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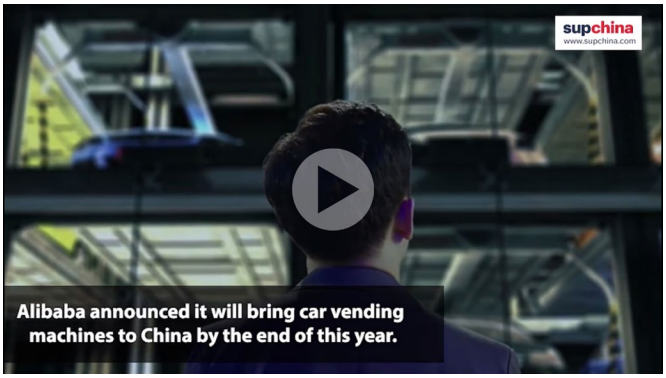
Vending Machines Get Smart With AI

Vending machines have a long history. As far back as 215 B.C.—in the temples of Alexandria, Egypt—a simple device accepted bronze coins to dispense holy water.

Two millennia later, vending machines are a whole lot smarter and entertaining—selling a surprising assortment of goods. In fact, thanks to Alibaba and Ford, you can even purchase a car from a vending machine **(Video 1)**.



Video 1. Ford automobile vending machine in Guangzhou, China

Aside from automobiles, vending machines of all types are gaining traction in China, forecasted to reach 138 million deployments by 2020. Manufacturers, startups, and retail conglomerates are making use of new technologies.

Vending machines are becoming better, smarter, and can deliver more engaging customer experiences. Through artificial intelligence, facial recognition, and transparent displays, these machines offer everything from entertainment to cashless payments.

Several trends are driving vending machine operators to seek new ways to engage their consumers.

People and commerce are shifting further from cash to digital payments, and many are now adopting mobile wallets such as Alipay and WeChat Pay. Nearly 45 percent of the Chinese population used mobile wallets in 2018, one of the highest adoption rates in the world.

And new technologies are enabling even more convenience. Companies are testing facial and biometric recognition payments. For example, KFC offers facial recognition payments at hundreds of locations across the country. And the Shenzhen Metro is testing new technologies that would enable riders to pay by simply looking at a screen.

By making use of AI, facial recognition, and advanced digital displays, vending machine providers are enabling entertaining and interactive content to drive loyalty and increase sales.

Faster Time to Market

These super-smart and connected vending machines present new business opportunities for Solution Integrators and OEMs. But designing and building a complete, customized system is a significant challenge.

BOE Technology Group is making it easier for integrators to deploy vending solutions with its New Retail Vending Machine Suite, available as an approved Intel® RFP Ready

Kit (RRK), the end-to-end system components required to optimize deployments and build an AI-enabled solution.

"We provide everything, including the transparent display, the hardware and software. It's an all-in-one solution that can be easily assembled and installed on any machine," said Xiaodong Shi, Engineer at BOE Technology Group.

RRKs are pre-integrated and proven, enabling OEM and solution integrators to create new opportunities and go to market faster **(Figure 1)**.

Partnerships Deliver Innovation

In one example, Pure Juice partnered with BOE and CSSC, an automatic equipment manufacturer, to co-develop an innovative vending machine. The company's goal was to offer an appealing user experience that would increase engagement and sales.

Based on the RRK, the vending machine offers the full service of a juice counter with an immersive self-service experience. The company has deployed the system at major stores and shopping malls in locations such as Shanghai and Beijing.

Consumers interact with the machine through a transparent touch screen display that enables them to see their drink freshly made. The customer then has the option to pay through biometric or cashless purchase **(Figure 2)**.

"People can see the whole process of how their juice is made through the transparent display. They can also watch the advertisements and seamlessly do the whole payment process," Xiaodong Shi said.

Facial recognition and AI enable the machine to identify VIP customers, instantly queue their usual order, and process payment in a seamless fashion.

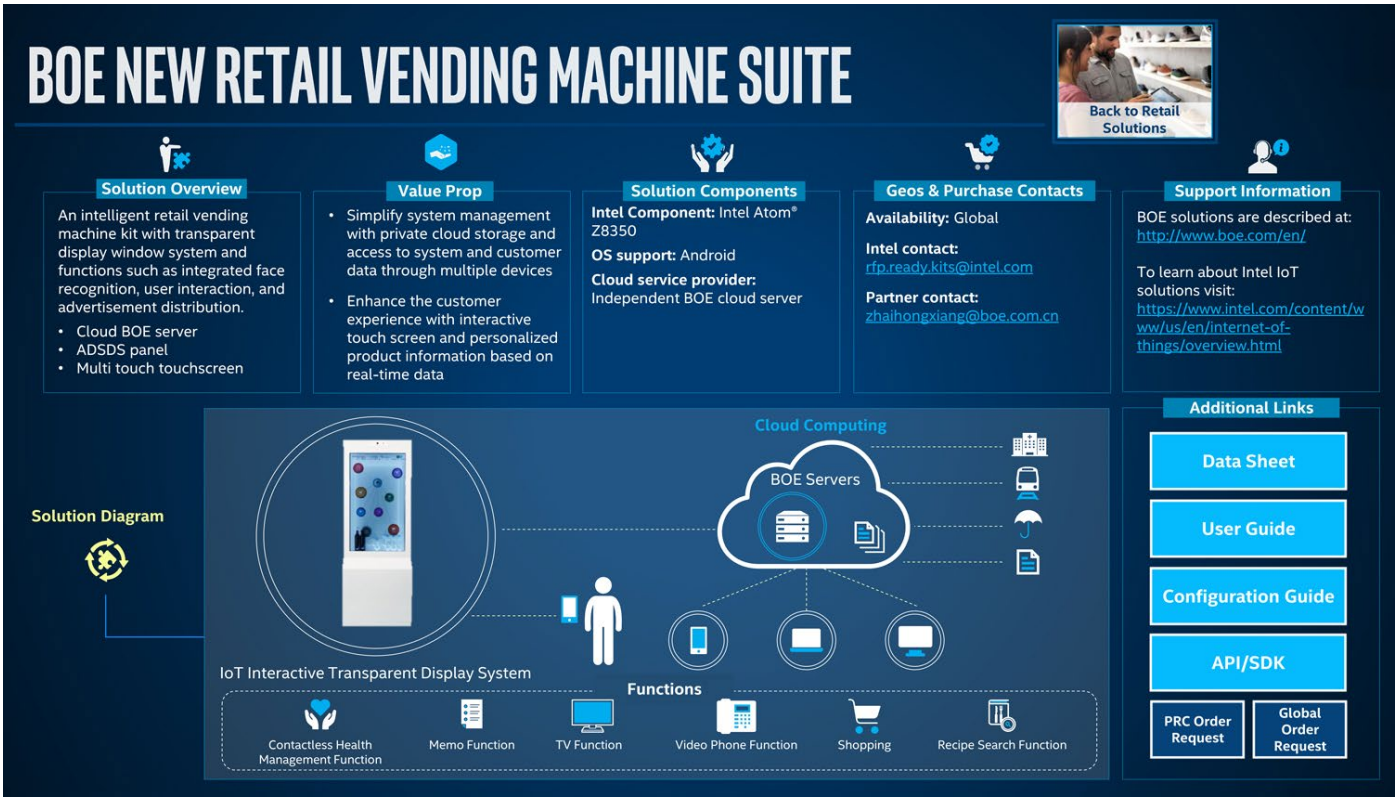


Figure 1. RRK end-to-end solution components.

Figure 2. The Pure Juice vending machine features a display and a touch screen.

The facial recognition capabilities also enable vending machine operators to engage in more direct advertising and entertainment. The artificial intelligence can identify gender, age group, and other demographics and then display ads geared toward those segments.

From Vending Machine to Cloud

While transparent displays offer many benefits, in vending machines they often have many issues, including poor backlighting, a limited refresh rate, bad toggle confliction, and low illumination.

BOE's ADSDS (Advanced Super Dimension Switch) technology offers higher transmittance, brightness, and contrast ratio along with a visual angle of 178 degrees. The panel also offers low power consumption for energy efficiency.

Regardless of location, vending machine operators can centrally manage multiple systems through the Intel®-powered BOE cloud server. They can remotely update prices, product information, and advertisements in real time. Because they are network connected, it's simple to monitor inventory status.

The Retail Vending Machine RRK presents new opportunities to solution integrators that are entering this growing market. Partnering with BOE enables integrators to more quickly build, deploy, and manage custom vending machines for their retail customers. With 600 transparent display machines deployed, BOE provides proven technologies and solutions.

As Chinese consumers increasingly look for more engaging experiences in vending machines, operators and systems integrators will find a growing number of options. A flexible, all-in-one solution that enables easy deployment can be a game changer in bringing new technologies to the market.