From Sea to Sky

Mapping the Future of Unmanned Vehicle Technology

Learn More

Start Your Journey **Today**

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AAEON's Mission
Discover our vision for intelligent edge AI platforms

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Market Overview
Explore deployment scenarios across UAVs, UGVs, and UUVs

03

Real-World Use Cases
See how our technology solves complex challenges

04

Build Your Solution
Start developing cutting-edge autonomous systems

Who We Are

AAEON Technology Inc., founded in 1992, is a leading provider of edge AI computing solutions powering the next generation of autonomous systems.

We leverage cutting-edge technologies from premier chip providers, expertly designing hardware platforms that enable OEMs, ODMs, and system integrators to develop and deploy sophisticated AI-driven solutions.

Our platforms combine raw computing power with industrial-grade reliability, meeting the demanding requirements of unmanned vehicle applications across every environment.

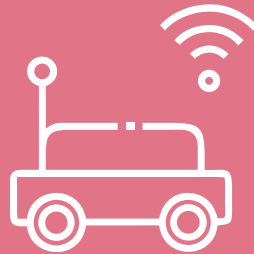| 30+	17	850+	92.5%
Years Experience	Global Offices	Employees Worldwide	Customer Satisfaction

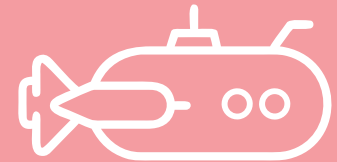# Three Domains, Infinite Possibilities

AAEON's computing platforms power autonomous operations across air, land, and sea, with each environment presenting unique technical challenges that demand specialized solutions.
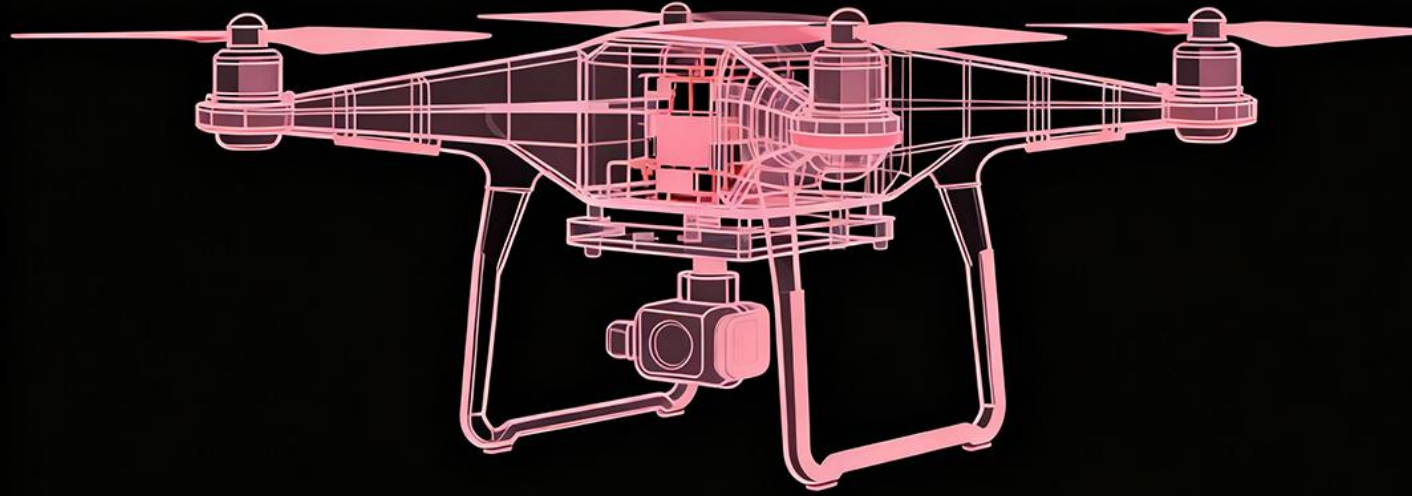

UAVs

UGVs

UUVs

UAVs: Aerial Intelligence

Crop Health Monitoring

Gather comprehensive data on crop health, wildlife populations, and pollution detection across vast agricultural landscapes with precision multispectral imaging.

Infrastructure Inspection

Survey critical infrastructure including power plants, pipelines, and communication towers, accessing hard-to-reach areas while maintaining operational safety.

Disaster Response

Cover wide areas affected by natural disasters like earthquakes, floods, and hurricanes to streamline response efforts and accelerate relief operations.

UGVs: Ground Operations
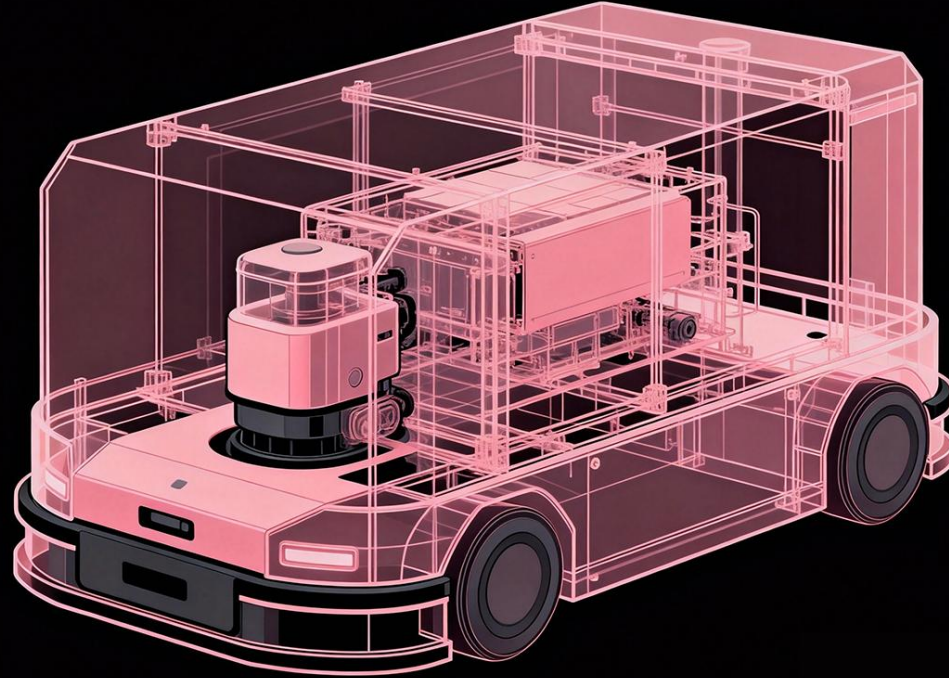
Warehouse & Logistics

Perform labor-intensive material handling tasks across manufacturing facilities, optimizing workflows and reducing operational costs.

Industrial Safety Monitoring

Deploy in hazardous or remote sites to monitor industrial equipment for faults and perform predictive maintenance, protecting workers and assets.

Healthcare Automation

Transport lab samples, deliver meals to patient rooms, perform routine disinfection, and conduct security patrols across large healthcare facilities

UUVs: Underwater Exploration
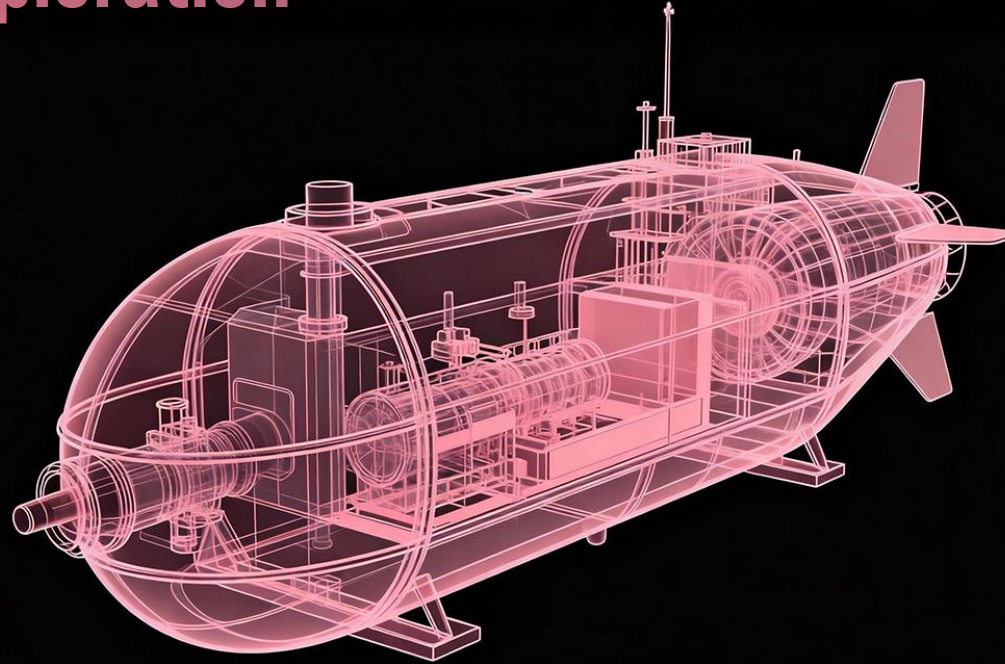
Oil & Gas Infrastructure

Conduct visual, acoustic, and sonar-based integrity checks of underwater pipelines, ensuring operational safety in extreme environments.

Marine Research

Enable seabed mapping and sample analysis to monitor deep-sea ecosystems, supporting critical climate change research initiatives.

Defense & Security

Provide covert underwater surveillance capabilities, tracking submarines, detecting unauthorized intrusions, and monitoring other underwater vehicles.

Case Studies Overview

Heavy Goods Transportation

Automotive manufacturing automation

Seabed Mapping & Analysis

Deep-sea geoscientific research

Infrastructure Inspection

Underground pipeline monitoring

Autonomous Passenger Transport

Airport mobility solutions

Agricultural Monitoring

Precision farming technology

Case Study 1:
Heavy Goods Transportation

The Challenge

An automotive manufacturer needed to reduce logistics overhead and human resource requirements while maintaining precision in component delivery across sprawling factory floors.
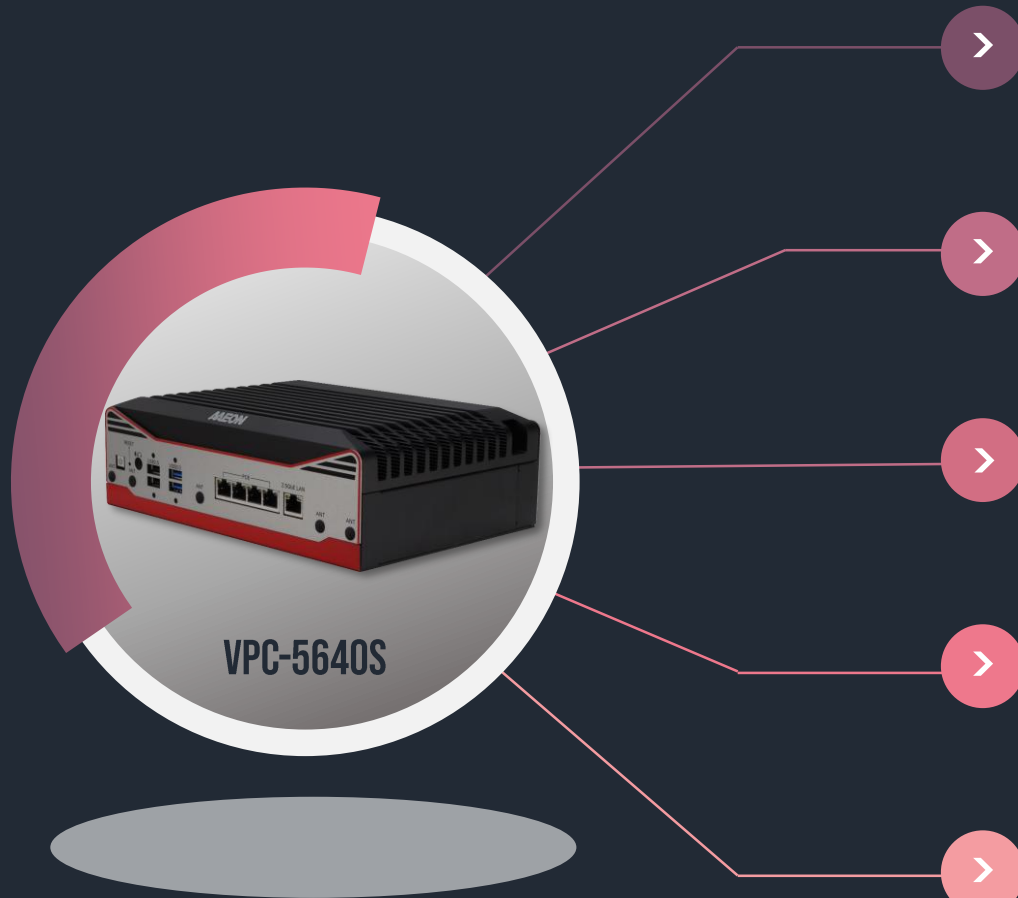
The Solution

A rugged <u>VPC-5640S</u>-powered UGV deployed to transport heavy component pallets to predetermined locations on assembly lines and in body shops, operating autonomously 24/7.

Application Architecture

- GPS
- POE Cameras
- Motor Control
- Sensors

9V~36V
W/Power Ignition

MIL-STD-810H
Vibration & Shock

VPC-5640S

Key Product Features ▶

VPC-5640S

PoE Camera Support

Four PoE ports plus 2.5GbE LAN for high-speed camera and sensor connectivity.

Serial & CANBus Integration

DB-9 ports for RS-232/422/485 and isolated CANBus connections for motors, LiDAR, and industrial sensors.

Digital I/O

DB-15 port provides 8-bit DIO for safety interlocks, actuators, and emergency stop signals.

Wireless Expansion

M.2 E-Key for Wi-Fi/Bluetooth and M.2 B-Key + SIM for LTE/5G remote monitoring.

Rugged & Reliable

MIL-STD-810H certified for vibration/shock, -40°C to 70°C operation, suitable for continuous factory floor use.
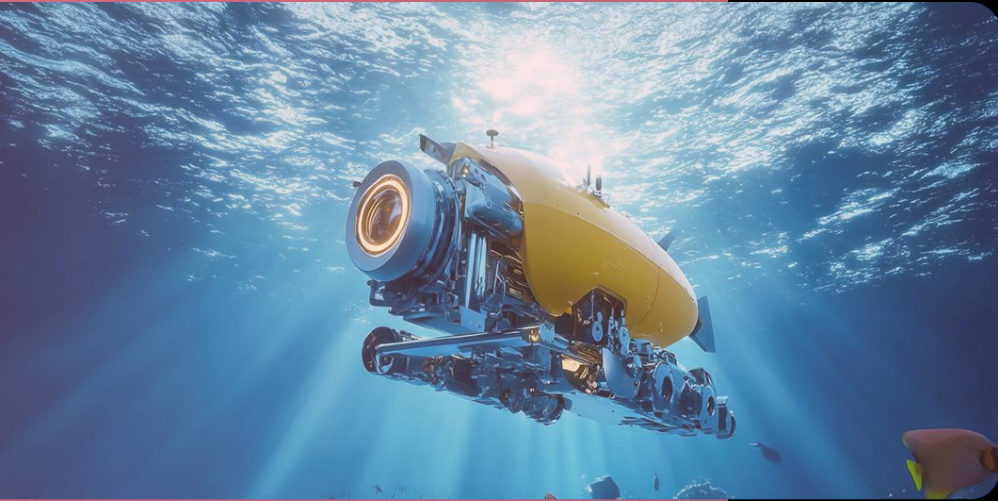
Case Study 2:
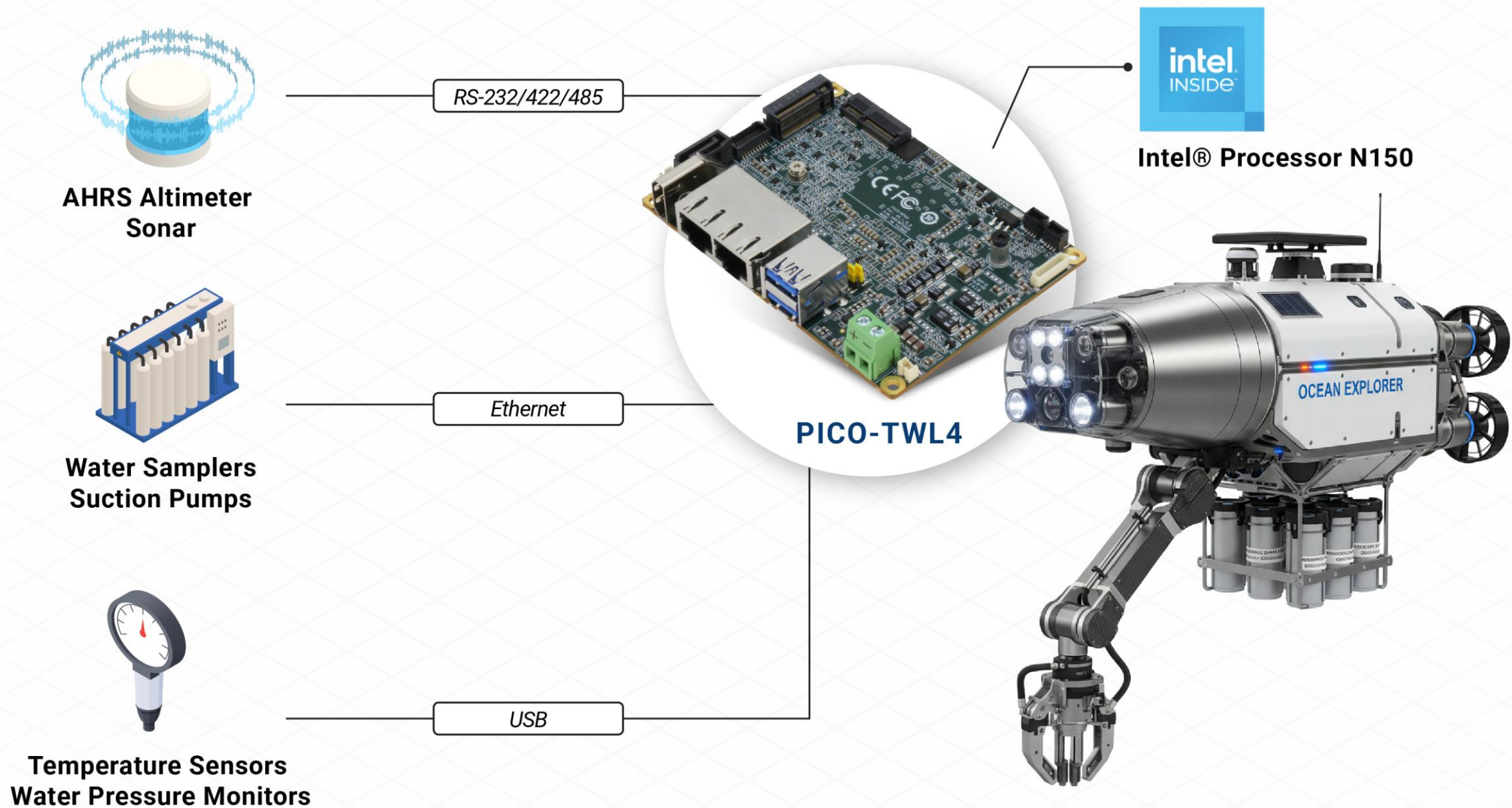## Seabed Mapping & Sample Analysis

Exploring the Unknown

A PICO-TWL4-powered UUV conducts geoscientific research, mapping seabeds over extended distances while coordinating multi-payload operations to obtain samples from various locations.

This compact platform enables breakthrough discoveries in marine biology, geology, and climate science through extended autonomous missions in challenging underwater environments.
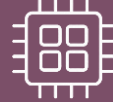
Application Architecture

AHRS Altimeter Sonar

RS-232/422/485

Water Samplers Suction Pumps

Ethernet

Temperature Sensors Water Pressure Monitors

USB

PICO-TWL4

intel INSIDE

Intel® Processor N150

OCEAN EXPLORER

Key Product Features

PICO-TWL4

Efficient Quad-Core Performance

Intel® Processor N150 for parallel processing at just 6W, plus CPU C-states and S3 mode for extended endurance.

Environmentally Resilient Customization

Supercapacitor integration enabled rapid 300-second recharge cycles and near-endless durability, minimizing downtime in remote missions.

Comprehensive Sensor Integration

Compact 100mm x 72mm board supported AHRS, altimeter, sonar, and auxiliary mission sensors via multiple COM and USB ports for precise 3D navigation.

Time-Synchronized Payload Control

Dual LAN with TSN-enabled Ethernet ensured accurate, real-time motor control for coordinated sample collection.

Case Study 3:
Public Infrastructure Inspection

Maintaining Critical Systems

A compact, rugged AI-powered autonomous PICO-MTU4-based UGV traverses underground pipelines to inspect, analyze, and detect structural anomalies in aging infrastructure.

This solution prevents catastrophic failures, reduces inspection costs, and enhances public safety by identifying issues before they become critical problems.

Application Architecture

Lockable Cable Connectors — USB Cameras

Lockable Cable Connectors — USB Cameras
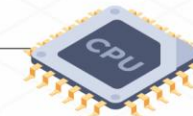
Lockable Cable Connectors — Sensors

Lockable Cable Connectors — Sensors

PICO-MTU4

intel CORE ULTRA

NPU
Efficient AI Task Handling

CPU
Advanced Multitasking

Key Product Features

PICO-MTU4

100mm x 72mm Form Factor

Fit seamlessly into the pipe-traversing vehicle while maintaining high-performance computing capabilities.

Intel® Core™ Ultra NPU

Eliminated the need for an external AI accelerator, reducing power consumption and heat output.

Embedded Durability

Soldered LPDDR5 memory ensured shock resistance, while lockable cables prevented disconnections in high-vibration environments.

Optimized Power Efficiency

The board's low-power SoC architecture and sub-0.01W NPU consumption met ErP energy efficiency standards, ensuring long operational endurance.
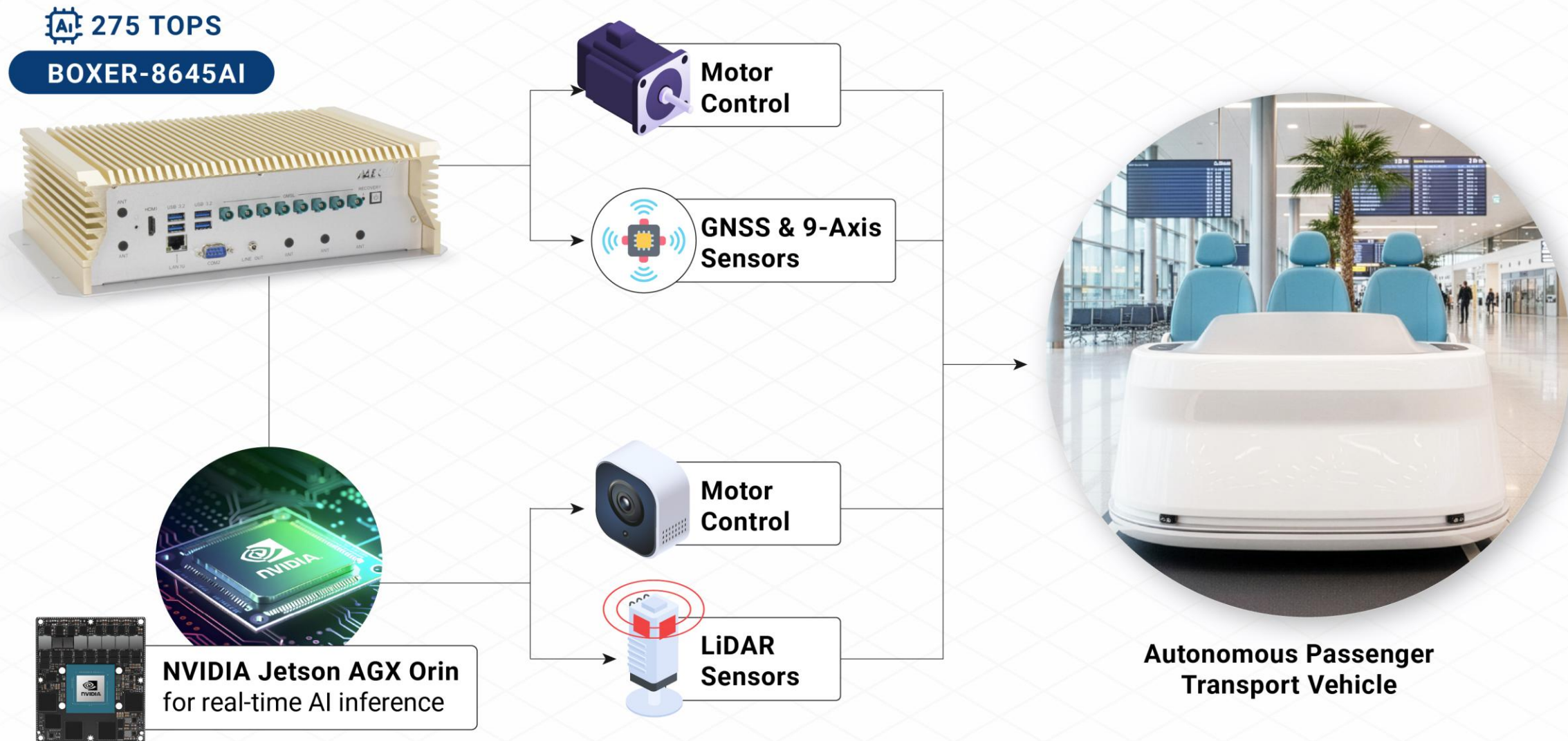
Case Study 4:
Autonomous Passenger Vehicle

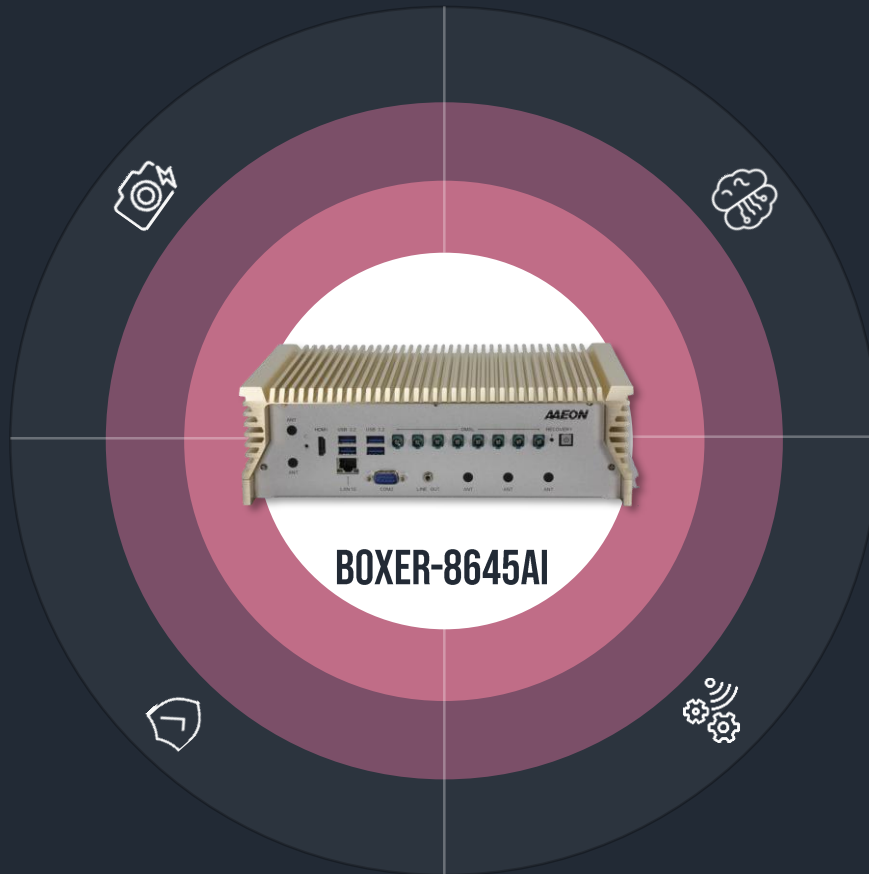### Accessible Mobility Solutions

A BOXER-8645AI-controlled UGV deployed in airports navigates high-traffic areas autonomously, ensuring passengers with mobility issues travel comfortably between terminals and facilities.

This system combines safety, reliability, and passenger comfort while reducing operational costs and improving airport accessibility services

Application Architecture

275 TOPS
BOXER-8645AI

Motor Control

GNSS & 9-Axis Sensors

NVIDIA Jetson AGX Orin for real-time AI inference

Motor Control

LiDAR Sensors

Autonomous Passenger Transport Vehicle

Key Product Features

BOXER-8645AI

GMSL2 Camera Support

Eight FAKRA connectors for low-latency, high-resolution GMSL2 camera input.

NVIDIA® Jetson AGX Orin™

275 TOPS of AI inferencing for real-time path planning and object recognition.

Sensor & Actuator Integration

CANBus for motor control, RS-232 and RS-485 for LiDAR, GNSS and 9-Axis sensor support.

Mission-Critical Reliability

MIL-STD-810G compliance for shock and vibration resistance, wide temperature tolerance for reliable 24/7 operation.

Case Study 5:
Agricultural Monitoring Drone

### Precision Agriculture Intelligence

A small form factor UAV powered by the de next-V2K8 gathers accurate real-time data on crop health, diseases, and environmental conditions across extensive agricultural landscapes.

This platform enables farmers to optimize resource usage, detect problems early, and increase yields through data-driven decision making.

Application Architecture

USB, GPIO, COM — Sensors

COM — GPS

USB — Cameras

M.2 M-Key — 4G Module — Cloud

de next-V2K8
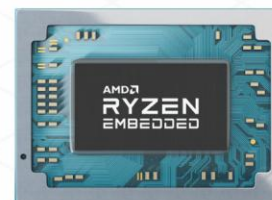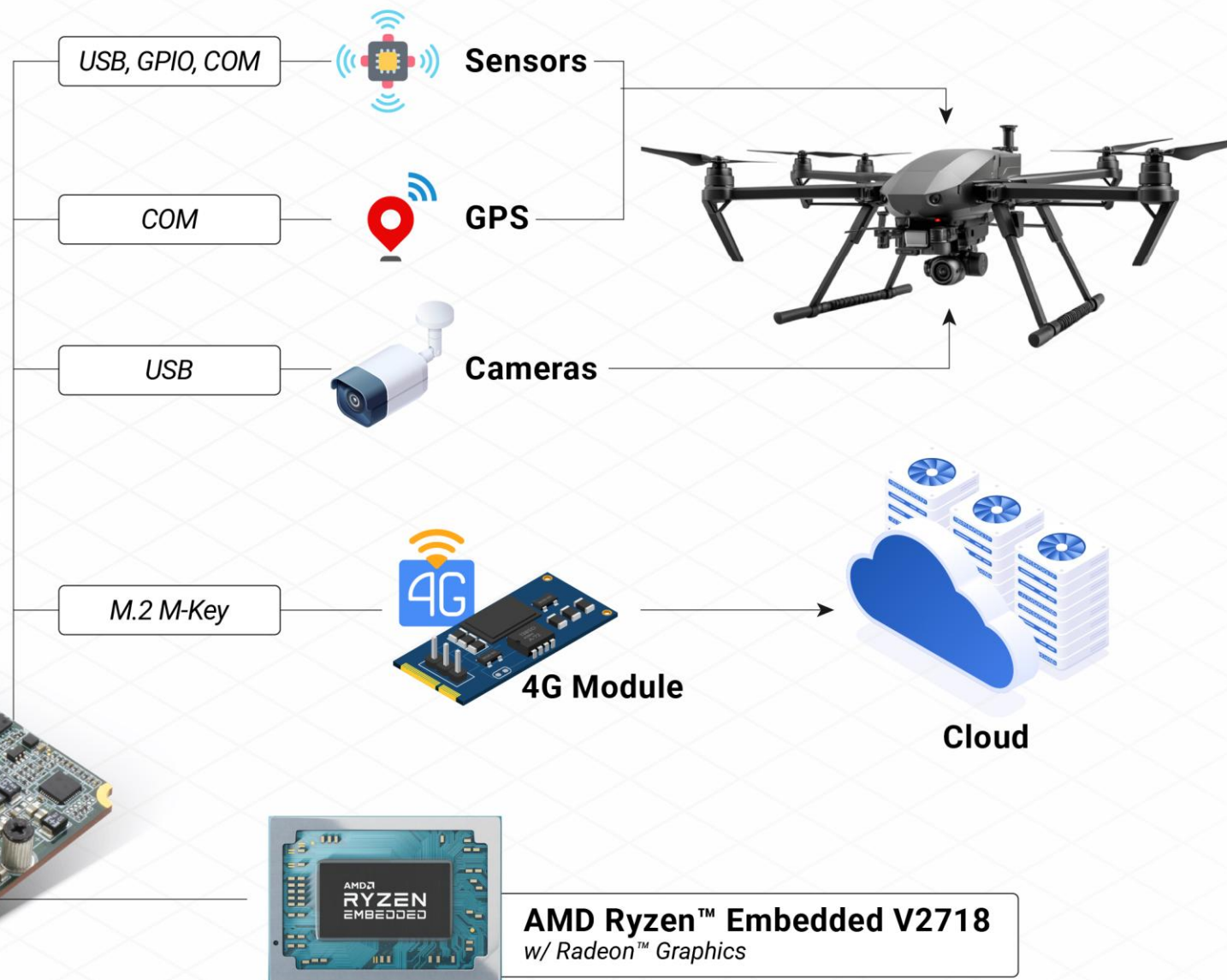
AMD Ryzen™ Embedded V2718
w/ Radeon™ Graphics

Key Product Features ▶

Ultra-Compact & Lightweight

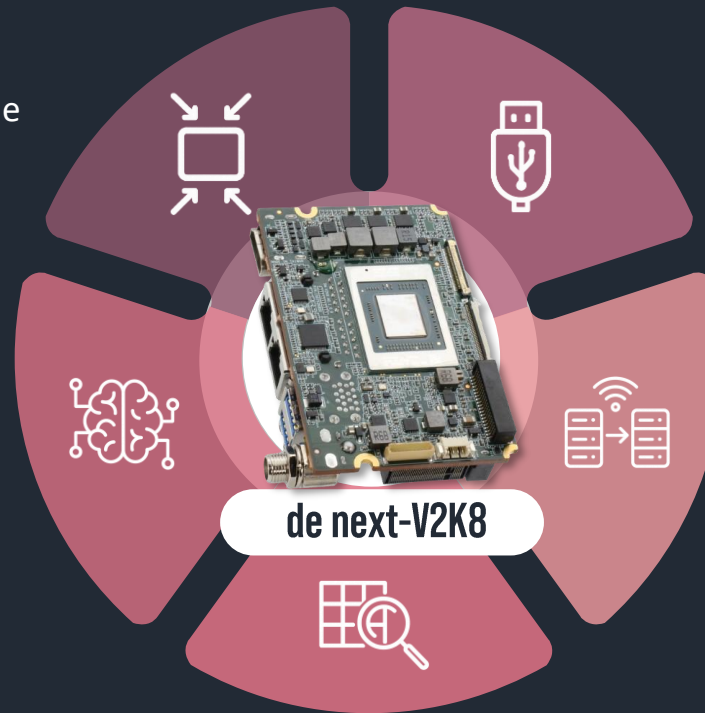86mm x 55mm SBC optimized for drone integration.

Powerful Edge AI Processing

AMD Ryzen™ Embedded V2718 with Radeon™ Graphics for AI inference.

High-Resolution Imaging

USB 3.2 Gen 2 ports supporting multispectral and visible light cameras.

Advanced Sensor Connectivity

USB 3.2 Gen 2 ports supporting multispectral and visible light cameras.

Real-Time Data Transmission

M.2 2280 M-Key slot enabled 4G connectivity for remote monitoring.

de next-V2K8

AAEON delivers autonomous operation from the seas to the sky through forward-thinking, innovative products and an agile design approach.

Join us in the driver's seat of in-vehicle technology, today.

www.aaeon.com