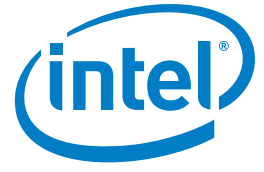


SOLUTION BRIEF

Intel® Atom™ Processor
Intel® Core™ i5 Processor
Smart Vending System



Dispensing Higher Profits Through Smart Technology

New machines do more than sell snacks



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– Chau Shen,
Manager, Technical Project Management
Promate Technology Inc.

Solution Summary

Vending systems are going high tech, with built-in digital signage, interactive touch-screen kiosks, remote management capabilities, real-time inventory monitoring and ordering, and even cashless payment mechanisms. These customizable and engaging machines proactively market their contents to passers-by, while delivering actionable business intelligence to their operators in real time.

Unlike the traditional, low-tech drink and snack machines that reside in break rooms, corridors and warehouses, these smart systems actively promote and sell a wide variety products to would-be customers. The Hubbo* vending system developed by Promate Technology Inc.* has been used to sell food, drinks, keepsakes/souvenirs, makeup and other beauty products. Even fresh food is an option with such a smart system because the inventory can be closely monitored and tracked remotely to ensure safety to consumers.

The Hubbo system enables vending operators, advertisers and product distributors to experiment with innovative marketing and vending technologies with little capital risk. One such concept is the “tryvertising” (try-advertising) solution that lets marketers use the machine to distribute samples of new products or promotional items and determine customer interest. The integrated digital signage display engages passers-by while the interactive kiosk gathers contact information and user feedback.

This solution study describes the innovative Hubbo vending system and the Intel technology that makes it smart.

Traditional vending machines have their limits

The attraction of vending machines is their ability to provide a low-overhead sales outlet in places where it may not be cost-effective to operate a traditional retail store. By design, traditional vending machines are decidedly low-tech and low-cost operations. Marketing is minimal, using only the machine itself to attract would-be customers. The machines are deployed where traffic and demand are assumed to be present, and then operators hope for the best.

But these machines can be quite costly to operate. These unsecured systems are often unmonitored and subject to vandalism and theft. They only accept bills and coins for payment, which limits the products they can sell to low-price items. And someone must look after them frequently – both for operating maintenance and inventory stocking – by visiting the machine in person.

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The on-site visits add greatly to the operating cost. In addition to routine re-stocking, unscheduled visits must be made to repair malfunctioning payment and dispensing mechanisms, address vandalism, and so forth. What’s more, there is no way for an operator to know if a sudden increase in traffic results in a machine running out of inventory well before the normal restocking time, leading to lost sales opportunities. All of these issues drive up TCO and reduce the potential profits of any vending business.

A smarter vending business model

In contrast, new smart vending systems face fewer of these limitations. In fact, other than the fact that they are stand-alone dispensing systems, they bear little

resemblance to their predecessors. Smart vending machines overcome the limitations of traditional vending solutions with:

- **Interactive software and full motion graphics** – To engage customers in new ways, multi-media displays and eye-catching ads draw the attention of passers-by. When prompted by the customer, information that may not be visible on the front label of a product can be displayed on the nearby screen. And depending on the item purchased, the machine can be programmed to suggest and direct the customer to related companion products.
- **Integrated intelligence and remote manageability** – Security, inventory management and maintenance are no longer an issue with the ability to monitor and diagnose system operations from a remote location. For example, cashless payment can be used and transactions processed in real time. The machine’s inventory can be monitored remotely and restocking can be dynamically scheduled. New advertisements and marketing campaigns can be deployed remotely, reducing labor costs and time to deployment. Machine malfunctions can be immediately reported to maintenance staff to reduce downtime and improve service to customers.

The Hubbo Vending System

“The concept of Hubbo is to break the misconception that only drinks and snacks can be sold from a vending machine,” said Chau Shen, Manager, Technical Project Management at Promate Technology Inc. “It moves traditional vending into a more sophisticated environment and aims to change the way people look at vending machines.”

Hubbo combines a digital signage display, an interactive kiosk and a cashless, smart vending machine that gives businesses





a three-pronged approach to engaging potential customers. With touch-screen interaction, multimedia advertising, and reliable transaction and dispensing mechanisms, this system is both fun for customers to use and more powerful for the operator.

Promate is using the Hubbo system to explore new vending business models. The slot size flexibility and cashless payment system enables operators to experiment with the price point and types of products being sold. "To date, we have sold food and beverages – including fresh items – makeup and beauty products, and even keepsakes and souvenirs," says Shen.

The company is also using Hubbo to try alternative dispensing strategies and non-traditional vending business models. "One of our current models is to use Hubbo to enable a 'tryvertising' (try-advertising) concept where operators use the machine for sampling," explains Shen. The high-definition 42" display attracts passers-by to the opportunity. If desired, the integrated kiosk can be used to gather contact information or get user feedback.

"In the tryvertising system we utilize facial recognition to prevent users from receiving multiple samples of products. When a customer receives a sample, his/her facial features (not full image due to

privacy concerns) are stored so that he/she cannot receive a second sample until the inventory has changed," explains Shen. "We foresee the use of this facial recognition technology for services similar to a rewards card so that familiar users can be proactively recognized when they approach the machine and be greeted with a customized message or purchase suggestion based on previous experience."

The innovative and engaging experience of the Hubbo system delights would-be customers and vending businesses alike. It's also attractive to the venue owners who contract for the floor space and electrical connection that powers the system. "The projected, tablet-like touch-screen display satisfies customer appetites for interactive and delightful technology experiences," observes Shen.

The system itself includes multiple components all integrated into a single device. Features include:

- Custom-designed kiosk and digital billboard
- 7" projected capacitive touch screen, powered by an Intel® Atom™ processor-based board for vending machine control
- 17" touch screen powered by an Intel Atom processor-based board for interaction with the kiosk
- 42" audio/video display powered by an Intel® Core™ i5 processor-based board for digital signage
- Security camera
- Voice/Video over IP for connection to a remote customer service operator
- Ethernet data connectivity
- Facial recognition technology
- RFID EasyCard* cashless payment machine
- Telemetry for remote measurement and reporting of data
- Resizable product slots (up to triple-width slots)
- Thermal printer for customer receipts

Intel Technology Makes it Smart

Earlier versions of Promate's vending machines used a different processing architecture to power their payment system, digital signage and interactive kiosk. But they recently switched to Intel architecture because multiple processor choices offered the optimum combination of processing performance in a low power envelope. Low heat generation and low power consumption are important to vending system manufacturers and operators, and the Intel Atom processor was selected for key parts of the Hubbo system specifically because it provided the necessary performance within a low thermal envelope at the lowest possible power consumption.

Plus, being able to use both the Intel Core processor and the Intel Atom in the same platform gave Hubbo's designers additional flexibility. With Intel®

architecture "it's easier to integrate technology from multiple sources," says Shen. Intel architecture supports a wide variety of programming architectures and languages and makes available many different relevant drivers. Because all Intel processors use the same architecture, this integration is made easier even when using multiple different chips within the same system, such as the Hubbo smart vending machine. In addition, "the raw processing power of the Intel processors is well-suited for use in this type of application."

What's more, the Intel Core i5 processor has Intel® Active Management Technology built in that enables remote manageability of the system. This feature is quite valuable to vending operators who may be managing hundreds or thousands of machines. From a single location, they can observe all of their systems and more efficiently schedule maintenance at each machine.

Learn More

Smart vending systems have the potential to dispense higher profits at lower TCO. The Hubbo solution is one such idea, and there are many others in development. as the property of others.

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