Make Retail Smarter

With AAEON

AI-powered solutions for a seamless, efficient, and engaging retail future.





Table of Contents

AAEON Introduction

Explore AAEON’s legacy of innovation in AI and edge computing for retail.

Smart Retail Overview

Discover how smart technologies are transforming the retail experience.

Use Cases

Real-world applications that enhance efficiency, insight, and customer engagement.

Take the Next Step

Find out how AAEON can help elevate your retail operations today.



Headquarters

AAEON

Introduction

AAEON Technology Inc., founded in 1992, is a leading provider of IoT and AI edge computing solutions. Its products include embedded motherboards, industrial displays, rugged tablets, industrial control systems, and network security devices, offering comprehensive solutions for OEMs, ODMs, and system integrators.

From Concept to Reality

AAEON's expert team provides end-to-end customized services, from concept development to mass production and after-sales support. Its AI edge computing and system integration solutions are widely used in smart cities, smart retail, and smart manufacturing, driving innovation and efficiency.



Manufacturing/Logistics Centers

Smart Retail Overview

Smart retail encompasses a variety of applications aimed at making the day-today retail experience more efficient and customer-friendly.



01

Efficiency

Automated operations minimize manpower needs.



02

Insights

Data analytics reveal consumer behavior patterns.



03

Convenience

Streamlined experiences reduce customer wait times.



04

Security

AI safeguards against loss and shrinkage.

Use Cases

1

Frictionless Shopping

Streamlining customer checkout experience

2

Digital Out-of-Home

Dynamic advertising solutions

3

Inventory Tracking

Automated stock management systems

4

Interactive Product Displays

Engaging customer interaction solutions

5

Point-of-Sale System

Advanced payment processing solutions

6

Loss Prevention

AI-powered security solutions

Frictionless Shopping

Customers are able to shop without the need to present their items at a kiosk, check-out, or cashiers, instead simply picking the items they want and leaving the store. Equipped with 4 PoE cameras and up to 67 TOPS of AI performance via the NVIDIA® Jetson Orin™ Nano, the BOXER-8623AI can acquire broad area coverage, running image classification models to determine which items customers select, and automatically processing payment via the customer's registered account once they leave the store.

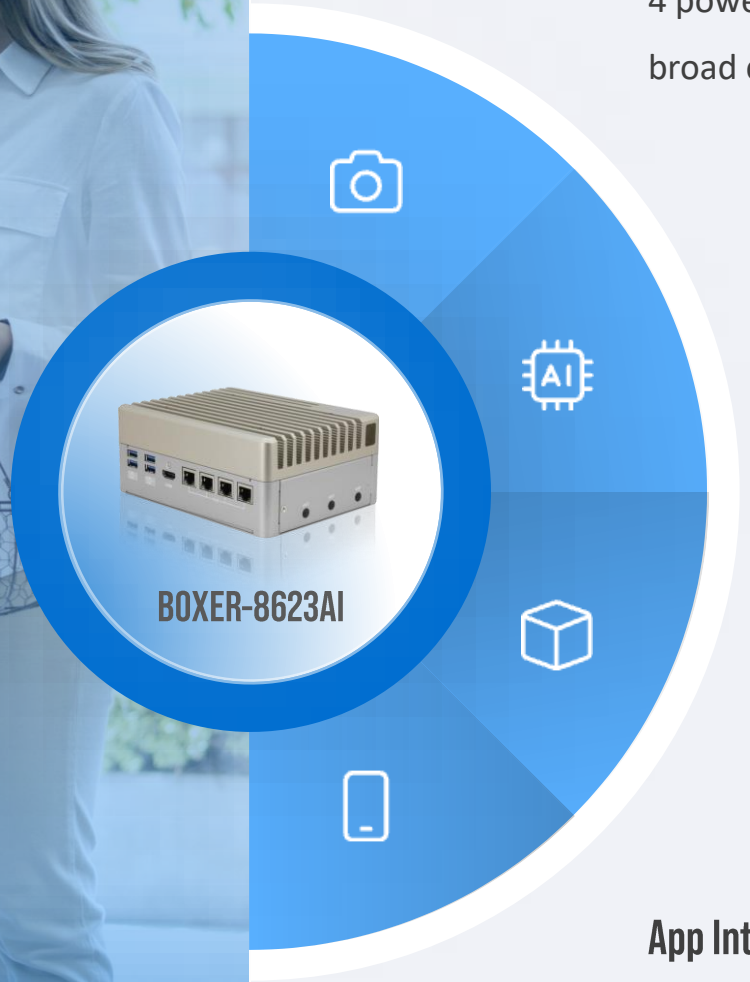


BOXER-8623AI





Benefits



PoE Cameras

4 power-efficient cameras provide broad coverage for product tracking.

NVIDIA Jetson Orin

Up to 67 TOPS of AI performance for accurate product classification.

Compact Design

180mm x 136mm x 75mm size with flexible 12-24V power input.

App Integration

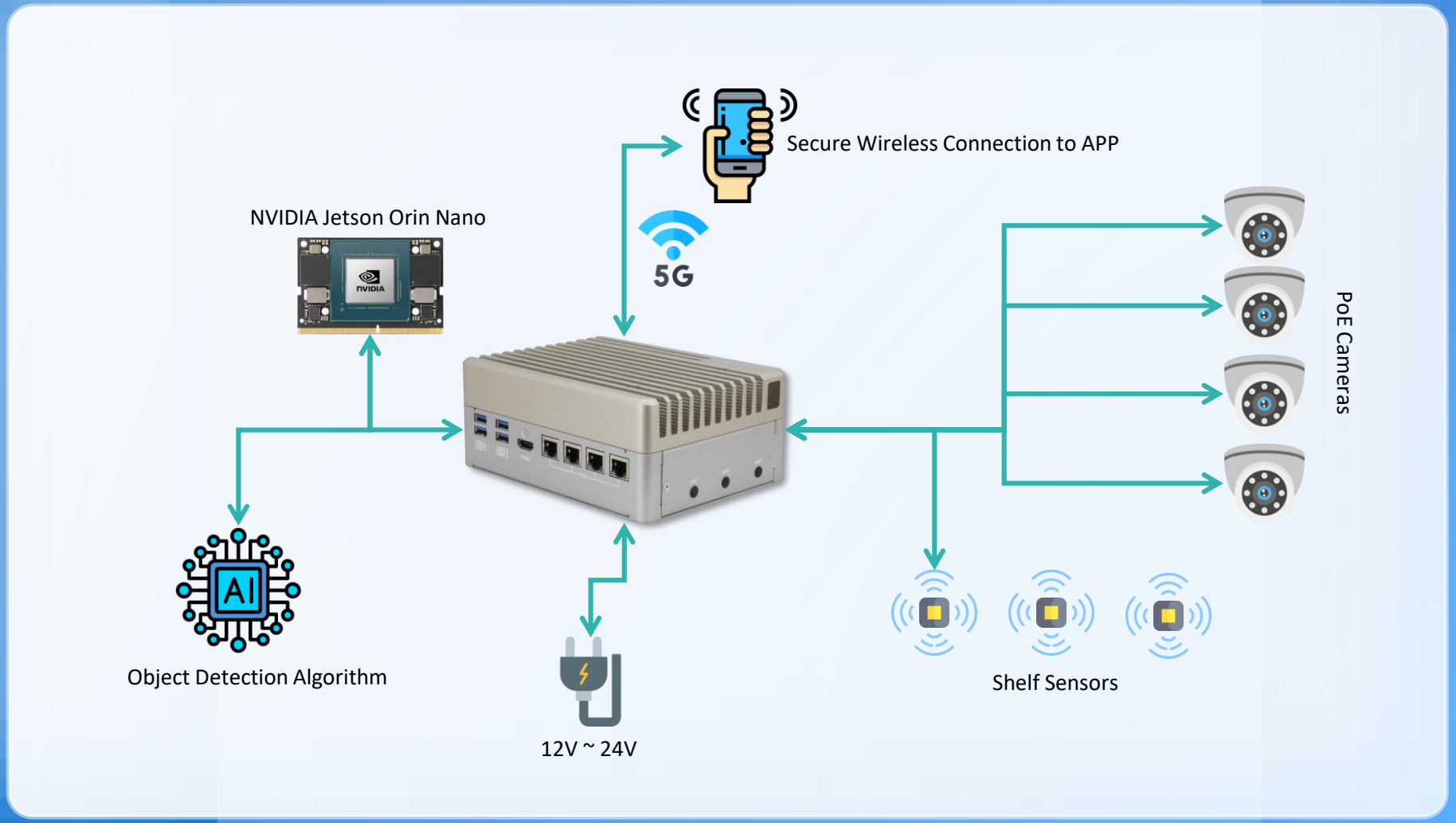
Secure wireless connection processes payments via customer accounts.

Diagram

Frictionless Shopping



Customers enjoy a seamless, checkout-free experience powered by AI and edge computing. Cameras and shelf sensors detect selected items, while payments are automatically processed via mobile app–enabling real-time transactions and shorter wait times.



DOOH

Digital Out-of-Home Advertising

Using the UP Squared Pro 710H Edge, the retailer can gather customer insights such as purchasing preferences to dynamically tailor the advertising shown to similar customers via digital displays within the store, increasing the precision of their in-store marketing and allowing them to provide a more personalized experience to shoppers.



UP Squared Pro 710H Edge





Benefits

High-Speed Connectivity

USB 3.2 Gen 2 x 2 and 2.5GbE x 2 enable fast and stable camera installation.

Edge AI Acceleration

Integrated Hailo-8™ processor delivers efficient on-device AI processing.

Expandable AI Power

M.2 M-Key slot for an additional AI acceleration module

Crisp Visual Output

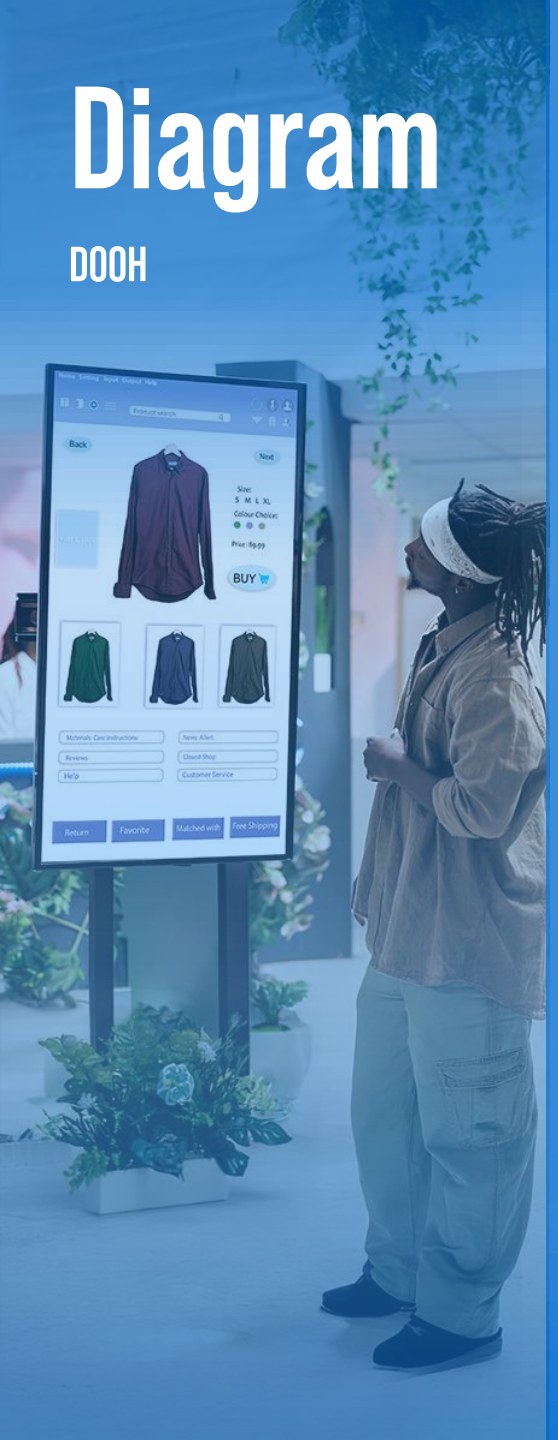
HDMI 2.0b or DP 1.2 port supports high-resolution display connections.

Powerful Performance

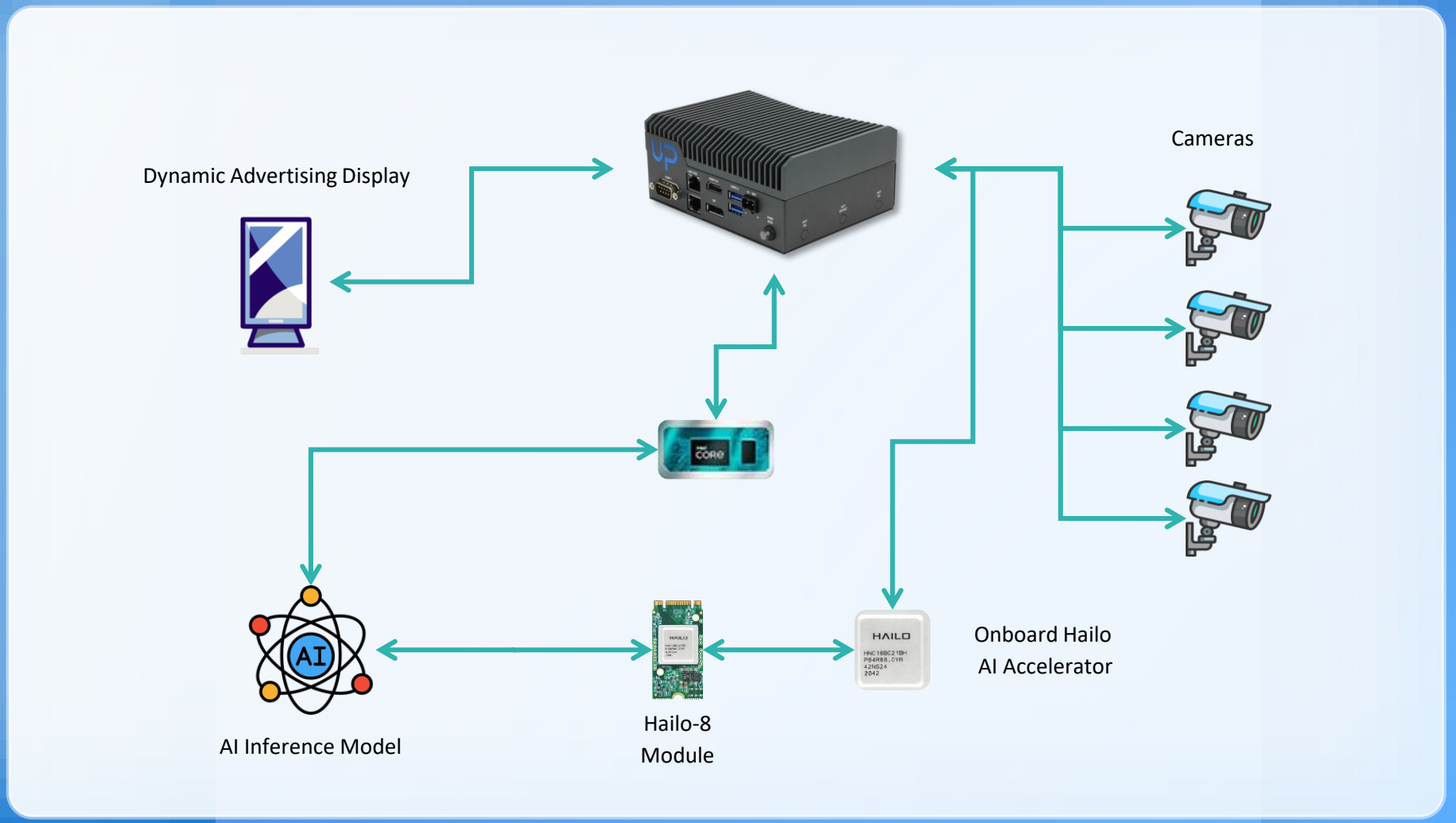
Intel® Core™ i3-N305 processor and high-bandwidth LPDDR5 system memory

Diagram

DOOH

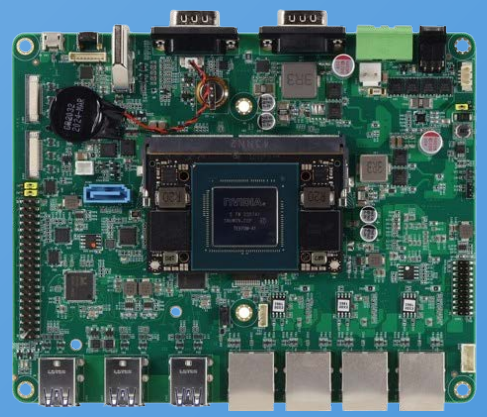


Gather purchasing preferences to tailor advertising to similar customers through in-store digital displays, dynamically adjusting promotional content in real time to enhance the precision and effectiveness of personalized marketing.



Inventory Tracking

Powered by the BOXER-8654AI-KIT, the application is deployed in self-service retail units such as vending machines, refrigerators, and kiosks and leverages computer vision to track inventory and transactions, turning them into interactive, automated vending and storage solutions. This enables product owners to receive real-time inventory updates, while customers can utilize APP-based frictionless purchasing.



BOXER-8654AI-KIT



Benefits



Ultra-Compact Size

Extremely small and lightweight form factor for space-efficiency

Energy-Efficient AI

NVIDIA® Jetson Orin™ NX for product monitoring inference models

Flexible USB Expansion

Multiple USB ports offer versatile peripheral connections.

MIPI Support

Compatible with MIPI cameras for high-quality visual input.

Wide Operating Range

Functions reliably in -25°C to 70°C temperature-controlled environments.

Inventory Real-time Updates

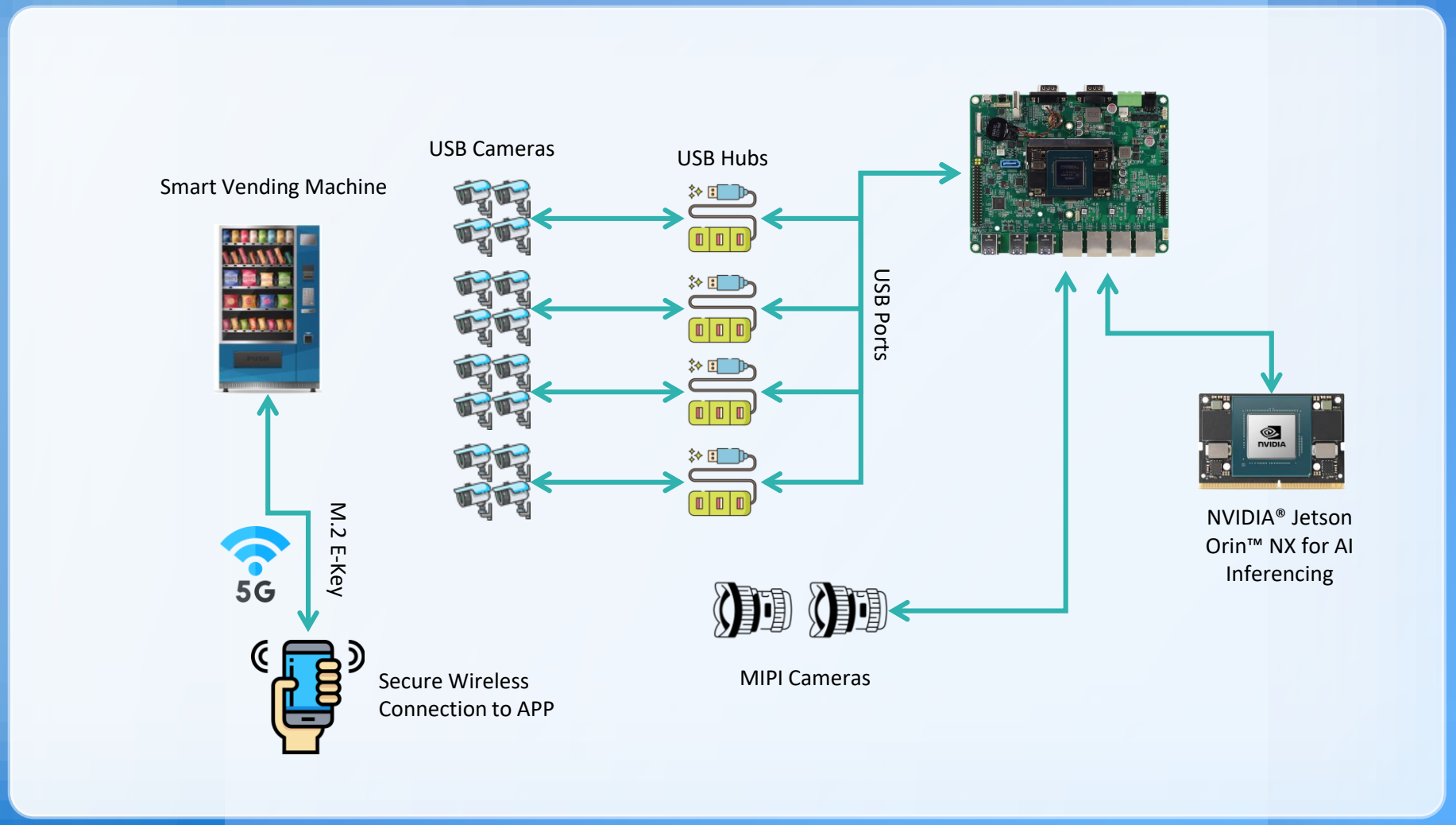
Product owners receive instant inventory status notifications.

Diagram

Inventory Tracking

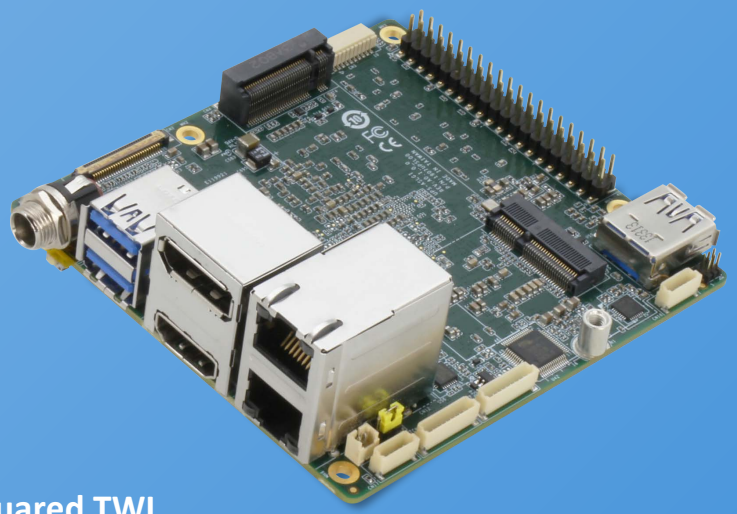


AI and computer vision technologies enable real-time inventory tracking in vending units and kiosks. Items are identified and updated instantly, while mobile integration allows for frictionless, app-based purchasing.



Interactive Product Displays

This solution was integrated into high-end cosmetics counters to display full product information for customers based on the product sample placed on it. Running an object recognition model using a HAILO-8™ M.2 2280 AI accelerator installed via the board's M.2 M-Key, the UP Squared TWL was able to recognize the product placed on the counter, and show tailored product displays on screen for customers to see.



UP Squared TWL



Benefits



Small 85.6mm × 90mm form factor fits seamlessly into cosmetics counters.

Compact Design

High-Quality Imaging

MIPI camera support enables precise product recognition.

DP 1.2 delivers stunning product visuals.

8K Resolution

AI Powered

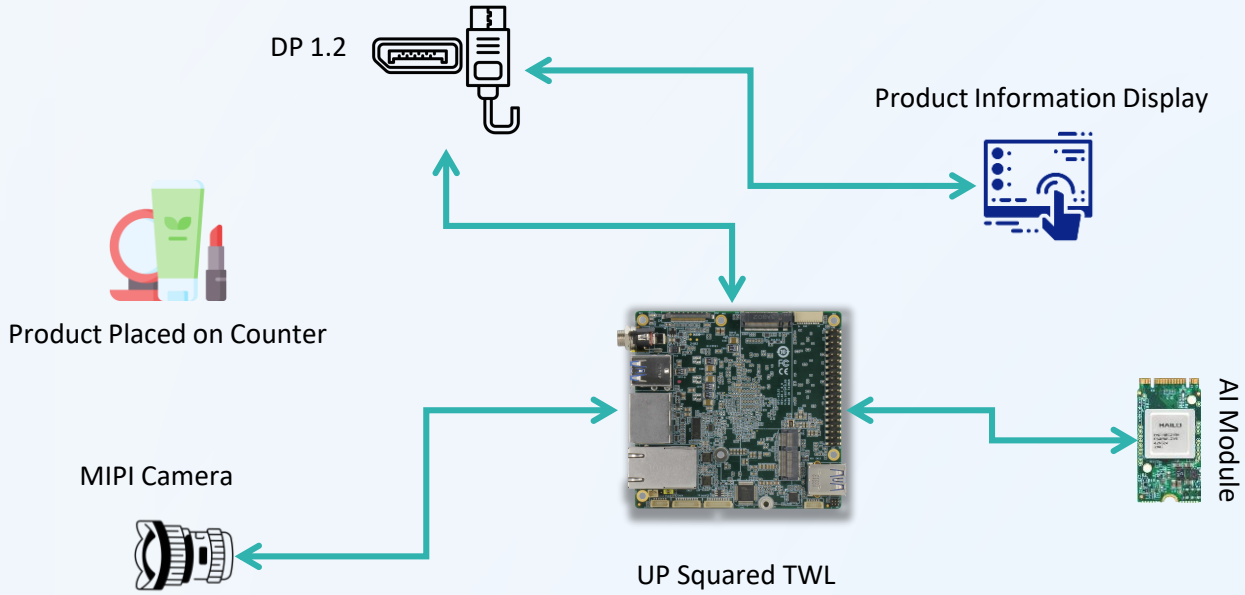
HAILO-8™ M.2 2280 module support provides SSD and YOLO model architectures.

Diagram

Interactive Product Displays



By recognizing products placed on the counter, AI-powered displays deliver tailored content to shoppers. This solution enhances customer engagement and provides instant access to detailed product information.



POS

Point-of-Sale System

Point-of-Sale (POS) System that can handle everything from daily transactions to inventory management and customer engagement, using the ACP-2076 7” WSVGA Multi Touch Panel PC as a fully integrated solution. The application is able to calculate the price of scanned items, offer customer interaction via high-resolution display, and process multiple payment methods securely.



ACP-2076



Benefits

Engaging & Versatile Display

7" multi-touch screen with multiple mounting options for flexible, engaging use.

Fanless Design

Quiet and designed to limit dust accumulation.

Energy Efficient

Low power consumption helps reduce operational costs.

Expandable Connectivity

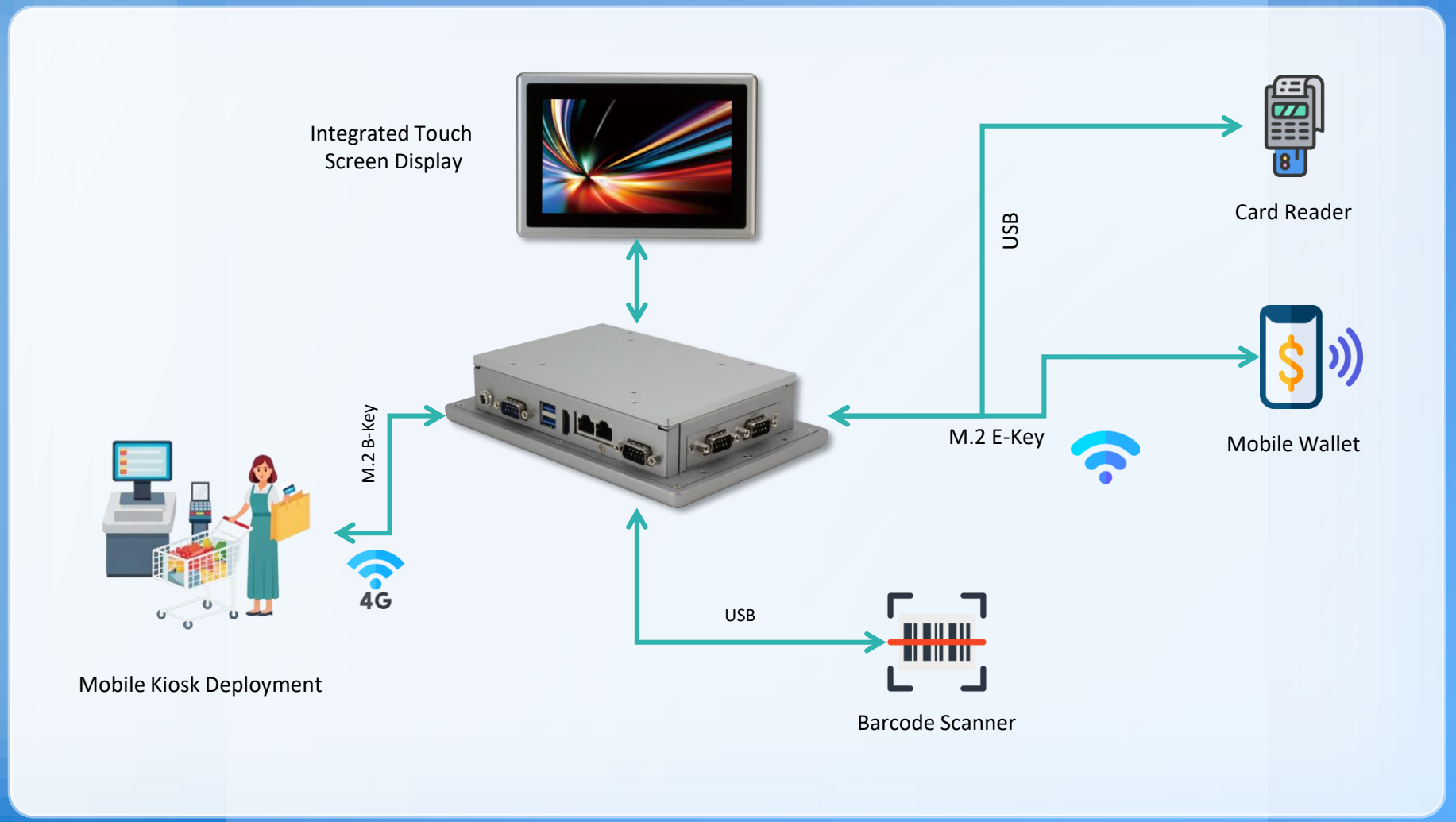
M.2 slots support wireless modules and payment peripherals for flexible expansion.

Diagram

POS



A fully integrated POS system streamlines transactions, inventory updates, and customer engagement. With touch display and wireless payment support, it enables smooth, secure, and efficient checkout experiences.

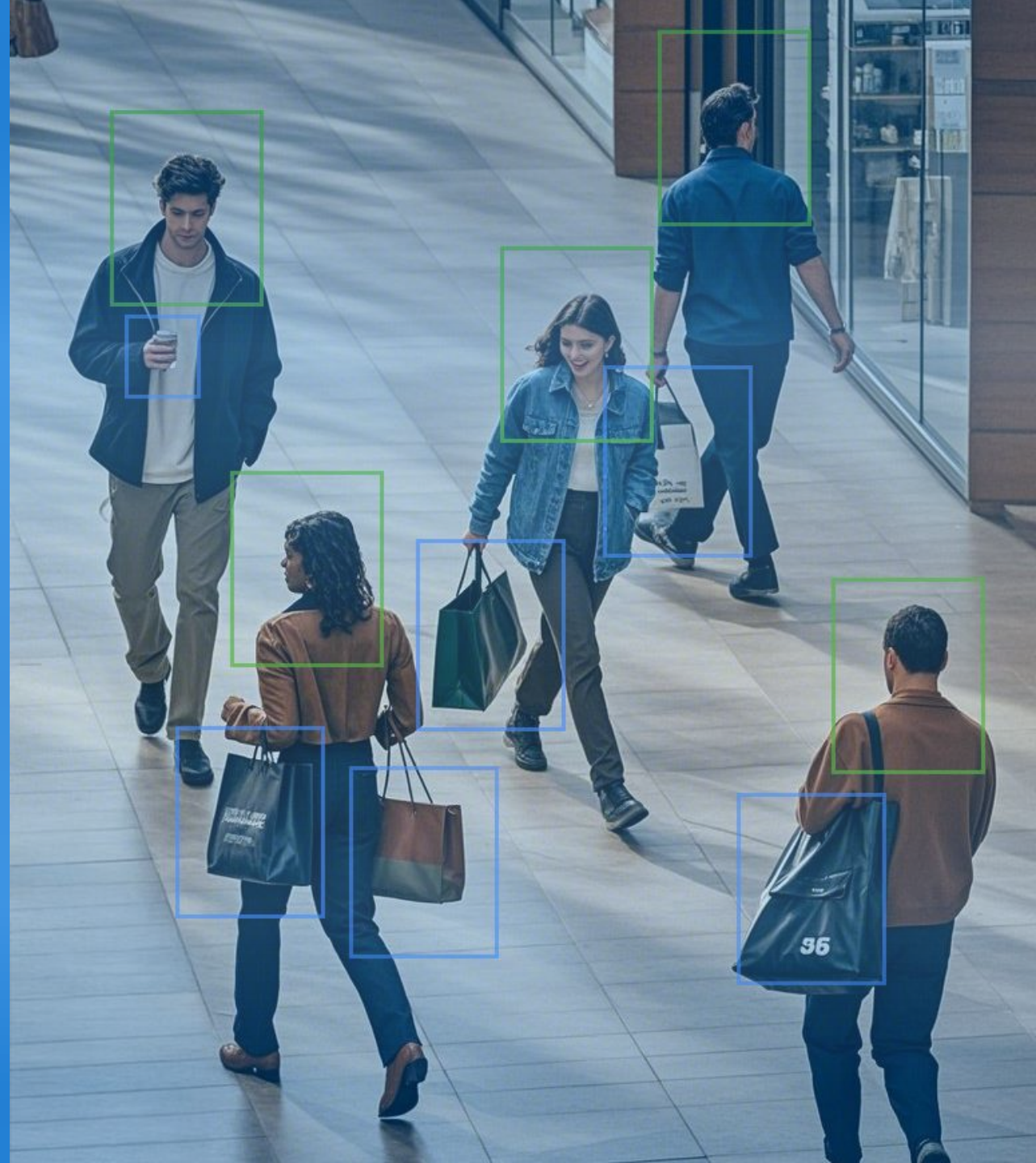


Loss Prevention System

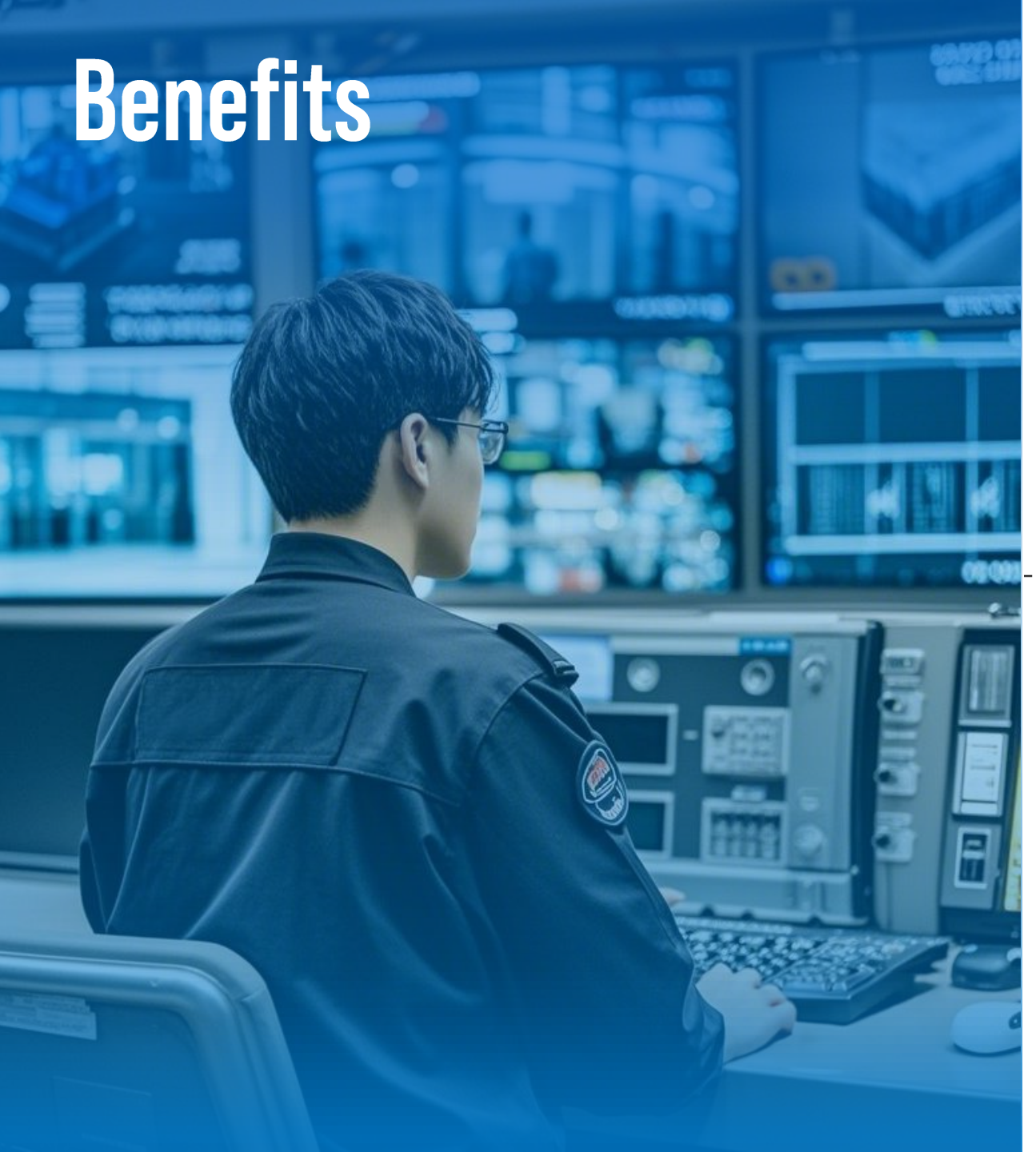
Utilizing the GENESYSM-RAP6's strong processing, high expandability, and broad peripheral support, this application is an efficient and scalable solution for in-store surveillance, customer behavior monitoring, and theft prevention. Through the real-time analysis of in-store behavior received from cameras and sensors, the system can provide alerts, trigger security locks, and provide real-time video feed to central control rooms.



GENESYSM-RAP6



Benefits



Enhanced Performance

13th Generation Intel® Core™ CPU with Intel® Iris® Xe Graphics

Rich I/O Support

USB, serial, GPIO, and LAN interfaces for camera, sensor, RFID, and other peripheral devices

Flexible Expansion

AI, storage, and wireless expansion support

Wide Power Range

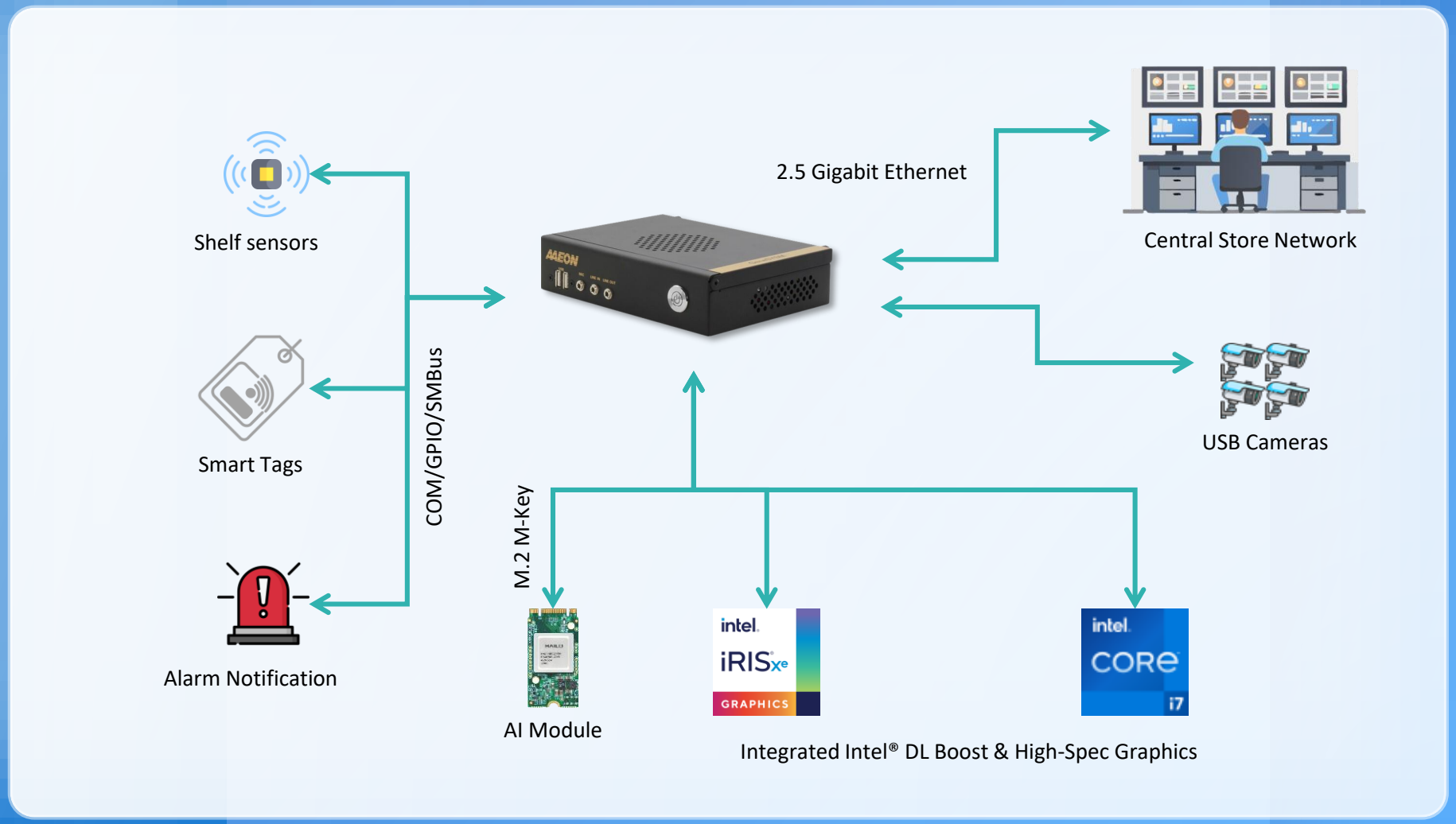
9V~36V power input for flexible deployment

Diagram

Loss Prevention System



Using AI, sensors, and camera integration, the system monitors in-store activity in real time. It helps detect suspicious behavior, triggers alerts, and supports theft prevention across retail environments.





Take the Next Step

www.aaeon.com

Contact your AAEON representative to explore how our smart retail solutions can support your business goals