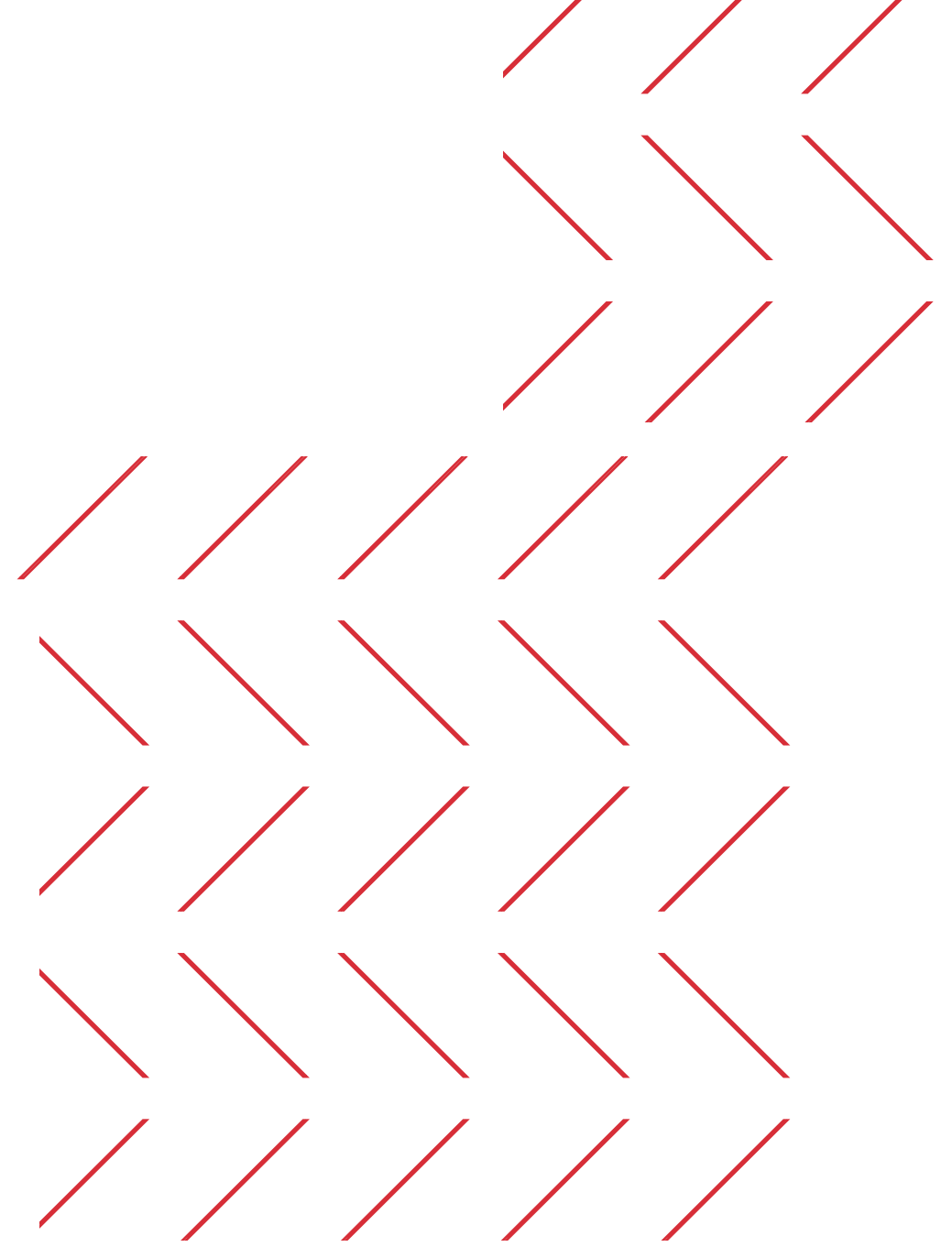


# SEF TALK

## **secunet edge** security retrofit and digitization platform

03.11.2020, Jens Kulikowski, secunet Industry Division



# About me



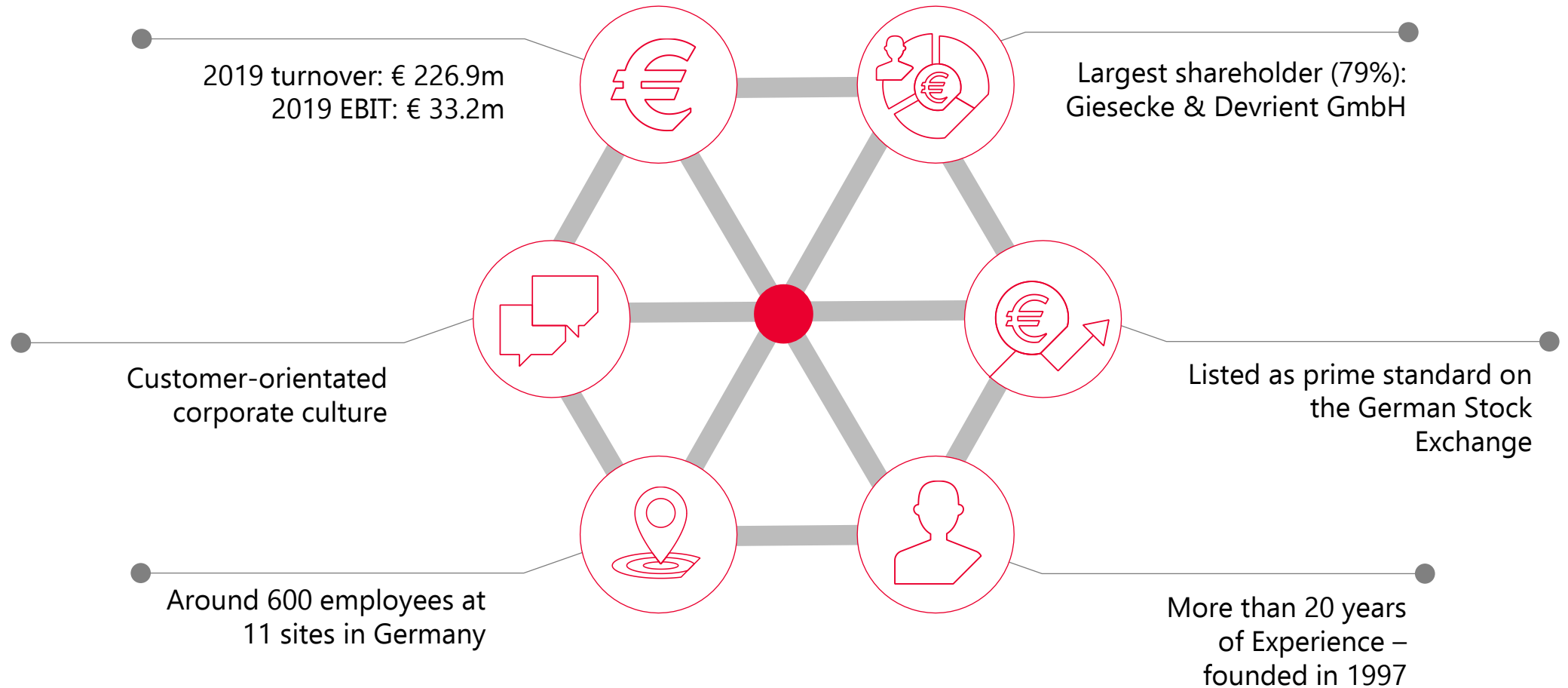
**„I am 41 years old, live near Munich and work as a Business Developer at secunet.**

**For more than 10 years I have been engaged with IIoT and cyber security.**

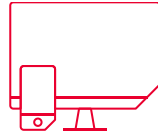
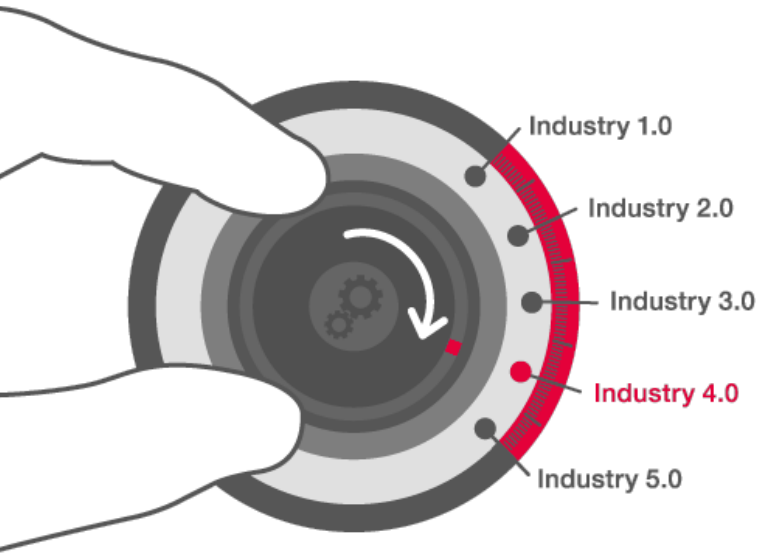
**My 1st IoT project was „Secure IIoT in central banks“ – in 2009“**

**Jens Kulikowski**

# secunet – Facts & Figures at a Glance

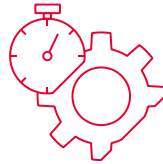


# IT security as the foundation of Industry 4.0



## REDUCING OPERATING COSTS

**Preventive:** condition-dependent maintenance, maintenance planning, predictive maintenance



## PROCESS EFFICIENCY THROUGH AUTOMATION CREATES COST-SAVING OPPORTUNITIES

**Transparent:** increase availability, throughput, OEE



## NEW BUSINESS MODELS AND REVENUE DRIVERS

**Added benefits:** controlling how data are made available, integrate third party suppliers securely



## PROTECTION FROM COSTS RESULTING FROM SECURITY INCIDENTS

**Trustful:** micro-segmentation, isolation, secure remote maintenance, etc.

# Investments and Risks

**72%**  
**2019**

CEOs believe, AI will  
most significant  
advantage

Investment  
forecasts

**\$35,8 Bn**  
**2019**

**\$79,2 Bn**  
**2022**



**€50<sub>Bn</sub>**

**Cybersecurity Risk**  
Annual damage to the  
German  
manufacturing  
industry caused by  
cyberattacks

**€28<sub>M</sub>**

**Downtime Risk**  
Costs in the  
automotive industry  
per day

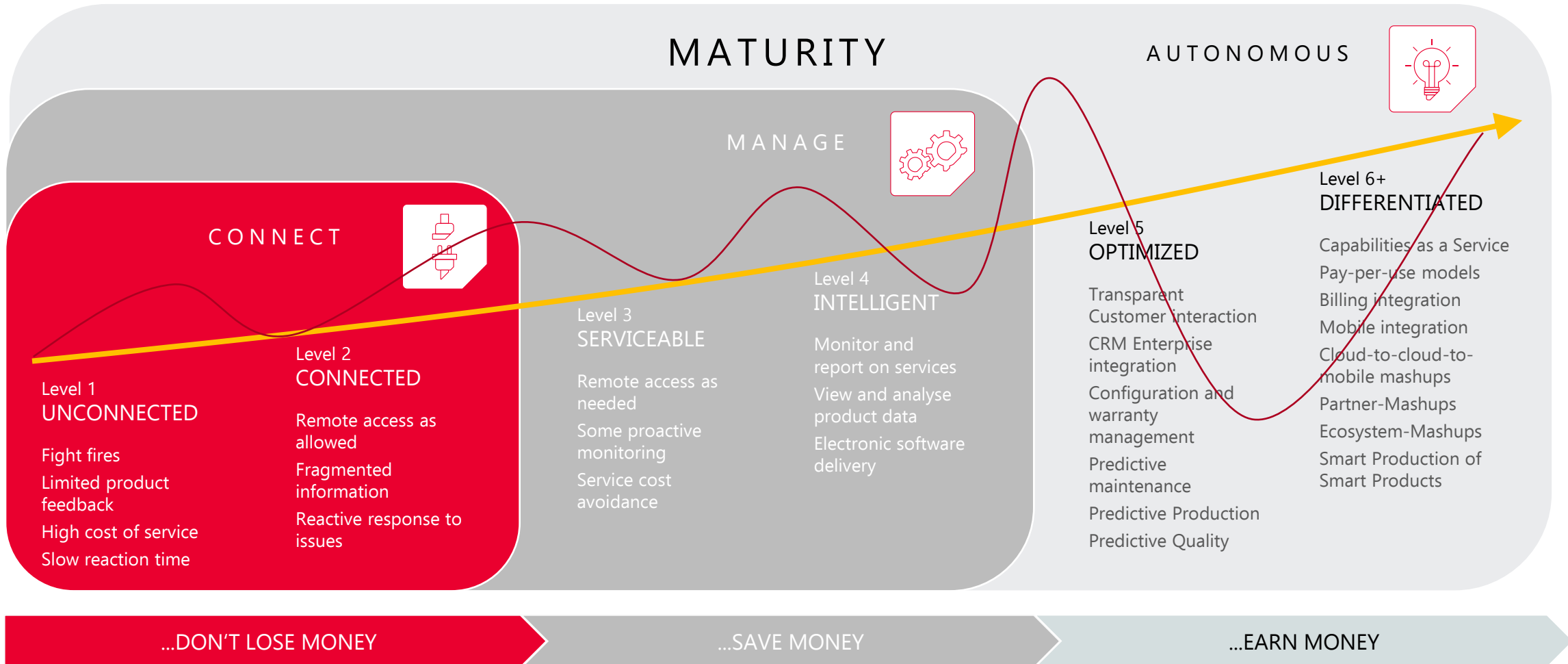
**> 51%**

**Data Misuse**  
Most German executives  
identify data misuse by  
hackers or partners as the  
greatest concern

Source: McKinsey – Industry 4.0 How to navigate digitization of the manufacturing sector  
Source: Stiftung Neue Verantwortung – PwC, IDC forecast,

# Each digital transformation is an individual journey

How to support today's and future use case



**Spotlight: secunet edge**

# Secure connectivity for IoT and Edge Computing

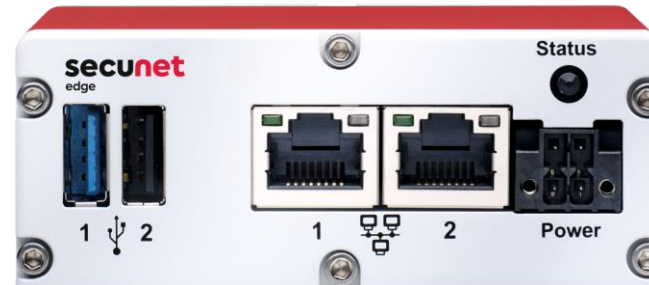
Industry 4.0 enabler: **firewalling, retrofitting, IoT, protocol translation**

**Secure connection** of machines, local IT infrastructures and IoT platforms

Intelligent edge computing platform based on **flexible container environment**

**Extendable by secunet monitor, with real-time network monitoring and AI-based anomaly and threat detection**

**Industry-grade hardware** made in Germany

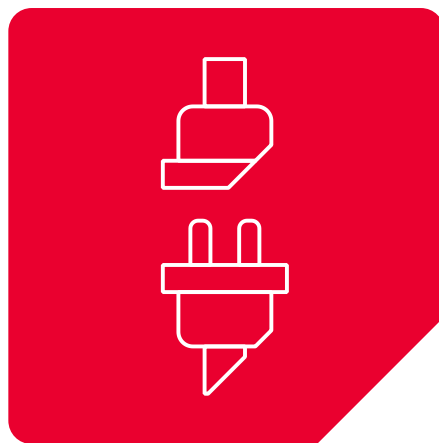


## PROTECT.



Security for systems and networks by means of micro-segmentation and isolating machines

## CONNECT.



Secure connectivity: connection to internal and external services

## DETECT.

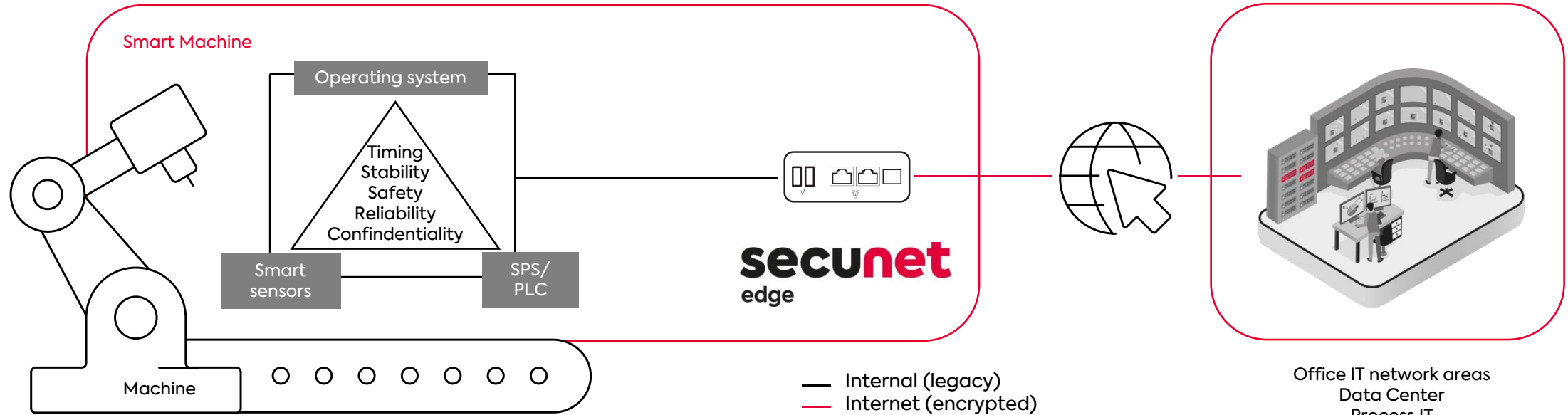


High level of security, thanks to secunet's security applications



# Protect.

## Security for machines and networks



### It's a Thing! It's not an IT security device!

#### „Never change a running system“

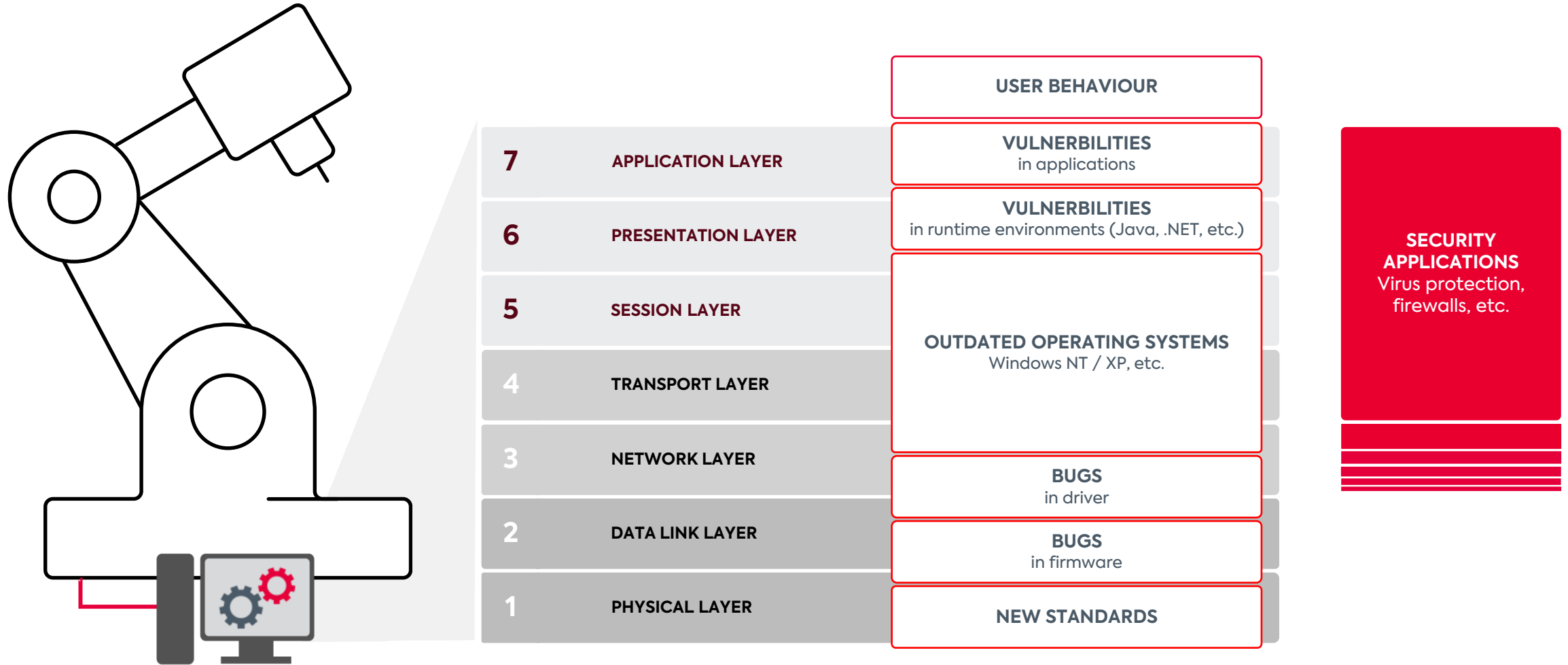
- OT systems have a very long life time up to 30 years
- Every SW-Update requires several days of onsite testing
- Software is just one component of an OT system and as long as it runs it's OK

#### „Running systems need regular updates“

- All systems in a network must meet up-to-date security standards
- Today's IT protocols and interfaces have to be supported
- Regular updates are general and not exceptional

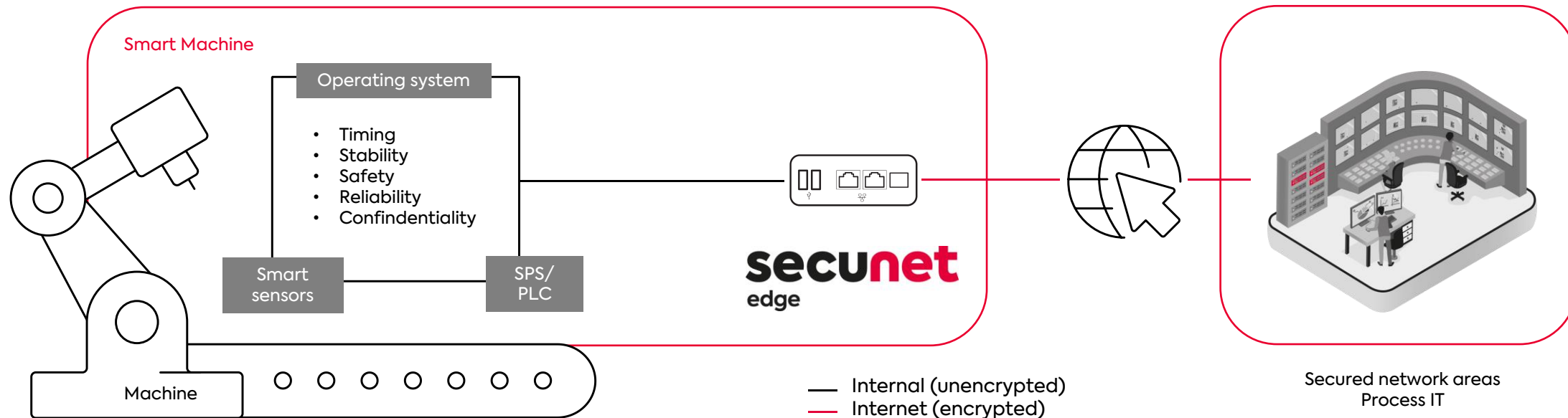
# Many discontinuations on machine lifecycle

machines run > 30 years



# Protect.

## Security for machines and networks



### INTEGRATE MACHINES EASILY AND SECURELY

- Secure, controlled and flexible integration of machines within the network
- Communication from and to the machine can be controlled
- Bridging legacy machines to state-of-the-art IT infrastructure

### STEALTH FACTORY APPROACH OR MICRO-SEGMENTATION

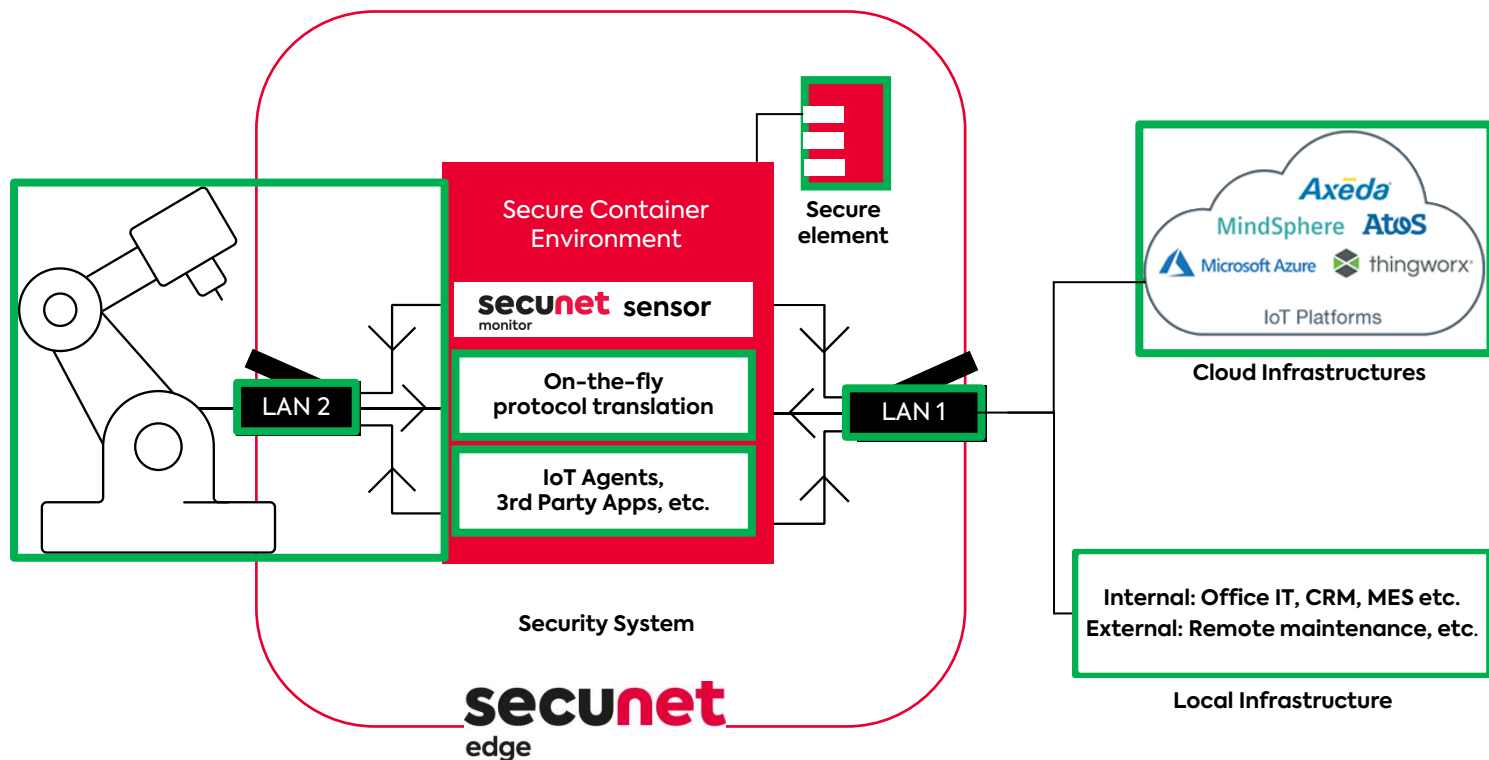
- **Stealth mode firewall:** Machines to be protected by invisible firewall, invisible to the network + on-the-fly protocol translation
- **IP firewall mode:** Isolation of the machine via fine-grained network segmentation + on-the-fly protocol translation
- **Application Layer Gateway mode:** Data flow control by means of intelligent and securely run applications

### MANAGED BY IT

- Interfaces for SNMPv3, NAC, SIEM
- Extendable by secunet monitor anomaly detection
- In-line management, no separate IT management network required

# Connect.

Flexible platform with secure runtime environment for applications



## THE RUNTIME ENVIRONMENT

### Secure and modular

- » Running applications in a secure container environment on a hardened system
- » Flexible addition of further applications for implementing new use cases
- » Certified secure Element (**FIPS140-2 Level 3, or CC L3 EAL5**)

### Proprietary business ideas and use cases

- » Interfaces to the container environment enable the development and operation of proprietary applications

## Typical application scenarios

### Connectivity between machine and services

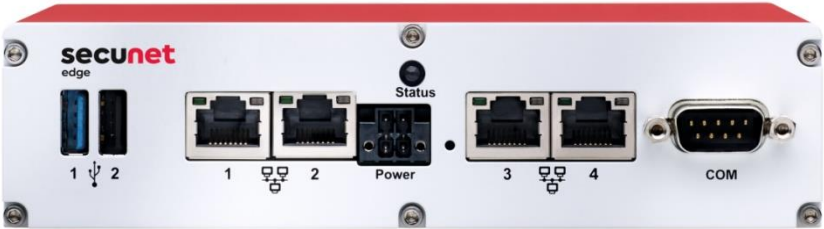
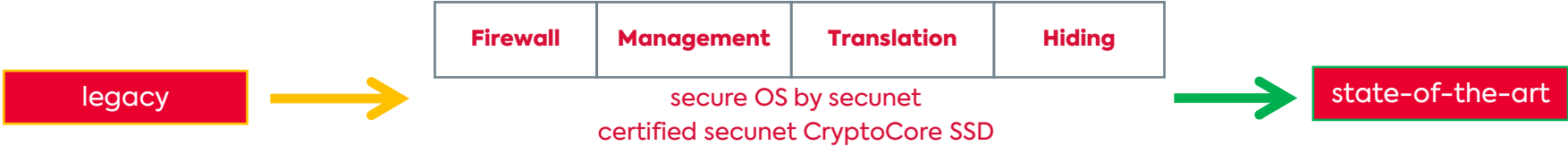
- » Controlled, secure connection to local and Cloud infrastructures, as well as IoT platforms

### Edge computing

- » Local analysis and preprocessing of machine-generated data
- » Compliant the **Intel Unified IoT Edge Framework**

# WinNT, WinXP, Win7 discontinuation:

**Target:** Connecting a legacy machine, hiding unsecure information, reducing visibility and attack vector, translate to encrypted communication and allow management by IT department, **without changes on machine**



secunet edge on-the-fly-encryption		
smb / ftp	← →	sftp / ftps
telnet	← →	ssh
rs232	← →	ssh
smbv1	← →	smbv3
rdp	←   →	rdp
html	←   →	rdp
vnc	←   →	vnc

- Ultra long lifecycle
- Outdated protocols
- No changes on the machine

- Encrypted protocols
- Managable by IT
- Up-To-Date

# Remote Maintenance and IIoT

**Target:** Connect a legacy machine for remote access and IoT to an IoT Platform in the cloud

## USER „EVERYWHERE“

### SERVICE / SUPPORT

Machine management  
Central Management for secunet edge



### PRODUCTIONS-MANAGEMENT

OEE, Dashboards



## WEB / IOT CLOUD

LOGICAL E2E REMOTE-SESSION

### PTC THINGWORX SERVER

Web Portal With Device Management Application, Dashboards, Reports

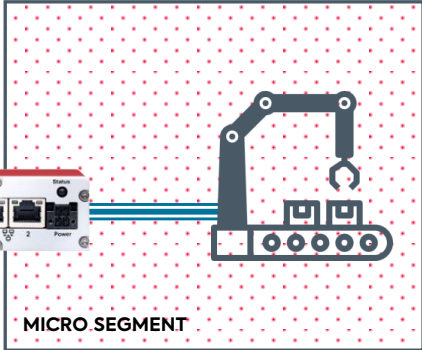
Administration  
Right-Management  
Cloud-2-Cloud Setup



## PRODUCTIONS ENVIRONMENT

Thingworx EMS Container

Allways-On Protocol / https



MICRO SEGMENT

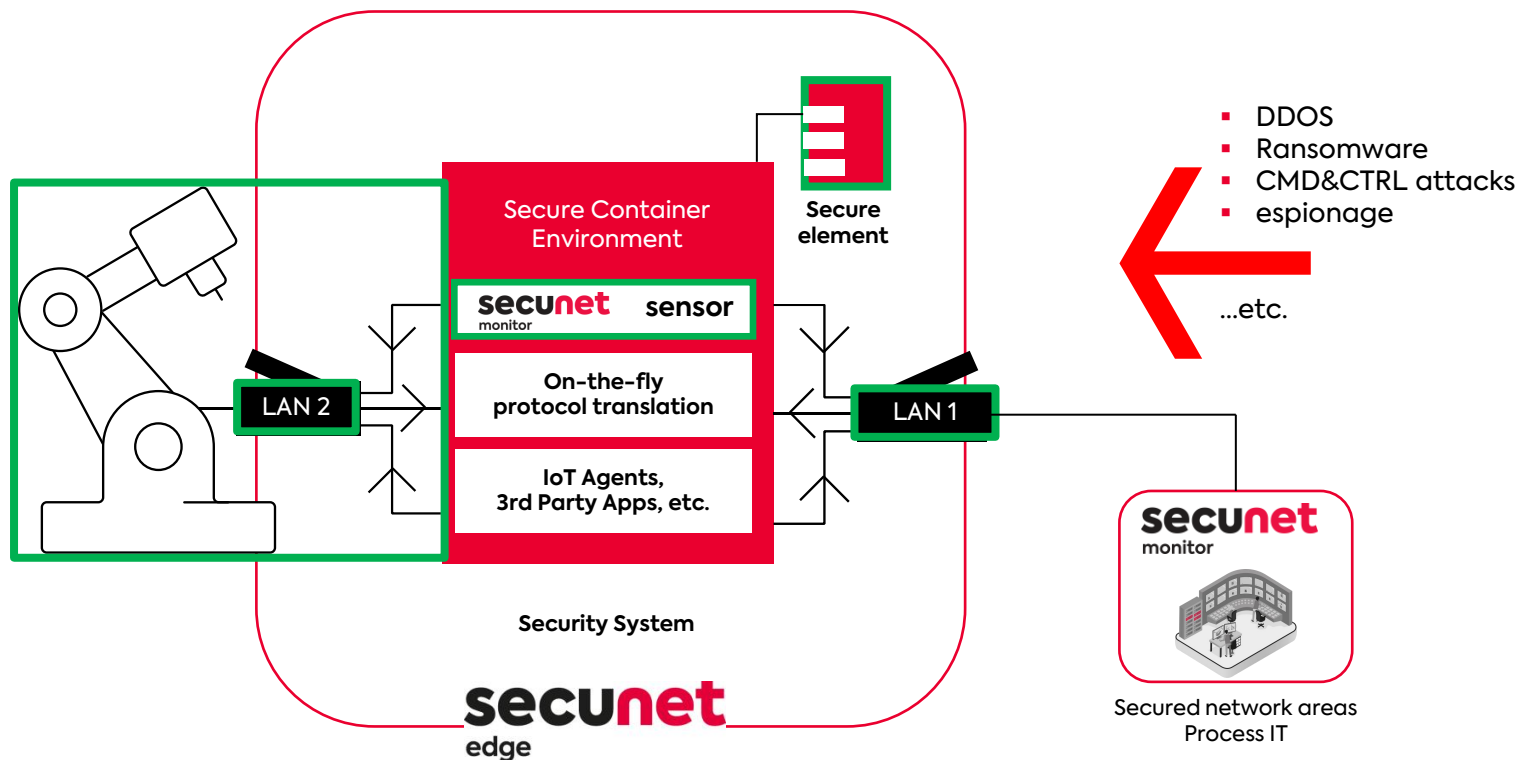
CUSTOMER

## Benefit:

- Remote Access to an isolated + connected machine via RDP, ssh, etc.
- Secure and encrypted (firewall friendly) tunnel
- Management of machines and secunet edge devices
- Monitoring of real-time data of connected machines

# Detect. **secunet** edge + **secunet** monitor

secunet security application for system and data security



## SECUNET SECURITY APPLICATIONS

### Security monitoring – real-time monitoring of information flows

- » Identifying and controlling data streams
- » Identifying anomalies in data connections
- » Allow deep analyzing breaches
- » Reporting + Dashboard

### Active Response

- » Alarming + active firewall control
- » Additional security feature

### Secure Environment

- » Secure element as a trust anchor for information security and secured container applications
- » Fixed-installation, tamper-proof chip (comparable with smartcard)

# Real-Time Network Defence

## WEAK SPOT ANALYSIS (COMPLIANCE)

Detection of unplanned communications links, compliance violations and vulnerabilities

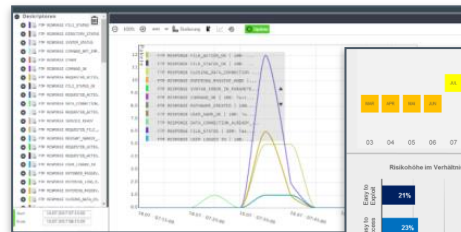
## NETWORK ANALYSIS Asset Discovery & Analysis of existing protocols in IT and OT networks

## INTRUSION DETECTION

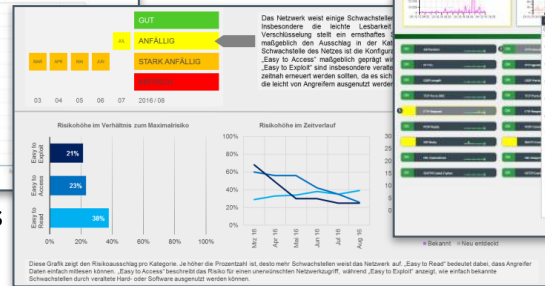
Automatic detection of known attacks within the network

## ANOMALY & THREAT DETECTION

Detection of abnormal behaviour (anomalies) and indicators of targeted attacks (APT)



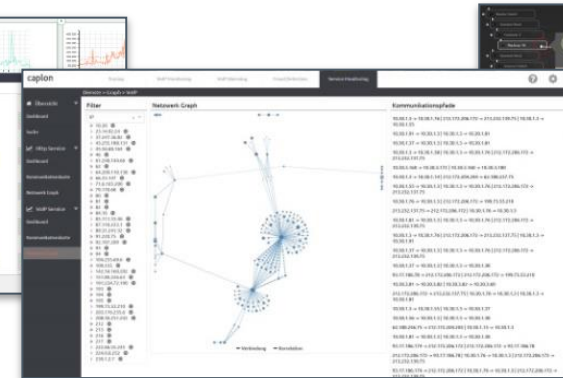
EXPERT SYSTEM & ANALYSIS



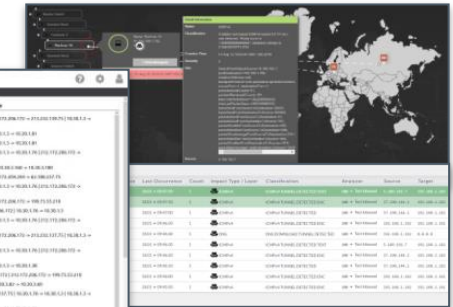
SITUATION REPORT



REAL-TIME MONITORING



SERVICE MONITORING



ADVANCED THREAT DETECTION

## AUTOMATED PERIODICAL REPORTING

of the network's status

## ALERTING, NOTIFICATIONS, AND RESPONSE

in the event of anomalies and rule violations



# Benefits from the right vantage point

## BUSINESS

Machine security as an enabler in Industry 4.0

- + Cost-saving potential through increasing process efficiency (production, maintenance, etc.)
- + Revenue opportunities thanks to new business ideas
- + Minimising security incidents = reduction in damage costs
- + Designed for use cases both today and in the future

## IT OPERATION

Flexible integration, simple and time-saving administration

- + Minimal integration demands: security layer as a plug and play solution
- + Minimal IT resources yet high level of machine security
- + Minimal manual admin tasks thanks to the simple, centralised administration
- + Flexible integration into IT management environments



## SECURITY

Identify. Protect. Detect. Respond. Recover.

- + Sustainable protection of the infrastructure
- + IT Security for OT life cycle: Security always at the highest possible level
- + Protection from various attack vectors = protection for machines and networks
- + Unique digital identity via hardware-based trust anchor

## OPERATORS

Never change a running system.

- + Use of advantages through remote access (higher availability)
- + Collaboration in smart production
- + Data-based value-added services (predictive maintenance, quality, etc.)
- + Familiar use of the machine: security layer not obvious to staff

# SPRECHEN SIE MIT UNS.

Wir sind Ihr Partner für integrierte 4.0-Lösungen  
in der Industrie.



Ihr Kontakt:

**Heike Vocke**

Geschäftsführerin  
Strategie & Beratung

Tel: +49 172 3440663

E-Mail: [heike.vocke@isax.com](mailto:heike.vocke@isax.com)



**Jens Kulikowski, Business Developer**

**secunet Security Networks AG, Industry Division**

**Mail:        [jens.kulikowski@secunet.com](mailto:jens.kulikowski@secunet.com)**

**Phone:      0201 5454 2225**

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