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The Future of Construction

Written by: Michelle Meisels, Principal, Technology Practice, Deloitte Consulting, and Aijaz Hussai, Senior Manager, Deloitte Services LP

FUNDAMENTAL CAPABILITY SHIFTS NEEDED FOR LONG-TERM SUCCESS

There are fundamental shifts happening that will push engineering and construction industry firms to explore radically new ways of creating and capturing value as they make the leap toward the fourth industrial revolution. Specifically, there are five major forces of change that will shape the engineering and construction industry in the future.

Smart Operations

Engineering and construction firms and owners alike are increasingly looking to deploy and integrate Industry 4.0 technologies to enable data-driven decisions, driving dynamic scheduling, and reducing budget and schedule variances, often across multiple sites. These technologies range from building information management and digital twins to remote project monitoring using sensors and drones.

Prefabrication and Modular Construction

Borrowing from cost-efficiencies and learnings in manufacturing, construction companies and owners are increasingly attracted to the significant improvements that could be enabled through offsite construction. Besides material costs, modularization, and prefabrication are also helping reduce labor costs, ensure better design and quality control, and shorten the project schedule to ensure minimum budget overruns.

Data and Advanced Analytics

Data and advanced analytics are becoming the core enabler of future success in the construction industry. They are moving business decisions from reactive to predictive and could enable firms to outpace their competition. For example, technologies such as digital twin are using 3D data to generate building profiles and blueprints of building parts/components in real-time. Integrating these technologies with scheduling and maintenance systems could provide visibility and operational improvements across the building lifecycle.

Future of Work

A rapid influx of digital technologies, ongoing labor shortages, COVID-19, and new workplace protocols are driving firms with work, workforce, and workplace challenges. While the industry has been consistently adding new jobs, challenges due to talent shortages persist. This gap is partly because the industry is likely to incorporate more digital technologies into key workstreams to further enhance productivity, efficiency, and worker safety. These changes make it important for industry firms to start thinking of how roles and jobs will change to reflect the use of these new technologies.

Strategic Sourcing

Despite many firms altering their cost structures, most are suffering due to increasing material costs, contract extensions, and even extended schedules leading to cost overruns. With continued cost pressures and supply chain risks, heightened customer demands, and a need for labor, material, and technology partners, there is a shift from tactical procurement "to meet budgets" towards strategic sourcing to reduce complexity, drive value and enable ecosystems of strategic vendors and partners.

To navigate this rapidly changing industry landscape, industry firms should:

» Develop a connected, integrated, and automated operations foundation—a dynamic, always-on network that provides continuous access to information, analytics, and insights, with a host of efficiency and productivity-enhancing technologies;

» Consolidate construction management platforms with analytics layers to enable dynamic scheduling and inform data-driven decisions in the short term;

» Deliver turnkey solutions with preferred ecosystem partners in the long-term;

» Deliver greater certainty on schedules and budgets, increase productivity, and reduce disruption onsite;

» Drive dynamic, data-driven workflow management and decision-making by digitizing and connecting jobsites and overlaying data analytics.

While industry firms are gradually shifting from primarily manual processes to deploying point solutions and single-use cases, or "pockets of digital," making a successful transition requires fundamental shifts in the overall ways of working. These key fundamental capability shifts involve moving from traditional process areas to more sophisticated operations in the future. Today, most industry firms are still involved in early-stage efforts, with connected and integrated operations focused on optimizing the entire construction value chain. But as customer pressures increase, projects become more challenging, operations become more dispersed and market behaviors remain highly variable, firms should increase their scope of integration and automation to improve their ability to manage this growing complexity and ambiguity.

Firms should shift their focus from integrating across the value stream to integrating across the assets. This requires accelerated technology investment in three domains:

» Intelligent operations to improve the operational process through automation and digitization;

» Command centers to bring data together from across the value chain; and

» Intelligent enterprise to refine specific construction processes. Industry firms should focus on having a holistic technology convergence approach that connects, integrates, and automates construction sites with the entire value chain on a secure, intelligent infrastructure to lay a strong foundation for a successful future and deliver desired outcomes.

About the Author

Michelle Meisels is with Deloitte's technology practice and leads the Engineering & Construction practice. She focuses on organizations' large, often global, finance and information technology transformation programs by leveraging digital technology. She helps clients as they integrate technologies with organizational and process standard practices to achieve both qualitative and quantitative benefits. She specializes in cloud ERP, project controls, supply chain management and analytics technologies.

Aijaz Hussain is with Deloitte's Services LP's Research Center for Energy & Industrials, where he leads research and insights for the aerospace and defense, engineering and construction, and chemicals sectors. He has more than 20 years of experience in research, thoughtware development, business strategy, market/competitive intelligence and financial analysis. He has authored numerous studies in the areas of business strategy, advanced technologies, digital transformation, innovation and the future of work.

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