WHITE PAPER

Intelligrated®

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How advances in hardware and software address the challenges of omnichannel fulfillment

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The demands of omnichannel distribution center (DC) fulfillment are driving the adoption of more advanced pick-to-light hardware and software. Retailers are tasked with meeting not only traditional in-store requirements associated with keeping product on the shelves, but also the challenges of e-commerce, including: high volume of individual SKUs, seasonal peaks and each picking scenarios. Faced with these sometimes competing demands, DC managers seek order fulfillment systems and processes that maximize workforce productivity and minimize errors. This white paper will discuss how Intelligrated's many pick-to-light hardware options and flexible warehouse execution system (WES) software can be deployed to address these specific challenges, as either a stand-alone system or an enabling technology integrated into a larger system.

Omnichannel fulfillment challenges permeate modern distribution operations

The advent of the Internet has made online shopping the preferred commerce method for both millennial and Generation X consumers. Whether retailers started with an e-commerce model or have made the transition from traditional brick-and-mortar business, meeting omnichannel fulfillment expectations presents a variety of distribution challenges, namely:

- **Fluctuations in order volume:** with order volume varying seasonally, daily or even hourly, DC order fulfillment processes must be capable of flexing to meet demand.
- **Increasing number of SKUs to manage:** supporting the one-stop-shop model and persistent promotional activities result in an increase of SKUs needed on hand.
- **Service level agreements (SLAs):** high customer expectations add complexity to the order fulfillment process. Examples include: shortened delivery timelines, reduced shipping costs and in-store fulfillment of online orders.
- **Traditional retail fulfillment:** orders for store replenishment remain constant and consist of high line counts and SKU numbers to keep requisite sizes, colors and styles on the shelf.

With all these forces at play, omnichannel DCs are hard pressed to efficiently balance the complexity of each channel, meet rising customer expectations, and maintain high degrees of accuracy and productivity. Intelligrated pick-to-light hardware and software can help DC operators meet these objectives.

Order volume variances

Increasing order volume and fluctuations in demand create a wide range of fulfillment scenarios that DC managers must be prepared to address. Many modern pick-to-light systems are unable to adapt order filler resources and workflows to meet changing order volumes, while also maintaining (or increasing) order accuracy, productivity and operational efficiencies.

Fulfilling low order volumes typically requires fewer order fillers operating in batch picking scenarios. To maximize efficiencies, DC managers strive to limit the order fillers' walking distance while streamlining their batch picking paths. Intelligrated's tightly coupled WES software and pick-to-light hardware provide light-directed instruction at each SKU location for all active orders within an order filler's batch, allowing them to efficiently pick a batch of orders in a single path.

As order volume increases, the pick-to-light system allows order fillers to adapt by ramping up productivity with multiple order fillers sharing identical or overlapping work zones. This is accomplished through pick-to-light hardware with multiple colors and easily configurable options that enable simultaneous batch picking with zone demarcation. Individual order fillers work on their own orders while the application tracks their productivity.

Intelligrated's pick-to-light hardware and software accommodate the full spectrum of order volume that occurs between these extremes, all while enabling real-time monitoring of worker progress. Access to this data helps DC managers not only respond appropriately to today's demands but prepare for future order fulfillment scenarios.

Full system integration for seasonal peaks and valleys

As fulfillment demand fluctuates with seasonal and promotional activities, a pick-to-light system needs to be flexible enough to integrate with multiple hardware, technologies and systems. While pick- and put-to-light, Voice and RF scanning processes all have a place in modern fulfillment operations, many DC managers struggle to leverage these systems into a cohesive solution.

Intelligrated's WES software modules enable seamless integration of pick-to-light hardware and existing systems to deliver maximum DC efficiencies. By incorporating every available technology, Intelligrated is able to blend capabilities and select the solution most beneficial for specific workflows and order profiles, such as:

- Discrete pick-to-light devices for high-density break pack piece picking
- xD™ (extended display) with dynamic shelf space optimization ensures proper picking and slotting size; adapts to smaller SKUs; eliminates the problem of unutilized shelf space; and removes unnecessary walk time for the order filler

- Integration of Voice and/or RF scanning for low-density, slower-moving items

Intelligrated's ability to blend best available pick-to-light technologies with existing systems allows omnichannel fulfillment operations to scale with seasonal demands, maximize DC efficiencies and ensure delivery of items.

Increasing number of SKUs

Rising SKU counts and varieties combined with increasing order fulfillment volumes introduce complexity into slotting strategies. Ideally, pick-to-light hardware should be flexible enough to accommodate new SKUs and changing SKU profiles without necessitating additional pick-to-light devices and racking.

Intelligrated's xD pick-to-light hardware device economizes available slotting space in a flow rack by dynamically sizing the slot width to match the SKU. This allows DC managers to continually configure the picking station in accordance with changing SKU profiles. Pick locations can be sized to match the SKU width or allow multi-face slotting. This is especially useful for adapting to smaller items without having to move the pick-to-light hardware device.

Intelligrated's xL™ (extended light) pick-to-light hardware device coordinates the automatic or manual slotting on the front side of flow rack with replenishment activities on the back side. This gives replenishment operators light-directed put away instructions to place SKUs in the correct flow location while also determining proper slot widths.

Order accuracy

Maintaining order accuracy is a top priority for DC managers in all types of fulfillment operations. But with the complexities inherent to omnichannel fulfillment, ensuring order accuracy is an even greater challenge. Many pick-to-light systems aren't designed with the functionality to assist with this important task. Too often, order fillers are unable to question the SKU number and/or order IDs, and managers cannot easily trace order errors to particular workers.

Intelligrated's pick-to-light systems give order fillers and DC managers the tools needed to ensure order accuracy. Order fillers can query the system to determine the correct SKU, order ID, store ID and last location put to. They can also report back to the system with pertinent conditions, such as: out of stock, damaged stock or instruction to suspend stock location.

Managers seeking to investigate the origin of order inaccuracies can trace errors back to the specific order filler. This gives them the opportunity to uncover the source of the problem and, if necessary, provide additional coaching or training to individual order fillers.

For an additional order quality measure, Intelligrated's pick-to-light systems can also perform a weight check to compare the order's actual weight to its expected weight. This simple step can identify discrepancies before an order is shipped to a customer.

Productivity

The complexity of omnichannel fulfillment often presents many opportunities to improve productivity throughout the distribution chain. Unfortunately, most pick-to-light hardware devices and software applications are not necessarily designed to exploit these opportunities. What's worse, some systems don't have the safeguards in place to prevent pick-to-light hardware failure from crippling picking processes and taking productivity offline.

Intelligrated designs and manufactures both pick-to-light hardware and associated software. This tight integration not only enables optimum workflows and simple scalability, it also provides a variety of bypass methods to maintain productivity during a hardware failure.

In the event of pick-to-light hardware failure at a specific location, the software responds accordingly to avoid large-scale disruptions. Distributed network communications and node isolation allow the order filler to complete tasks via one of several designated bypass methods:

- **Pick-to-light bay display bypass:** allows duplication of location control on a separate display within the bay
- **RF scan bypass:** allows order fillers to use an RF terminal to continue to fill orders if the pick-to-light is unresponsive
- **RF assist:** allows additional order fillers to work from the same order queue and share sections of a pick-to-light work zone to help complete the required work
- **Voice bypass:** allows the order filler to continue to fill orders using Voice technology if the pick-to-light is unresponsive

In addition, Intelligrated pick-to-light devices have onboard diagnostics capable of reporting events and producing a heartbeat "stay alive" signal.

Intelligrated utilizes a flexible communications architecture that offers multi-drop or Daisy chain networking of pick-to-light devices. Intelligrated limits Daisy chain communication to low count pick-to-light devices with control nodes, reducing the effect of any one device's failure. These node controllers prevent a single pick-to-light device failure from affecting more than one shelf of pick-to-light devices. Multi-drop isolates each pick-to-light device to communicate independently of each other so that a single device failure will not affect other pick-to-light devices.

Durability

Continual day-to-day use in harsh warehouse environments can wreak havoc on pick-to-light hardware devices. Many of them aren't manufactured with the requisite materials, strength of construction or quality standards to withstand their intended use.

The pick faces on Intelligrated's pick-to-light devices are constructed with either aluminum or high-impact polycarbonate, depending on the customer's preference. The base ducting piece mounted directly to the racking system is made of aluminum to ensure maximum security of the pick-to-light device.

All Intelligrated pick-to-light devices are manufactured to ISO standards and held to strict manufacturing guidelines and tolerances. We also source our pick-to-light hardware devices from a qualified manufacturing supplier, where functional "burn-in" tests are required prior to shipment and installation of the device.

Intelligrated pick-to-light hardware is equipped with anti-vibration connectors and precise-fitting Trak connection hardware. Our pick-to-light devices also feature anti-static technology via copper shielding on polycarbonate face plates and a grounding band on device circuit boards.

Flexible technology

For many omnichannel DCs, the pick-to-light devices and technology are not flexible enough to adapt to varying order profiles, volumes and order filler workflows. This is often attributed to the limited features and options available in pick-to-light devices, reducing the possibility of creating a solution that precisely meets DC requirements.

From a simple pick-to-light device for a single location to a complex display that lights an entire shelf, Intelligrated offers the industry's most comprehensive selection

of pick-to-light hardware to match the device (or combination of devices) to a DC's specific requirements.

- **T3C™:** enables four simultaneous order fillers to fill individual orders or cluster-pick multiple orders. Features a durable pick face and allows for closely slotted SKUs and ease of mobility for frequent re-slotting.
- **cL™:** allows two order fillers to simultaneously fill individual orders or cluster pick multiple orders. Perfect for a static put wall or pick racking system where SKUs are rarely moved, the economical cL offers a polycarbonate pick face and cabled communications in a small footprint.
- **xD:** designed to maximize the pick face for very close, high-density SKUs with the flexibility to re-slot frequently. Ideal for adding thousands of SKUs to an existing pick module without having to install additional racking and enabling dynamic slotting capability. Its full-length alphanumeric display keeps the order filler on task while providing next task messages.
- **xL (and xD):** adds to the replenishment side of an existing xD device to enable moving and slotting of highly dense SKUs. Guarantees the correct SKU replenishment in the designated slot in a dynamic slotting application.

- **sL:** pick-to-light device provides a lighted pick or put location with a simple confirmation button. Ideal where no slotting or simultaneous order filling is needed or when the order profile dictates a cluster-pick scenario.
- **RF:** provides put and/or pick via RF only or integrates with pick-to-light for bypass or assist mode.
- **Voice:** designed for use in stand-alone pick and/or put purposes, Intelligrated Voice can overlap with pick-to-light systems as needed.

As the manufacturer of the pick-to-light hardware, Intelligrated can also develop custom pick-to-light hardware as needed.

Live monitoring and predictive planning

Many pick-to-light software applications are not capable of monitoring activity in real time and providing actionable data that DC operators can use to make informed resource adjustments. Without access to this data, operators don't have the tools they need to accurately identify business trends and effectively prepare for seasonal ebbs and flows.

Intelligrated's pick-to-light hardware installation also includes the appropriate process applications from our comprehensive WES software application. This software integrates with all hardware responsible for moving orders throughout the DC, controlling the flow of materials from receiving to shipping. The industry's most tightly coupled hardware and software solution offers many benefits throughout the distribution chain:

- DC managers can use the software to monitor the performance of pick-to-light devices and system resources, recommend next best task to associates, and suggest opportunistic picks based on hot orders or walk paths.
- Order batching and cart order building can be determined based on pre-defined business rules and order profiles. The software enables smart order release based on ship time, order commonality, and single- or multi-line order profiles.
- For an enterprise view, the software provides the executive management team with a real-time view of individual DCs or the larger DC network.
- The software integrates with Intelligrated's Labor Management System software to provide enhanced performance evaluation and closer monitoring of productivity and order accuracy.

Conclusion

Regardless of the difficulties retailers may face meeting the challenges of e-commerce and traditional in-store order fulfillment, Intelligrated's tightly coupled pick-to-light hardware and WES software have the requisite functionalities and flexibility to address a wide range of omnichannel fulfillment scenarios. As an experienced supplier that can design, manufacture and install a complete fulfillment system — from conveyors to pick-to-light devices to WES software — Intelligrated is uniquely qualified to equip retailers with the tools they need to meet today's high service level expectations.

For more information, contact Intelligrated® by email at info@intelligrated.com, by phone at 866.936.7300, or visit www.intelligrated.com.