



Scale effectively – Transform production network and supply chain

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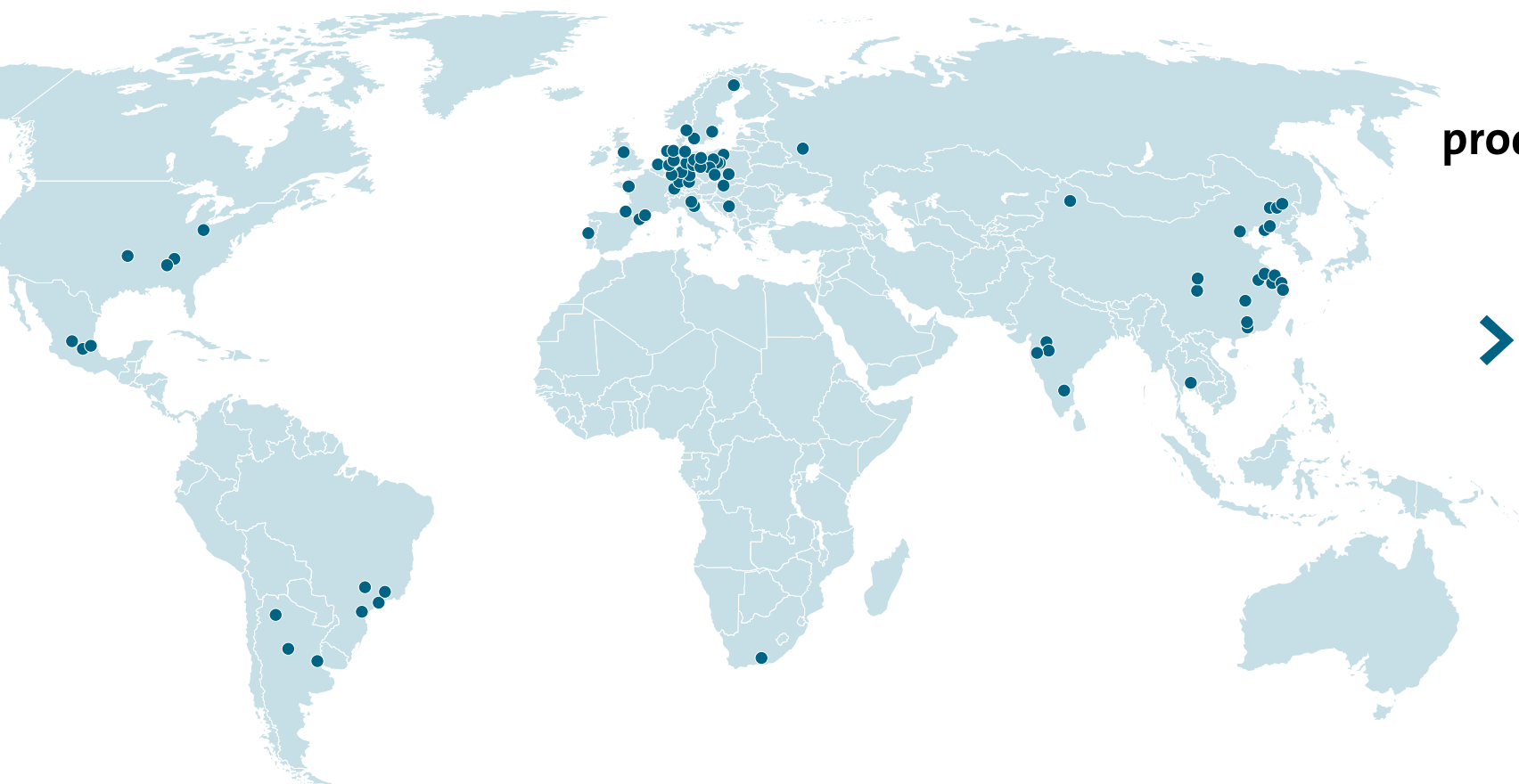
Classification: PUBLIC

Volkswagen AG with over 672,000 employees – a challenge for transformation

VOLKSWAGEN
AKTIENGESELLSCHAFT

VOLKSWAGEN

GROUP



119
production plants

12
brands

>40,000
suppliers

€250 bn
sales revenue

>60
product
ramp-ups

8,2 m
vehicles
produced



“NEW AUTO”

Volkswagen reinvents itself

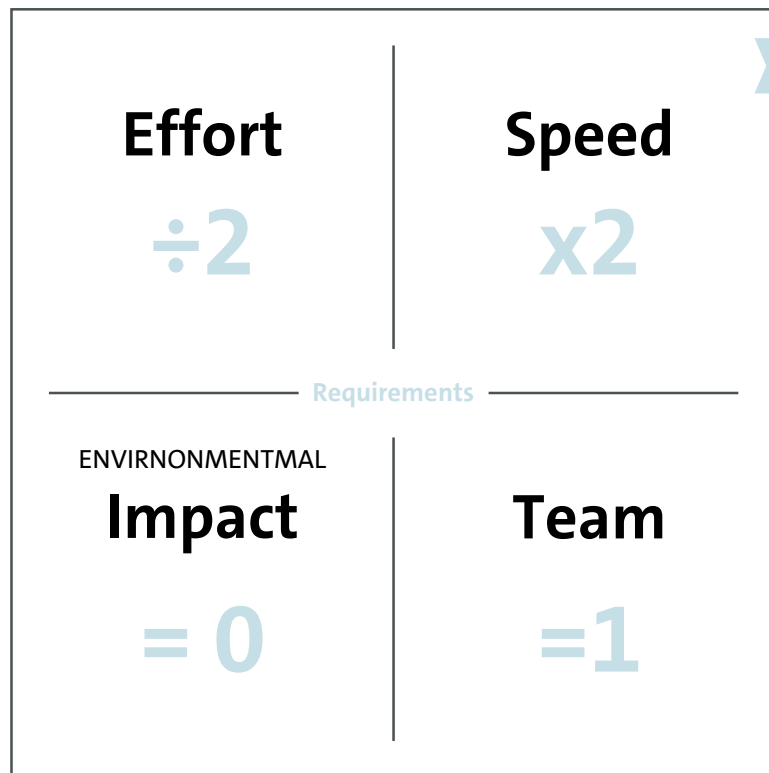
» “There is much to suggest that many of the parameters, paradigms, rules of thumb and empirical values we have accumulated over the past 100 years of automotive history will change fundamentally.

So it’s time to reinvent ourselves.”

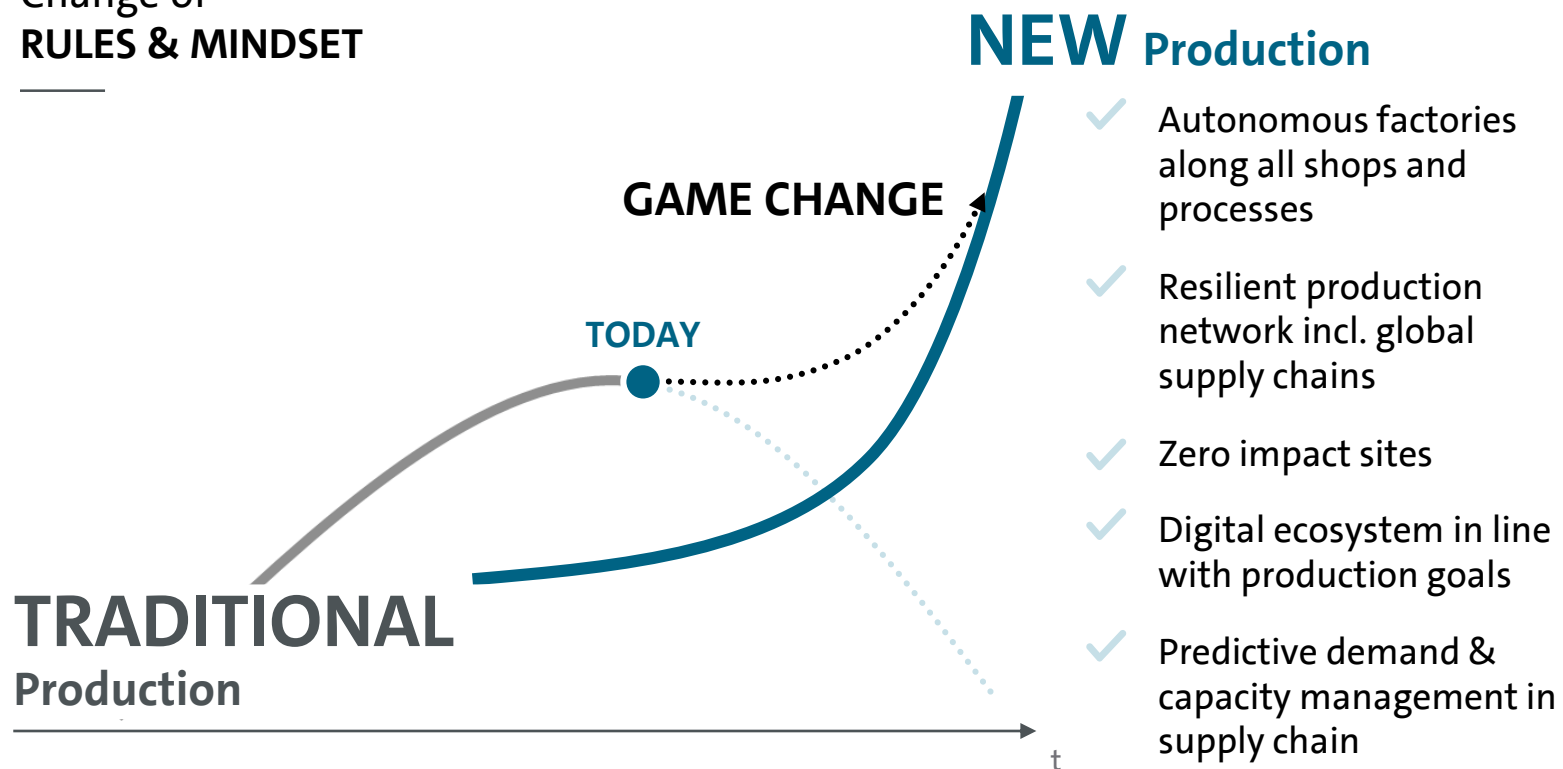
Herbert Diess

Strategy presentation NEW AUTO | July 2021

Aspiration requires change of rules & mindset



Change of
RULES & MINDSET



NEW AUTO needs NEW PRODUCTION

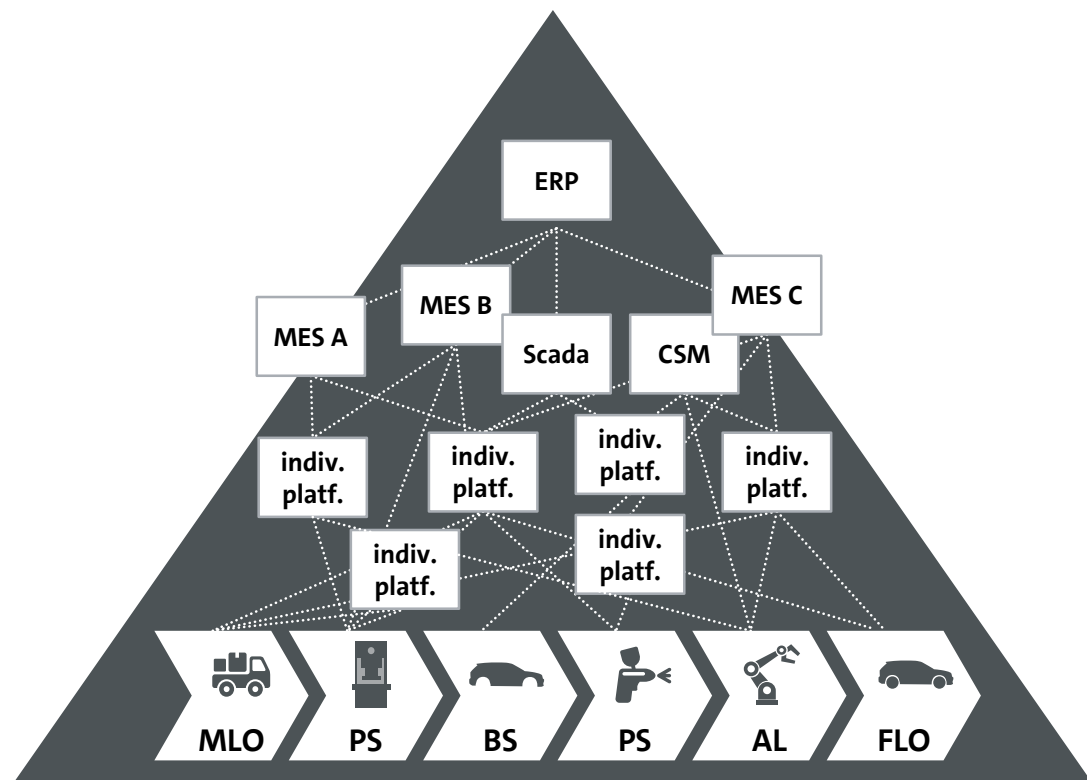
Paradigm shift of product & mobility requires a radical change in production!

How we create the technical basis for scaling

Industrial Cloud

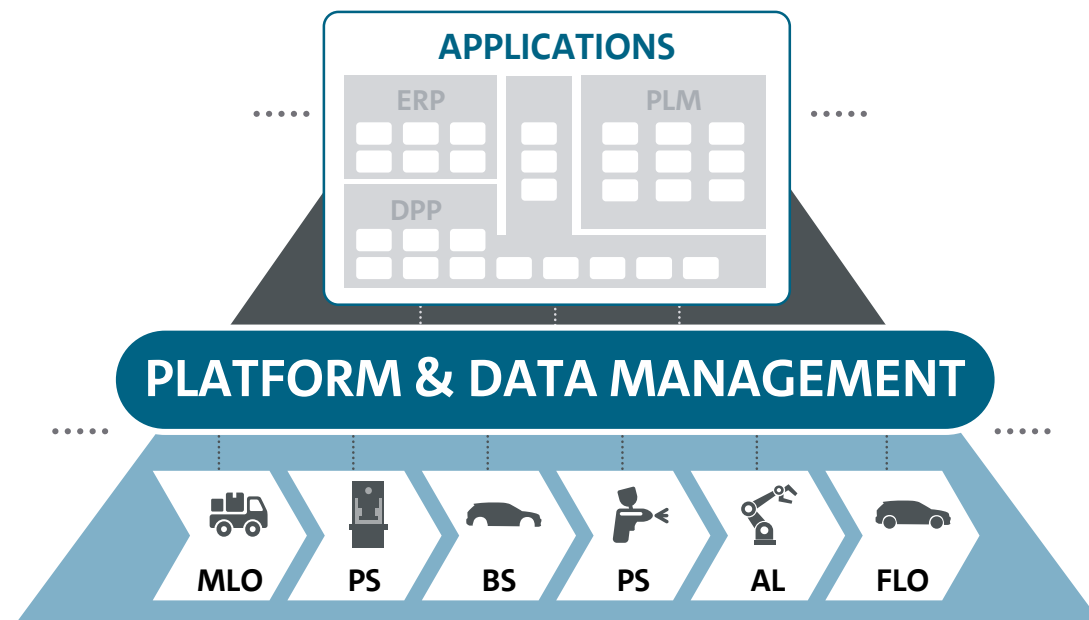


Volkswagen transforms a fragmented IT landscape to an integrated platform architecture



n to n interfaces between solutions

**Highly customized solutions
and thus redundancies**



One interface from asset to platform

**Decentral developed solutions
based on a standard platform**



The platform allows modular use case development to achieve interoperability and quick value capture



▲
Reusability,
scalability &
conformity

USE CASES

Solution to a problem
e.g. Intelligent Sign Inspection



**Reusability depends on
commonality &
standardization**

TECHNICAL CAPABILITIES

Described skill
e.g. Image Recognition



**Commonality allows
standardization**

SERVICES

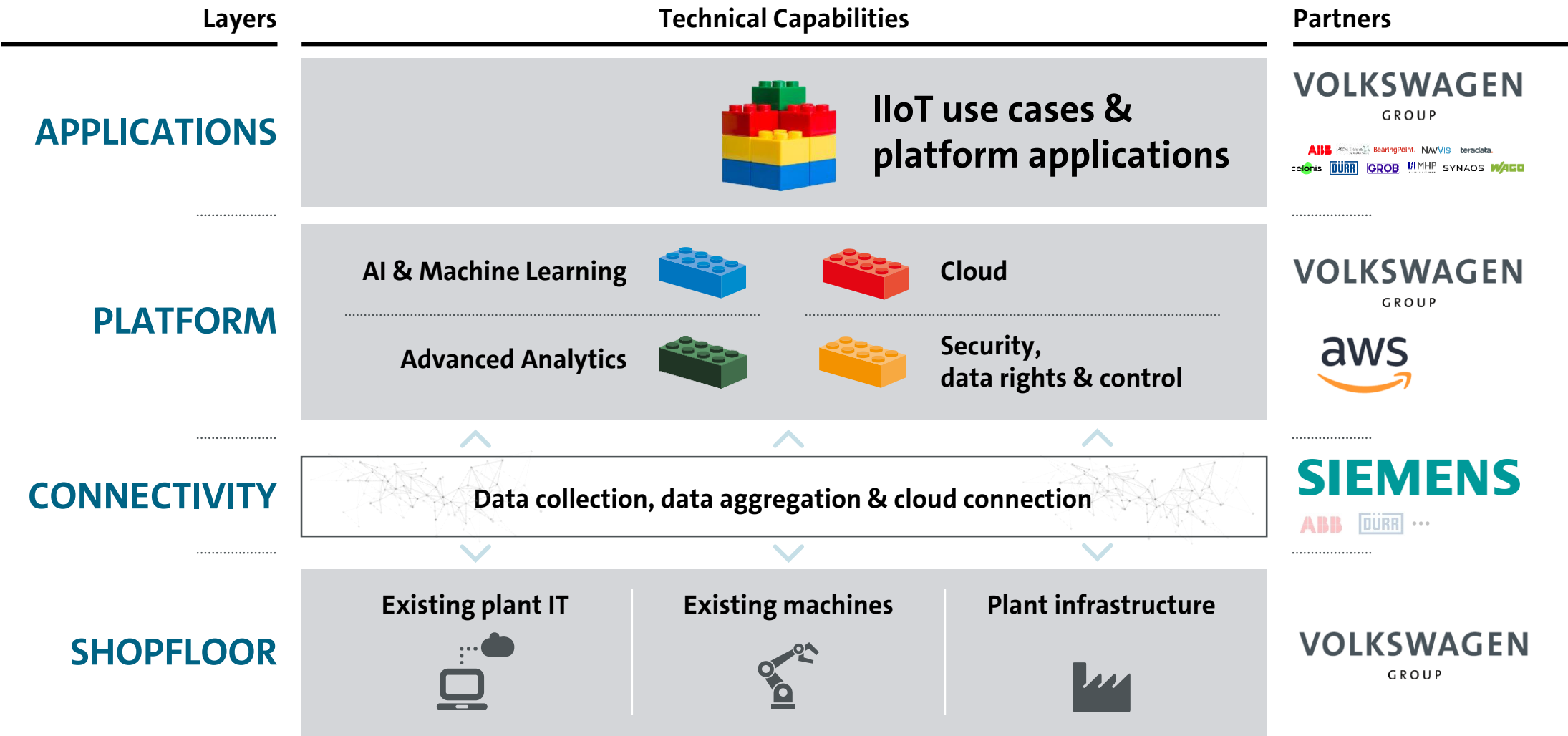
Ready-to-use software
e.g. Industrial Computer Vision



**Standardization enables
modular reusability**

Services provided by
 | **VOLKSWAGEN**
GROUP

To build the platform, Volkswagen attracts partners willing to invest



Example | Intelligent Sign Inspection use case unlocks the economy of scale

Example

ISI – INTELLIGENT SIGN INSPECTION



Leveraging **Industrial Computer Vision** platform service for automatic label recognition via stationary in-line cameras or image recognition app on mobile device



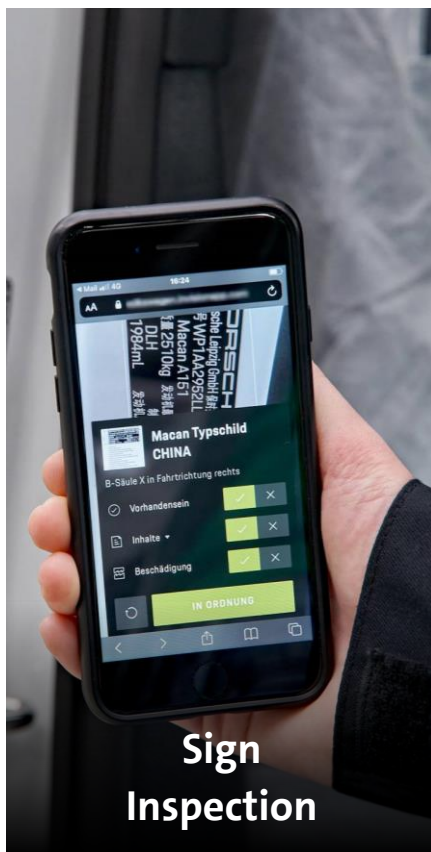
Scope

ROI

Single use case	Scaling platform	
	01	02
Individual plants	57 VW plants	External scaling
Several years	<1 year	Additional revenue

The Intelligent Sign Inspection is built on Volkswagens group-wide Vision Workbench

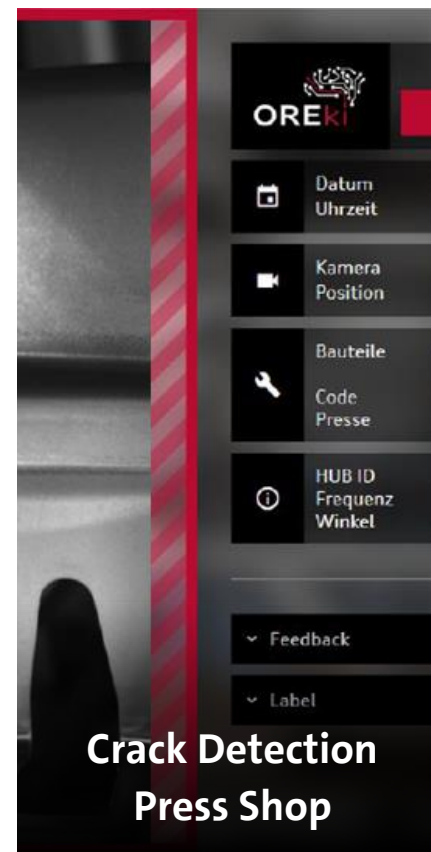
Volkswagen Vision WORKBENCH



**Sign
Inspection**



**Installation Control
Assembly**



**Crack Detection
Press Shop**



**Anonymization
of Images**

A QuickStarter Kit serves to create transparency for all plants across all use cases



With this platform approach Volkswagen focuses on enabling decentralized scaling



»» “We give developers a platform. And flexibility.”

“A store that welcomes competition.”



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»» “We give plants a platform. And flexibility.”

“A store that promotes efficient collaboration & development.”



Why does Volkswagen want to create the **INDUSTRIAL CLOUD ECOSYSTEM?**



01 Open innovation

Innovate faster by sharing use cases across companies in the ecosystem, creating a win-win situation for all members



02 Scaling

Create open standards for apps, services and use cases to rapidly scale across plants and companies



03 Value chain integration

Enable efficient collaboration across the whole ecosystem, help achieve productivity goals

How we create the organizational foundation for scaling

Industrial Cloud Solutions & Scaling Arena



The ICS portfolio is built up based on current challenges of the OEMs

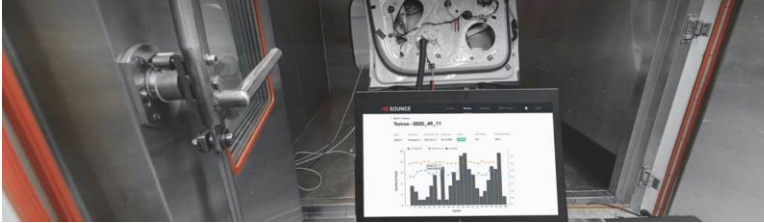
Alarm Cockpit

Consolidation of multiple alarms from various systems into one app



Source

AI-supported acoustics/vibrations based condition monitoring solution



Call Rocker

Automation & digitization of replenishment control



Centralized Data Mgmt. in Paint Shop

Analysis of paint shop quality data during operational process



Energy Data Reporting & Analytics

Creating transparency about consumption & identification of energy saving potentials to achieve ESG goals



Eagle

High speed and high throughput shop floor to cloud connectivity



Smart Twin

Optimization of assembly line feeding policies



Digital PDCA Process

System for identifying errors and causes in production, allowing knowledge transfer of measures between plants



Asset Management

Enabler for life cycle management of IoT software assets



Volkswagens ecosystem and platform will link to connect the automotive industry

