

Smart IoT Solutions for Automotive Manufacturers – Best Practice by the IoT Pioneer

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Motivation for IoT & Industry 4.0 Projects

Digitalization in the Automotive Industry

Project Example: IoT Middleware

Portfolio Automotive Digital Services

SmartProduction_monitoring | PLC-Analyst („VCS“)

PLC-Analyst („VCS“) Use Case: Assembly Line

Device Insight

Device Insight

Device Insight

KUKA

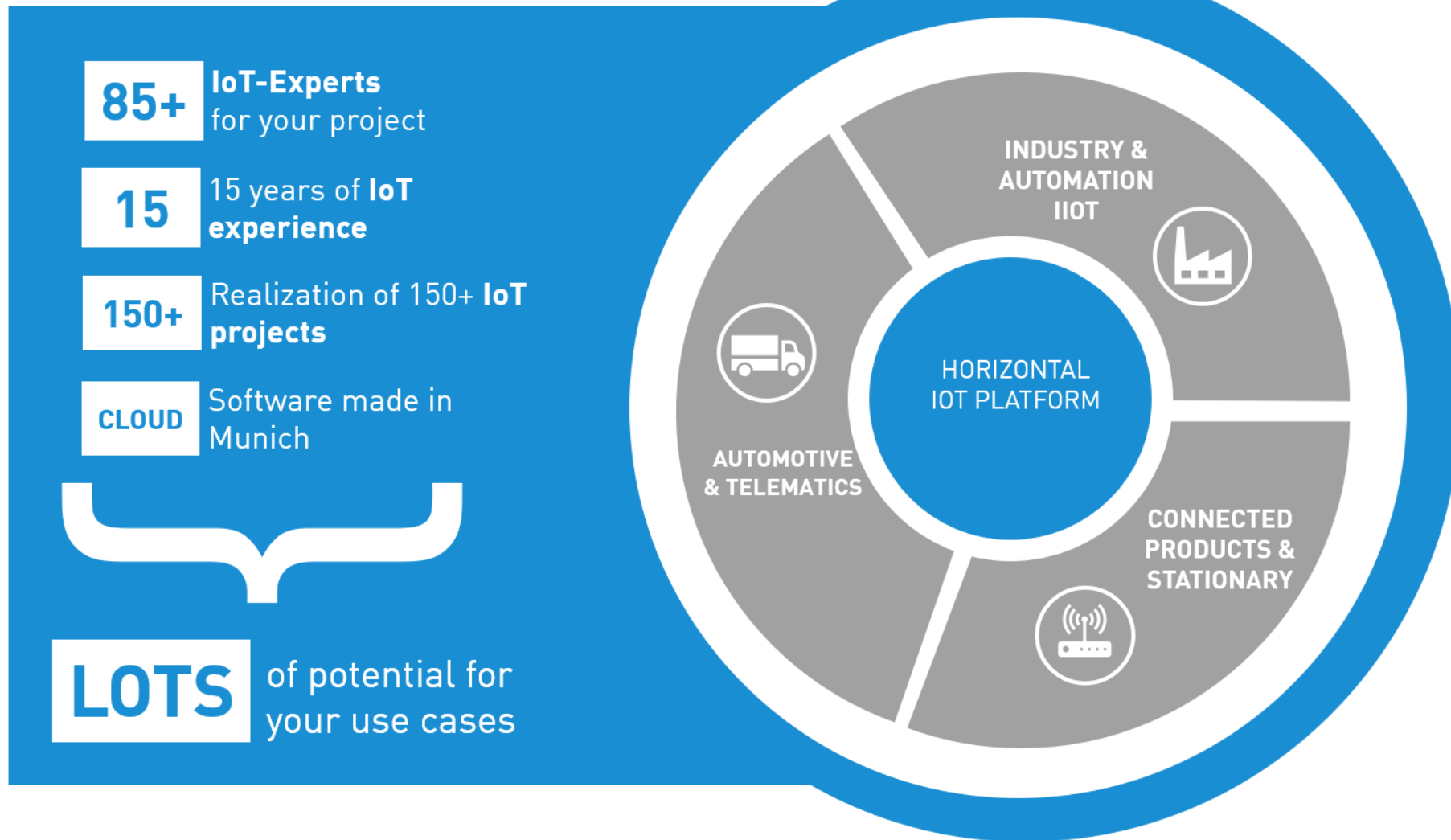
KUKA

KUKA

**DEVICE
INSIGHT**

Smart IoT Solutions

15 Years of IoT Experience



Motivation for IoT & Industry 4.0 Projects

„Our customers ask us to build machines capable of meeting the expectations of **Industry 4.0**.“

„Our **IoT portal is an innovation driver** and helps to expand our market leadership.“

„We have to catch up with the **competition**.“

„We want to record our **machine downtime logs**. So we gain a better understanding for the reasons why and can differentiate warranty claims from out-of-specification operations.“

„We know that **condition monitoring** will increase the availability of our machines and thus **boost the production**.“

Internet of Things – A Simple View

THINGS



INSIGHTS



ACTIONS

Connecting things
is only the first step

Digitalization in the Automotive Industry

R&D

PRODUCTION

LOGISTICS

RETAIL

PRODUCT

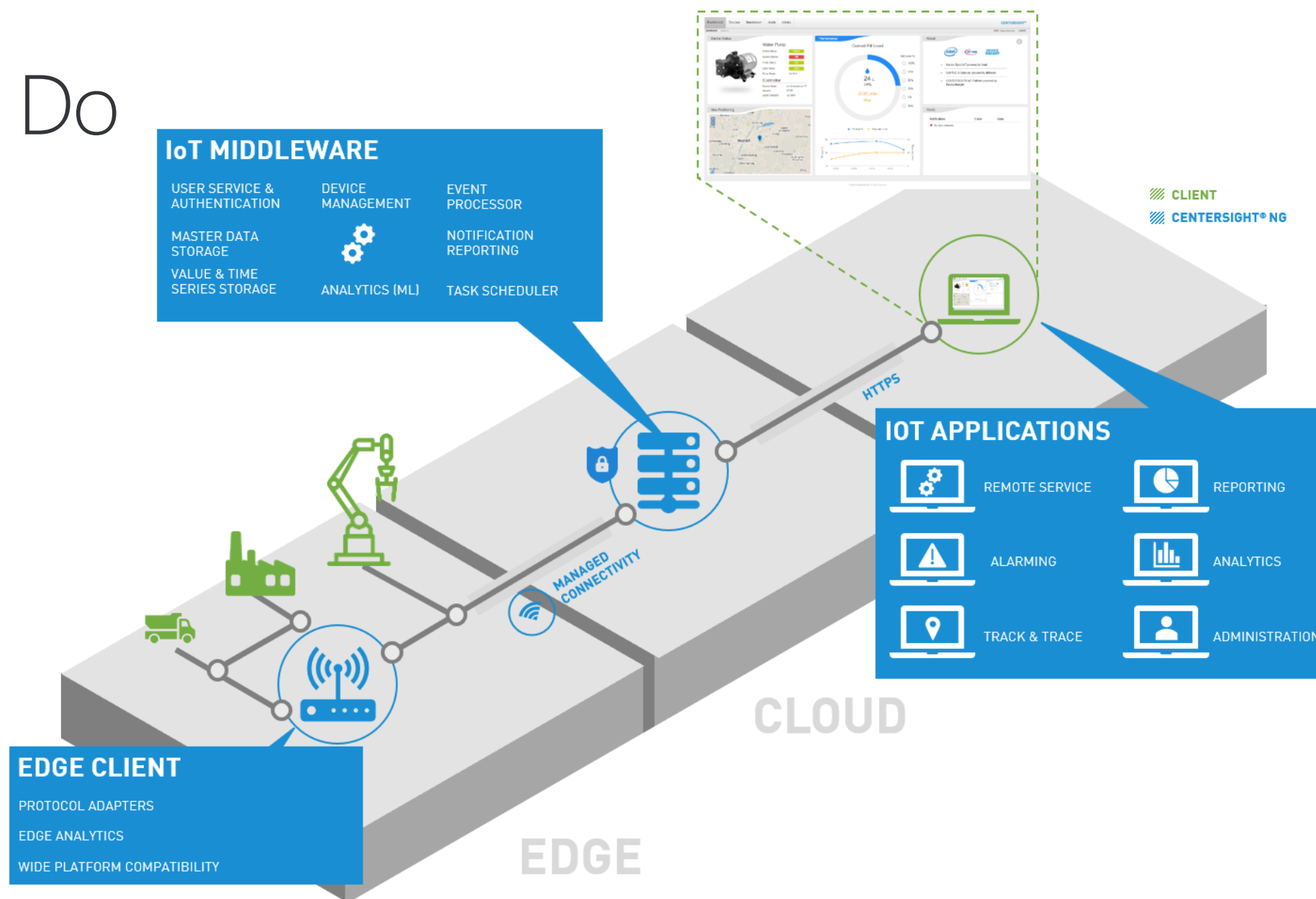
Areas within your company
that can be digitalized

Industrial IoT vs. IoT

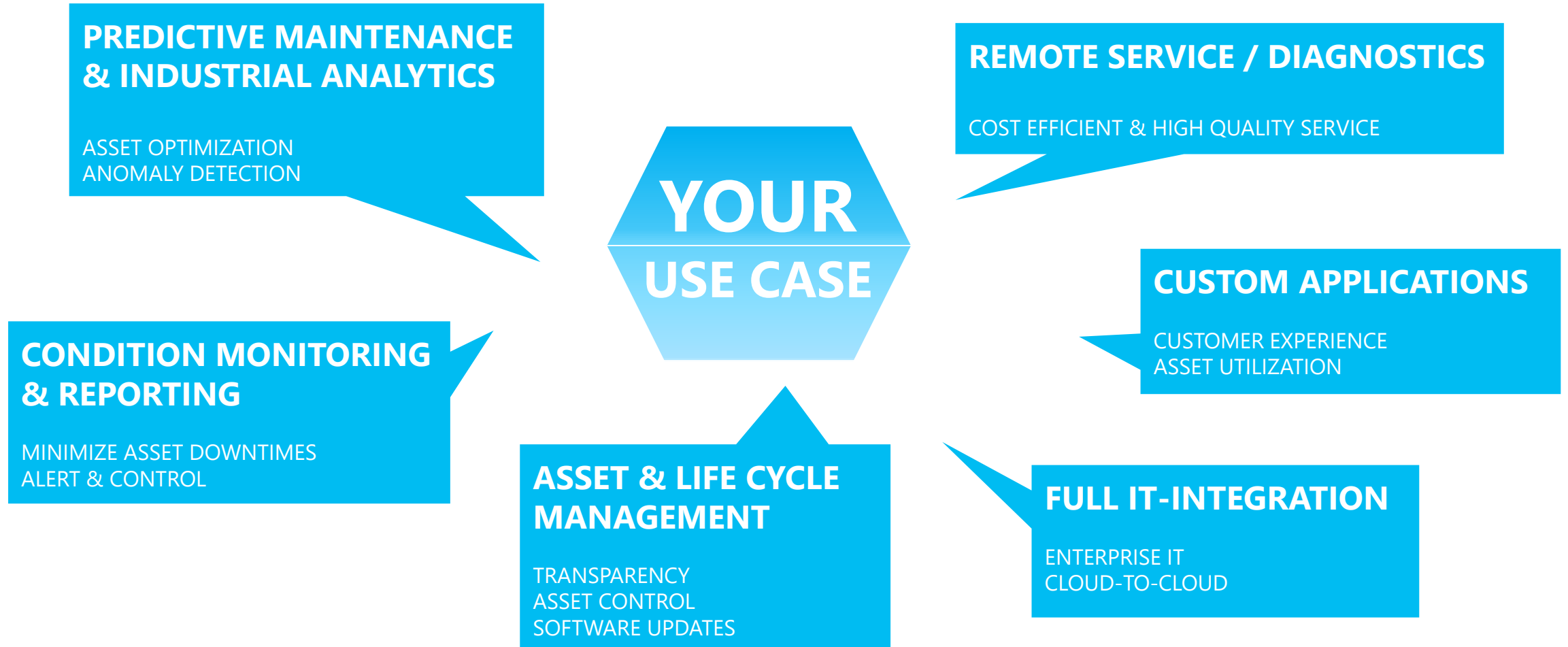


Most solutions are focusing on production or product

What We Do



Implementation of Your IIoT Solution



Project Example: Connected Car

Background:

- The customer is one of the world's leading importers and operators of cars and commercial vehicles.
- The project goal is to provide all information regarding car status, current position, trips, malfunctions and driver score in the cloud.

Implementation with CENTERSIGHT® NG:

- Device Insight's IoT platform CENTERSIGHT® NG serves as the central middleware and creates a digital twin of the vehicle in the cloud.
- The cloud-based software solution enables all connected car data to be retrieved, visualized and automatically analyzed in portals and apps – live and worldwide.
- Fleet owners receive an overview of life positions, driver scores, trips, total fuel consumption, total kilometers, service intervals and geo-fences.
- Drivers use an alerting system for vehicle malfunctions including push notifications and possibility to contact breakdown service.



Industrial IoT vs. IoT



Customer use case
focusing on production

KUKA

Automotive Digital Services

Division Automotive: Portfolio Digital Services



SmartProduction _trainings

„Identification of your Industry 4.0 perspectives“

- Get informed
- Get aware
- Get inspired
- Get ready

Transparency Understanding



SmartProduction _connectivity

„Visualization of existing assets“

- KUKA_Connect

Transparency Connectivity



SmartProduction _management

„Freeze, replay and analyze operating processes“

- MVP - Virtual Shadow

TCO Transparency



SmartProduction _monitoring

„Visualization of existing processes“

- PLC-Analyst (“VCS”)

Availability Transparency



SmartProduction _optimization

„Creation of additional benefits“

- Bottleneck detection
- Energy & Material Efficiency

Cycle Time Efficiency



SmartProduction _engineering

„Creation of new solutions“

- SmartProduction_control

TCO Flexibility

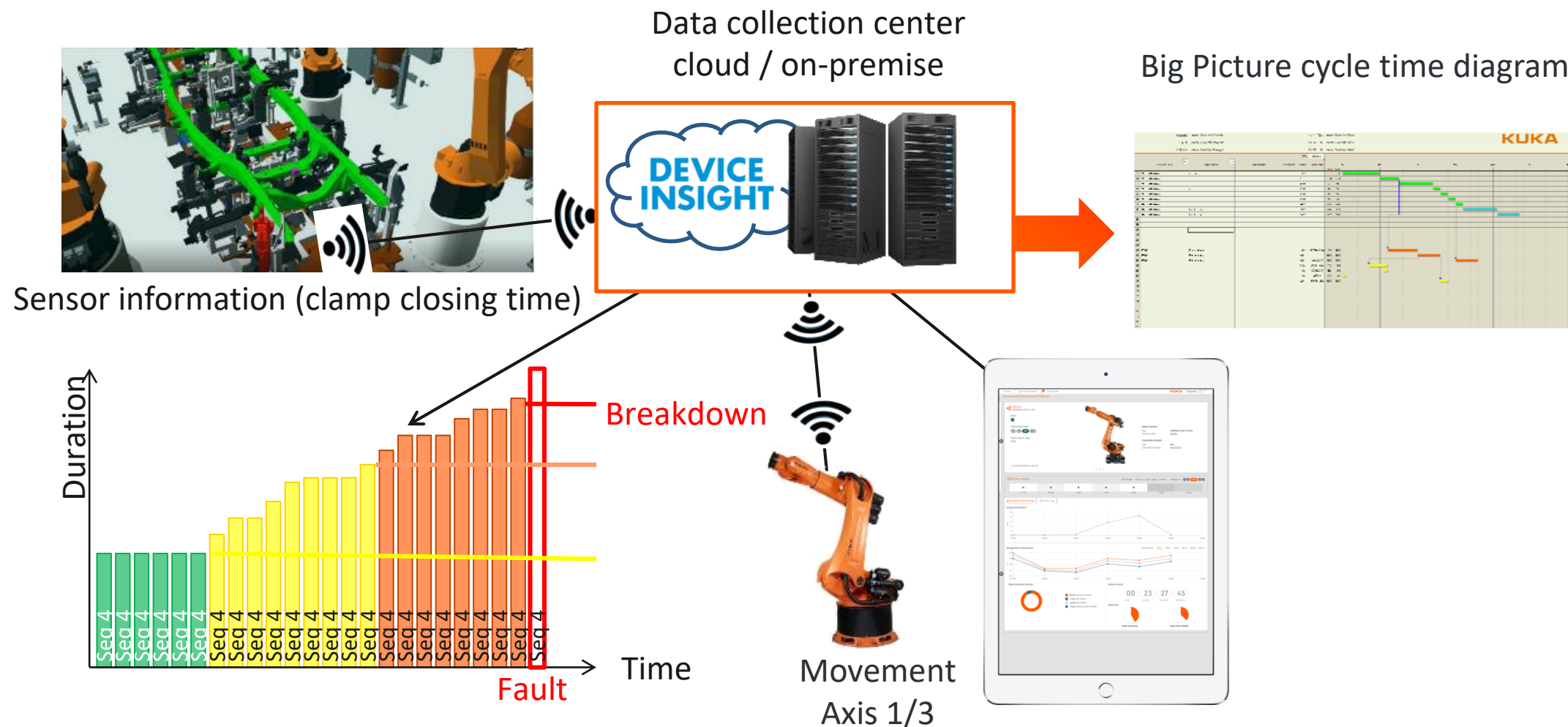


Digital Services

Cloud or On-premises



Know-how of Horizontal & Vertical System Integration by KUKA



PLC-Analyst: Use Cases of Various Customer Projects

1

Improve cycle time

10-20% in 6 weeks*

Reducing the cycle time by using
SmartProduction_monitoring

2

Increase Outputs

60 cars in 4 weeks**

Increasing the output by optimizing existing
equipment

3

Shorten launch curve

25%***

Shortening the ramp-up phase by
improving fact-based collaboration

4

Improve transparency

Global data access

Improving data transparency through
mobile and global accessibility

*/**/*** conducted customer project

PLC-Analyst ("VCS") Background

We listen to what our customers have to say....



„The **current output** does not reflect my needs.“



„Whenever I want to see the **system status**, I have to go to the **production hall**.“



„In the production hall I only have the possibility to see **detailed raw data**.“



„The **amount of try-out parts** is much too high.“



„I'm missing a **general, continuously visualization of the collected data**.“

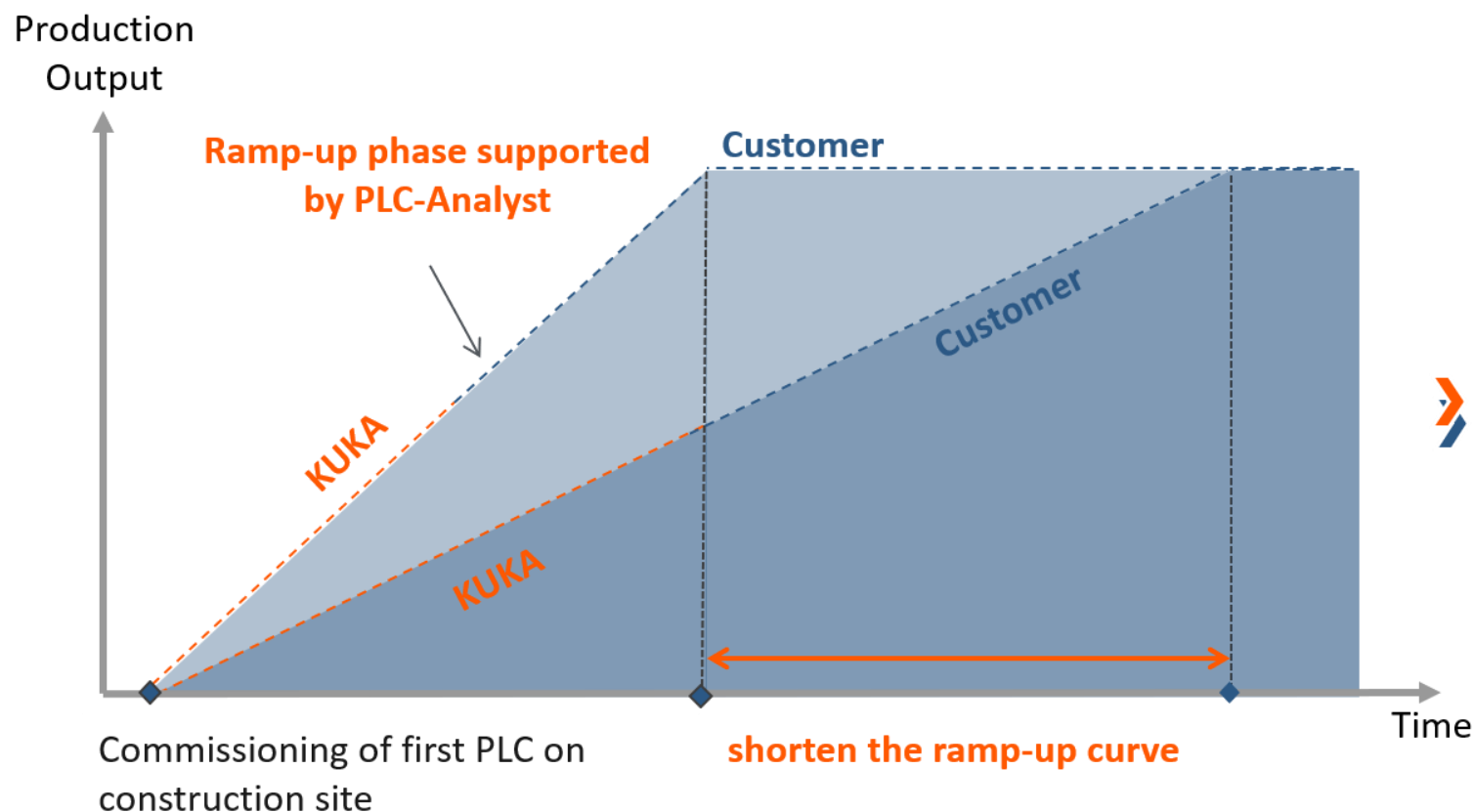
... and developed a solution



SmartProduction_monitoring

- Web-based system
- Collecting process data via PLC
- Analysis of long-term trends
- Display on different user levels

PLC-Analyst ("VCS") : Tool to Support and Quicken the Ramp-up Phase of Automotive Manufactures (MVP)



How to create a Win-Win-Situation?

<ul style="list-style-type: none"> ○ Implementation of PLC-Analyst on first PLC on constructions site ○ KUKA uses PLC-Analyst during its own commissioning phase ○ Achieving KPI's faster; Leave construction site earlier 	KUKA
<ul style="list-style-type: none"> ○ Continue using PLC-Analyst after take over by customer ○ Identifying bottleneck's and crucial errors quicker ○ Achieving an earlier start of high volume production 	Customer

SmartProduction_monitoring | PLC-Analyst ("VCS")

Web-based system that collects process data from PLC/Robot to analyze errors, performance, technical availability, cycle time & much more.
Production monitoring and optimization - in or out of the cloud in real time.

Range of functions

- Long-term trend analysis, error detection & preventive maintenance
- Visualization & Validation of processes in cycle time diagram
- Status report and optimization of production by bottleneck detection
- Fast and focused decision-making based on automated reporting
- From pull to push reporting with modular setup

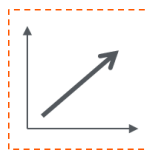
Customer Value

Ramp-up phase



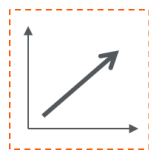
...through faster identification and elimination of errors

Output



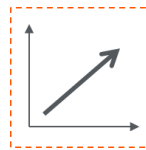
...through faster evaluation & elimination of interruptions

Transparency

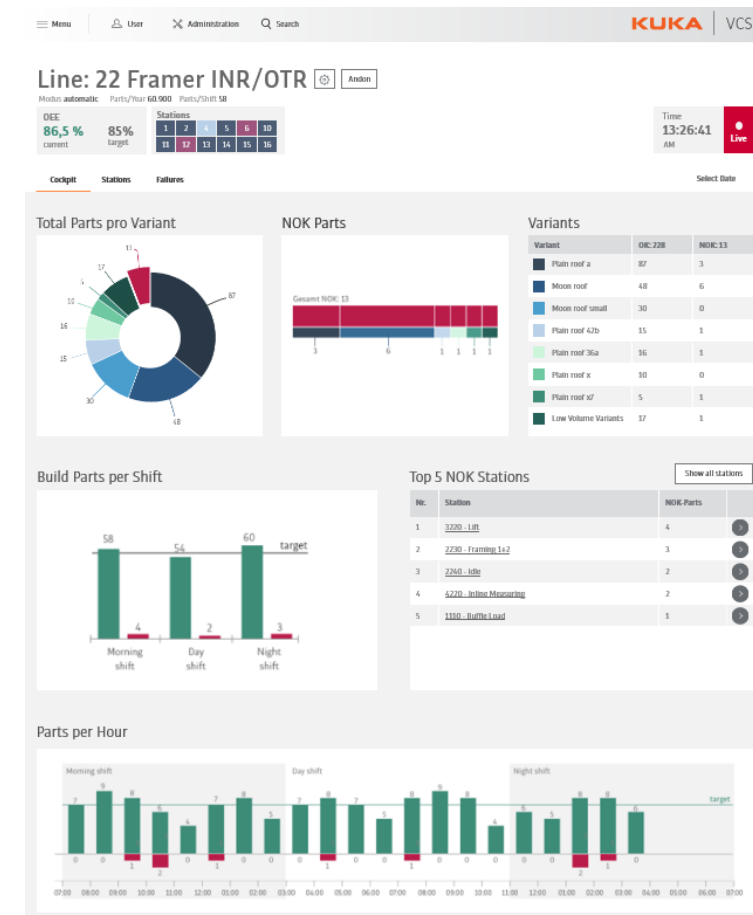


...through virtual shadow & digital retrieval of information (via QR code)

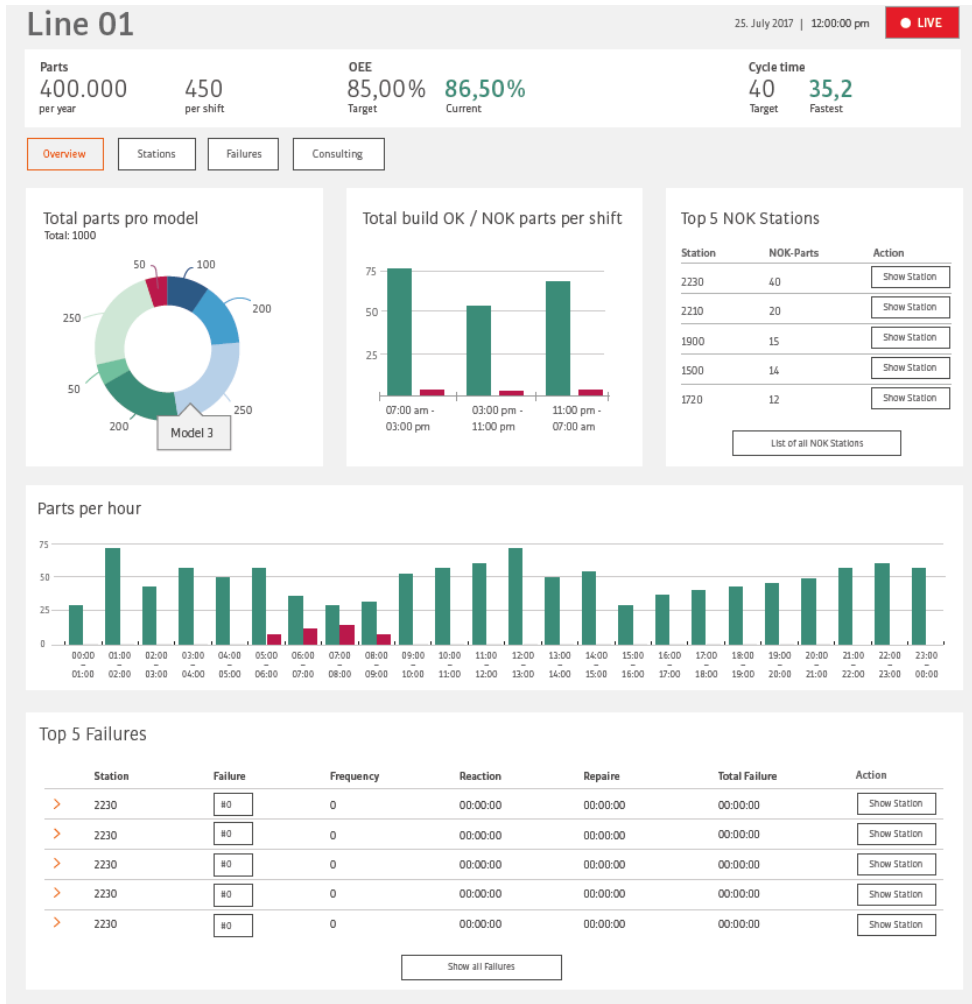
Availability



...through visualizing & validating adjustments



Use Case: Assembly Line 1 Augsburg



Thank you.



Marten Schirge
Vice President
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INSIGHT**



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Junior Business Developer
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KUKA

