Connected Worker 4.0

Date: June 23, 2020
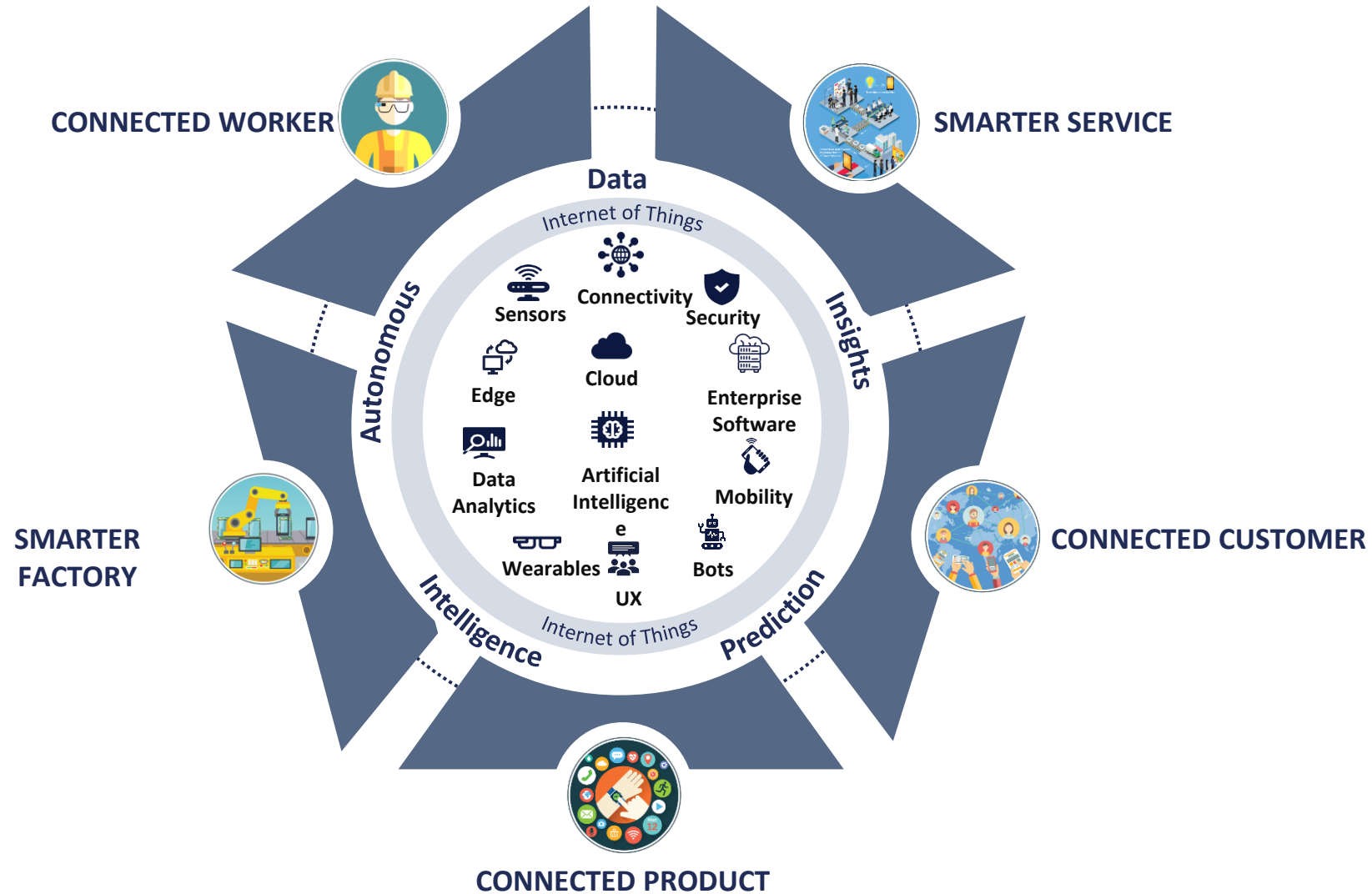
Michel Dorochevsky, Michael Ziermair, Michael Haider

Connected Worker 4.0

Introducing the core concept

Connected Enterprise

The ecosystem around the Connected Worker

CONNECTED WORKER

SMARTER SERVICE

CONNECTED CUSTOMER

CONNECTED PRODUCT

SMARTER FACTORY

Data

Internet of Things

Autonomous

Insights

Intelligence

Prediction

Internet of Things

Connectivity

Security

Sensors

Cloud

Edge

Enterprise Software

Data Analytics

Artificial Intelligence

Mobility

Wearables

Bots

UX

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Connecting the workers with new tools and technologies was always an enterprise goal and the current global situation is accelerating the trend for Connected Worker 4.0

1. Who is a Connected Worker?

- Device
- Data
- Decision

3. Why NOW?

- Productivity
- Health & Safety
- Technology
- Affordability

2. How is Connected Worker 4.0 different?

Device
- Wearable
- Mobile
- Camera

Data
- Information
- Edge
- Cloud

Decision
- Digital workflow
- Responsive operations
- Real time tracking

Devices in detail
The toolset enabling the connected worker

ASSISTED REALITY

- Aligned to real world situation
- Displays context-relevant information

Google Glass EE 2

Vuzix M400

Realwear HMT-1

AUGMENTED REALITY

- Creates computer generated enhancements on top of existing situation
- Aids in enhancing the situation for better user experience

WebAR / WebVR

Microsoft HoloLens 2

ARKit 3/ARCore

VIRTUAL REALITY

- Artificial, computer generated simulation of a situation
- Immerses user in situation by simulating vision and hearing

HTC Vive

Oculus

Oculus Rift S

NON-REALITY DEVICES

- Spans from handheld devices to drones

Smartphone Tablet

Drones

Camera

Connected Worker Solution
Key Features

You-See-What-I-See

Hands-free operation

Step-by-step work instructions

Business workflows

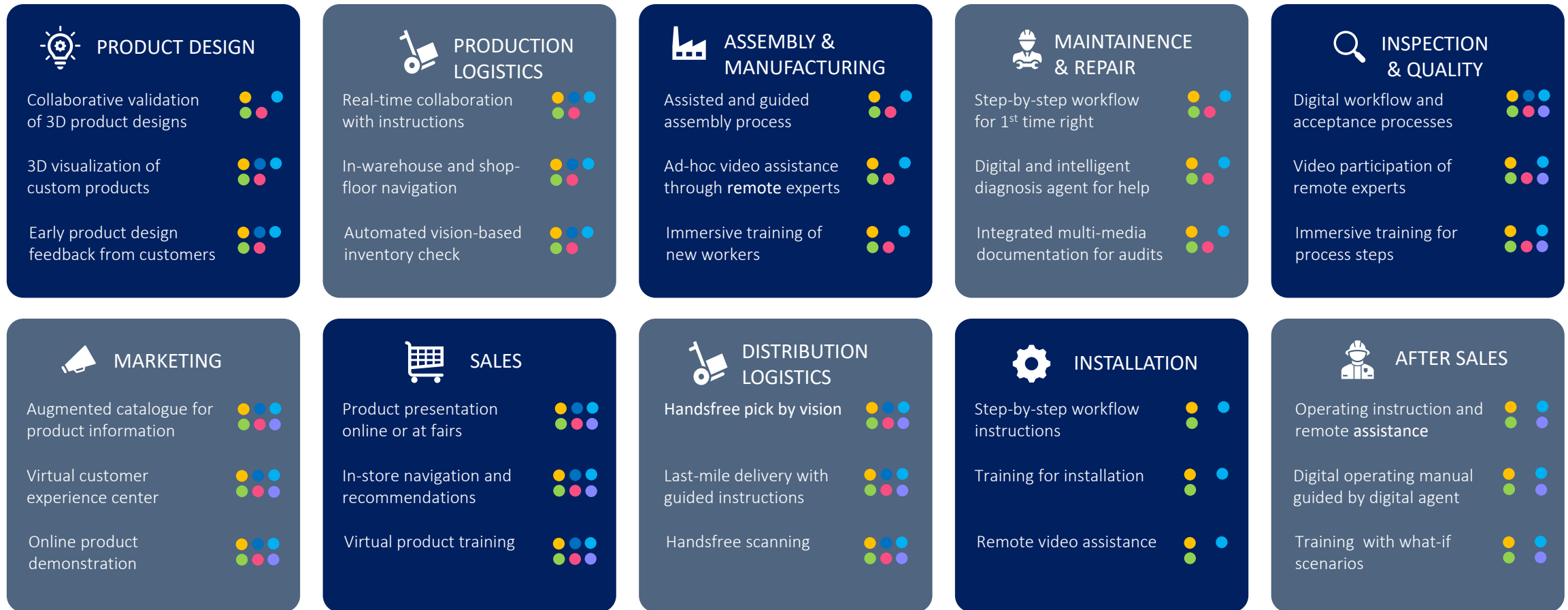Speech to text conversion

Capture images and videos

Top 30 use cases for the Connected Worker along the value chain

PRODUCT DESIGN
- Collaborative validation of 3D product designs
- 3D visualization of custom products
- Early product design feedback from customers

PRODUCTION LOGISTICS
- Real-time collaboration with instructions
- In-warehouse and shop-floor navigation
- Automated vision-based inventory check

ASSEMBLY & MANUFACTURING
- Assisted and guided assembly process
- Ad-hoc video assistance through remote experts
- Immersive training of new workers

MAINTAINENCE & REPAIR
- Step-by-step workflow for 1st time right
- Digital and intelligent diagnosis agent for help
- Integrated multi-media documentation for audits

INSPECTION & QUALITY
- Digital workflow and acceptance processes
- Video participation of remote experts
- Immersive training for process steps

MARKETING
- Augmented catalogue for product information
- Virtual customer experience center
- Online product demonstration

SALES
- Product presentation online or at fairs
- In-store navigation and recommendations
- Virtual product training

DISTRIBUTION LOGISTICS
- Handsfree pick by vision
- Last-mile delivery with guided instructions
- Handsfree scanning

INSTALLATION
- Step-by-step workflow instructions
- Training for installation
- Remote video assistance

AFTER SALES
- Operating instruction and remote assistance
- Digital operating manual guided by digital agent
- Training with what-if scenarios

LEGENDS

● INDUSTRIAL　　● TRANSPORTATION　　● TELECOM　　● ENERGY & UTILITIES　　● RETAIL　　● FINANCIAL SERVICES

Most prevailing use cases today

INSPECTION AND QUALITY

Use Case
Utilising Connected worker devices, speech to text AI to automatically create reports during inspections

BUSINESS BENEFITS

- Reduce overall inspection up to 33%
- Eliminate secondary or tertiary efforts resulting from incomplete protocols (missing images)

TECHNOLOGY Enabler

Assisted Reality, Augmented Reality, Artificial Intelligence, Cloud

FIELD SERVICE MANAGEMENT

Use Case
Utilising Connected worker devices to support on site employees through real time video-audio calling

BUSINESS BENEFITS

- Drastically reduce global support process conclusion time through remote support
- Minimise travel cost
- Better Utilisation of expert resources

TECHNOLOGY REQUIRED

Assisted Reality, Augmented Reality, Artificial Intelligence, Cloud

TRAINING & SKILL DEVELOPMENT

Use Case
Utilising Connected worker devices for highly immersive training of emergencies and complex procedures

BUSINESS BENEFITS

- Ensure higher knowledge retention rates of training content through accurate simulation of emergencies

TECHNOLOGY REQUIRED

Virtual Reality, Artificial Intelligence, Cloud

Customer Story

Energie Burgenland on their Connected Worker journey

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Who We Are?

- Largest energy provider of Burgenland
    - 200.000 electricity connections
    - 50.000 Gas connections
- Focus on renewable energy, specifically wind power
- Our mission is innovation leadership in the fields of economic and renewable energies

NETZBETRIEBE				2018/19
Strom	Zählpunkte Netz	Anzahl		205.188
	transportierte Menge	GWh		1.814
	Netzlänge	km		9.800
Erdgas	Zählpunkte Netz	Anzahl		52.326
	transportierte Menge	GWh		2.337
	Netzlänge	km		2.620

At a Glance
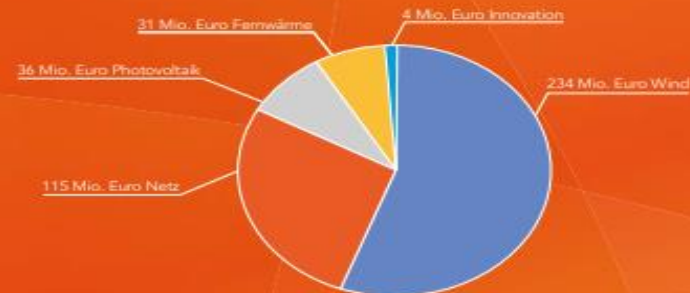
What improvements did we want to make?

energie BURGENLAND

Time-optimization of our acceptance/maintenance processes using
Connected Worker technologies to create protocols automatically during the process.

| Challenges	Goals
Inefficient co-ordination processes between admin and the consumer	Web tool for efficient creation of workorders, including synchronization with Smartglass and Smartphone
Paper-based acceptance/maintenance documents, including lengthy post-processing	Fitting the acceptance specialists with Smart Glasses for automatic generation of protocols
Angle of view on the defects is difficult for photo / video recordings on a narrow wind turbine	Combination of Smart Glasses and Smart Phones for the best flexibility possible
Manual defect identification can lead to different evaluation of defect images	Automatic identification of damage using artificial intelligence

How we improved the process . . .
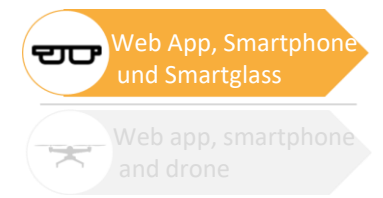
Creation of work package via Web Tool

Assessor synchronize WP*) with Smart Devices

Herzlich willkommen
Christian Seidler

Meine Arbeitsaufträge

Mit Web synchronisieren
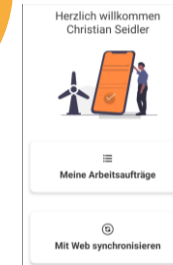
Inspection of wind plant via SmartDevice and Speech-to-text KI

Upload to webtool with automatic translation of the language into text

Acceptance by means of checklist on Smart Device completed

24 Abschnitte

Außenanlage

Turmkeller/ T

SF 6

Info

16 Fragen

Polschuhwicklungen

Statorwicklung

Statorwicklung ohne Metallspäne

Assessor checks and submit the checklist
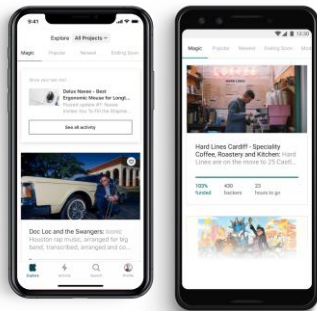
Automatic created protocol

Online Modus   Offline Modus

*) WP Work Package

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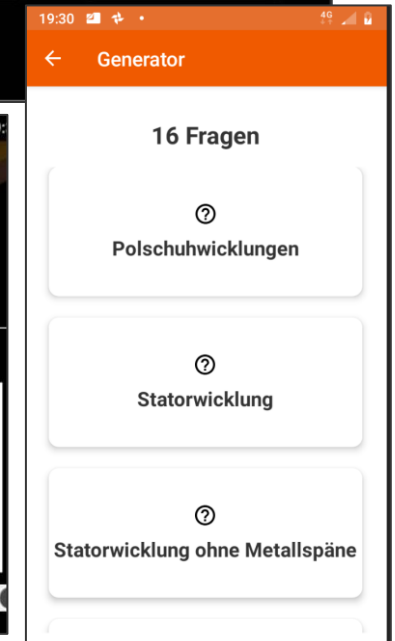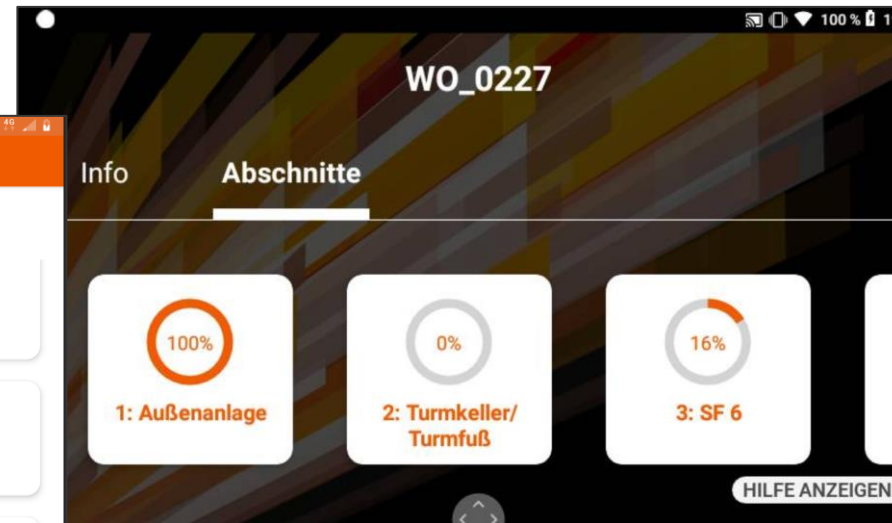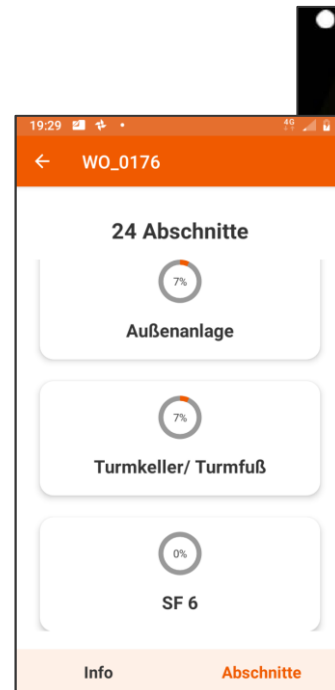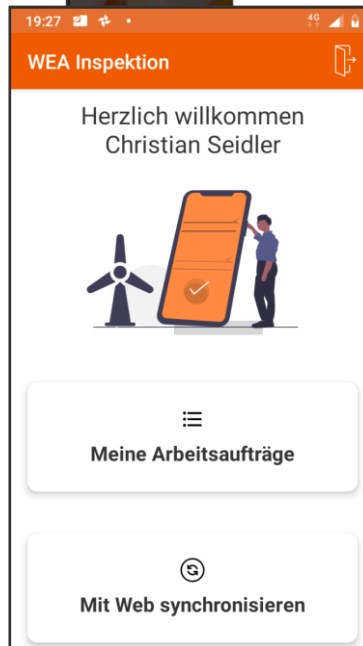# Some impressions of our wind farm plants …..

Our connected worker solution...

Realwear
HMT-1

Smartphone

Why field trials are so crucial ….

Only by performing practical tests were we able to identify use-case specific problems at an early stage and quickly develop solutions

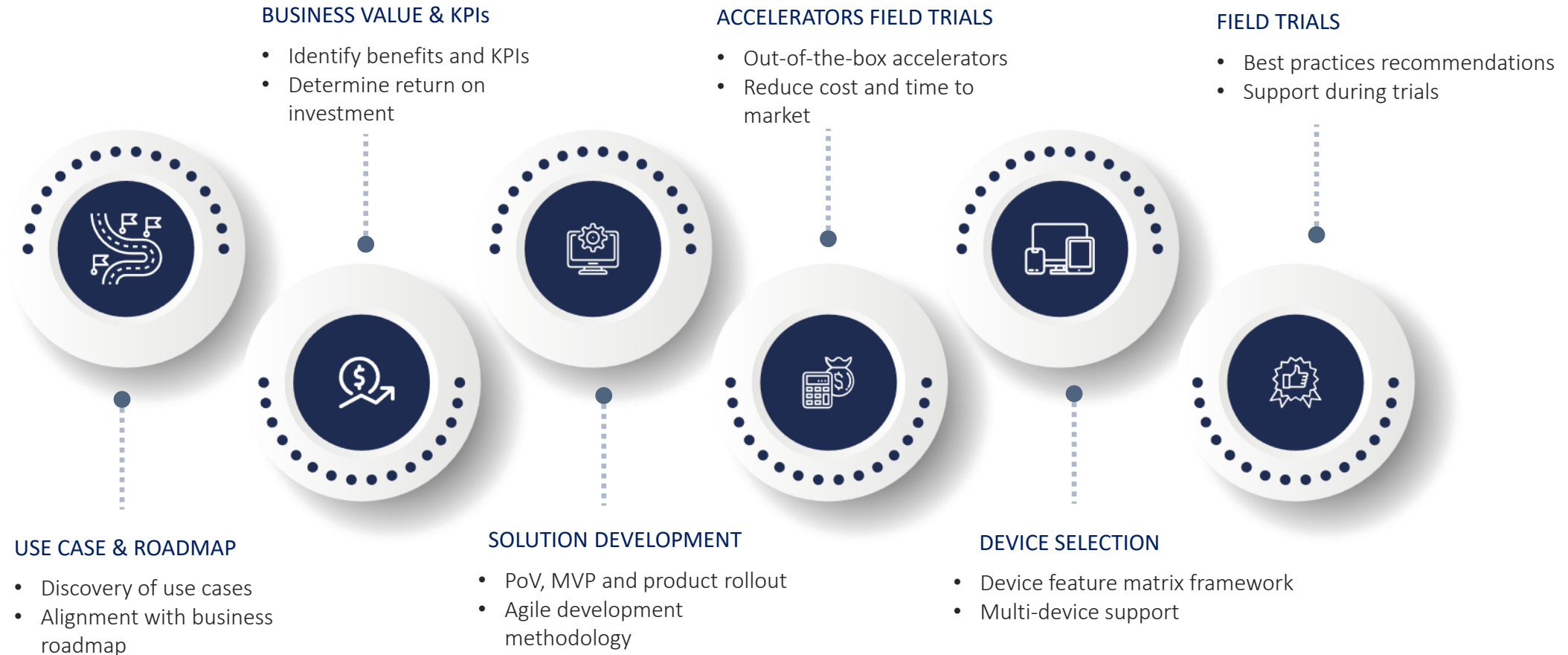| Challenges	Our solution
Strong winds at a height of up to 150 metres have a negative effect on the quality of the audio recording	Analysis of solution hardware and retrofitting of Smart Glasses with wind filters
Simultaneous processing of the same checklist on Smartphone and Smart Glass	Development of an upload logic for frictionless merging of the checklist
Navigation in complex checklists	Development of a voice control system for direct control of checklist elements for easy navigation

Getting started in six steps

BUSINESS VALUE & KPIs

- Identify benefits and KPIs
- Determine return on investment

ACCELERATORS FIELD TRIALS

- Out-of-the-box accelerators
- Reduce cost and time to market

FIELD TRIALS

- Best practices recommendations
- Support during trials

USE CASE & ROADMAP

- Discovery of use cases
- Alignment with business roadmap

SOLUTION DEVELOPMENT

- PoV, MVP and product rollout
- Agile development methodology

DEVICE SELECTION

- Device feature matrix framework
- Multi-device support

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Key Takeaways

- Connected Worker 4.0 = Device, Data, Decision

- Devices are an enabler for your workers and should be tailored to your use case, your work environment and the preferences of your workforce

- Connected Worker solutions encompass: Realtime video-audio, business process workflows and step by step instructions

- Connected Worker solutions help you with business continuity in the "new normal" and beyond

- Connected Worker solutions can grow into an ecosystem that span across your entire value chain

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Interested in more details on Connected Worker? Feel free to contact us:

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THINKING BREAKTHROUGHS