

MANAGING THE IIOT VALUE CHAIN

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Opportunities of the IIoT Value Chain Transformation



Where IIC and I4.0 are Adding Value



Testbeds

Validate New Technologies and Concepts
Foster Creation of Partner Ecosystems

Reference Architectures

Provide Guidance
Create a Common Language

Best Practices

Accelerate Project Execution

Interoperability & Standards

Enable „Things“ to Interact

Projects & Deployments

Ensure Commercial Success

Where IIC and I4.0 are Adding Value



Testbeds

Reference Architectures

Best Practices

Interoperability & Standards

Projects & Deployments

Testbeds Help Driving Innovation

1st public IIC testbed: Track & Trace (Bosch, TechM, Cisco)

- ▶ 2015: From idea to commercial deployment in less than 1 year
- ▶ 2016: New use case „Forklifts“ (Bosch & SAP)

Value

- ▶ Validate technologies
- ▶ Blueprints for commercial solutions
- ▶ Generate best practices and standards
- ▶ Promote creation of partner ecosystems

Announcing today

- ▶ **Bosch has joined Labs Network Industrie 4.0**
- ▶ Support I4.0 testbeds
- ▶ Enable further collaboration between IIC and I4.0
- ▶ Foster integration of SME's into IIoT value chain



Where IIC and I4.0 are Adding Value



Testbeds

Reference Architectures

Best Practices

Interoperability & Standards

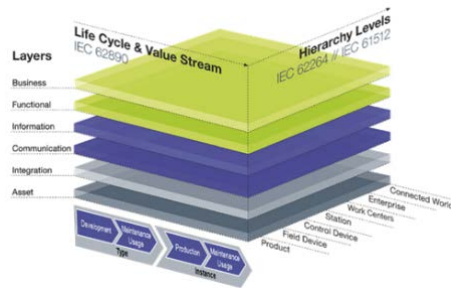
Projects & Deployments

IIC and I4.0 Help Managing the IIoT Value Chain



RAMI4.0

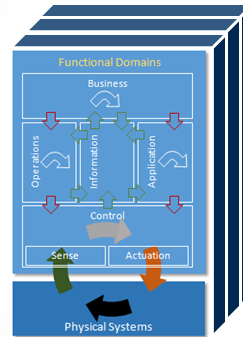
I4.0 Reference Architecture



- ▶ Provides common language
- ▶ Maps physical to virtual world
- ▶ Covers product life cycle

IIRA

IIC Reference Architecture



- ▶ Provides common language
- ▶ Reduces complexity
- ▶ Ensures scalability



Where IIC and I4.0 are Adding Value



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Best Practices Help Ensuring Project Success

Best Practice =

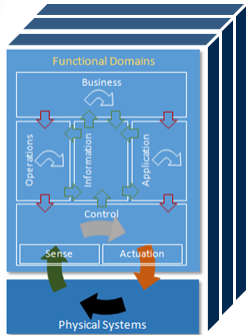
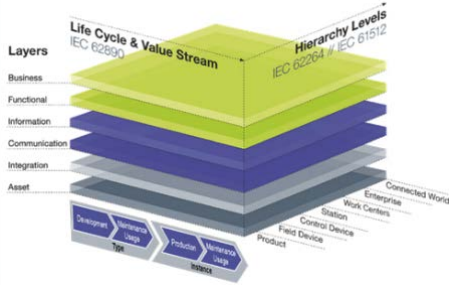
Reference Architecture

+ Project Experience



Need for

- Certified IIoT experts
- Tools and support for IIoT project managers
- Lean description of best practices



Complementary Approaches of IIC and I4.0



Plan

Build

Run

Cross-Domain Solutions



Asset Operations
Cloud



Manufacturing Focus in Depth



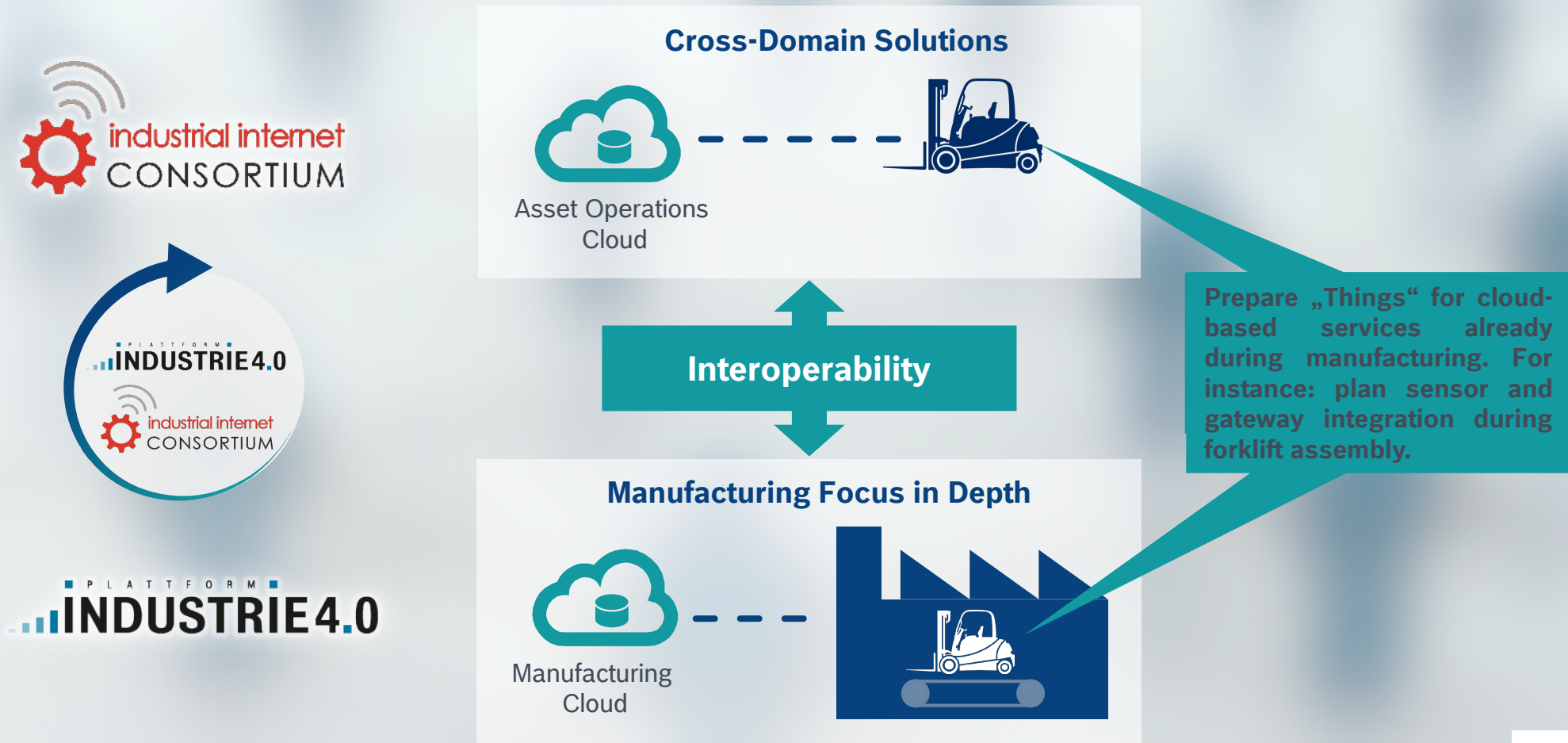
Manufacturing
Cloud



Type

Instance

Holistic Approach for Interoperability



Tangible Cooperation Result

IIOT PROJECT TOOLKIT



II.0 EXTENSION



- ▶ Full IIoT *Action Pack* for each delegate at today's event
- ▶ Request to use it and to provide feedback to tool-kit team
- ▶ Help capturing best practices

Where IIC and I4.0 are Adding Value



Testbeds

Reference Architectures

Best Practices

Interoperability & Standards

Projects & Deployments

From Testbeds to Standards



PPM Protocol
(PPMP)



- ▶ Production Performance Management (PPM) testbed: Bosch plant in Homburg
- ▶ Optimization of production performance: on-time delivery, OEE, energy utilization

- ▶ Open standard, derived from Homburg PPM testbed
- ▶ High relevance for both, SME's and large enterprises

PPM Protocol Ensures Interoperability

PPM Protocol

- ▶ Easy to use
- ▶ Utilizes standard Internet technologies
- ▶ Open source



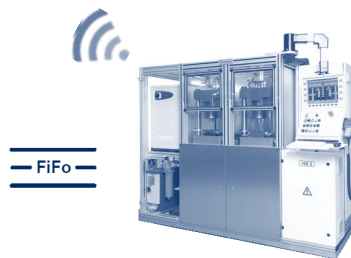
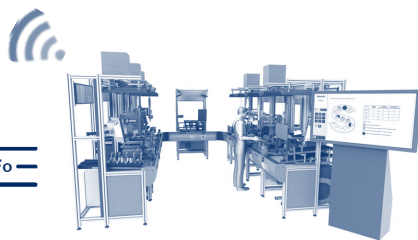
PPM

Data aggregation
(digital twin) and
conversion
to KPI's

PPM dashboard, advanced
analytics, simulation



PPM Protocol



Machine components, sensors, ...

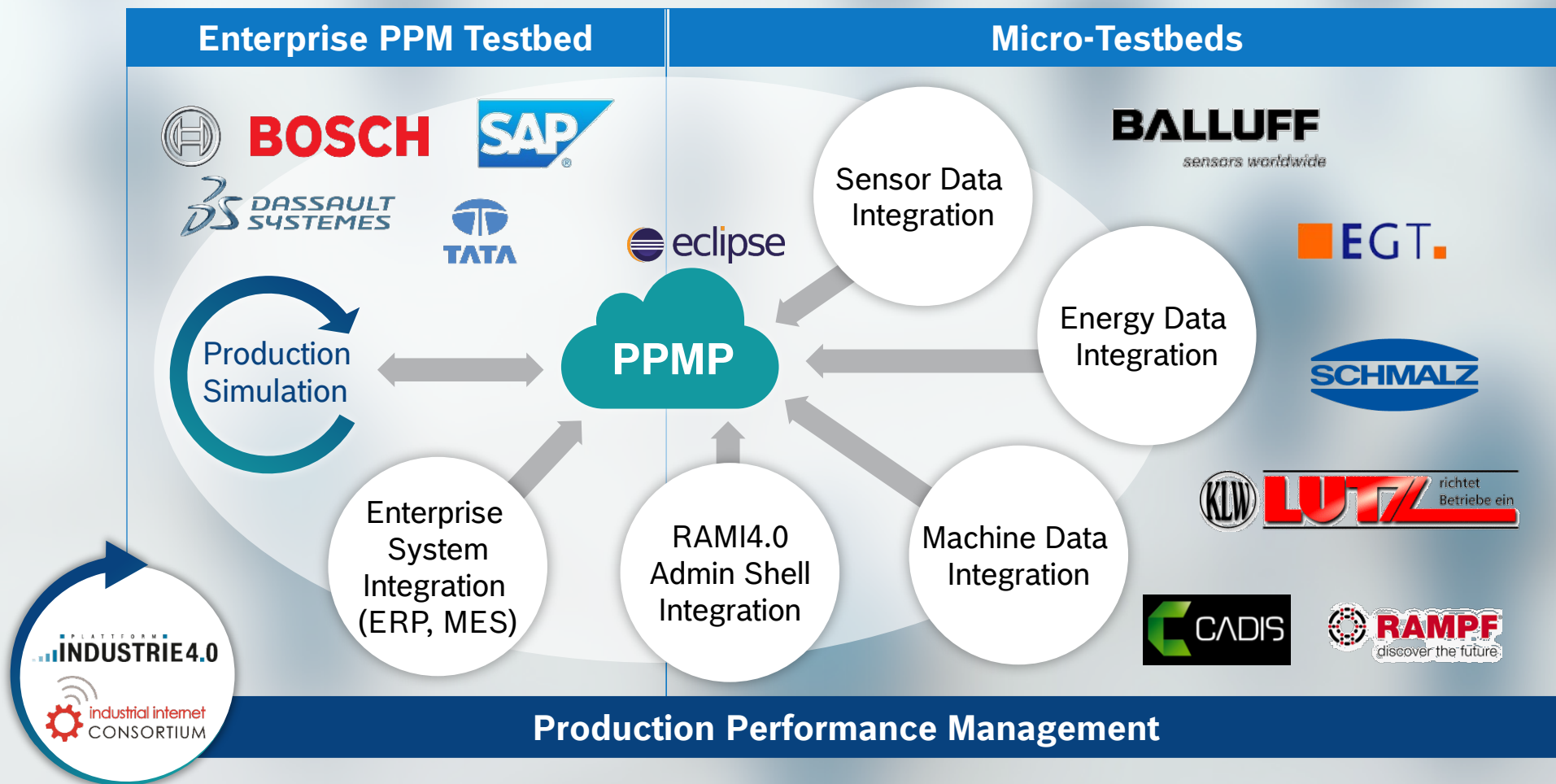
PLATTFORM
INDUSTRIE4.0



Energy,
HVAC,
building, ...



Bosch Initiates PPMP Ecosystem



st w Steinbeis

Summary

- ▶ IoT transforms traditional industrial value chains
- ▶ Bosch already uses IoT solutions in own plants
- ▶ For broad deployment and accessibility especially for SME's interoperability is key
- ▶ PPMP as an example for standardization through open source
- ▶ Bosch supports IIC and I4.0 consortia and their initiatives

