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Intelligent Dynamic Store Merchandising Solution Cuts Losses on Perishables and Raises Brand Awareness

EXECUTIVE SUMMARY

Imagine giving retailers the ability to track real-time demand for perishable items in each store, and automatically adjust prices and promotions to prevent spoilage, while also protecting margins. In the case of grocery stores, this technology can recover 25 percent or more of the six percent of total sales lost, on average, from perishable sales and perishable waste. With the Dynamic Store Merchandising (DSM) solution from Toshiba*, reducing loss and turning it into profit is actually happening. The solution utilizes a retailer's existing intelligence on customers, buying patterns and product performance to optimize the return-on-inventory investment across all product categories. The results are increased sales, maximized margins, reduced inventory distortion and the elimination of losses arising from perishable waste and shrinkage. Moreover, DSM is an in-store merchandising solution that can measurably influence customer buying decisions at the point of purchase by raising brand awareness through an optimum mix of customer communications mechanisms.

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Intelligent Systems

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KEY BUSINESS OBJECTIVES

Reduce waste and optimize store promotions for maximum return-on-inventory and consumer loyalty.

WHO WILL BENEFIT FROM THIS SOLUTION

DSM integrates various advanced technologies, which benefit retailers, such as grocery, home improvement and consumer electronics, as well as brands and consumers.

Retailers can increase profit by as much as four percent when the loss on perishables is reduced by 25 percent. In addition to preventing spoilage that leads to inventory distortion, the solution facilitates effective cross-selling and promotions that can further increase a retailer's profitability. Food waste reduction not only benefits the retailer's bottom line, but it also conveys a social responsibility and an environmentally-friendly image.

Brands can increase success rates for product innovations and raise brand awareness of new products at the point of sale by having their advertisements play on digital signage and electronic shelf labels.

Consumers benefit from being able to buy fresher perishables because stores have less overstock that has to be sold close to its sell-by date. Moreover, stores are less likely to be out of stock on items, thus better satisfying customer expectations.

MEETING NEW MARKET DEMAND

Retailers, especially grocers, have spent a lot of time and money on supply chain optimization; however, these techniques are not effectively minimizing the waste associated with perishable items, like produce, dairy, bakery and meat. For grocery stores, perishables are 50 to 65 percent of total sales, yet an average of six percent of perishable sales are lost due to a combination of:

▪ Price discounts to meet the sell-by date

▪ Waste due to unsold, expired product

▪ Cost to dispose of waste

For example, a grocer with approximately $1 billion (USD) turnover averages $500 million to $600 million in sales from perishable items. That means a potential loss of $30 million or more from the bottom line through lost margin and waste. In one instance, a European retailer lost more than $375 million annually, caused by selling items below cost to avoid waste or throwing away expired product.

Some retailers try to avoid waste by carrying hardly any inventory; however, this increases the risk of going out of stock on the shelf and not meeting customer expectations. When it comes to supply chain management, it's focusing on the last 100 yards in the store that makes the difference, especially with respect to perishables.

THE BUSINESS CHALLENGE

The retail food industry faces several critical business issues related to managing inventory and maximizing product margins:

- **Reducing losses on perishables:** The losses from fresh products, such as food and live plants can be high, so selling them before their sell-by date certainly helps the bottom line.

For grocers, nearly 25 percent of inventory is perishable; therefore, it's worthwhile to try price cuts, promotions and other selling techniques in order to prevent a potential three percent loss to the bottom line.[1] In fact, if there's minimal waste in the first place, retailers can increase their profits by as much as four percent.

- **Responding to unpredictable demand swings:** A major UK grocer estimates that around 50 percent of the items they sell are impacted by the weather.[2] The retailer developed a computer program to determine how weather affected store sales by analyzing detailed weather reports going back five years. For example, the analysis revealed a 10 degree Celsius rise in outdoor temperature led to a 300 percent uplift in the sales of barbecue meat.[3]

Grocers would benefit from inventory systems that account for demand changes due to special factors, such as weather, holidays and local events. In particular, the demand for perishable items produced in the store, such as bakery and delicatessen, can be impacted by day to day factors, and the production volume for these items should reflect this reality.

- **Minimizing out of stocks:** Many large retailers stock their shelves while most consumers are sleeping. So if there's high demand for an item during the day, the shelf could go empty until it's replenished by the night crew. Other retailers have employees regularly walk the aisles looking for gaps on the shelves and initiating replenishment requests. This is a sub-optimal approach because the problem is addressed after the item is out of stock, and it's a poor use of available personnel resources.

These examples point to a long-standing problem for retailers – that of inventory distortion – defined as the cost of lost sales resulting from out-of-stock merchandise plus the losses from overstocks that must be deeply discounted in order to sell. According to the IHL Group, this combined annual cost is estimated at $818 billion, increasing by $50 billion in the last year.[4]

- **Optimizing in-store promotions and brand awareness:** By sending cross-selling promotions for full-priced items to customers' smart phones, retailers can counterbalance lower sales from marked-down products. For instance, retailers may offer a discount on pasta when purchased along with tomato sauce or shredded cheese sold at the standard price. Technologies, such as digital signage and electronic shelf labels, make it easier to influence consumer demand and optimize brand engagement.

Item-level discounting, based on special offers, seasonal merchandise markdowns and the increasing use of demand pricing, represents more than 30 percent of all store items. The concept of "everyday low prices" is proliferating, with the major European supermarket chains even publishing low-price comparisons with their largest competitors. Research has proven that where a discounted item could be cross-sold to a full margin "affinity" item, the resulting financial impact on the basket showed an uplift of five percent in revenue and eight percent in incremental gross margin, while still reinforcing "everyday low price" perceptions with the shoppers.[1]

SOLUTION OVERVIEW

DSM from Toshiba[5] enables retailers to use same-store analytics to focus on operations and processes where margin is at risk or can be improved to help drive profit. The solution enables grocers to:

- Reduce loss from perishables by 25 percent or more and increase operating profit by as much as four percent of total store sales; invariably a greater than 20 percent lift in actual operating profit

- Cut inventory-carry costs

- Maximize promotion performance while minimizing post-promotion markdowns

- Reverse margin erosion from increased discounting, promotions and special offers

At its core, DSM provides real-time demand and supply information. Every time an item is sold, the demand curve is updated for that store for that day, taking into account things like weather and everything else that is actually impacting what's happening in the store. The tool also updates the inventory based on sales, deliveries and disposed waste. By comparing the sales and demand curves, it's possible to see when the store will likely need to replenish an item from the warehouse, supplier or in-store department.

Connected retail systems

The solution brings together many retail systems (Figure 1) in order to generate an accurate, single view of inventory and to be able to communicate pricing and promotional information to consumers.

- **In-store server** – runs DSM to manage the content shown on digital signs and electronic shelf labels.

- **Point-of-sale (POS) terminal** – sends sales transaction data to the in-store server, allowing real-time, centralized tracking of inventory.

- **Electronic shelf label** – displays product information and prices, which can be modified in real time.

- **Digital signage** – displays prices, promotional messages and brand advertising.

- **Handheld device** – enables employees to communicate with the DSM application, as in receiving alerts about inventory issues, sending restocking requests to the warehouse and suppliers, and logging inventory movements, like incoming deliveries, shelf replenishment and disposed product.

- **Smart phone** – supports various use models, including self-checkout and communicating marketing messages.

- **Manager's console** – displays DSM inventory tracking information and receives alerts on actions needed to correct supply/demand imbalances.

- **RFID tag** – allows product to be tracked throughout the supply chain, from the warehouse to the shelf.[6]
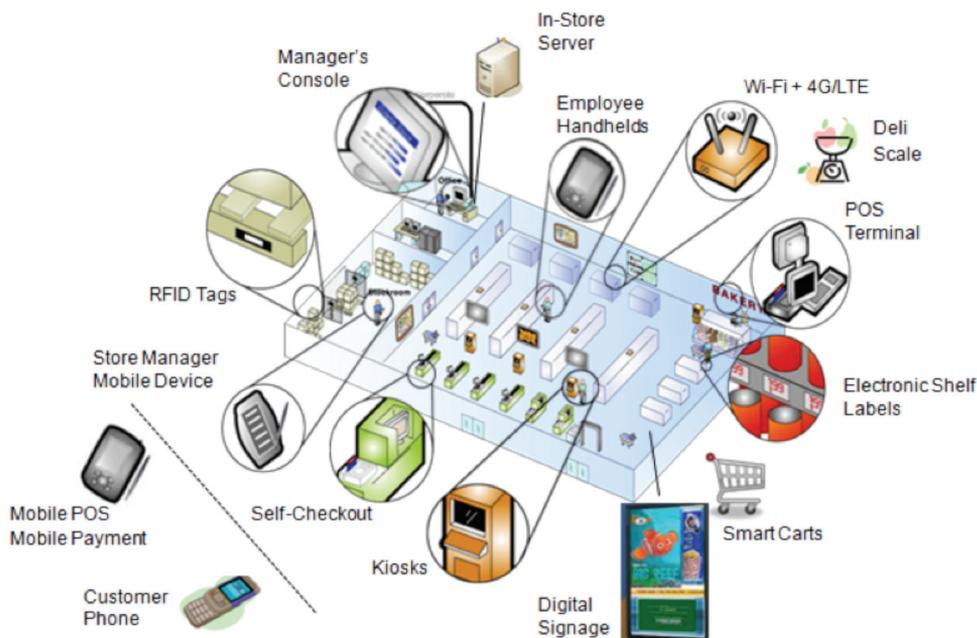
Source: "Retailers Use SAP Point-of-Sale to Realize the Future Store", SAP

Figure 1. Example of an In-Store Network

▪ **Deli scale** – uses a camera to recognize, weigh and issue a bar-coded ticket for a produce item that can be used to facilitate checkout.[6]

In-store prepared items

Today, many supermarkets and grocers actually produce quite a large amount of food in their stores: delicatessen area, meat counter, bakery and so forth. This typically makes up about 10 percent of the number of perishable items that are sold; and although it may not seem like a large amount, the associated lost margin and wastage in this area are significantly higher than 10 percent in many cases.

There are several reasons for this, but a main one is the volume and timing of in-store production is dictated by a schedule that is usually generated the night before using a simple forecast methodology. As seen in the earlier UK grocery store weather anecdote, the store is an unpredictable place, so having a fixed schedule determine the level of in-store production isn't the most effective way of doing things. Producing to demand, rather than to a schedule, can significantly reduce waste and increase the ability to deal with spikes in demand.

Risk analysis

DSM assesses the inventory risk by product category and calculates the impact, in both monetary and unit terms, of out of stock and overstocks, as illustrated in Figure 2. The risk comprises:

▪ Out of stock: the loss exposure resulting from a demand-supply imbalance.

▪ Overstocks: the retail price multiplied by the inventory in excess of demand.
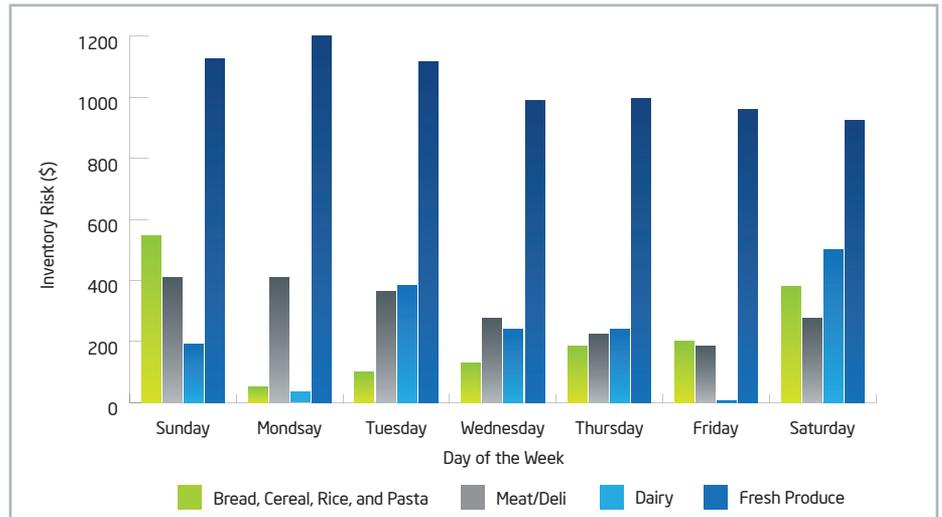

Figure 2. Trend Analysis of Inventory Risk

Fundamental capabilities

Dynamic store merchandising is a feature-rich solution that:

▪ Provides accurate, real-time inventory counts data on all items carried by a store.

▪ Recalculates item demand curves at the point of every item sale and measures demand against the available supply in the store.

▪ Detects and immediately corrects emerging imbalances between demand and available store supply by either:

– applying the smallest markdown needed to accelerate sell-through to lift demand where over-stocked.

– alerting store associates of a timeline to out of stock where the demand is greater than supply.

▪ Analyzes daily trends in real-time by store, enabling dynamic actions to be executed against the day's sales demand.

▪ Applies price optimization functionality to ensure price points align with profit, sales and sell-through rates through powerful price optimization functionality that progressively "learns" the minimum markdown required to accelerate sell-through to rebalance demand with supply; by time within day, within week.

▪ Delivers in-store alerts to prevent out of stock on the shelf and enable in-store production based on daily demand.

▪ Manages the media required to communicate with and influence customers in the store before they reach the checkout counter.

Objective #1: Reduce loss from perishables by 25 percent or more and increase profit as much as four percent

In the UK alone, retail and distribution produce about 0.4 million tons of food waste every year, representing $600 million (EUR450 million).[7]

For a grocer, perishables, including fresh produce, dairy, deli, butchery and breads, typically contribute 50 to 65 percent of total sales. There's an average loss of six percent stemming from perishable sales and perishable waste. Losses come from discounting when an item is very close to its sell-by date, and the retailer puts a markdown sticker on it at the last minute to avoid having to throw it away. These discounts are frequently 50 to 65 percent, which makes up the majority of the lost margin. This is based on goods the retailer bought and is now selling at around a 65 percent lower price than was intended. Losses also occur when the worst-case scenario happens – an item can't be sold, and it must be disposed of, often incurring an additional processing cost.

Dynamic pricing

How can DSM help curtail margin loss? It triggers dynamic price adjustments in response to any detected inventory over-stock risk, thereby allowing retailers to clear excess supply with the minimum margin loss, and maximize the gross margin return on inventory investment (GMROII) across all items in store. In the case of perishables, the early detection of an over-supply enables shrink to be minimized and more excess supply to be cleared with the minimum margin loss off retail price. The current perishables loss prevention depends upon a visual detection based on sell-by date, or condition of product, as in the case of loose fresh produce. This visual detection is labor intensive and often results in drastic, last-ditch price reductions, or risk generating no return.

For example, if the sell through demand for bananas is falling behind supply, the inevitable progression to shrink will occur. DSM detects the inventory risk imbalance as soon as the imbalance trend is detected and will adjust the price point to accelerate the sell-through rate so the demand quickly rebalances with supply.

Once the balance is restored, DSM enables the retailer to reset the price point back to full retail. DSM includes mechanisms that ensure the customer buying at the markdown price receives that price through checkout. As explained earlier, DSM progressively learns the minimum markdown required to accelerate the sell-through according to time/day. In this fresh produce example, the fact that this category is subject to continuous replenishment enables DSM to automatically ensure the elimination of most of the current shrink losses.

Table 1 provides scenarios for perishable losses running at six and three percent. The key figures are the large turnover (sales) figures, which are representative of large European or U.S. retailers, and the associated losses on perishables, running near $288 million a year and coming straight off the bottom line. If just 25 percent of this can be recovered with DSM, the savings could be over $72 million or a 4.2 percent increase in operating profit.

To put this number in perspective, it would take a striking 21 percent uplift in total store sales to achieve the same financial improvement.

How is it possible to reduce losses on perishables by 25 percent or more, even upwards of 85 percent? DSM applies real-time monitoring of sell-through rates for individual perishable items and automatically calculates optimum "demand cover inventory" as of the latest unit sold at the POS terminal. This demand requirement is measured against supply (actual inventory) to assess the inventory "risk" (supply greater than demand) for a given store, by day and time. When the risk is determined to be excessive – to the point of delivering losses – DSM Optimized Inventory Management (OIM) alerts the supply chain to stop supply until advised otherwise, followed by initiating dynamic price adjustments intended to eliminate any overstock and rebalance supply to demand. Just-in-time price cuts, promotions or other actions on perishables can help cut waste losses by more than 25 percent.[1]

	Perishable loss running at 6%	Perishable loss running at 3%
Turnover	$9,615,300,000	
Operating profit	$344,400,000	
Perishable turnover	$4,803,200,000	
Perishable loss	@ 6% = $288,192,000	@ 3% = $144,096,000
DSM recovery @ 25%	$72,048,000	$36,024,000
Operating profit rises to:	4.3%	4.0%
Equivalent sales uplift needed to deliver the same operating profit impact	21.0%	10.5%

Table 1. Increasing Operating Profits by Reducing Perishable Loss

Objective #2: Cut inventory-carry costs

The objective of supply chain management is to eliminate "inventory risk" by controlling the actual item level balance between inventory demand and available store supply. The optimum scenario ensures overstocks are eliminated and inventory investment maximized to those items that directly contribute to store performance. This includes "halo" products, whose direct contribution may not meet the targets, but whose presence may be essential to the retention of key customer segments.

Helping retailers maintain just enough inventory in order to minimize carrying costs, DSM generates a real-time report that identifies the worst performing items with respect to inventory imbalance by assigning risk levels (numbers and value), as pictured in Figure 3.

DSM's optimized inventory management analyses are a critical tool for maintaining an optimal level of inventory and identifying potential problem areas.

- Inventory imbalance based on supply and demand: occurrences by day and inter-day.

- Excessive discounting applied by stock-keeping unit (SKU).

- Realized losses by SKU and by category.

- Poorest performing SKUs in terms of inventory risk losses.

Objective #3: Customer centric merchandising

Whether using advanced retail analytics or more simplistic basket analyses, the retail sector has determined there are between five and eight distinct customer segments with differing buying behaviors and contributions to store performance. These vary by store according to socio-economic factors related to the store catchment area – the maximum distance consumers are willing to travel to shop, taking into account transportation time and cost.
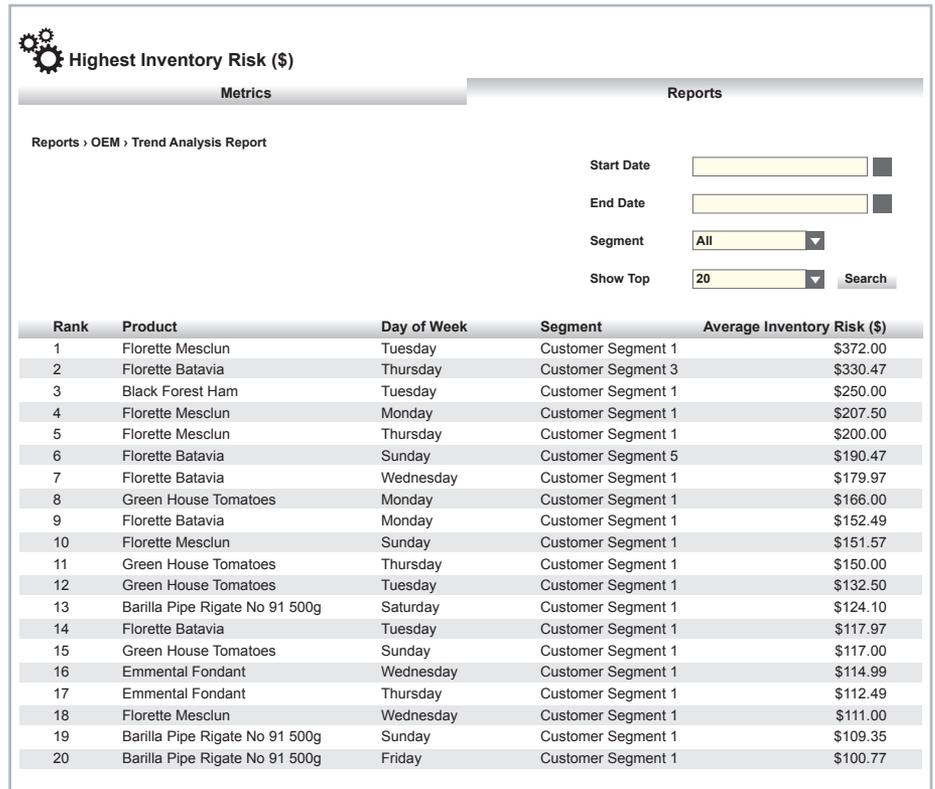
Highest Inventory Risk ($)

Metrics				Reports

Reports › OEM › Trend Analysis Report

Start Date

End Date

Segment   All

Show Top   20   Search

Rank	Product	Day of Week	Segment	Average Inventory Risk ($)
1	Florette Mesclun	Tuesday	Customer Segment 1	$372.00
2	Florette Batavia	Thursday	Customer Segment 3	$330.47
3	Black Forest Ham	Tuesday	Customer Segment 1	$250.00
4	Florette Mesclun	Monday	Customer Segment 1	$207.50
5	Florette Mesclun	Thursday	Customer Segment 1	$200.00
6	Florette Batavia	Sunday	Customer Segment 5	$190.47
7	Florette Batavia	Wednesday	Customer Segment 1	$179.97
8	Green House Tomatoes	Monday	Customer Segment 1	$166.00
9	Florette Batavia	Monday	Customer Segment 1	$152.49
10	Florette Mesclun	Sunday	Customer Segment 1	$151.57
11	Green House Tomatoes	Thursday	Customer Segment 1	$150.00
12	Green House Tomatoes	Tuesday	Customer Segment 1	$132.50
13	Barilla Pipe Rigate No 91 500g	Saturday	Customer Segment 1	$124.10
14	Florette Batavia	Tuesday	Customer Segment 1	$117.97
15	Green House Tomatoes	Sunday	Customer Segment 1	$117.00
16	Emmental Fondant	Wednesday	Customer Segment 1	$114.99
17	Emmental Fondant	Thursday	Customer Segment 1	$112.49
18	Florette Mesclun	Wednesday	Customer Segment 1	$111.00
19	Barilla Pipe Rigate No 91 500g	Sunday	Customer Segment 1	$109.35
20	Barilla Pipe Rigate No 91 500g	Friday	Customer Segment 1	$100.77

Figure 3. Trend Analysis of Inventory Risk

DSM uses customer segmentation analyses, called DayPart, to align time-of-day promotions in accordance with each store's time-of-day customer segment profile. Effective DayPart communications can lift average basket revenue by five percent and improve promotional sales uplift by five percent. In the example store with $1 billion turnover and lost margins and waste of $30 million cited in the inventory management section, the DayPart impact would increase average annual store profit by more than $100,000.[1]

Effective communication with shoppers

Promotions are only effective when customers know about them, and electronic shelf labels and digital signage are two communication mechanisms for getting the word out about price reductions. Electronic shelf labels often contain an LCD module capable of displaying price, product information and high-definition video in various formats. With this capability, retailers and consumer packaged food (CPG) manufacturers can capture the attention of shoppers by playing attention-grabbing advertisements and animations.

With a much larger screen, digital signs provide great flexibility by displaying diverse content in different zones at once, perhaps showing a price, a promotion and a video advertisement from a CPG manufacturer. The different media content is managed and scheduled by DSM in a manner that's coordinated with real-time promotions geared to reducing surplus inventory.

Illustrating this opportunity, a supermarket chain in the Netherlands deployed digital signs to inform customers about price reductions on fruits and vegetables.[3] The retailer compares predicted and actual sales to expected deliveries and current stock levels. When there's an inventory imbalance, prices are marked down accordingly and communicated over Wi-Fi to 92 full-color, 15-inch displays, as shown in Figure 4. In addition, shoppers using mobile self-scanning devices receive updated price information and cross-selling offers.[2]

Targeted advertisements

Retailers can also employ Anonymous Viewer Analytics (AVA) to play targeted messages and advertising to those standing in front of electronic shelf labels and digital signage. With audience detection technology and an optical sensor mounted above the store shelf, it's possible to collect customer demographic information and dwell times – all anonymously and while respecting viewer privacy. This information can be used to target ads, as in showing content that is of interest to people standing near the digital sign, according to their gender and age bracket. Retailers and CPG manufacturers can get dwell and purchase information, which are indications of the effectiveness of the ad playing at the time. These capabilities, and more, are supported by Intel® Audience Impression Metrics Suite (Intel® AIM Suite) running on Intel® processors.

Smart phone messages

Another way to increase demand for an overstocked item is to send promotions to consumers via their smart phones. This provides an opportunity for upselling and cross-selling, which can be particularly effective when discounts, coupons and promotions are tied to customer preferences via loyalty cards.

Objective #4: Maximize promotion performance while minimizing post-promotion markdowns

DSM will manage a promotion based on the target promotion plan. If, say, a promotion is to run for a seven day timeline, DSM will monitor the real-time sell-through in the normal inventory risk detection described earlier. In the case of promotions, however, DSM applies a real-time demand signaling of any variance to the promotion plan, whether it is less than, or exceeding, available supply. In this way, the management may elect to apply a "manager's" price adjustment to accelerate sales should the demand fall short of supply, or accelerate resupply where the demand exceeds the available stock.

The objectives are to manage the total promotion sell-through to plan by the end of the promotion; eliminate the post-promotion markdowns; and ensure no customer responding to a promotion is ever confronted with an out-of-stock situation. When there is an inventory over-stock post promotion, DSM knows where it is (which store) and what post-promotion markdown percentage is required to move the excess inventory with minimum margin loss. This process applies to all products under promotion, not just perishables.

Cross selling

Cross-selling promotions that match up discounted items and full-priced items enable retailers to offset lower revenue from marked-down products. DSM helps retailers increase the effectiveness of promotions by providing the buying patterns of different customer segments by time of day, as shown in Figure 5. For example, Group 2 comprises women, age 35-50, who typically come to the store on Tuesday and Thursday afternoons

Figure 4. Digital Signs Communicate Price Reductions for Fruits and Vegetables

to buy items needed to prepare an evening meal. DSM reveals that Group 2 shoppers prepare pasta dishes quite regularly, buying noodles, tomato sauce and shredded cheese. This is an example of an affinity relationship that DSM identifies based on in-store performance, demographics/customer segments and time of sale.

Putting this data to work, a retailer can create a promotion that is available to shoppers who buy marked-down shredded cheese, which is nearing its sell-by date, as well as noodles and tomato sauce at full price (Figure 6). This promotion runs Tuesday and Thursday afternoons, corresponding to the greatest expected demand as indicated by the customer segmentation data. DSM can also verify there are enough noodles and tomato sauce in inventory to support the expected upsurge in demand.

Dynamic store merchandising helps address several challenges facing the retail industry by:

- **Reducing losses on perishables by constantly looking at in-store inventory, demand level and sell-through rates**
  - DSM provides real-time inventory and demand data on all the items in the store, not just perishables. It compares the sales trends against the inventory situation for every single item, allowing retailers to act in real time by initiating pricing actions and promotions that respond to what's actually happening in that store during the day.

- **Responding to unpredictable demand swings**
  - DSM forecasts demand based on a large number of factors, including historical sales data, and the impact of weather conditions and holidays. This capability enables retailers to be better prepared for large upward swings in demand by getting alerts to replenish shelves more frequently and revise the schedule for in-store produced items.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1800							
1700							
1600							
1500							
1400							
1300							
1200							
1100							
1000							
0900							

Total Data	Group1	Group2	Group3	Group4	Group5	Group6
B,C,D,E	B,C,F	B,C,E,D	C,F,H	H,F,B	E,D,C,B	B,C,D,E

Product Affinity Table

Figure 5. Customer segmentation based on time-of-day buying patterns

- **Minimizing out of stocks**
  - DSM monitors item level sell-through rates in order to predict when an item will go out of stock, triggering a proactive replenishment alert to store management, thereby avoiding empty shelves. In those cases where the item truly isn't available in the store, DSM uses the in-store communications capabilities to advise the customers of the out-of-stock situation and recommend an alternative item.

- **Optimizing in-store promotions by cross-selling full-priced product to compensate for discounting**
  - With Dynamic Store Merchandising, whenever the base item is on discount, DSM interfaces with retail analytics to make use of all item affinity relationships to identify suitable cross-sell items.

Promotion: 20% off shredded cheese, if you buy A & B at full price

Figure 6. Promotion featuring a perishable and two non-perishables

TECHNOLOGY

THE DSM solution runs on an in-store server and connects to a wide range of retail systems, including:

Powerful Toshiba point-of sale and remote management

The SurePOS 700 Series is Toshiba's most powerful point-of-sale system, delivering maximum performance and adaptability. Installed in retail operations throughout the world, the Toshiba SurePOS 700, powered by an Intel® processor, complements the DSM solution sending sales transaction data from the POS to the in-store server to enable real-time, centralized tracking of inventory. The energy efficient SurePOS 700 is retail-hardened for the most rigorous retail environments and virtually tool free to lower service costs. Toshiba Remote Management Agent allows retailers to view and control all store devices and systems from a single console—in the store or at the enterprise. Able to access POS systems, peripherals, kiosks, servers, storage and network devices, this management tool provides greater operational efficiency so retailers can focus on delivering a differentiated shopping experience.

Expert installation and integration

Toshiba Worldwide Services provides the retail experience and expertise to help retailers realize a quick time to value with customizing and integrating store-level solutions. They can support a store's own IT staff or provide a broad range of expert guidance, consulting and services. With experience installing solutions in more than 30,000 stores worldwide, the Toshiba team works in all retail markets and segments, with any size organization.

EMPOWERING A NEW WORLD OF RETAIL INNOVATION

The retail industry is in the midst of a dramatic information revolution that is laying the groundwork for new consumer experiences, enhanced productivity, reduced inventory distortion and brand optimization. Intel is addressing this transformation with the Intel® Intelligent Systems Framework, a set of interoperable solutions designed to facilitate connecting, managing and securing devices in a consistent and scalable manner.

What can emerging intelligent retail systems do? Imagine an intelligent store where incoming weather data indicates a severe storm approaching. The store's digital signs and kiosks immediately begin promoting items commonly purchased during storms, like umbrellas, and prices are adjusted to reflect the predicted increase in demand. Price updates are transmitted to electronic shelf labels and the back office. Data from checkout confirms umbrella sales are increasing, causing immediate alerts to the stockroom. The store's warehouses and key suppliers send shipments to replenish the shelves.

The Intel Intelligent Systems Framework helps simplify the deployment of intelligent systems and enables retail OEMs to shift their investments from achieving interoperability to unlocking the value of data. The framework features fundamental capabilities, delivered by components that address connectivity, manageability and security, including software and middleware from Wind River* and McAfee*.

For more information, visit **www.intel.com/content/ www/us/en/embedded/ intelligent-systems.html**.
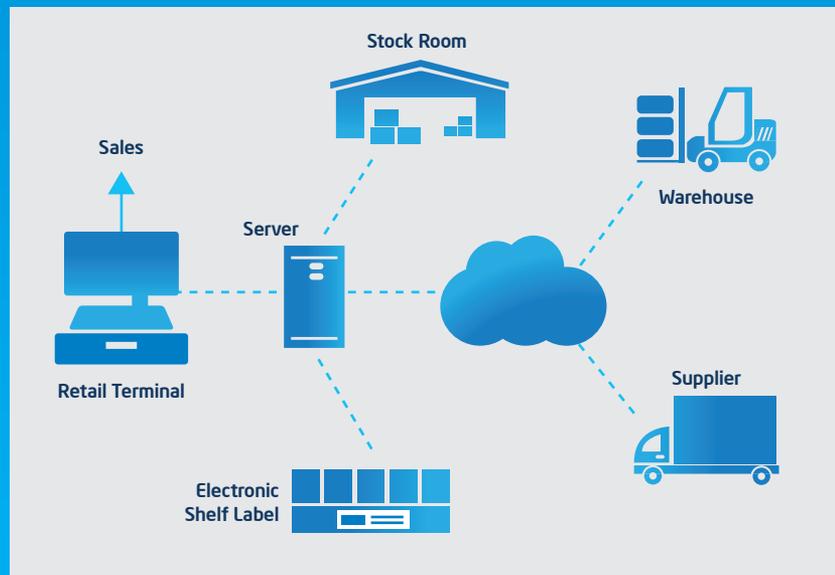
Comprehensive data protection

Business-critical or customer-confidential information can fall into the wrong hands if the data on retail systems is not properly safeguarded. McAfee, a subsidiary of Intel, offers several products that provide multiple layers of protection against data loss and unauthorized access.

- McAfee* Endpoint Encryption is the cornerstone of data protection since it encrypts data throughout the retail environment, including retail systems, network files and folders, removable media, and USB portable storage devices.

- McAfee* Device Control protects critical data and systems by controlling the use of removable media, as in preventing an unauthorized individual from downloading data from a POS terminal onto a removable storage device, such as a USB drive or DVD.

Digital signage

Digital signs are typically connected to media players that process and send video streams for display. Media players based on Intel® processors have the necessary computing performance to additionally run Intel® AIM Suite, which is Anonymous Viewer Analytics (AVA) software that can identify the demographics of people standing in front of the digital sign. The software adds powerful data collection and audience measurement tools to the retail environment. By providing valuable metrics that were previously unavailable, retailers and CPG manufacturers can better understand audience characteristics such as actual impressions, length of impressions, potential audience size, and gender and age range demographics.

For retailers looking for assistance in deploying the capabilities discussed in this solution blueprint, the Intel® Retail Solutions Partner Network comprises industry-leading vendors with expertise in many key areas, including hardware, software, content creation, deployment and networking.

SUMMARY

The store is an unpredictable place, where there are many variables that can lead to supply and demand imbalances. By constantly looking at in-store inventory, demand level and sell through rates, Toshiba's DSM enables retailers to truly optimize the last 100 yards of the supply chain.

DSM uses same-store analytics to focus on the operations and processes where margin is at risk or could be improved, thus optimizing the return-on-inventory investment across all product categories, most importantly perishables. The solution brings together many retail systems: in-store servers, POS terminals, digital signage, electronic shelf labels, handhelds and so on, all of which benefit from the power-efficient performance of Intel processors. Intel's scalable roadmap provides solutions for the various devices found in the store and in the backend infrastructure.

RESOURCES

Intel® Retail Solutions Partner Network

Redefining what's possible, leading solution providers have come together to address the specific needs of retailers, whether it's consulting, content creation and management, retail systems, hardware customization, deployment support, network management or cloud-based services. The Intel® Retail Solutions Partner Network provides one-stop shopping for cutting-edge technologies that deliver new consumer experiences, enhanced productivity, reduced inventory distortion, brand optimization and more. To learn more, visit **intel.com/retailsolutions**.

For more information about retail solutions from Toshiba, please visit **www.toshibagcs.com**.

[1] "Just right. Just in time.", IBM,
   http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=PM&subtype=SP&htmlfid=RTS03034USEN&attachment=RTS03034USEN.PDF&appname=STG_RT_USEN_SB

[2] Source: Toshiba customer

[3] "The Challenge of Food Waste," Planet Retail, **http://www-03.ibm.com/systems/data/flash/retail/resources/foodwaste_planetretail.pdf**

[4] IHL Group Report: $818 Billion Lost Annually in Global Retail "Inventory Distortion"; 2012

[5] Dynamic Store Merchandising is provided by Toshiba Global Commerce Solutions* under licensing from Impulselogic* Limited

[6] **http://supermarketnews.com/archive/metro-ag-debuts-high-tech-future-store**

[7] Source: **http://england.lovefoodhatewaste.com/content/how-much-food-wasted-total-across-uk**