



SOLUTION BLUEPRINT
Intelligent Shelf
Label Solution
Retail Services

INTELLIGENCE IN. AMAZING OUT.

Intelligent Shelf Label Solution Creates Brand Awareness

EXECUTIVE SUMMARY

Statistics show that on average, consumers are hesitant to try new dairy products, making it challenging for producers to introduce new offerings successfully. Helping turn this around, the intelligent shelf solution provides eye-catching digital graphic displays right next to products, which increases awareness of new products and encourages consumers to try them. The solution can inform shoppers about special promotions, as 70 percent of purchase decisions are made at the point of sale (POS) itself,¹ and in doing so, move products that are nearing their sell-by date, thus reducing the amount of product lost to waste. Anonymous Viewer Analytics technology employed by Intel® Audience Impression Metrics Suite (Intel® AIM Suite) can be used to gather anonymous consumer data, such as age and gender at the point of sale, which can then be used to analyze buying patterns and optimize promotion strategies and inventory.

METRO GROUP



**Intelligent
Systems**

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KEY BUSINESS OBJECTIVES

Boosting sales, decreasing operating costs for retailers and reducing new product introduction failures for consumer packaged goods manufacturers with the latest technologies.

WHO WILL BENEFIT FROM THIS SOLUTION

The intelligent shelf solution integrates various advanced technologies, which benefit retailers, brands and customers.

Retailers can boost profitability by raising consumer awareness of new products, running special offers on nearly-expired products, decreasing the effort and cost to manage price tag changes, and taking steps to reduce inventory distortion.

Brands can increase success rates for new dairy product innovations and raise brand awareness of new products at the point of sale.

Customers benefit from an improved experience, which is more engaging, intuitive, informative and personalized.

MEETING NEW MARKET DEMAND

Back in 2002, the METRO GROUP Future Store Initiative was formed to develop innovative technologies and concepts to make shopping easier, faster and more convenient. The initiative includes METRO GROUP, the fourth largest retailer in the world,² and more than 75 other companies from the consumer goods, IT and service industries, all committed to promoting modernization throughout the retail industry.

An example of the Initiative's work was exploring new ways to promote dairy products, a category that often determines how frequently consumers shop at food stores. Their main objectives were to find ways to improve the success rate of new product launches and to reduce the amount of expired goods. With the digital age transforming in-store retailing, a promising approach is to use electronic shelf labels to address these issues, as well as reduce labor costs.

THE BUSINESS CHALLENGE

The retail food industry faces several critical business issues related to increasing sales and decreasing operating costs:

- **Engaging and enticing shoppers:** In a fiercely competitive retail industry, creating a differentiated shopping experience is critical for building customer loyalty and retention, which are aspects of brand optimization.

The digital age has created a multitude of ways to connect with consumers. Retailers who take advantage of new technologies to create a more memorable and valuable experience will have a better chance at motivating consumers to come back frequently and shop longer.

- **Increasing new product success rate:** The track record for new product introductions is dismal, with somewhere between 80 and 95 percent of new product introductions failing, according to Accupoll research.³

One of the hardest things for a brand to do is introduce a new product and get consumers to notice. Once consumers trust a product or brand, convincing them to change their preference and switch over to something new is no easy task.

- **Moving nearly-expired product:** The losses from expired food products can be high for supermarkets, so selling them before their expiration date helps the bottom line.

Inventory management of perishables is a primary concern for food and drug stores. Besides dairy and produce, the clock is ticking on many other products with expiration dates, like healthcare products. Once food hits its sell-by date, retailers can either sell it to salvage stores, donate it to food banks or toss it out – all of which results in a loss.

Perishable merchandise illustrates 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, which must be deeply discounted in order to sell or comprise wastage. According to the IHL Group, this combined annual cost is estimated at \$818 billion, increasing by \$50 billion each year.⁴

- **Reducing operating costs:** Large retailers expend significant effort to print, check and change price labels in order to keep store shelves and displays up to date.

The average number of items carried by U.S. supermarkets is an incredible 38,000,⁵ which makes maintaining accurate pricing very time consuming and costly. Weekly sales, last-minute

promotions and internal price audits further add to the workload. For instance, a leading grocery retailer said that about 40 percent of price labels are changed daily to reflect promotions.

SOLUTION OVERVIEW

METRO GROUP, together with partners Danone and Arla, aims to create a much higher level of brand awareness among consumers by revolutionizing the way product information is presented in store aisles. A refrigeration shelf example is shown in Figure 1, where colorful, multimedia content plays on digital signage displays and electronic shelf labels located at the endcaps. The shelf labels 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 as they look for products on store shelves.

METRO GROUP is also using electronic shelf labels installed in endcap displays to notify customers about special offers on items that are soon to expire. For example, if there is a large inventory of milk with the sell-by date approaching, the product can be placed on the endcap display where the reduced-price item is displayed by the intelligent shelf solution. Prices are first changed in the product database and then communicated to shelf labels and point of sales systems. Moreover, the inventory levels are monitored, such that the special offer is discontinued after enough milk has been sold.



Figure 1. Refrigerator Case with Digital Signage and Electronic Shelf Labels

Intelligent Shelf Label Solution Creates Brand Awareness

Electronic shelf labels

Small screens can be added to any retail shelf and controlled directly via any mobile devices using wireless technology (e.g., WiFi, Bluetooth). The screen can show product prices, play movies or display other information with intense color and brilliance. The screen comes in different sizes and configurations, and an actual METRO GROUP implementation is shown in Figure 2.

Intelligent performance

A content management system (CMS) running on an Intel® Core™ i7 processor manages the content displayed by the electronic shelf labels. The CMS dynamically delivers content updates from a central location, providing flexibility for the display of rich and engaging content as well as keeping prices up-to-date with commensurate reductions in operating costs.

Engaging shoppers with targeted advertising

In the future, METRO GROUP could add Intel AIM Suite, an audience detection

technology that processes images captured by optical sensors mounted around store shelves (Figure 3). The solution collects customer demographic information and dwell times – all anonymously and while respecting viewer privacy. This gender and age range information can be used to target advertisements, as in showing content that is of interest to the person standing in front. Moreover, retailers and product manufacturers get access to quantitative data that indicates the effectiveness of promotions such as impression counts, viewer demographics, dwell times and purchase information. This capability, as well as common metrics used by advertisers, such as proof of play and proof of impression shown in Figure 4, is supported by Intel AIM Suite running on Intel processors.

Future possibilities

The benefits from in-store digital signage and the intelligent shelf solution are maximized when they are integrated with other retail systems, such as back office,

inventory management software and POS systems, just to name a few. Here are a few examples:

- **Measure advertising effectiveness:** Retailers can run a dynamic promotion (e.g., new product introduction, price reduction) and gauge the level of interest by measuring the dwell time of consumers in the vicinity of the electronic shelf label. Additionally, conversion rates can be monitored by number of viewers with sales-out data.
- **1:1 marketing:** Many retailers would like more specific promotions targeting particular consumer groups or even individual consumers. Loyalty cards can be used to help since they provide access to consumer data and purchasing behavior. For example, a retailer can play a product ad for a particular target group using the intelligent shelf solution, and then correlate sales receipts with loyalty card data for that period to see whether there was an up-tick in product sales.



Figure 2. Intelligent Shelf Solution in METRO GROUP Stores

Electronic shelf labels help address several challenges facing the retail industry by:

Engaging customers to pay more attention to new products on the shelf

- Digital signs with video and animation can direct shoppers' attention toward marketing messages that could compel them to try something new.

Running special promotions on clearance or soon-to-expire products

- Retailers can use the intelligent shelf solution to raise awareness on products they want to move quickly, possibly by offering a lower price. This can be an effective way to clear out old inventory before a product transition, such as a packaging change or a new version.

Changing shelf prices electronically

- The intelligent shelf solution enables retailers to lower operating costs associated with regularly updating price tags throughout the store.

Engaging consumers with a unique multimedia experience

- Digital signage and electronic shelf labels can provide consumers valuable information at the point of purchase and help increase brand awareness.

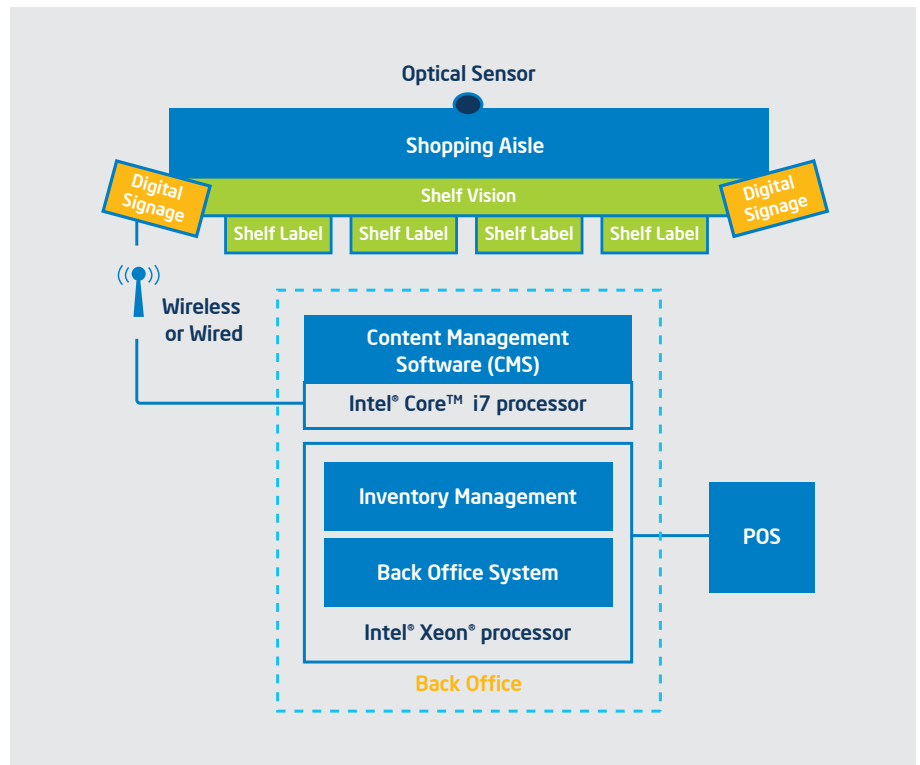


Figure 3. Digital Signage and Electronic Shelf Labels Are Connected to the Back Office Systems

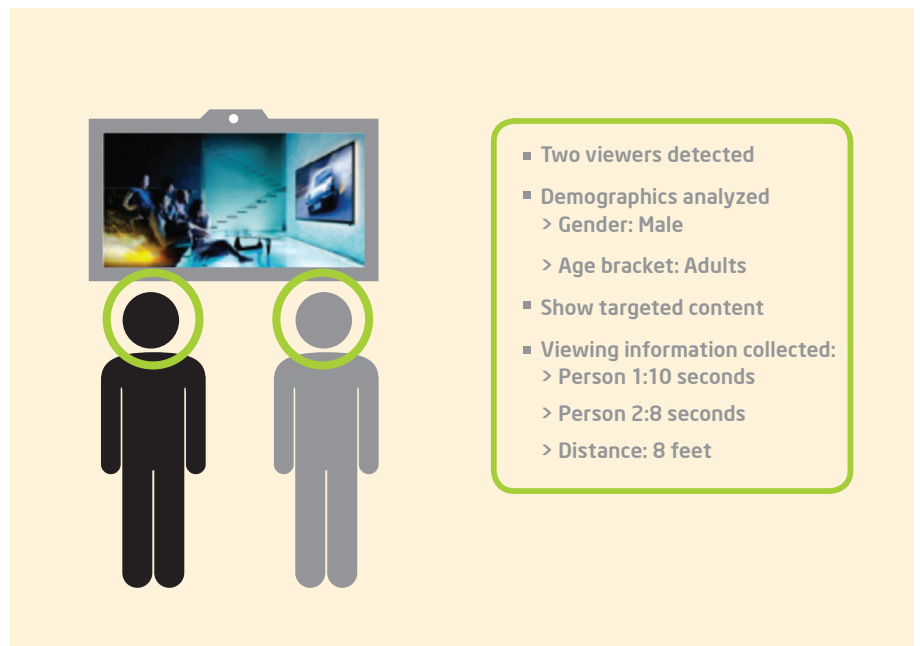


Figure 4. Example of Customer Demographic Information Gathered with Intel AIM Suite

TECHNOLOGY

Electronic Shelf Labels

The electronic shelf labels consist of display rails and LCD modules (2 or 3 LCDs each), which connect to the CMS server via USB or a wireless network.

Remote Management

Retail IT departments can minimize costly onsite repair visits using Intel® Active Management Technology (Intel® AMT)⁶ to remotely monitor, diagnose and repair devices in-store. These include digital signage solutions, like the intelligent shelf solution, but also other devices in the store such as POS systems, kiosk systems and vending machines. The technology enables technicians to power-cycle machines and repair software issues, along with other device management tasks. A keyboard-video-mouse (KVM) feature allows technicians to control the system as if they're sitting right in front of it, even when the operating system does not respond or the system is down. This secure link can also be used to send software updates and security patches between individual machines and headquarters.

Solution Components

The Intelligent Shelf Label Solution is powered by an Intel® Core™ i7-2710QE processor-based computer.

Software Components (media players)

- Content Management System (CMS): Online Software AG*
- Operating System: Microsoft Windows* 7
- Security: McAfee* Endpoint Encryption and McAfee* Device Control
- Application: Intel AIM Suite

EMPOWERING A NEW WORLD OF RETAIL INNOVATION

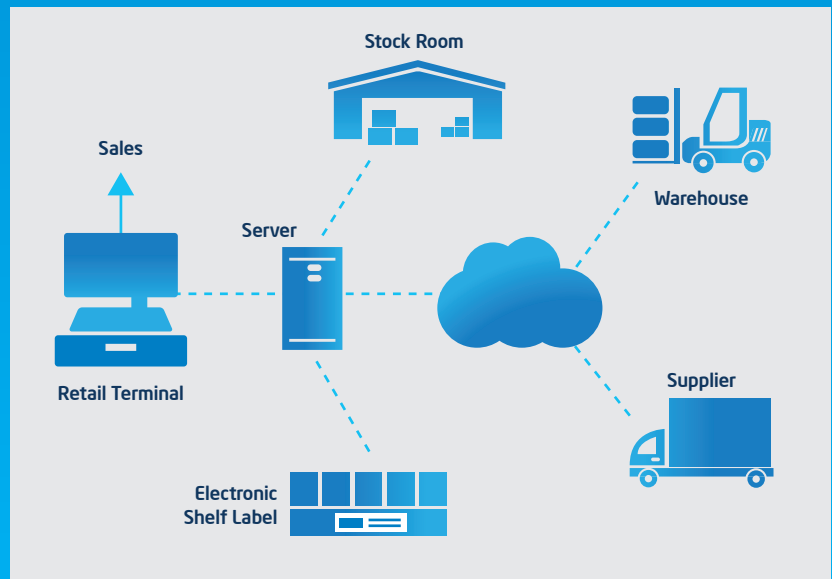
The retail industry is in the midst of a dramatic information revolution that is laying the groundwork for new consumer experiences, enhanced productivity, reduced inventory distortion and brand optimization. Intel is addressing this transformation with the Intel® Intelligent Systems Framework, a set 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.



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

SUMMARY

METRO GROUP, together with retail industry partners Danone and Arla, is using the intelligent shelf solution to accomplish several objectives, including enhancing new product promotions, moving particular product inventories faster with special offers and lowering operating costs. What's unique about the electronic shelf labels is the ability to play nearly any type of media right when consumers are shopping and when the information is most relevant and valuable. The information is managed and distributed by a content management system running on an Intel Core i7 processor-based platform, which has the computing power needed to simultaneously send out different content to thousands of LCD-based shelf labels. This platform also provides Intel Active Management Technology to remotely manage installations consistently in all stores and reduce operational costs. In the future, the processor could run Intel AIM Suite, an anonymous viewer analytics solution, to detect audience demographics and provide information on consumer dwell times for promotions.

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-base services. The Intel® Retail 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.

¹ Source: http://www.gfk.com/group/events_insights/studien/studienarchiv/index.en.html

² Source: Deloitte, "Switching Channels: Global Powers of Retailing 2012," January 2012, at p. G11.
http://www.deloitte.com/view/en_US/us/f9f6b21f1d464310VgnVCM1000001a56f00aRCRD.htm

³ Source: http://www.blog.oplaunch.com/product_launch/2007/01/doing_everythin.html

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

⁵ Source: FMI Research Resources, "Supermarket Facts - Industry Overview 2010," <http://www.fmi.org/research-resources/supermarket-facts>

⁶ Intel® Active Management Technology (Intel® AMT) requires the platform to have an Intel AMT-enabled chipset, network hardware and software, as well as connection with a power source and a corporate network connection. With regards to notebooks, Intel AMT may not be available or certain capabilities may be limited over a host OS-based VPN or when connecting wirelessly, on battery power, sleeping, hibernating or powered off. For more information, see http://www.intel.com/p/en_US/embedded/hsw/technology/amt

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