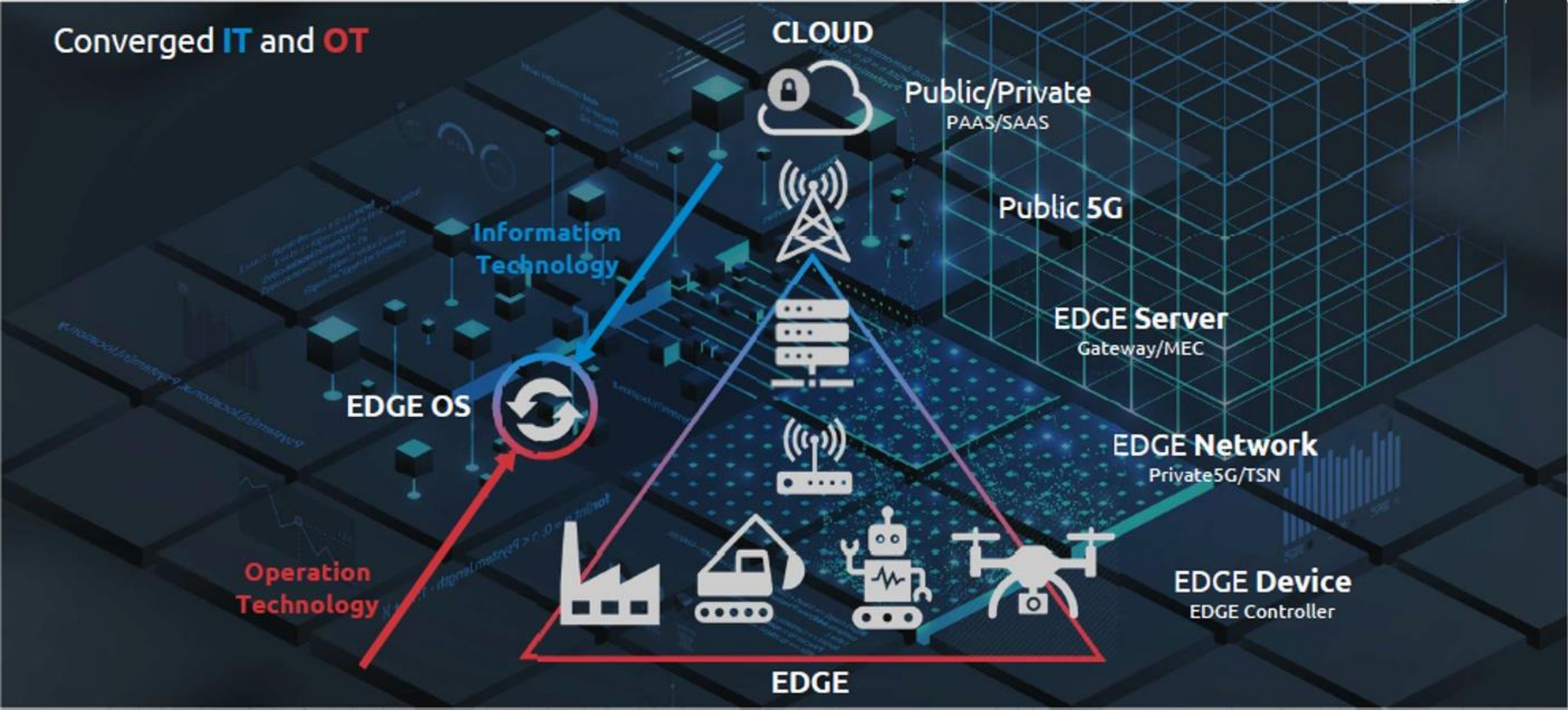# 邊緣運算賦能**AIoT**產業創新應用

Ethan Chen

GM of Edge Computing Platforms BU, ADLINK
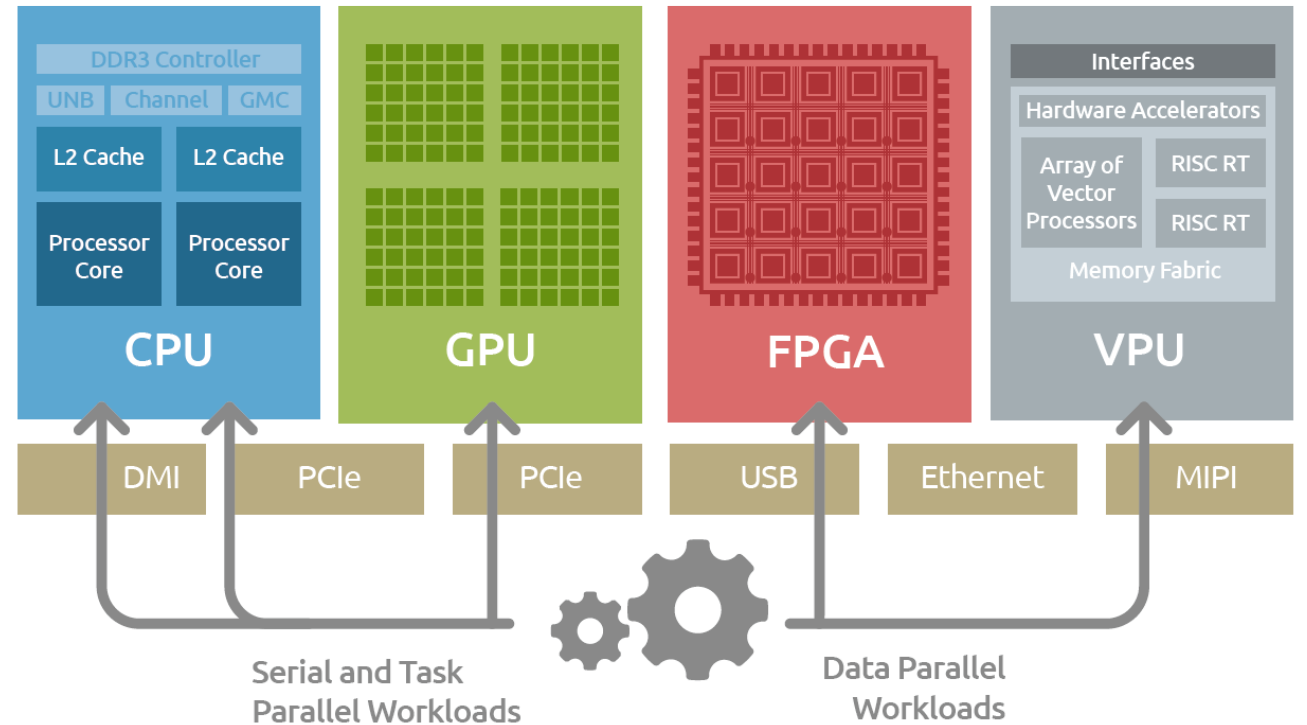
2023, March

Industrial Automation in Age of IoT

Horizontal Integrations as Service

Edge AI is Heterogeneous Computing

ADLINK offers the best Edge AI platforms to meet heterogeneous computing demands and optimize ROI.

CPU

DDR3 Controller
UNB | Channel | GMC
L2 Cache | L2 Cache
Processor Core | Processor Core

GPU

FPGA

VPU

Interfaces
Hardware Accelerators
Array of Vector Processors | RISC RT / RISC RT
Memory Fabric

DMI | PCIe | PCIe | USB | Ethernet | MIPI

Serial and Task Parallel Workloads

Data Parallel Workloads

Evolving with Edge AI Computing

The Ultimate Blend of Performance and Efficiency

Smart Factory

Thermal Optimization Design

Embedded Computers

Industrial Computers

Smart City

IoT Gateways

Complete AI Modules Support

Media Display Solution

Robotics Controllers

Edge AI Platforms

5G Network

Configuration to Order Services

Function Modules Design

SSD, Wireless Modules
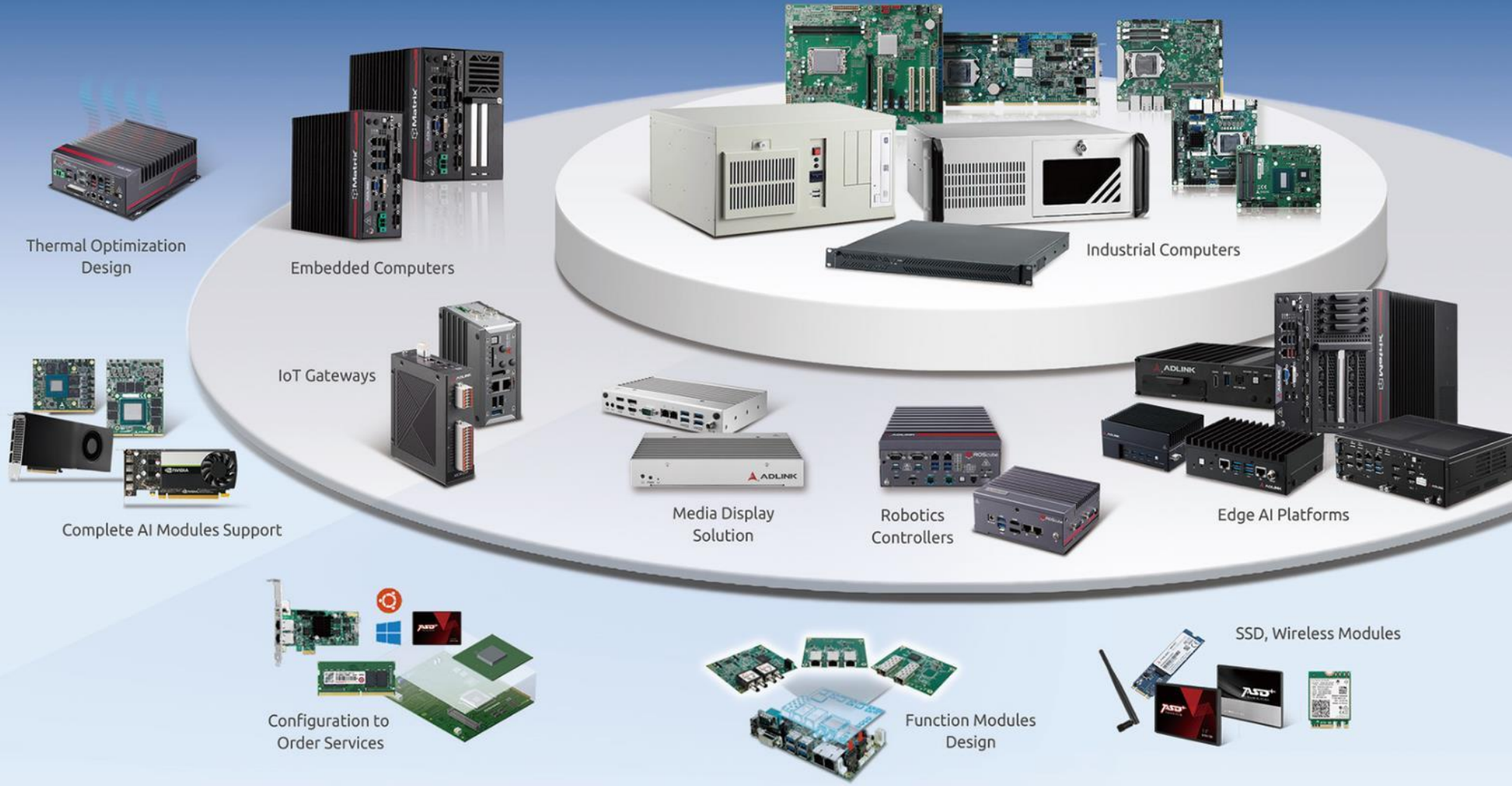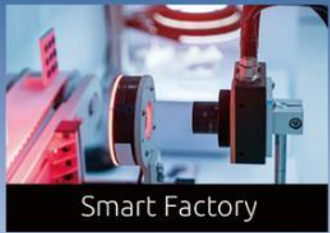
Intelligent Embedded Computers

Enabling Versatile Future-proof Applications

EdgeGO

Complete Solutions	**Application Featured Design**	**Diverse I/O and Expansion**	**Ruggedized Designs**
• Multiple form factor options • Intel® Xeon®, Core™ and Atom® processors • Integrate GPU computing from NVIDIA® Quadro® GPUs	• Motion/vision/frame grabber cards • Industrial cameras • Industrial peripheral modules	• Application-specific Connectors • Flexible I/O Combination & Programmable IC Addable • Add-on Expansion Slots	• -20˚ ~70˚C Wide operating temperature • Anti-vibration / Shock • Dust-prone and corrosive proof

2023 New Products

12/13th GEN INTEL® CORE™ PROCESSORS
NEW RANGE OF EDGE AI PLATFORMS

IMB-M47H	MVP-5200	MVP-6200	NuPro-E47	IMB-M47	DLAP-8100	SBC35-RPL
Q1 2023	Q2 2023	Q2 2023	Q2 2023	Q2 2023	Q3 2023	Q3 2023

MVP-5200/6200 Series

System Core:

- R680E PCH **(Forward Compatible to Raptor-S)**
- CPU (35W) : i9-12900TE/ i7-12700TE/ i5-12500TE/ i3-12100TE
- CPU (65W) : i9-12900E/ i7-12700E/ i5-12500E/ i3-12100E
- **DDR5 3200 up to 128GB**
- Wide Power Input : 9-32Vdc supported
- **M.2 2280 NVMe** Supported (Gen3 x4)
- 5G/LTE/WiFi6 Supported
- FM (Function Module) Board Supported

Back Plan PCIe I/O Slots:

- **PCIe Gen4 x16** supported
- 4x 2.5" SATA drive bay, hot swappable, RAID 0/1/5/10

Environmental:

- Operating Temperature -20~60°C

intel partner Titanium IoT Solutions

Ubuntu Certified

Windows 11

One-stop, Fully Integrated Solutions for Faster Deployment.

Extensive Selection Of Pre-validated Motion, Vision, And I/O Cards

IMB-M47H features with rich expansion I/O, includes one PCIe x16 Gen5, one PCIe x4 Gen3, one PCIe x1 Gen3, and four PCI 2.2 slots for functional expansions like graphics cards, LAN cards or motion control cards. It also provides an M.2 A-key slot for Bluetooth and Wi-Fi, and an M.2 M-key for storage.

From CPU to Board	Slot1	Slot2	Slot3	Slot4	Slot5	Slot6	Slot7
	(PEG)	(PCI1)	(PCIe1)	(PCIe2)	(PCI2)	(PCI3)	(PCI4)
Bandwidth	PCIe 5.0	PCI 2.2	PCIe 3.0	PCIe 3.0	PCI 2.2	PCI 2.2	PCI 2.2
Physical slot	x16	PCI	X4	X1	PCI	PCI	PCI

ADLINK's wide selection of pre-validated motion, vision, and I/O cards guarantee compatibility and ensure fast and convenient deployment for the full spectrum of demanding industrial applications.

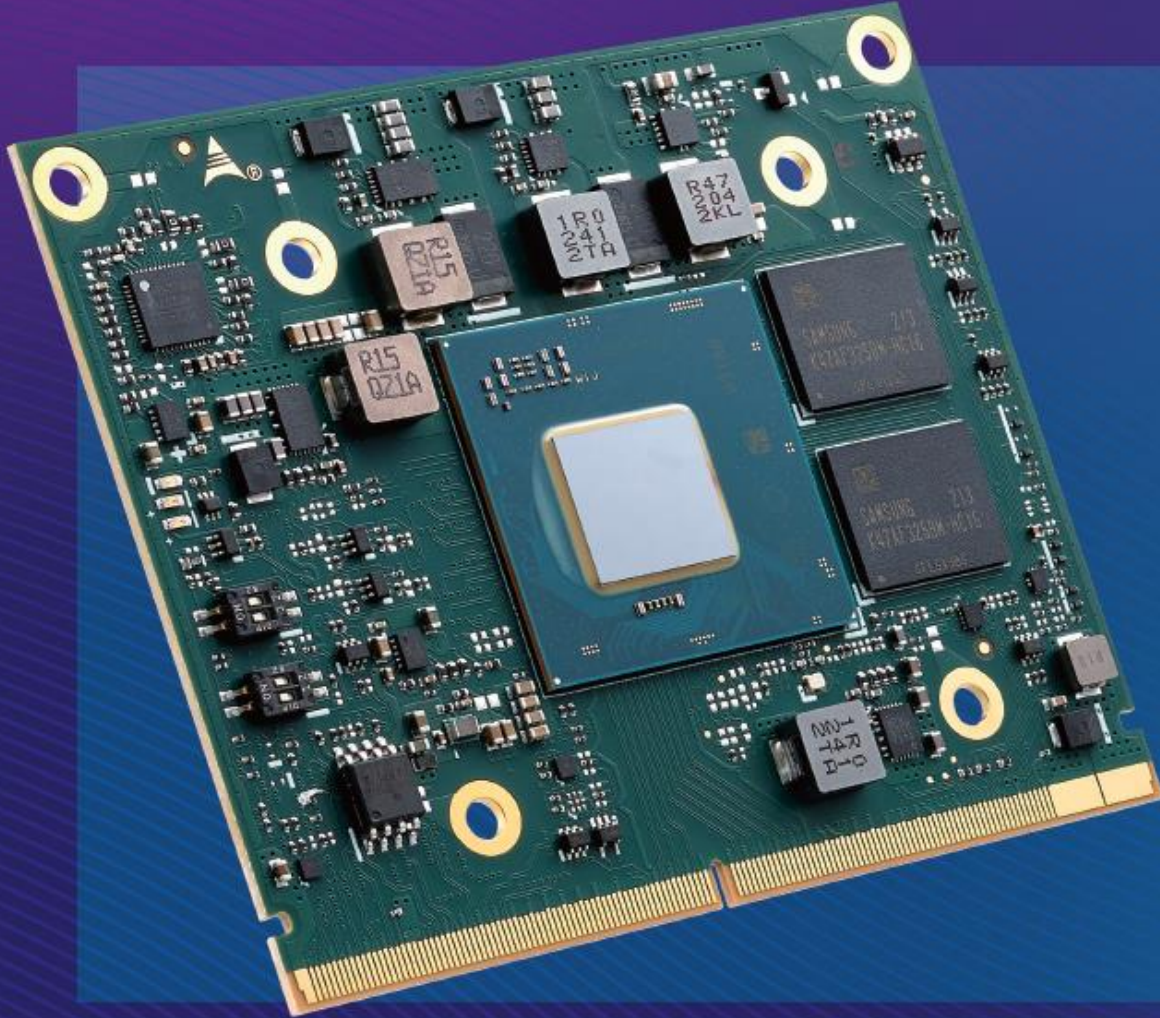PEG cards   Frame Grabbers   Motion Controllers   I/O Cards

ADLINK
® Leading **EDGE COMPUTING**

A New Era of
Professional
Graphics

# MXM-AXe

MXM 3.1 Type A based on Intel® Arc™ GPU

With built-in ray tracing hardware, graphics acceleration, and machine learning capabilities, the ADLINK MXM-AXe module unites fluid viewports, the latest in visual technologies, and rich content creation all packed within a single form factor.

- Up to 4x Displays, with Audio and Dolby Vision® Support
- Ray Tracing Hardware Acceleration
- Dedicated AI Acceleration
- Industry First AV1 Hardware Encode
- 4GB High Speed Memory

adlinktech.com/en/MXM-AXe

intel
partner   Titanium
          IoT
          Solutions

A New Era of Professional Graphics
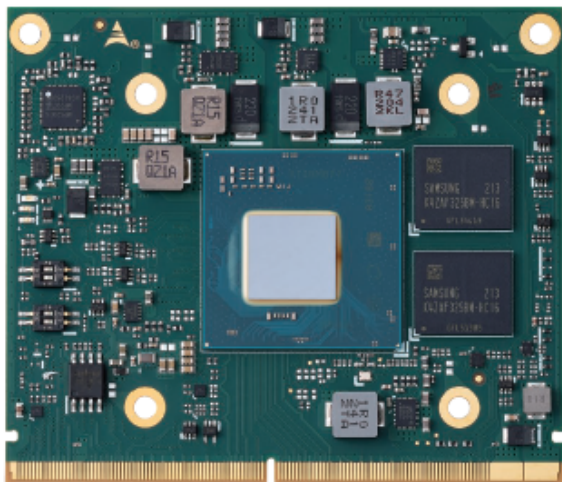
As a Titanium partner of Intel, ADLINK has always been one of the pioneers in delivering Intel-powered modular solutions in the embedded world. This time, ADLINK integrates Intel's latest line of powerful, discrete graphics — Intel® ARC — on the embedded MXM form factor. It leverages Intel's well-established graphics ecosystems, such as OpenVINO™ for AI, Intel® OneAPI management tools, that edge developers have enjoyed and relied on for years.

This isn't a mere new line of GPUs, but one that makes your migration from integrated to discrete graphics seamless and fully transparent.

Key Features

4GB GDDR6
High Speed Memory

112 GB/s
Memory Bandwidth

8x RT
Dedicated Cores

4x DISPLAY
Supported at 4K, 60Hz

Intel GPU Architecture

X® HPG microarchitecture is engineered from the ground-up to deliver high performance, efficiency, and scalability for creators and professional workloads.

- New X®-cores with built-in XMX AI capabilities
- Advanced 3D acceleration hardware
- Ray Tracing Units

## ADLINK MXM-AXe

Specifications

PERFORMANCE	Ray Trace (RT) Cores	Up to 8 Xe Cores
	Execution Units (EU)	Up to 128x
	XMX AI Cores	Yes
MEMORY	PCIe® Support	Gen4 x8 with 3.0 Backwards Compatibility
	Dedicated Memory	4GB of GDDR6
	Bandwidth	112 GB/s
	Interface	64-bit
DISPLAY	Outputs	4x DP2.0 or HDMI2.1
	Support (HDR enabled)	4x 3840x2160 (4K UHD, 60Hz)
		2x 5120x2880 (5K UHD, 120Hz)
		2x 7680x4320 (8K UHD, 60Hz)
		1x 5120x1440 (5K Ultrawide, WUHD, 240Hz)
HARDWARE ACCELERATION	Decode	VC, VC1, MPEG2, HEVC-10bit, VP9, JPEG
	Encode	AV1, AVC, MPEG2, HEVC, VP
	Ray Trace	Yes
	AI Engine	Yes
	VR Ready	Yes
POWER	Consumption	A370M 35-50W TGP
		A350M 25-35W TGP
GENERAL	Form Factor	MXM Type A (82mm x 70mm)
	OS Support	Microsoft Windows 11 / Windows 10
Ordering Information	MXM-AXe-A370M	MXM 3.1 Type A Intel® ARC™ A370M Graphics at 35-50W, 4GB GDDR6, 4x DP2.0 or HDMI2.1
	MXM-AXe-A350M	MXM 3.1 Type A Intel® ARC™ A350M Graphics at 25-35W, 4GB GDDR6 , 4x DP2.0 or HDMI2.1

2.9x Faster
than Intel® Iris® Xe Graphics

with

Intel® Deep Link
Hyper Compute
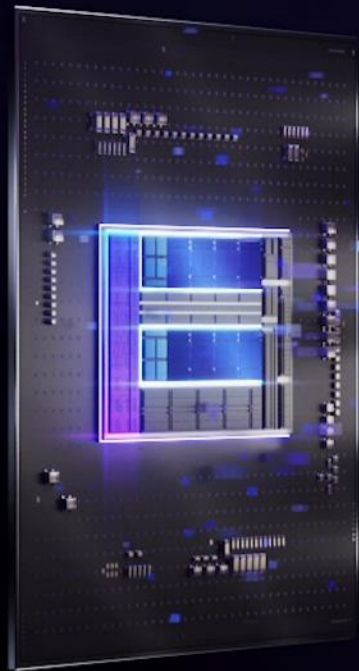
Learn more at www.Intel.com/PerformanceIndex (graphics and accelerators). Results may vary.

Go-to-Market with Intel DG2

What is EVA

ADLINK EVA focus on Edge inference and provide integrated SDK help customers build the AI application with trained AI network.

- **Easy to implement**
- **Easy to integrate**
- **Easy to deploy**
- **Easy to extend**
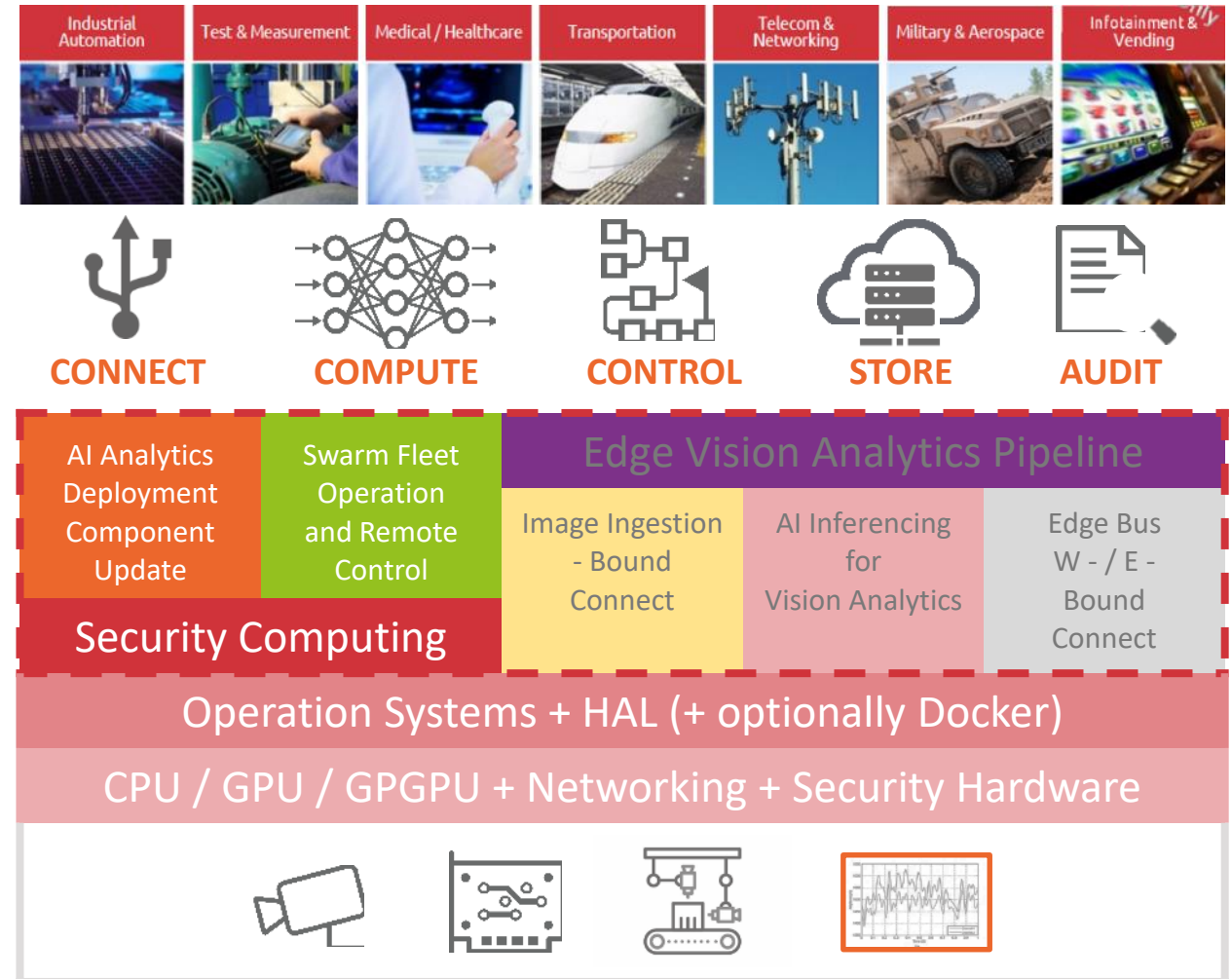
ADLINK

EVA Architecture

Facilitating EDGE AI Applications

SERVICE

- Enable **edge data analytics**
  - Capture video and images
  - Transcode and process vision data
  - Analyze data with deep learning inference
  - Trigger actions at the edge

ARCHITECTURE

- Make applications **platform agnostic**
  - Decouple video source (industrial CAMs)
  - Decouple deep learning engine and hardware (NVIDIA TensorRT / Intel OpenVino / …)
  - Decouple OS (Linux / Windows)
  - Decouple edge connectivity Pub/Sub EVA data (on ROS2 / Data River / …)

Industrial Automation | Test & Measurement | Medical / Healthcare | Transportation | Telecom & Networking | Military & Aerospace | Infotainment & Vending

CONNECT **COMPUTE** **CONTROL** **STORE** **AUDIT**

AI Analytics Deployment Component Update	Swarm Fleet Operation and Remote Control	Edge Vision Analytics Pipeline		
		Image Ingestion - Bound Connect	AI Inferencing for Vision Analytics	Edge Bus W - / E - Bound Connect
Security Computing				

Operation Systems + HAL (+ optionally Docker)

CPU / GPU / GPGPU + Networking + Security Hardware

Two Weeks To PoC

6x

FASTER TO PoC

2 WEEKS	VS.	12 WEEKS

Capture camera images in 15 mins with the ready-to-use camera plug-in — Need few days learning the camera API

Use EVA supported optimized models, just focus on training and application — Non-optimized open-source models take weeks to retrain and modify

Intuitive GUI, few hours to construct the AI image processing pipeline — Weeks to deploy the model into a AI image processing pipeline

Powerful pre-view function makes the verification and profiling easier — Video stream or frame verification and optimization takes huge effort to do

- Domain specific, optimized pre-trained models provide an excellent starting point for training/PoC
- Simplified, zero-coding IDE doesn't require AI expertise
- Demo in days and deploy PoC in two weeks

EdgeGO – The Edge-Native Platform for Remote Device Management

Remote Management

Device Management
- Remote monitoring and control
- Mass configuration and maintenance
- Device onboarding

Event Notification
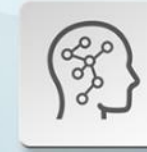- User-defined events
- Alerts via SMS, LINE, Wechat…

Dashboard Visualization
- Pre-built basic metrics
- Customizable interface, statics, and charts

Edge Native

Edge Applications
- Edge AI
- Data acquisition & analysis
- OTA & data backup

Cloud Connectivity
- Connects Cloud through dedicated EdgeGo server
- Collaborates with AWS, Azure, Allxon…

Edge Security
- Endpoint protection via anti-virus
- Network defense following cybersecurity guidelines

COM Module   MCM Plus   AVA   IoT Gateway

EdgeGO – Full Lifecycle Management for Edge Devices

Administration
- User authentication and authorization integration with LDAP compatible services.
- Device and operation access control by user groups and roles.
- Web-based UI for both workstations and mobiles.

Edge device management
- Device registration and onboarding.
- Organizing devices to groups and integration with LDAP compatible services.
- Real-time device monitoring and remote control.

Edge device control
- Remote device configuration.
- Remote device desktop or terminal access.
- Remote device power control.
- Remote device peripheral control.
- Remote device data import and export.
- Remote task scheduling and management.

OTA update
- Remote update of device software and firmware.

Edge device security
- Strong encryption and integration with PKI.
- System security with Trend Micro and TXOne.
- Data backup and restore with Synology.

Monitoring and alerts
- Real-time telemetry, events, diagnostics, and logs collection.
- Rule-based edge triggered or server triggered alerts and automated actions.
- Customizable dashboards.

Notification
- Group-based and rule-based notification configuration.
- Customized notification templates.
- Notification connectors to email, LINE, WeChat, and WhatsApp.

Application
- Edge device application software certification, installation and management.

Multiple deployment
- On-premise deployment with EdgeGO on-premise servers.
- On-premise deployment in enterprise IT infrastructure.
- Cloud deployment in ISP clouds, such as AWS or Azure.

3rd party cloud or application integration
- Users, devices, and groups integration with LDAP.
- Accessing EdgeGO services by RESTful API.
- Real-time messaging and remote control with AMQP over websockets.

Leading EDGE COMPUTING

ADLINK

adlinktech.com

Trusted Industrial Computer Partner
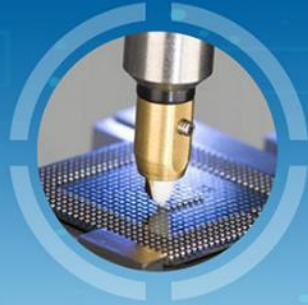
Electronic Manufacturing

Semiconductor

Machine Vision

Test and Measurements

Leading Technology

- Intel's Latest Gen. processors, vPro, Microsoft Win10
- High Speed PCIe (up to PCIe gen 5)

Application-Oriented Design

High-integrated Solution with Machine Vision & Motion Application (Camera, GigE or USB Card, I/O Module)

Rugged I/O Design

- Unique Power design
- 15 micro inches gold/metal plating connectors
- EN55032 Class B Radiation Test Pass

Customization Services

- Longevity Support
- Customized Design Service
- Fast and Flexible Configure-to-Order Services

intel.

PCI EXPRESS

Thank you.

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