Revolutionizing Construction with Technology

Forward–thinking contractors are prepared to compete in construction's dynamic future.

BY MARTY MCCARTHY OF MARCUM LLP
AND DINO DADDONA OF MARCUM TECHNOLOGY
MARCUMLLP.COM

IN THE PAST ten years, technological progress has continued to revolutionize every aspect of modern life, and the construction industry, although sometimes reluctant to recognize change, is certainly no exception.

For sureties issuing construction bonds, identifying ideal partners often means digging into details that extend far beyond fundamental financial reports. In virtually every sector of the economy, the success of a business is increasingly correlated with its willingness to explore and embrace new technologies and more efficient ways of working. Of course, some industries are more amenable to change than others; construction is notorious for a sometimes misguided loyalty to those practices that have worked in the past. Still, enterprising firms are setting themselves apart and gaining a competitive edge by using new technology within the sector.

By identifying these firms, sureties can move forward knowing that their potential partners are not only sound from a financial perspective, but also equipped with a forward-looking philosophy that could prepare them to adapt to changing markets and industry practices.

Let's look at a few technology solutions below, all available in today's market. These solutions can increase cost efficiency by enhancing existing capabilities, automating mundane tasks, or offering a better approach to tackling age-old challenges.

Backoffice Solutions

These are industry agnostic tools, as well as tailor-made solutions for use in the construction industry, that automate repetitive tasks, generate analysis, or simplify the management of large data sets.

The Essential Tool: An enterprise resource planning system, or ERP, is
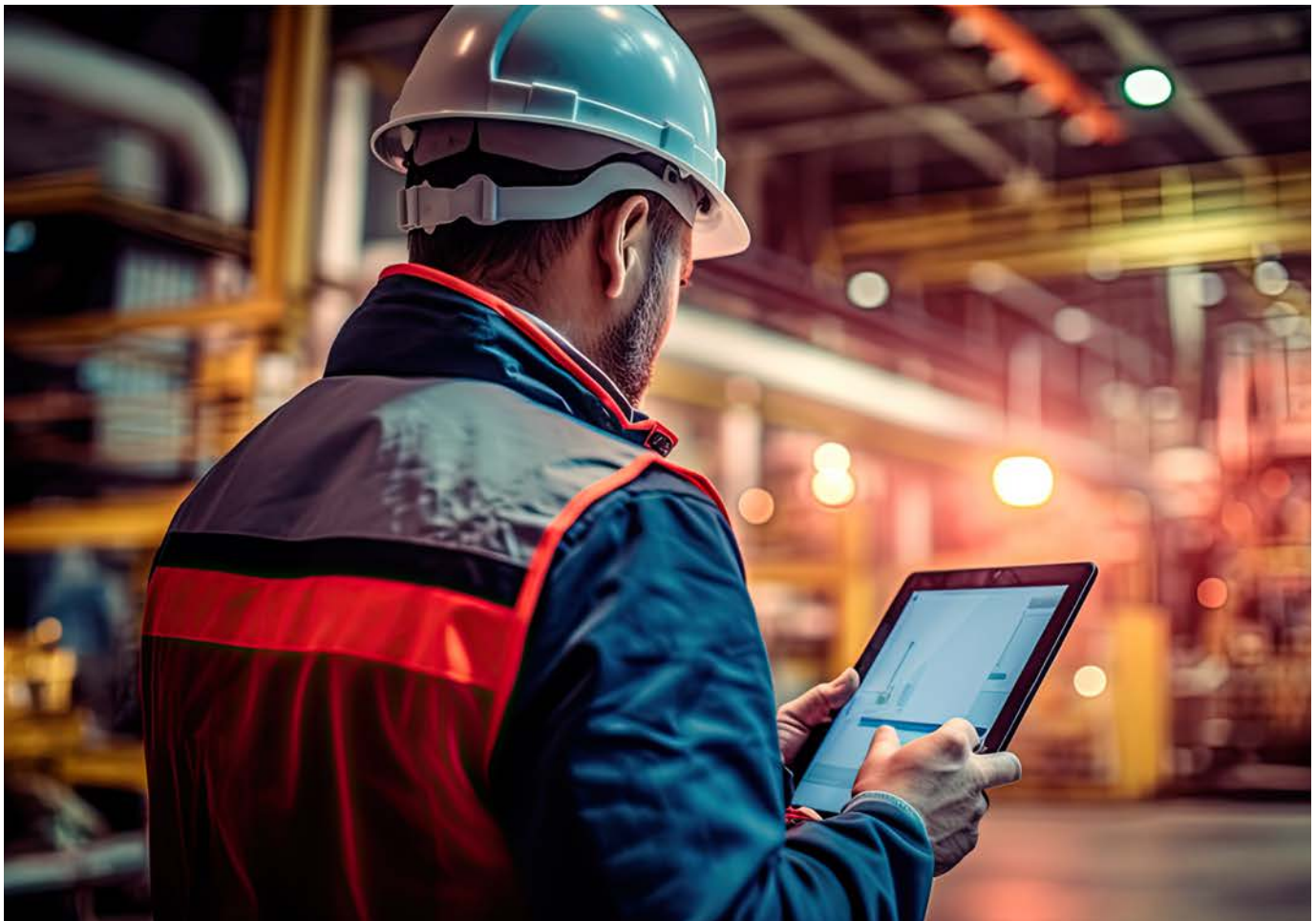
the first and possibly most crucial step on the path to achieving an integrated and advanced tech environment for any business. ERPs can effectively serve as the glue that holds a construction business together, centralizing management, accounting, payroll, and service operations to efficiently manage essential functions like job costing, material routing, and project management.

Data Analysis and Management Tools: Processing huge data sets, manually manipulating Excel sheets, and poring over reports may not be what most have in mind when entering the construction field. But, when it comes to building a lasting business, these functions are as essential as any other. Thankfully, AI solutions are on hand to help with these responsibilities. They require oversight to avoid mistakes but can be less error-prone overall than when humans handle similar work. Furthermore, they can be more cost-effective than manual alternatives and free up a construction staff's time to dedicate to higher priority tasks.

Material Resources Management Systems: Inventory tracking solutions enable enhanced visibility into the tools and materials on hand, without a trip to the warehouse. They can save the time of those who would otherwise conduct checks on materials and equipment and simplify the process of preparing for projects. To maximize their utility, inventory management systems can be integrated with project management and field service and scheduling platforms.

Collaborative Modeling Software: Hyper-specialized providers have transformed the traditional blueprint into 3D with building information modeling tools that produce interactive images that can be shared with key providers to enhance collaboration and overcome challenges as they arise. The images generated can be displayed in virtual reality, and this technology is already being widely used to generate as-built drawings. For in-progress work, models can be adjusted and shared with stakeholders instantly so everyone involved is on the same page when it comes to project readiness. There is considerable time-saving potential when an unforeseen challenge can be shared with relevant experts as soon as it arises. With collaborative tools this powerful, work slowdowns can be cut from a matter of days to a matter of minutes.

Onsite Solutions

By putting the power of the back office in a pant pocket, functions typically handled at a desk can be accomplished in the field, on break, or anywhere in between. In addition, new tools are making sites safer, construction work easier, and timelines shorter.

Field Reporting: Project management tools aren't just for office workers. Apps designed for mobile platforms can be used in the field to enable real-time updates supporting project management, planning, time tracking, and reporting efforts.

Oversight On-demand: A litany of camera-related offerings deliver 24/7 security and accountability on job sites. Whether a firm is concerned about theft or site monitoring, there are a number of tools that make capturing and viewing images easy and convenient.

Virtual Reality for Building Real Skills: Some companies use virtual and augmented reality tools to enhance safety by having employees conduct safety trainings in virtual reality. Other companies augment traditional tools with digital enhancements; for example, one company is producing hard hats with augmented reality glasses that deliver safety information.

High Risers: Aerial imaging got a lot cheaper when drones hit the shelves of the local consumer tech store. Whether serving as an eye in the sky for safety monitoring, to assess the quality of a roofing job, or to get a bird's eye view to generate models of an environment, drones are a mobile and affordable (relative to the cost of manned vehicles) extension of a construction crew. They can also comfortably reach recesses that people can't.

Making Construction Light Work: Large projects are getting survey assistance from advanced laser technology. Site surveying can be significantly quicker when employing laser scans to map and inspect construction sites, particularly at scale.

Modular Design and Fabrication: Somewhere between the office and the site lies a liminal space for producing modular and prefabricated solutions that are becoming increasingly popular. Once considered an ancient or niche practice, modular construction is enjoying a resurgence and enabling hyper-efficient onsite construction.

Future Tech: In some cases, 3D printing technology is being used to lay concrete for offices and homes. At the scale of the construction industry, 3D printing is still largely cost-prohibitive because of the expense associated with the technology and the skilled labor required for oversight and maintenance. Still, as the technology advances, 3D printing represents a potential revolution for the industry.

What Technological Sophistication Says About a Construction Firm

When technology disrupts an industry, it is the early adopters that reap the most benefits from breakthroughs. Of course, selecting the right tech at the right time is easier said than done. When counseling clients on the latest and greatest tools for their business, the first step is a strategic IT assessment. The results of a comprehensive review of current practices help create a guide for companies to integrate proven technologies—usually over three-to-five-year timelines—that can have a transformative impact on their business capabilities and bottom lines. From the perspective of a bonding agent, those organizations that are forward-looking and eager to take advantage of technology might be better prepared to compete in a dynamic construction market.

As progressively effective technology continues to unlock value, it will only become increasingly essential that construction firms remain current to overcome the competition.

It would certainly be a bad sign if firms were overspending on technology or paying for solutions that don't meet a demonstrable use case, but, overall, the construction industry generally seems to suffer from the opposite problem—a reticence to update processes and practices even when the advantages of doing so should be clear.