

THE RISE OF THE DIGITAL YARD

WHITE PAPER





As companies seek out ways to work smarter, better, and faster in the increasingly-complex manufacturing, distribution, and retail environments, technology serves as both a facilitator and a disruptor. In this white paper we explore the rise of the digital yard and show how technology is enabling significant efficiencies, productivity gains, and cost containment in a world where every penny added to the bottom line positively impacts organizational success.

There's a reefer out in the yard that has been sitting for two weeks and needs to be pre-cooled before any food can be loaded onto it for delivery. A broken-down yard jockey was parked in the corner of the yard, waiting for someone to notice it and repair it. Two dock doors aren't operating properly and, as a result, the inflow of goods into the distribution center (DC) is slower than usual.

These are just three of the scenarios that unfold in distribution yards nationwide on a daily basis, and that most companies are tackling through a combination of manual processes, spreadsheets, phone calls, and emails. And while warehouse management systems (WMS) manage the activities that take place within the four walls of the DC, and transportation management systems (TMS) take over once a vehicle drives out through the gate, that space between the two systems is still largely a "black hole" of information for most companies.

To gain complete visibility and effectively manage the gate, dock, assets, yard, shipments, and network operations, companies are turning to scalable, cloud-based YMS solutions that effectively conquer challenges like lengthy gate check-in processes, multiple or redundant moves, time-consuming yard checks, delays, and excessive detention or demurrage charges. By integrating the solution with an existing WMS or TMS (or both)—or utilizing it as a standalone solution—shippers can avoid these and other problems associated with limited yard visibility.

Thanks to advancements in technology including cloud computing, internet of things (IoT), drones, and mobile, yard visibility and management are now reaching new heights as the picture of the "Digital Yard" comes into very clear focus. No longer relegated to using clipboards, spreadsheets, and manual systems to manage their yard assets, companies are asking themselves questions like: How can we better leverage today's advanced technologies to run our yards even more efficiently?

"At any given year, there are over 500 million trailers' shipments among 250,000 plants and warehouses in the U.S. alone. Eighty percent of the time, those assets sit idle," says Matt Yearling, PINC's CEO. "Based on these numbers, it's clear that this portion of the supply chain is ripe for automation, robotics, drones, and other advanced technologies that are already making their way into warehouses and DCs."

WHAT DOES A DIGITAL YARD LOOK LIKE

The digital yard experience is real-time, data-driven, automated, integrated, and connected. Here are the four key foundational components of the digital yard, and what each looks like in action:

Use software to eliminate islands of information

Achieving this goal starts with implementing a software package that can manage repeatable processes consistently across your organization. Without this core component—in this case, a YMS—managing and refining processes becomes somewhat of a crapshoot. Unfortunately, most organizations place too much emphasis on data that is sourced from human input, which is not only expensive on the labor side, but it also introduces error into the picture.

This, in turn, degrades the quality and potential insight that the data will be able to provide. And speaking of data, it's no secret that most of it resides in silos of information right now. Focused on specific information—such as warehouse automation—this data is virtually useless for the shipper that wants to streamline and gain visibility over its yard processes. The good news is that connecting these islands of information is not as hard as it used to be thanks to modern web services-based integration technologies. For example, companies can now do in days what used to take weeks of programming and customization.

Utilize automated technologies to locate and track inventory

Skilled labor is costly and, of recent, is getting harder and harder to find and retain. So where sensors collect information, companies can now take the understanding of the process—together with sensor information—a step further in the form of an “automated worker.” We're already seeing practical examples of this in supply chain operations, with parcel sorting, product packaging, automated guided vehicles, and robotic lift trucks.

Using automated gate management, for instance, companies can streamline gate procedures; increase the velocity of check-in and check-out of trailers, yard trucks, shuttle trucks, tractors, and drivers; and electronically reconcile loads with purchase orders. And through yard and shuttle truck management, managers can monitor online and in real-time the location, speed, and action of yard and shuttle trucks, and access productivity reports in real-time. This enables better decision making and allows companies to maximize efficiency in a quadrant of the supply chain that's not always viewed as a hotbed for continuous improvement.

As a critical component of the digital yard, this level of automation effectively takes a repetitive, mundane job and allows an autonomous robot to execute it in a more efficient way. Drones, for example, can move the tracking process into the air and executes automatic inventory checks, increase inventory accuracy, and identify inventory in hard to reach locations using GPS, RFID, Ultrasonic, LIDAR, video, OCR, and/or barcode readers.

Leverage sensor technology and stop wasting time, fuel, labor, and product quality

As the devices that detect and respond to input from their surroundings and physical environments, sensors play a crucial role in the digital yard. By taking care of the timely and accurate input of operational information, assisting the flow and management of information in the software, and avoiding the need for workers to input data manually, sensors bring a new level of sophistication and oversight to the yard. And, thanks to the rise in awareness of sensors in Internet of Things (IoT) technology, companies now have many different ways to Auto-ID and locate assets without having to step out into the yard.

For example, knowing that drivers only make money when they are on the road—and that they have a habit of dropping trailers in the first open spot they see, not always where they are directed—Real-Time Location Technology System (RTLS) uses sensors to provide a way to validate actual locations versus desired locations. This, in turn, saves a lot of wasted time, fuel, and product quality (i.e., in the case of fresh produce). The beauty of using sensor technology in place of manually entered data results in high quality data that you can depend on, with RFID, GPS, OCR (optical character recognition), and barcode technology being the most popular choices for today's shippers.

Gain a holistic view of your supply chain

With the basic tools in place to automate processes, the sensors to capture events, and the robots to automate, the question becomes: What do you do with this information overload?

The answer is simple: Take a holistic enterprise perspective. That entails taking the data feed of enterprise grade tools that enables your organization and provides transparent engagement with partners. Using RTLS, for instance, users can track and locate assets in real-time with low cost passive RFID, GPS, optical, and other sensors on the ground or in the air. All the information collected is presented in a dashboard format via the company's YMS, where users can access an online graphical view of the facility, showing yard, trailer, and driver location and status information.

A critical component of any digital yard, this step finds companies managing enterprise-wide metrics, best practices, process execution, flow of information, and inventory. In return, these companies gain valuable business intelligence that not only helps them tackle complex supply chain challenges, but that also guides them down a path to continuous improvement and profitability.

THE CRITICAL INTERSECTION BETWEEN WAREHOUSING AND TRANSPORTATION

While corporations have made significant investments in managing their transportation and warehouse assets using transportation and warehouse applications, they now realize that without real-time, accurate trailer and shipment status information across their facilities, they cannot gain full value for these technology investments. For instance, delays in the yard can mean production down time for manufacturing operations, product spoilage if handling perishable goods, lost opportunities caused by stock-out for retailers, or credibility issues with carriers and customers.

A digital yard enhances the value of existing warehouse management systems (WMS), transportation management systems (TMS), and other systems through easy integration and the provision of real-time information via web API. This allows organizations to realize additional dock productivity by expediting gate appointments and automatically triggering trailer moves to the dock based on rules from their WMS or TMS systems. Don't let your yards be the blind spot in your end-to-end supply chain. Instead, view it as a valuable component of your operations and utilize it as a tool for continuous improvement.

YOU CAN'T IMPROVE WHAT YOU CAN'T MEASURE

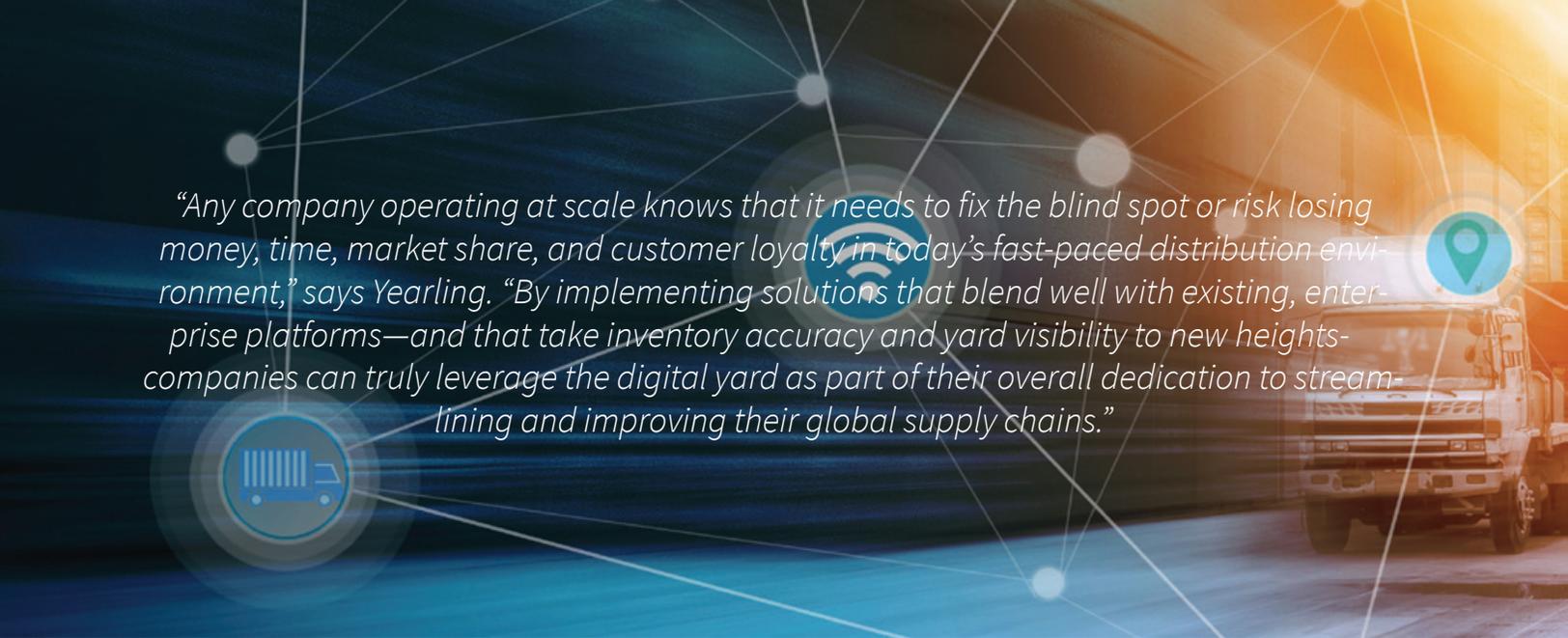
It's one thing to acknowledge that your yard is a "black hole" of information and in need of improvement. In fact, most companies would probably readily admit this. Actually doing something about it, and putting the time and effort into transforming that black hole into a valuable and viable link in the end-to-end supply chain is something else entirely. "While we're certainly seeing a lot activity on the automation/robotics side within the warehouse or DC," says Yearling, "the yard as a whole is still largely manual in nature, with a lot of people managing record-keeping and tracking assets by hand."

The problem with this compartmentalized, siloed approach is that the yard is not an independent entity working free and clear from the rest of the supply chain. It is, in fact, interconnected with both transportation and warehousing. And, as a critical component in the freight-movement process, the yard is also closely intertwined with the rest of the supply chain. "In today's customer-centric business world, where everyone wants to do what's right for the customer," says Yearling, "sequestering the yard off into a corner and hoping it runs itself is not a profitable approach."

Instead, companies should view their yards as part of a large, comprehensive ecosystem where everyone comes together to access a single source of truth. For example, carriers should be able to quickly log into a cloud-based system, view their assets in customers' yards, and then make gate appointments online 24/7 eliminating the need for frequent phone calls and faxes. The digital yard also enables carriers to perform live inventory checks, view current load status, and obtain historical records of trailer and shipment activities—all without having to pick up the phone or send an email.

"Yard management systems not only provide visibility into the yard, but also help companies see the big picture," writes Inbound Logistics' Justine Brown in *The Illuminating Power of Yard Management Systems*. "Rather than working in silos, workers view the entire supply chain process, which can help them identify potential delays to improve overall efficiency."





“Any company operating at scale knows that it needs to fix the blind spot or risk losing money, time, market share, and customer loyalty in today’s fast-paced distribution environment,” says Yearling. “By implementing solutions that blend well with existing, enterprise platforms—and that take inventory accuracy and yard visibility to new heights—companies can truly leverage the digital yard as part of their overall dedication to streamlining and improving their global supply chains.”

By leveraging real-time information, metrics, and key performance indicators (KPIs), companies gain a wide range of benefits that they wouldn’t otherwise be able to leverage, including:

Visibility: Without an YMS that can provide real-time visibility to assets parked in the yard, organizations are reduced to doing a daily yard check with pen and paper and spending hours reconciling what they found with previous checks into spreadsheets or manual systems.

Velocity: YMS provides real-time visibility into asset locations and their operational status including dwell times in various states. By monitoring all the delays in the visit lifecycle, it becomes possible to accelerate operations, such as rapidly identifying available empty trailers for outbound loads.

Safety: YMS can improve safety by eliminating the need to have people walking around the yard performing manual checks. Instrumentation on yard trucks monitors speed, safe practices, and hours of service for yard truck drivers.

Process conformity: The YMS will ensure every trailer, tractor, and driver entering the facility is checked-in and out in a consistent way. Seals are checked, damage is recorded, and shipment information is associated with the trailer number.

The Network Perspective: By running facilities in isolation, they fail to recognize labor savings by consolidating talent into centralized control towers. The network view allows organizations to pool assets, including empty trailers, yard trucks, and to compare operational effectiveness across locations.

Collaboration/Transparency: Progressive shippers and 3PLs think of visiting carriers as their customers. Some even provide carriers with access to their YMS, so they can send real-time shipment notifications, which can happen before the shipment leaves the source facility.

Cost savings: Automating yard operations with a YMS is often justified through a combination of reduced demurrage costs, lower driver detention fees, and increased throughput.



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