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Beyond the AI Paradox

Why AEC Firms Aren’t Seeing AI in the Bottom Line & How to Close the Gap

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AI is everywhere…except in the bottom line

The "AI Paradox"



← but →



of companies **have deployed AI** in some form in at least one business function[1]

of companies still report **no material contribution to EBIT** from AI deployments[1]

1. "The state of AI: How organizations are rewiring to capture value," McKinsey, March 12, 2025

Example follows

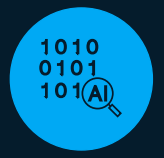
But why?



Not directing AI towards areas that truly drive value



AI used to make existing work incrementally more efficient vs fundamentally changing how work gets done



Focus on interesting use cases and point solutions vs transforming domains



Failure to establish baselines or KPIs, making benefits invisible or impossible to attribute



Viewed as an IT initiative rather than business transformation with P&L accountability



Lack of emphasis on change management or new skills

Across the AEC lifecycle, there are many domains & workflows...

Not exhaustive

Project stage	Project pursuit	Project definition	Design & engineering	Pre-construction	Procurement	Construction / Execution	Commissioning & Handover
Domain & core work-flows	**1. Commercial** • Opportunity qualifications & pipeline management • Pricing strategy • Customer development • Opportunity identification • Opportunity qualification and tiering • Pipeline management • Marketing • Competitor tracking • Partnership strategy	**2. Capital planning & feasibility** • Portfolio strategy & capital allocation • Market & site analysis • Business case modeling • High-level scope definition • Order-of-magnitude (ROM) estimating • Risk assessment & sensitivity analysis • Funding & financing alignment • Go / No-Go governance • Permitting & approvals strategy **3. Site selection & planning** • Site feasibility & survey validation • Preliminary grading & earthwork modeling • Mass haul & access analysis • Utility & environmental constraints review • Constructability & risk assessment • Utility & subsurface investigation • Geotechnical & environmental surveying	**4. Design** • Concept / schematic design dev • BIM modeling & model coord. • Constructability reviews • Quantity extraction & model-based takeoffs • Design change management • Sustainability & compliance analysis • Design coordination/dash det. • Design deliverable/package mgmt. • Parametric & generative design • Rendering & visualization **5. Engineering** • Structural analysis & detailing • MEP syst. design & load calc. • Civil grading & drainage design • Value engineering • Code & regulatory compliance validation • Model-to-spec integration • Temporary works engineering • Constructability sequencing & execution planning • Specification drafting & dev • Architectural work • Interface management • Model reviews • Constructability review	**6. Estimating** • Takeoffs • Quantity extraction & assemblies • Labor productivity modeling • Equipment utilization modeling • Unit rate & cost database management • Subcontractor scope alignment inputs • Risk & contingency • Baseline schedule development (with WBS) **7. Bidding** • Bid package & solicitation • Quote leveling & scope alignment • Pricing & margin strategy • Bid governance & submission • Trade partner /workforce prequalification • Contracting approach selection • Final negotiations • Scope / price adjustments	**8. Materials** • Bill of materials generation • Supplier qualification & onboarding • Material lead time tracking • Inventory planning • Submittals/spec compliance • Supplier perf. management **9. Off-site fabrication** • Prefabrication planning • Production scheduling • Quality control tracking • Shop drawing coordination **10. Purchasing** • Purchase order management • Vendor negotiations • Subcontract buyout • Change order processing • Payment approval • Rental management • Equipment procurement workflow **11. Manufacturing** • Production planning • Plant scheduling	**12. Operations & management** • Labor & equipment dispatch • Field productivity tracking • Field execution • Equipment & fleet mgmt. • Daily reports & progress capture • Timecards & crew mgmt. • Work pkg/short-interval planning • Daily reports & production quant • Workforce/attend. (site) tracking • Heavy lifts & field operations **13. Commercial management** • Job costing vs budget • Cost tracking vs estimate • Change order management • Contract admin & mgmt. **14. Logistics** • Truck assignment & dispatch • GPS-based arrival estimation • Fuel management • Cycle time analysis • Maintenance management • Site access/entry management • Material inventory mgmt. **15. Quality** • Quality inspections • Deficiency mgmt. (e.g., NCRs)	**16. Commissioning** • Systems testing & commissioning tracking • Punch list management • As-built documentation • Warranty tracking • O&M manual delivery • Asset tagging & digital twin readiness • Final cost reconciliation **17. Handover** • Substantial completion certification • Owner acceptance workflows • Turnover package approval tracking • Lien waiver & closeout documentation • Final contract closeout & retention release • Regulatory / authority sign-offs • Warranty issue tracking • Owner training (records) management
Cross cutting	**18. Enterprise backbone** • Job cost accounting • Budget tracking & forecasting • AP/AR & billing • Payroll & labor cost allocation • Revenue recognition	**19. Project controls** • Earned value management • Cost management • Forecasting • Scheduling	**20. Project management** • RFI Management • Submittals Tracking • Schedule management • Change order workflow • Issue tracking • Task sequencing logic • Meeting management / log	**21. Corporate functions** • Finance • HR • Legal • IT	**22. EHS** (Environ., Health & Safety) • Safety & compliance tracking • Environmental comp. • Labor & workforce comp. • EHS regulatory • Safety incident mgmt. • Training / certifications / site access compliance	**23. Integration / Data layer** • Data governance & master data mgmt. • IoT/telematics integration • Data streaming & interoperability **24. Document management** • Document & model mgmt. • Drawing & document control	**25. Asset lifecycle management** • Parts inventory optimization • Service contract & warranty management • Total cost of ownership modeling • Asset health scoring & remaining useful life estimation • Disposition timing & resale optimization

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… but most organizations are applying AI sporadically…

Not exhaustive



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… rather than focusing intensely on transforming domains at scale

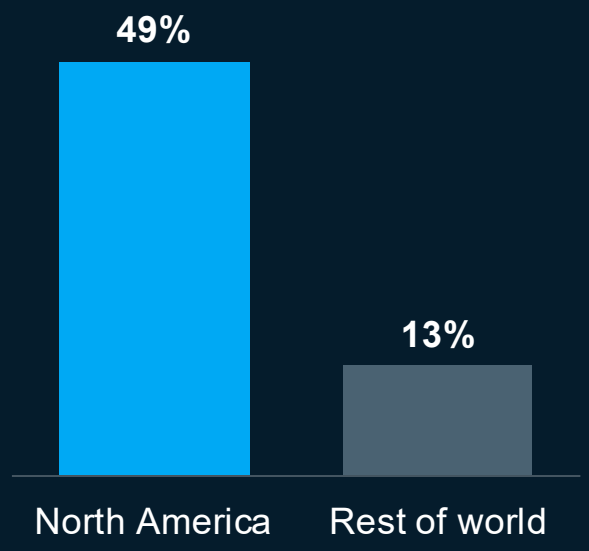
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Most North American firms are stuck in this pattern, and trailing the world on scaling AI with plans to invest less than global peers

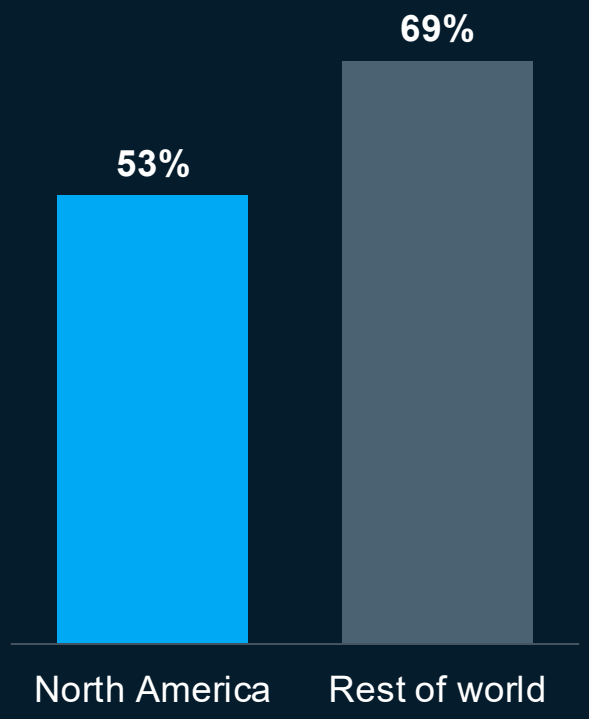
No AI workflow scaled across the enterprise

% of firms[1]



Plan to invest 5%+ of revenue in technology

% of firms, next three years



Key takeaways

The gap is regional independent of size

Among larger firms, about a third in North America have no AI workflow at enterprise scale, against one in ten elsewhere

North America gives AI half the weight

North American executives give AI about 5 of 100 points as a force of change, against about 10 elsewhere

The problem is scaling, not starting

About 60% of North American firms with nothing at scale are already piloting AI. Resistance to change is also cited more often there

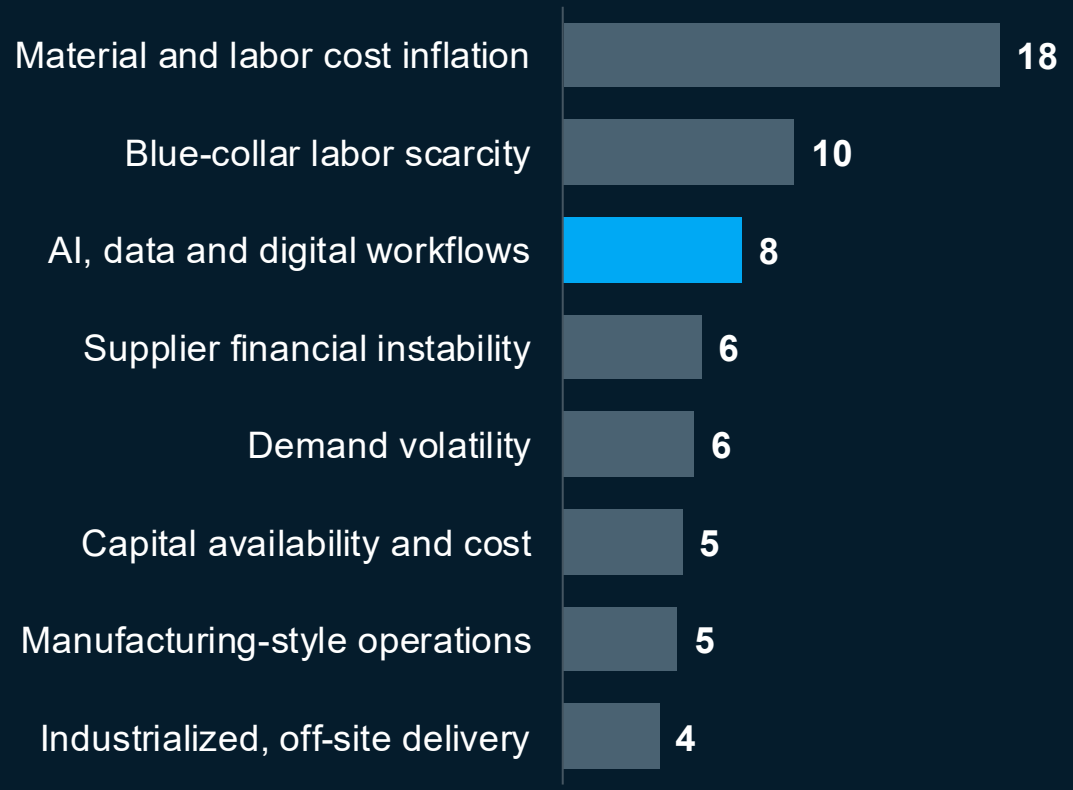
1. North America = firms with 50%+ of construction revenue there (n=144); rest of world n=103. Scaled = self-rated 'scaled across the enterprise' or higher in at least one of nine workflows. Larger firms = above-median revenue

Source: McKinsey Next Normal in Construction survey, June–September 2026 (n=247)

Yet the stakes are high… executives rank AI first among capabilities that will separate winners by 2035

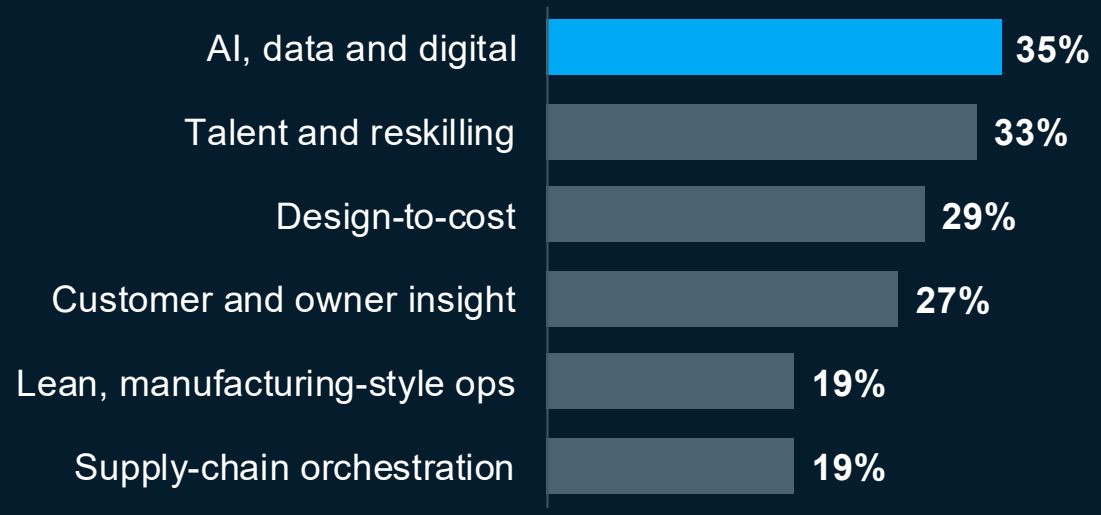
Forces driving change, next five years

Average points allocated out of 100[1]



Capabilities that will separate winners by 2035

% of respondents ranking it in their top three[2]



Investment is following the capability view

Nearly three in four give AI no weight as a force of change, yet it is the top area of increased investment over the past two years, cited by almost half.

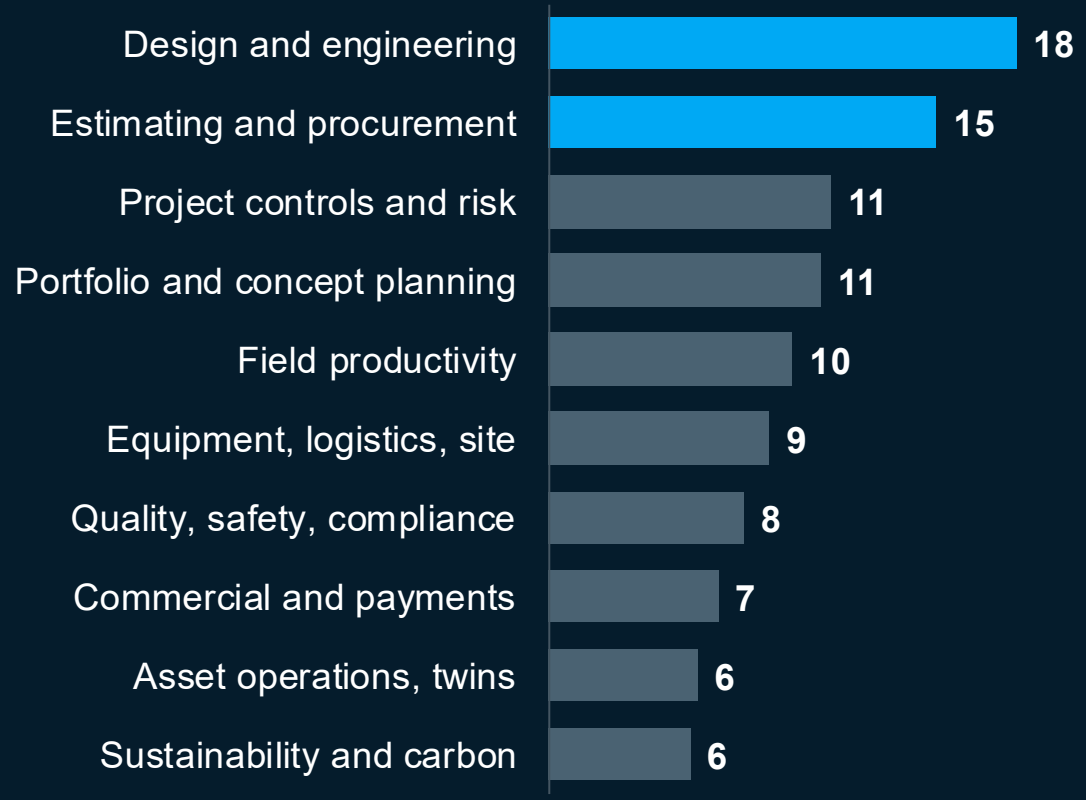
1. Respondents allocated 100 points across 21 forces; top 8 shown. 2. Respondents ranked 13 capabilities; top 6 shown.

Source: McKinsey Next Normal in Construction survey, June–September 2026 (n=247)

That value centers on design, engineering, estimating, and procurement, but talent is the biggest barrier

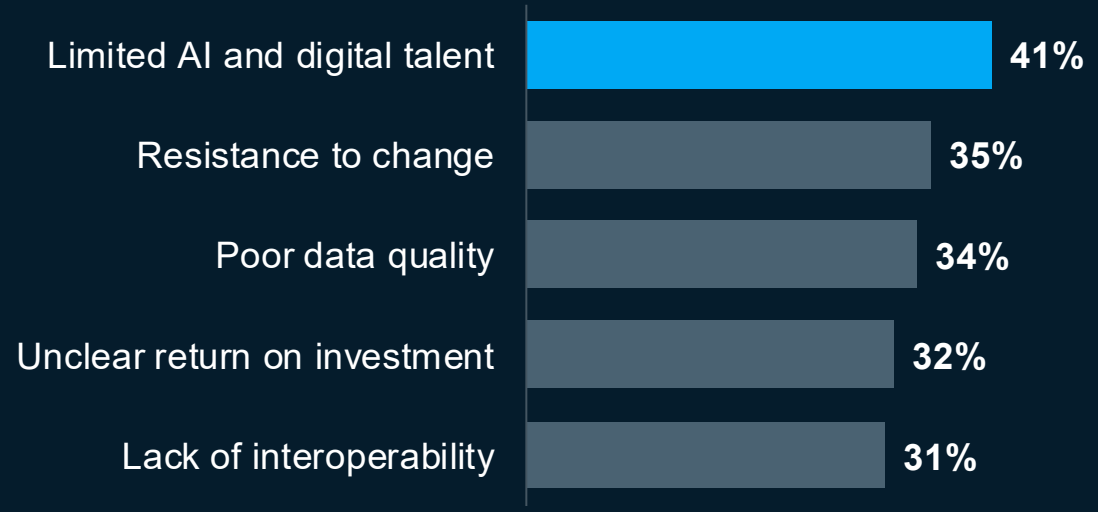
Where AI will create the most value by 2035

Average points allocated out of 100



Biggest barriers to broader AI use

% of respondents selecting[1]



Talent gets scarcer as firms scale

Limited AI talent is cited by a third of low-maturity firms and about half of high-maturity firms, while concern about ROI stays flat at around a third.

1. Multiple selections allowed; top 5 of 11 barriers shown

Source: McKinsey Next Normal in Construction survey, June–September 2026 (n=247)

Capturing value from AI requires organizations to “rewire” across six dimensions

Strategy



1 Strategic roadmap

How do we align our digital strategy with our overall technology aspirations?

How should we approach the transformation in a way that ensures value capture and unlocks competitive advantage?

Capabilities



2 Talent

How do we manage talent to stay ahead of the digital skill gaps?

3 Op model

How do we organize ourselves and teams to deliver on our digital strategy?

4 Technology

How do we setup a scalable tech stack and infrastructure to support multiple digital applications and solutions?

5 Data

How do we to setup a robust data foundation to scale digital across the organization?

Change Management



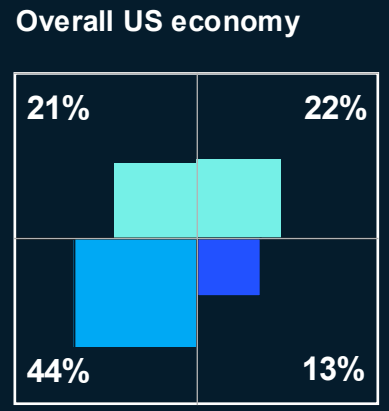
6 Adoption and Scaling

How do we design our scaling plan to ensure easy re-usability and scalability across the organization?

How do we deliver effective training to support skill building and manage culture change at scale?

How do we think about risk and responsible use of digital across the organization?

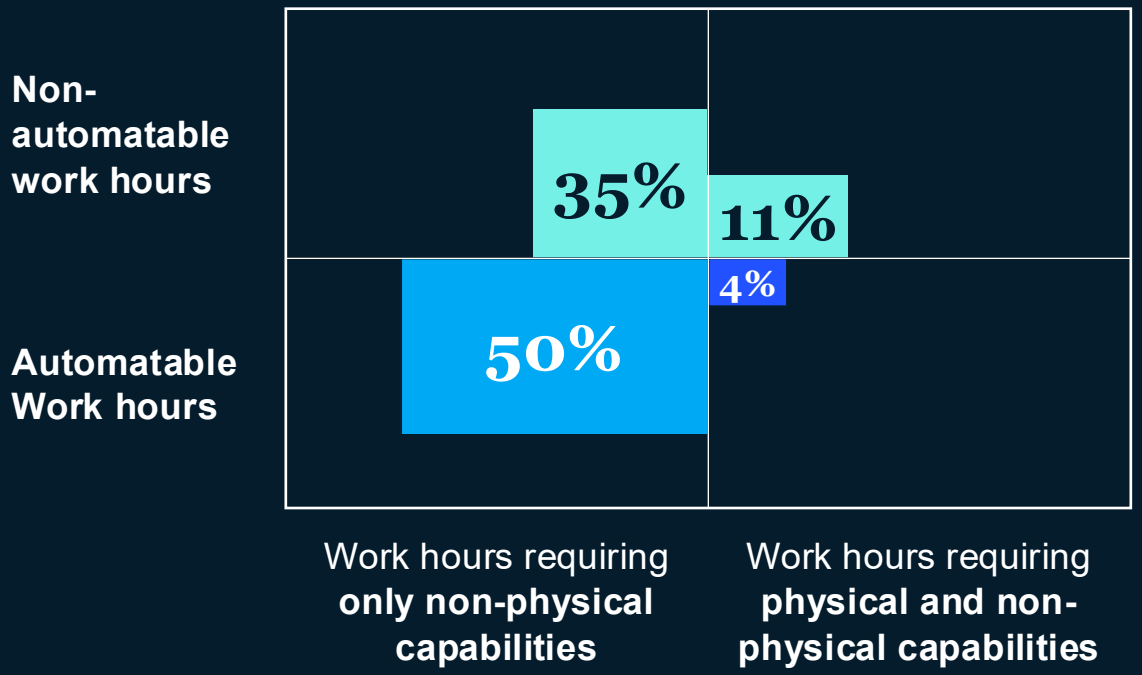
Over half of AEC work hours are automatable, which means redesigning roles, not removing 50% the workforce



People Agents Robots

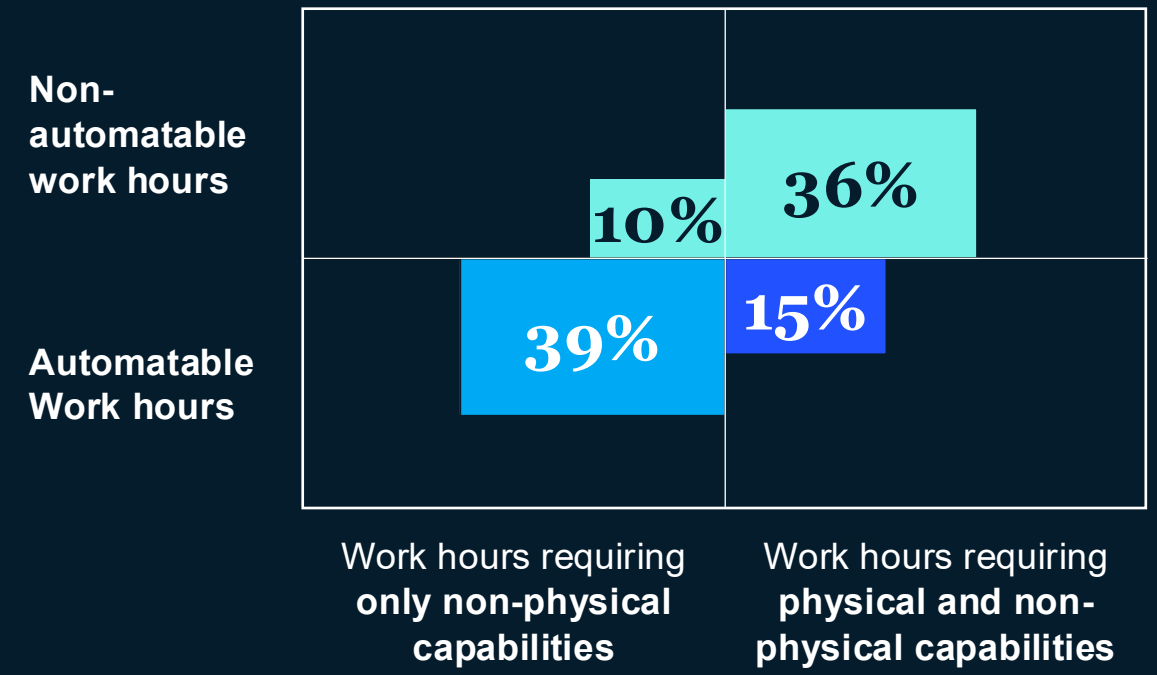
Architecture and Engineering,

Share of 2024 work hours based on technical automation potential[1]



Construction,

Share of 2024 work hours based on technical automation potential[1]



1. Automation potential is based on current capabilities of technology to perform human work. Automation potential shown is the late scenario of expert estimates. The early scenario of global technical automation potential ranges from 60 to 70 percent of current work hours

Source: McKinsey Global Institute analysis; US Bureau of Labor Statistics; O*NET; Current Population Survey, US Census Bureau

A new paradigm is emerging: from human-centric execution to domain-wide human-agent coordination

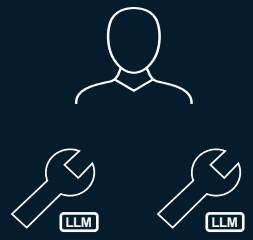
Proficient practitioner



Practitioners perform the work “manually”

1x

Practitioner using AI Tools



Practitioners use AI tools and incorporate outputs into their tasks

<1.2x

Raw productivity potential

Practitioner using AI + re-imagining workflows

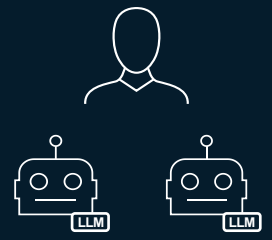


Practitioners don’t just use tools; they rethink business workflows and decision-making

1.5x

Raw productivity potential

Agents performing tasks

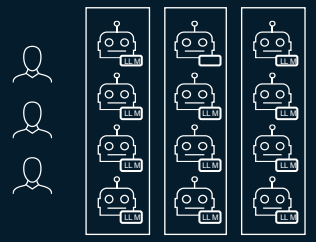


Agents perform tasks and create outputs, unlocking capacity for practitioners to focus on high-value activities

2-3x

Raw productivity potential

Hybrid Human and agent cross functional teams



Refined human-agent interaction model with cross functional human and agent. Human practitioners supervising and finalizing output

>3x

Raw productivity potential

AEC organizations must determine which workflows are best led by humans or agents and which can be fully automated

Workflow scenarios based on automation potential

Human Agent **Circle size**: Role responsibility





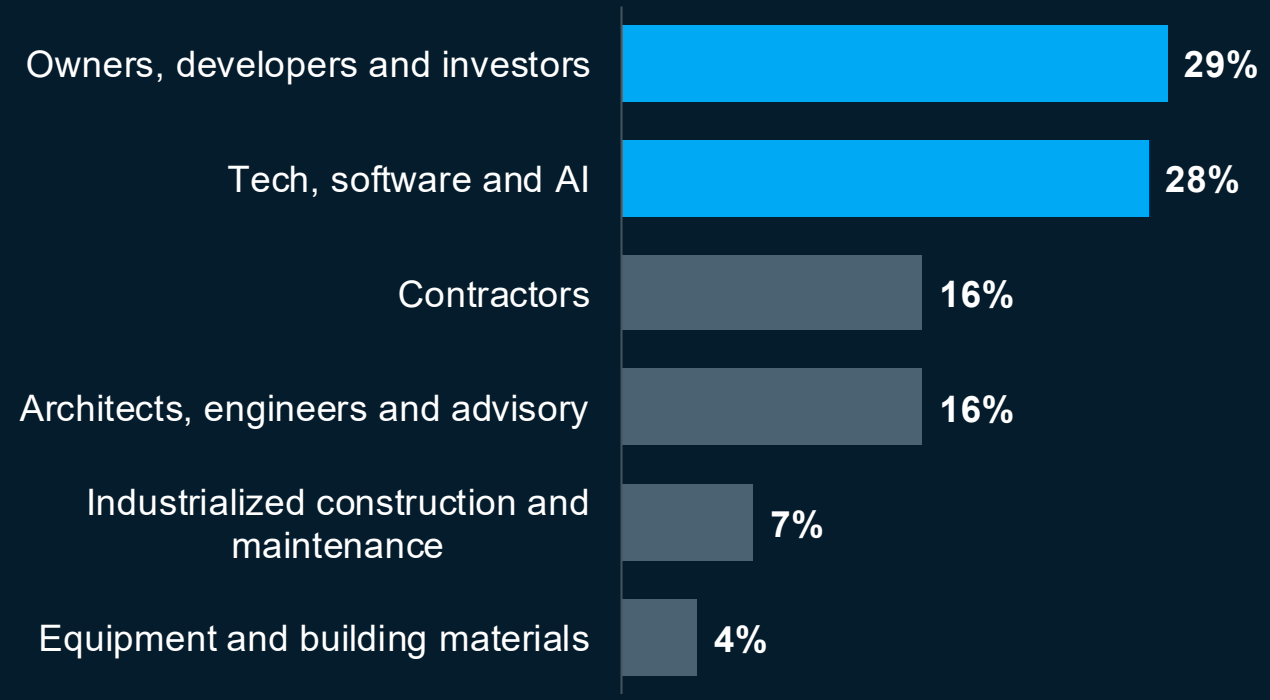


	Human-led, agent-enabled	Agent-led, human-accountable	Autonomous
Description	A human leads the workflow, with AI agents supporting	An agent leads the workflow; humans provide judgment and accountability	Agents run the workflow end to end; humans design and oversee it
Determining factors	• Projects limited by senior engineer availability • Human judgment creates the value; AI speeds existing work	• Most workflows are repeatable decision systems encoded with expertise • Humans manage exceptions, not information	• Standard processes with low-levels of risk or complexity • Human intervention is a workflow failure
Trade-offs	• Limited productivity gain • Dependence on scarce expertise • Slower decisions	• Requires trust in AI outputs • Challenges roles / decision rights • Higher governance burden • Risk of overreliance • Resistance from project teams	• Highest implementation complexity • Requires standardized workflows • Less flexibility for unusual projects • Heavy governance and risk controls
AEC project examples	An engineering manager runs design delivery; agents produce analyses and recommendations	An estimating agent builds the bid and flags commercial risks; the proposal manager approves	Project controls agents track cost and schedule, update forecasts, and raise recovery alerts

But value won't necessarily remain with the firms doing the work – executives expect owners and tech platforms to benefit most

Who will benefit most from the value AI, automation and productized solutions create by 2035

% of respondents ranking the group first[1]



Key takeaways

Only owners back themselves

Owners rank their own group first. Contractors, design and engineering firms and equipment makers all rank technology platforms ahead of themselves[2]

Project cost and schedule history is the most valuable data

About two in five put it in their top three, well ahead of any other data type. Every project generates it

Partnerships are the leading strategic move

About 60% expect more partnerships with AI and software providers, the most common move of 13 tested. Who owns the project data in those deals is the open question

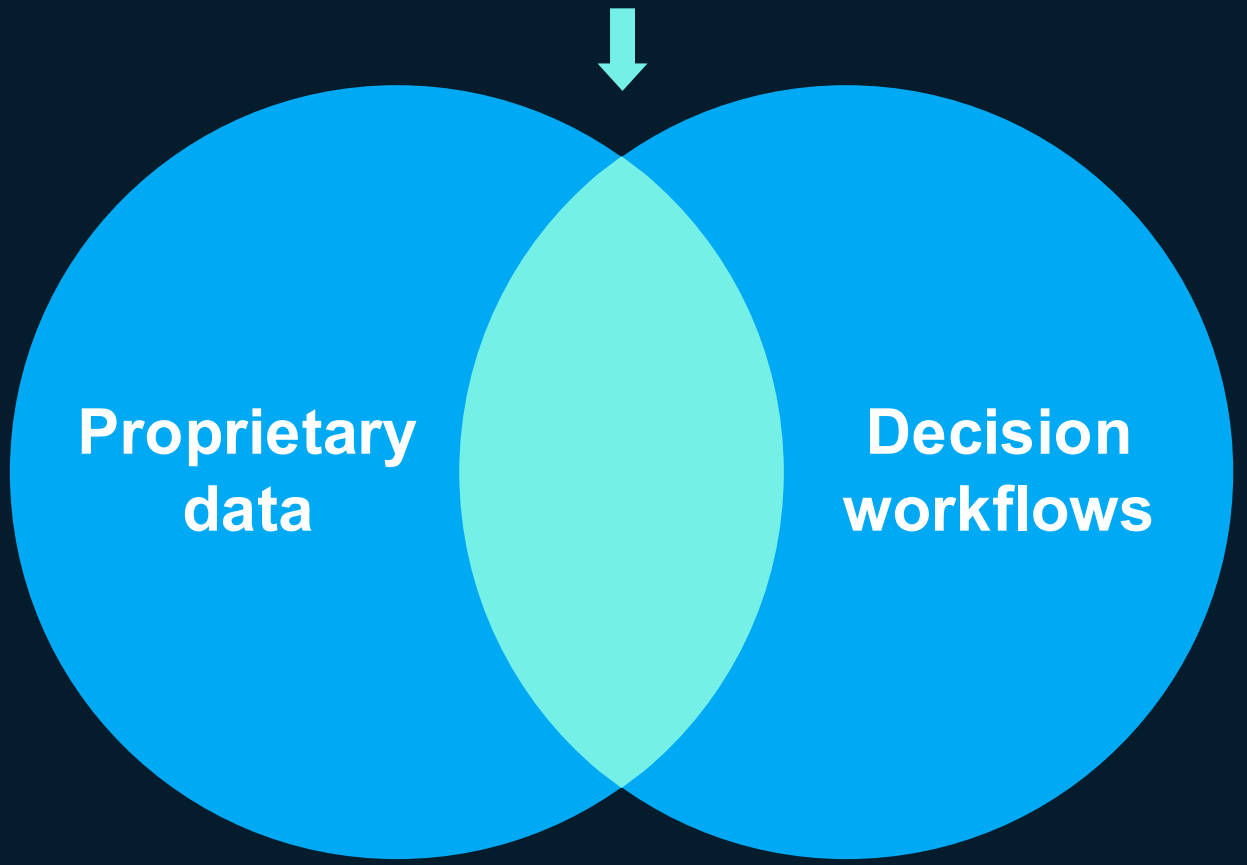
1. Owners group includes customers/end users; contractors group includes workers/talent; architects, engineers and advisory includes CM/PM; shares add to 99% as one respondent skipped. 2. By respondent's own role: owners n=53, contractors n=77, architects, engineers and advisory n=48, equipment and materials n=37

Source: McKinsey Next Normal in Construction survey, June–September 2026 (n=247)

To keep the value, firms need to own both their proprietary data and the decision workflows that data informs

Value created where proprietary data meets the decisions it informs

Experience moves out of individuals and into the workflow, with a data driving continuous learning



Owning the data:

Capture it in context, as the work happens

Structure it for reuse, with traceability and clear ownership

Secure rights, portability and separation from vendors

Owning the workflow:

Focus on structured, proprietary workflows that scale

Orchestrate agents to automate, retrieve, draft, flag and route

Keep judgement and accountability with people

And as AI cuts hours, pricing must shift toward value and outcomes to protect revenue and margin

Impact of AI on pricing strategy

Effort-based	Value-based	Outcome-based
• Charges for hours and resources	• Prices client value: faster delivery, lower risk, less rework	• Ties fees to results: cost, schedule, quality, risk
• Weakens as AI cuts hours and breaks the link to value	• Keeps a share of AI gains instead of passing them through	• Shares upside and accountability with the client
• Still fits uncertain scope, as a cost control	• Needs proven value and willingness to pay	• Needs solid baselines and agreed attribution rules

Emerging AI-focused pricing models

Enhanced effort-based pricing: hourly structure with premium rates or fee floors

Hybrid pricing: base fee plus variable fees tied to outcomes

What leaders can do now: A winning agenda

1. **Prioritize 3 to 5 high-value workflows that drive outcomes**
2. **Rewire operating models and teams, while developing talent**
3. **Activate and build data products around workflows**
4. **Update commercial models to retain value and capture upside**
5. **Choose where to build, partner, or buy technology**
6. **Scale with governance, and maintain audit trails to manage risk**