

Overcoming Healthcare Pain Points

Transforming Healthcare with Smarter Solutions



AI-Assisted Diagnostic Imaging



Medication Delivery Robot



ICU Monitoring Station



Fall Detection System



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Who we are

AAEON's Mission

Empowering healthcare innovators with reliable edge AI platforms that make care **safer**, **faster**, and **smarter**.



End-to-End Partnership

From concept development and platform selection to mass production and after-sales support, AAEON helps bring healthcare solutions to market with confidence.



Trusted Edge AI Expertise

AAEON delivers dependable industrial and embedded computing platforms, including motherboards, systems, rugged tablets, AI edge platforms, and wireless solutions designed for stability and long-term deployment.



Smarter Outcomes in Healthcare

Working with healthcare equipment providers, AAEON develops platforms that enhance patient safety, streamline workflows, and support better clinical outcomes.



Established in 1992



Global OEM/ODM Service

Where Technology Meets Healthcare

With the adoption of edge AI solutions increasing across sectors, many new technologies can be harnessed to streamline workflows, increase efficiency, and enhance the effectiveness of existing healthcare tools. Such examples include:



Autonomous Mobile Robots (AMRs)

AMRs can be used to deliver medication from pharmacies to wards and transport lab samples between departments.



Diagnostic Imaging Anomaly Detection

CNN-based object detection and segmentation models can be used to automatically identify anomalies in medical imaging.



Patient Safety Monitoring & Alert Systems

Embedded systems can be used in conjunction with live camera feeds to enable early detection of patient falls.



Case Studies

Real-world applications of edge AI in healthcare.



AI-Assisted Diagnostic Imaging

Supporting faster, more accurate image analysis for earlier and more confident diagnosis.



Fall Detection System

Real-time monitoring and alerts to help prevent falls and improve patient safety.



ICU Monitoring Station

Continuous patient monitoring for faster insights and proactive care.



Medication Delivery Robot

Autonomous medication delivery to support timely, accurate, contactless care.



AI-Assisted Diagnostic Imaging



Smart Colonoscopy Support

A medical technology startup partnered with AAEON to develop an innovative AI-assisted colonoscopy device using the BOXER-8641AI-PLUS. The objective was to increase the detection rate of subtle or ambiguous anomalies such as polyps, lesions, and adenomas during colonoscopies.

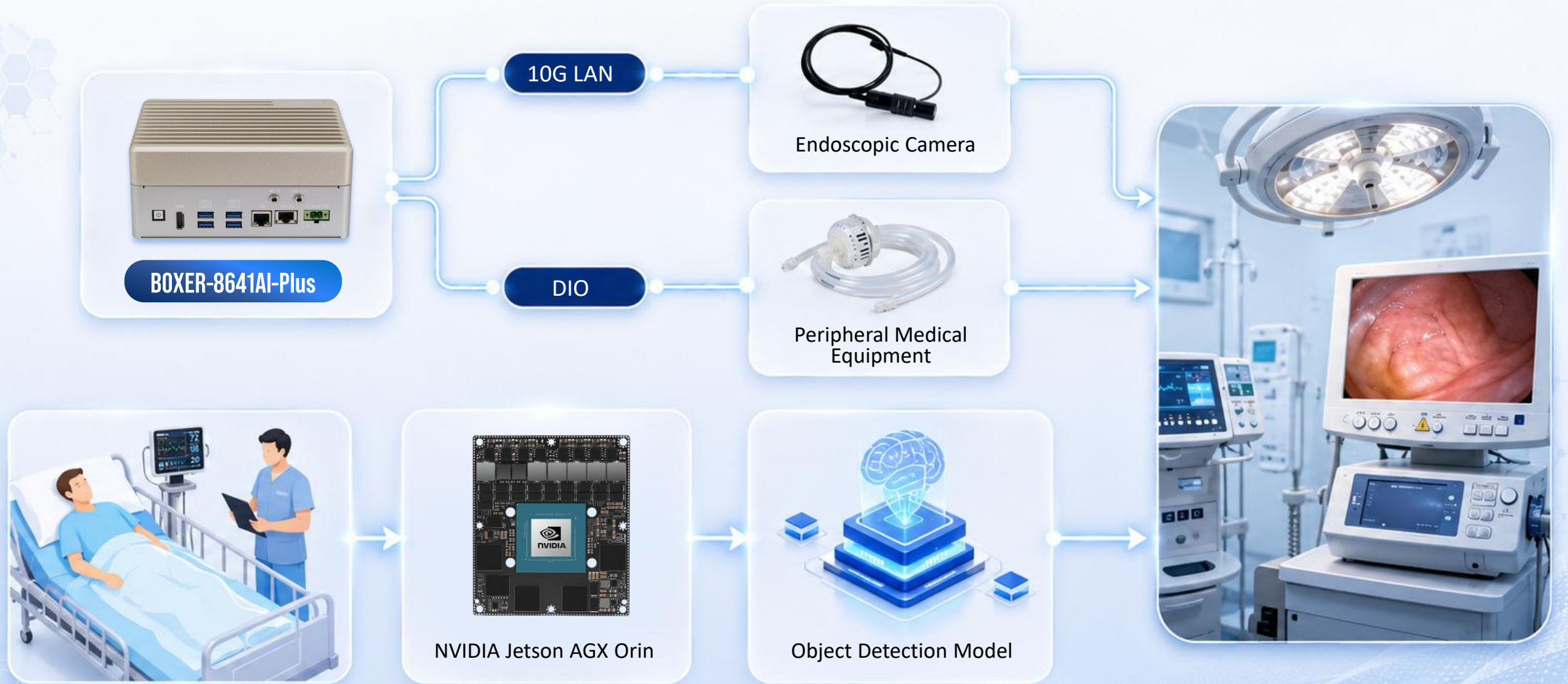


Key Platform Requirements

- ✓ Compliance with electromagnetic compatibility (EMC) standards.
- ✓ Capable of delivering a continuous, high-speed stream of uncompressed image data.
- ✓ Able to remotely update multiple systems at scale.
- ✓ Sufficient AI performance to execute the customer's complex object detection and image classification algorithms.



Application Architecture



Why AAEON's BOXER-8641AI-PLUS?

AI-Assisted Diagnostic Imaging



FCC Class B

Compliant with EMC, EMI, & EMS standards for use with medical equipment.



10G LAN

Could support an endoscopic camera for high-resolution video.



NVIDIA® Jetson AGX Orin™

Allowed precise execution of complex object detection algorithms.



DB-9 x 3

RS-232/485 & DIO to interact with peripheral equipment.



Out-of-band (OOB) Connector

Remote hardware monitoring checks.



Over-the-air (OTA) Update Functionality

Remotely integrate new model datasets.

Fall Detection System

In a bid to leverage technological innovation to expedite the response times to falls and improve outcomes for care home residents that suffer falls, AI software development company AIRUCA teamed up with AAEON and leading systems integrator Novalux to produce the AI-Behavia FD fall detection system using the BOXER-8621AI, a Compact Fanless Embedded AI System powered by the NVIDIA® Jetson Orin Nano™ with Super Mode.



Key Platform Requirements

- ✓ Support continuous video streams from up to four network cameras without frame drops.
- ✓ Provide a display interface through which video feeds could be output for local monitoring.
- ✓ Communication protocols capable of triggering alarms or devices to alert staff that a fall had been detected.
- ✓ Strong inferencing capabilities to provide accurate, latency-free analysis of multiple video feeds.



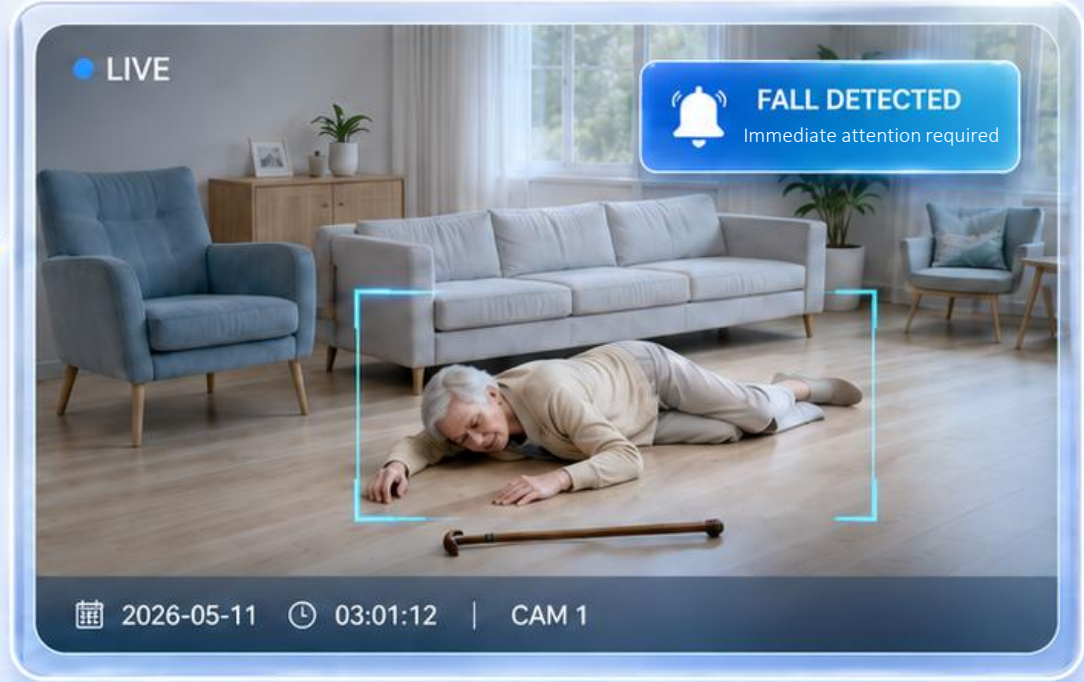
Application Architecture



LAN/PoE



HDMI



BOXER-8621AI

DIO



Why AAEON's BOXER-8621AI?

Fall Detection System



Gigabit Ethernet for Centralized Data Acquisition

The BOXER-8621AI's RJ-45 Gigabit Ethernet LAN port was able to host four network cameras through a PoE switch, providing sufficiently fast video data acquisition while maintaining stability to avoid frame drops.



An Efficient Yet Powerful AI Engine

An onboard NVIDIA® Jetson Orin Nano™ module offered up to 67 TOPS, making it powerful enough for the parallel processing and matrix multiplication needed to run AIRUCA's AI algorithms.



Digital I/O for Dynamic Alert Mechanisms

The system's network-independent digital I/O could be connected to a Relay Box to interface with alarms, meaning immediate alerts could be issued based on the visual data acquired.

ICU Monitoring Station

A system integrator wanted to develop a real-time, AI-powered Intensive Care Unit (ICU) monitoring station capable of analyzing patient vital signs, detecting anomalies, and alerting medical staff to potential emergencies.

To do so, they used the [MIX-Q670A1](#) equipped with a GPU powered by the Intel® Arc™ A750E graphics platform.

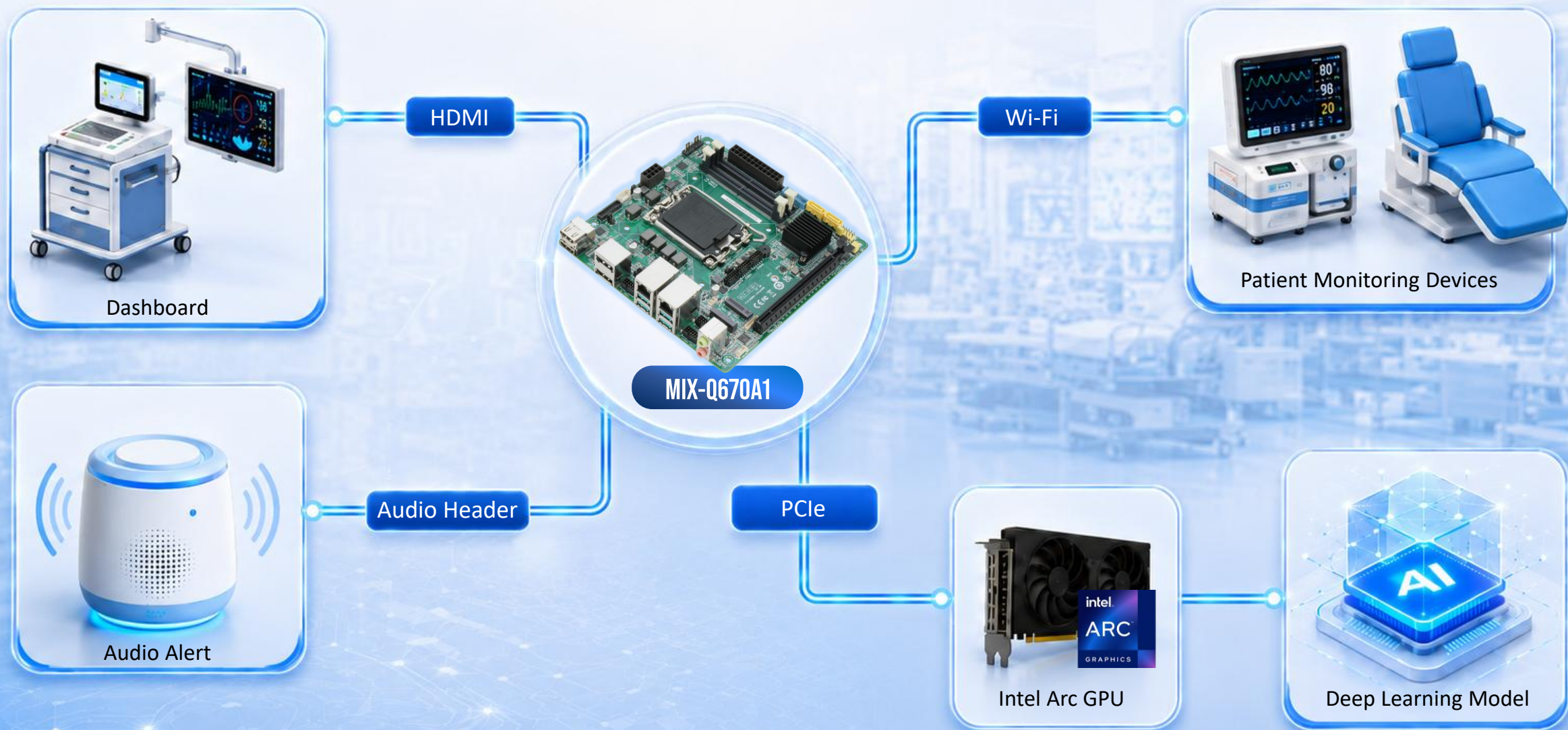


Key Platform Requirements

- ✓ Capable of handling large volumes of patient data in real time.
- ✓ Needed support for Wi-Fi and Bluetooth to connect medical IoT devices while ensuring secure data transmission with WPA3 encryption and TPM 2.0
- ✓ Extremely strong AI performance to detect trends and abnormalities in vital signs without adding excessive computational overhead.
- ✓ Allow for upgrades in processing power, storage, and connectivity over time, ensuring long-term viability.



Application Architecture



Why AAEON's MIX-Q670A1?

ICU Monitoring Station



Powerful Hybrid Computing Architecture

The MIX-Q670A1 motherboard + Intel® Core™ i7-13700 CPU ensured efficient task allocation between background processes and real-time data analysis.



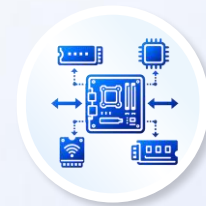
Elite Graphics Card Support

Through its PCIe Gen 5 [x16] slot, the MIX-Q670A1 could host exceptionally high-performance GPUs, such as those utilizing Intel® Arc™ A750E Graphics technology, which offered 229 TOPS of AI performance.



Secure & Reliable Data Transmission

The board's TPM 2.0, WPA3 encryption, and Intel® Hardware Shield ensured data integrity and protection for patient information.



Flexible & Future-Proof Mini-ITX Design

The modular form factor enabled scalability, allowing future processors, storage, and wireless module upgrades without needing to replace the whole unit.

Medication Delivery Robot

Noting the inefficiency of existing medication dispensation on hospital wards, a leading healthcare equipment provider developed an automated medication delivery cart.

To do so, the company employed AAEON's RICO-MX8P, a fanless Pico-ITX single-board computer powered by the NXP i.MX 8M Plus processor platform.

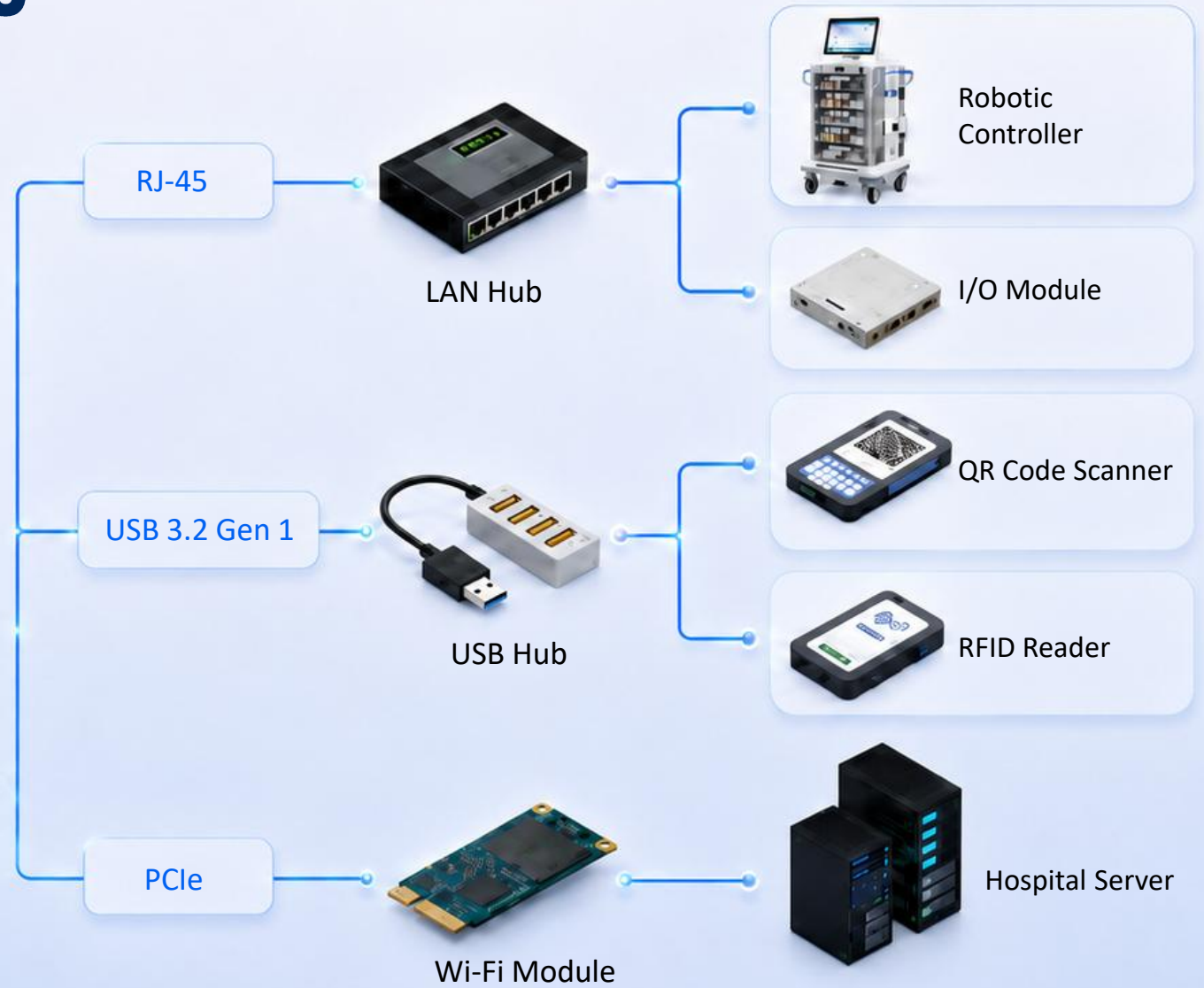


Key Platform Requirements

- ✓ The platform chosen would need to be installed within a larger robotic unit, so a small form factor was required, and fanless operation was a plus.
- ✓ The application would need both wired and wireless connectivity, as well as support for RFID card readers and QR code scanners.
- ✓ The medication delivery cart would require a custom user interface, so the software integration support the chosen embedded partner could offer was an important factor.



Application Architecture



Why AAEON's RICO-MX8P?

Medication Delivery Robot



1 Dual-network Configuration

The RICO-MX8P offered both an RJ-45 LAN port and an M.2 2230 E-Key slot, allowing both wired Ethernet for the cart's robotic and I/O modules and Wi-Fi to exchange data with hospital servers.

2 Software Integration Support

AAEON provided extensive UI customization and software integration support, including language localization and custom branding.

3 Multi-Peripheral Support

The board's USB 3.2 Gen 1 port provided the bandwidth for a USB hub capable of managing RFID card readers, QR code scanners, and other peripherals through a single upstream interface.

4 Small Footprint

At just 100mm x 80mm and designed for fanless operation, the RICO-MX8P was a very practical option for the application, where it would need to be deployed within a compact unit with minimal outside airflow.

Impact: Medication Delivery in Clinical Settings

The customer has now deployed their medication delivery cart in clinical environments. While the application is still in its infancy, it is expected to have a substantial impact on how medication rounds are conducted.



40%

Workload Reduction

Potential reduction in medical staff workload by eliminating in-person pharmacy sign-out and return trips.



20

Patients Per Trip

The cart can handle medication delivery for up to 20 patients in a single round, dramatically accelerating efficiency.



100%

Multi-step Security

Automatic locking compartments and multi-step authentication create a secure controlled substance workflow, reinforcing compliance and minimizing human error.



Key Takeaways

Edge AI is no longer just a future concept in healthcare. It is being deployed today. Across four distinct use cases, AAEON's platforms are delivering measurable impact across three critical dimensions.



The Case for Edge AI in Healthcare

Faster Response Times

In healthcare, time is always critical, not only in emergency departments but across every area of clinical care. By embedding AI into healthcare workflows, staff can access the information they need faster and make decisions with greater confidence.



A Second Set of Eyes

Preventative screenings are becoming more common, and AI models integrated into diagnostic tools can provide clinicians with valuable support. By helping identify anomalies earlier and more accurately, AI can make timely intervention more achievable.



Efficient Resource Allocation

Autonomous mobile robots can help reduce the clinical time spent on routine tasks such as medication delivery and sample transport. This allows staff to focus more of their time on patient care where it matters most.





Always Agile, Always Ahead.

Let's Advance Healthcare Together with Edge AI

Interested in how edge AI can be used to improve healthcare? Discover more by visiting the [Smart Healthcare](#) application story collection on our website, or [contact us](#) today.

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