BuildCentrix

CONSTRUCTION IN THE CLOUD

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United Mechanical Inc.
The ABCs of APIs
Managing Construction Data

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BuildCentrix

A WORD FROM THE PRESIDENT

HAVING YOUR DATA AND REPORTING AND EATING IT, TOO

Data is only useful when it is structured to answer the right question for the right person at exactly the right time. In most businesses data serves two masters: accounting and operations, and accounting has long dominated the relationship.

When it comes to data and reporting in the construction industry the vast majority of the time the focus is solely on accounting/financial. Of course, this makes a ton of sense; after all, accounting is really all about history the story of what happened, not what's happening, which is more operational in nature. When it comes to construction, waiting for history to play out can mean the difference between profit and loss. Today, progressive companies are looking for a more robust dataset focused on operations to create real-time operational reporting to help keep projects in the black.

Since construction data has been traditionally gathered for financial purposes it has to be bent, twisted, and re-compiled to try to find answers to operational questions. This takes time and costs money, and typically, by the time the answers come out the fate of the project has already been sealed. Furthermore, most of the accounting/enterprise resouce planning (ERP) based software is unfriendly for average users resulting in high levels of user resistance and data bereft of critical operational information. Many construction managers will even go so far as to say the company they work for is really an accounting company that just happens to be in the construction business. Luckily, like all things in the construction industry technology is changing and closing the gap between accounting and operations.

The BuildCentrix platform allows businesses to keep their systems and reporting for financial purposes while adding a new layer of real-time operational reporting to help stakeholders react faster to keep projects on time and on budget. Creating technology that sits between the people actually building a project and the people tasked to the accounting/finance side of the project allows two critical things to happen: administration costs of accounting and finance are reduced, and specialized real-time operational reporting creates actionable items to keep projects on time and on budget.

BuildCentrix helps clients create and manage a more robust and complementary dataset to allow everyone on their team to get the data and reporting they need to do the job they are hired for, in the most effective and efficient manner possible. ▪

UNITED MECHANICAL INC.

An impressive legacy moving into the digital age

By Jessica Kirby
Photos courtesy of United Mechanical

United Mechanical has offices in San Jose, Alameda, and Rohnert Park, and completes projects of various types all across the Bay area. The company has grown an impressive legacy over its 16 years in business. United Mechanical specializes in commercial HVAC, plumbing, service, and pipefitting, commanding a team of 450 employees as the third largest HVAC company in the Bay area.

A company doesn't grow and succeed over nearly two decades without a sense of innovation and a willingness to try new things. United Mechanical was one of the first HVAC companies in the region to equip its field personnel with iPads, a decision with roots in productivity and efficiency.

"We did this to simplify our ordering process and to help facilitate communication between the field and the office," said Ezekiel Palma, sheet metal worker at United Mechanical. "This streamlined our ordering process considerably and helped us to maximize production."

Prior to digitizing its key working processes, the company was completing its ordering and other business mainly by hand with manual entry. In 2014, United Mechanical implemented the BuildCentrix ordering, CAM integration, and production management modules, which changed these processes forever.

"Prior to BuildCentrix everything was hand-drawn and hand-ordered," said Palma. "This led to a lot of misinformation and lost tags, which in turn caused us to spend hours contacting our foremen and clarifying cut sheets."

It didn't take the team long to recognize this was a place where technology could have a big impact without disrupting the business process.

"We wanted to simplify our ordering process and reduce the number of calls we made," said Palma. "Another big factor was standardizing our fittings company wide and reducing the time-consuming custom fittings we received before."

Implementing BuildCentrix meant field ordering became a streamlined and self-correcting process. Because fittings are selected from a pre-determined SMACNA-approved library, there is no way for field foremen to submit misdrawn or mismeasured items.

"Further," said Palma, "once we integrated BuildCentrix fittings with our CAM software we greatly reduced the amount of time it took to process our orders, especially when it came to PractiCAM. We are able to set up rules to automate most of the process, and this has greatly simplified our process."

One area that presented a bit of a challenge for United Mechanical was the initial learning curve. Some of the company's more experienced workers needed basic computer training before they could get started learning and using the BuildCentrix software.

"We went through a few revisions on the database that caused some uproar," said Palma. "But now that everything has been set for a while, everyone seems to be managing well."

Moving forward, Palma said it is only a matter of time before every company will need to adopt this type of technology to stay competitive and at the top of the productivity and efficiency game.

"We try and promote BuildCentrix at every turn," he said. "More and more things are moving to the digital realm and to keep up with the competition we need to keep improving our productivity. There is an increasing demand for hard numbers and accountability in our trade." ▪

Visit United Mechanical online at umi1.com/. Learn more about BuildCentrix at buildcentrix.com

The ABCs of APIs

How mechanical contractors can leverage API technology to connect internal software and legacy services.

By Joe Perraton

Are your eyes glazed over yet? Are you thinking, "Here we go, another tech guy making me feel stupid, talking about something waaaay outside my wheelhouse"? Well you're wrong. Okay, mostly wrong. I'm not here to talk tech; I'm here to talk about simple ideas and concepts that will have a huge net positive impact on your contracting business. Yes, you'll need tech guys, but they just have to execute your plan and they can geek out all they want.

What's an API anyway?

API stands for Application Programming Interface. Simply put, APIs allow internal and/or external applications to communicate with one another. So, if the job name and number data stored in your accounting software is sent to your mobile timecard application, it does that using an API.

Why do I care?

While your internal accounting, enterprise resource planning (ERP), and other systems power your office operations, mobile computing powers the rest of the world. Getting important data out of internal systems and into the mobile environment saves businesses untold amounts of time and money. Using APIs to interact with outside services can also help extend the life of existing internal software. If and when you do need to switch or upgrade these systems APIs help to minimize the impact of these changes on your operations by providing a layer of technology between internal and external systems.

When you're dealing with lots of data and lots of different software and systems APIs make it possible to securely share data from a single source. For contractors, this data can be as simple as job names, numbers, and phases or as complex as material ordering and payroll data. APIs provide an added bonus, since you don't need to upgrade or change your internal systems, such as accounting or ERP to integrate data to other services or programs.

How does it work?

APIs allow you to safely get data, like job numbers and job statuses, from a trusted central source, like accounting, and populate other programs and online services so everyone is using the same data. This means all job data used by other services will be the exact data used in your accounting or ERP system. So for example, as soon as job ends and is closed off in accounting, all other services using that API, such as timecards and material ordering, will be updated and users will no longer be able to book time or materials to that job.

Connecting to an API requires programming some middleware between the businesses internal systems and the service provider's public API. Some mechanical contractors will have internal resources to build and maintain their own application; others will contract the work out to a local technology firm. The middleware extracts only the data needed from internal systems, then posts it to the vendor's API, which then syncs up the two data sets. This process can be automated and executed as frequently as required. Contractors with lots of employees and/or lots of small jobs may do hourly updates and others may do daily updates depending on their circumstances.

Not all APIs are created equal

A strong, well-built API is critical for long-term stability and success. Here are some key elements to consider when evaluating vendor APIs:

1. Backwards compatibility - As technology and businesses change, so, too, will data requirements and functionality. A well-built API provides stability and adaptability for implementation requirements.

2. Documentation - A good API needs good documentation. OpenAPI (Swagger) provides a strong user-friendly platform and vendors should include detailed documentation to support rapid implementation.

3. Communication - API integrations are a partnership between your technology team and your service provider, so having a good relationship and good communication are important for long-term success.

The bottom line

The goal of API integration is to get everyone on your team the information they need whenever and wherever they need it. Properly implemented, it will lower administrative costs, reduce errors, and improve efficiency. Leveraging API integration makes contractors more agile and responsive to future technology without sacrificing the existing software systems they need to complete projects on time and on budget. ▪

DRONES TOPPING THE LIST IN CONSTRUCTION-SPECIFIC TECHNOLOGIES

The days of manual inspection are rushing to an end as UAVs (drones) move in to the top spot in the list of ways technology is improving the construction process. Drones conduct accurate and quick surveys of land, jobsites, and building systems in a fraction of the time and with undoubtable precision. Here are some other ways they are revolutionizing jobsites and the way we work.

Robust communication: Drone technology means constant connectivity between the site and management office. Those with cameras bring real-time data to all aspects of the site, and help keep record of activities, employees, and materials.

Improved productivity: The technology's ability to collect and manage data means workers and management can more easily collaborate, meet deadlines, and save money. They take on the risks in some applications and can allow contractors the ability to bid more jobs and complete them faster.

Increased safety: Ubiquitous surveillance means workers are kept in view at all times, making jobsites safety and providing 24-hour security. Incidents of vandalism and theft are recorded and the need for workers to enter dangerous areas is dramatically reduced.

Transportation and Inspection: Drones can actually move materials and items around the job site, again reducing time and increasing productivity. Keeping an eye on everything that leaves and enters the job site is a bonus in helping monitor materials and labour movement. ▪

APIs: FUTURE OF CONSTRUCTION

At first glance it might be easy to dismiss a term like Application Programming Interfaces (APIs) as the kind of technical jargon that only software programmers might get excited about. However, the implications of 'the API economy' could barely be less significant as organizations increasingly digitize and become data driven. In some industries it has even disrupted whole business models and become a regular board room topic.

An API is essentially a means by which different software applications can talk to each other, like a digital glue that can bond disparate systems and services together. If you have wondered how you can sign up for a new app or website with your Facebook ID rather than entering all of your personal details again, then it is down to APIs. Or perhaps to track a package you simply click a URL in the vendor's email and it takes you straight to the information in the delivery company's website without any re-entry of addresses or delivery ID. The YouTube video embedded on a web page, current weather conditions beamed to the home screen on your mobile phone, and price comparison site matching your details to a host of vendor prices in seconds. All made possible by the humble, understated API.

Open the gates

Software vendors are now realizing that their products need to communicate with others. For example you may wish to create a recipe that automatically switches on the home central heating when your car calculates that you are 30 minutes away. The largest benefits, however, are reserved for organizations, where slow and error prone manual handling of information can be replaced by seamless, automated work flows. But what does this all mean for construction?

Plug in to productivity

The construction industry is highly fragmented and this creates inefficiency. Productivity has barely moved in 20 years and if you can make profits of just 2% then you are doing well. Add to this the fact that the overhead of a major capital project can often represent 20-25% of the total cost, and there is clearly room to divert money from the desk back to the site.

Advances are already being made with the deployment of BIM. Asset information is assembled from a variety of systems and surfaced to a mobile app or other medium via APIs. This makes a wealth of information available at the user's fingertips without the need to gather and integrate information manually. But there are all manner of other ancillary business processes that lend themselves to automation, not least the administration of contracts, in particular the kind of standardized forms of contract found on large infrastructure projects.

Reasons for APIs

Jealously guarding one's information in a walled garden is on its way out while sharing in a controlled, selective, and secure way is on its way in. It may take a while in an industry that is traditionally fragmented and adversarial. But the good news is that everyone stands to benefit.

Read more at https://www.ibm.com/blogs/insights-on-business/manufacturing/api-days-ahead-for-construction/. ▪

3 STRATEGIES FOR IMPLEMENTING LEAN CONSTRUCTION PRINCIPLES

We know what lean means (increasing productivity and efficiency), we know what it does (evaluate and streamline systems), and we know the benefits (more money, happier staff, and more sustainable workplaces). Once the business of forward-thinking, avant guarde companie, today nearly everyone has their hands in lean in some small way whether they know it or not.

Lean construction is in its own, special realm of possibility because it represents the perfect marriage of people power and

material output. Driven by teams working in tandem, construction is a highly complex, working machine that requires just the right balance and constant adjustment to make everything run smoothly. This is where lean really gets exciting. Overview any one component of a project team – designers, general contractor, subtrades, even regulation bodies – and discover any number of ways to tighten productivity and raise the bar. So, how to get started? Read on.

Waste is your Nemesis

Essentially, the enactment of lean means the elimination (or at least mitigation) of waste. But before you can change waste, you have to study, analyze, explain, and prioritize its parts and causes. What is its role? Where does it come from? Who or what is responsible? How much time does it take to manage it? In lean-speak, if it prevents a project from moving forward, it is waste. If it slows down progress, it is also waste. But it is never about one single thing. Study each process, the waste's ancillary processes, and start there for small things to change and experiment with in order to shift the waste stream.

No Silver Bullets

If there is one thing construction is known for, it is rigidity. Resistance to change is eroding as the industry demands it, but people don't change overnight. In implementing lean, there is a certain commitment to longevity required. There are no quick fixes that will completely change the game in a heart beat. There is no single way to solve a problem. There are no silver bullets. If lean is your mission, start planning trials and what to do with the errors. Develop and share the plan with your team so everyone is on board and ready to wait out finding the right solutions for you. Larger projects require more pre-planning, so leave time. Once you teach yourself to commit and be patient, it will become second nature and success will fuel momentum for more success.

All In Operations

It is easy to look at the field for improvements. It makes sense that if production is creating waste, the answer lies in streamlining production. If field orders are time wasters, address the field personnel. However, never underestimate the contribution management makes to leaning up a business. The lean way is an all-in way and it is as weak as its least productive part. Be sure your lean plan addresses management and ownership as well as the people in the trenches. This ensures an holistic approach to streamlining and builds a sense of communal teamwork when everyone is doing their part. ▪

HOW BUILDING INFORMATION MODELING IS OPTIMIZING CONSTRUCTION

Building Information Modeling (BIM) is driving economic growth and productivity enhancement in the North American construction industry. This technology leverages real-time, fully accessible data to help constructors develop more efficiently, in more sectors, and in less time. Most notably, construction crews, previously individual to each trade or specialization, have evolved into high-functioning construction teams, thanks to BIM.

BIM software helps create digital models of construction projects, which serve as a central storage area for project information including design, planning, materials, and even labor. The material is accessible to every team member and input is shared across the team, ensuring up-to-the minute data fuels every decision.

Technoogy like BIM and other automation, lean, or mobile technologies aimed at streamlining key processes mitigates the drain of errors and miscommunication, and leaves craftspeople free to do what they do best—construct buildings. Managers and office staff have a clearer and searchable database of figures and progress, and building owners can see what is happening on every level at any given time.

A report by Dodge Data & Analytics finds that large percentages of contractors are using BIM to improve their operations, including 93 percent of HVAC contractors, 91 percent of plumbing and piping contractors, and 88 percent of structural fabricators in the United States. Contractors can attach estimated costs and scheduling information to the model in order to show architects and project managers the cost and time it will take to bring their visions to life.

BIM isn't actually new—after over a decade its use has proliferated and its functionality has improved tenfold. BIM ensures a collaborative model, meaning as team members plan and coordinate their scopes, the overarching data is updated so everyone is using the same information. Because all documentation and paperwork attached to a project is collected in BIM, everything is at every team member's fingertips. And because BIM runs live, plans, changes, and progress can be tracked and shared without lengthy meetings and phone calls. When the project is over, the BIM file becomes an archive for future study, improvement analysis, or long-term system evaluation or monitoring.

A study by Autodesk on the impact of BIM in modern construction confirms that more than 80 percent of respondents had a positive return on their investment in BIM software, while another 14 percent at least broke even. Respondents who were using BIM for more than 50 percent of their projects reported improvements to coordination of materials, quality/performance of buildings, schedule control, and reduced project error. Additionally, the study found that BIM was helping a small percentage of firms improve ROI by reducing IT costs.

What are you waiting for? Leap into BIM today and change your projects forever. ▪

Photo courtsey of PSF Mechanical Inc.

Lean construction technology for mechanical and HVAC contractors

BUILT FOR YOUR INDUSTRY

BuildCentrix is a modular multi-trade platform built specifically for integrated mechanical and HVAC contractors.

ALL THE TOOLS YOU NEED, NONE OF THE HASSLE

100% cloud-based, with integration points for accounting, ERP and fabrication software provide you with a high return on investment without sacrificing the power you need in the field, shop and office.

Call us toll Free at 1-855-932-3828 for a free trial or email support@buildcentrix.com

See it for yourself. Visit **www.buildcentrix.com** to schedule an online demo today.