10.20.20

BUILD USA

PRESENTS

WHITE PAPER ONE

THE FIRST OF A WHITE PAPER SERIES

BUILDING IS CHANGING. ARE YOU?

SYNTECGROUP

Contents

Introduction

The digital revolution has begun. Over the course of the last decade, the **rise of digital technology** has transformed industries such as automotive, banking, healthcare, media and entertainment, retail, and others. Innovation has helped companies in these industries increase productivity and sustainability, improve communication, cut costs, and create new jobs.

However, during this same period, the building industry has continued to function as it has for the past half century. Most companies still rely heavily on manual labor and mechanical technologies, offer traditional products and services, and operate according to long-established practices and traditional business models. Executives, project owners, contractors, subcontractors, and other industry stakeholders have consistently resisted the full-scale adoption of digital solutions. Many believe that implementing new technology is impractical or unprofitable. Applications of digital technology are often one-off solutions for particular problems. Few companies have captured the full benefit of digital—indeed, building is among the least digitized sectors in the world. As a result, **productivity** has stagnated.

The slow pace of innovation is an important issue not only for individual stakeholders, but also because of the industry's role in the global economy. A $10-trillion-a-year industry, building accounts for 6% of global GDP and employs about 7% of the world's working-age population (more than 100 million people worldwide). Building is the world's largest consumer of raw materials and other resources. It uses about 50% of global steel production and more than 3 billion tons of raw materials. Any improvement in productivity through successful adoption of innovation will have a significant impact. For example, a 1% rise in productivity worldwide could save $100 billion a year.

Even the outsize numbers do not do justice to building's impact on the global economy and environment. Updates in the built environment are often the drivers for consumption in many other economic sectors. Plus, the built environment is a primary anchor for stability, confidence, and growth within every community. Within ten years, according to our estimates, full-scale digitalization will lead to huge annual global cost savings. For nonresidential construction, those savings will be $0.7 trillion to $1.2 trillion (13% to 21%) in the design and E&C phases and $0.3 trillion to $0.5 trillion (10% to 17%) in the operations phase.

In order to move forward, we need to acknowledge the historical resistance to change, and the current rising tide of interest in how Building can and will change. Thanks to the recent development of new technologies, tools, and techniques, the industry has vast potential for improving productivity. Innovative solutions are now available for all project phases, from strategic planning and design, through pre-construction, to operations and ongoing life maintenance. These technologies—common data environments (CDEs), building information modeling (BIM), big data analytics, drones, wearables, wireless sensors, augmented and virtual reality, 3D scanning and printing, automated and robotic equipment, advanced building materials, and new **modular building methods** – are beginning to change the entire industry. By leveraging the power of these technologies, companies can boost productivity, reduce costs, streamline project management, enhance quality and safety, and help keep projects on time and on budget. To cite just one example, collaborative digital platforms can change project outcomes by empowering people to work smarter, communicate more easily, and track projects more effectively.

The building industry is **poised** for digital transformation. We now have a brand-new toolbox filled with powerful tools. However, the industry is still learning how to best implement and use them. In the near future, industry-wide adoption of digital technology will disrupt traditional workflows, processes, and ways of doing business. With the pace of change accelerating, players along the industry value chain would be wise to develop new business models—and a new mindset—to confront the challenges that inevitably accompany change. The companies that resolve to address these challenges head-on will emerge as leaders in the post-digital world.

Barriers to Change

Given the potential benefits of adopting digital solutions, why have so few companies fully digitized their operations? The answer lies in the traditional processes and procedures that have evolved over the **history** of the deeply fragmented, risk-averse building industry. The following characteristics of the building industry make digital transformation particularly challenging:

- ***Fragmentation.*** The building industry is characterized by a highly **fragmented value chain**. Each step in the chain involves a multitude of independent contractors, subcontractors, and suppliers. Further, these players often find themselves at odds with each other due to the short-term and adversarial nature of construction contracts. This set of conditions hinders the seamless data flows and integrated systems that robust digitization requires.

- ***Lack of Standardization.*** Construction projects are nearly always one-off endeavors, with **unique requirements** that demand customized design and delivery methods. As these methods are rarely repeated, it is difficult to introduce changes and establish new ways of working across multiple projects.

- ***Transience.*** Workforce turnover in the building industry is high. Each construction project typically involves a brand new set of stakeholders, organizations, and project teams. These groups have little incentive to embrace new technologies or work processes during the brief period of time when they are working together on a project.

- ***Decentralization*****.** Large companies often consist of multiple business units that tend to follow their own processes and procedures. Individual construction projects take place at sites that are far away from the company office. Many sites are located in harsh or remote environments. Few sites are conducive to teaching workers how to work in new ways or master new technology.

- ***Silos in project management.*** The building world is filled with walled off **silos of knowledge**. Companies are often rewarded for zealously guarding their project data—even if this secrecy is detrimental to the overall project. In reality, the obfuscation of knowledge often offers a competitive advantage over transparency. What is more, individual teams and business units will often develop their own digital solutions without coordinating with others.

- ***Minimal investment in R&D.*** Research and development is vital for the renewal of any industry. Yet building companies invest much less in R&D than their peers in other industries (less than 1 % of revenues, versus 3.5%-4.5%for the auto and aerospace sectors). The benefits of R&D are long-term, the costs short-term. This is an unappealing trade-off for project-driven companies confronting shrinking profit margins and stagnant productivity.

- ***Conservative Culture****.* The building industry retains a conservative culture which does not nurture progressive thinking. Too often, the industry mindset is oriented toward the past, not the future. Since companies often have established processes for dealing with perennial problems, they may have difficulty adopting more innovative solutions.

- ***Workforce Talent*****.** Finding digital talent is a primary concern for executives across the building industry. However, a negative perception of the industry, along with a

lack of programs for upskilling the current workforce, makes it difficult to attract the required talent and close a significant talent gap.

Recommendations for Action

For the first time in its history, the building industry has access to robust technological solutions that can dramatically increase integration across the value chain. Technologies such as BIM have the capacity to break down traditional silos, enable real time **knowledge sharing**, and promote **collaboration** among previously disconnected organizations.

If digital technology is successfully integrated across the entire building team, the benefits will increase exponentially. Companies can promote positive outcomes by implementing new technology in sync with corresponding changes in organizational processes and project workflows. To this end, companies can take specific steps in the following areas:

- ***Corporate culture***. In creating an organizational structure that supports digitization, leaders must recognize that digital transformation is about more than just test-driving trendy technology or pursuing innovation for innovation's sake. It's about creating a **people-first culture** supported by powerful digital tools and workflows.

- ***Leadership***. The ultimate purpose of innovation is to make human lives better by improving living conditions and working conditions. To achieve this purpose, we need effective, forward-thinking leaders that can utilize technology in more meaningful and impactful ways.

- ***Implementation strategy***. Many industry players introduce new digital tools into their organizations without first educating workers about their benefits or modifying workflows and processes. Technology adoption takes time and should be guided by a systematic strategy. A good plan will include clear goals, realistic timelines, and specific measures of success. Executives and managers must start with a clear definition of how digital will create value. They should communicate why these changes are important as well as their impact on organizational structure. For example, by citing the positive effects on cost, schedule, and risk optimization. During the transformation, they should spend as much time on operational change as they do fine-tune new technology. This approach helps focus each solution on a real business need while at the same time encouraging buy-in among the workforces. The ultimate

goal is to increase collaboration along the value chain by seamlessly integrating new digital tools into daily operations.

- ***Legal Contracts***. Traditionally, industry stakeholders have viewed construction contracts as opportunities to transfer risk to potential adversaries or competitors. Instead, contracts should be seen as mutually beneficial tools that ensure an equitable distribution of both risks and rewards. Contracts should enable owners and contractors to share the benefits that arise from the adoption of innovative technologies and practices.

- ***Financing Agreements and Insurance Products.*** The financial services and insurance products available in today's business environment still reflect historical prejudices about how risk is shared and mitigated. Insurance and financial partners should create new products and services that more accurately reflect the new environment of collaboration, allowing for shared and reduced risk in the building industry.

- ***Organizational changes.*** Industry players are experimenting with new collaborative paradigms for the digital age. These new paradigms contrast with the traditional grouping of architect, engineer, general contractor, and design-and-build contractor. Two emergent organizational models will successfully differentiate themselves in the near future:

    - ***Internally Integrated Business Conglomerates (IIBC).*** Organizations of the IIBC model are represented today by large-scale companies like Bechtel and AECOM that have complete verticals in almost all market sectors and services.

    - ***Collaboratively Integrated Partner Organizations (CIPO).*** The CIPO model refers to small and mid-size and some large firms who have developed strong individual brands and cultures, yet choose to join collaborative organizations that can pool the required skills, processes, and resources to compete on projects of all scales and remain nimble enough to quickly adjust to market shifts.

- ***Talent management.*** Recruiting new talent and upgrading the skills of the existing workforce should be priorities for companies who want to become leaders in a post-digital world. Today, most companies lack adequate upskilling processes as well as a long-term strategy to attract, recruit, and retain talent. Companies should expand their talent searches, strive to improve the industry's image, and establish continuous learning and development practices. In addition, to appeal to the **new generation** of workforce talent, companies should project a positive brand image that reflects the

innovative technology and sustainable practices of the 21st century. Over the next 10-15 years, as the younger generation takes on management roles and starts to control decision-making, many barriers to entry will begin to disappear.

Conclusion

Disruption in the building industry is no longer looming on the horizon. It has arrived.

And innovation will continue to accelerate.

Industry players can no longer afford to ignore the rapidly expanding set of technology solutions available across the asset life cycle. Building has the benefit of learning from other industries that have undergone dramatic digital transformations in the recent past. Companies that fail to adapt will find themselves falling behind the competition. While companies that are quick to embrace emerging technologies will gain a strong competitive advantage over their rivals. This applies not only to traditional rivals within the industry, but also to potential disruptors entering the industry from other sectors.

Technology is a powerful tool. However, it is not the hero of the story. The focus should always be on "**people:"** our clients, staff, vendors, and partners. People are paramount in the world of building. Historically, many staff positions have been created to perform repetitive administrative tasks. As technology takes on more and more of building's repetitive tasks, there will be rapid staff growth in the areas of data analysis, strategic planning, and authentic customer service. These professionals will ensure that the "Building Experience" is understood, enjoyed, , and made valuable for everyone involved. Even in the digital age, people will remain at the center of the building industry.

Significant gains are at stake for the organizations who move first and fast. Companies should already be exploring new business models to maximize the benefits of adopting digital solutions. Change is coming. The time is now to start thinking strategically about the future.

At this point, questions may arise:

How do we create a collaborative environment?

How do we successfully incorporate digital technology throughout a project team and across the life cycle of a building?

How can any single company implement new strategies that will work with all of its different building partners?

That is what “BuildUSA” is all about. You will find the answers to these questions—and many more--in this series of four white papers. At the end of the white paper series, you will find BuildUSA's specific solutions for the commercial market, including BuildUSA's collaborative digital environment, or BCE."

Meet the Author

CEO / Founder – Steve Salzman, Steve holds a Bachelor of Architectural Science from the University of Illinois. His career has encompassed the areas of architecture, design, construction management, and real estate development. Building and running multiple companies has afforded him the opportunity to develop an intimate understanding of all phases of the building process. These professional activities coupled with a personal interest has led to extensive research on how to develop and deploy new technology, new building materials and new building prototypes. As a recognized in leader in the rapidly changing building industry, Steve applies his industry-specific experience to provide executive leadership to The Syntec Group in the areas of client and project development and collaboration, market penetration, technology and strategic planning.

About BuildUSA

Evolving market realities have begun to significantly impact the historical cottage industry nature of Building. Firms of all sizes will increasingly develop collaborative organizations that pool the required shared digital workflows, standards, and resources. Collaboratively Integrated Partner Organizations (CIPO's) will strive to maintain their unique identity/culture while remaining agile and strong enough to both accommodate and drive market shifts. BuildUSA-Chicago (BUSA-C), will be the first CIPO group and will focus on the Midwest region, providing a branded building process that will offer:

"High Quality", "High Performing" buildings to the market in "Shorter Periods of Time" and at "Lower Costs".

About The Syntec Group

Syntec Group is comprised of leading building industry solution providers expert in in each specialty required to address all your building and facility needs. The Syntec Group's business protocols and management tools result in seamless projects, well informed owner's and positive outcomes.

We strive to provide our clients:
Real world experience, creatively applied, using cutting edge business & technology solutions.

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