WISE-PaaS/IoT Suite

One-stop IoT Development Kit and Cloud-Native IoT Platform

Advantech

WISE-PaaS Core Service

09/28/2020 v0.34   (English)

WISE-PaaS/IoTSuite Architecture

One-Stop Industrial IoT Application Development Kit and Cloud-Native Platform
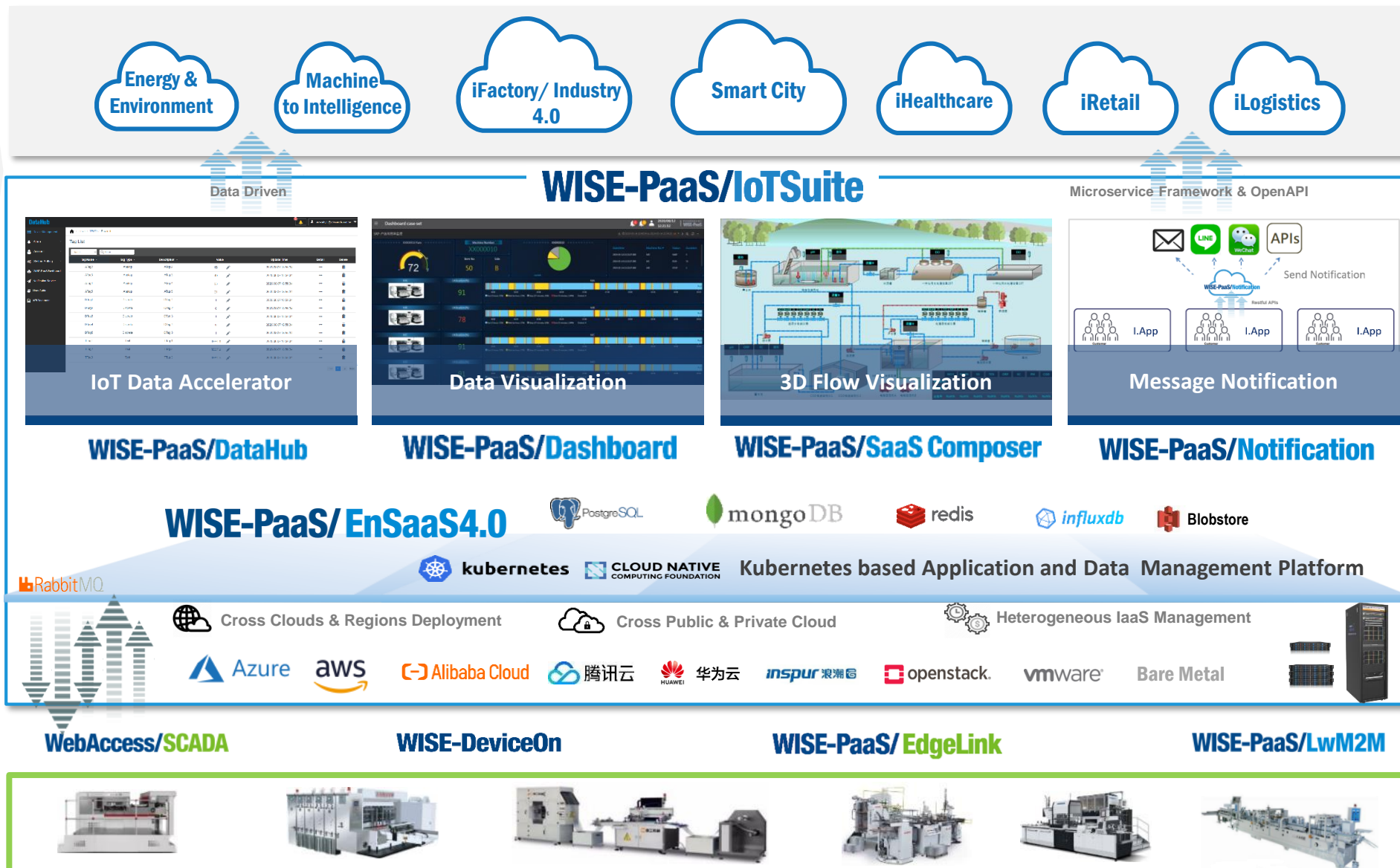
Co-Creation Model
Solution provider
Enjoy a flexible ecosystem of off-the-shelf solution

Domain Focused
System integrator
Design and implement services with ease

Energy & Environment

Machine to Intelligence

iFactory/ Industry 4.0

Smart City

iHealthcare

iRetail

iLogistics

WISE-PaaS/IoTSuite

Data Driven

Microservice Framework & OpenAPI

IoT Data Accelerator
WISE-PaaS/DataHub

Data Visualization
WISE-PaaS/Dashboard

3D Flow Visualization
WISE-PaaS/SaaS Composer

Message Notification
Send Notification
RestFul APIs
I.App   I.App   I.App
WISE-PaaS/Notification

WISE-PaaS/ EnSaaS4.0   PostgreSQL   mongoDB   redis   influxdb   Blobstore

RabbitMQ   kubernetes   CLOUD NATIVE COMPUTING FOUNDATION   Kubernetes based Application and Data Management Platform

Cross Clouds & Regions Deployment   Cross Public & Private Cloud   Heterogeneous IaaS Management

Azure   aws   Alibaba Cloud   腾讯云   华为云 HUAWEI   inspur 浪潮云   openstack   vmware   Bare Metal

WebAccess/SCADA   **WISE-DeviceOn**   **WISE-PaaS/ EdgeLink**   **WISE-PaaS/LwM2M**

Equipment Manufacturer   Intelligent collection, control, and visualization anytime, anywhere.

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WISE-PaaS/IoTSuite Standard Software Service

Data fusion & collaborative management

WISE-PaaS/DataHub

DataHub is a data fusion and collaboration service for time-series data. It covers data acquisition, data aggregation, data monitoring, and alarm notification functions. Application services based on time-series data can be easily established using DataHub. These application services can be applied to IoT scenarios in smart factories, smart cities, or on the Internet of Vehicles quickly.

EnSaaS IoTHub provides safe and efficient device access and data transmission services. It supports Streaming Text Oriented Message Protocol (STOMP), Message Queue Services protocol (MQTT), and CoAP of UDP protocol. It further supports access to millions of measuring points, millisecond data transmission, edge-to-cloud encrypted data transmission, and access permission control.

RabbitMQ   **EdgeSDK**

Device access & uploading data to the cloud

ADVANTECH WISE-Marketplace

Applications based on WISE-PaaS/IoTSuite

InsightAPM , AIFS
Additional Subscription

General Platform for Industrial IoT
WISE-PaaS/IoTSuite

WISE-PaaS/EnSaaS4.0
Application Platform for Mobile Cloud-Native Microservices

2D&3D low-code data visualization

WISE-PaaS/Dashboard
WISE-PaaS/SaaS Composer

Use various dashboard panels to intuitively display, explore, and analyze collected data while viewing statistics from multiple perspectives. When combined with SaaS Composer, the dashboard presents data in real-time, creates virtual application sites, and allows users to conduct data analysis/real scene presentations on the display quickly. It assists users in operation management and decision-making with insights to collected data.

This software delivers notification services via e-mail, LINE, WeChat, and SMS. It supports high concurrency and reliable notification delivery. Similarly, it enables notification group management, notification template management, notification schedule management, and notification record queries. This unified alarm notification process supports alarm notifications from all platforms, applications, and services. It helps users quickly implement full life cycle management programs for alarm notifications.

WISE-PaaS/Notification

Real-time alarm notification service

Build industrial IoT platforms everywhere

Computing
Based on Kubernetes, EnSaaS K8s Service delivers a standardized computing resource management solution. This service supports application, multi-tenant workspace, resource, and permission management functionalities. EnSaaS K8s Service is an enterprise-level container cloud platform that enables stable operation of applications as well as easy operation and maintenance.

Storage
Based on Ceph, it provides a reliable auto rebalancing and auto recovery distributed storage system for object storage, block devices, and file systems. This solution relies on powerful replication capabilities to ensure data safety and reliability. In addition, it delivers convenient, flexible, and capable petabyte level data handling with ease.

Database
EnSaaS DB Services is suitable for various industrial applications. It supports PostgreSQL, MongoDB, InfluxDB, Redis, and other database programs. EnSaaS DB Services provides a unified management interface, and supports multi-tenant access control, flexible expansion, and data backup/restore. Additionally, it delivers excellent data safety and reliability.

IAM
SSO provides a unified ID authentication service that allows users to use one account to access all authorized WISE-PaaS services. It fully covers the unified permission management of all platform services including applications, databases, and K8s resources. Additionally, it supports single sign-on and an integrated interface of third-party applications.

Microservice Management
EnSaaS Service Mesh and Configuration Management supports complete micro-service management functions — including application configuration/key management, service discovery/observability, smart routing, load balancing, automatic fault detection /recovery, authentication/authorization, and message encryption.

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Develop & Manage IoT Applications Quickly

WISE-PaaS/IoTSuite 3 Steps to Build IoT Applications Quickly

☑ **Step 1：Device access and management**   ☑ **Step 2：Data transmission and storage**   ☑ **Step 3：Data visualization**
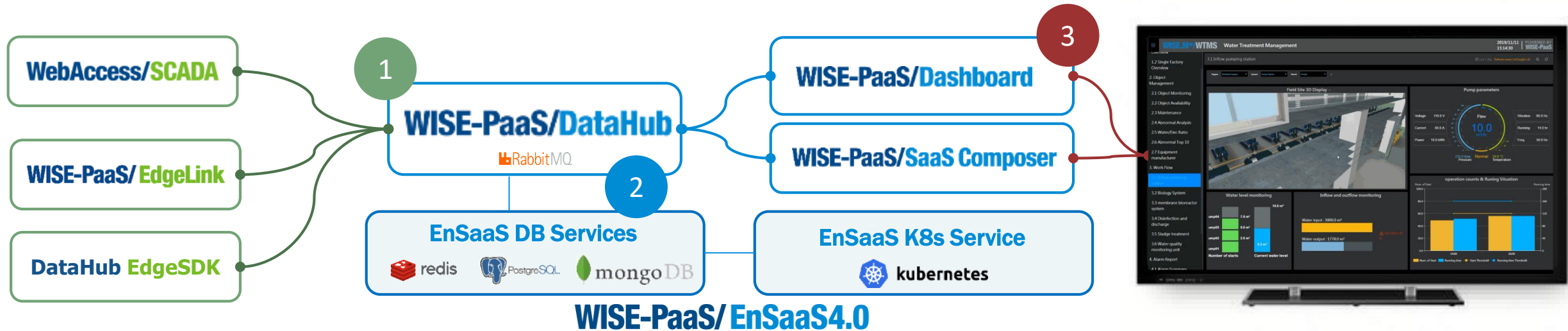
Cloud-Native Platform   ☑ Data management   ☑ Application management

- Easier for engineers to use
- Build industrial apps faster

- Supports a myriad of devices
- Do everything with one suite

- Enable cloud-edge collaboration
- An open cloud native ecosystem

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3 Quick Steps for IoT Applications

Step1

Device access & management

Step2

Data transmission & storage

Step3

Data visualization

Safe and reliable device connection

The device relies on an issued key to access the platform. It uses SSL/TLS encrypted communication to ensure security and reliability during data transmission.

Easy access and multi-protocol support

Supports numerous cloud protocols. Users can access the platform via a simple configuration. Integrates Advantech's existing edge advantages to achieve a fast connection from the edge to the cloud. Additionally, WebAccess and WISE-PaaS/EdgeLink support many edge devices and data acquisition protocols

Multi-tenant equipment management

Provides excellent equipment management and data acquisition. Supports the management of tens of thousands to millions of nodes at a millisecond data acquisition rate. Provides four levels of data and authority management for engineering, nodes, equipment, and measuring points.

Stable and scalable data transmission

Supports low latency, high concurrency, and high throughput data uploads. Delivers cloud data, data services, and resource expansion flexibility to ensure simultaneous data transmission stability.

Safe and reliable data storage

Data is enterprises' most valuable asset. Platform data supports high availability and multiple copies to prevent data loss. Additionally, multi-tenant isolation mechanisms ensure data security and strictly manages data access.

Adaptable instant alarms/notifications

Supports user-defined alarm notification rules, alarm query, and alarm processing. Combines several alarm notification services (E-mail, WeChat, DingDing, Line, etc.) to ensure the immediate delivery of notifications.

Seamless integration of data and applications

Execute uploaded data visualization immediately by configuring data sources. Enable fast data presentation and analysis reports.

Diverse data presentation

Supports common data analysis and statistics. Features more than 50 common industry-specific graphic components and built-in application frameworks to help you quickly create domain data visualization solutions.

2D/3D view of application sites

Enables creation of site 3D models. Recreates on-site circumstances to deliver a sense of presence. Offers real-time view of key indicators. Connects uploaded data to site models for easy visualization and control.

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Device Cloud Access and Data Uploading - Connect the Edge to the Cloud With Ease

1 Connect

Edge SDKs of six mainstream programming languages including C, C#, Python, Java, Go, Node.js support various IoT devices, gateways, and system software. Applicable to various operating systems and hardware environments.

2 Flexible

Provide AI engine functionality via SQL- like syntax to extract, transform and filter data. Supports dozens of functions, and the flexibly to configure AI engine rules according to the application site.

WISE-PaaS/DataHub

3 Integrate

Rich data aggregation APIs provide functions such as device management, alarm notifications. These are suitable for IoT scenarios such as smart factories or Internet of Vehicles, helping deploy domain applications quickly.

4 Efficient

High-performance data management services support the management of tens of thousands /millions of nodes at millisecond data acquisition rates. These services provide edge-to-cloud data encryption for transmission and access control at device hierarchy.

IoTHub Service

RabbitMQ   kafka

✓ Supports TLS 1.2 encrypted transmission
✓ Supports MQTT/AMQP/CoAP
✓ Stable performance & expansion flexibility
✓ Multi-tenant connection isolation

MQTT ORG

Data Steam   configuration files

Data Steam   configuration files

Edge Connectivity / OT Control

WebAccess/SCADA
- Modbus
- OPC FOUNDATION
- EtherNet/IP
- BACnet

WebAccess/CNC
- FANUC
- SIEMENS
- MITSUBISHI ELECTRIC
- HEIDENHAIN
- ADVANTECH LNC
  Machine Control & Robotics

WebAccess/MCM
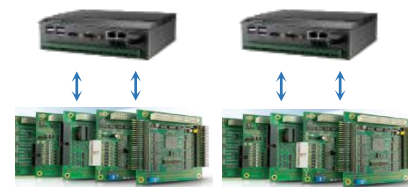
WISE-PaaS/EdgeLink

WISE-PaaS/DataHub
- sdk
- python
- C++
- Java
- Microsoft .NET
- node JS
- GOLANG

Advantech's existing edge hardware solutions and data acquisition advantages

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Low-Code Data Visualization - Fast Data Value Mining

Low-code fast application development
- ✓ No coding — just drag and drop
- ✓ Complete configuration using application framework
- ✓ Rich common and professional dashboard plug-ins

Alarm notifications & data labeling
- ✓ Flexible and configurable alarm rules and frequencies
- ✓ Multiple notification services
- ✓ Data attribute labeling, classification, and query

Reusable dynamic pages
- ✓ Dashboard information changes according to specific variables
- ✓ A single or a group of panels can be dynamically copied according to specific variables

Multi-language support
- ✓ Multilingual query support
- ✓ Multilingual SRP-Frame application development
- ✓ Multi-language differentiated panel configuration

Multi-tenant & multi-level authorization
- ✓ Multi-tenant Org management
- ✓ 2 management dimensions: User & Team
- ✓ Org, Folder, Dashboard authorization control

Dark Theme

Light Theme

SRP-Frame Frameworks
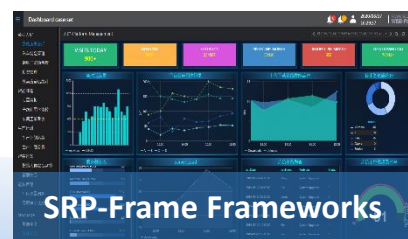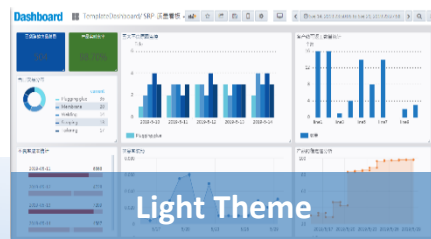
Multi-device support from 2k, 4k, & 8K high resolution self-adjusting panels on PCs and mobile devices.

Panel Plugins

Graph · Singlestat · Bar Gauge · Control Panel · Work Order · Dash video · Monitor Panel · Patient Card · Funnel Panel · Advanced Datatable · Worldmap Card Panel · APM Work Order

70+ display plug-ins

Query Request → data

Data Source Plugins

Influxdb · PostgreSQL · MySQL · MS SQL Server · ... · SimpleJson/Datahub · SimpleJson/InsightAPM · SimpleJson/DeviceOn · SimpleJson/WebAccess

40+ data source plug-ins

Query Request → data

Commonly used database or resource monitoring services
Prometheus · Microsoft SQL Server · influxdb · OpenTSDB · ZABBIX · elasticsearch · PostgreSQL · MySQL · graphite

WISE-PaaS platform seamless data integration
- WISE-PaaS/DataHub
- WISE-PaaS/AIFS
- iFactory/OEE
- WISE-PaaS/InsightAPM
- WISE-DeviceOn
- iFactory/FEMS

Edge data acquisition monitoring services
WebAccess

Data source service or API

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WISE-PaaS/Dashboard — CNC Management

WISE-PaaS/Dashboard – Mobile App for iOS & Android

WISE-PaaS/SaaS Composer Scenario

A free format drawing tool to visualize data for process control in 2D or 3D.

Traditional static flow chart
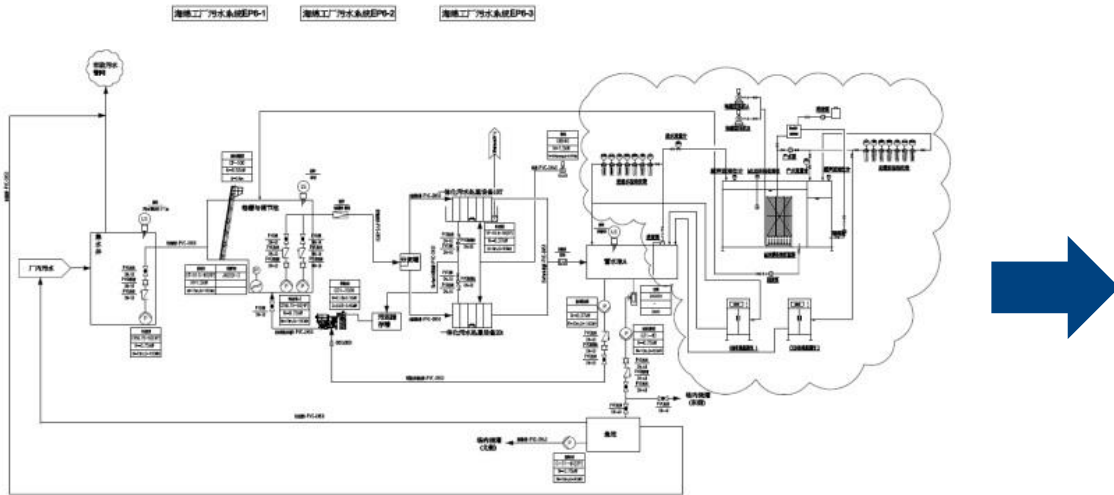
3D flow chart of operational status
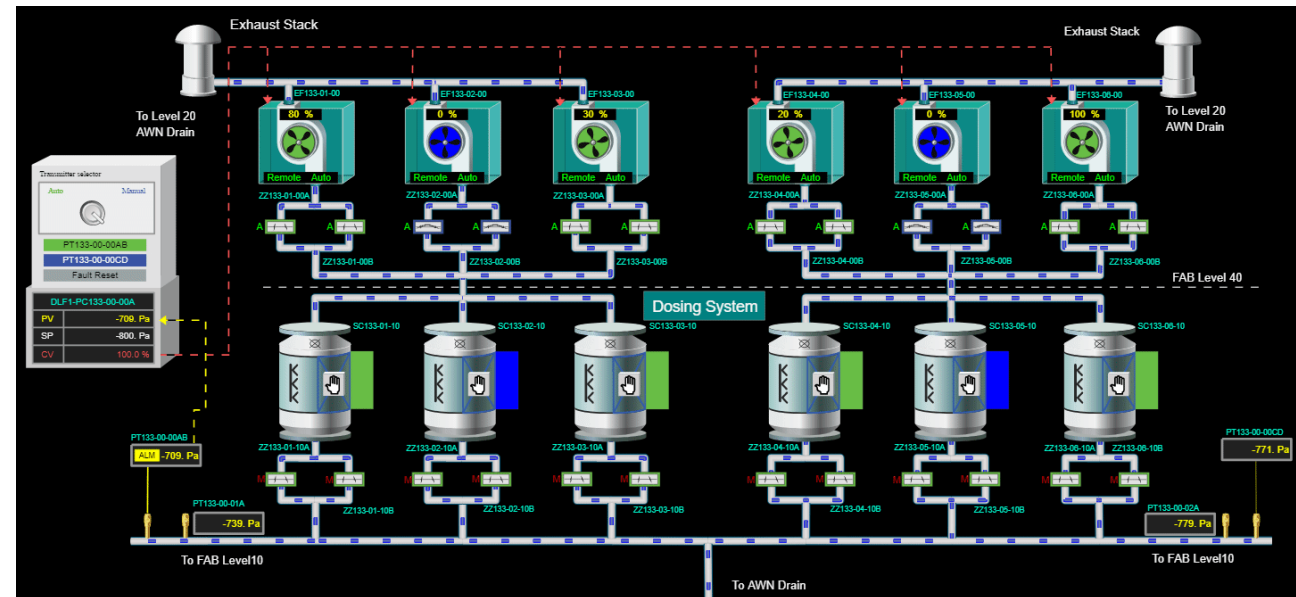
WISE-PaaS/SaaS Composer – Chemical Plant (lithium
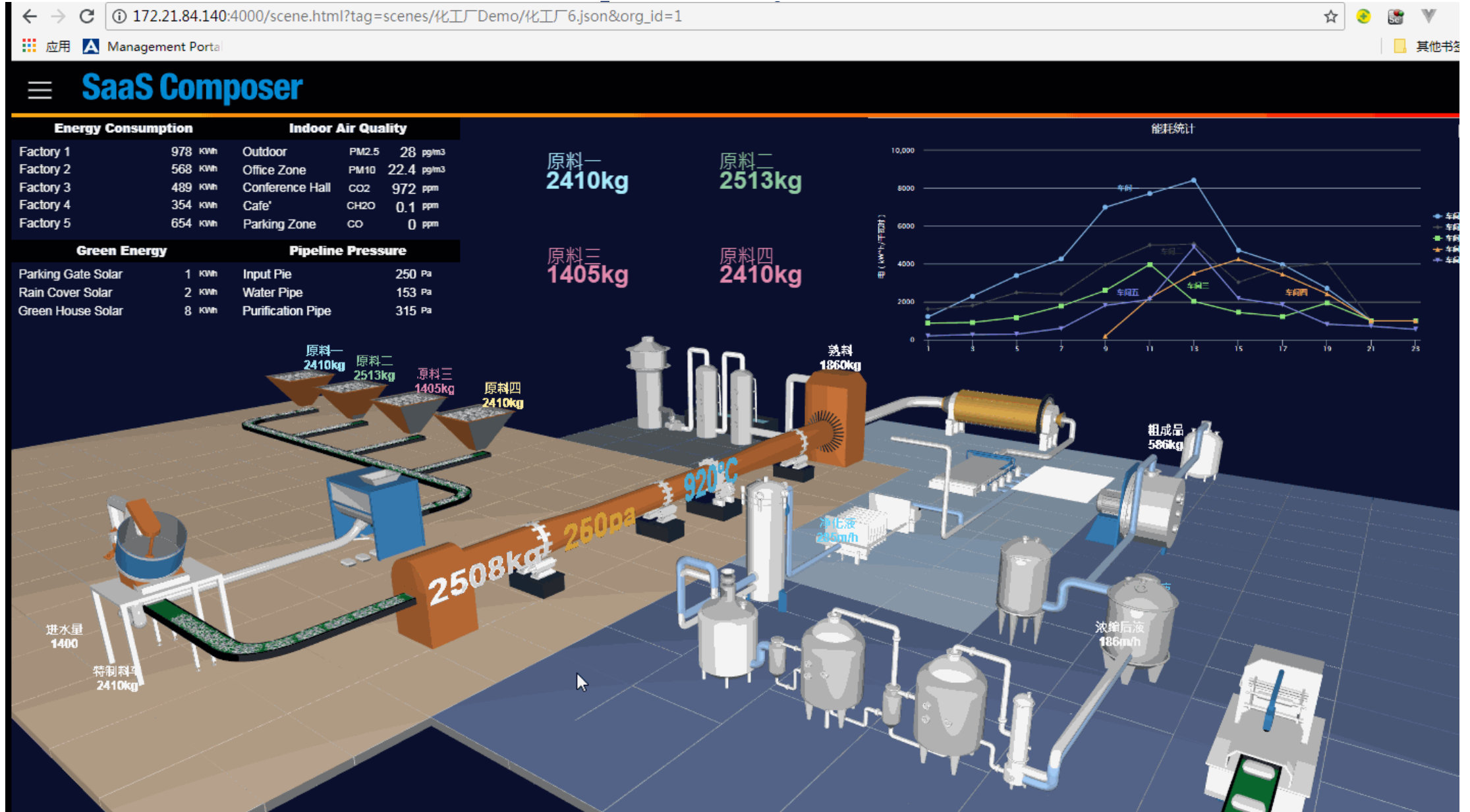
2D/3D Fusion View – Insight for Your Operation

The combination of dashboard and SaaS Composer plug-in embeds the SaaS Composer windows into the dashboard. Use the various dashboard panels to visually display, explore, and analyze data. View statistics from multiple angles and present the combination of dashboard and SaaS Composer in real-time to render a virtual application site. This solution allows users to access data analysis and real scene presentation on the display quickly. Users can benefit from the insights presented by the augmented operation data visualization to achieve better decision-making.

WISE-PaaS/Dashboard

WISE-PaaS/SaaS Composer
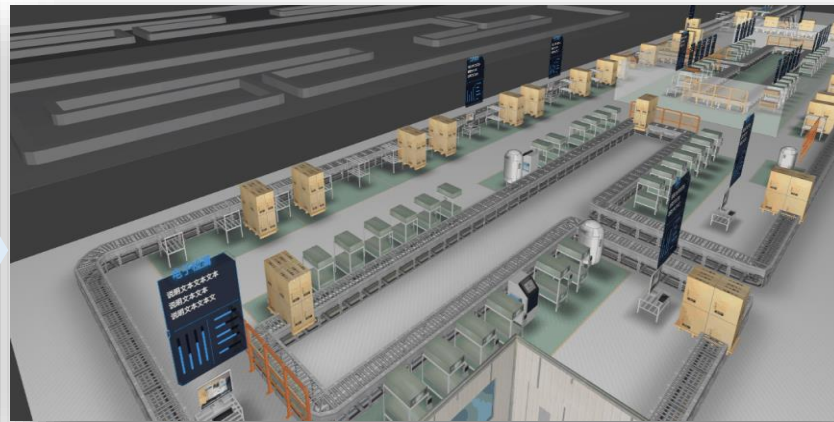
Integration Result
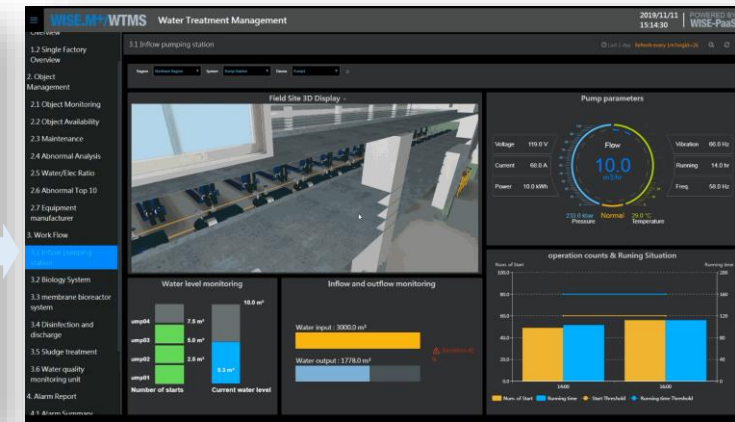
- ➤ Big screen situation room, reports, and mobile reports
- ➤ Easily expandable plug-in interface
- ➤ No coding required — simply drag and drop
- ➤ Common and pro dashboards for diverse industries
- ➤ Supports platform data, multiple database software, and commonly used statistic functionalities
- ➤ Access to iframe framework services

- ➤ 100% user-defined graphics presentation for different applications
- ➤ Improves users' situational awareness
- ➤ Supports standard JavaScript, logical analysis, and processing on object properties
- ➤ Supports iframe web page with embedded video function
- ➤ Refresh screens in milliseconds
- ➤ Intuitive data binding
- ➤ Anti-picture distortion

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Reliable and Flexible Notification Services

Integrated Service	WISE-PaaS/DataHub WISE-PaaS/Dashboard WISE-PaaS/InsightAPM iFactory/OEE iFactory/FEMS	Features

message → API

WISE-PaaS/Notification

message → MQTT

WISE-PaaS/ Notification	Multi-channel notification support	Notification group management	Custom notification templates	Scheduling and level management

message ↓   message ↓

| Notification Channel | |

message ↓   message ↓

| Notification Object | Enterprise account   User   User |

Features

- Fast and stable
- High concurrent processing
- Multi-notification pipeline coverage
- Template management supports different variables
- Group and level management
- Notification scheduling & level management
- History notification record query

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Application & Data Management - The Cornerstones of IoT Innovation

01

EnSaaS K8s Service - Application Management Service

Ready to use out-of-the-box micro-services frameworks helps customers focus on domain applications

Based on Kubernetes, EnSaaS K8s Service provides a ready to use out-of-the-box application and micro-service framework management solution. This solution enables the use of micro-services — these include: routing/API management, service discovery, load balancing/flexibility, centralized monitoring /alarms, and centralized log management — in production, testing, and development environments. Micro-service management functions — such as scaling, centralized monitoring/alarms, and centralized log management — can be linked with WISE-Marketplace to complete the automated subscription and deployment of applications.

Enterprise-level container management platform & innovative cloud-native application development

EnSaaS K8s Service delivers cloud container management aimed at helping enterprises to easily deploy and manage containers via an intuitive user interface. Users with no prior experience can start using K8s quickly. Its easy to use interface greatly reduces barriers to entry and accelerates application development.

Multi-level workspace helps companies manage authorizations and resources easily

EnSaaS K8s Service provides a variety of workspaces completely isolated from access permissions. This helps SI's and IT managers to easily manage workspace access permission and resource quotas for different user groups.

Consistent infrastructure management enables one-time development for multiple deployments

EnSaaS K8s Service incorporates different K8s services provided by different IaaS providers. It encapsulates the differences between public and private clouds, and supports one-time app development for multi-cloud deployment. Likewise, it supports centralized management for multiple clouds and clusters.

Multi-level multi-tenant space enables stable operation and easy maintenance
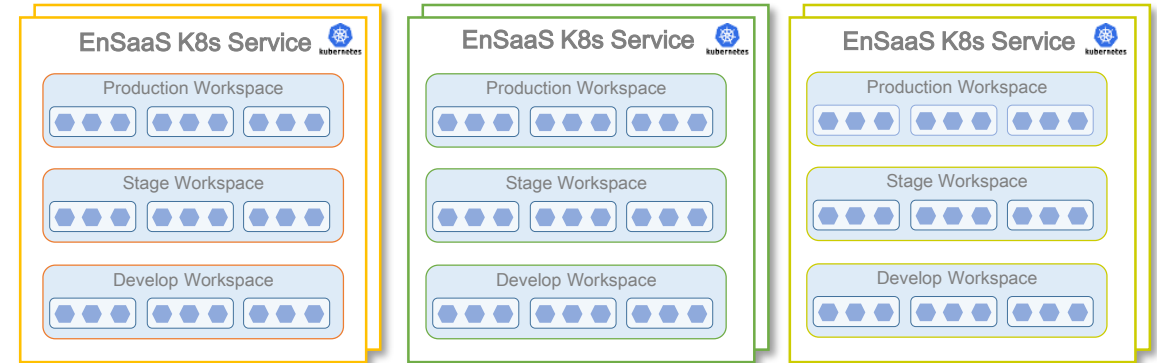
EnSaaS Management Portal – Application Management Console

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Application & Data Management - The Cornerstones of IoT Innovation

A selection of data storage services suitable for diverse industrial applications.
All-around management features enable easy maintenance

Workspace — Dashboard, SaaS Composer
Workspace — DataHub, Notification

Unified interface and authorization management for diverse data types.

Service Hub

Centralized Monitors and Alarms

PostgreSQL · mongoDB · redis · influxdb · Blobstore

MongoDB — Single Node for Developing, Staging, and PoC, w/o HA

Scalable

MongoDB Primary, MongoDB Secondary1, MongoDB Secondary2 — HA (High Available) for Production Environment

EnSaaS Management Portal – Data Management Console

EnSaaS DB Service – Data Management Services

Rich database support

To meet the needs of different types of IoT data storage requirements, EnSaaS DB Service provides PostgreSQL, MongoDB, InfluxDB, and other database services. It helps customers build industrial applications quickly. Additionally, EnSaaS DB Service enables flexible resource expansion and high usability.

Convenient operation interface

EnSaaS DB Service delivers a convenient and interactive interface management system. Users can complete the management of all data storage services via a set of user interfaces — including the creation/deletion of instances and keys. EnSaas DB services simultaneously integrates WISE-PaaS/SSO to enable unified identity authenticat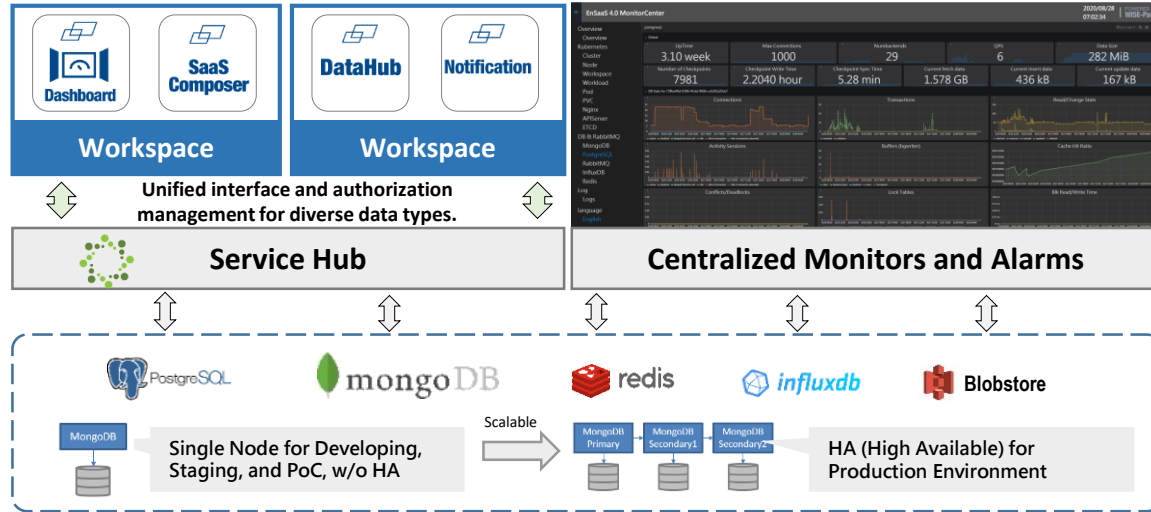ion for applications, data, and platforms. Users can enjoy convenient single sign-on functionality while having guaranteed data access management security.

Secure access key management

EnSaaS DB Service provides key management functions for connecting to data storage instances. This ensures the management of keys — including creation, viewing, and deleting — and can automatically inject keys into application deployment workspaces. This facilitates a consistent interface and fast connection to multiple data storage instances to support industrial applications. It simultaneously ensures data security, yielding an excellent adaptable solution.

Comprehensive real-time monitoring

EnSaaS DB Service delivers real-time database instances monitoring. The monitoring dashboard allows users to intuitively understand the health status and real-time usage of database instances. In the event of an abnormality, it can be combined with WISE-PaaS/Notification services to deliver real-time alerts.

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EnSaaS Integrated Real-Time Monitoring and Control
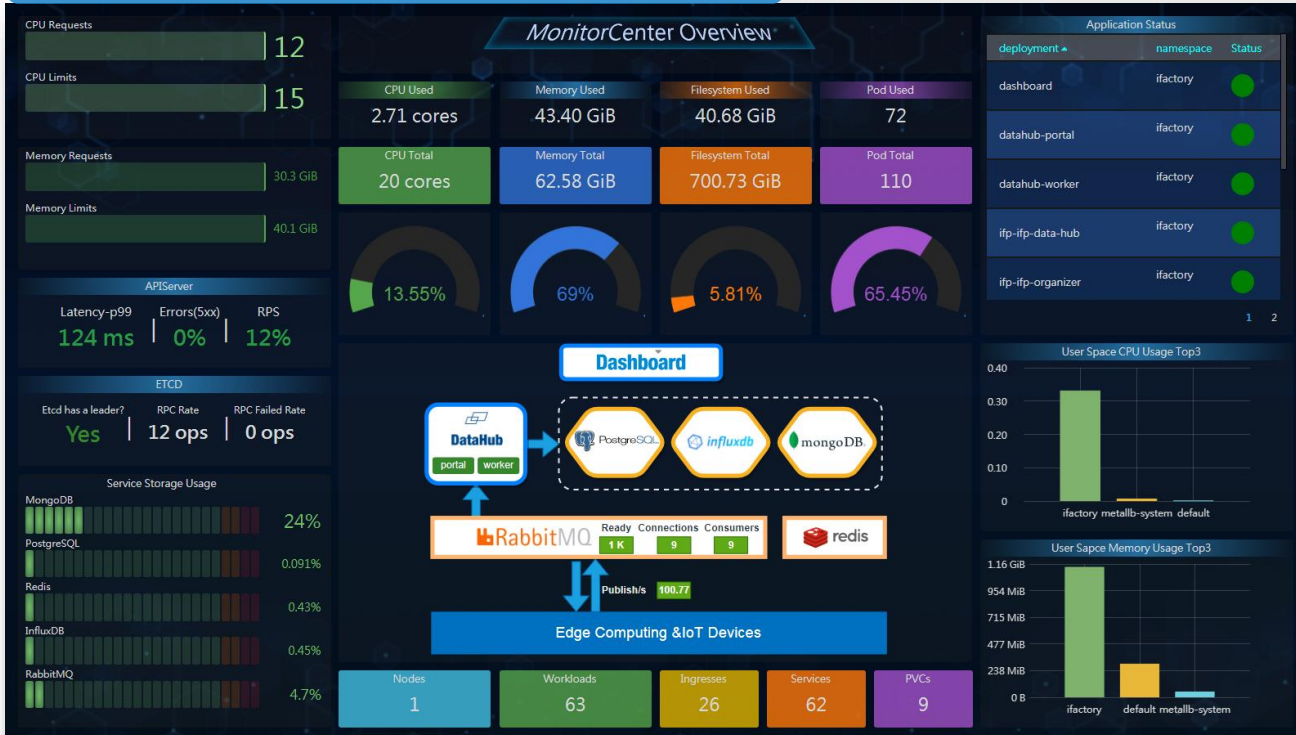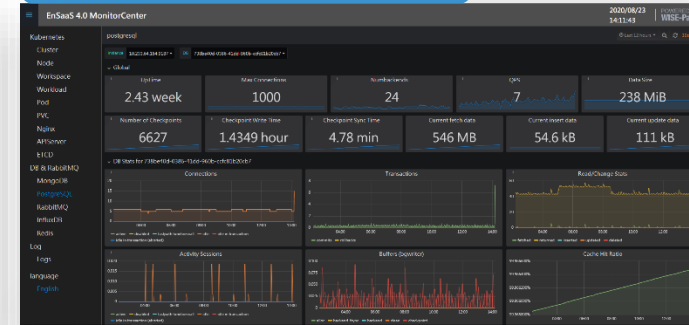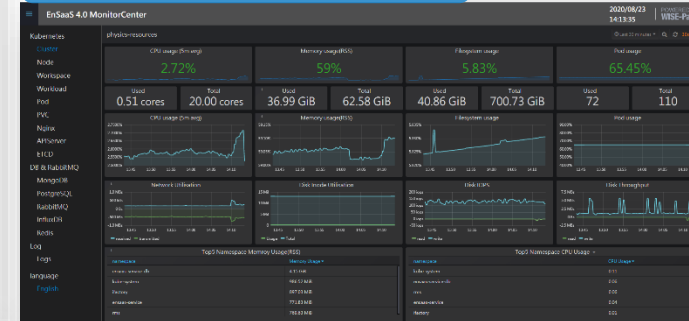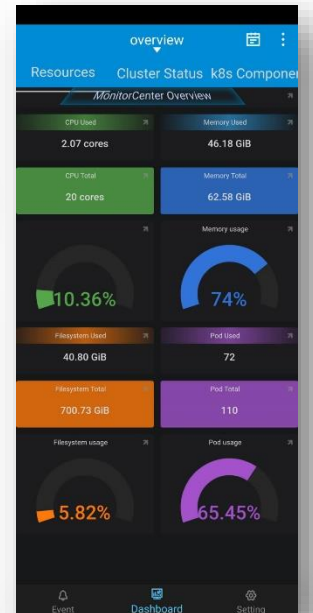
Case Study
Smart Manufacturing

1 Illuminate Operational Visibility

2 Accelerate Asset management & productivity

3 Enrich OT functions to improve asset life cycle management

Equipment Overview

Utilization Trend - Line Analysis

Utilization Trend - Line Analysis

Real time monitoring/ Robotic Arm

Real time monitoring/Vibration sensor

WISE-PaaS/IoTSuite

iFactory OEE	**OEE** Overall Equipment Effectiveness

- ✓ Tracking model efficiency / yield
- ✓ Production line abnormal scenario notification
- ✓ Warnning for low performance lines

iFactory BEMS	**BEMS** Energy Management System

- ✓ Flexible Adjustment and allocation to department.
- ✓ Efficiency management of Equipment energy
- ✓ Season Energy price interval management.

iFactory PHM	**PHM** Prognostics and Health Management

- ✓ Extend Equipment Life-time
- ✓ Engineers Capacity & Capability recording
- ✓ Maintenance history tracking

iFactory SPC	**SPC** Statistical Process Control

- ✓ Capability of Accuracy & Precision
- ✓ Dramatically reduce variability and scrap
- ✓ Scientifically improve productivity

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Industries where WISE-PaaS/IoTSuite has been applied

WISE-PaaS/IoTSuite
Accelerator for enterprise digital transformation

Intelligent Retail

Intelligent Parking

Intelligent Steel Factory

Automotive Test Center

Wind Farm Management

Test Chamber Management

Intelligent Steel Factory

Intelligent Factory OEE

Intelligent Agriculture

One-stop low-code development kits provide companies with the ability to build end-to-end solutions and help enterprises quickly realize remote device management and data fusion

The data platform builds data-driven business capabilities for companies and helps companies accelerate their digital strategy

The cloud-native platform injects new impetus for technological transformation and innovation for companies, helping companies to accelerate application delivery

Software Stack of WISE-PaaS/IoTSuite (1)

Service	No.	I.App	Description
Visualization Service	1	WISE-PaaS/Dashboard	Provides basic data analysis, can connect to commonly used databases and seamlessly integrate with platform data, can quickly produce various commonly used and proprietary reports, can provide field diagram drawing, can use application construction framework to quickly create visualization solution without coding, can support large screen PC and mobile terminals
	2	WISE-PaaS/SaaS Composer	WISE-PaaS/SaaS Composer is the new generation cloud based graphical control tool that allow user to interact with machine in real-time. It is a browser based infrastructure, which replaced the traditional IDE limitations and allow cross platform usage. This satisfies variety of industrial domains and business solutions. With 100% customizability, users can reconstruct the work site to offer a detailed live representation
Data Storage Service	3	PostgreSQL	An object-relational database management system that establishes relations between data tables within an object-oriented framework in order to achieve data independence and consistency. WISE-PaaS uses this database service to store the metadata of edge devices.
	4	MongoDB	The NoSQL databases is relatively flexible, stores data as key-value pairs in the JSON format, and efficiently processes high-traffic websites and indexes big data. WISE-PaaS uses this database service to store key-value data. Trends in stored data are then illustrated using WISE-PaaS visualization tools and analytics services for advanced value-added applications.
	5	InfluxDB	A time-series database (TSDB) for storing large volumes of time-related data. Compared to common databases, a TSDB requires less space and is more efficient for storing and managing time-series data. Thus, for cloud platforms that need to store time-related data, a TSDB is the ideal choice.
	6	Redis	An in-memory data structure server, used as a database and cache service. It supports data structures such as strings, hashes, lists, sets, sorted sets with range queries.
	7	BlobStore	Blob storage is an object storage solution for cloud platforms. Blob storage is the most suitable storage for storing large amounts of unstructured data. Unstructured data is data that does not follow a specific data model or definition (such as text or binary data). For example, storing picture, video, backup data file or software package.

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Software Stack of WISE-PaaS/IoTSuite (2)

Service		I.App	Description
Data Hub Service	8	DataHub	WISE-PaaS/DataHub is an IoT solution accelerator. It offers data collection, device management functions, and data aggregation API that are suitable for IoT situation, such as Smart City, Smart Factory or Internet of Vehicle.
	9	RabbitMQ	RabbitMQ is a general purpose messaging solution, often used to allow web servers to respond to requests quickly instead of being forced to perform resource-heavy procedures while the user waits for the result. It is also good for distributing a message to multiple recipients for consumption. When your requirements extend beyond throughput, RabbitMQ has a lot to offer: features for reliable delivery, routing, federation, HA, security, management tools and other features.
App and Data Management Service	10	EnSaaS K8s Service (EKS)	Kubernetes-based cloud native application and data management service, including microservice framework services, supporting cross-cloud and regional deployment, cross-public and private clouds, and heterogeneous IaaS management.
	11	EnSaaS Management Portal (EMP)	The EnSaaS Management Portal (EMP) provides management services for the EnSaaS cloud platform, supporting multi-service instance management of EnSaaS K8s services, EnSaaS storage services and centralized management of applications running on EnSaaS. EMP provides friendly functions and a convenient and easy-to-use interface. Users can view and manage applications, data and platform resources, which greatly reduced the effort of using Kubernetes to manage and maintain industrial applications. In addition, EMP also provides powerful and complete multi-tenant functions, supports multi-dimensional, multi-level authority management, and provides systematic support for DFSI's operations on EnSaaS.
	12	EnSaaS Real-time Monitor (ERM)	EnSaaS Real-time Monitor is a stable, efficient, and flexible monitoring and alerting system based on Prometheus. It includes monitoring and alerting services , which provides multi-dimensional monitoring and alerting for clusters. ERM has a multi-level system covering levels of cluster, node, workspace, namespace, pod, workload, and container. It also contains monitoring for DB, IoTHub and other services.
	13	WISE-PaaS/Notification	WISE-PaaS Notification is a messaging service that is primarily for integration with SRPs. Users can send E-mail, LINE, WeChat, DingTalk, WhatsApp, and call third-party APIs through the WISE-PaaS Notification API to achieve instant message notification.
IAM Service	14	WISE-PaaS/SSO	EnSaaS SSO is a set of safe, convenient and open secure identity authentication services provided by WISE-PaaS. Supports multi-tenant management and enterprise subscription account operation models, provides unified user identity authentication management, and provides a convenient API's for integration. Third-party integration services and SaaS applications can use one account to access multiple applications.

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Software Stack of WISE-PaaS/IoTSuite (3)

Service		I.App	Description
Microservice Framework	15	EnSaaS Service Mesh (ESM)	EnSaaS Service Mesh (ESM) is a service mesh platform with high performance, high reliability and ease of use. With enhanced usability, reliability, and visualization, it provides out-of-the-box user experience. ESM provides a non-intrusive microservice governance solution that supports full-lifecycle management and traffic management and is compatible with the Kubernetes. It hosts functions such as service discovery, service authentication and authorization, load balancing, circuit breakers, and traffic limiting. The built-in support for grayscale release enables user to automate release management all in one place. Based on the monitoring data that is collected non-intrusively, ESM provide a panoramic view of your services, including real-time traffic topology, tracing, performance monitoring, and runtime diagnosis.
	16	EnSaaS Config Management (ECM)	EnSaaS Configuration Management (ECM) is an application configuration center that enables you to centralize the management of application configurations, and accomplish real-time configuration push in a distributed environment. ECM serves as the configuration center in a distributed system. It offers a series of functions such as configuration modification, configuration push, historical version management and gray release. With these features, ECM helps you centralize the management of configurations in every application, reduce the cost of configuration management in distributed systems, and lower the risks of availability issues or even failures caused by incorrect configuration changes. With ECM, you can greatly reduce the workload of configuration management and enhance service capabilities in scenarios such as microservices, DevOps, and big data.
Cloud-edge collaboration Service	17	EnSaaS EdgeConnector (EEC)	EnSaaS EdgeConnector is a remote operation and maintenance SaaS service in the EnSaaS Cloud-edge collaboration management framework. It breaks the limitations within the local area network and allows the 7-layer traffic in the internal network to be accessed in the external network through EEC, and supports white List and mutual TLS authentication to realize the security of remote access. EEC provides the intranet penetration function of the K8s cluster, allowing users to conveniently and quickly manage and operate clusters deployed in the enterprise private network in the external network; it also provides users with centralized remote control of applications, data and platforms in the external network Management, monitoring, and operation and maintenance provide a secure channel; users can also subscribe to applications from WISE-Marketplace and EnSaaS Catalog through EEC services, and deploy them remotely in the data center or edge computing platform in the enterprise private network.

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Additional Service can be superimposed   WISE-PaaS/InsightAPM

Fixed Assets

Mobile Assets

Site Infrastructures

Management Staffs

Digital Twins

WISE-PaaS/InsightAPM

WISE-PaaS/Dashboard ← Data Plug-in

WISE-PaaS/SaaS Composer ← Data Plug-in

Other Visualization Tool

Data Model API

Rule and/or AI Inference Engines

Mathematic Model

Events and Alarms

WISE-PaaS/AIFS

WISE-PaaS/Notification

Data Tagging and Synchronization with Edge
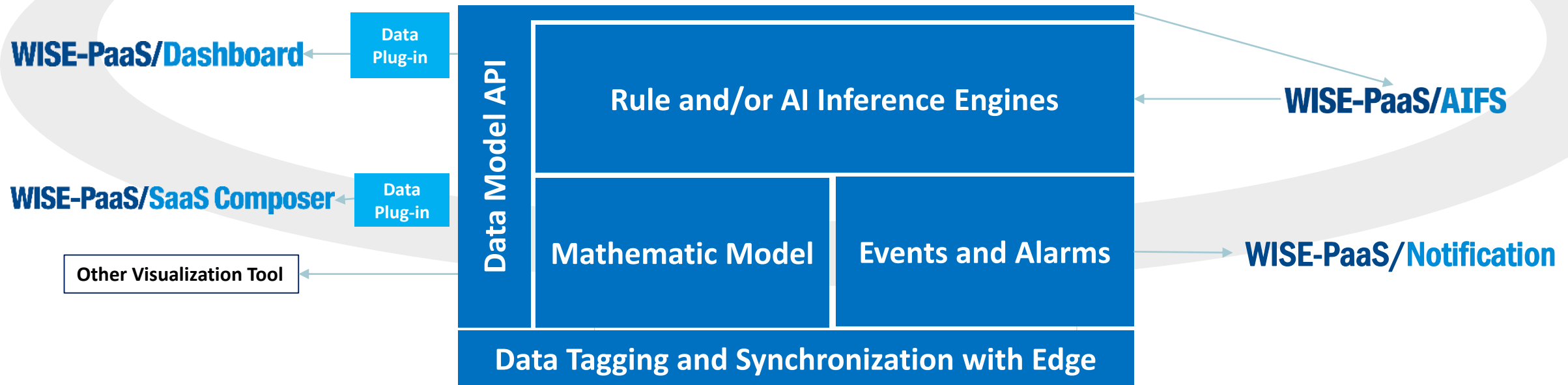
WISE-PaaS/ EnSaaS4.0   Scalable Data Platform with Microservices Framework

WebAccess/SCADA   **WISE-PaaS/WISE.M+**   **WISE-PaaS/DeviceOn**   **WISE-PaaS/VideoSense**   **WISE-PaaS/LwM2M**

Connected OT assets

ADVANTECH

Additional Service can be superimposed - WISE-PaaS/AIFS

Unified Platform for AI Models Training, Deployment and Life Cycle Management.

Smart Retail
- Face Recognition & Passenger Flow Calculation

Smart Machine
- PHM
- Motor PMS
- Predictive Cutting Edge Broken

Smart Factory
- AOI
- Process Quality Analysis
- Inventory Forecast

WISE-PaaS Cloud

Training and Model Management

Resource Schedule & Cluster Management
- hadoop YARN
- GPU
- kubernetes

(1) Training Data Source
- PostgreSQL
- influxdb
- mongoDB
- ceph
- Microsoft Azure Blob Storage
- WISE-PaaS/APM

(2) Workspace
- Jupyter — Notebook (online)
- docker — Upload Code (offline)
- learn
- PYTORCH
- Keras
- TensorFlow
- ONNX

(3) Catalog
- Firehose
- Data Preprocess
- Pre-build Algorithm
- Pre-trained Model

- 3rd Party Algorithm
- Marketplace Integration

(4) Preprocess
- Feature Selection
- Time Series Data label
- Image & Video Data Label

(5) Training
- Auto Re-Training Task
- Hyperparameter Tuning

(6) SDK
- Data Source
- Model Management
- AutoML

Model Management
- Model Repository
- Model Compression
- OpenVINO

Public Clouds: Azure aws 阿里云 ··· **Private Clouds:** WISE-STACK openstack vmware **Hybrid Clouds:** GPU Server

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Edge Intelligence

Inference

(8) Inference Engine Deployment
- Restful API
- Cloud Inference and Edge Inference

(7) Model Deployment
- Model & File Update
- Model Update Rule

WISE-PaaS/DeviceOn
WISE-PaaS/OTA
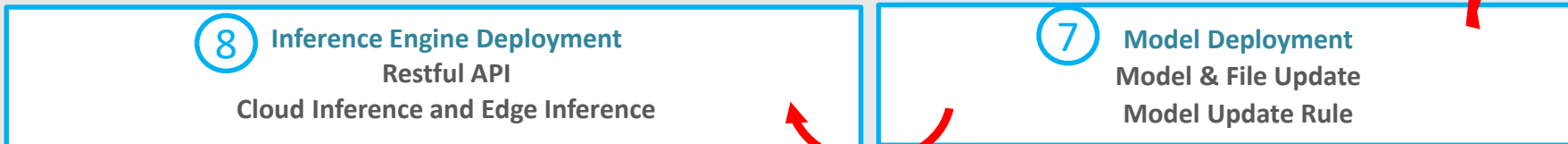
Container Runtime : docker EDGE X FOUNDRY   **Operating System:** Windows Linux android

v.20191017

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WISE-PaaS/AIFS: AI Framework Service
N X M : Manage multiple AI models across entire site
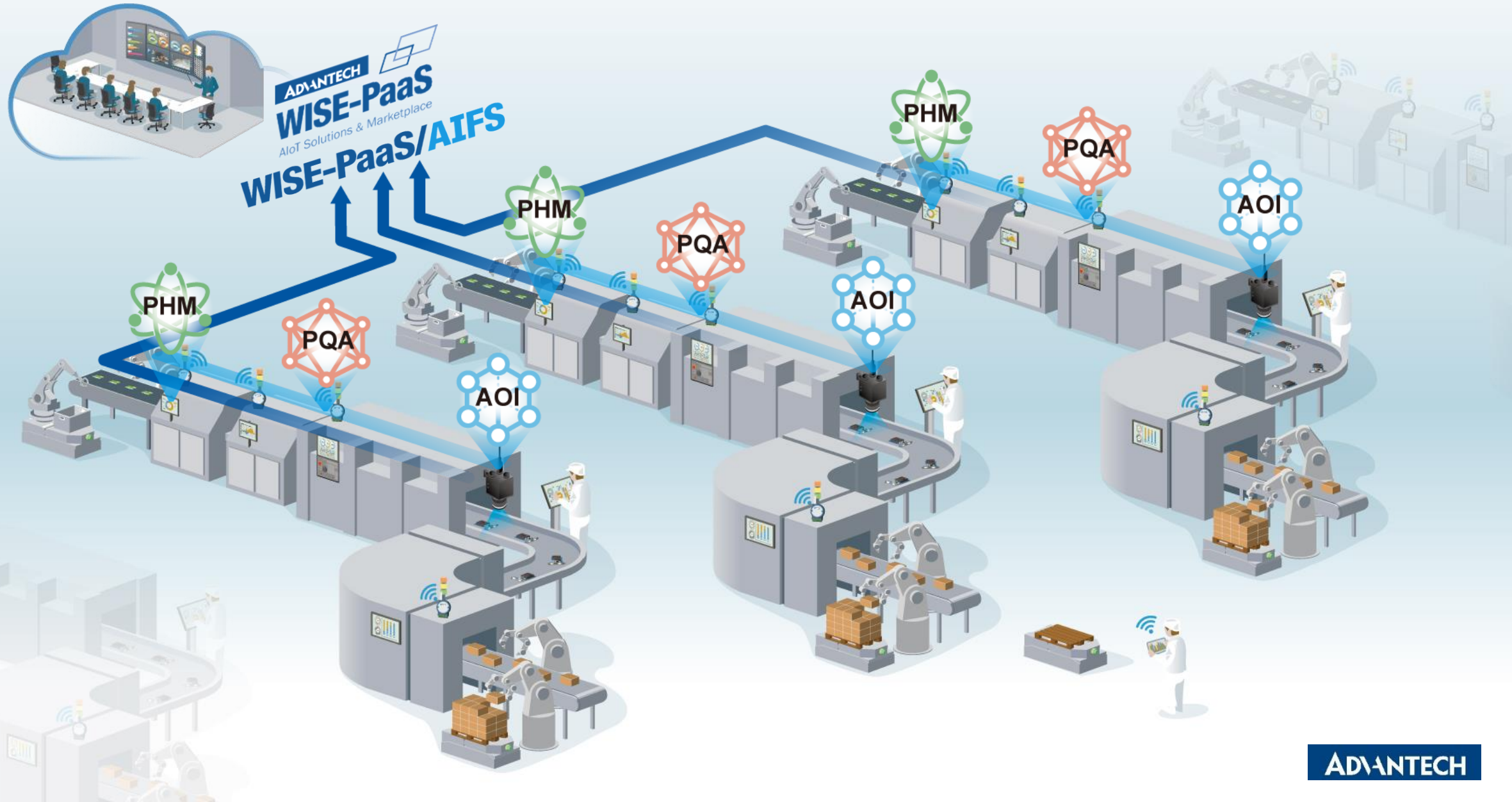
WISE-PaaS/IoTSuite Hybrid Cloud Architecture

One-Time Development, Multiple Deployments, and Unified Operation

- WISE-STACK 200, is a single-scenario data center that features a light weight and highly usable and expandable secured design
- WISE-STACK 300 supports deployment in multiple scenarios and complete cabinets
- WISE-STACK 600, GPU accelerated AI analysis and applications for large-scale industrial IoT cloud platform environments

- Software and hardware integrated solution
- Single scenario edge computing node
- Supports deployment on private enterprise networks
- Lightweight, secured, low cost, and low latency
- Supports cloud-side collaboration

Enterprise Private Cloud

openstack. vmware

Bare Metal

WISE-PaaS/IoTSuite S Series
WISE-STACK Private Cloud

WISE-PaaS/IoTSuite E Series
Edge Intelligence All-in-One Solution

Enterprise Exclusive Cloud

openstack

vmware

Tunnel Service

Cross-cloud and cross-domain centralized management

TWCC TAIWAN COMPUTING CLOUD

IIJ

Azure

阿里云

WISE-PaaS/IoTSuite S Series
Enterprise Exclusive Cloud

- Deployed on an enterprise exclusive cloud platforms
- Supports deployment based on OpenStack or VMware
- Supports deployment based on enterprise public clouds by private accounts
- Supports Azure, AWS, Alibaba Cloud, Tencent Cloud, and Huawei Cloud, etc.

WISE-PaaS/IoTSuite C Series service plans
Self-Operated Public Cloud

- Advantech self-operated data center
- Launched in four major regions
  - Azure @ Singapore
  - Alibaba Cloud @ Hangzhou
  - IIJ @ Tokyo
  - TWCC @ Taiwan

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WISE-Marketplace X **WISE-PaaS/EnSaaS4.0**

WISE-PaaS/IoTSuite C Self-Operated Public Cloud

WISE-PaaS/IoTSuite C is a set of WISE-PaaS/IoTSuite industrial IoT application development kits provided by the public cloud data center of WISE-PaaS 4.0 cloud platform. It includes WISE-PaaS/Dashboard, WISE-PaaS/SaaS Composer, WISE-PaaS/DataHub, WISE-PaaS/Notification, EnSaaS K8s Service, EnSaaS DB Service, and EnSaaS IoTHub. WISE-PaaS/IoTSuite@Cloud helps enterprises accelerate their digital transformation.

WISE-PaaS/IoTSuite S Enterprise Exclusive Cloud

WISE-PaaS/IoTSuite S is a customized exclusive industrial IoT cloud platform for enterprises. It incorporates compatible certified server stacks and deploys them on private networks to create an integrated industrial IoT cloud platform. Additionally, it can be deployed on an enterprises' virtual network established in public clouds — such as Azure, AWS, and Alibaba Cloud. When deployed in an enterprise's data center via OpenStack and VMWare, it yields an exclusive industrial IoT application cloud/industrial cloud. Advantech's WISE-PaaS/IoTSuite enables the centralized management of multiple WISE-PaaS/IoTSuite E intelligent edge platforms deployed on networks and clouds. In summary, this solution delivers integrated management and cloud-side collaboration.

WISE-PaaS/IoTSuite E Edge Intelligence All-in-one Solution

WISE-PaaS/IoTSuite E is an industrial IoT intelligent edge platform based on Kubernetes and Bare Metal Architecture deployment. It is deployed on enterprises' private networks using a certified compatible server. WISE-PaaS/IoTSuite cloud is fully compatible with cloud/edge platform architectures and extends cloud native capabilities to the edge. It provides complete device access, edge computing, and cloud-side collaboration capabilities to create a one-stop integrated cloud solution for enterprises.

What is WISE-PaaS/IoTSuite

WISE-PaaS/IoTSuite is the cornerstone of industrial IoT applications. It covers a set of development kits which enable the rapid development of industrial IoT applications, as well as cloud-native applications, and data management platforms. A complete IoT platform can be built quickly through a low-code development kit. This kit uses a three step process — device access and management, data acquisition and storage, and data visualization. Users of cloud-native applications and data management platforms simply focus on business innovations while improving efficiency/security, reducing costs, and implementing agile application development and platform operations. By using WISE-PaaS/IoTSuite and overlaying industry applications with a micro-service architecture, users can build domain focused solutions for industry clouds. WISE-PaaS/IoTSuite covers a series of cloud-side collaboration products such as Cloud(C), Stack(S) and Edge(E).

WISE-PaaS/ EnSaaS4.0 Enterprise-level IoT PaaS

WISE-PaaS/EnSaaS is the core technology for applications and data services on the WISE-PaaS industrial IoT cloud platform. EnSaaS K8s Service provides application, workspace, resource, and micro-service management services frameworks to users. Additionally, EnSaaS DB Service provides the multi-metadata storage services needed for building industrial applications. The EnSaaS Catalog Service is linked to WISE-Marketplace to provide enterprise users with a business operation platform for industrial IoT solutions. EnSaaS is committed to the integrated management of cloud and edge solutions.

Welcome to integrate WISE-PaaS / IoTSuite into your industrial solutions, and work with us to provide services to end customers

iFactory/OEE

MES

iHealthcare

Machine to Intelligence

WISE-PaaS/IoTSuite -Cloud Native Technologies Empower Cloud-Side Integration
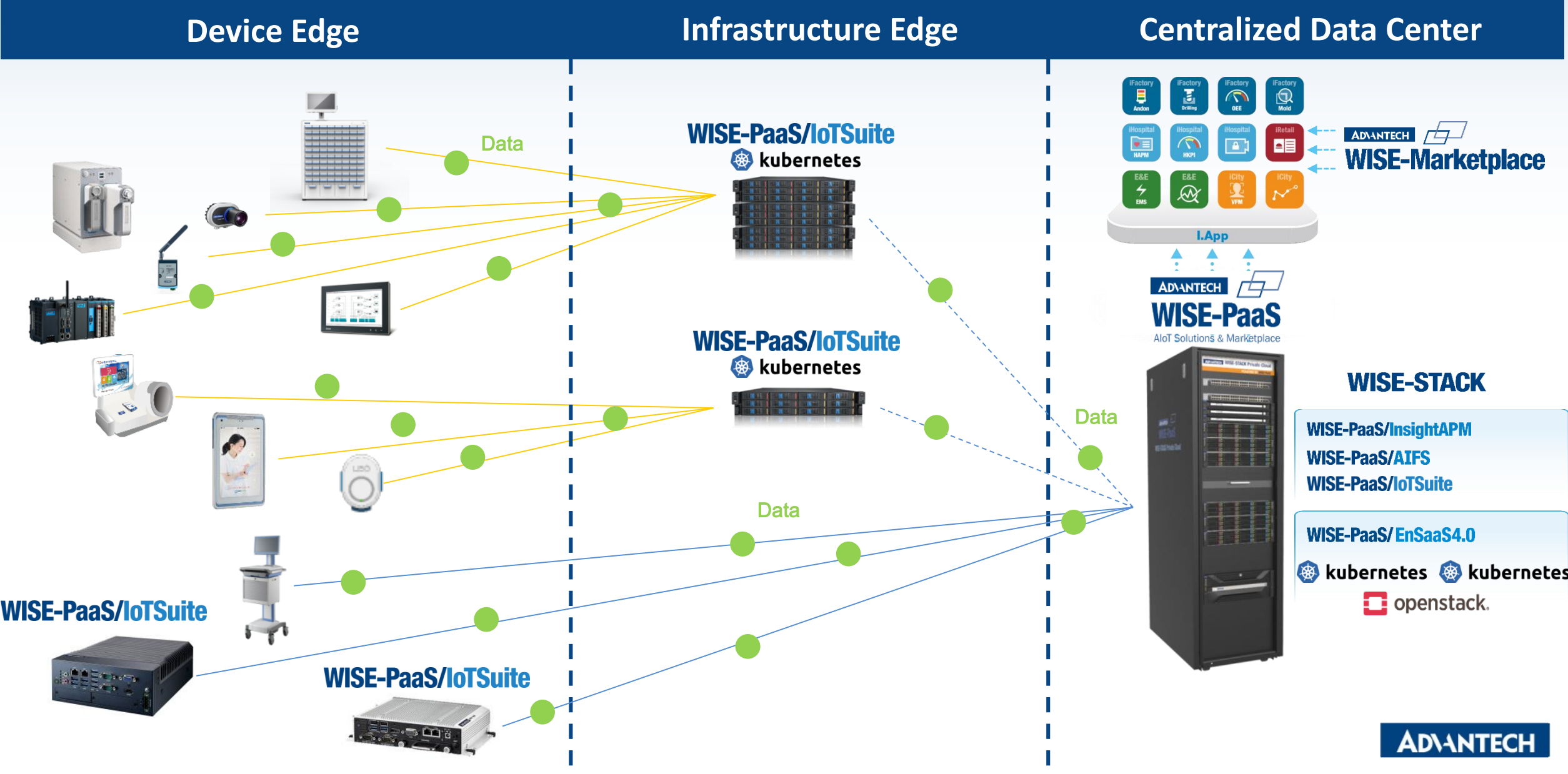
WISE-PaaS/IoTSuite E100/E300

One-stop IoT Development Kit and Edge Intelligence All-in-One Solution

Advantech

WISE-PaaS Core Service

09/28/2020 v0.34　(English)

WISE-PaaS/IoTSuite E Series

One-stop IoT Development Kit and Edge Intelligence All-in-One Solution

Domain Focus Solution

Energy & Environment

iFactory/ Industry 4.0

Smart City

iHealthcare

iRetail
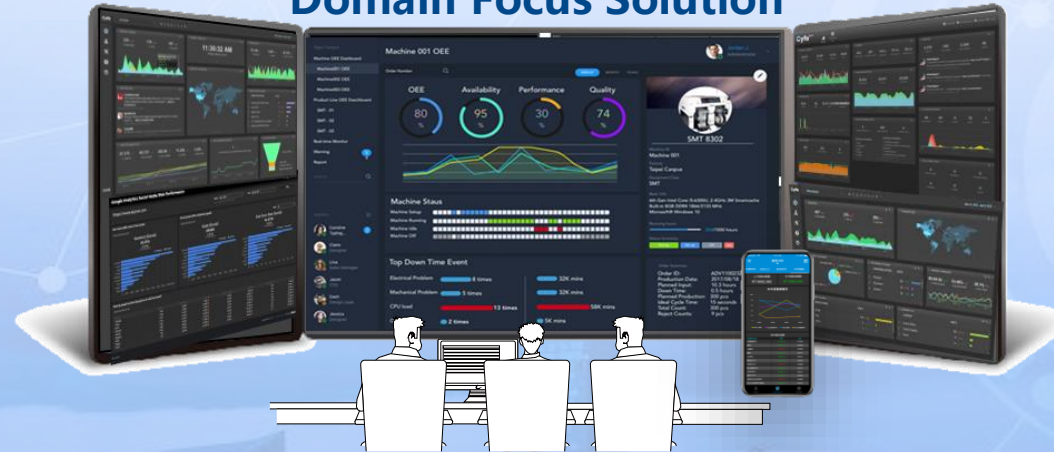
WISE-PaaS/IoTSuite
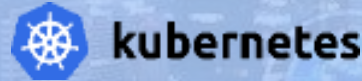
kubernetes

🔒 **Secured**

🕐 **low latency**

☁ **Lightweight**

📊 **Low Cost**

Edge 100   Edge 300

Integrated IoT Suite
- On-demand Industrial Apps
- Industrial App Development Suite

Integrated EnSaaS Service
- Application lifecycle Management
- Data Transmission and Storage

Kubernetes Based Platform
- Microservice Management
- Kubernetes Build-in

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Embedded Software Edge
vs
Cloud Native Approach Edge

Cost reduction

Increase efficiency

Security

Agile

App Lifecycle	Embedded Software Edge Today	Cloud Native Approach Edge Tomorrow
Design	Hardware Dependent	Platform Independent
	Waterfall (gate based)	Agile (iterative)
	Monolithic	Micro-services & Containers
Develop	Reinvent wheel (eg many RT OS'es)	Re-use centric
	Legacy programming models (C, ASM)	Modern small footprint programming (Go, Node.JS)
	Proprietary, expensive dev tools & closed-source	Open source, open development
Deploy	"Burn-in" a the factory with testing prior to shipping	Instant app deployment when and where needed; Zero-touch full stack deployment
	Update in field as little as possible	As many times as needed at the moment it is available
	High risk for upgrades, one way. Manual Disaster Recovery	Roll-back ability Automated verification and disaster recovery
Operate	One at a time management	At scale management with "intended state" model
	Local focused (console/serial/shell)	Network/remote focused, SD-WAN overlay integrated with apps
	Insecure due to being air-gapped (not connected) historically	"Ground to Cloud" defense in layers with PKI cryptography;
Analyze	Not easy to get statistics/diags out of device	Continuous statistics, diags and analysis
	Distributed and "ships in the night"	Centralized and aggregated
	No feedback loop / lack of automated analytics	Machine learning and insight driven

Reference: "Cloud-Native Edge for Connected Operations"

ADVANTECH

Edge intelligence all-in-one value proposition

WISE-PaaS/IoTSuite E Series

WISE-PaaS/IoTSuite for Edge Computing to enable agile AIoT development

Distributed architecture guarantees real-time

Edge nodes close to the endpoints ensure low latency, connect with the central cloud to realize remote centralized management

Traditional software upgrade to cloud architecture

Start with a small-scale single field single scenario, It is more suitable for PoC than public cloud and private cloud

A consistent development architecture in the cloud and edge

Lightweight cloud native, the application can be deployed on the public cloud and the edge nodes at the same time without changing the code

Need to ensure data security and reliability

Data filtering and analysis and statistics are completed on edge nodes, and the original data is stored on the company intranet

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WISE-PaaS

AIoT Solutions & Marketplace

ADVANTECH

The Drivers of Edge Computing
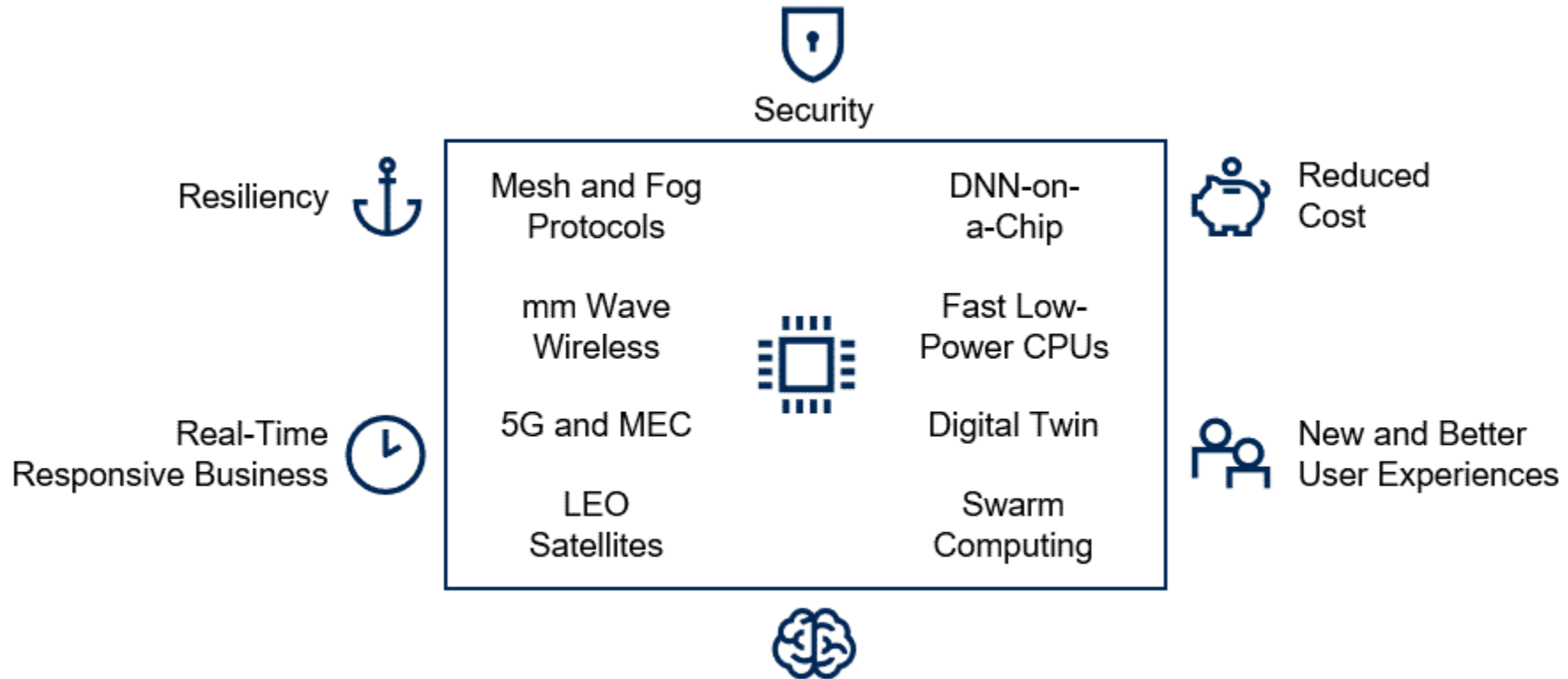
From Gartner Report Top 10 Strategic Technology Trends for 2020: Empowered Edge

Strategic Technology Trend

Key Findings

1. The need for real-time insights and localized action, regulatory requirements, network constraints, and volume and velocity of data generated from sensors and endpoints is forcing I&O leaders to deploy edge computing solutions in order to process data closer to the source of generation.

2. Hardware OEMs, and analytics, OT, telecommunications, vertical-specific emerging and cloud vendors are exploring partnerships to create end-to-end edge computing solutions.

3. Most vendors are working toward providing "real-time analytics" and control at the edge, but today most use cases are focused on data aggregation and event filtering capabilities near the source of data generation.

4. Industry-vertical-specific device integration, device and application management, analytics, AI, visualization, hardware and cloud integration are aspects of edge computing solutions that are currently undergoing rapid innovation.

Strategic Planning

1. By 2022, more than 50% of enterprise-generated data will be created and processed outside the data center or cloud.

2. By 2022, 20% of new industrial control systems will include analytics and AI-edge inference capabilities, up from less than 5% in 2019.

3. By 2022, at least 50% of greenfield IoT projects will use containers for application life cycle management at the edge.

4. By 2022, at least 50% of high-end industrial IoT gateways will offer an optional 5G module.

From Gartner Report Top 10 Strategic Technology Trends for 2020: Empowered Edge

Available HW Servers for WISE-PaaS/IoTSuite E Series

WISE-PaaS/IoTSuite E100

Deployed on **SKY-7221 x 1 Node**

WISE-PaaS/IoTSuite E300

Deployed on **SKY-7221 x 3 Nodes**

(Enable High Availability)

SKY-7221 — 2U High Performance Rackmount Server with Intel Xeon Scalable Processor Family

Item / Node	Description	Minimum	Recommended	Maximum
Server (with Slide rail)	Advantech SKY-7221 2U Rack mount with 2x 850w RPSU			
NIC	10GbE SPF+ x4, 1GbE RJ45 x2, IPMI (1GbE RJ45) x1			
RAID Card	PCIe Gen. 3 SATA3/SAS 8 Ports 12Gbps			
Processor	Intel Xeon Silver 4210 2.2G 10C	1	2	2
RAM	32G DDR4 2933 REG 1.2V	2	8	24
Disk (OS)	2.5" SATA3 256GB SSD	2	2	2
Disk (Storage Cache)	2.5" SATA3 256GB SSD	2	2	-
Disk (Storage)	Enterprise 3.5" SATA3 4TB 7200 128MB HDD	4	8	-
Disk (Storage)	3.5" SATA3 1TB SSD	-	-	10

Resource Requirement of WISE-PaaS/IoTSuite Edge

Service Type	Service	vCPU(core)	Memory(GiB)	Persistent storage(GiB)	E100 Pod Replicas	E300 Pod Replicas
Application Services	Platform Management	5.5	6.8	256	1	2
	Development Kit	1.5	2.0		1	2
Data Services	PostgreSQL	2.0	8.0	512	1	3
	MongoDB	2.0	8.0	512	1	3
	InfluxDB	2.0	8.0	512	1	1
	RabbitMQ	2.0	4.0	8	1	3
	Redis	0.1	0.1	4	1	3
	Blob	0.5	2.0	1,024	1	1
Resource Requirement of E100 IoTSuite		16 core	40 GiB	3 TiB		
Remaining Resources of E100 (It is recommended to reserve 20% of the remaining resources)		4 core	24 GiB	5 TiB		
Resource Requirement of E300 IoTSuite		35 core	90 GiB	6 TiB		
Remaining Resources of E300 (It is recommended to reserve 30% of the remaining resources)		25 core	102 GiB	10 TiB		

(for SKY-7221 Minimum Spec)

Scale-out of WISE-PaaS/IoTSuite Edge
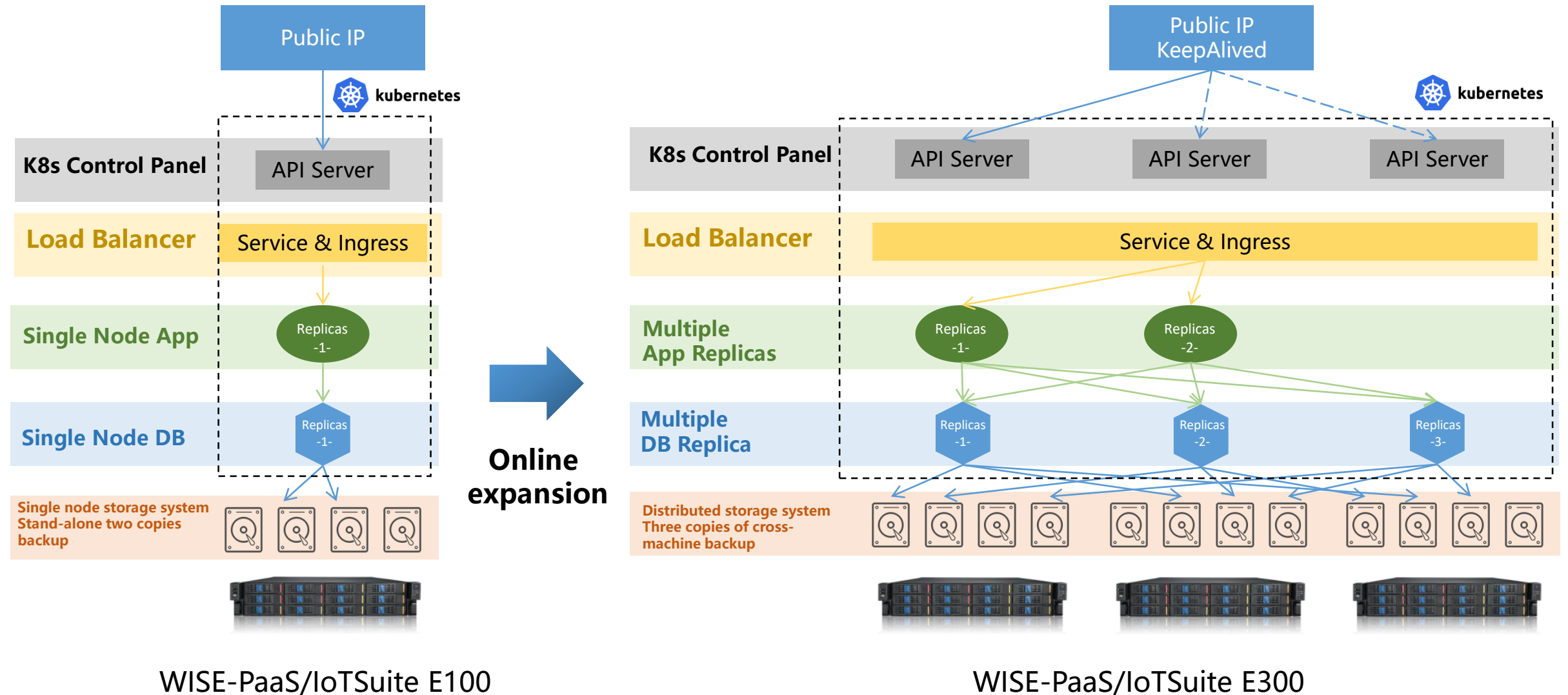
Standard Software Stack of WISE-PaaS/IoTSuite E100

Service	No.	I.App	Service Plan	Instance	Notes
Visualization Service	1	WISE-PaaS/Dashboard	Professional Plan	x 1	Supports data source and graphic plug-ins developed and publicly released by Advantech, supports SRP-Frame and image plug-in upload, supports logo OEM, supports various notification methods of Alert and panel multi-language settings, supports mobile terminal re-typesetting, report export, dashboard Data backup import
	2	WISE-PaaS/SaaS Composer	Professional Plan	x 1	WISE-PaaS/SaaS Composer is the new generation cloud based graphical control tool that allow user to interact with machine in real-time. It is a browser based infrastructure, which replaced the traditional IDE limitations and allow cross platform usage. This satisfies variety of industrial domains and business solutions. With 100% customization ability, users can reconstruct the on-site environment and offer a live detailed representation
Data Storage Service	3	PostgreSQL	Containerized Single Node Plan	x 1	w/o Availability SLA
	4	MongoDB	Containerized Single Node Plan	x 1	w/o Availability SLA
	5	InfluxDB	Containerized Single Node Plan	x 1	w/o Availability SLA
	6	Redis	Containerized Single Node Plan	x 1	w/o Availability SLA
	7	Ceph	Single Node Plan	x 1	Provide persistent volume for Kubernetes with 2 data replicas (hardware specification required)
Data Hub Service	8	DataHub	Professional Plan	x 1	Support 100,000 tags published per minute
	9	RabbitMQ	Containerized Single Node Plan	x 1	w/o Availability SLA
App and Data Management Service	10	EnSaaS K8s Service	Single Cluster with One-Node Plan	x 1	Bare metal based Kubernetes Cluster
	11	EnSaaS Management Portal	Standard Plan	x 1	Support Single Cluster with One-Node
	12	EnSaaS Real-time Monitor	Advanced Plan	x 1	Support Monitor, Logging and Alarm
	13	WISE-PaaS/Notification	Standard Plan	x 1	Support Email notification, The support of WeChat and Line notification function requires the additional purchase of EnSaaS Tunnel Service
IAM Service	14	WISE-PaaS/SSO	Standard Plan	x 1	Support one Subscription
Technical SLA	15	EnSaaS Ticket System	Standard maintenance upgrade package -1 year 5x9 service	x 1	5X9 ticket support (working hours), respond to service requests within 8 hours; Remote inspection service not more than four times a year

Standard Software Stack of WISE-PaaS/IoTSuite E300

Service	No.	I.App	Service Plan	Instance	Notes
Visualization Service	1	WISE-PaaS/Dashboard	Standard Plan	x 1	Supports Advantech's development of publicly released data sources and graphic plug-ins, application construction framework SRP-Frame and image plug-in upload, and various notification methods of Alert. Does not support logo OEM, mobile terminal re-composition, panel multi-language configuration, report export, dashboard data backup import.
	2	WISE-PaaS/SaaS Composer	Professional Plan	x 1	WISE-PaaS/SaaS Composer is the new generation cloud based graphical control tool that allow user to interact with machine in real-time. It is a browser based infrastructure, which replaced the traditional IDE limitations and allow cross platform usage. This satisfies variety of industrial domains and business solutions. With 100% customization ability, users can reconstruct the on-site environment and offer a live detailed representation
Data Storage Service	3	PostgreSQL	Containerized HA Plan	x 1	w/o Availability SLA
	4	MongoDB	Containerized HA Plan	x 1	w/o Availability SLA
	5	InfluxDB	Containerized Single Node Plan	x 1	w/o Availability SLA
	6	Redis	Containerized HA Plan	x 1	w/o Availability SLA
	7	Ceph	HA Plan	x 1	Provide persistent volume for Kubernetes with 3 data replicas (hardware specification required)
Data Hub Service	8	DataHub	Professional Plan	x 1	Support 100,000 tags published per minute
	9	RabbitMQ	Containerized HA Plan	x 1	w/o Availability SLA
App and Data Management Service	10	EnSaaS K8s Service	Single Cluster with 3-Nodes Plan	x 1	Bare metal based Kubernetes Cluster
	11	EnSaaS Management Portal	Standard Plan	x 1	Support Single Cluster with 3-Nodes
	12	EnSaaS Real-time Monitor	Advanced Plan	x 1	Support Monitor, Logging and Alarm
	13	WISE-PaaS/Notification	Standard Plan	x 1	Support Email notification, The support of WeChat and Line notification function requires the additional purchase of EnSaaS Tunnel Service
IAM Service	14	**WISE-PaaS/SSO**	Standard Plan	x 1	Support one Subscription
Technical SLA	15	EnSaaS Ticket System	Standard maintenance upgrade package -1 year 5x9 service	x 1	5X9 ticket support (working hours), respond to service requests within 8 hours; Remote inspection service not more than four times a year

Additional Software Services for WISE-PaaS/IoTSuite E Series

Service	No.	I.App	Service Plan	Instance	Notes
App and Data Management Service	1	EnSaaS EdgeConnector (Cloud Service)	Standard Plan	x 1	EnSaaS EdgeConnector is a remote operation and maintenance SaaS service in the EnSaaS Cloud-edge collaboration management framework. It breaks the limitations within the local area network and allows the 7-layer traffic in the internal network to be accessed in the external network through EEC, and supports white List and mutual TLS authentication realize the security of remote access. EEC provides the intranet penetration function of the K8s cluster, allowing users to conveniently and quickly manage and operate clusters deployed in the enterprise private network in the external network; it also provides users with centralized remote control of applications, data and platforms in the external network Management, monitoring, and operation and maintenance provide a secure channel; users can also subscribe to applications from WISE-Marketplace and EnSaaS Catalog through EEC services, and deploy them remotely in the data center or edge computing platform in the enterprise private network.
Note	Additional PN subscribed from WISE-Marketplace				

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Order information

WISE-PaaS/IoTSuite E100

Description	Part Number
WISE-PaaS@IoTSuite E100 Standard	32WSEDGE100A01

WISE-PaaS/IoTSuite E300

Description	Part Number
WISE-PaaS@IoTSuite E300 Standard	32WSEDGE300A01

Contact Window	Name	Email
BDM	Sam Chuo	Sam.chuo@advantech.com.cn
Solution Architecture	Stanley Yeh	Stanley.Yeh@advantech.com.tw
Marketing Specialist	Gail Chen	Gail.chen@advantech.com.tw

Level1 Technical Support	Address
Online Ticket System	https://portal-support-ensaas.sa.wise-paas.com
SRE	WISE-PaaS.SRE@advantech.com
SA/SE	WISE-PaaS.SA@advantech.com
CSM	WISE-PaaS.CSM@advantech.com

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WISE-STACK Enterprise-level IoT Private Cloud

Advantech

WISE-PaaS Core Service

09/28/2020 v0.34   (English)

Advantech Private Cloud – WISE-STACK

Rack-scale, Pre-integrated, Turnkey Solution

Elastic Scalability & High Availability

Fast Edge-to-Cloud Integration to Enable AI Solution Development

Simplified Data Endpoints and Edge Cluster Management for Cost Optimization

WISE-STACK Value Proposition

On-Premise WISE-PaaS
WISE-PaaS/IoTSuite for Private Cloud to enable agile AIoT development

Data Privacy
Data and process need to remain unavailable to the public network

IT Cost in Control
Applications run on capped computing resources without bill shock

Cloud Computing Flexibility
Bare metal and IaaS can be expanded unlimitedly without operation down time

CT Cost in Control
Prevent high bandwidth cost of moving data in and out of private networks

ADVANTECH
WISE-PaaS
AIoT Solutions & Marketplace

ADVANTECH

WISE-STACK Private Cloud Solutions

Data Platforms for Fast AIoT Solutions Development & Mass Edge AI Deployment

I.App

iFactory Andon | iFactory Drilling | iFactory OEE | iFactory Mold
iHospital HAPM | iHospital HKPI | iHospital | iRetail
E&E EMS | E&E | iCity VFM | iCity

ADVANTECH
WISE-Marketplace

WISE-PaaS
PaaS

Edge

ADVANTECH WISE-STACK Private Cloud
POWERED BY WISE-PaaS

- **Privacy**
- **Continuous Operation**

- **Compute & Data Pooling**
- **Easy Expansion**

- **Enable AIoT Solutions**
- **Cost Effective**

WISE-PaaS / Application Framework Services
- Visualizations
- Reports / Alerts / Notifications
- Asset Performance Management (InsightAPM)
- AI Framework Services (AIFS)

WISE-PaaS / EnSaaS4.0
- Multi-tenancy Management
- RBAC & Single-sign On
- Centralized Logging & Monitor
- DB Storage & IoT Hub
- Microservices Framework

openstack ❖ **kubernetes**

WISE-STACK-200
On-premises Data Platform
- Operation Management
- 2D Dashboard
- Equipment & Device Management

WISE-STACK-300
CPU-based AI with 3D Visualization
- Operation Management
- 2D/3D Dashboard
- Equipment & Device Management
- CPU-based AI Framework Service

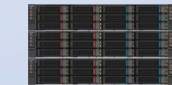### WISE-STACK-600
GPU Resource Management
- Operation Management
- 2D/3D Dashboard
- Equipment & Device Management
- CPU-based AI Framework Service
- AI Framework Service with GPU Resource Management

(3) All-in-one Nodes
SKY-7221

(3) Controller Nodes
SKY-8101
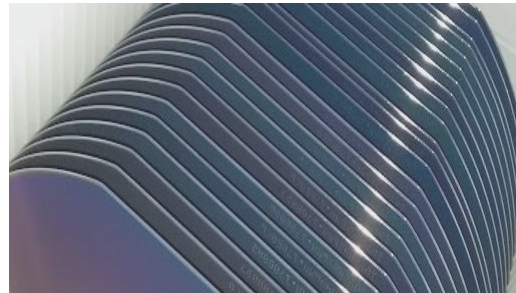
(3) HCI Nodes
SKY-7221

(1) AI Node
SKY-6400

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WISE STACK Real Sales Cases

Steel Industry: APM + AIFS + Dashboard

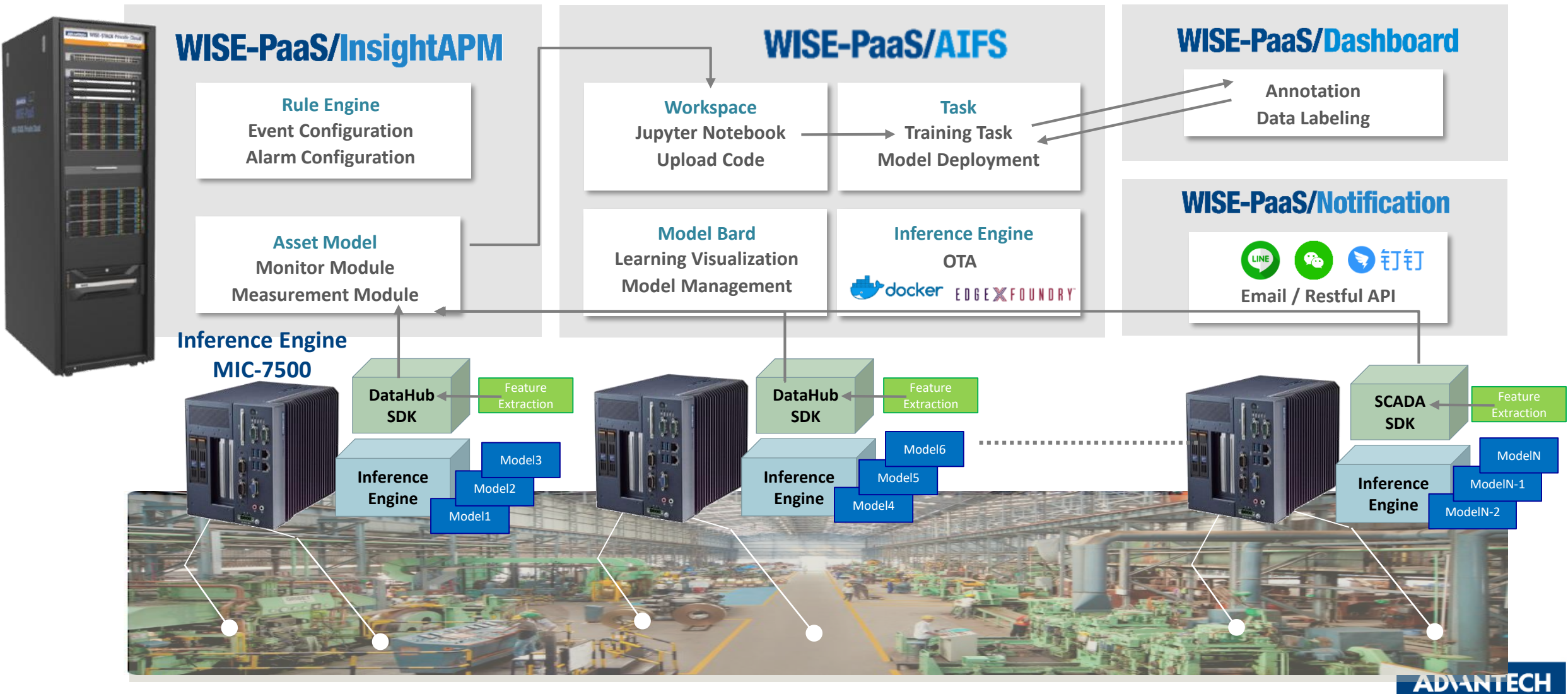Semi-Conductor Industry: AIFS + Data Platform

Medical Center: Dashboard + Data Platform

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Steel Industry: Equipment Anomaly Prediction
Step 1. Edge Data Collection and Model Training for multiple points

WISE-STACK

WISE-PaaS/InsightAPM

Rule Engine
Event Configuration
Alarm Configuration

Asset Model
Monitor Module
Measurement Module

WISE-PaaS/AIFS

Workspace
Jupyter Notebook
Upload Code

Task
Training Task
Model Deployment

Model Bard
Learning Visualization
Model Management

Inference Engine
OTA

docker EDGE X FOUNDRY

WISE-PaaS/Dashboard

Annotation
Data Labeling

WISE-PaaS/Notification

LINE WeChat 钉钉

Email / Restful API

**Inference Engine
MIC-7500**

DataHub SDK ← Feature Extraction

Inference Engine
Model3
Model2
Model1

DataHub SDK ← Feature Extraction

Inference Engine
Model6
Model5
Model4

SCADA SDK ← Feature Extraction

Inference Engine
ModelN
ModelN-1
ModelN-2

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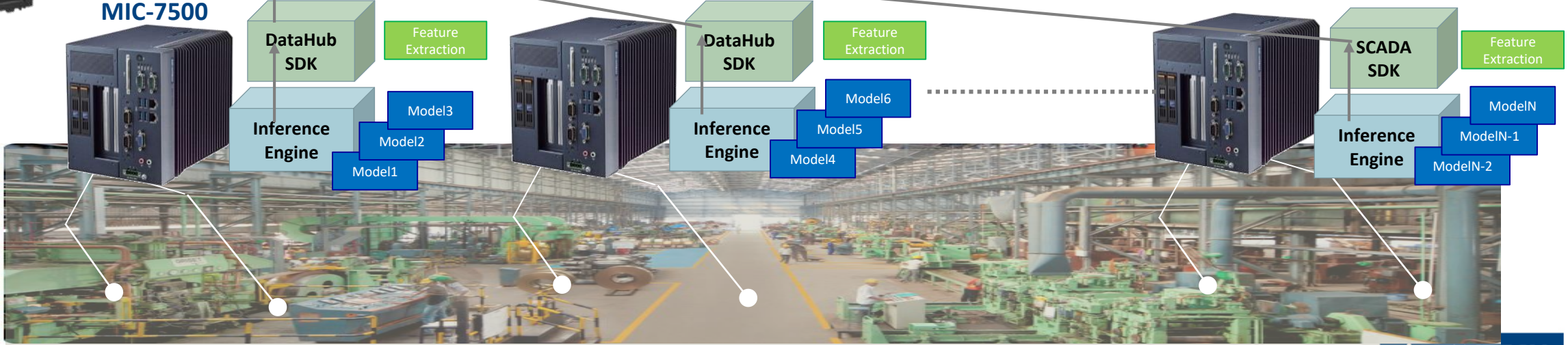
Semi-Conductor AI Development Environment

Data

Data

Data

Data

Data

Data Platform

Operation Technology (OT) Data Platform

AI Training Data Platform

IT Data Platform

AIFS

AI Model Life Cycle Management Platform

Edge Computing Management Platform

AI Modeling Service

AI development

Predictive Quality Assurance

Prognostic and Health Management

More Domain focus AI
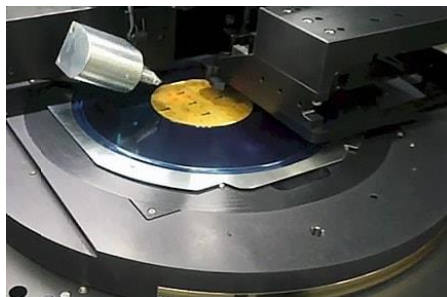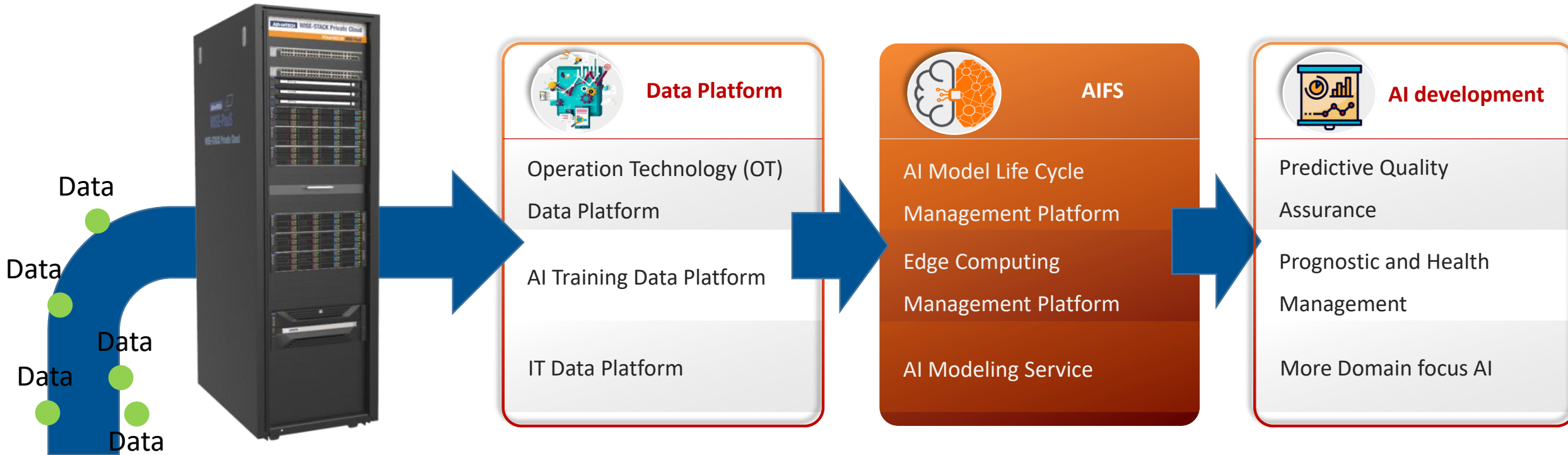
Machine and Equipment on Production line

Medical Center Chronic Disease / Diabetes Care

Portable Device

- Nursing
- Bedside Infotainment

WISE-PaaS/AndroidDM

App and infotainment system to record treatment activities and status of patients during hospital stay

WISE-PaaS/InsightAPM

Hospital IT System

- ETL Server
- HIS
- PACS
- NIS
- RIS / LIS

All hospital data pertaining to patients with diabetes

WISE-PaaS/AIFS
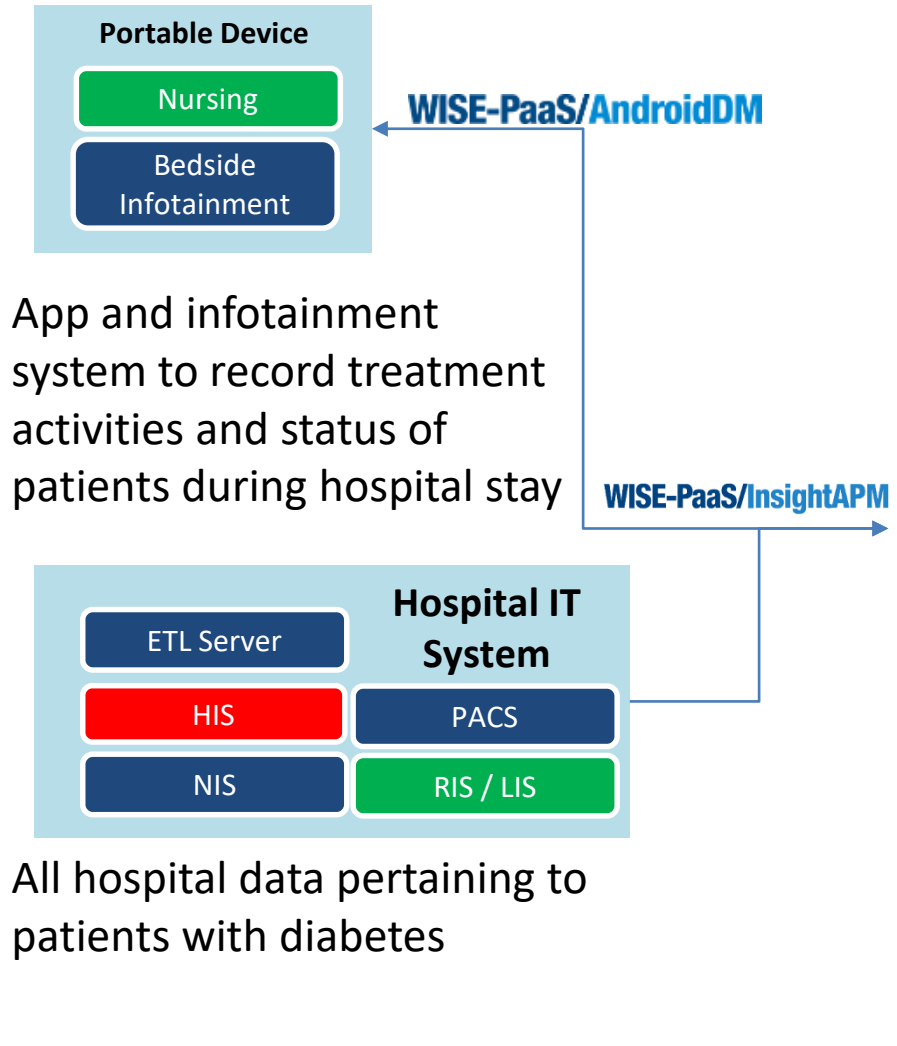
Command Center to track and improve treatment quality. **WISE-PaaS/Dashboard WISE-PaaS/SaaS Composer**

App to continuously deliver care and consultation. Supply patient with community and goods through online store.

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WISE-STACK - Hardware Specification

	WISE-STACK	Description	Qty/unit	WISE-STACK 200	WISE-STACK 300	WISE-STACK 600
HCI Server	HCI server (Chassis w/Slide rail)	SKY-7221 w/ 4x 10G SFP+	1	3	3	6
	CPU	Intel Xeon Silver 10C 4210 (13.75M Cache, 2.20 GHz)	2	3	3	6
	Memory	32G DDR4 2933MHz	8	3	3	6
	SSD	2.5" 480GB SATA3 SSD	4	3	3	6
	HDD	Enterprise 3.5" 4TB 7KRPM HDD	8	3	3	6
Controller Server	Controller node server (Chassis w/Slide rail)	SKY-8101w/ 2x 10GbE SFP+	1		3	3
	CPU	Intel Xeon Silver 10C 4210 (13.75M Cache, 2.20 GHz)	1		3	3
	Memory	32G DDR4 2933 288PIN 2GX4 REG 1.2V MICRON	2		3	3
	SSD	2.5" 480GB SATA3 SSD	4		3	3
GPU Server	AI server (Chassis w/Slide rail)	SKY-6400 w/ 2x 10GbE SFP+	1			1
	CPU	XEON 2.1G 16.5M 3647P 12C 4116 76°C - Silver	2			1
	Memory	16G DDR4 2666 288PIN 1GX8 REG 1.2V SAM	12			1
	SSD	128GB 2.5" SATA3 SSD	2			1
	HDD	Enterprise 3.5" 2TB 7KRPM SAS HDD	2			1
	GPU	Nvidia RTX 2080Ti GPU	4			1
Switch	10G Switch	with 12 RJ45 and 12 fiber ports.	2		24 + 24 (HA)	48 + 48 (HA)

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WISE-STACK 200 标准软件服务

Service	Detail	Service Plan	Default Configuration	Instance
Platform Service	Master Kubernetes Cluster (for platform management)	3 x master nodes, 5 x worker nodes	4 vCPU, 16GB RAM per worker Node	Instance x 1
	Slave Kubernetes Cluster (for I.Apps running)	3 x master nodes, 5 x worker nodes	4 vCPU, 16GB RAM per worker Node	Instance x 1
	Single Sign-On	Support Single Tenant Subscription		Instance x 1
	EnSaaS Management Portal (EMP)	Support Single Slave Kubernetes Cluster		Instance x 1
	EnSaaS Real-time Monitor (ERM)	Advanced		Instance x 1
Data Service	PostgreSQL (With Service Manager)	2 replicas	4 vCPU, 16GB RAM, 256GB Disk	Instance x 1
	MongoDB (With Service Manager)	3 replicas	4 vCPU, 16GB RAM, 256GB Disk	Instance x 1
	InfluxDB (With Service Manager)	Single Node	4 vCPU, 16GB RAM, 256GB Disk	Instance x 1
	Redis (With Service Manager)	Containerized	0.1 vCPU, 128MB, 4GB Disk	Instance x 1
	RabbitMQ (With Service Manager)	3 nodes	2 vCPU, 8GB RAM, 32GB Disk	Instance x 1
	Blobstore (With Service Broker)	Compatible with AWS S3		Instance x 1
Development Kit	Dashboard	Professional		Instance x 1
	SaaS Composer	Professional		Instance x 1
	DataHub	Professional		Instance x 1
	Notification	Standard		Instance x 1
EnSaaS Ticket System	Standard maintenance SLA - 1 year 5x9 service	5X9 ticket support (working hours), respond to service requests within 8 hours; Remote inspection service not more than four times a year		Instance x 1

WISE-STACK 300 标准软件服务

Service	Detail	Service Plan	Default Configuration	Instance
Platform Service	Master Kubernetes Cluster (for platform management)	3 x master nodes, 5 x worker nodes	4 vCPU, 16GB RAM per worker Node	Instance x 1
	Slave Kubernetes Cluster (for I.Apps running)	3 x master nodes, 5 x worker nodes	4 vCPU, 16GB RAM per worker Node	Instance x 2
	Single Sign-On	Support Multi Tenant Subscription		Instance x 1
	EnSaaS Management Portal (EMP)	Support Multi Slave Kubernetes Cluster		Instance x 1
	EnSaaS Real-time Monitor (ERM)	Advanced		Instance x 1
Data Service	PostgreSQL (With Service Manager)	2 replicas	4 vCPU, 16GB RAM, 256GB Disk	Instance x 2
	MongoDB (With Service Manager)	3 replicas	4 vCPU, 16GB RAM, 256GB Disk	Instance x 2
	InfluxDB (With Service Manager)	Single Node	4 vCPU, 16GB RAM, 256GB Disk	Instance x 2
	Redis (With Service Manager)	Containerized	0.1 vCPU, 128MB, 4GB Disk	Instance x 2
	RabbitMQ (With Service Manager)	3 nodes	2 vCPU, 8GB RAM, 32GB Disk	Instance x 1
	Blobstore (With Service Broker)	Compatible with AWS S3		Instance x 1
Development Kit	Dashboard	Professional		Instance x 2
	DataHub	Professional		Instance x 2
	Notification	Standard		Instance x 2
	SaaS Composer	Professional		Instance x 2
EnSaaS Ticket System	Standard maintenance SLA - 1 year 5x9 service	5X9 ticket support (working hours), respond to service requests within 8 hours; Remote inspection service not more than four times a year		Instance x 1

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WISE-STACK 600 标准软件服务

Service	Detail	Service Plan	Default Configuration	Instance
Platform Service	Master Kubernetes Cluster (for platform management)	3 x master nodes, 5 x worker nodes	4 vCPU, 16GB RAM per worker Node	Instance x 1
	Slave Kubernetes Cluster (for I.Apps running)	3 x master nodes, 5 x worker nodes	4 vCPU, 16GB RAM per worker Node	Instance x 2
	Single Sign-On	Support Multi Tenant Subscription		Instance x 1
	EnSaaS Management Portal (EMP)	Support Multi Slave Kubernetes Cluster		Instance x 1
	EnSaaS Real-time Monitor (ERM)	Advanced		Instance x 1
	Business Operation Service	**Include Catalog, Order, Billing, Enterprise Account Management supporting Resell mechanism**		Instance x 1
Data Service	PostgreSQL (With Service Manager)	2 replicas	4 vCPU, 16GB RAM, 256GB Disk	Instance x 2
	MongoDB (With Service Manager)	3 replicas	4 vCPU, 16GB RAM, 256GB Disk	Instance x 2
	InfluxDB (With Service Manager)	Single Node	4 vCPU, 16GB RAM, 256GB Disk	Instance x 2
	Redis (With Service Manager)	Containerized	0.1 vCPU, 128MB, 4GB Disk	Instance x 2
	RabbitMQ (With Service Manager)	3 nodes	2 vCPU, 8GB RAM, 32GB Disk	Instance x 1
	Blobstore (With Service Broker)	Compatible with AWS S3		Instance x 1
Development Kit	Dashboard	Professional		Instance x 2
	DataHub	Professional		Instance x 2
	Notification	Standard		Instance x 2
	SaaS Composer	Professional		Instance x 2
EnSaaS Ticket System	Standard maintenance SLA - 1 year 5x9 service	5X9 ticket support (working hours), respond to service requests within 8 hours; Remote inspection service not more than four times a year		Instance x 1

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Co-Creating the Future
of the IoT World