

# Smart Manufacturing Sustainable Manufacturing

Digital Solutions Provider





# ruhlamat

## Originated in Germany, Continued Global Footprints

ruhlamat is a German company with almost 60 years of manufacturing experience. It has locations in Germany, China, India, Mexico, Czechia, Lithuania and Malaysia.

## Specialized in Smart Manufacturing, Dedicated to Multiple Industries

ruhlamat Automation Technologies (Suzhou) Co., Ltd. was founded in 1998 as the regional headquarters of the ruhlamat Group in the Asia-Pacific area (Abbreviation: ruhlamat Asia). Positioned as a global One-stop Smart Manufacturing Solution provider, with approximately 1000 employees in China. ruhlamat Asia has a business covering combustion engine vehicle auto parts, NEV auto parts, healthcare, 3C, household appliances, semiconductor, elevator and other industrial products.

## Management Innovation & Change Management Boost "GDPDPI" Strategy

To satisfy market demands, and follow the industry trend, ruhlamat Asia promotes and implements the organizational and business changes guided by the "GDPDPI" strategy (Globalization, Diversification, Productization, Digitalization, Platformization, Innovation), and has formulated the "Business Unit" O-chart, established the Standardization Management Team. With a positive attitude and a desire to seek innovative products and technical solutions in the intelligent and digital fields, ruhlamat Asia is committed to supporting the industry development, transformation and upgrades.

## Suzhou ruhlamat Smart Technologies Co.,LTD.(ruhlaSmart)

ruhlamat is laying out its intelligent & digitalization business to assist manufacturing corporations in their digital transformation journey. ruhlaSmart was founded in 2018 with a commitment to enabling digitalization, intelligent transformation, and low-carbon transition for manufacturing corporations. We provide one-stop digital solutions.

ruhlaSmart has built a team of experts in software technology, automation, artificial intelligence (AI), big data, lean production, project management, and other related fields. We have leveraged over 20 years of industry knowledge to offer our clients digitally driven products in the realm of "Smart Manufacturing + Sustainable Manufacturing". Our design approach incorporates platformization and modularization, enabling us to provide comprehensive digital solutions.

## Smart Manufacturing

Reduce cost & Increase efficiency



### Smart Machine

#### - Machine Lifecycle

- MMS (Machine Management System)
- Predictive Maintenance



### Smart Line

#### - Production Line

- LMS (Line Management System)
- PPM (Process Performance Management)
- L-WMS (Line-Warehouse Management System)
- PCS (Production Control System)



### Smart Factory

#### - Manufacturing Management

- MES System for Workshop Level
- TPM (Total Productive Maintenance)
- Andon



### AI Energy Saving

- Energy Data Acquisition and Monitoring
- Cognitive AI Algorithms
- Energy-saving Optimization Strategies
- Energy-efficient Controlling

Energy saving & Carbon reduction

## Sustainable Manufacturing



# Smart Manufacturing

## Smart Machine

The health management system that covers the entire lifecycle of the machine. By leveraging health monitoring, maintenance operation, predictive maintenance, and KPI management, it enables continuous improvement of machine Overall Equipment Effectiveness (OEE).

### Product Portfolio



#### Machine Health Management

Key component status monitoring and health assessment based on algorithm



#### Event Track

Complete video and parameter record for reviewing at alarm time



#### Maintenance Management

Maintenance task, tearing and spare parts tracking, knowledge base with expert experience



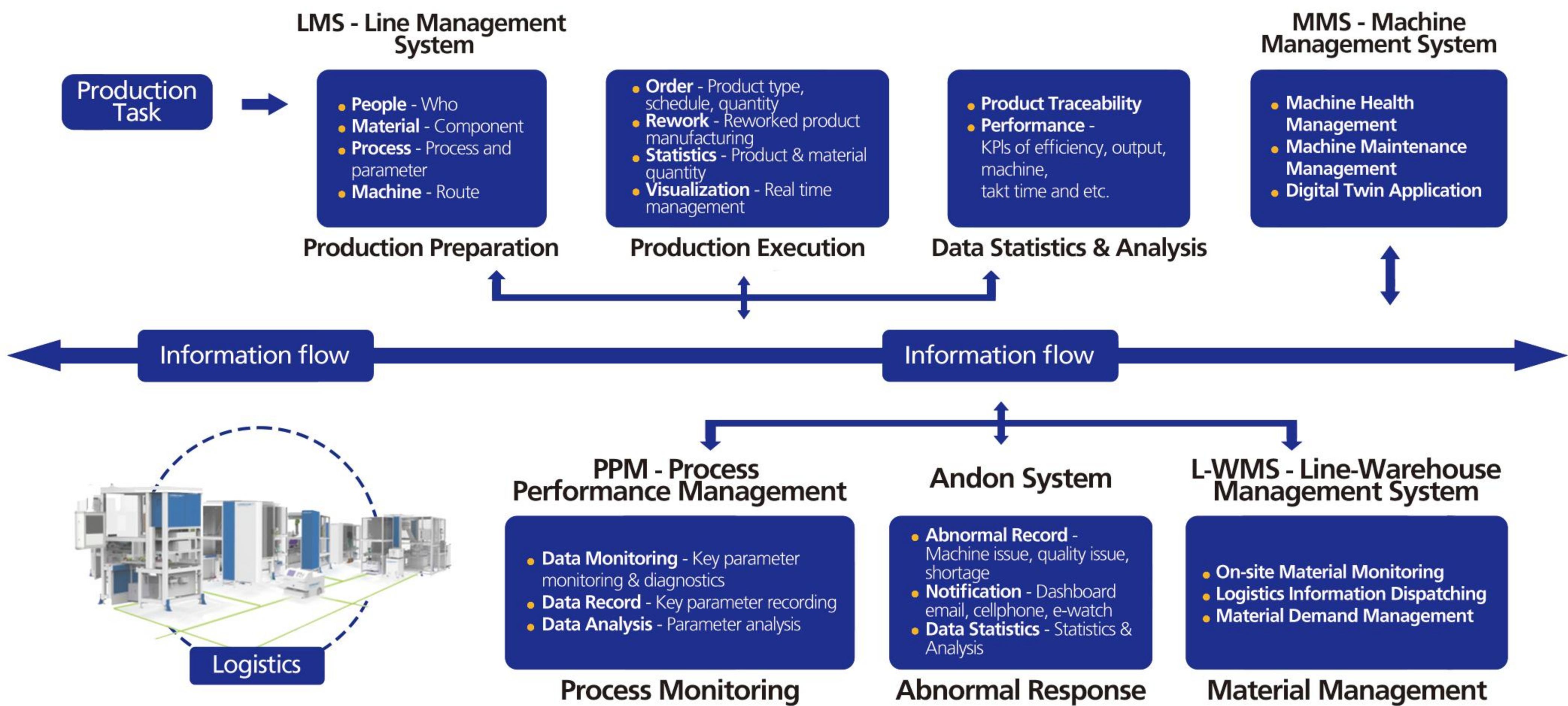
#### Configurable Dashboard and Report

Flexible and user-friendly data visualization and analytics tools

## Smart Line

The central management of production line, focusing on solving production management challenges. By leveraging end-to-end data connectivity, production execution management, process monitoring, and proactive response to anomalies, we enhance the OEE (Overall Equipment Effectiveness) of production line equipment, while reducing Total Manufacturing Cost (TMC).

### Product Portfolio



## Smart Factory

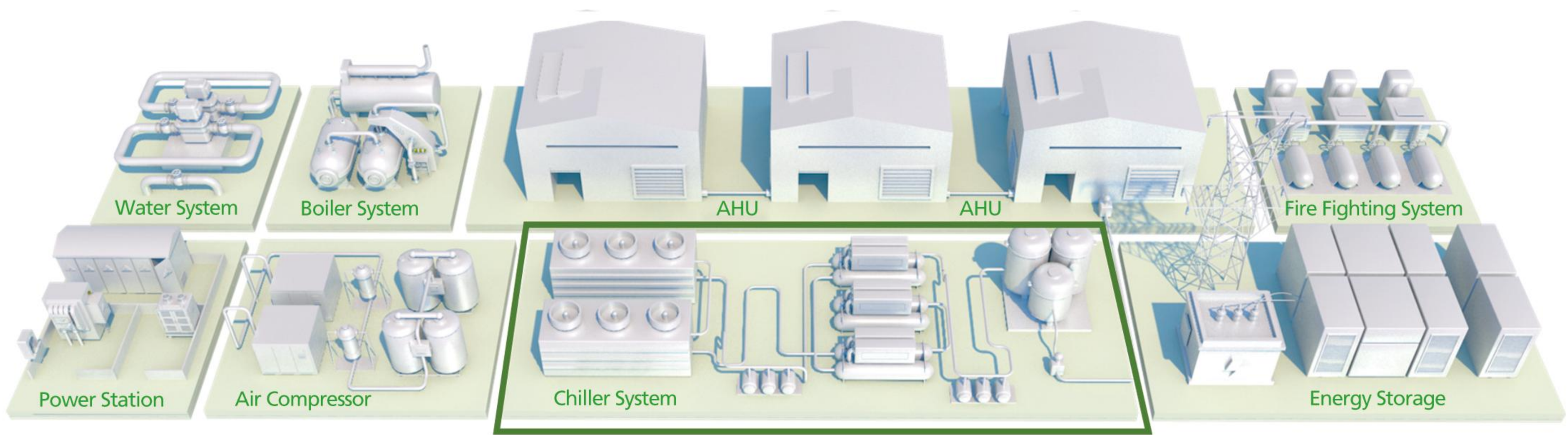
The operations management center for Factory Manufacturing Processes. Enabling data connectivity and collaborative management. Achieving data connectivity among users, machines, sensors, and others by developing proprietary IoT modules compatible with widely used PLCs (SIEMENS, OMRON, AB, BECKHOFF, etc.) and communication protocols (OPC-UA/ MQTT, etc.).

### Product Portfolio





# Sustainable Manufacturing

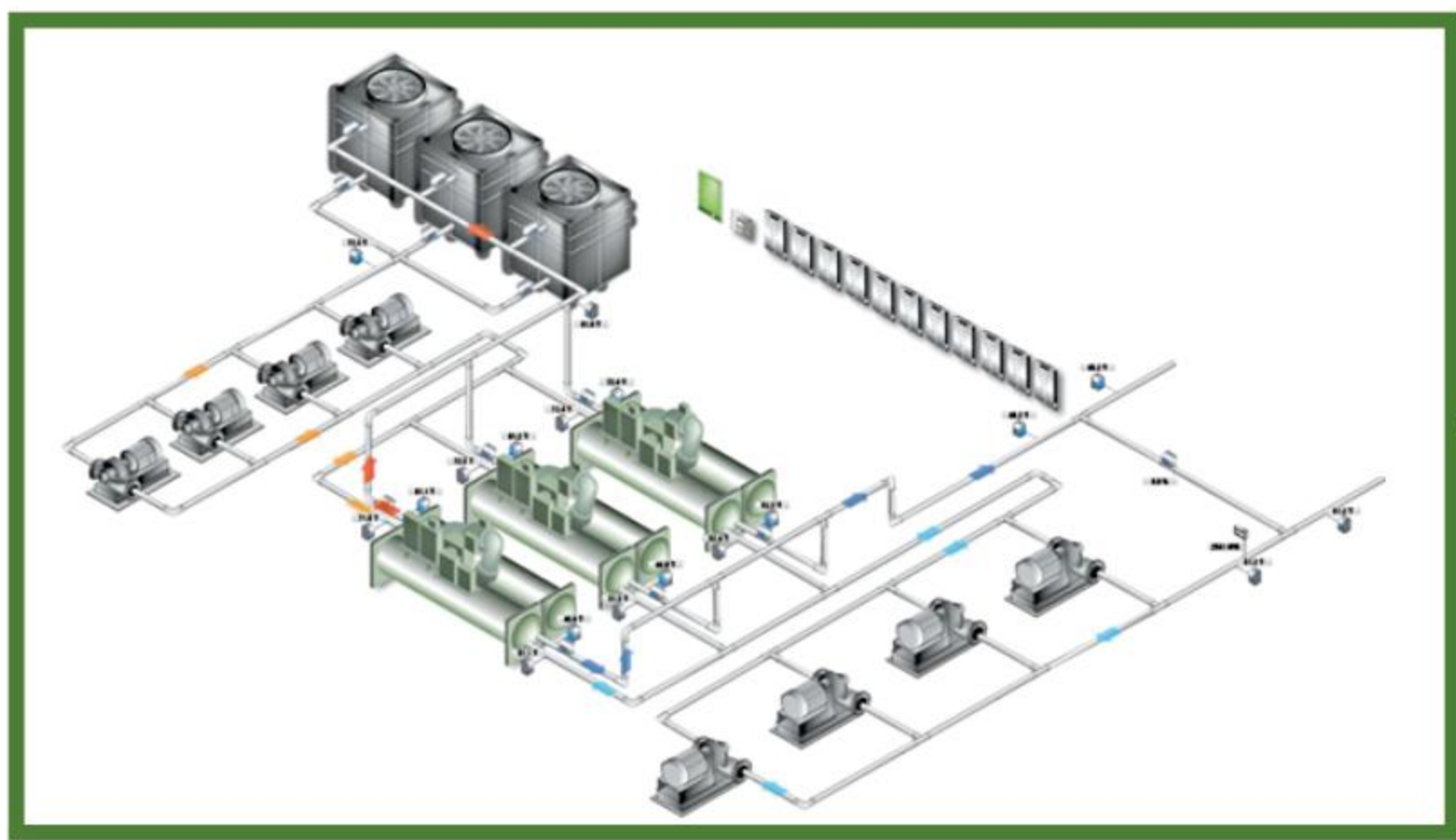


## AI Energy Saving

ruhlaSmart digital sustainable manufacturing solutions are based on mechanism and cognitive AI to help enterprises to save energy and reduce carbon.

In chiller station for example, energy-saving rate can reach more than 20%.

**Hardware:** According to the existing equipment, necessary hardware devices such as frequency conversion device and BA control module need to be added.



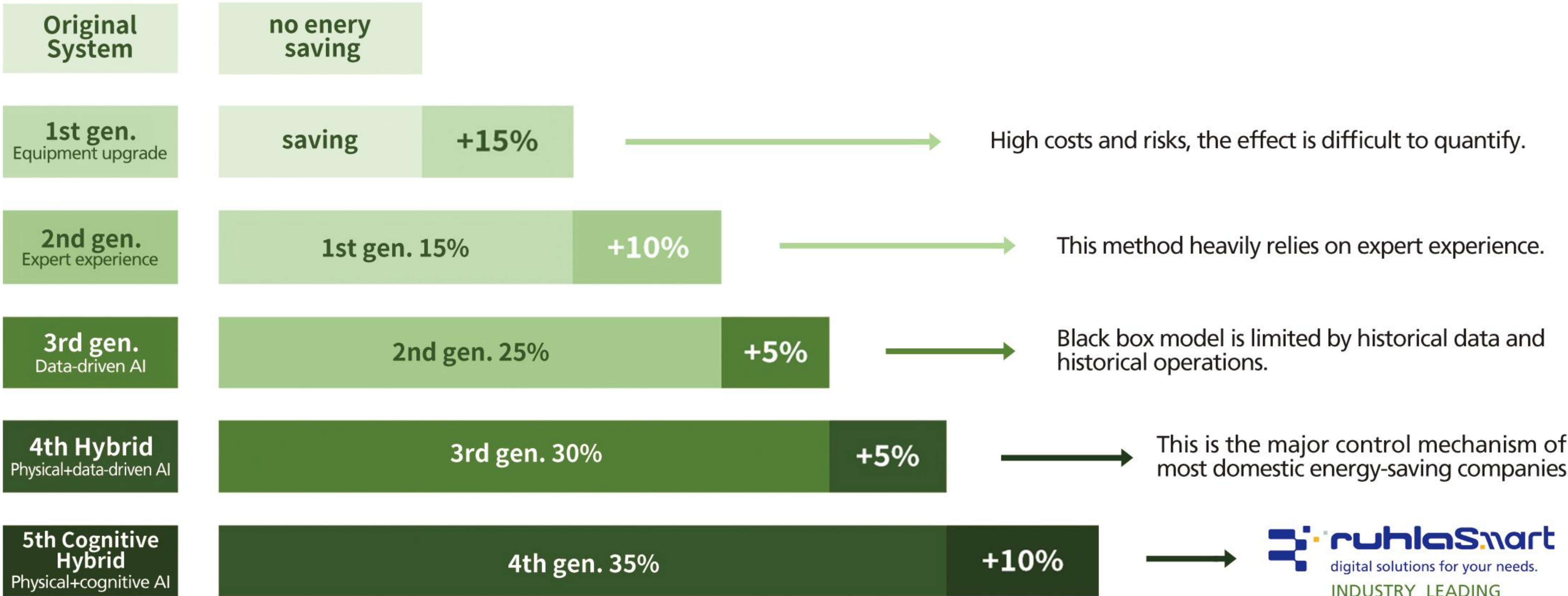
**Software:** By deploying a chiller station AI optimization control system, the annual comprehensive energy efficiency of the chiller station can reach the good operating range (EER≥5.0) and become a high-efficient system.

Hardware: Debug and optimize the mainframe, water pumps, and sensors

Software: Upgrade the chiller station control system

- Water Chiller**
  - Chilled Water Outlet Temperature Setting
  - Number of Operating Units
- Chilled Water Pump**
  - Number of Operating Units
  - Rotational Speed
- Cooling Water Pump**
  - Number of Operating Units
  - Rotational Speed
- Cooling Tower**
  - Fan Speed
  - Cooling Water Temperature Setting
  - Number of Operating Units
- Air Handling Unit**
  - Fan speed
  - Setting of Air and Water Valves

## Traditional vs Cognitive AI Energy Conservation





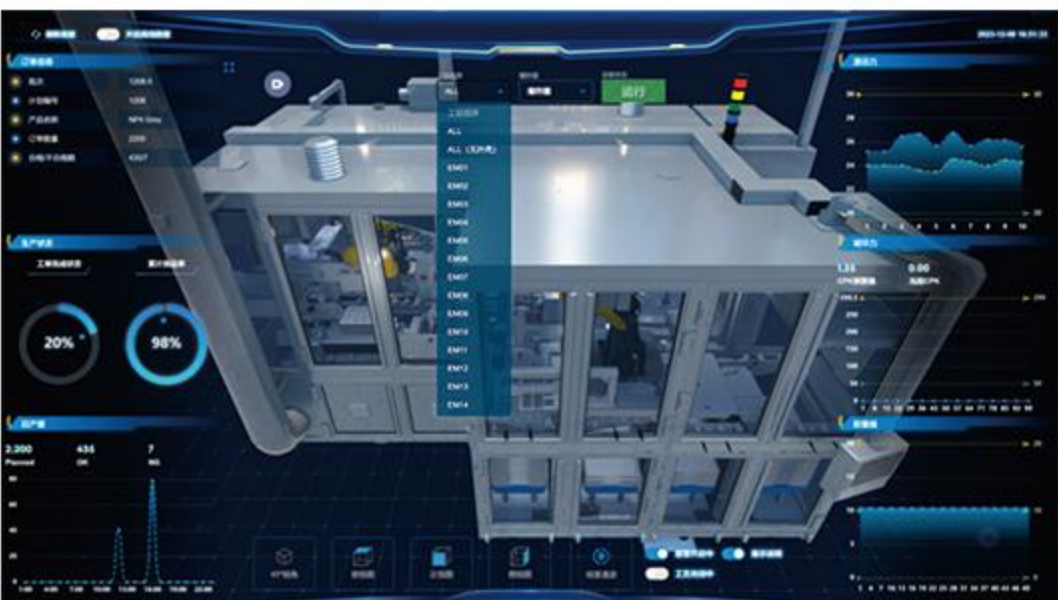
# Optional Technical Services

By providing both Smart Machine, Smart Line, Smart Factory for Smart Manufacturing, and AI Energy Saving for Sustainable Manufacturing to achieve a more efficient intelligent management solution.

## Application Scenarios

### Digital Twin

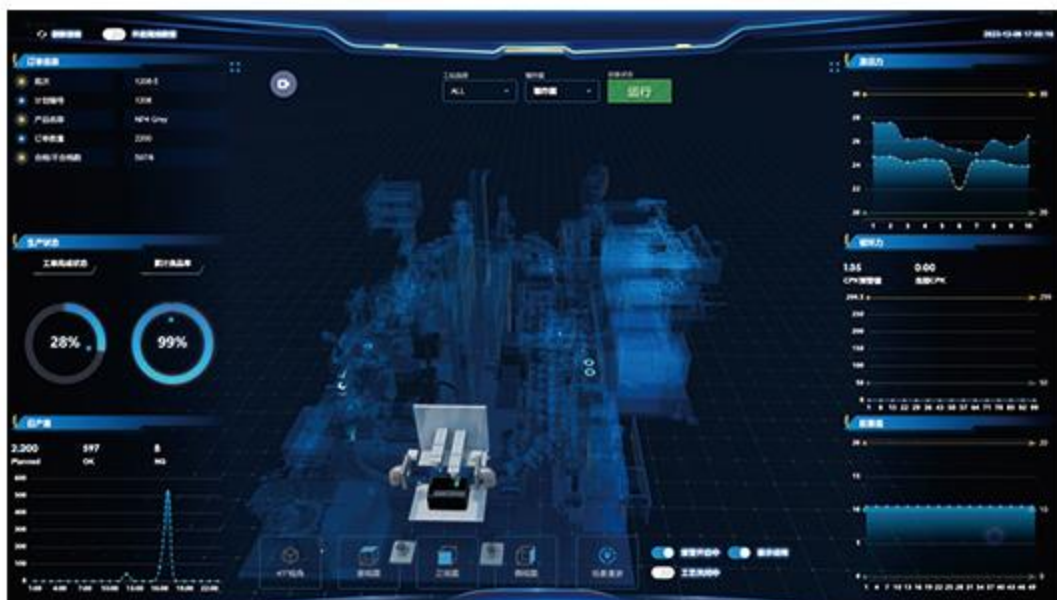
- Combining Virtual and Reality
- Immersive Interactive Experience



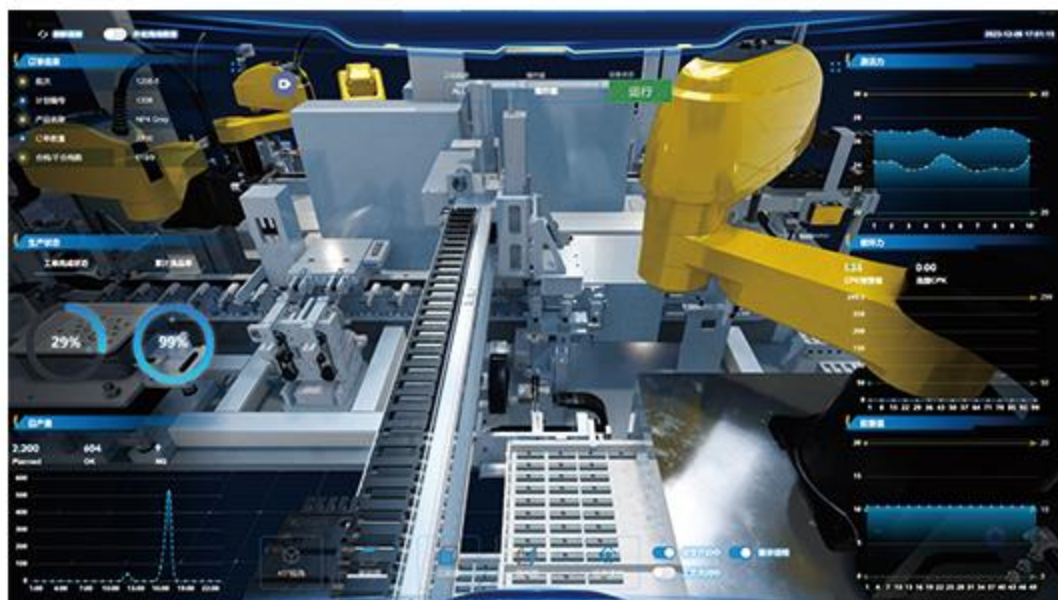
Workstation Switching



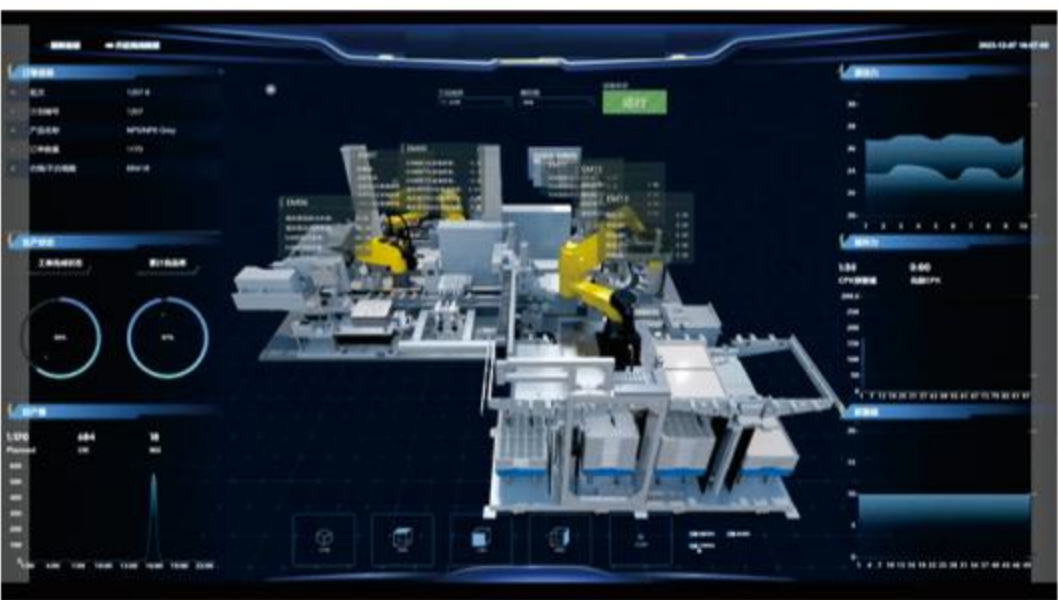
Perspective Swapping



3D Virtualization



Visualized Charts



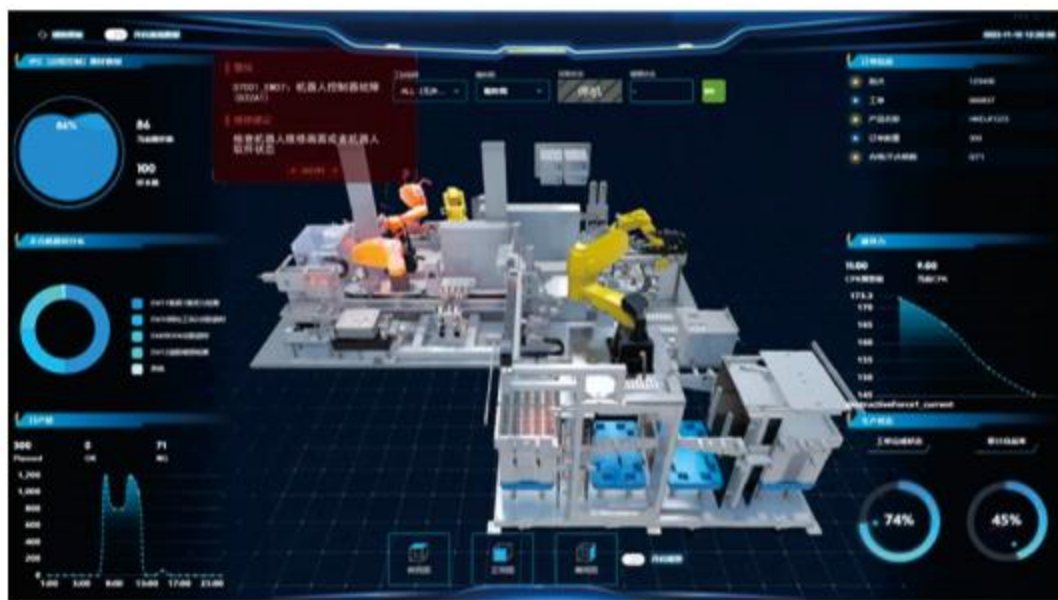
Machine Process Indices Monitoring



Workstation Roaming



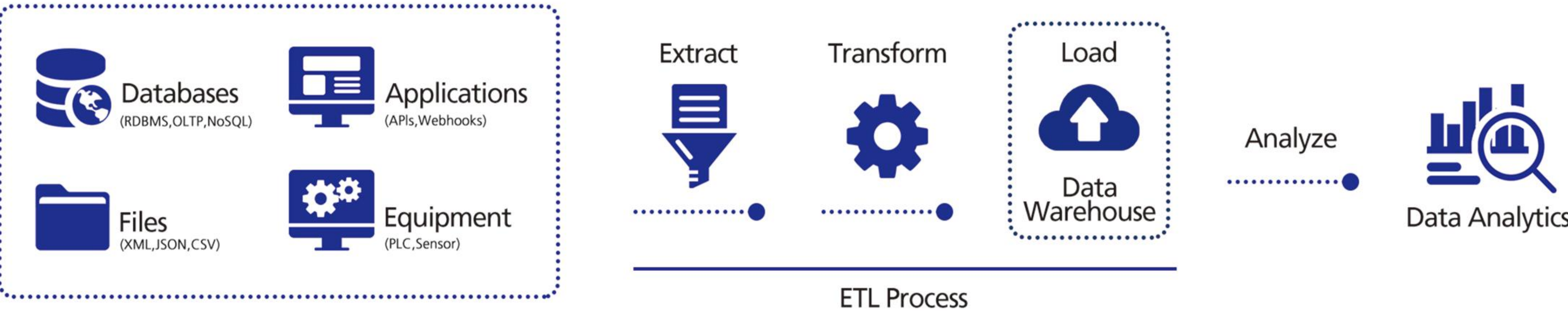
3D Explosion Display



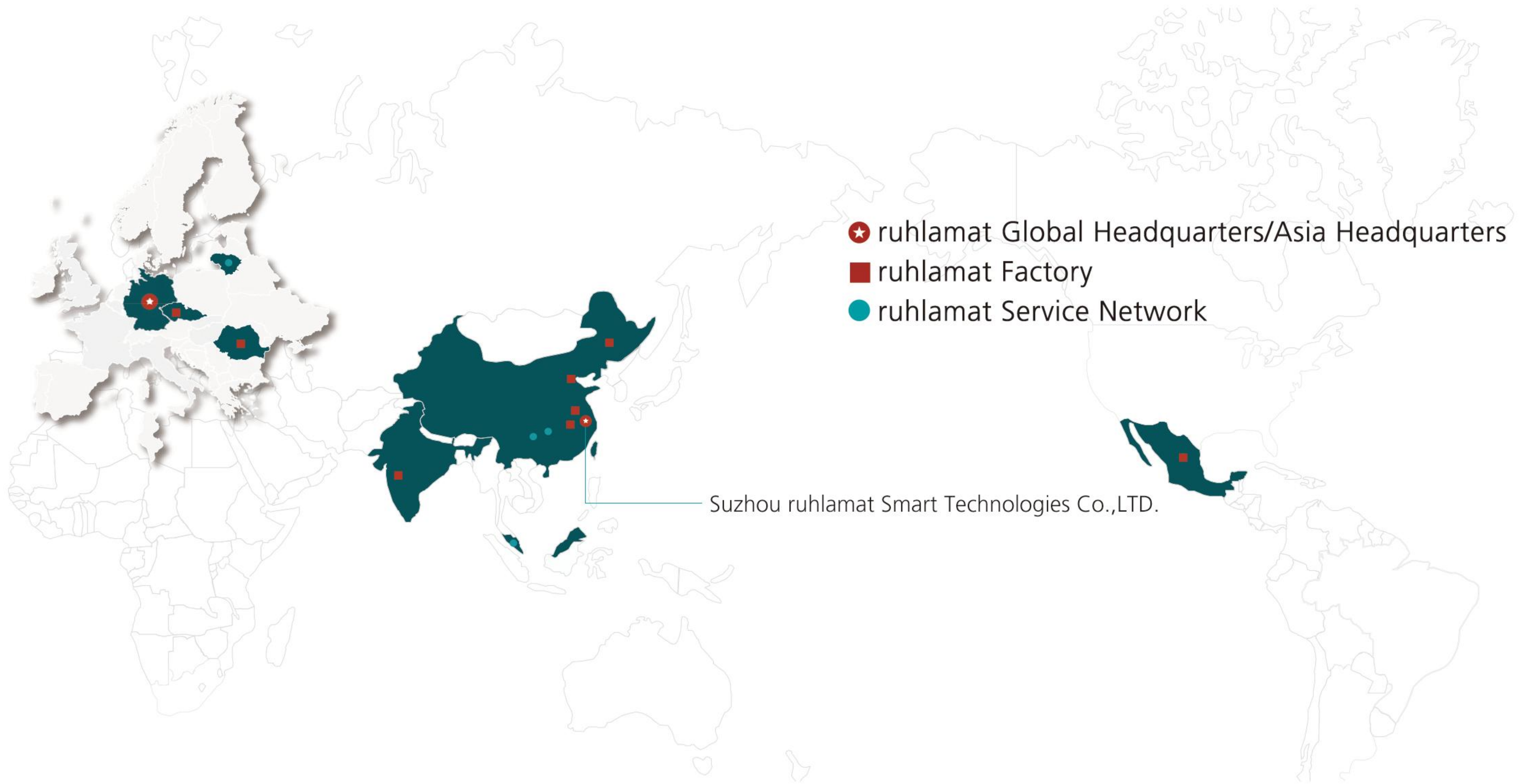
Alarm Visualization

### Data Intelligence

- Data Collection IoT, Data Processing and Data Warehouse Setup
- Data-driven & AI Application







## Customers and Partners

ruhlaSmart has business coverage in Asia, Europe, the Americas, and other regions, involving multiple industries such as automotive parts, new energy, and pharmaceutical industry. We collaborate with over 50 outstanding enterprises and have completed 200+ successful cases. Typical clients include ZF, Hella, PO, BorgWarner, Vitesco, Gentherm, Hengtong, Novo Nordisk, and Hengrui, among other industry-leading companies.

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Public Account

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