【 Nuvoton x Allxon webinar 】

克服 Edge AI 最後挑戰：實現遠端管理完整服務

Nuvoton Technology Manager, Show

Allxon Customer Success Manager, Zoey

2021/8/26

Agenda

- **Introduction** (Nuvoton/Show, 14:00~14:05)

  ◦ New solutions and Benefits

- **Beyond Conventional RMM** (Allxon/Zoey, 14:05~14:50)

  ◦ About Allxon

  ◦ Allxon Device Management Solutions

  ◦ Case study (scenario)

  ◦ Recap and Action

- **Q&A** (Nuvoton+Allxon, 14:50~15:00)

Introduction

Nuvoton Technology Manager, Show

(yhyang@nuvoton.com)

New Solutions: SaaS (Software as a Service)

- More certificated cloud services.
- New SaaS platform: NUC980 Chili + Allxon cloud

NuMaker Boards	PaaS					SaaS
	arm PELION	amazon web services	Alibaba Cloud	Microsoft Azure	THE THINGS NETWORK	allxon
RTU-NUC980 (Chili)	●	●	●			●
NUC980-IIoT / NUC980 LoRaG	●	●	●		●	
IoT-M487	●	●	●	●		
PFM-M2351 / M2354	●	●		●		
IoT-M263A	●	●	●	●		
LoRaD-M252					●	

NuMaker-RTU-NUC980(Chili) Platform Outline
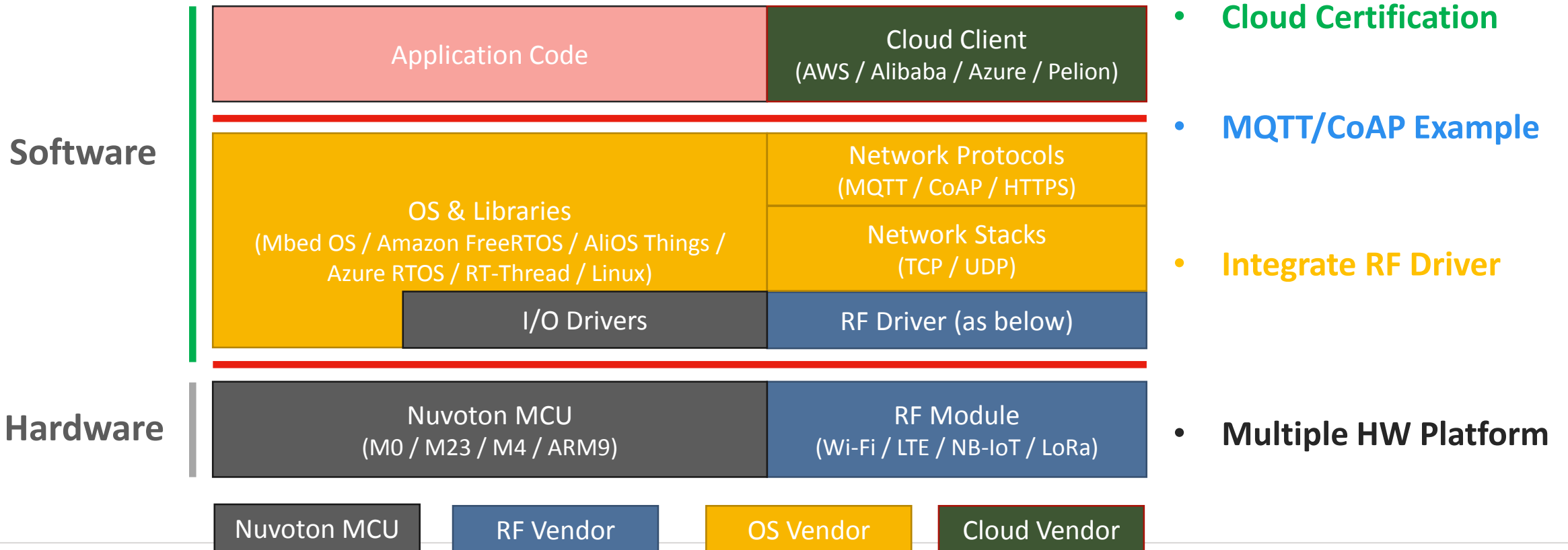
Key Features

- NUC980DR61YC
  - ARM926EJ-S 300 MHz
  - 64M Byte DDR2 in LQFP64 package
- 10/100M Ethernet x 1
- On board USB CDC port
- USB 2.0 HS Host / Device x 1
- CAN Bus x 1
- RS485 x 1
- SPI NOR Flash 256M bit
- Dimension: 50mm x 50mm
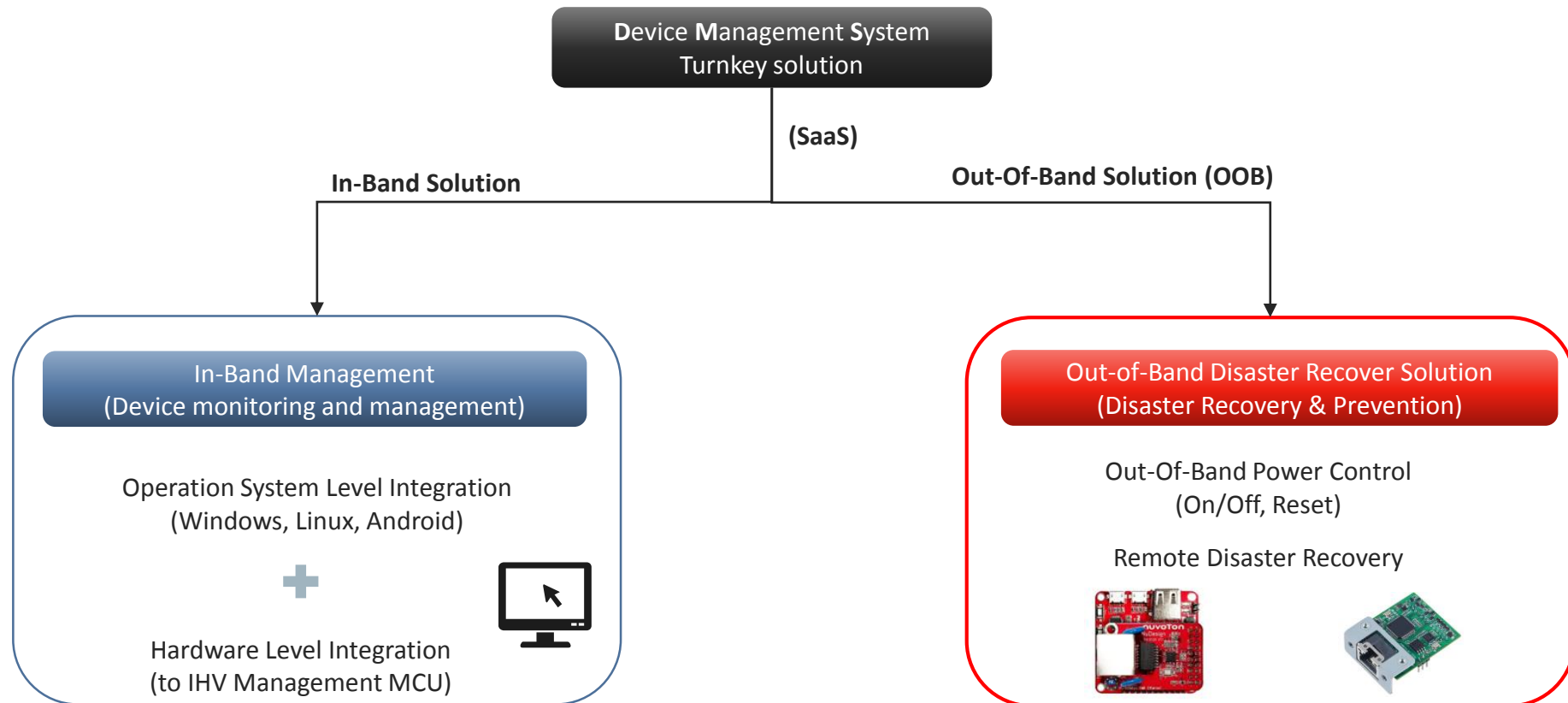- Linux OS ready
- Software as a Service (SaaS)

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5
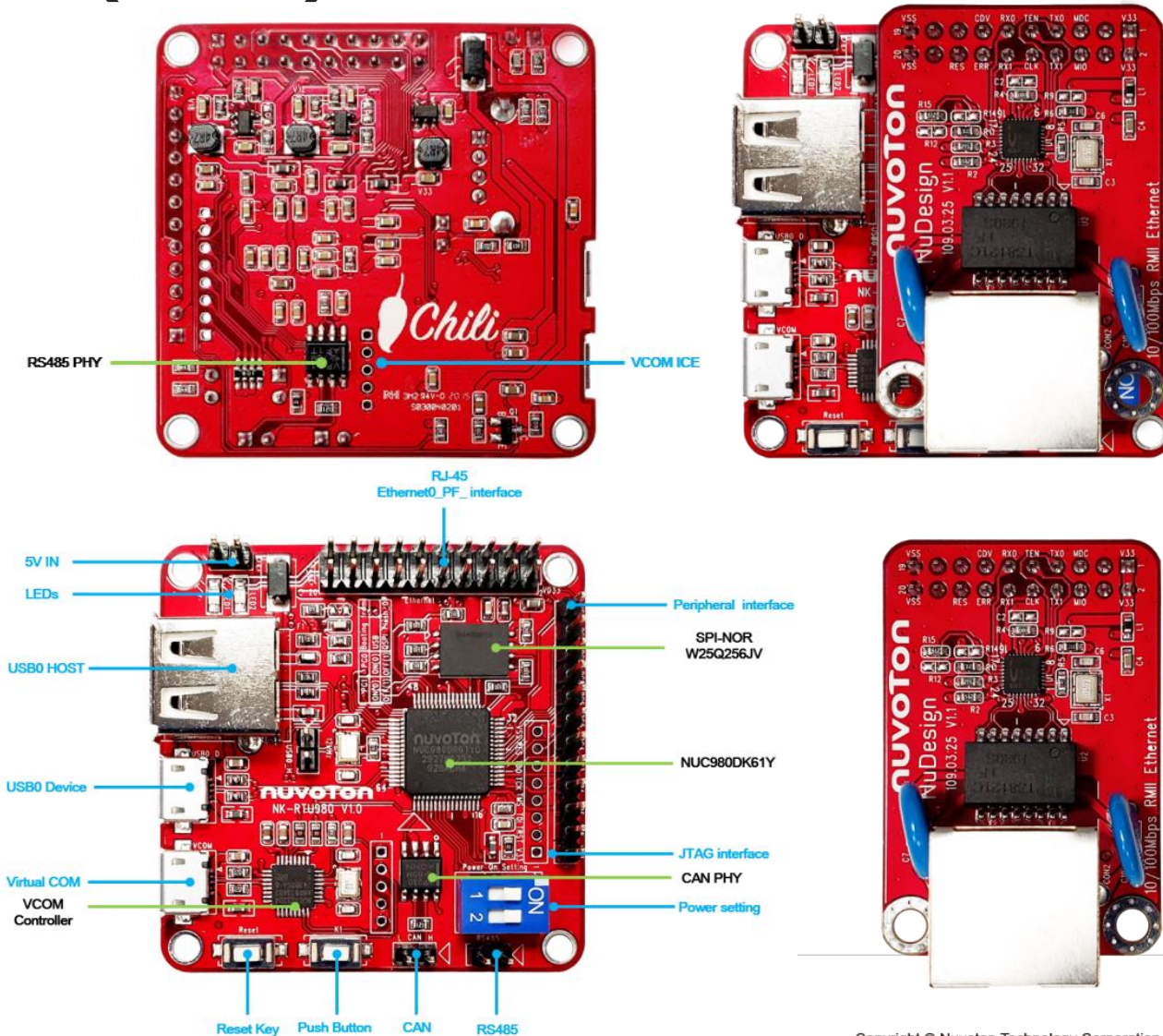
Benefits: Accelerating Time to Market

- Integrate MCU/OS/Network Protocols/RF Driver/ Application code
- **Ready-to-use with simple and efficient remote device management services.**

Software

Application Code	Cloud Client (AWS / Alibaba / Azure / Pelion)

- **Cloud Certification**

OS & Libraries (Mbed OS / Amazon FreeRTOS / AliOS Things / Azure RTOS / RT-Thread / Linux)	Network Protocols (MQTT / CoAP / HTTPS)
	Network Stacks (TCP / UDP)
I/O Drivers	RF Driver (as below)

- **MQTT/CoAP Example**

- **Integrate RF Driver**

Hardware

Nuvoton MCU (M0 / M23 / M4 / ARM9)	RF Module (Wi-Fi / LTE / NB-IoT / LoRa)

- **Multiple HW Platform**

Nuvoton MCU	RF Vendor	OS Vendor	Cloud Vendor

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DMS Turnkey Solution

- Nuvoton NUC980 + Allxon SaaS is the DMS turnkey solution.

Device Management System
Turnkey solution

(SaaS)

In-Band Solution

Out-Of-Band Solution (OOB)

In-Band Management
(Device monitoring and management)

Operation System Level Integration
(Windows, Linux, Android)

+

Hardware Level Integration
(to IHV Management MCU)

Out-of-Band Disaster Recover Solution
(Disaster Recovery & Prevention)

Out-Of-Band Power Control
(On/Off, Reset)

Remote Disaster Recovery

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Beyond Conventional RMM (Remote Monitoring and Management)

Allxon Customer Success Manager, Zoey

(zkung@allxon.com)

Beyond Conventional RMM

AI / IoT Edge Device Management with OOB Solutions

2021/8/26

Content

- Getting to know Allxon

- Allxon Device Management Solutions

- Case Sharing

- Recap and Action

Section 1

Section 1

Milestone of Allxon

2019.09
Established
Established Allxon (SaaS)

2020.07
Alliance
Recognized as a preferred partner of NVIDIA
Jetson Ecosystem

2021.02
Release
Official launch of Allxon
swiftDR OOB Enabler

2001-2011
Foundation
Advancement in infrastructure (IaaS)
and cloud platform (PaaS)

2020.06
Alliance
Partnership with world's
No. 1 IPC manufacturing brand

2021.01
Distribution
Official distribution to Japan through
renowned IT supplier Macnica
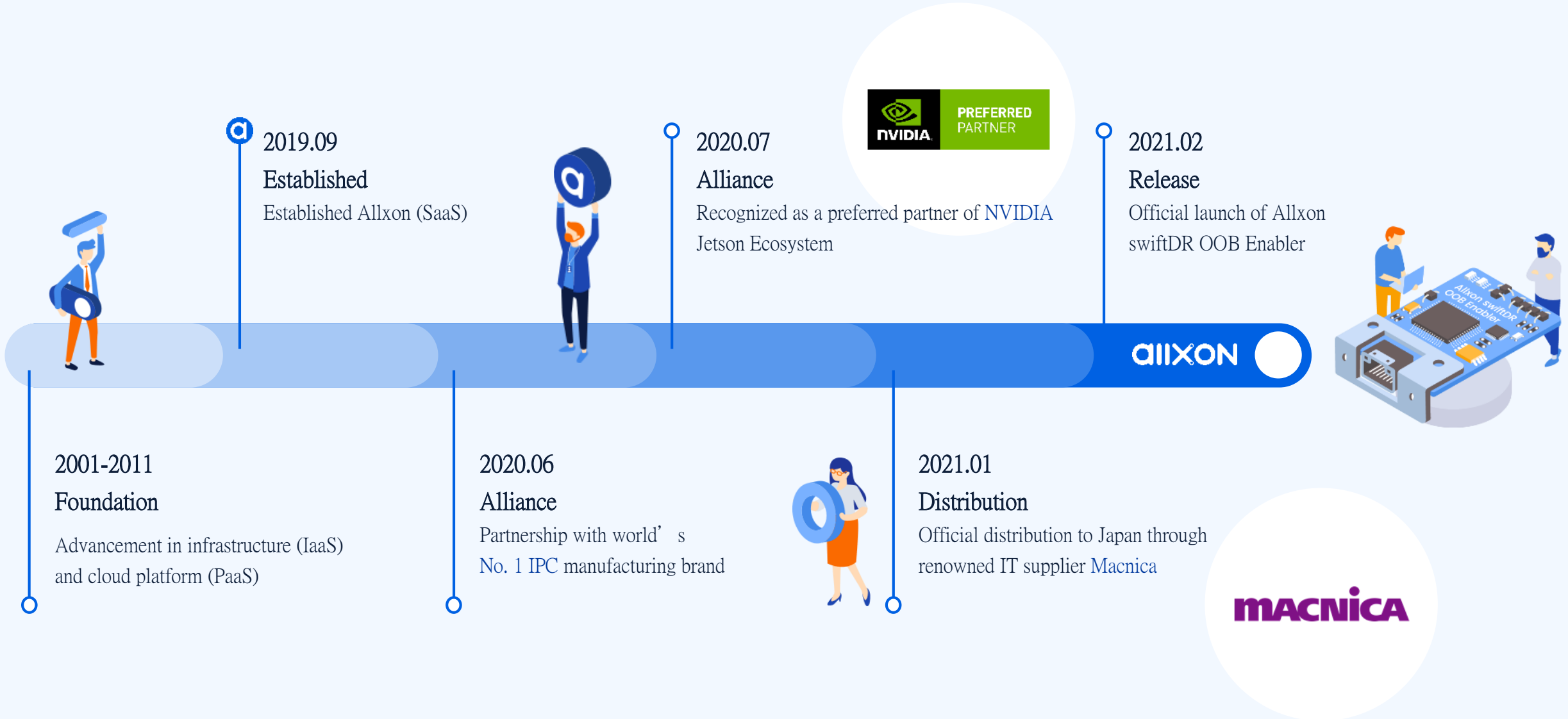
Edge AI Momentum

NVIDIA Edge AI Solutions

Jetson Modules
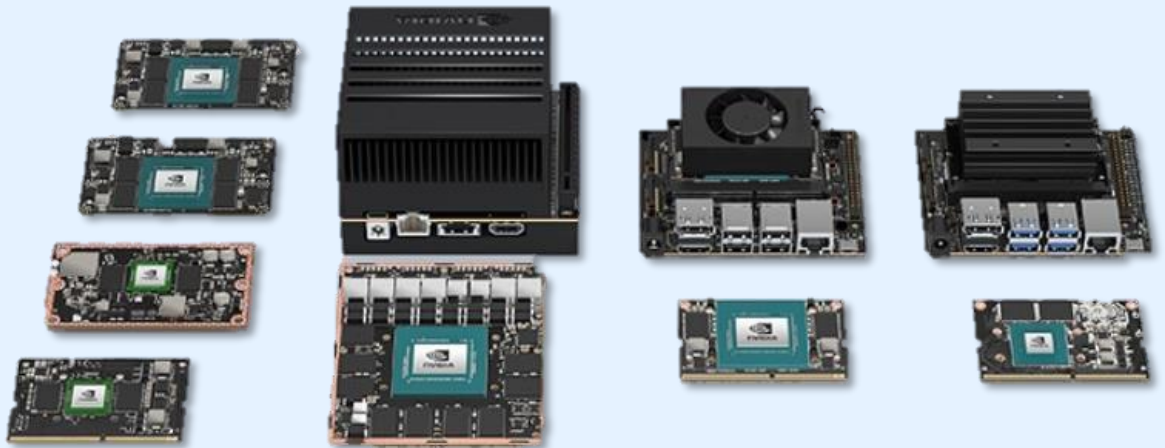
How Allxon's Solution Can Help

THE CHALLENGE WITH AI AT THE EDGE

CNNs   RNNs

GANs   RL
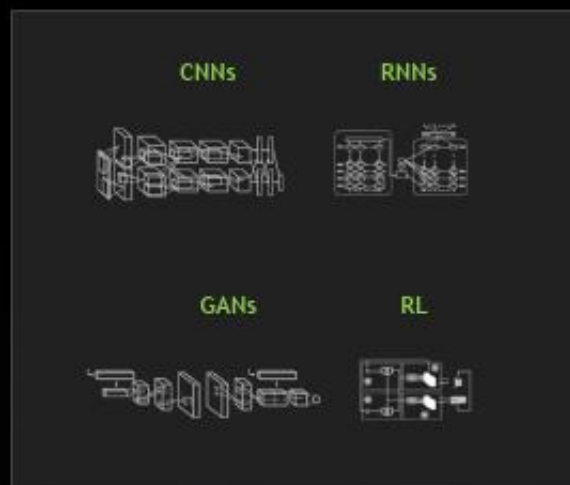
Growing Diversity & Complexity Of Neural Nets

INFERENCE
Classify
Detect
Segment

PRE-PROCESSING
Decode
Scale, Dewarp, Crop
Stream Mgmt

POST-PROCESSING
Encode
Composite
Visualize
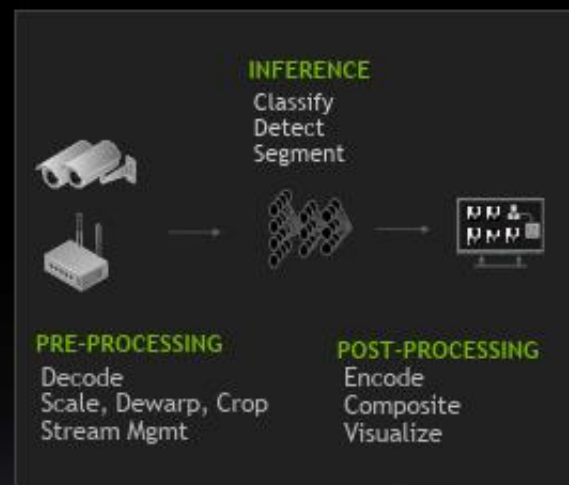
Full Stack Acceleration

CLOUD   DATA CENTER   EDGE
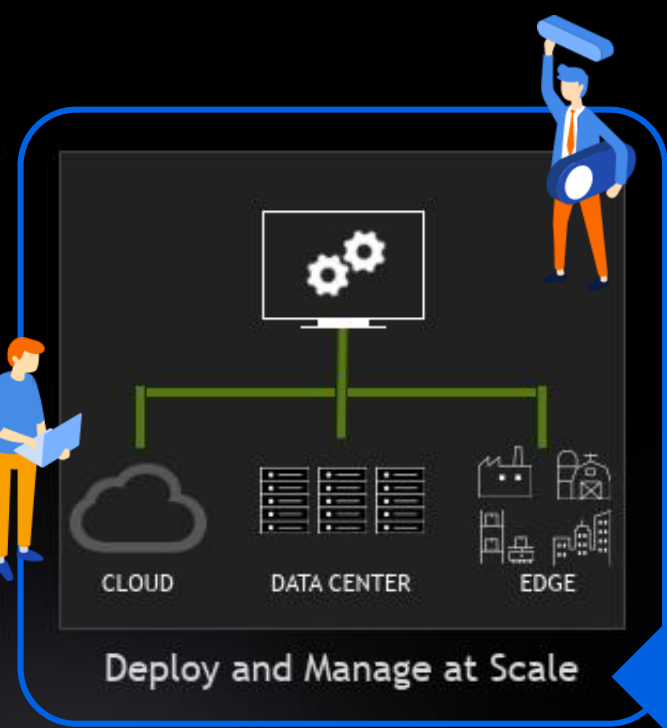
Deploy and Manage at Scale

allxon

Average estimated cost

of onsite visit to perform repair

USD $187

Intel Internal estimates, Gartner 2014 and CompuCom internal estimates

Our Partnership with NVIDIA JETSON ECOSYSTEM

Allxon is the preferred software partner
that provides remote management solution for Jetson platform.

We Support You Every Step of the Way

POC

Business / Data Understanding

Data Preparation / Modeling

Evaluation & Validation

1

Production

Group Deployment & Provision

2

Configuration & OTA

3

Edge Replacement

6

aiixon

4

Monitoring & Management   OOB

5

6 Retirement

Disaster Prevention & Recovery   OOB
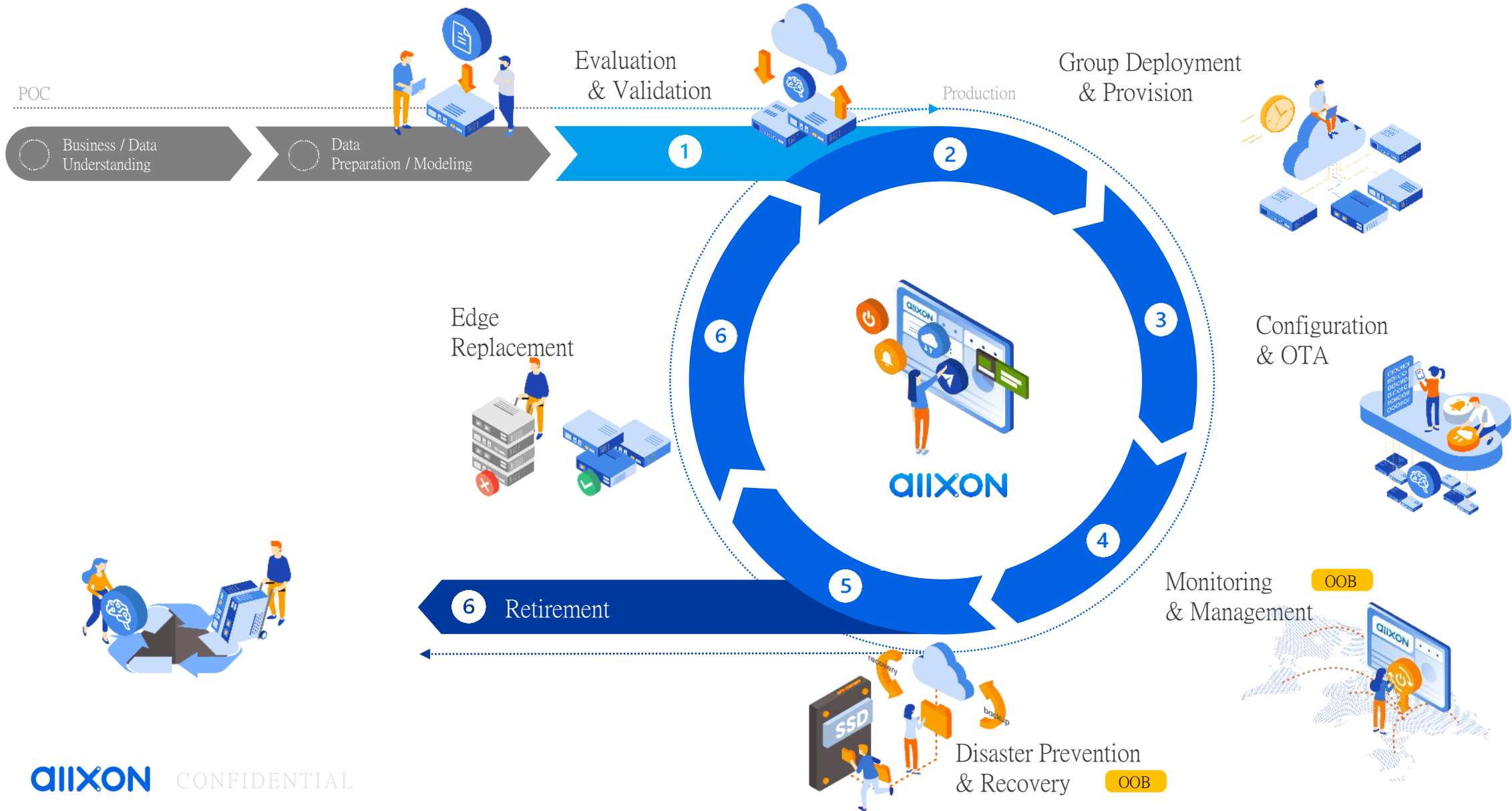
Allxon DMS,
an open platform for smarter device management

Section 2

Section 2

- Getting to know Allxon
- **Allxon Device Management Solutions**
- Case Sharing
- Recap and Action

Allxon Device Management Solutions (Allxon DMS)

Allxon RMM		Allxon swiftDR Series*		Allxon plugIN™
Allxon RMM	**Allxon RMM for NVIDIA Jetson**	**Allxon swiftDR for SSD Recovery****	**Allxon swiftDR for Power Cycling**	**Custom Solution** *empowered by* **Allxon plugIN**
• Single unified dashboard • Alert via multiple channels • Install & update software • Take Snapshot on devices	• Enter Jetson Recovery mode* • AI model update NVIDIA PREFERRED PARTNER	• Instant full SSD backup & recovery from remote • Allxon RMM	• Power on/off • Enforcement Shutdown • Allxon RMM	• Allxon verified software add-on for enhancing and fulfilling the special application of yours.

Allxon Services

In-Band (INB)			Out-of-Band (OOB)	
⟳ Reboot	⊡ Take Screenshot	📄 Collect logs	🔔 Alert Notification	🌡 Temp. / RH. Sensor
⏻ Enforcement Shutdown	▭ Send Command	☁ Over-The-Air (OTA)	🔋 Battery Life Detection	🔓 Intrusion Detection

* with Allxon swiftDR Enabler
** with selected hardware component

When Nuvoton meets Allxon Cloud

The Uniqueness of Allxon

When Nuvoton meets Allxon Cloud

Chip to Allxon SaaS

Nuvoton 980
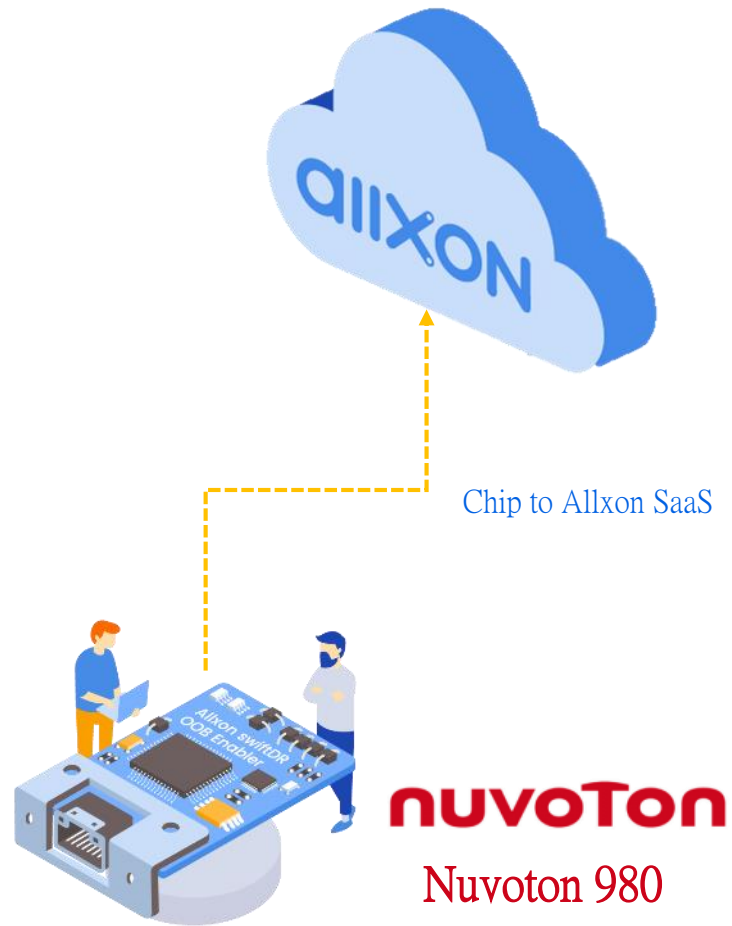
Edge AI Applications

Allxon Device Management Solution for Edge AI Platforms

- Remote & Auto Provisioning
- 24/7 Device Monitoring & Controlling
- Event Notification (email, Line, IFTTT)
- AI Model Remote Deployment (OTA)
- Log Collection
- Out-Of-Band Disaster Recovery (Option)
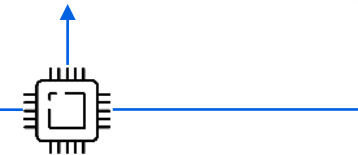
MPU

Edge AI Platform

When Nuvoton meets Allxon Cloud

NuMaker Boards	PaaS					SaaS
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RTU-NUC980 (Chili)	●	●	●			●

Have you Seen This?
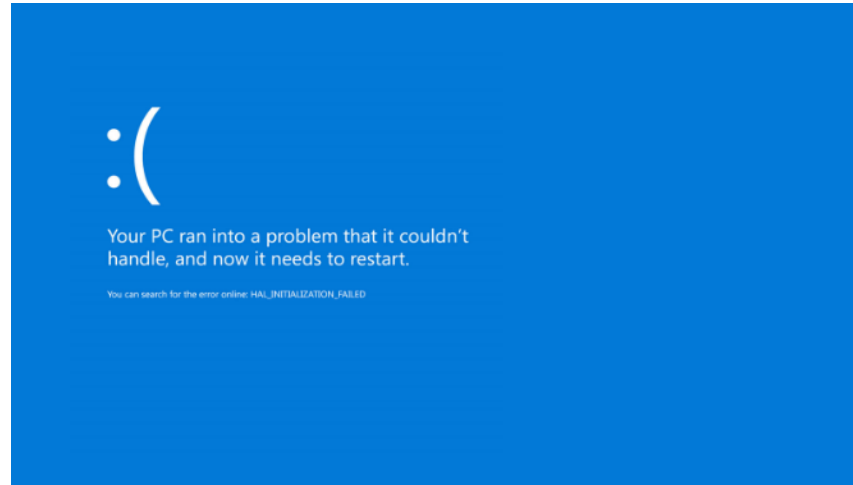
What would you do when OS crashed?

And **70%** devices will be **back to normal** after power cycling.
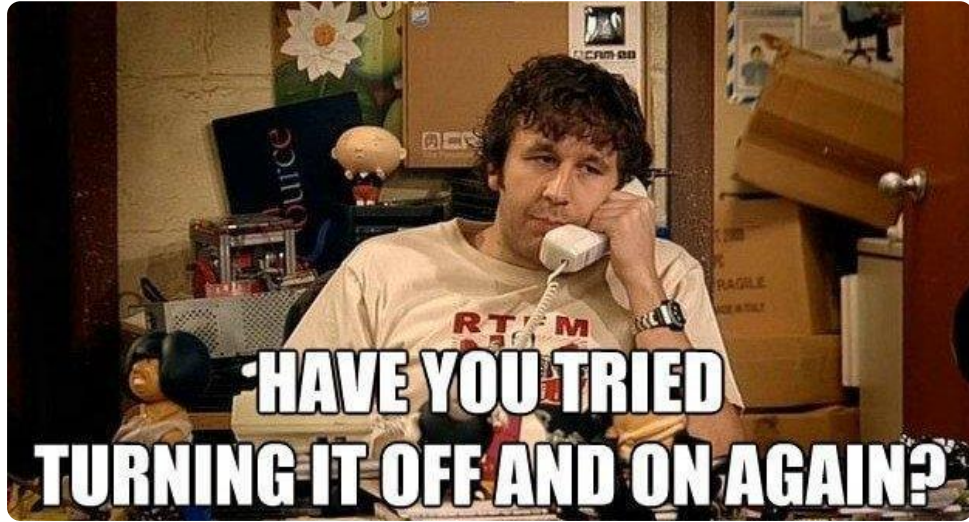
90% onsite supporting for non-responsive devices are trying to **reboot** them firstly.

60%

crashed

back to normal

Allxon swiftDR OOB Enabler

✓ Easy-to-Integrate

✓ Support for Public and Local Network Environments

- ARM9 microprocessor embedded
- Built-in Allxon **Out-Of-Band (OOB)** service agent, capable of supporting both **public** and **local** network environment architecture
- Provide 24/7 secure central portal for remote device management
- Support power state monitoring on edge system
- Support **complete power control** over the edge system when the system is unresponsive (Allxon swiftDR for Power Cycling)
- Support full SSD backup & recovery via **Allxon swiftDR for SSD Recovery** technology
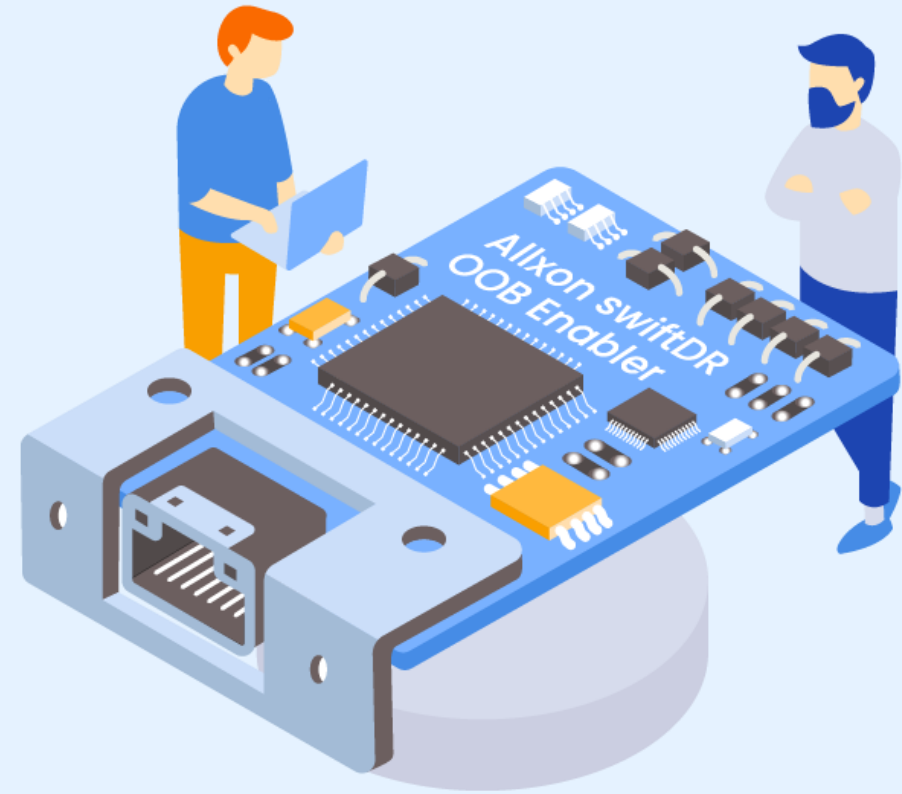
Allxon swiftDR OOB Enabler

Key Functions

Remote **Power On / Off**

Enforcement Shutdown

Hardware **Reset**

Scheduling Power Control

Application

	Power Switch		Power Reset		Device Power		UART PIN
1	PWR–BTN	5	RST–BTN	1	+5V	1	UART Tx
2	GND	6	GND	2	GND	2	GND
3	PWR–BTN	7	RST–BTN			3	UART Rx
4	GND	8	GND				

Allxon swiftDR OOB Enabler

Out-Of-Band Power Control

#Remote OOB
Power Control

Allxon swiftDR OOB Enabler

Out-Of-Band Power Control

crashed

back to normal

Allxon swiftDR OOB Enabler

Out-Of-Band Power Control

crashed

back to normal

Remote Manage for Wayside Signage

Pain Point

Existing railway CMS devices **lack the tools to efficiently reboot digital signages at each train station**

Solution

Allxon OOB swiftDR enabler

enables railway control centers to remotely power off and back on edge displays in a click of a button.

Secure Connection (WebSocket/Restful)

Power Cycling

Passenger information

Central Management System

Cloud-Based DOOH in Germany

Solution

With thousands of displays installed in different places across Germany, highway, airport, city center.

Cittadino MSP needs a **cloud-based platform** to help them to improve the efficiency of daily operation. Cost-saving and responsive support.

Cloud-Based DOOH in Germany

Pain Point

With thousands of displays installed in different places across Germany, highway, airport, city center.

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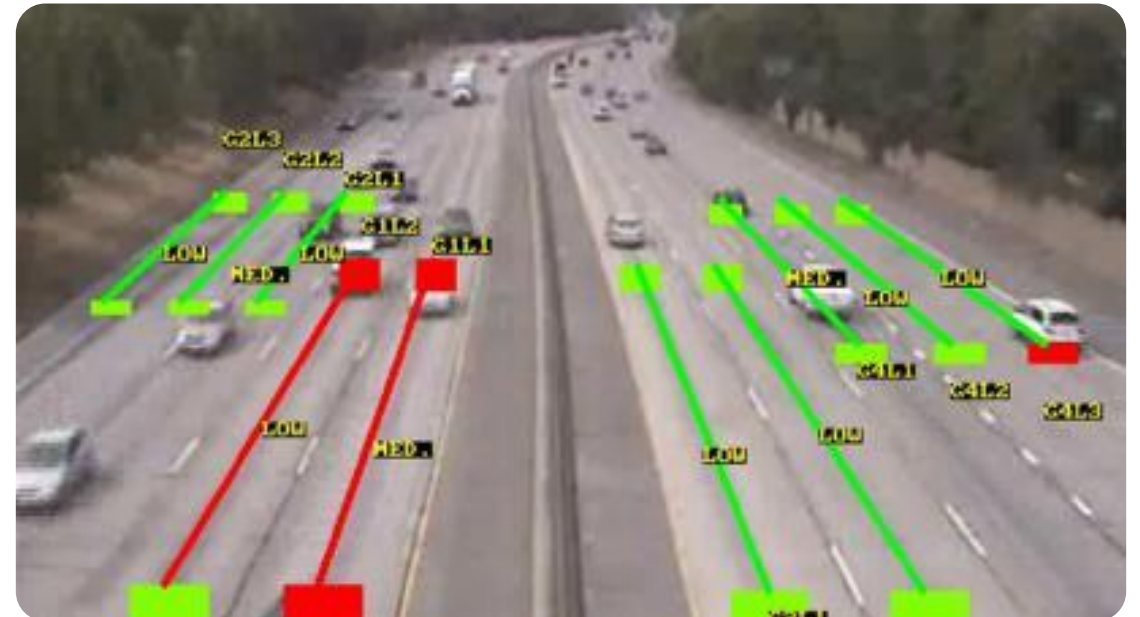**Solution**

Allxon swiftDR OOB Enabler

Automatically Power Control

Turn devices on & off automatically with the operation hours.
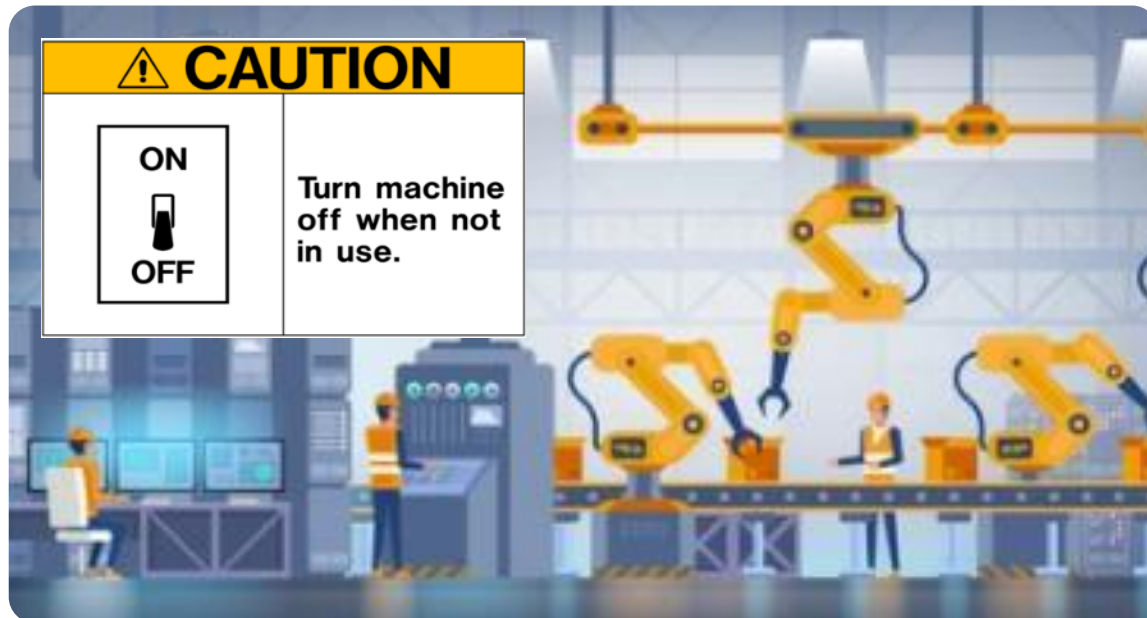
Energy Saving

Turn devices on only when it's needed.
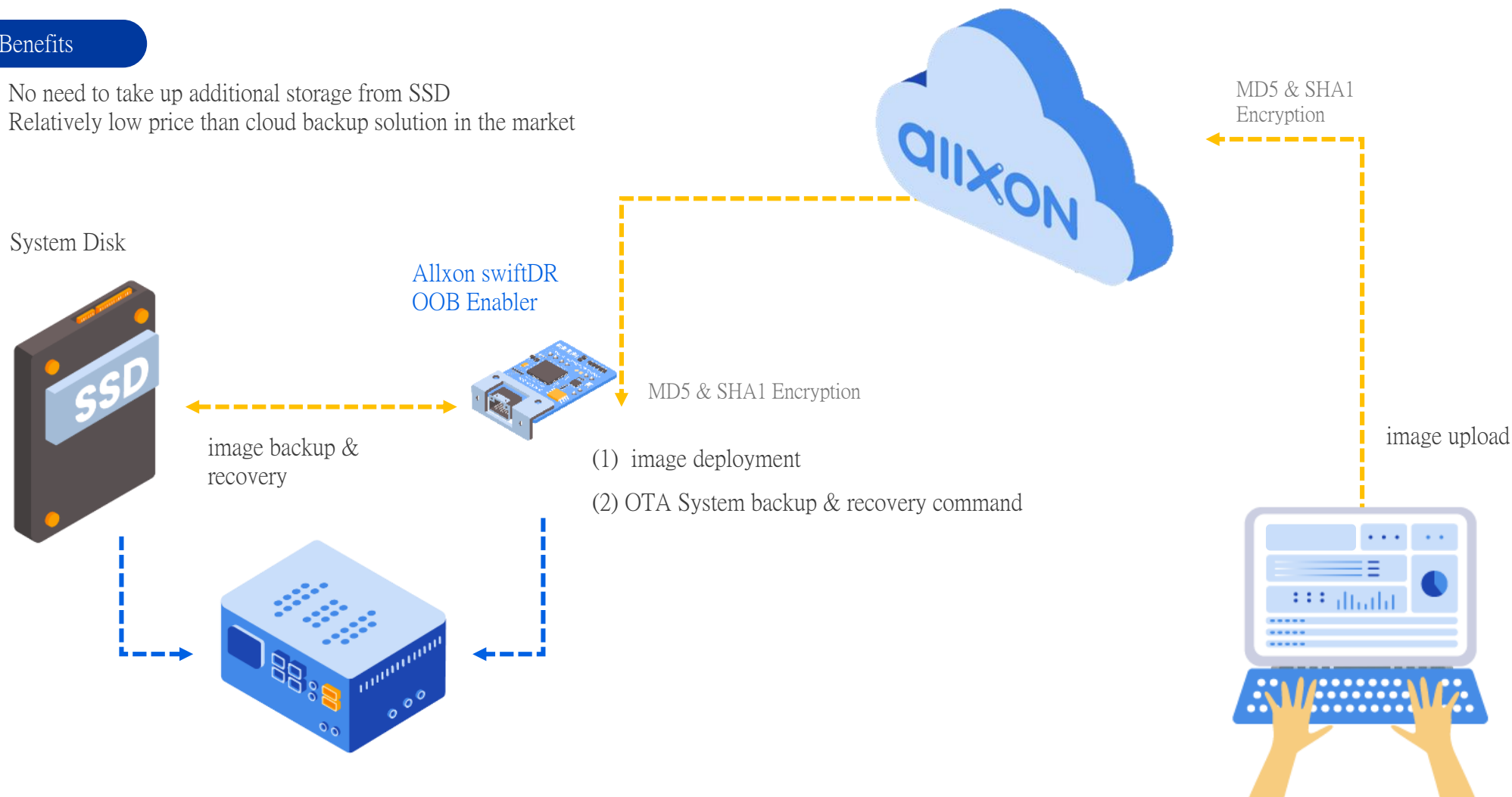Reduce unnecessary power consumption of idling.

System Image Deployment & Recovery at Scale

Benefits

1. No need to take up additional storage from SSD
2. Relatively low price than cloud backup solution in the market

MD5 & SHA1 Encryption

System Disk

Allxon swiftDR
OOB Enabler

MD5 & SHA1 Encryption

image backup &
recovery

(1) image deployment

(2) OTA System backup & recovery command

image upload

Jetson BSP Recovery in Just 3 Steps

No more onsite !

Step 1. Trigger Recovery Mode

#command –
enter recovery mode

NVIDIA PREFERRED PARTNER Jetson Platform

Step 2. OTA BSP

#command –
OTA the Updated BSP

Allxon swiftDR
OOB Enabler for Jetson

Step 3. BSP Update

#command –
flash BSP through OOB
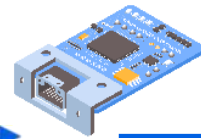
internal USB Connection

Customize? Try Allxon plugIN Architecture

Edge Devices

Information

Software

Command

Agent → plugIN™

Hardware

MB | Fan | Power | SSD | GPU

nuvoTon Chili Board

Allxon swiftDR
OOB Enabler

Command | Information

Smart Retail

Smart Transportation

Smart City
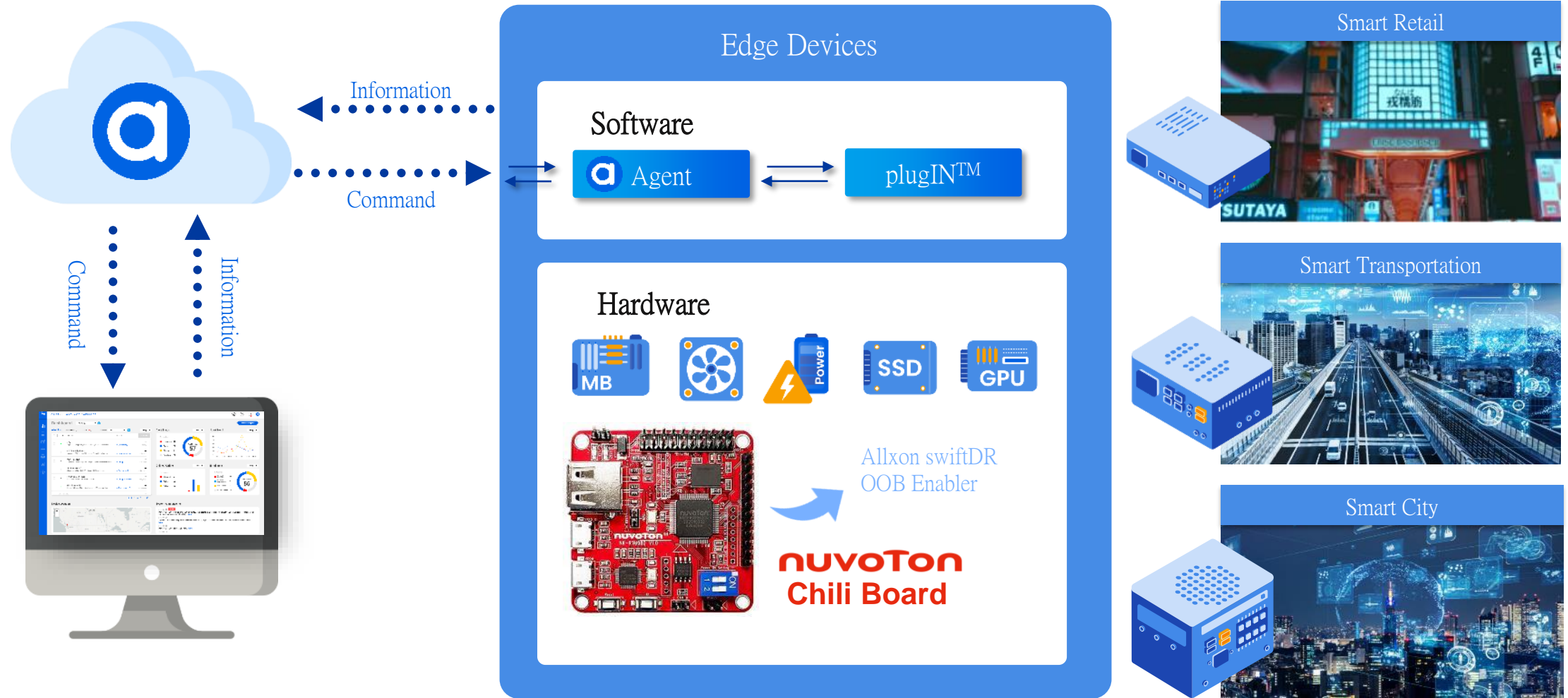
Check-in on Your Devices with Allxon plugIN

GPU Performance

Stay informed on important details, such as GPU utilization and memory usage, to ensure services run at an optimal level.

Temp/RH Sensor

Monitor the temperature/RH levels of your devices to ensure they do not overheat or malfunction during operations.

Cyber Threat Detection

Avoid destructive threats by responding immediately upon threat detection.

Battery Life Detection

Monitor the battery life of your devices to ensure they stay ON when you need them.

Section 3

Getting to know Allxon

Allxon Device Management Solutions

Case Sharing

Recap and Action

Section 3

Fast Provisioning and Group Setting

- The largest French retail chain selling cultural and electronic products, with over 300 locations with more than 2,500 individual signage displays throughout France.

- SI need to spend hundreds of hours to configure and install applications to every device if by the traditional way.

Solution

- Once their displays were connected to the internet, Allxon agent automatically installed the correct software and granted the necessary privileges to enter their device network.

Central Web Portal for Digital Signage

In the past, they have no choice but let every digital signage players keep turned-on.

With Allxon solution, Calvin Klein IT is now able to efficiently manage and keep tabs on all devices at all locations from a central web portal, saving thousands of dollars.

Expense on Onsite Setting
(month/person)

$504.00

$168.00

AI Model OTA Update in Tax-Free Shops

Artificial Intelligence applications for collecting and analyzing consumers behavior in retail stores of Japan International Airport. The AI model need to be update and constantly adjust in order to get a good inference result.

Solution

System integrators (also ISV) can deploy the updated trained AI model remotely, with setting different policies of every stores.

IoT Security

Secured by TMIS Monitored & Managed by Allxon

Allxon DMS + Trend Micro™ IoT Security ensures system integrity and reduces the attack surface.

- blocked attacks

- vigilant vulnerability checks

- Trend Micro Web Reputation Services (WRS) for web blacklisting

- Trend Micro Approved Application Listing (AAL)
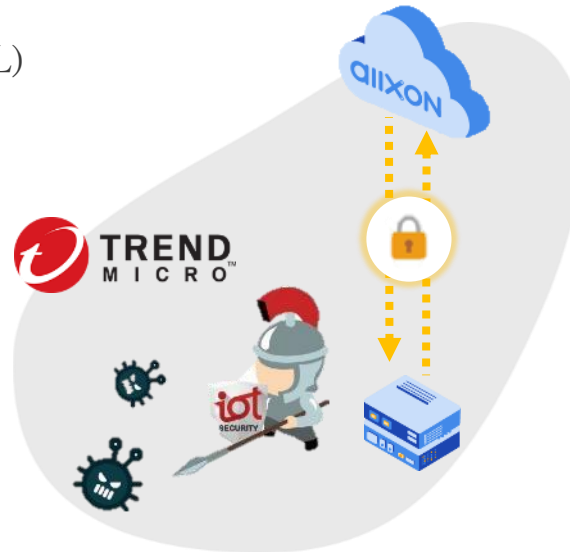
Cooperation with Taiwan IPC

Cooperation with Distributor
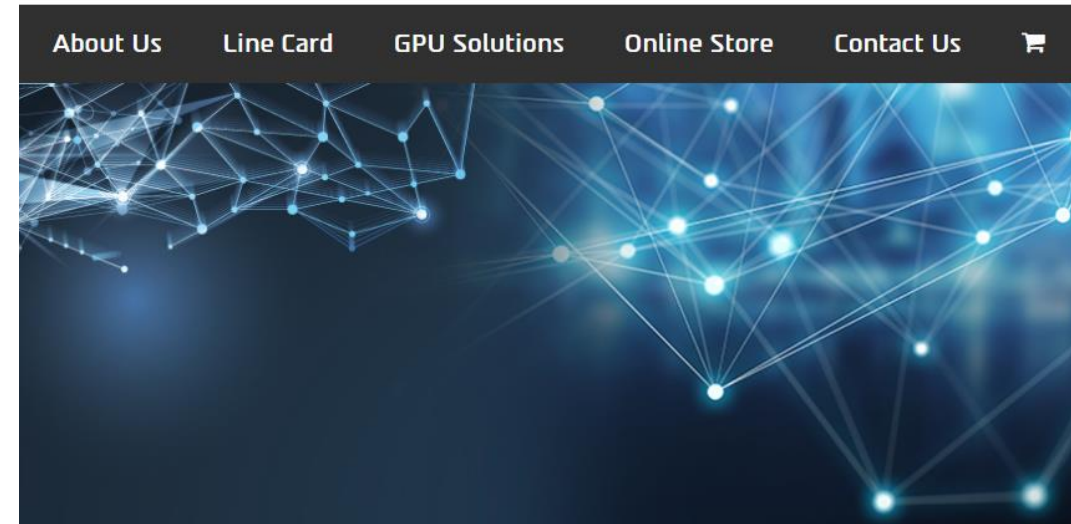
Allxon

Augments the wide range of NVIDIA® Jetson™ AI Systems with Allxon remote management functionality

As one of the NVIDIA® Jetson™ preferred partners, Allxon Device Management Solutions (Allxon DMS) provides a wide breadth of centralized cloud device management services, saving businesses from managing mass devices of multi-platform interfaces. System integrators are able to remotely control and manage these devices through the entire device lifecycle. This solution can help businesses to organize, monitor, update, and troubleshoot AIoT devices of any scale and in any environment efficiently.

Section 4

Getting to know Allxon

Allxon Device Management Solutions

Case Sharing

Recap and Action

Section 4

○ Getting to know Allxon

○ Allxon Device Management Solutions

○ Case Sharing

● Recap and Action

Recap

Chip to Allxon SaaS

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Nuvoton 980

Allxon provides a **Single Unified Cloud Portal** for Edge AI

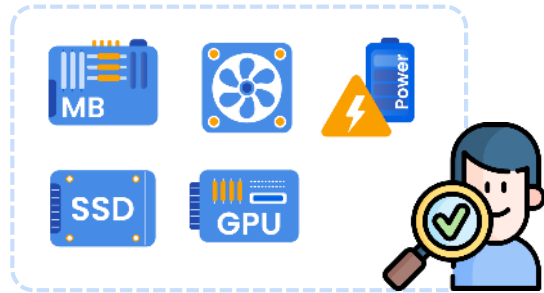**Allxon swiftDR** for Power Cycling is a powerful disaster recovery tool brings you **disaster recovery solutions.**

Cuts time and 30% labor costs by **remotely managing** and solving technical issues in just a click of a button

Allxon swiftDR OOB Enabler

Gen. 2

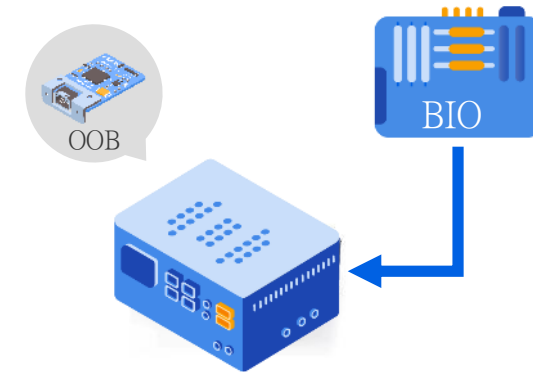Hardware Monitoring via OOB
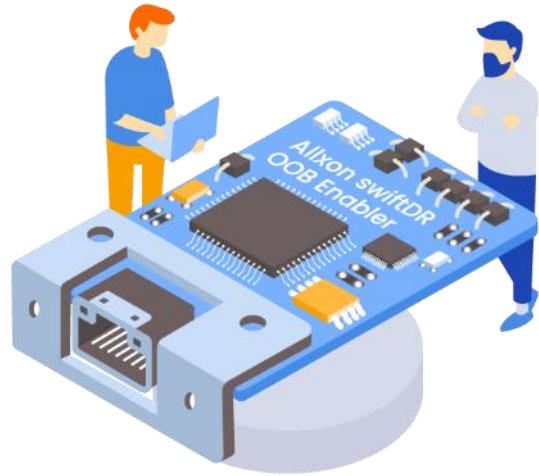

Telecom Network Support

Wi-Fi Network Support
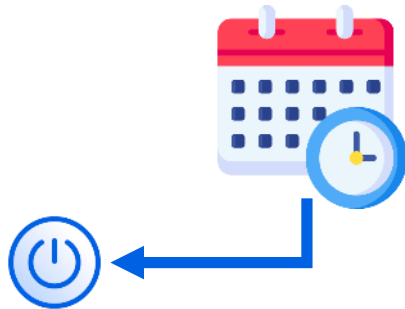
System Alive Detection
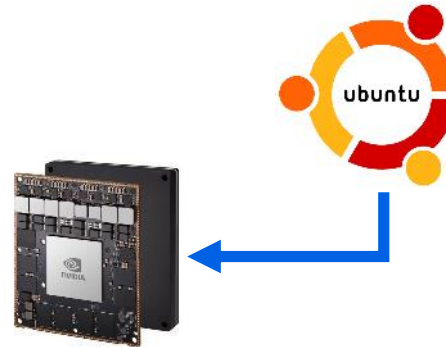
Jetson BSP Remote Reflash

BIOS Update via OOB

Allxon swiftDR OOB Enabler
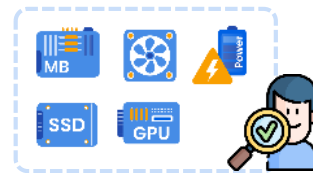
Gen. 2

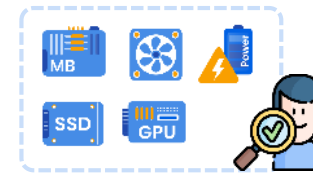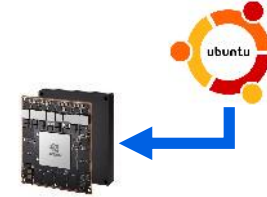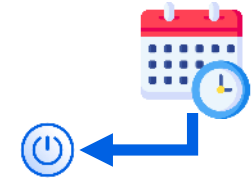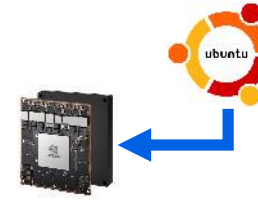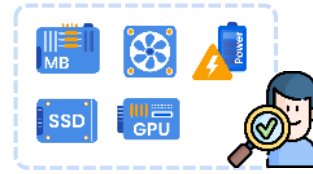### Interface

- GPIO x 7
- USB (host/device)
- I²C (Master) x 1 set
- I²C (Slave) x 1 set
- UART x 1 set
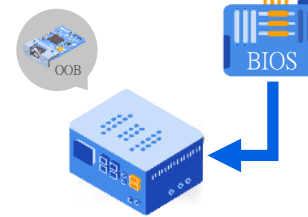
NVIDIA Metropolis Partner

NVIDIA METROPOLIS 軟體合作夥伴

提供 100 種以上的合作夥伴軟體產品供選擇，讓您找到符合確切需求的整合自訂解決方案。

Optimizing Business Operations Together

Integrating with **Allxon swiftDR OOB Enabler** for value-added functions and becoming a part of the edge AI/IoT movement.

Keep it ON!

allxon

Joy of innovation

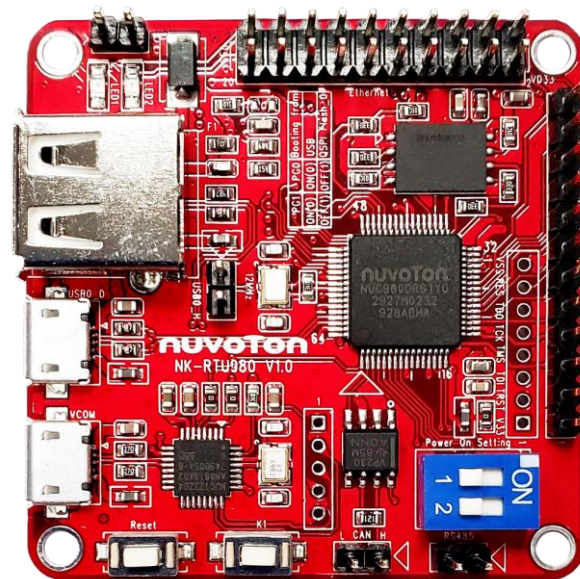**nuvoTon**

Thank You

Danke

Merci

ありがとう

Gracias

Kiitos

감사합니다

धन्यबाद

كل اركش

הדות

Chili board 五折特賣
折扣碼：Chili

五折

NuMaker-RTU-NUC980 (Chili board)

Joy of innovation

nuvoTon

Q&A

- 請透過 Q&A 視窗文字提問，會有專人線上回覆。

- 因時間因素如有未答覆之問題請填寫會後問卷，會後將盡快回覆。

- 會後填寫問卷，可參與新唐 Chili board 抽獎及 Allxon full function code 全功能試用。

- 今日參加會議者都可獲得新唐 Chili board 五折碼及 Allxon trial code。

Contact

- Nuvoton NUC980 Chili Platform+Allxon SaaS:

  - https://www.nuvoton.com/products/iot-solution/iot-platform/numaker-rtu-nuc980/

- Nuvoton Platform support:

  - salessupport@nuvoton.com

- Allxon SaaS support

  - https://www.allxon.com/contact

Joy of innovation

NUVOTON

Thank You
Danke
Merci
ありがとう
Gracias
Kiitos
감사합니다
धन्यबाद
شكرا لك
תודה