BREAKING
DOWN DATA

How Data Organization Solves Today's Biggest
Challenges for the Construction Industry

PlanGrid | **CONSTRUCTION DIVE**

Custom content for PlanGrid by Construction Dive's Brand Studio

Construction companies understand that accurate data promotes smart business choices.

From scheduling crews and equipment to tracking weather forecasts and material deliveries to monitoring financials, **data is a critical component of construction operations.** But the importance of data goes much deeper: data allows all parties involved in a construction project—from owners and architects to general contractors and their subcontractors—to make informed decisions at every phase of construction. And once a project is completed, data is turned over and supports the owner in maintenance and operations for the life of the facility.

The benefits of data are far-reaching, from keeping construction professionals up-to-date with what's actually happening on the job site to increasing productivity, streamlining analysis, lowering overhead, reducing rework costs and mitigating risks.

PlanGrid

How Data Was Collected in the Past, and What's Changed

Collecting data in the construction industry isn't a new concept. For decades, industry professionals have gathered the record-set for projects, including drawings, documents, redlines for as-builts, photos, issues, Requests For Information (RFIs) and all the components that contributed to a project. Contractors did this on paper in the field, and then manually recorded it back in the office using email, spreadsheets or older project management solutions.

While these traditional information systems were not construction-specific, they did allow contractors to store project data. However, accurately communicating critical information between the office and field was challenging. Organization, transfer and updates were inefficient, which led to wasted time on unproductive tasks and an increased risk of rework. Until recently, technology wasn't available that allowed the office and field teams to connect in real-time.

What's changed? The invention of smartphones and tablets, along with access to WiFi on the job site, became the catalyst for developing many other technologies that are now utilized in construction to capture project data.

Today, 77% of contractors and 65% of owners use mobile technology to complete their construction and engineering projects.

[KPMG] These high-tech integrations have positively affected the industry by streamlining the construction process and enhancing communication between all parties—owners, architects, contractors and subs—throughout all phases of construction.

Mobile technology has also allowed for the collection of data from many sources, such as people, computers, sensors, machines and other data-generating devices. This data has become equally valuable to all parties during construction and post-construction, especially for operating and maintaining a facility.

![PlanGrid]

Challenges with Collecting and Organizing Data

About 90% of the data in the world today has been created in the last two years, according to a report from IBM Marketing Cloud, and as owners and their chosen construction/engineering firms move toward digital and cloud-based technology storage solutions, the ability to collect data has increased dramatically—as have the challenges to stay organized. A recently published industry report found that employees spend 5.5 hours per week looking for project information. Coupled with other non-optimal activities such as dealing with mistakes and rework (3.9 hours/week) and handling conflict resolution (4.7 hours/week), this will cost the U.S. construction industry an estimated $177.5 billion in labor costs in 2018.

"This speaks to the integration of data in our daily lives," notes Josh Progar, customer advocate for PlanGrid. "That's not lost on the construction industry and the projects built. There is an influx of data right now, but if you don't capture and organize it, you're going to drown."

Another emerging challenge is data loss. "In construction, we have tons of data," explains Progar, yet an Emerson study reveals that up to 30% of data created during design and construction is lost by project closeout.

Data loss can happen at any stage of a project, and also during the export/import process at turn-over when the data fields aren't one-to-one compatible.

When considering the design-build-operate lifecycle of a building, the data lost can include everything from stakeholder research, environmental data and field safety information to sensor input on heavy equipment that monitors active/idle time used for analysis and sensors that are built into the structure (such as buildings and bridges) used to monitor levels of performance.

3 Ways to Prevent Data Loss

1. Make sure your technologies integrate well with each other and that the data fields are one-to-one compatible. When they aren't, data can "fall" out of the system and get lost.

2. Streamline data collection on the job site with easy-to-use mobile apps and automated digital forms.

3. Plan far in advance for close-out by capturing data throughout the project lifecycle so turn-over is as seamless as possible.

PlanGrid

How Data Reveals Solutions to Today's Construction Challenges

Data is essential to the decision-making process. It factors into assessing how a project is going, shows outstanding RFIs or punch list items, calculates productivity, tracks internal workflows and more. Data also assists with revealing the answers to substantial company decisions, such as:

- Should we hire additional labor or can we increase efficiency with offsite components, such as prefabrication?

- Based on the active/idle times, should we purchase new heavy equipment for our fleet or lease?

- Should we investigate utilizing robots during construction as was done on the Pittsburgh bridge project to increase productivity and worker safety?

Scott Jennings, P.E., principal of SJ Construction Consulting, LLC, has over 25 years of experience working with hundreds of contractors across the country. "The benefit of capturing data lies in the ability to make proactive changes that affect the bottom line of the job in progress. The last thing you want is to look back and say, 'If I'd only known that a month ago.'"

PlanGrid
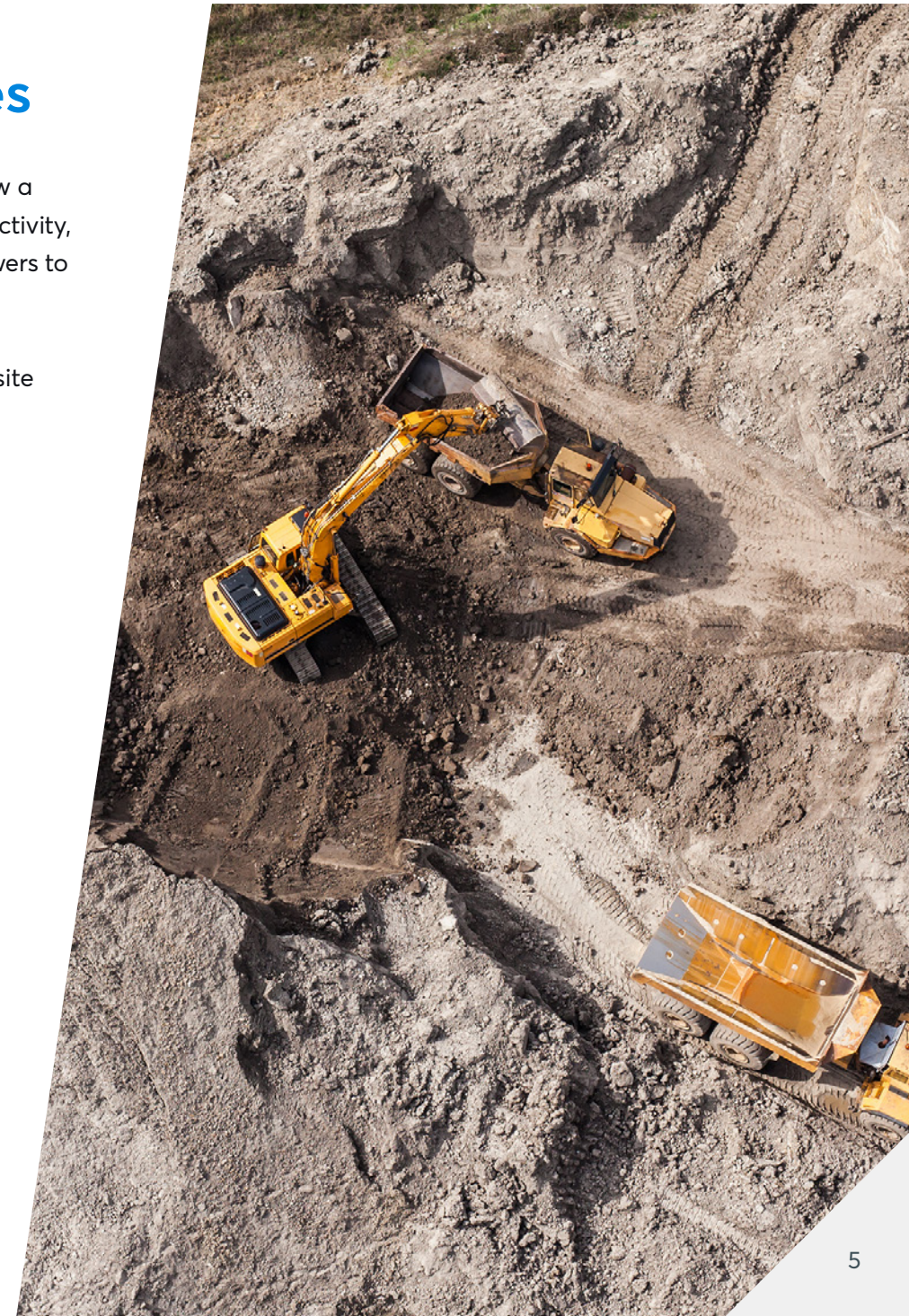
How can you ensure that your company isn't held back by the many challenges a plethora of data presents?

The answer is to invest in a cloud-based solution that organizes your data in a way that is accessible and actionable.

Here's a look at seven ways an organized data system solves some of today's biggest construction challenges:

PlanGrid

1 Increases Productivity

Productivity in construction has suffered for decades. All too often companies review a freshly completed project only to discover that errors were made because of poor data. In one example, the project plans were updated but not accessible to the team and the next thing you know, the wrong strength concrete was poured.

This is just one of the many anecdotes that demonstrates how projects can quickly become off-schedule and over-budget because the correct data was not accessible.

Granger Construction managers, project teams, subcontractors and their clients are utilizing digital data for the project documentation process. Rob Train, vice president of Granger Construction, states:

"Having data in hand is much more efficient. We find it saves hundreds of labor hours on a construction project. Where we once would have spent time walking back and forth to the job trailer to pull up documents, now we can do so on a tablet to quickly resolve issues, answer questions and collaborate right on the spot."

Mobile technology—and the data that is now accessible—is a game changer. It allows employees to be more agile and efficient and to communicate information while on the move. Collaboration can happen more efficiently by allowing drawings, documents and notes to be shared via the cloud, job site issues and questions to be answered on the spot, and updated project details to be uploaded—with the appropriate parties being notified instantaneously.

PlanGrid

2 Fosters Transparent Collaboration

In the past, <u>construction was a fragmented industry</u> with everyone working on their own portion of the project with very little insight as to how it all ties together to the long-term project goals. However, access to real-time data has become a valuable tool for owners and contractors to collaborate and make proactive decisions throughout the job lifecycle. Contractors can provide owners with job progress reports expediently, and owners can better plan for occupancy. When put into practice, both contractors and owners have noted that data transparency builds confidence, reduces miscommunication and strengthens the relationship.

Cultivating a Data-Driven Mindset within Your Organization

When investigating construction technology options, a top priority should be choosing tools that enable teams to easily communicate and access accurate project data. No matter what system is used to collect and organize data, you must begin by cultivating a data-driven mindset. Here are a few key elements to consider:

- **Get technology into the hands of your staff.** They are your champions; if they like it, it's going to be used and be successful.

- **Pinpoint an IT person for your team.** This person does not have to be an expert, but it should be an individual who has a passion for technology and can help others understand and use it.

- **Start with the basics.** When it comes to accessing digital data, begin with the basics, like building drawings and/or specs. Once people see how easy it is to pull up the information with a mobile device, the foundation for use is set, and you can build from there.

- **Select an intuitive program that is easy to use.** Technology needs to be easy to use and accessible no matter where you are located. Seek out technology that has an intuitive mobile application, preferably built for devices used regularly in the field, such as Androids, iPads and Microsoft Surfaces.

- **Create shared value.** If the value is not shared broadly within the organization, there is little incentive to participate, so a data-driven mindset should begin at the top and trickle down. You must get buy-in from management to change the way business is done.

PlanGrid

3 Streamlines Analysis

50% of construction companies surveyed said mobile technology increases the volume of quality data they can obtain onsite, according to a study from Dodge Data & Analytics.

Construction operations can only improve when each segment stops functioning in a vacuum and works from shared information. With the data readily available in real-time, contractors and their subs can see what's happening on a current job, spot inefficiencies and make adjustments. Companies can leverage data gathered to manage fleet equipment, maintenance, efficiency and uptime and ensure that their projects are on budget and on schedule.

Data solutions store all critical financial, operational and organizational information—used to manage and optimize field operations—that is accessible and actionable from everywhere. The ability to review data in real time—from drone images and environmental data to material deliveries and daily logs—gives firms and owners the confidence that any decisions or adjustments that need to be made are done so based on the correct source of truth.

PlanGrid

4 Controls Costs

As reported by **Dodge**, a significant number of contractors noted that mobile technologies help them complete projects within budget and on schedule, and 71% said they help control project costs.

When it comes to documenting critical job information, the advanced functionality of mobile devices makes a tablet or smartphone just as powerful as a desktop computer, and much more reliable than pen-to-paper. The use of technology to capture data and complete the necessary "paperwork" while in the field equates to significant cost savings.

CT Mechanical quickly realized the magnitude by which they could lower their overhead when they began using PlanGrid, because it has reduced the field team's need to visit the office. "The one thing that affects our operations the most is field productivity," owner Catherine Tojaga explains. "If I can get 15 more minutes of productivity a day out of 15 foremen, we gain 18 hours of productivity a week. At $110 per hour, that's approximately $2,000 a week or $100,000 a year gained."

Document management throughout the project lifecycle can also be a challenge, but when the data is organized and accessible, sharing files digitally turns a task that was once a logistical headache into an efficient, cost saving measure. Drawings, images, spreadsheets, videos, CAD files and more can be marked up and shared while maintaining strict permission levels.

Train notes that Granger Construction first purchased PlanGrid as a solution for tracking project documentation, but they quickly realized how much they were saving in printing costs. "In the past, on a $25 million project, we've spent as much as $400,0000 on printing, but we've seen those costs go away."

PlanGrid

5 Reduces Rework

48% of all rework in the U.S. is caused by poor data and miscommunication. Rework, often attributed to poor project data, can account for up to 5% of total construction costs—a forecasted cost of $65.2 billion in the United States in 2018. In fact, a survey of 900 construction executives, managers, project managers and others found that rework due to errors in the field was a top concern for 65% of respondents. Budget projections and project timelines don't typically account for rework, which can

simply stem from miscommunication or limited access to information on the job site.

Having a platform where the data is instantly synced ensures that your team will be notified of the changes and helps prevent costly rework. "On the construction side of our operation, we want to make sure everyone's working off the same set of drawings to avoid rework because rework is expensive," says Erin Bodwell, vice president of infrastructure, planning

and facilities for Michigan State University Federal Credit Union.

Since tracking data with PlanGrid, Train notes, "Our superintendents and field team are more accurate with the data that they have, and as a result, we've seen a reduction in rework. Now, we're also able to expedite work because that information is in the hands of our teams."

PlanGrid

6 Mitigates Risk

Risk and uncertainty will always be a part of the construction industry. With the potential of loss of time, resources, and life, a solid risk management strategy is a key component to the security of your company and project.

According to the **Construction Industry Institute (CII),** a risk management program should have three stages: 1) risk identification, 2) risk measurement and 3) risk control. Data that is captured throughout the project (identified) can be analyzed (measured) to mitigate risk (control).

"Data gives both the contractor and the owner the ability to diffuse any disputes on the job because it allows transparency," notes Jennings. "When you can capture data along the way, all parties can talk and flesh it out during construction rather than litigate over it when construction is complete."

However, data can help you boost awareness to mitigate risk in other ways as well. "We use real-time data to view how our projects are performing," says Train. "If there are a number of unresolved change orders or revisions to documents in a short period of time, that's a red flag that tells us we need to investigate to stop any problems before they become larger issues."

PlanGrid

7 Eases Turn-Over

The average design and construction period of any facility is between three and five years, while the average lifecycle of a building, from the moment construction begins until it's demolished, is between 60 and 80 years. Yet, too many construction companies are focused on less than 10% of a building's entire lifecycle.

Progar explains: "One of the owner's biggest headaches is the building's lifecycle. A contractor can distinguish themselves by choosing a technology solution that seamlessly completes the turn-over, so owners have the data they need to operate and maintain their facility."

Bodwell elaborates: "Once the building is constructed, as an owner, we're inheriting the data from design and construction, so it's important that we have access to accurate data. Before PlanGrid, it was difficult to access this information. Projects 10 years ago were stored in binders, and while earlier technology solutions allowed us to collect documents on the cloud, we found organizing this data difficult."

A notable shift in the construction industry has clients verbalizing how essential it is to get data turned over cleanly so they can use it to operate and maintain a facility. They value having accurate, as-built documentation. It's no surprise that 71% of owners indicate that capturing and retaining more data during design, construction and closeout will reduce or significantly reduce lifecycle operations costs [Construction Disconnected].

Tojaga notes that before using PlanGrid, CT Mechanical used many different tools to try to manage all the information. She says, "The data was everywhere, and it was completely inefficient. Now, on the operations and maintenance side, having the mechanical data accessible via their mobile devices … saves our tech teams hundreds of labor hours."

PlanGrid

Technology creates **vast leaps of efficiency,** but you can also swim in that data if you don't categorize it accordingly.

Data can be collected in a variety of ways, but when the data silos disappear, you get a clear understanding of what is happening inside your business.

![PlanGrid logo] PlanGrid

PlanGrid

PlanGrid builds simple, powerful software construction teams love to use.

The company's mobile-first technology gives general contractors, subcontractors, owners and architects access to information in real-time, enables great collaboration and provides actionable insights. With PlanGrid, any construction team member can manage and update blueprints, specs, photos, RFIs, field reports, punchlists and other information from any device. PlanGrid is used on more than one million projects across commercial, heavy civil and other industries in 90 countries.

Visit us at www.plangrid.com to learn more, or request a demo today to see PlanGrid in action.

Learn More
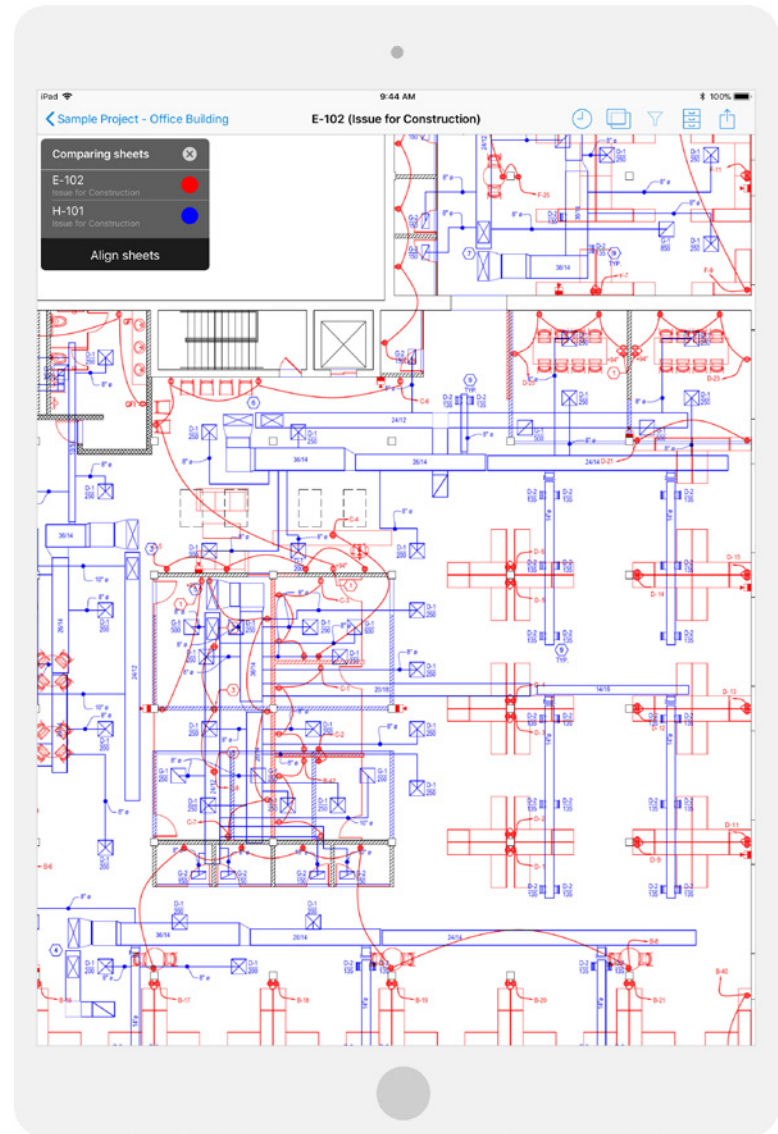
BRAND**STUDIO**

Custom Content. Targeted Results.

Industry Dive's Brand Studio collaborates with clients to create impactful and insightful custom content. Our clients benefit from aligning with the highly-regarded editorial voice of our industry expert writers coupled with the credibility our editorial brands deliver. When we connect your brand to our sophisticated and engaged audience while associating them with the leading trends and respected editorial experts, **we get results.**

LEARN MORE