

Next-Generation Digital Signage

The Intelligent Shelf* from SB Creative Provides a Major Boost to Omni-Channel Strategies in the Retail Industry

SB Creative

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Business activities: Digital content,
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The trend among today's consumers is to frequent both bricks-and-mortar retail stores and the virtual world of e-commerce (EC) sites, social networking service, and blogs to find the product that best suits their needs and purchase it through the most convenient channel. This makes it essential that retailers adopt an omni-channel strategy that skillfully integrates these different elements. The first step is for retailers to combine the advantages of the physical and virtual worlds to provide a customer experience that is unlike anywhere else.

Digital signage that simply displays advertising to shoppers in a uni-directional way is inadequate for this purpose. To succeed in the future, retailers need signage that can attract the attention of customers and present them with tailored advertising. Accordingly, SB Creative Corporation, part of the SoftBank Group, has developed such a next-generation signage solution. Called Intelligent Shelf*, it is a new type of information station that provides digital signage on a store's product shelving.

Whereas conventional digital signage required room in the store for installing the units, Intelligent Shelf can be attached to existing shelving to provide signage without taking up excessive space.



Cosmetics shelving



Wine bottle shelving

Store Staff Can Update Signage Content from a Smartphone or Tablet

SB Creative has been developing digital signage for many years, having produced a series of leading-edge solutions that include interactive touch panel models, printer models (for coupon and other printing), and models that can capture images using a front facing camera on a signage. In designing Intelligent Shelf, SB Creative has drawn on this extensive experience and know-how. While Intelligent Shelf incorporates numerous displays, the primary one is the “intelligent label” used for individual products. In addition to displaying a tailored message, photograph, or video for each product, the intelligent labels can also attract the attention of shoppers by playing video or combining a number of intelligent panels to highlight a promotional message.

A problem with conventional digital signage is the amount of effort required to prepare and manage the display advertising. This has made it difficult to provide effective advertising on an ongoing basis without the input of dedicated staff with expertise in content production and management. Intelligent Shelf, in contrast, which incorporates a large number of displays, uses Intel® Retail Client Manager (Intel® RCM), an advanced digital content management system (CMS), to simplify the tasks of advertising production and management. It also includes functions that make it easy to update content using a smartphone, tablet, or other Internet connected device, allowing real-time content updating in-store, even by staff who are not comfortable using PCs.

Content distribution and management is performed via the Microsoft Azure* public cloud server.

To ensure that Intelligent Shelf has a fast communications response, the service in Japan is provided using a local data center. Similarly, when the service is rolled out to overseas locations in the future, the intention is to set up content distribution and management platforms at data centers as close as possible to the locations concerned.

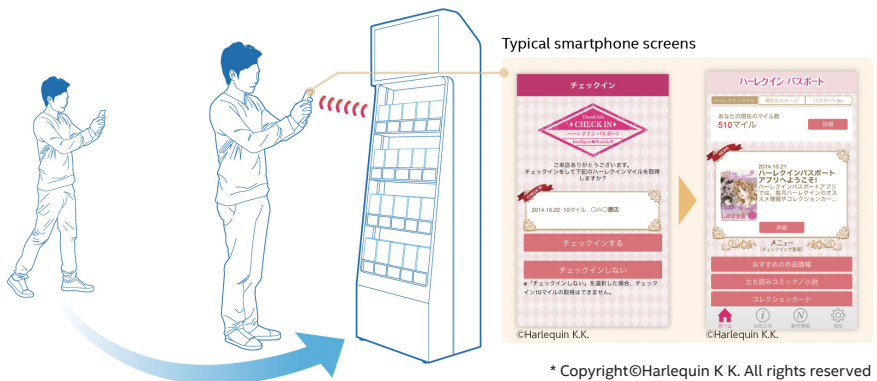
One-to-One Communications with Shoppers via Mobile Devices

Intelligent Shelf supports short-range wireless communications using the Bluetooth* Low Energy standard. This can be used to transmit a wide variety of information to the smartphones, tablets, and other devices most shoppers carry, providing an environment that allows one-to-one communication between them and Intelligent Shelf. For example, Intelligent Shelf can send a welcome message to shoppers who pass nearby, inviting them to approach. Once the shopper is standing in front of Intelligent Shelf, the possibilities include providing the latest information on the shelf's products or issuing coupons redeemable at that store. Intelligent Shelf also allows shoppers to make online purchases (via their mobile device) of products that are not displayed on the shelf or that are out of stock. This provides a shopping experience that combines being present in the physical store with online shopping via the mobile device.



Figure 1: Interoperation of Cloud, Store, and Consumer Device

While support is currently limited to iOS* devices that support the Bluetooth Low Energy standard working in tandem with iBeacon* from Apple, the plan is to extend this to Android*, Microsoft Windows*, and other mobile devices in the future. Recent years have seen an ongoing rise in the number of digital devices that can connect to the Internet (the Internet of Things, or IoT). The smartphones and tablets used for communications with Intelligent Shelf are mobile computing and communication devices that end users regularly carry with them, and are among the digital devices that underpin this era of the IoT. In other words, with its ability to interoperate with these devices, Intelligent Shelf can be thought of as one of the first solutions that makes use of this aspect of the IoT.



The intelligent bookshelf can send information directly to shoppers' smartphones. Shoppers who approach a bookshelf can check-in to receive the latest information and gain access to a variety of content such as samples to browse.

Figure 2: How the Intelligent Bookshelf is Used

Use Intel® Core™ vPro™ Processor Family to Enhance Processing Performance and Administration

The Intelligent Shelf controller unit uses Microsoft Windows Embedded running on a hardware platform based on the Intel® architecture. In particular, it successfully combines high added-value service delivery with excellent operational efficiency by having a new-generation Intel Core vPro processor at the heart of the system. A characteristic of multi-monitor environments like that of Intelligent Shelf is that the processing load increases roughly in proportion to the number of screens. It also requires multitasking for the concurrent execution of multiple tasks that process the information to display on each screen. The Intel Core vPro processor combines multi-core and multi-threading technology (Intel® Hyper-Threading Technology) to deliver smooth processing that can handle each of the many displays independently.

Similarly, the availability of Intel® Active Management Technology (Intel® AMT) on the Intel Core vPro

processor demonstrates its worth in the administration of Intelligent Shelf at a store. Whereas past signage units have required maintenance staff to visit the site, Intelligent Shelf's support for Intel AMT means that most maintenance and fault response work can be performed remotely from a control center. This maximizes system utilization and significantly improves service levels for signage functions.

Deployment of Intelligent Bookshelf Service for Bookshops

Being involved in both publishing and digital signage, SB Creative sees great potential for the use of Intelligent Shelf to boost the performance of both businesses. Accordingly, the first service it has launched using Intelligent Shelf is an intelligent bookshelf service for bookshops. An intelligent bookshelf augments a conventional bookshelf with large-screen displays and label-based digital signage to provide details of paper books on display, related information such as back numbers or other titles in a series, upcoming new releases, and store information.

The intelligent bookshelf can also be used for interactive communication with a shopper who is standing nearby, including the ability to provide them with sample e-book files or the latest news of upcoming new releases that they can view on their mobile device. The system can also encourage people to return to the store by issuing customers who check in to the intelligent bookshelf's online service with award miles or check-in miles that they can redeem at the store. To maximize the amount of book information it can provide in the limited space available on a bookshelf, SB Creative aims to provide services that not only bring together e-books and conventional paper books, but are also easy for visitors to the bookstore to use, letting them enjoy books to their heart's content. In the future, SB Creative plans to deploy Intelligent Shelf not just at bookshops but also at supermarkets, convenience stores, and many other types of retail outlets.

Latest Intel Technology Underpinning Intelligent Shelf

New-generation Intel Core vPro Processor Family

While Intel® processors, the company's flagship products, are recognized for their high performance in PCs, tablets, servers, and other devices, Intel also supplies an extensive range of embedded system processor models to suit the diverse needs of such systems. To ensure the superior computational performance multi-screen digital signage demands, SB Creative chose the new generation of Intel Core vPro processors to serve as the heart of its Intelligent Shelf solution. Intel Core vPro processors are designed to deliver higher processing performance with lower power consumption by combining the latest processor manufacturing technology with excellent circuit designs.

Intel Core vPro processors not only provide the signage units with excellent processing performance, they also incorporate Intel AMT to support sophisticated management of the units. Intel AMT is an advanced administration technology that provides full operation of the signage units via a network, allowing them to be operated as if they were physically present. If an embedded system supports Intel AMT, most maintenance and fault response work can be performed remotely from

a control center. This helps reduce administration costs and improve service.

Intel Retail Client Manager (Intel RCM)

Intel RCM is a digital content management system (CMS) that provides comprehensive support for the administration of digital signage units, including the production, management, and distribution of advertising material. Intel RCM can be used to produce and distribute advertising with strong visual appeal, combining content of many different types such as HD video, photographs, audio, Web content, Adobe Flash*, and TV broadcasts (terrestrial, satellite, and cable). Typically, the management of digital signage infrastructure and advertising content has imposed a heavy workload. When using Intel RCM, however, advertising material can be produced easily using intuitive mouse-based operation, with content intended for a large number of different screens able to be managed centrally from a single console. This eliminates the need to hire specialized technical staff.

Intel RCM uses a digital signage network that utilizes Intel® Audience Impression Metric Suite (Intel® AIM Suite) technology

to obtain anonymous information on people who view advertising, including the number of viewers and their gender, age bracket, and time spent. Sophisticated analysis of this audience data can be used for such tasks as assessing the effectiveness of promotional campaigns. In this way, use of Intel RCM can extend beyond the distribution of advertising through digital signage units to also encompass advertising campaigns that are integrated with such consumer-facing retail systems as ATMs, POS terminals, kiosks, and vending machines.

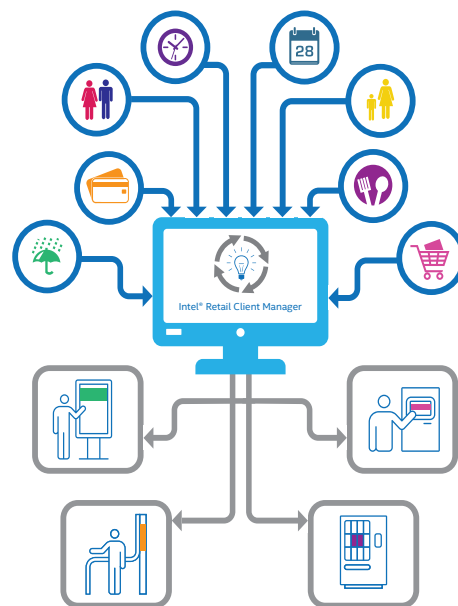
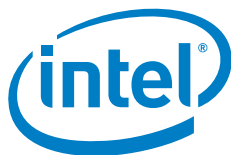


Figure 3: Intel Retail Client Manager

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