

# AI at The EDGE



# AGENDA

- EDGE AI –  
Challenges and Opportunities
- AI Solution from DFI
- Application Sharing
- Questions







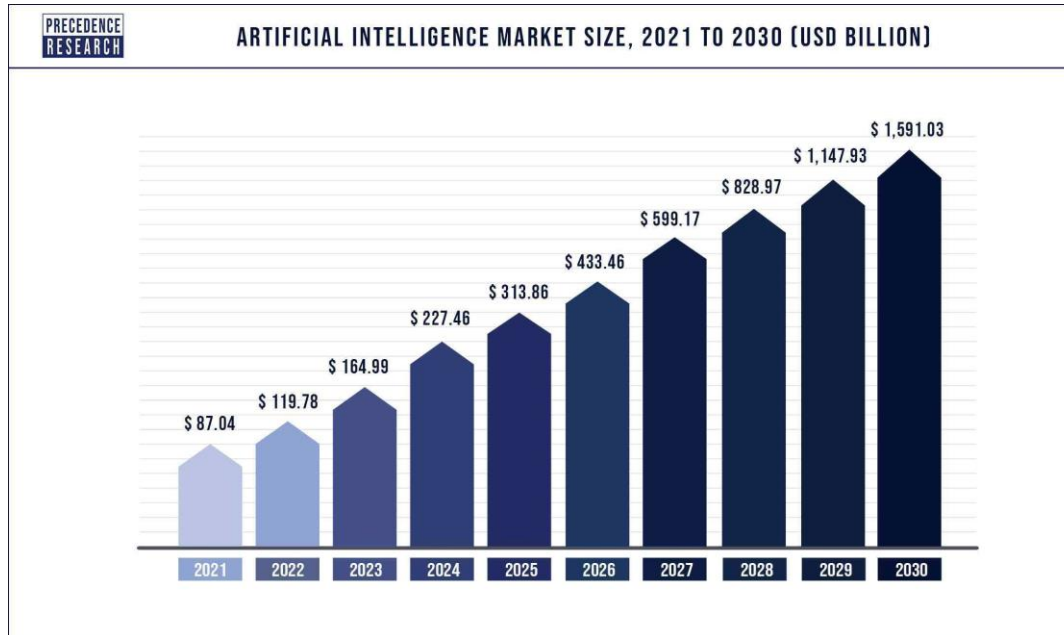
DFI

# EDGE AI

## Challenges and Opportunities



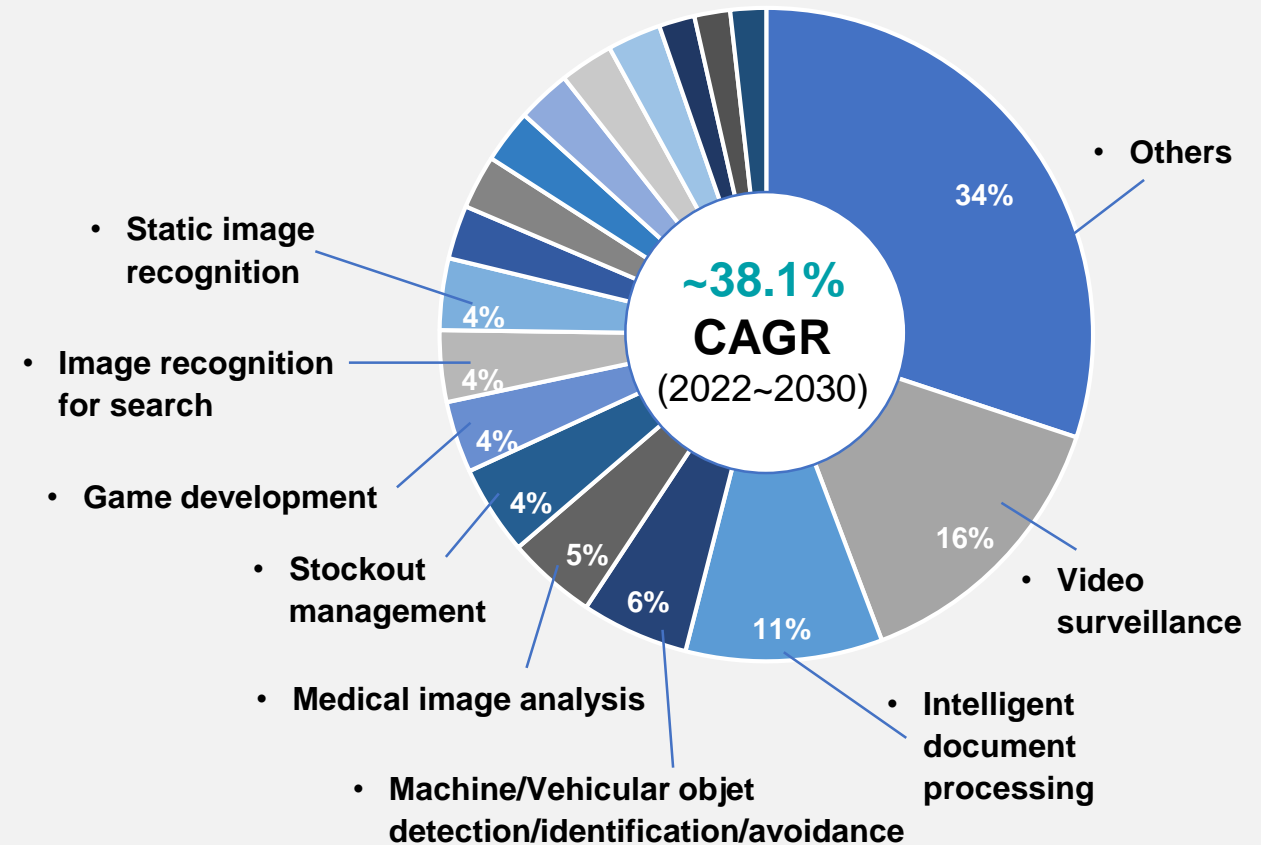
# Global AI Marketing Size



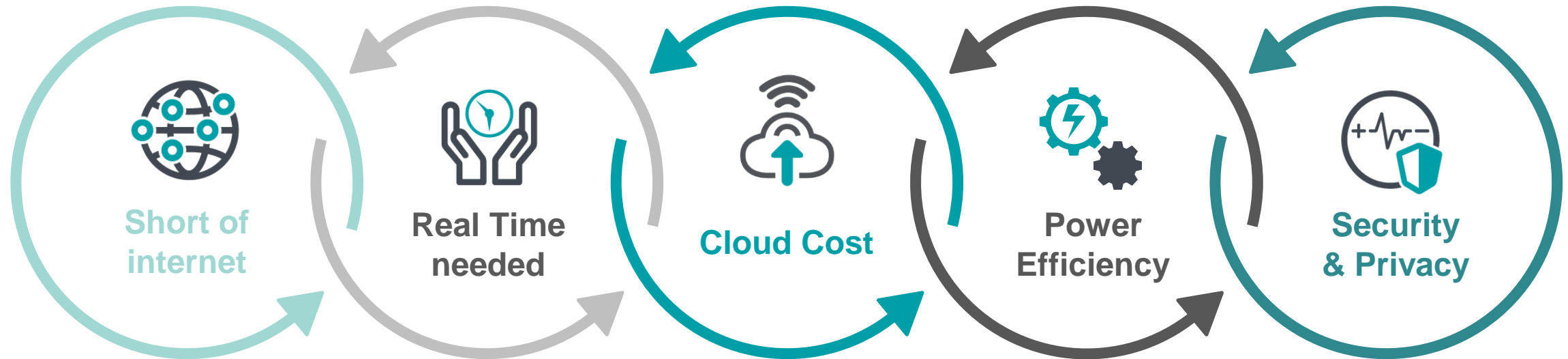
**Video Surveillance is expected to grow significantly**



- Autonomous stores **3%**
- Face recognition **3%**
- Ad insertions into images&video **3%**
- Queuing image content **3%**
- Human emotion analysis **3%**
- AR/VR development **3%**
- Localization&mapping **3%**
- Collaborative meeting **3%**



# Cloud AI vs EDGE AI



EDGE AI does most of its data processing locally to provide AI services anywhere.

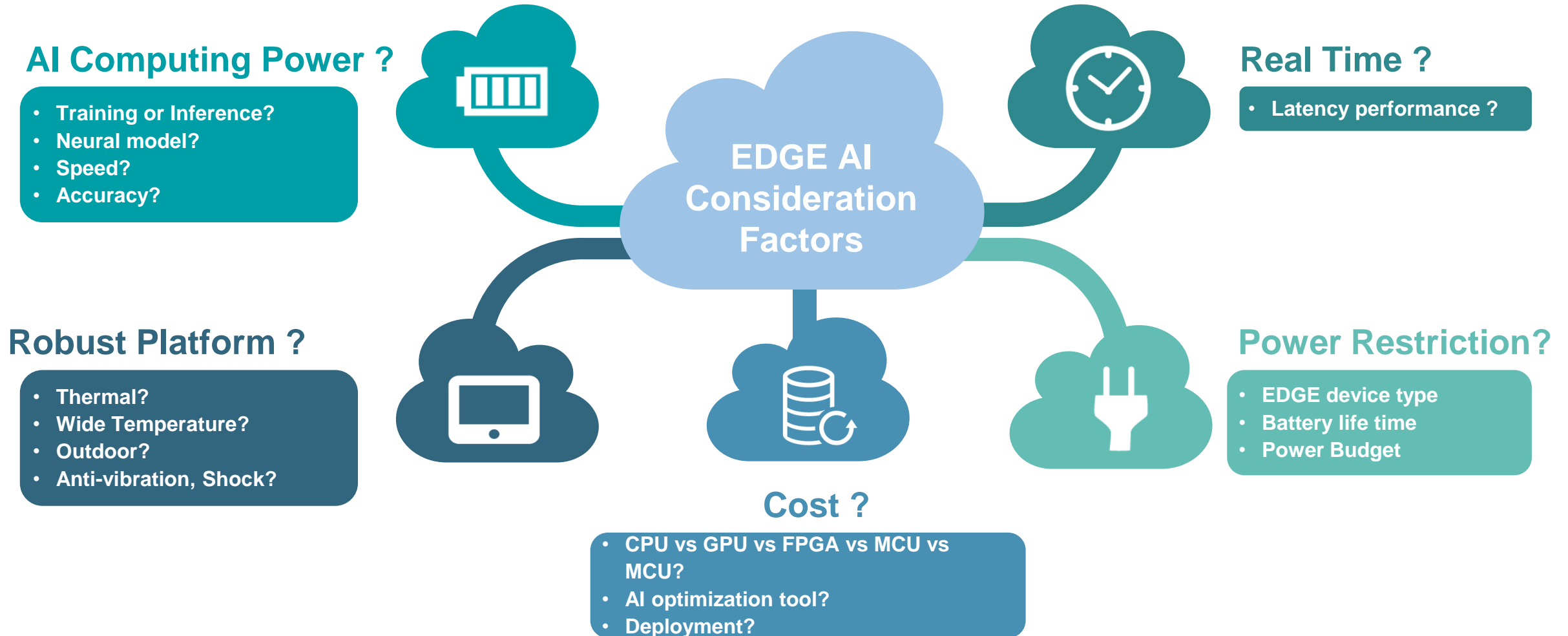
EDGE AI makes it possible to perform much faster inference and support real-time use cases.

EDGE AI runs the algorithm at edge side, sending less data over the internet and thus saving a lot of Internet bandwidth.

EDGE AI processes data at the local side, it saves energy costs than in cloud data centers.

Edge AI analyses data locally that can help alleviate concerns about sensitive data.

# EDGE AI Consideration Factors





# AI Solution from **DFI**



# DFI EDGE AI Solution Features

With flexibility, reliability and optimization service

## Powerful/Robust/Scalable EDGE computing work station

- Various AI Engine - CPU, GPU, VPU, NPU
- Robust System - Passive cooling, Wide Temperature, Anti vibration/shock
- Scalability - PCIE/MXM expansion

## High performance process at the EDGE - Open VINO Toolkit

- Accelerate Deep Learning inference for different vertical applications
- Speed deployment - Many Pre-trained Models & Samples
- Customization - Utilize OpenCL Kernels and Tools to add custom code pieces straight into the workload pipeline, customize deep learning model layers

## Remote Management - Save time and labor costs

- Over The Air (OTA)
- Remote Control
- Logs Collection

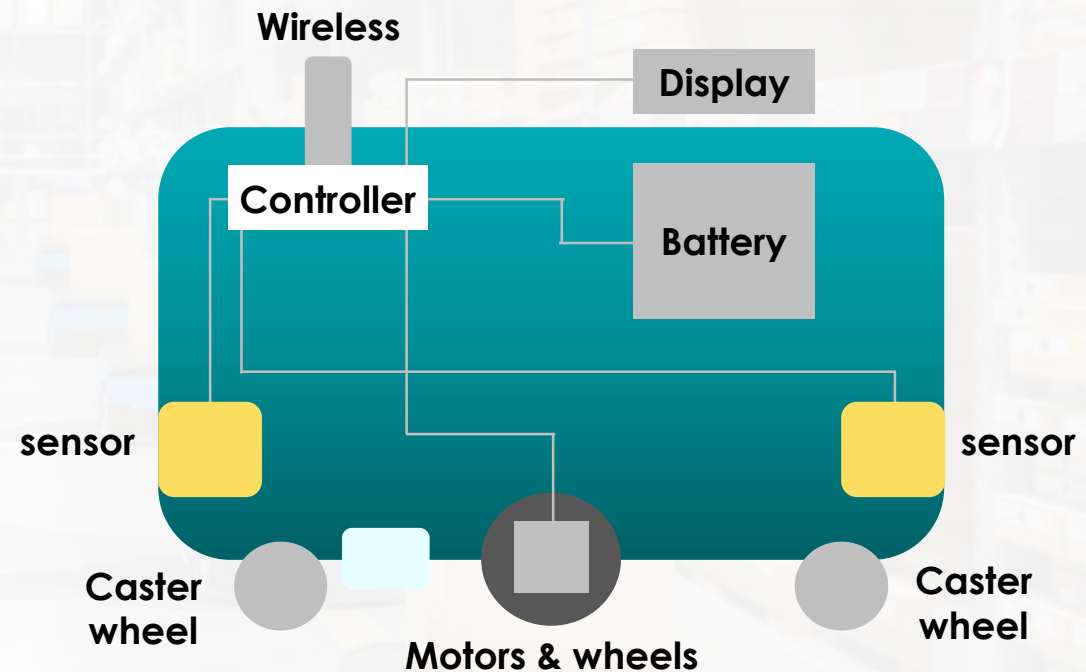




# Autonomous Mobile Robot Application

## Controller

- Powerful Computing performance
- Versatile I/O interface
- Low power consumption
- Resistance to harsh environments
- Reliable wireless network
- Smaller size



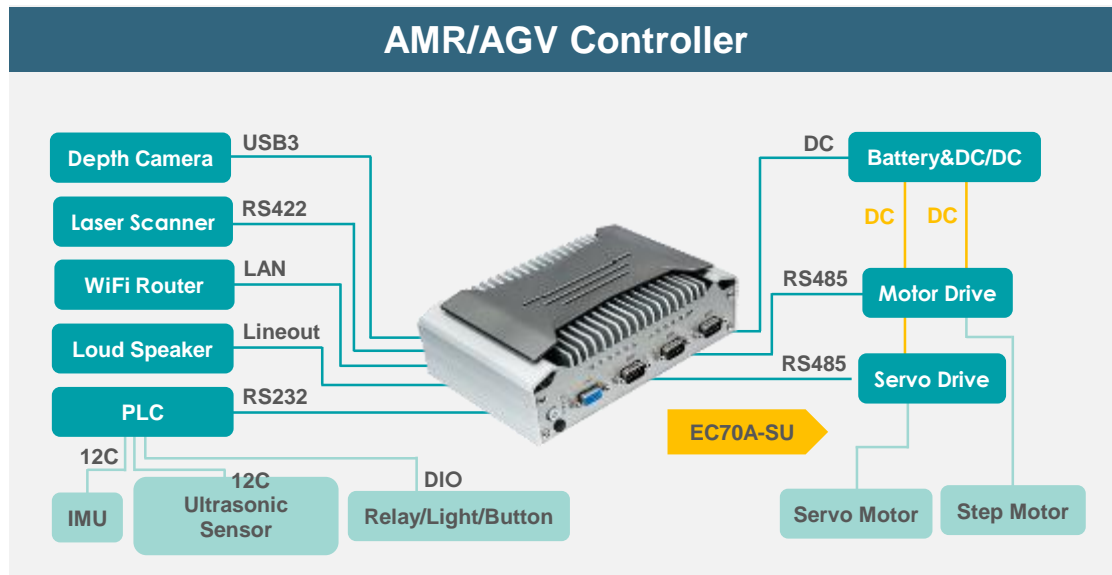
# EC70A-TGU

## Intel's 11th generation Tiger Lake low-power platform

Supports low-latency, time-critical applications and execute multiple workloads on a single platform.

## Soldered onboard memory

Supports 8GB onboard memory, It can resist the impact caused by vibration problems when the system is in use.



## Rich I/O

Supports rich I/O interface for users to use, up to 6 USB3 or 4 LAN. (SKU dependent)

## Ultra Compact Size

Supports customer to integrate system easily and raise the flexibility of robot mechanism design.

## Reliable System (Ubuntu Certified)

The hardware is tested for every single security update and any required fixes are made before they are released.





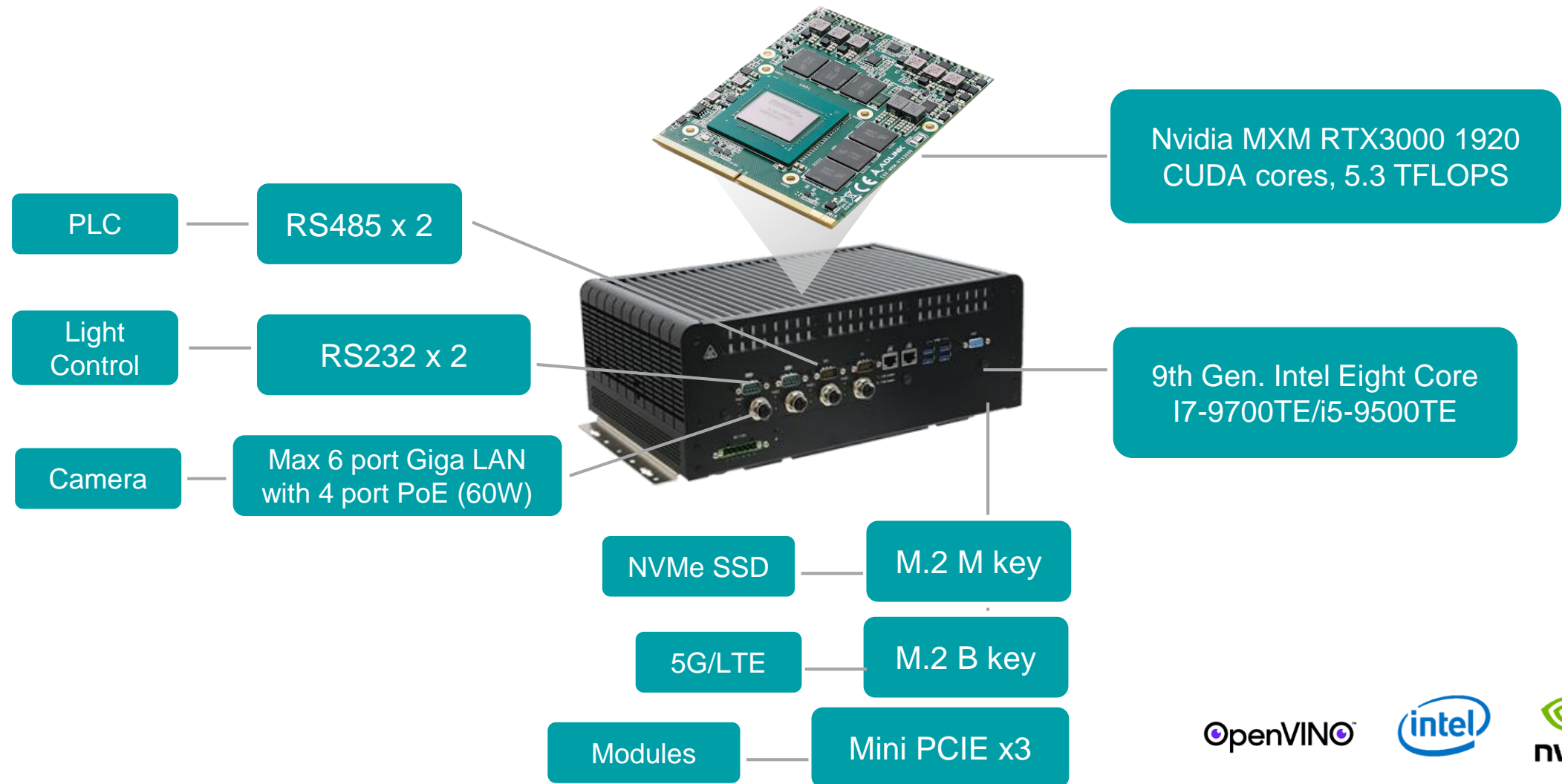
# Optical inspection Application



## System Requirement

- High Computing CPU & GPU support
- Equipped with a variety of interface, can be connected to PCL, light control, motor
- Support for multiple cameras for different types of high-speed inspection
- Endure rough industrial environments

# EC300-CS : High Performance & Rugged AIoT Edge Computer



OpenVINO™





# Powerful EDGE AI computing for Autonomous Driving

## Feature

- High performance computing power
- Scalable storage for amount of data
- TSN Ethernet for time certainty signals
- High speed Ethernet for data exchange
- Multiple I/O fro different sensors
- Remote Management



### 2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



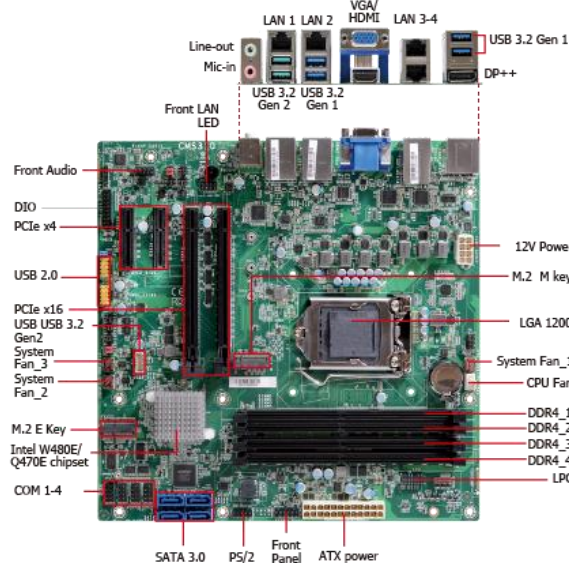
EXT-R5232  
- 4 RS232



EXT-R5485  
- 4 RS485



DFI Motherboard  
EXT-R5232/RS485  
Additional 4 COM



## System Overview

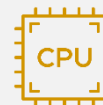
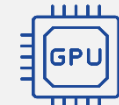
### Perception

Camera

Lidar

Radar

### Planning



Massive Data Transfers

### Control



Front View



Rear View

# AI Training Edge Server WM343-ADS

## Embracing the Popularity of Artificial Intelligence

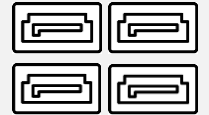


- Intel 12th Gen. LGA 1700 socket Core i
- up to 125W, 16 cores
- High AI computing performance with NVIDIA QUADRO RTX3060 & RTX5000

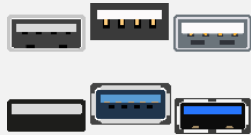
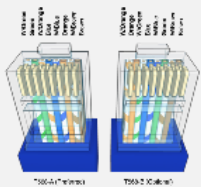


## Diverse storage expansion

- 2 x M.2 2280 PCIe x4 Gen3 for NVMe SSD
- 4 x SATA3.0
- 6 Bay NVMe RAID 0/1/5/10



## Rich I/Ov



- 2 x 2.5G TSN Ethernet
- 2 x 10G Ethernet
- 1 PCIe16, 3 PCIe4
- 1 M.2 E key
- 8 x USB 3.2 Gen 1/Gen 2
- COM x 2



ADS310

## Customization design for flexible costv

An Open and Modular IPC System that includes all elements which are common for AI applications.





# DFI EDGE AI inference Solution (Nvidia)

## EDGE AI Inference System

- 1 Powered by Nvidia Xavier NX
- 2 8 x 10/100 MbE with PoE for image analysis
- 3 Fanless design for harsh environment



Fanless



Compact  
Size



Deep  
Learning



PoE



**Industrial 4.0**  
Machine Vision



**Smart City**  
Facial Recognition



**EDGE AI**  
Video Analytics



ECS102-XNX



EC100-XNX



Jetson Xavier NX  
10W ~ 20W, 21 TOPS

## JetPack SDK For AI Applications

### Application



### Ecosystem

AI Software & Services	Hardware & Design Services	Machine Vision Cameras & Sensors	System Software & Developer Tools
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DEEPSTREAM

ISSAC ROS

RIVA

JETPACK SDK Linux | RTOS

Triton

CUDA-X

Deep  
Learning

Multimedia

Accelerated  
Computing

Computer  
Vision

Sensors

Developer  
Tools

Jetson

# DFI EDGE AI inference / Training Solution (Heterogeneous)



Automation



Transportation



Healthcare



Industrial 4.0

## Robust & Reliable

- Fanless design
- Wide Voltage: 9V ~ 36V
- Wide Temperature -20~70°C
- Anti-Vibration & Shock



EC70A-TGU



EC300-CS (Nvidia MXM)



VC500-CMS-MXM (in-vehicle)

## Compact & Configurable

- Selectable AI Engine (MXM or graphic PCIE card)
- Multiple Expansion slots
- Various I/O



DT200-CS (Nvidia MXM)



EC543-CS



WM343-ADS

## High performance training server

- 2nd gen Intel® Xeon® Scalable processor up to 150W 24 cores
- Powerful AI computing (up to 4 graphic PCIE cards)



DT370-ADS

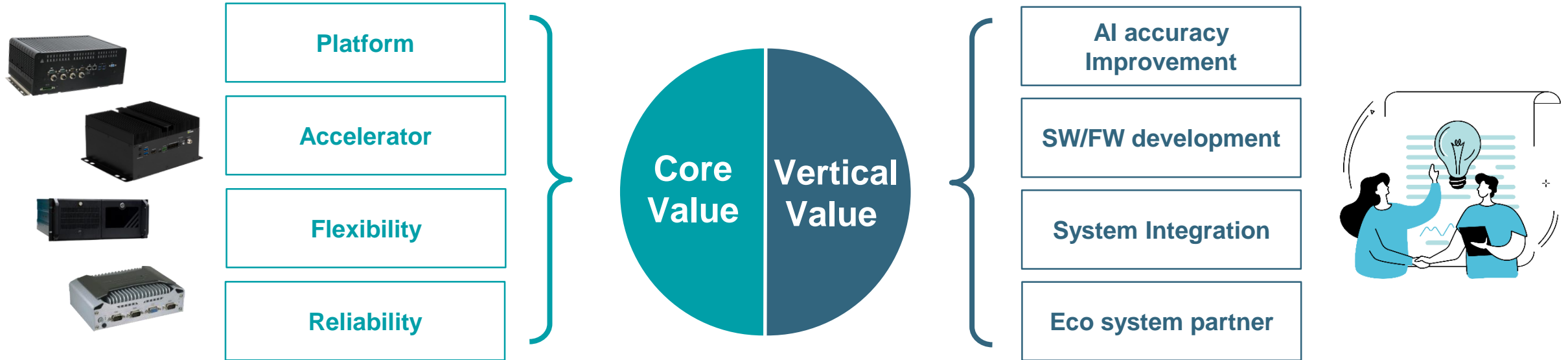


RM840-PR810



# Adopting AI Business Together

## DFI EDGE AI System



# Thank you!

For more information, please visit <http://www.dfi.com>