

IoT enablers



Tze Chiew
Product Sales Manager

Advantech

at a Glance

Advantech defines its brand mission as “Enabling an Intelligent Planet”, to empower innovative technologies and solutions.

- Headquarters
Taipei, Taiwan
- Established
May, 1983
- Employees
8000



Enabling an Intelligent Planet

ADVANTECH

IoT Focus Areas

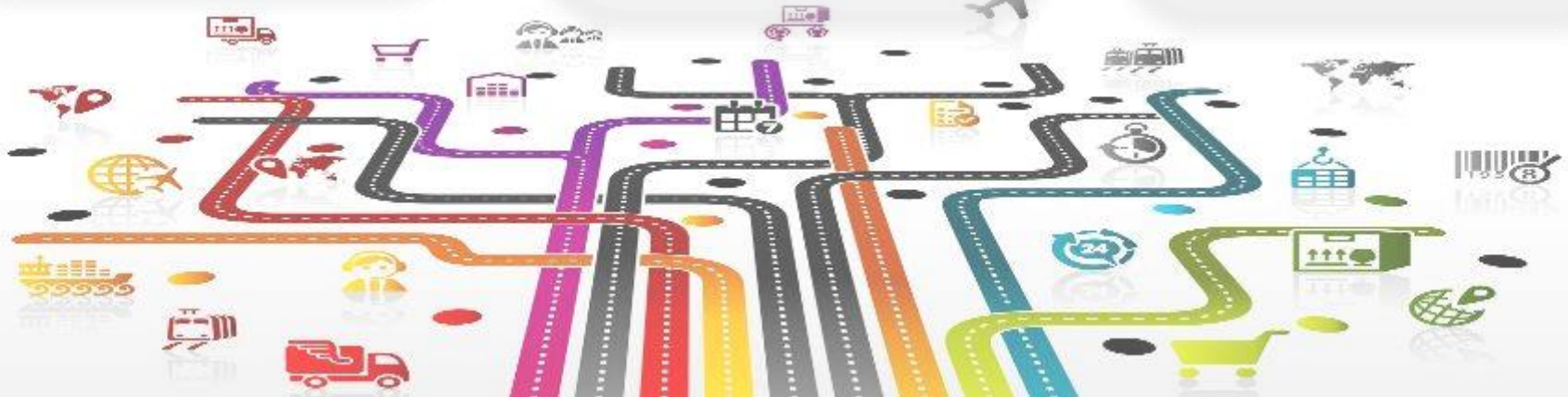
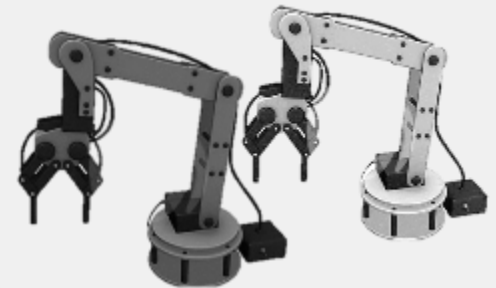
Smart Services



Smart City



Industry 4.0



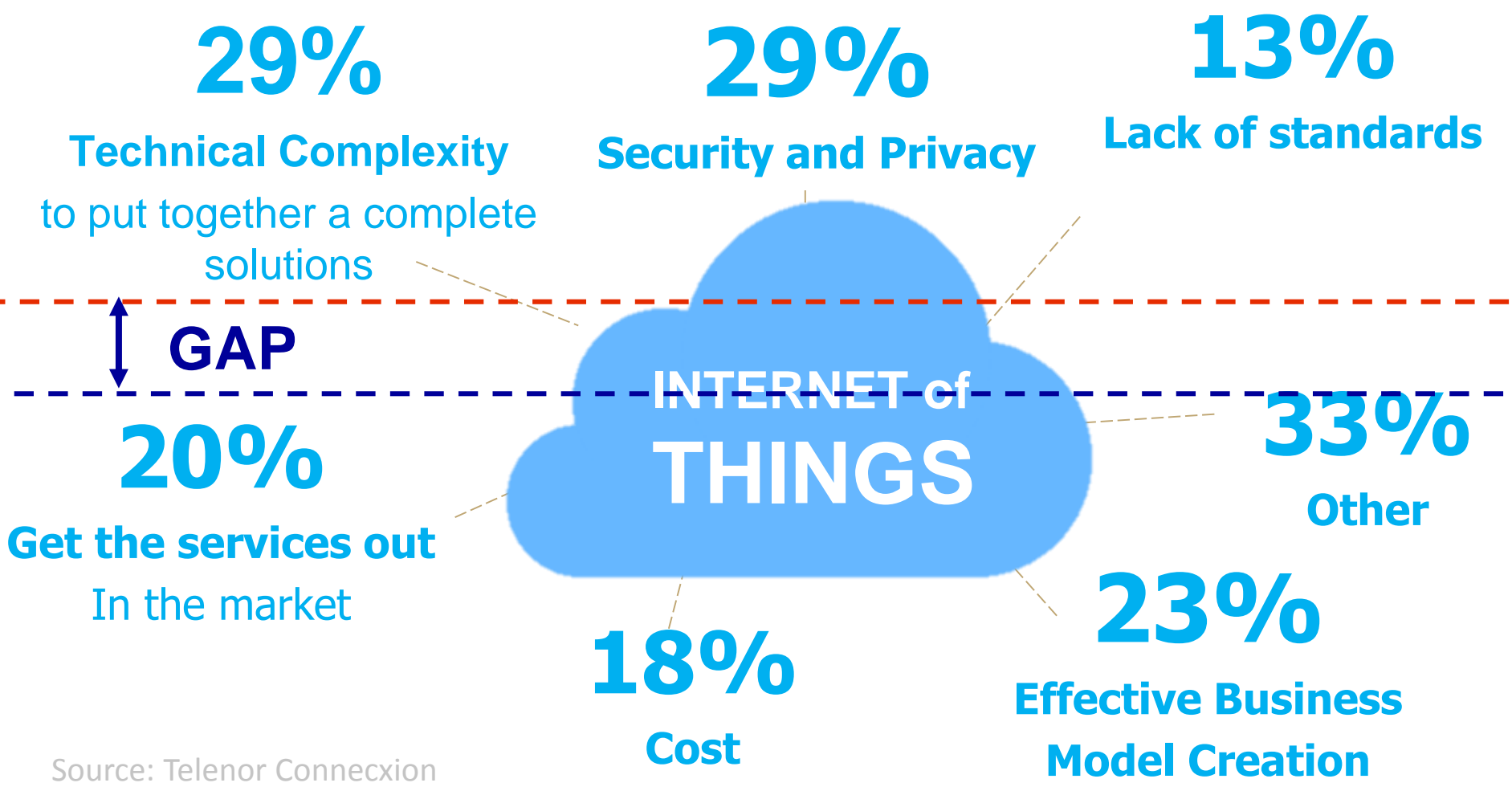
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More than 75% of buildings have no intelligent controls

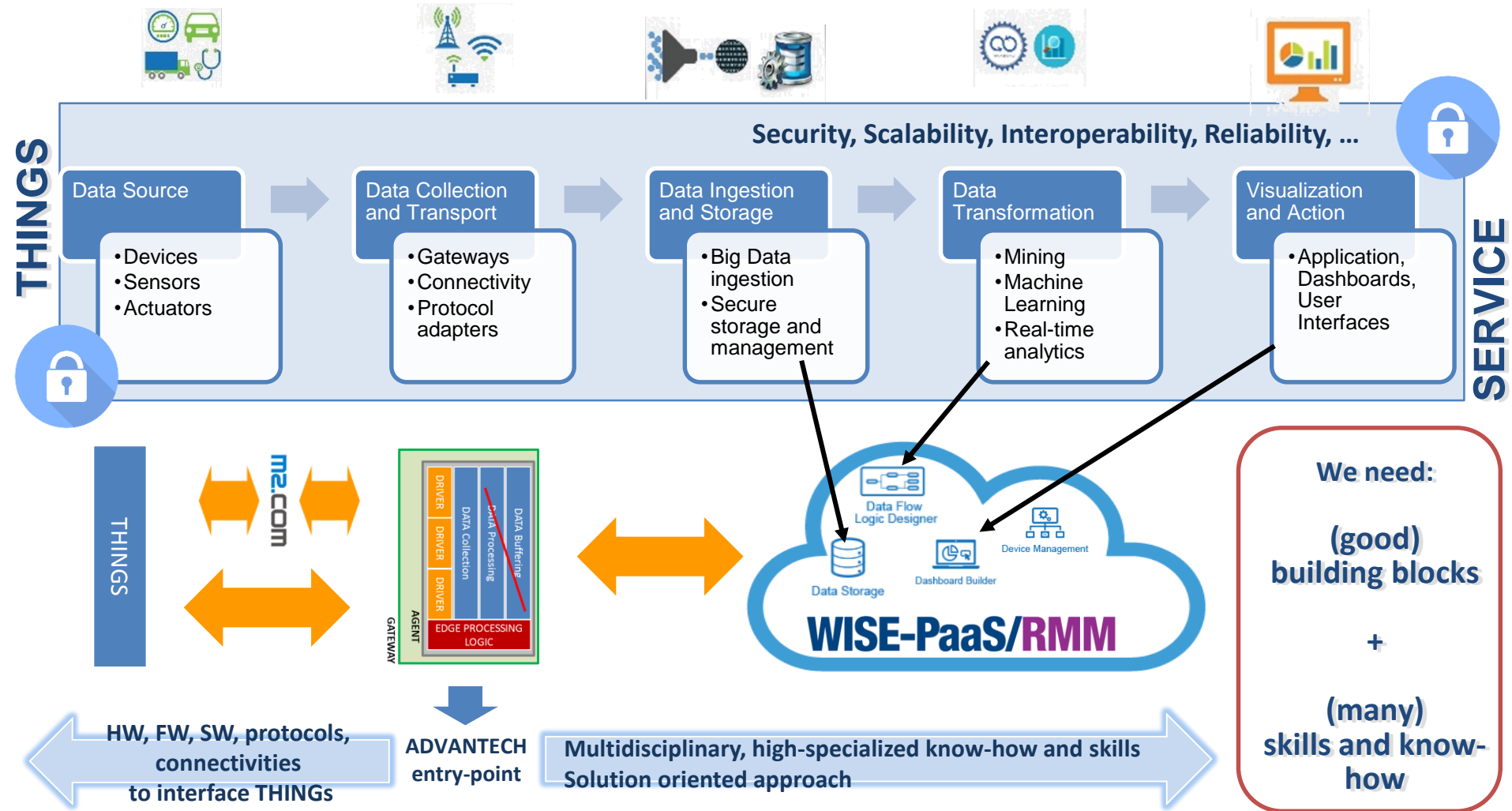


Main Challenges of Implementing IoT Solutions

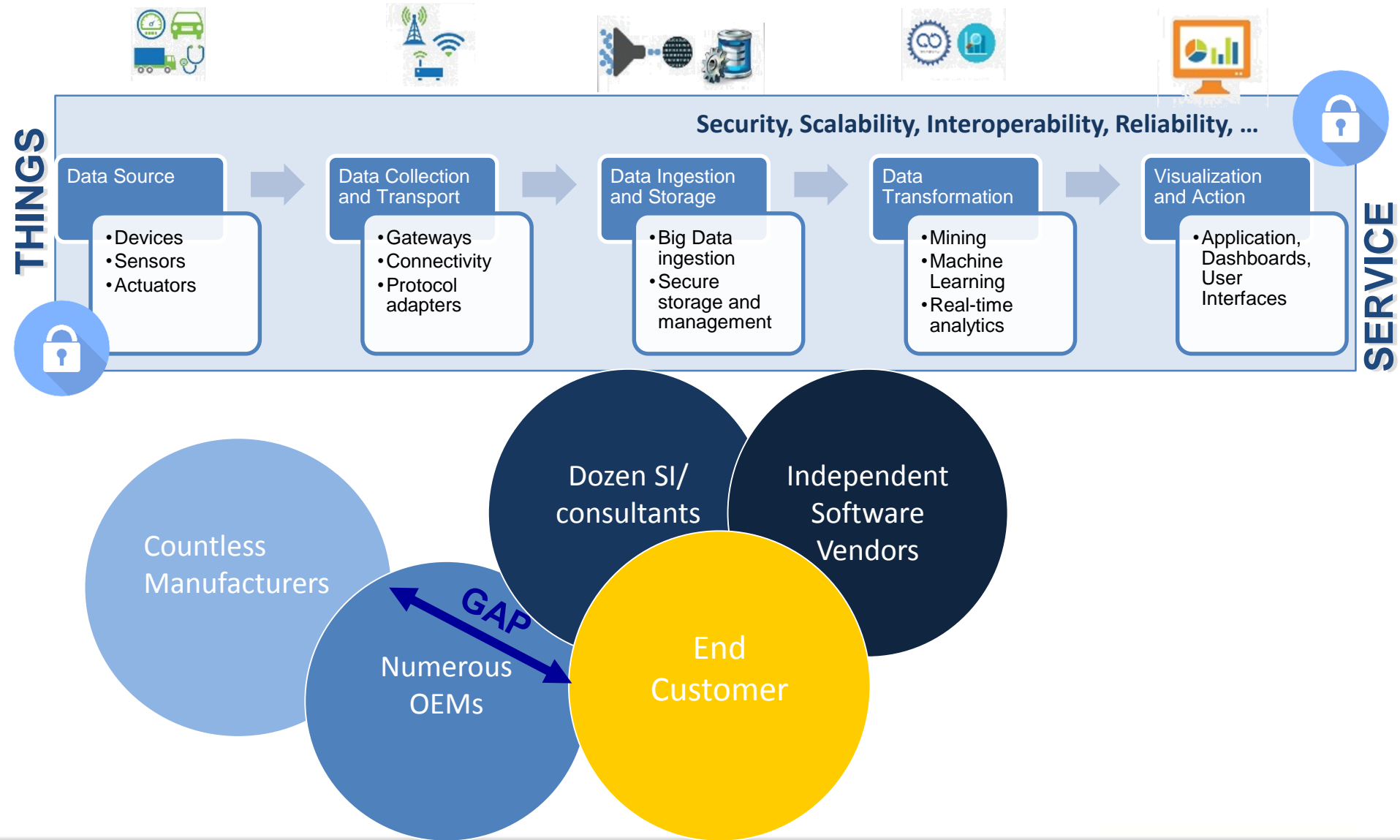


Source: Telenor Connexion

How to build an IoT solution?



Business Model Challenges

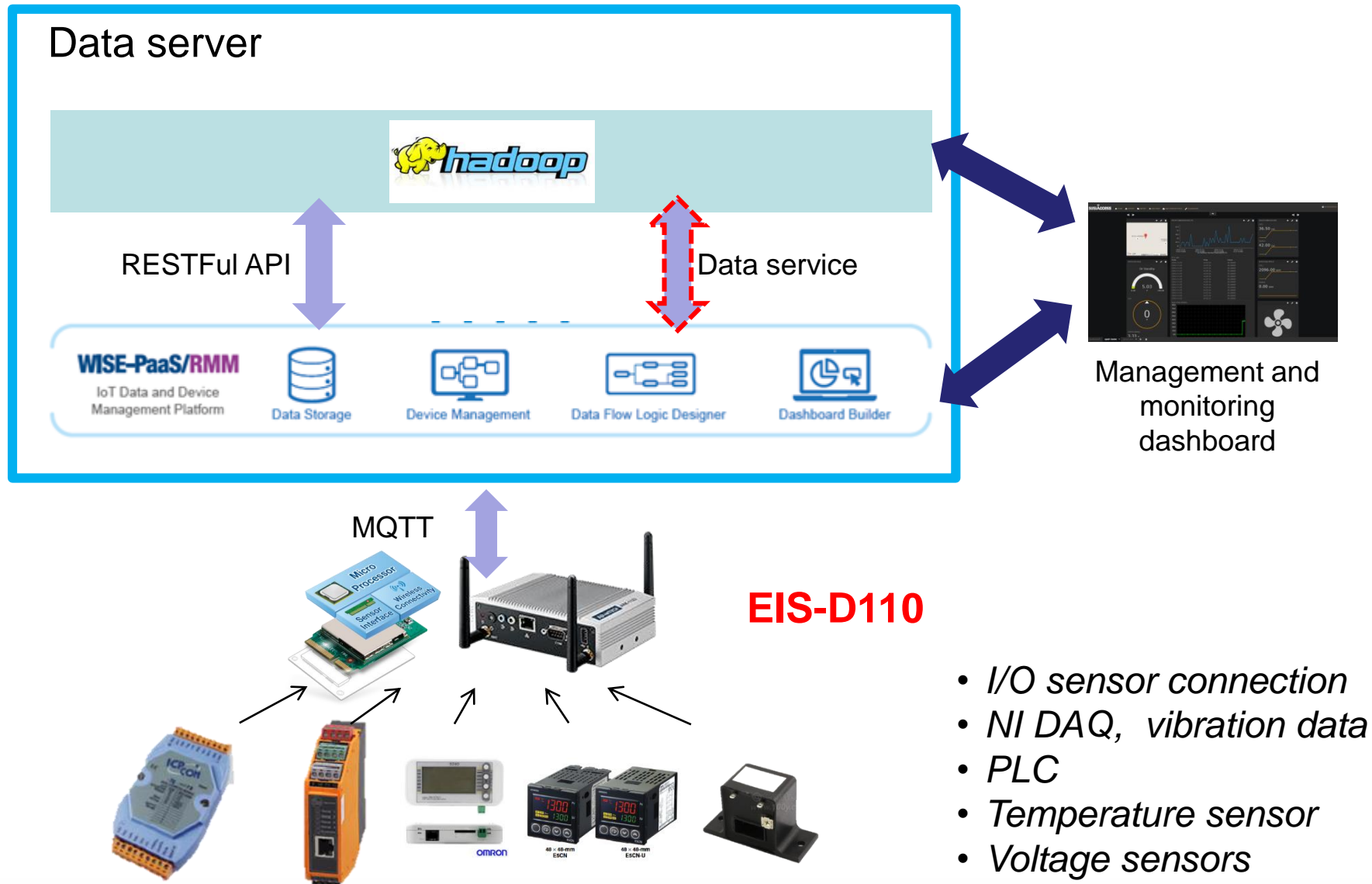


Factories in general

- Have lots of expensive equipment
- Want to move to Factory 4.0
- Purpose
 - Get insights
 - Improve production efficiency
 - Reduce system down-time



Data Collection



The Smallest MCU Built-in Industrial Sensor Node

ARM

m2.com
Open Standard for IoT Applications



- Low Power Management
- Integrated with Memory
- High Computing for Sensor Algorithm
- Great Performance Per Watt
- Unified Software Architecture



Modular
Design

Certificate
Ready

Industrial
Standard

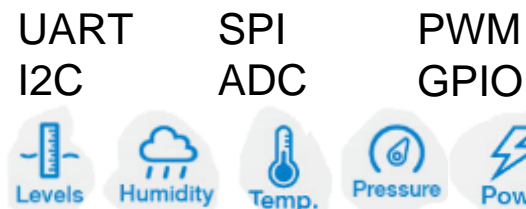
ARMmbed™

RTOS

Diverse Wireless Technology



Multiple Sensor Interfaces



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Wireless Technology Comparison

Technology	Low Power Wi-Fi	Bluetooth Low Energy	ZigBee	SmartMesh	LoRa	SigFox	LTE-M	NB-IoT
Standard	IEEE 802.11.x	IEEE 802.15.1	IEEE 802.15.4	IEEE 802.15.4e	LoRa ISM	SigFox ISM	3GPP Rel. 13	3GPP Rel. 13
Frequency	2.4 GHz 5 GHz	2.4 GHz	2.4 GHz	2.4 GHz	868 MHz 915 MHz 433 MHz	868 MHz 915 MHz	7~900 MHz	7~900 MHz
Data Rate	16 Mbps	1 Mbps	250 Kbps	250 Kbps	12.5 ~ 0.970 kbps	100 bps 600 bps	1 Mbps	200 Kbps
Tx Power	~ +17 dBm	~ +10 dBm	~ +10 dBm	~ +8 dBm	~ +18 dBm	~ +14 dBm ~ +22 dBm	~ +20 dBm	~ +23 dBm
Sensitivity	-92 dBm	-89 dBm	-100 dBm	-93 dBm	-136 dBm	-126 dBm	-117 dBm	-141 dBm
Range	~100m	~30m	~100m	~ 300m	~3km urban ~15km rural	~3km urban ~30km rural	~2km urban ~20km rural	TBC
Tx current Consumption	350 mA	22 mA	32 mA	9.7 mA	120mA	120mA	800 mA	TBC
Standby Current	58 uA	1.3 uA	1.4 uA	1.2 uA	1 uA	1 uA	3.5 mA	TBC
Rx current	70 mA	18 mA	26 mA	4.5 mA	10mA	10mA	50 mA	TBC
Topology	Star	Star	Mesh	Mesh	Star	Star	Star	Star
Node Capacity	Medium <30	Medium <30	Small <20	Medium ~200	Large >10,000	Large >20,000	Large >20,000	Large >20,000

Edge Intelligence Server (EIS)

WISE-Agent

IoT Connectivity

**Pre-configured
Microsoft Azure**
WISE-PaaS
Marketplace

IBM Node-RED

Data Manageability

Features

- Rugged & Secure Edge Computer
- WISE-PaaS Software Packages Built-in
- Optional Pre-configured Cloud Services & Solution Packages



WISE-Point

WISE-PaaS Marketplace

- Microsoft Azure Cloud Services
- Intel Security Services
- WISE-PaaS/WebAccess Software
- 3rd Party Software



EIS-D110

- Intel® Celeron® J1900
- WES7E/ Win 10 Enterprise
- COM, GbE
- Wi-Fi, Bluetooth



EIS-D120

- Intel® Celeron® J1900
- WES7E/ Win 10 Enterprise
- COM, GbE, iDoor
- Wi-Fi, Bluetooth



EIS-D150

- 6th Gen Intel® Core™ U-series
- WES7E/ Win 10 Enterprise
- COM, GbE, iDoor
- Wi-Fi, Bluetooth

Software Suite Built-in



WebAccess/IMM

WebAccess/IMM

Media player
management
solution



WebAccess/SCADA

WebAccess/SCADA :

Information
management
platform

**Limited version*



WebAccess/HMI

WebAccess/HMI:

Human-machine
interfaces and
supervisory control

**Integrated version*



WISE-PaaS/OTA

WISE-PaaS/OTA :

Remote software
update



WISE-PaaS/RMM

WISE-PaaS/RMM :

Remote monitoring
and Management.
Open and standard
platform



WISE-PaaS/Security

WISE-PaaS/Security:

Centralize device
and data protection



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IoT Development Tools

WISE-Agent



*IoT
Connectivity*



Edge IoT Application Development :
Open Plug-in SDK and sample code



Industrial Protocol Connectivity :
Provide standard protocol for sensor and devices



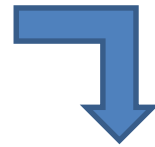
Data Format Integration :
Support ODBC for database and files



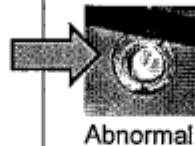
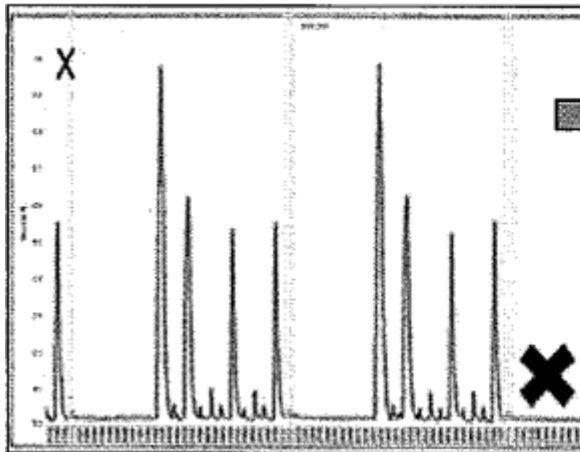
I/O and Sensor Compatible :
Integration test with Advantech sensor and I/O nodes



Data Collection and Analytic (Equipment 1)



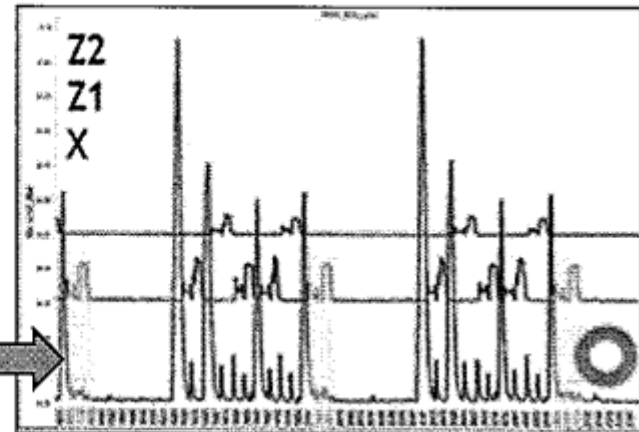
Voltage Sensor



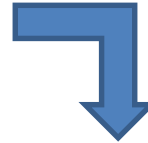
Abnormal



Normal



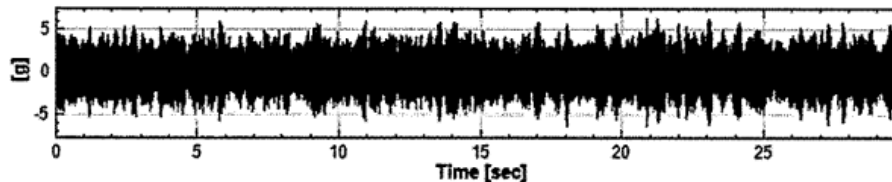
Data Collection and Analytic (Equipment 2)



Vibration sensor

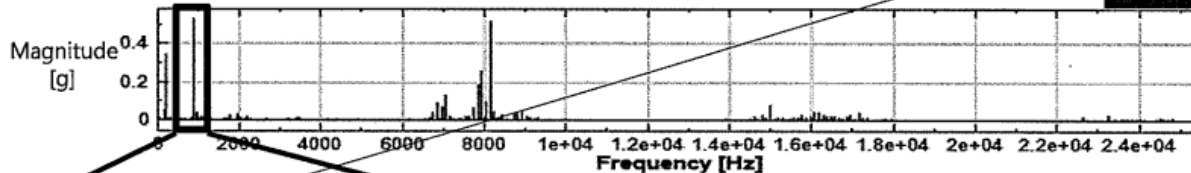
Time Domain: Original Vibration Signals

0119 0420

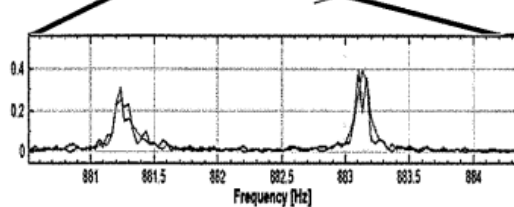


Frequency Domain: After FFT (Fast Fourier Transform)

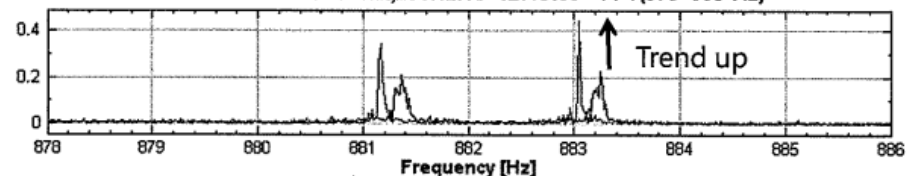
2017/01/19 16:19 - FFT



Zoom out the specific frequency range.



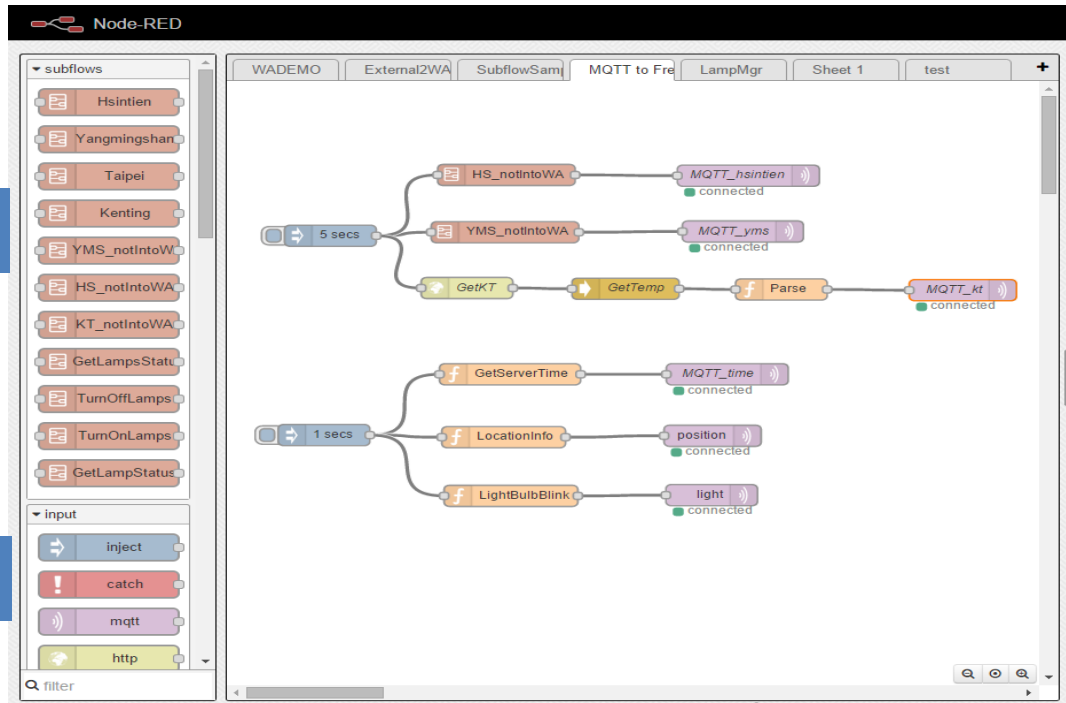
2017/2/8 16:32:47 v.s. 2017/2/16 12:13:08 - FFT(878-886 Hz)



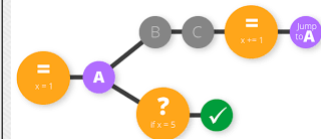
Edge Intelligence and Logic Flow

Data
Conversion

Light
Analytic



Event Alert



Logic Flow
Editor

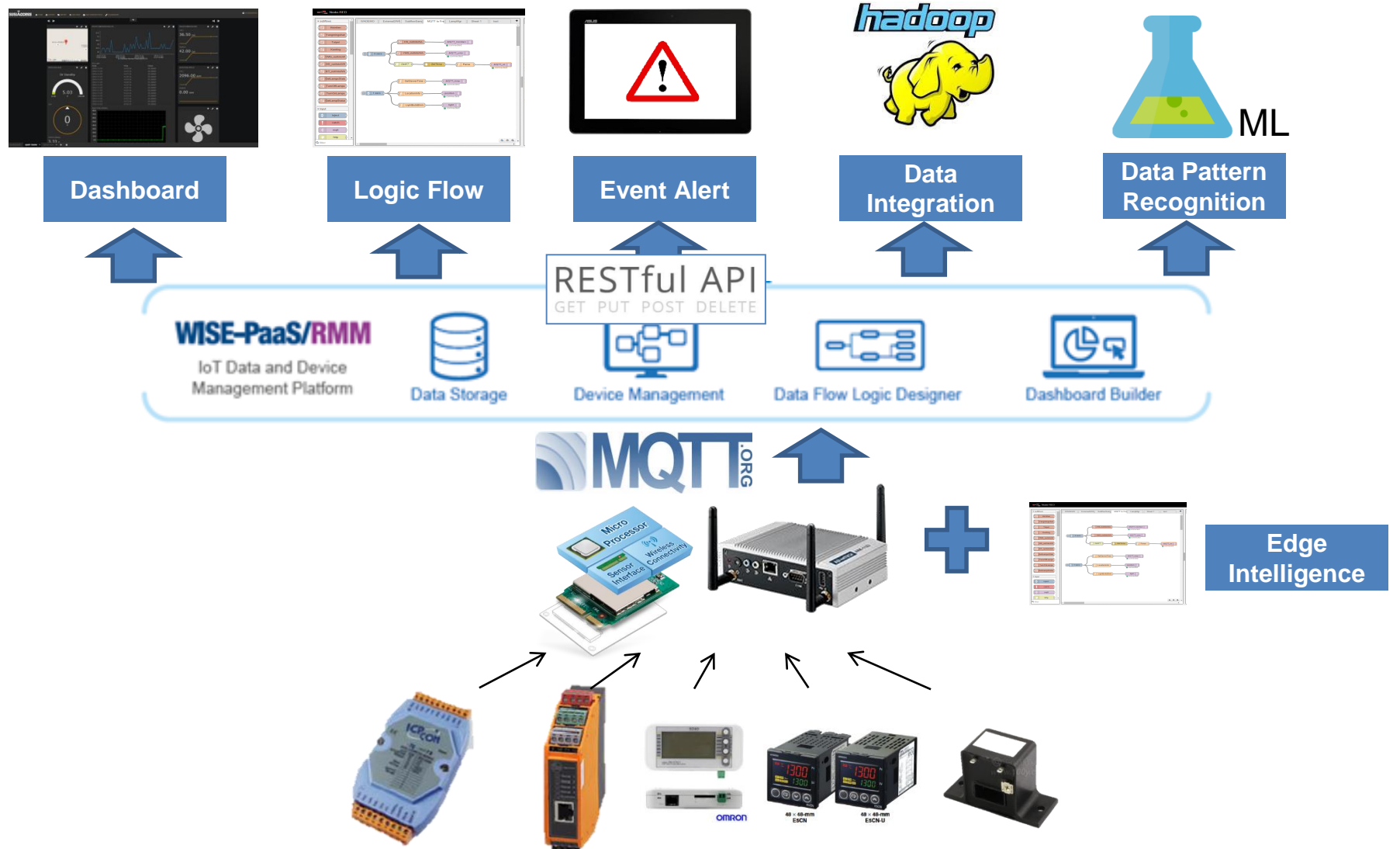
Search for known
parameters



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Landing Structure



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WISE-PaaS/RMM

WISE-PaaS/RMM Standard

Hardware Devices Build-In

System Monitoring



Device Monitoring

Remote Control



Remote KVM

System Security



Powered by
Acronis

System Recovery

WISE-PaaS/RMM Professional

IoT Developers Design-In

Software Development Kit



Sensor/Device SDK

High Availability



Server Redundancy



Automatic Alerts



Power On/Off



Powered by
Intel Security

System Protection



RESTful API



Server Hierarchical



Dashboard Builder



Node-RED Logic Editor

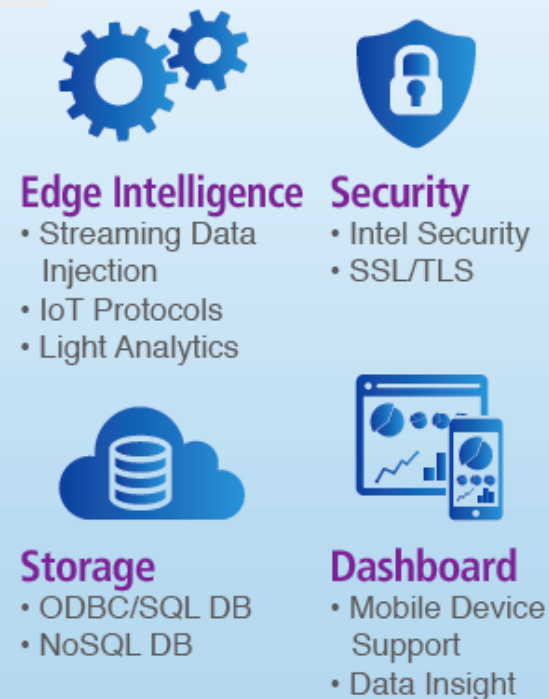
Edge Intelligent Server Starter Kit



EIS-DK10

- Complete IoT Connection Solutions
- All-in-one Developer Packages
- Plug-and-Play to Jumpstart IoT Innovation

Including:
1 month Azure VM



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Embedded IoT & Industrial IoT

WISE-PaaS Marketplace

Discovering and Shopping for Your Own IoT Deployments

ADVANTECH
WISE-PaaS
Edge Intelligence Platform

View Solution

Microsoft arm MBED McAfee Acronis

WISE-PaaS Marketplace, Yo...

- Home >
- IoT Cloud Services >
- IoT Security Services >
- IoT PaaS Software Services >
- Solution Packages >

IoT Cloud Services

See More

Azure Cloud Infrastructure

Pre-configure packages for fast moving to the cloud



Arm Device Management

A centralized web-based console to remotely monitor and manage devices with LWM2M standard.



Arm Software Update

Remote software update service for improving device longevity and reliability.



- <http://wise-paas.advantech.com/marketplace>

Advantech

in Perspective

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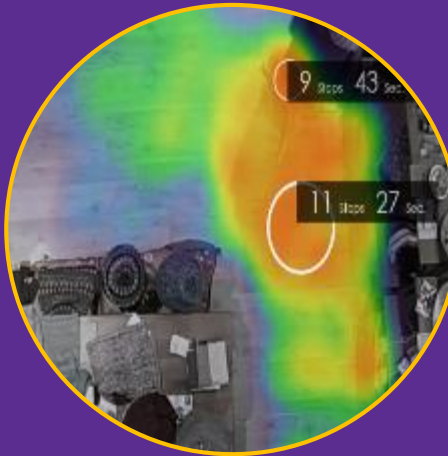
UShop+ Store BI – 3 SRPs

Traffic Analytics SRP-UST510



- ◆ Incoming and outgoing traffic
- ◆ Store traffic & conversion
- ◆ Staff Allocation

In-store Heatmap SRP-UST530



- ◆ Marketing Attribution
- ◆ Merchandise display adjustment

Shopper Profile SRP-UST550

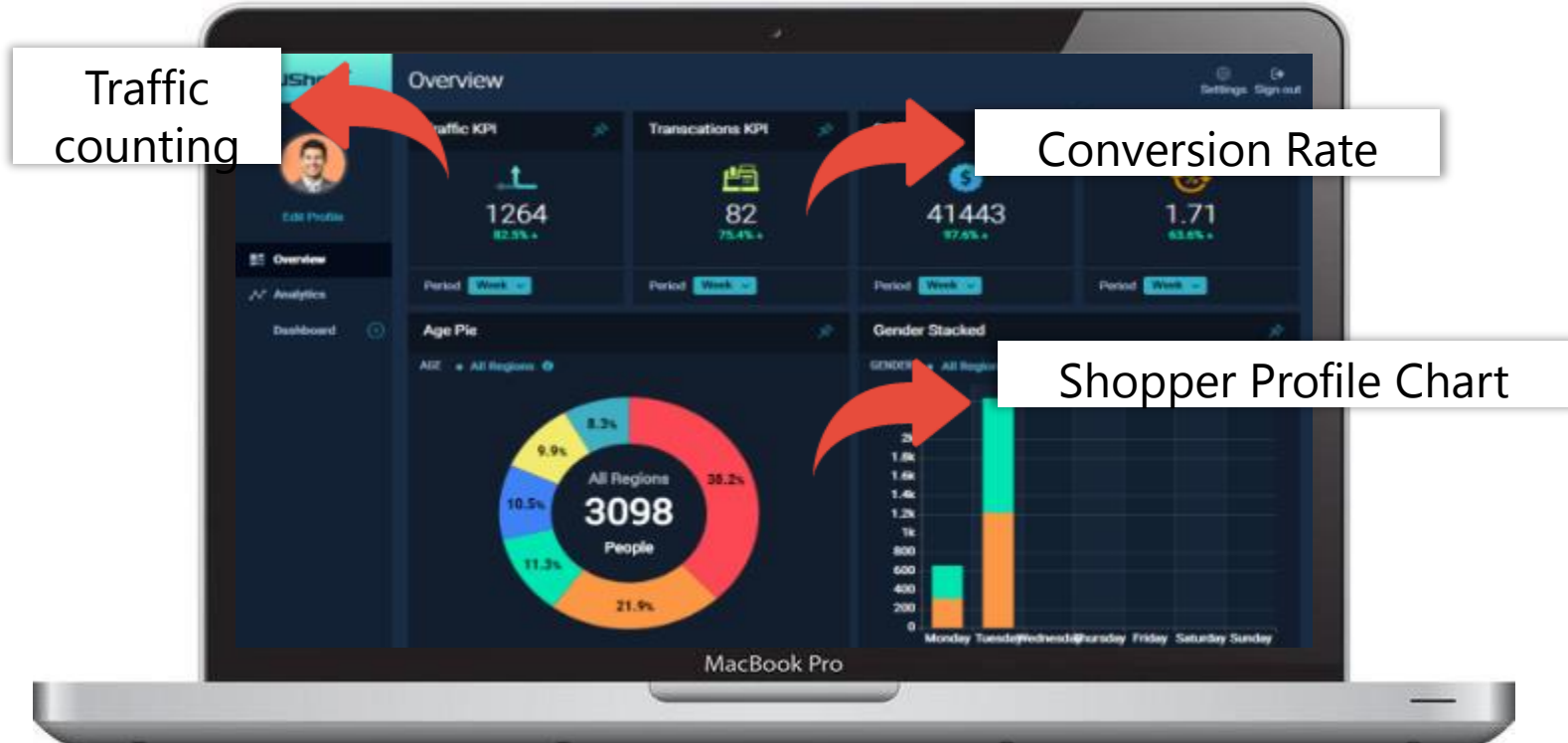


- ◆ Repeat/New customer
- ◆ Customer Loyalty
- ◆ Potential customer
- ◆ Demographics Analysis

KPI Dashboard

Rich and configurable dashboard design for different scenarios

- ◆ Analytic data: Traffic 、 Turn-in rate 、 Conversion rate 、 Sales volume 、 Transactions 、
- ◆ Age 、 Gender 、 Heatmap
- ◆ Chart type: KPI 、 line 、 Bar 、 Pie 、 Table 、 Matrix



Successful Case- Hi-Life



Application : Chain convenience store

Region : Taipei

Product :

- Store Traffic Analysis
- In-Store Heatmap

Benefit:

Increase store traffic & operation effectiveness

