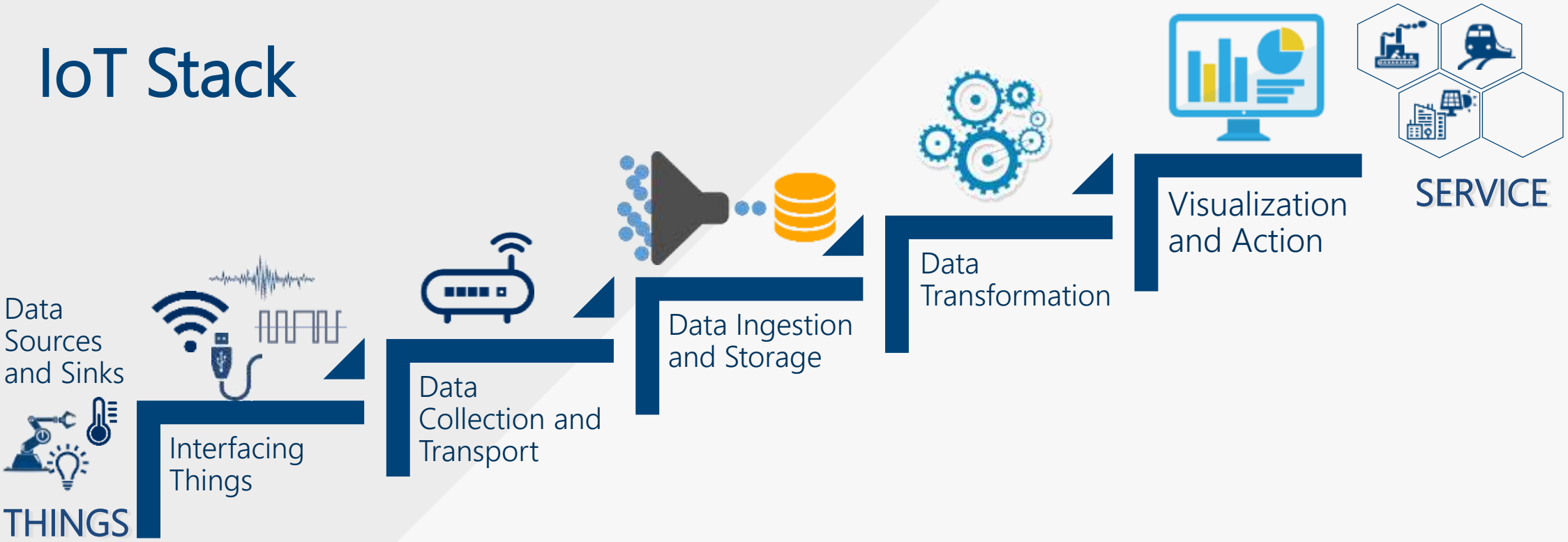
EMBEDDED
CONFERENCE FINLAND
HELSINKI - APRIL 12 2018

Making the connection

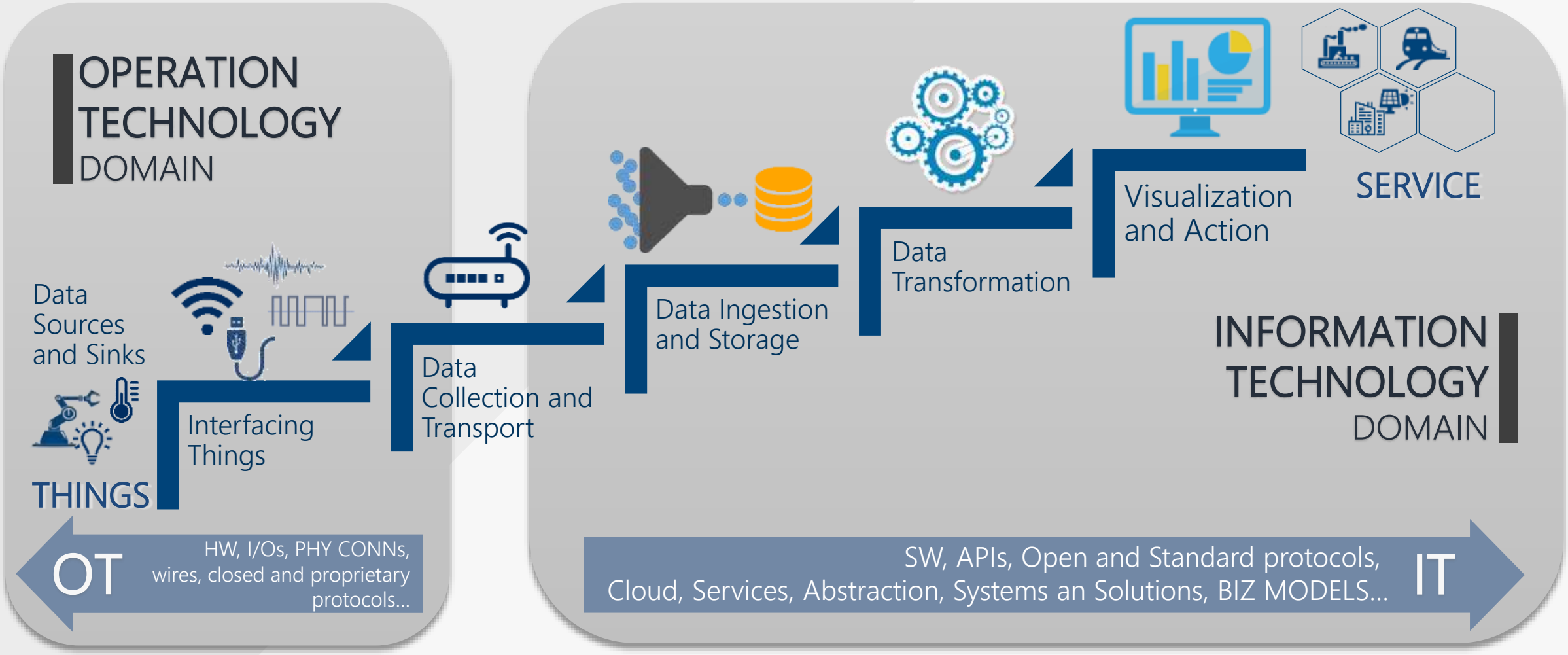
Tze Chiew
Product Sales Manager

IoT Stack



Device Lifecycle Management
(Deploy, Monitor, Service, Manage, Update, Decommision)

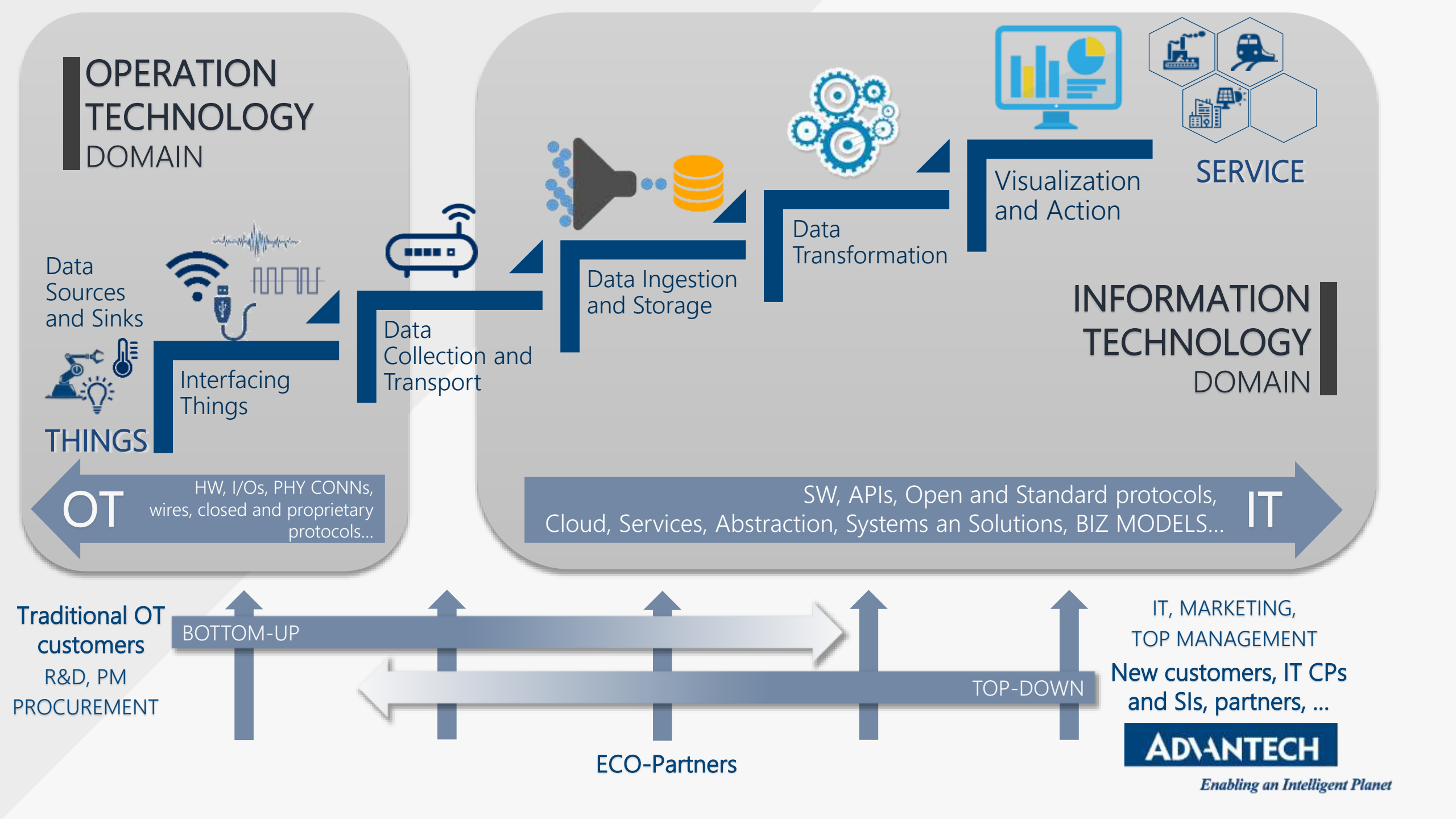
ADVANTECH
Enabling an Intelligent Planet



IT and OT speak different languages.

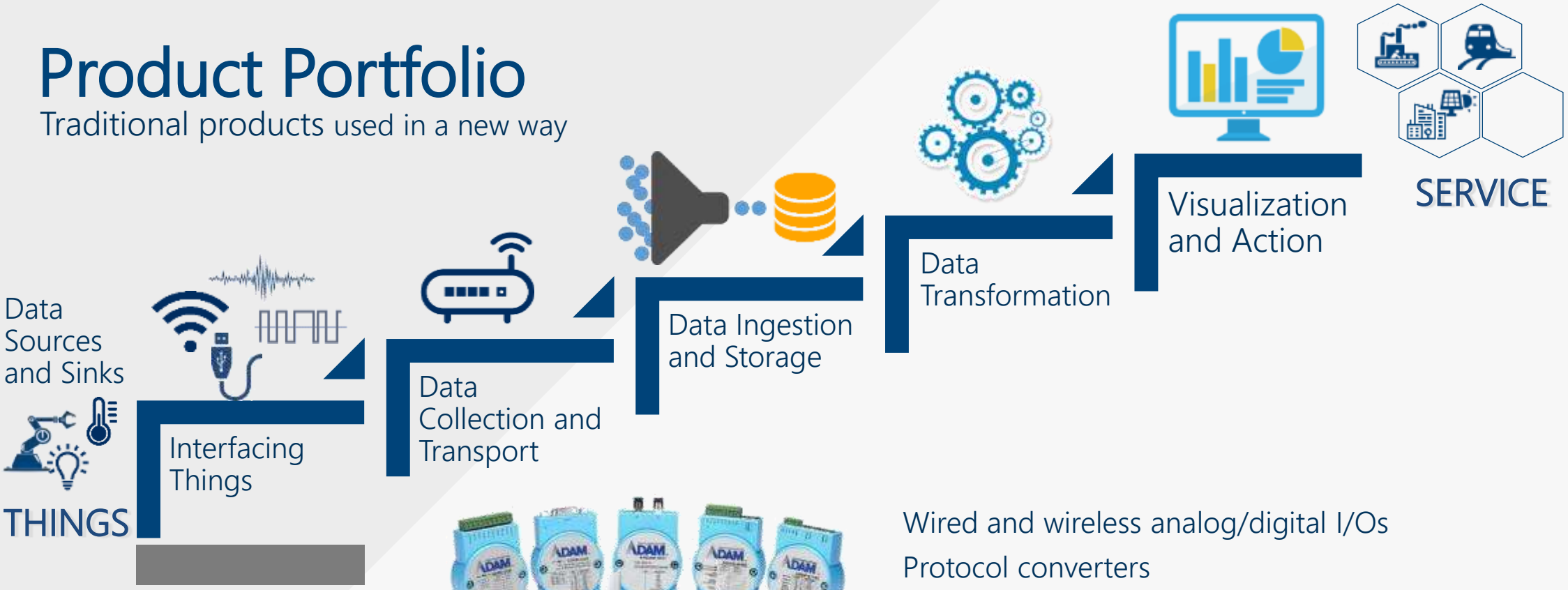
ADVANTECH

Enabling an Intelligent Planet


OPERATION TECHNOLOGY DOMAIN
Data Sources and Sinks
THINGS
Interfacing Things
Data Collection and Transport
Data Ingestion and Storage
Data Transformation
Visualization and Action
SERVICE
INFORMATION TECHNOLOGY DOMAIN
OT
HW, I/Os, PHY CONNs, wires, closed and proprietary protocols...
SW, APIs, Open and Standard protocols, Cloud, Services, Abstraction, Systems an Solutions, BIZ MODELS...
IT
Traditional OT customers
R&D, PM
PROCUREMENT
BOTTOM-UP
TOP-DOWN
ECO-Partners
IT, MARKETING,
TOP MANAGEMENT
New customers, IT CPs and SIs, partners, ...
ADVANTECH
Enabling an Intelligent Planet

Product Portfolio

Traditional products used in a new way



Wired and wireless analog/digital I/Os

Protocol converters

RS-4xx, MODBUS/RTU and MODBUS/TCP

ETHERNET/IP, PROFINET

ETH, WIFI

Wifi, HTTP, RESTful APIs, MQTT

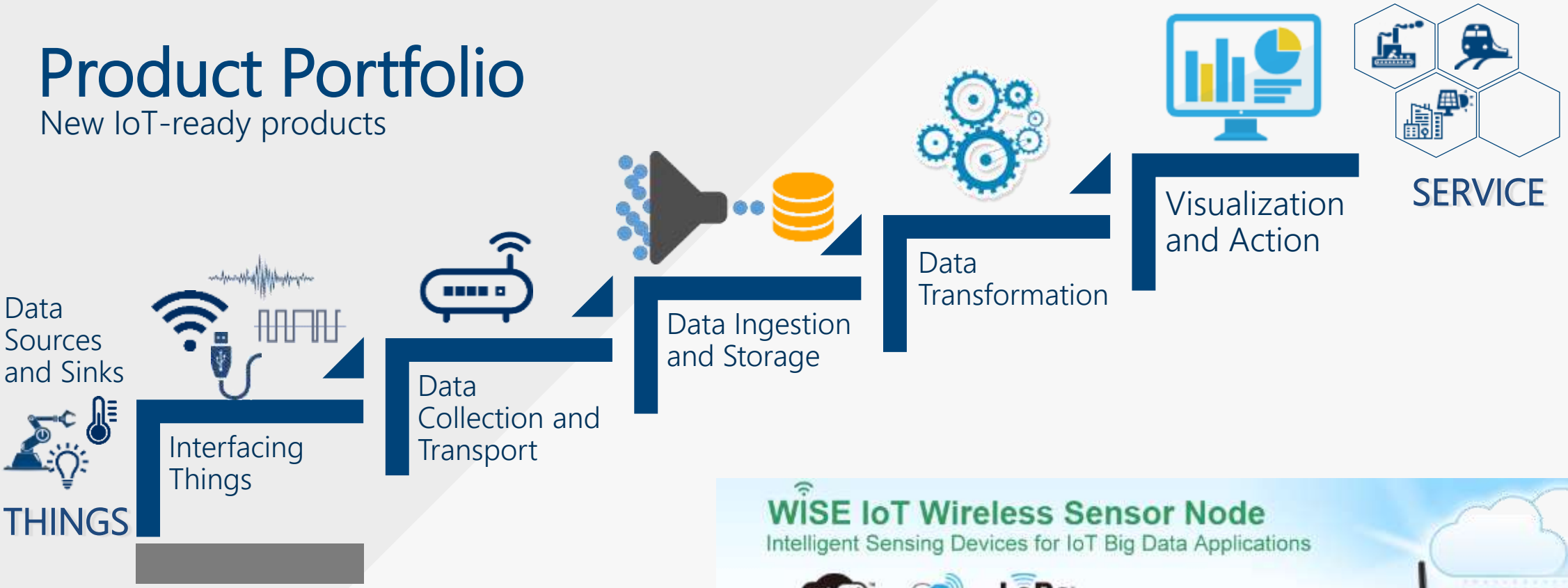
A huge portfolio of **traditional products** used in a new way.

ADVANTECH

Enabling an Intelligent Planet

Product Portfolio

New IoT-ready products



Sensor nodes with data-logging

Indoor/outdoor

RESTful API and MQTT

ADVANTECH

Enabling an Intelligent Planet

Industry 4.0

NFC/RFID

Wi-Fi

ZigBee

Energy & Environment

Sub 1G

LoRaWAN

3G/LTE

Identification

Mesh

Sub-1GHz

LoRaWAN

4G LTE 3G

Proximity | Local Area | Neighborhood area | Wide Area

WISE-4000

IoT WiFi I/O Module

- Wi-Fi
- Direct connection
- Data Storage
- MQTT
- Restful

WISE-4200

Industrial IoT Wireless Sensor Node

- LoRa/Zigbee
- Internal Battery
- Data Storage
- Math
- LoRa to WiFi/LAN

Mesh

LoRa

WISE-4400

IP65-Rated IoT Wireless Sensor Node

- LoRa
- SMS
- IP 65-rated
- Built-in Antenna
- LoRa to WiFi/LAN

LoRa

WISE-4600

Outdoor IoT Wireless Sensor Node

- LoRaWAN/Cellular
- Support M2.Com
- IP65-rated
- MQTT
- Restful

4G LTE

ADVANTECH

Enabling an Intelligent Planet

Product Portfolio

Building-blocks enabling intelligent IoT products

Data Sources and Sinks

THINGS

Interfacing Things

Data Collection and Transport

Data Ingestion and Storage

Data Transformation

Visualization and Action

SERVICE

m2.com

sigfox

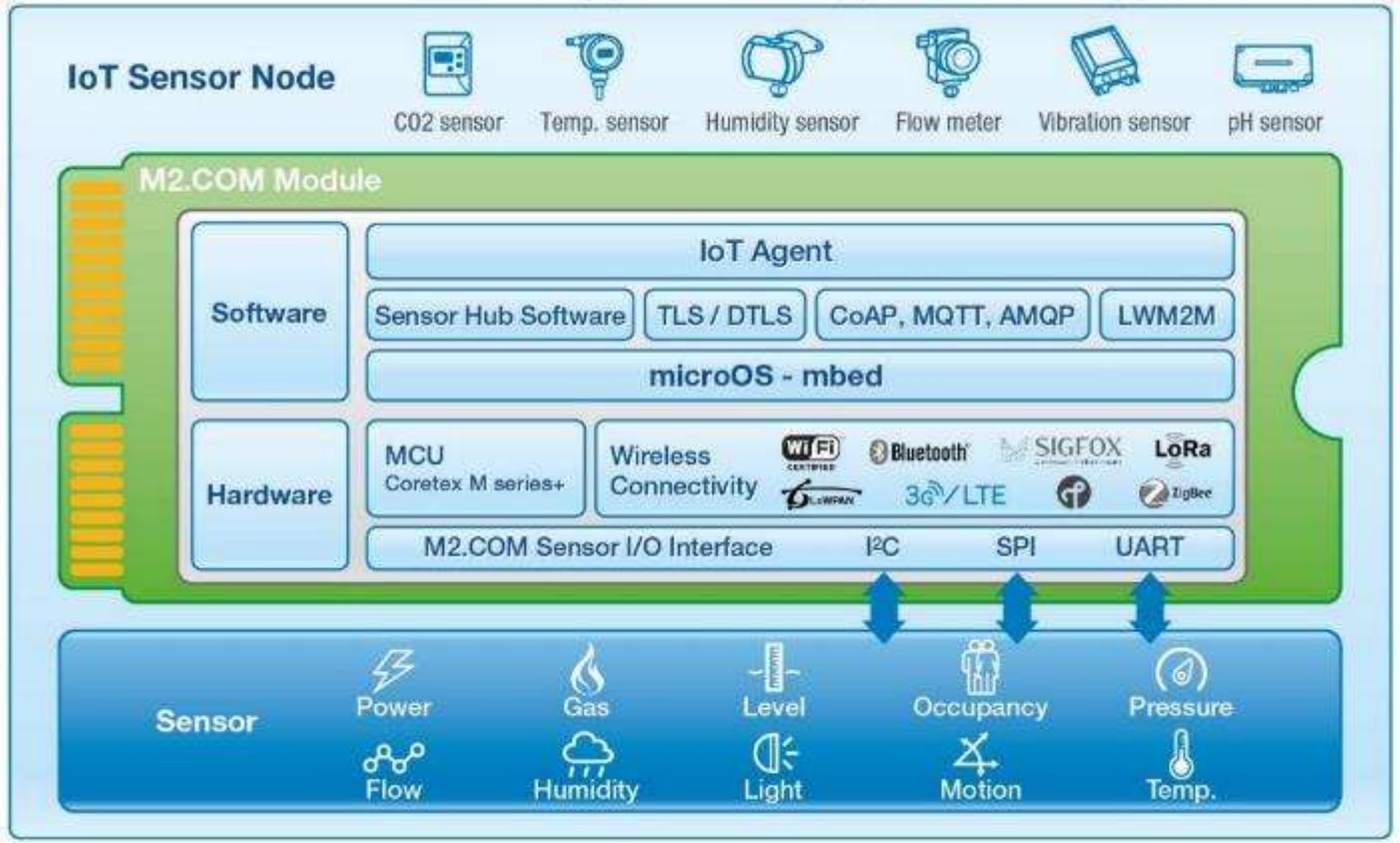
dust networks

LoRa

Lte

Bluetooth

Wi Fi CERTIFIED



m2.COM
Open Standard for IoT Applications

WISE-1500 Wireless Sensor Series

Local Area → Neighborhood area → Wide Area

WISE-1520

- TI Cortex-M4 80MHz
- RAM 256 KB / 1MB Flash
- Low-power Wi-Fi 802.11 b/g/n with AES 128 Encryption
- TI-RTOS support

Wi Fi CERTIFIED

WISE-1540

ARM mbed

- STM Cortex-M4 80MHz
- Linear Dust SmartMesh
- Self-forming & self-healing network
- IEEE 802.15.4e & 6LowPAN
- mbed OS Support

dust networks

WISE-1570

ARM mbed

- ARM Cortex –M4 80MHz
- RAM 128KB / 1MB Flash
- Rel .14 NB-IOT Compliant
- Support multi-bands
- mbed OS support

Lte

WISE-1530

- STM Cortex-M4 100 MHz
- RAM 256 KB / 1MB Flash
- Wi-Fi/Bluetooth Combo
- SIG compliant
- RTOS support

Bluetooth

Wi Fi CERTIFIED

WISE-1510

ARM mbed

- STM Cortex-M4 80 MHz
- RAM 64 KB / 256 KB Flash
- Sub 1 GHz – 868/915MHz
- Support Private LoRa / LoRaWAN
- mbed OS Support

LoRa

WISE-1511

ARM mbed

- STM Cortex-M4 80MHz
- RF: NXP OL2385
- RC1 EU: 868MHz
- RC3 JP: 920MHz
- SigFox Ready

sigfox

ADVANTECH

Enabling an Intelligent Planet

Product Portfolio

Flexible, scalable, powerful gateways

Data Sources and Sinks

THINGS

Interfacing Things

Data Collection and Transport

Data Ingestion and Storage

Data Transformation

Visualization and Action

SERVICE

UTX

UBC

ARK

WISE

x86 QUARK, ATOM and CORE i

ARM

Any wired/wireless connectivity

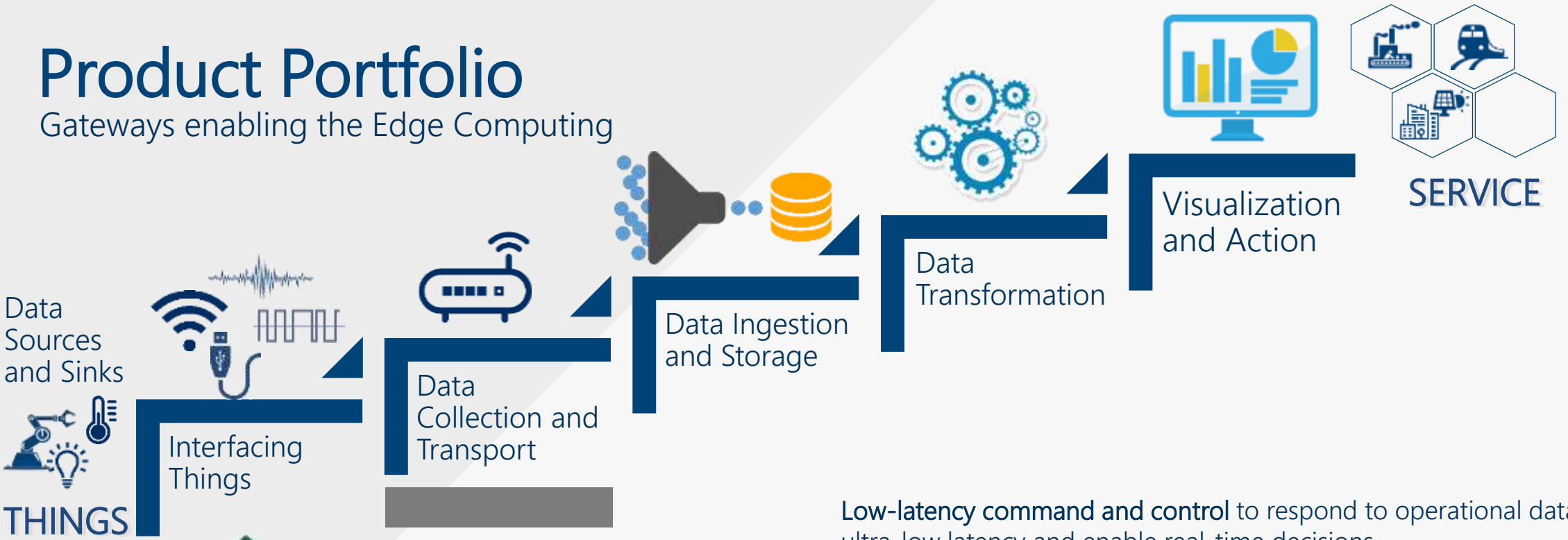
Analog/DIGITAL I/Os

ADVANTECH

Enabling an Intelligent Planet

Product Portfolio

Gateways enabling the Edge Computing



Data collection
Data aggregation, filtering
Pre-analytics on the edge
Business logic
Key role in security

EDGE Computing

Low-latency command and control to respond to operational data with ultra-low latency and enable real-time decisions.

Limited connectivity to the cloud to analyze and react to data even when cloud connectivity is intermittent.

Limited bandwidth thanks to the aggregation and pre-filtering of data before sending it to the cloud.

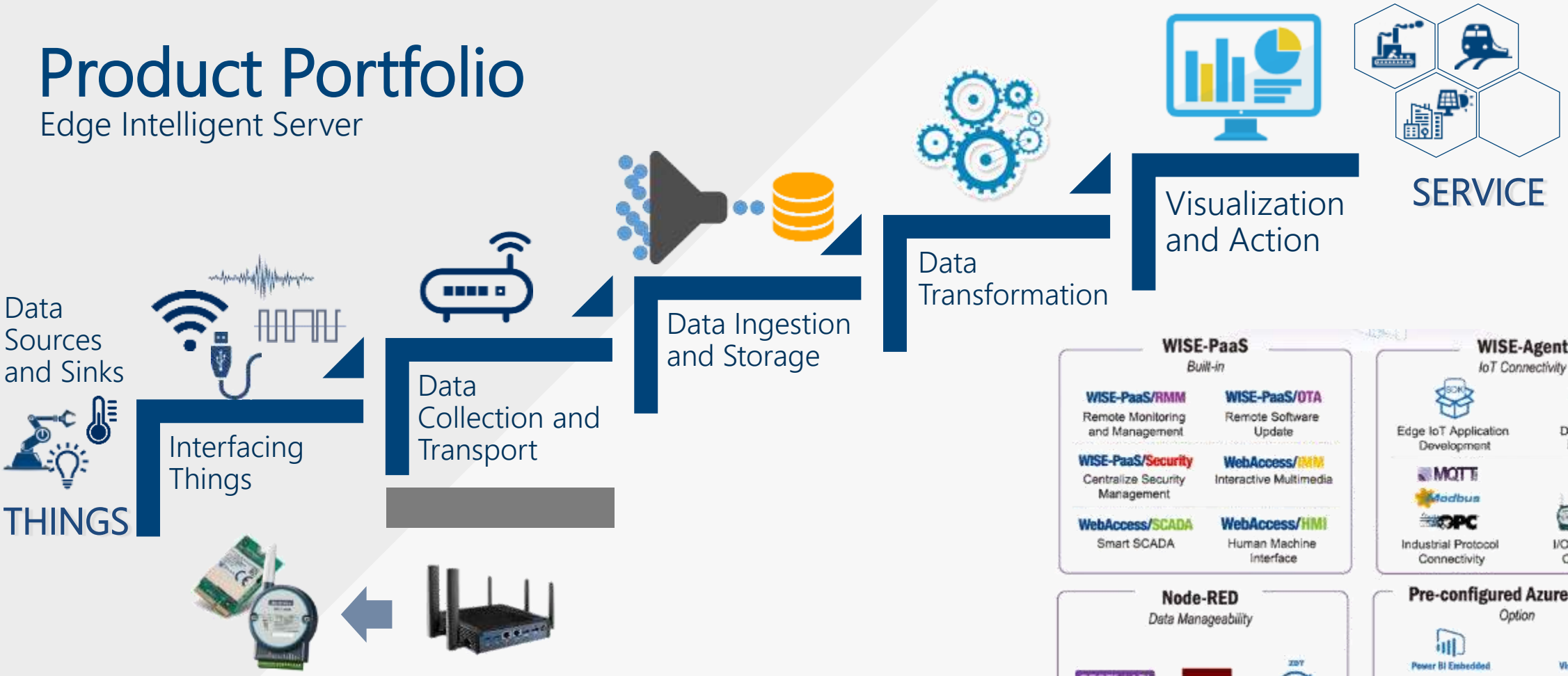
Compliance: regulatory compliance may require some data to be locally anonymized or aggregated before being sent to the cloud.

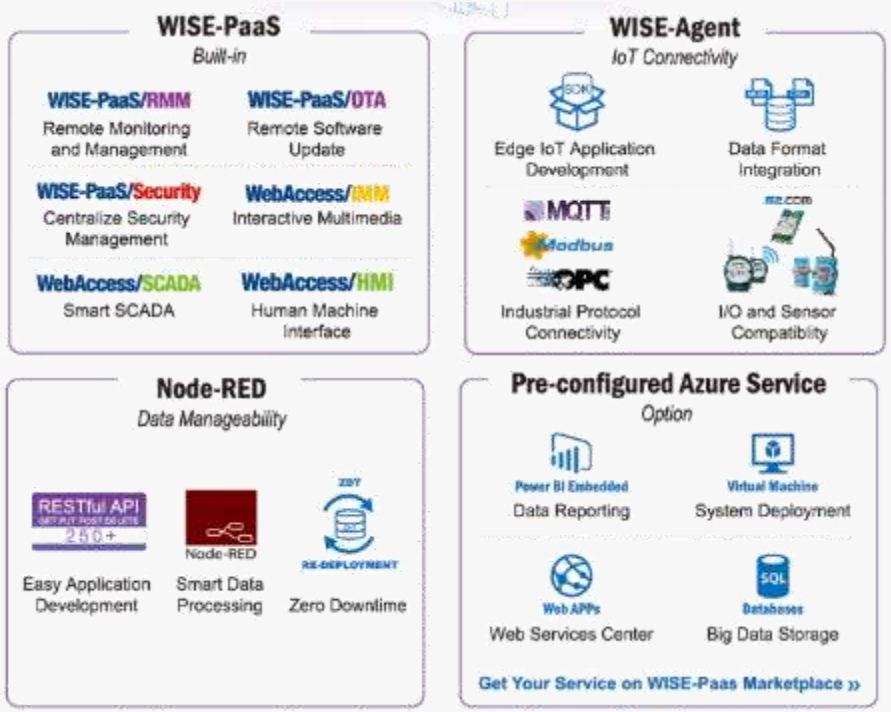
ADVANTECH

Enabling an Intelligent Planet

Product Portfolio

Edge Intelligent Server





Edge Intelligence Server

EIS-D110/EIS-D120/EIS-D150

Building Up Edge-to-Cloud Applications with Integrated Hardware plus Software

Accelerates IoT implementation through an integrated HW/SW solution that enable IoT connectivity, data manageability and analytics.

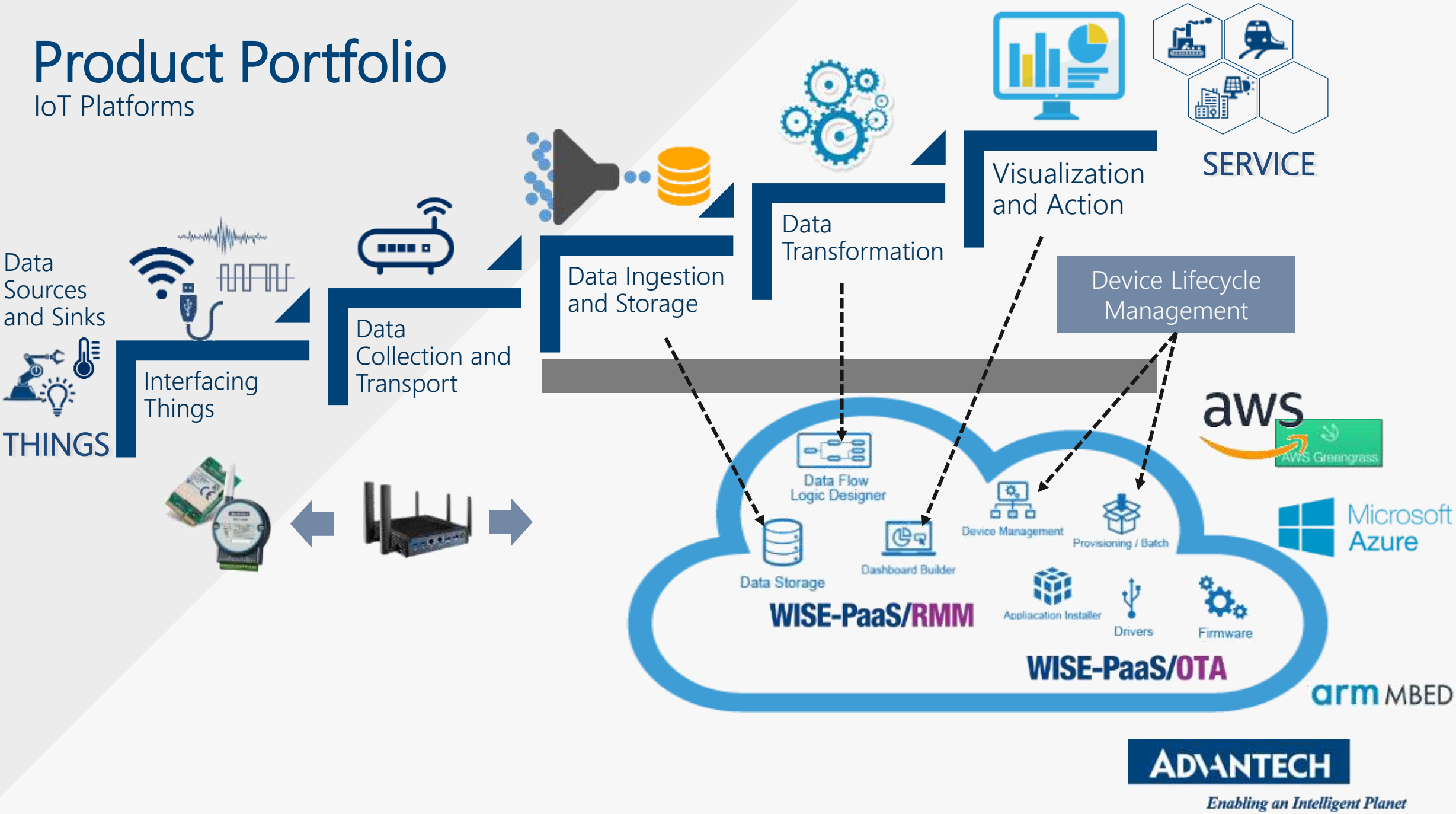
(WISE-PaaS software packages, IoT development tools, pre-configured cloud services, WISE-PaaS marketplace).

ADVANTECH

Enabling an Intelligent Planet

Product Portfolio

IoT Platforms

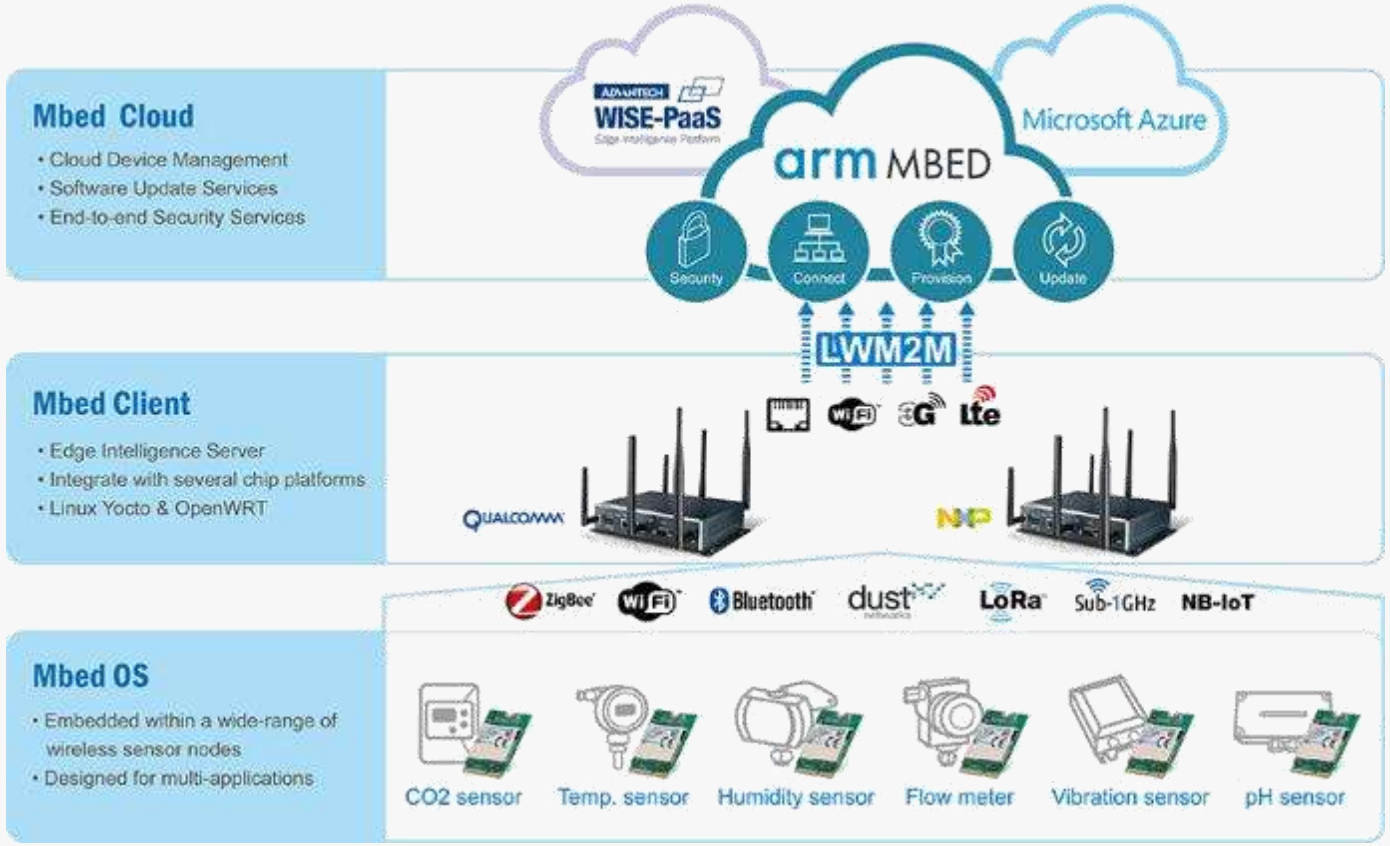


ADVANTECH

Enabling an Intelligent Planet

arm MBED Products

MBED EDGE	MBED CLIENT	MBED OS
WISE-3610	EPC-R4760	WISE-1510 LoRa
WISE-3620	EPC-R4610	WISE-1520 WiFi
EPC-R4760	UBC-220	WISE-1530 WiFi/BLE
EPC-R4610	UBC-221	WISE-1540 Dust
EPC-R4680	UBC-222	WISE-1570 NB-IoT
UAX-EM4221		



Data communication

Remote management

Flexible identity provisioning

End-to-end security

ADVANTECH

Enabling an Intelligent Planet

aws Products

GREENGRASS

UTX-3117

ARK-1123

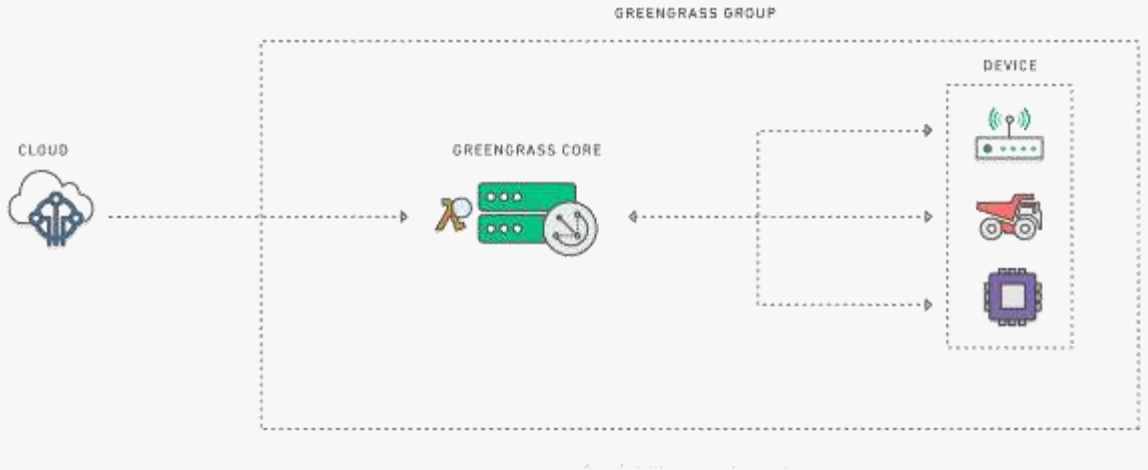
EPC-R4760

ARK-1124

EIS-D210

Amazon FreeRTOS

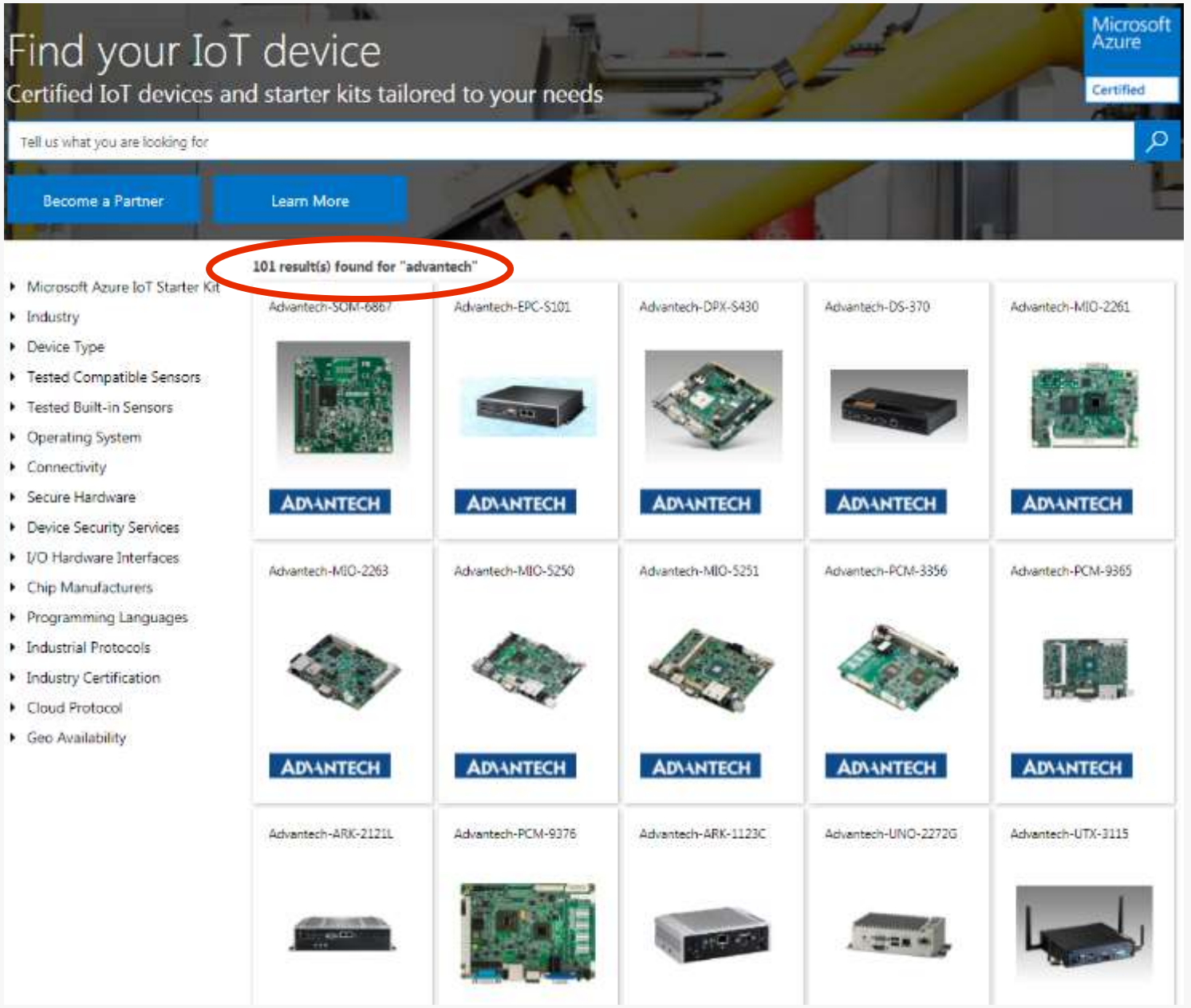
WISE-1520



Embedding Lamba Compute (and other AWS Services) in Connected Devices extends AWS cloud capabilities to local devices

ADVANTECH
Enabling an Intelligent Planet

Azure Products



ADVANTECH

Enabling an Intelligent Planet

Industry 4.0 Solution Ready Platform

Alleantia
ALL <THINGS> JOINED

THINGS

Data Sources and Sinks

Interfacing Things

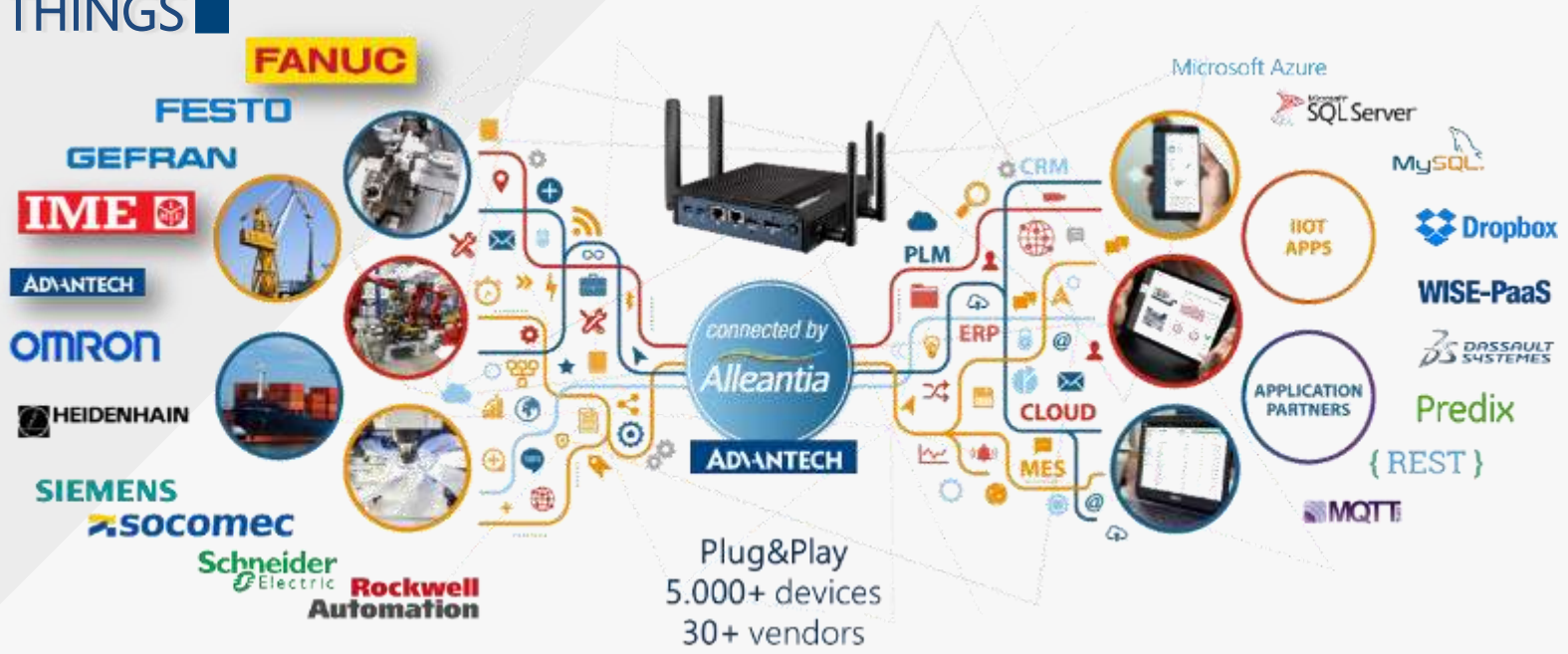
Data Collection and Transport

Data Ingestion and Storage

Data Transformation

Visualization and Action

SERVICE



aws
Microsoft Azure
arm MBED

ADVANTECH
Enabling an Intelligent Planet

Cold Chain Logistics – real-time monitor

Temperature

Humidity

Drop detection/
Shock/Vibration

NFC

LoRa

3/4G

Backend control center

Cold chain Sensor

In-vehicle gateway

ADVANTECH

Enabling an Intelligent Planet

User Scenario

Before Departing → **During Transport** → **After Delivery**

Operator

Driver

Setup Sensor & Initial

- 5 Second setup
- Setup via NFC reader
- Setup Temp. Limit/record time
- Check Battery capacity
- Initial by SW or button

Logging & monitoring

- Monitoring the status of goods and vehicle
- Coach the driver in real time and alert the backend office

Management

- Record and update the data to backend office by SW API or SDK
- Check if any cold chain breach

Sensors

NFC reader

Config Tool

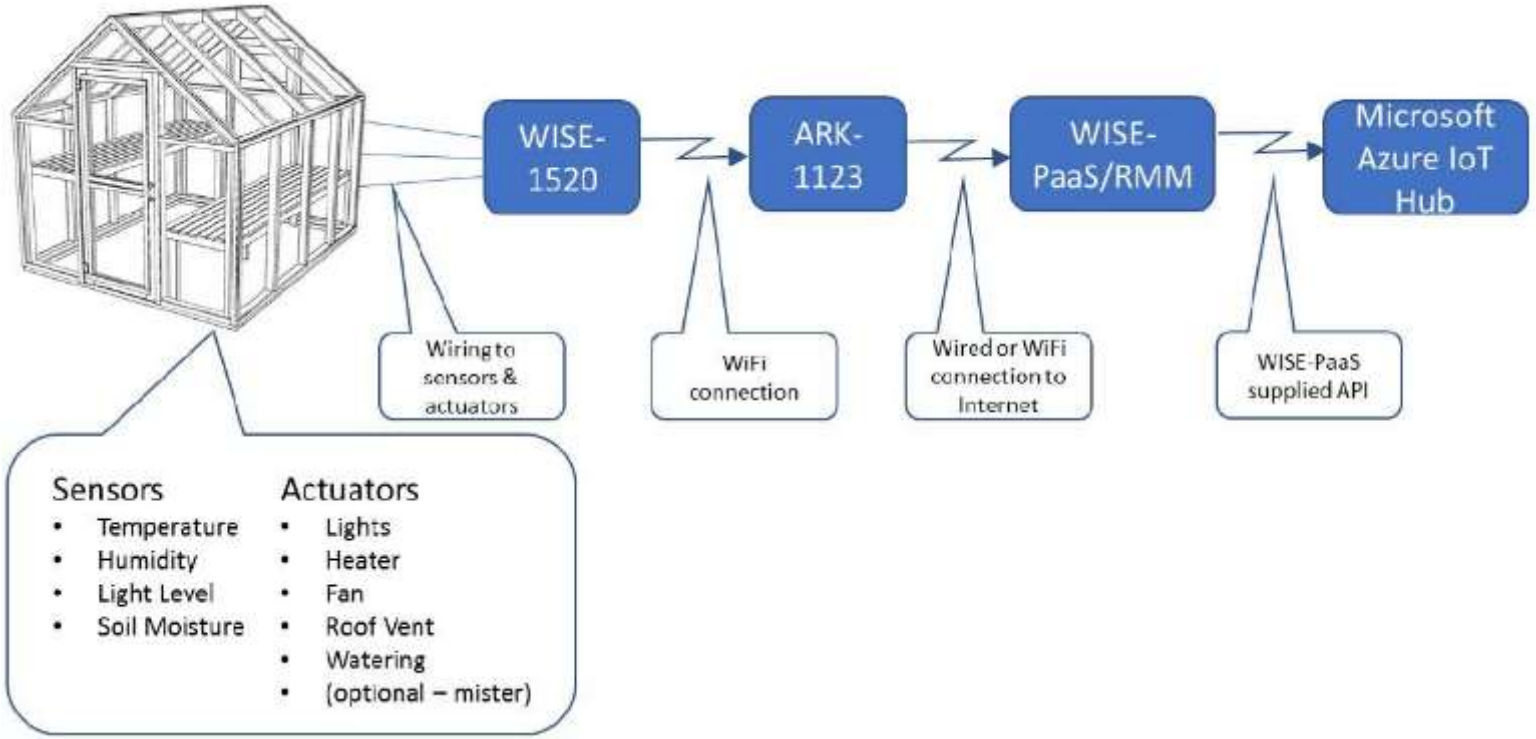
In-vehicle Gateway

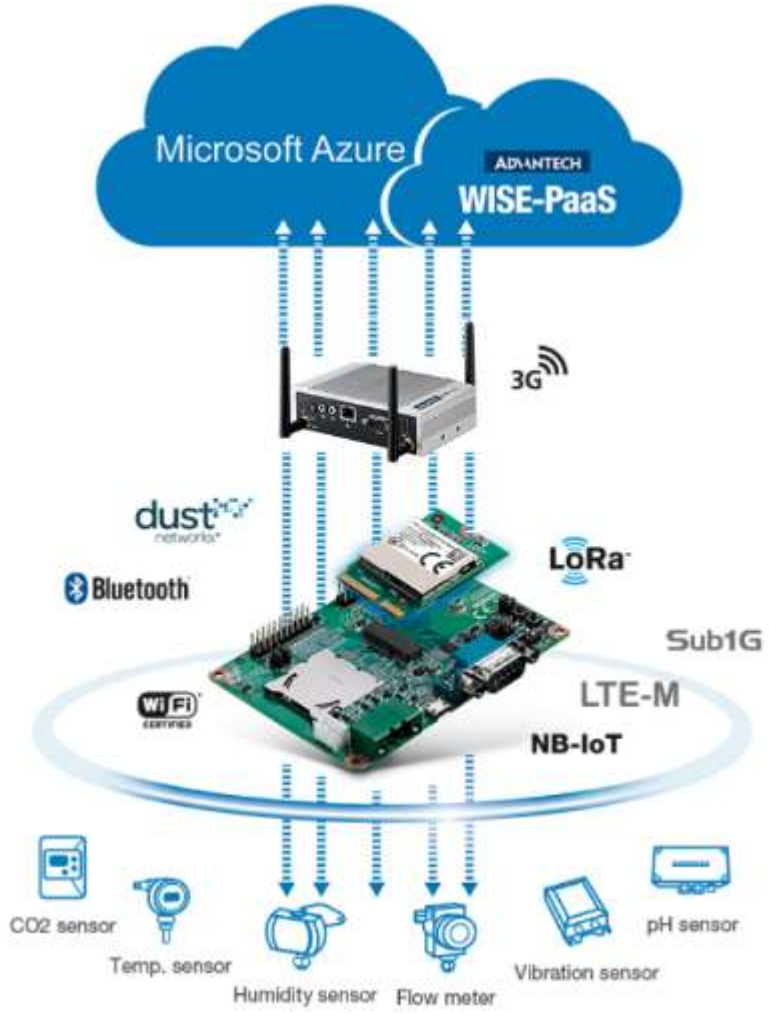
Cloud Service

API or SDK for data transfer to cloud server

Android apk

Greenhouse


WISE-1520
ARK-1123
WISE-PaaS/RMM
Microsoft Azure IoT Hub
Wiring to sensors & actuators
WiFi connection
Wired or WiFi connection to Internet
WISE-PaaS supplied API
Sensors
Temperature
Humidity
Light Level
Soil Moisture
Actuators
Lights
Heater
Fan
Roof Vent
Watering
(optional – mister)


Microsoft Azure
ADVANTECH
WISE-PaaS
3G
dust networks
Bluetooth
LoRa
Sub1G
LTE-M
NB-IoT
Wi Fi
CO2 sensor
Temp. sensor
Humidity sensor
Flow meter
Vibration sensor
pH sensor

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

Edge Intelligence
- Streaming Data Injection
- IoT Protocols
- Light Analytics

Security
- Intel Security
- SSL/TLS

Storage
- ODBC/SQL DB
- NoSQL DB

Dashboard
- Mobile Device Support
- Data Insight

Making the connection

OT & IT
Hardware & Software
Physical & Digital
Human

Nobody can do I(o)T alone

Let's do I(o)T together

tze.chiew@Advantech.nl

ADVANTECH
Enabling an Intelligent Planet