Westernacher
NONSTOP INNOVATION

WESTERNACHER WHITE PAPER

End-to-end supply chain inventory visibility in retail. The evolution of the retail store.

In the past, stores were the place where you go to check out a product, try it on and purchase it. It was the place to be informed, to get inspired, to find new ideas, and to hunt for the best deals. The Internet has changed all of this.

For example, pricing pressures have led to retailers hiring store associates with little or no product knowledge. Lean initiatives created smaller store sizes with less inventory and/or selection. While, in the real world, business was getting tougher, the Internet seized the opportunity and offered solutions that closed the information gap, the service gap, and the availability gap. Amazon is the perfect example of how our attention shifted from bricks and mortar to online, and many analysts forecasted a quick death of the retail store.

However, something funny happened: while some stores and chains are closing and struggling, others are thriving. One thing the Internet is not able to do is to provide the same level of instant gratification or satisfaction a store visit and purchase can provide. Even one-day shipping does not come close and it is certainly expensive. Again, look at how much money Amazon is losing in fulfillment.

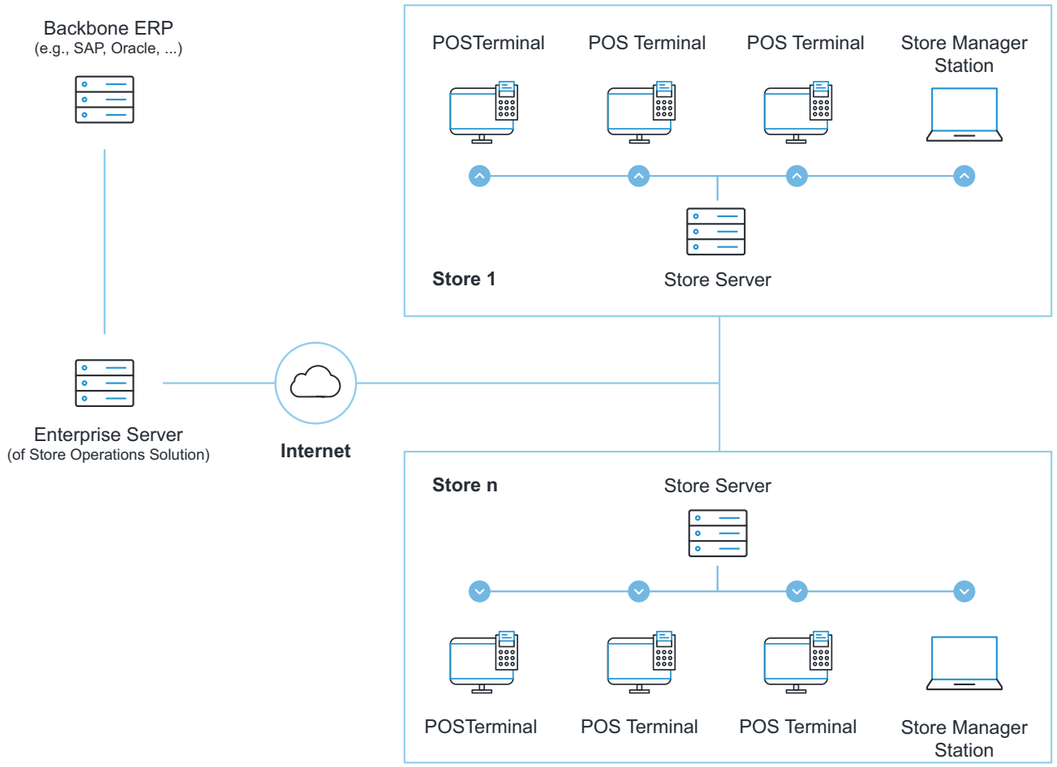
All this sparked a new trend where we can buy on the Internet, but we can then turn around and pick up our purchases locally on the same day or the fulfillment is on the same day from a local store. This is called omnichannel and it requires near real-time, end-to-end inventory visibility. To enable same day pick-up and delivery, local stores are becoming forward warehouses, nowhere is this is more obvious than at my local Kroger where I always find pickers roaming the aisles fulfilling online orders. So, why not manage these stores like warehouses?

Today's solutions have historical roots.

Historically, retail solutions were foremost cash registers that became more and more automated and intelligent. Today, even small solutions have the ability to capture inventory, pricing schemas, payment methods, etc. Many of these solutions were bought up at some time by big ERP firms such as SAP and Oracle. However, even today, store applications are usually from third party providers.

When we try to track merchandise we usually have inventory information in two domains: planning, buying, production, allocation and distribution are usually done in a closed loop and highly integrated landscape. Selling (in any channel), however, is done in a separate landscape.

SIMPLIFIED RETAIL IT LANDSCAPE (MERCHANDISE FLOW ONLY)



Because of this split between customer facing operations (store) and back room operations (ERP), even today, tracking merchandise is an issue. ERP systems track merchandise up to the delivery at the back door of a store. But this is often not captured via proof of deliveries (PoD) and even less frequently does the ERP system receive a receipt from the store.

The store systems are able to load inventory information but usually do not capture storage locations (aisle, shelf, bin, ...) within the store. For this, so-called planograms are used, which focus more on the allocated shelf space and appearance but not on the inventory characteristics, such as how inventory is managed (FIFO, LIFO, ...).

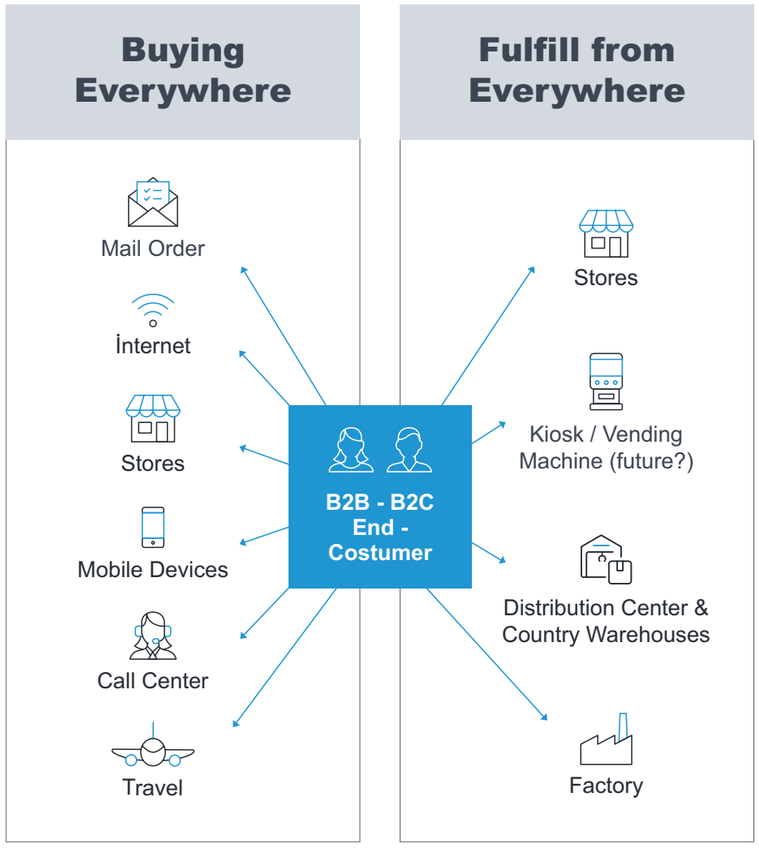
What has changed?

In the last few years, online only retailers, as well as traditional bricks and mortar retailers, realized that the question is not an either or but that customers are looking for conversion. They want to buy everywhere and get fulfillment from everywhere. Customers do not care about channels and expect that all channels work together, know where the product is that they are looking for, and can get the same lowest price.

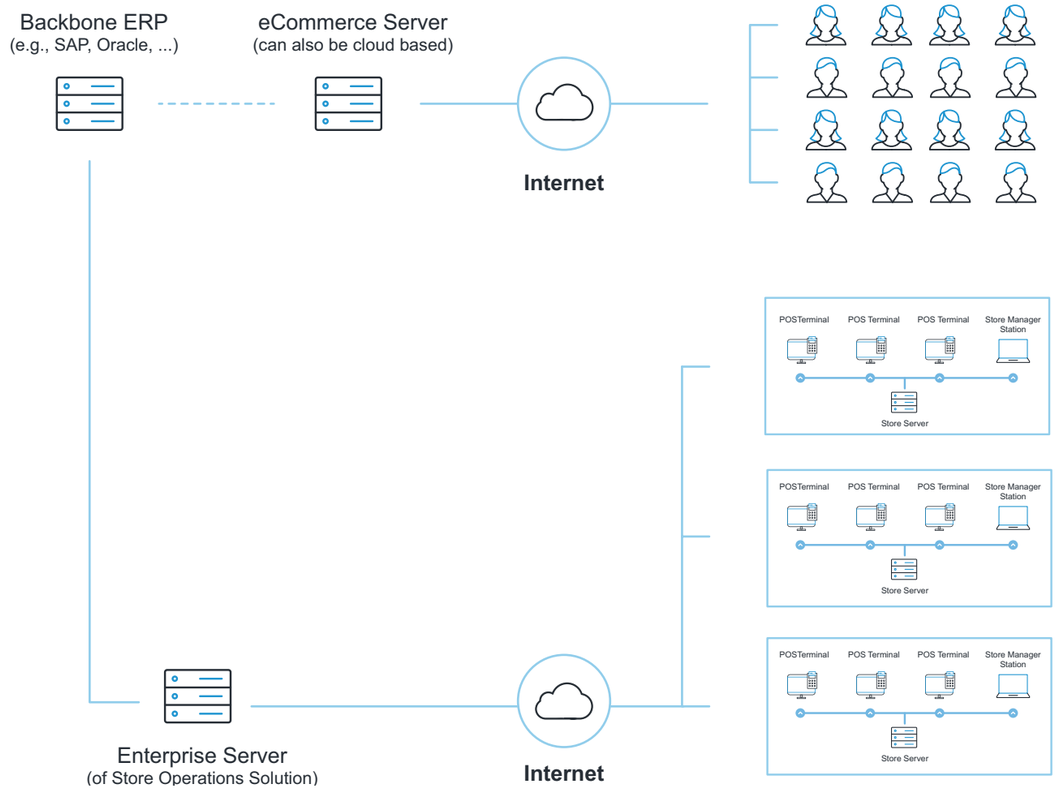
This is why Amazon is experimenting with different store and warehouse formats, Google is connecting stores with online shoppers and many retail chains are reviving delivery and pick-up services.

However, on the IT side, we still see a split as online sales platforms such as SAP's Hybris are often standalone and have their own product catalog with dedicated inventory, separate pricing and an independent fulfillment scenario.

THE OMNICHANNEL CHALLENGE

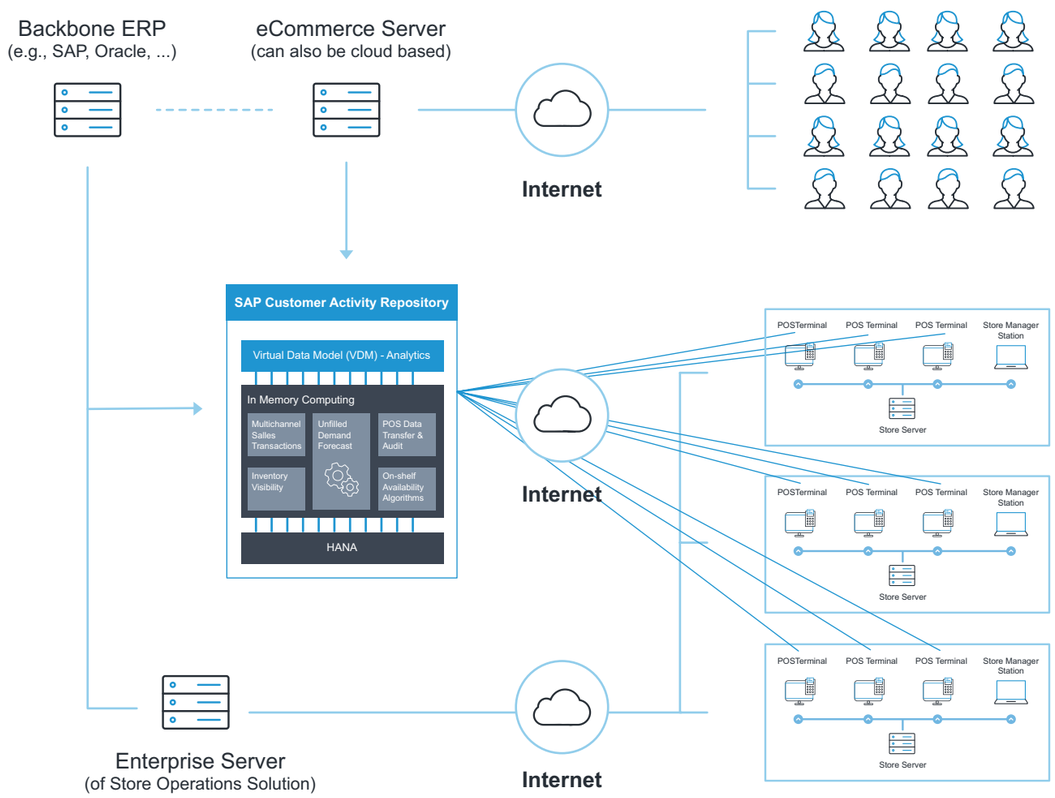


OMNICHANNEL 1.0



In newer developments, SAP realized that its Customer Activity Repository (CAR) was holding the data necessary to consolidated inventory, sales and pricing information from many different channels:

OMNICHANNEL WITH SAP CAR



The main issue with this solution is its complexity. It attempts to close the gap with a new software solution that consolidates all the data already available. It is an additional repository (aka data base) that was originally created to improve marketing results by capturing what customers actually buy and adjusting marketing and sales promotions in real-time.

CAR's core functionality is capturing data via its POS Inbound Processing Engine in near real-time from stores, unifying all this data with sales data from other channels and creating a unified demand forecast. The ability to estimate on-shelf availability and to provide inventory visibility are almost side effects.

Retailers and vertically integrated consumer goods companies (such as Nike, Columbia, Swarovski, etc.) operate differently. For them, the solution is to integrate the different channels and view their stores more and more like forward warehouses. At Walmart and Kroger, for example, consumers can purchase items online and pick them up, sometimes within two hours. Preparing the pick-up-order is like preparing a parcel shipment in the warehouse: employees with carts roam the aisles and pick products from the shelves and put them into totes, usually guided by a handheld device with a picking app.

The role of warehouse management systems.

So, the question becomes: why aren't retailers managing their whole supply chain in one flow? Instead of separating backend operations from store operations, the focus should be on providing a closed loop tracking of all merchandise:

- From suppliers or manufacturers to DCs
- From DCs to RDCs
- From RDCs to stores
- From stores to other stores
- From suppliers or manufacturers directly to stores

Every store now becomes a forward warehouse and like in every warehouse, we manage:

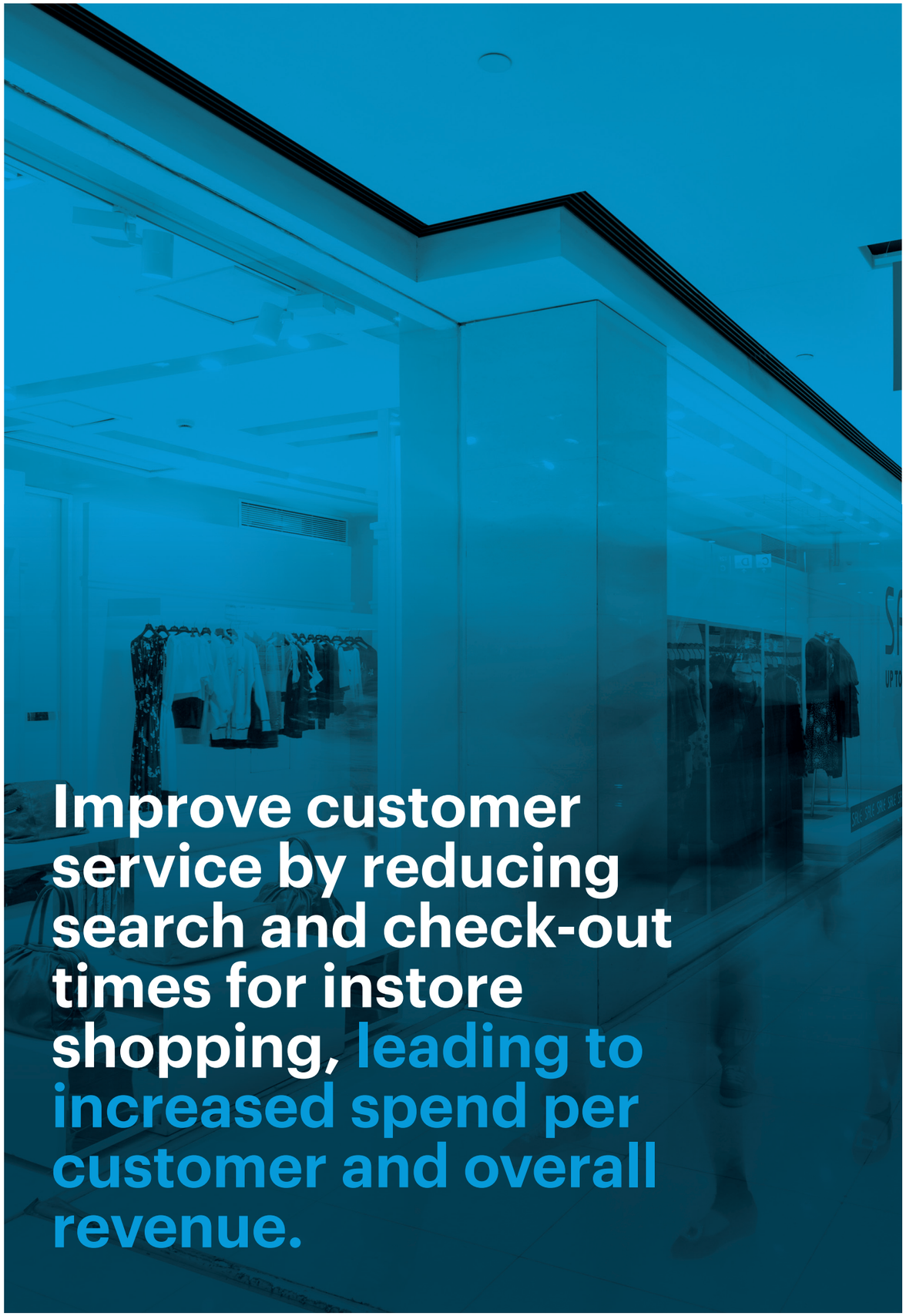
- Inbound processing
- Storage and operations, including resource management
- Outbound processing

Outbound processing includes capabilities to pick, pack and ship online orders. It does not include instore sales, which we will discuss below, but it does include the capability to ship from stores to consumers.

On all levels of this distribution network, we can incorporate vendor managed inventory (VMI) and consignment inventory. Stores can also hold inventory of items not for sale and items that are not replenished.

Running all stores as part of a central warehouse management system (WMS) provides real-time inventory visibility of all locations on every echelon of the (internal) supply chain. The whole system can be self-balancing, meaning that shortages in one store trigger automatic replenishment from the DC, RDC, or another, nearby store.

The tracking of merchandise is also better since all shipments are now managed within the same system and no additional software is required to properly receive shipments. The same applies for planning and managing shelf space.



Using WMS to manage stores.

As mentioned in the previous sections, WMS functionality can be separated into three main areas:

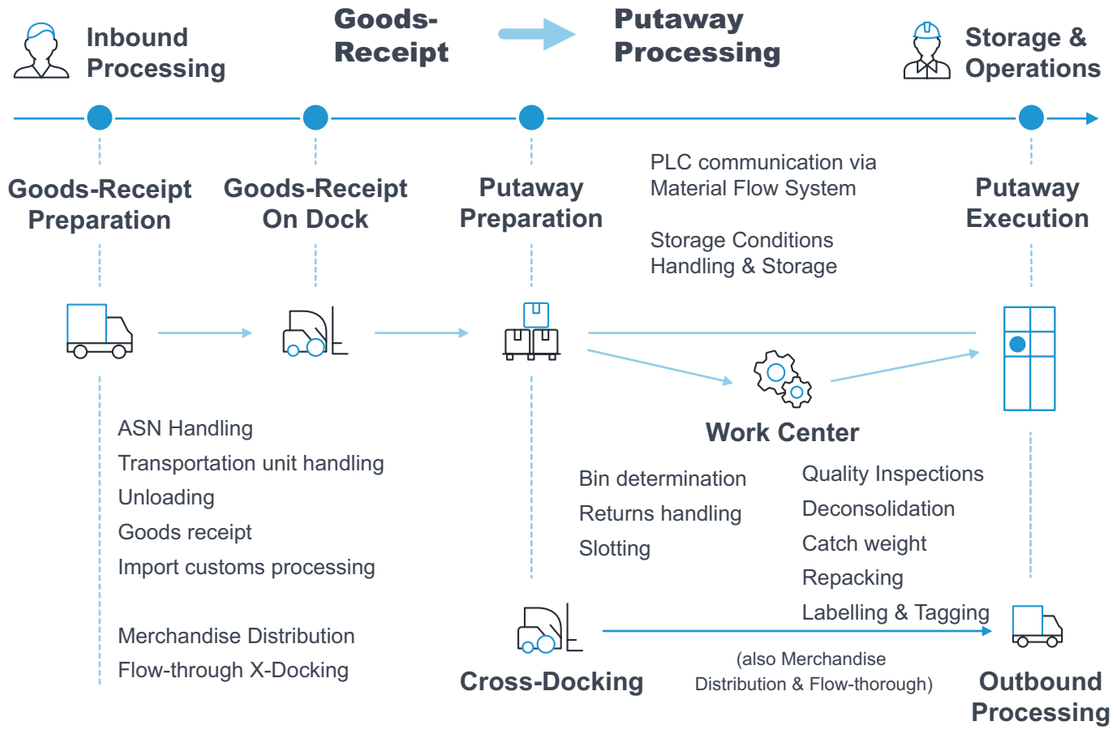
1. Inbound Processing
2. Storage & Operations
3. Outbound Processing

We will review these three areas and assess how well they can be used in store operations.

1. Inbound Processing

Goods receipt preparation in the store is not unlike in a warehouse: the store has received an advanced shipping notice and has scheduled incoming deliveries to align with foot traffic and resource plans. When the goods arrive, they are received in the warehouse management system. The system then prepares the put-away activities, including unpacking, quality checks and shelf/bin determination. In some instances, the incoming delivery will include merchandise that needs to be repackaged for customer pick-up or last-mile delivery, which can be handled in a simple front-end interface[1].

KEY INBOUND PROCESSING TASKS



[1]SAP uses Fiori to extend front-end capabilities.

2. Storage & Operations

In warehouse operations, this is the area that is often referred to as “production”: putting garments on hangers, applying price and security tags, executing value added services (VAS), cleaning, display management, etc.

Stores actually have the same requirements and more. Especially managing displays, prices and product locations are major tasks regularly poorly planned and executed. For example, for fashion retailers, merchandise needs to be marked down after a certain number of weeks and moved to another area on the floor in order to make room for new merchandise. WMS are able to plan, execute and monitor these activities. In traditional store operations, separate systems and applications are needed for this.

Another set of tasks centers around VAS: most WMS allow you to integrate these in (store) operations planning. For example, fashion stores can now plan and execute tailoring services and grocery stores can manage cooking and catering offers.

Because most WMS integrate resource planning capabilities, stores can now manage associate work scheduling and task assignment in the same system. This allows you to overcome the duplication often seen in today's system setup where personnel management in stores is handled in separate systems and not integrated with the flow of merchandise.

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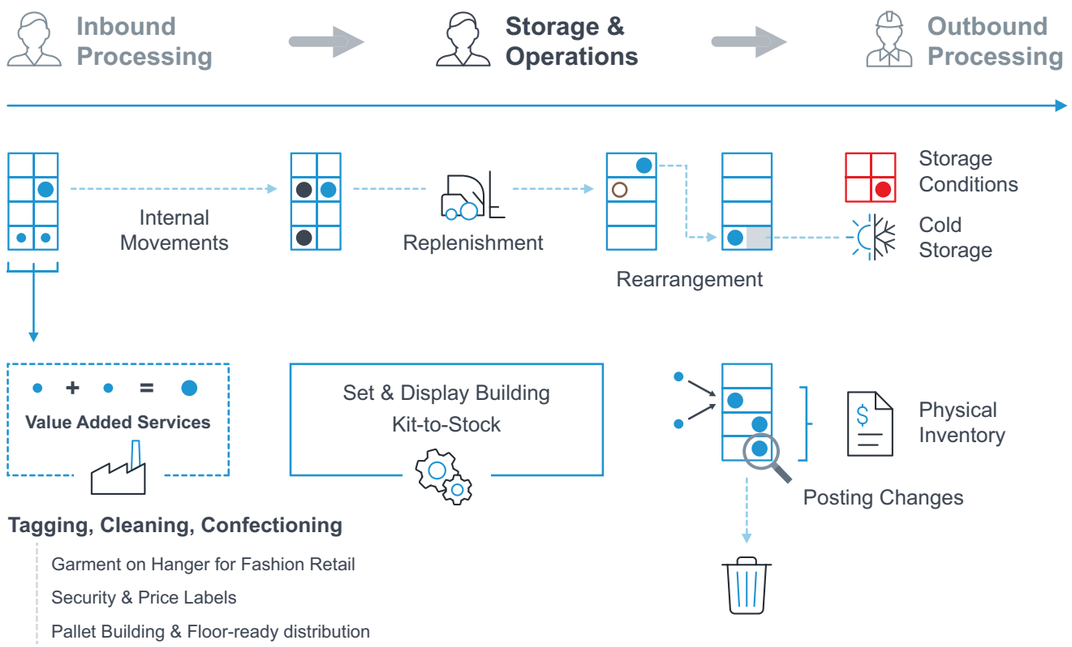
KEY STORAGE & OPERATIONS TASKS



3. Outbound Processing

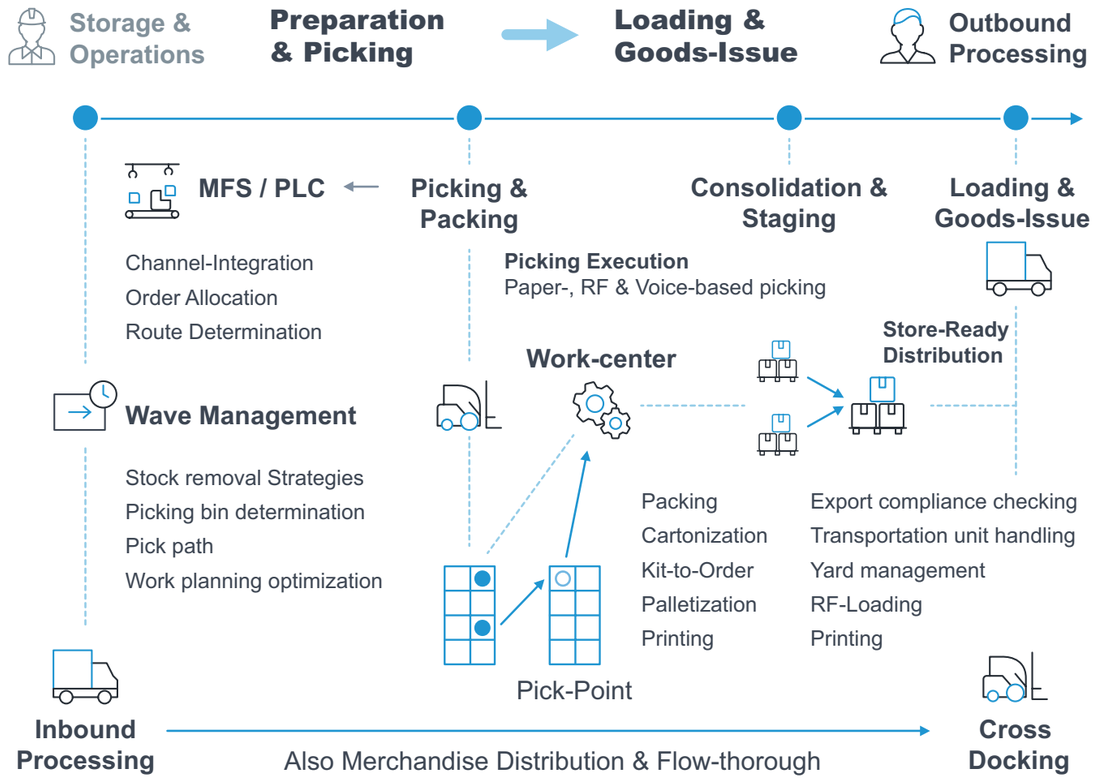
This is the portion that is most difficult to align with pure warehouse requirements. In stores, we usually do not have to spend much time on picking preparation or wave management. That is with the exception of grocery stores, where store pick-ups are becoming more and more important. Just like in a warehouse, associates are picking products for multiple orders at the same time and need guidance on the best pick path, including the capabilities of RF and voiced-based picking.[2]

Depending on incoming online pick-up orders, we also need the capability to optimize resource planning to handle all orders in a timely fashion, allowing customers to pick up orders on their way home from work. To support customer pick-ups and last mile deliveries, stores need capabilities to pack orders, create shipping labels and coordinate pick-ups with last mile shippers and customers. Many WMS have the functionality available to support all of these activities

Lastly, WMS already provide capabilities to further automate store operations and especially to integrate picking robots. It provides solutions for pick-by-voice and route optimization (in the store) that can also be made available to consumers who use the appropriate store application.[3]

[2]Voiced-based system support is not just available for picking, but also for other tasks in inbound processing (i.e., put-away) and operations (e.g., mark downs).
[3]While this is not part of the main topic of this paper, we can also imagine further enhancing the consumer version of the route optimization functionality to lead consumers to special offers or coupons to be downloaded.

KEY OUTBOUND PROCESSING TASKS



Managing instore sales

WMS do not offer functionality to execute the sales process. Instead, they receive an outbound delivery request from the ERP system which then triggers the outbound delivery request. Once the order has been picked and packed, the associate does a post goods issue which closes the outbound delivery.

To support the traditional store objective of selling merchandise to walk-in customers, we need a front-end application. The challenges come from the following requirements:

- Accepting manufacturer coupons
- Accepting retailer coupons (paper and electronic)
- Tie-in to loyalty programs for discounts and other incentives (e.g., point accumulation)
- Handling sales of restricted purchases such as alcohol or tobacco
- Managing temporary mark-downs, especially in grocery retail
- Price matching (e.g., in electronics)
- Deposits
- Accepting multiple forms of payments, even within one transaction
- Discount restrictions (i.e., limits on discounted articles)
- Multi-buy discounts (e.g., BOGOs) and cross-selling offers (e.g., free milk with 4 General Mills cereals)

A number of WMS and POS systems exist that have integration points to each other while supporting the above requirements. However, these systems are usually for smaller settings.[4]

Furthermore, there is the question of managing cash and checks, as well as passing on credit and debit card payments for further processing. While statistics show that cash and check payments are clearly on the way out, there are also clear differences between retail sub-categories and countries. For example, cash usage in Germany, Europe's biggest economy, is still above 70% in grocery stores. In comparison, in the US, this number has fallen to below 20% of transactions.

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But even at 20%, stores carry a substantial amount of cash and checks that need to be stored at the point of sale. This requirement might create another push for creating different check-out ways. Already, many grocery chains (e.g., Kroger and Walmart) allow for self-check-outs in designated lanes. Some also experiment with check-out as you pick your items, either using intelligent carts or handheld scanners.

In fact, recognizing that more and more consumers are using devices such as Amazon's Alexa to create shopping lists or use the retailer's own application to create shopping lists (e.g., Kroger), retailers might offer yet another solution approach where the shopping list can be integrated with the company's WMS, which creates an optimized picking route for the consumer. We can also think about turning the customers' phones, that are already used for the shopping lists, into scanning devices pre-processing the physical shopping cart.

[4]We will discuss what SAP system configurations and warehouse management solutions (EWM, S/4HANA EWM, EWM Cloud, ...) will be the best fit for different use cases and retail categories in a follow-up PoV.

Possible system landscape

The core of the solution, as mentioned, is a WMS. One of the key questions is whether to model every store as its own warehouse or just as a storage location. Setting up every store as a storage location (as opposed to a separate warehouse) is much easier to implement and allows for much faster scalability. However, this option comes at a significant loss of functionality available in every store such as self-replenishing and self-balancing inventories.

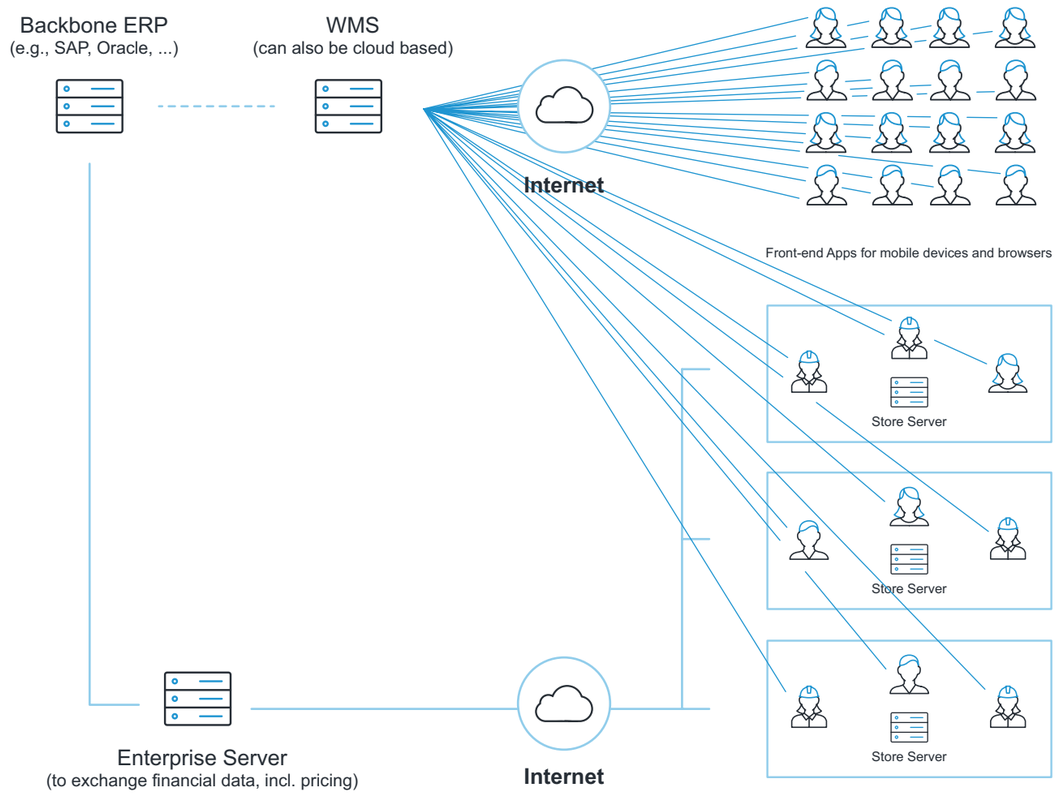
At the end, the decision depends on a number of circumstances, including the number of SKUs, number of stores, complexity of the distribution network, ability to offset costs for licenses and implementation with savings from other systems and hardware investments, plus many more factors.

As indicated above, we will need some front-end solutions and extensions to provide additional functionality for consumers and store associates. These include:

- Picking app for associates and handheld scanner devices
- Picking app for customers with essentially the same functionality as for associates but geared towards consumer devices
- Sales app to execute sales on a cash register and the ability to fulfill all the typical cash register functions
- Simplified version of the SAP Warehouse Clerk
- Repacking app
- VAS execution app

To further simplify and integrate the possibly multi-channel shopping experience, we should integrate online sales with instore sales. Ideally, cashiers would have access to the same check-out app as online shoppers with the added capability of collecting cash and checks. Or the other way around, online shoppers no longer access stand-alone online sales apps but access a combination of the WMS and Sales that provides pricing and network inventory information.

WMS BASED SYSTEM LANDSCAPE (ILLUSTRATIVE)



Summary of advantages and challenges.

We believe that today's omnichannel solutions for retail are too complex and too costly, making it especially difficult for mid-sized retailers to implement. Starting with the premise that retail is about selling merchandise, we also put the merchandise at the center of our approach of using a WMS to manage not just warehouses but also stores.

The advantages of this approach are:

- Creating a closed-loop inventory tracking across the complete (internal) supply chain
- Real-time inventory information from all inventory at all nodes and transportation lanes
- Ability to support extended store service offerings from VAS, to customer pick-ups and home deliveries
- Ability to improve customer service by reducing search and check-out times for instore shopping, leading to increased spend per customer and overall revenue.
- Automation of replenishments and rebalancing of store inventories (not discussed in detail before)
- Overall reduction of stock-outs while reducing overall inventories, excess inventories and therefore capital costs

The challenges center around the mentioned pricing requirements (discounts, promotions, ...), the ability to manage cash and checks and scalability of the solution across possibly hundreds or even thousands of stores.

How to get started.

Westernacher has been innovating business and IT for almost 50 Years. We are successful in helping our customers with many different transformation initiatives by providing solutions for operational, organizational and technical issues:

- **Technical:** from implementing EWM, S/4HANA, SCE and other SAP solutions to developing custom ABAP and Fiori solutions.
- **Organizational:** supporting businesses in the transformation to becoming a merchandise focused retail organization. Providing an engaging vision and training to realize quick wins and removing (cultural) barriers.
- **Operational:** developing innovative business processes to make the most of the new technology and information. Improving KPIs and creating KPPs to move the company from a reactive stage to an orchestrating stage.

To provide you with a better understanding, we offer an Inspiration Day where we show you what an EWM centered IT landscape looks like and how it might impact your company. This is achieved through demonstrations and by discussions with our retail experts.

Start your digital transformation with Westernacher.

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