IMPROVING CONSTRUCTION PROJECT MANAGEMENT OUTCOMES WITH TECHNOLOGY

Anyone wanting to own their own building and build it from scratch might quickly find the process to be incredibly daunting. There are horror stories about construction going unfinished, designs haphazardly followed and projects finished way over budget. The good news is that no matter what the building plans, a private home, civil structure or commercial real estate, there are ways to plan and manage the construction project so that work gets done on time and on budget.

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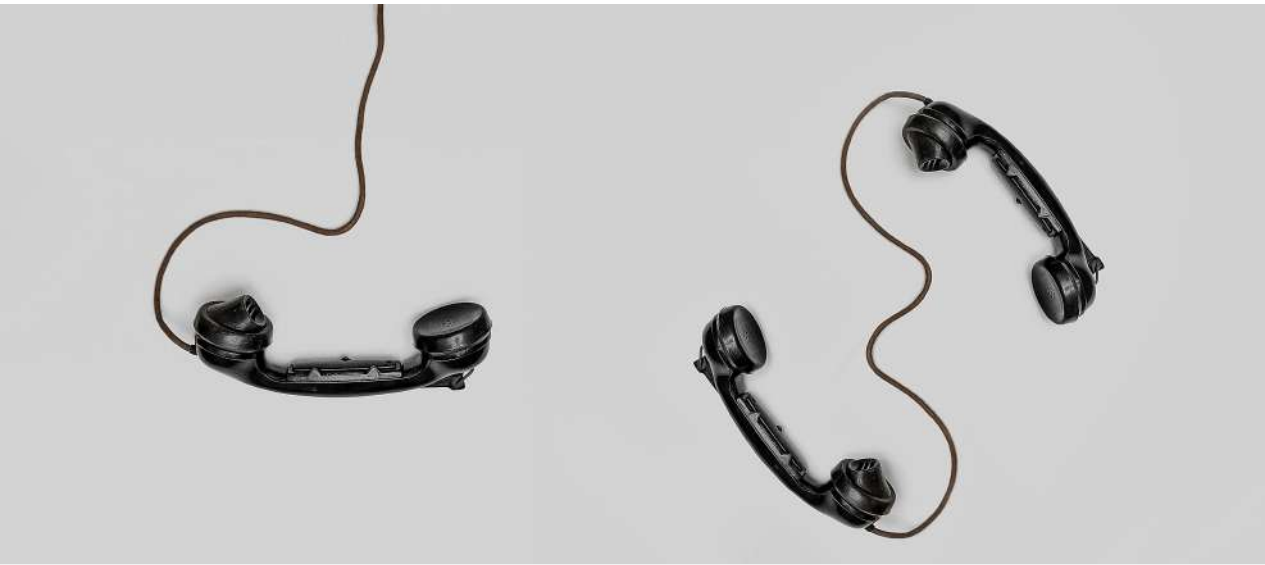
TABLE OF CONTENTS

COMMUNICATION IS ESSENTIAL

There are several steps to a construction project. More importantly, a lot of people are involved in the construction process. There are contractors, subcontractors, project managers, engineers, architects and, of course, the owner of the building. Good communication is vital, but lines of communication are easily crossed and, because so much is involved, delays and mistakes are all too common.

Furthermore, old-fashioned modes of communication such as paper, spreadsheets and email are all too commonly used. The construction industry trails behind other types of business in incorporating new technologies that streamline the management process. Fortunately, these new technologies are being developed at a rapid pace and using them could dramatically reduce delays and mistakes.

Delays mean that projects are put on hold and mistakes demand that work be redone, both of which cost money. Building owners and construction managers can use technology to build a line of communication among the whole team that continues throughout the entire project.



STEPS INVOLVED IN CONSTRUCTION

Before looking at technology used to save time, money and improve communication, there are the 7 stages to any construction project:

- **Design of the Building and Bids from Contractors** - An architect and/or engineer will decide if the design makes sense within the guidelines of regulations and building codes
- **Design Clarification and Cost Determination** - The contractor has been hired and they come together with a project team and budget.
- **Procurement** - An architect and/or engineer will decide if the design makes sense within the guidelines of regulations and building codes
- **Construction** - The contractor has been hired and they come together with a project team and budget.
- **Commissioning** - The contractor has been hired and they come together with a project team and budget.
- **The Owner Takes Possession** - An architect and/or engineer will decide if the design makes sense within the guidelines of regulations and building codes
- **Closeout of the Project** - The contractor has been hired and they come together with a project team and budget.

IMPROVING PROJECT MANAGEMENT

The construction industry is oftentimes slow to incorporate technology. This is despite the rapid growth in new technologies that could assist project managers in communicating with contractors, subcontractors, engineers, architects and building owners to better budget, adjust contracts and schedules, as well as make any changes to the design plans. The use of these new technologies could help ensure the project gets done on time, on budget and without injury to the workers.

HOW TECHNOLOGY CAN BE USED

Software programs that can be used with mobile devices help everyone stay connected and adhere to the project plan. Cloud-based project management software ties all the different parts of the project together: the forecasted budget, scheduling, changes to contracts and results from site inspections. This allows the project team to dispense with individual spreadsheets that may get lost and to stop relying on emails that do not get read in time because the platform is accessible to everyone on the construction site through a mobile device.

BIM or Building Information Modeling is useful because it allows for everyone involved to see a 3D depiction of the finished building during design phase. BIM is useful in project management, particularly in commercial real estate, because any changes to the design can be seen by everyone involved as they occur. Furthermore, BIM offers a preview of changes as they are expected to happen, which means each phase of construction can be pre-planned and scheduled.

The smart phone is another device most people have and one that can easily be taken to any construction site. Specifically, the camera allows members of the project team to share pictures and videos of what is going on at the site. This real-time form of communication allows problems to get resolved quickly and efficiently. Downloaded apps can help provide information that can be used more efficiently on-site.

WORKER SAFETY

Wearables and sensors are key to preventing on-site, work-related injuries. Wearable technology that monitors the worksite is being placed in construction clothing and personal protective equipment such as hard hats, work boots, gloves and safety vests. This technology can check a worker's body temperature, heart rate and posture, as well as record their movements and pick up on whether or not they are overly tired and, therefore, in danger of being harmed.

Site sensors can be used to pick up the noise levels of the construction site, as well as determine if it is too hot, dusty or if workers are exposed to dangerous chemicals.

BIG DATA ANALYTICS

With everything going on throughout each day of construction, data builds up quickly. Data is more than tracing the flow of money. It includes tracking worker habits, occupational hazards, what is and is not efficient during construction and the effective or ineffective use of equipment and materials. Software platforms meant to track construction data enables the project team to collect, store, organize and share data for cost and production analysis, as well as to improve safety conditions.

OTHER RESOURCES

Other technology that would be useful for project management, particularly the construction of commercial real estate includes drones and AR equipment for safety training. Drones can fly overhead and are useful for worksite inspections. AR, or augmented reality, can be used to train workers to safely and proficiently use construction equipment. Whatever technology is used, communication between each highly skilled member of the project team is essential for timely and cost-effective project management.

ABOUT CIVE®

CIVE® is an upscale Design-Build firm, specializing in top-down build process driven by value engineering – from state-of-the-art design, leading-edge engineering, high-quality construction, and elite project management.

Our strengths lie in a rich mix of talent, experience and ingenuity. Our clients can depend on us to anticipate industry changes and plan for the future, while providing most practical and cost-effective solutions. CIVE® devotes customized, individual service to all its clients, whether large or small.

Specialties: Residential, commercial & industrial design, civil engineering, structural engineering, mechanical engineering, electrical engineering, construction management & project management.

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