



Synchronizing the Distribution Supply Chain with Mobility



Preface

This white paper focuses on how mobility can improve the efficiency of business processes across the supply chain. In addition, Motorola has also published a family of white papers that focus on each of the distribution supply chain areas — warehouse, transportation, yard and labor management functions — providing in-depth information on how mobility can be applied to address today's business issues in each of these areas. To obtain these white papers as well as more information on how Motorola mobility solutions can streamline your supply chain, please visit motorola.com/supplychainmobility or access our global contact directory at motorola.com/enterprise/contactus



Background: today's supply chain issues

In the massive \$2.9 trillion distribution industry, the roles of the manufacturer, distributor, wholesaler and retailer are beginning to blur, driven by heightened competition, the new global economy and increasing customer demands for the right product, the right price and the right service.

Offshore manufacturing pressures manufacturers and distributors alike. Says Greg Aimi, Director of Supply Chain Research for AMR Research, "As product comes off an Asian production line costing only cents on the dollar, wholesalers are under increasing pressure to lower prices accordingly — while sitting on inventory longer." Large retailers continue to become stronger and more powerful, encroaching further into the traditional role of the distributor. And retailers are responding to pricing pressures by bypassing the wholesaler and distributor to gain additional savings.

No matter where you are in the distribution supply chain — manufacturer, distributor, wholesaler or retailer — you face thinning margins, faster product lifecycles and increased customer expectations. To thrive in this environment, you need to be able to improve the velocity at which your business moves — without sacrificing quality or service levels. You need mobility.

The role of mobility: the leaning of the supply chain

Mobility eliminates wasted time hidden in your business processes — time that slows your entire chain of operations. Without mobility, processes are tied to an application that can only be accessed on a desktop computer, leaving businesses dependent upon paper to disseminate information (such as work orders) to employees as well as to collect needed information throughout business processes. But paper-driven processes require time to handwrite data and time to enter that information into the computer — a process that requires the data to be handled twice. And this 'double touch' of business data leads to an inefficient use of time, high labor costs and a larger opportunity for error.

Through mobility, computing power is moved from a stationary desktop computer to a mobile computer — the tools workers need to automate business processes are always in hand. Workers can now access and capture data in real time — right at the point of work. Manual processes are replaced with real-time computing. Instead of issuing paper work orders to employees, an electronic work order can be issued instantly and automatically by your business systems. Instead of collecting data on paper-based forms that must then be entered into the computer at a later time, workers can enter the information directly into your business systems.



The ability to incorporate any information in any business application into any business process enables enterprises to maximize the value of existing business systems. For example, at the receiving dock, a quick scan of the bar codes on pallets can automatically reconcile the shipment with the purchase order, and then check the orders system to determine if the shipment should be placed on the warehouse shelves — or cross docked for immediate shipment.

Regardless of whether you are managing goods in a warehouse, transporting goods or managing the pickup and/or delivery of goods, mobility will compress your business processes, squeezing inefficiencies out to increase productivity. In addition, errors are significantly reduced — the ability to automatically capture data via bar code scanning, RFID and more eliminates the many errors inherent in handwritten forms and in the subsequent data entry of those forms into a computer. The speed of business is increased and customer service levels are improved — without impacting quality and without increasing costs. And the ability to instantly move information to the business systems that can best utilize the data enables the benefits of mobility to ripple throughout your organization — and beyond your walls to other areas of your supply chain.

Lean principles are a best practice in manufacturing, utilized to eliminate wasted time and errors in manufacturing processes to enable the building of a higher quality product in less time with less cost — and when the customer demands it. With the power of mobility, enterprises can apply the lean principles of manufacturing, enabling tighter

coordination between sales, manufacturing and logistics operations. As a result, wasted time and errors can be driven out of virtually any business process, effectively leaning the supply chain. In the following pages, we'll take a look at the process improvements mobility can enable within typical distribution supply chain operations — the warehouse, the yard, transportation of goods and labor management — and how the benefits can ripple into other areas of your business, as well as up and downstream in your supply chain.

The warehouse

For manufacturers and distributors alike, the warehouse is the critical hub of the business, the central depot through which everything must pass — from raw materials waiting to be manufactured into finished goods to product waiting for shipment downstream to a distribution center, retailer or end-customer. Mobility can be applied throughout all core warehouse processes, transforming the warehouse into a competitive advantage.

Receiving

With mobility, enterprises can enable workers at the receiving dock with real-time access to the purchase order database along with automated data capture — either bar code scanning or the ability to read RFID labels. Paperwork is eliminated and data collection is automated, improving the velocity of the receiving function:

- Incoming shipments are automatically identified and instantly reconciled.

- Proper processing orders for the shipment are immediately delivered right to the worker's handheld computer — from where to stage accurate shipments for put-away or cross docking to how to handle any errors in the shipment.
- Productivity is improved through process automation, enabling the same workforce to process more shipments per day.
- Dock-to-stock cycle times are reduced.
- Real-time inventory visibility allows you to intelligently direct put-away or conveyance for items that are low in stock first, reducing the opportunity for costly out-of-stocks to impact the order fulfillment process.
- The instant visibility into the order system enables cross docking to effectively reduce handling time and costs for incoming shipments.

Put-away

Real-time access to the warehouse management inventory system and automated data collection capabilities can greatly improve the put-away function:

- Electronic put-away orders are delivered right to the mobile device, including the exact location for put-away as well as most efficient route to that location.
- When workers arrive at the put-away location, a quick scan of the bar code on the shelf tag (or read of an RFID shelf tag) not only ensures the item is put in the correct place, but also provides a record of the location of that exact receipt.
- Throughput is improved, since items reach the shelves in the shortest amount of time.
- Productivity is improved — the same number of workers can process more put-away orders each day.
- Increased inventory visibility reduces stocking inventory levels and related warehouse space requirements.
- Out-of-stocks are reduced — inventory reaches the shelves more rapidly, preventing a false out-of-stock that can result in a lost order.
- The information is available to implement first-in first-out (FIFO), last-in first-out (LIFO), or first-expire first-out (FEFO) inventory management

— all of which can have a significant positive impact on the company's profitability analysis and tax liabilities.

- Asset utilization of material handling equipment (MHE) such as forklifts and clamp trucks is improved —travel time in the warehouse aisles is reduced, which in turn reduces wear and tear and maintenance requirements for the vehicles.

Cross docking

Mobility enables on-the-spot visibility into the order database, providing the real-time information required to reach a new level of efficiency in the cross dock function. Workers can scan the bar codes or read the RFID tags to identify incoming shipments. In the event the shipment fulfills an open order, cross docking information is immediately delivered to the worker's mobile computer, delivering a number of benefits in this warehouse function:

- Productivity is improved through process automation — the same number of workers can process more shipments per day, driving labor costs down.
- Labor time and costs are reduced — shipments are handled once instead of multiple times, since the need for shipments to be staged for put-away, placed on the warehouse shelves, picked, packed and re-staged for shipment is eliminated.
- Errors are reduced — real-time information ensures that the right shipment is delivered to the right dock and loaded onto the right truck.
- Visibility into all the shipments slated for cross docking allows for increased efficiencies in movement between docks — instead of moving each shipment individually, shipments bound for the same dock can be aggregated.
- Usage times and wear and tear for forklifts and other material handling equipment are reduced through more efficient use of material handling equipment (MHE).

Sorting

When workers in the sorting function are armed with a comfortable wearable mobile computer and access to the orders database and shipping application, workers can scan a package and automatically receive instructions for most efficient action (staging, put-away or shipment) — in just seconds. Now:

- Productivity is improved — the same number of workers can sort more packages per hour, improving labor costs.
- Errors are reduced — bar code scanning eliminates the possibility of data entry errors, which in turn eliminates sorting errors.
- Order accuracy and shipping times are increased, improving order fill rates and customer satisfaction.

Returns

Through mobility, enterprises can provide workers in the returns area with instant access to inventory, accounting and order systems as well as advanced data capture capabilities such as bar code scanning and image capture. The wealth of paperwork so common in this function can be virtually eliminated:

- A quick scan of an item bar code or RMA label can instantly validate the return and update business systems with the disposition of the return.
- Workers can snap a picture to provide proof of condition for returns records, eliminating potential customer disputes.
- Customer credit, if due, can be issued immediately along with instant customer notification.
- Items returned to inventory are automatically noted in the inventory systems, instantly available for fulfillment of new orders.
- Overall processing time is reduced, improving worker productivity and ensuring prompt returns processing to protect customer satisfaction levels.

Cycle counts

When cycle counters are armed with real-time on-the-move access to the inventory database and advanced mobile data collection capabilities, efficiency and accuracy in this function are dramatically improved. Workers with a mobile RFID reader mounted on a cart can take a full and error-free cycle count in the time it takes to push a cart through the warehouse aisles. Counts that may have taken three or four weeks in the past can be completed in hours. The new level of cost-efficiency allows enterprises to easily and quickly take daily cycle counts, resulting in unprecedented inventory visibility that enables:

- Better trend analysis for improved buying practices
- Reduced inventory stocking levels
- Reduced capital expenditures for holding inventory
- Reduced space requirements for inventory

Picking

With mobility farther upstream in the put-away function, you already know what products are on your warehouse shelves and where they are located. When you add real-time access to your order and inventory business systems, you can automatically deliver electronic picking orders to a mobile device that includes a pick list along with the fastest route to the items. A quick scan of a shelf tag, bar code or RFID tag provides instant verification that the right item has been picked, and the item is instantly deducted from inventory. Now:

- Productivity is increased — the same number of workers can process more orders per day, driving the cost of doing business down.
- Errors are significantly reduced through the automated capture of data and instant double check for picking accuracy.
- Out-of-stocks are eliminated through the ability to instantly deduct items from your inventory as they are picked.
- The ability to deliver granular picking information enables LIFO/FIFO/FEFO picking for better inventory management.
- The ability to instantly store serialized product information with customer orders enables enterprises to expeditiously locate any product or parts that have been recalled, reducing liability as well as the high costs associated with tracking products that have already been delivered to your distribution channel or end customer. And product warranties can be accurately registered to the customer with the correct effective date, ensuring that customers receive the support to which they are entitled.
- Product information can be leveraged to prevent damage during picking operations. For example, prior to picking up an item, a scan of a bar code or RFID tag can provide clamp truck operators with the appropriate pressure setting for the clamps. This valuable mobility application helps

reduce the high cost associated with the delivery of damaged equipment — from the cost of the return and re-shipment to the cost of an unsatisfied customer.

Packing, staging and shipping

Mobility can streamline these final stages of order fulfillment, ensuring that the right order contains the right products, and is shipped to the right customer at the right time via the right method of shipment:

Packing

- Improved order accuracy — a quick scan of items during the packing process serves as a crucial cross-check of order accuracy.
- Improved order fulfillment — real-time inventory visibility enables packers to easily see any if any backordered items are now in stock, enabling completion of the shipment prior to leaving your facility. Order handling time and costs are reduced, and customers receive product more rapidly and with less shipping and handling costs, improving customer satisfaction.
- Packing material costs are reduced — based on the items in an order, your business system can automatically determine the right size carton for the shipment, removing guesswork and eliminating the use of excess amounts of filling materials.
- Labeling compliance for transportation of hazardous materials and exported goods is ensured.

Staging and shipping

- Improved shipping accuracy:
 - A quick scan of the bar code or RFID tags on cartons or pallets provides a valuable cross-check to ensure that the order is correct, properly addressed and scheduled for the proper shipment method, complete with on-the-spot printing of all necessary paperwork.
 - Integration of dispatch data ensures that the shipment is properly staged for loading on the right truck in the right order.
 - Costly mis-ships are eliminated.

- Productivity is increased — the same staff can now ship more orders per day.
- Shipping and delivery times are improved.
- Customer service and satisfaction are improved — customers are more likely to receive orders when promised, with the right items, promoting higher customer retention levels.
- Vehicle utilization is improved — trucks are fully loaded with the right shipments.
- Driver productivity is increased — staging in the correct order enables drivers to spend less time at each stop.

Asset tracking

Mobility can completely automate the asset tracking process through the use of RFID. When permanent hardened RFID tags are placed on all assets that are critical to order fulfillment, such as totes and pallets, RFID readers automatically capture tag information as the assets move through the warehouse:

- Superior tracking of assets is enabled without any manpower — and assets such as totes and pallets can easily be associated with a specific customer order.
- Real-time asset visibility greatly reduces loss and theft, and enables better management of assets — the right asset is always available at the right time, eliminating any delay in order processing.
- Lower stocking levels are possible due to the reduction in loss, reducing capital expenses.
- Since assets now remain in your inventory longer, asset lifecycles are increased, reducing the total cost of ownership (TCO) and improving the return on investment (ROI) for these often high-dollar items.

Warehouse manager

Mobility can get your warehouse managers out of the office and back on the warehouse floor by enabling the extension of all the necessary desktop tools right to the palm of their hands. With a rugged integrated voice and data mobile device built to endure the harsh environment of the warehouse:

- Managers can keep their desk phone, email, and access to all business systems in their literal pockets.

- Managers and supervisors can remain out on the warehouse floor instead of at the desk, where they can better protect overall productivity and throughput.
- Efficiency and effectiveness of managers is maximized.

Transportation

Transportation is a highly mobile function — drivers are out on the road and moving nearly 100 percent of the time, making tight management of vehicles and drivers a challenge. In addition, this function is burdened with the need to collect a lot of data to meet government regulations, translating into large volumes of forms and other paperwork. Mobility outside your four walls can connect all the people and assets in this function directly to your business systems regardless of where they may be, eliminating paperwork and providing the visibility required to improve overall management. Mobility in the transportation function enables:

More effective load schedules

The ability to see and best match available loads with available trucks maximizes asset use and minimizes mileage and fuel costs, while ensuring timely arrival at the end destination. And maximum asset utilization enables more deliveries with the same fleet, also providing a path for cost-effective growth.

Dynamic route changes

All throughout the day, situations occur that require immediate response — for example, a top tier customer may have an emergency pickup, or another delivery truck may have broken down on the road. When drivers carry a mobile voice and data device with integrated GPS technology, dispatchers can see the location of all vehicles, enabling the instant re-routing of the closest vehicle to maintain service levels and minimize costs.

Maximum asset utilization

Mobility can provide the real-time data required to automatically calculate the utilization of each vehicle in the fleet. Fleets that are under-burdened can be reduced — reducing capital expenditures for vehicles as well as reducing the labor and parts costs associated with vehicle maintenance. In addition, the ability to marry maintenance records with each

truck ensures proactive scheduling of maintenance to ensure trucks are kept in top running condition, reducing the high cost of downtime.

Better container management

Containers with RFID tags can be automatically tracked without any human intervention. Granular information allows you to see the whereabouts of your containers — including which customer has which container. Opportunities for theft and loss are greatly reduced, protecting revenues — and profitability.

Real-time exception management

With mobility, you have the performance metrics right at your fingertips to see exceptions in real time. Whenever a load is in danger of late delivery, an alarm can be triggered and sent to appropriate personnel. Proactive steps can then be taken to either avoid the late delivery or minimally to alert the customer to the situation, protecting customer service and satisfaction levels.

Improved driver productivity

A mobile computer can significantly improve driver productivity by eliminating much of the need to perform manual paperwork, and placing all the information needed throughout the workday right at the fingertips of the driver:

- Electronic Department of Transportation (DOT) logs and trip sheets eliminate paperwork and possible errors. In addition, GPS/locationing can be used in conjunction with remote engine monitoring capabilities to automatically calculate and enter hours of service and mileage on the appropriate electronic forms. Since time in the truck is now considered active driving time, the elimination of the need to manually prepare paperwork means more miles and stops per day per driver — increasing throughput with the same workforce. And since all the information needed to calculate fuel tax (mileage and fuel information) is now in your business systems, fuel tax calculations can be performed automatically, again reducing the need for drivers to spend time completing fuel tax forms.
- The ability to electronically download the day's manifests and routes to a driver's handheld computer eliminates the need for dispatch to create paperwork — and for drivers to wait in line to retrieve paperwork.



- Expedited recording of OS&D (overages, shortages and damage) keeps drivers on the road and productive instead of completing paperwork and making calls to process those exceptions.
- Mileage is minimized — on-demand address-to-address directions and up-to-the-minute traffic information ensure that drivers can always locate the fastest possible route to any given location.

Reduced fuel consumption

Mobility assists in reducing fuel consumption in several ways:

- Real-time visibility into waiting loads ensures optimal aggregation of loads, improving efficiency in routing and reducing mileage and the associated additional fuel costs.
- Real-time monitoring of engine performance enables the collection of a wide range of metrics that can drive fuel consumption down. Data can include truck speed, RPMs, idling time, torque band compliance and more. This information can then be used to provide instant feedback to a mobile computer in the vehicle to request that drivers modify their driving behavior to conserve fuel. A complete audit trail enables you to see which drivers are complying with the computer-driven orders and which are not — enabling better management of your driver workforce.
- On board navigation systems eliminate extra mileage incurred when drivers are lost.

Reduction of data errors

Completion of forms via paper and pen and subsequent entry into a computer at a later date is replaced by electronic forms that are automatically populated with available data whenever possible. The result is a dramatic improvement in data integrity and a reduction in error rates, preventing errors in mileage or fuel purchases from translating into erroneous calculations of taxes due, errors in the day's manifests from rippling into costly mis-ships, and more.

Real-time proof-of-delivery (PoD)

When proof-of-delivery moves from paper to mobile computer, proof of delivery information, including time of delivery and the recipient's name, can be transmitted to the office instantly. If the mobile device is equipped with imaging capabilities, drivers can capture signatures electronically and snap a quick picture to document the condition of the shipment. This information can then be transmitted instantly to the home office, shaving weeks off of the cash-to-cash cycle time.

Cost-effective regulatory compliance

As government regulations increase in volume as well as complexity, mobile computing keeps compliance simple and cost-effective. A mobile computer eliminates the need for drivers to complete paperwork and process logs. And on-board GPS equipment enables a paperless and automated collection and reporting of required data for U.S. State Fuel Tax forms and Department of Transportation (DOT) logs.

Pro-active safety management

Mobile computing can be applied to record and transmit engine statistics and on-board events, including sudden acceleration or deceleration, speeds and diagnostic warnings to enable proactive management of driving habits as well as the reconstruction of an accident or other event based on historical data. This capability enables transportation organizations to identify and remove drivers who perpetually practice unsafe driving habits:

- Improve driver safety records
- Reduce the potential for accidents
- Reduce insurance and liability

The yard

In distribution, the yard is key to the daily movement of goods — all incoming inventory and outgoing customer orders must pass through this portal to and from the warehouse. This critical link in your supply chain is a virtual outdoor extension of the warehouse — serving as outdoor storage for incoming inventory, and providing the final step in order processing for all outbound shipments.

Through the automation afforded by mobility, enterprises can reduce errors and increase throughput in the yard — without adding staff or assets. A new level of information visibility is achieved — and the sharing of this information with your other business systems forms a bridge that enables new levels of efficiency in the travel of supplies and goods throughout your supply chain.

Improved gate throughput

When guards at the gate are outfitted with real-time mobile computing devices, the check in process for arriving vehicles can be highly automated. Trucks can be immediately identified and loads reconciled with purchase orders, eliminating long delays at the gate and gate congestion — without adding guard stations or guards.

Improved load sequencing at the dock

Mobility ensures that the right trailer is scheduled for the right dock at the right time. Dispatchers no longer need to wait for paper to trickle down from the guard station to obtain the information needed to best schedule dock appointments — the information is transmitted wirelessly the moment it is collected. Now, all the critical information dispatchers need to

create the most effective dock schedules is instantly available, including: trailer type, trailer content (down to the SKU level), load type (perishable, dry or hazardous), length of time trailer can be on the lot before penalty charges are issued by the carrier, purchase order associated with the load, and any errors or exceptions to the purchase order.

Improved employee productivity

The automation of many tasks can result in significant improvement of worker productivity throughout the yard, enabling the same staff to handle an increase in volume in the yard — without affecting service levels. For example, at the guardhouse, the reduction in paperwork enables guards to handle more transactions. When a yard dog is outfitted with a mobile RFID reader, a worker can take a complete inventory in a typical warehouse yard that is approximately 350k to 500k square feet in just twenty minutes — a task that can often take up to half a day. And instead of searching for the right trailer, workers on yard dogs are now provided with the exact location of the right trailer — and a quick scan of the RFID tag with a handheld or vehicle mount mobile computer provides a valuable double check to ensure the trailer is correct.

Better labor management

Typically, task assignments are verbal only, received via a two-way radio. Verbal communications do not allow for any type of audit trail to analyze worker performance, from either an error or task volume perspective — and can be easily misunderstood in the noisy yard environment. When yard workers are armed with a mobile computer, the ability to issue text-based task lists to a worker can greatly eliminate errors. Workers can acknowledge when the task is complete, and your system can show the error rate and volume of tasks for all of your workers. Two-way radios can be eliminated — in the event you wish to maintain voice communications with your yard jockeys, you can select an integrated voice and data device that will allow you to place a call to one or all yard jockeys (via one-to-one and one-to-many walkie-talkie style voice communications). And Voice-over-WLAN (VoWLAN) capability delivers cost-effective voice as well as data communications for yard workers.

Asset management

Since mobility provides yard-wide real-time visibility of your assets, utilization can be significantly improved. The right trailer can be matched with the



right load, improving load aggregation and trailer utilization. The availability of a wealth of asset utilization data enables the enterprise to assess the productive use of the entire fleet — information that might reveal that the fleet could be reduced, rippling into a significant reduction in capital expense as well as maintenance costs. In addition, the ability to quickly locate and better schedule yard dogs improves general productivity and reduces miles traveled. Fuel costs are reduced, maintenance requirements are reduced and yard dog lifecycle is extended, improving the total cost of ownership (TCO) for this critical piece of yard equipment.

New capabilities: cross docking and interleaving

The new expanded view of the entire yard enables the implementation of two functions that can further enhance the productivity in the yard: cross docking and interleaving. The moment a shipment arrives at the guard station, dispatchers can see exactly what is in the shipment and the entire dock schedule, allowing appropriate shipments to be cross-docked to reduce shipment handling time and inventory handling cost.

That same visibility also enables very judicious movement of trailers, known as interleaving. A trailer parked at an inbound dock for unloading might be identified as the right type of trailer for an outbound load that is ready on a nearby dock. Instead of returning the trailer to the yard, the trailer can be delivered immediately to the outbound dock for loading — rather than taking an interim trip to the yard.

Labor management

The mobile labor management system is an additional layer that wraps around your mobile warehouse, yard and transportation systems, leveraging the information already in those systems to enable unprecedented visibility and control over the productivity of one of the largest supply chain costs — the workforce. The mobile labor management system draws on the granular information afforded through mobility in your other supply chain management systems to unlock the maximum potential of your workforce. Where mobilizing your warehouse, transportation and yard management systems improves productivity in your business processes, it is the mobile labor management system that enables managers to improve the productivity levels of individual workers. Mobilizing labor management enabling enterprises to maximize the value of the mobility solutions in the warehouse, transportation and yard to create a significant competitive differentiator — a 'lean workforce machine' that enables the day-in and day-out delivery of superior customer service.

Automation of time and attendance systems

By enabling employees to scan a bar code on their security badge at the start and stop of each shift, time and attendance can be completed automated — the trip to the time clock is eliminated. Administrators no longer need to collect, calculate and enter punch card data into a computer system. And the automation of the data collection virtually eliminates the possibility of error, eradicating time that might have been spent resolving employee

disputes over time worked or correcting paychecks due to an error in data entry. The automation of what might seem on the surface to be a simple and efficient system (such as a punch clock) can deliver big benefits. According to the American Payroll Association, automating time and attendance processes typically saves \$1000/ per employee/per year* — delivering an annual savings of a half a million dollars in a facility with 500 workers.

Visibility into productivity...and performance metrics

A mobilized labor management system enables enterprises to efficiently determine who is doing what and how long it takes by providing the granular data required for an accurate comparison of productivity metrics. For example, to compare pickers in a warehouse, you need to reach well beyond the number of orders picked to factor in the type of equipment in use (such as a forklift or hand cart), item location (within reach or high on a top shelf), item size and any special handling requirements (for example, for highly fragile items) to fairly assess employee performance. With a mobile labor management system in place, enterprises can easily integrate information from the warehouse, yard and transportation mobility solutions with core business systems, (such as the warehouse management system) to easily and automatically monitor, track and analyze the time each employee spends on each task — and push the results to the manager's own mobile device. Now, managers have the data required to get and keep the workforce operating at peak productivity. Managers can:

- Determine achievable realistic and task specific key performance metrics to enable a meaningful measurement of individual employee productivity levels.
- Track individual worker performance against those metrics.
- Identify all non-productive time, including where it is spent, how much it is costing the enterprise — and how that time can be eliminated.
- Identify the most productive employees to ensure those workers receive recognition and incentive to continue their excellent performance.

- Identify underperformers — and develop a plan for improvement tailored specifically to help each employee achieve key performance metrics. For example, one employee may need additional training on a specific task — while another simply needs to spend more time working and less time on breaks.
- Understand the true capacity of the workforce to ensure the bar for departmental metrics is properly set.

Continuous and automated performance feedback

A key aspect of labor management is clear communication of achievable goals that are linked to the company's strategies. While goal setting to achieve specific objectives is standard in the ranks of upper management, line employees are rarely given goals that are aligned with corporate objectives. Robert S. Kaplan and David P. Norton noted that only 7 percent of U.S. line employees are given goals that are rooted in top level corporate strategy — the remaining 93 percent do not have visibility into what the company is trying to achieve or improve, and without that knowledge, cannot actively assist the enterprise in achieving those goals.

In order to achieve peak workforce productivity, workers need to understand clearly what it takes to achieve or exceed expectations — and what the reward will be for doing so. Through mobility, enterprises can automatically calculate and distribute personal performance goals and metrics to workers, providing a vehicle for continuous everyday improvement in workforce productivity levels. Instead of presenting employees with a piece of paper that outlines goals each quarter or at the half year mark, employees can access their personal daily goals right on their mobile computers at the start of each work day. And at the end of the day (or other preferred interval), employees can view their performance improvement and how close they are to achieving their personal goals — as well as departmental goals.

Better resource planning

When information from your mobile warehouse and other supply chain management solutions is integrated into your labor management system, managers have visibility into the true capacity of the

* Trends in Time and Attendance, presentation at the 22nd Annual Congress of the American Payroll Association, April 27, 2004.

workforce for improved resource planning. Armed with this information, managers can anticipate the peak and valleys that may occur throughout the year and better plan staffing requirements to address fluctuating demand. For example, during holidays when orders are at an all-time high with high customer expectations for shipment turnaround times and order accuracy, managers can better determine when and how many additional workers will be required to ensure service levels are preserved in spite of the increased volume. With proper manpower planning, the value of this large cost center can be maximized, allowing managers to ensure that:

- The right workers are on staff at the right time and assigned to the right tasks — reducing errors and increasing customer service levels.
- The need for temporary help is reduced, improving control and reducing staffing costs.

Better management...with less management time

Managers can better manage workers in less time through two key capabilities: the automatic collection and analysis of information from your mobile warehouse or other supply chain management solution, and the two-way communication that allows the delivery of pertinent information to the mobile devices of managers as well as their staff. The result is:

- The elimination of many manual administrative tasks — such as the compilation of data to obtain key metrics or regular meetings with employees to discuss goals and progress towards goals.
- The ability to provide a continuous feedback loop to the workforce with virtually no effort significantly incents employee self-direction. Real-time on-the-job performance monitoring, clear communication of job expectations — from how long tasks should take to how many tasks should be completed in a day and what is an acceptable amount of break time — and real-time communication of current performance metrics promotes a self-driven workforce.

And when the workforce strives to better manage itself, managers are free to focus on higher level management initiatives.

Summary

Mobility can help the distribution supply chain address some of today's most challenging issues: thin margins, rapid product lifecycles and increased customer expectations. By moving computing power from the desktop to the point of work via a mobile computer, enterprises can provide workers with the tools needed to shave wasted time and errors out of business processes throughout the distribution supply chain. The time savings enables the same amount of workers to handle more tasks, while automated data capture tools (such as bar code scanning and RFID) reduce the errors inherent on handwritten forms, and tighter collaboration across the supply chain further improves the velocity of business. The result is a streamlining of the distribution supply chain — a leaner supply chain capable of improving quality, reducing the cost of doing business and improving customer service and satisfaction levels for real competitive advantage.

For more information

For more information on how you can reap the benefits of mobility in your supply chain, please visit us on the web at:

motorola.com/supplychainmobility

or access our global contact directory at

motorola.com/enterprise/contactus

The incremental benefits of mobility — tighter synchronization across the supply chain

When mobility is deployed in one functional area of the supply chain, the resulting process automation and instant availability of data delivers benefits to the other tangential functional business areas inside the enterprise as well as upstream and downstream in the supply chain. The following chart describes the incremental benefits associated with deploying mobility in the various areas of the distribution supply chain.

Warehouse	
Yard/ Transportation	<p>Mobility enables tighter integration between your yard and warehouse workers, yielding greater efficiencies in both functions. When shipments are ready to go, electronic work orders are immediately sent to the yard workers' mobile devices, complete with the exact location of the next trailer or container scheduled for conveyance. The result? Trailers are delivered to the dock in minimal time.</p> <p>Since warehouse workers can see the dock schedule, orders can be staged in a timely fashion and warehouse workers available for loading the moment the trailer arrives. Dock turnaround times are reduced and drivers are back on the road as fast as possible, eliminating fines for excessive wait times.</p> <p>Real-time inventory visibility enables yard workers to determine instantly if an arriving truck contains items that are currently out of stock. In this instant, a dynamic change in the dock schedule can be executed to ensure the immediate delivery of the shipment to the receiving dock, minimizing the loss or delay in processing of orders as well as the possible impact on the production line.</p>
Shipping/ Delivery: Dispatch	<p>When the dispatch function can see shipments in progress in the warehouse in real-time, load plans can be prepared that take into account all shipments that will be ready to load in the morning — not just shipments completed at a specific point in time. The creation of real-time load plans allows the best utilization of your delivery vehicles and your drivers. Load aggregation is easily optimized, and trucks are more fully loaded with shipments that have been aggregated to enable the most efficient delivery route possible.</p>
Shipping/ Delivery: Route accounting and proof of delivery	<p>The collaboration of data between shipping and dispatch enables a new level of efficiency in your delivery function. Shipping information is utilized to create electronic manifests and invoices that can be sent directly to the driver's mobile device:</p> <ul style="list-style-type: none"> • The elimination of paperwork improves driver productivity, enabling more stops per day per driver. • Since drivers can now make more stops, there is an increased opportunity to sell more product throughout the day, increasing sales. • Since electronic transfer of information eliminates the paperwork, accounting and administrative staff no longer needs to enter paperwork into the computer, further increasing employee productivity. • Drivers can complete the electronic invoice cycle by obtaining an electronic signature upon delivery, which is then instantly transmitted into the enterprise billing system. The improved velocity of the movement of information reduces the days sales outstanding (DSO), which in turn improves the cash-to-cash cycle and overall profitability.
Manufacturing/ Production Line	<ul style="list-style-type: none"> • The ability to track and trace for consumer safety and to meet regulatory compliance is simpler and less cost-intensive. • Granular information about the parts and/or ingredients stored in your warehouse for later manufacturing into finished products or consumer packaged goods is captured in receiving and put-away in the warehouse, creating a very detailed genealogy that follows the arrival of the raw goods at your facility through to shipping of finished product. • Sales and operation planning is improved thanks to better demand information from the sales team, which leads to better manufacturing planning and lower stocking inventory requirements.

Sales	<p>When the sales function has a window into the real-time inventory and order database in the warehouse management system:</p> <ul style="list-style-type: none"> • Sales personnel can check inventory, obtain pricing and place orders — right from a customer’s location. • An electronic computer-based sales form improves productivity by eliminating paper-based order forms that also require later data entry into the computer. • Time previously spent on paperwork can now be spent on sales, enabling salespeople to make more calls per day, increasing sales potential. • Improved customer service — orders, pricing and delivery times can be confirmed on the spot. And if a customer calls requesting the status of a present order, the information is never more than seconds away from the salesperson’s fingertips.
Field Service	<p>When your warehouse and field service functions are integrated via real-time mobility solutions, the efficiency and customer service levels in field service operations are improved:</p> <ul style="list-style-type: none"> • The warehouse has visibility into upcoming schedules for repair and service. • Parts and tools can be ordered and reserved in advance. • Technicians have what is required to complete the job on hand, improving customer service and satisfaction.
Transportation	
Warehouse	<p>In the warehouse, orders filter down for fulfillment and are transferred to dispatch to schedule the right truck to the right dock at the right time. The integration of the transportation and warehouse systems provides simultaneous visibility into both order and truck status, allowing the synchronization necessary to:</p> <ul style="list-style-type: none"> • Properly aggregate loads • Develop route plans that maximize efficiency in terms of mileage, driver time and fuel costs
Yard	<p>Integration with the yard system ensures that yard workers are expecting and are prepared for your vehicles. The results are:</p> <ul style="list-style-type: none"> • Minimal wait times at the dock • On-the-road drive time is maximized during shifts — key in a workforce with a major shortage in drivers • Vehicle utilization is increased — a critical metric given the high cost of trucks and trailers
Yard	
Warehouse	<p>When the yard management system is connected to the warehouse management system, workers in the receiving department of the warehouse already know what products are in an arriving shipment as well as the suggested location for put-away, and are ready to act the moment the shipment is removed from the truck:</p> <ul style="list-style-type: none"> • Time spent identifying shipments to obtain proper processing directions is reduced • Warehouse throughput is improved • Errors in the warehouse receiving process are reduced
Fleet Management	<p>The sharing of information between yard, transportation and warehouse functions enables a new level of synchronization in these business areas:</p> <ul style="list-style-type: none"> • Load aggregation is further improved • Scheduling is optimized • Truck utilization is improved • Fewer miles are driven, translating into less maintenance and a reduction in fuel costs • Overall shipping costs are reduced
Labor	
Global Management	<p>Mobility provides a rich enterprise-wide data library to enable easy and real-time comparison of similar workforces and operational areas around the world. For example, you can quickly and easily:</p> <ul style="list-style-type: none"> • Compare global warehouse performance. • Provide regional goals and performance-to-goal metrics for tighter global management of facilities. • Obtain information required for better strategic facilities management. For example, spotting two warehouses with declining volumes could enable a proactive decision to combine the facilities, providing a substantial savings on capital and operational expenses.



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