives.

> It's a pivotal moment for humankind, and the reason is that many things we thought were impossible are now possible.

Shankar Kalyana
Senior Vice President & Chief Technology Officer

Stantec

02

Business & Strategic Impact of AI

Fully realizing the efficiency gains that AI can generate takes more than dropping a few standalone AI applications into processes that require very little change management. Firms must identify the systems that stand to benefit the most, set measurable performance goals and account for future developments. Respondents shared where they are in developing and implementing their AI strategies.

Business Objectives

95%
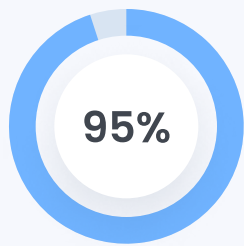
Almost all respondents expect AI technology to improve employee productivity and/or create cost savings. Large firms have higher expectations for workforce efficiency, while small/medium firms are more focused on cost savings.

Increased Employee Productivity

86%

79%

Cost Savings

69%

79%

🟦 **Large Firms** (> 500 employees)   🟦 **Small/Medium Firms** (≤ 500 employees)

Strategic Alignment
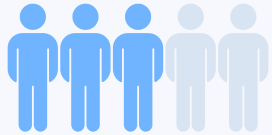
About **60%** of respondents indicated that their firm's AI initiatives align with its overall business goals and actively support the company's strategic objectives.
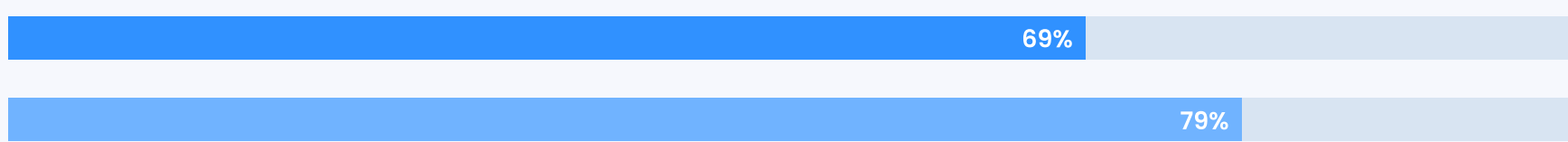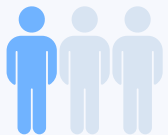
However, **at least 1/3** of respondents revealed that their AI strategy is **not** integrated with their business strategy.

Budgetary Impact

77%
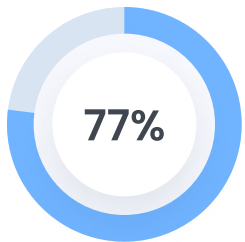
Most respondents anticipate an increase in their firm's AI investments within the next year.

Implications

While AI is generally recognized as a competitive business advantage and a key to profitability, many firms lack a clear integration strategy. Simply introducing AI in a standalone or add-on capacity undercuts the innovation, decision-making and operational benefits it can provide. Many firms struggle to align AI initiatives with overall business goals, making it difficult to prove value and meet ROI demands.

"

AI is an enabler in delivering big, complex missions in national security or large civil programs. The key is combining that with an understanding of the client's challenges. Tech alone doesn't solve it. It's about how we apply it with purpose and leadership.

Ricardo Lorenzo
Chief Technology Officer

PARSONS

Recommendations

01 Pilot Value-Based Pricing

With AI integration comes the potential for significant efficiency gains across multiple areas of the business. This ultimately puts pressure on the AEC industry's traditional time-and-materials business model — if projects are being delivered more efficiently, charging by the hour becomes less profitable. Begin preparing for the eventual shift to a value-based model by identifying opportunities to test fixed-fee or shared-risk pricing on AI-driven tasks.

02 Define AI ROI

Focusing on outcome-based indicators relevant to AEC project lifecycles can help firms quantify AI's business impact. Use standardized metrics that prove value against business and project goals such as reduced rework hours, fewer change orders, better schedule alignment and more. Tracking these metrics during pilot projects will help build a clear case for integrating AI with business goals.

03 Form Strategy Councils

To truly harness the power of AI, it's crucial to recognize how it can impact every part of the business. Involve leaders across finance, operations and technology departments to examine how AI can amplify each area and unify AI with business outcomes. These councils can also be engaged to encourage buy-in and identify early adopters and advocates.

Tembi Hommes
Global Chief Data Officer

ARUP

" We see a generational shift in how we solve problems. AI is part of that shift — speeding up workflows and letting us tackle more complex challenges.

03

Technology & Generative AI Use Cases

With so much buzz around AI, and particularly GenAI, it can be difficult for firms to avoid getting caught up in the hype. Unfortunately, this puts them at risk for hasty implementations in areas that are not optimal for proving value. AEC firms must identify the appropriate AI technology to apply in high-impact areas as a first step toward success. Respondents shared the areas where they've already witnessed AI-driven gains, how they're leveraging GenAI, and the areas where they anticipate future wins.

Organizational Efficiency

71%
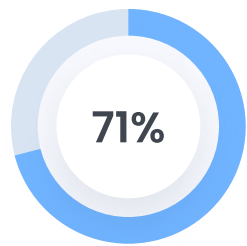
The majority of respondents credit the adoption and application of AI with enhancing efficiency at their firms, specifically citing:

- Improved collaboration across the business
- Better decision making
- Lower costs
- Improved efficiency within organizational processes
- Optimized headcount

Client Experience & Value

45%
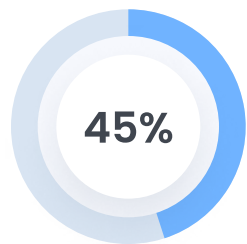
Almost half of respondents indicated that AI has added value for clients by allowing their firms to:

- Create new programs and services
- Customize and/or improve existing products and offerings
- Develop new business and/or service models
- Expand into new markets and reach different audiences

Generative AI
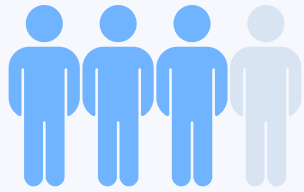
73% of respondents reported that they regularly use GenAI tools at work.

At large firms, staff is **73% more likely** to regularly employ GenAI tools for work tasks than at small/medium firms.

94%	**55%**
Large Firms (>500 employees)	**Small/Medium Firms** (≤500 employees)
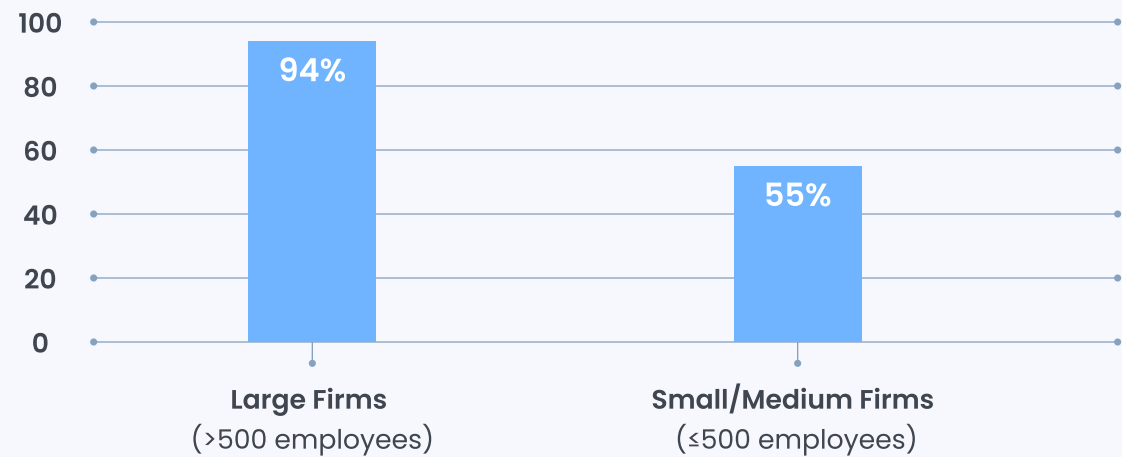
Respondents' highest priorities for future GenAI initiatives focus on financial gains and creating value for clients.

Increase Core Business Revenue	74%
Decrease Core Business Costs	73%
Increase Value of Offerings	65%

Other areas where respondents reported using GenAI tools include:

○ Innovation   ○ Project support   ○ Research

Bonus

Top Areas Expected to See AI-Driven Revenue Gains

Project Design & Delivery

Almost **90%** of respondents specified project design and delivery as one of the top three areas with the highest potential for growth due to AI.

Ranked #1

- **48%** of Large Firms
- **20%** of Small/Medium Firms

Marketing & Sales

At least **75%** of respondents included marketing and sales in the top three areas where they expect to see revenue growth due to AI.

Ranked #1

- **20%** of Large Firms
- **50%** of Small/Medium Firms

Implications

The AEC industry has countless opportunities to apply AI, from simple process automation to advanced generative design. While large firms anticipate gains around project design and delivery, and small/medium firms see more potential for applications within marketing and sales processes, it's clear that AI initiatives will impact every area of the business.

As firms experiment with integrating AI and GenAI into their processes, they will face crucial decisions on balancing the efficiencies they've gained with creating greater value for clients.

Generative design is changing the conceptual phase for AEC firms, allowing them to quickly iterate several designs and keep humans in the loop to determine which one best meets project objectives and satisfies client requirements.

AI presents an opportunity for firms to improve the client experience, helping them converge on a shared vision and realize more successful project outcomes.

Recommendations

01 Implement Low-Risk Internal Tools

Start with internal chatbots for knowledge retrieval and to summarize technical documents, project reports and RFPs. Using existing company data ensures that chatbot outputs are immediately relevant, and piloting these straightforward tasks allows teams to gain confidence using AI without high-stakes project risks.

02 Encourage AI Labs

Give architects, engineers and project managers the opportunity to experiment with GenAI tools in a secure, controlled setting. Creating a dedicated sandbox environment and setting clear experimentation goals will help manage risk, expedite learning and adoption, and accelerate innovation. AI labs spark creative solutions that can differentiate a firm from its competition.

03 Validate With "Human in the Loop"

Enforce QA processes around AI outputs to ensure human-engineering oversight. Emphasizing design validations, project-centric metrics and human oversight will ensure reliability, build client trust and enable the safe scaling of AI initiatives. This balanced "AI + human co-creation" model addresses the enthusiasm around AI's possibilities and the need for responsible application.

Darren Martin
Chief Digital Officer

AtkinsRéalis

"
There are huge safety considerations that are associated with the use of AI, particularly some forms of generative AI, which for us means that as we embark on that journey, we want to ensure that there is human oversight throughout the process to safeguard it.

04

Data Governance & Security

AI has the power to skyrocket the AEC industry into the future, but firms must first learn to use this resource safely. With big data comes big responsibility — a mistake in judgment can have far-reaching consequences. Not surprisingly, most firms are taking a cautious approach while pursuing new AI-driven technologies, and survey respondents revealed their biggest concerns.
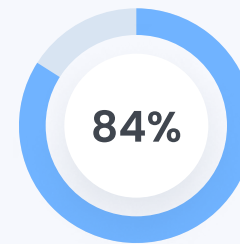
Risk Mitigation

Data Security
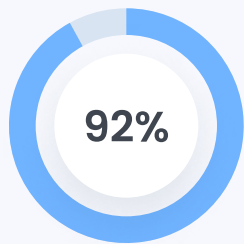
92% Nearly all respondents highlighted security and privacy as high-priority risks of GenAI usage, specifically:

- Cybersecurity vulnerabilities
- Intellectual property infringement
- Irresponsible, unsafe and unethical use
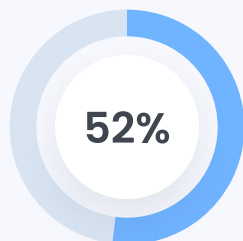- Personal/individual privacy concerns

Accuracy

84% A significant majority of respondents are concerned with inconsistencies and errors in GenAI outputs due to:

- Incorrect or biased data
- Incomplete or outdated data
- Lack of physical and situational awareness
- Shifting safety and sustainability requirements

Current Use

52% More than half of respondents reported that their firms are currently using open/public GenAI models.

Leadership Priority

Believe *It or Not ...*

Only about **15%** of firms surveyed have or plan to hire a Chief Data or Chief AI Officer.

Implications

Effective AI solutions demand robust data governance frameworks, streamlined data architecture, and strong security and IP protections. Without them, organizations risk compliance issues, cybersecurity vulnerabilities, IP leakage, damage to the organization's reputation and other potential missteps.

Most firms recognize the need to manage their data and regulate the use of AI tools across the business. However, very few firms have prioritized such initiatives at the executive level, which indicates a lack of alignment from leadership and makes company-wide adoption more difficult.

> **Ricardo Lorenzo**
> Chief Technology Officer
>
> **PARSONS**

" Threat actors are also on an AI journey, looking to technology for ways to be more productive and efficient in what they're doing. They're looking at how they can exploit aspects of cybersecurity in this new era of AI … so, securing your AI infrastructure is key to your organization.

Recommendations

01 **Institute a Data Governance Council**

Engage leaders from legal, IT, operations, engineering and other business areas in a cross-functional committee to help make decisions around AI policies and investments. This council should establish protocols for consistent data management and oversee the enforcement of usage policies and compliance with regulatory requirements. A member or subcommittee may be designated to specifically advise on ethical use guidelines and standards for AI initiatives.

02 **Adopt a Zero Trust Mindset**

Embrace the "never trust, always verify" cybersecurity approach to protect data at all touchpoints — contractor and vendor collaboration portals, design-sharing platforms, remote and mobile work access, and more. Additionally, encrypting AI model parameters, limiting internal access and monitoring usage logs will help protect AI models from unauthorized use or theft without curbing innovation.

03 **Draft an AI Policy**

Communicate AI policies across the company with an accessible resource that defines user guidelines, identifies appropriate use cases and highlights best practices. This policy should provide clear expectations for safe, ethical and responsible use, intellectual property ownership and bias audits. Finally, provide safe testing environments that allow users to experiment with AI tools and get used to working within the parameters set in the AI policy.

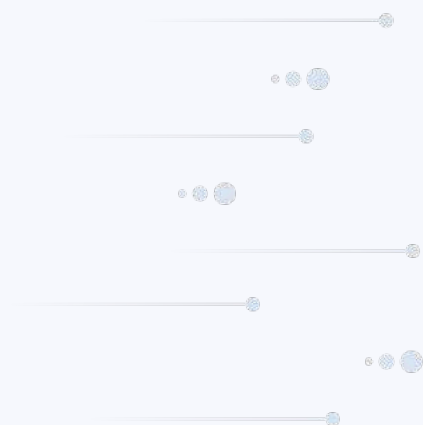> Responsible AI and data ethics must come from the top. We're building guidelines around that now.

Tembi Hommes
Global Chief Data Officer

ARUP

05

Workforce Impact

Besides evoking excitement and amazement, AI's evolving capabilities can elicit concern or even fear. Employees, for example, may view AI integration as a welcome advancement that allows them to focus more time and energy on higher-value tasks. However, they may also see it as a threat to their jobs.

AEC firm leaders face eagerness as well as resistance from staff, and survey respondents shared their concerns and priorities when it comes to adopting AI in the workplace.
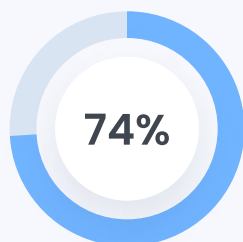
Operational Obstacles

89%
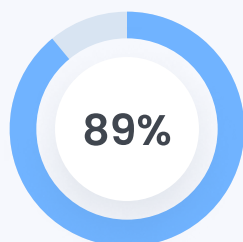
About nine out of ten respondents reported that they struggle to achieve company-wide adoption of AI initiatives, specifically:

- Choosing tools that are easy for users to adopt
- Providing sufficient training to support adoption
- Upskilling technical knowledge and abilities

Displacement Concerns

74%

Most respondents **do not** expect firm size to change much after AI integration.

Believe *It or Not ...*

Only 5% of respondents predict that some roles will be replaced by AI technology in the future.

Top Workforce Priorities

Upskilling

Almost **80%** of respondents intend to prioritize training current employees to use AI technology in their present roles.

Hiring

More than half plan to hire new employees with AI-related skills and experience.

Reskilling

About **40%** anticipate training and transitioning current employees to more valuable roles.

Implications

Despite the general acknowledgement of AI's importance, most respondents don't seem concerned about it replacing humans in the AEC workflow. They do, however, recognize that the need for change management adds another layer of complexity to integrating and optimizing AI in their businesses.

Change management is critical to the success of AI initiatives. Firms must proactively reskill and guide employees, keeping the human-AI collaboration model central and reassuring staff that AI is a partner, not a predator.

> "
>
> If we can harness AI and data, there's so much promise, but we must be mindful of how employees do the work. People and processes come first; technology is subservient. That is the real shift — use AI to empower humans, not replace them.

Shankar Kalyana
Senior Vice President &
Chief Technology Officer

Stantec

Recommendations

01 **Develop AI Literacy**

Create basic AI training programs for all staff and offer targeted sessions for advanced roles. Providing hands-on labs and secure sandbox environments where employees can safely experiment with new tools will build confidence and excitement. Consider partnering with AI vendors or technology consultancies to introduce emerging methods and demonstrate buy-in from the top.

02   Showcase Quick Wins

Focusing on areas where AI can significantly reduce manual effort while posing minimal risk, track metrics such as hours saved and error reduction. Engage managers across the business to report team wins and highlight improvements, reinforcing that AI benefits multiple stakeholders.

03   Reward AI Pioneers

Reward and recognize teams that successfully pilot new AI tools or workflows. Offering high-visibility incentives encourages adoption and identifies team members who can serve as resources or advocates for future initiatives. Meaningful recognition can also reinforce to staff that leadership values proactive engagement and is committed to creating a culture of innovation.
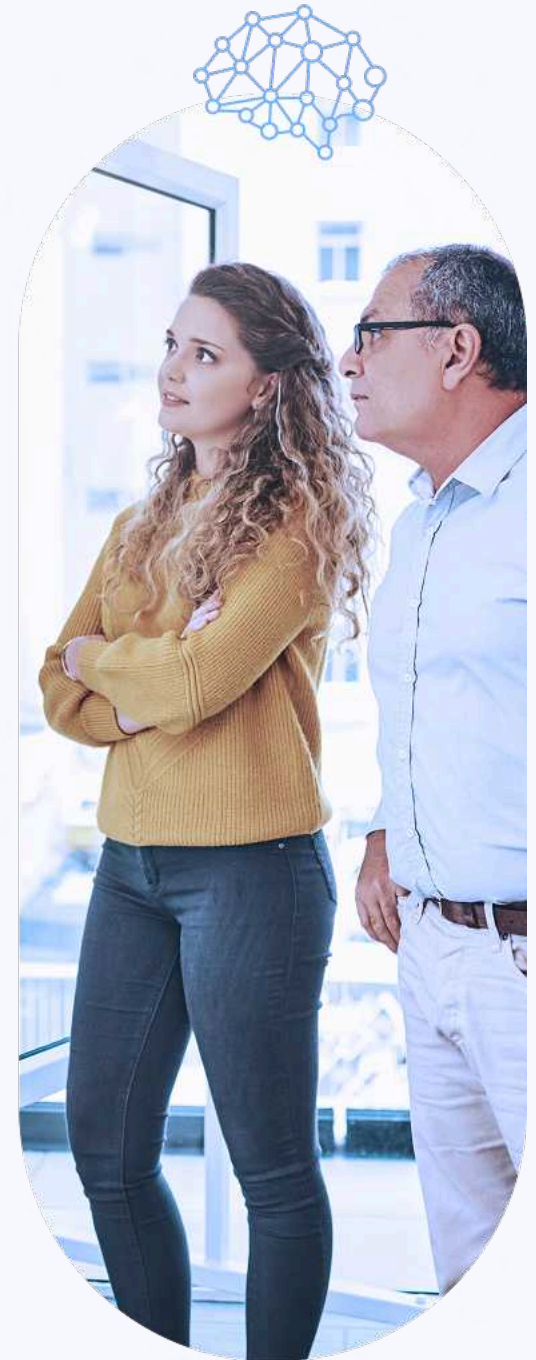
Darren Martin
Chief Digital Officer

AtkinsRéalis

"

AI helps us unify all that data for better decisions, but we can't just automate everything and walk away. We must have domain experts guiding the models, verifying outputs and ensuring they reflect real-world constraints.

What's Next?

From planning to mature integration, the AI journey is complex, and this report represents the experiences of firms at various stages of adoption. Based on the trends revealed within the survey responses, we've compiled a list of suggestions to help all AEC businesses as they pursue a data-driven future.

01 Importance & Adoption of AI

- ✓ Create a Shared AI Vision & Roadmap
- ✓ Conduct an AI Readiness & Talent Assessment
- ✓ Demonstrate Value With Quick-Win AI Pilots

Next Step: Establish Clear AI Roadmaps

With exciting advancements in generative design, computer vision, risk assessment and more, AEC firms can't afford to ignore AI. However, diving in headfirst without a plan could cripple adoption attempts. Developing an AI roadmap is a crucial first step toward successful AI integration. Collaborate across departments to establish clear goals, understand overall readiness and identify valuable use cases that align AI initiatives with business objectives.

02 Business & Strategic Impact of AI

- ✓ Pilot Value-Based Pricing
- ✓ Define AI ROI
- ✓ Form Strategy Councils

Next Step: Adopt Incremental, Value-Driven Use Cases

Proving value is key to the success of any AI initiative. Identifying opportunities for quick, high-impact efficiency gains or client-facing enhancements will build momentum and encourage buy-in from leadership and staff. Start with low-risk internal AI tools that produce measurable results (time saved, errors reduced, etc.) and use those success stories to champion more advanced initiatives.

03 Technology & Generative AI Use Cases

⊘ Implement Low-Risk Internal Tools   ⊘ Encourage AI Labs   ⊘ Validate With "Human in the Loop"

Next Step: Maintain a Human-in-the-Loop Mindset

AI can drastically speed and expand design creation, but licensed professionals must remain accountable for final deliverables. The human element is critical to safely scaling AI initiatives, providing validation and oversight to ensure accurate, reliable and quality outcomes for the business and the customer.

04 Data Governance & Security

⊘ Institute a Data Governance Council   ⊘ Adopt a Zero Trust Mindset   ⊘ Draft an AI Policy

Next Step: Invest in Data Infrastructure

AI tools are only as good as the data that drives them, so as these technologies evolve, data management must as well. A designated data governance council responsible for overseeing data processes is essential to ensuring data quality and security. As AI tools are introduced into the workflow, AEC firms should continually evaluate and refine their enterprise data governance, architecture and security frameworks to address new risks and challenges.

05 Workforce Impact

✓ Pilot Value-Based Pricing   ✓ Define AI ROI   ✓ Form Strategy Councils

Next Step: Upskill & Align the Workforce

AI integration can't happen without addressing the human factor through change management. Reassuring employees that AI is a partner rather than a predator and giving them opportunities to experiment safely will bolster confidence and drive excitement. Embed AI into daily workflows and prioritize upskilling and reskilling to craft a culture that embraces innovation and critical thinking.

The AEC industry is on the cusp of a transformation in which data, AI and humans work together to solve society's greatest infrastructure and sustainability challenges. Organizations that methodically plan and execute their AI strategy — balancing risk and reward — will emerge as industry vanguards.

Additional Resources

BST Global designs, develops and deploys the AEC industry's first suite of AI-powered project intelligence™ solutions. Beyond our flagship ERP offering, we provide work management, predictive insights and resource management solutions to complement a firm's existing ERP.

LEARN MORE ⊙

BST Global's AI + Data Consortium is a group of global technology leaders with a mission to be the voice of AI-powered and data-driven innovation for the AEC industry.
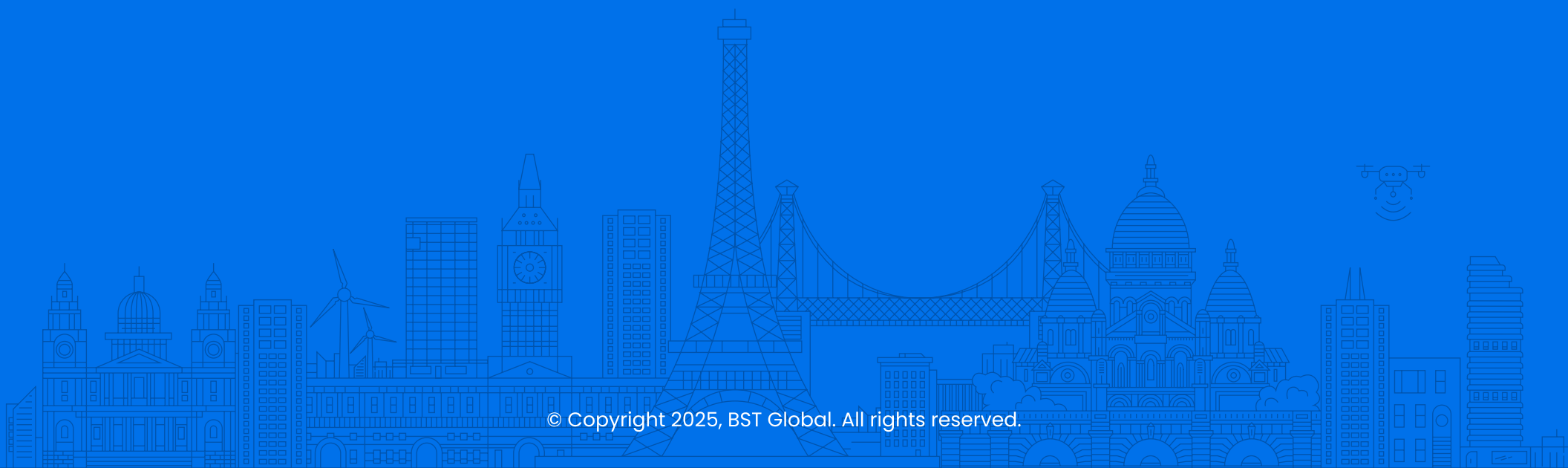
MEET THE MEMBERS ⊙

In **The Trailblazers** podcast, AEC experts and industry innovators explore the latest ideas, strategies and transformational technologies that are redefining the built environment and the world as we know it.

BROWSE EPISODES ⊙

Focused on all things AI for the AEC industry, **BST Global's AI Summit** brings leaders from the world's top design, engineering and environmental consultancies together to share how they are preparing for an AI-powered and data-driven future.

EXPLORE AI SUMMIT ⊙