



**BUILDING
CONSTRUCTION
GROWTH
WITH DIGITAL
BRICKS
AND MORTAR**

**WHEN MOST PEOPLE THINK
CONSTRUCTION, BRICKS
AND MORTAR COME TO MIND.
HEAVY MACHINERY. HARD HATS.**

THEY'RE
VISUALIZING THE
CONSTRUCTION
INDUSTRY OF
YESTERYEAR.

Instead, picture this: a robotic system developed by the Massachusetts Institute of Technology (MIT) that can build the basic structure of a building in less than 14 hours.¹

Or, this: scientists from Switzerland's ETH Zurich University are building the DFAB House, the first house in the world to be designed, planned and built using primarily digital processes.²

The building blocks for a world that runs on digital technologies are—not surprisingly—digital. Yet, in a \$10 trillion industry³ being upended by digital entrants, many construction companies have not transitioned to digital as the mainstay of their business.

Moving to a digital model is essential for future survival as connected homes, smart factories and offices, and consumers who demand sustainable construction at the right price point become more prevalent. Companies that integrate digital technologies into their business now can increase earnings before interest, taxes, depreciation and amortization (EBITDA) growth from the typical 5 to 7 percent to 8 to 12 percent by 2020.⁴

Major players should not be lulled into complacency by the slow erosion of margins over time. This decline is not another temporary dip. Without implementing digital technologies, construction companies will lose to nimbler digital players who will steal share of customer.

CUSTOMERS WANT A CONNECTION

Customers are bringing their expectations from other areas of their life to their desires for building. Connected cars, homes and electronics are becoming de rigueur. More than half (51 percent) of consumers back a future of smart-home technology.⁵ And connected airports, roads, and more are fast becoming a reality. VINCI's Eurovia has created Power Road®, a road that produces thermal energy captured from solar radiation. The energy can be transferred to nearby buildings and infrastructure via a heat pump. Building owners and airports can then use it not just as a power supply, but also as an easier route to ice- and snow-free roads, parking lots and runways.⁶

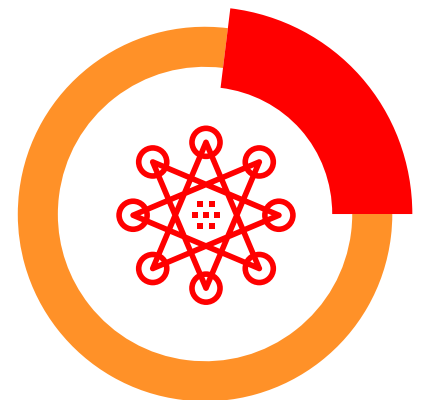
No longer do construction customers want just an attractive, climate-controlled building. Instead, they demand infrastructure that minds their safety; provides real-time information, guidance and entertainment; and not only manages emissions but generates sustainable energy. The list goes on. To make any or all of these services a reality, a digital infrastructure is necessary. And to provide a digital infrastructure, construction companies need to become digital organizations.

CONSTRUCTION WORKSITES AS CONNECTED FACTORIES

A digitally enabled jobsite and workforce allow a construction site to be as productive as a connected factory. Accenture Strategy analysis identified 20 partial digitization initiatives that can unlock an additional 50 percent EBITDA across a typical construction company's operations by 2020.⁷ Not surprisingly, 50 to 70 percent of the benefits these digital technologies unlock relate to connected worksites.⁸

Some construction companies are already piloting connected worksite initiatives, and seeing a 15 to 30 percent impact.⁹

**15-30%
IMPACT**



A CONNECTED WORKSITE



Crews and construction management are connected in real time, allowing for crews to communicate any difficulties in executing plans and management to communicate back any changes to plans as a result of those difficulties. 3D models can be sent via wireless devices.



Connected machines allow the home office to monitor maintenance schedules, fuel consumption, asphalt temperature at rollout and much more.



Workers wearing augmented reality visors have Building Information Modeling (BIM) data overlaid onto their real-world view of the site, giving them a detailed plan and the information that used to require paper documentation and plans.



Sensored exoskeletons allow workers to lift larger than usual loads, minimizing fatigue and decreasing injury rates.



Site managers get a real-time view of each worker, from body temperature and heart rate to location.



Connected fleets allow site managers to control who can access equipment, as well as when and where it can be used.



Online 3D printing of building components saves time and money, as crews can create what they need as they need it—particularly for specialized components.

Not only do digital technologies help a job site run better, they can get it up and running far faster than traditional methods. Using typical ground-based surveying, it is not unusual for two to three weeks to pass before a 60-acre site is fully documented. But, using drones to collect that same data, mapping a site can take four days or less.¹⁰

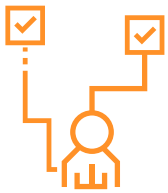
THE NEW CONSTRUCTION ROYALTY: START-UPS

Gone are the days when construction giants ruled the industry. In today's digitally fueled environment, niche players have become the seat of power. No large construction company can house the digital know-how and talent required to cover all aspects of connected buildings, smart homes and sites that run with the latest in artificial intelligence and automation. Companies that want to remain firmly established as a construction leader will begin now to form an ecosystem of niche players who specialize in the digital products and services they need to deliver on consumers' construction demands. Building these relationships allows construction firms to focus on their core business, versus becoming overly fragmented in chasing the latest technology—which is bound to become dated in a short time.

Start-ups specialize in construction site collaboration and design software, online equipment rental platforms, smart walls, customized robots—the list goes on. And with accelerator programs cropping up internationally—such as Dreamit UrbanTech, which invests in start-ups that specialize in smart cities and construction technology¹¹—wise industry giants will partner for digital expertise rather than trying to hire it.

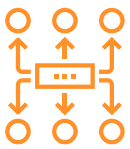
FRAMING FOR **FUTURE SUCCESS**

To use digital technologies to fuel growth, increase productivity and kick-start innovation—not to mention to meet growing consumer demand for connected building—construction companies should consider a few first steps:



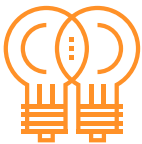
SPLIT FOCUS

Winning in the new era of digital construction requires a two-pronged approach. Yes, you must change the way you operate by digitizing your existing business. But that alone falls short of success. You must also simultaneously create new business models that will counter the cannibalization of your traditional core markets.



INVEST NOW IN THE TECHNOLOGY THAT IS DISRUPTING YOUR BUSINESS

Wearables, drones, augmented reality, sensors and automation not only are essential to connected worksites—they multiply the value you will unlock with BIM and 3D technologies.



ACCESS DIGITAL KNOW-HOW THROUGH NEW PARTNERSHIPS

Rather than building digital capabilities from the ground up, grow your partnerships. Look to digital start-ups for alliances and acquisitions that will help you innovate, increase productivity and fuel growth.

JOIN THE CONVERSATION



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NOTES

- ¹ Kaya Yurieff, “This robot can 3D print a building in 14 hours,” *CNNTech*, May 2, 2017.
- ² Clayton Moore, “Researchers are using 3D printing and robots to design, plan, and build a house,” *Digital Trends*, July 7, 2017.
- ³ Accenture Strategy analysis of World Economic Forum data, 2017.
- ⁴ Accenture Strategy Construction Digital Value Verification analysis, 2017.
- ⁵ Doug Drinkwater, “Study: Consumers open to living in connected homes,” *Internet of Business*, December 7, 2015.
- ⁶ “Eurovia invents Power Road®, the positive energy road,” VINCI, October 16, 2017.
- ⁷ Accenture Strategy Construction Digital Value Verification analysis, 2017.
- ⁸ Ibid.
- ⁹ Accenture Strategy insights based on client experience.
- ¹⁰ “Case Study: DroneDeploy Drones Improve Contractor’s Site Planning, Design, Safety,” *ForConstructionPros.com*, June 27, 2017.
- ¹¹ AlleyVoice, “This Accelerator Is Investing in the Startups Building the Cities of the Future,” *AlleyWatch*.

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