# 25 YEARS OF TECH AND 4 TRENDS SHAPING THE FUTURE

Over the past 25 years, four key technological advancements have significantly transformed capital infrastructure planning and execution. Recognizing these key developments provides valuable insights for organizations preparing for the future of project controls and management.

## 2000-2024

### Cloud Computing and SaaS Solutions

The advent of cloud-based project management tools has been one of the most significant trends in the past 25 years. The cloud has enabled project teams to improve collaboration, reduce costs, and enhance scalability. The cloud replaced traditional, on-premise software, enabling organizations to implement more flexible, cost-effective solutions.

### Data Analytics and Predictive Analytics

The integration of data analytics in project controls has empowered organizations to make data-driven decisions. Predictive analytics allows project managers to foresee potential risks, delays, and budget overruns by analyzing historical project data and improved forecasting accuracy.
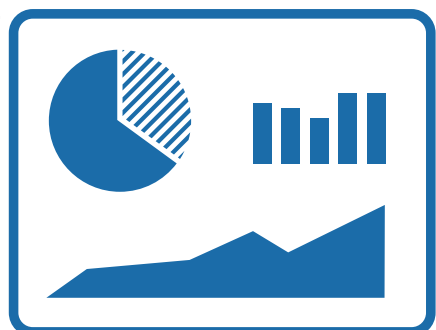
### Mobile Technology

The proliferation of mobile devices led to the rise of mobile applications allowing project managers, field engineers, and team members to access, update, and share project information from anywhere at any time. Real-time collaboration tools further revolutionized communication and decision-making.

### Automation and Artificial Intelligence (AI)

Automation and AI have transformed project controls by streamlining routine tasks such as data entry, progress tracking, and reporting, while AI-driven systems are now being used to identify patterns, predict project outcomes, and suggest optimizations.
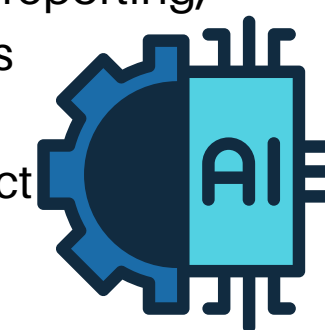
## 2025 & Beyond

### AI-Driven Decision Support Systems

We can expect a surge in AI-powered decision support systems that will significantly enhance project planning and execution by utilizing vast amounts of data to provide real-time insights, predictive recommendations, and automated decision-making to manage risks, and improve overall project performance.

### IoT (Internet of Things)

IoT-enabled sensors will provide real-time data on everything from equipment usage to structural integrity, helping track project progress more accurately and anticipate issues before they occur. This will be particularly valuable for construction and infrastructure projects that rely heavily on machinery and physical assets.

### Blockchain
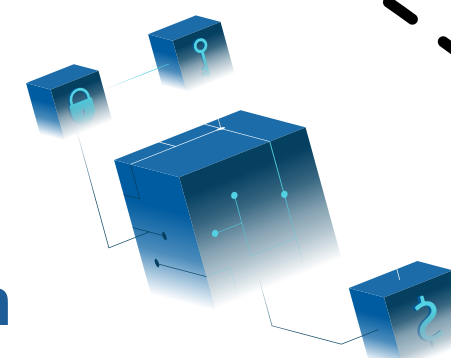
Blockchain is a decentralized digital ledger system that provides secure, transparent, and immutable records for contracts, transactions, and supply chains. It enhances accountability, fosters trust, and reduces fraud while streamlining processes. Its applications in AEC are wide-ranging, including improved supply chain management through real-time tracking of materials, automation of processes via smart contracts, secure document management and authentication, better stakeholder coordination, and streamlined quality control and regulatory compliance.

### Agentic Automation
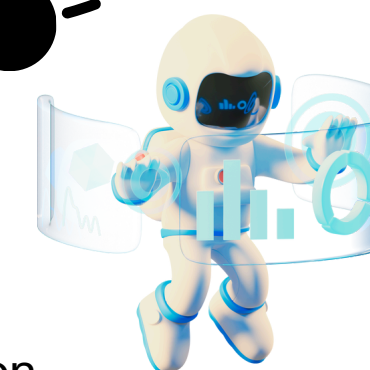
Agentic automation is an advanced form of automation that utilizes AI-powered software agents capable of making independent decisions and taking actions to achieve specific goals with minimal human intervention. It has the potential to revolutionize global infrastructure projects by autonomously monitoring timelines, allocating resources, performing inspections, identifying safety hazards, improving quality control, predicting material needs, and more.