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EDGE COMPUTING:
REDEFINING RETAIL EXPERIENCES

Presented by

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MARKET TRENDS

Emerging Technologies

- AI-enabled edge computing delivering real-time analytics at the point of service
- Retail digitization accelerating with cashier-less stores and intelligent signage
- Voice and Vision AI creating personalized customer experiences in QSR
- Compact, modular systems optimized for diverse retail environments

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INDUSTRY PAIN POINTS

Data Blind Spots

Traditional POS systems lack real-time customer behavior insights. AI-powered solutions track preferences and enable personalized recommendations.

Service Bottlenecks

Long checkout lines and slow order processing frustrate customers. AI-driven automation dramatically reduces wait times.

Human Errors

Mistakes in order entry and payments damage customer satisfaction. Automated systems ensure transaction accuracy.

Labor Challenges

High turnover increases hiring costs. AI automation reduces dependency on human cashiers and order takers.

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ADVANTECH ADVANTAGES

Modular Architecture
Rich I/O flexibility enables seamless integration across POS, kiosks, signage, and analytics systems

Scalable Computing
Wide CPU range - Intel 14th Gen and Xeon platforms adapts to any workload requirement

AI-Ready Infrastructure
Native support for Intel Movidius to accelerate deployment

Long-Term Reliability
Smart thermal design with X-shape chassis & up to 10-year product longevity ensure stable operations

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COMPETITIVE DIFFERENTIATION

1
Unified Hardware Ecosystem
UBX and USC-M series support multiple verticals from a single platform, reducing integration complexity

2
Intel-Optimized AI
Seamless optimization enables high inference efficiency with proven performance benchmarks

3
Global Support Network
Proven reliability backed by a leading industrial computing brand with worldwide service presence

14
Pre-Validated Stack
Ready-to-deploy hardware for Vision AI and Voice AI applications accelerates time-to-market

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SOLUTION DEVELOPMENT LANDSCAPE

1   **Edge AI Acceleration**
NPUs and low-power GPUs enable real-time inference at the point of service without cloud dependency

2   **Software-Defined Scalability**
Flexible platform switching based on workload needs

3   **Latency-Critical Deployment**
AI model execution at the edge for self-checkout and drive-thru automation requiring millisecond response

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ENGINEERING CHALLENGES & SOLUTIONS

Thermal Management
Managing AI inference performance within strict thermal constraints in compact enclosures

Framework Compatibility
Ensuring seamless integration with diverse AI frameworks and sensor ecosystems

Performance Balance
Optimizing CPU, GPU, and NPU resources for varied workloads including vision, speech, and analytics

24/7 Reliability
Designing systems that maintain stability in harsh environments and continuous operation scenarios

Advantech's Approach
High compute density achieved through innovative X-shape thermal architecture in the UBX-330 series. Robust modular I/O design supports diverse retail and industrial integrations while maintaining system integrity.

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PARTNERSHIP

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Intel Platform

AI Acceleration

Connectivity Suite

Intel provides critical AI acceleration through OpenVINO, long-term platform stability, and ecosystem support that enables Advantech to balance cost and performance across CPU and GPU product lines.

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WHY INTEL?

Broad Toolchain Support

Native compatibility with OpenVINO, TensorFlow Lite, and PyTorch accelerates development cycles

Proven Reliability

Global support network and established track record in mission-critical deployments

Thermal Efficiency

Superior power management and thermal characteristics ideal for compact edge environments

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Optimization Process: Conversion efforts focused on tuning AI workloads for OpenVINO optimization, driver integration, and BIOS-level performance enhancements for Intel NPUs and GPUs.

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Retail Excellence
AI Vision powering self-checkout systems, dynamic signage, and intelligent inventory management across major chains

QSR Innovation
Voice AI transforming drive-thru experiences and self-order kiosks, reducing wait times by up to 40%

Industrial Applications
HMI systems, real-time analytics, and control clients for manufacturing and laboratory environments

Business Model

Advantech operates a *hardware + platform enablement model*, delivering customizable BOX PCs and monitors with long-term lifecycle support. Our target audience includes system integrators, OEMs, retail chains, and automation solution providers seeking end-to-end AI integration capabilities.

TARGET MARKETS & SUCCESS STORIES

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THANKS!

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