# BuildCentri (

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April 2019

USING TECHNOLOGY TO RESPOND TO MARKET FORCES

**30 SECONDS, 3 FEET, 3 MEGABYTES** 

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In lean, everything you need should be within 3 feet or 30 seconds. But if you want to take it up a notch, don't forget 3 megabytes.

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JESSICA KIRBY, Editor jkirby@pointonemedia.com

POINT ONE MEDIA INC., Creative Services artdept@pointonemedia.com

COVER Courtesy of Silicone Valley Mechanical

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## BuildCentrix A WORD FROM THE PRESIDENT

#### **CONNECTING PEOPLE IS JOB #1**

The future of technology for the construction industry is all about turning construction into manufacturing. Artificial intelligence (AI), data visualization, machine learning, and the Internet of Things are the new technologies that will be empowering the transformation from building a building to assembling one. These technologies are all about creating and crunching terabytes of data to increase the speed and lower the cost of modern buildings.

Right now some contractors are investing in gathering data from myriad sources to start using this new technology. It's a timeconsuming and tedious process, but it allows businesses to start using the data to find areas of improvement and better monitor the lifecycle of a project. It also helps them learn and understand how to apply modern manufacturing principles to the construction process.

While this is a great place to start proving the value of this type of information, it is just as important to focus on connecting the people who create the information in the first place. Doing so will reduce costs and the time required to consolidate data while simultaneously reducing errors and increasing efficiency. If everyone involved in a project is always connected to it when they are creating a transaction, whether it's a material order or recording labour, wouldn't the cost of the data drop and wouldn't project reporting truly become real-time?

Connecting people, materials, and labor directly to a project model and its phases is what will change construction to manufacturing. AI, data visualization, and machine learning are tools that will help make it possible, and they are all based on crunching the data people create every workday. Taking the time to actually connect your people will provide a muchneeded cost and time savings today as well as the foundation contractors will need to navigate a changing construction industry. •

# 5

# USING **TECHNOLOGY** TO RESPOND TO MARKET FORCES

#### By Jessica Kirby Photo courtesy of Silicone Valley Mechanical

Silicon Valley Mechanical (SVM) is a mechanical contractor located in the Silicon Valley, serving an area reaching from South Bay to the Peninsula. The company fabricates and installs complex HVAC and plumbing systems in various building types, ranging from commercial uses to high-tech facilities, and including educational and high-density residential clients. SVM specializes in true design-build, taking on the most complex tenant improvements, clean rooms, laboratories, and data centers. It also runs a 24-hour emergency service team.

The company has experienced incredible growth over the past five years, employing over 750 employees consisting of 650 field and production union members and 100 office personnel. When SVM first implemented BuildCentrix, it was a team of 100 field and 15 office employees, but management saw growth on the horizon.

Silicon Valley Mechanical currently uses BuildCentrix's field ordering and timecard modules. That means field personnel can use live, database-driven ordering to select components from an extensive library of SMACNA standard components and fittings, and digitally enter hours worked in a fraction of the time it would take to record them manually. Prior to using BuildCentrix, SVM did its ordering and time tracking by hand. "To order, our field would send hand-drawn fittings on cut sheets, which then had to be entered into the system," says Jeremy Day, field operations manager for SVM. "This took a lot of time for the inputter and left a lot of room for error."

The BuildCentrix implementation means components are selected from a library and parameters on the system ensure nothing can be constructed outside of SMACNA's stringent fitting standards.

The timecard installation was successful for similar reasons. "We used a combination of Excel spreadsheets and handwritten forms that were then entered manually into our payroll system by the our payroll team," says Hannah Monteiro, administrative operations manager for SVM. "Approvals by our superintendents took more time, job costing errors were easily missed until payroll entered the information, and the overall time to process payroll was significantly higher."

The BuildCentrix installation has changed that process so personnel can enter hours worked from a digital device, and the information is integrated seamlessly with the company's payroll system.



From a production standpoint, BuildCentrix has improved communication between the field and shop, eliminated the time wasted deciphering incorrectly drawn fittings, and reduced time spent reviewing orders for accuracy and errors. "Now, the employees report their time directly using a tablet, which has replaced the need to create, fill out, and manage manual forms," says Monteiro. "Our superintendents now spend a fraction of the time approving their teams' hours by using the BuildCentrix upload feature."

As a tech-savvy, forward-thinking company, the decision to use BuildCentrix to automate these key processes wasn't a difficult one, and in looking back, the implementation occurred at just the right time.

"We had just over 100 employees at the time, so the implementation was not difficult," says Monteiro. "There was a learning curve for each employee, but they all accepted the program after one or two training sessions."

Day and BuildCentrix's vice-president of operations James Beveridge are currently working on taking the data collected from the field ordering and payroll modules and implementing it to help measure how many pounds of metal are fabricated per hour, which will help measure and assess the company's productivity rate. "We look forward to seeing more integration with third-party vendors, such as Vista and CAMDuct in the future," says Monteiro.

"I don't have the time to sit down and review long reports, let alone build them," says Day. "As SVM focuses on improving efficiencies, we need fast and powerful reporting. Being able to look at visual reports like what BuildCentrix offers gives me real time data in a format that easy to digest. We can take that information to set benchmarks and look at improving productivity."

As a company that has experienced exponential growth over the past five years, SVM is in the best possible position to benefit from a program like BuildCentrix because it saves time and costs and frees up company staff to do the things they are best at. This is a growing trend in full-service mechanical contracting firms keen on responding to market forces.

"Without a program like BuildCentrix, we wouldn't have the competitive edge to meet SMACNA standards in a cost effective timeframe while reducing manhours spent on administrative tasks," says Monteiro. "You have to figure out how to minimize time spent doing things that take away from the quality of your work.

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# 30 Seconds

By Joe Perraton

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### LEANMANUFACTURING

works on one simple rule: everything you need to do your job should be no more than 30 seconds or 3 feet away. This means workers are their most efficient when everything they need is at their proverbial fingertips. No wasted time, no wasted energy.

In today's technology driven construction industry I think we need take lean practices one step further and add 30 megabytes into the rule. Not having accurate and timely information on a project is like showing up for work with a hammer and having no nails. Timely, accurate information is a key driver of job performance, and without it, people are often forced to waste untold hours, materials, and money trying to find out what they need to know to get the job done.

#### 30 megabytes

30 megabytes is .003 of a gigabyte. It's not a lot of data, but isn't the whole point of lean, less being more and all? 30 megabytes isn't enough data to tell you everything there is to know about a construction project, but it is enough to uncover areas of improvement in the field and shop. Done right, it will highlight the projects that need urgent attention and those meeting or exceeding expectations. The data can tell you how your shop and/or field labor is tracking, by job, phase, and even labor code. It's also enough data to tell you the type and volume of materials you're using per project and how you can improve cost, delivery, and storage factors. It's enough to tell you where materials are, what they cost, and what the company makes on them. 30 megabytes can save megabucks in time and practical costs on a project.

#### It's the simple things

Yes, I know every contractor has a system for getting work done, be it paper, spreadsheets, or a big, complex enterprise resource planning (ERP) system. The problem is for most contractors the information contained in their systems is not in a format they can use, or it is unavailable to key people when they need it. Like working on an assembly line and running out of bolts at work station, a lack of usable and timely data can cause the whole company money and time loses as labor and materials back up. Making sure data is easy to create, centralized, and available to answer simple questions in real-time will provide contractors the same efficiency improvements as keeping clean, organized, and well-stocked workstations provide manufacturers.

#### Thinking lean on technology

Technology is awesome, no doubt about it, but technology for technology's sake can turn into over-thought, over-analyzed, overly confusing, and overly costly outcomes. Lean technology is all about collecting the right data at the right place, at the right time, and using it to provide real-time answers to the simple question everyone has: "How are my projects doing?"

Lean construction technology such as the BuildCentrix platform works in conjunction with existing ERP, accounting, and design software. It's role is to provide actionable real-time data for the front line people who need it most, at the exact moment they need it. ERP, accounting, and design systems will continue to play a critical role for contractors, gathering and crunching all minute details, and after the dust settles they'll tell you whether or not a project was successful. Lean technology will help to make sure that story has a happy ending.

#### AI INTERSECTING WITH IOT AND CLOUD COMPUTING BECOMING UBIQUITOUS?

Across various sectors, artificial intelligence and cloud computing complement each other, often along with Internet of Things (IoT), to improve technology and catalyze growth. Data from Research and Markets indicates that the Artificial Intelligence of Things (AIoT) market is projected to grow at a compound annual growth rate (CAGR) of 37 percent through to 2023. The report observes that "AI adds value to IoT through machine learning and decision making and IoT adds value to AI through connectivity and data exchange" and devotes several sections to the increasing role of cloud computing in the market.

An example of this is Stelco Holdings, Inc., which recently partnered with Canvas Analytics Inc. The partnership involves Stelco using Canvas' AI-driven Industrial IoT platform to "transform its steel operations, improve yield, and boost productivity." Canvas Analytics Chief Executive, Humera Malik, commenting on the need to convert the voluminous data generated into usable info:

"As manufacturers digitize their operations floor, they are inundated with volumes of data coming from a multitude of sources. The next step towards intelligent operations requires real-time analytics power that transforms operational data into actionable intelligence."

Universal mCloud Corp. similarly leverages cloud computing and IoT, most recently in the oil and gas sector with the deployment of its AssetCare platform. Nuance Communications, Inc.'s cloud-hosted PowerScribe One platform utilizes AI to assist in diagnostics and decision support for radiologists.

As major facets of the so-called fourth industrial revolution (4IR), it's not surprising to observe AI, IoT, and Cloud Computing intersecting to enhance various sectors, and as the World Economic Forum describes the 4IR as being "characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres."

#### TECHNOLOGY IS CHANGING CONSTRUCTION

Technology is no longer a foreign concept in the construction world. Boasting some of the most innovative programming and acting as the perfect working lab for ancillary technologies, construction is the ideal place to show off just how well technologies can improve efficiency and boost productivity. In the office, on the road, and on the jobsite, this final frontier of industries willing to automate is taking on some great new concepts including the following: *Mobile*: Smartphones, iPads, tablets, and on-the-go laptops are infiltrating construction sites the world over because of their ability to facilitate key processes, connect all members of a working group, and improve safety. People on the job can access drawings, ordering software, and safety documents at the touch of a screen. And, it wasn't long ago crews had to wait for phone service on a site—those days are long gone with mobile technology.

*Drones*: Drones are one of the fastest-growing technologies out there because of their ability to nimbly and with minimal set up complete all sorts of tasks from inspection and surveillance to 3D printing in remote areas. Drones can make it into tight, hard to reach places and can provide a reliable record of progress, people, and the safety status of a project.

*Centralized Digital Reporting*: You'd be surprised how many state of the art construction firms still file time cards, safety reports, field orders, and material requests on the proverbial (and literal) back of a cocktail napkin. In an industry where "tested and true" is the anthem, pen and paper have enjoyed a lasting legacy; however, administrators are finally seeing some releif with digital and centralized reporting software use infiltrating the construction scene. Imaging the time, money, and productivity saved from clicking a mouse to record payroll rather than manually entering hand-written hours. Digital reporting is by far the top technology seller in construction.

Increased Safety: As technology prevails and processes go digital, safety records skyrocket. When everyone can access safety materials using the phone in their pocket and communicate with their teams in a moment's notice, mistakes and injuries that occur out of ignorance or in isolation are severely mitigated. Reporting in the moment and having access to records at your finger tips helps keep everyone in the loop and help management make informed decisions about key processes on a jobsite.

#### COLUMBUS STATE TO OFFER A DEGREE LEADING TO A CAREER IN CLOUD COMPUTING

By Jennifer Smola, The Columbus Dispatch

A new two-year degree at Columbus State Community College aims to have more students "reaching for the cloud." The new associate of applied science degree in software development will offer a path to employment in cloud computing and will be developed in partnership with Northern Virginia Community College and Amazon Web Services Educate, the academic arm of Amazon Web Services (AWS) for information technology and cloud education resources. Columbus State has been awarded a nearly \$600,000 grant from the National Science

#### **BITS AND BYTES**

Foundation to create the curriculum. The program will be designed to coordinate with AWS certification exams and other credentials in the IT industry.

The first group of students in the associate-degree program will begin in the fall of 2020, but Todd Warner, executive in residence for workforce innovation at Columbus State, said the college already is working to update existing courses with elements of cloud computing.

AWS describes cloud computing as the "the on-demand delivery of (computing) power, database storage, applications and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing."

It's a skill set that is in increasing demand and can lead to jobs that pay well, Columbus State said in its announcement.

"This is another step forward in keeping our academic programs relevant and meeting the needs of employers and what they're looking for," Warner said.

The announcement of the degree program also follows the school's September announcement that it will offer two cloudcomputing courses from AWS Academy that help students earn IT certifications. The degree program builds on those offerings, Warner said.

"It allows us to provide a student a body of work that they can show a potential employer," he said. "It gives them context to understand 'What I built in one class is used in the next.""

Columbus State will be one of fewer than 20 higher-education institutions across the country to partner with AWS to develop such a program, Warner said.

"Cloud computing has created a massive job opportunity, and Columbus State is playing an important role in driving workforce opportunities and powering innovation in the Ohio community," Ken Eisner, global lead for AWS Educate, said in a news release. "We deeply value this collaboration with Columbus State and the potential for this degree offering to help diversify the tech talent pipeline and power the cloud workforce of tomorrow."

#### HYBRID CLOUD COMPUTING MARKET: INCREASING DEMAND FOR DIGITAL SERVICES FORECAST BY 2024

Hybrid cloud computing is gaining traction fast. It is a seamless integration of private, public, and community clouds from various service providers to carry out different functions within the same organization. It helps organizations to take advantage of the cost-effectiveness of public cloud platforms for all nonsensitive operations and rely on private cloud where they are required. Different cloud services complement one another's functionalities in hybrid cloud computing thereby allowing users to maximize their efficiencies. The adoption of hybrid cloud depends on various factors such as the degree of control needed over data, data security and compliance requirements, and the type of application being used by an organization.

A report by Transparency Market Research segments the global market for hybrid cloud computing based on parameters such as solutions, services, service models, verticals, and organizations' sizes. Depending upon solutions, for example, it segments the market into security and compliance, cloud management and orchestration, disaster recovery, and hybrid hosting. On the basis of service, it classifies the market into professional and managed services.

Depending upon the service model again, it segments the market into platform as a service (PaaS), software as a service (SaaS), and infrastructure as a service (IaaS). Small and medium enterprises (SMEs) and large enterprises both utilize hybrid cloud computing. Consumer goods and retail, government and public sector, education, healthcare and life sciences, manufacturing, media and entertainment, telecommunication, and information technology enabled services and banking, financial services, and insurance are key end-use verticals.

### Global Hybrid Cloud Computing Market: Trends and Opportunities

At the forefront of driving growth in the global hybrid cloud computing market is various entities' requirement for scalable, nimble, and cost-effective cloud computing solutions and the need for smooth interoperability between the existing applications and cloud services. Going forward, more and more savvy enterprises are expected to adopt hybrid cloud technologies to save on costs and to have acces to technical expertise to focus on their core competencies. Organizations can easily shift their non-critical data and applications from private to the public cloud to reduce the web traffic. Another growth driver is the increasing demand for digital services and their applications.

However, factors such as infrastructure dependency and fears over dearth of privacy and data protection are predicted to counter the growth in the global market for hybrid cloud computing. A noticeable trend in the market is the soaring popularity of SaaS and IaaS service model. This is because many SaaS vendors provide applications as a service to the end users and focus on the hybrid cloud management software.

Geography-wise, the key segments of the global hybrid cloud computing market are Asia Pacific, North America, Eastern Europe, Western Europe, Latin America, and the Middle East and Africa. Among them, North America leads the global market with maximum share.

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