

Solution Brief

AI for Edge Computing
Intelligent Retail Technology



The Intelligent Edge Is Transforming Automotive Retail

Winsense and Intel unveil the first AI-powered smart digital store for automobile dealers in China

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The retail industry, and especially brick-and-mortar stores, are facing an increasingly competitive climate in an already historically competitive industry. Technology innovation and evolving consumer shopping preferences continue to drive profound change, challenging retailers to keep up or find themselves left behind by more-nimble, forward-looking competitors.

For many offline retailers, the question is not if they need to modernize but, rather, how they should do it. They acknowledge that traditional tools and technologies are no longer able to meet the needs of today's savvy digital shoppers. Meanwhile, a lack of consumer behavior data and identity information is hampering operations and marketing. As they attempt to advance their digital transformation, a growing number of companies are looking to adopt an intelligent edge solution.

Yongda teams up with Winsense Technology

One retailer embracing the transition is Yongda, China's leading automobile dealer. To help guide the deployment of a new intelligent retail solution at its Porsche Center Suzhou, Yongda Porsche 4S, Yongda sought the expertise of Winsense Technology, China's leading AI physical retail digitalization and intelligent decision-making service provider.

The automotive retailer needed to quickly address a variety of business challenges. These include a lack of in-store customers, a declining conversion rate among those who did enter, incomplete customer data that hampered selling, and a nonintegrated system that slowed and complicated operations. The shop also suffered from being in a remote location.

Winsense Technology provides end-to-end smart retailer solutions, offering core technologies that incorporate vision and behavioral semantic AI capabilities as well as an edge-to-cloud-edge collaborative distributed computing operating system. Its flagship products include digital asset construction solutions, vision customer relationship management (CRM), and personalized marketing and decision-making systems.

The Winsense converged edge solution for Yongda is the first AI-powered smart digital store among automobile dealers in China, enabling Yongda Porsche 4S to rethink how it addresses and resolves its digital modernization challenges. Through this new solution, Yongda learned how a converged edge approach outperforms nonconverged Internet of Things (IoT) solutions.

Meeting evolving customer needs is a perennial priority for retailers, especially for a company like Yongda, a service solution provider for the life of the car. Converged edge technology makes possible seamless scaling from the cloud to the edge, enabling a variety of workflows to come together to deliver the enhanced user experience Yongda Porsche 4S's shoppers are looking for.

Data timelines are also important for Yongda, and edge computing enables data to be processed in real time. For example, Yongda Porsche 4S's in-store staff can, for those customers who opt in, immediately identify their gender and identity in the store, leading to faster assistance and obviating

the need to repeatedly ask the customer for basic information. The net result is an expedited path to insight and value, a critical upside as Yongda Porsche 4S seeks to better understand its customers to improve decision-making and response time.

The Winsense Intelligent Retail Store Solution

Bringing a deep commitment to serving and implementing solutions for retailers, Winsense created a solution built on a common software platform on which the edge server and application can be customized for different use cases. The Winsense Intelligent Retail Store Solution boasts a number of distinct advantages. On the technical side, it combines edge computing, artificial intelligence (AI), and other technologies to deliver a complete solution ideal for a variety of customer scenarios. Retailers and customers stand to potentially save time, effort, and cost.

Complementing the technical excellence, Winsense brought a deep automotive expertise. This enabled the team to more quickly understand Yongda Porsche 4S's goals and deliver a solution that met those aims by addressing the needs of their customers.

Winsense partners with Intel

To deliver for Yongda Porsche 4S, Winsense reached out to Intel for assistance. The core team at Winsense, which had come from Alibaba, had a great deal of experience with computer vision (CV) solutions based on an Intel® architecture platform. The team had worked with Intel from the earliest days of the company and collaborated on the Open Retail Initiative (ORI), providing confidence and a smooth path forward for development of the right solution for Yongda Porsche 4S.

In addition to its working relationship with Intel, Winsense understood that the computing power offered by Intel® technology is hard to beat and aligned well with the demands of the Yongda Porsche 4S project. What's more, the Winsense team knew from previous experience that it could expect favorable results developing CV using Intel® x86 processors.

Thanks in part to guidance and support from Intel, Winsense was better able to accelerate the go-to-market timeline for Yongda Porsche 4S and ensure the sought-after improvement to the retailer's total cost of ownership. Winsense focused on a set of key Intel® technologies.

Intel® Distribution of OpenVINO™ toolkit

For the AI, Winsense employed the Intel Distribution of OpenVINO toolkit. This robust resource empowered Winsense to develop an algorithm and model that use deep learning intelligence. The toolkit is based on convolutional neural networks, thereby equipping Winsense to extend workloads across Intel® hardware and maximize performance.

Winsense appreciated how easy the Intel Distribution of OpenVINO toolkit was to use to increase efficiency and unify the interface across Intel® Core™ processors and Intel® Xeon® processors. Access to support was also easy. The software toolkit led to a 10 percent increase in the frame rate.¹

Intel® Edge Software Hub

The Winsense solution will be highlighted as an ecosystem solution on the Intel Edge Software Hub, which provides reference implementations and use cases that can help developers get to market quicker with less pre-work. The software packages and offerings can help simplify the optimization of edge solutions, including CV and deep learning applications for Intel architecture.

The ingredients of the Yongda Porsche 4S solution

Winsense's automotive smart retail end-to-end solutions are built around intelligent edge technology from Intel while integrating core technology capabilities from Innosys, which brings AI expertise as well as deep retail experience. The Winsense products also rely on edge computing; the edgeX Foundry, an open source project of LF Edge with the Linux Foundation; cloud computing; and automotive IoT (AloT).

Combined with Intel-based edge servers and Intel Edge Insights for Retail, Winsense created a customized smart store digital solution for Yongda Porsche 4S built on a flexible, agile application deployment platform through a microservice architecture. The common software platform provides a digital base for consumer profiles and store digitalization and equips the store owner to more easily optimize operations. At the same time, the decision intelligence system for the CRM service streamlines the daily management in the store.

The introduction of edgeX and other open IoT technologies into its products and projects enables Winsense to better integrate IP cameras, sensors, and multidevice and multidata environments. It also allows users to achieve plug-and-play simplicity with IoT devices and data fusion between systems. The Intelligent Retail Store Solution offers a powerful workload consolidation and modern architecture application. It might use six to eight cameras on one Intel® Core™ i7 processor-based edge server for Yongda Porsche 4S's shop and as many as 400 to 800 cameras on 60 to 70 Intel Xeon processor-based devices for a larger execution such as a shopping mall.

How does the solution work?

By employing the Winsense Intelligent Retail Store Solution, store managers can harness computers to convert the integration of big data into a deeper understanding of the store operations and the flow of people in real time.

Computer vision can present a three-dimensional representation of the environment, including complex personnel types, numerous high-value assets, multiple function collections, and complex management scenarios. This intelligence can enhance the efficiency of storefront integrated management services and help staff undertake a rapid response in the event of a crisis warning.

Key features of the technology

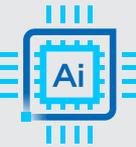
The Winsense Intelligent Retail Store Solution helps capitalize on the promise of data-based services during the entire sales process—from leads, follow-ups, and test drives to sales promotions, orders, and staff scheduling. The result is improved operational efficiency, sharpened sales team execution, and a convenient, high-quality experience for new and returning customers. Key features of the technology include:



Modularity – The Winsense solution is customizable for different situations. With slight adjustments, the technology can be adapted to meet the needs of different Yongda Porsche 4S locations.



Connectivity – Connects the solution to greater networks or cloud services as it has been designed in such a way that all parts can work seamlessly together.



AI – Using the power of edge inference, Winsense helps unlock insights and offload workloads from the core network, with some calculations being done at the edge and the biggest computing demands reverting to the cloud.



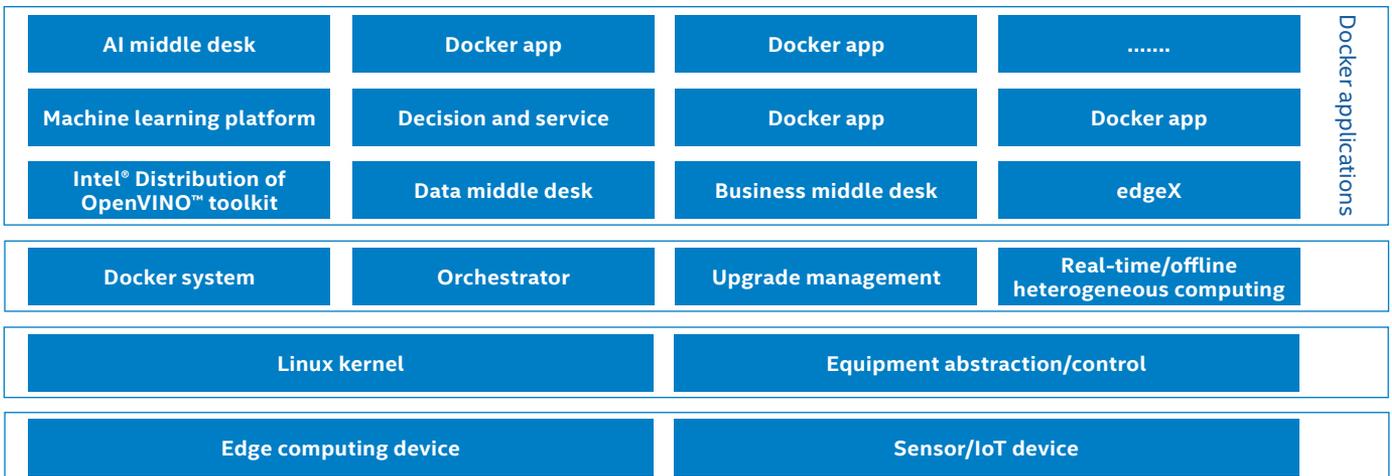
Flexibility – Because costs are especially critical in retail, the solution draws on open source components and software to help curb costs and protect users from vendor lock-in.

For example, the CV can scan the license plate number of an opted-in customer to identify whether the vehicle entering the gate is a regular customer coming for maintenance or a new, unknown customer making an appointment for a test drive. Consequently, the solution can intelligently control the gate and notify the sales staff member assigned to receive the customer. That important data is integrated into the salesperson's handheld tablet.

The powerful big data trend analysis capabilities can help Yongda Porsche 4S sales staff generate car-purchase thermal analysis charts and identify the popular models of the greatest interest to customers. They can more accurately understand customer car-purchase needs and better evaluate feedback to the store. It's about providing store employees with the

information they need to make better decisions to create an enhanced customer experience and more sales.

Real-time data acquisition is conducted on the edge site. The data could include details like demographic characteristics, arriving vehicle specifics, property attributes, and on-site foot-traffic information. That data is then analyzed on the edge server along with the rich database accessed from the cloud site managed by Winsense. Leading AI algorithms and powerful edge computing capabilities ensure the real-time data processing and application. In the final step, a report is issued that includes purchase intention, target model, and decision preference—invaluable information for tailoring the engagement to the customer.



Winsense edge computing stack

Building on the Open Retail Initiative (ORI)

The launch of the Intelligent Retail Store Solution is an important part of the joint implementation of the ORI overseen by Innosys and Intel. The initiative is a collaborative effort led by Intel and other companies that want to accelerate the scalable deployment of data-rich solutions optimized for physical retail—from the edge to the cloud.

The ORI collaboration calls on open source projects as well as vendor proprietary solutions to deliver use cases based on ecosystem components. With that mission in mind, Winsense is introducing edgeX and other open IoT technologies into its products and projects to solve problems related to limiting one-size-fits-all thinking in store and operations management.

The IoT edge computing standard architecture proposed by edgeX is designed to tackle a variety of goals. First, it can help companies achieve true, full openness and transparency. Second, it can efficiently and accurately solve the needs of large-scale operations, especially as they relate to growth. And finally, the architecture can assist in the continued promotion of IoT data integration and interoperability across multiple industries.

Learn more

Learn more about Winsense Technology at winsenseos.com.

Explore the Intel Edge Software Hub at intel.com/edgesoftwarehub.



1. Based on Winsense internal testing.

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Seeing a smarter future for retail

The Intelligent Retail Store Solution was launched by Intel and Yongda in June 2020, setting a new benchmark for the digital, data-driven transformation of the automotive sales industry. While it is too early to point to measurable results, benefits are being seen across user experience, conversion rates, and revenue.

By working together, Intel and Winsense are changing how retailers think about their data. With the Intelligent Retail Store Solution, companies can begin to refine management and deliver a more personalized process for customers. Implementation of smart edge technology is giving retailers a powerful tool that supports better decisions, happier customers, and more-successful stores.

About Winsense Technology

Beijing Yingshi Technology Co., Ltd. (aka Winsense Technology) was established in July 2018 and is committed to using machine intelligence technology to provide digital solutions for consumer behavior addressing offline business scenarios. The company assists brand service providers to build smart retail business solutions for brands, develop data-driven smart business decision-making systems, and provide consumers with an enhanced retail experience.

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