The Ongoing Evolution of Jobsite Connectivity

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INSIDE TECH'S POTENTIAL TO INTEGRATE INFORMATION FOR MORE EFFICIENT WORKFLOWS

The vision is there. Wouldn't it be great if the entire jobsite — the general contractor, subs, designers, owners, equipment vendors, and material suppliers — were all working in sync with the data that shifts with each condition change, progress report, change order, telematics warning, and machine inspection? If the right people got the right information at the right time to make informed decisions? This one-dashboard vision is much easier said than done. The journey of one equipment manager illuminates the roadblocks. Several years ago, Langdon Mitchell, equipment division general manager for heavy civil contractor Morgan Corp., needed someone to physically go machine by machine to update the software in his fleet.

The next big hurdle: each original equipment manufacturer (OEM) had its own proprietary telematics portal. Like most contractors, Morgan has a mixed fleet — getting a unified fleet view from all the disparate systems was clunky and time-consuming, Mitchell said.

The Spartanburg, South Carolina, company is now using a third-party product that amalgamates the information from each brand in the company fleet in addition to its rental equipment. "It's become a single source of truth," Mitchell said. "Beyond the raw telematics data, it's allowing us to have tools to have actionable items."

But more is needed, said Will Hipp, equipment data analyst with Morgan. "Our eventual goal is to have all the project managers on board so they can see the machines on other jobsites and identify any machines that have little utilization."

That involves getting dynamic project schedules to match up with fleet needs to pinpoint areas where the company has too many or not enough machines. "That is one of the biggest tasks we have: making sure that machines are in the right place at the right time," Mitchell said.

Jobsite Connectivity Is Complex

The Morgan Corp. story shows the information needs of one

division of one company. Multiply those needs companywide, and then by all the entities with which that one company does business. Now add the industry at large and you get the idea of complexities involved. "It sounds pretty simple, but when you take a look at the disparate systems general contractors (GCs), subs, developers, and agencies use, everybody has different formats and protocols so it's extremely convoluted," said Brian Juroff, senior vice president of sales-positioning solutions at Topcon Positioning Group.

"While jobsite connectivity is easy to define, executing it is a completely different matter. Every contractor has a different soup mix of software for office, modeling, scanning, etc. It becomes a huge hurdle."

"There's an immense amount of data that's created throughout the course of a construction project," said Patrick Stevenson, vice president of product management and platform at Trimble. "Jobsite connectivity is making sure that information is transferring to the right individuals at the right moment in time so they can more effectively do their job."

What's needed is a connective tissue that integrates fully with all pieces of information, creating a living, adaptive body of data. "It's providing a digital overview of what's happening on the site so everyone can easily make decisions," said Kenneth Veys, portfolio manager, uptime and connectivity at Volvo Construction Equipment.

The Jobsite Connectivity Boost

Overall technology infrastructure advancements like 5G networks, light detection and ranging (lidar) scanning, global navigation satellite systems (GNSS), and edge computing is laying the foundation for jobsite connectivity.

"I've been on jobsites in the past where at 2:30 p.m. you were going to lose connectivity based on satellite positioning," said Lonnie Fritz, senior market professional at Caterpillar. "You could set your watch to it. GNSS alone has really driven improvement in accuracy and reliability."

One of the biggest shifts is open architecture software so that data from different sources can be more easily integrated. "That's allowing a lot of contractors to embrace the concept of automating their processes," Juroff said.

While jobs in more remote areas still face connectivity issues, the amount of data that can now be transmitted has grown in the world at large. And there's a wealth of data that's waiting to be mined in a connected way, from machine telematics to design data to labor apps, said Jason Anetsberger, Komatsu's director of customer solutions. Connected machines can now receive updated design data, report back their productivity and the shape of the terrain as they create it.

Severino Trucking of Candia, New Hampshire, went to a cloud-based model to reduce redundancy and disconnect, said Pat L'Heureux, project manager. "We have some crews that will take a project 80% of the way and then another group takes over. Everyone needs to have the same information."

Going to the cloud has been a "huge time-saver," reported L'Heureux. "I can now troubleshoot an issue in five minutes, where sometimes in the past it could take me three hours because of travel time."

And it's not just machines and production schedules in the data mix. Trackers, specialized hard hats, and smart glasses are adding location, fall alerts, and biometrics information on construction workers, leading to increases in safety and labor management capabilities.

Attitudes Have Changed

Contractor attitudes have also shifted, said Trimble's McLachlan. "We've seen a big jump in adoption of connectivity solutions," she said, "especially now that we can push a design update out to a machine remotely instead of having to drive out to the jobsite."

"Every year, the needle is definitely moving on the contractor technology adoption levels," Fritz said. "There's an increase in their belief of what technology can do to improve their operations."

The combination of grade control data with telematics reporting was a significant step forward, said James Leibold, product manager, connectivity, at John Deere: "You're not just having machines that report data, but you can remotely go into a machine and fix it."

The ability to not physically have to download job model

revisions is critical, said Lyle Ballou, GPS manager for DXI Construction in Churchville, Maryland.

"We are managing 65 active jobs as we speak, and we have to manage the GPS info as different crews move in and out of different jobs weekly, sometimes daily." DXI Construction juggles the workload for 51 different crews in three different states, which necessitates being able to instantly connect and "program" each crew for the work to be performed.

"The investment we have made has eliminated not being able to work, because we have to wait for stakeout, or wait for a program to be driven to a job and downloaded," Ballou added.

What's the Right Solution?

One barrier to jobsite connectivity is the sheer choice of tech options out there, said Jim Bretz, connectivity services support manager at Volvo Construction Equipment.

"Customers don't know what to choose," he said. Fears about office and field data security are also valid.

"It's so fragmented right now there with the number of solutions," agreed Mitchell. "One company has a cool answer for one thing, and another company has a cool answer for another thing. How do you now bring that information into the whole so you can make decisions?"

"The different solutions can be siloed, which makes it hard to have cross compatibility," added L'Heureux. "If providers get too proprietary, it can hurt the end user."

Tech's Focus on Construction

"I love the attention the industry is now getting," said Anetsberger. "People are seeing that it's either ripe for digital disruption or that there must be an easier way."

Mitchell agreed: "What is exciting in our industry right now is how technology is really, really ramping up." Contractors will be able to piggyback on what's happening in the broader technology space. In addition to jobsite connectivity, these efforts will also lay the groundwork for autonomous machines.

But don't think jobsite connectivity will solve all problems, Bretz warned. "It's likely it will reveal more issues and create a whole new aspect of managing jobsites and machines because it opens up a lot of information that wasn't immediately available," he said.

"The connected jobsite concept is something I'm passionate about and I want to see grow," said L'Heureux. "It will help with the disconnect we see daily between companies, engineers, even internally. It will create more of a community if we can share this data."

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