Elevating Construction Operations With an Advanced Tech Stack

Written by: Ryan Rademann, Partner, Wipfli

Forward-thinking companies know that technology isn't just about creating new efficiencies: It's about remaining competitive in bids to win work and win the war for talent. Both customers and competitors are becoming increasingly digitally savvy, and with tight margins, leaders need the insights technology offers to retain key players and deliver on-time, on-budget projects.

Companies that want to create a technology-enabled future can start by getting strategic about platform selection and system architecture. Here are four critical aspects companies need to consider to elevate IT infrastructure and build a powerful tech stack:

1. The Future of Construction

AI is already changing the construction operational ecosystem. As it and other advances continue, companies need to be more proactive about handling integration and data governance.

Moving systems and data to the cloud is a crucial first step. Cloud-based systems provide greater scalability and security without the burden of on-premises services.

Companies also need to add critical infrastructure, like integration platform as a service (iPaaS) and data lakehouses, to their technology road maps.

As construction technology grows more complex and companies adopt more solutions, iPaaS provides the necessary framework to let systems communicate and share data.

Additionally, data lakehouses provide an effective way to store both structured and unstructured data as the future moves beyond dashboards and into a context lake for large language model-powered generative AI inference.

With these technologies in place, a firm's systems are integrated and data stays organized and accessible — all essential for realizing the benefits of generative AI.

2. Architecture to Support Modernization

As companies move toward modernization, having the right systems architecture is critical.

There are five key elements to have when designing construction systems architecture:

- Business intelligence software that enables better data and analytics
- Front-office, back-office, and field tools that are used for day-to-day responsibilities
- The infrastructure that supports systems, including cloud setup, data, and hardware
- Cybersecurity practices to protect all systems and infrastructure
- External outlets like websites and portals that are integrated with internal solutions

Implementing an architecture capable of connecting systems, staying secure, and enabling data and analytics makes it easier for companies to modernize effectively. This approach also establishes a robust foundation for integrating more advanced technologies as the digital landscape continues to evolve.

3. Key Systems

System selection plays a crucial part in helping create a systems architecture that enables companies to access the insights and capabilities they need to stay competitive.

There are five key systems construction companies should consider when building their tech stack:

CONSTRUCTION MANAGEMENT SYSTEM

A capable construction management system (CMS) provides a unified platform for all staff to access current project information.

Typically, construction companies face a disconnect between the jobsite and office, leading to miscommunications and inefficiencies that can impact already tight margins. An appropriate CMS can help eliminate that gap by acting as a central hub for important tasks such as real-time site updates and scheduling.

However, the real benefits of these systems come with integration. When integrated with other solutions, including financial and relationship management systems, a CMS acts as a foundation for a company's tech ecosystem, connecting data on projects and other business areas for smoother project execution.

MODERN FINANCIAL SYSTEM

Being able to access accurate financial data in near real time empowers staff with the information they need to execute projects successfully.

Legacy financial systems tend to be inefficient and error-prone. Modern, cloud-based financial systems and ERPs differentiate themselves with capabilities such as dimensional accounting and easier integration. They can also help leadership optimize resource allocation with tools for revenue forecasting; material, labor, and equipment scheduling; job costing and cash-flow forecasting.

HUMAN RESOURCE INFORMATION SYSTEM

The construction workforce can often be the biggest challenge for firms. A human resource information system (HRIS) or human capital management system can help HR staff with recruiting, onboarding, performance reviews, benefits, and automated payroll. When integrated with a modern financial system, an HRIS can even provide real-time integration of fully burdened labor allocated to job-cost subledgers.

As firms navigate a shrinking labor pool and growing leadership gaps, an HRIS provides the insights companies need to make talent acquisition, retention, and succession planning easier.

CUSTOMER RELATIONSHIP MANAGEMENT

Customer relationship management systems (CRMs) aren't just for sales. They can help companies manage a variety of customer interactions and relationships, including trade partners, estimates, and bid packages. Where a CMS acts as a project 360, a CRM acts as a customer 360.

A CRM can also provide further business insights when integrated with other solutions. For example, integration with financial systems can help with pipeline forecasting across multiple periods, including monthly, quarterly, and annually. And integration with a CMS can provide the visibility needed to enable real-time resource planning.

REPORTING STACK

As companies integrate their systems and begin collecting and storing data effectively, a robust reporting stack becomes necessary to leverage that data. Well-built reporting stacks can

aggregate the data from each of a firm's core tools, helping achieve greater accuracy, depth, and context in raw data. A modern data warehouse or data lakehouse doesn't just house structured data but also the bigger and often underutilized dataset that is the unstructured data such as drawings, photos, emails, excel files, and PDFs.

One key technology to focus on is dashboards. Implementing unified dashboards that abstract insights from the entire set of underlying systems helps all levels of staff gain access to live, relevant reports and helpful data visualizations. Whether they're looking into project timelines or budget variances, dashboards can help staff surface the insights they need to make informed, smarter decisions on projects.

4. The Right Culture

Embracing technology in the construction industry requires more than just integrating new tools. Creating a culture that embraces technology and empowers staff to use it allows companies to see greater adoption and return on their tech investments.

Historically, construction has been dominated by hands-on labor and manual processes. Technology is changing that, and companies need to be prepared by cultivating a technology-proficient workforce. Staff need continuous training, including skills assessments and development programs, to help equip them with the knowledge needed to leverage technology effectively.

There are three critical questions construction leaders can ask when evaluating their technology culture:

1. Does the culture support a foundation for an AI-enabled organization by fostering generative AI curiosity and data literacy among staff?
2. Are formal technology talent and technology-literate talent organized to help surface business pain points in a way that is productive?
3. Is the governance in place to evaluate and fund the right, needle-moving projects?

Cultivating AI curiosity, fostering data and AI literacy, and organizing teams to be able to act are critical steps in securing success as the economy reorganizes in favor of the most efficient and competitive employers.

About the Author

Ryan Rademann is a partner with Wipfli. In addition to his role as a regional leader for the firm's construction and real estate practice overseeing the Lower Great Lakes, Ryan is a trusted advisor to the C-suites within dozens of large construction firms across the nation. His deep technology expertise is deployed to support clients' operations, finance, accounting, and business development.

About the Article

 Associated Builders and Contractors is a national construction industry trade association representing more than 21,000 members. Based on the merit shop philosophy, ABC helps its members develop people, win work, and deliver work safely, ethically, and profitably for the betterment of the communities in which they work.