

SOLUTION BLUEPRINT
Intelligent
Coffee Station
Retail Services



INTELLIGENCE IN. AMAZING OUT.

Intelligent Coffee Station Solution Generates Data for Brand Promotion

EXECUTIVE SUMMARY

For most businesses, success depends upon knowing customers and providing what they want. For the vending industry, this is easier said than done because customers typically serve themselves from unattended machines, and consequently, vending operators rarely engage them directly. To overcome this hurdle, Costa Coffee*, the UK's market leader and the world's second largest coffee chain,¹ is implementing Anonymous Viewer Analytics (AVA) with the goal of providing their customers with an unprecedented user experience and level of product customization. This solution blueprint discusses how the Costa Express CEM-200 concession delivers a full experience, self-serve café, where the London espresso bar meets contemporary Italian design and Intel retail solutions technology. This solution helps Costa strengthen pricing power, offer customers the right product mix, increase sales per transaction and improve operating margins.



Table of Contents

Executive Summary	1
Key Business Objectives	2
Who Will Benefit From This Solution ..	2
Meeting New Market Demand	2
The Business Challenge	2
Solution Overview	3
Technology	6
Summary	8
Resources	8

KEY BUSINESS OBJECTIVES

Costa's mission is to save the world from mediocre coffee. The Costa Express CEM-200 will aid this, by increasing consumer engagement, lowering operational cost - whilst at the same time driving shareholder value.



- Vending operators benefit from lower operations cost through real-time reporting telemetry and highly reliable machines based on Intel® processors.
- Customers get a dramatically improved experience - more engaging, intuitive and informative.

MEETING NEW MARKET DEMAND

New technologies in the vending industry are gaining momentum as they offer consumers a more convenient and satisfying experience. Going high tech, vending machines are integrating touchscreens, cashless payment, telemetry, near-field communications and digital signage, among other enhancements. As a result, consumers enjoy greater vending machine interactivity; vending operators increase sales and reduce operating costs; location managers receive a higher level of service; and product manufacturers attract more customers and raise their brand awareness.

THE BUSINESS CHALLENGE

Major brand name companies and the vending machine industry face diverse challenges, including how to:

- **Strengthen pricing power:** Most consumers are reluctant to pay a premium for vended products (e.g., coffee, sandwiches) because they assume the quality is inferior to store bought.

It is human nature to presume that fresh food prepared in a store or restaurant will taste better than that coming out of a machine. This bias may be even greater if the machine seems dated or the food looks like it has been stored for a while.

- **Offer the right product mix:** Unless vending operators personally study customer interactions, they may not truly know whether the product mix they offer is maximizing sales.

WHO WILL BENEFIT FROM THIS SOLUTION

The intelligent vending solution integrates various advanced technologies that benefit product manufacturers, vending operators and customers.

- Product manufacturers can take customer demographics into account in order to deliver the right mix of products at each location, while commanding a higher price by deploying machines that better reflect the high quality of their offerings.

The location of a machine often dictates the demographics of potential customers: shopping malls have more young people; hospitals have more elderly; highway rest areas have a broad mix, etc. Vending operators wish to better understand their customer base(s) and which products are most popular among different audiences. With this information, they can deliver the product mix that satisfies the majority of customers at a given location. This task becomes even more challenging when operating broadly across international markets.

- **Increase sales per transaction:** Like many businesses, growing profitability in the vending industry hinges on increasing volume.

It is possible to get customers to spend more by making improvements to traditional vending machines, like cashless payment, cross-selling promotions, loyalty cards, couponing, easy-to-use

touchscreens and digital signage, among others.

- **Improve operating margins:** Some vending operators run their businesses on very narrow margins and need to be able to justify the purchase of new technology with the prospect of a large increase in revenue or operations efficiency.

The costs to operate a vending machine comprise equipment acquisition, installation and maintenance, space rental, electricity, and restocking, just to name a few. Vending operators carefully weigh new technologies with respect to the potential to lower cost and increase sales over the long run.

SOLUTION OVERVIEW

Costa Coffee's coffee vending business, Costa Express, was launched with the acquisition of Coffee Nation in 2011 from Scott Martin, who was an innovator in the segment for over 12 years. In addition

to its more than two thousand stores worldwide, Costa Coffee has installed over two thousand self-serve coffee bars (Figure 1) which have proved highly successful in retail stores, gas stations and transport hubs. A key reason Costa Coffee went through the effort and expense of creating such a solution is it can reach more customers at lower cost, compared to opening new stores. Costa Coffee has also innovated along the way, replacing buttons with touchscreens and incorporating Intel® Audience Impression Metrics Suite (Intel® AIM Suite) with Anonymous Viewer Analytics (AVA) technology used to build stronger connections to consumers. Intel AIM Suite incorporates the AVA technology to allow Costa Coffee to understand more about who's using the machine and what they're buying. Since different sets of consumers (e.g., age range and gender) prefer certain types of coffee, this information enables Costa Coffee to offer the right selection of coffee at each location.



Figure 1. Costa Coffee Self-Serve Coffee Bar

Intelligent Vending Machines

Consumers who love fresh espresso coffee have some great new experiences coming their way. Building upon the great success of the Costa “Compact” concession range, Costa has developed its new CEM-200 Advanced Coffee Concession targeting worldwide deployment in evolving customer segments, such as corporations, lounges, airports and rail stations. The CEM-200 is more than a fresh bean-to-cup coffee vending system. It’s a full experience, self-serve café, which also adds an incredible blend of new technologies to help the vendor promote brands in ways that have never been available before today. CEM-200 Advanced concessions include AVA technology for personalized advertising; remote manageability for instant advertising updates and cost-effective maintenance; connectivity with social media; and augmented reality that promises eye-catching graphics for consumers.

In addition to brand promotion, the solution provides the vendor with data that can be analyzed to optimize inventory levels and to deliver targeted advertising that helps build brand preferences and delivery data to the boardroom. The stations have a wide range of built-in capabilities, including Bluetooth* connectivity, social media links and easy scalability to add even more capabilities through software updates.

The CEM-200 is a “World first” in its ability to simultaneously engage all five senses: sight through an eye-catching, iconic Pininfarina design; sound through location based HiFi; taste through the world’s leading bean-to-cup coffee system and over 250 drink choices; scent through an innovative, proprietary delivery system. and touch through the extensive use of the highest quality materials and finishing.



Figure 2. Product Selection Using a Touchscreen



Figure 3. Digital Signage Plays Animation about Fresh Milk

Touchscreens and digital signage

Unlike traditional machines whose user interface is primarily selection buttons and money collectors, Costa Express self-serve coffee bars employ contemporary touchscreens for navigating through product information and carrying out transactions, as shown in Figure 2.

Touchscreens are essential for creating a more engaging, interactive experience that increases customer dwell time, leading to increased sales. For example, they can complete complex transactions, like multiple item purchases, such that a customer can order three cups of coffee with a single transaction. Another benefit is the ability to update pricing dynamically, changes that can be time-consuming on classic vending machines. Touchscreens are also used to display product nutrition information, a function which is mandated in some regions.

The vending machines have a high-definition digital signage display that plays ads to educate customers, like informing them the machine brews every cup with the same famous Mocha Italia coffee beans and fresh milk used at Costa Coffee

stores. Another screen, Figure 3, points out the machine always uses fresh milk, not powdered milk.

Cashless payment

Customers without cash on hand need not be turned away. Offering greater convenience, Costa Coffee machines accept credit and debit cards. Cashless payment also enables customers to purchase more per transaction because they are not limited by the amount of cash in their wallets.

Coupons

In the future, Costa Coffee will have the ability to give out coupons that can be redeemed on a subsequent visit, encouraging repeat business. Similarly, a coupon could be printed and dispensed when a shopper buys a particular beverage and food combination as part of a cross-selling campaign.

Anonymous Viewer Analytics (AVA)

Utilizing the AVA audience detection technology and an optical sensor on the front of the machine panel, it's possible to collect customer demographic

(Figure 4) 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 who is standing in front, whether a child, man, woman or senior. Product marketers 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 AIM Suite running on Intel processors.

Telemetry

Costa Express self-serve coffee bars support telemetry for sending a wide variety of useful information, typically in a standard format called DEX (Data EXchange standard), to vending operators and company headquarters. Examples include sales and inventory data used for restocking and pre-kitting, alerts about component failures (e.g., refrigeration unit) or reports on cash levels. This information enables operators to improve operational efficiency, such as route optimization, preemptive repairs and cash management.

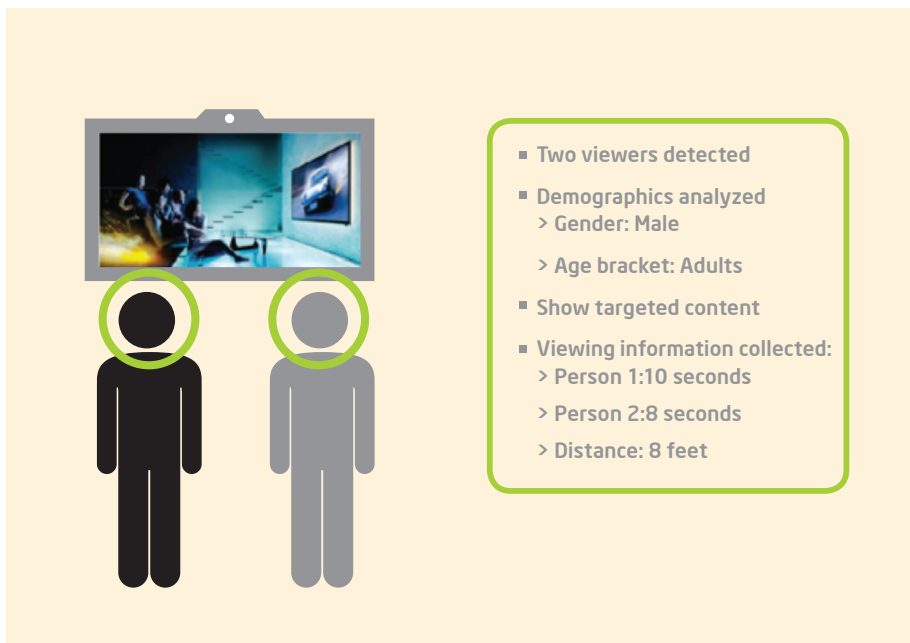


Figure 4. Example of Customer Demographic Information Gathered with Anonymous Viewer Analytics

Intelligent Coffee Station Solution Generates Data for Brand Promotion

Costa Express self-serve coffee bars help address several challenges facing the vending industry by:

- Giving customers an exceptionally captivating and informative experience that is differentiated by a machine providing a technologically-advanced look and feel.
 - > Costa Coffee can command a premium for its coffee, compared to other machines, because it conveys a high quality image.
- Collecting anonymous customer demographics information via AVA.
 - > Costa Coffee can make sure each machine has the right product mix for the customer base it is serving.
- Providing an easy-to-use, touchscreen-based user interface and cashless payment options.
 - > These features make it easier

for customers to buy more per transaction, thereby boosting sales.

- Combining three system functions onto a single Intel® processor-based board.
 - > This consolidation lowers system cost over traditional equipment that has separate boards to run the machine, cashless payment and telemetry.

TECHNOLOGY

Intel® AIM Suite

Intel Audience Impression Metrics Suite (Intel AIM Suite) adds powerful data collection and audience measurement tools to a network of vending machines. By providing valuable metrics that were previously unavailable, vending operators can better understand audience characteristics such as actual impressions, length of impressions, potential audience size, and gender and age range demographics. This solution, as illustrated

in Figure 5, comprises four elements:

- Intel® AIM Suite - The master control application for the Anonymous Viewer Analytics (AVA) solution. It manages instances of Intel® AIM Counter and uploads data to Intel® AIM Analytics.
- Intel® AIM Counter - Intel AIM Suite's face-detection technology module. The software analyzes a video stream from an optical device and anonymously detects faces of people using the vending machine, providing information on the number of viewers and their demographics, viewed content and dwell time.
- Intel® AIM Analytics - Web-based reporting system. This cloud-based service provides advertisers and digital signage networks with a secure means to view their data, generate reports and enable automated e-mail reports.

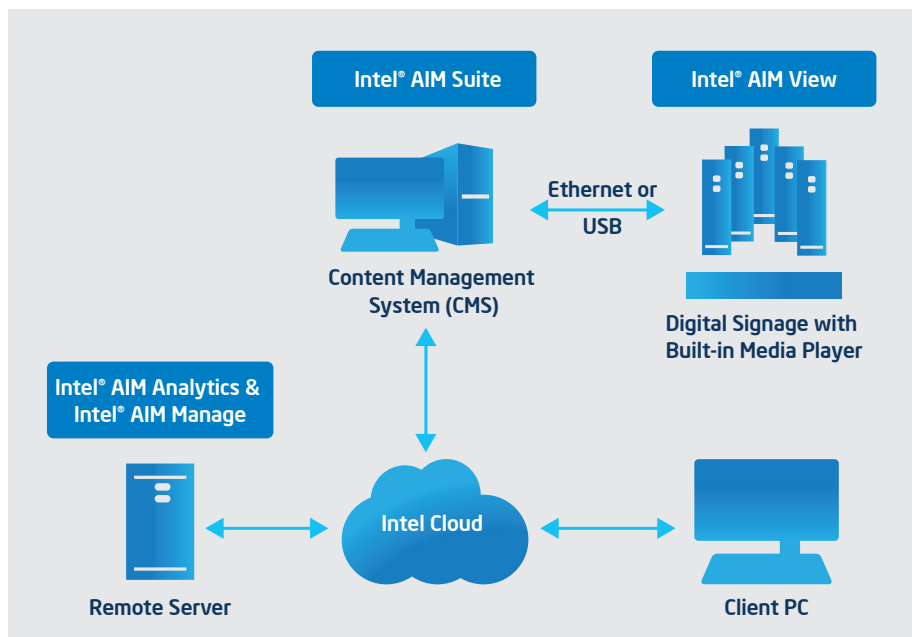


Figure 5. Anonymous Viewer Analytics Solution

- Intel® AIM Manage – Web-based license and sensor management system. This cloud-based system remotely manages all computers running Intel AIM Suite.

Intel AIM Suite and Intel AIM Counter run best on Intel® architecture processor-based computers, which may be the same machines that support content management system applications. Intel AIM Analytics and Intel AIM Manage servers are hosted and managed by Intel.

Hardware Platform

Costa Express self-serve coffee bars are based on the ultra-lower power, dual-core Intel® Core™ i7-3517UE processor. The processor dissipates only 17 watts, enabling a fanless design. When paired with the Intel® QM67 Express, the platform provides I/O flexibility, error correcting code (ECC) memory support and stunning and seamless visual experiences. The processor integrates Intel® HD Graphics 3000, which supports high-end enhanced media/graphics capabilities and performance while reducing overall platform power requirements. The platform has several display interfaces, including HDMI*, DVI*, DisplayPort*, SVDO and analog VGA, and various I/O ports, such as USB 2.0, Ethernet and PCI Express*. Instead of traditional hard drives with moving disks, the systems use the Intel® Solid-State Drive 520 Series, offering better performance and reliability.

EMPOWERING A NEW WORLD OF RETAIL INNOVATION

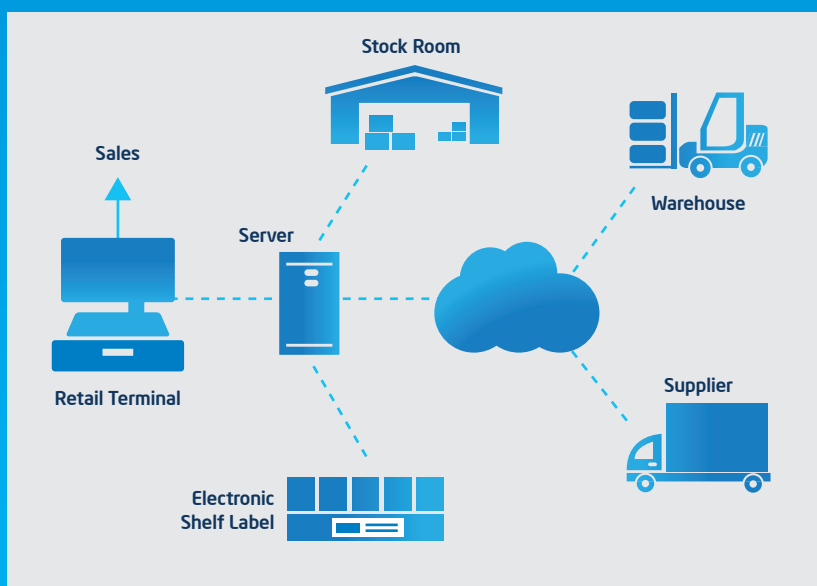
The retail industry is in the midst of a dramatic information revolution that is laying the groundwork for new consumer experiences, enhanced productivity, reduced inventory distortion and brand optimization. Intel is addressing this transformation with the Intel® Intelligent Systems Framework, a set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



Intelligent Coffee Station Solution Generates Data for Brand Promotion

This high performance platform is capable of running the entire machine, as well as:

- vending operations
- HD graphics
- touchscreen
- digital signage
- 3.5G communications
- telemetry
- cashless payment
- Enhanced Intel SpeedStep® Technology and Idle States, further reducing power consumption
- Intel® Turbo Boost Technology, adding performance when needed

Software Components (media players)

- Security: McAfee* Endpoint Encryption and McAfee* Device Control
- Application: Intel AIM Suite

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

Costa Coffee is looking to rapidly expand its deployment of self-serve coffee bars; and to help make them more profitable and cost effective, the company adopted a number of new technologies. The end result is a state-of-the-art machine capable of commanding a well-deserved premium for the fresh espresso drinks it creates; improving profitability through optimizing its product mix; creating up-sell opportunities; and reducing operations costs. These advancements are supported by power-efficient Intel processors and Anonymous Viewer Analytics technology found in Intel AIM Suite, in addition to other Intel® technologies.

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.



¹ Source: <http://www.serviceguidance.com/www-costa-co-ukcard-Become-a-member-of-Costa-Coffee-Club>.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. UNLESS OTHERWISE AGREED IN WRITING BY INTEL, THE INTEL PRODUCTS ARE NOT DESIGNED NOR INTENDED FOR ANY APPLICATION IN WHICH THE FAILURE OF THE INTEL PRODUCT COULD CREATE A SITUATION WHERE PERSONAL INJURY OR DEATH MAY OCCUR.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request. Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order. Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's Web site at www.intel.com.

Copyright © 2012 Intel Corporation. All rights reserved. Intel, the Intel logo and Intel Core are trademarks of Intel Corporation in the United States and/or other countries.

* Other names and brands may be claimed as the property of others.

