



Doing More with Less:

Yard and Dock Management Systems From an ROI Perspective





Executive Summary

When confronted with what might first appear as an insurmountable challenge, it's always good to rely on the optimistic viewpoint that every problem indeed has a solution. Such is the case when facing the final realization that your current approach to on-site logistics is causing a major problem—or even a series of problems—and is in critical need of its own unique, tailored solution. In this case, rest assured that doing more with less through automation will result in the best possible outcome.

Ideally, the more-with-less-solution you're seeking will address a variety of pressing issues that encompass all of the various aspects of your logistics operation, including gate control and management, to yard activity, the loading dock and its equipment as well as the real-time capability to track assets accurately.

This white paper takes a direct look at the most critical logistics problems that your operation might be facing in the yard and/or at the dock.

Obviously, every solution to a problem does take some level of investment, whether time, money or both. The key to preserving profitability with an investment in a yard management system (YMS) and/or dock management system (DMS) solution is to ensure that your return on that investment (ROI) is both predictable and achievable within a relatively short time period.

This white paper takes a direct look at the most critical logistics problems that your operation might be facing in the yard and/or at the dock, such as costly detention charges, inefficient processes and security issues. Other yard and/or dock logistics issues include difficulty controlling expenses, outmoded communications methods, idle personnel, and high labor costs.

Compounding inefficiencies in the yard and at the dock include a heavy reliance on manual labor to perform a variety of tasks that could otherwise be automated, paper-based tracking resulting in low availability of real-time management intelligence and too much time spent communicating with drivers, vendors, brokers and customers.

In turn, this paper provides an overview of several YMS/DMS solutions and approaches that will not only solve the aforementioned problems facing on-site logistics operations, but that will ensure a timely ROI using a proven and automated “less is more” approach. And backing that up are examples of three companies in North America that are either currently experiencing or anticipating significant improvements in cost savings, customer service and productivity with automated yard and dock management systems.



Inefficiency: The Core of an Industry Problem

As the global supply chain continues to grow in complexity, facility managers and warehouse executives face a unique set of challenges. While many issues and costs associated with moving materials and products might seem out of one's control at times, working toward optimizing processes—from the gate through the yard and to the dock, as well as the warehouse itself—can in turn increase operational and logistics efficiency.

Historically, yard and dock management has presented its own set of specific challenges that are still evident to this day in many operations. Yard and dock management has traditionally been inefficient and labor-intensive. On top of that, managing yards and docks has produced a fair share of asset tracking and security problems, as well as communications issues, that all impact bottom line profitability.

According to Aberdeen Group's most recent survey of supply chain executives, 80% of companies are not only involved in the transformation of their supply chains, but expecting to gain a ROI on their technology initiatives. A key transformation driver is supply chain responsiveness, which means that supply chain visibility and agility combine to deliver a responsive supply chain that can quickly identify and react to changes in supply, demand and execution threats/opportunities. Based on Aberdeen Group's research, this results in optimizing the supply chain and through the use of enterprise resources—such as a YMS/DMS solution for the purpose of this white paper—ultimately improves customer satisfaction. This further proves that all is not well with the traditional methods.

There has always been a blind spot surrounding such critical factors as the real-time location of trailers and associated shipments.

Even though companies have been increasingly using transportation (TMS) and warehouse management systems (WMS), there has always been a blind spot surrounding such critical factors as the real-time location of trailers and associated shipments.

The bulk of yard management problems have essentially resulted from a lack of intelligence about prioritizing shipment arrivals, identifying trailer contents, managing yard jockey activity, standardizing yard processes, reducing the time needed to allocate vehicles to loads and avoiding unnecessary trailer movement.

At the dock, security issues abound, as well as haphazard management practices, scheduling problems and the high cost of ongoing maintenance. Without proper intelligence at the dock, there also exists a lack of visibility, inefficient live and staged trailer coordination and turn times. As a result, companies experience high costs related to detention charges, product spoilage and the potential for employee accidents.



When faced with so many complex challenges and problems, the critical question that every warehouse executive must ask is, “Is there a way we can cost-effectively systemize our yard and dock management practices and guarantee a sound return on our investment in a short time period?” The simple answer to that question, is “yes, and often in as little time as 12-24 months.”

How to Calculate Your ROI

Your expected ROI time frame is as simple as collecting some key statistics for your yard, dock and/or gate as they apply to your specific situation. Based on the yard, dock and gate statistics of a typical operation in America, as seen in the sample (see **Figure 1**), the ROI should be about 14 months. And even though the investment to implement such systems is larger for bigger operations, the ROI is typically faster than smaller operations. For example, one company was able to pay for their entire system in 12 months only with the reallocation of their dispatch staff that was previously used to manually manage all the trailer moves in the yard.

Traditional Methods Losing Effectiveness

There’s no doubt that as supply chains become longer and more intricate, traditional management methods and practices are rapidly losing their effectiveness. Today, supply chains come with much higher stakeholder risk, greater global expectations, sudden and dramatic changes in demand, and an insatiable desire for interconnectivity.

Following are just a few examples of how traditional approaches to yard and dock management are still inefficiently addressed today:

GENERAL PARAMETERS	
100 trailers	Number of trailers loaded/unloaded per day.
250 days/year	Number of operating days per year.
20% Live	Percentage of live loading versus staged loading.
90 minutes	Time it takes daily to schedule all trailer activity.
\$20 per hour	Fully burdened hourly rate of warehouse staff.
0 per month	Trailer detention/demurrage charges incurred per month.
DOCK-SPECIFIC PARAMETERS	
50 active dock doors	Number of active loading dock doors.
90 minutes	Average load/unload time per live trailer.
5 hours	Average load/unload time per dropped trailer.
10 minutes	Average time to locate live driver and have them leave the dock door.
YARD-SPECIFIC PARAMETERS	
3 yard truck(s)	Number of yard trucks used per shift.
60 minutes	How long does trailer inventory take per day?
GATE-SPECIFIC PARAMETERS	
2 gate(s)	Number of gates.
10% a day	Percentage of facility dedicated trailers processed each day.
5 minutes	Time to check-in and check-out a trailer at the gate.

Figure 1
YMS/DMS ROI calculation example



- **Physical Inventory Management:** equipment by type and the number of containers and trailers are only accurate as long as physical inventories are done on a regular basis. However, as soon as a trailer is hooked up and pulled out of the yard, the accuracy of the inventory has been compromised.
- **Yard Driver Performance:** tracking and watching drivers by using a spreadsheet, or worse yet, a scratch pad or clipboard to write down driver moves, clocking in and clocking out, and with no way to determine which employees are performing better at their assigned jobs.
- **Detention Monitoring:** live drivers typically have two hours to handle a load. Not having the ability to receive a notice—such as an automatic email that provides a list of trailers that are in jeopardy of detention—means that problems will only mount over time.
- **Demurrage Monitoring:** if a trailer is delivered on-site or a sea container is dropped in a particular location and there's no way to monitor how long the trailer or container has been sitting, demurrage charges start adding up. For example, only 20 trailers in demurrage out of 1,000 in demurrage for four days at \$25 a day will result in an \$2,000 bill.
- **Missed Live Appointments:** if product is brought from warehouse racks to the dock in preparation for loading, and the appointment is missed, then either the product remains on the dock and clogs up the area, or the product has to be put back and moved all over again for a new appointment. Repeated missteps can quickly add up unnecessary costs.
- **Broker/Carrier Communication:** due to lack of notification via an automated tracking process, valuable time is wasted on the communications loop between shipping offices and brokers and carriers notifying them that shipments are late or early, or completed and ready for pick up. Having no time stamp record to account for when truckers enter and leave a property can possibly result in bogus detention invoices.
- **Scheduling Problems:** when a specific department gets backed up, for example due to a missing worker who is out ill, a department supervisor might make unilateral, haphazard decisions to catch up. Unfortunately, no one else in the system, including scheduling, the broker, the customer, etc. knows which trailer was worked.

The list of problems and issues can go on and on, but those identified in this white paper can obviously end up costing a company hundreds of thousands to even millions of dollars in unnecessary annual expenses. That is where automation can literally come



to the rescue. Within months, the expense for such automation can be recouped. And once that happens, your ongoing cost savings will make a direct impact on your operation's overall profitability.

Automation and Visibility Are the Solution

Advancements in technology in general move exponentially fast, as is consistently demonstrated by rapid developments in mobile computer devices and smartphones. Likewise, the vast and diverse technology that the supply chain industry relies on is advancing at its own fast clip as well. On-site logistics improvements continue to drive innovation in the industry, and automation is one improvement area that the logistics world is watching very closely. And one way to clearly increase operational and logistics efficiency is via an integrated YMS/DMS.

Some YMS/DMS programs on the market are specifically programmed for internal use only with tracking and inventory capabilities. Other programs focus outside the four walls, helping to better organize a yard for higher functionality. The optimal solution you should consider is a system approach that encompasses all on-site logistics needs, from gate control and management, to yard activity, the loading dock and its equipment and door management for an entire building. An integrated YMS/DMS should also contain modular components so that the system as a whole can be tailored to individual applications and needs.

For example, the dock is an ideal place to initiate superior logistics process goals. From loading dock teams to workers out on the yard, to teams that are working behind the scenes inside the facility, an automated system can help increase efficiencies and open up communication lines between each point in your supply chain. By increasing efficiencies on your loading dock, in your yard and throughout your facility you can ensure that your supply chain is setting off on the right foot from day one.

An ineffective loading dock will ultimately mean a less efficient supply chain.

In the recent past, most systems didn't talk to each other. A loading dock and yard management system that doesn't communicate between teams results in a much slower, less responsive supply chain. As a result, an ineffective loading dock will ultimately mean a less efficient supply chain.

Without an integrated system in place, something like a lost trailer in the yard could cause massive delays as a yard employee must drive around from trailer to trailer, dock position to dock position in a slow and inefficient attempt to locate the lost asset. Not to mention detention fees, demurrage charges, spoiled product or delay induced bottlenecks at the gate.



Recording every trailer movement

In contrast, a YMS/DMS system that uses passive RFID (radio-frequency identification) and sensor technologies, as well as GPS tracking, will record every trailer movement. This increased visibility and monitoring creates real-time performance reports, with the ability to reduce yard check time by 95 percent, and yard labor and equipment resources by up to 30 percent. In addition, by capturing real-time loading dock status updates from a single interface, and providing paging devices to live drivers to make trailer movements timely and efficient, can reduce labor hours and increase dock utilization by up to 20 percent.

With a fully integrated YMS/DMS system, the transportation department (which typically manages trailer movement) can schedule appointments and send automatic notifications to carriers when a specific trailer is ready for pick up. The yard module receives this information ahead of the trailer arriving and is fully aware and ready to accept the arrival. When the trailer arrives at the gate, any identification number (PO#, Load#, etc.) will automatically identify the load and populate the whole trailer story in the application. This tells the guard shack employee and the operation, which trailer arrived, what is on board, where it came from, where the trailer needs to be (yard parking lot to dock door) in addition to other time-saving data.

An integrated YMS/DMS can certainly help you increase visibility, productivity and sustainability from the time a trailer enters your yard until the time it leaves.

This automatic check-in process can result in a 50+ percent reduction in time at the gate. As an example of time savings, just eliminating a mere two-and-a-half minutes per trailer (inbound and outbound) when running 200 to 300 trailers per day adds up to an enormous amount of time savings.

The yard module then receives the alert that the trailer has arrived and issues any required move task to the yard jockey, so he knows exactly which trailer (thanks to the RFID tag affixed to the trailer at the gate) to move and where to take it. The warehouse system will assist in locating the correct door, and facilitates priority movement of equipment to shipping or receiving doors based on warehouse requirements and loading/unloading schedules. Overall, an integrated YMS/DMS can certainly help you increase visibility, productivity and sustainability from the time a trailer enters your yard until the time it leaves.

Let the system decide

With regard to automated YMS/DMS locationing, you don't have to manually set up a series of rules for yard trucks to follow. You simply let the system decide where to

locate and position trailers and keep track of locations automatically at any given time. In fact, it's been proven that YMS/DMS-directed moves can result in a 20 to 30 percent reduction in yard truck hours. For a large manufacturer that might be running 5 yard trucks 24 hours each day at \$45 per hour, for example, that's \$5,400 per day. Based on six days per week, that amounts \$1.68 million per year in yard truck expenses. A 20 percent reduction in time would translate into an annual cost savings of \$337,000.

Another company was charged \$21,600 per week for 480 hours of yard services prior to having an automated YMS installed. They reduced their yard service hours to 380 hours per week, and saved \$225,000 per year.

Yard inventory management

As a clear example of yard inventory inefficiency, inventory must be taken as much as every two hours for cold products, or for a dry warehouse, once at the beginning and end of each shift. Employees involved in yard inventory might spend two hours each day walking around with a clipboard verifying what's on the yard, where it's located and what is on each trailer.

Once they arrive back at the command center, the employees type their information in to a computer, which risks errors in transposing the information, or they simply transfer the information to a whiteboard. However, once anything moves in the yard or something is unloaded, the information immediately becomes inaccurate. A YMS/DMS can solve this problem by producing accurate inventories and from an ROI standpoint, eliminate the need for up to 95 percent of all inventory labor, which is at least two hours a day to eight hours a day, depending on whether cold or dry items are in play.

Integration means more effective decision making

In addition, critical decisions that are made when an integrated YMS/DMS is implemented (see **Illustration 1**) are always going to be more effective. Such a system will utilize specific dynamic business process rules to help decipher the best dock position to send

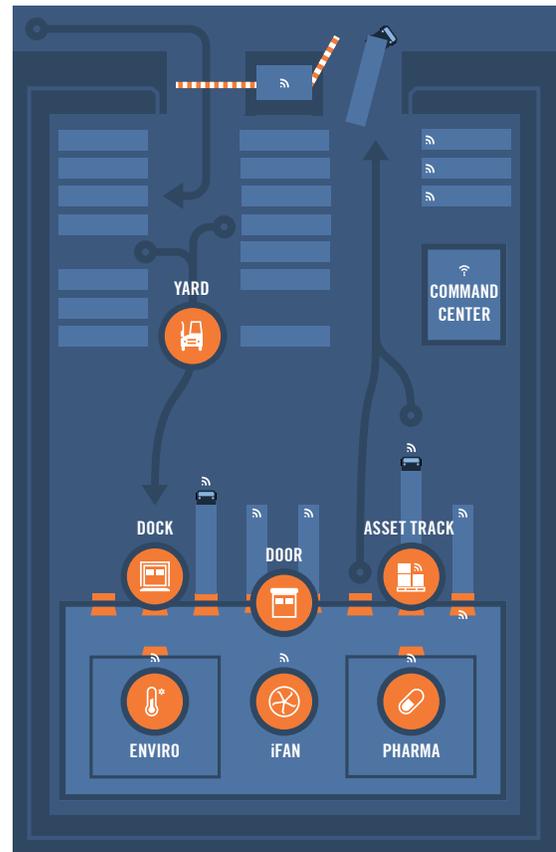


Illustration 1
Example of an integrated YMS/DMS



a certain trailer to. For example, on any given day, the system might identify that forklift resources are at full capacity in certain areas of the warehouse based on certain inputs. The system will then use an algorithm to churn out a result telling the YMS/DMS where to send the trailer for the most efficient operation possible, perhaps with more forklift capability.

Decisions can also be made while yard activity is in motion. The system will send an automatic task to the driver in the trailer so that things happen in real-time. Such real-time data, and a full representation of your yard and yard equipment, should be viewable via easy-to-understand visual user interfaces, including automatic movement updates.

A fully integrated YMS/DMS also serves the internal boundaries of your loading dock so all loading dock equipment—dock levelers, dock doors and restraints—can be managed and controlled automatically. With real-time information and value-added capabilities, a YMS/DMS will keep your dock running at optimal efficiency by collecting critical equipment analytics that enable you to see your entire loading dock, discover areas to increase additional efficiency and keep your facility running at peak performance.

What about doors and security?

Door management is another concern because protecting your product, but particularly so when you're dealing with items sensitive to contamination, such as food and pharmaceuticals. Open doors can let in dust, dirt and pests, and lead to temperature or air pressure changes that can adversely affect your products—or even your energy costs and your people. You should employ a YMS/DMS program that can remotely monitor the status of loading dock equipment at a facility. Remotely controlling that dock equipment will contribute to cutting waste, saving money and staying in compliance with government regulations and auditors.

An integrated YMS/DMS should be capable of being programmed to work fluidly with the TMS and WMS without interference.

An integrated YMS/DMS program should also benefit the overall security solution of a facility. For example, trailer presence sensors, combined with trailer restraints, allow users to virtually “lock down” a trailer to a dock door.

And lastly, an integrated YMS/DMS should be capable of being programmed to work fluidly with the TMS and WMS without interference.

Radios have traditionally been the technology of choice for the majority of loading docks across the globe, resulting in dispatchers sending orders or directions at the same time while fighting for clarity, and in many cases, losing out to noise interference and



misheard instructions. A YMS/DMS takes the noise out of the equation and introduces drastic technology improvements. For instance, GPS-enabled locationing allows a YMS/DMS to direct yard jockeys to the closest trailers via a mobile computer in the cab. In the past dispatchers wouldn't know where to go. The larger the operation, the greater the confusion and the higher the costs associated with drivers burning fuel and time.

Real-World YMS/DMS Applications

There are any number of scenarios that can vividly illustrate an operation's ROI potential from a yard and dock management system. Following are examples of three such real-world YMS/DMS applications:

A major auto manufacturer recently invested \$500,000 in a YMS/DMS that in turn resulted in relocating six dispatch personnel into new jobs. Prior to the auto manufacturer's YMS/DMS investment, the dispatch people essentially spent all day calling trailers in and out of dock doors from their radios. As a result, the auto manufacturer was able to realize an ROI on its YMS/DMS investment in one year.

On the East Coast of the U.S., and prior to its investment in a YMS/DMS, a beverage company relied heavily on a manual process for trailer inspections. Personnel placing temperature sensors on cooler trailers and assigning trailer seals were documenting the entire process on paper requiring multiple trips back and forth to the shipping office to record information. The process is now being conducted using mobile tablet devices. What previously took 20 minutes per trailer is now only requiring five minutes per trailer. Using an automated tracking process provides a high degree of functional power to the YMS/DMS user and eliminates a long paper trail to dig through in case an inspection history is needed.

The retailer opted to install a YMS/DMS to source the pertinent data to optimize logistics and comply with CFIA regulations.

In Western Canada, one of the world's largest retailers faced a productivity issue that was affecting the time it took to ship product from a distribution center (DC) to retail stores. First, trailers were spending too much time at the loading dock. Second, the Canadian Food Inspection Agency (CFIA) requires that food distributors have a trailer present and secured at their dock before opening the door. The retailer's management was aware of the problems and the CFIA regulations; however, they did not have access to the data necessary to show the cause of these problems and provide an effective solution. The primary problem was trucks spending too much time at the loading dock after unloading was complete.

The retailer opted to install a YMS/DMS to source the pertinent data to optimize logistics



and comply with CFIA regulations. A variety of sensors now gather this real-time data which allows DC's management team to monitor and manage trailer activity. Prior to installation, management had no way to track dock utilization, the time a trailer is being loaded/unloaded compared to how long the trailer has sat idle at that dock door. With their new YMS/DMS, the retailer was able to determine that their utilization rate was only 30 percent. After using the data, the retailer experienced a 66 percent increase in dock utilization, which means they're becoming more efficient with their dock door assets and gaining capability to reduce labor costs, trailer and personnel idle time, fuel consumption, detention charges, security or environmental breaches and maintenance.

Most importantly to the facility, the system's yard and dock management capabilities provides optimal use of all of the loading dock positions and ensures compliance with the regulations developed by the CFIA.

What to Look For In a YMS/DMS Solution

As you begin to evaluate vendors who can help you automate the management of your warehouse docks and yards, consider what solution would best help your supply chain meet or exceed complex expectations. Also, give careful consideration to how soon an integrated YMS/DMS solution will provide a ROI. Following are some key criteria they should be able to meet:

- Ability to solve logistical challenges from the guard gate to the loading dock.
- Real-time visibility into operations.
- Latest generation in technology to automate data collection and processes.
- Ability to receive automatic alert notifications so that you always know immediately about any problems.
- User-friendly graphical interface that helps turn large amounts of difficult-to-manage data into meaningful and actionable charts and reports.
- Modular-based system to offer flexibility to meet your unique operational challenges.
- Easy integration into existing business systems and processes.
- Scalable and flexible enough to manager any number and variety of assets.
- Projected ROI within 12-24 months, or less.
- Ability to grow as your business grows.

Summary Conclusions

Essentially, effective yard and dock management boils down to the basics: properly scheduling a load to your facility, ensuring an efficient process at the gate house upon arrival, getting a trailer into the yard and positioned at the right spot, knowing where the trailer is and what's on it at all times, making sure it moves from the yard to the right dock at the right time, and exits the facility efficiently and with the proper load.

With an automated yard and dock management system, on-site logistics guesswork is eliminated, resulting in no more inefficient manual processes. And because the whole on-site logistics process is automated from start to finish, the ROI starts becoming clearly apparent.

From the various cost and time savings examples shown in this white paper, you can easily see how an investment in an integrated YMS/DMS solution will produce a rapid ROI from several different perspectives. Doing more with less is definitely an achievable outcome for your entire on-site logistics operation.

To learn more about integrated yard and dock management, as well as which approaches and solutions are best suited for your logistics operation or warehouse, send an email to info.4sight@assaabloy.com, or place a direct call to **866-691-1377**. You can also find out more, as well as gain access to an online calculator to project your own ROI, at www.4sightsolution.com.

About 4SIGHT

4SIGHT is an advanced software system that solves logistical challenges from the guard gate to the loading dock. 4SIGHT can also manage the doors and assets inside your warehouse. 4SIGHT combines the loading dock, the yard and the warehouse into one comprehensive unit, providing managers with the visibility, reporting metrics and productivity tools they need to increase efficiency and profitability. 4SIGHT is comprised of a module-based system which makes it easy to choose the solutions you need to solve your operation's particular challenges, and 4SIGHT modules can be integrated with your existing business systems.

4SIGHT is part of the ASSA ABLOY Entrance Systems portfolio of products, which brings even more well-known door and entrance control brands and experience. ASSA ABLOY Entrance Systems, based in Malmo, Sweden, also expands our already extensive global presence and provides a larger platform of solutions to customers worldwide.