



智慧驅動產業轉型

研華 Edge AI 與 WISE 平台的邊緣創新實踐

**Smart Transformation Powered by Edge:
Advantech's Edge AI & WISE Platform in Action**

從硬體整合到 AI Agent 落地，加速百工百業智慧升級

From Hardware Integration to AI Agent Deployment —

Accelerating Smart Upgrades Across Industries



摘要 | Abstract

研華致力成為「智能地球的推手」，以邊緣運算（Edge Computing）與人工智慧（AI）為核心策略，透過 ACE 應用導向邊緣運算系統與 WISE-STACK 私有雲平台，實現軟硬整合的邊緣 AI 架構，推動 AI 於製造、能源、零售、交通與醫療等場域加速落地。本白皮書說明研華如何結合產業知識與 AI 技術，打造生態系共創平台，協助企業提升決策能見度與營運效率，進一步掌握生成式 AI 與 Agentic AI 的新契機。

As a global leader in industrial IoT and embedded platforms, Advantech is spearheading industrial transformation with Edge AI and sector-driven strategies. This white paper highlights the company's integrated approach through its ACE edge computing systems and WISE-STACK private cloud platform—bringing AI capabilities to the edge in diverse sectors like manufacturing, energy, healthcare, retail, and transportation. We further explore how Advantech fosters collaborative ecosystems and AI agent deployment to drive real-time insights and resilient operations across industries.

目錄 | Contents

- 一、 邊緣 AI 的產業契機與挑戰 | Industry Drivers & Challenges of Edge AI
- 二、 研華的解決方案架構：ACE Application Computing on Edge and WISE-STACK Private Cloud Platform
- 三、 重點應用場域與成果分享 | Key Applications and Use Cases
- 四、 共創生態系與技術整合優勢 | Ecosystem Co-Creation & Integration Advantages
- 五、 結語：向 Edge AI 全球領導者邁進 | Conclusion: Toward Global Leadership in Edge AI



一、邊緣 AI 的產業契機與挑戰 | Industry Drivers & Challenges of Edge AI

隨著生成式 AI (Generative AI) 與 Agentic AI 興起，邊緣運算的即時性與部署效率成為產業轉型的關鍵推手。然而，市場面臨以下挑戰：

- 數據爆炸與即時推論需求
- 多元異質硬體平台整合難度高
- AI 應用碎片化，缺乏垂直場域標準化
- 缺乏可快速導入的低代碼工具

The rapid rise of Generative and Agentic AI has intensified the need for responsive, scalable edge computing. However, industries face multiple challenges:

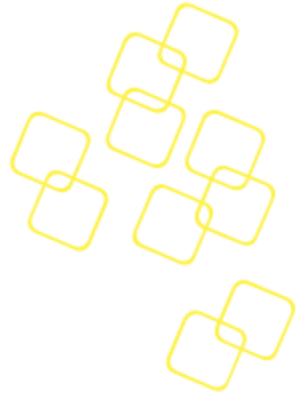
- Data explosion and real-time inference requirements
- Complex integration across heterogeneous edge hardware
- Fragmented AI applications lacking standardization
- Shortage of low-code tools for easy AI deployment

二、研華解決方案架構：ACE Application Computing on Edge and WISE-STACK

Private Cloud Platform

研華推出 ACE (Application Computing on Edge) 應用導向邊緣運算系統，整合底層韌體 (BSP)、中層容器技術 (Container)，透過預先整合軟體、硬體與多元週邊模組，對準機器人、工業自動化到智慧醫療等多元應用。並推出全新私有雲平台 WISE-STACK，整合工業 AI Agents、大語言模型 (LLM)、IoT 資料串流與模型上下文協定 (MCP)，打造可快速部署的邊緣數據中心。

Advantech's ACE system offers an application-centric solution built on a co-designed software-hardware platform. It features a dual-track architecture—BSP and Container—enabling rapid deployment across a wide range of vertical sectors, including robotics and AMR, industrial automation, and smart healthcare applications. As for WISE-STACK—a private cloud platform integrating industrial AI Agents, LLMs, and Model Context Protocol (MCP), enabling an agile edge data center for real-time AI operations.



三、重點應用場域與成果分享 | Key Applications and Use Cases

研華解決方案已於下列場域加速落地應用：

- **智慧製造：**整合 AI 視覺、AMR 協作機器人，提升良率與彈性生產
- **智慧醫療：**部署 AI 推理系統於診斷與監控端，提升醫療精準度
- **能源與交通：**應用於再生能源預測與智慧車載系統
- **智慧零售與服務：**結合人流分析與數位看板，強化客戶互動

Advantech's solutions are driving transformation across key industries:

- **Smart Manufacturing:** AI vision and collaborative robots improve quality and agility
- **Healthcare:** On-prem AI inference enhances diagnostics and patient monitoring
- **Energy & Transport:** AI enables predictive analysis and smart vehicular systems
- **Retail & Services:** Foot traffic analysis and digital signage boost engagement

四、共創生態系與技術整合優勢 | Ecosystem Co-Creation & Integration Advantages

研華與 AMD、Intel、NVIDIA、NXP、Qualcomm 等晶片大廠合作，並串聯感測、AI 平台、ROS 開源社群等，推動開放標準與即插即用的 AS&R 自主系統解決方案，具備以下優勢：

- 軟硬體完整整合
- Ready-to-use 開發工具鏈
- 支援 Arm 與 x86 架構混合部署
- 全球在地技術支援與 DFSI 夥伴共創

Through collaboration with chip leaders—including AMD, Intel, NVIDIA, NXP, Qualcomm and AI communities, Advantech enables:

- Full-stack integration from silicon to solution
- Ready-to-use development kits
- Support for hybrid Arm & x86 architectures
- Global field support via DFSI co-creation model



五、結語：向 Edge AI 全球領導者邁進 | Conclusion: Toward Global Leadership in Edge AI

研華憑藉強大的產品組合、產業洞察與技術整合能力，持續推進「Edge Computing & WISE-Edge in Action」品牌戰略。未來將更聚焦於 AI Agent、自主系統與產業生態圈共創，加速 AI 智慧落地，實現「智能地球的推手」之願景。

With a strong portfolio and deep market insight, Advantech is executing its “Edge Computing & WISE-Edge in Action” strategy, focusing on AI agent deployment, autonomous systems, and ecosystem co-creation. The company is well-positioned to lead global industrial AI transformation—realizing its vision as the “Enabling of an Intelligent Planet.”

關於研華

研華為全球物聯網智能系統與嵌入式平台領導廠商，並以「智能地球的推手」作為企業品牌願景。為迎接邊緣運算與人工智慧之大趨勢，研華以Sector Driven策略全面展開佈署，並將以Edge Computing和Edge AI為核心，聚焦邊緣智能系統、智慧製造、能源與公共事業、智能醫療、智能零售與服務等五大關鍵市場，加強全球布局提升核心競爭力；整合Edge Computing邊緣硬體平台產品群、工業物聯網軟體平台WISE-IoT，再加入產業Edge AI解決方案及行業知識，重塑成產業整合應用的協同共譜之經營模式，助力夥伴客戶串接產業鏈；此外，亦積極偕同各產業夥伴「共創」產業生態圈，以加速實踐產業智能化之目標。

媒體聯絡人：

研華公司 / 公共關係專案副理

謝孟昕 Marco Hsieh

Tel: +886-2-7732-3399, Ext. 7388

marco.hsieh@advantech.com

研華公司 / 台灣區營運處行銷部

陳詩涵 San Chen

Tel: +886-2-7732-3399 Ext. 7097

san.chen@advantech.com.tw