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A Supply Chain Executive's Guide to Yard Management Systems:

How to Evaluate, Select, and Successfully Implement a YMS

Is it time to modernize and automate your yard management operations? For many companies, the answer is a resounding Yes!

The need for supply chains to become more agile, flexible, and responsive is more critical than ever, due to (among other things) the rapid growth of e-commerce, more stringent customer requirements like On-Time In-Full (OTIF), and the disruptions caused by the COVID-19 pandemic.

Historically, yard management has been the weakest link in the end-to-end supply chain, with many companies still relying on clipboards or low-tech solutions to manage their operations. As a result, they are incurring significant costs in the form of unproductive labor, higher demurrage and detention fees, lost or misplaced trailers, product spoilage, and excess inventory (among other cost factors). They are also failing to meet customer expectations around service, visibility, and responsiveness, which limits their ability to differentiate themselves and compete on customer experience.

In addition, carriers are becoming more selective in who they work with. Therefore, companies with very inefficient gate check-in and check-out processes, which keep drivers off the road and waiting, will experience higher tender rejection rates. This ultimately translates into higher transportation costs (not just in detention charges, but higher spot and contract rates too) and more delayed shipments.

Simply put, companies can no longer afford to ignore yard management, which is why yard management is moving up the digital transformation priority list for supply chain executives. But how do you begin the journey?

This brief guide is meant as a starting point for supply chain executives looking to evaluate, select, and successfully implement a Yard Management System (YMS).

Getting Started

The famous author and speaker Simon Sinek tells us that we should always start by asking "Why?" So, why implement a Yard Management System?

The answer to that question depends on answering a different question first: What supply chain and logistics problems are you trying to solve and/or what new capabilities are you trying to enable?

This is the most important question companies need to ask themselves before embarking on any technology evaluation and implementation project. Like the great Yogi Berra famously said, “You've got to be very careful if you don't know where you're going because you might not get there."

The answer to “Why a YMS?” varies by company, but here are some common challenges that companies often mention:

- We are experiencing excessive detention/demurrage fees
- We spend too much time and resources looking for trailers in the yard
- We don’t have accurate and complete visibility of inventory in our yard
- We have a lot of manual processes and data entry
- We have a lot of congestion at our gates due to poor visibility to inbound shipments, lack of appointment scheduling capabilities, and/or manual check-in/out processes
- Our yard operations are poorly integrated with our transportation and warehousing operations
- We have poor visibility of the real-time location of our yard trucks and drivers and their statuses and activities
- We have a lack of visibility to dock door utilization & availability, and to turn times of trailers at the doors

Before putting together a Request for Information/Proposal and reaching out to YMS vendors, you first have to clearly identify and define the business problems you want to solve and/or new capabilities you want to enable. To get started, it’s important to map your current yard management processes. “Why do we do it this way?” is a good question to ask along the way. It helps you identify which processes are truly important and add value, and which ones are wasteful and inefficient due to poor design or manual processing.

In short, mapping your current yard management processes will help you develop your list of “must-have” technology requirements, as well as identify opportunities for innovation and improvement.

The "Why" for Leaders in Yard Management

In a video series titled “Profiles in Yard Management Excellence,” we interviewed several supply chain and logistics executives whose companies are leading the way in driving continuous improvement and innovation in yard management. Here is how these executives answered the “Why a YMS?” question:

> **Carhartt:** “Visibility to incoming and outgoing shipments is not only a critical need, but it’s a very necessary part of doing business,” said Andra Gibson, Project Manager, Logistics Service Solutions at Carhartt. “Our team needed to know which trailers were onsite, how many times those trailers moved, what was on their inbound and outbound loads, and then when those vehicles exited the premises. We needed a solution that was more effective than manual yard checks and a paper trail that we utilized up to that point, to support the volume of movements that we were actually doing. We also needed a better way to track information on the drivers and equipment that were passing through our gates for security purposes.”
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> **Automotive Logistics Provider:** “Our business with Subaru grew from 100 trailers to 1,000 trailers,” said the President of an automotive logistics provider. “From a yard management perspective, our existing approach wasn’t able to give us the robustness and flexibility that we needed. When trailers are getting pulled at a high rate of speed, by the time you perform a [manual] yard check for 1,000 trailers, the whole yard has changed. We wanted a very flexible, robust system that would give visibility, KPIs, and tracking to know exactly what parts and what containers were in which location at any given time.”

Food and Beverage Manufacturer: “As part of our growth, we began providing 3PL services to one of our suppliers which involved importing a large volume of dairy product containers from New Zealand,” says the time was Director of Supply Chain Solutions and Analytics at a food and beverage manufacturer. “That meant we had to manage the container locations, maintain accurate inventory, and then share that information with our partners. The introduction of the Food Safety Modernization Act (FSMA) put the extra onus on yard security and our ability to track driver activities and validate their identifications. We were doing things manually, with a clipboard and a driver sign-in sheet in the office; it was a pretty simple process.”

Pactiv: “We had very little visibility over our yard processes, which we monitored and tracked via Excel spreadsheets,” said Chris Snow, who at the time was Midwest Fleet Manager at Pactiv. “Individuals often forgot to update the spreadsheets or neglected to save them to the shared drive. Spotters would spend 15 minutes or more looking for a trailer that we needed to unload or load quickly. And with up to 300 trailers in our yard at any given time, those 15+ minutes would quickly add up to hours wasted every day. We were also experiencing high inbound trailer detention fees because we weren’t always unloading carrier trailers in a timely fashion. After three days, carriers would start charging us trailer detention fees. That’s an extra $100 right off the top. If you’re not keeping a close eye on it, that total can grow pretty quickly.”

In an era where providing an enhanced customer experience is becoming a greater competitive differentiator, the simplest answer to “Why a YMS?” today is “Because we can no longer compete without one.”

Important Key Performance Indicators

Defining your business objectives, however, is not enough. You also need to identify (or develop) Key Performance Indicators (KPIs) that enable you to establish a baseline and measure progress and success moving forward.

Here are some KPI examples related to costs, productivity, and service:

- Time per Task
- Idle Time
- Dock Utilization
- Dock Productivity
- Cost of Spoilage/Expiration of Perishable Products
- On-Time Arrival
- On-Time Delivery
- Inventory Accuracy
- Carrier Detention Time
- Detention Fees
- Demurrage Fees
- Redelivery Fees
- Time at Gatehouse
- Time Spent Finding Trailers
- Dwell Time by Equipment Type
- Number of Tasks per Yard Jockey
- Yard Jockey Peak Times (to better manage manpower)

his is just a partial list of metrics, and companies may define and measure them in different ways. The important takeaway, however, is that when it comes to successfully implementing a YMS, the biggest mistake you can make is skipping or not investing enough time and effort in this upfront work -- that is, on clearly defining your business objectives and the relevant metrics to measure progress and success.

In addition, assigning a dollar value to these KPIs helps you to quantify the Return on Investment (ROI) of a YMS.

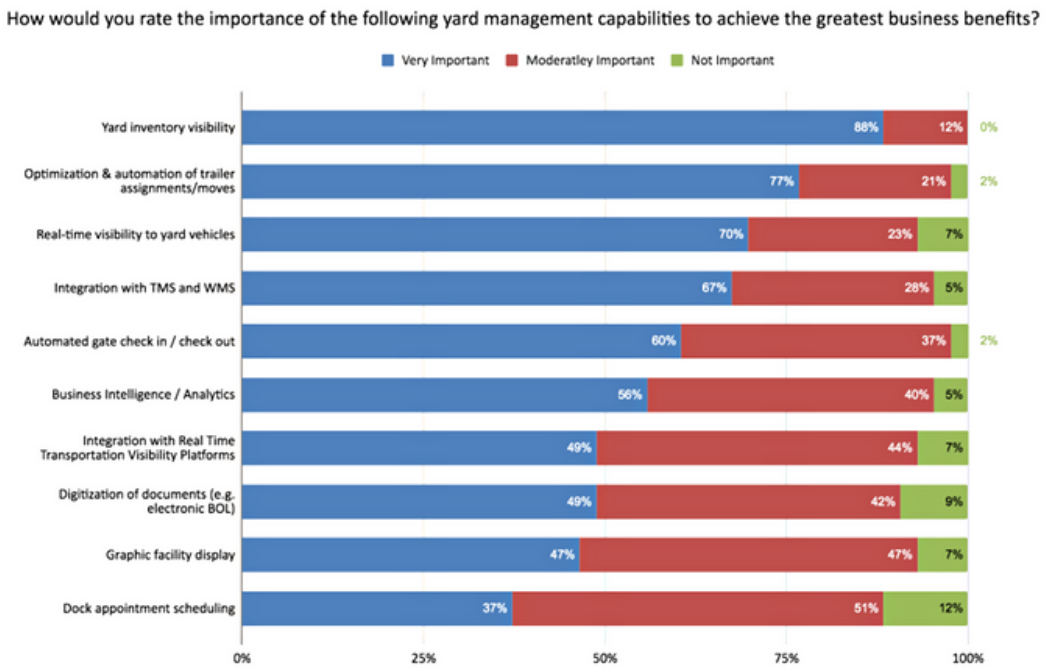
For example, what dollar value would you assign to the following outcomes:

- Reduce spotter hours by 30%
- Reduce equipment and fuel use by up to 50%
- Eliminate manual yard checks
- Avoid overflow yards by optimizing existing real estate
- Eliminate the need for gate staff by using kiosks

Which YMS Capabilities Are Most Important?

In a survey Adelante SCM conducted with supply chain and logistics executives, we asked them, “How would you rate the importance of the following yard management capabilities to achieve the greatest business benefits”?

“Yard inventory visibility” received the highest percentage of “Very Important” votes (88%), followed by “Optimization and automation of trailer assignments/moves” (77%) and “Real-time visibility to yard vehicles” (70%).



All the capabilities received at least 88% “Moderate” or “Very Important” votes. This implies that companies view all these capabilities as playing an important role in managing their yard operations.

Providing an in-depth analysis of YMS capabilities is beyond the scope of this paper, but here are some important capabilities to consider and questions to ask in your evaluation process.

Gate Management

The checking in and out of trucks, trailers, and drivers is a very manual and labor-intensive process for many companies. The net result is congestion and delays at the gatehouse, which often translates into carrier detention fees, delayed shipments, and disrupted loading and unloading plans. Therefore, there is usually a lot of opportunity for cost savings and productivity improvements by streamlining and automating gate check-in/check-out processes.

- Does the YMS enable self-service (unstaffed) gates? Is there additional software or hardware required to enable a self-service process?
- How are RFID tags used in the gate check-in/check-out process? What if a trailer arrives without an RFID tag?
- What are the key data elements required to facilitate and/or automate the gate check-in/check-out process? How is that data/information obtained?
- Is the data/information captured at gate check-in/check-out customizable?
- For staffed gates, are guards able to use handheld mobile devices to execute check-in/check-out processes?
- After checking in, are drivers automatically instructed where to drop the trailer? What criteria are used to determine drop location?
- Is there a process that allows drivers to “pre-check-in" before actually arriving on-site to speed up the final gate check-in process?

Appointment & Dock Scheduling

There are many variables involved with dock scheduling, including trailer type, freight type (e.g., refrigerated or not), package type (e.g., palletized or not), loading/unloading time, and available labor. Therefore, it is very difficult to develop an efficient and reliable schedule using a spreadsheet or other manual methods.

- How are dock schedules created? What factors/constraints are considered?
- Are schedules automatically updated if exceptions occur (e.g., late truck arrival)?
- Are carriers able to self-schedule appointments via the system?
- Are carriers automatically notified when a trailer is ready for pickup?

Yard Optimization

Yard truck drivers (wages, benefits, etc.) and yard trucks (purchase, maintenance, etc.) are two of the biggest cost items in a yard operation. Therefore, finding ways to maximize their productivity and utilization is very important.

- Does the YMS automatically generate move requests? Based on what criteria? Are those criteria customizable?
- How are move requests communicated to yard truck drivers? Are mobile devices and/or in-cab terminals required?
- How does the system determine which truck to assign to a move request?

Yard Inventory & Asset Visibility

As noted earlier, yard inventory visibility topped the list of “Most Important” capabilities among the supply chain and logistics executives we surveyed. Simply put, it is impossible to achieve timely, accurate, and complete real-time visibility of assets and inventory with manual yard checks.

- Which devices/technologies are used to track and locate trailers in real-time? What data is captured and sent to the YMS?
- Are users able to search for the location of specific purchase orders or product numbers? How is that link between trailer ID and contents enabled?
- Are users able to view location, status, and inventory information in a graphical map display? Is it possible to provide carriers, customers, and other trading partners with visibility of their assets and inventory in our yards?
- Can the system monitor the real-time location and status of yard trucks?
- How does the YMS use this real-time visibility information related to trailers, inventory, and trucks to optimize yard operations and automate workflows?

Business Intelligence, Analytics, & Reporting

In many ways, considering the large quantity of data it captures and generates, you can view a YMS as a business intelligence and analytics solution. It provides valuable insights on a wide variety of operational metrics to help companies identify continuous improvement opportunities.

- What standard dashboards/reports are available? Can users create their own custom reports/dashboards? Can reports be scheduled for users to receive automatically?
- Are users able to monitor the dwell time of assets at each lifecycle stage?
- Can users set up alerts to manage and prevent demurrage/detention fees?
- For refrigerated trailers, are users able to track temperature, fuel level, and operating status?
- For companies with multiple yards, can they get an enterprise-wide view of performance?

Again, this is not a comprehensive list of YMS capabilities, but it addresses many of the key areas that deliver measurable business value and it is a good starting point for companies putting together a Request for Information (RFI) or Request for Proposal (RFP).

Integration Considerations

A Yard Management System doesn’t exist in a vacuum. It has to exchange data and information with a variety of other enterprise applications, such as transportation management, warehouse management, enterprise resource planning, and real-time freight visibility systems. It also has to communicate electronically with external trading partners, including carriers, suppliers, and customers, as well as integrate with real-time location systems (RTLS), RFID readers, gate kiosks, and other IoT devices.

A big reason why some implementation projects get delayed or go over budget is that companies fail to identify upfront all the touchpoints and data transfer requirements between a YMS and other applications and devices. Similarly, companies need to determine their connectivity strategy and approach when it comes to carriers, logistics service providers, suppliers, and other external trading partners.

Today, integration via Application Program Interfaces (APIs) and web services is the preferred approach. APIs and web services provide more real-time data and visibility than EDI, for example, along with other integration and maintenance benefits. However, if legacy applications are involved, custom interfaces may need to be developed, which takes time and money. It's one thing if you know this upfront and build it into the project plan and budget, it's another if you discover it at the 11th hour.

In short, identifying all the integration touchpoints upfront, and how they will be enabled, is a critical factor for implementation success.

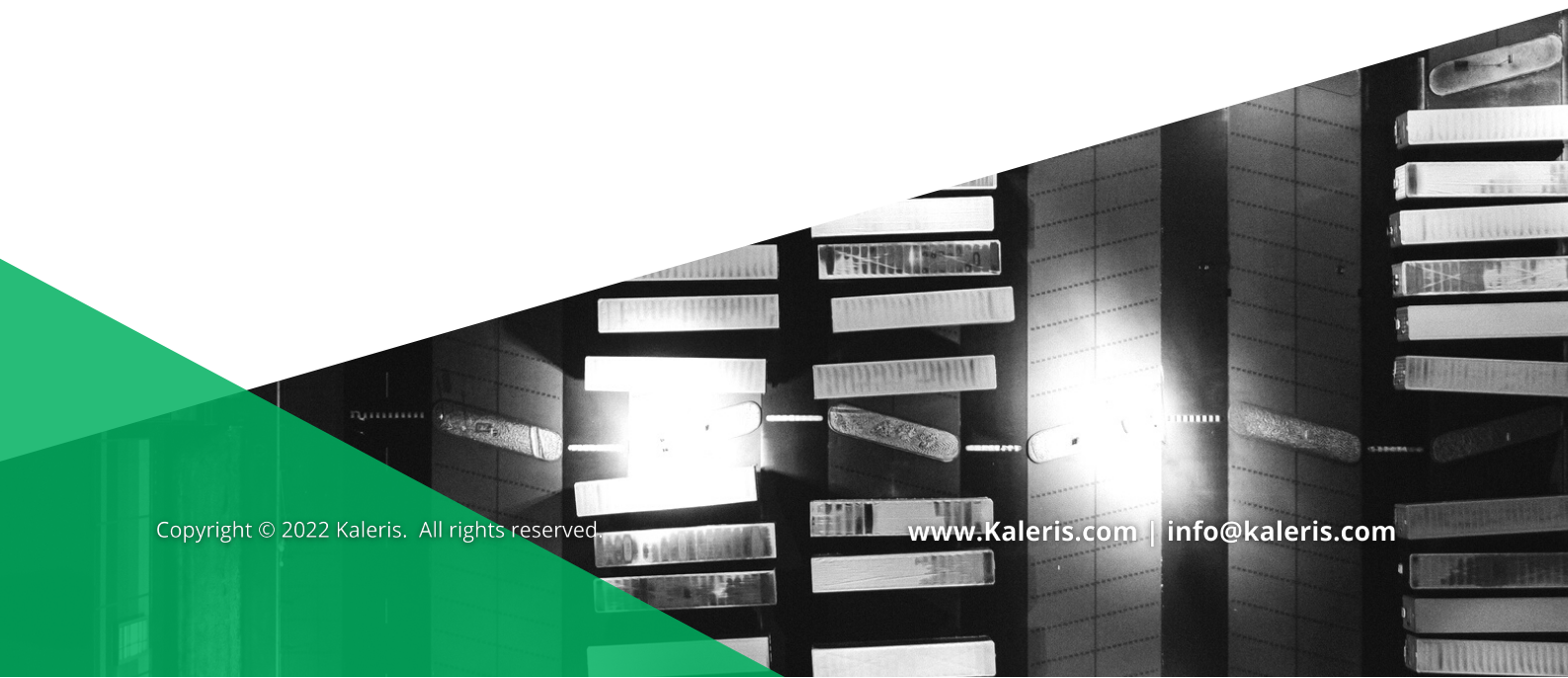
Selecting YMS Technology Partner

The "right" YMS for one company might be the "wrong" YMS for another. As we emphasized earlier, determining which solution and vendor are right for you begins by clearly defining the business problems you want to solve and/or new capabilities you want to enable; identifying the KPIs aligned with those objectives; mapping your current yard management processes to help you develop your list of "must-have" technology requirements and identify opportunities for innovation and improvement.

The more time you spend on this upfront work and analysis, the more focused and informed your evaluation process will be, and the greater your chances for implementation success.

At the end of the day, the "right" YMS solution and partner often comes down to factors that go beyond a checklist of features and functions, such as:

- Ease of Implementation/Speed to Value: How much time, effort, and resources are required to implement? Can you implement the solution in phases?
- Innovation: Is the vendor's R&D roadmap aligned with your near- and long-term needs? How quickly can the vendor add a new functionality that you need?
- Use Case Complexity: Is the solution capable of meeting our unique requirements and constraints?
- User Experience and Training: How configurable is the solution? Is it intuitive and easy to use and learn?
- Partnership: How easy is the vendor to work with? How responsive will they be to your needs? How knowledgeable and experienced are their subject matter experts? Can they teach you new things? Are your cultures and objectives aligned?



Final Words of Advice

"A lot of vendors can show you a PowerPoint of their solution, but you have to go see their solution in action at an operation that matches your needs," says Mike Meier from Venture Global Solutions. "If it passes that test, then you know [the solution is likely a good fit for you]."

In other words, as part of your evaluation process, **visit companies that have similar yard operations and requirements as you.** As the saying goes, seeing is believing. Also, when soliciting feedback about the solution, you should talk not only to their logistics leaders, but also to the people on the frontlines of yard management (yard truck drivers, gate staff, etc.). These "power users" will often provide great insight into the pros and cons of a solution.

Also, **put together a cross-functional team with a strong leader.** And there is one group, in particular, that must be included on the team: YMS power users.

One of the biggest mistakes a company can make with any technology implementation is to outsource the responsibility for success. Yes, you can engage with a third-party firm to lead or assist with the implementation, but this does not mean that you wipe your hands clean of all responsibility. You also have to roll up your sleeves and actively participate in the implementation process.

Who needs to participate? Ideally, you will have a person dedicated full-time to the project. This project leader doesn't necessarily need to be a yard management expert; they just have to know enough about the process, requirements, and goals to lead the effort successfully. They also need to have strong communication skills, have the ability to identify bottlenecks and resolve them quickly, and keep everyone involved with the project motivated and on track.

And finally, **when building the business case for YMS, look beyond the four fences of the yard.** Historically, the business case for a yard management system has been focused primarily on reducing the direct and indirect costs associated with yard operations. As we have highlighted in this paper, there are significant opportunities for companies to reduce costs and improve efficiencies within the "four fences of the yard." However, YMS provides significant business benefits across the enterprise, especially in transportation and warehousing. Defining and quantifying this broader value proposition will help logistics executives win the support of CEOs and CFOs to invest in digitizing yard operations.

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