HighJump™

EVALUATING WAREHOUSE TECHNOLOGY: VOICE VS. PAPER, RF SCANNING AND PICK-TO-LIGHT

INTRODUCTION

When evaluating picking solutions for the warehouse, there are four main options that are often considered: voice, paper, RF scanning, and pick-to-light. Although each of these solutions have their own strengths, weaknesses, and ideal applications, they should all be considered when making a decision about future projects. Comparing the four solutions to each other, and evaluating what they will bring to your operation, is the best way to determine what will be the best fit for your operation.

PAPER

Paper-based order picking, or label processing, is the process of completing warehouse procedures with the use of paper orders. Paper picking is typically coupled with after-the-fact data entry using desktop terminals. Associates perform warehouse tasks off of pick lists, put-away labels, printed VAS instructions, and other paper documents. Upstream processes (such as how the information is sorted on the documents), and downstream processes (such as scan and verify on a desktop terminal), directly impact paper/label processing's performance and functionality.

Paper/label processing is thought of as a good fit for smaller operations with relatively straightforward transaction requirements and minimal budgets. Even operations that rely on RF scanning for the bulk of transactions usually employ paper/label processing for some functions. It can be purely a manual proposition or part of an automatic flow, such as a label case pick-to-belt, where the pick is confirmed by an in-line conveyor scan. There is very little investment required with a paper picking process, with a majority of the costs associated being for paper and printer ink.

Paper Picking Process

When an employee picks with paper (or labels), they go through the following process:

1. Instructions printed (whether a list or sheet of labels) and picked up
2. Read Location
3. Navigate to location
4. Check the item to be picked
5. Put down the clipboard/paper
6. Pick the item
7. Pick up the clipboard/paper
8. Cross the item off the pick list (if picking with labels, the label goes on the product rather than crossing it off)
9. Report back to data entry, where data is transferred manually back into the WMS

RF SCANNING

RF scanning terminals have long been considered a prerequisite for larger, more complex operations. However, RF scanning can be found in all different types and sizes of operations primarily due to direct support by most warehouse management systems (WMS). Even operations running non-RF enabled legacy fulfillment systems can turn to automated data collection software for this functionality.

RF scanning offers some distinct advantages over paper/label processing. It can provide positive verification that the warehouse associate is at the right location or picked the correct SKU through a barcode scan or key entry. Work can be pushed out to associates based on location and task priority instead of handed out from a manually managed queue. Transaction data is captured in real time as associates perform tasks. Furthermore, RF scanning makes some functions like multi-order cart selection possible or more practical than paper/label processing.

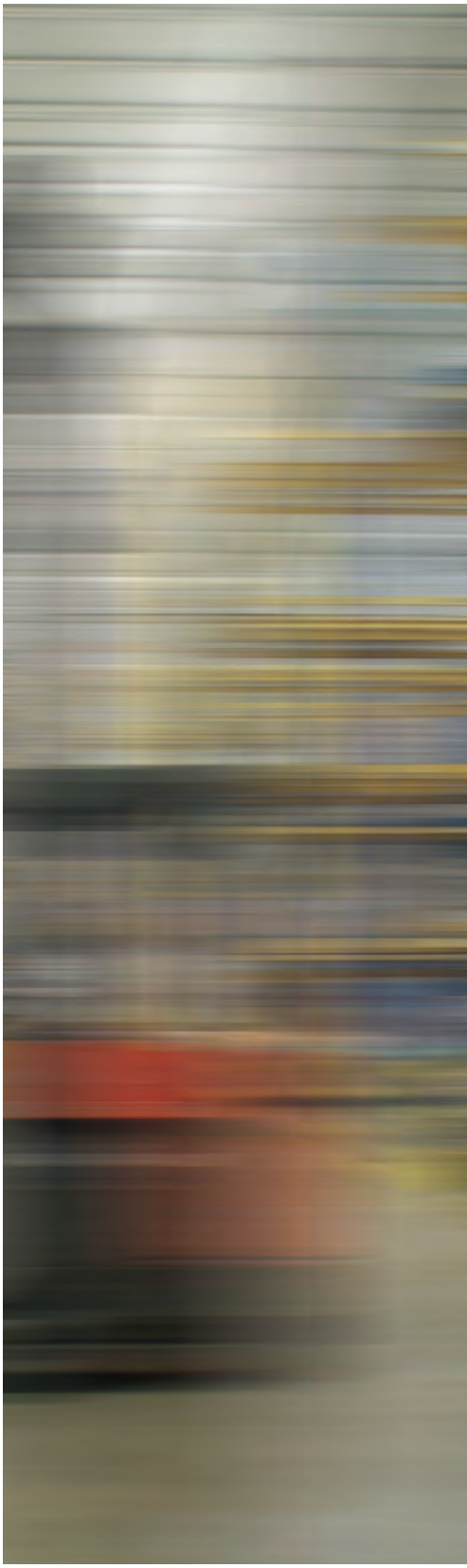
RF Picking Process

When an employee picks with RF scanning, they go through the following process:

1. Read the location on the scanner
2. Navigate to location
3. Scan location label
4. Read pick quantity on screen
5. Scan label on product
6. Put down the scanner
7. Pick the item
8. Pick up the scanner
9. Device uploads data back into the WMS

PICK-TO-LIGHT (PTL)

Pick-to-Light remains a popular selection technology due to its ability to support high pick rates and its ease-of-use. It is typically used in a zone-based, pick and pass flow where an associate scans a tote or carton barcode label. The PTL software activates light displays for every location that shows the required quantity needed for the tote or carton. The associate walks the zone, selecting SKUs and confirming picks by pressing display buttons. Displays can also be provided to show SKU, order, or other relevant information, with some vendors even using LCD displays to show SKU pictures.



Also, as its name implies, PTL technology is about the order selection process. Unlike the other technologies discussed in this paper, it is not employed to drive other warehousing functions such as receiving, put-away, and cycle counting. This means any investment in the technology cannot be leveraged beyond the confines of the PTL module and order selection process.

PTL is often utilized by operations who have a set number of SKU's with a high pick volume, as there is a considerable cost associated with adding each new SKU. The process used for a PTL picker is easy to follow and learn, and can lead to large increases in productivity.

PTL Picking Process

When an employee picks with PTL, they go through the following process:

1. Workers are assigned zones
2. Navigate to zone
3. Scan tote or carton label
4. Light mounted above product location illuminates
5. Read the quantity needed
6. Pick product
7. Click on the light to confirm pick

VOICE

Voice technology for use in the distribution center was created with one purpose in mind: maximizing operational efficiency in the warehouse. Most other warehouse technologies require workers to transfer their attention from the task at hand to a piece of paper, screen, or light and back, taking time and increasing the likelihood of error. With voice, workers are hands-free and eyes-free, with the voice system feeding their instructions through a headset. This allows them to work quickly and efficiently, increasing productivity and accuracy throughout your warehouse. Many warehouses will also experience a large decrease in training time, as voice training can take as little as an hour.

Voice is typically used to support tasks such as order selection, put-away, replenishment and cycle counting within the warehouse, but it can be deployed into many other areas as well. The expansion into other workflows is aided by the fact that the voice system is directly connected to your WMS or ERP, allowing live updates to be transmitted as workers are on the warehouse floor. This not only helps with inventory management, but also allows supervisors to stay up to date with productivity of their workers on an individual level.

Voice Picking Process

When an employee picks with voice, they go through the following process:

1. Hear the location while navigating to it
2. Reach the location
3. Speak the check digits located at the site
4. Listen to the number of items to be picked
5. Pick the items
6. Verbally confirm the quantity

It should be noted that on step six, the picker has the option to relay any issue at the pick site, whether it be a short or a damaged item, back to the WMS. For example, if there is a short, the picker would only report the number they were able to pick. The voice system would ask them to confirm that their mispick was due to a short, and then the picker could move on from that location. Here is an example of what the voice interaction would look like in that case:

Voice system: "Pick four."

Picker: "Three"

Voice system: "You said three, I asked for four. Is this a short?"

Picker: "Yes"

Voice vs. Paper Picking

While paper picking is a great starting point for many smaller operations, it tends to be a barrier to large scale growth and improvement. Paper completely eliminates the ability for real-time visibility into inventory, employees, or systems. The entire process is held until the data entry process begins, and that process is prone to errors. The process is also reliant on the printers remaining functional, as any maintenance issues can bring an operation to a standstill.

Additionally, having workers burdened with paper handling slows down the processes that are key to the functioning of your DC. Having to pick up and put down clipboards removes the workers attention from the task, and can lead to unwanted errors or mispicks. This problem is also added to as many workers will attempt to memorize several steps ahead to increase productivity, leading to mix ups, mispicks, and inventory issues.

Voice advantages over paper:

- Supervisors have real time visibility into what is happening on the warehouse floor
- Live updates on inventory, shorts, and damages into the WMS/ERP system
- Hands and eyes free
- Increased productivity, safety and accuracy
- Cuts down on operational costs associated with paper and ink
- Greener solution

Voice vs. RF Scanning

Prior to voice, no other technology had a greater impact on the evolution of WMS than mobile or RF scanners. While they are popular with many companies, RF and barcode scanners do have some drawbacks. Training on RF scanners can be extensive, with some operations requiring up to three weeks before workers are self-sufficient. Once fully trained, these workers are still distracted with something in their hands, and are unable to complete warehouse processes without picking up and putting down the scanner.

Additionally, maintenance costs for the devices can be high, as many workers drop or mishandle the scanners during use. This can lead to expensive screen or keyboard replacements, as well as the need for extra equipment to compensate for the damaged units.

Voice technology allows workers to complete tasks quickly and efficiently, with workers able to keep their hands and eyes free, and their attention on the project at hand. The voice picking process can shorten the information exchange between the picker and the system, which leads to a direct increase in picking speeds and productivity.

Voice advantages over RF scanning:

- Hands and eyes free
- No struggling to read a screen
- Safer picking with a reduced drop/damage rate
- 25% more productive on average
- Decreased training time- most voice users are up to speed in a few hours
- 40% more accurate on average

Voice vs. PTL Picking

Pick-to-light presents challenges that go beyond pick rates and raw productivity numbers. It is an inherently more costly and complex technology that typically requires a significantly higher start-up investment and a relatively rigid product flow. Each new SKU requires its own light system, meaning that any additional products added to your operation will have a significant cost associated with it. There is also a significant maintenance cost associated with PTL, as there are so many system parts that can fail (buttons, lights, displays, connectors, power supplies, wiring). All of these pieces require a back-up inventory to ensure a functional system at all times. Should an individual light go out, it may not be caught right away, as workers will just assume that the product is not being ordered. This will be discovered far down the line, when there are multiple incomplete orders logged on the same day.

With PTL, totes and cartons are generally routed between fixed pick zones via a conveyor system. Managing workflow can be an ongoing issue, because of daily workload fluctuations between zones and picker productivity that result in bottlenecks in some areas and under-utilization in others.

Voice offers much more flexibility to redeploy resources to match daily changes in overall workload on the warehouse floor. Furthermore, changing the configuration of a pick-to-light module can require additional changes to the light displays, communications backbone, and pick-to-light software as well as physical storage media and WMS changes. Reconfiguring pick modules supported by voice is a much simpler proposition that generally only requires labeling in addition to storage media and WMS changes. Additionally, expansion with PTL can be costly, with so many pieces needing to be purchased and changed. With voice, costs are driven by number of users rather than SKU's, helping minimize operational costs.

Voice advantages over PTL:

- Hands and eyes free- no need to look for lights, read displays, or press buttons
- Increased flexibility and less costly expansion
- Reduction in bottlenecks
- Adaptable for other warehouse activities like receiving, cycle counting, replenishment, loading and put-away
- Ability to track individual worker performance
- Cost per worker rather than per SKU

CONCLUSION

Although each of these solutions has its merits, voice often out-performs the other options. With better productivity, accuracy, training time, and flexibility, voice has proven success in taking operations to their peak efficiency. If you have any questions about voice, or would like to consider voice for your operation, please contact us at info@highjump.com or visit our website at www.highjump.com.

ABOUT HIGHJUMP

HighJump is a global provider of supply chain management software that streamlines the flow of inventory and information from supplier to store shelf. Named to the Inc. 5000 Fastest Growing Companies list for 3 years running, HighJump employs more than 440 team members worldwide, and supports more than 4,000 customers in 66 countries, ranging from SME business to global enterprises.

HighJump's functionally rich and highly adaptable end-to-end solutions help users achieve new levels of supply chain responsiveness, performance and profitability, from the warehouse to the storefront, from the desktop to the driver's cab. HighJump's suite of warehousing, manufacturing, transportation, distribution, mobile delivery and retail solutions allow users to seamlessly drive growth, customer satisfaction and revenue by delivering goods faster and more profitably.

HighJump: supply chain accelerated.

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