



Siemens MindSphere
built on SAP Cloud
Platform

Christian Frech
Key Account Manager

Agenda

- 1 Why IoT and Industry 4.0
- 2 What is MindSphere
- 3 How can I use MindSphere
- 4 Customer References

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1 Why IoT and Industry 4.0

2 What is MindSphere

3 How can I use MindSphere

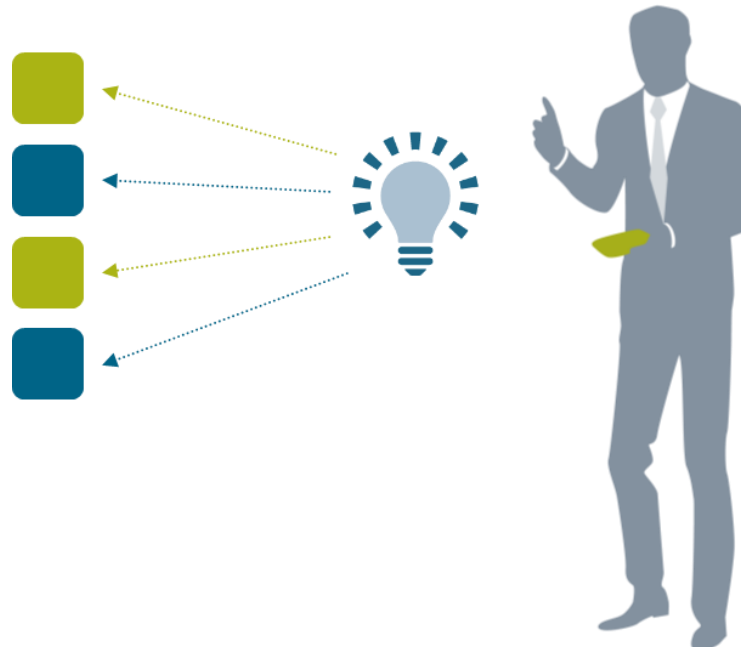
4 Customer References

Internet of things (IoT) causes a paradigm shift in industry

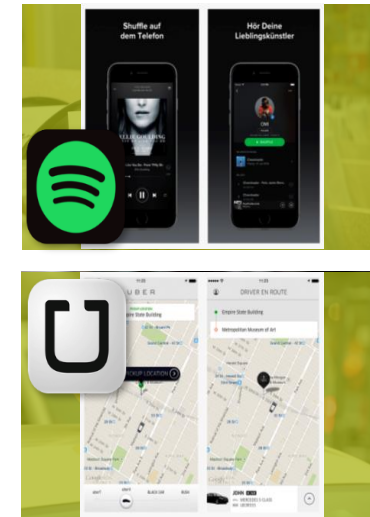
Shift from hardware to software



Users become designers



New business models become possible



From the **record store** to **streaming**

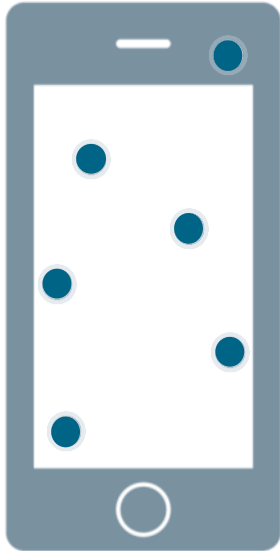
From the **taxi** to **ride sharing**

Why IoT and Industry 4.0

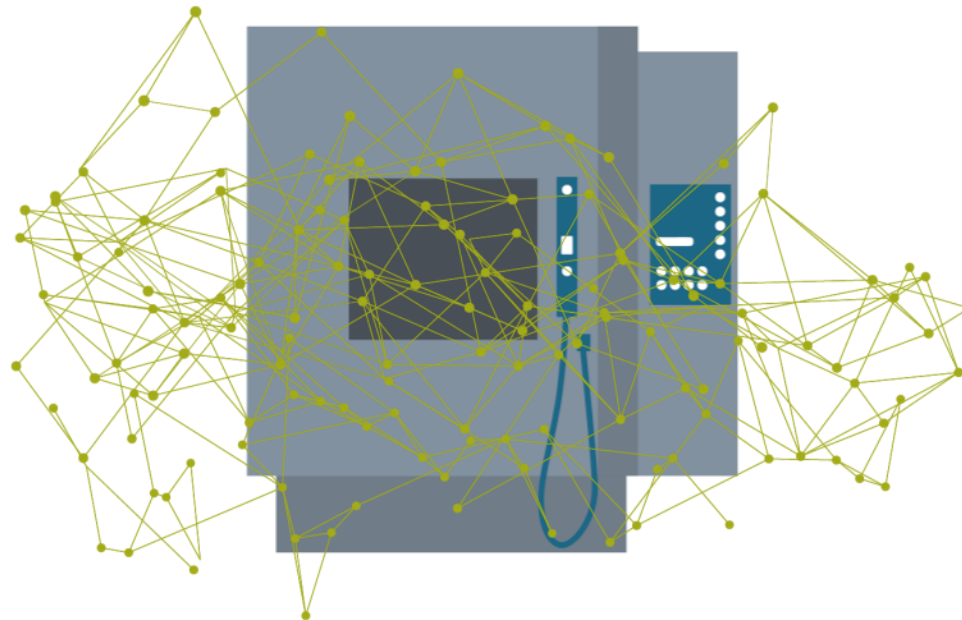
To make use of industrial data within machines,
industry expertise is key to success

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Simple consumer applications vs. complex industrial applications



~ 6 sensors

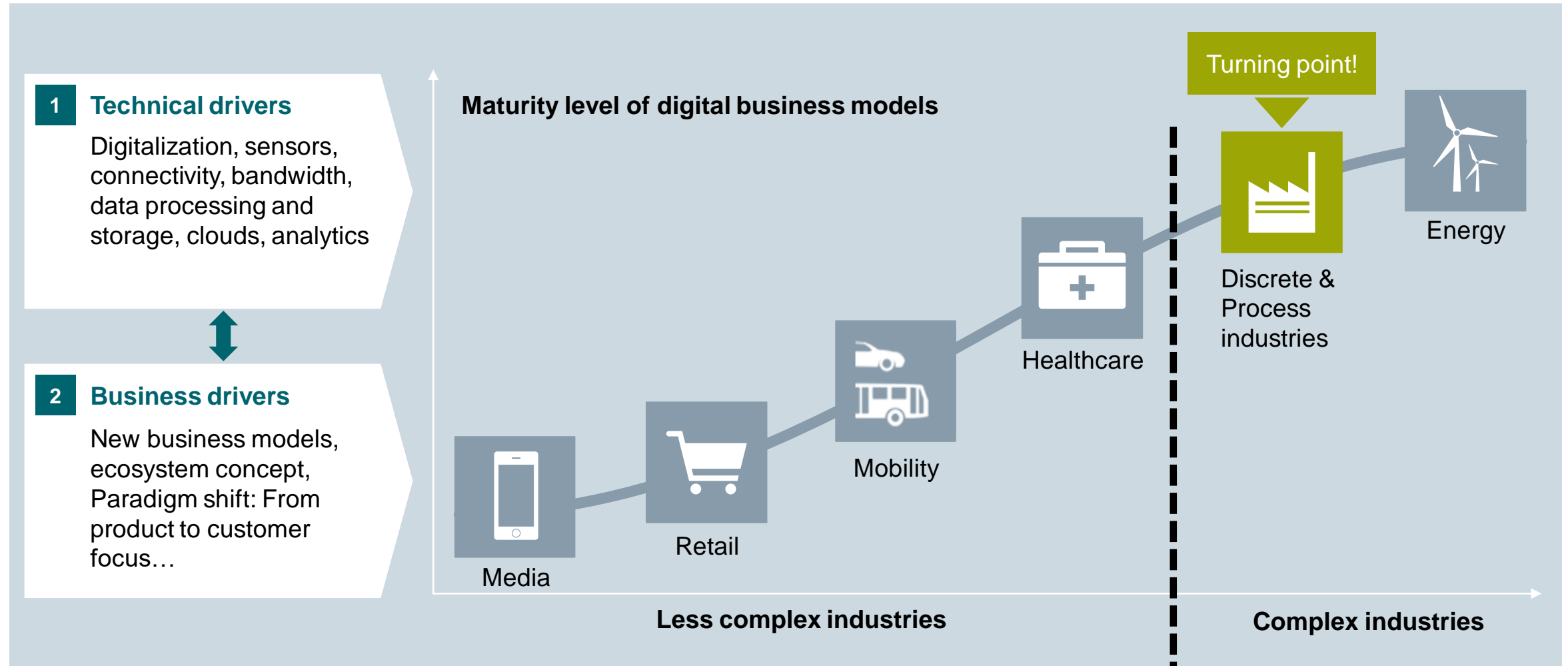


~ 2000 data points



Industry
expertise
is key to
success

Digitalization – now it is time for complex industries



Based on report „Smart Service World“/Accenture-Visualization

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MindSphere

®

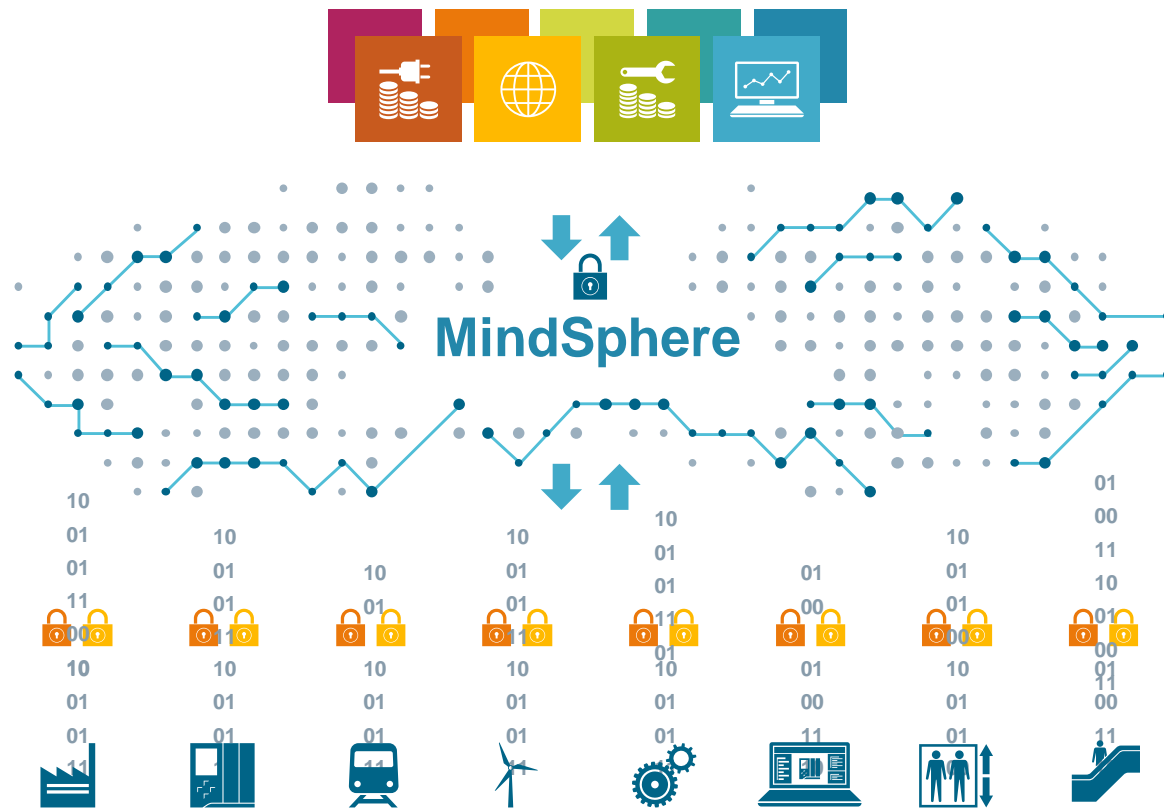
built on

SAP Cloud Platform

What is MindSphere

MindSphere – The cloud-based, open IoT operating system from Siemens based on SAP Cloud Platform

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MindApps

- Industrial App Store
- Apps from Siemens, partners or develop own apps
- Gain asset transparency & analytical insights

MindSphere

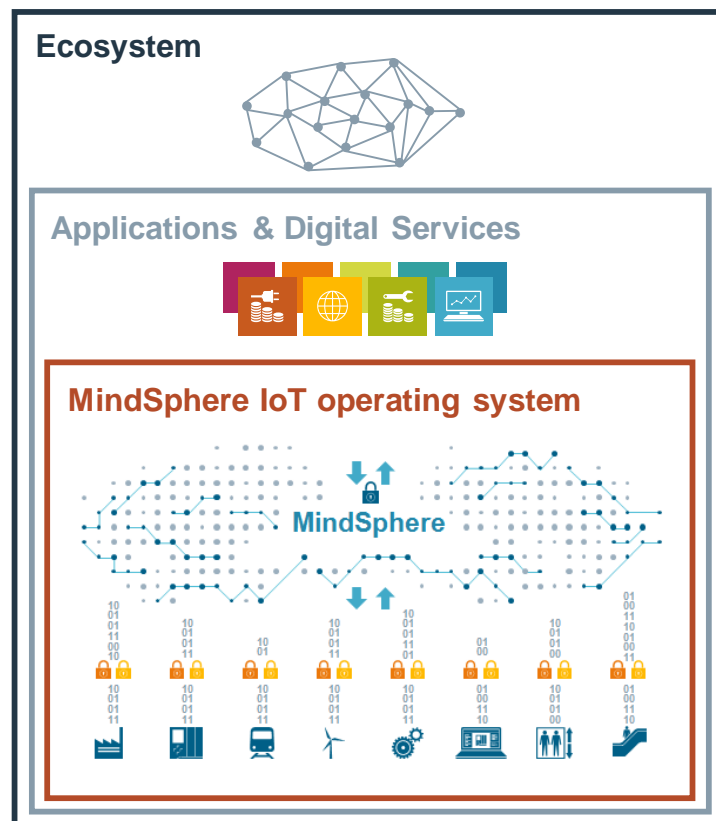
- Open interface for development of **customer specific apps**
- **Various cloud infrastructures:** offered as public, private or on-premise (planned)

MindConnect

- **Open standards** for connectivity, e.g., OPC UA
- **Plug and play connection** of Siemens and 3rd party products
- **Secure and encrypted** data communication

MindSphere offers key strengths as cloud-based, open IoT operating system

MindSphere – The cloud-based, open IoT operating system



Unique MindSphere strengths



Global Siemens **installed base of millions of devices** (30 million automation systems, 70 million contracted smart meters, 800 thousand connected products, e.g., trains)



Transfer of domain know-how into vertical-specific analytical apps



Integrated operational data with **Digital Twin to optimize simulation & engineering** (model-based analytics)



Plug & play connectivity for quick connection of assets without coding



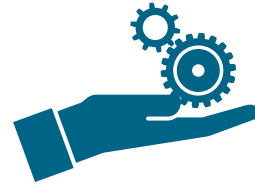
Ecosystem with **broad domain expertise and horizontal IT capabilities**

What is MindSphere

MindSphere built on SAP Cloud Platform is the strongest Industrial Platform in the Market

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Siemens **Industry Partner Network / SAP Partner Network**



We can implement customer requirements

Siemens **Industry Application and Service Know-how**



We analyze data **and** deliver service

More than 200 Beta Customers for Industrial Assets in a Production Environment

Siemens **Instrumentation and Industry Domain Know-how**



We know what **and** how to measure

Siemens **Industry Sales Network / SAP Sales Network**

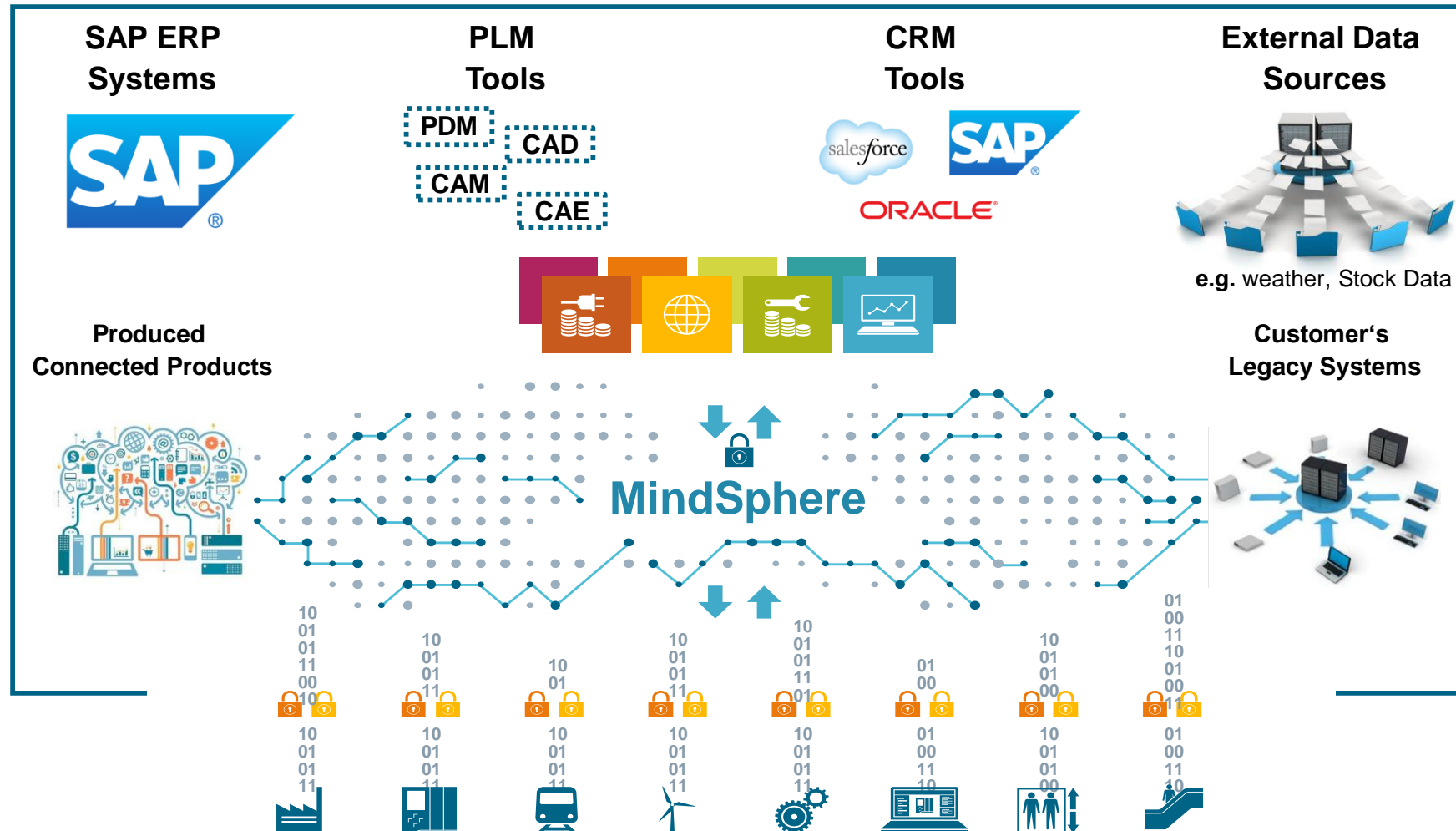


We know the OT **and** IT contacts at our customers

What is MindSphere

Added Value throughout the possibilities of combining operational and business Data

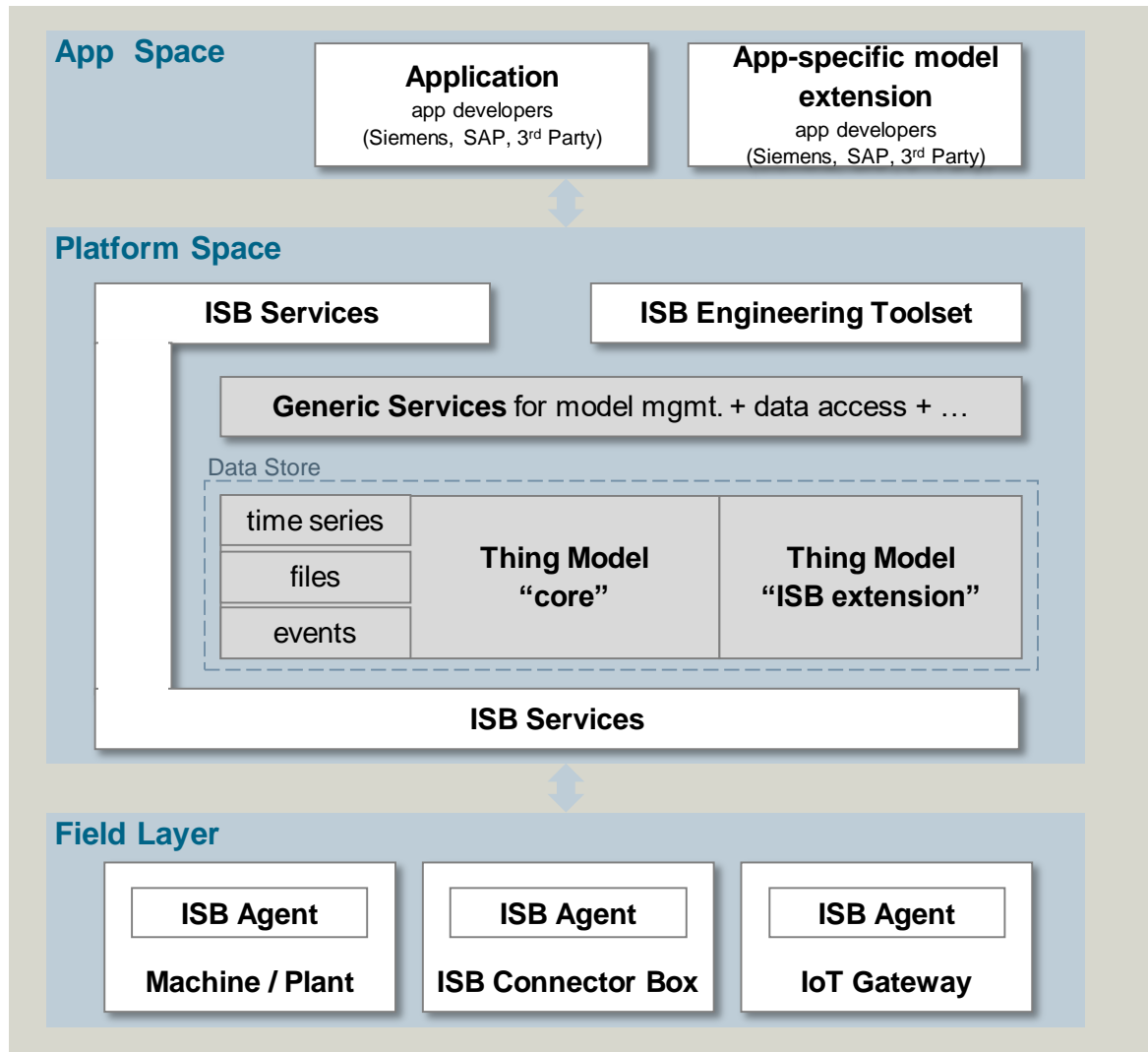
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What is MindSphere

MindSphere is based on ISB and SAP Cloud Platform on Cloud Foundry and Open Stack, ensuring IaaS Provider Independence

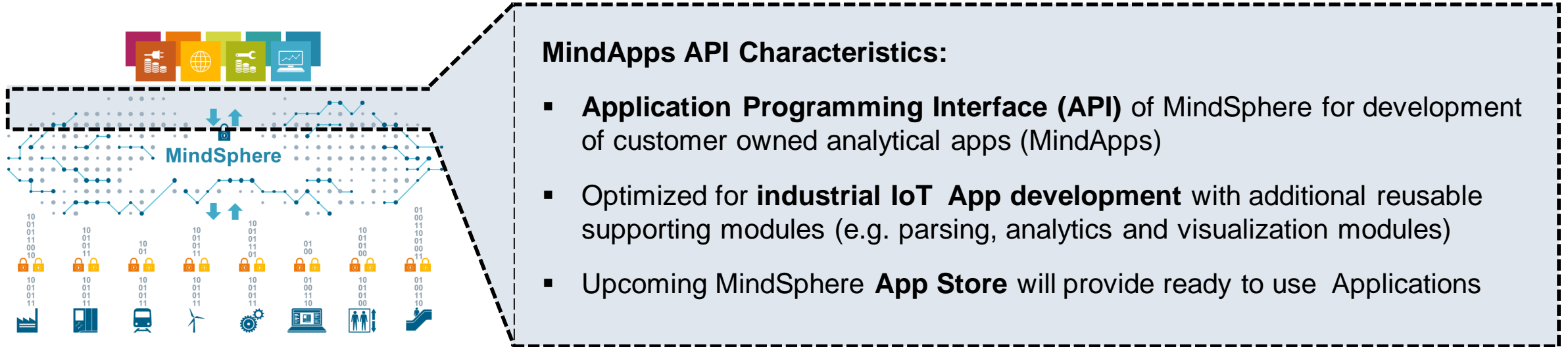
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Siemens and SAP combine leading-edge technologies:

- **Big Data platform supported by SAP**
- **SAP Cloud Platform:** incl. Cloud Foundry, Redis, RabbitMQ, PostgreSQL, MongoDB, Platform and Multi-tenancy
- **SAP IoT Application Enablement**
- **SAP SDKs (HCP/ UI5+)**
- **SAP API Business Hub**
- **SAP/ Siemens/ 3rd Party Applications on SAP Cloud Platform**
- **SAP/ Siemens Backbone Integration**
- **SAP service and support**

MindSphere APIs – scalable application and connectivity development



1 Development tools for standard Integrated Development Environments (IDEs) Eclipse. Additional **modules supporting** IoT use cases (e.g., parsing , analytics and visualization modules).

2 Key MindApp API Features

MindSphere App Store provides numerous ready to use Applications (MindApps). For App developers the App Store offers a **monetization and promotion channel** to industrial customers.

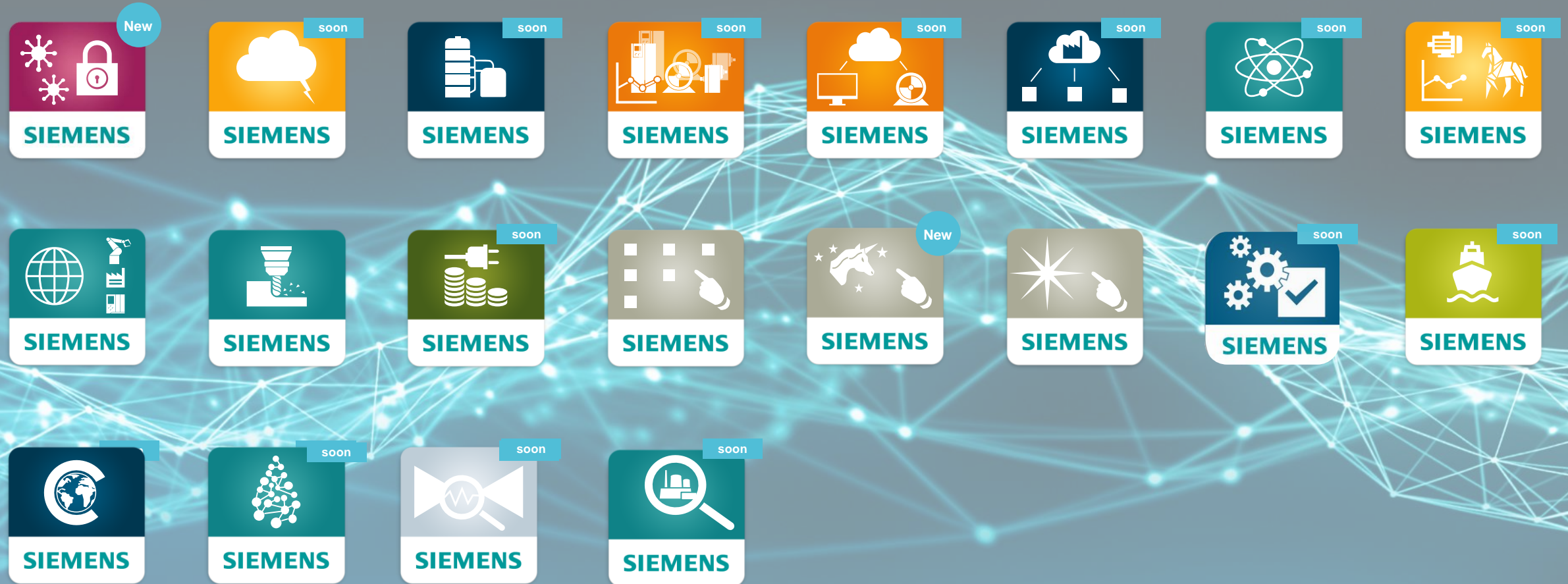
3 Developer community supported via Developer Portal, Developer Conference, dedicated consulting, free demo apps, and much more.

What is MindSphere

MindApps (Status at the Hannover Fair 2017)*

Currently being developed (application programming beta-phase)

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To get more details about the MindApps under development, please refer to the attached document:

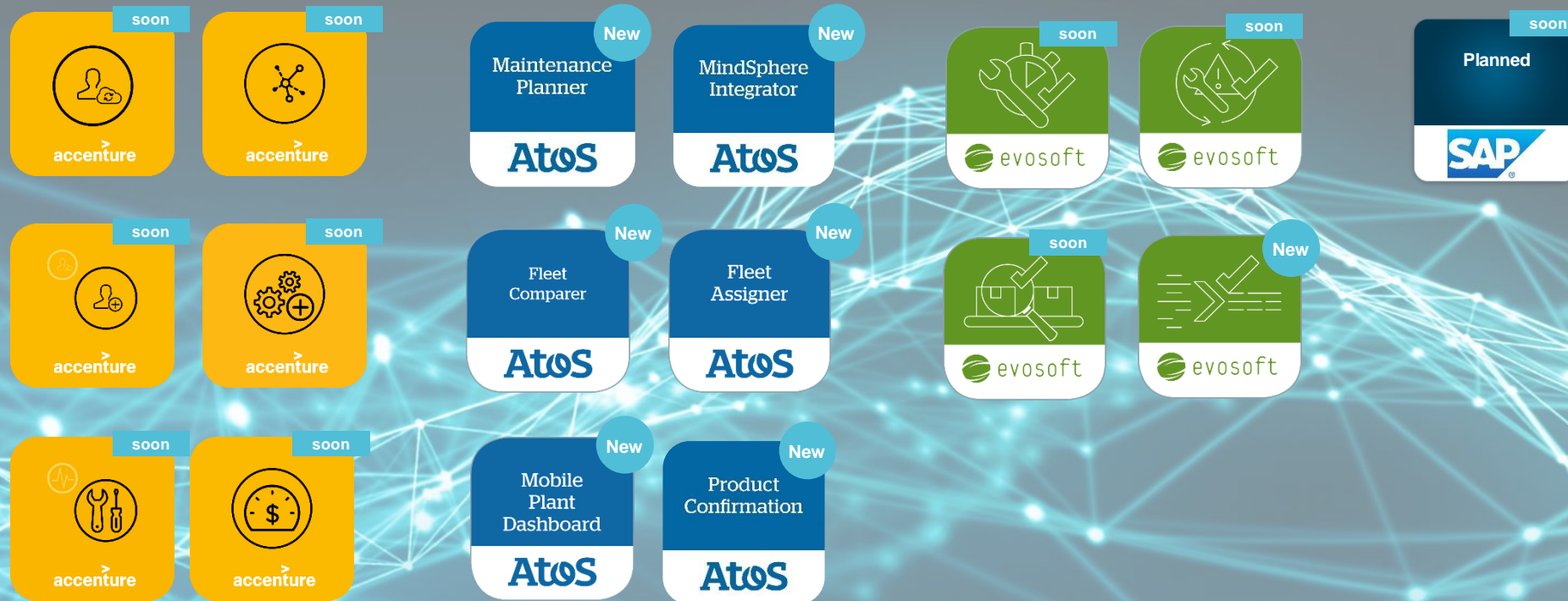


* Subject to changes

What is MindSphere

Applications from our Partners running on MindSphere* Currently being developed (application programming beta-phase)

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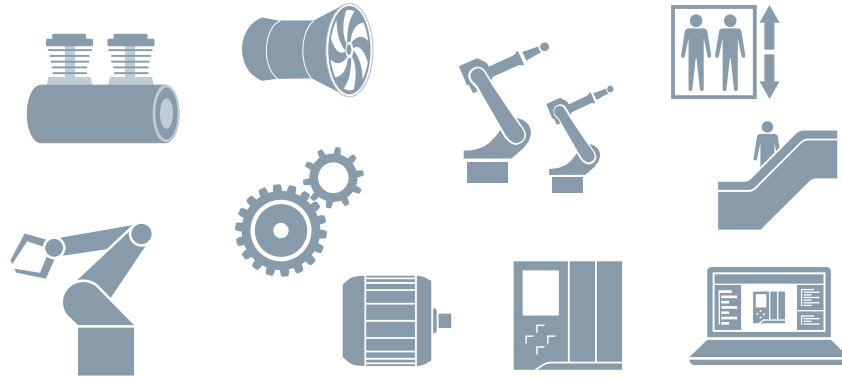


What is MindSphere

MindSphere and MindApps to increase business value for equipment suppliers and operators

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Equipment supplier



Business Value

- **Increase service efficiency / lower warranty expenses**
 - Visualize and manage fleets worldwide
 - Automate failure and event alarming
- **Offer additional services and new business models**
 - Provide availability guarantees
- **Enhance products via feedback loop to R&D**
 - Use operational data to verify and optimize simulation & engineering

Equipment operator



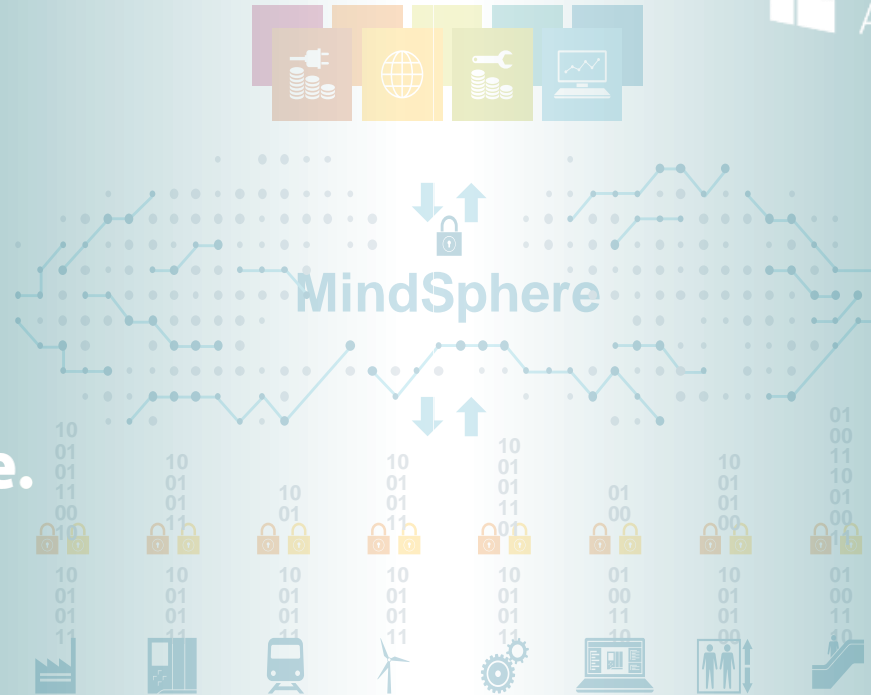
- **Increase uptime / asset availability**
 - Predict failures to run in-time maintenance and reduce / prevent unplanned downtime of machines
- **Optimize assets**
 - Identify optimal configuration for your equipment to reduce energy consumption, peak loads, etc.
- **Increase maintenance efficiency**
 - Prolong maintenance cycles over product lifetime

What is MindSphere

Strong open ecosystem emerging around MindSphere, opening new opportunities for our customers and partners

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Exemplary Set of Partners



Predefined partner Roles:

Consulting / Strategy partner, Application Developer, Technology Provider, System Integrator, IaaS – Provider, Connectivity Developer

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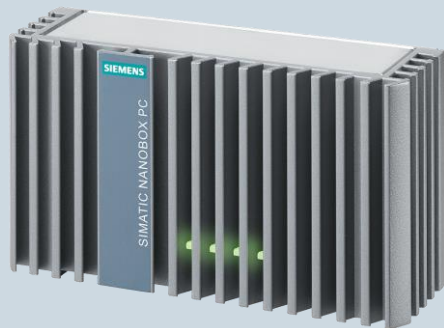
How can I use MindSphere

MindSphere enables a quick, easy and secure start into data-driven services

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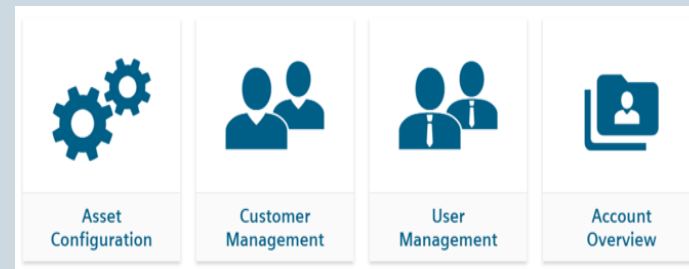
STEP 1 Connect


Get a MindSphere user-account, receive and integrate your MindConnect element into your machine/equipment



STEP 2 Configure

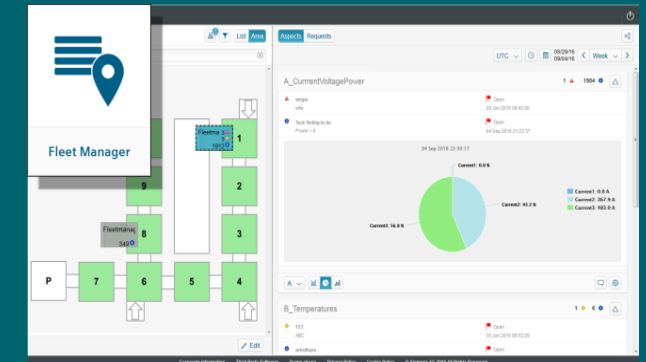
Configure data acquisition, connectivity and Visual Analyzer via MindSphere



 Asset Configuration on MindSphere - experience how easy it. [Click here](#)

STEP 3 Run the Service

Monitor e.g. health status of all assets and drill into details using MindApp Fleet Manager



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Additional Success Stories

Major soft drink producer

Machine monitoring

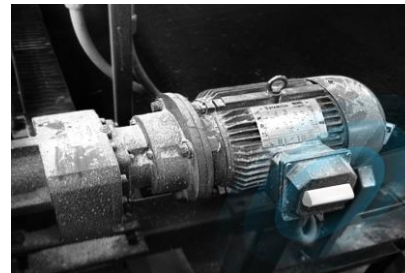
- **Affordable IoT solution** for predictive maintenance of 150 motors
- **Increased asset uptime** through accurate failure prediction
- Global **accessibility of data**



Multinational steel company

Motor fleet management

- **Low-cost solution** for monitoring of motor fleet
- **Reduced downtime** in all motor applications
- **Visualization** of motor fleet



Major international airport

Failure prediction for baggage system

- Identification of all potential **failures in baggage trail**
- **On-time maintenance of defective baggage carts**
- Visualization of **system failures**



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