

ctrl X IOT

# INDUSTRY 4.0 SOLUTIONS FOR SMART MANUFACTURING



Der Deutsche  
Innovationspreis  
2021



reddot winner 2022  
industrial design



# The machine operator

Above all else, the machine operator must:

## Produce.

... and must do it with the highest possible efficiency.

But for machine operators today, machines are still like (most) cars:

They do the job, but

- They were developed yesterday,
- Are hardly upgradeable for tomorrow and
- Seldom allow straightforward and/or secure data access.



# The machine operator

Above all else, the machine operator must:

# Produce.

... and must do it with the highest possible efficiency.

Even more problems:

- Investments must be protected
- Unplanned downtime due to crashes, jams and failures
- Connecting Shopfloor-IT and Automation Networks is complex
- New machines must be integrated into complex existing systems
- Less and less qualified personal at the shop floor



# ctrl X AUTOMATION

## Our answer

HIGHER  
PRODUCTIVITY  
**10%**

- Highest availability
- Best quality
- Fastest performance

HIGHER

OEE



# ctrl X AUTOMATION

## Our answer

## EDGE-BASED INTELLIGENCE

## FOR YOUR FACTORY OF THE FUTURE

### CONNECTIVITY PLUS

30+ secure protocols for data acquisition and local archiving for business intelligence

### STANDARDIZED DATA AGGREGATION

The easier your devices exchange information, the more efficient they are\*

### SECURE NETWORK APPLIANCE

Router, Firewall and VPN – the target: maximum security and machine availability



### DISTRIBUTED INTELLIGENCE

Drive-based, Embedded, IPC – ensures data access securely from its source

### DEVICE MANAGEMENT

Central administration of connected devices – Inventory, Software distribution, Remote Access...

# ctrl X AUTOMATION + ctrlX IOT/ctrlX WORLD

Our answer

↑  
EVEN MORE  
HIGHER PRODUCTIVITY  
  
? %

HIGHER

OEE

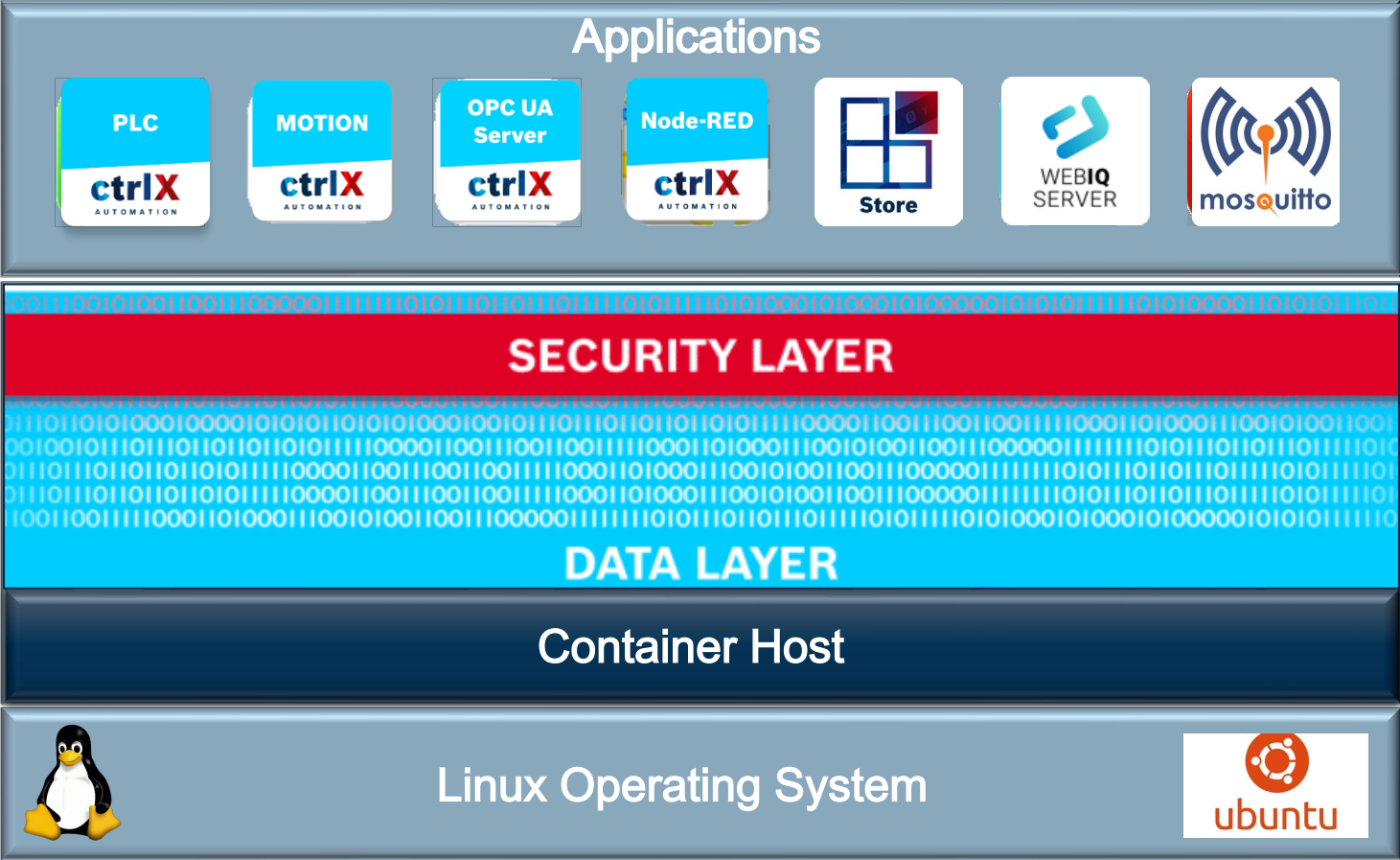
- Highest availability
- Best quality
- Fastest performance

# ctrl X AUTOMATION

## The USER TREND – APPS



ctrl X CORE X3



# ctrl X World

## 73 partners

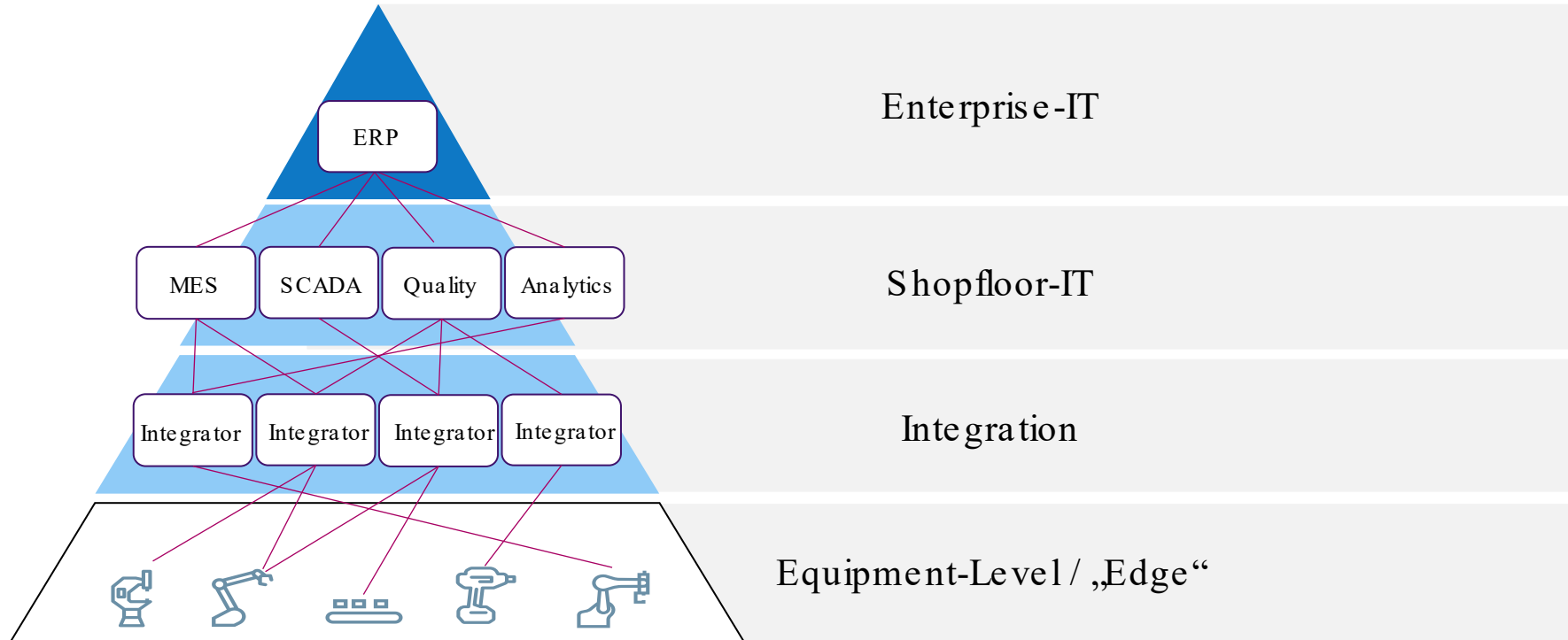


<h3>COMMUNICATION</h3> <p> <b>BOSCH</b>   MB CONNECT LINE   tetronik   TOSIBOX         </p>	<h3>SECURITY</h3> <p>  Rhebo  <small>a Landis+Gyr company</small> </p>	<h3>MECHATRONICS</h3> <p>  SCHUNK   WITTENSTEIN         </p>	<h3>MOTION</h3> <p>  FuzzyLogic         </p>	<h3>HMI</h3> <p>  MGA   SMARTHMI   SpiderControl™ ist eine Marke von   Net ini   Weidmüller GTI Software         </p>
<h3>ENGINEERING</h3> <p>  CORDIS SUITE   EPLAN   FANUC   MathWorks   NEXEED   machineering THE TIMESAVER COMPANY   FACTORY I/O   Selmo   wepall         </p>	<h3>IOT</h3> <p>  Appollo   Bosch IoT Suite   cedalo   conductiv.ai   Cybus   dataprophet   FUJITSU   i-flow   influxdata®   InUse   IXON   KATULU   mirasoft   mosquito   pragmatic INDUSTRIES   PrescientDevices   S.   salesforce   SQL AUTOMATION   WORK-API   timecho         </p>			<h3>SERVICES</h3> <p>  ATIN   HUCON shifting limits   infoteam software   iteratec   Perfect Production   SIMON   UID   UNIVERSITY 4 INDUSTRY   XITASO         </p>
<h3>SENSE &amp; VISION</h3> <p>  360 ZEROVISION   elunic   VISION         </p>	<h3>PLC</h3> <p>  CODESYS   neuron AUTOMATION         </p>	<h3>FACTORY IT</h3> <p>  FORCAM   mpciv   TechMass   TULIP   oei         </p>	<h3>DEVICE</h3> <p>  BALLUFF   CoreTigo   HALLO   ARDUINO PRO   KEBA   Lanner   maxon   SICK   synapticon   TURCK   WAGO         </p>	<h3>TECHNOLOGY</h3> <p>  NOKIA   vmware         </p>



# ctrl X AUTOMATION

## What will be different



Open standards -- expandability by the customer -- can be integrated into existing systems

# ctrl X AUTOMATION + NEXEED

Our answer

↑ EVEN MORE  
HIGHER PRODUCTIVITY

**20 %**

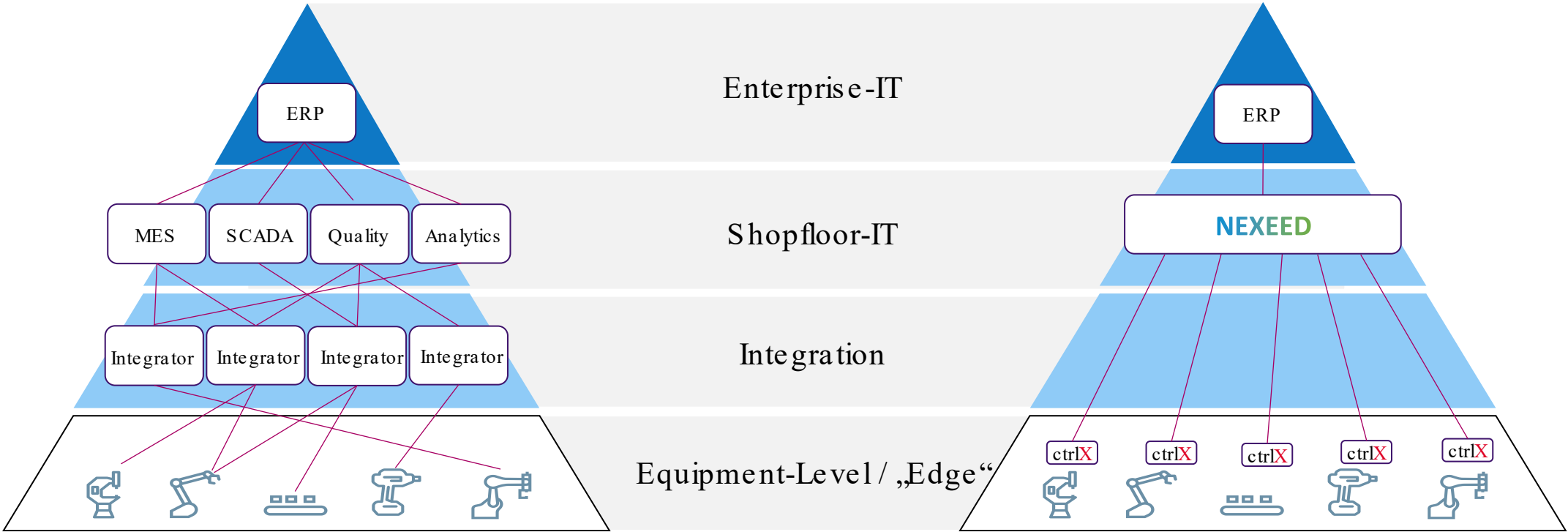
- Highest availability
- Best quality
- Fastest performance

**HIGHER**

**OEE**

# ctrl X AUTOMATION + NEXEED

## What will be different



Open standards -- expandability by the customer -- can be integrated into existing systems

A blue-tinted photograph of an industrial factory floor. In the center, a car chassis is positioned on a conveyor belt. Several large, complex robotic arms are visible, some reaching towards the car. The background shows the structural beams of the factory ceiling. The overall scene is illuminated with a strong blue light, creating a high-tech, industrial atmosphere.

# 8 WAYS FOR HIGHER OEE

# ctrl X AUTOMATION – End user benefits

## @Edge Level

Increase Connectivity



Increase Security



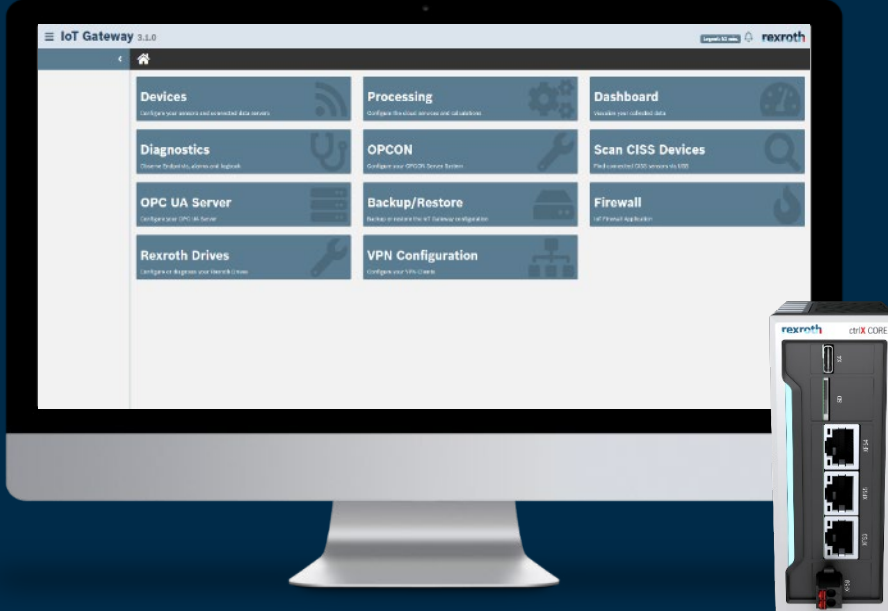
Manage devices centrally



Get complete OEE transparency



Fast and direct access to all machine and process data





# ctrlX IOT

## OT meets IT with ctrlX IOT



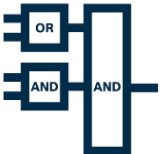
Web-HMI



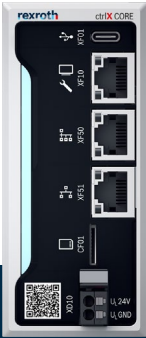
Router



Firewall



PLC



The all-in-one device

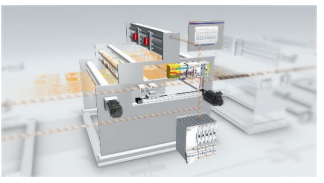


IoT-Gateway

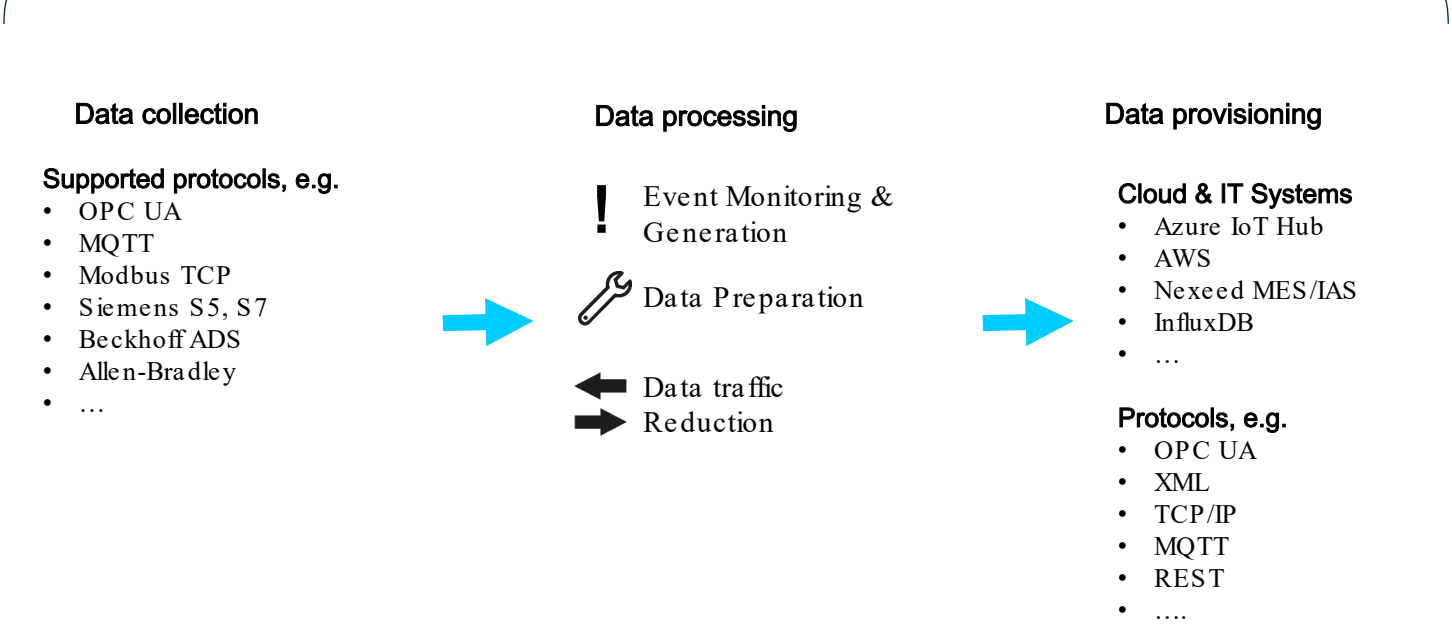
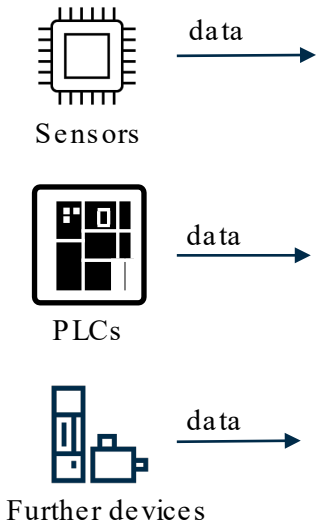
# ctrlX IOT

## ctrlX CORE: Machine Edge

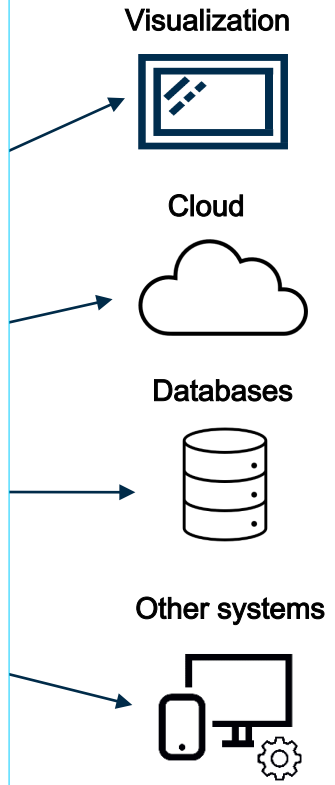
### Machine Level



- ✓ Data analytics,
- ✓ Predictive maintenance,
- ✓ Visualization & notification
- ✓ OEE optimization
- ✓ Business intelligence
- ✓ ...



### Cloud / Enterprise IT



## Bosch Global Software Technologies - Device Bridge

### SEAMLESS OT-IT INTEGRATION

Acquire data from Shopfloor and send to top floor

### ACQUIRE

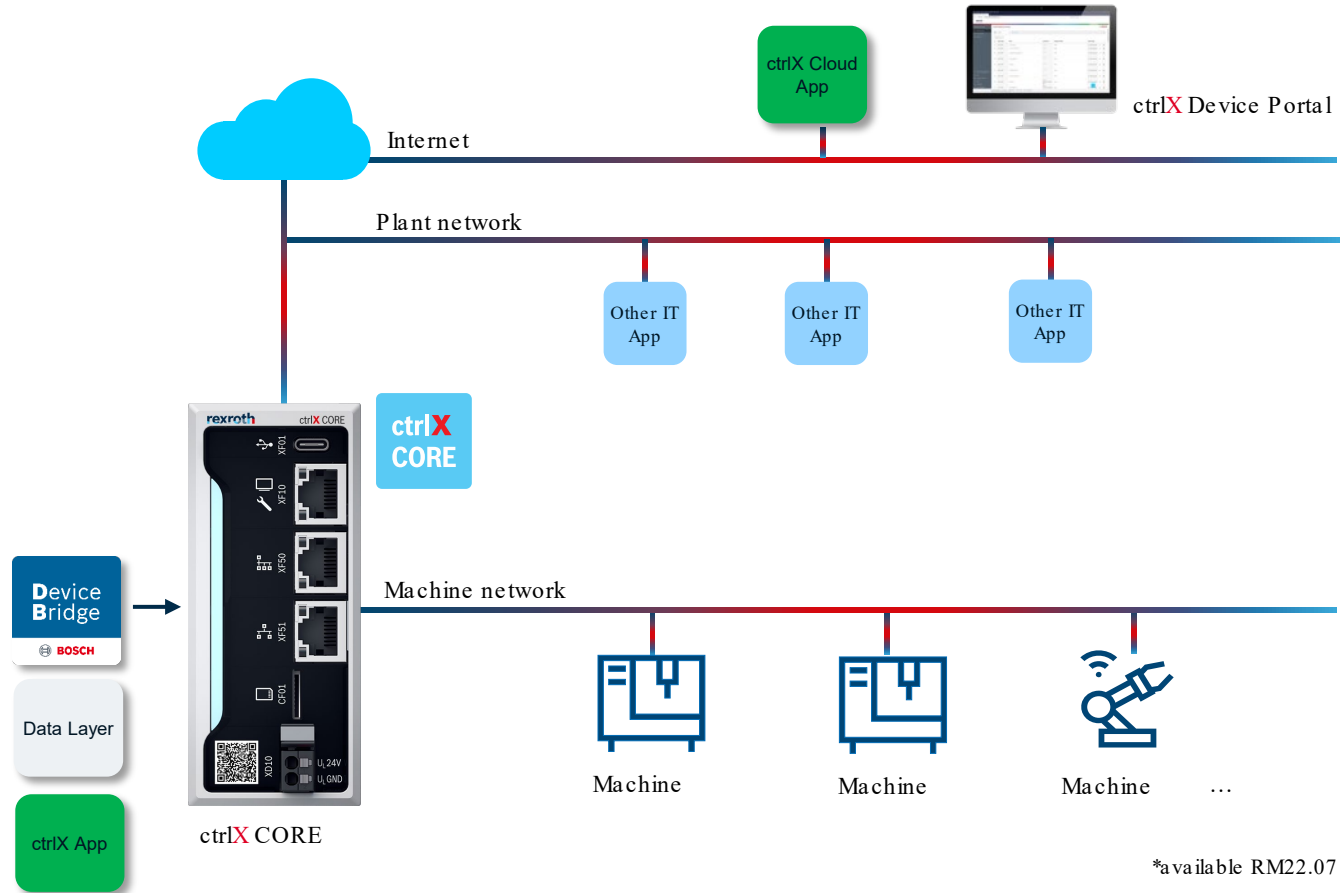
Supports 40+ Controllers – PLC/CNC/Sensors, etc.

### TRANSFORM

Smart Data Processing at Edge

### DELIVER

Send data to Data Layer or directly to 15+ IT Applications



\*available RM22.07

# ctrl X AUTOMATION – End user benefits

## @Edge Level

Increase Connectivity



Increase Security



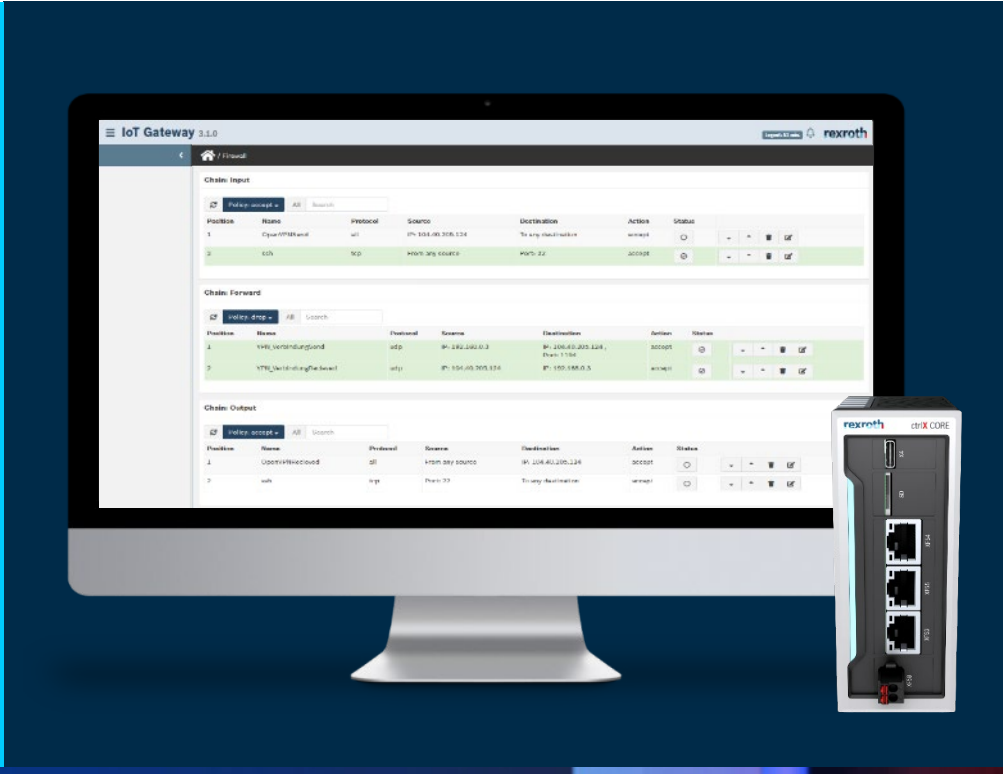
Manage devices centrally



Get complete OEE transparency



Increased protection of machines against network attacks from hackers, viruses and trojans.



# ctrl X AUTOMATION

## Security is enabled from the moment it is powering up



ctrl X IOT

Integrated & Secure



ctrl X CORE is secured by default

ctrl X CORE is secured by design

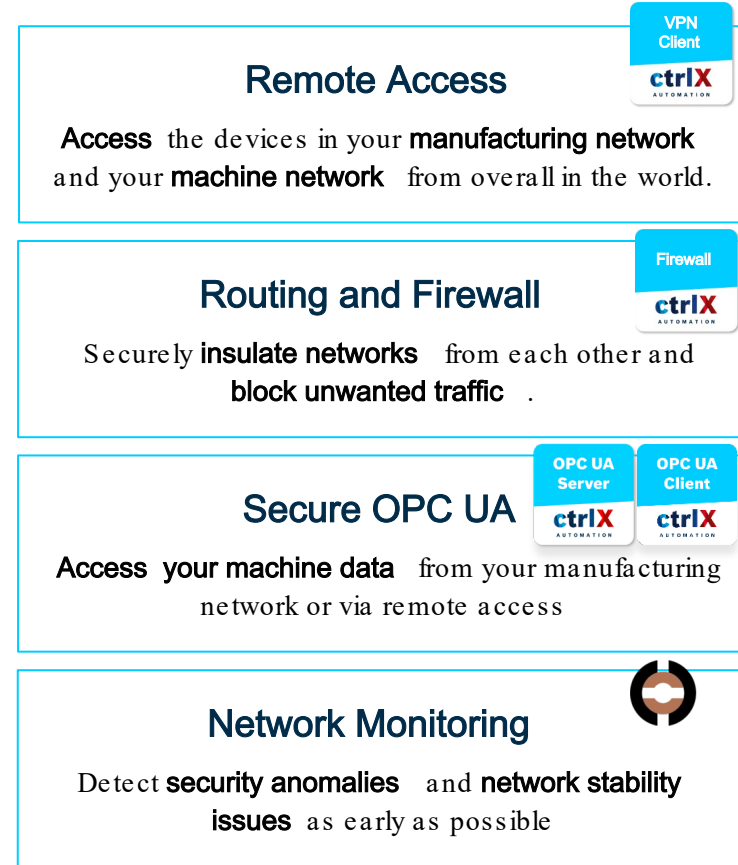
Security certified according to IEC 62443 SL3

ctrl X IOT Security Apps:



ctrl X CORE runs Linux Ubuntu Core OS

### FEATURES



### USE CASES



# ctrlX SERVICES

## Security Consulting

### EVALUATION OF THE CURRENT SECURITY STATUS

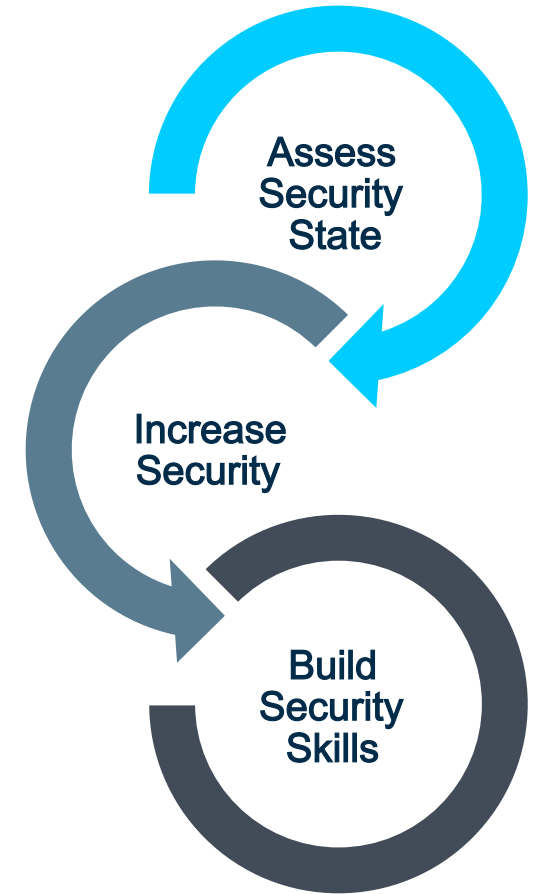
- Carrying out risk and threat analyses
- Carrying out vulnerability scans (Vulnerability Assessment)

### INCREASING THE LEVEL OF SAFETY

- Creation of individual security concepts (concrete measures) to minimize risks and increase security
- Support with the implementation of security measures
- Introduction to the IEC62443 series of standards and support in implementing your requirements

### BUILDING SECURITY COMPETENCE

- Carrying out training courses to increase awareness and acquire IT security knowledge
- Support for the integration of IT security processes (e. g. vulnerability management, incident management, ...)



# ctrl X AUTOMATION – End user benefits @Edge Level

Increase  
Connectivity



Increase  
Security



Manage devices  
centrally



Get complete OEE  
transparency



Monitoring, Backup +  
Restore, Updates and  
Remote Access  
via  
ctrlX Device Portal



# ctrlX SERVICES

## ctrlX Device Portal

### FOR MACHINE BUILDERS:

- **SHIFTING VARIANCE INTO SOFTWARE** by liberation from fixing functions at SOP
- **EFFICIENTLY SERVICING MACHINES** with one central tool
- **INCREASING AFTER SALES** by selling functions via update over the air

### FOR END-USERS:

- **EASING DIGITIZATION** with central tool for remote maintenance
- **IMPROVING SECURITY** by frequent software updates on hand

Availability in particular country based on demand and local regulations.



# ctrl X AUTOMATION + NEXEED – End user benefits

@Shopfloor-IT

Increase Connectivity



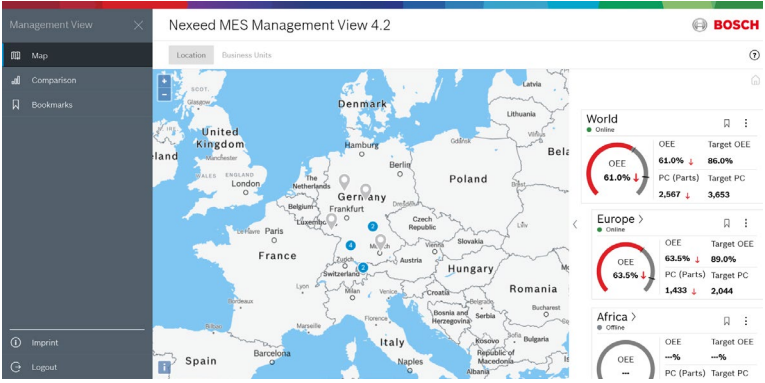
Increase Security



Manage devices centrally

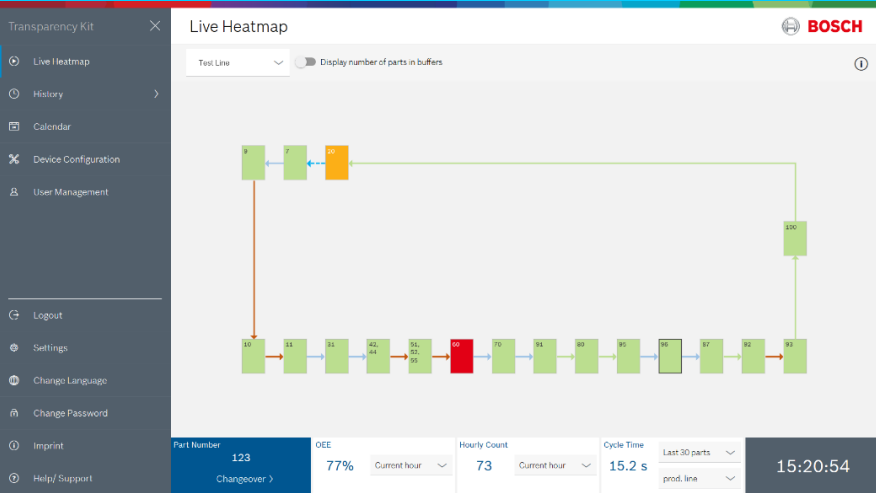


Get complete OEE transparency



OEE worldwide monitoring

OEE monitoring of a particular line



# ctrl X World

## 73 partners



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# ctrl X AUTOMATION + NEXEED – End user benefits @Shopfloor-IT

Improve production performance

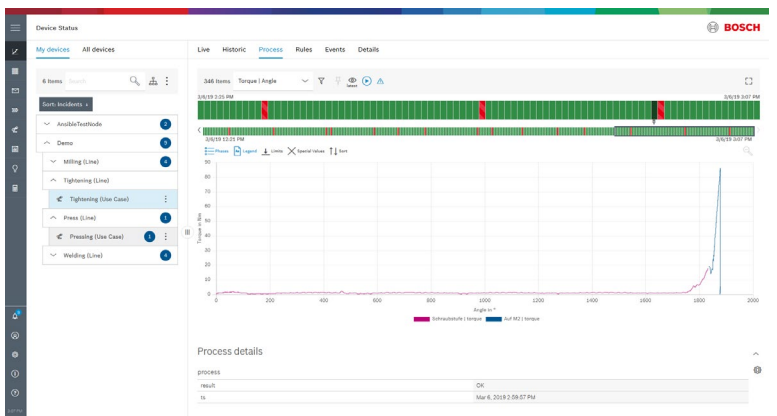
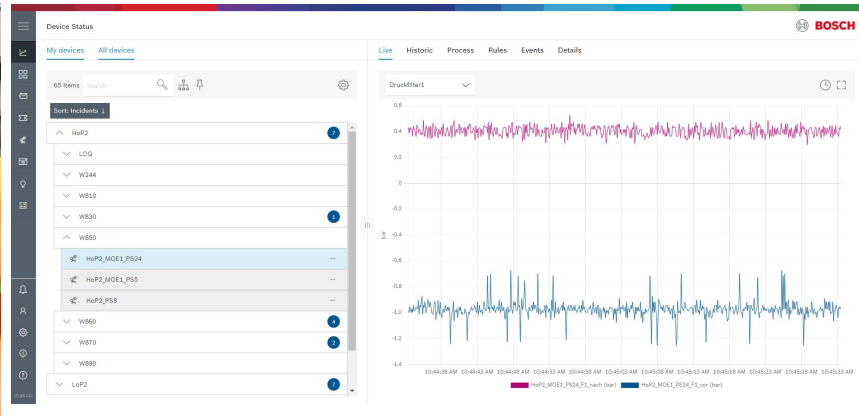
5

Integrate easier and faster devices and machines

6

Use less energy and decrease CO2 footprint

7



Condition & Process Monitoring

# ctrl X AUTOMATION + NEXEED – End user benefits

## @Shopfloor-IT

Improve production performance

5

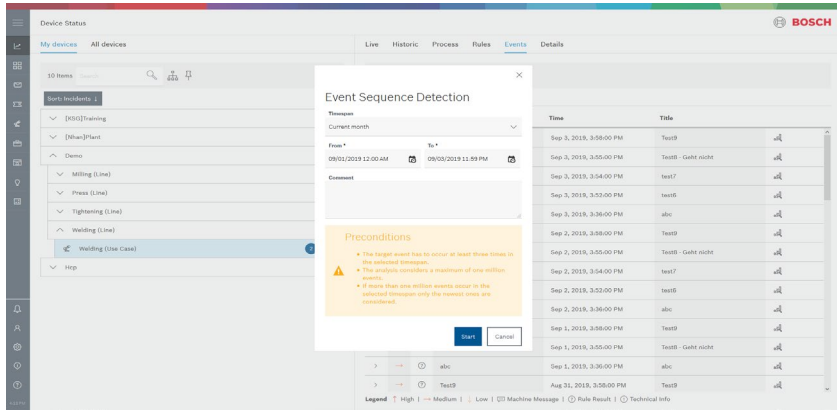
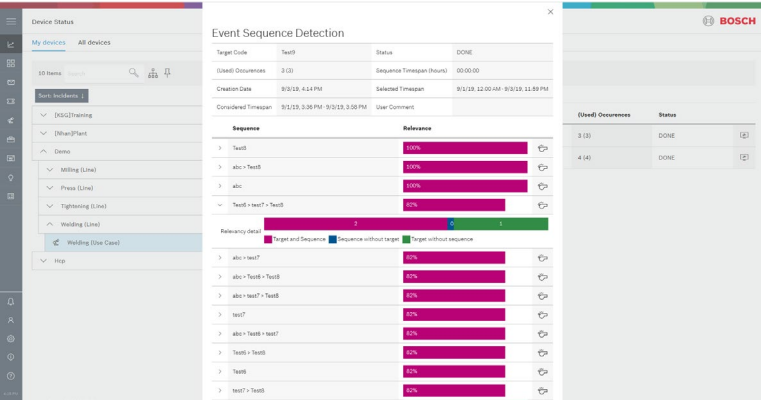


Integrate easier and faster devices and machines

6

Use less energy and decrease CO2 footprint

7



Using a sequence analysis is to determine reasons for machine downtimes

# ctrl X AUTOMATION + NEXEED – End user benefits

Next

Improve production performance




Integrate easier and faster devices and machines



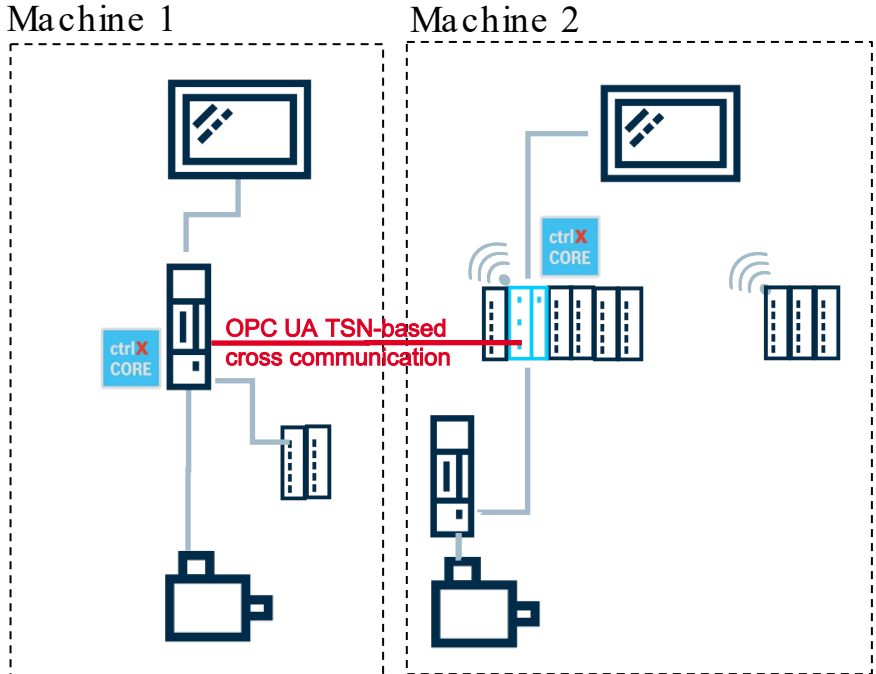
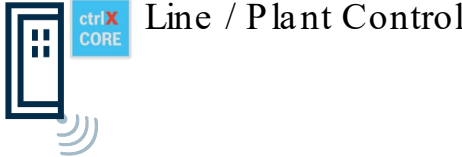

Use less energy and decrease CO2 footprint



New freedom with 5G-based automation



Easy integration of machines with OPC UA down to the field level



# ctrl X AUTOMATION + NEXEED – End user benefits

Next

Improve production performance

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Integrate easier and faster devices and machines

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Use less energy and decrease CO2 footprint

7

Smart light management,  
Monitor energy consumption,  
Manage energy peak demand

