Distribution Center
Walkthrough Guide

January, 2012
# Table of Contents

## Contents

Preface ........................................................................................................................................... 3  
Workflow Process Overview ........................................................................................................... 5  
Yard Operations ............................................................................................................................ 5  
Receiving ...................................................................................................................................... 5  
Unloading ..................................................................................................................................... 6  
Checking ...................................................................................................................................... 7  
Putaway ......................................................................................................................................... 8  
Replenishment ............................................................................................................................... 9  
Stocking ......................................................................................................................................... 9  
Picking .......................................................................................................................................... 10  
Cross-dock/Flow-through/Put-to-Store .......................................................................................... 12  
Packing .......................................................................................................................................... 13  
Line Loading (Palletizing) ............................................................................................................ 14  
Loading/Shipping ......................................................................................................................... 14  
Value Added Services .................................................................................................................... 14  
Audit ............................................................................................................................................ 15  
Returns ......................................................................................................................................... 15  
Inventory Control ......................................................................................................................... 15  
Management/Reporting ............................................................................................................... 16  
Miscellaneous ............................................................................................................................... 16  
Summary/Review ........................................................................................................................... 16  
Walkthrough Worksheet ............................................................................................................... 17  
Company Business Metrics .......................................................................................................... 42  
Key Operational Metrics ............................................................................................................... 43
Preface

Increased competition and customer demands are driving Intermec and its partners to better deliver complete “whole product” solutions that meet customer needs well beyond the traditional hardware and related support services approach. By focusing on specific solutions that address the customer’s business needs and challenges, the sales person can create an important competitive advantage establishing themselves as the Trusted Advisor to the customer. Achieving the level of credibility and respect that comes with the trusted advisor role puts the sales person in a much stronger competitive position and more powerful role to influence a complex buying decision. Intermec believes this positioning is gained by demonstrating a thorough operational knowledge of the customer’s business, building credibility through past customer engagement successes, and creating unique business value and a compelling event around high value workflow process improvements. This document is designed to help the sales person understand the specific walkthrough process for this Deployment Environment (DE) to enable making a compelling analysis and recommendation to prospective customers.

The DE Guide, sales decks and sales deck instructions are three resources currently available on INsider to help with consultative sales engagements. This Walkthrough Guide works in concert with those other resources and is designed to address step two in a four step sales engagement process adopted from Vocollect (see Figure 1). Vocollect sales professionals achieve an 80% success rate when they effectively adhere to this process.

Figure 1: Value Engagement Process

The process begins with an initial customer meeting. The objectives of this meeting are to understand the customer’s business challenges and focus and to get the customer to agree to allow you to do a walkthrough of their operations. Once these objectives have been obtained, end the meeting by establishing a start date and move to the next step of actually conducting the walkthrough.

The walkthrough may involve discussions, observations and interviews of supervisors/management personnel. The objective is to document the customer’s current business and operational processes, documenting ways technology and process changes can be applied to make improvements. The main deliverables of this step in the process are to identify compelling events and opportunities for unique business value (UBV) and to compile a business case that supports a positive return on investment.

Once the business case has been developed, a presentation of the findings can be made at a briefing with the customer’s executive staff. During this meeting, the benefits for automating key business
processes are reviewed and the business case for doing so is revealed. A positive return will most likely result in the development of a project plan and proposal.

This Walkthrough Guide is intended for the use of Intermec and partner sales reps and systems engineers that are preparing to call on client or prospect organizations in an effort to help them identify cost savings through technology and process change.

Note that the content in this document, while extensive, is not exhaustive. The content contains what is common or typical in most operations, but keeps in mind that companies will vary. It is important to research the client or prospect and completely understand their business and market segment before conducting the walkthrough. Many of the specifics of the business will be discovered in the initial meeting where you are introducing your expertise and capability, demonstrating your credibility by referencing other companies we have helped as you close for the walkthrough visit.

This document provides detailed questions to profile a customer’s operations. The answers to these questions will provide data for an ROI model that will convey cost savings in areas where Intermec and partner products and services can be leveraged to obtain greater accuracy, productivity and cost savings benefits. See Figure 2 for potential outputs from executing a walkthrough.

**Figure 2: Walkthrough Outputs**

After reading this guide, you should be:

- Familiar with the step by step procedures for conducting a walkthrough
- Familiar with the typical workflow process areas
- Able to identify and document business, IT and operational challenges
- Able to identify areas of potential technology or process improvement
- Able to document proposed benefits and develop a sound business case
- Able to deliver a proposal based upon real ROI savings important to the customer

Note: If in the pre-qualification process you have determined the likely DC type and it will involve the use of Voice applications, you will need to involve Vocollect sales resources or a certified Vocollect reseller partner.
Workflow Process Overview

The process review is divided into operational process areas. It is important, for each of these process areas, to understand the current technologies, procedures and methods and document them accordingly. It is also important to understand how the client envisions changes in these areas and what expectations they have in that respect. This information will help drive our proposed benefits and lead to a successful project.

Yard Operations

The yard operations are, in essence, an extension of the DC. However, they can be a choke point of activity if they are not efficiently moving drivers and loads in and out efficiently. Activity begins and ends with the Gate In and Gate Out transactions. Capturing information at point of arrival is important for tracking drivers, loads, equipment, trailer content, arrival/departure times and maintaining security protocols. Other yard processes involve the movement of trailers around the yard and into and out of receiving and shipping doors and the inventory of equipment and trailer contents in the yard.

Most organizations deploy paper-based methods in the yard and are thus prime candidates for the accuracy and productivity increases that technology can provide. Electronically capturing data at the gate through the use of barcode scans or RFID can speed the process and provide a more accurate tracking method. RFID can be utilized in a more permanent fashion for private fleets by tagging the tractors and trailers with permanent tags. Temporary hanger tags can be used to capture data and track OTR (Over the Road) equipment while on your property whether they are drop trailers or live load.

Tracking the contents of trailers is also important to DC operations. Knowing what product resides in the yard on trailers be it backhauls, drop trailer content or excess storage is important to filling outbound order needs. Being able to track the items and quantities is important, but equally important is tracking load condition. Information such as temperature for frozen or perishable loads is vital for tracking cold chain needs. With vendors charging detention fees for drivers and/or equipment being kept too long at a location, the accuracies provided in electronically capturing arrival/departure times are also a plus.

By capturing information electronically and updating a system in real-time you can expedite the movement of goods through the DC, especially in operations using cross-dock and flow-through where timing of inbound and outbound operations is vital. Electronic capture also increases compliance levels for food track and traceability initiatives. Inbound container/asset tracking is another benefit of RFID deployment in yard operations. The printing of bar coded gate receipts is also being deployed by Best-in-Class operators as a way to track paperwork through the receiving check-in and check-out processes and associating driver, equipment and inventory to a specific appointment. This is also an opportunity to investigate whether the use of eMDI can be utilized to capture Bill-of-Lading, packing slip or other data.

Look for opportunities to add mobile computing, scanning, imaging, eMDI, printing, media and RFID to these processes. Specific questions to ask during the Yard Operation review can be found in the Walkthrough Worksheet.

Receiving

It can be argued that the receiving process is the most important process in the DC. All downstream processing depends on the accuracies and efficiencies achieved in the receiving process. Receiving quantity and/or wrong product errors will ultimately affect the ability to ship the right product and the right quantity to the customers resulting in decreased customer satisfaction levels and possible sales loss to competitors.

As with all processes it is important to document how receiving is being done currently and observe areas where improvements can be made by implementing technology. There are many different types of receiving and one or many could be being used by the client. These can include:

- Fluid unload to conveyor where there may be an opportunity for Print & Apply
• LTL (Less than Truckload) which may or may not involve the need for breakdown of the pallets into correct quantities and configuration (TI x HI)
  o Can be pallet or floor loaded
• TL (Full Truckload) which may or may not involve the need for breakdown of the pallets into the correct quantities and configuration (TI x HI)
  o Can be pallet or floor loaded
• Straight loads of one SKU usually palletized, but sometimes floor loaded in the instances of bulk items such as paper
• Loads requiring specialized MHE (Material Handling Equipment) like slip sheet machines, etc. which are not as common anymore

There are also several different methods of receiving that can include:

• Paper based receiving which is typically the least efficient and productive and the most error prone
• RF receiving using either vendor supplied labels (UCC 128), information specific labels or generic labels
• RFID receiving usually deployed in very high volume situations or in situations where you have several different SKU types in single cartons such as apparel receiving
• ASN receiving that pre-matches the actual ship information from the vendor to the expected PO in the system and makes the adjustments systemically so that the expected quantity now matches the shipped quantity
  o Full ASN receiving is a process where a one button push receives all the items on the PO in the quantities said shipped by the vendor. This is usually only done with very trusted vendors who have a history of delivering exactly what they say they shipped

At the time of receipt there is a vast amount of information that must be gathered in an accurate and efficient manner. Some of this information may include:

• Quantity by product
• Lot numbers
• Serial numbers
• Catchweight (although typically captured in the Outbound process)
• Track and Trace information in food DC’s that can include COOL (Country of Origin Labeling), Bio-terrorism information and PTI (Produce Traceability Initiative) data
• Exception information such as damages, overs and shorts
• Temperature information for Cold Chain tracking
• Specific QC information relevant to the client
• ePedigree number for pharmaceutical
• Container/Asset tracking information
• Numerous other Vendor Compliance information deemed important to the client

The receiving process can be separated into distinct steps that include Unloading and Checking. We will look at each of these processes individually for areas where we can provide improvements in accuracy and efficiency.

**Unloading**

The unloading process consists of the movement of the received goods from the container (trailer, rail car or other delivery method) to the dock floor for proper checking. As mentioned above, these goods can arrive on the floor of the container or on pallets. How they arrive helps determine what receiving method is sometimes deployed.

Floor loaded goods can either be transferred to pallets for Putaway or fluid unloaded to conveyor for transfer to storage or quite possibly conveyed to outbound directly. In the case of fluid unloading, print and apply is often utilized to label the merchandise for transit through the automated system. This is an excellent opportunity for Intermec to install print and apply and
media products. Some common fluid unload operations include office supply clients. In the case of floor loaded goods transferred to pallets it is necessary to apply a label that contains pertinent product info to each pallet. This can be a specific label containing both human readable and bar coded information or a generic label containing only a barcode that contains all the information. These cases may also contain RFID tags.

Goods that arrive in LTL, TL or other methods also go through the unload process. They may or may not have to be broken down into the correct configurations for storage in the DC. This breakdown process is typically done by the driver of the vehicle or lumpers hired by the DC or driver. In some cases the DC staff is responsible for breakdown, but these are not common. These pallets may already contain a label applied by the vendor. This label can be utilized to move the goods through the system. If it does not contain a label then either a product specific label or generic label will be applied during the check-in process.

Once the unloading process is started the check-in process can begin simultaneously if the unloader and checker are separate workers. In some instances they will be the same person.

Checking

The checking process of receiving may be the most critical process in the DC. It is usually performed by senior associates with great knowledge of the DC’s products. The checking process consists of making accurate counts of the product and capturing additional information as outlined above.

Checking can be done in many different ways. There are still many companies using paper-based receiving which is the most time consuming and least accurate method. DC’s using this method are prime candidates for deploying technology improvements that could include the use of mobile computers, fixed and/or mobile printers, RFID, voice and eMDI.

As part of the checking process the checker is responsible for verifying that the correct product in the correct quantity in the right condition is being received on the corresponding PO or PO’s. Capturing this data through scans or voice is more efficient than paper and eliminates the data entry errors associated with writing on a document and subsequently entering that information into a system.

Checkers are responsible for getting the product in a status that allows for either Putaway or transfer directly to the shipping area if Cross-dock or Flow-through is being utilized. This may include applying a product specific or generic label to the product/pallet so there is a huge opportunity for media and printers. Some checkers may be responsible for multiple dock doors where stationing fixed printers on the dock in strategic locations can be effective if very large quantities of labels need printed at once. In instances where checkers are responsible for many doors it is more productive to equip those checkers with mobile printers. The checkers can then apply the correct label to the product/pallet as needed and eliminate unnecessary steps.

Utilizing mobile computers to scan product and label information as well as capture additional data is very productive and accurate. The additional data sometimes captured in receiving was outlined above and assists in providing critical information about the products. It ensures quality control, vendor compliance and product and consumer safety. Using image capture and eMDI can further assist in gathering critical data relevant to quality, damage, load condition and important document information. In produce or other receiving operations where load condition or inspection is a common process it is quite possible that image capture with our camera functionality will be relevant.

RFID is also a sound investment for receiving in DC’s that have very high volumes as it can drive high levels of productivity. RFID is also relevant in operations handling high value items and mixed product cases. RFID is also seeing an increase in the area of container/asset tracking. Replacement costs for returnable containers are usually very high so deploying technology that
allows the operation to keep them in their network typically drives a high ROI. The Mission Foods case study is a prime example of this.

In DC’s using voice technology in the picking process, there may be an interest in expanding the use of voice to other process areas to include receiving. This may also be applicable in DC’s not using voice, but wishing to roll out this technology across the entire facility. Although not common for receiving voice should be considered as a viable technology to deploy. Proper discovery will help determine which combination of technologies and process improvements will drive the greatest accuracy and productivity improvements for your client.

Look for opportunities to add mobile computing, scanning, imaging, eMDI, printing, media, voice and RFID to these processes. Specific questions to ask during the Receiving Operation review can be found in the Walkthrough Worksheet.

**Putaway**
The Putaway process is the action of moving received goods from the receiving dock to its next destination. This process can be user directed or system directed.

User directed Putaway is typically much less effective from an accuracy and productivity standpoint. User directed Putaway is usually deployed in less disciplined DC’s and some of the issues that can arise include non-confirmation of locations, poor labor and cube utilization and poor stock rotation.

System directed Putaway is more disciplined and requires the user to take the product to a system specified location that properly utilizes cube and labor, check digits for location verification and maintains proper stock rotation for FIFO, LIFO and code dating. The system directs this work in real-time so productivity is increased. There are several different location types that product may be directed to:

- Pick Location
- Forward Reserve
- Deep Reserve
- Bulk Floor Storage
- Push Back Rack
- Staging Location for Cross-dock/Flow-through
- Other including outside storage

With system directed Putaway, the worker typically scans the pallet label and then proceeds to the location determined by the system. Once arriving at the location another scan to determine accuracy is usually performed.

DC’s not using technology can be using paper-based processes and they are prime candidates for upgrading to technology based processes. This is a good opportunity to introduce RF and/or voice devices. Deploying VMC’s with tethered or blue tooth scanners (for off the truck mobility) can enhance accuracy and productivity. Some operations that expect their workers to do multiple work processes may find deploying cradled mobile computers to be effective for both Putaway tasks and other work. As mentioned in the Receiving section, voice technology is being utilized in additional processes other than picking and fork applications such as Putaway where vehicle mount voice devices with Bluetooth headsets and scanners is gaining in usage. Clients still wanting to use VMC’s but interested in advancing to voice will find great value in our voice enabled VMC’s.

In typical fork processes it is usually necessary to scan items, pallets, racks, etc. from variable distances. Interme’s near/far scan capability is valuable to operators, especially those utilizing high bay racking for storage. There are also instances where fork operators need the ability to print labels. Mobile printers are being utilized on the fork lifts to enable this.

Look for opportunities to add VMC’s, mobile computing, scanning, printing, media, voice and RFID to these processes. Specific questions to ask during the Putaway Operation review can be found in the Walkthrough Worksheet.
Replenishment
The replenishment process is very similar in activity to the Putaway process from an operator standpoint. It involves moving product from storage locations to active picking locations or stocking points. This process can be user directed or system directed.

User directed replenishment is typically much less effective from an accuracy and productivity standpoint. User directed replenishment is usually deployed in less disciplined DC’s and some of the issues that can arise include non-confirmation of both pull and put locations, poor labor and cube utilization and poor stock rotation.

System directed replenishment is more disciplined and requires the user to take the product to a system specified location that properly utilizes cube and labor, check digits for location verification from both the pull and put locations and maintains proper stock rotation for FIFO, LIFO and code dating. The system directs this work in real-time so productivity is increased. There are different location types that product may be directed to:

- Pick Location
  - Conventional Rack
  - Static Shelving
  - Case Flow Rack
  - Pallet Flow Rack
  - Carousels, A-Frames, Pick-to-Light (PTL), or other Material Handling Equipment (MHE)
- Forward Reserve from Deep Reserve
- Pick and Drop (P&D) Staging Location for Stocking
- Other including outside storage

With system directed replenishment the worker typically scans or speaks the storage location and then proceeds to the location determined by the system. Once arriving at the location another scan or voice entered check digit to determine location accuracy is usually performed.

DC’s using paper-based replenishment processes are prime candidates for upgrading to technology based processes. This is a good opportunity to introduce RF and/or voice devices. Deploying VMC’s with tethered or blue tooth scanners (for off the truck mobility) can enhance accuracy and productivity. Some operations that expect their workers to do multiple work processes may find deploying cradled mobile computers to be effective for both replenishment tasks and other work. As mentioned in the Receiving section voice technology is being utilized in additional processes other than picking and fork applications such as replenishment where vehicle mount voice devices with Bluetooth headsets and scanners is gaining in usage. Clients still wanting to use VMC’s but interested in advancing to voice will find great value in our voice enabled VMC’s.

In typical fork processes it is usually necessary to scan items, pallets, racks, etc. from variable distances. Intermec’s near/far scan capability is valuable to operators, especially those utilizing high bay racking for storage. There are also instances where fork operators need the ability to print labels. Mobile printers are being utilized on the fork lifts to enable this.

Look for opportunities to add VMC’s, mobile computing, scanning, printing, media, voice and RFID to these processes. Specific questions to ask during the Replenishment Operation review can be found in the Walkthrough Worksheet.

Stocking
The stocking process is an additional replenishment step utilized to place items in pick locations that are not typical pallet handling locations and usually need extra prep work. Stocking can also be user directed or system directed. As with the Putaway and replenishment processes, user directed stocking is far less accurate and productive and can be a major cause for items not being available to pick at the time the selector passes the pick location.
System directed stocking is more disciplined and requires the user to take the product to a system specified location that properly utilizes cube and labor, check digits for location verification and performs the correct stocker prep function to ensure the carton is in a state ready for picking. The system directs this work in real-time so productivity is increased. There are different pick location types that product may be directed to:

- Static Shelving
- Case Flow Rack
- Carousels, A-Frames, PTL or other MHE

With system directed stocking the worker typically scans the P&D location and the pallet of mixed product and then proceeds to the pick area determined by the system. Once arriving at the location the system will direct the stocker to prep and place specific product into specific locations based upon travel efficiencies or priority need or both. A scan into the final pick location is usually required to determine accuracy is maintained and to eliminate the errors created when product is co-mingled in pick locations.

DC’s not using technology can be using paper-based processes and they are prime candidates for upgrading to technology based processes. This is a good opportunity to introduce RF and/or voice solutions. Mobile computers are very suited to perform accurate scans of the product into their locations and view the prep instructions associated with the stock.

Voice technology is ideally suited for the stocking process because of the repeatable nature of the activity and the efficiencies gained by utilizing hands free technology. Pairing voice with a wearable scanner is sometimes required when additional scannable info is required.

There are also instances where stockers need the ability to print labels. Mobile printers are being utilized to enable this requirement.

Look for opportunities to add voice, mobile computing, scanning, printing and media to these processes. Specific questions to ask during the Stocking Operation review can be found in the Walkthrough Worksheet.

**Picking**

The picking process is by far the most labor intensive work process in the DC and also an activity that is prone to error. This process area is typically the biggest opportunity for improvement in the DC operation.

As the order picking process involves significant cost from labor content, costs of incorrect items picked, any secondary audit processes required and the potential for returns or losses due to incorrect products that are not returned and/or not paid for. And the impact on customer satisfaction levels directly attributed to picking quality is significant. There are a number of picking methods and technology solutions available. The methods for order picking vary greatly. The characteristics of the product being handled, total number of transactions, total number of orders, picks per order, quantity per pick, total number of SKUs, value-added processing activities such as kitting or private labeling, and handling of piece pick, case pick, or full-pallet loads are all factors that affect the method for order picking. Many times a combination of picking methods is needed to handle diverse product and order characteristics.

Key objectives in order picking best practices include increased productivity, reduced cycle time, and increased accuracy.

**Productivity**

Productivity in order picking is measured by the pick rate. Piece pick operations usually measure the pick rate in pieces picked per hour while case pick operations measure cases picked per hour.

In pallet pick operations the best measure is pallets picked per hour. Productivity includes the time it takes to physically travel to the item’s physical location, select and handle the item (or the
total of the items on a given order) to be loaded on a pallet or packed in a tote or carton, and
taken to the final destination location.

Accuracy

Regardless of DC operation, accuracy is always a key objective. Virtually every decision made in
setting up a DC impacts accuracy. From product location and numbering scheme, slotting, pick
face labeling, product labels, and even lighting. All these elements of DC design impact picking
accuracy. Technologies that aide in picking accuracy include voice picking systems, barcode
scanning and pick-to-light systems. Other major factors affecting accuracy include employee
training, strong accuracy tracking and accountability methodologies including audits and pay-for-
performance incentives.

Cycle Time

Cycle time is the amount of time it takes from order entry to shipping the order. Customer’s
expectations for service levels vary, but inventory turn metrics, lean and just-in-time inventory
practices as well as same day shipment business models has put greater emphasis on reducing
cycle times from days to hours or minutes.

Some important things to understand and note about customer operations are the types of picking
methods being utilized. Are they doing full pallets (common in CPG), partial pallet, full cases, broken case
and/or piece or each picking (usually single items from within the case pack level)? Another important
consideration is how many temperature zones are there? The three typical temperature zones are
Freezer, Cooler (typically refrigerated temperatures for fresh foods) and Dry (ambient). These
temperature zones determine the operational workflows. Naturally freezers present challenges to
equipment and people and are typically more difficult than dry areas. Cooler and dry are fairly similar in
terms of people/equipment challenges. Some of the typical pick methods deployed include:

- Basic Picking
  - Full Pallet Picking
  - Case Picking
  - Piece Picking
- Batch Picking
- Wave Picking
- Zone Picking

There are also many different types of medium from which items are picked including:

- Conventional Rack
- Static Shelving
- Case Flow Rack
- Pallet Flow Rack
- Carousels, A-Frames, PTL and other MHE

Further information about these pick methods and medium types can be found in the Distribution Center
Deployment Environment Guide.

There are several technologies that can be deployed in the pick process but the most efficient, accurate
and productive for the DC labor force is voice picking, especially in high volume, complex operating
environments with a high number of transactions. The higher the volumes, the faster the ROI with voice
picking. Moving a client from paper-based or label picking to voice or RF picking can deliver great
benefit. Voice picking is hands free and eyes free so it increases accuracy and productivity through
focused work activity. Voice can be deployed in any type of pick operation to include pallet picking, case
picking and each picking to tote or carton. There are additional benefits with voice to include safety and
ergonomic gains, training time reduction (very relevant for seasonal picking), employee satisfaction and
the resulting retention and language barrier removal. There are instances where scanning additional
critical data (see Page 7) is required and these are opportunities to deploy wearable scanners to be used with voice picking. If the client is experiencing issues with pick accuracy, productivity, shorted items, etc. then voice is a very good fit. With its hands free nature voice is also an ideal pick technology for cold environments as the necessary use of gloves tends to impede other pick methods such as paper, label and RF.

Mobile computers are also used in pick operations and are best suited for low volume, basic operating environments. It is important to recognize how the client wishes to utilize their workforce. If the workforce is expected to perform multiple operational processes such as picking, receiving, loading, etc., during a single shift, then it may be advantageous to equip them with voice enabled multi-function (scan/key/voice) mobile computers so that a single device with a single supporting infrastructure (batteries/chargers/etc.) can be utilized.

As part of the picking process destination labels are usually required to be applied to the finished container (pallet, tote, etc.). This can be accomplished by placing fixed printers throughout the facility so that the picker can retrieve them either before or after completing their pick task. These fixed printer stations can, however, become choke points in high volume operations. Mobile printers can also be deployed, especially in operations such as Convenience and Drug Store DC’s that require a shelf or pricing label be applied to each item picked or in each picking where tote or carton labels are required.

The use of automation and/or robotics is becoming increasingly relevant in DC operations. These technologies are currently typically deployed in very high volume operations where the product being handled is very similar or standard in nature.

If the client is using zone or wave picking, automated conveyor and sortation systems will likely be a part of the system. In case picking, you may see standard conveyors to transport individual cases or unit-load conveyors to transport pallets. This operation is often referred to as 'pick-to-belt'.

ASRS (Automated Storage and Retrieval Systems) when combined with unit-load conveyors and sortation systems can provide fully automatic pallet picking operations. And the ability to store product in racking up to 100 feet high gives excellent storage density. ASRS systems are used effectively in full pallet operations to defray labor costs. While extremely costly and complex mechanically, ASRS systems can be economical over longer payback periods.

There is also an increase in the use of motorized equipment that allows the workers to remain in their pick zones and reduces the travel time associated with conventional picking. Some of these processes involve the movement of pallets to each zone by motorized equipment and the worker will pick items from their zone to the pallet that then moves to the next zone. The use of voice technology for picking the items in the zone is a great complement to this technology. In some instances the motorized equipment will arrive with a new empty container while the full container will be transported to the dock by motorized equipment.

Also be aware that in some very large, high volume operations full automation may be a consideration. These fully automated facilities can be very costly to construct and implement but can provide ROI over an extended period of time. In these situations it is still feasible to find processes within the facility that we can positively affect with our technologies.

Look for opportunities to add voice, mobile computing, scanning, printing and media to these processes. Also look for opportunities to add complementary technology to operations that are highly automated. Specific questions to ask during the Picking Operation review can be found in the Walkthrough Worksheet.

Cross-dock/Flow-through/Put-to-Store
These processes are very closely tied to both the receiving and picking processes. The use of these processes is a growing trend due to the efficiencies that they provide. All of these processes reduce the amount of conventional handling of the product, thereby eliminating process steps and driving savings.
In its purest form, cross-dock is the action of unloading materials from an incoming trailer or container and immediately loading these materials in outbound trailers, thus eliminating the need for storage. Pure cross-dock is common in distribution centers, trucking depots and freight consolidation points. Most cross-dock applications in a DC are closely aligned with flow-through applications where the operations require staging areas where inbound materials are sorted, consolidated, and stored until the outbound shipment is complete and ready to ship. True cross-dock in a typical DC environment requires extremely good management of receiving and outbound timing and places a high degree of importance on the WMS and shipping coordination to accomplish. Cross-dock does not involve an inventory transaction.

Flow-through is a process that occurs when typically full pallets are identified by their ASN's (advanced shipping notices) and taken from receiving directly to a 'put' location rather than being put away into the general inventory locations. A flow through 'put' location is provided by the WMS for a given order. The 'put' location can be at a shipping dock door or a staging area for a specific customer order. If timed correctly between receiving and shipping, a full pallet can be received, reverse picked and loaded directly into an out-going truck with reduced product handling. These pallets with high velocity or fast moving goods are ‘broken’ and cases from the pallet are ‘put’ to a flow-through location or into lines arranged in front of dock doors where items are temporarily staged, then built into new pallets for immediate shipping. The remaining cases that do not flow-through from the received pallet are put away into regular inventory. Flow-through requires an inventory transaction.

Put-to-Store is a process of placing full cases of product in a designated section of the DC. The worker then scans the UPC code and is directed to move a quantity of the goods to a labeled customer bin, carton or tote. It is the process of unloading a full case into multiple stores containers. It is very common in apparel DC’s.

All of these processes are enhanced by using technology.

Look for opportunities to add voice, mobile computing, scanning, printing and media to these processes. Specific questions to ask during this operational review can be found in the Walkthrough Worksheet.

Packing

Packing is a process most common in DC operations such as apparel, small parts and direct-to-consumer. It is usually done at fixed stations fed by conveyors and sorters. They are usually equipped with PC’s, dunnage dispensers, scanners, printers and outbound shipping containers. Some are equipped with scales.

Packing stations are process areas where we can improve productivity and accuracy with our technology. Paper-based packing stations are becoming less common but if encountered we drive efficiencies through the use of mobile computers and scanners. This process area is also another area where an increased use of voice technology is being deployed. Using voice drives additional efficiency by eliminating the extra steps required to pick up and set down the mobile computer or scanner.

Packing stations are prime printer application areas as each outbound carton requires some form of labeling. This area is an ideal area to differentiate with our smart printing technology, thereby eliminating the need to equip each packing station with a costly PC. The use of smart printers can also drive vast benefits in operations doing seasonal business. Numerous “portable” packing stations can be deployed quickly and almost anywhere needed without the necessity to hardwire system connectivity and other infrastructure.

Packing stations are also prime areas for using our VERDEX solution to verify outbound addresses, especially in direct-to-consumer DC’s.

Look for opportunities to add voice, mobile computing, scanning, printing, media and VERDEX to these processes. Specific questions to ask during the Packing Operation review can be found in the Walkthrough Worksheet.
Line Loading (Palletizing)
Line loading is the process of retrieving product being delivered via conveyor and putting them on a pallet for outbound delivery. This is a common practice in DC’s that utilize automated conveyance such as is found in batch picking to conveyor rollers or belts. This is also common for pick-to-tote operations.

Most times in this type of process the scan is completed by the conveyor system that diverts the carton down the lane. But using voice to verify specific cartons loaded onto specific pallets can add accuracy to these processes. Fixed or mobile printers are also utilized to create the outbound destination label for the completed pallets.

Look for opportunities to add voice, printing and media to this process. Specific questions to ask during the Line Loading Operation review can be found in the Walkthrough Worksheet.

Loading/Shipping
The loading process in any DC is another area where errors can be rampant and cost the operation a lot of money. Loading is the process of putting the outbound containers in delivery trailers. Errors can occur due to multiple reasons. A loader can grab the proper container for the load he/she is working, but load it onto the wrong trailer or in the wrong door. Another error point in loading is not loading all the product destined for that delivery. These errors become very costly as extra delivery routes are usually created to meet the customer's satisfaction, especially in the case of much needed promotional product.

Then use of mobile computers on the loading dock can greatly enhance the accuracy and productivity over paper-based operations. Scanning the containers on the dock will prompt the system to direct that container to a specific load in a specific door. System directions can be as specific as requiring the loader to scan the container, the door and the trailer being loaded to ensure accuracy. The system can also prompt the loader that all containers for that load are not loaded and direct them to the staging location for retrieval. Another common use of mobile computers in the loading process is for image capture of the outbound load condition. This protects the DC from unwarranted damage claims. Although less common some DC operations are beginning to utilize voice for loading. Be open to questions about the use of voice in loading.

The loading dock is another area where asset tracking is important for reusable containers. Capturing this data can be done through scanning permanent barcode labels on the container or by reading RFID labels on the containers (see the Mission Foods case study).

There is certainly a need to deploy printers in the loading area as consolidating containers is a common practice to reduce the number of small containers being loaded to eliminate poor shipping cube and/or overflow containers.

Parcel or LTL loading is another area where VERDEX can be utilized to drive delivery accuracy and eliminate rework.

Look for opportunities to add mobile computers, voice, printing, media, RFID and VERDEX to this process. Specific questions to ask during the Loading Operation review can be found in the Walkthrough Worksheet.

Value Added Services
Value added services (VAS) are extra services provided by the DC operation for the benefit of their customer that provides perceived or real value. 3PL and direct-to-consumer operations are the most common VAS providers. Some of these services are billable by the operation. These services can include:

- Adding price tags
- Putting clothes on hangers
- Gift wrap
- Adding promotional items to packages
• Kitting and assembly
• Special labeling

These typically manual processes can be enhanced by adding technology. Look for opportunities to add mobile computers, scanning, voice, printing and media to this process. Specific questions to ask during the VAS Operation review can be found in the Walkthrough Worksheet.

Audit
Audit is the process of checking a picker’s work against a manifest for accuracy. The goal is to find and eliminate errors before shipping and validate the DC’s error rate.

Audits can be performed on loads, routes, stops, containers or assignments. Errors can be mis-picks, missing items, damage, etc. Sometimes auditors identify missing items, but often miss extra items. Both of these errors cause inventory accuracy issues. These errors are very costly for DC operations and deploying technology to reduce errors is usually met with enthusiasm. By utilizing voice or scanning vs. paper or label methods in the picking process errors are greatly reduced. Using these same technologies in the audit process is also more accurate and efficient than paper-based audit processes. Image capture of quality or condition is also important in auditing.

Look for opportunities to add mobile computers, voice, printing and media to this process. Specific questions to ask during the Audit Operation review can be found in the Walkthrough Worksheet.

Returns
The returns process is usually a loathsome process in any DC. Some DC’s have outsourced this process to 3rd party providers rather than perform it in house. For those DC’s that still process returns, adding technology can greatly enhance the productivity and efficiency.

The use of mobile computers to scan the RMA (Return Merchandise Authorization), labels, case UPC’s or to perform system lookups provides accuracy. Image capture can also be used to record the condition of the merchandise. Used in conjunction with mobile printers allows the worker to move amongst the return area and be more productive. Labels are needed to re-label the merchandise with its proper destination such as return to stock, refurbish, donation or dumpster. This is also an area where the use of voice can provide mobility.

Look for opportunities to add mobile computers, voice, printing and media to this process. Specific questions to ask during the Returns Operation review can be found in the Walkthrough Worksheet.

Inventory Control
Inventory control practices in a DC are vital to the accuracy of the overall inventory. This accuracy is monitored closely by both internal and external auditors as the accuracy is paramount to properly valuating the inventory contained in your supply chain network.

Some organizations continue to perform annual or semi-annual full inventories and most of these are done with paper processes. These inventories, however, have a tendency to be very inaccurate do the numerous error points associated with counting, recounting and data entry.

Best-in-Class operations eliminate these full inventories by deploying efficient cycle counting processes that tend to be highly accurate and preferred by the auditors. Performing these system directed cycle counts is usually done through the use of mobile computers or voice. Pairing these with mobile printers for the creation of new or replacement labels is a common practice and keeps the counter in the count area doing productive work. Fork operators utilizing VMC’s can also perform cycle counts as part of their job function if directed by the system.

It is also becoming common practice in these Best-in-Class operations to interleave the cycle counting process with other work processes such as picking and fork applications. Interleaving is the process of performing multiple work processes at once to drive better utilization of labor and equipment. An example
of this would be fork drivers performing replenishments on their way back to the dock to perform another Putaway. It is usually done by proximity and priority.

Look for opportunities to add mobile computers, voice, printing and media to this process. Specific questions to ask during the IC Operation review can be found in the Walkthrough Worksheet.

**Management/Reporting**

DC managers and supervisors are most effective when they have immediate access to real-time operational data. This allows them to manage in a pro-active manner which in turn drives efficiencies in their operations. The most effective managers are also those that are out on the floor observing their operations vs. being captive to an office. Equipping them with a device that allows them to access their DC systems for labor information, dashboards and alerts while on the floor is very important to them. The device should allow them email, text, image capture and phone capabilities. Our CS40 should be positioned for this.

**Miscellaneous**

While performing your DC Walkthrough it is important to remain observant for other opportunities that may be relevant and drive incremental business outside the scope defined by the customer. Some of these other opportunity areas include:

- Facility rack labeling needs
- Fleet operations
- DSD operations
- Field Service operations
- Store operations
- Manufacturing operations (common now with large grocers)
- Outside storage facilities

**Summary/Review**

Once completed with the walkthrough, it is important to recap all of your notes and check for any errors or omissions. An important next step is to then validate your information with the client as it is important that there is agreement on current operating methods and future desired operating methods. It is important to continue to be consultative in this step as you build your Trusted Advisor status and the client will value your expertise and opinions on how to improve their operations.

The Walkthrough Worksheet below is a solid foundation of questions by process area. It is not meant to be all-encompassing. The consultative dialogue you have with the client will determine which of the questions are relevant and may generate additional questions not listed. Therefore great emphasis is placed on proper discovery and the objective of this document is to enhance that. It is designed as an appendix so that it may be printed separately and used in the actual walkthrough.

It is also important to complete the Metrics sheet as this information will assist you in creating your proposal and related financial summary. It is suggested, due to the very specific nature of the metrics information, that you send the metrics sheet in advance of your Walkthrough visit to give the client appropriate time to gather the information. You may also prefer to give this to the client at the Walkthrough and collect at a later date.
Walkthrough Worksheet

Walkthrough Preparation

When planning the walkthrough it is very important to align expectations and determine the specifics of the walkthrough. You will need to identify and more importantly communicate the following:

- The date and times for the walkthrough
  - A thorough walkthrough can be time consuming so it is important to set the proper expectations
- The locations for the walkthrough
  - Some customers run multiple DC’s that can be very different in their operational processes so it may be necessary to do a walkthrough at multiple locations.
- The walkthrough participants
  - Intermec sales representative
  - Intermec technical resource (need determined by sales rep)
  - Intermec business/operational consultant (need determined by sales rep)
  - Client distribution/logistics executive who understands their operations and business strategies from end to end
  - Client distribution personnel who understand the details of the operation and can answer the detailed questions during the walkthrough
  - Client IT personnel (need determined by client contact)
Yard Operations

Look for:

- mobile computing
- scanning
- imaging
- eMDI
- printing & media
- RFID

Questions:

1. How do you currently log Gate In and Gate Out transactions?

2. How do you capture delivery information (driver, equipment, seal#, PO/Appt#, etc.)?

3. How do you track equipment (Private, OTR) in your yard?

4. How do you keep track of trailer content inventory?

5. How do you track dock door moves?

Additional Notes:
**Receiving**

**Look for:**
- mobile computing
- scanning
- imaging
- eMDI
- printing & media
- voice
- RFID

**Questions:**
1. Do you have advance notice of incoming shipments? How far in advance?
2. What types of Transportation / Carriers are used for inbound?
3. Are receipts posted against purchase orders?
4. Can there be multiple receipts against a purchase order?
5. Can multiple trailers be received for a single purchase order?
6. What is the configuration of the inbound product? (pallets, mixed pallets, floor load, etc.)
7. Is the product broken down and / or sorted for counting and receiving? Describe the process.
8. What paperwork accompanies inbound product? How is it recorded?
9. Is a workstation used to reference information in the system for the receipt?
10. What documents are used on the warehouse floor during the receiving process? How are the documents used?

11. What is the important information on the paperwork?

12. What information from the Receipts / Purchase Order is required by the host system?

13. How and when are receipts recorded in the system?

14. What information is available on the inbound product? What is currently being tracked on each? What information is bar-coded?

   Pallets?

   Cases?

   Eaches?

   Other?

15. Describe the receiving process steps (Paper? RF? RFID? Voice?)

16. Are receipts of items allowed that were not on the Purchase Order?

17. Are overs/unders on shipments accepted?

18. How is damage handled on receipt?
19. What kind of labeling is performed? Are all products labeled the same?

20. What happens with the receipt paperwork when it is completed?

21. Do certain items require a different receiving process?

22. Are some receipts a higher priority?

23. What types of special situations exist?

24. What other types of information is tracked at time of receipt?
   a. Container / Asset Tracking?
   b. Vendor Compliance / Inspection / Quality Control?
   c. Catchweight / Code Date / Lot# / Serial# / Temperature?
   d. Track & Traceability?

25. How is product staged / prepared for Putaway?

26. Is product ready for Putaway following Receipt?

Additional Notes:
Putaway

Look for:

- VMC's
- mobile computing
- scanning
- printing & media
- voice
- RFID

Questions:

1. When are Putaway's completed?

2. Is product taken directly from the receiving dock to its storage location?

3. Is Putaway directed to pick locations? Does it require off the truck handling?

4. What types of equipment used during the Putaway process? (floor jacks, fork lifts)

5. How is the Putaway location chosen? (user / system directed?)

6. How does stock rotation impact Putaway?

7. Is RF currently used? Voice?

8. How / when are Putaway's recorded in the system?

9. What is required to complete the Putaway? (system / paper)

10. Are check digits / confirmations used?
11. What types of locations are Putaway’s done to? (conventional rack, pushback, floor, etc.)

Additional Notes:
Replenishment

Look for:

- VMC’s
- mobile computing
- scanning
- printing & media
- voice
- RFID

Questions:

1. What equipment types are used for replenishment? (Fork truck, Man-ups, etc.?)

2. How is stock rotation managed?

3. How are replenishments done?

4. Are replenishments directed by the system?

5. Are check digits / verifications used?

6. Are replenishments done in ‘batch’ to fulfil all outstanding orders?

7. Does off the truck handling occur?

8. What tools are utilized for replenishments? (Paper, RF, Voice)

9. What is done to complete the replenishment in the system? (paperwork / system update)

Additional Notes:
**Stocking**

Look for:

- voice
- mobile computing
- scanning
- printing & media

Questions:

1. What equipment types are used for stocking? (Fork truck, pallet jack, carts, etc.?)

2. How is stock rotation managed?

3. How is stocking done?

4. Is stocking directed by the system?

5. Are check digits / verifications used?

6. What types of locations are stocked? (shelving, flow rack, etc.)

7. Does stocking require prep to the cases? How are prep instructions communicated?

8. What tools are utilized for stocking? (Paper, RF, Voice)

9. What is done to complete the stock move in the system? (paperwork / system update)

Additional Notes:
Picking

Look for:

- voice
- mobile computing
- scanning
- printing & media
- complementary technology to operations that are highly automated

Questions:

1. How are the orders picked in the facility? (paper, label, RF, Voice, etc.)

2. What type of equipment is used for picking? (pallet jack, fork truck, pick carts, etc.)

3. What types of locations is product picked from? (shelving, case flow, pallet flow, conventional rack, carousels, etc.)

4. Is there any Seasonality to order volume? What is the order volume during peak periods?

5. What is the normal lead time between receiving the order and fulfilling?

6. How are the orders grouped for picking?

7. How are the loads planned?

8. How is work released to the floor? (large batches of orders, orders by customer, etc.)

9. What is the current pick accuracy?

10. Are some orders treated as priority?
11. Are there any customer specific instructions included with the order?

12. What pick methods are used? (discrete, batch, zone, wave, etc.)

13. Is picking interleaved with other processes? (cycle count, etc.)

14. What different UOM are picked / shipped? (pallets, cases, pieces, other)

15. Do all items have specific locations for different UOMs? (piece pick locations, case pick locations, etc.)

16. Are pick locations floating or fixed?

17. What areas are picked in? (Dry, Frozen, Cooler, Outdoor, Wet, etc.)

18. How are the various UOMs separated between workers? (some piece / others only pallets, etc.)

19. Describe the pick process & paper flow

20. Are there printing requirements in the pick process?

21. What is the selector required to do at each location / item to complete the pick? (RF / Manual validation)

22. What pick pattern is used through the aisles?
23. Are any labels applied during the pick process?

24. Is there a bottleneck in the existing process?

25. Where are picked orders taken / staged / placed after picking?

26. Are there any automation / robotics involved in the pick process?

27. What steps are required if the selector cannot find the entire quantity in the appropriate location?

28. What is the process if all items or quantities on the order cannot be shipped?

29. What container types are picked to? (pallet, tote, outbound carton, cart)

30. Are pickers required to wrap or perform any additional tasks as part of picking?

31. At what point are shipments confirmed to the host system?

32. What changes / improvements to the pick process are desired?

Additional Notes:
Cross-dock / Flow-through / Put-to-Store

Look for:

- voice
- mobile computing
- scanning
- printing & media

Questions:

1. Are cross-dock shipments done through the DC?

2. How are cross-dock pallets processed? (paper, label, RF, voice)

3. Are conveyors used in the cross-dock operation?

4. Is flow-through done in the DC?

5. Are there any special labeling requirements?

6. Are customer flow lanes used? How?

7. How is flow-through processed? (paper, label, RF, voice)

8. Describe the process for moving products in and out of intermediate drop zones

9. Is there a put-to-store operation in the DC?

10. How is put-to-store processed? (paper, label, RF, voice)
11. Are there any special labeling requirements?

Additional Notes:
Packing

Look for:

- voice
- mobile computing
- scanning
- printing & media
- Verdex

Questions:

1. Is there a separate packing / consolidation station?

2. What steps are performed at the packing station?

3. Are any labels printed / applied at packing?

4. Do orders need to be consolidated following picking?

5. How is packing performed? (paper, label, RF, voice)

6. How is address verification accomplished?

7. Is there a manifesting system?

8. What information is required by the manifest system?

9. What information is produced by the manifest system?

10. What steps are performed at the shipping / manifest system station?
11. What types of carriers are used for outbound product?

Additional Notes:
Line Loading (Palletizing)

Look for:

- voice
- printing & media

Questions:

1. Is there a palletizing operation?

2. Are there any labeling requirements?

3. How are tasks assigned and completed? (paper, RF, voice)

Additional Notes:
Loading / Shipping

Look for:

- mobile computers
- voice
- printing & media
- RFID
- Verdex

Questions:

1. How are products loaded? (fluid, pallets, etc.)

2. What steps are performed in loading?

3. Are any labels printed / applied at shipping?

4. Are pallets consolidated at loading?

5. How is loading performed? (paper, label, RF, voice)

6. What verification steps are performed in loading? (container, door, trailer, etc.)

7. Is container/asset tracking performed? How? (paper, RF, RFID, voice)

8. What paperwork is produced? How is it recorded?

9. How is the system updated at load close?

Additional Notes:
**VAS (Value Added Services)**

Look for:

- mobile computers
- scanning
- voice
- printing & media

Questions:

1. **What types of VAS are performed in the DC?** (kitting, gift wrap, labelling, etc.)

2. **How are tasks assigned?** (paper, RF, voice)

3. **Are there printing and labelling needs?**

Additional Notes:
Audit

Look for:

- mobile computers
- voice
- printing & media

Questions:

1. Are audits performed? What is audited? (loads, routes, stops, containers, etc.)

2. How are audits performed? (paper, RF, voice)

3. What errors are most common? (mis-picks, missing items, etc.)

4. Are there printing and labelling needs?

5. How are measurements recorded?

Additional Notes:
Returns

Look for:

- mobile computers
- voice
- printing & media

Questions:

1. Are Return Merchandise Authorizations issued to customers?

2. If the authorizations are issued, how are they recorded? (scanned, manual data entry)

3. How are non-Authorized returns handled?

4. Is there a separate returns area?

5. Are there printing and labeling requirements?

6. How are the returns recorded in the system?

7. Are there image capture needs to validate condition of product?

8. What types of return locations are there? (return to stock, refurbish, donation, etc.)

9. When is product returned to normal warehouse stock?

10. How is the storage location determined?
11. Who puts the product into the location, how is that confirmed into the location?

Additional Notes:
Inventory Control

Look for:

- mobile computers
- voice
- printing & media

Questions:

1. Is Cycle Counting performed in the DC?

2. When are cycle counts performed?

3. Are cycle counts interleaved with other work processes?

4. What tools are used for cycle counts? (paper, RF, voice)

5. How are the products / locations determined for cycle counting? (scheduled, random, ABC classification)

6. Can cycle counts be requested for specific items / locations? If so, how communicated?

7. What steps are taken if a discrepancy is discovered?

8. What changes are desired in the cycle count process?

9. How often is a physical inventory taken?

10. What is the physical process?

11. Is it a blind count?

Additional Notes:
Management / Reporting

Look For:

- Business Intelligence
- Reporting
- Dashboarding
- Alerting
- Labor Management information requirements

Additional Notes:
Miscellaneous

While performing your DC Walkthrough it is important to remain observant for other opportunities that may be relevant and drive incremental business outside the scope defined by the customer.

Look for:

- Facility rack labeling needs
  - Consider 2D labels – less damage due to size and also provide data redundancy
- Fleet operations
- DSD operations
- Field Service operations
- Store operations
- Manufacturing operations (common now with large grocers)
- Outside storage facilities

There are additional thought provoking subjects to consider while performing your DC Walkthrough, however, it is important not to position “Product” at this time but instead gather information that can help you create the best proposal. Some of these include:

- Do the workflows require a general purpose computer or is an application specific device more appropriate?
  - Intermec Launcher may be an option
- What back-end application (WMS, ERP, etc.) is running and what UI is desired?
  - Intermec Terminal Emulator is lowest TCO for traditional WMS & ERP
  - Intermec Browser can provide more secure environment for web-based applications
  - Intermec developer tools and support can be advantageous for custom client software
- Does the operation use TE today? Use web-based? Future desire?
- Has the operation implemented 2D? Is this a consideration (especially for track & traceability)?
  - Long range imagers vs. lasers – reduce label size while increasing readability
- Current RF infrastructure? Future changes?
  - Value of “n” radio in 70 series
- What Power Management requirements are there?
- What Device Health & Monitoring requirements are there?

Additional Notes:
Company Business Metrics

The information gathered in the business overview is vital to the eventual success of the project. Some of this information may already be knowledge possessed by the sales team, especially in the case of current customers. This information is commonly acquired in initial qualification calls, however, in some instances these specifics are captured in the initial meeting and/or in the conference room before conducting the walkthrough. This vital information includes:

- Key contacts within the organization (Business, IT, Operations)
- Project scope and drivers
  - It is important to understand what the client deems as a successful project
- Client business specifics
  - Market segment/industry vertical
  - 3PL, regional DC, direct-to-consumer, etc.
  - Annual sales and volumes
  - Client customer types
  - Client product types
- Competition
  - Client competitors
  - Intermec competitors involved in project and/or currently entrenched
- Partner involvement
  - Intermec partners
  - Client partners (SCM/ERP vendors, consultants, integrators)
- Current and planned customer service objectives
- Current and planned inventory levels, turns, accuracy goals
- Cost reduction goals
- Current and planned IT infrastructure
  - Current and/or planned software systems installed (Enterprise and SCM)
  - Current and/or planned hardware utilized
  - Current and/or planned automation and/or robotics
  - Current and/or planned network (WLAN, WWAN)
  - Interface requirements
  - DB and OS preferences
  - Desire for onsite or SaaS/HaaS
  - Business Intelligence/Reporting/Alerting requirements
  - Staff size and expertise
    - What responsibilities will client and Intermec assume for project

The next section of the Walkthrough Guide is a template for gathering key operational metrics that will be used to populate areas of the Benefits Calculator and possibly the Vocollect ROI tool. These metrics are important in understanding the current levels of efficiency in the clients' operations. They will also assist in reviewing the proposed impact areas and in the development of the business case.
Key Operational Metrics

The following table is a list of key metrics that should be gathered in order to assist completing the benefits calculator and ROI tool.

<table>
<thead>
<tr>
<th>Description</th>
<th>Metric</th>
<th>Value</th>
<th>Customer Input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of DC’s</td>
<td>Number</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>DC Types (Dry, FF, etc.)</td>
<td>Type</td>
<td>FF</td>
<td></td>
</tr>
<tr>
<td>Outside Storage?</td>
<td>Y or N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td># Workdays per Year</td>
<td>Days</td>
<td>280</td>
<td></td>
</tr>
<tr>
<td># Holidays per Year</td>
<td>Days</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td># Vacation / Sick Days per Year</td>
<td>Days</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td># Training Days per Year</td>
<td>Days</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Net Workdays per Year (C2-C3-C4-C5)</td>
<td>Days</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Days of Operation</td>
<td>Days</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Hours of Operation</td>
<td>Hours</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Average Work Day Length</td>
<td>Hours</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>Facility Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Square Footage</td>
<td>Sq. Ft.</td>
<td>500,000</td>
<td></td>
</tr>
<tr>
<td>Shipments per week/avg</td>
<td>Number</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>Shipments per week/peak</td>
<td>Number</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>Receiving Dock Doors</td>
<td>Number</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Shipping Dock Doors</td>
<td>Number</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>No. of Yard Hostlers</td>
<td>Number</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pallet Location Types (Floor, Drive-in, etc.)</td>
<td>Loc Type</td>
<td>Floor</td>
<td></td>
</tr>
<tr>
<td>Case Location Types (Pallet, Case Flow, etc.)</td>
<td>Loc Type</td>
<td>Case Flow</td>
<td></td>
</tr>
<tr>
<td>Each Location Types (Shelving, Case Flow, etc.)</td>
<td>Loc Type</td>
<td>Shelving</td>
<td></td>
</tr>
<tr>
<td>Special Location Types (HazMat, Secured, etc.)</td>
<td>Loc Type</td>
<td>HazMat</td>
<td></td>
</tr>
<tr>
<td>Location numbering scheme (barcoded?)</td>
<td>Scheme</td>
<td>A13451</td>
<td></td>
</tr>
<tr>
<td>MHE (Carousel, PTL, etc.)</td>
<td>Type</td>
<td>PTL</td>
<td></td>
</tr>
<tr>
<td><strong>Technical Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Infrastructure</td>
<td>Vendor</td>
<td>Cisco</td>
<td></td>
</tr>
<tr>
<td>Host System</td>
<td>Vendor</td>
<td>Oracle</td>
<td></td>
</tr>
<tr>
<td>WMS System</td>
<td>Vendor</td>
<td>Red Prairie</td>
<td></td>
</tr>
<tr>
<td>YMS System</td>
<td>Vendor</td>
<td>C3</td>
<td></td>
</tr>
<tr>
<td>TMS System</td>
<td>Vendor</td>
<td>G-Log</td>
<td></td>
</tr>
<tr>
<td>Other System</td>
<td>Vendor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other System</td>
<td>Vendor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other System</td>
<td>Vendor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operational Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity Rates - Receiving</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Receivers</td>
<td>Number</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Metric</td>
<td>Value</td>
<td>Customer Input</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$20.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td>Regular Rec Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Rec Hrs./week</td>
<td>Hours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Pallets Received/Hour/Receiver</td>
<td>Number</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Cases Received/Hour</td>
<td>Number</td>
<td>1800</td>
<td></td>
</tr>
<tr>
<td>Loads Rec/week</td>
<td>Number</td>
<td>280</td>
<td></td>
</tr>
<tr>
<td>Pallets Rec/week</td>
<td>Number</td>
<td>7500</td>
<td></td>
</tr>
<tr>
<td>Cases Rec/week</td>
<td>Number</td>
<td>2880000</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Putaway</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Forks</td>
<td>Number</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$20.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td>Regular PA Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT PA Hrs./week</td>
<td>Hours</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Pallets PA/Hour/Fork</td>
<td>Number</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Pallets PA/week</td>
<td>Number</td>
<td>48000</td>
<td></td>
</tr>
<tr>
<td>Avg Cases/pallet</td>
<td>Number</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Cases PA/week</td>
<td>Number</td>
<td>2880000</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Replenishment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Forks</td>
<td>Number</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$20.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$25.00</td>
<td></td>
</tr>
<tr>
<td>Regular Replen Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Replen Hrs./week</td>
<td>Hours</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Pallets/Cases Replen/Hour/Lift</td>
<td>Number</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Pallets Replen/week</td>
<td>Number</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>Cases Replen/week</td>
<td>Number</td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Stocking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Stockers</td>
<td>Number</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Stock Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Stock Hrs./week</td>
<td>Hours</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Cases Stock/Hour/Stocker</td>
<td>Number</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Cases Stock/week</td>
<td>Number</td>
<td>10000</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Picking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Pickers</td>
<td>Number</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Pick Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Pick Hrs./week</td>
<td>Hours</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Daily Ship Cases - avg</td>
<td>Number</td>
<td>400000</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Metric</td>
<td>Value</td>
<td>Customer Input</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------------</td>
</tr>
<tr>
<td>Daily Ship Cases - peak</td>
<td>Number</td>
<td>450000</td>
<td></td>
</tr>
<tr>
<td>Weekly Ship Cases - avg</td>
<td>Number</td>
<td>2800000</td>
<td></td>
</tr>
<tr>
<td>Weekly Ship Cases - peak</td>
<td>Number</td>
<td>3150000</td>
<td></td>
</tr>
<tr>
<td>Eaches Pick/Hour/Picker</td>
<td>Number</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Cases Pick/Hour/Picker</td>
<td>Number</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Pallets Pick/Hour/Picker</td>
<td>Number</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Lines/Order - avg</td>
<td>Number</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Lines/Order - peak</td>
<td>Number</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Picks/Order - avg</td>
<td>Number</td>
<td>140</td>
<td></td>
</tr>
<tr>
<td>Picks/Order - peak</td>
<td>Number</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>% each pick</td>
<td>%</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td>% case pick</td>
<td>%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>% pallet pick</td>
<td>%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Packing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Packers</td>
<td>Number</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Pack Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Pack Hrs./week</td>
<td>Hours</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Cartons Pack/Hour/Packer</td>
<td>Number</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Cartons Pack/week</td>
<td>Number</td>
<td>2400</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Palletizing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Palletizers</td>
<td>Number</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Palletize Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Palletize Hrs./week</td>
<td>Hours</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Pallets Palletize/Hour/Palletizer</td>
<td>Number</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Pallets Palletize/Week</td>
<td>Number</td>
<td>1400</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Loading</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Loaders</td>
<td>Number</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Load Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Load Hrs./week</td>
<td>Hours</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Pallets Ship/Week</td>
<td>Number</td>
<td>7200</td>
<td></td>
</tr>
<tr>
<td>Pallets Load/Hour/Loader</td>
<td>Number</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - VAS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of VAS</td>
<td>Number</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular VAS Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT VAS Hrs./week</td>
<td>Hours</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Metric</td>
<td>Value</td>
<td>Customer Input</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------</td>
<td>--------</td>
<td>----------------</td>
</tr>
<tr>
<td>Tasks/Hour/VAS</td>
<td>Number</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Audit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Auditors</td>
<td>Number</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Audit Hrs./week</td>
<td>Hours</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>OT Audit Hrs./week</td>
<td>Hours</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Audits/Hour/Auditor</td>
<td>Number</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Productivity Rates - Returns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Return Staff</td>
<td>Number</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$27.00</td>
<td></td>
</tr>
<tr>
<td>Regular Return Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Return Hrs./week</td>
<td>Hours</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Returns/Hour/Staff</td>
<td>Number</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Cost/Return</td>
<td>$</td>
<td>$8.00</td>
<td></td>
</tr>
<tr>
<td>Annual Cost Returns</td>
<td>$</td>
<td>$200,000.00</td>
<td></td>
</tr>
<tr>
<td><strong>Inventory Control</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of IC staff</td>
<td>Number</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Reg Hourly Rate $</td>
<td>$</td>
<td>$15.00</td>
<td></td>
</tr>
<tr>
<td>OT Hourly Rate $</td>
<td>$</td>
<td>$22.50</td>
<td></td>
</tr>
<tr>
<td>Regular Hrs./week</td>
<td>Hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>OT Hrs./week</td>
<td>Hours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>TCO Failure Data (for customers currently using mobile computers)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Devices Deployed</td>
<td>Number</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>No Failures per Year</td>
<td>Number</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Cost per Repair</td>
<td>$</td>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>Cost for Annual Maintenance Program (per unit)</td>
<td>$</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>No. Spares Required to Support Operations</td>
<td>Number</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Cost per Spare</td>
<td>$</td>
<td>$25</td>
<td></td>
</tr>
</tbody>
</table>