The IIoT evolution in the capital goods sector

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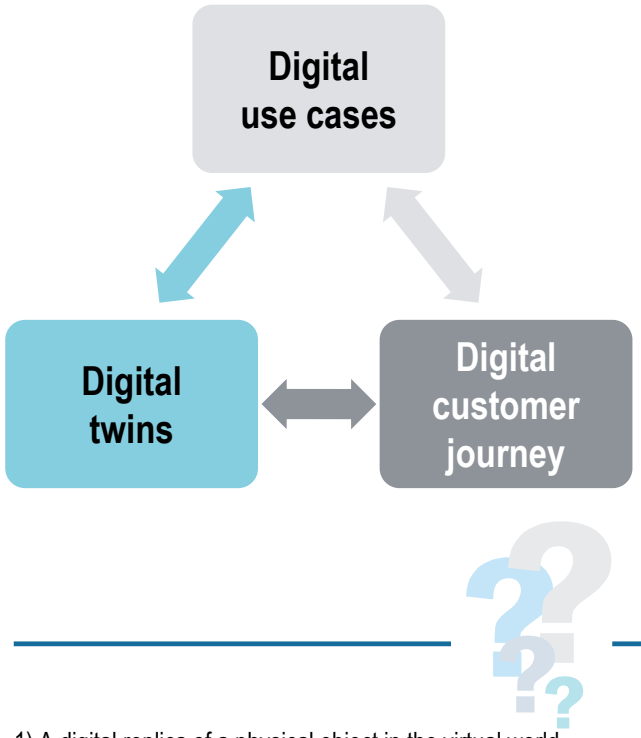
A. Motivation & study scope

The study addressed key questions regarding current status, future evolution and key challenges of the IIoT

Study – Key questions addressed

IIoT



What is the **role** of **IIoT in** companies' **strategies for digitization**?

What are the **existing and planned IIoT use cases**?

What are **key trends and challenges** for the **IIoT evolution**?

How does **IIoT support digitization** of the **customer journey?**

What role do **IIoT and digital twins**[1)] play within that?

1) A digital replica of a physical object in the virtual world

Focus on discrete manufacturing, machine tool OEMs and automation equipment suppliers – More than 40 interviews conducted

Study – Scope & participants

Machine tools & mfg equipment

1

Automation & process equipment

2

Software, platforms & clouds

3

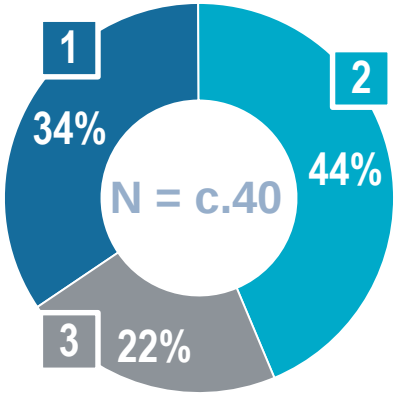
Selected examples

LIEBHERR
DMG MORI
FEINTOOL
SCHULER
TRUMPF
Bystronic
HELLER 1894 2019 5
+GF+
GROB

SEW EURODRIVE
ABB
FESTO
Weidmüller
Endress+Hauser
People for Process Automation
iba
SIEMENS
BECKHOFF

Microsoft
ADAMOS
AXOOM
IBM
DASSAULT SYSTEMES
HEXAGON
ptc

Study participants



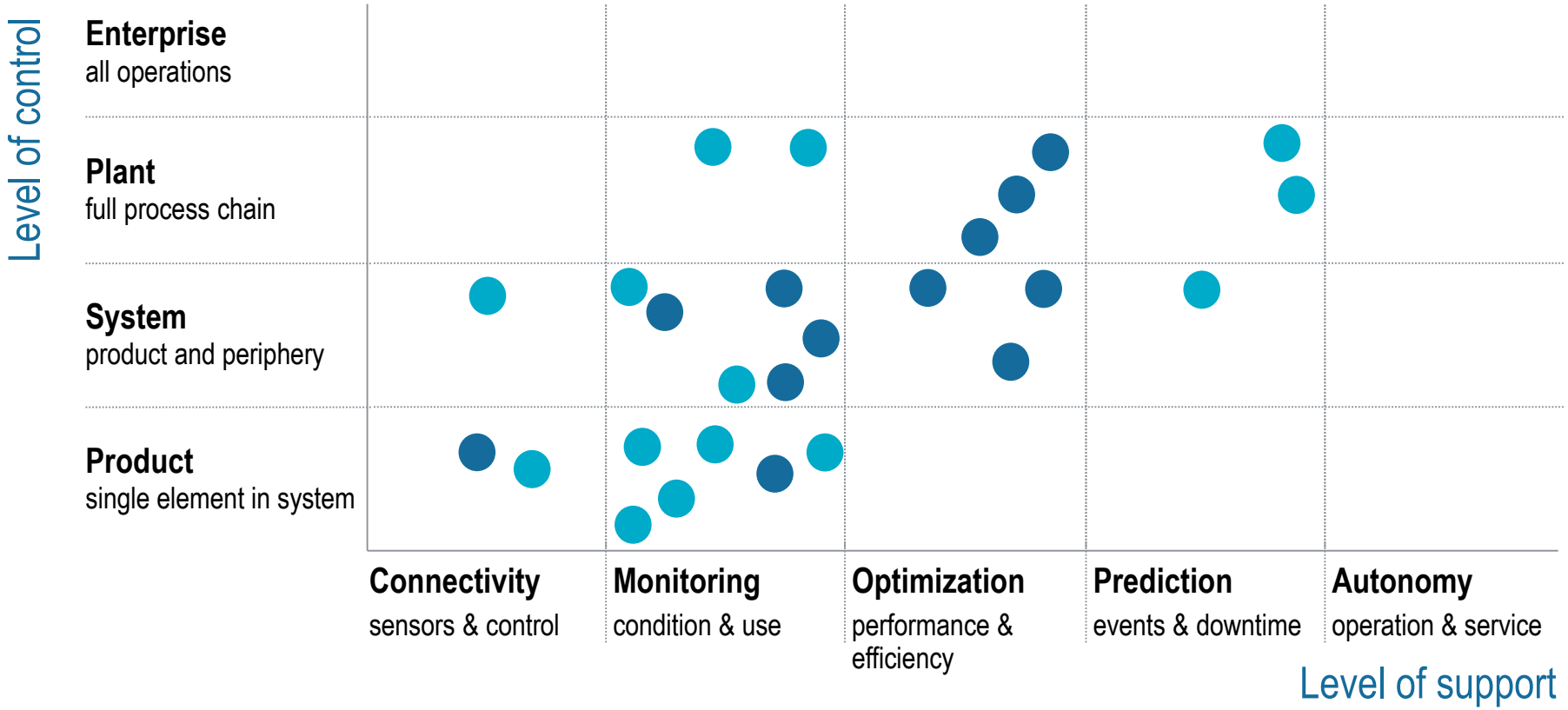
> **Overall 25+ company interviews**
> **Additional 15+ expert interviews** at **Hannover Messe** April 2019
> **Leveraged RB project experiences, research** and academic **contacts**

Source: Roland Berger

B. The IIoT evolution

Today, we see that OEMs prepare their products to interact with superior control levels and start the true IIoT evolution

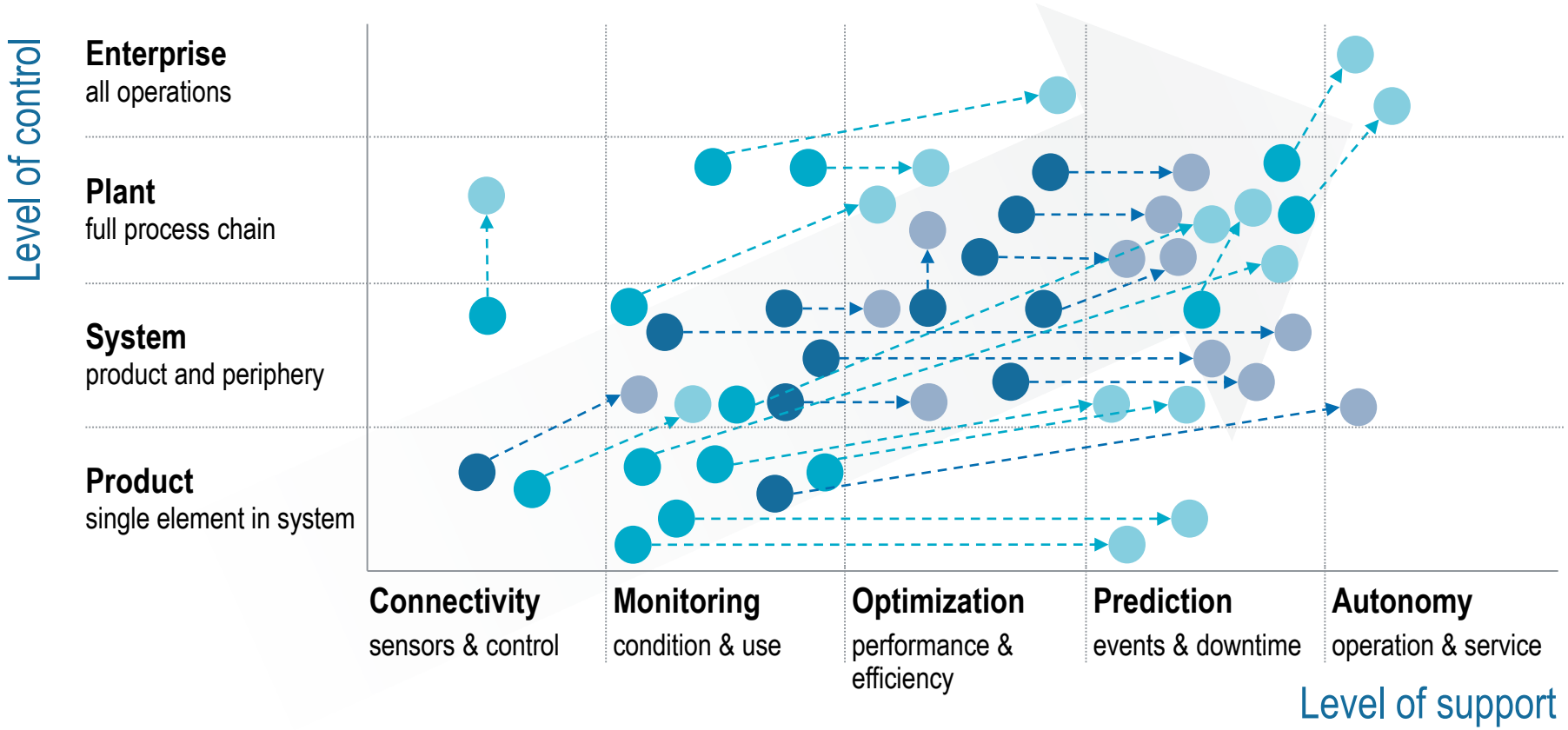
IIoT use cases – As of today



Source: Research, Expert interviews

IIoT use cases in preparation show that companies push to develop predictive capabilities and expand their systems boundaries further

IIoT use cases – In preparation



Industry branch

- Machine tool manufacturer (Existing IoT Use case)
- Machine tool manufacturer (IoT Use case in preparation)
- Others (Existing IoT Use case)
- Others (IoT Use case in preparation)

Source: Research, Expert interviews

In theory, digitization enables new business models – However, only a few companies have yet moved to become an MaaS-like partner

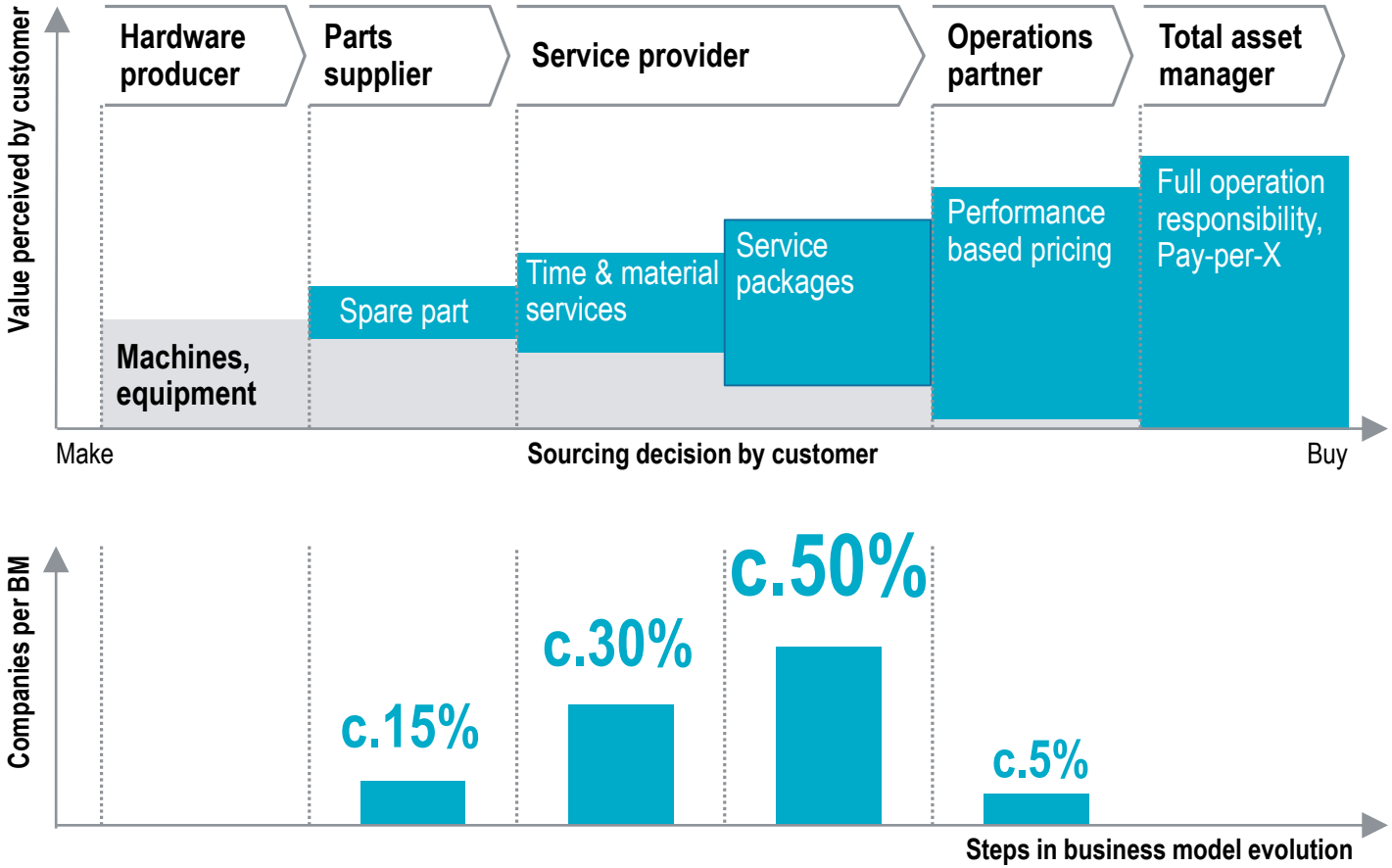
Evolution of business models

Stepwise business model innovation

Theory

Industry

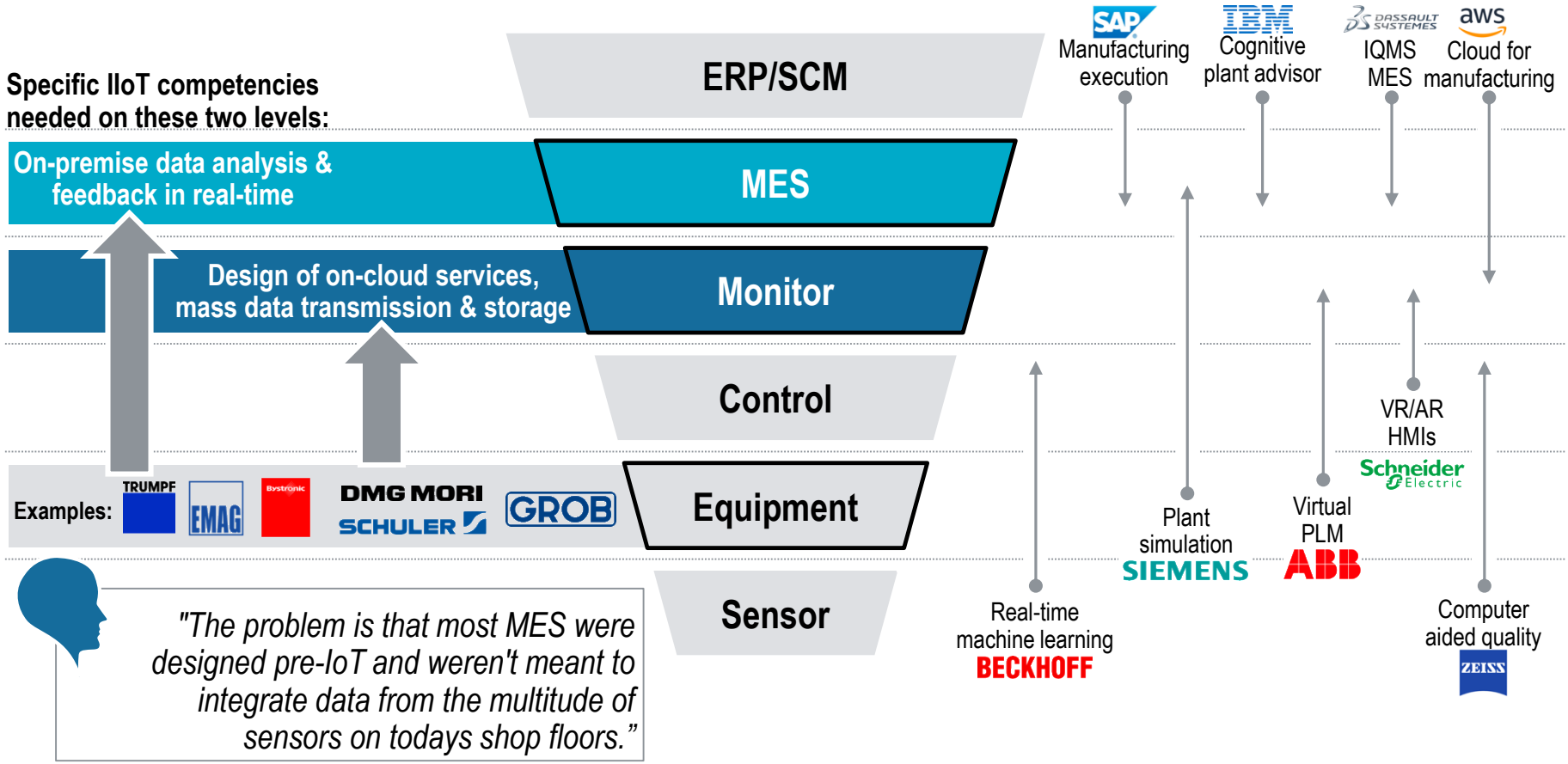
Companies business model focus 2019



Source: Research, Expert interviews

OEMs prepare to offer solutions on 'Monitor' and 'MES' level – New IIoT competences needed in a field dominated by large players

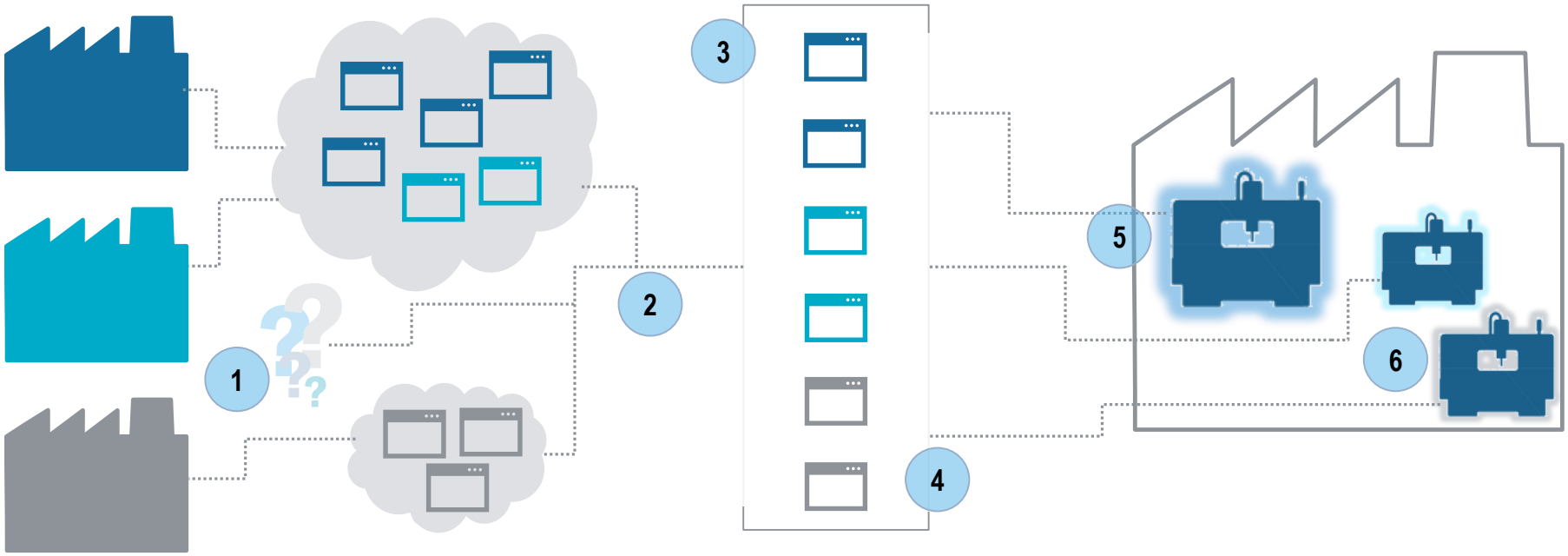
Future proof solutions – Dynamics along automation pyramid



Source: Research, Expert interviews

6 clear trends mark way towards open solutions – Interoperability and transparency are key enablers to increase customer value

Platform economy – Requirements



1 3rd party software developers
Opening environment for developers distant to the machining sector

2 Cloud interoperability
Data exchange between platforms and clouds from different providers

3 Application selection
Easy access to all available applications and free choice of use

4 Transparency
Customer chooses which data can be used for which application

5 Plug-and-play
Support for cloud connectivity and horizontal integration

6 Mixed machinery park
One go-to point for all service applications for all machinery

Source: Research, Expert interviews

We have observed three key challenges companies have to overcome if they want to exploit IIoT opportunities

Key challenges

1. Truly capturing business model potential of digitization

Companies are still operating according to their **known, existing business model** – Finding new ways to monetize IoT use cases and pushing business model **innovation towards MaaS** as a key challenge.

2. Making systems future proof on high control level

Companies that grew with operational technology and hardware have to build **IT infrastructures and software** solutions – dynamics in smart manufacturing demand for **scalable solutions**.

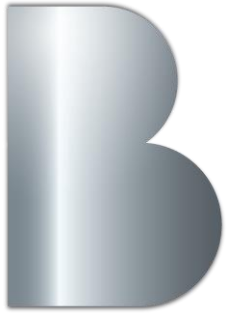
3. Positioning for platform economy and the digital endgame

Consolidation in platform economy can be expected. **Open ecosystems** now state of the art but **interoperability** between platforms still not given.

Source: Roland Berger

Roland Berger

THINK:ACT



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