(intel®)

Contactless Payment Technology Drives Higher Vending Machine Revenue

TouchGo* Technology combines flexible contactless and contact (no pin) payment options, an interactive touchscreen and high definition video, enabling vending operators to increase the number of transactions and average sales per transaction.

Figure 1. Interactive TouchGo* Technology touchscreen display

"Our vending machine technology, using 2nd generation Intel® Core™ i3 processors, delivers a new breed of dynamic merchandising that greatly enhances the customer experience."

Per Hovland
Managing Director
TouchGo Technology Ltd.*

Vending machine operators are looking for ways to reverse the decline in sales over the past few years. This trend is evidenced by three years of falling U.S. vending machine sales, including a three percent drop in 2010, according to the "State of the Vending Industry Report" published by Automatic Merchandiser*.[1]

In an effort to buck this trend and help to accelerate vending sales, TouchGo* Technology supports several new vending machine innovations that increase customer-engagement and the number of available customers. For example, vending operators can serve more customers with contactless payment technologies, such as Visa payWave and MasterCard PayPass cards that allow customers to "Tap & Go" – no pin number entry required. "With payWave and PayPass contactless sales, the average transaction value has gone up by 25 to 30 percent over sales through a cash-only based vending machine," says Per Hovland, managing director at TouchGo Technology.

EMV*,[2] based contactless payment (Figure 1) also creates a paradigm shift: from making customers pay before choosing an item to allowing them to pay after selecting multiple items; customers can also use coupons and coordinate purchases with other nearby machines. Now it's easier and more fun to buy multiple items. A vending purchase is often an impulse buy, which is aided by payment flexibility and dynamic merchandising.

Attracting customers, TouchGo Technology features an interactive touchscreen with buttons and screen control modeled after popular smart phones and tablets. The screen simultaneously plays an advertisement, product-selection screen and a cube with up to four different views. These views can be "rotated" by a single swipe of the finger to show nutritional and brand information, as well as product-related video on any face of the cube. The system is a Microsoft* software-based solution, running on the Intel® Core™ i3 processor, which offers greater future-proof protection than traditional vending machines.

CHALLENGES

- **Increasing transaction count:** Enable customers without cash-on-hand to safely, conveniently and quickly pay for items
- **Boosting transaction value:** Provide customers a more engaging experience that encourages them to buy more items

SOLUTIONS

- **Contactless payment:** Pay with contactless cards from major credit card companies or via near field communication (e.g., NFC-enabled mobile phone)
- **Interactive, dynamic experience via touchscreen:** Entice customers with a flick and swipe control, videos, special offers, additional product content and much more

Solution Components

The TouchGo Technology vending machine solution provides several capabilities used for cashless payment, customer interaction, machine control and communications, including:

- **Near field communication (NFC)** – conducts payment with specialized credit cards and in the future, devices such as mobile phones, wrist watches, key fobs and Google* Wallet.

- **TouchGo software** – enables the machine to display a wide variety of high definition video content, like live news, interactive advertising, Twitter* feeds and ordering applications (e.g., retail products (lipstick), restaurant food and flowers).

- **Printer/scanner** – dispenses and reads promotional coupons, including discounts for multiple product purchases or coupons displayed on a mobile phone. A cross-branding example is printing a coupon/voucher to a restaurant chain when a customer buys a candy bar and a bag of crisps from an affiliated partner.

- **PC-based vending machine controller (VMC)** – controls the vending machine's mechanics, such as actuators, motors, compressors, sensors, bill acceptors, card readers and coin changers.

- **Communications** – interfaces to the Internet over 3G wireless or wired LAN. The TouchGo software logs all telemetry events and can report a potential problem to a central server, which in turn alerts the operator via mobile phone.

Figure 2. Customers flick the cube to get more product information

Implementation Details

The solution supports new vending machine designs or retrofits for legacy machines. A machine manufacturer can integrate a 32 inch (81 cm) touchscreen with a new design or add an 8 inch (20 cm) screen to an existing vending machine. Both approaches use an Intel® processor board that runs the software, controls the machine hardware and connects to the Internet. For a legacy machine, the existing machine control hardware is bypassed. Manufacturers also have the option of reselling entire vending machines produced by TouchGo Technology.

Platform Details

Using the Microsoft's .NET 4 platform and an extensive developer library, TouchGo Technology software is flexible and future-proofed for emerging applications. The software runs on an Intel processor with integrated graphics that drives up to five videos simultaneously and provides the computing headroom needed to run future content-rich applications. A video of a rotating 3D cube (Figure 2) shows combinations of nutrition information, video branding, co-branding, special offers or other marketing messages. At the same time, a high definition advertisement plays on the upper portion of the screen.

Software Stack

The TouchGo Technology software stack, as depicted in Figure 3, features an automated vending machine attendant (AVMA) shell that provides for the easy installation of vending applications (VAPPS) and third party software. Working in the background, this custom shell includes an application programming interface (API) that allows machine manufacturers and operators to add plug-ins per the Microsoft extensibility framework. As a result, the software stack simplifies the integration of new services, helping to future-proof vending machines and protecting vending operators' investments, while increasing long-term profitability.

The Microsoft .NET 4.0 Framework is an integral Windows* component that supports building and running applications and XML Web services. It provides a consistent object-oriented programming environment whether object code is stored and executed locally, executed locally but Internet-distributed, or executed remotely. The .NET Framework has two main components: the common language runtime and the .NET Framework class library. The code-execution environment greatly minimizes software development deployment and promotes safe execution of code, including code created by a third party.

In addition to interfacing to the .NET Framework, the AVMA shell manages the execution of various software components, including VAPPS, the peripheral manager, the payment manager and the WiSE software. WiSE (Wireless Sales and Engineering) is the reporting system that sits under every component of the shell and accesses data related to the sales and operation of the machine. It also provides the telemetry functionality, communicating with the server system, authenticating payment and automatically updating software. For example, a vending machine can connect to the server every couple of minutes, quickly reporting a peripheral issue (e.g., jammed printer) to the operator or owner; the management of every peripheral is independently configurable.

Hardware System

Today, a majority of vending machines are controlled by microcontrollers and custom hardware that manage systems involving motors, actuators, sensors and other devices. For vending machine manufacturers, designing and validating a hardware platform is typically resource-intensive and time-consuming. In addition, such platforms are often purpose-built, which can limit their ability to satisfy future needs or handle innovative new applications.
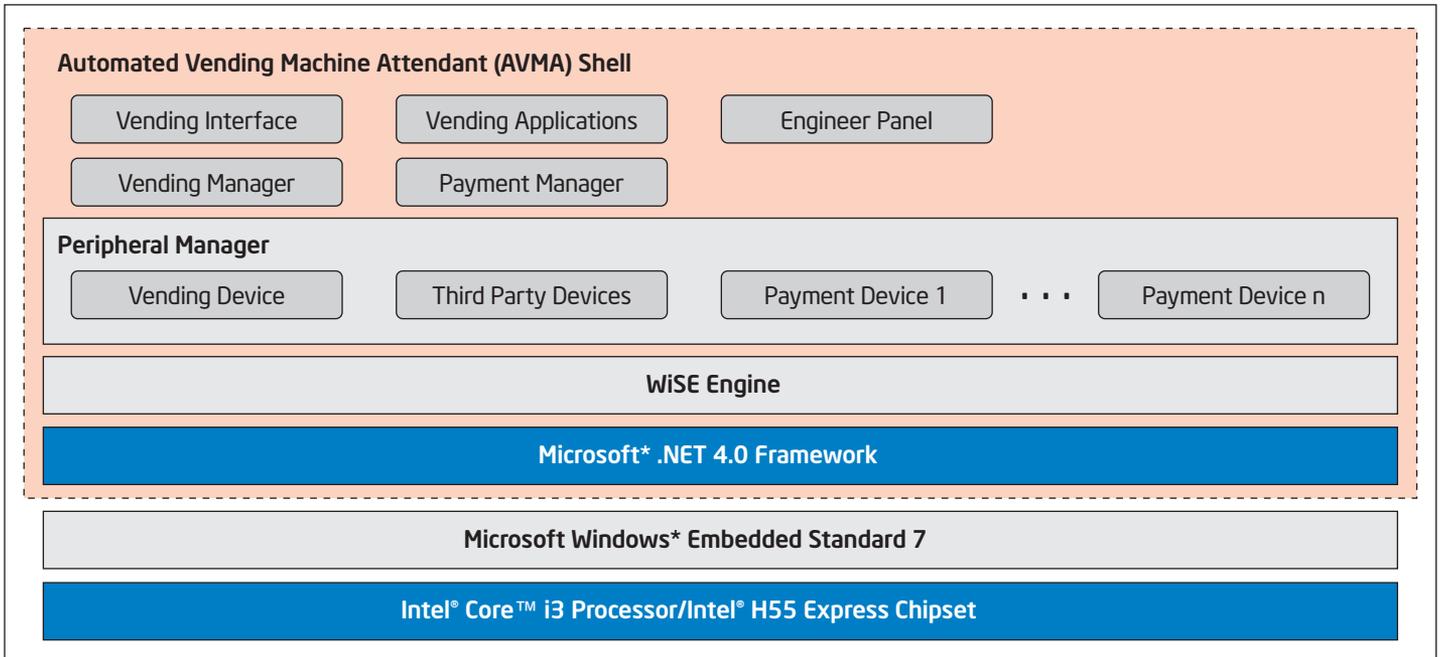

Figure 3. TouchGo* Technology Software Stack

In contrast, it's possible to have more flexibility and dramatically reduce development effort by leveraging TouchGo Vending Machine Technology and Intel processors. With few modifications to existing electromechanical systems, manufacturers can add the TouchGo Technology hardware system capable of supporting compute-intensive digital signage, video analytics and the wide range of VAPPS.

The touchscreen vending accepts all Mastercard PayPass and Visa payWave contactless payments irrespective of the payment device form factor (i.e. debit/credit/pre-paid cards, NFC mobile phones with wallets, NFC watches, tags etc.). The machine includes a contactless payment terminal from Ingenico*, a leading provider of payment solutions with over 15 million terminals deployed in more than 125 countries. The payment system uses online authorization via an acquiring bank or payment card acquirer. Each vending machine site will be signed up as a merchant to the card acquirer to provide a 2/3 day payment into their bank for all items purchased from the vending machines less any appropriate fees .

The vending machine control board is designed with an Intel Core i3 processor and an Intel® H55 Express Chipset, as illustrated in Figure 4, which provide plenty of computing headroom and I/O flexibility. Using standard USB, the chipset interfaces various system components, including a MDB talker board, the interface board, a terminal for contactless payment, a printer/scanner for receipts and coupons, and in the future, near field communication such as Bluetooth* on mobile devices. The board also supports multiple high definition (HD) displays and audio. This Intel processor-based platform provides developers and machine operators with a high level of software flexibility, and it secures transactions using leading-edge, e-commerce security technologies.

The TouchGo 32 inch touchscreen PC-based vending machine is manufactured under a design and manufacturing exclusive agreement with DarenthMJS* Ltd, who are based in the UK. The machine, together with the software, is available for worldwide distribution.
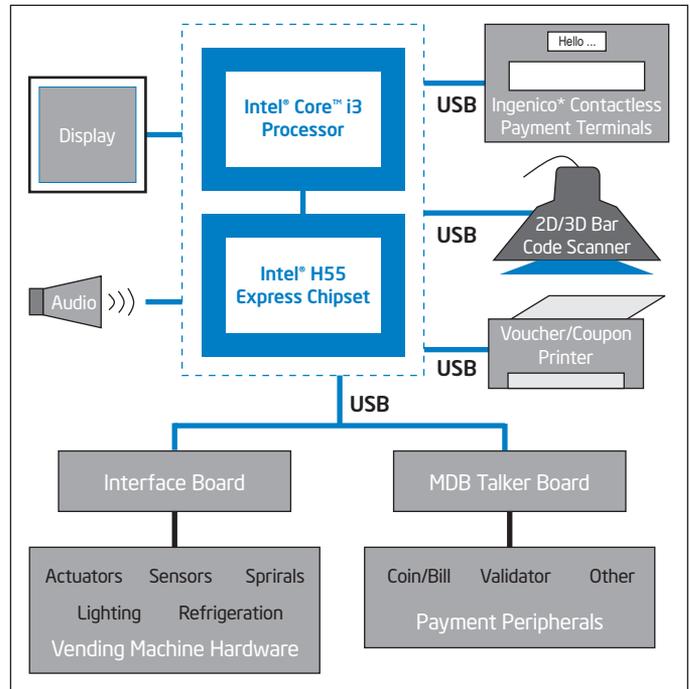

Figure 4. Hardware System

New Era for Vending Machines

Giving machines a desperately needed facelift, TouchGo Technology is changing the way customers conduct vending transactions. Machine operators can significantly increase sales through contactless payment and highly-interactive machines that increase the customer base and expand sales value. Advances in computing technology are enabling product manufacturers to develop creative ways to promote their offerings and attract more vending customers.

For more information about TouchGo products, please visit **www.touchgotech.com**

For more information about retail solutions from Intel, visit **www.intel.com/go/ic**