

# AI for Construction Management

## Enabling Timely, Profitable Project Completion in an Uncertain World

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Global supply shortages and delays, evolving health and safety procedures, unexpected restrictions in worker mobility - in today's world, it is best to assume anything can (and will) happen.

Sweeping changes, triggered by both a contracting economy and the global pandemic, have caused chaos within the construction industry—a sector which has already fallen behind in the adoption of emerging technologies. New obstacles and challenges within the space highlight the limitations of traditional approaches to construction project planning and coordination, further emphasizing the need for flexibility and innovation.

### The construction industry is long overdue for technological renovation.

According to [KPMG's Global Construction Survey](#), only 25% of construction projects are completed on time. This percentage falls even further in the development of infrastructure - especially large-scale projects within the natural resources, energy, and public sectors. Overall, it is estimated that lagging productivity within the construction sector costs the global economy [more than \\$1.6 trillion](#) per year.

In contrast to most global industries, construction is one in which technical innovation has been particularly slow to catch on. According to [recent reports by consulting firm McKinsey](#), construction is among the least digitized sectors in the world—ranking second-to-last within the United States, and last of all sectors reviewed in the European Union.

The construction sector's most popular tools and procedures have remained largely unaltered for decades. New solutions designed to streamline construction planning and management are largely met with institutional inertia. Perceived barriers to use (such as lengthy onboarding and training, or high out-of-pocket cost) have inspired historical resistance to widespread adoption.

As a result, many players now find themselves hemorrhaging profit when unexpected circumstances arise. So, why is there such resistance to new approaches? Consider a few potential scenarios:

- Changes to health and safety standards, which require additional equipment—or limit labor hours and worker overtime
- Unexpected material shortages, or other disruption within the supply chain
- Shipping delays caused by natural disaster or global events
- Customs and trade restrictions, which affect the import of essential materials and supplies

When it comes to large-scale construction and development, occurrences like these are quite common. But once a construction project is underway, the modifications to schedule and timeline required to accommodate situational changes like the above are incredibly difficult to execute. The adjustment of myriad moving parts can drastically alter both the timeline and cost of project completion.

While this fundamental interconnectivity poses immense challenges in an increasingly uncertain world, it also makes the use of big data and Artificial Intelligence (AI) for construction management the ideal solution.

### Lost time equals reduced profitability.

Time is money - and in construction, every moment counts. Historically, the human element was key; reliance on the skills, industry knowledge, and insight of experienced managers was critical to timely and profitable project completion. Should an unexpected event occur, strategic intervention required the coordinated effort of commonly siloed teams (accounting, procurement, scheduling, labor), each responsible for accurately assessing, synthesizing, and sharing the data within their limited sphere of expertise.

After days (or weeks) of information gathering and analysis, a human team might succeed in using a legacy scheduling solution to propose a handful of options and alternatives for addressing these challenges. Still, they would have already lost significant time.

“The construction industry is due for a digital renovation. Faced with challenges around project efficiencies, ongoing safety concerns and flatlining labor productivity levels, the industry’s sluggish adoption of new technologies has reached an inflection point. Digital transformation requires changing processes and using new resources that harness the power of data to improve communication, efficiency, productivity and safety. This can position construction firms for profitable growth in a highly competitive industry, while also addressing workforce challenges.”

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## Increased options lead to greater opportunity.

Contrast this with an alternative approach in which a developer leverages AI for construction management. The project lead simply updates the current plan to reflect the relevant change. The solution's AI automatically calculates and adjusts for cascading effects - analyzing all available data and scenarios, in order to propose ideal alternatives. Where a human team might take weeks to assess several scenarios, an AI is capable of processing millions of options per minute. Less obvious pathways to progression are revealed - increasing opportunities for timely and profitable completion.

## Technological adoption is key to competitive operation in today's environment.

Reduced operational staff, evolving health and safety procedures, restricted worker mobility, and unexpected delays and shortages within the global supply chain all point to a growing need for flexibility—and the scale and complexity of modern construction requires insight and agile coordination far beyond the capabilities of human analysis.

A growing number of modern tools and technologies are well-positioned to support the reinvention of today's construction environment. According to the [World Economic Forum](#), "Using big data and artificial intelligence throughout the design and construction process can transform the building sector."

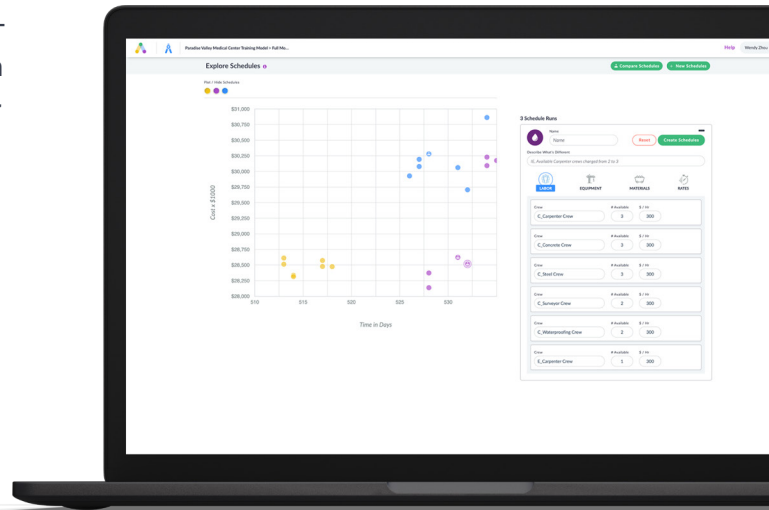
Solutions intended to address the complex scheduling of construction and development are being adopted quickly by those at the cutting-edge of development. A few solutions, such as that presented by ALICE Technologies, have been designed from the ground up to apply the powers of AI to the complexities of construction management.

## ALICE: A Unique Solution

A unique solution, ALICE is the first platform in the construction industry to combine the experience of your human team with a powerful simulation engine. ALICE not only addresses many complications inherent in scheduling and project coordination, but also allows quick, on-the-fly adjustment and examination of alternatives.

At project initiation, ALICE enables its customers to harness AI for schedule development. Builders can assess millions of potential pathways to completion, optimizing for efficiency, and trimming weeks from their timeline. With ALICE assisting in preliminary project planning, your team can maximize resources from day one, boosting profits by conserving time, labor, and equipment costs.

Should unexpected issues arise, your team can easily re-optimize, analyzing and assessing alternative pathways to pinpoint the ideal scenario. Powerful Artificial Intelligence, presented in an easy-to-use interface, supports the review of myriad construction schedules simultaneously, empowering users to choose the optimal path for each project and skillfully navigate changes.



## Increased efficiency is the pathway to future profits.

The world around us is changing, and the urgent need for a new approach to large-scale construction management is clear. The World Economic Forum cites [an expected 30-40% reduction in industry productivity](#), stemming from the impact of COVID-19. In order to maximize profitability, stakeholders must overcome their resistance to modern technologies, and embrace opportunities to increase efficiency.

Through the adoption of smart, data-driven products such as ALICE Technologies, the construction industry can surpass the limitations imposed by environmental challenges and outdated tools. By leveraging powerful AI simulation to optimize project schedules, builders and developers will open new pathways to efficiency—paving the way for both profit and progress.

## Produced by ALICE Technologies

ALICE Technologies is the world's first AI-powered construction simulation platform. Founded in 2015 based on research from Stanford University, ALICE leverages artificial intelligence to analyze a project's complex building requirements and generate highly efficient building schedules. ALICE enables contractors and owners to plan, bid, and build more effectively, reducing construction times and labor costs by \$30 million for a typical \$500 million construction project. ALICE Technologies works with construction leaders in the infrastructure, industrial, and commercial construction segments, such as Parsons, HDCC, and Kajima Corporation.

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To learn more about ALICE and schedule a demo, give us a call at **833.254.2383**

Or email us: [info@alicetechnologies.com](mailto:info@alicetechnologies.com)

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