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CONSTRUCTION AND ENGINEERING

Up, Up, and Away

Project and Construction Execution Looks to the Cloud

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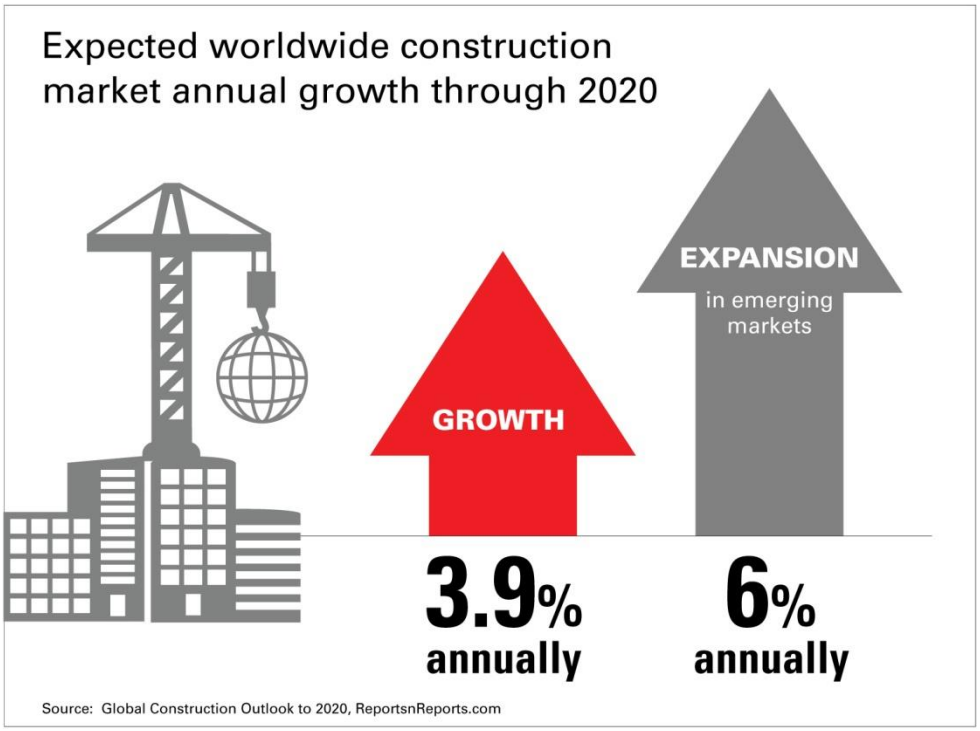
Introduction

The engineering and construction (E&C) industry is posting promising growth as it rebounds from the global recession. The worldwide construction market is expected to grow 3.9% annually through 2020—with expansion nearing 6% annually in emerging markets.[1] And, while these metrics signal a return to better times, this growing momentum comes with new challenges that E&C companies must overcome to compete successfully and ensure profitability in an ever-more complex industry.



Increasingly, firms seek new levels of efficiency and end-to-end enterprise insight as they work to boost their ability to select the right projects, bring them in on time and on budget, ensure compliance, and capture best practices for continuous improvement.

As part of this quest, forward-thinking organizations are taking a fresh look at their project and construction execution methodologies and systems to assess how they can accelerate project launch, further automate processes, and ensure project coordination, control, and consistency across the project lifecycle.

1 "Construction Industry to Grow 3.9% Annually During 2016-2020," Global Construction Outlook to 2020, ReportsnReports.com http://www.prnewswire.com/news-releases/construction-industry-to-grow-39-annually-during-2016-2020-538332332.html

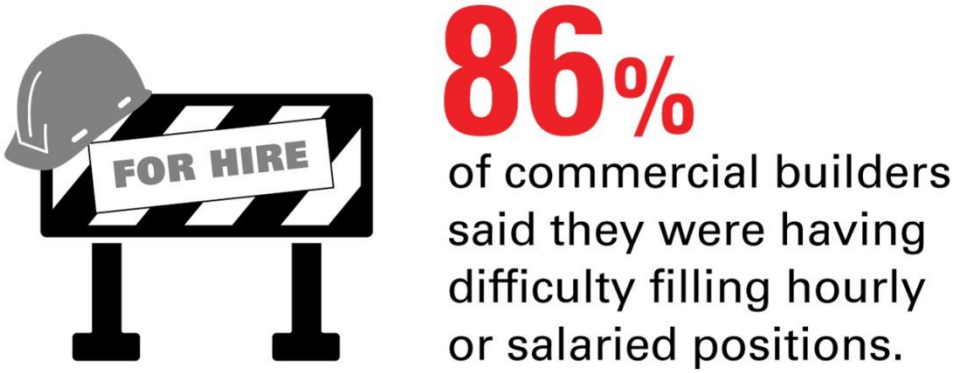
Three requirements top the list:

As these expectations rise, many E&C firms are looking upward—to the cloud—for answers.

Unexpected Consequences

The market rebound comes with some strings attached, as today's E&C firms can attest.

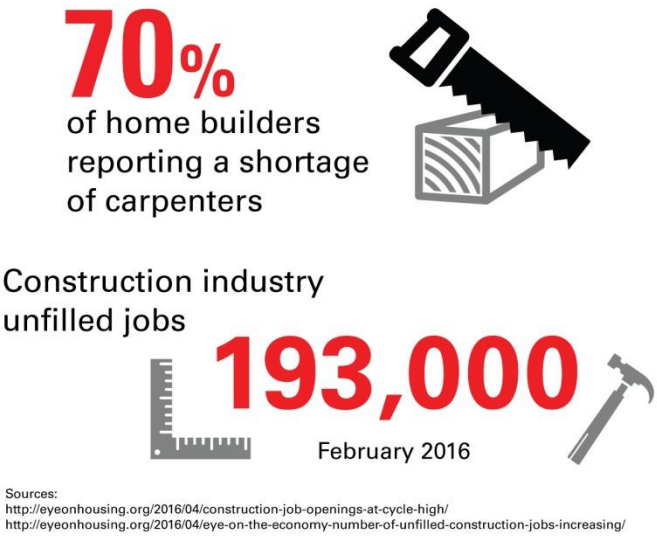
As construction activity has increased, so has the shortage of skilled workers across both the residential and commercial sectors. In a July 2015 Associated General Contractors survey, 86% of commercial builders said they were having difficulty filling hourly or salaried positions.[2]



Source: "As Construction Heats Up, So Does Labor Shortage," USA Today, August 27, 2015

The problem is multifaceted. First, many skilled workers left the industry during the last recession and have not returned. As important, many more have reached or are nearing retirement age at a time when we simply are not seeing sufficient numbers of new professionals entering the industry.

2 "As Construction Heats Up, So Does Labor Shortage," *USA Today*, August 27, 2015. http://www.usatoday.com/story/money/markets/2015/08/26/construction-worker-shortage/32430517.



The impact of the labor shortage cascades throughout the industry. First, it can slow project starts—which, in turn, makes it harder to complete projects on time and on budget. As important, the skilled resource shortage is forcing some firms to turn down work—delivering an immediate hit to the bottom line. At the same time, resource scarcity drives up costs, putting pressure on already narrow margins.

Firms are taking a harder and more strategic look at the projects they bid and, ultimately, undertake. In today's market, it is not only about delivering a project on time and on budget, but about selecting the *right* projects that will optimize growth and profit. As such, E&C organizations seek enterprise-wide visibility into each project—from request for proposal (RFP) receipt to project completion—and the ability to coordinate and optimize activities across the front and back offices as well as the field.

Eye on the Prize

E&C firms aspire to achieve a holistic view across the business—visibility that extends well beyond a single project to how the firm's entire portfolio is being managed and performing. They also look to further automate and improve the integrity and efficiency of project management and compliance activities. Most important, E&C enterprises want to be able to continuously learn from past projects, optimize use of increasingly scarce skilled resources, and adopt best practices that will help to ensure a competitive advantage even as the market changes rapidly.

Many organizations, however, encounter significant frustration in this quest. While construction processes require more precise coordination and collaboration between many stakeholders—including owners, engineers, contractors, finance groups, and even regulatory agencies—firms are too often saddled with siloed legacy environments containing integrations that are simultaneously complex, expensive, and insufficient. Many processes also remain largely manual. The end result is that information is not easily accessible to those who need it, it is often not up to date, and does not ensure the traceability required in today's modern construction enterprise. This reality further thwarts efforts to learn from past projects and capture and operationalize vital institutional knowledge as older workers begin to retire.

Old Systems in a New Market

E&C projects increasingly need to be built right from the start—from choosing the right project to having the right contracts, documents, and IT infrastructure in place. However, companies are more often than not working with disparate systems, multiple versions of the same document, and struggling to have one, comprehensive view of their project. Team members leave a tremendous amount of down-time between entering information into one system and relaying it to the next team member—causing delays and significant visibility gaps, including obstructed views of critical resource availability.

With no clear version of the truth, firms cannot proactively manage projects and anticipate possible setbacks. They also cannot ensure the right mix of projects or effectively work to optimize profitability as the number of active projects grows.

Time is money in the E&C industry, so firms (and project owners) place a priority on getting systems and projects up and running as quickly as possible. Many project and construction execution environments are not designed to support this level of agility—often requiring lengthy system build-out and on-boarding processes. As important, as business ramps up, scale becomes a greater concern. Many on-premises legacy systems do not have the infrastructure necessary to handle new capabilities, including increasingly mobile operations, or the capability to scale quickly to take advantage of new business opportunities. As important, firms do not have the luxury of time—or resources—for costly and time-consuming project and construction execution solution implementations.

It's Clear in the Cloud

To gain the agility and modern capabilities needed to mitigate risk and compete effectively, E&C organizations are considering the cloud for project and construction execution—and for several good reasons:

- **Collaborating for Consistency Across the Enterprise:** It is crucial to enable collaboration and project controls across the business. Instead of multiple spreadsheets with conflicting results, project stakeholders need to rapidly and cost effectively capture, share, and operationalize best practices to improve project delivery and customer satisfaction. A cloud-based project and construction execution platform—encompassing enterprise project portfolio management (EPPM) components—can facilitate team-based collaboration with a single repository for all project data and provide users with rapid access to the latest features and functionality.
- **Visibility Where and When You Need It:** To get the job done, E&C team members often need to move from behind the desk to the project site. The cloud enables them to access the latest functionality with the most up-to-date capabilities—regardless of location. With project members at the site, in the office, and everywhere in between, teams need the ability to quickly mobilize information securely while having a single source of truth to get the job done right. With a secure project and construction execution cloud solution, stakeholders have instant access to projects from their mobile devices, personal computers (PCs), and laptops—enabling them to check on projects and take action on the go. Team members can easily and quickly perform status updates by using interfaces that best accommodate their line of work—from dealing with contractors on the ground to ensuring the project is running on schedule. Moving to the cloud is all about delivering the flexibility and agility that E&C firms need to achieve success without the rigid restraints of their aging systems.
- **Saving Time and Money:** The stakes are higher than ever to complete projects on time and within budget, with incentives growing for early and under-budget completion. With a cloud-based project and construction execution solution, E&C organizations can scale up system users quickly and cost effectively to match construction sector growth and project demand—enabling faster access to the latest innovation and functionality. E&C organizations can also avoid costly infrastructure investment as well as expenses associated with maintaining on-site systems. The IT team, therefore, can focus on priorities that move the business forward while the firm spends a significantly lower percent of its operating budget on IT.
- **Focus on Getting the Job Done:** Aging systems can cause project leaders to focus their time and effort on IT issues instead of on what matters most—engineering and construction. A cloud-based project and construction execution environment removes this burden with 24/7 professional management and support, alleviating strain on the IT team and allowing project managers to get back to the project at hand. A cloud-based solution also enables users to benefit immediately from new functionality, as well as security upgrades.

Not All Clouds are Created Equal

As firms begin to view cloud-based offerings through a requirements prism, they quickly find that not all solutions are created equal. This is especially true when it comes to delivering on core requirements for real-time insight, end-to-end visibility, and less overall complexity and risk. What should an organization look for when choosing a cloud solution?

Complete and Integrated: Firms require a complete solution to truly integrate cost and schedule delivery across the organization and align corporate goals and strategy with actual day-today business operations. The importance of a complete and integrated project and construction execution solution cannot be understated. Piecemeal solutions, even if delivered via the cloud, will continue to proliferate complexity and spawn a new generation of information silos—and the challenges that inherently accompany them. In this case, a comprehensive solution must span the five tenants of cost and schedule delivery and ensure seamless integration between each component:

- **Cost and Contract Management:** Essential to getting project teams organized and coordinated from day one, cost and contract management capabilities should include proven engineering and construction best practices as well as ready-to-use forms, reports, and workflows. As important, robust contract documentation and controls help to ensure effective tracking, management, and cataloging of all critical documents and information.
- **Schedule Management:** To enable a seamless handoff between the contract and scheduling phases, solutions should include integrated data and workflows that allow organizations to immediately see the impact of every request for information (RFI) and change order on the construction schedule. It is also important to have functionality that aligns with each user's responsibility, enabling them to effectively track, manage, and mitigate change, while ensuring controls and facilitating collaboration. The solution should also deliver visibility into resource demand to rapidly identify potential conflicts and optimize increasingly scarce resources. In addition, rigorous process definition and workflow capabilities go a long way toward fostering project management consistency.
- **Financial Management:** A complete project and construction execution solution should integrate financial data with project delivery and controls for a consolidated view across projects. This structure delivers financial visibility from the field to the back office—which is vital to precise project management. In addition, workflows should provide built-in financial discipline as well as support monitoring of performance across multiple projects.
- **Lean Construction:** As adoption of Lean Construction and Six Sigma expands in the E&C industry, organizations require new tools to support these methodologies. A shared, single-system view of schedule and execution details as well as the ability to communicate real-time updates is essential for Lean and Six Sigma initiatives. Online whiteboards can provide at-a-glance visibility to all team members and provide the opportunity for collaboration and clarification. Solutions for Lean initiatives should also provide detailed audit trails and well as mobile capabilities to support all project team members regardless of their location.
- **Reporting and Analytics:** These capabilities drive continuous improvement and are more essential than ever in today's environment in which resources are stretched tight and firms must be more strategic in the projects they select. Reporting and analytics capabilities should include the ability to understand profitability at a glance and discover insights into performance and trends across all projects. Integrated financial reporting and analytics can help to reduce the time needed to produce company reports. Also critical to keeping projects on track and profitable are robust dashboards that enable budget tracking and deliver insight into cost variance and project changes and their potential impact on budgets and schedules.

Trusted and Proven: Even though extensive up-front, on-site investment is not required with a cloud-based solution, firms should not throw caution to the wind. Many of the same parameters should apply whether evaluating an on-premises or cloud-based solution and vendor. Is the solution industry-proven? Does the vendor deliver the level of availability and support we require? Do they continue to invest heavily in their solutions and infrastructure? Does the vendor have stability and staying power in the industry?

Construction Management Services Company Elevates Operations with Cloud

A West Coast-based commercial construction and construction management company was looking to extend collaboration and project controls across its business, but was struggling to rapidly and cost-effectively capture, share, and operationalize best practices to improve project delivery and customer satisfaction. In an industry where margins are tight, the company needed technology that would be up and running where and when they need it for greater business agility.

The company deployed Oracle's Primavera P6 Enterprise Project Portfolio Management Cloud Service—a complete, integrated project and construction execution solution built for rapid deployment—to strengthen project controls and collaborate more effectively with internal and external team members and partners.

Today, these stakeholders can instantly check the progress of active projects with new visibility into and control over critical projects. Data within the job schedules is updated live, enabling teams to execute in real-time and access interactive charts via their mobile devices as well as PCs and laptops. The company's executives can also view critical data for all construction projects in progress across all divisions from a single screen.

Reports that were traditionally 30 to 40 pages are now available in a single repository—eliminating cumbersome, paper-based spreadsheets and multiple versions of the truth. The firm now has a complete and accurate picture of project performance and supports consistency across the organization using standards, which include codes and templates.

In addition to achieving greater business agility, the company is reducing IT costs and complexity and focusing less on IT and more on what it does best—engineering and building new facilities. The firm can ensure more predictable IT costs with a cloud solution by eliminating the cost and risk involved with the need to purchase, deploy, and manage hardware infrastructure and application licenses.

The company also is able to scale up system users quickly and cost-effectively to match construction sector growth and project demand. It can add users in minutes, without the need for additional IT infrastructure investment.

With the cloud-based solution, the company is connecting more stakeholders—anytime and anywhere—with a flexible, cost-effective model that enables it to roll out the solution to partners and project owners, widening visibility and collaborating while accelerating decision making. Since the system is accessible at any time, users can be even more responsive to the needs of operations and customers.

Conclusion

Flexibility and the ability to adapt easily to change can create a compelling competitive advantage for E&C organizations. Whether it's behind the desk, on the go, or at the job site, E&C project teams need to be empowered to get a project done no matter where the job takes them and with a limited amount of resources.

Cloud-based project and construction execution solutions—encompassing EPPM components—enable firms to get organized and coordinated quickly while creating faster value with the flexibility needed to quickly adapt to and implement changes. These capabilities are increasingly important in today's competitive market where margins are tight, skilled professional resources are limited, and the ability to execute is paramount.

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Integrated Cloud Applications & Platform Services

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