



# Don't Get Stuck in a Construction Technology Silo

*Optimize and future-proof your construction tech stack  
with tools that play well together.*

## **Construction is more digital than ever. But in an industry filled with specialized jobs and tools, tech stacks can quickly become unruly – unless they integrate.**

As recently as a year or two ago, a one-size-fits-all software solution was viewed as a smart investment for a construction firm looking to digitize.

But a lot can change in a short amount of time. Labor shortages, remote work, stakeholder demand for simple digital interactions, shifting budgets and the ever-present demand for efficiency and productivity have pushed firms toward specialized software solutions: optimized tools that improve specific parts of a construction project workflow.

No matter what you're working on, from field scheduling to geo-analysis, there is a software solution that can help it run better. The problem construction firms are facing now, however, is getting all this new technology to work together.

This means as you zero in on the different parts of your workflow, you must consider how your tools will communicate – and how they can unite as part of a broader construction ecosystem. In short, you must be able to answer one simple question: How can we integrate everything to work as one streamlined system?

In this helpful guide, we discuss the benefits of doing just that, including the importance of open integration – a keystone of future-proofing your tech stack.

We'll cover:

- Benefits of connected construction
- An example digital workflow
- The build vs. buy question

***Construction firms must figure out how to get all their specialized software working as one cohesive ecosystem.***

# THE AGE OF CONNECTED CONSTRUCTION

**One piece of technology simply can't solve all of your construction workflow problems. That's why firms are optimizing their tech stack with tools for specific construction functions – and why these tools need to connect.**

*Deloitte's 2022 Engineering & Construction Industry Outlook* touts this year as the year of connected construction – a shift that brings people, processes, assets and job sites onto one platform, making everyone and everything work smarter.

But this doesn't mean going back to a one-size-fits-all approach. Rather, this is all about creating intelligent workflows between best-of-breed solutions through open integration capabilities.

A closed system that doesn't want to integrate with other tools greatly limits your efficiency and productivity potential. When data is siloed across roles and systems, its power to drive meaningful action is hindered. Integration capabilities enable data to flow exactly where it needs to be without further human intervention.

**“In 2022, connected construction will likely be a catch-all for major digital investments to connect, integrate, and automate operations and bring the entire value chain onto a secure, intelligent infrastructure.”**

– *Deloitte 2022 Engineering & Construction Industry Outlook*

Here are the top benefits of digital workflows powered by integration capabilities.

## **1. Increased Efficiency**

Digital workflows create seamless and reliable internal and multi-company processes. In an industry with tight deadlines and a lot of moving parts, the more efficient your processes – the better.

## HOW DIGITAL WORKFLOWS BOOST EFFICIENCY

- Eliminate redundant administrative work.
- Save time from sifting through data spread across emails, PDFs, spreadsheets or paper files.
- Get more done in less time, accelerating construction schedules.

## 2. Increased Productivity

Increased efficiency naturally translates to increased productivity. People can only do one task at a time. Every number entered into a spreadsheet is a non-zero number of seconds or minutes. Every non-value-added task manually completed is a value-added task that has to wait. So, when processes are more efficient through digital workflows, construction employees are empowered to do more with the same (or fewer) resources.

## 3. More Informed Decision Making

Construction stakeholders are calling for an increased need for rapid and more informed decision-making to meet project deadlines. This is especially prevalent in the field. But improving decision-making requires accurate, complete, consistent and timely data.

Accurate, complete, consistent and timely data is only possible through integrated, digital workflows. Any piece of data that has to be manually exported and re-imported somewhere else to inform the next step of the construction workflow is at risk of corruption – whether mistakenly mistranslated, missed, or lost.

An integrated workflow enables business partners to automate inter-enterprise operations, capture real-time visibility, leverage leading-edge software capabilities and share clean and accurate data that they can leverage fast in order to make more informed decisions and promote certainty of outcomes.

## 4. Improved Ability to Predict & Mitigate Risk

On a similar note, having access to accurate, complete, consistent and timely data helps construction stakeholders get ahead of any issues in real-time

According to a [2020 Autodesk & FMI Report](#), bad data as a result of manual, unintegrated processes and human error may have caused \$1.8 trillion in losses worldwide. However, only 36% of construction stakeholders have implemented a process for identifying and repairing bad data. This means, more often than not, construction firms are unaware of unusable data – and the risks that the data would reveal – until it's too late

An integrated, intelligent system of tools that communicate smoothly with each other unlocks data in a usable, predictive manner. Project stakeholders can get real-time updates on potential problems and proactively mitigate risk.

***30% of construction stakeholders have said that over half of their project data is unusable.***

“Harnessing the Data Advantage in Construction” – Autodesk & FMI Report

## 5. Improved ROI from Technology Investments

Finally, when all of your technology investments work together, you're able to not only make the most of each specific tool but also improve the construction project workflow as a whole – maximizing ROI from your tech stack.

Qualitatively, the frustrations of trying to manage the data flows in and out of multiple systems will be no more. You can spend more time and energy on continuously improving your process instead of feeling bogged down by your technology. This pays off quantitatively, too – because you don't have to spend as much time and money on replacing or developing tools and processes to accommodate a closed system.

*So, what does this tech stack really look like? Let's look at an example.*

### AN EXAMPLE WORKFLOW: CONSTRUCTION MATERIALS TESTING

**Construction materials testing is an essential part of the life of a construction project, but a key portion of the workflow is often under-served by technology tools. Let's look at how integrated tools can connect the dots and provide the above benefits.**

Information from the field informs work at the lab, which informs important next steps for the project back in the field. Within this workflow, there are a number of tools at your disposal from field data collection to project management. But there's a gap when it comes to direct testing in the lab.

For concrete strength testing specifically, a typical CMT workflow looks like this:

1. Field technicians capture sample data and conduct field tests on samples.
2. Field technicians cast specimens and have them transported to the lab to cure until testing.
3. Lab technicians test cylinders at 3, 7 and 28 days.
4. Lab technicians record results from the machine and later key them in their LIMS.
5. Engineers review, approve and sign reports and distribute them to other stakeholders.

In a manual or semi-automated workflow, each step requires someone to manually key data or import/export data for the next step in the process.

For example, it's up to the technician to verify that the specimen being tested was the right one on the right date. It's also up to the technician to record the right results in the right place. When it comes to report approval, engineers rely on manual communication to alert stakeholders when a report is ready for the review process. Then, the report approval process can involve additional inefficient, untracked tasks such as emailing, moving files between shared folders or even delivering printed documents.

How can you close this gap?

## INTEGRATED CMT SOFTWARE

Integrated, cloud-based CMT software consists of a private cloud-database, an interface for accessing and communicating with that database, a way to integrate everything with your lab's automatic testing machine – and your organization's broader tech stack.

This type of solution automates how data moves through the material testing process and better structures and secures data forever.

For example, field technicians can capture sample data and claim and locate specimens on site and sync that field reporting data with the lab. When a specimen is ready to be tested, the machine – automatically loaded with field data – “knows” what's it's testing, preventing specimens from being tested on the wrong date.

After the test, results automatically flow to reporting software. When it's time for report approvals, project stakeholders can get real-time text or email notifications of any lab updates, problems or next steps, making the entire workflow faster and more actionable.

This one tool sits at the heart of the CMT workflow, connecting the chasm between field and lab testing while integrating with the broader project tech stack.

***For a niche yet important part of the construction workflow, this begs the question: should you build it or buy it?***

## CONSTRUCTION SOFTWARE: TO BUILD OR BUY

**As you look to specialize and optimize your tech stack, you might be thinking: “I can just make these tools myself” – guaranteeing that the solutions will work together. Not so fast.**

There's a tendency to dismiss purchasing specialized software for niche solutions within the larger construction workflow. The question gets asked: Why make the investment when you can just develop a solution in-house or with a third-party developer?

Here are factors to consider when debating building versus buying:

## 1. Time

Saving time and redirecting your organization's limited resources to higher-value tasks is typically the goal of optimizing your construction workflow. So, spending even more time developing solutions in-house can be counterproductive.

Someone else with software development skills has already invested the time to develop a specialized tool, which means you don't have to. And the development costs have been spread across a broader market, making the ownership cost less than what you'll pay. Take advantage of that!

## 2. Costs

In-house or third-party software development also requires a huge financial investment. A single application can cost anywhere from \$50,000 to \$250,000, just to start, and many times, much higher by completion. It's a slippery slope. Costs include:

- Hiring or expanding your in-house IT team (or paying for a third-party developer).
- Buying software licenses and hardware for developing, testing and QA of the solution.
- Buying tools to manage code and integrations.

Compare this to a simple subscription model that costs a few hundred dollars a month or few thousand a year to license and use – without all the baggage that in-house development comes with.

## 3. Maintenance

The initial time and financial investment required by in-house or third-party software development is one thing. But, then there's ongoing maintenance that further adds to costs.

After the solution is developed, you are responsible for maintaining the software, fixing bugs, managing data security and hosting, and upgrading features over time.

And you have to keep pace with changes in the market. If it's your home-grown system, you can quickly be faced with a legacy dinosaur that prevents your business from being as nimble as it should be.

In short, when you choose to build your own tools, you've added a completely new and resource-intensive workflow to the very workflow you're trying to streamline.

*Convinced? Here's what to look for in a system.*

## BUYER'S GUIDE: CAN YOUR TOOL INTEGRATE WITH OTHER SYSTEMS?

**Whenever you buy software, you must evaluate its capability to integrate with other systems. It should be able to adapt to any new systems or changes down the line. Ask yourself the following questions to determine if your software of choice is future proof:**

- Does the inherent design allow for a native integration or two-way sync? (Flat files don't integrate)
- What is the current range and depth of integrations available in the software provider's portfolio?
- Does the provider offer integrations with other products and software your firm already uses?
- Does the solution provider have an open API? Is it behind a paywall, or is it readily available to customers and partners?
- Does the provider offer setup or roll out support for the integration?
- What is the solution provider's road map for future integrations?

These questions should be painless. If the solution cannot be easily integrated into your existing process and systems, it's not going to help you. The road map for future integrations is especially important. If things change, will this software be able to adapt?

At the end of the day, you want to look for a solution that doesn't need to change every time other dynamics in your company change. For example, if you decide to move to a different LIMS down the road, you shouldn't have to deconstruct your entire workflow to make that possible.

## CONCLUSION

Technology is only as good as it is usable. When you introduce new software into your construction ecosystem, it should transform your process – not make it more difficult to get the work done. The ability to integrate puts your technology to work, allowing information to sync and flow freely between multiple systems, such as field applications, LIMS, accounting systems and more.

The testing piece of the CMT workflow is a great place to start. ForneyVault, integrated CMT software, improves efficiency and productivity in the CMT workflow while also fitting into the greater ecosystem of a construction project.

*Bottom line: As you optimize your tech stack, look for tools that play well with others so you can realize maximum efficiency and productivity.*