

WHITE PAPER

A Practical Guide

A Practical Guide: Purchasing and Implementing a Yard Management System

By Gregory Braun

Senior vice-president,
C3 Solutions



C3 Solutions

Table of content

1. Yard Management	02
2. YMS—Who needs it?	04
3. What to look for: Evaluating a YMS	05
4. What's the ROI?	13
5. Blueprint for a successful implementation	14
6. Conclusion	19

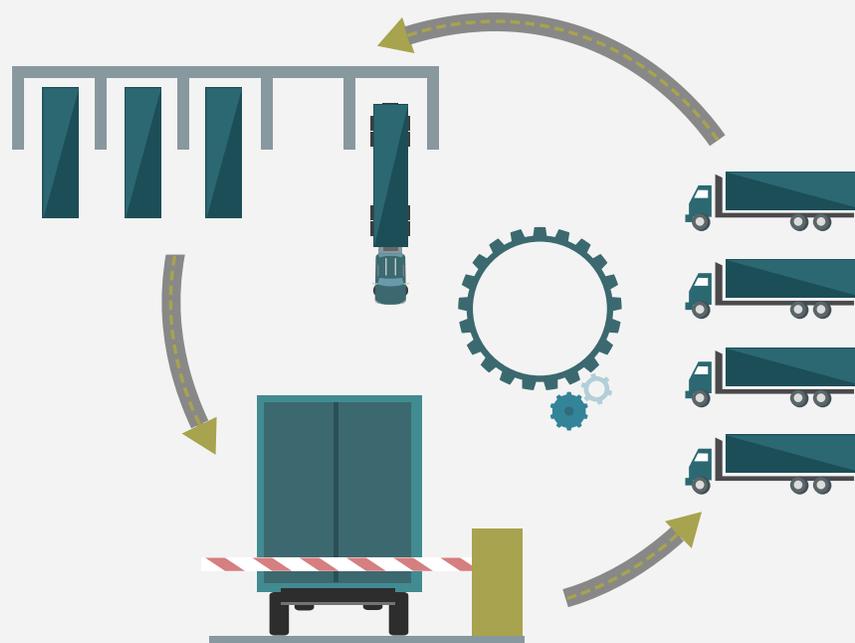
1. Yard Management

A Yard Management System (YMS) is software that manages and tracks traffic coming into and within a site such as a distribution centre yard, factory facility or container terminal.

In this guide we'll explore how YMS can help to solve pain points in the yard as well as some opportunities it offers across the enterprise. We'll also look at what you need to evaluate a system and find a vendor, and how to estimate an ROI, as well as sharing some tips on implementing a system.

It is designed to manage all the scheduling of inbound loads, optimize the labour requirements needed to move mobile assets around the site, and track private or third party trucking units while they are on site.

In a nutshell, YMS allows you to look right through the walls of your facility to extend visibility into the yard. It only takes a little imagination to picture the potential that information could have for improving operations.



Why now?

YMS may seem like a new concept, possibly because for many years it has been the preserve of large enterprises that could afford the cost of the enterprise software and IT infrastructure to support it.

Recent technological advances, however, have now allowed for the evolution of YMS into a solution that almost any company can benefit from. Four developments in particular have made the systems more accessible:

- 1. Software as a service.** Cloud-based software options mean the cost of acquisition has declined dramatically, putting YMS within reach of smaller companies.
- 2. Wireless technology.** Cellular networks have come a long way lately. LTE and 4G are robust enough to be trusted with the communications for a YMS. Expensive private networks are no longer required.
- 3. Mobile devices.** The ready availability, lower cost, and common operating platforms of current mobile devices means they can be used as the driver interface for YMS. Companies can now leverage mobile with their own units, or rely on employees' personal devices as the main or back-up interface.
- 4. Standardized systems integration.** Web services technology now allows communication among applications and platforms through standardized protocols. This enables quicker and cheaper communications than old solutions like EDI, and means that the YMS can be easily integrated with enterprise systems like warehouse management systems (WMS) or transportation management systems (TMS).

2.

YMS— Who needs it?

While the cost of YMS has dramatically declined in recent years, that alone doesn't make a case for needing it. But given the benefits it can confer on an operation, there are many reasons to consider implementing one.

We've put together some of the key signs that your operation might benefit.

Eight signs your yard needs managing and how a YMS can help

The sign

How a YMS can help

1. It feels like you need another yard driver

If your yard drivers are spending valuable time hunting for misplaced trailers, moving the same trailer multiple times and/or the operation is continually waiting on yard drivers to either remove or bring in trailers, you have a good case for implementing a YMS.

One of the largest costs of operating your yard is the driver. When productivity slips due to inefficient or non-existent planning, that driver is overworked and it looks like you'll need another person doing that job.

A YMS will optimize the drivers' tasks, help prevent double moves, streamline communication and eliminate hunting for trailers in the yard.

2. Manual yard checks are becoming more frequent

If staff are out in the yard doing trailer inventory several times a day, they are wasting valuable time and collecting information that is immediately out of date.

With a YMS you can enforce best practices so that trailers are where they are supposed to be, and manual counting will be a thing of the past.

3. Yard operations are not optimized

A lack of planning means that activities are haphazard, nobody takes responsibility and there is a general lack of visibility into activities and trailer locations.

A best-of-breed YMS requires a thorough planning process, taking into account business objectives and constraints and building operational rules that will optimize labour and asset utilization.

4. The gate is a chokepoint

Manual in and out processes are slowing things down and causing lineups at the gate. The delays then encourage drivers to just drop their trailers in the first available spot instead of where they've been instructed to put them.

A YMS will allow for automatic check-in via mobile device, and will direct drivers to leave their trailer in an easy-to-find and logical location, thereby helping to encourage good practices.

5. Carriers want to drop trailers so their drivers can leave

With the severe and worsening driver shortage affecting carriers' ability to deliver loads, it's no wonder they are increasingly requesting drop and hook programs. Enabling a driver to spend less time at the DC delivering his load means he is more productive for his employer and can make more money for himself.

A well-managed, YMS-enabled facility makes it possible for drivers to roll in, drop their load and move on, in the quickest possible timeframe. It will also help avoid driver detention fines imposed by carriers.

6. Trailer demurrage fees are high and climbing

If you cannot process third-party trailers quickly enough with your drop and hook program, you will end up paying charges for container dwell time. The worse the backlog, the more demurrage fees you'll end up forking over.

Since carriers normally include a standardized amount of 'free' time before demurrage fees kick in, your YMS can build that in, and will be able to prioritize the trailers that need to be moved to avoid being charged. The YMS will also automatically notify carriers that their trailers are available, eliminating another touch point for your labour force.

7. Dock staff are frequently waiting for trailers

If docks are sitting idle waiting for trailers, you are wasting valuable human and infrastructure resources, not to mention potentially delaying important outbound shipments, and impinging on warehouse operations.

A YMS will provide visibility into when a dock is becoming available, and will notify the yard driver that a particular trailer needs to be moved there. Based on your business priorities, it will ensure the maximum throughput is achieved with minimum idle time.

8. Costs are out of hand

The lack of coordination combined with excessive trailer moves, demurrage charges and wasted labour are all adding up to increased costs for yard activities.

Yard management can ensure that all resources are used to their optimum advantage and waste is minimized.

3.

What to look for: Evaluating a YMS

Assuming that at least some of these challenges resonate in your operation, it's probably worth your while to think about the capabilities a YMS can offer. Picture the benefits that a system delivering all these attributes could deliver to your business.

8 things a YMS can—and should—do:

1. Deliver real-time visibility into everything going on in the yard.

That includes trucks, trailers and their contents, yard trucks and their drivers. Instantly know where each or all of your assets and inventory are with a click or a tap.

2. Optimize tasks for yard drivers.

Managing yard drivers is the most costly part of your operation and is key to delivering service within your organization. With a YMS these dedicated drivers are equipped with a mobile device that transmits their next instruction. The moves planned by the YMS are optimized according to your business requirements to use the least resources and create maximum efficiency.

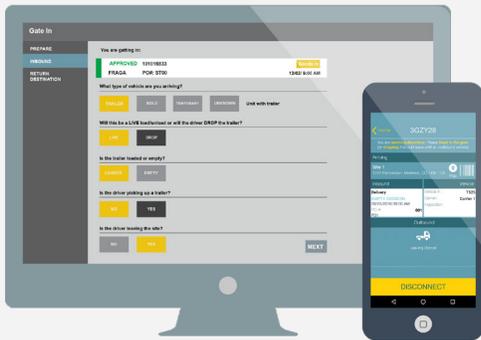
3. Dock Scheduling.

In order to get the best out of your assets, including the docks, and to maximize operational throughout, scheduling the docks should be a key part of the system. Both inbound and outbound loads can be managed this way, taking into account a custom rule set based on your business objectives and requirements.

The screenshot shows a dock scheduling interface with a grid. The columns represent different dock areas (1-7) and the rows represent time slots from 07:00 AM to 10:00 AM. Each cell in the grid contains information about units and pallets, such as '70 Units 16 Pallets' or '63 Units 14 Pallets'. The interface includes a header with 'Chicago Main' and 'Friday, Feb 13', and a footer showing a total of '2,271 Units' and '314 Pallets'.

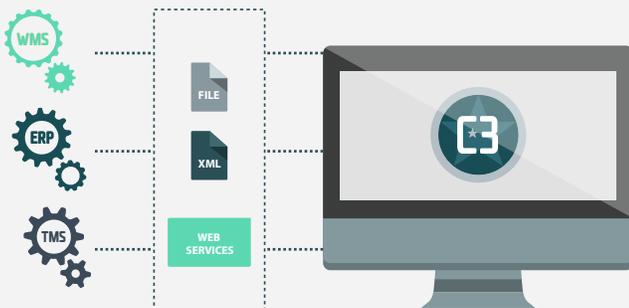
4. Manage the gatehouse.

The YMS should be able to enhance gatehouse operations by streamlining the amount of time and effort it takes to check trucks and trailers in and out. As the gate is the first point of contact and the main security post for the facility, it's very important for the staff there to be able to quickly and easily identify each specific vehicle, why it's there and where it needs to go. Self-serve options for check-ins are a very useful tool for managing scheduled arrivals, and the YMS should offer this functionality.



5. Enable integration.

In order to maximize the value of your YMS it needs to be able to communicate with other systems, like your WMS and TMS, preferably through a standardized mode such as web services. This integration will eliminate the need for data re-entry and will ensure the continuity of the data contained in all the systems.



6. Be dynamic.

The YMS should be able to adjust priorities on a continual basis, responding to peaks and valleys in shipping and receiving volumes. It also needs to be able to forecast vehicle availability to respond to those fluctuating volumes

7. Communicate.

The system needs to perform as a control tower, wirelessly communicating instructions and critical information to all the yard drivers.

8. Provide data.

The YMS should be able to provide feedback on key indicators and metrics to allow management to gain insight into past performance that can be used to optimize yard and dock operations.

Standalone or add-on?

There are two principal ways to obtain a YMS. You can acquire a standalone YMS that is purpose-built for yard management. A second option for getting the functionality is adding a yard module to your pre-existing WMS software.



YARD MODULE

A yard module basically operates as an extension of the WMS running your warehouse. It is designed to track the inventory on hand, in whatever storage medium you are using, whether it's racking inside or a container outside the four walls of the DC. It optimizes storage capacity utilization, manages the labour that is required for storing and accessing (picking, putaway, packing etc.) that inventory, and manages inbound and outbound orders.

BEST-OF-BREED YARD MANAGEMENT SYSTEM:

A YMS is specifically designed to optimize labour and trailer resources and movements in the yard environment. Every yard is unique, so the system is designed with the ability to prioritize how trailers are handled at each site according to that yard's own needs. If one site needs to maximize labour productivity, the YMS can be tailored to do that. If another wants to emphasize inventory fill rates, that can be its overarching design objective.

In addition to the eight tasks a YMS needs to be able to do, here are five additional points that distinguish it from a yard management module:

- ✓ Track, control and optimize movement of trucking assets in one or more yards associated with any one site.
- ✓ Manage the use of receiving and shipping dock doors and parking locations.
- ✓ Schedule and receive loads based on configurable priorities.
- ✓ Adjust priorities based on volumes.
- ✓ Use GPS mapping to manage trucking assets on site and incoming, particularly for large, unmarked lots.

10 places a YMS can optimize operation

1. Retail distributors with large operations, hundreds of private and 3rd party tractors and trailers.
2. Postal or parcel DCs with high volumes of inbound and outbound trailers on a tight time schedule.
3. Large import container yards with a need to store, track, and retrieve multiple containers on short timelines.
4. Campus-style manufacturing facilities where product and raw materials move from building to building during the production process.
5. Companies that need to manage inventory fill rates by prioritizing and expediting inbound loads so that outbound order fulfillment can be maximized. The YMS enables visibility into loads on the yard that may be back-ordered or aging so they can be queued efficiently.
6. Cross-docking operations where the YMS acts between the WMS and TMS to manage all the inbound and outbound loads.
7. Manufacturers with high throughput that utilize automation in their DC. Automated truck loading systems, in particular, that take only a few minutes to load a trailer, require precise timing of empty trailer delivery. A YMS can ensure a steady flow of trailers to optimize the use of the automation.
8. Just-in-time manufacturing operations that require precisely timed delivery of parts or other inputs to keep the production line moving.
9. Companies holding perishable food products in refrigerated trailers in the yard need to monitor conditions inside the trailer as well as keeping track of fuel supplies to prevent product from spoiling due to equipment failure.
10. Small- and medium-sized businesses that need logistics efficiency to gain and maintain competitive advantage. The investment in a YMS to complement existing TMS or WMS is seen as a strategic move to ensure the best possible inventory control. For example, in this type of operation a YMS may be used to manage inbound inventory for the purchasing department.

Technology

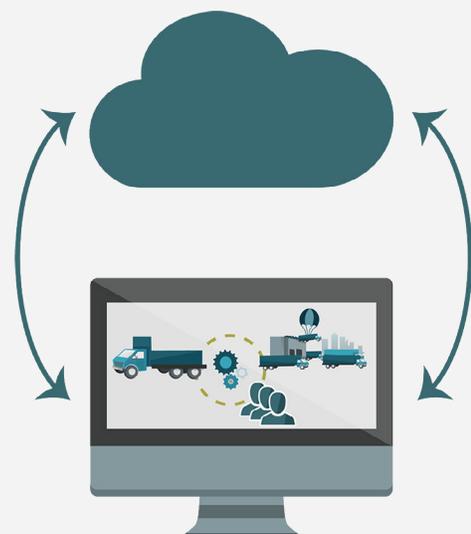
There are a few ways you can get the dock scheduling system you need. Options include developing it in-house, buying a license software, or choosing Software as a Service (SaaS).

- ✓ **In-house development** may seem like a good option if you have a unique set-up with custom legacy software and IT resources sitting idle. However, once you factor in all the time and resources it would require to develop your own solution—unless you are a software development firm—chances are you'll find yourselves behind schedule and ultimately with an out-of-date product. There's so much expertise on the market at the moment that in-house development just doesn't make good business sense.
- ✓ **Licensed software** requires a sizeable investment in hardware to run it on, and also may leave your organization vulnerable to data breaches when the system runs on your own servers.
- ✓ **A SaaS solution**, on the other hand, requires no hardware and no software. It is scalable and quick to implement. SaaS systems also avoid the security concerns about letting outside users inside the company firewall, because they are hosted in secure data centers and are frequently updated to ensure security keeps up. These systems are easily customized and can effectively communicate with your enterprise systems. SaaS systems are also less expensive.



Another aspect is **mobile functionality**. We mentioned it earlier, but it also bears noting again in the context of the vendor evaluation. Having the system mobile-enabled should be a minimum requirement for a YMS. The availability of robust cellular networks nearly everywhere you might find a distribution centre or production facility means there's no need for costly private network set-up and maintenance.

Likewise, the system needs to be able to run on the dominant mobile operating systems, Apple and Android, in order to have the widest array of mobile devices available for use with it. Be sure that your vendor has these capabilities and plans to keep the mobile apps current with OS updates.



A vendor evaluation checklist

It's important to thoroughly evaluate the ability of potential vendors to deliver the product and system promised. Especially when you are contemplating selecting a cloud-based system, that vendor's capabilities in terms of several critical functions are paramount.



Can they provide:

- ✓ **Security.** Because your system is intended to allow users from outside your organization to access the scheduling portal, being able to ensure security of your systems and data is of paramount importance.
- ✓ What **service level** do they provide? Do they provide support during the hours you may need it?

- ✓ What is the **upgrade plan**? How often is the software revised or updated? Is it regularly scheduled or on an as-needed basis?
- ✓ What is their **technology infrastructure**? How do they ensure uptime if they are a SaaS provider?

References

Don't be shy about asking for references from a potential vendor. And when you get that reference, make sure you talk to some key people:

- ✓ Speak with the **end-users** of the system—what do they like or dislike about it? Do they see it having made an improvement in working conditions?
- ✓ What does the **project manager** have to say? Did the vendor deliver as promised? How were variances, conflicts or problems dealt with? Was the implementation smooth?
- ✓ What about the **warehouse manager**? Has productivity improved as expected? Did the ROI calculations work out? How are carrier relations subsequent to implementation?

4.

What's the ROI?

Developing a hard and fast ROI calculation for a YMS is not that straightforward. In order for a specialized YMS solution to deliver tangible benefits there has to be a minimum operational volume. But it's contingent on so many unique operating considerations that each business will have its own answer.

Nonetheless, here's a sample of the kind of improvements you can expect to see after implementation:

By the numbers

- » Shunt driver productivity up by as much as 30%
- » Time spent hunting for misplaced trailers down by 95%
- » Potential to decrease fleet trailers by 10 to 15%
- » Yard truck efficiency improved by 30% or more
- » Number of yard trucks needed down by 25%
- » Dock utilization increased by 20%
- » Dock productivity up by 30%
- » Detention costs down by 90%
- » Time at gatehouse can be reduced from 5 to 10 minutes to 30 seconds
- » Warehouse peak outbound throughput efficiency up by 10 to 12%

It's not hard to find examples of the tangible benefits a YMS can deliver. Depending on the scale of your operations, you can expect to see an ROI in as little as a year.

Soft benefits

There are also numerous benefits to be gained from implementing a YMS that are a little harder to quantify. For example:

- ✓ Reduction in accessorial fees, driver detention and demurrage charges;
- ✓ Reduction in operator errors that result in erroneous trailer moves;
- ✓ Improvement in order fill rates – it's hard to quantify the benefits here, but when you are able to allocate trailers to the loads that net the highest return, there are definitely net benefits to the organization;
- ✓ Improvement in on-time delivery to stores, avoiding wasted labour at receiving docks and preventing lost sales due to product not being on shelves;
- ✓ Reduced inventory losses—for example if perishables in refrigerated trailers can be monitored to ensure correct handling temperatures are maintained losses will be reduced. Further, product can be managed from the trailers, based on product expiry date information.

3

Own it

- » Be completely involved throughout the entire process.
- » Ensure you have subject-matter experts on the team to take on training and configuration in their particular area of specialty.
- » Set up testing and configuration validation for every step.

4

Build a dream team



- » Define roles and responsibilities for the team, ensuring you have the correct resources teed up.
- » Make sure they are fully committed and have the time allocated to play their part.
Some of the people you'll need include:
 - » Project manager
 - » Super users – these folks need to be onboard from the beginning, involved in the entire project, understand the processes and system requirements involved
 - » Business subject matter experts
 - » Integration resources
 - » Trainers
 - » Others particular to your needs

Switching them on

Getting your yard drivers on board

Absolutely key to the success of your implementation are the yard drivers. If they are not on board the system is sure to falter. They are typically a very skilled team who know how to manage a yard. So it's very important to help them understand that the YMS is there to help, not take away their autonomy or worse—their job.

The key is to demonstrate how the YMS will speed things up, and make them more efficient by automating the more tedious parts of the job. Paper and pencil, magnet boards and spreadsheets were once the gold standard; now can be replaced by much quicker and more accurate software.

Win this group of staff over to the project by getting them involved from the outset. Enlist their help in scoping, planning, designing, and implementing the system. If they see their ideas, suggestions and work included and playing a big part in the project's success they will be backers, not naysayers.

Finally, during the rollout solicit their feedback to help tweak the areas that need improvement. As with any implementation, glitches will happen and adjustments will need to be made to the business rules. The yard drivers will be the ones to flag it, and when they see that their input has been used to prevent the same error from reoccurring, they'll know their input is fully valued.

5

Value the vendor

- » You are on the same team. Work to establish good, open relations from the start.
- » Ensure you have clear communication channels and visibility into what they are doing and where they are at in the plan.
- » Be sure that any challenges that arise or perceived risks on the horizon are communicated in both directions, fully and as soon as they appear.
- » Use their expertise. This may be your team's first implementation of this type, but it's not theirs. When issues arise they've likely seen something just like it on another project. Don't be afraid to ask their advice!

6

Be loud and clear!

- » Communicate. This means keeping clear channels not just with your team and vendor, but also with the rest of the stakeholders in your company. End-users, operations people and senior management all need to be kept in the loop with regular updates and exception reporting.
- » It's important to schedule regular meetings with users and operations departments to show them the system, its processes and how it will be configured. They may have valuable feedback, and will definitely appreciate being in the loop.
- » All this communication is key to a successful change management program, and will help ensure buy-in from those who will be using the system once it's up and running.

7

Integration is key

- » Involve your integration resources from the outset. Because information will be required and decisions made throughout the implementation process, these resources will be very important. They will be consulted about what information can be transferred, and when, what the touch points are and so on. They need to be available to confirm feasibility.

8

Training and informing the users

- » You must not underestimate the importance of ensuring the end users are properly trained and have the necessary documentation available to them.
- » Training needs to be comprehensive and hands-on, with lots of opportunity to practice, so they get the feel of actually using the system, before it is live.
- » Ensure there are 'cheat sheets' for every user role. These need to have detailed, step-by-step instructions. Having this in place will greatly reduce errors and lower the number of support requests during and after the go-live period.

9

Serious business: The Go-Live

Here's a list of the elements you'll need in play for the go-live:

- » Internal support resources for all locations, every shift, and all business areas that are using the system.
- » Vendor support, either on-site or remote.
- » Establish an issue-reporting procedure with the vendor.

- » Ensure your users know what the proper procedure is should they encounter an issue. Who do they contact and how?
- » Be sure there are open channels of communication back from the end-users to the system team so that suggested changes or improvements can be communicated. Otherwise, workarounds will happen or users will try to bypass or not use the new system.

10

Sustain the glory

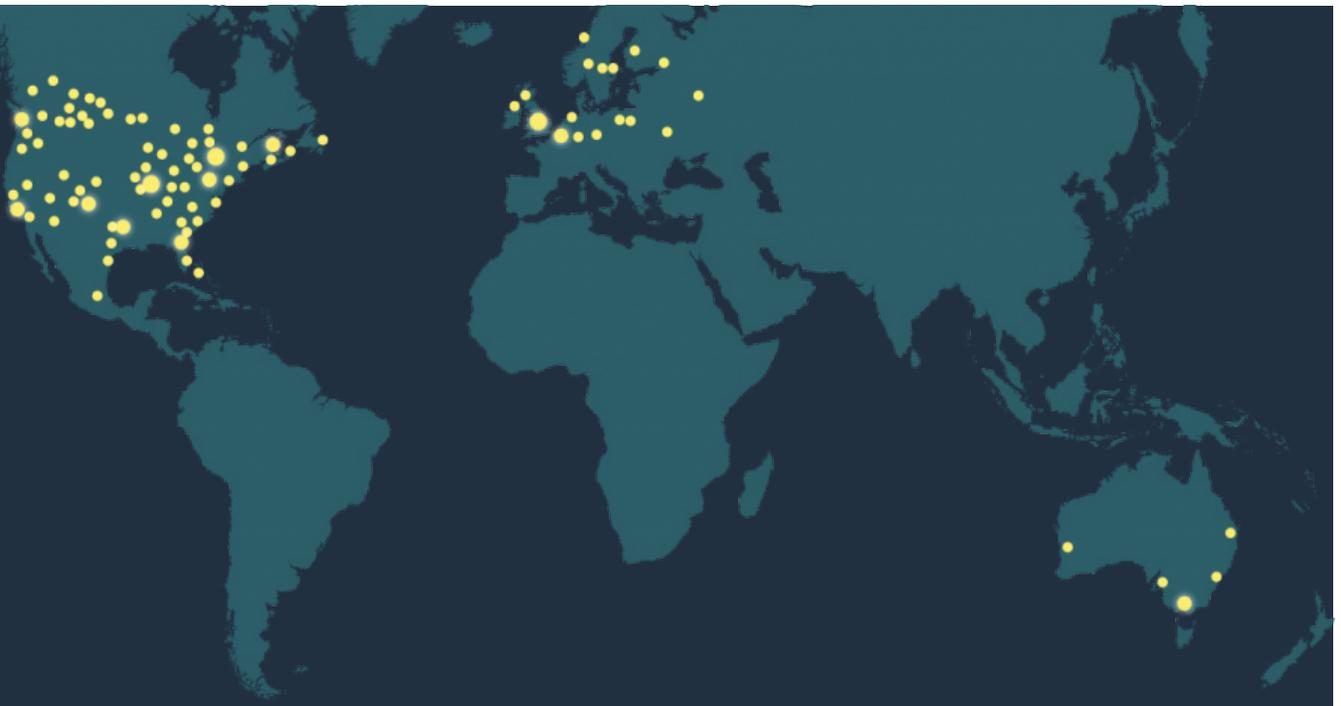
The best demonstration of a successful implementation is the **system's sustainability**.

- » Make sure you have an ongoing training strategy in place.
- » Cultivate your super users. They will likely be the ones to handle training, configuration, testing new versions, support and the relationship with the vendor team. The ongoing success of the implementation will largely depend on their engagement, hard work and continuing support for the new system.

Conclusion

Hopefully, with this guide, we have helped offer some guidance on your path to a YMS adoption. The objective has been to help inform the decision to implement a YMS, from investigation, to scoping, to vendor selection and implementation.

These systems offer much potential for operational efficiency, cost savings and an improved bottom line. Hopefully, with all this information at your fingertips, you'll be prepared to plan, convince and successfully implement a system of your own.



C3 Solutions is an information technology company specialized in yard management (YMS) and dock scheduling (DSS) systems.

Since its founding in 2000, C3 has gained the confidence of clients around the world and across many industries including retail, grocery, distribution, manufacturing and parcel post.

Headquartered in Montreal (QC), Canada and privately owned, C3 is dedicated to developing, implementing and supporting the most complete yard management and dock scheduling products on the market today.

For more information,
visit www.c3solutions.com

Get in touch

1751 Richardson
Suite 4408
Montreal, QC H3K 1G6

514.315.3139
sales@c3solutions.com



C3 Solutions