



KLB
Construction:
How Apps
Make Digital
Transformation
a Reality

KLB: Using Apps to Manage Its Distributed Operations and Workforce

In Pursuit of a Digital Future



Going from paper to a digitally-driven environment is never easy but the benefits are clear: a more productive, innovative and empowered workforce, streamlined business processes and lower costs. Each industry is somewhat unique in its approach to digital transformation and construction is no exception.

Companies in this sector struggle with a number of specific challenges. Projects are complex and unique, requiring different teams, equipment, planning and so on. There is also a growing demand for environmentally sensitive construction, more and more safety regulations to adhere to and an ever-increasing mountain of paperwork to manage, track and deal with as issues arise.

Rolling out software solutions for multiple sites that are geographically dispersed is not easy. But there are good, cost effective solutions available. What is the most important decision a construction company must make as it pursues its digital future? **Buy versus build.**

On the surface, buy might seem the obvious solution. There are a number of construction management software solutions that address project and employee management, field operations, logistics, quality control and safety. But this can be a pricey endeavor since a construction company's work flow and processes are as unique as the job sites they work on. More often than not, out-of-the-box solutions must be customized to meet specific requirements.

Today, decisions to build are on the upswing as a number of vendors offering low- or no-code app development platforms have significantly reduced development and support costs. Many companies are standardizing on an app development platform, creating the apps they need in-house or through limited consulting engagements. The costs are typically much lower (approximately 20 percent compared to out-of-box solutions) as is the time-to-full-deployment (two months compared to eight to twelve months).

For companies in the construction sector, moving to a digital environment that includes real-time (and offline, due to site logistics) sharing of information for transparency and collaboration is imperative. Equally important: ensuring that the digital environment moves beyond the desktop to include mobile devices since most construction personnel work in the field and need to access information where they are located.

KLB and AppSheet: Case Study

There are many companies in the construction sector that have committed to digitization. Their efforts have resulted in higher productivity, lower costs and schedule overruns and safer work environments. One such example is Washington-based KLB Construction.

KLB Construction: Family-Owned, Committed to Safety and On-Time Projects

KLB, a Seattle-based company founded by Kelly Lynn Bosa in 1984, is a heavy-highway civil contractor that serves the Pacific Northwest. Still family-owned and operated, KLB has grown to over 250 employees.

KLB attributes its success to its ongoing commitment to meeting the strictest standards of safety, integrity and fairness. It has been widely recognized for important safety performance achievements by the Associated General Contractors (AGC) of Washington, WSDOT and other organizations.



Today, KLB is at the forefront of leveraging technology to not only manage and enforce safety guidelines and regulations, but to digitize workflow and processes.

Committing to a Digital Future: Buy Versus Build

KLB's digitization journey started with a simple goal: reduce the mountains of paperwork. Most of their processes were paper-driven with some digital information coming through email (with photos) as well as in the form of phone calls. All of this had to be recorded, processed and managed. This was a time-consuming task, made even more difficult as paperwork was siloed into different functions so that there was no single view of any issue.

Richard Glass, Director of Information Services, led the charge on the digitization effort. His first decision? **Buy or build.**

A survey of construction management software solutions highlighted feature and function deficits. According to Glass, "Mobile apps are lagging in the construction industry and it's underserved by technology. Things move faster than our technology providers can keep up with." Glass' main concern was user adoption. To be successful, apps needed to be adopted and used by field workers. "Off-the-shelf software typically does not represent how we do things. Being able to customize the app for our purposes makes it more user-friendly and more likely to be adopted by the field."

KLB: Using Apps to Manage Its Distributed Operations and Workforce

“Mobile apps are lagging in the construction industry and it’s under-served by technology. Off-the-shelf software typically does not represent how we do things. Being able to customize the app for our purposes makes it more user-friendly and more likely to be adopted by the field.”

— Richard Glass, Director of Information Services

Once the decision to build was made, Glass looked at a number of no-code development platforms and settled on AppSheet. “Getting AppSheet and having some basic knowledge of programming was a good way to get a head start making apps that are usable for our company.” Within a month, Glass deployed his first app, Field Management, which provides centralized access to KLB-specific data, such as job sites, personnel, vendors, etc., and acts as the hub for all of KLB’s construction apps.

User Adoption: Make It Easier Than Paper

With all the apps Glass created, user adoption was critical. It came down to a simple test: Each app had to be easier than paper. As Glass describes it, “If we can leverage the work that other people are doing, for example, the contracts person who knows all the jobs that are coming up, once the list is formed it’s available for people in the field. You are standardizing what people are documenting in terms of job names and numbers and you are not duplicating effort. So, if you’re on a job site and the names and numbers are pre-populated on the form, you’ve saved time for that person in the field because they don’t have to look those things up. If you’re logged into the system, we know who you are so you don’t have to put your name in, it’s already there. If we make it easier than paper, we increase adoption.” This is the litmus test that Glass used for all the apps he created.

“If we make it easier than paper, we increase adoption.”

— Richard Glass, Director of Information Services

Today, all information is collected, managed, and updated digitally, a tremendous productivity boost for KLB app users. Users can now access real-time information and proactively address issues as they arise at job sites or at corporate. An added bonus: Instead of sometimes spending more than an hour per day on paperwork, users have all the information they need at their fingertips. According to Aiesh Ragih, Senior Project Manager, “Before the apps, everything was 100% paperwork. We used to write daily reports using KLB forms, work orders—all manually. Apps have made all the managers more efficient.”

KLB and AppSheet: Case Study

"Before the apps, everything was 100% paperwork. We used to write daily reports using KLB forms, work orders—all manually. Apps have made all the managers more efficient."

— Aiesh Ragih, Senior Project Manager

KLB Construction Management Apps

Ensuring the accuracy of data is always important and when a number of apps share data, it's paramount to have a single source of truth. To accomplish this, KLB delegates "data responsibility" to the one person who generates the data. For example, the job list that is available in every app (read-only) is managed by the Contracts Administrator. She is the only person that can add a new job. Similarly, the Payroll Administrator is the only person that can add, update, or delete an employee. This data management function is accomplished through a number of Admin-type apps and helps streamline app functionality and eliminate data entry duplication.

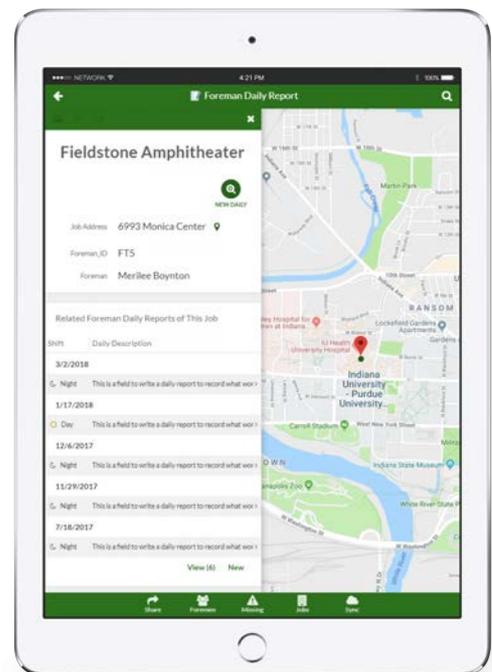
All apps can be accessed via smartphone, tablets, and the desktop. Being device-agnostic is important as some users do most of their work via laptop while others use tablets and phones.

Field Management

KLB's field management app is the master app that acts as a hub for all the other apps and provides centralized access to KLB-specific data, such as job sites, personnel, vendors, etc. In addition to acting as a central hub, the app also performs pit, logistics, and material management. It shows all the pit and job site locations to maximize efficiencies in terms of pickups and drop-offs. KLB can be working on more than 20 job sites at a time across the state and managers responsible for determining the best pit to use are responsible for more than one job site. For KLB, the logistics of where pits are located in relation to job sites makes for improved efficiencies and higher productivity—being able to digitally select the best "available" pit reduces the time spent looking for pit addresses, finding them on a map and then determining the one to use.

Daily Reports

The Daily Reports app is organized by job, providing a daily digital view of what is happening at a job site. This app replaces KLB's paper Foreman Daily Log, a triplicate log. With the app, the site foreman can stop by a job site and digitally fill out a daily report to record what work was completed, etc., with accompanying photos when needed. Back at the office, all the reports can be reviewed to get a clear picture of activities at all sites.



KLB: Using Apps to Manage Its Distributed Operations and Workforce

Reimbursements

The Reimbursements app manages expense reporting and reimbursement. Previously, KLB had a dozer box/mail box located at corporate headquarters. If you wanted to get reimbursed, you would have to drive to the office and drop off your expenses. Then, when a check was cut for the expense, you would have to drive back to the office to pick it up. This app automates the expense reporting and reimbursement processes.

Near Misses

The Near Miss app tracks and manages all information related to a near miss incident that is then used to re-enforce safety regulations, best practices and guidelines. Michael Holmes, EHS Director, uses near miss incidents as way to create teachable moments and ensure that safety is the paramount consideration on job sites.

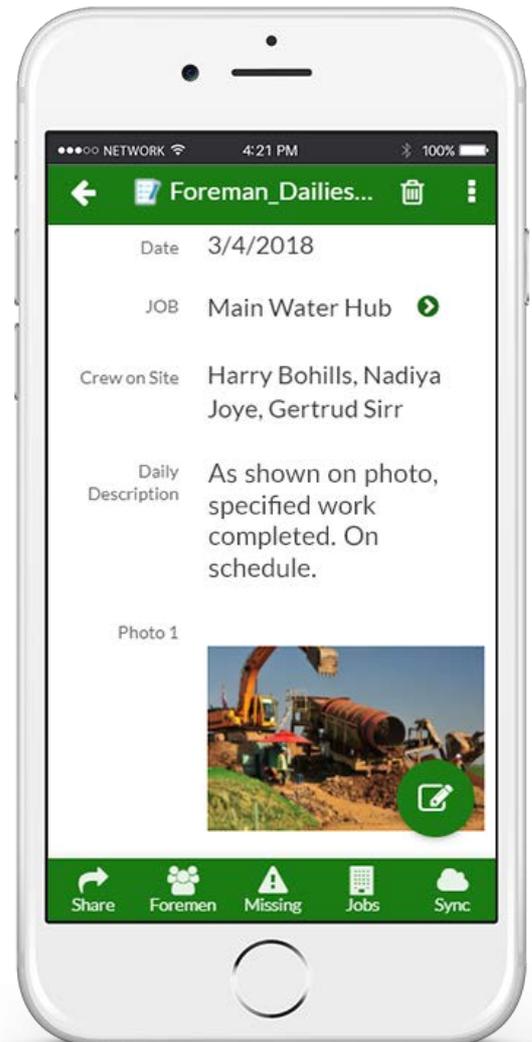
Incidents and Safety Alerts

The Incidents and Safety Alerts app tracks and manages all information to do with job site safety incidents, fully digitizing the process. Alerts everyone of a safety issue and provides all information related to it in one centralized location. According to Nicole Spry, Supervisor, the app makes her far more productive, "Before, if there was an incident, I would have to take notes and photos, go back to the office and fill out forms, etc., to report it and follow up with phone calls to verify everything. With the Incidents app, I can enter all the information."

This is Michael Holmes' most used tool. "Whatever the incident, this is our first reporting tool. I need it to do my investigation, as well as for L&I and compliance. When the issue happens, guys in the field can open the app, fill out the info, take photos, etc. I get an instant alert with all the info I need to do my job."

Moving Towards a Fully Digitized Environment

When it comes to building their own apps, KLB sees no end in sight. It continues to look for ways to automate work processes and digitize the paperwork required by federal and state regulatory bodies. Next up: tracking GPS coordinates on their trucking fleet so that they have real-time information on where every truck is located, whether it's in transit or at a specific site.



KLB and AppSheet: Case Study

Richard Glass and KLB were early adopters of AppSheet. Both companies have evolved—AppSheet in terms of platform features and functionality and KLB in terms of the number of apps, functionality and backend support.

In any industry, KLB could be considered a role model for digital transformation. For other companies in construction, Glass has the following advice: “Everything is starting to get connected and even companies in an underserved industry, like construction, are going to have to adopt to new technology. Larger companies have more resources and seem more willing but any size company can certainly look at building apps that digitize some aspect of their business processes. That’s how we started out and look at where we are now.”

KLB and the Northgate Link Extension

If you happen to live in the greater Seattle area and commute along the I-5 corridor, you may have noticed considerable construction activity near the Northgate Mall. The Northgate Link Project is an extension of the existing light rail service that serves Seattle and surrounding areas. This \$174 million project includes an elevated station at Northgate, a 3.5-mile tunnel that extends from Husky Stadium to underground stations in the Roosevelt and U District neighborhoods, an elevated transit station at Northgate, and a parking garage located adjacent to the station.



It is, by all accounts, a massive undertaking. Or, as Sound Transits describes it, the lynchpin of their North Link project (slated to begin service in 2021).

Unique Job Sites, Complex People and Project Management

There is a universal truth in construction: no project is alike. Each is shaped by the unique aspect of the site. Roads, tunnels, railway stations and buildings may seem similar but each project has distinct characteristics.

The Northgate extension is no exception. It involves dozens of subcontractors and extremely complicated project management milestones and timelines. As the general contractor, Absher Construction is in charge of managing the subcontractors, ensuring that milestones are met and handling the diverse challenges that arise.

KLB: Using Apps to Manage Its Distributed Operations and Workforce

KLB Construction Does the “Heavy” Lifting for the Northgate Extension

On the Northgate extension, KLB is responsible for mass excavation, grading, MSE wall construction and wet utilities, including:

- Mass excavation (150,000 bank cubic yards) for driller access, excavation and facing for the soldier pile lagging walls for the parking garage and structure excavation.
- Excavation and installation of eight large storm water flow control/detention vaults and tanks with a combined capacity of over 700,000 gallons.



Coordination between the contractor and subs is complex when weather and other variables are stable and can get extremely complicated when environmental factors are not as expected. Equipment may fail. Excavation work may run into unanticipated issues. While safety is always of primary importance, the size and scope of this project as well as its close proximity to public spaces (the Northgate Mall and I-5 corridor) means more than strict adherence to all guidelines and regulations. For example, non-construction site visitors are cleared and approved for tours, given a short class on

safety and made to don specific safety gear before touring the site. Throughout the tour, site visitors should expect to be questioned more than once by other subs or the main contractor on who they are and why they are touring the site.

For KLB, sites like this are the norm. The difference between today and five or ten years ago is how much more productive and efficient they are due to their automation and digitization mastery. Moving from one app to many, selecting specific functional areas to focus on, and, once adoption is secured, moving on to the next area and doing it over again are hallmarks of a successful digital transformation. KLB is certainly at the forefront of construction’s digital transformation.

KLB: Using Apps to Manage Its Distributed Operations and Workforce

Q and A with KLB's Director of Information Services, Richard Glass

What's your most important AppSheet feature?

"We've had an evolution with apps. The growth in AppSheet's backend support of different data sources has helped us to grow—we started with Smartsheet, then Google Sheets, and now have a MySQL custom database. AppSheet's ability to handle larger and larger data sets has made it possible for us grow in the use of apps. Our next big push is to track GPS coordinates for our trucking fleet—those data sets are millions of rows and AppSheet can accommodate that."

What are the tips you would give a new app creator?

"I would say start with the backend. If you're using Google Sheets decide on all the tables you want and how you want them to connect. Understand the one-to-many and many-to-many relationships as these are important. Watch a video on this concept and it will help."

How do you determine your next digitization project?

"The litmus test for us is that it has to be easier than paper. If we can leverage the work that other people are doing, for example, the contracts person knows all the jobs that are coming up and once the list is formed, it's available for people in the field. You are standardizing what people are documenting in terms of job names and numbers and you are not duplicating effort. So if you're on a job site and the names and numbers are pre-populated on the form, you've saved time for that person in the field as they don't have to look those things up. If you're logged into the system, we know who you are so you don't have to put your name in, it's already there. If we make it easier than paper, we increase adoption."



How do you see the construction landscape in terms of digitization?

"Larger companies are starting to adopt a digital strategy. Smaller companies (like subcontractors in demolition, landscaping, etc.) less so, but everyone is being affected because there are more paperwork requirements on job sites."

"Everything is starting to get connected and even an underserved industry like construction is going to have to adopt new technology to stay with the curve. Larger companies have more resources and seem more willing. KLB is already an early adopter in construction technology and that has made us far more efficient and productive."