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*Tamtron's Loader Crane Scale provides the wireless transfer of weight measurement data from loader cranes to a cloud-based storage system*



# PREDICT AND PREVENT

The last year or two has seen the emergence of more sophisticated safety devices, many of them now incorporating perceptive AI software, all of which is beginning to make an impact, helping operators or drivers become more aware of risks and helping improve safety and efficiency. Daniel Searle takes a look at a few of the latest.

Earlier this year, Pennsylvania based technology and advanced dash cam manufacturer Tenna unveiled a new heavy duty AI assisted camera system - the TennaCam 2.0 HE 360 AI - aimed squarely at the construction industry. The system uses an AI-enabled 360 degree camera system with auxiliary cameras to monitor and identify people, moving vehicles or stationary obstacles and equipment, especially in blind spots, sending visual and audible notifications to the operator via its 10 inch monitor before a collision occurs.

The TennaCam 2.0 HE 360 AI comes as a single, fully integrated kit that includes:

- AI-enabled 360 degree camera system
- Auxiliary cameras
- CANbus integration
- 10-inch in cab monitor

It is said to be far more proactive than most current camera systems that only provide a view for the operator and record footage that can be reviewed after an incident has occurred.

Tenna co-founder and chief executive Austin Conti says: "Contractors don't need another system that tells them what went wrong after the fact. While Tenna can do that too, we know that jobsite safety is paramount, and that technology that actively helps operators avoid incidents in the moment can have a significant impact in reducing such incidents."

Another thought is that if what might have been a serious reportable incident is avoided, lessons can be learned and shared in a more positive environment - from the recordings and alerts - rather than as part of a fatal incident investigation, when other priorities often take over.

## THE ORCISM SYSTEM

Japan's Obayashi Corporation has introduced the Orcism (Obayashi Robotics Crane Integrated System) management and control system for cranes, which combines a range of advanced technologies to help prevent serious incidents. It won the Special Jury Prize at the 2026 Japan Industrial Technology Awards earlier this year. Of particular interest is that it can be used in

conjunction with a 'digital twin' of the load/job which is monitored to detect obstructions in the vicinity of a crane and issue alerts to the operator when required, as well as monitoring load sway and overexuberant slewing/load acceleration and deceleration, slowing, steadying or stopping the function when necessary.

The Orcism system also incorporates technology such as automated and remote functions, and security, such as the 'Face-Starter' function which uses facial recognition to prevent unauthorised personnel from operating the machinery.

Obayashi runs a demonstration site for the technology at its East Japan Robotics Centre, in Kawagoe City, north west of Tokyo, with a control room running remote, automated operation of two tower cranes - a 720 tonne/metre class and a 360 tonne/metre class crane.

One driving factor behind the system is the growing shortage of people willing to work in construction related industries, which is now a critical issue in Japan. The company claims that Orcism can address this by assisting in areas such as construction planning and management as well as simplifying on-site management tasks.

## LIVE LOAD WEIGHING FEEDBACK

One of the pillars of 'Industry 4.0', also known as 'the Internet of Things', is the real time transfer of data, which enables operators or central processing systems to make decisions based on live feedback.

The next generation Loader Crane Scale from Finland's Tamtron embraces this approach, with the wireless system measuring load weighing data with an accuracy of within 0.1 percent and transferring it in real time to Tamtron's One Cloud online data transfer and storage service, and the user's ERP or logistics systems.

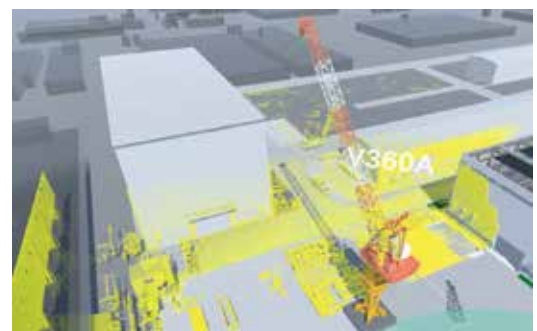
The scale is compatible with all loader cranes, both articulated and telescopic, and is aimed at applications such as waste

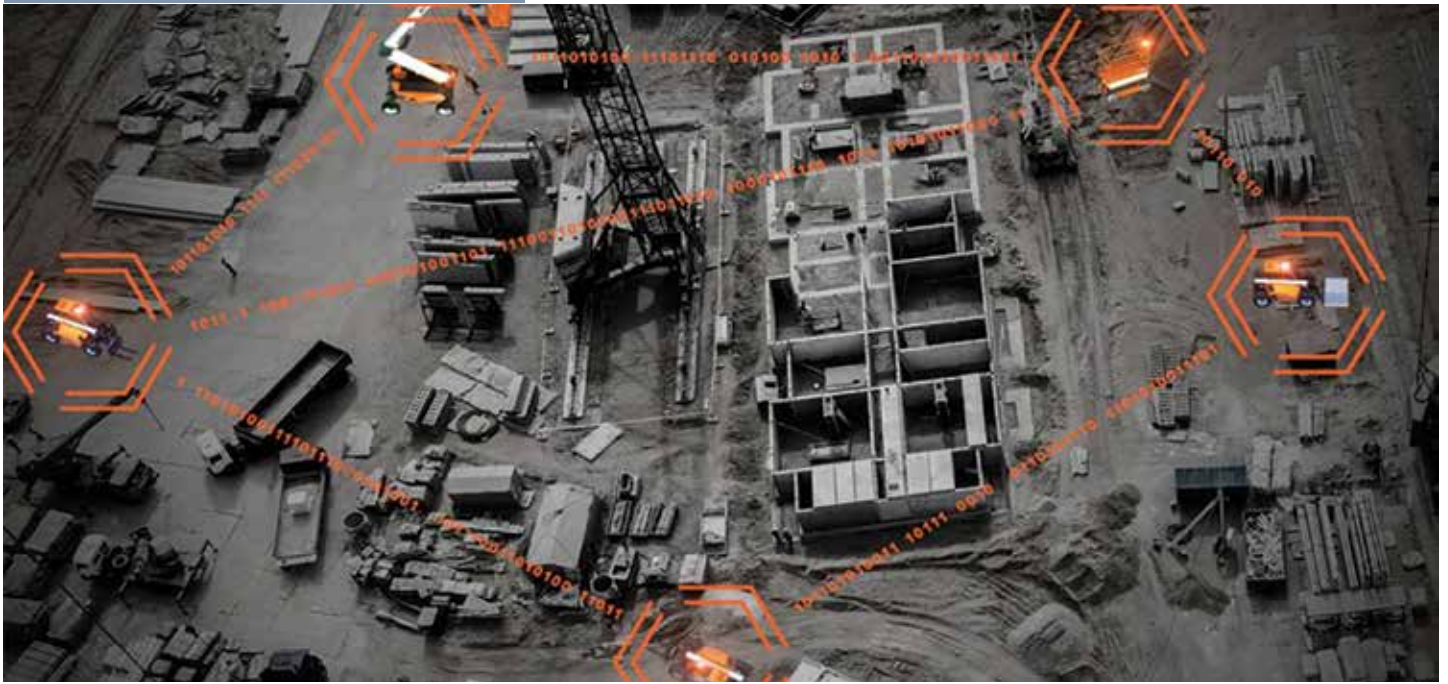
management and recycling.

An interface is provided by an easy to use intuitive mobile application, the operator can add photos and comments to each specific job or lift, to enhance documentation and traceability, with all the information added to the cloud service and available for invoicing, planning and monitoring. GPS co-ordinates are also saved for each weight measurement. ■



*Obayashi's Orcism software enables the remote, automated operation of cranes using a digital twin*





# THE SKY IS THE LIMIT

Just over three years ago JLG appointed Ara Eckel as director of product management to head up its 'Connected Solutions Platform' team, responsible for the development of 'cutting edge digital technologies' for the company's platforms and telehandlers with the aim to improve the overall value of its products. Mark Darwin met up and quizzed him about current and future digital technologies.

**Ara Eckel joined JLG in 2020 as senior manager, product marketing and management, having spent eight years in the automotive industry in various marketing roles. In 2022 he was appointed director of product management for its connected solutions portfolio which included JLG Augmented Reality and Mobile Control Apps, including the Bluetooth Enabled Analyzer & Analyzer Reader and Advanced Battery Monitoring System, as well as ClearSky telematics, 3D Interactive Schematics, BIM library, SkySense electronic detection system and AccessReady Fusion XR virtual reality training simulators, and now leads the development of these and other new products.**

Three years ago, the latest development was a next generation Internet of Things (IoT) platform for true, two way fleet management and machine interactivity.

Two years ago JLG expanded its ClearSky Smart Fleet platform with new features aimed at improving fleet management and equipment diagnostics. And at the beginning of this year, it announced two new features for its ClearSky Smart Fleet platform: 'digital access control' and 'over the air machine software updates'. Both of which are available via the ClearSky Smart Fleet connectivity beacon on aerial lifts and telehandlers.

What is obvious from all this is that technology and developments are changing rapidly.

"The big thing when I joined JLG was how do we get ClearSky and telematics right, having had two previous versions," says Eckel. "We tried to work with some partners in the past and commercial off the shelf solutions from various providers, of which there are plenty, but unfortunately, discovered that although there are very good telematics providers, not many were any good for access equipment."

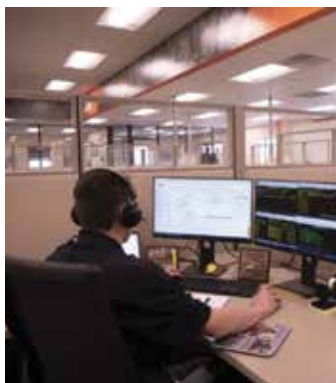


Ara Eckel

"I will give a very simple example. Most of those devices will only send data when the machine is on. Around 90 percent of the time a work platform is in use, it is not running. That problem in itself was a unique one for us to solve, and as we delved into it we realised that the only way to provide customers with what they were looking for was to develop the systems in-house."

"We then went on to launch ClearSky Smart Fleet, our in-house solution, which starts not with traditional telematics, but a two way Internet Of Things and how you interact with the product and not just send the data to the cloud and let somebody do something else."

"People buying aerial lifts today expect connectivity and connected products. So, we began to standardise that product, and we are now seeing the benefits. We have been on that



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journey for almost four years, and I will say we have been very fortunate to be resoundingly successful. We have hit every single performance metric, and a lot of that has to do with how focused we were with our customers. We carried out more Voice of Customer research globally than for any previous product. That now allows us to understand our customers' needs in a different way."

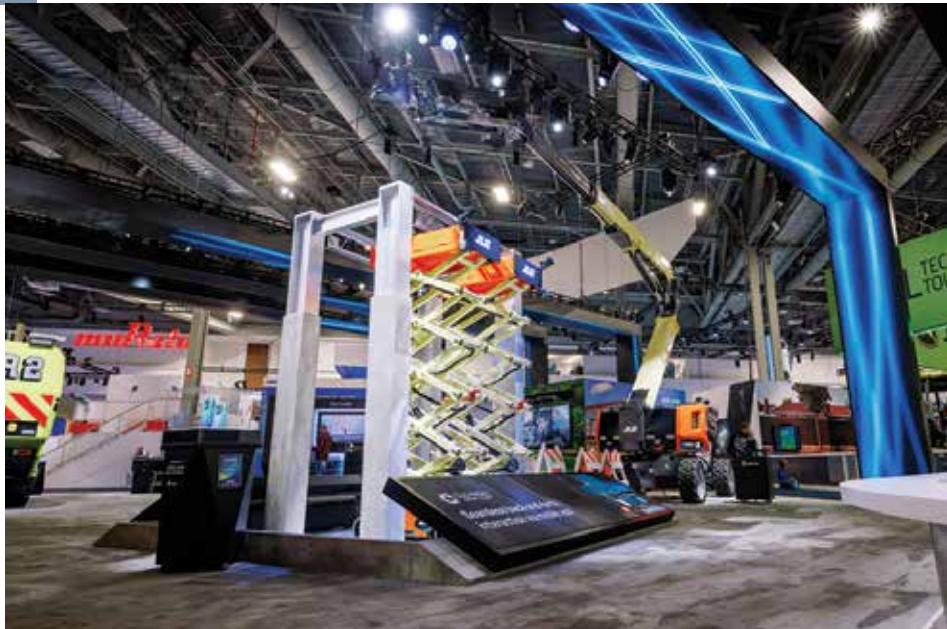
"One of its cool features is help finding the machine in a packed, busy yard or site which is normally really difficult if you are a service manager or a fuel truck driver and can easily take 30 minutes on a large site. So, we came up with this idea, which is very similar to having a remote lock/unlock button on your car - you press the button, and you can see the indicators flash or hear the car's horn beep. So now with the touch of a button on a smartphone or tablet you can activate the lights or the horn of a specific unit."

"We can take that capability and use it in a lot of different ways, and this has really enhanced our other digital experiences. We put the productivity tool of Smart Fleet onto Online Express, so now everything is in one central spot - all of your productivity, utilisation and service insights and technical publications are there, and you can even buy the part to fix it."

### ARE ALL THESE REALLY DEVELOPED IN-HOUSE?

Yes, it is all developed in-house," he says, "but we don't have too much hubris that we do it all on our own. What we own is the map and the infrastructure, but we work with partners who can help us succeed...such as a wireless carrier and custom fabrication partner...because no one had created a connectivity device integrated within a beacon light in the way we did it."

"We have picked the right partners, and they have



helped us along the way. We have even ended up working with a digital experience designer to make sure the solution itself was self-explanatory. We know that if we have to provide training for every single person who uses the tool, it is not going to work. When you download an app to your phone, you just start using it, and it works - it has to be that level of simplicity."

"We have also simplified our systems a lot. When I first joined, JLG had four different usernames and logins across the company regions. Now we have just one global JLG ID so if you have an online express account, you have access to all of JLG - very fast and simple. At one point we even had seven websites but have reduced it to four. We had 18 global applications that is now down to five. The simplification strategy has been so beneficial and helps customers get a much better understanding of what we can offer."

### WHAT IS CURRENTLY HAPPENING?

"We do our road map planning five years in the future, anything beyond that just sits there, but from an execution standpoint, we do an agile based development - these are monthly sprints that enhance or appreciate the value. Our current product launch is digital access control."

### ACCESS CONTROL

"Access control has been a very misunderstood feature in our industry. What we want to ensure is that the right operator has access to a specific machine. A lot of companies have already solved this - including us - by putting a keypad on the side of the machine that requires the operator to enter a four digit code to enable it. But the process typically breaks down because after buying the keypad someone has to assign serial numbers, then someone has to assign a code, then send the codes to the site manager, the site manager evaluates who is validated to operate each machine and then issues them their codes... What you find is that it either doesn't work at all or the system is abused. I have seen keypads with the four digit code on a sticker next to it!"

"In spite of this, most customers or users do want to control access to the equipment. Our next introduction is a fully digital version available on your phone and our portal, so you don't have to buy additional hardware. When launched, it will work across our entire connected base of more than 120,000 units. The owner can also put the machine into various modes - an unrestricted





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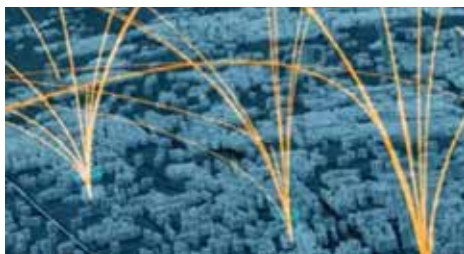


state with full use, a full restriction and lock-out so nobody can use it, and a creep mode for transport. This puts all the power into the owners' hands so that they know the right people are using the equipment at the right time.

Overnight this should give us an edge in access control, rather than selling keypads at about \$200 each as well as a subscription fee. We have just launched the App version in North America with the portal version on its way. Europe is just waiting on CE certification."

## SUBSCRIPTIONS

"Historically subscriptions in the construction industry tend to be long - up to seven years. We have moved to a one year plan, so if it doesn't live up to expectations, cancel! What tends to happen with long term contracts is that around half leave when up for renewal, and it is worse in general construction equipment. I know of one leading OEM which has a 17 percent retention rate. Since our launch three and a half years ago, we have retained 93 percent of customers, suggesting that we are living up to expectations and providing value. Our subscription is simple - up to \$40 per year or about \$3 per month for each machine depending on the total fleet size."



## OVER THE AIR SOFTWARE UPDATES

"Everyone now seems to offer over the air updates, but what you actually find is they can update the connectivity module, which doesn't necessarily have the ability to rewrite the machine's software. You can change the parameters of the beacon or a CAN device or add new firmware, but we may be the first company in the aerial lift market to be able to change machine software through our telematics system. This will be launched later this year."

## AUTOMATED SITE NETWORKS

"Another slightly more obscure feature is called automated site networks. JLGs devices are constantly communicating with each other over a Bluetooth network, automatically 'pairing' when in close proximity - just like a Bluetooth device automatically connects on your smartphone."

Traditionally, if you wanted to set up a geofence around a machine, you would pick points on a map and assign machines to it and if there were changes, it would tell you.

"What we can do now is if two machines are next to each other and talking, they automatically form a geofence. The moment one of them moves away, it tracks it as an event, and when it joins, you get another event log. So, from a logistics and operations standpoint, we have essentially automated knowing where the equipment is."

"These networks can be as large as the number of machines in an area - rental company yards, for example with hundreds of machines. On

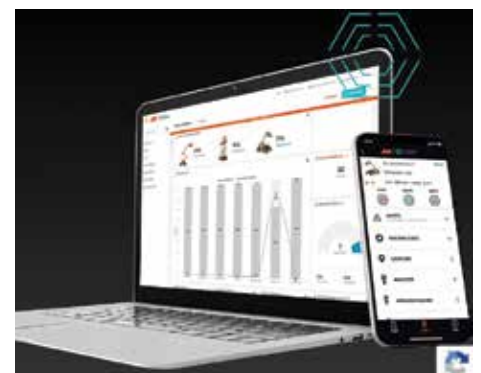
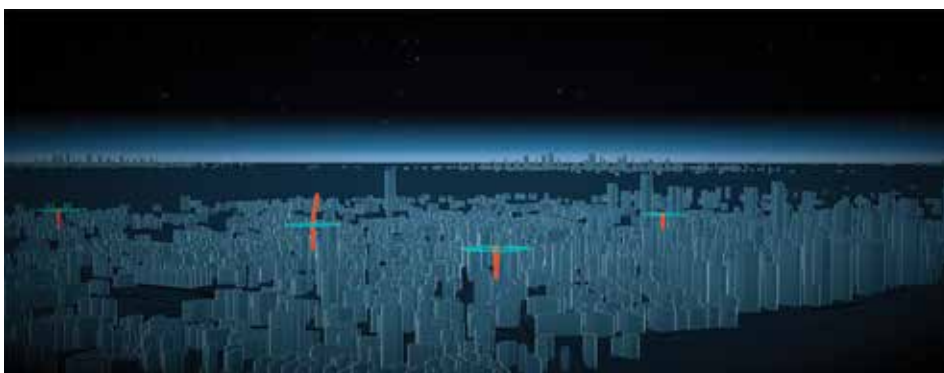


site, the network will strengthen by talking to JLG machines even if owned by different customers - machines talk, but customers can only see information on their own machines. If we fast forward five years, when there may be 500,000 connected units, you could theoretically connect around the globe. We own the proprietary technology in the Americas to have automated Bluetooth matching on a jobsite".

## DOES EVERYTHING CHANGE THAT QUICKLY?

"Yes - If we had this conversation a year ago, it would have been dramatically different. AI is an unbelievable tool in our box of options, but it is only one tool, and we have to figure out and match the application to the need. We don't just want to come out like most and say, 'we do AI!'

"We have done two very interesting things with AI. We are using it for technical publications, but with a human in the loop to ensure that the information is accurate. This has enabled us to produce technical publications 50 percent faster and translate 30 percent faster. The other way we are using AI is for product support centres where we are starting to launch an adjunctive AI solution, so if you were to log into the chat and ask it questions it would use our internal knowledge base - whether that is knowledge or service articles or technical publications - and in many cases a product support person will be watching, to check the answers before giving it to the customer - so we are still learning how make sure it is accurate." ■





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