

INSIGHTS FROM THE BDO REAL ESTATE & CONSTRUCTION PRACTICE

# BUILDING THE FUTURE OF CONSTRUCTION WITH DIGITAL TRANSFORMATION

By Ian Shapiro, Adam Rouse and Malcolm Cohron

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.

The construction industry has a workforce that skews older, and as more baby boomers head toward retirement, the industry faces a labor shortage that's poised to get worse. According to the U.S. Bureau of Labor Statistics, there were about [300,000 construction job vacancies](#) in June 2019, and the industry is expected to need 747,000 more workers by 2026. While the demand for skilled craftspeople has continually increased, fewer young people are entering the industry.

Potential recruits just don't see construction as an attractive and viable career option, especially when other sectors are considered more tech-savvy and offer perks that appeal to millennial workers. To navigate these conditions and sharpen their competitive edge, construction companies need to adopt a bifurcated strategy: invest in new technologies to streamline operations and lower costs from blueprint to final product, and invest in the workforce through retraining initiatives and by bolstering the talent pipeline.

## ADDRESSING OLD CHALLENGES WITH NEW TECHNOLOGY

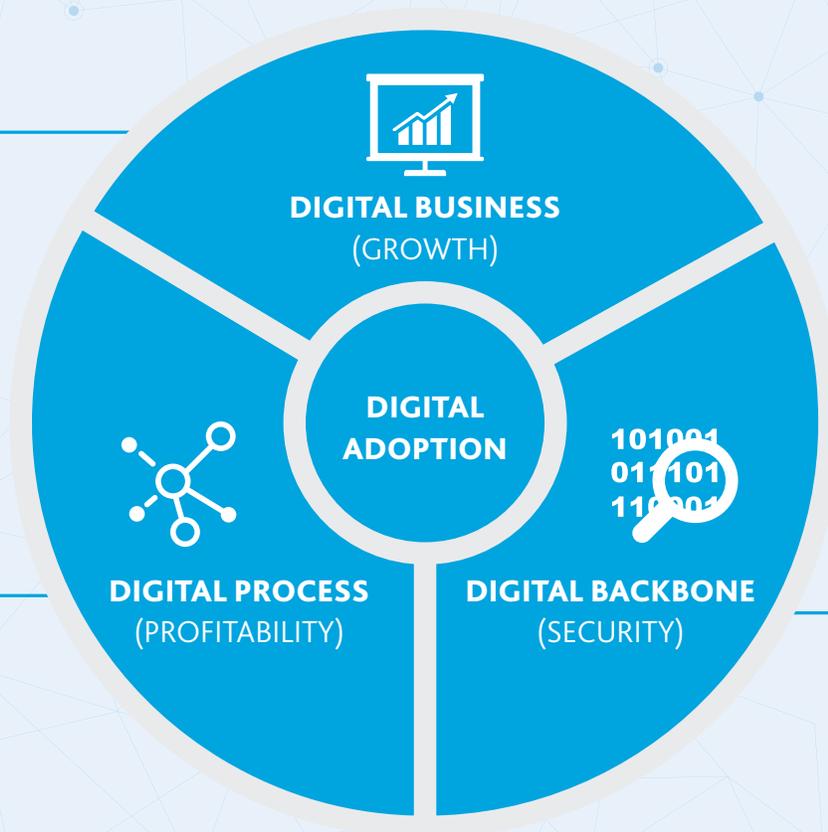
Transforming construction means more than introducing modern technologies to the industry: Technology correctly incorporated has the effect of rippling through and improving interrelated processes. This requires assessing the current state of a business, strategizing for the future state and then mapping a journey to that future.

**DIGITAL BUSINESS**

concentrates on creating new value, market differentiation and revenue in the digital economy.

**DIGITAL PROCESS**

focuses on operational reinvention by optimizing end-to-end process performance and improving efficiency.

**DIGITAL BACKBONE**

is the foundation on which all digital initiatives are built, centering on addressing or removing the IT complexities, risks and barriers to innovation, to meet business and evolving market demands.

Digital transformation goes far beyond digitizing analog functions; it enables a fundamental shift in how a business operates so that it can compete in a digital world. Three key areas of transformation are ultimately enabled by end-user adoption: [Digital Business](#) enables growth, [Digital Process](#) improves efficiency and profitability and [Digital Backbone](#) securely facilitates usability for business needs.

Identifying and adopting valuable digital tools, data-enabled hardware and field software can provide a solid foundation for sustained growth. For example, using drones or unmanned aerial vehicles (UAVs) for aerial photography can help expedite a land survey and assist planning through digital imaging techniques, precise topographic mapping software and data analytics that inform building strategy. Continued UAV surveillance can also help secure the site and inspect for safety hazards or structural issues. When applied in conjunction with 3-D printing, automated equipment tracking and progress reporting, these innovative building techniques reduce the time, effort and cost involved in more traditional construction approaches.

In an industry that has been challenged by disruptions to the price of materials—including tariffs of 25% on steel and 10% on

aluminum imposed in 2018—increasing efficiencies and reducing controllable costs are more important than ever. Innovative software can identify and quantify work tasks, reducing or eliminating extraneous work to help maximize time and minimize effort. Supply chain information can even be tracked in the cloud, increasing transparency and accuracy by collecting that data within a single platform. Digital tools not only support the project budgets and timelines, but also promote worker safety and sentiment.

**NAVIGATING WORKFORCE WOES**

Workforce challenges in construction abound. The industry has been contending with a lack of organized site management, miscommunications between the field and regional office and a downward trend in employee morale.

The flow of information from job site to regional office to corporate can be fragmented, delayed and incomplete. The amount of time it can take to input information into the system leads to lack of real-time visibility into a project's progress, which can ultimately have an impact on cashflow. Integrating data can streamline communication and deliver more accurate

information more quickly. Work in Progress (WIP) tools track work in real-time, making sense of data that can then be used to inform subsequent project plans. They also allow for more accurately designed scheduling with the appropriate amount of margin and risk tolerance built into project plans. Similarly, Building Information Modeling (BIM) can synthesize all essential aspects of a project's input into a single plan with 3-D modeling, wherein contributors can stay in timely communication.

Digital transformation can also help attract younger workers to the industry by creating more jobs that require tech skills. *U.S. News & World Report* noted in 2018 that less than 10% of construction workers are younger than 25, while the median age is above 42 years old. Modernizing processes through increased adoption of technology can both create new jobs and future-proof the industry.

Technology also enables construction managers to standardize approaches across a project (or multiple projects), facilitating additional clarity in delegating responsibility and even safety. The

IDC predicts [279 million wearables](#) will be in use by the end of 2023, a technology that can be applied to increase site safety and monitor for productivity. For instance, sensors attached to workers' clothing or hard hats can track signs of fatigue to prevent an accident, monitor body temperature to avoid hypothermia or heat exhaustion, send an alert through noise or vibration to indicate a hazard and provide supervisors with real-time information about the number and location of employees on site.

For companies who can augment their capabilities now, successful digital adoption may reinforce their competitive capabilities and lay the foundation for a successful future. From project management tools that offer real-time communication, updates and project overviews, to cloud and mobile technology, advanced uses for GPS, robotics, drones and more, innovative applications of technology can fundamentally change the project design and development process. Digital transformation can be the means for the industry to navigate workforce issues, discover new efficiencies and build an integrated platform to reinvigorate growth for generations to come.

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