

WHITE PAPER

# Dedicated Omnichannel Fulfillment Centers



Used

↑  
Thru Put



Reduce  
Capital  
Investments  
Tap  
Capacity

**C<sup>3</sup>FE<sup>®</sup>**  
Automated Wave Planning  
Starts Here

Fastest  
Order  
Cycle Time

Minimize  
WMS  
Functional

Adaptive



## ***The new era of omnichannel fulfillment is upon us—one inventory, one engine, one workforce***

The convergence of channels is re-inventing how we think and how our distribution centers operate. The days of dedicated distribution and fulfillment centers is quickly transforming into the new era of channel immune distribution centers. Making use of one inventory, one fulfillment engine and one workforce results in tremendous gains that improve a company's bottom line. Channel specific distribution centers are giving way to dedicated omnichannel fulfillment centers—a fulfillment center for all channels, all inventory and with all the available labor and automation resources under one roof.

### ***Forces Driving Omnichannel Dedicated Distribution Centers***

With the large growth in mobile platforms and the slowed growth of the same store's sales with a physical presence, the challenges of continuing down the path of operating distribution centers with dedicated channels are mounting.

#### ***Peak E-Commerce Labor Needs***

Staffing the distribution center operation at 10:1 or more peak to non-peak ration in volume need is becoming more and more difficult to staff. If a steady operation requires a team of 100 laborers, many operations are training 1,400 or more contingent laborers ahead of peak in anticipation of their need. On peak days when an operation requires 800 contingent laborers and only 400 show up, the entire operation's peak capacity is diminished, equipment is underutilized, and more importantly, service levels are extended or sales intake is throttled to match the new capacity.

#### ***Inventory Allocations***

For omnichannel operations where the business has exclusive channel "agnostic" inventory, the sharing of inventory between channels is not a significant challenge other than ensuring that there is enough unit or piece picking inventory available for direct-to-consumer (DTC) orders. However, for omnichannel operations that have channel and exclusive product (SKU) configurations, this presents significant challenges for selling through same-SKU inventory for all channels. Purchase orders issued to vendors are often separated by channel. The first set of

orders issued to a particular vendor might have 60% of the product on a "retail" purchase order and the remaining 40% on the "e-commerce" purchase order. Some examples of these specific product configurations on a particular purchase order are below:

- Price tags on retail items only
- Retail cartons with "musicals" of different sizes and styles destined for the store floor
- DTC (direct-to-consumer or e-commerce) items require poly bagging
- Automatic sorting machine readable exterior UPC or LPN coded labeling

The key to enabling these SKUs to become channel agnostic lies in their configuration and their dominant preference for a specific channel. Often e-commerce SKUs can be sent to any channel as they are packaged at the most finite SKU level. Retail SKUs often require some type of value added service (VAS) work to be performed prior to fulfilling in the e-commerce channel, i.e. removing from master pack, removing price tags and segregating into individual units packaged for e-commerce sale.

#### ***Infrastructure***

Combining the fulfillment channels under the roof of one distribution center has significant implications on reducing infrastructure and costs. The capital dollars spent on storage systems, automation, information and information execution systems are typically quite large. Add operating costs associated with maintaining facilities, supervision and labor for two distinct channel based facilities and the cost really begins to pile up.. Combining the channels not only reduces the cost with each facility but it often also reduces the size of corporate headquarters based teams associated with maintaining two separate infrastructures.

#### ***Timely Decisions***

How much labor do I need? What stock levels should I keep at each channel distribution center? What incentives should I offer to maintain staff levels through peak? When and how do I transfer inventory if demand outpaces projections? These are just a few questions we ask ourselves while operating a fulfillment center during the year. Now imagine asking yourself these same questions knowing all inventory, fulfillment processes and resources (labor and machines) are shared in a single omnichannel

fulfillment center. The answers are far less challenging to develop and implement.

### **Order Profiles Challenging Conventional Designs**

Dynamic marketing and the information that is fed back to us has really changed the way we fulfill orders. We flow product more frequently and at smaller quantities based upon actual demands not projected. This challenges systems and processes that are designed to move product in mass to enable efficiencies. The mass is there but the configuration of mass is no longer predictable. The best plan in an omnichannel world is to implement systems that can dynamically react to the swing in demand. E-commerce operations have long struggled with making use of systems and processes that are retail-centric. Marketing promotions that last only hours and offer free shipping tend to drive a large spike in single item orders, and maybe two hours later a buy one, get one free campaign will drive a spike in multi-line orders. Our systems need to dynamically react to these swings.

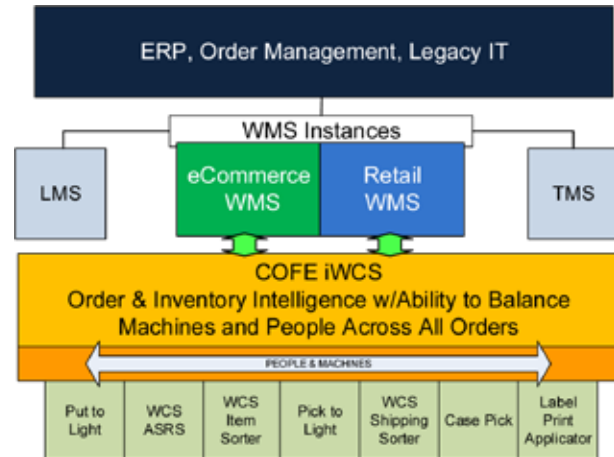
### **Resource Utilization**

A resource is defined as a source or supply from which benefit is produced. To the fulfillment process this is inventory, storage systems, machines and laborers. The goal of utilizing these resources should be getting the most performance out of the resources as possible each hour. A resource that is only productive 50 minutes of the hour is wasting 10 minutes each hour. A large contributing factor to underutilizing resources is the manner in which we flow product. Starting and stopping between waves of work is inefficient and presents large opportunities for changing how we transition work flows and maintain utilization. An ideal flow would remain as near constant as possible providing the resource with enough work to remain utilized the full 60 minutes of every hour. By combining channel operations, we introduce more transition points to our legacy system. New systems need to be implemented that maintain parallel flows which operate simultaneously.

### **Benefits of an Omni Fulfillment Center: Why VARGO®'s COFE® Intelligent Warehouse Control System (iWCS) is the Fulfillment Engine Best Suited to Drive the Operation**

If a one word statement were provided to identify the force that is driving the implementation of omni fulfillment centers it would be "utilization." Getting the most out of all resources, facilities, inventory, labor and equipment

is key to the bottom line of all businesses. Distribution operations' resources are rarely (if ever) fully utilized. In the distribution center, the one system that can sequence and synchronize work across all resources is the warehouse control system (WCS).

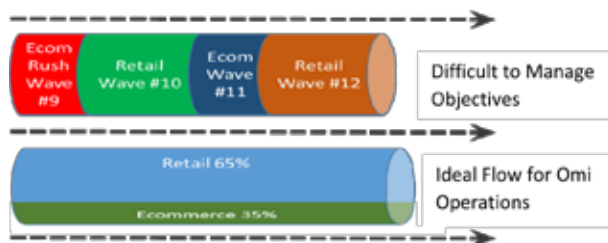


The WCS is the only system that can both bridge the gap between overlying systems (LMS, TMS, WMS, ERP, etc) and coordinate the synchronizing and sequencing work to obtain the most utilization of all resources.

The greatest challenge facing our legacy systems is being able to manage utilization through traditional WMS practices which relay information back and forth to sub-systems. For example, a pick-to-light system is a wonderful technology to increase accuracy, performance and capture real-time metrics, but it works in a silo. This pick-to-light system has no working knowledge of a shipping system's current workload and utilization. The iWCS, which maintains a shadowed copy of inventory and order information, can see across all systems and drive laborers to perform work which best utilizes machines while executing work that maintains business rules and objectives. To do this effectively, VARGO®'s COFE® iWCS methodologies are based upon PULL practices that look at all resources (people and machines) to induct work that is pulled to an available resource. It's a simple concept. If a shipping lane, item sorter divert or picker is in need of work, then induct new work that satisfies that resource's need. This simple methodology ensures balance. Systems that are PUSH based will always struggle with gating, metering and releasing work as they require buffers between functional elements to maintain a sufficient flow of product.

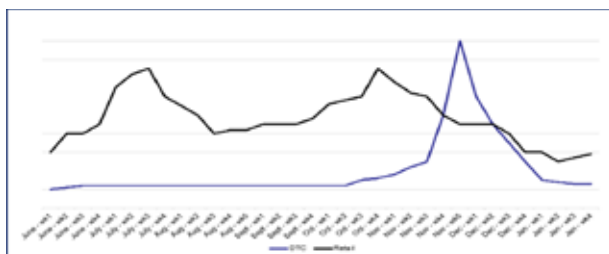
### Simultaneous Workflows

With the introduction of different channels—possibly different brands—to a single fulfillment center, the fulfillment engine inside the fulfillment center should have the ability to flow work in parallel paths and process different flows simultaneously. Equally important to the operation as knowing what work needs to be processed is knowing what work not to process. Inducting more work than a single station or possibly a shipping divert can process in a given period of time results in starving other resources. It also creates the need to buffer work, which can not only take time but also unnecessary resources to manage and process. Pulling work to the available resource is a natural way of maintaining workflow balance, resulting in the highest available utilization of resources. Deciding what to pull is both systemically and user driven. Late hour club or next day delivery orders may require more bandwidth at 4 p.m. than at 6 a.m. It also can't be limited by the amount of work ahead of it when initiated; this is often a problem with systems that have large buffers. At the same time, the flow of retail orders can't be interrupted to meet its shipping objective.



### Improving Facility Utilization through Channel Peak Requirement Timing Variations

For retail and e-commerce distribution channels the variations of the timing of required peak activities is an opportunity to improve overall facility utilization. Generally, retail peak output requirements are ahead of e-commerce peak requirements by several weeks. The peak inventory requirements also have the same relationship. The improved utilization of an omnichannel facility is achieved by leveraging common facility resources to handle the time variant requirements of each channel.



### Leveling and Extending Workforce Utilization

As all distribution operations are driven by demand and that demand varies over time, there is a constant requirement for efficient operations to rely on temporary labor to meet the variable demand. A good contingent (temporary) workforce is oftentimes difficult to supply. An omnichannel operation has the opportunity to offer temporary workers longer work engagements as the production demand is extended in time due to the simultaneous needs of the channels. The incentive to temporary workers allows the operation to take first pick of the available workforce.

### Sharing Infrastructure

There is an incredible amount of capital expense in standing a new distribution facility. A great deal of that expense is in infrastructure: the land, the taxes, the building, parking, employee support facilities, utilities, communication equipment and networks, and the list goes on. By not having to duplicate this infrastructure, there is a tremendous opportunity to improve facility utilization.

### Common Processes for Common Actions

There are many common actions that occur between distribution channels: inbound processes, inventory processes, picking, packing, etc. An omni solution provides the opportunity to make the common action use common processes, common trained workforce and common equipment. This affords an opportunity to increase utilization. It also reduces training requirements and improves overall quality as the procedures are common, which reduces the probability of errors due to lack of training.

### Omnichannel Inventory Selection and Substitution

In operations where there are multiple configurations of the same SKU, COFE® tracks inventory by the configuration. COFE® uses inventory with the proper configuration for filling various channel demands.

In omnichannel operations where inventory is configured for delivery to a specific channel, COFE® knows how to always allocate or select inventory from the proper channel while that inventory is available. COFE® has a configurable feature to allow inventory from one channel to be “re-configured” in order to share inventory across channels.

The means of reconfiguration may be configured to one of the following options:

- Reconfigure at the time of picking—the pick worker is informed that the inventory must be reconfigured for picking. Procedurally, the pick work accomplishes the task.
- Full case reconfigure—a case of the substitute channel is automatically selected for pulling as in a replenishment task. However, a “work assignment” is attached to the pulled case that will route the case to a configured destination for reconfiguration. The reconfigured material is identified to COFE® with the new channel identification and putaway as the needed channel inventory. Orders requiring the SKU are released for picking once the newly available inventory is ready.
- Extending duration of use of temporary labor force through channel production requirements
- Capable of receiving and storing inventory as:
  - Channel agnostic
  - Same SKU pre-configured to be consumed by a specific channel
- Capable of automatically reconfiguring and consuming non-channel same SKU product as necessary
- Utilization of a channel agnostic labor force
- Utilization of specialized MHE, where applicable, to efficiently process varying demand profiles
- Utilization of common work force processes for common actions (putaway, picking, shipping, etc.)
- Utilization of common work flow monitoring tools
- Utilization of a common single instance of a warehouse management system

### **Summary of Omnichannel Distribution Features**

Designing and constructing omnichannel distribution operations is a challenging endeavor. The end-state achievement is normally reached by evolution, with each step of the path overcoming one or more challenges. In order to obtain an ideal end-state, a vision of the end-state must be created in the front-end that ensures each evolutionary step taken is leading to that ultimate objective.

The end-state features identified by VARGO® for the distribution operation are intended to provide a solution that addresses a broad business requirement footprint, leveraging all assets to deliver product in an unrestricted business model. The key features identified by VARGO for such an omni distribution operation are:

- A single distribution facility sharing facility infrastructure
- Capable of delivering product at facility limited peak rate combinations of “channels”
  - E-commerce customers
  - Retail customers
  - Client owned stores
  - Wholesale orders
- Minimizing required peak facility capacity by taking advantage of variations in peak requirement timing between channels

*Contact VARGO® to learn more about how to identify business requirements for inside the omni fulfillment center and how our experienced methodologies have been applied to similar businesses.*