Building Smarter: Practical AI for the Construction Industry

We will discuss what AI looks like in construction right now.

Jeff Rapp
Principal at Rea
Jeff.Rapp@reamanaged.com
reamanaged.com
https://www.linkedin.com/in/jeff-a-rapp/

Travis Strong
Principal at Rea
Travis.Strong@reamanaged.com
reamanaged.com
www.linkedin.com/in/travis-strong-cisa

Alex Ryan
CEO of Ryshe
Alex@ryshe.com
ryshe.com
linkedin.com/in/alexanderryan92

rea BUSINESS ADVISORS

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Evolution of Technology

As 2025 comes to a close, technology in construction seems more pervasive than ever. From alternative building materials such as 3D printing and mass timber to robotics, builders are looking to add tech in all forms to enhance their businesses.

However, it's important to note that ***any discussion about construction technology isn't complete without mentioning two key drivers – artificial intelligence and data centers****.*

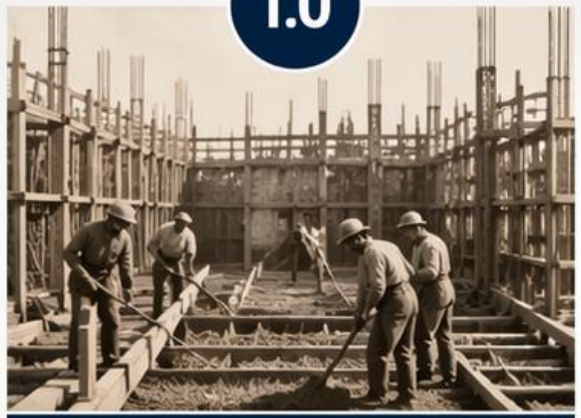
Matthew Thibault. "The top construction technology news of 2025".

https://www.constructiondive.com/news/the-top-construction-technology-news-of-2025/808077/

The Evolution of Construction

BUILDING ON A FOUNDATION. INNOVATING FOR THE FUTURE.

1.0



CONSTRUCTION 1.0

Manual, Craft-Based

Paper plans, experience-driven decisions, and skilled labor on the job site.

2.0

CONSTRUCTION 2.0

Mechanization

Heavy equipment and mechanization improve productivity and scale.

3.0

CONSTRUCTION 3.0

Early Digital

CAD, spreadsheets, email, and basic software bring digital tools to the office.

4.0

CONSTRUCTION 4.0

Connected, Intelligent, Data-Driven

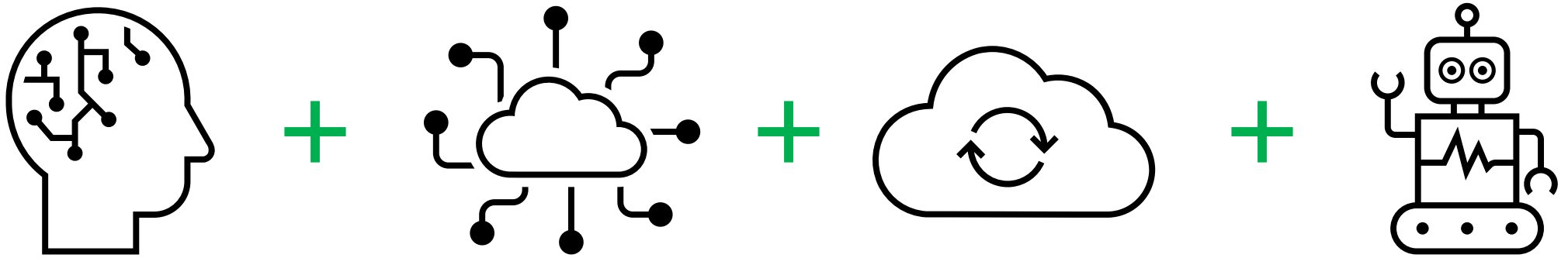
AI, IoT, cloud, automation, and data analytics connect people, projects, and performance in real time.

Each phase built the foundation. Now, we're adding intelligence to everything.

What is industry / construction 4.0?

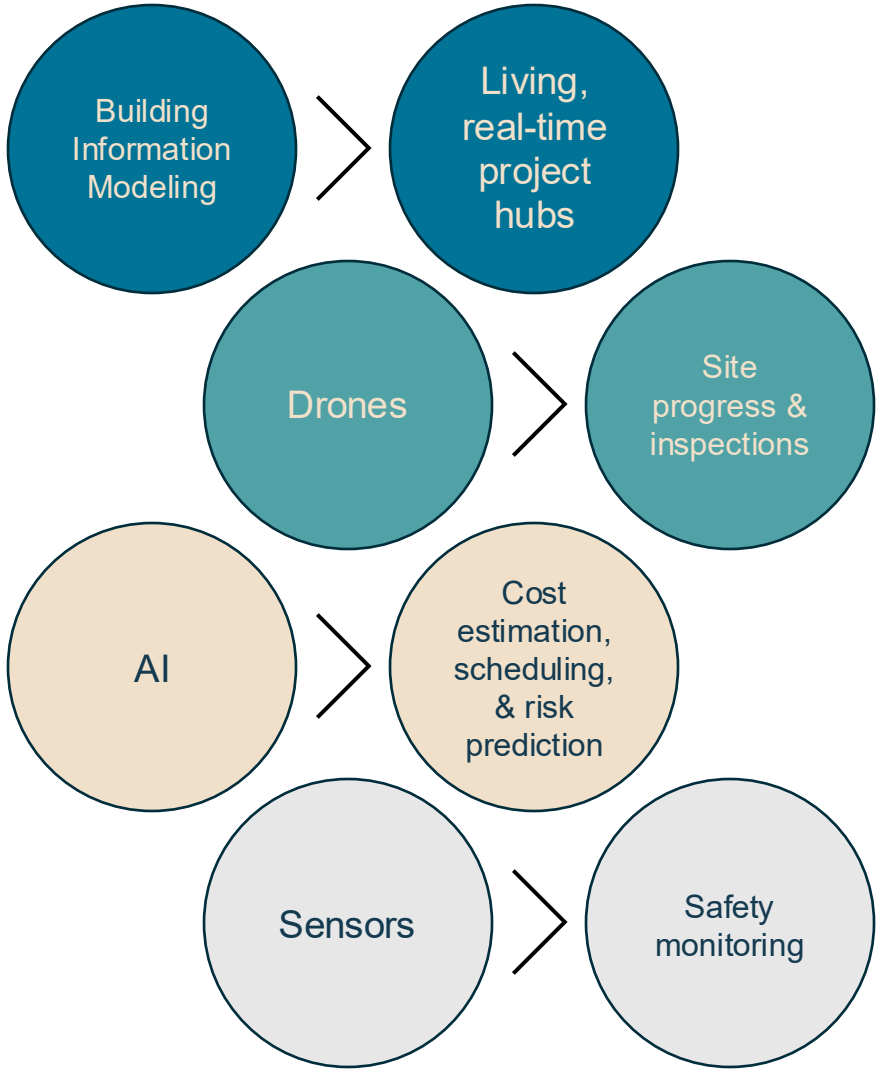
Industry 4.0: the fusion of the physical job site with digital intelligence—where systems talk to each other and decisions are driven by real-time data.

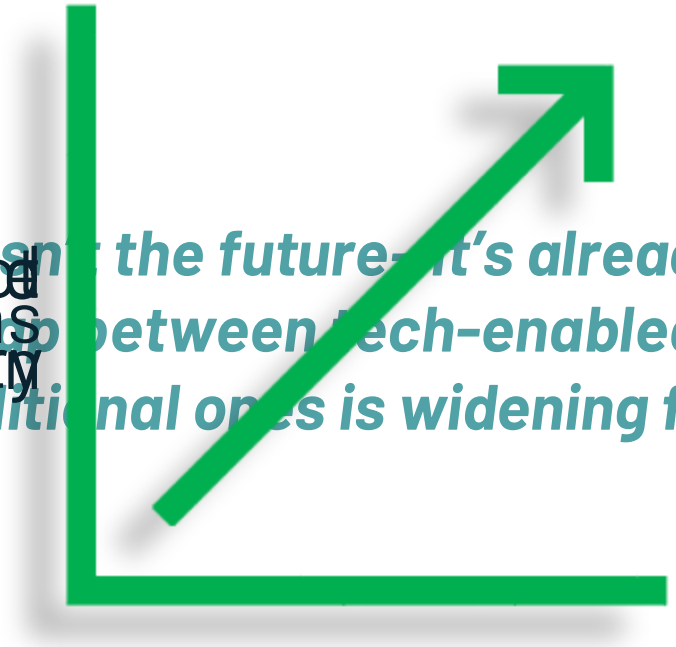
Think: your job site + your data + your systems…all connected and learning



Artificial Intelligence + Internet of Things + Cloud Platforms + Automation & Robotics

What does it look like? Why does it matter?





Bottom line: This isn't the future—it's already happening. The gap between tech-enabled contractors and traditional ones is widening fast.

What is AI, Really?

AI is software that turns data into usable output

Software that learns from and uses data to generate predictions, recommendations, summaries, or decisions that support people and processes.

Think faster review, better pattern recognition, and a first draft — not a replacement for judgment.

Analyze

Spot patterns, anomalies, and trends

Generate

Draft emails, spec summaries, and notes

Assist

Improve speed and consistency

The non-negotiable:

Human responsibility never leaves the business.

AI can accelerate work. It does not own the decision, the risk, or the outcome.

AI in Construction

Where it already shows up today

On-site safety

Monitor safety zones and trigger alerts.

Project planning

Review weather, labor, and sequencing constraints.

Spec review

Flag warranties, testing clauses, and missing requirements.

Conflict detection

Find drawing/spec mismatches and support RFIs.

Drafting & summaries

Draft emails, proposals, and meeting summaries.

Bottom line: this is not future-state experimentation — it is already operational in planning, field execution, and document-heavy workflows.

Traditional AI vs. Generative AI

Both matter — they just solve different problems.

	Traditional AI	Generative AI
Purpose	Forecast, classify, detect risk	Create new text, images, code, or summaries
Input	Structured data and historical patterns	Natural language prompts and broader context
Typical fit	Scheduling, estimating, anomaly detection	Drafting, search, summarization, first-pass analysis
Who uses it	Specialists and embedded systems	Broader business users

Most people say "AI" and mean generative AI. Construction firms need both.

What’s the agentic or autonomous AI buzz all about?

Yes, it is real. No, it is not the place to start.

Agents take action

AI systems can execute multi-step tasks with limited human intervention.

Autonomous AI exists

The capability is already in market — especially in constrained, well-governed environments.

Maturity comes first

Without strong data, ownership, and guardrails, autonomy creates risk faster than value.

Skipping maturity does not make you innovative. It makes you exposed.

AI Readiness

Most AI failures are not technology failures – They are readiness failures

Readiness Matters!

What separates AI as a competitive edge from AI as an expensive distraction.

Organizational challenges	Most AI failures come from inconsistent data, unclear ownership, and disconnected processes.
Preparedness matters	Readiness ensures problems are defined clearly, trusted data is used, and outputs are managed intentionally.
Construction amplifies it	Thin margins and low risk tolerance mean undisciplined AI adoption gets expensive fast.
Shift to business transformation	Readiness SHIFTS your organization from opportunistic tool use to intentional transformation!

Readiness is the operating system for responsible AI adoption.

The Three Pillars of Readiness

All three must be true for AI to scale effectively.

Data Readiness

- Accurate, consistent inputs
- Defined ownership and accountability
- Data you can trust in production

Governance and Risk

- Privacy and security guardrails
- Approved use policies
- Compliance and oversight without bureaucracy

Organizational Readiness

- Leadership alignment
- Clear business objectives
- Identified processes that support adoption

If one pillar is weak, the system breaks.

The First 30 Days

Start focused. Learn quickly. Build confidence before you scale.

01

Define

Set one or two business objectives AI should improve.

02

Select

Choose two to three high-value use cases and solutions.

03

Assess

Inventory data sources and judge quality early.

04

Implement

Add policies, security guardrails, and a monitored pilot.

Progress over perfection: the goal is a disciplined pilot, not immediate grand transformation

Privacy & Security Implications

As construction is or becomes more digital, your biggest risk may not be concrete or steel—it's **data, access, and trust.**

The New Risk Landscape

As construction becomes more digital, your business is connected in more ways than ever—creating **more opportunity, and more risk.**

MORE CLOUD SYSTEMS

Critical data and applications live in the cloud, accessible from anywhere.

MORE CONNECTED DEVICES

IoT sensors, equipment telematics, drones, and wearables are always on.

MORE THIRD-PARTY APPS

Vendors, partners, and subcontractors need access to your systems and data.

MORE DATA FLOWING EVERYWHERE

Plans, bids, financials, contracts, photos, and field data move across more platforms.

More connectivity means a larger attack surface.

Cyber threats are more sophisticated, targeted, and persistent—making security a **business-critical priority.**

You're no longer just protecting a job site—you're protecting a digital ecosystem.

THE IMPACT OF A SECURITY FAILURE CAN BE COSTLY:

DATA BREACHES

Expose sensitive plans, bids, and financials.

PROJECT DISRUPTION

Downtime leads to delays, missed deadlines, and cost overruns.

FINANCIAL LOSS

Ransomware, fraud, and recovery costs hit your bottom line.

REPUTATIONAL DAMAGE

Loss of trust with clients, partners, and stakeholders can be long-lasting.

ADOPT AI RESPONSIBLY. PROTECT YOUR FIRM. BUILD THE FUTURE.

AI and digital tools create huge opportunities—but also new risks. Success comes from using AI intentionally, securing your data, and building strong guardrails across your organization.

1. TOP RISKS WITH AI + DIGITAL CONSTRUCTION

DATA EXPOSURE
Sensitive data like plans, bids, financials, and client information can be exposed or leaked.

UNAUTHORIZED ACCESS
Compromised accounts or weak access controls can lead to data or system breaches.

AI MISUSE
Inaccurate, biased, or hallucinated outputs can lead to poor decisions and real-world consequences.

VENDOR RISK
Third-party tools and platforms may store, share, or use your data in ways you don't expect.

AI amplifies risk if not governed.

2. RESPONSIBLE AI IN PLAIN TERMS

Responsible AI means using technology intentionally, with oversight and control.

USE AI INTENTIONALLY
Start with clear business goals and well-defined use cases.

VALIDATE OUTPUTS
Review and verify AI outputs before making decisions or taking action.

CONTROL ACCESS TO SENSITIVE DATA
Limit access to the right people and the right information.

KNOW WHERE YOUR DATA IS GOING
Understand how tools store, use, and protect your data.

AI is a powerful tool—human judgment is essential.

3. 5 PRACTICAL SAFEGUARDS EVERY FIRM SHOULD IMPLEMENT

1. **CONTROL ACCESS**
   Use multi-factor authentication (MFA) and enforce least privilege access.
2. **PROTECT DATA**
   Classify sensitive data (plans, bids, financials) and apply encryption and access controls.
3. **VET AI TOOLS**
   Evaluate where data is stored, how it's used, and whether it's used to train models.
4. **TRAIN YOUR PEOPLE**
   Make security and responsible AI part of your culture and ongoing employee training.
5. **MONITOR ACTIVITY**
   Continuously monitor for unusual behavior and respond early to potential threats.

Simple, consistent actions create strong protection.

4. WHAT GOOD LOOKS LIKE

SECURE BY DESIGN
Data flows securely between people, systems, and projects.

AI WITH GUARDRAILS
AI is used intentionally, validated, and aligned to business goals.

RISK-AWARE CULTURE
Employees understand their role in protecting data and using AI responsibly.

STRATEGIC ADVANTAGE
Technology and security enable faster decisions, better outcomes, and stronger margins.

Secure, responsible innovation drives long-term success.

THE GOAL: Enable innovation safely. Protect what matters. Empower your people. Build stronger projects.

AI for Construction

Beyond the Hype – Practical Use Cases

Alex Ryan | CEO, Ryshe | A Wiley|Wilson Company

Rea Webinar | April 28, 2026

Alex Ryan

CEO, Ryshe | A Wiley|Wilson Company

ENR Contributing Author	Engineering News-Record, the AEC industry's publication of record since 1874
Speaker, Ai4 2026	Enterprise AI at one of the largest AI conferences in the world (10,000+ attendees)
Open Source AI Contributor	Contributing to AI infrastructure projects used by thousands of developers globally
500K+ LinkedIn Impressions	Content on AI adoption in construction and engineering
Enterprise AI Deployments	AEC, Aerospace & Defense, and Manufacturing sectors
Inside the Industry	One of the only AI practitioners in the country who operates from inside an A/E firm

The AI Problem in AEC

Most firms bought AI tools. Few are getting value from them.

$72K/yr

Average Copilot spend for a 200-person firm

But only 12-22% of employees actively use it

76%

Of employees prefer free ChatGPT over Copilot when given a choice

Your team is using AI. Just not the one you're paying for.

6-12 mo

Typical AI implementation timeline

By then, the champion has moved on or the budget is gone

Sources: Copilot Consulting Q1 2026 deployment benchmarks; Recon Analytics Jan 2026 subscriber data; Gartner enterprise AI implementation surveys

What Vendors Tell You vs. Reality

What Vendors Say	What Actually Happens
"AI will transform your entire firm"	**Most firms need 3-4 specific workflows automated**
"Just buy Copilot for everyone"	**Generic tools get abandoned within 60 days**
"We'll build you a custom AI platform"	**12 months and $500K later, you have a pilot**
"AI replaces your employees"	**AI handles the repetitive work so people do real engineering**
"You need a data lake first"	**You can start with document workflows tomorrow**

Three AI Use Cases

That Actually Work for AEC Firms

Document Intelligence

RFP responses, spec reviews, submittal tracking, RFI processing

Enterprise AI Hub

Replace Copilot with a centralized AI platform every employee can use

Meeting Intelligence

Automatic meeting summaries, action items, and decision tracking

Use Case 1: Document Intelligence

What It Does

- Drafts RFP responses in minutes instead of hours
- Reviews specs for conflicts, outdated references, and missing items
- Processes RFIs and maps responses to the right sections
- Searches across project documents with natural language queries

Real Results

74%	Faster document retrieval
$480K	Annual time savings
92%	Extraction accuracy
15 hrs/wk	Saved per project manager

Source: ryshe.com/case-studies

Use Case 2: Enterprise AI Hub

Replace per-seat AI tools with a centralized platform that costs less and gets used more.

	Microsoft Copilot	Enterprise AI Hub
Cost (200 employees)	$72,000/yr	**$12-15,000/yr**
Adoption Rate	12-22% (bottom quartile)	**60-80%**
Models Available	1 (GPT-4)	**14+ (best model per task)**
Custom Workflows	No	**Yes (RFP, spec review, etc.)**
Data Stays In Your Cloud	Partial	**100%**
Per-Seat License Required	Yes ($30/user/mo)	**No (usage-based)**

Use Case 3: Meeting Intelligence

Before

- Someone takes notes (maybe)
- Action items lost in email threads
- New team members have no context
- Decisions get revisited because nobody remembers
- "I thought we decided that last month"

After

- **Automatic structured minutes from every meeting**
- **Action items with owners and deadlines extracted**
- **Decisions logged and searchable**
- **New PMs can search 6 months of project history**
- **30 seconds after the meeting ends**

The Problem Nobody Talks About

Shadow AI

Your employees are already using AI

They're pasting client project data, internal financials, and draft proposals into free ChatGPT and Claude accounts you can't see, audit, or control.

For firms handling government or defense work

This is a compliance incident waiting to happen. CUI data in a consumer AI tool can result in contract loss or regulatory penalties.

The fix: centralize AI in your own cloud

One platform, inside your Azure tenant, with full audit logging. Every conversation is visible, governed, and secure.

What to Do Monday Morning

Five steps you can take this week, regardless of budget.

1. **Audit your AI spend**

   Add up every AI license across the org. Copilot seats, ChatGPT Enterprise, one-off tools. Most firms are shocked by the total.

2. **Check your adoption rate**

   Ask IT for actual usage data on those licenses. If fewer than 30% of licensed users are active, you're overpaying.

3. **Ask about shadow AI**

   Ask your engineers: 'Are you using free ChatGPT for work?' The honest answer is almost always yes.

4. **Pick one workflow to automate first**

   RFP responses, meeting minutes, or spec reviews. Don't try to transform everything. Start with one.

5. **Run the cost math**

   Compare what you're paying per-seat vs. what usage-based pricing would look like. The gap is usually 60-80%.

THANK YOU