Maximize Productivity and Customer Satisfaction with Gate Appointments

Strategy for Terminals
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Introduction

Anyone who has spent time around a cargo terminal, whether it be a marine container terminal, distribution center, depot or other, knows that there are busy times and slack times. Many terminals suffer periods that are more than "busy" - they are overloaded with trucks backed up outside the gate and down the road waiting to get in, trucks backed up inside the gate waiting to get out, a congested yard full of trucks waiting for loading dock doors or handling equipment. At other times gate clerks and equipment operators are idle, reading magazines waiting for work.

Both extremes are bad. During idle times, money is being wasted on unneeded labor and machine operation. During overload periods, customers are losing money paying trucks to wait in line for hours, missing cut-offs for getting their cargo on a ship, etc. which will ultimately cost the terminal in customer satisfaction and retention.

Moreover, the terminal’s productivity usually declines in these overloaded periods resulting in higher costs per move and less profit. Lastly, government agencies such as the police may levy fines and/or take up management time complaining about blocked roads and threats to public safety. Last fall a new law called the “Lowenthal Bill” [i] was passed in California that penalizes terminals $250 USD for each truck that is kept waiting more than 30 minutes at marine container terminal gates because of air pollution concerns. For most marine terminals the fine will exceed the total revenue received for handling the container. This type of legislation is bound to become more common in the coming years as governments increasingly focus on the ever-worsening pollution and traffic congestion that most cities are experiencing. Legislation is currently pending in New Jersey [ii] and Massachusetts [iii].

Most terminals have some idea of the gate demand based on planned vessel activity (marine terminal) or warehouse activity (distribution center) however this is usually not enough to avoid overload periods. A normally busy but smooth day may be turned into half a day of slack time and half a day of overload due to an event such as a traffic accident that holds up traffic for three hours, or random occurrences of many trucks deciding to come at the same time.

A gate appointment system can maximize both the profitability of the terminal and customer satisfaction and profitability by matching the demand for gate activity with
the supply of personnel and machines available to service the trucks. The positive impact on customer profitability is often so large that truckers are willing, and sometimes eager, to pay for the privilege of using an appointment system. The revenue from usage fees is often enough to pay the cost of implementing and operating the system and to turn a profit.

Navis has implemented more terminal appointment systems for cargo terminals than any other company. In this report we draw on our experience in North America, South America and Australia to explain the “ins and outs” of cargo terminal appointment systems and the benefits they can provide.

**Increasing Terminal Productivity – Doing More With Less**

The truck throughput capacity for a terminal is the smallest of the in-gate capacity, the yard capacity, and the out-gate capacity. The area with the smallest capacity is called the “choke-point”. When the number of trucks arriving per hour exceeds this capacity service failures will occur. In addition, if these three processing areas have different capacities, then the areas that have more capacity than the choke point are operating inefficiently and costing more money to operate than they need to. In Figure 1, the yard is the choke point and the in-gate and out-gate are over-manned given the number of trucks that the terminal can push through the yard.

![Figure 1 - Truck throughput limited by yard capacity. Wasted in/out gate capacity.](image)

Each part of the terminal should have the same capacity for maximum efficiency.

The capacity of each area (in-gate, yard, out-gate) can be adjusted by adding or subtracting personnel (gates) and equipment (yard). The maximum capacity of the gates is fixed by the total number of lanes available. The maximum capacity of the yard for handling trucks is limited by either the total number of container handling machines (stacked operation) or by yard congestion (wheeled and stacked operations). Yard capacity for roadwork is further limited by other operations that require yard space and handling equipment such as vessel and rail operations for marine and rail terminals. Yard capacity is not fixed for all time like gate capacity but varies with time according to the (known) vessel and rail operation schedules.

The foregoing tells us something important – we can determine the maximum capacity of the terminal to handle gate activity in advance. Knowing this, we can determine the capacity of the bottleneck (usually in-gate or yard) over the course of each shift and put only enough people and machines in the other areas that are required to make their
capacity the same as the bottleneck area. Now the picture looks like Figure 2.

Figure 2 - Adjusting capacities to make them equal maximizes efficiency.

Have we saved money yet? Unfortunately, the answer is probably “no” because most terminal operators have figured this out and reaped the benefits. However, it is worth noting that yard capacity for roadwork can be hard to estimate in stacked yards with vessel or rail operations without an integrated simulation tool like Navis “Stratus” [iv]. By employing integrated simulation, a terminal may be able to estimate equipment needs more accurately and save substantial money and/or avoid service failures caused by lack of available equipment.

While we can predict the terminal’s maximum capacity in trucks per hour or minute, we cannot predict the demand. The number of trucks that want to be serviced at a terminal in a given time frame – say between 08:00 and 09:00 – is essentially random. Every terminal has patterns determined by activity such as vessel operations (marine terminal) or rail operations (rail terminal). At a terminal you may hear that “Monday is a busy day, but Tuesday is light” and that may be predictably true (or not) week after week. However when you get down to 08:00 to 09:00 on Mondays, demand is likely to be pretty variable.

The unpredictability of demand on an hour-by-hour basis leads to periods of “overload” where demand is greater than the maximum capacity of the terminal, leading to service failures. Unpredictability also leads to periods of underutilization where the terminal is manned for a certain capacity, but demand never reaches that capacity. Figure 3 illustrates this situation.

In this figure ten gate clerks have been assigned for the morning but only four for the afternoon because the terminal knows that more trucks come in the morning than come in the afternoon. The solid line shows the resulting capacity for handling trucks. The dashed line shows how many trucks actually came and when. The yellow shows that more trucks arrive and can be handled (overload/backup) and the blue shows that fewer trucks show up than can be handled (under utilization/slack time). Somehow the terminal correctly estimated the total number of trucks that would come in the morning and the afternoon, but more trucks came in the early morning and in the early afternoon than came in the late morning and late afternoon. Despite estimating the total number of trucks for the day exactly right, there were still periods of back-up and slack time.

Another problem can be seen in Figure 3. From a practical point of view, the terminal’s capacity can only be adjusted on a shift-by-shift basis since manpower and equipment must be scheduled in advance. So even if you could somehow know that you would need ten gate clerks from 07:00 to 12:00 but only four from 13:00 to 18:00, you would be stuck with paying ten clerks for the full ten hours.
Figure 3 - The unpredictability of demand leads to service failures and inefficiency.

To obtain maximum efficiency, supply needs to be equal to demand all of the time. The only way to do this is to control the demand over time. Following the example above, you could employ seven clerks instead of ten for the shift if you could somehow force precisely half the trucks to come between 13:00 and 18:00. This is exactly what an appointment system can do.

Leveling Demand to Match Supply

An appointment system does two things. First, it limits demand to be less than or equal to the terminal’s maximum hour by hour capacity which prevents “overload” and second, the appointment system makes the demand predictable so that the terminal can reduce capacity to match the predicted demand. For example, if the terminal’s capacity to handle trucks is 100 trucks between 8AM and 9AM, then the appointment system allows a maximum of 100 appointments. If truckers only sign up for 50 of the 100 moves, then the terminal can halve the number of clerks and/or machines assigned to gate activity for that period and save money.
Continuing the example shown in Figure 3, we can use an appointment system to force the demand for gate activity to match the supply. Figure 4 shows the result. By limiting the number of appointments available during each hour, we force truckers to come during times when the terminal will be able to handle them without back up. The result in this somewhat idealized example is that requiring appointments allows us to save the cost of three gate clerks for the day and never make a truck wait in line for service.

Increasing Maximum Terminal Capacity

Not only can an appointment system limit demand to match supply, an appointment system can actually increase the capacity of a terminal to handle trucks. In the practical use of an appointment system, appointments are made at least one day in advance. Further, the appointment system can, and usually should, require some detail of what the trucker wants to do, such as requiring the number of the container he wants to pick up or the number of the booking against which he wants to drop-off an export container. This information can be used in different ways to expedite truck processing:

- Each night, spare yard handling capacity can be used to make it easier to deliver imports and empties and carry out inspections the next day. The night shift can pre-mount containers on chassis and/or pre-position containers to a convenient “delivery zone” near the gate. Further, the delivery zone might be served by a relatively cheap piece of equipment such as a reach-stacker instead of a more expensive to operate rubber tired gantry crane (“RTG”) or straddle carrier. Alternately for RTG operations, containers can be shuffled into a single RTG area and organized by delivery time zone so that the containers can be accessed without re-handling or interfering with RTGs committed to vessel operations. Navis SPARCS
Delivery Selection Optimization Option \([v]\) uses appointments to automatically plan and execute this work without planner involvement.

- Appointments for receiving export containers can be used to allocate yard space such that the containers can be handled with the least amount of handling equipment. This strategy is particularly valuable in RTG operations.

- By requiring key data to be entered into the appointment system, such as container number, booking number, etc., business rules can be validated at the time the appointment is made, and business rule violations that would prevent successful entry through the gate can be flagged to the trucker so that he can avoid wasting a trip to the terminal. Each trucker that is turned away is a trucker that will be back again, so preventing “turn-aways” increases throughput.

Together, these techniques can significantly expand a terminal’s capacity to service trucks and reduce the time the truck spends in the terminal. None of these benefits are possible without appointments because they depend on knowing hour-by-hour demand for gate activity. The result is lower costs for the terminal and happy truckers, consignees and shippers. Serving more customers and doing it better with less equipment/personnel is clearly a “win-win” that benefits both parties.

### Not as Easy as It Seems

Now, if you’re ready to go to the stationary store, buy a ledger book, distribute your phone number and start taking appointments by phone – hold on! Implementing a successful gate appointment system for a cargo-handling terminal is not as easy as it may seem. If the appointment system is to deliver net benefits you will need four things:

1. Clearly defined measurable goals that you want to achieve.
2. A very carefully crafted process and set of business rules that can achieve the goals.
3. A software system that implements the appointment process, integrates tightly with the terminal management system and which has plenty of “knobs and dials” to tune the system and adjust to changing needs.
4. A customer/trucker education program for users that leads to thorough understanding of the process, business rules and computer system interface resulting in buy-in from the user base well before the system is put into use.

### The Importance of Setting Goals

You will probably end up wasting money if you implement an appointment system without a clear definition of the benefits you expect to get. At one extreme you risk implementing a system that is too simplistic to achieve the desired results, leading to a negative return on investment (ROI). At the other extreme you may implement a system that is much more complex and costly to procure and run than you really need, again resulting in a negative ROI. Besides the money lost, trying to use a system that
doesn’t fit is likely to lead to a big community relationship problem and days or weeks of lost productivity.

To illustrate, suppose your terminal has problems with frequent long truck lines at the in-gate. The solution is to implement an appointment system and require its use for every gate transaction. It seems pretty straightforward: you figure out how many trucks you can process in some reasonably short time period – say 100 trucks per hour. Then you implement a web site where truckers can sign-in and see what time slots are available. The trucker then puts their name down for a slot that is acceptable to him and gets in return an appointment number that allows entry at the gate. When they arrive at the gate, the drivers provide an appointment number to get serviced. When all the appointments for a given day are used up, truckers must start looking at the next day.

The biggest problem in successfully implementing this appointment system is not technical – it’s getting people to “do the right thing” (as defined by the terminal). The essential fact is that, in this example, you are implementing this appointment system because the demand for your service (receiving and delivering, loading or unloading trucks, etc.) regularly exceeds the supply of that service. When supply exceeds demand you have shortages and people don’t usually deal with shortages well. They tend to try to find ways to obtain an advantage over others to get a disproportionate share of the thing that is in short supply. Let’s be fair _the ability of truckers to get serviced by the terminal has a direct effect on their livelihood. Further, all the other truckers are their competitors.

The first day the appointment system described above is put into effect you will see two things: first, light truck traffic and second, a flood of phone calls and visits to the terminal manager from extremely irate trucking company owners, shipping lines, shippers and consignees complaining that they cannot get an appointment for service. What happened? The aggressive truckers went on-line and took every appointment they could get their hands on – regardless of the number of actual jobs they had at the time. As a result, many truckers were unable to get appointments for their confirmed jobs and the appointment “hoarders” simply didn’t show up for appointments they didn’t end up needing.

What is the result of the first day? A massive customer/public relations problem, a record low number of containers handled at the gate and an even bigger problem tomorrow when you have to handle all the containers that didn’t get handled today. In short, one step forward, and ten steps backward. The system was too simplistic to achieve the goal of limiting gate backups.

Was the appointment system just described an absurdly oversimplified example? No. This system has been successfully used for the last seven years by a Navis customer to solve a different problem. This customer in South America uses it for import delivery (only) – not for all gate moves. Their goals are to improve customer service and increase overall productivity – not to deal with gate backups. At night, when the gate is shut, the terminal shuffles deliveries out of RTG areas and into a delivery area near the gate that is served by side-picks. During the day, the RTG’s are relieved of import delivery work so they can concentrate on vessel work that enhances vessel productivity. In addition, the customers get very rapid turn-around when picking up imports. There is no appointment hoarding issues because there is sufficient capacity overall for delivering imports.
Lastly, if the South American terminal used a system capable of solving the gate back-up problem, it would be overkill. The system would cost too much to implement and operate to justify the benefits in customer service and yard productivity.

We will come back to the challenges of implementing a system in which appointments are required below, but first let’s enumerate common goals terminals want to achieve with appointment systems. Typical goals by category are:

- **Improved customer service.**
  - Elimination of excessive truck queues at the gate – limiting the maximum number of trucks lined up at the in-gate at any time and/or limiting the maximum time a truck must wait before being processed at the in-gate.
  - Reduction of truck “turn-time” (time spent by each truck visiting the terminal).
  - Elimination of “trouble transactions” (when the truck must be turned away due to business rule violations like trying to pick up a container not cleared by customs).
  - Pre-mounting deliveries on chassis to expedite pickup.

- **Improved yard efficiency and terminal productivity.**
  - Reduction of yard congestion.
  - Reduction of the handling equipment needed to deliver and receive containers by shuffling them in advance.
  - Alignment of demand for CFS or Warehouse activity with CFS or warehouse door availability and warehouse productivity.
  - Implementation of un-manned gates.
  - Reduction of gate personnel.

**Defining a Process and a set of Business Rules to Achieve the Goals**

The simple appointment system described above was a failure in solving the problem of excessive in-gate queuing because not enough business rules were implemented to make the various participants behave in a way that balances all of their interests. It is important to note that careful selection of business rules is the key to success and that the effect that the business rules have on the users’ behavior is not always predictable. You may need to experiment and refine the rules once the system is in use. Thus, you need a software system that either already has many “knobs and dials” for switching existing business rules on and off, or is designed for easy implementation of new business rules.

Finally, you need the user community to buy in to the process and rules and set their expectations of the benefits and costs realistically. If the rules are at all complicated or controversial, it may take a number of months to get the user community on-board.
The Importance of Integration with the Terminal Operating System

Integration between the appointment system and the terminal or warehouse operating/management system is essential to achieve significant benefits. As we have seen above, an appointment system delivers benefits by adjusting demand for the terminal’s services to meet, but not exceed, the terminal’s capacity to supply those services. The terminal operating system has the information required to determine the terminal’s capacity over time. It knows where all the cargo/containers are, it knows the operations schedule, and it knows the business rules that must be obeyed. Further a real-time operating system like Navis’ SPARCS/Express monitors the work against the schedule to determine capacity in real time. Thus, the appointment system and the terminal operating system each represent half of the solution. By tightly integrating the two, you can get the best solution to the problem, maximize automation and minimize the on-going cost of running the system. Here are two examples of the benefit of tight integration between appointment and operating systems.

Validation of appointment requests and isolation of business rules – when someone makes an appointment for a service, such as to pick up an import container, you should require the container number and validate it against all the terminal and shipping line business rules before granting the appointment. If the container is not in the terminal or not yet off the ship or not released by customs, you may want to prevent the appointment or at least warn of the errors. If the appointment system is not tightly integrated with the terminal operating system, then you have to duplicate the business rules in the appointment system and update the appointment system with all the data needed to evaluate the business rules. This approach will be costly to implement, hard to change and never 100% accurate.

Notification of changes – if the terminal operating system knows about the appointments, then it can proactively notify truckers/customers about changes that affect them. For example, a container that was released by customs before an appointment was made might be re-held by customs afterwards. The terminal operating system can note that there is an appointment for pick-up and notify the customer via email, fax or pager that the container may not be available for pickup as scheduled. Your customer can re-schedule the pick-up instead of wasting money sending a truck to pick up a container he will be unable to get.

You may find community systems and stand-alone/loosely coupled appointment system offerings in the market place. These “one-size-fits-all” systems may provide some benefit depending on your goals, but they will not be able to deliver the benefits that an integrated appointment system can because these systems are very unlikely to have all of the data required to support appointment validation nor all of the business rules desirable.

Community systems can be good things, and there is a way to work with them without losing the benefits of tight integration. This is achieved by letting the community system be the interface to the users while the “brains” live in the terminal, tightly integrated with the terminal operating system. Web Services [vi] is an ideal technology for achieving the integration between the community system and the appointment system at the terminal. Navis’ WebAccess product provides the functionality needed to connect Navis’ Express appointment system with community systems using Web Services. It is a turnkey solution for appointments with or without a community system.
The Basics of Appointments

The components of an appointment system are: people, a computer system, documents and agreements. You will need executive, customer service, operations and information technology (“IT”) management involved in initiating the project and overseeing the implementation. Once implemented, you will need day-to-day management of the system that will involve both operations and customer service. Since you are not going to use a ledger book and a telephone to implement your appointment system, you’ll need to buy or build a software system to do the job and keep it running day-to-day. In most cases, the appointment system will need to be tightly integrated with your terminal operating system as described above. Finally, you’ll need a certain amount of documentation for users and almost certainly want your legal staff to construct agreements between the terminal and its users to cover limitation of liability, consequential damages, warranties, user responsibilities, user fees, if any, and perhaps other things your legal staff advises. In particular, the business rules should be spelled out clearly.

Physical Components of an Appointment System

The essential components of an appointment system are:

- A user interface (normally web/browser based) for users to make, cancel, change and list appointments.

- An administration interface (web-based or other) for the administrator to manage the system by defining the maximum number of appointments available in each time period, turn on/off business rules, monitor appointment counts against total available, etc.

- A “rules engine” that applies business rules to all user and administrator activity including making, changing, canceling appointments, and validating appointments at the terminal gate.

- A database to hold all of the appointments and related information.

- A “web portal” that provides access over the Internet, authenticates users, manages security, serves the HTML forms and pages that the users see and optionally provides Web Services integration for users’ systems [vi]. Navis WebAccess product is Navis’ Web Portal for appointments (and much more).

- An existing terminal operating/management system for the appointment system to draw data from for the rules engine, such as container statuses, booking details, etc.

Optionally there may also be:

- A billing system to invoice users if user fees or penalties are charged.

- A telephone bank from which to provide appointments to non-computerized users.

- Web services [vi] to enable integration between the appointment system and users’ computer systems (as opposed to users’ personnel).
Figure 5 shows schematically how the components fit together.

![Figure 5 - Components of an appointment system](image)

**Planning and Implementation**

The magnitude of the effort and cost of implementing an appointment system will be directly proportional to the ambitiousness of the goals you are trying to achieve. In this section we will describe the process for a medium to large project. While all of the steps apply to small projects, they will be simpler and less effort than described below.

The first step is for executive, customer service and operations management to decide on their goals and determine if an appointment system makes sense in achieving them. This report will help you make the determination, but it may be useful to contact vendors or consultants to help. This team should obtain a rough estimate of the cost of such a system, both initial and on going, and decide if there is likely to be a positive ROI.

Next, the customer service staff should prepare a presentation for key constituents (truckers, lines, agents, consignees, shippers, labor, etc.) to begin to socialize the plan with them and get their feedback. Receptivity to an appointment system can vary widely. Sometimes it can take a while for constituents to get used to the idea, and you will need to do a lot of selling. At the other extreme, constituents may believe that appointments will solve every problem imaginable. In this case, the challenge will be to bring them back down to earth and set realistic expectations that are realizable. The constituents will have lots of questions and concerns about training, fairness, and so forth, so you need to lay out an on-going schedule of meetings and updates leading up to the system implementation. Getting user buy-in is critical and it’s never too soon to start this process.

Having established a working relationship with the terminal’s constituents, you will want to turn to the critical task of defining a set of business rules that will achieve your

*Getting buy-in from truckers, lines, agents, labor, shipper and consignees is critical to success.*
goals as described above and agree them with at least most of the constituents. Only when you are confident you have this right should you proceed to system implementation.

To physically implement the appointment system you have four choices: buy, build in-house, outsource or rent. Buying is usually the cheapest if the package suits your needs. Navis Express customers can license our proven and highly flexible appointment module. At this point, implementation is a typical small to medium “IT project” with all that that implies. Most terminals have experience with such projects, so we will not comment further.

The “Go-Live”
The period beginning when the system is actually put into production use for the truckers and others to use (the “go-live”) is the real test of the system. It often happens that business rules need to be tuned, added or subtracted in order to get the desired behavior from the users and to get the desired internal benefits. You should be prepared for this even if you do extensive pre-production testing.

Customers may need a high level of support for some weeks as they get used to the system, have complaints, and so forth. Expect to have extra customer service personnel on hand for some period. The number required will depend on the complexity of the business rules that govern the system. It may help to phase-in the appointment system by relaxing some of the more contentious business rules in the beginning even if you intend to require them in the long run. For example, you might make appointments optional for a time even though you want to require them in the end. As always, plan for the worst and hope for the best.

Day-to-Day Management of the System
Appointment systems require day-to-day management to deliver results. The main tasks are capacity estimation and customer service. Normally, someone is appointed to be the appointment system “administrator”, which may be a full or part time job. The administrator is in charge of operating the system effectively to achieve the goals. By “operating” we don’t mean running the computers, we mean controlling the number of appointments available, dealing with customer issues and internal issues with the performance of the system and so forth. The administrator may handle customer service for the system or may be assisted by an existing customer service staff or subordinates.

You need to know the terminal’s capacity to provide services throughout the days ahead in order to decide how many appointments to make available. This is usually done by the administrator liaising with the operations management to determine the yard or warehouse capacity based on whatever activity may be happening in the terminal and the resources available to do it. If an unusually high number of machines or warehouse doors are scheduled to be unavailable on a given day, the number of appointments will need to be reduced. The administrator will manage the appointment system using the input from the operations department. To some extent the capacity can be calculated from data in the terminal operating system, historical data, etc., but don’t expect complete automation of capacity estimation. When problems arise in the middle of the day such as equipment break-downs, accidents, etc., appointments scheduled for later in the day may need to be canceled by the administrator and truckers/customers informed by customer service.
Customer service will need to authorize system access to users (give them a password), occasionally rescind authorization of abusive or non-paying users, answer questions, solve user problems, pass complaints to the administrator, etc. Customer service may also be called upon to provide a telephone appointment service to serve truckers that do not have access to the Internet, such as owner-operators who basically run their business from their truck with a mobile phone. The customer service agent simply takes the information over the phone and enters it into the appointment system, returning the assigned appointment number to the caller. Normally such a service is provided for a monthly fee based on volume. Note that such a service is not always provided, but is often required when appointments are required for all gate access. Sometimes such a service is offered by an authorized third party.

Optional Appointments

Implementing a system in which appointments are optional is relatively easy and can provide benefits, but the benefit potential is limited. A typical approach is to set aside a portion of the gate lanes or gate office windows for truckers with appointments, leaving the rest for “walk-up” users. It’s easier to implement an optional appointment system because those truckers that are willing and able to make appointments can do so and obtain a more reliable level of service and those who are unable or unwilling can take their chances. Business rules are often much simpler too because those who don’t want to use the system don’t have to.

The benefit for the users is obvious – more predictable gate service. The benefit for the terminal is limited, however, because the demand for gate service is still largely unpredictable. You are not going to be able to optimize yard space or gate manning. You might charge for appointments to pay for the system in exchange for the benefits the truckers receive, or provide them gratis for all or gratis for key customers. Again, you need to define your goals in advance to determine which choice is right.

Even if you intend to make appointments required, it is often a good choice to make them optional for a time until the community gets used to the system and procedures. After a while, with plenty of advance warning, you “flip the switch” to make appointments required.

The Big Leap – Requiring Appointments

Making the leap to a system that requires appointments for all gate service requires extensive and well-tuned business rules and a lot of day-to-day administration. Most of the challenges discussed below result from the fact that demand exceeds supply. Occasionally, an appointment system is implemented when supply is adequate. In such cases, requiring appointments is much less painful.

Ensuring Fairness

First you will need to ensure that the business rules are “fair” when followed so that all constituents can get a reasonable level of access to the terminal during times when demand exceeds supply. Achieving fairness starts with meetings with constituents.
well before the system is implemented and agreeing business rules that are acceptable
to all groups of constituents, if not every constituent. For example, the system should
work for large trucking companies and owner-operators as groups. One or two owner-
operators’ objections to the rules should not sway the result, but if most owner-
operators object, then changes are required.

During the “go-live” period and thereafter, the appointment system administrator needs
to act as a fair judge of user complaints and be willing to solve problems, grant
exceptions to the rules and potentially change the rules if required. The administrator
also may need to punish those who repeatedly try to cheat the system.

**When Demand Exceeds Supply**

When demand regularly exceeds supply, you will need extra business rules to ensure
fairness and to get people to “do the right thing”. Here is a partial list of problems we
have seen and what was done to correct them.

Appointment hogs – A natural reaction to shortages is to try to get as many
appointments as you can, even if you are not sure what you will use them for. If you
end up with more than you can use, cancel them or just don’t show up. Obviously, this
is bad for the terminal and the other users. Solutions:

- Require enough information when the appointment is made to make it hard
to make “dummy” appointments.
- Charge a penalty for no-shows and cancellations.
- Don’t allow appointments to be changed after a certain time such as one day
  in advance of the appointment.
- Limit the number of days in advance that appointments can be made.
- Limit the number of appointments a given trucker can get in each time
  period of a day.
- Limit the number of appointments a given trucker can get in a single day.

Key customers can’t get enough appointments – Solutions:

- Set aside a portion of the total appointment pool for the exclusive use of key
customers
- Let key customers make appointments farther in advance than other users

Appointment thieves – Users can guess a valid appointment number to use. Solutions:

- Require enough information when the appointment is made to prevent use of
  a stolen appointment (container number, etc.).
- Don’t use sequential appointment numbers that can be guessed.

**Equal Access**

When appointments are required, you will need to provide appointments to users
without access to computers, users that don’t speak your primary language, physically
impaired users and perhaps others with special needs. This will generally be solved by having a telephone based appointment service where operators make appointments on behalf of the caller.

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### Getting Paid

It is fairly common to charge a fee to trucking companies for access to an appointment system. The sums charged can be as high as tens of thousands of U.S. dollars per year for a single large trucking company. Trucking companies generally accept these charges without much complaint and occasionally enthusiastically. After all, the appointment system helps them increase their revenue by allowing their fleet of trucks to do more work each day. They may also be able to pass this cost on the shippers and consignees who also benefit from the predictability of service those appointments provide. Since all the truckers must pay the fee, it does not disadvantage one company relative to another.

Charges may be levied monthly or per appointment and billed in advance or in arrears. Truckers who require the telephone appointment service described above may pay a higher fee for this service.

You may also decide to levy penalties of various sorts to ensure proper use of the system. Such charges are usually paid in arrears and prolonged non-payment may result in the trucker being barred from terminal access.

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### Navis Express – The Leading Appointment System

Navis’ Express product is the world’s leading marine terminal operating system, installed in more than 60 terminals worldwide at the time of this writing. Navis Express’ appointment module is the most widely used appointment system in the world and encompasses all that Navis has learned in implementing successful appointment systems ranging from very complex “appointments required” systems to straightforward “optional appointment” systems. These systems are in use on three continents and have been in use for more than six years.

For Navis Express customers, the appointment module represents a proven, low risk, turn-key solution for appointments management. Navis personnel can help customers assess their needs and guide customers to a successful implementation that is well received by your community of users.

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### Summary

An appointment system allows a terminal to match its capacity to provide services such as cargo receipt and delivery with the demand for those services. The result is maximum resource utilization (people, equipment, land) for both the terminal and its community of truckers, shippers, consignees, and shipping lines, etc. An appointment
system can solve specific problems such as excessive gate lines/queues, yard congestion, long truck turn-times and transaction processing problems at the gate. An appointment system can also increase yard capacity. Further, it is fairly common to charge for the use of the system that can generate enough revenue to turn a profit.

Implementing an appointment system may be easy or hard, depending on the goals it is expected to achieve. Including the user community from the start and keeping them informed throughout the process is vital to a successful implementation. An appointment system cannot succeed without the willing participation of the user community.

Tight integration between the appointment system and the terminal’s operating system is vital to obtaining significant benefits from the appointment system. This is because the terminal operating system is the source of the “capacity” information and business rules that the appointment system needs to match demand to.

Navis’ Express terminal operating system contains the world’s most widely used appointment module. It provides a low risk, turnkey solution for Navis Express users and enables the many benefits appointments can provide to a terminal and its community.

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**Evaluation Form**

Your feedback is important to us. To help us improve our white papers to better help you, please follow the link to complete the white paper evaluation form.

[Appointments Management White Paper Evaluation Form](#)

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**References**


[iii] Senate Bill No. 1218 Chapter 1192, Massachusetts State Assembly, 2002. See: [http://www.state.ma.us/legis/bills/st01218.htm](http://www.state.ma.us/legis/bills/st01218.htm)

[iv] Stratus Simulation Tool., Navis LLC.

[v] Navis SPARCS Delivery Selection Optimization Option, contact [sales@navis.com](mailto:sales@navis.com)
