



AI Is Transforming Design and Build: From Data Swamps to Competitive Edge

The architecture, engineering, and construction (AEC) industry is adopting new technologies and innovating at a rapid pace unprecedented across the sector. Fragmented workflows, slow decisions, and siloed knowledge bases are no longer acceptable. Winning in this competitive environment means fluent data use, proactive risk-taking, and scalable insight. Artificial intelligence isn't just a novelty; it's the engine behind a new AEC operating system. With Nomic's platform, firms are not just digitizing; they're redefining how they win.

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After decades of stagnation, the AEC industry is at a make-or-break moment. Longstanding productivity challenges—marked by fragmented workflows and data silos—stand in sharp contrast to the transformative potential of digitalization and AI. Outdated communication methods and chronic underinvestment in IT have fueled inefficiencies, delays, and budget overruns, threatening to stall growth and limit the sector’s increasing potential.

As knowledge-intensive enterprises, AEC firms generate vast, complex data across diverse formats and project phases—but legacy systems are built for passive storage, not actionable intelligence. AI changes that by automating the analysis of everything from unstructured documentation to real-time operational inputs, enabling firms to uncover patterns, predict outcomes, and streamline decisions across the entire project lifecycle. Far beyond an IT upgrade, AI empowers AEC firms to shift from reactive, siloed operations to proactive, integrated, and intelligent ecosystems—unlocking productivity gains traditional tools were never built to achieve. Firms that act now to embed AI intentionally across their organizations will gain a decisive, lasting advantage—one their competitors may never catch up to.

AI adoption in the AEC sector: from competitive edge to survival imperative

AI is no longer optional for AEC firms—it’s a strategic imperative. Early adopters already hold a competitive edge, winning more projects, retaining clients, and strengthening their market position. But the window is closing fast. As clients demand faster, smarter, and more transparent delivery, AI-enabled firms won’t just compete—they’ll dominate, setting a new standard that will define the industry for decades to come. Strategic AI adoption is no longer merely an advantage—it’s the foundation for survival. The industry stands at a crossroads: only firms that move decisively and swiftly will lead the future of AEC, while those that hesitate risk being left behind in a rapidly evolving, intelligence-driven market.

Opportunity meets complexity: strategic AI adoption in AEC

While the opportunity is clear, implementation is complex. Firms face two pressing imperatives: adopting AI through a robust, future-proof strategy and moving swiftly and consistently across the organization to keep up. But success requires more than speed: it demands both technical depth in AI and a nuanced understanding of AEC workflows to identify high-impact applications. With the right technology partners, firms can integrate AI effectively, drive transformation, and stay focused on what they do best—now amplified by intelligent, data-driven capabilities.

Transforming tacit knowledge into tangible value

The vast reservoir of high-skilled knowledge generated within AEC companies, project by project, is indeed one of their most valuable yet often underutilized assets. Capturing and structuring this information is a key digitalization opportunity. When made accessible, this expertise becomes a scalable, strategic asset—driving innovation, enabling consistent quality, and powering long-term differentiation in an increasingly competitive market.

Unlocking client value: how digitalization & AI fuel new AEC revenue streams

AI and digitalization aren't just tools for internal efficiency—they're gateways to new client-facing opportunities and revenue streams. When adopted holistically, AI becomes a critical driver of innovation, enabling AEC firms to unlock insights from past projects—design specs, material usage, energy data, maintenance logs, and client feedback—to deliver proactive, data-driven services. This shift transforms how value is created and delivered, deepening client relationships and fostering continuous engagement far beyond traditional project boundaries.

Enabling AI Adoption with Nomic

Transforming with the Nomic Platform

In today's AEC landscape, firms are overwhelmed by scattered, unstructured data that's difficult to access and expensive to manage. Nomic transforms this fragmentation by ingesting documents from legacy systems like SharePoint, ERPs, DMSs, and cloud storage—converting static files into semantically rich, actionable insights.

Purpose-built for the complexity of AEC workflows, Nomic uses advanced embedding models and multimodal AI to interpret text, images, and diagrams. It transforms diverse file types into searchable assets, enabling teams to surface insights, build project-specific assistants, and make faster, more informed decisions across the project lifecycle.

The platform supports executives, engineers, and client teams alike—streamlining data exploration and accelerating knowledge sharing. By turning siloed information into a shared asset, Nomic boosts organizational agility and unlocks new business value.

Nomic Platform Elements:

- **Assistant:** Ask complex questions in plain language and instantly pull insights from technical documents, specs, and compliance files -no training required.
- **Workflows:** Automate and co-pilot internal tasks with your teams expert knowledge.
- **Nomic Embedding and Parsing Models:** Powerful AI embedding models under the hood that understand meaning across formats—text, diagrams, and code—enabling precise search, and rich contextual results and deep document understanding.

Nomic helps AEC firms lead in the next era of intelligent infrastructure—automating workflows, unlocking institutional knowledge, and enabling new AI-powered services that drive smarter, faster, more competitive operations.

Skip disruption by augmenting—not replacing—your existing AEC tech ecosystem

Critically, Nomic transforms operations without disrupting existing IT infrastructure. Its modular design integrates effortlessly with cloud platforms and business tools, allowing AEC firms to phase in adoption that minimizes risk, reduces costs, and speeds implementation. Unlike bulky, monolithic solutions that demand major organizational changes and long deployments, Nomic empowers AEC firms to test, scale, and expand AI across workflows—from estimating and design to project management and operations—at their own pace, accelerating ROI and future-proofing AI strategies.

AEC Optimization in Action with Nomic

1. Case Study: Smart proposal for AEC—Accelerating bid preparation

Problem

The procurement phase in AEC projects is critical but complex, requiring extensive documentation—RFIs, RFPs, RFQs, contracts, drawings, HSE guidelines, and more—alongside coordination among procurement, legal, technical, and finance teams. Even with digital tools, inefficiencies persist due to fragmented workflows, dense and siloed data, and limited AI support.

Key Challenges

- **Document overload:** Technical and legal documents are dense, time-consuming to process, and prone to errors during preparation and review.
- **Fragmentation:** Information is scattered across departments, causing misalignment, deadline risks, and bid inconsistencies.
- **Inefficient retrieval:** Manual searches across emails and systems slow down workflows and increase miscommunication.
- **Underused historical data:** Past responses are often unstructured and hard to reference, leading to repeated mistakes and missed opportunities.

Solution with Nomic

Nomic streamlines tendering by applying AI-powered document intelligence:

- **Semantic document analysis:** Embedding models automatically classify and cluster documents by meaning, improving accessibility and reducing manual organization efforts.
- **Smart search:** Semantic search retrieves relevant materials instantly using natural language, speeding up bid preparation.

- **Historical insight mining:** Teams can learn from past bids, uncover patterns, and improve accuracy and competitiveness.

Impact

By using Nomic, AEC teams move from manual, reactive workflows to proactive, AI-assisted tendering—resulting in faster preparation, clearer collaboration, and more competitive bids.

2. Case Study: Unified project reporting

Integrating disparate documents and information into a real-time interactive oversight.

Problem

AEC project reporting spans technical, financial, safety, and schedule data—but remains fragmented, manual, and inconsistent. Teams compile reports from scattered, unstructured inputs like emails, site diaries, spreadsheets, and photos. Existing tools offer static templates with limited intelligence, leading to delays, shallow analysis, and reduced stakeholder confidence.

Key Challenges

- High manual effort to extract and structure data
- Inconsistent formats across teams
- Disconnected tools and siloed information
- Rushed reporting under deadline pressure
- Static, non-interactive report formats
- Weak client visibility and trust

Solution with Nomic

Nomic transforms reporting by automating data integration, structuring unstructured inputs, and enabling dynamic, real-time insights:

- **Automated input processing:** Converts site data (e.g. emails, RFIs, notes, photos) into structured, searchable clusters
- **Explainable reporting:** Every insight links back to its source for auditability
- **Dynamic report generation:** Configurable templates auto-filled with up-to-date content
- **Conversational querying:** Instantly answer stakeholder questions using our Assistant agent with natural language and cited, intelligent responses.
- **Cross-project intelligence:** Identify recurring risks and benchmark performance over time

Impact

Nomic turns reporting into a real-time, interactive insight workflow—cutting preparation time, improving accuracy, and strengthening stakeholder confidence.

3. Case Study: Intelligent in-field response assistant

Leveraging centralized knowledge to accelerate failure diagnosis and resolution.

Problem

In critical infrastructure sectors like power grids and processing plants, equipment failures require rapid, accurate responses. However, field teams often lack real-time access to relevant knowledge, leading to delayed diagnostics, repeated mistakes, costly downtime, and safety risks.

Compounding this challenge, the AEC sector holds vast intellectual capital—deep expertise developed through complex, technical projects. Much of this knowledge remains scattered across unstructured documents and retained by experienced professionals, making it difficult to access and apply in the field. With skilled talent becoming scarcer, firms struggle to leverage this expertise consistently across teams.

Key Challenges

- Dispersed, unstructured failure documentation
- Slow, reactive troubleshooting with limited historical insight
- Repeated errors due to poor knowledge reuse
- Minimal cross-project learning and knowledge sharing
- Inefficient, back-and-forth communication with central teams
- Difficulty accessing and capitalizing on tacit organizational expertise

Solution with Nomic

Nomic's platform consolidates dispersed knowledge into a centralized "AEC firm brain," transforming failure resolution into a proactive, knowledge-driven process. It captures and organizes institutional knowledge, making it accessible to field teams in real time and ensuring continuous learning.

- **Failure tracking via shared knowledge hub:** Nomic embeds and clusters logs, reports, and incident data to identify recurring failure patterns and resolutions
- **On-site diagnosis assistant:** Enables field teams to query symptoms in natural language, receiving case-based guidance, repair steps, and safety protocols instantly
- **Self-learning system:** Automatically enriches the knowledge base with every new resolution, promoting cross-project learning and reducing repeated mistakes
- **Knowledge capitalization:** Democratizes expert knowledge across the organization, improving productivity, accelerating onboarding, and reducing reliance on scarce experts
- **Role-based access:** Ensure the appropriate team members have access to necessary resource documentation while maintaining compliance and security standards.

Impact

Nomic empowers technicians with instant access to the organization's full diagnostic and maintenance history, enabling faster, smarter, and safer in-field repairs. This reduces downtime, improves regulatory compliance, enhances operational resilience, and strengthens the firm's collective intelligence for future challenges.

4. Case Study: Expanding AEC capabilities with AI-driven, data-powered services

Problem

AEC firms traditionally exit after handover, missing the chance to support owners facing rising demands for efficiency, emissions reduction, compliance, and smarter operations. Modern buildings generate rich data from sensors and connected systems, but most owners lack tools to interpret it—while legacy dashboards offer little more than static metrics.

This presents a major opportunity: AEC firms can extend their role beyond construction by turning building data into high-value digital services.

Key Challenges

- **Underused operational data:** IoT streams remain siloed and lack actionable insight.
- **Stagnant digital twins:** Models based on outdated design assumptions lose value post-handover.
- **Internal capability gap:** AEC firms often lack the AI expertise to build scalable services.
- **Premature disengagement:** Firms walk away at handover, leaving owners unsupported.

Solution with Nomic

Nomic enables AEC firms to unlock new service lines—turning real-time building data into predictive, contextualized insights:

- **Performance optimization:** Analyze BMS and IoT data to detect inefficiencies and auto-adjust controls (e.g., flag excess HVAC energy use).
- **Predictive maintenance:** Combine sensor data with maintenance logs to forecast failures, rank risk, and reduce downtime.
- **Space utilization intelligence:** Leverage occupancy data to optimize layouts and inform rent-per-desk strategies.
- **Compliance & sustainability monitoring:** Track air quality, emissions, and resource use against regulations, with audit-ready dashboards.
- **Evolving digital twins:** Feed operational updates into the platform's semantic graph, maintaining a “living” model of the asset.

Impact

With Nomic, AEC firms shift from project-based revenue to continuous service delivery—supporting owners with real-time insights and offering new digital products like performance-as-a-service, compliance assurance, and digital twin subscriptions. This not only deepens client relationships but also creates recurring revenue and competitive differentiation.

High Impact Applications Beyond

Explore high-impact AI applications in AEC, including:

- **Advanced asset management:** Scaling operational excellence across assets.
- **Automated provider assessment:** Speeding partner selection, compliance, and replacements.
- **AI-powered compliance assistant:** Ensuring continuous regulatory alignment in complex projects.
- **Generative design insight:** Turning design complexity into competitive advantage.

Each use case transforms persistent AEC challenges into operational and strategic value. With deep industry expertise and a strong grasp of AEC workflows, Nomic is your trusted AI technology partner dedicated to empowering AEC firms.

The beginning of your AI journey - with Nomic

Across the AEC sector, the rules are changing—and the firms that will lead are those rethinking how value is created and delivered by embracing AI that does more than digitize; it reengineers how organizations operate. AI is no longer optional or experimental. It's the engine driving higher-margin services, faster delivery, and smarter decisions at every level. But real transformation demands more than software—it requires a platform built for scale, flexibility, and adaptability.

That's where Nomic comes in, offering a strategic technology foundation that empowers AEC firms to evolve, expand, and thrive in a data-intensive future. The Nomic platform gives AEC firms the tools to turn complex data into clear insights, fuel cross-team intelligence, and open the door to new business models grounded in knowledge and insight.

The stakes are high—client demands are rising, margins are tightening, and projects are more complex than ever. Waiting means falling behind. The future won't wait. Let's build it—together.