Digitalization and IoT focus: Industry

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Background / Activity

- **Education**   1987, BSC, Telecom (RF) ,Oulu and 2000 MSC, Information Technology, JKL

- **Prof. Experience**   1987 Nokia;   expertise R&D, Manufacturing, Salo

  1992 Aplicom;   expertise Sales, R&D/Quality

  1996 Jyväskylä Science Park,   expertise Networking

  1999 WTS, CEO   expertise Team creation and Growth

  2003 Ixonos,   expertise Global Business

  2013 Espotel, CEO   expertise Leadership

- **Entrepreneuship**   1998 WTS Wireless, Founder and CEO   => Exit 2003

  2002/ 2006 WTS Networks merge with Kilosoft   => Exit 2014

  2013 Espotel, Co-investor with Sponsor Capital   => Exit 2016

  2008 Firstbeat Tech, Chairman

- **Family life**   1990 Henri, 1993 Perttu, 2004 Riina

  Several "do it yourself houses" 1994, 2006, 2008

- **Current** 2016 SVP Etteplan and CEO Espotel, CoB Firstbeat   kari.liuska@etteplan.com

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Etteplan in brief

- One of the largest engineering services companies in the Nordic countries

- Established in 1983

- The biggest Nordic company offering design engineering services in China

- Revenue in 2015: EUR 141.1 million

- Personnel: 2,500+

- Etteplan's shares are listed on Nasdaq Helsinki Ltd under the ETT1V ticker

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Engineering with a difference
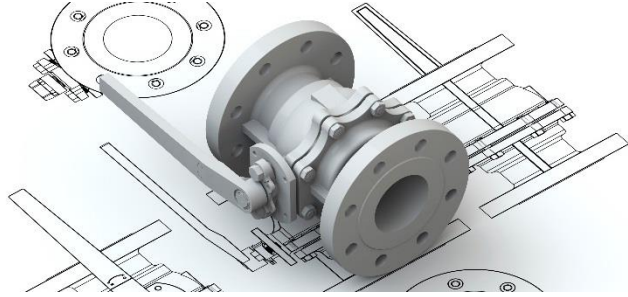
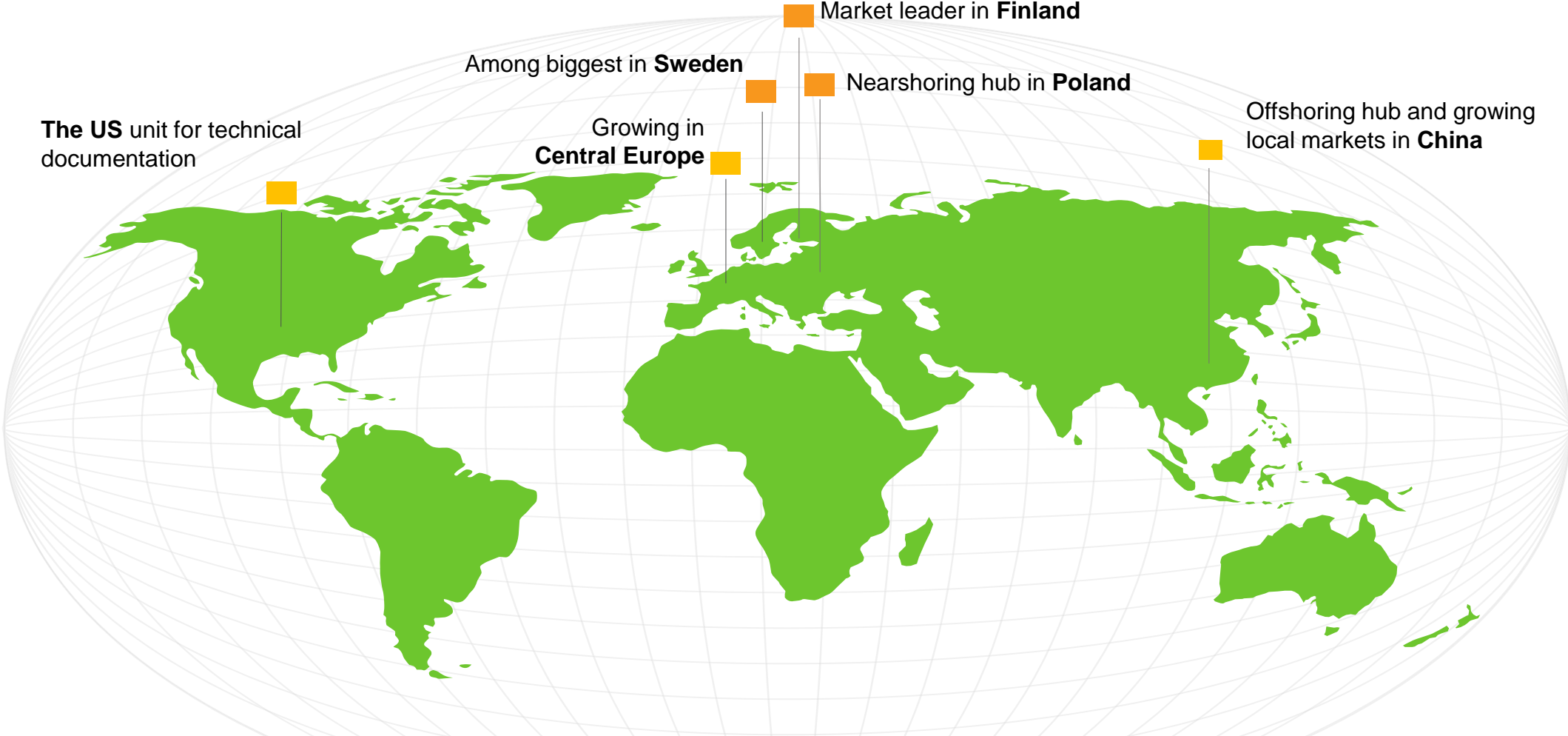**Engineering services** support customer's product development and machine manufacturing.

Technical documentation services improve the efficiency of the service business of equipment manufacturers.

Embedded systems and **IoT** (Internet of Things) bring intelligence to machines and equipment and enable their networking.

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Etteplan worldwide - 58 offices

Market leader in **Finland**

Among biggest in **Sweden**

Nearshoring hub in **Poland**

Offshoring hub and growing local markets in **China**

The US unit for technical documentation

Growing in **Central Europe**

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What is Internet of Things (IoT)

What is Internet of Things (IoT)

product → smart product → smart connected product → product system → system of systems
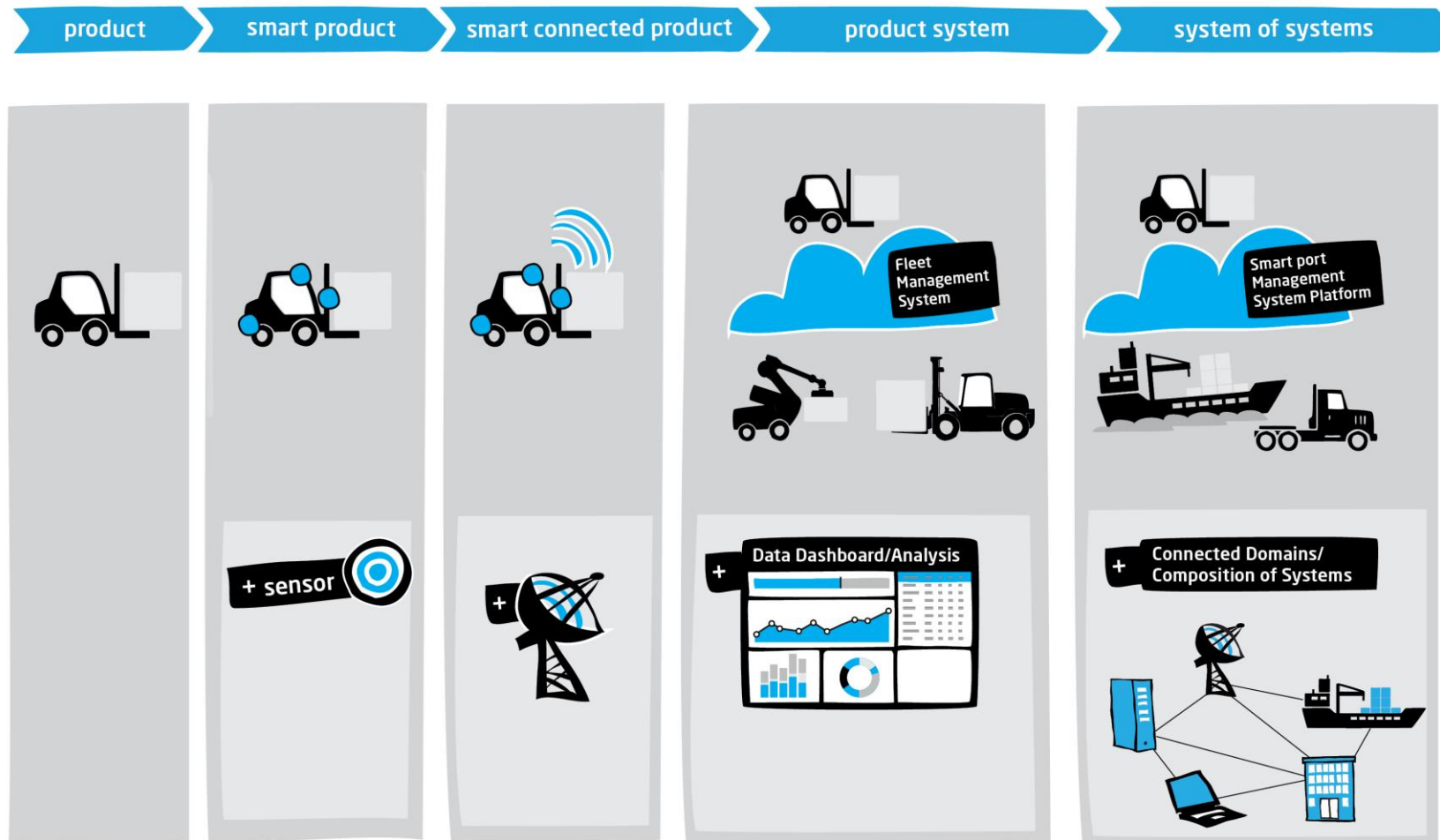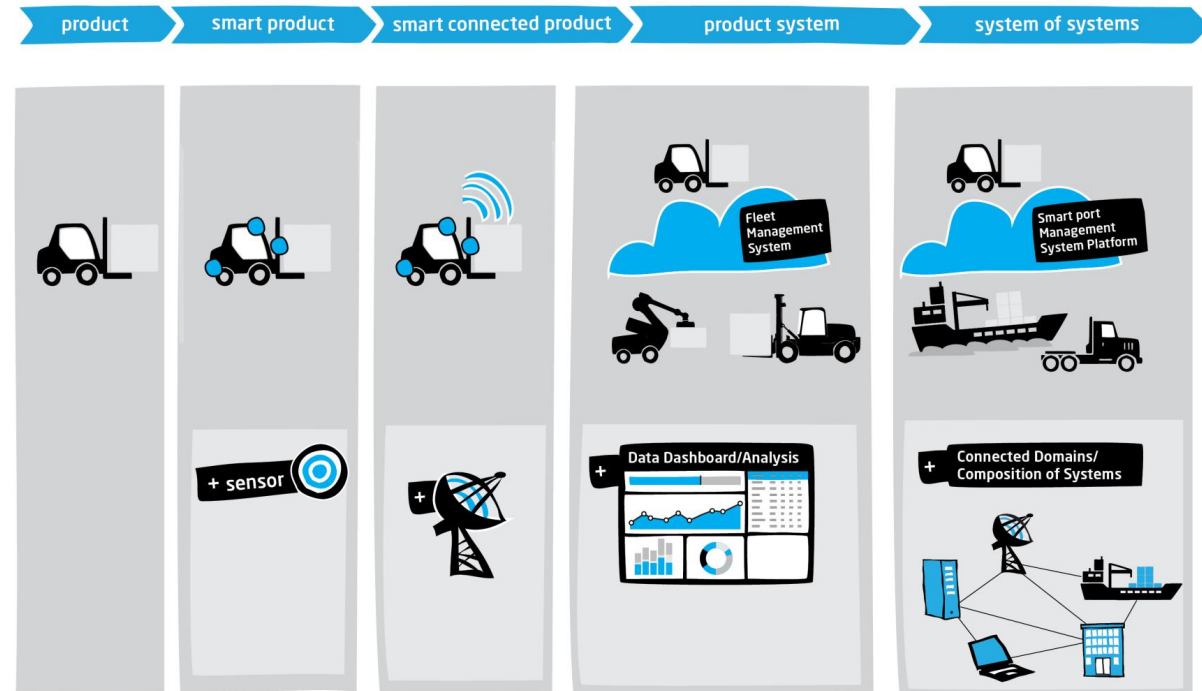
- 5G
- Artificial Intelligence
- Analytics

➢ Identity

ARM

Nokia
Ericsson

IBM / Watson
Amazon, Microsoft

IT companies

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References

The SKS Group is a Finnish family-owned enterprise founded in 1924. The core businesses and six companies are in Finland.

Drawing on its strong technical skills, the SKS Group offers product and service solutions to machine and equipment builders in Finland and other selected market areas.

The **WLT 310** is a wireless **LoRa** (Long Range Radio) transmitter designed for various industrial applications and capable of sending data over extremely long ranges. The smart transmitter's application parameters are configurable Over-the-Air (OTA) and it continuously measures process values. It is a low-energy transmitter with a battery life of several years, the LoRa technology has zero operating costs, and no 3G/4G network is needed.

The Gateway user interface suits various terminal devices and allows sensor networks to be easily configured. The Gateway includes its own local database that buffers the measurement data.

The cloud-based user interface monitors process values and allows external data to be combined with the measurement data.

SKSGROUP

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Gartner

Operate
- Remote control; like faster ROI because of smaller maintenance costs

Manage
- Use data for process optimization;
- Optimized Maintenance Services
- Sell new features into installed products

Monetize
- Pay-per-use
- Sell data (with value)

Extend
- Create business from data; sell access to digital services and smart analytics

The impact of IoT on the service business

IoT is not only about how assets and devices connect remotely.

It's about how to:

- Generate value for the customer
- Continuously improve the efficiency and productivity of the customer's operation
- Create new service offerings

➢ More uptime and Revenue for the customer

Traditional

Product Transaction Model
- Warranty Support
- Replacement Parts
- Field Service
- MRO

Future

Customer Relationship Model
- Remote Monitoring & Diagnostics
- Predictative Maintenance
- Enhanced Services
  - Performance
  - SLA
  - Energy management
  - Etc.
- Hybrid Product/Service offering

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From reactive to predictive maintenance

Time-to-Failure	Months	Weeks	Days	Failure
Maintenance Program / Model	**Predictive** (based on usage and wear characteristics to predict failure)	**Condition-monitoring** (based on standard asset operation)	**Preventive** (based on time or operational cycles)	**Reactive** (based on asset failure)
Vibration sensor	**Vibration detected, corrective action taken**	**Wear evidence** **Performance decrease** **Audible Noise** **Hot to touch**		**Motor Fails** must be repaired or replaced

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Top goals for service in 2016

■ Best-in-Class

Goal	Percentage
Improve customer retention / loyalty / satisfaction	58%
Improve service-related profitability	54%
Improve quality / relevance of service data	39%
Improve service information capabilities (i.e., mobility, knowledge sharing)	38%
Expand the breadth and complexity of service offerings	32%
Improve service workforce training	31%
Drive / compensate field upselling	20%
Boost service workforce engagement	17%

Percentage of Respondents, n = 377
Source: Aberdeen Group

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Causes for ineffective service

All Respondents

Cause	Percentage
Part unavailability (i.e., incorrect part, no part available)	29%
Customer / asset not available for service (i.e., access to customer property, equipment)	28%
Improper diagnosis (at time of dispatch)	19%
Technician did not have the right skills	15%
Resolution was only temporary	8%
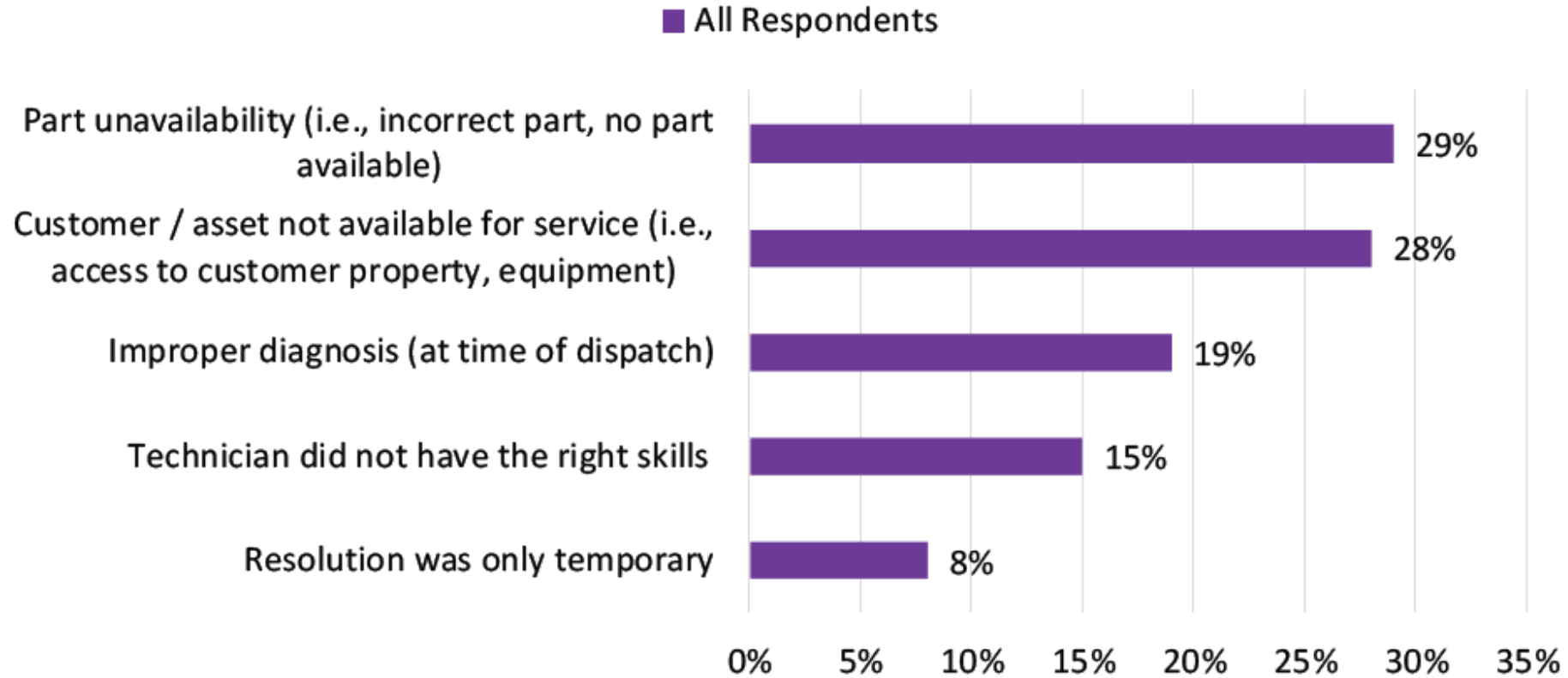
n = 181
Source: Aberdeen Group

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The connection is not completely there yet

Legend: ■ Best-in-Class ■ Industry Average ■ Laggards

Bar chart — Average Result (y-axis, 0% to 50%):
- Best-in-Class: 45%
- Industry Average: 39%
- Laggards: 35%

X-axis label: Percentage of serviceable equipment connected to remotely

n = 377
Source: Aberdeen Group

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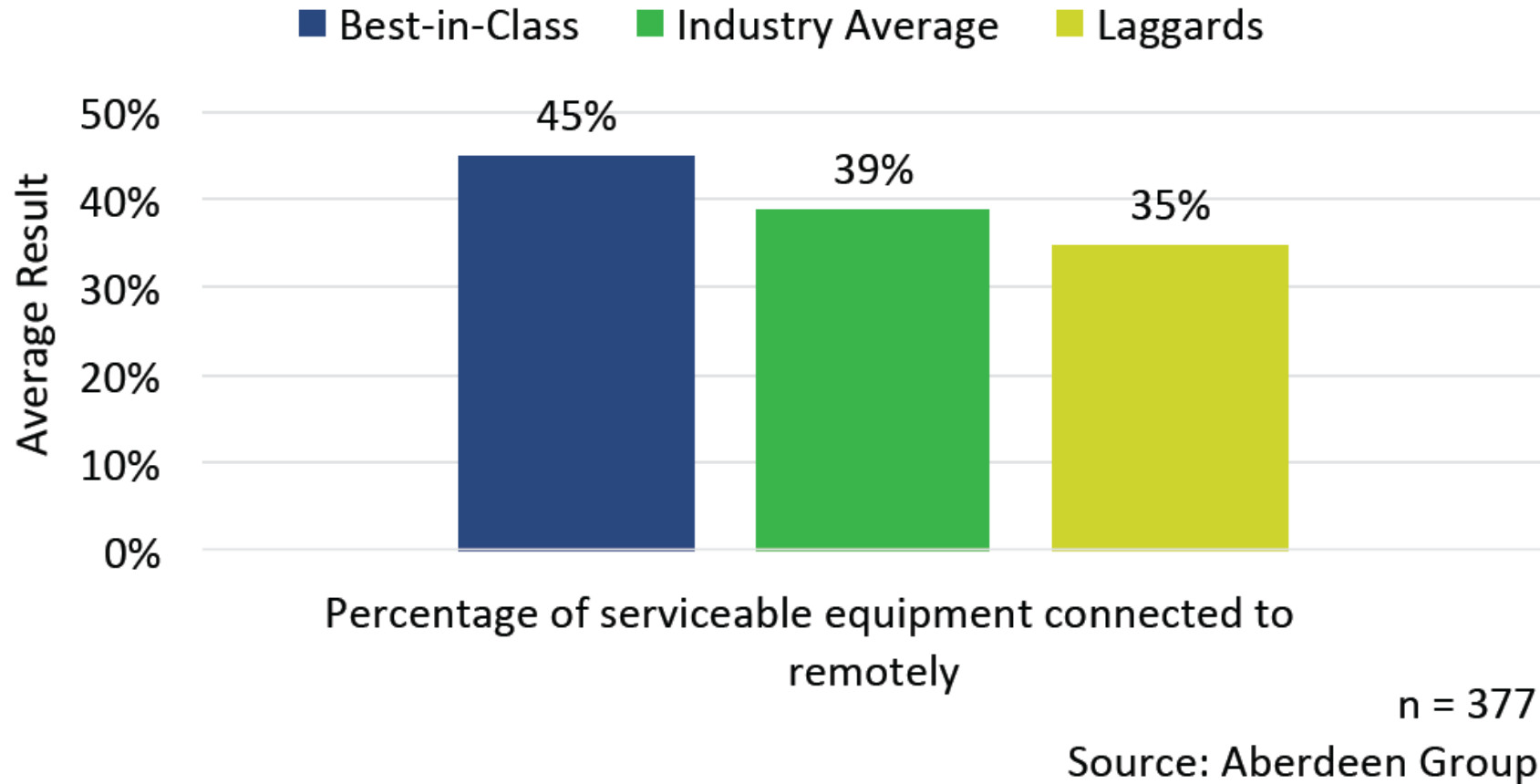
The IoT enhances service in many ways

■ All Respondents

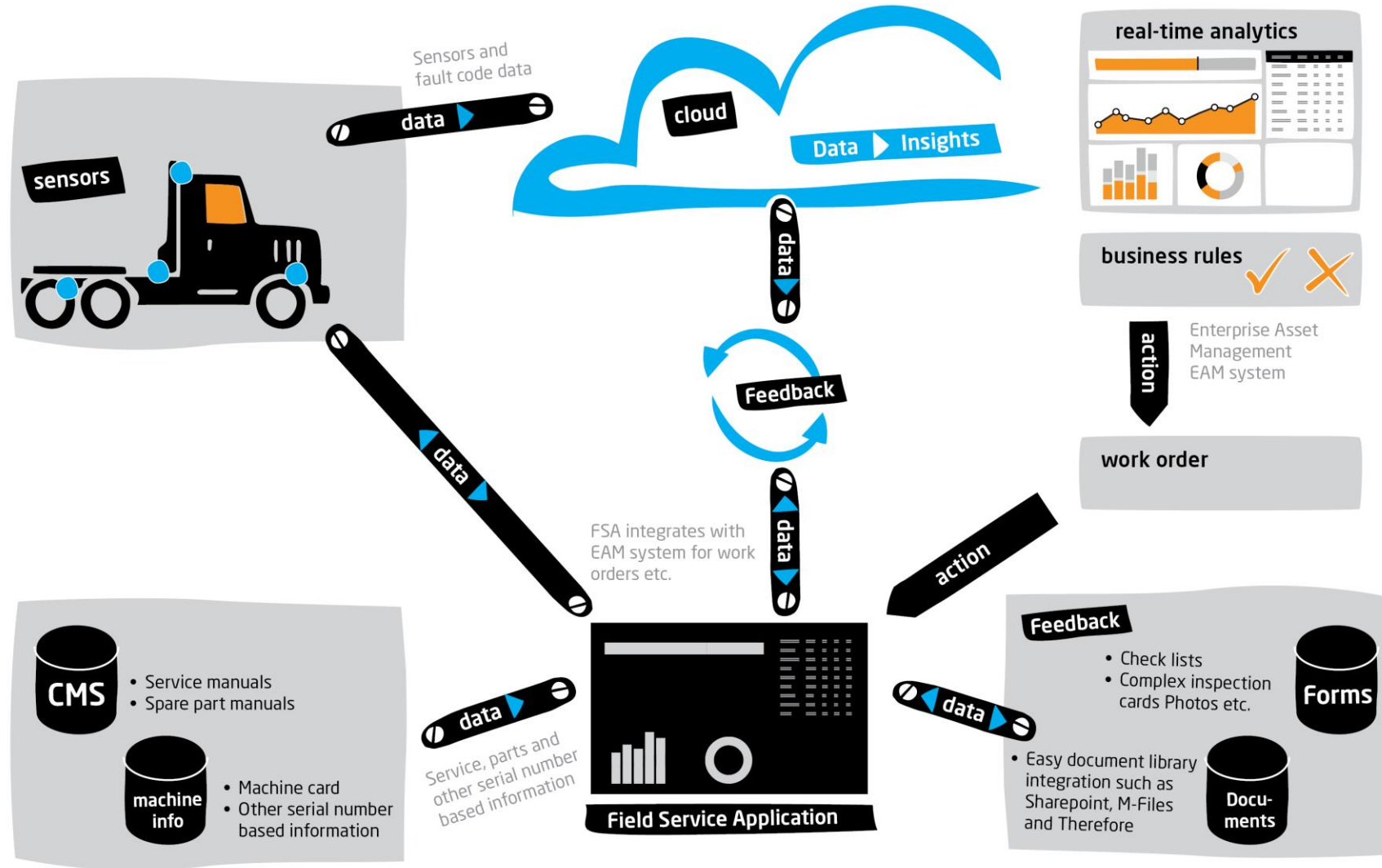| Category	Percentage
Create new service offerings	54%
Customer self-service	50%
Less on-site service / more remote resolution	34%
Product development / innovation	33%
New revenue streams	26%
Automatic dispatch of field service team	14%

n = 377
Source: Aberdeen Group

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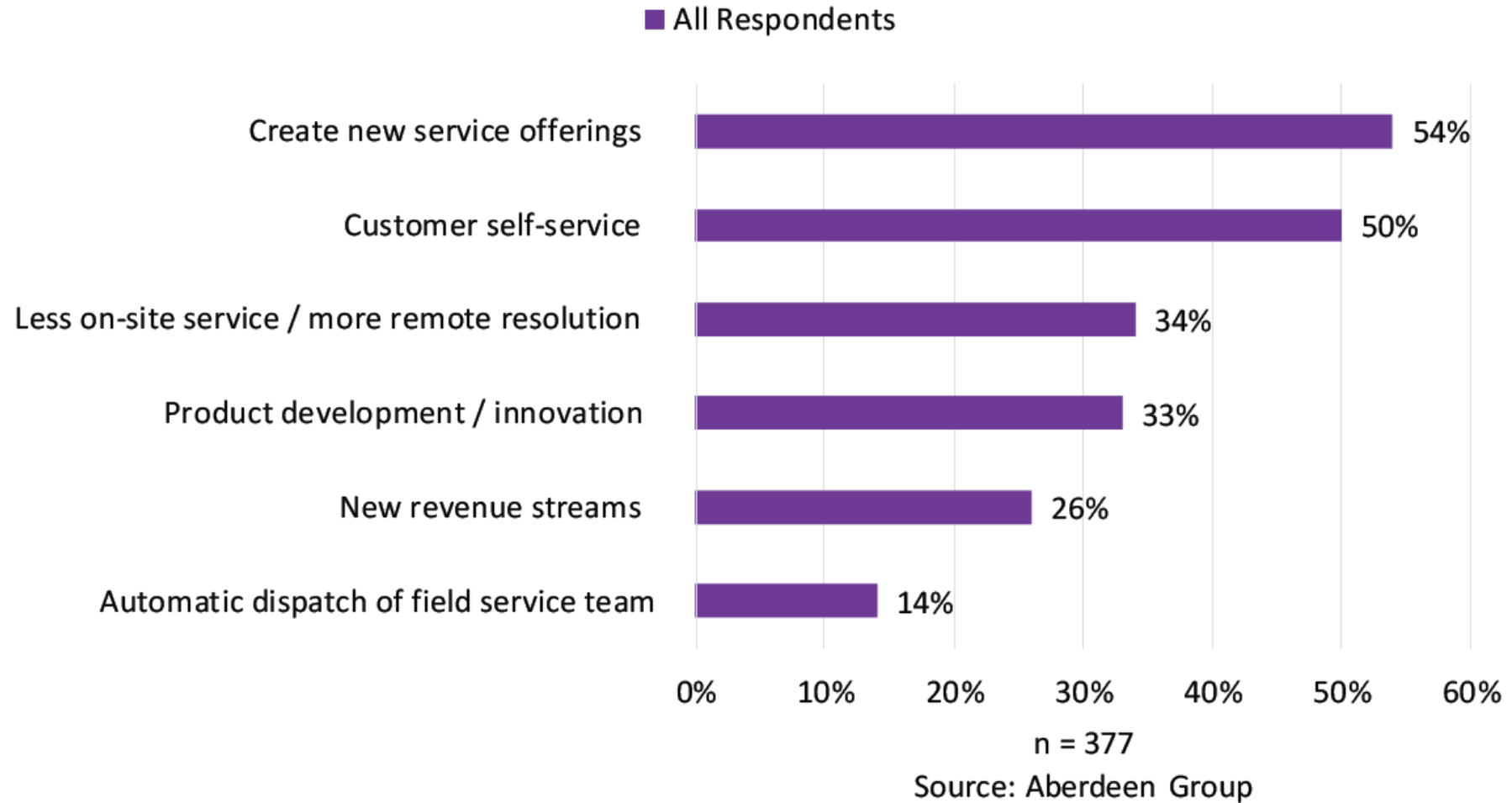
Finding new business models

- Siemens wanted to turn data generatedby its own products and solutions into more value for customers

- Each gas turbine has 1,500 sensors

- Turbine maintenance service generates 30 gigabytes of data per day

- Continuous operations data transmitted to a Siemens service center in real time

- Smart evaluation tools to analyze big data and calculate the likelihood of a breakdown

- New service offerings from insights: 200 ideas for service, out of which 12 new business models were developed

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From IoT to service information

Sensors and fault code data

data ▶

sensors

cloud

Data ▶ Insights

real-time analytics

data ▼

Feedback

data ▲

business rules ✓ ✗

action

Enterprise Asset Management EAM system

work order

FSA integrates with EAM system for work orders etc.

action

Feedback
- Check lists
- Complex inspection cards Photos etc.

Forms

data ◀

- Easy document library integration such as Sharepoint, M-Files and Therefore

Docu-ments

CMS
- Service manuals
- Spare part manuals

machine info
- Machine card
- Other serial number based information

data ▶

Service, parts and other serial number based information

Field Service Application

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References

Specializing in smart energy metering and smart grid applications, the technology company Aidon is Finland's market leader in its field. The company offers new-generation energy service devices based on open architecture as well as data transfer and system solutions.

Aidon supplies its customers with approximately 300,000–400,000 electricity meters each year, and therefore the reliability of testing system, quality, durability of components and end products play a key part. Espotel has supplied Aidon with several test systems, and both companies have also current co-operation projects under way.

"In Finland, there are not many testing houses with embedded software and production competence under the same roof. On the Finnish scale, Espotel is the only credible player with a sufficient scope, expertise and knowhow to do business", **Petri Ounila**, Head of Production at Aidon.

Aidon 6534
3×230/400V
0,25 - 5(85)A
TCM 221/10 - 4769

-40°C to +70°C
P 1000imp/kWh
SO 500imp/kWh
50Hz

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CE M11 1383

What's changing?

- The way people **consume** information (the end user will want to bring the home experience to work)

- The way information is **delivered** (AR, VR, interactive)

- The **type** of information (installation, use, service)

- The **devices** themselves (mobile devices, glasses)

- **Security** requirements

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Current vs future experience
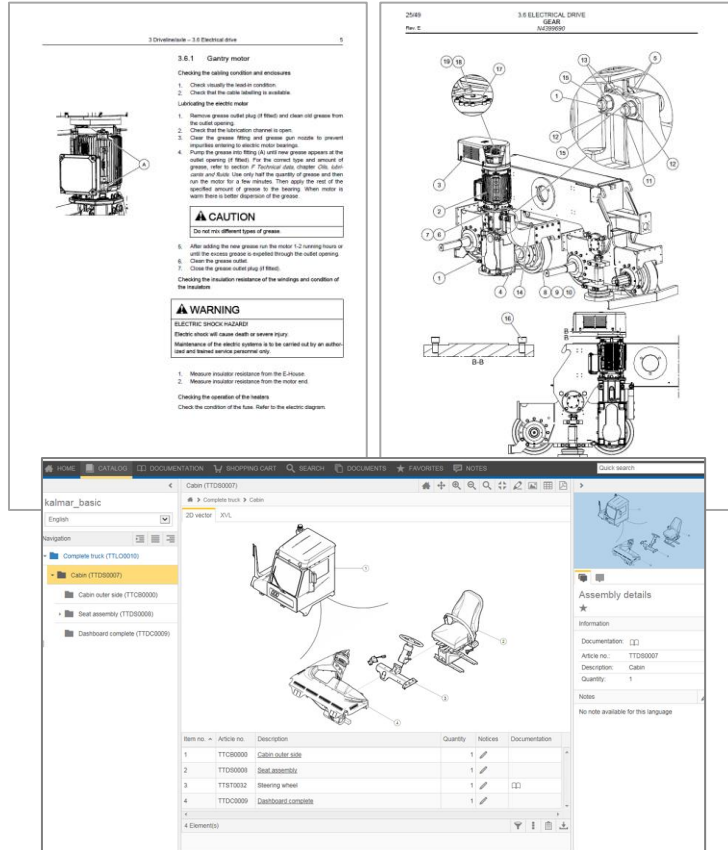
Structured service information, paper/PDF format and electronic service information portal.

Fill engine oil reservoir until the max. indicator.

Structured service information, AR experience and merged with "thing data" like sensor readings and fault codes.

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