PDM | PLM Competence Center

**IraSME & CORNET partnering event Aachen
26 November 2018**

Atakan Sünnetcioglu

Fraunhofer IPK

Division Virtual Product Creation

Fraunhofer

IPK

**INSTITUT
PRODUKTIONSANLAGEN UND
KONSTRUKTIONSTECHNIK**

PLM for Digitization

Smart Services
Data-driven business models

1 **MECHANIZATION**

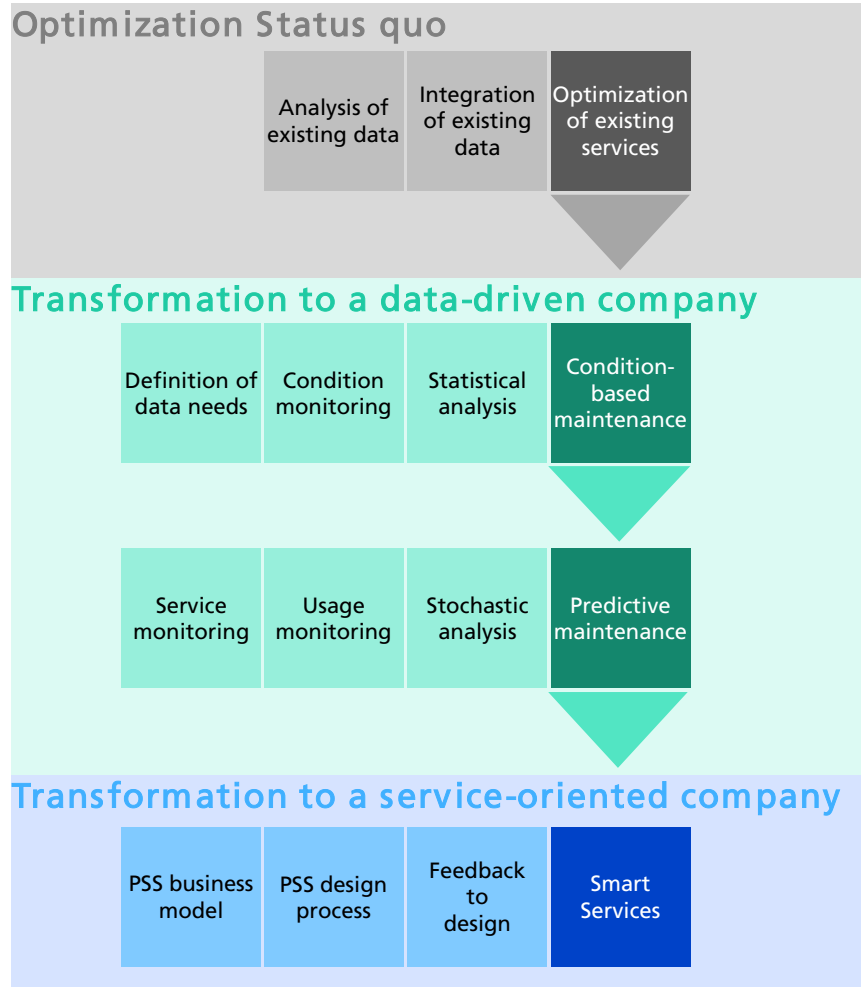**2** **DIGITIZATION**

3 **FUNCTIONIZATION**
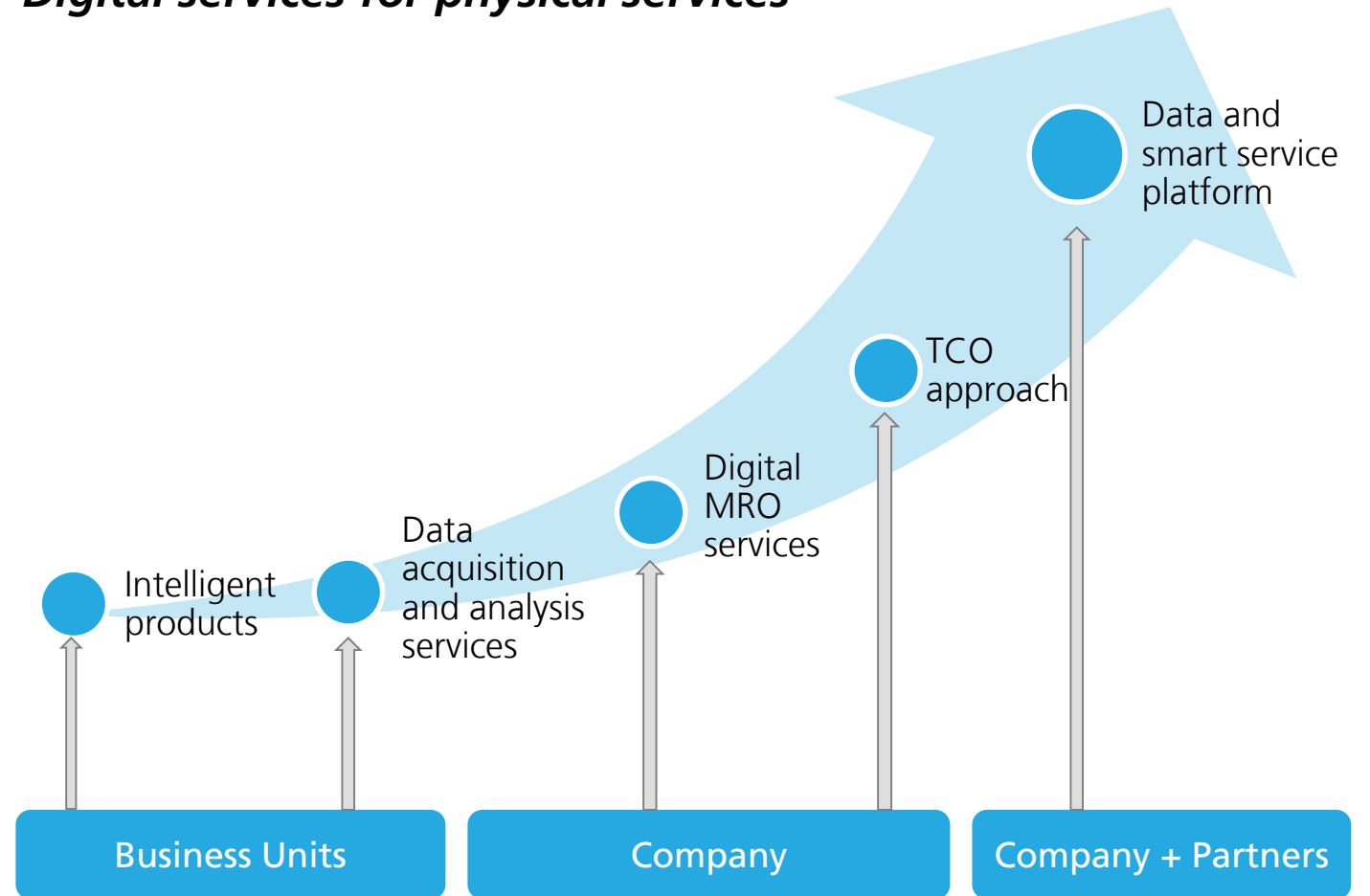

4 **SYSTEM OF SYSTEMS**

Instagram would not exist without mechanization, digitization, and functionization - a company with 700 million users worldwide - but their business model was not the driver. What is your smart service of the future?

Smart Services
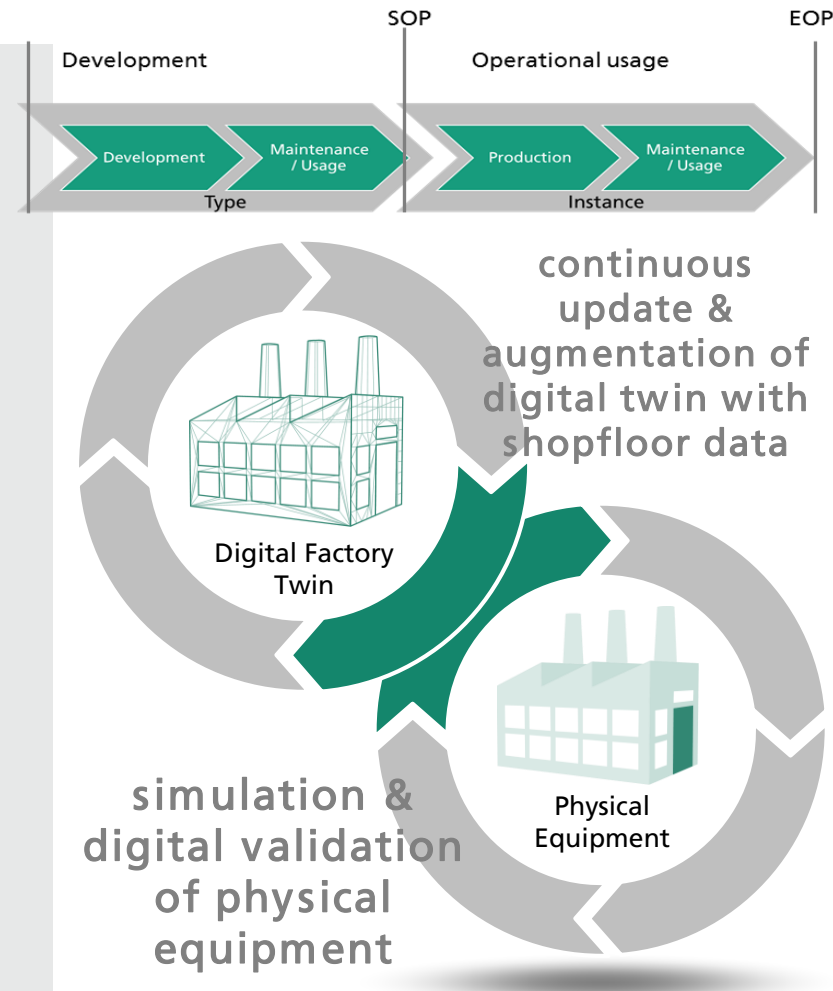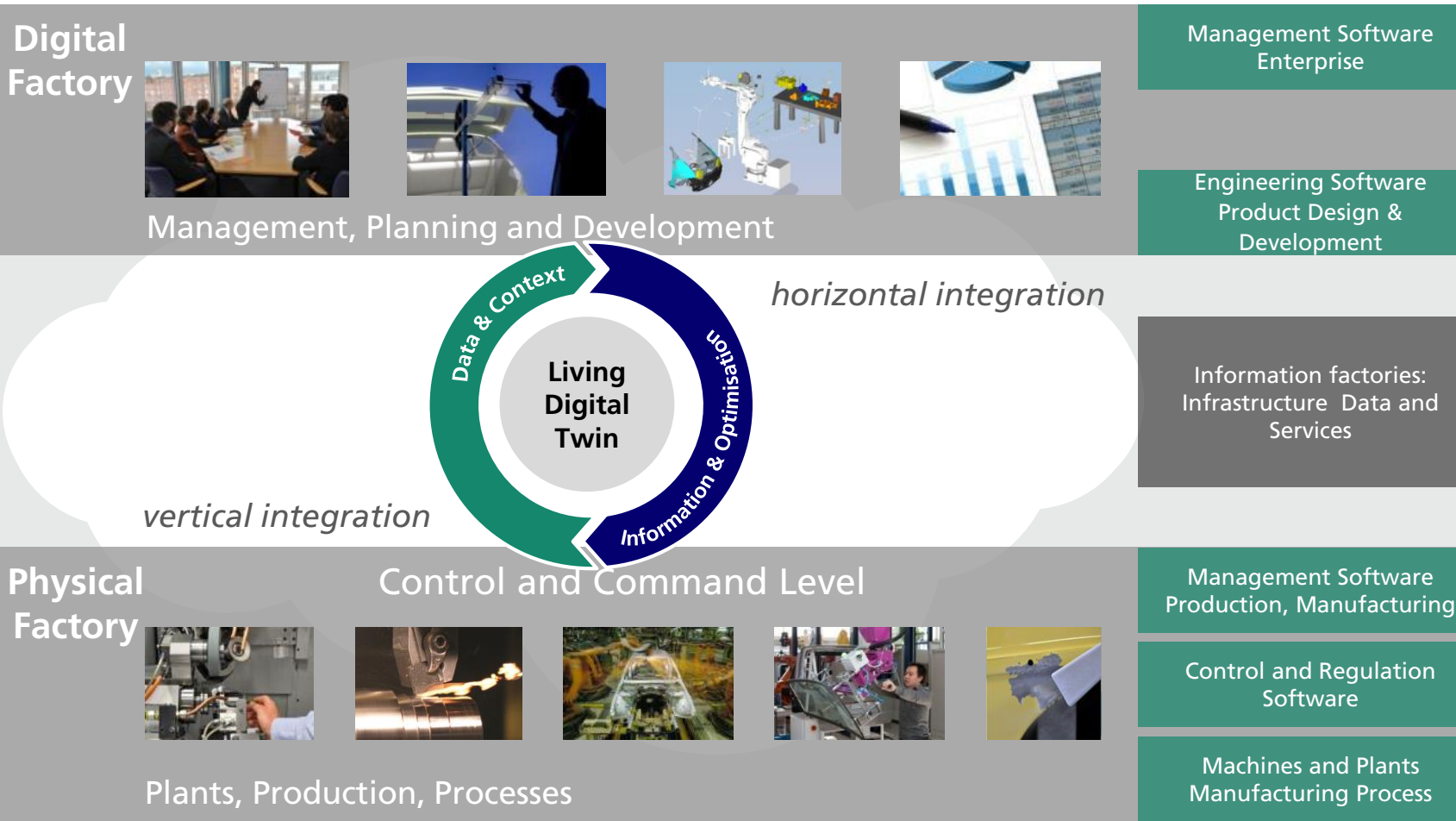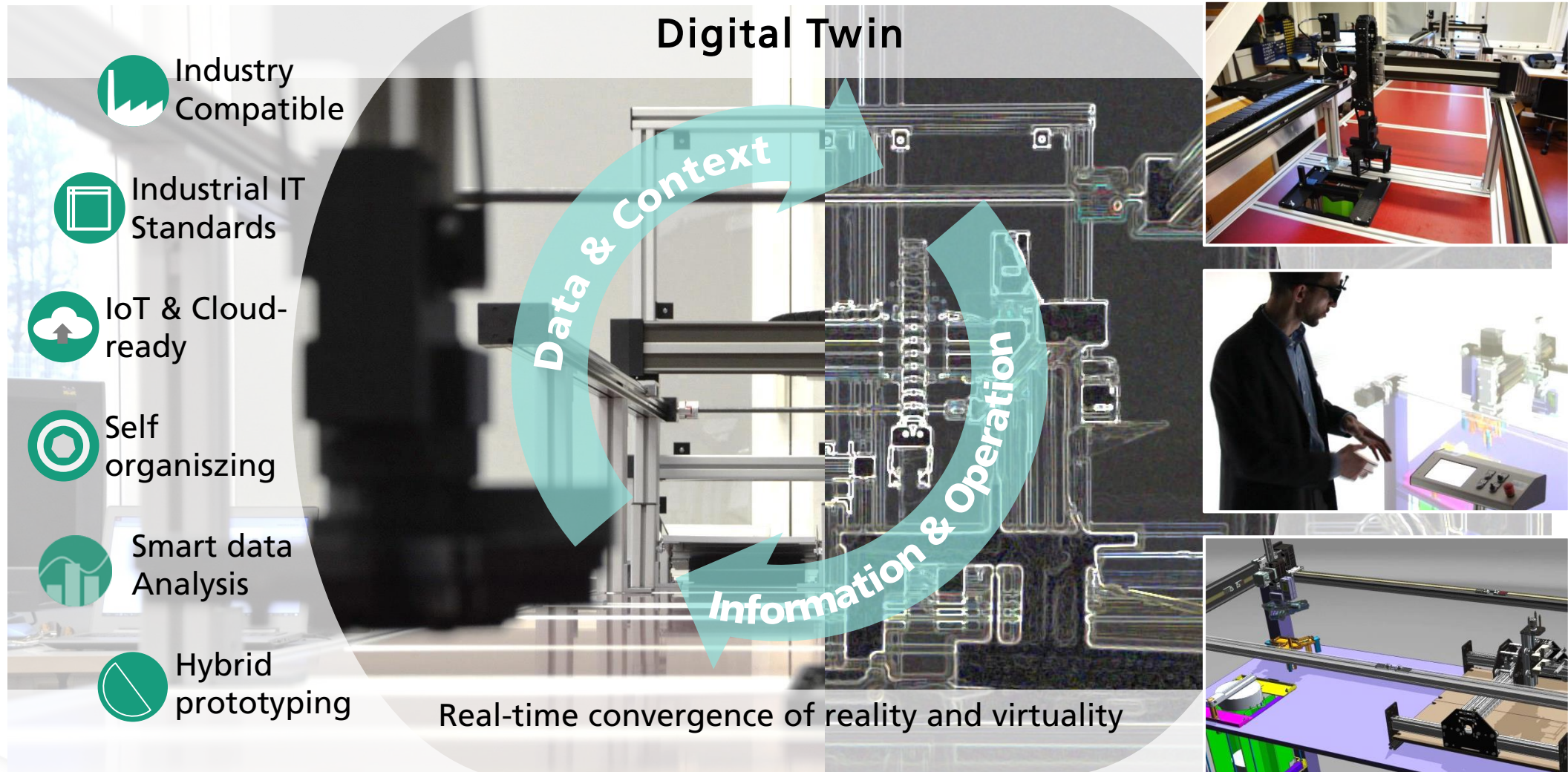## Capability stair steps and roadmap

Living Digital Twins
What we have done so far …

Digital Factory

Management, Planning and Development

horizontal integration

vertical integration

Physical Factory

Control and Command Level

Plants, Production, Processes

Data & Context

Living Digital Twin

Information & Optimisation

Management Software Enterprise

Engineering Software Product Design & Development

Information factories: Infrastructure Data and Services

Management Software Production, Manufacturing

Control and Regulation Software

Machines and Plants Manufacturing Process

© Photos: Fraunhofer IPK (verschiedene Fotografen); BAM

SOP

EOP

Development

Operational usage

Development | Maintenance / Usage

Production | Maintenance / Usage

Type

Instance

continuous update & augmentation of digital twin with shopfloor data

Digital Factory Twin

Physical Equipment

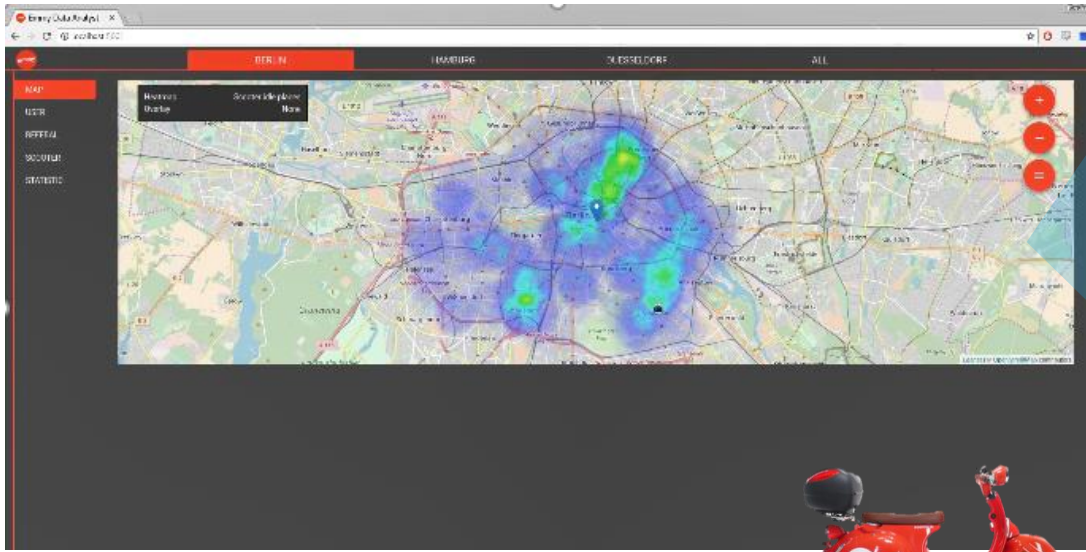simulation & digital validation of physical equipment

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"Smart Factory 4.0" test environment
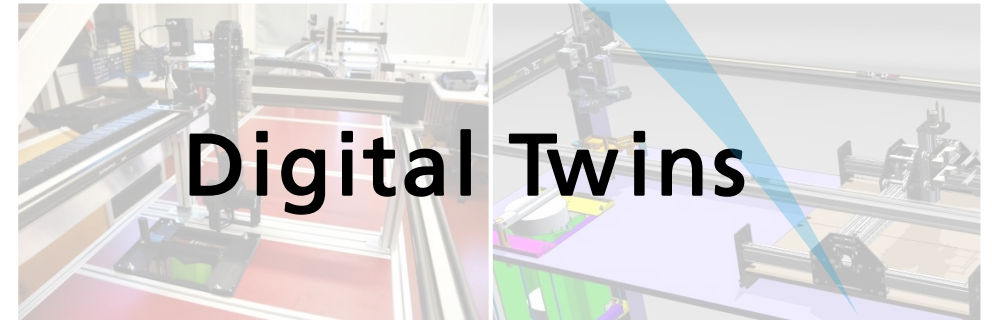## Fusion between real manufacturing, real-time digital simulation and data acquisition and analysis

Industry Compatible

Industrial IT Standards

IoT & Cloud-ready

Self organiszing

Smart data Analysis

Hybrid prototyping

Digital Twin

Data & Context

Information & Operation

Real-time convergence of reality and virtuality

Smart Services

Emmy Scooter
… just an example
(Source: https://emmy-sharing.de/)

enabling

Digital Twins

Arising questions:
- Which business models / ideas are suitable for smart services based on digital twins?
- What are the necessary capabilities for the development of necessary products?
- How to manage the data flow?
- …

Your Contact partners

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