





ctrlX OS is the open, secure and extendable industrial operating system.

Ready to run on many devices!
Suitable for all automation tasks.



THE NEXT LEVEL

AUTOMATION PLATFORM

DISTRIBUTE AUTOMATION SOLUTION ON ALL LEVELS

- Max out the available performance
- Merging IT and OT & enable new business models
- Edge features (Device Portal, App store, Community, Licensing tools)
- Powerful data networking within the automation solution without programming (ctrlX Data Layer)

CONSISTENT AND OPEN AUTOMATION SOLUTION

- Benefit from open automation platform by running own apps
- Continuously growing Rexroth/partner offer
- One toolchain across the entire solution
- Concentrate capacities on core competencies / know how

HARDWARE INDEPENDENT

Upgrade existing automation infrastructure or choose optimal devices for target application.

INDUSTRIAL GRADE

Continuously maintained, updated, cleared legacy, compatibility within the platform.

“Our goal with ctrlX OS is to create a true alternative to proprietary platforms and establish an open, worldwide leading automation ecosystem.

Together with our previous partners WAGO, Nokia, Dell Technologies and Congatec, we are now taking the next step.

ctrlX OS will be positioned even more strongly than before as a universal, vendor-neutral operating system for a wide range of industrial applications,”

VULNERABILITY HANDLING REQUIREMENTS

Manufacturers of the products with digital elements shall identify and document vulnerabilities and components contained in the product, address and remediate vulnerabilities without delay

MANUFACTURER OBLIGATIONS

*Manufacturers must **notify about actively exploited vulnerabilities** & any severe incident within a very short time interval (**24h for early warning**)*

PRODUCT CYBERSECURITY REQUIREMENTS

Products must be developed, designed and produced in a way so that an appropriate level of cybersecurity based on the risks that are assessed for the products is ensured.



Cyber Resilience Act ready

Quelle: https://www.europarl.europa.eu/doceo/document/TA-9-2024-0130-FNL-COR01_DE.pdf

ADDED VALUE ACHIEVED FOR CUSTOMERS

- **HIGH PERFORMANCE AND REAL-TIME CAPABILITY**
- **IT SECURITY**
- **EASE OF USE**
- Easy **SOFTWARE EXTENSION**
- Greater **VERSATILITY IN INTEGRATING** sensors, protocols and standards into the automation level



- **SIMPLIFIED DEVELOPMENT:** Combined building blocks at the hardware and software levels
- **FASTER TIME-TO-MARKET:** while providing a high level of design security
- **COMPREHENSIVE AND APPLICATION-ORIENTED SOFTWARE SUPPORT**
- **ATTRACTIVE MODULAR AND SCALABLE SOLUTIONS**



MAKES IT POSSIBLE TO IMPLEMENT THIS IN THE SHORTEST POSSIBLE TIME

Main features



Open and Secure

Software Platform which is industrial grade, real-time capable, with a micro-service based architecture, data-driven, usable on all OT/IT levels, secure, administrable, ready to run on many devices, web-based engineering



Extendable

With many validated apps from ctrlX OS Store, or build and reuse your own apps

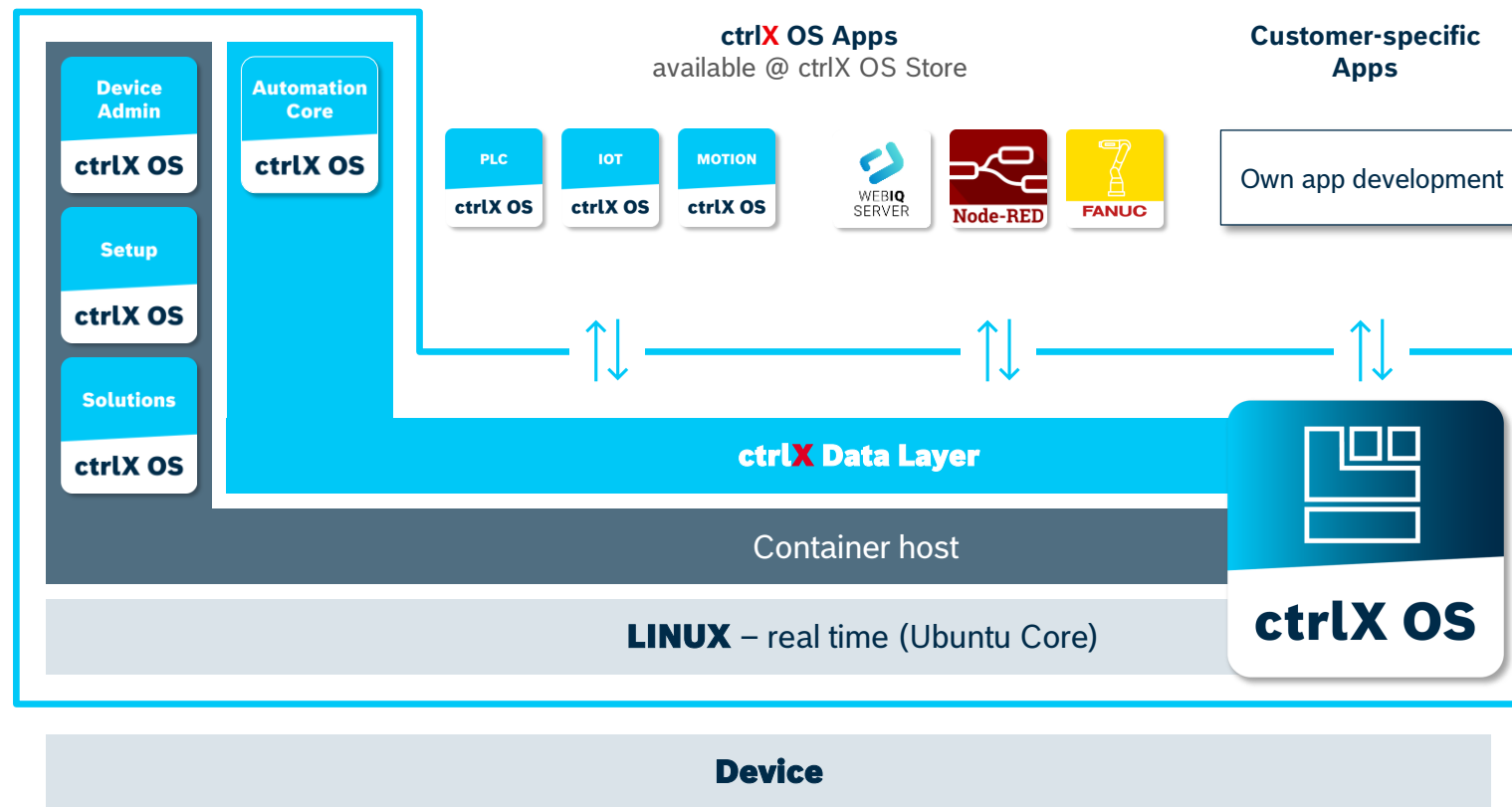


Enabling Co-Creation

Broad network of partners and developers: ctrlX OS OEM with ctrlX OS devices, Co-Creation with ctrlX World partners, developer community

Open and secure software architecture

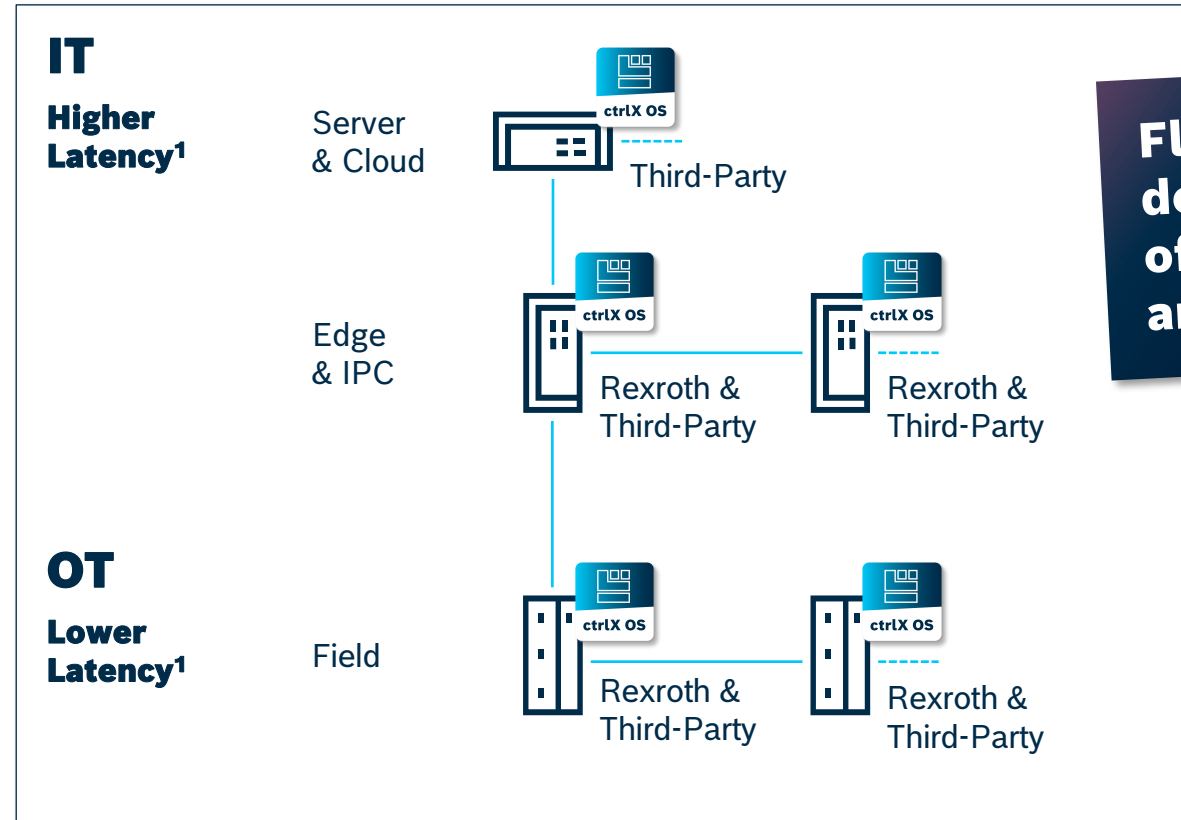
- ✓ INDUSTRIAL GRADE
- ✓ REAL-TIME LINUX
- ✓ APP TECHNOLOGY
- ✓ ALL PROGRAMMING LANGUAGES
- ✓ OPEN STANDARDS ONLY
- ✓ WEB-BASED ENGINEERING
- ✓ SEAMLESS IOT INTEGRATION
- ✓ CERTIFIED IT SECURITY
- ✓ REMOTE ADMIN
- ✓ CONNECTION TO:
 - ✓ ctrlX OS Store
 - ✓ ctrlX Device Portal
 - ✓ ctrlX Data Layer 1+n



Open and secure on all OT/IT levels

Consistency in:

- Distributed Topologies
- Use of Apps & Engineering
- Data Availability
- IT Security & Remote Connectivity
- Access to Store & Partner Solutions



**Flexible
deployment
of solutions
and workloads**

¹ Depending on hardware platform

CONSISTENT OVER ALL LEVELS:

- Use of apps, engineering & admin
- Data availability
- IT security
- Utilizing the ctrlX World

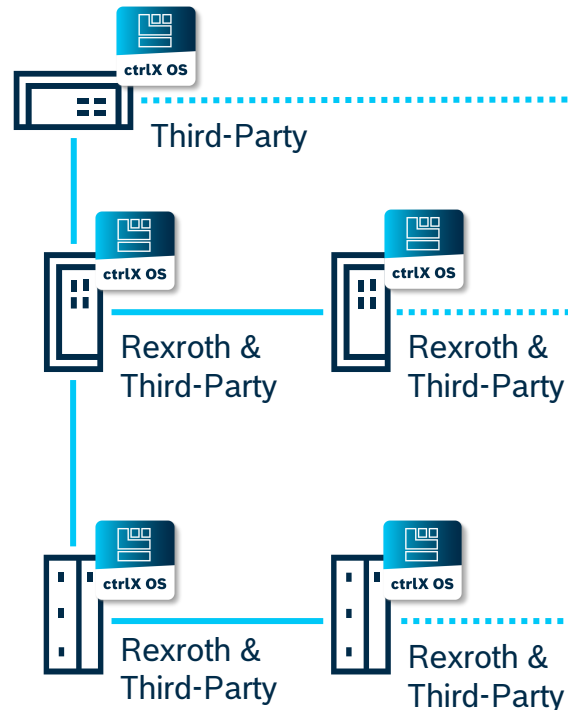
IT Higher Latency¹

Server & Cloud

Edge & IPC

Field

OT Lower Latency¹



ctrlX Device Portal

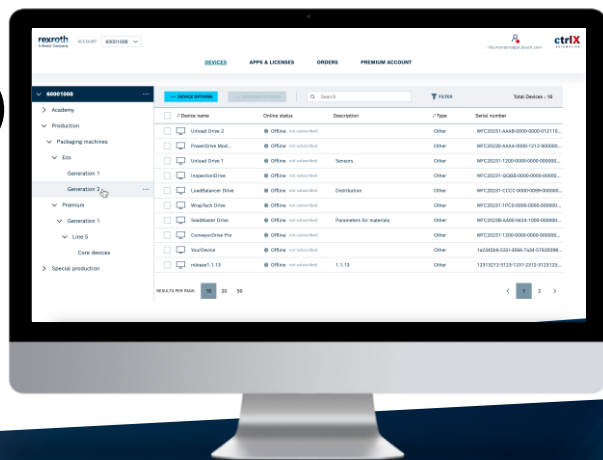
ctrlX OS Store

ctrlX OS Community



¹ Depending on hardware platform

ctrlX Device Portal for central device and software management



- ▶ See and manage your devices, apps, and licenses in one place
- ▶ Remote execution and scheduling of mass commands and rollouts
- ▶ Manage your own backups, configurations, connected devices + apps remotely
- ▶ Remote access via VPN for troubleshooting
- ▶ Edge Solution available for Secure Network separation

Commissioning



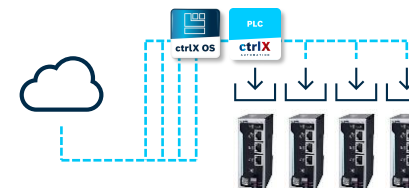
Engineering, service & maintenance



Fleet management



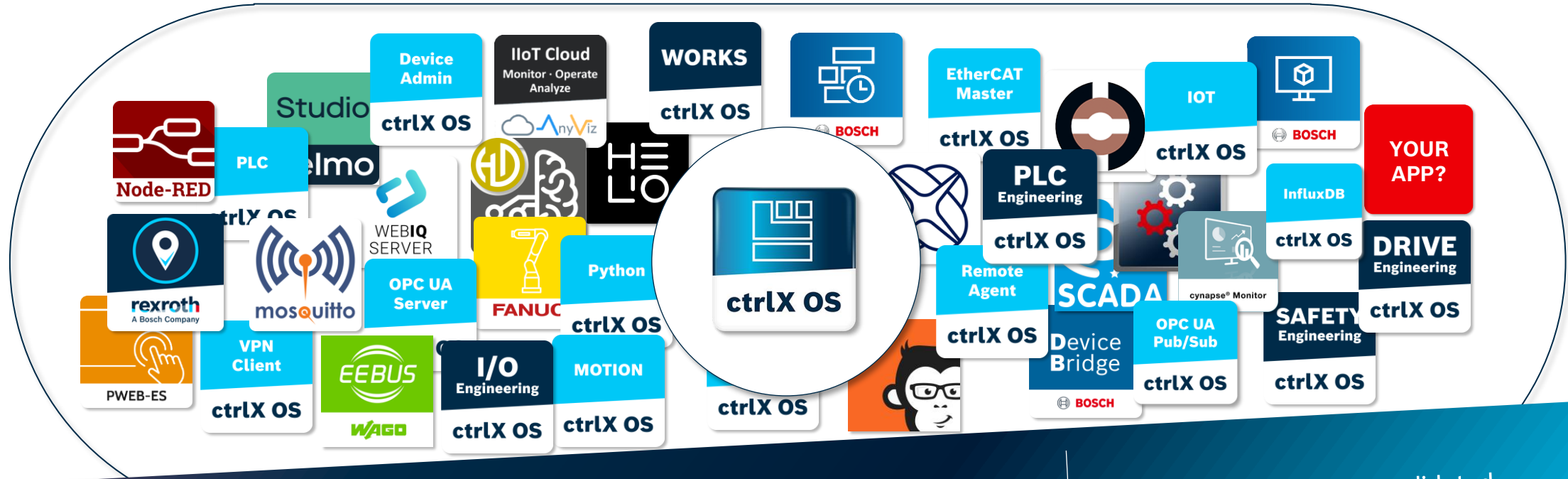
Serial commissioning



Edge solution



Extendable with apps from ctrlX OS Store



>80 Apps

t/o 50% from 3rd party and
continuously growing

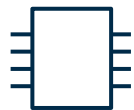


Customer decides what is
the best solution for the
automation challenges!



All apps are validated
and signed for ctrlX OS

Co-Creation: Everybody can program it and develop own apps



Program your PLC application

with CODESYS-based PLC Engineering and Runtime based on IEC 61131



Develop your apps

for ctrlX OS devices in any Linux-supported programming language



ctrlX OS SDK on GitHub

Find our ctrlX OS Software Development Kit in GitHub [here](#). The corresponding app guideline can be found [here](#).



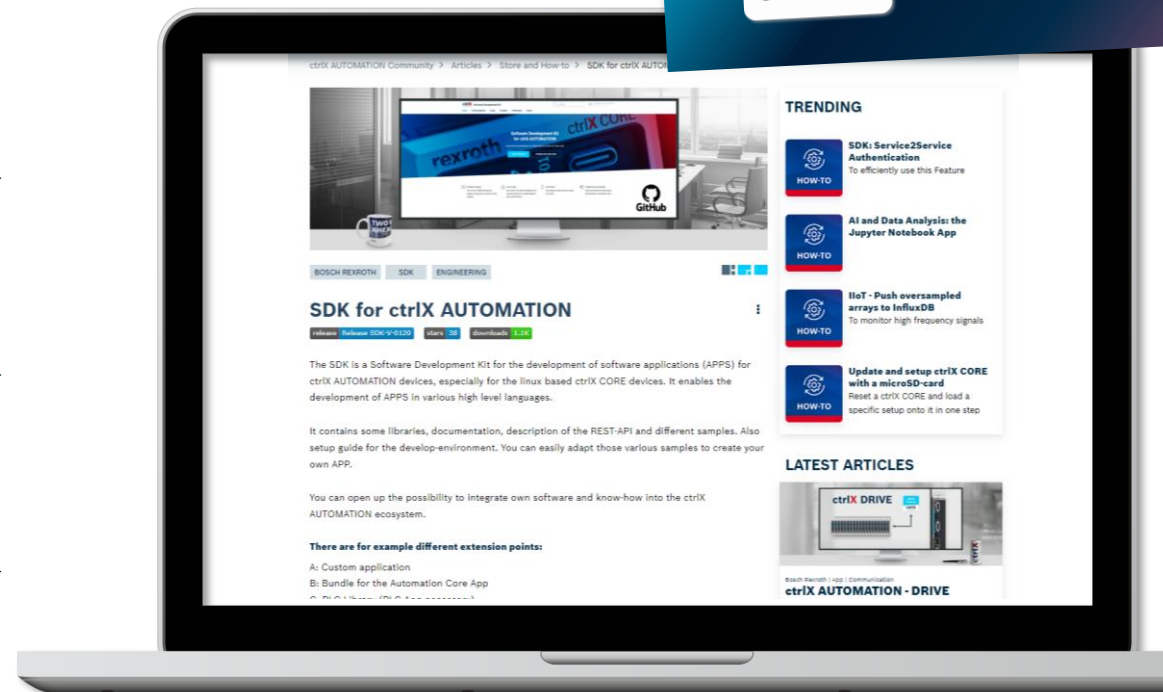
ctrlX OS Community

Feel free to exchange in our ctrlX OS [Community](#) and [Forum](#) and learn from best-practices & [How-Tos](#)

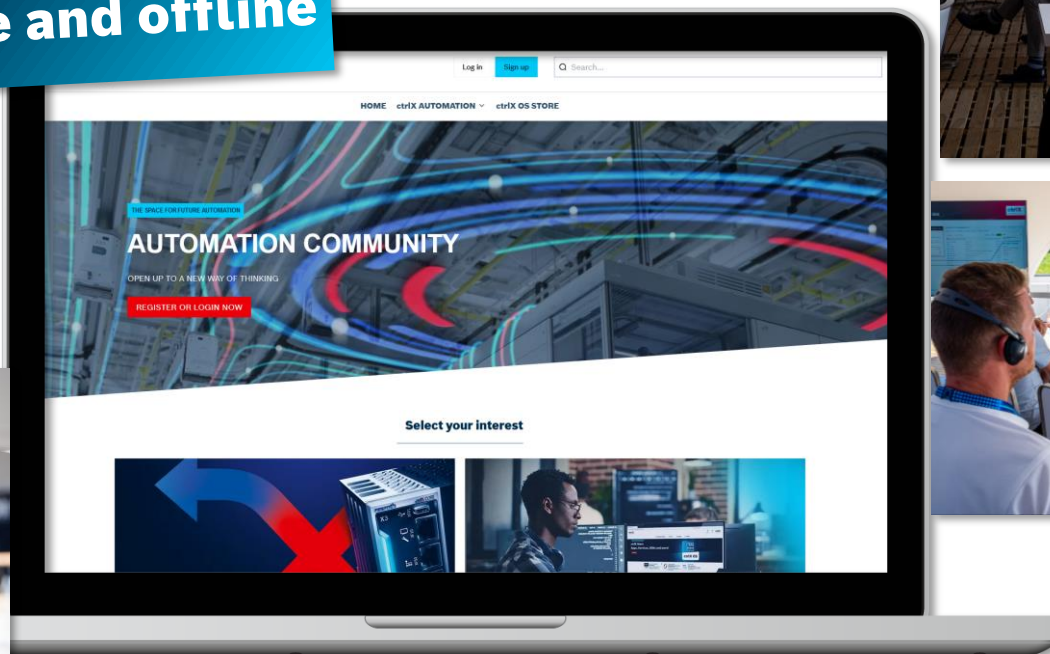


Security included

PLC projects and apps are compiled, apps are further signed for ctrlX OS devices, based on license system with protected local license endpoint (TPM-based)



Knowledge exchange, growth of know-how and support in the ctrlX OS Community online and offline



IT Security included in ctrlX OS

- ✓ Secure by design & secure by default
- ✓ Protects data which is stored or transmitted or otherwise processed
- ✓ Provides the platform to distribute and to apply vulnerability patches without delay and side effects
- ✓ Robust, resilient and ready for the CRA
- ✓ Further IT Security Consulting available



Cyber Resilience Act ready

Secure by **Design**



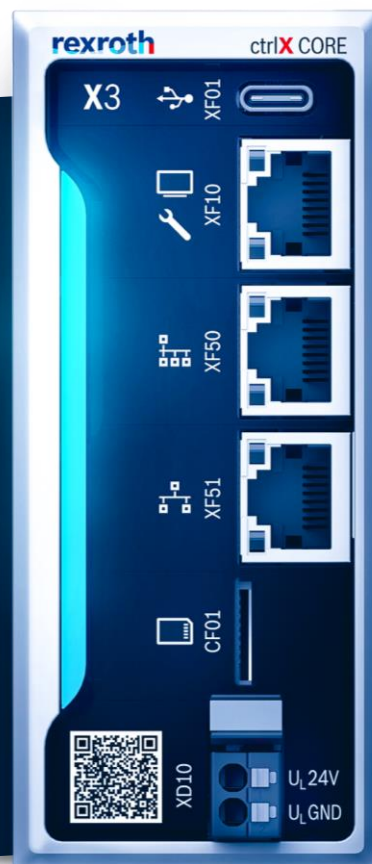
Secure by **Default**



ctrlX OS devices are secure!



Cyber Resilience Act ready



- ✓ **Secure by default**
encrypted data transfer, minimal network footprint
- ✓ **IoT integration with security by design**
compliant to IEC62443 SL2 (SL3 in preparation)
- ✓ **Secure update deployment**
ctrlX OS Store, ctrlX Device Portal
- ✓ **Flexible IT Security configuration**
Sessions and password policies, services configuration, ...
- ✓ **Functionally expandable**
with additional security apps from the ctrlX OS Store

Truly open: Co-creation with the Partner Network ctrlX World



100+ ctrlX World Partners complement with their solutions



Addressing > 150 use cases



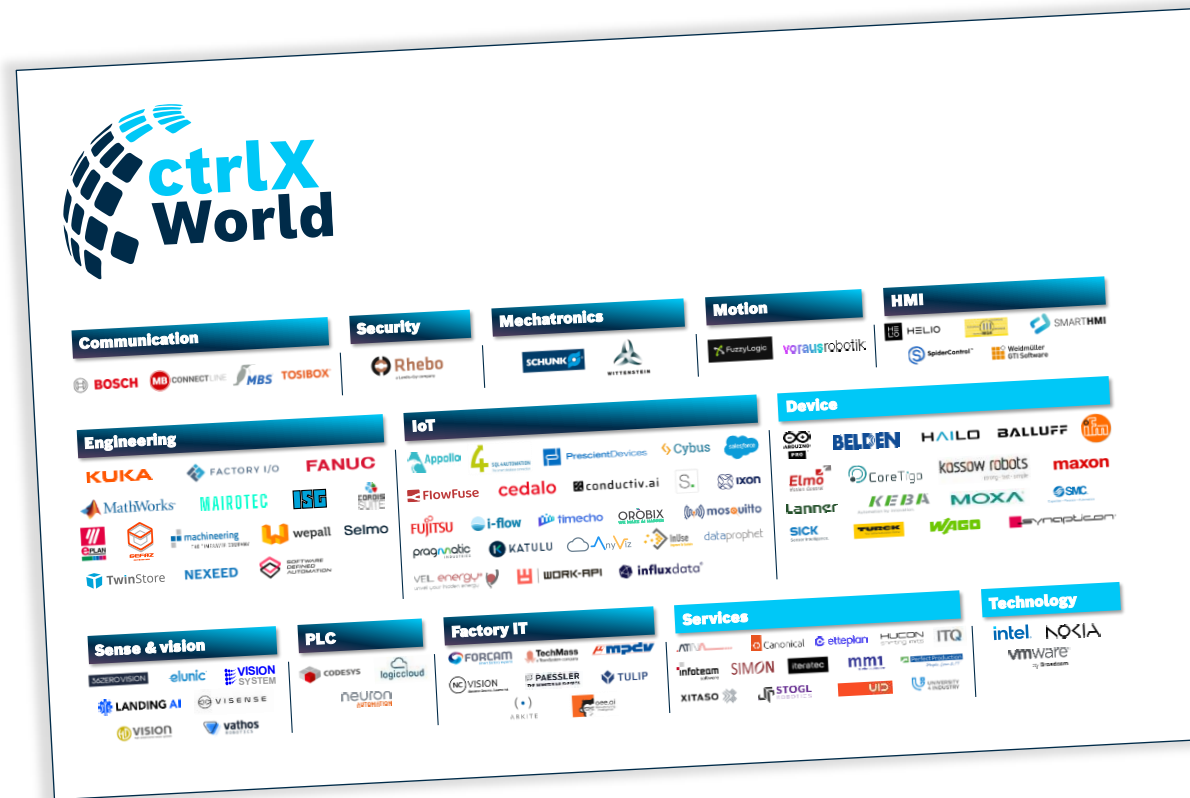
Apps, Device and Services partnerships



Open for everyone who would like to contribute



Official onboarding process



ctrlX OS

References

First ctrlX OS OEM

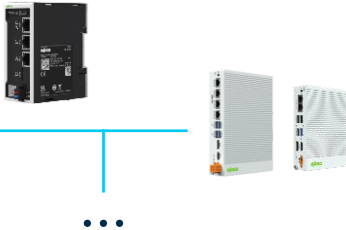
First official OEM since 2023.
Pioneering ctrlX OS into new markets.



ctrlX OS for ...



ctrlX OS on ...

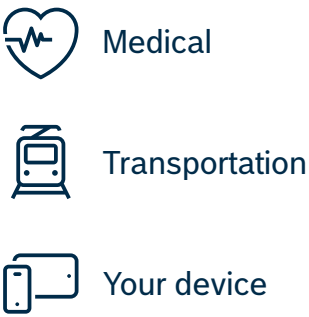


ctrlX OS OEM for COM boards

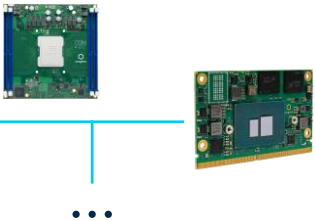
Official partner since 2024
COM boards for the world beyond automation



ctrlX OS for ...

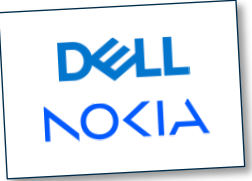


ctrlX OS on ...

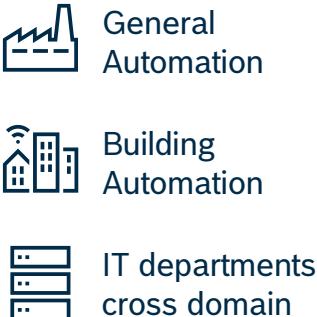


ctrlX OS OEM as virtual service partner

Official partner since 2023
Merging the worlds of OT and IT



ctrlX OS for ...

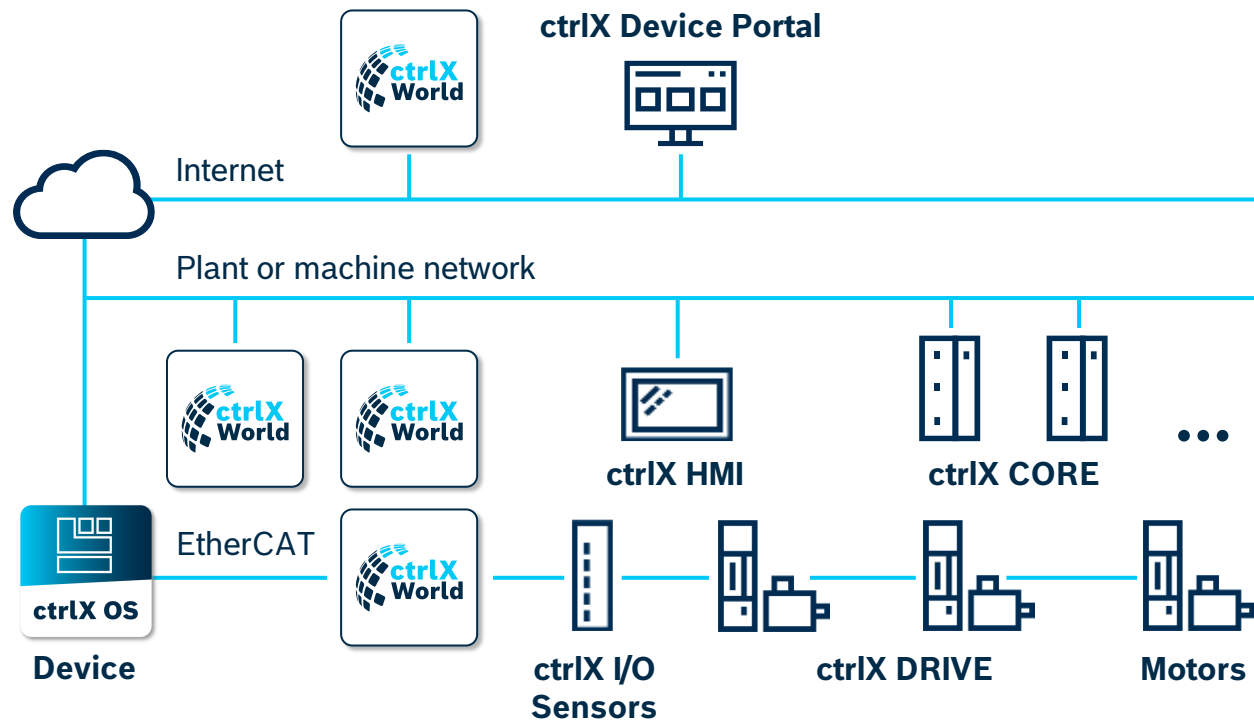
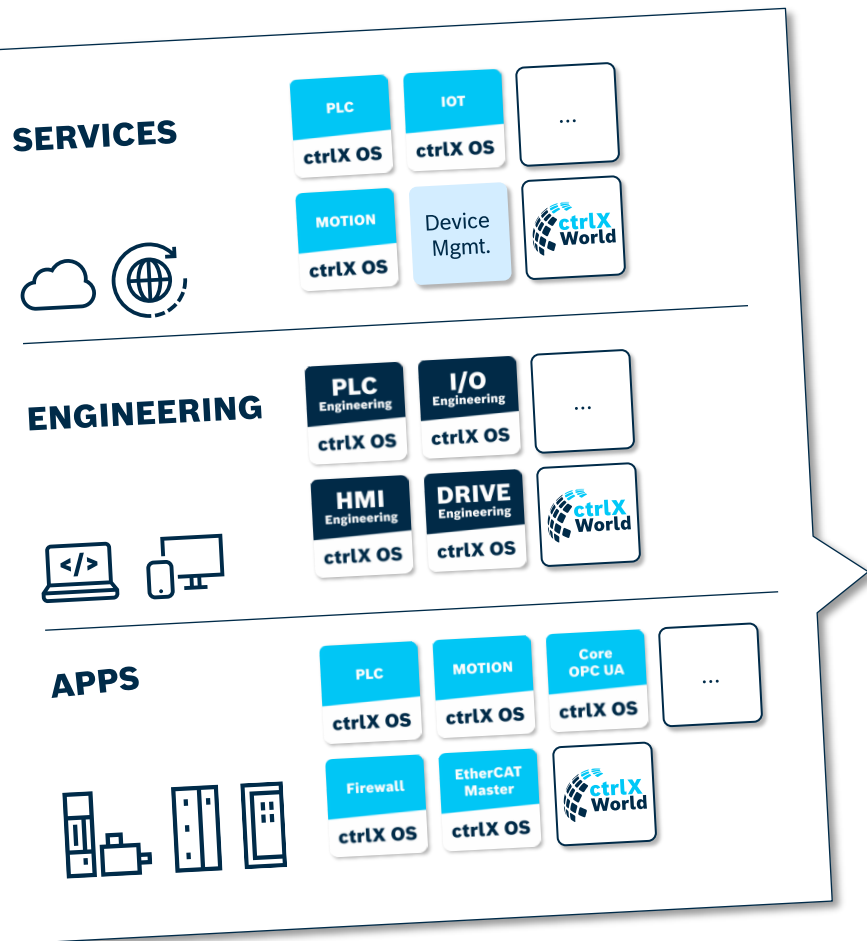


ctrlX OS on ...





Partner software and hardware solutions on all levels



ctrlX World Partner
Software and Hardware Solutions

ctrlX World

The fastest growing partner network in automation

100+

partners

> 150

use cases together

40+

ctrlX World apps

50+

partner how-tos



**ctrlX
World**

>150 use cases that our partners cover together with us



Extract data from machines & components



Use modern programming languages to automate



Deploy machines with ease and speed!



Effortless machine operation for efficiency!



Use vision & image recognition for visible value



Connectivity and efficiency through machine retrofit!



Unlock remote machine management anywhere, anytime!



Safeguard industrial machinery insights with elevated data security



Harmonize data across different manufacturers!



Increase your OEE



Reduce & optimize your cycle times



Reduce energy waste



Seamless MES integration for manufacturing connectivity!



Innovate with 3rd party component integration in ctrlX AUTOMATION!



Deliver optimal user-centric HMI experiences



Simple robotics usability integrate robots

ctrlX World

100+ Partners



COMMUNICATION



SECURITY



MECHATRONICS



MOTION



HMI



ENGINEERING



IOT



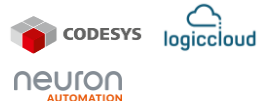
DEVICE



SENSE & VISION



PLC



FACTORY IT



SERVICES



TECHNOLOGY



An ecosystem built on trust!



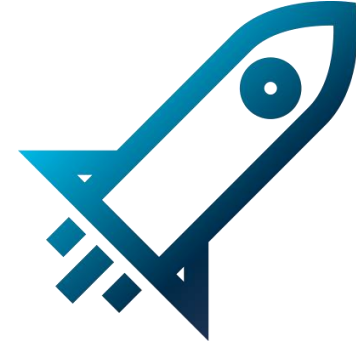
We take care

with app validation team,
plugfests and contracting for
quality assurance



One-stop shop

for ease of use, terms
& conditions, continuous
user experience



Open for everyone

with IDEAs and willingness
to extend solution space
with cool solutions

NEW FUNCTIONS

- ✓ Optimized boot time
- ✓ Re-designed logbook
- ✓ Ethernet port configuration (CORE X3)
- ✓ Support of new Ubuntu Core 22
- ✓ Dongle with pre-installed licenses
- ✓ Firmware update via web interface
- ✓ Extended retain memory configuration
- ✓ Lossless ctrlX Data Layer subscription
- ✓ Optimized system backup- and restore
- ✓ Customizable homepage using widgets
- ✓ Flexible assignment of NRT/RT CPU cores

AVAILABLE FOR
DEVICES FROM



open to
other devices

NEW APPS & ENGINEERING TOOLS



- ✓ Model Connect
- ✓ System Overview
- ✓ IXON Cloud Connector
- ✓ 36ZERO Vision Connector

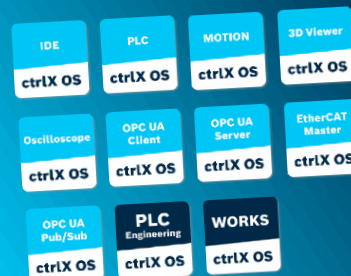
- ✓ HD Vision Systems – LumiScan Suite
- ✓ CODESYS – Professional Developer Edition
- ✓ Bosch Connected Industry – Nexeed Control plus



LTS 2.6



EXTENSIVE UPDATES & IMPROVEMENTS



- ✓ IDE
- ✓ PLC
- ✓ MOTION
- ✓ 3D Viewer
- ✓ Oscilloscope
- ✓ OPC UA Client

- ✓ OPC UA Server
- ✓ OPC UA Pub/Sub
- ✓ EtherCAT Master
- ✓ ctrlX PLC Engineering
- ✓ ctrlX WORKS Engineering



Third-party Field, Edge, Server devices

BASIC SYSTEM REQUIREMENTS

- ✓ 2 CPU cores (possible split of RT / NRT applications)
- ✓ 2 GB RAM
- ✓ 8 GB disc memory
- ✓ 64bit platform
- ✓ AMD64 Architecture

SECURITY

- UEFI secure boot (certificate handling)

SECURE HARDWARE ANCHOR FOR LICENSE ENFORCEMENT

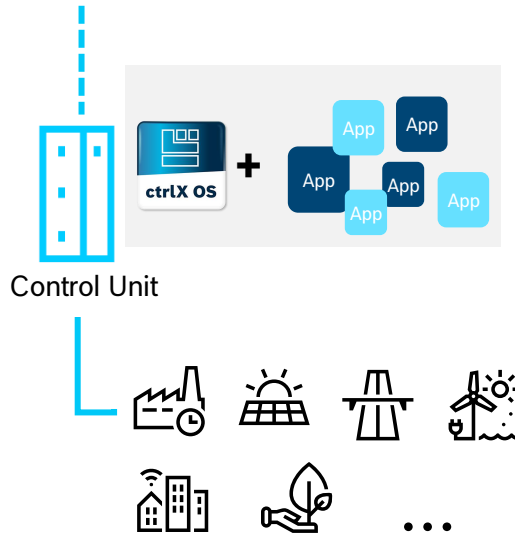
- One µSD reader for µSD dongle licensing per ctrlX OS device

or

- TPM 2.0 capable interface (e.g. Intel PTT, AMD fTPM) and respective manufacturing processes

FIELD

Any Applications

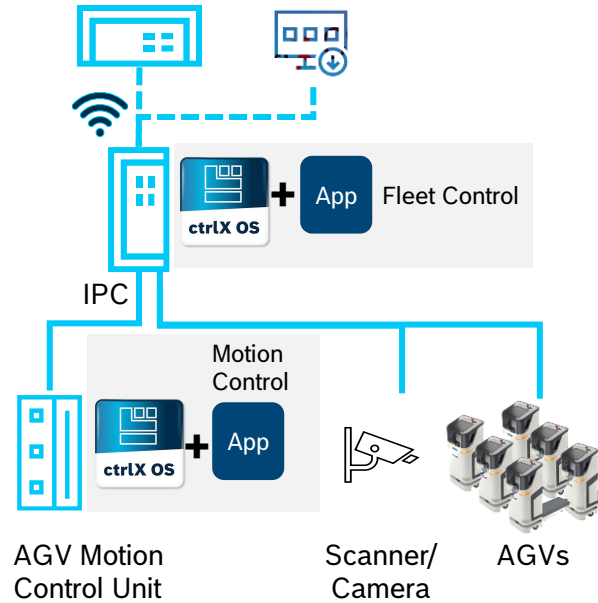


ctrlX OS for ...

**APPLICATIONS IN- AND OUTSIDE OF
FACTORY AUTOMATION**

EDGE

Intralogistics, AGVs

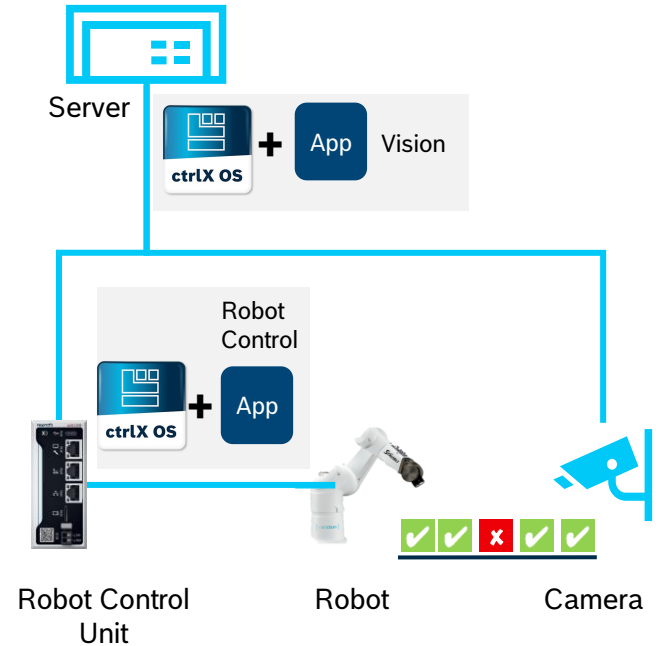


ctrlX OS for ...

**DECENTRAL AGV MOTION CONTROL
AND CENTRAL FLEET MANAGEMENT**

SERVER

Quality Inspection



ctrlX OS for ...

**ROBOT CONTROL AND AI/
VISION APPLICATIONS**

ctrlX OS

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ctrlX OS for ...



ctrlX OS on ...

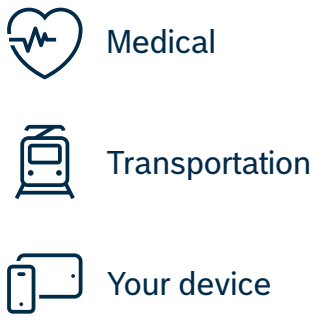


ctrlX OS OEM for COM boards

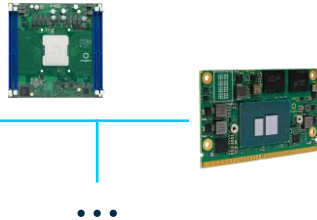
Official partner since 2024
COM boards for the world beyond automation



ctrlX OS for ...

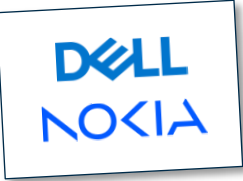


ctrlX OS on ...

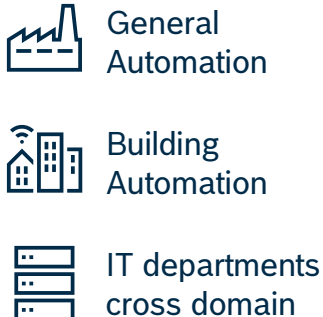


ctrlX OS OEM as virtual service partner

Official partner since 2023
Merging the worlds of OT and IT



ctrlX OS for ...



ctrlX OS on ...



Use cases with ctrlX OS within the Bosch family

Bosch Rexroth solutions

ACTIVE Shuttle



Autonomous mobile robot (AMR) with its Robot-control-unit running on ctrlX OS, providing a platform for FOTA, localization, obstacle detection and many more.

ACTIVE Mover



ACTIVE Mover high speed, high precision linear motor powered conveyor system based on powerful motion controller built on ctrlX OS.

Bosch solutions

Collision Avoidance System



Bosch collision avoidance system for rail-business with newest Bosch sensor generation, connectivity-features and modular future-proofed system architecture approach using ctrlX OS.

ctrlX OS

Ready to run on many devices



rexroth
A Bosch Company



DELL
Technologies



NOKIA

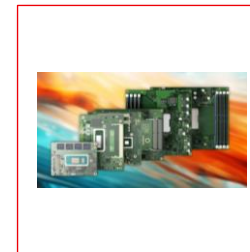


WAGO



congatec

ctrlX OS OEM
integrate ctrlX OS
onto their devices

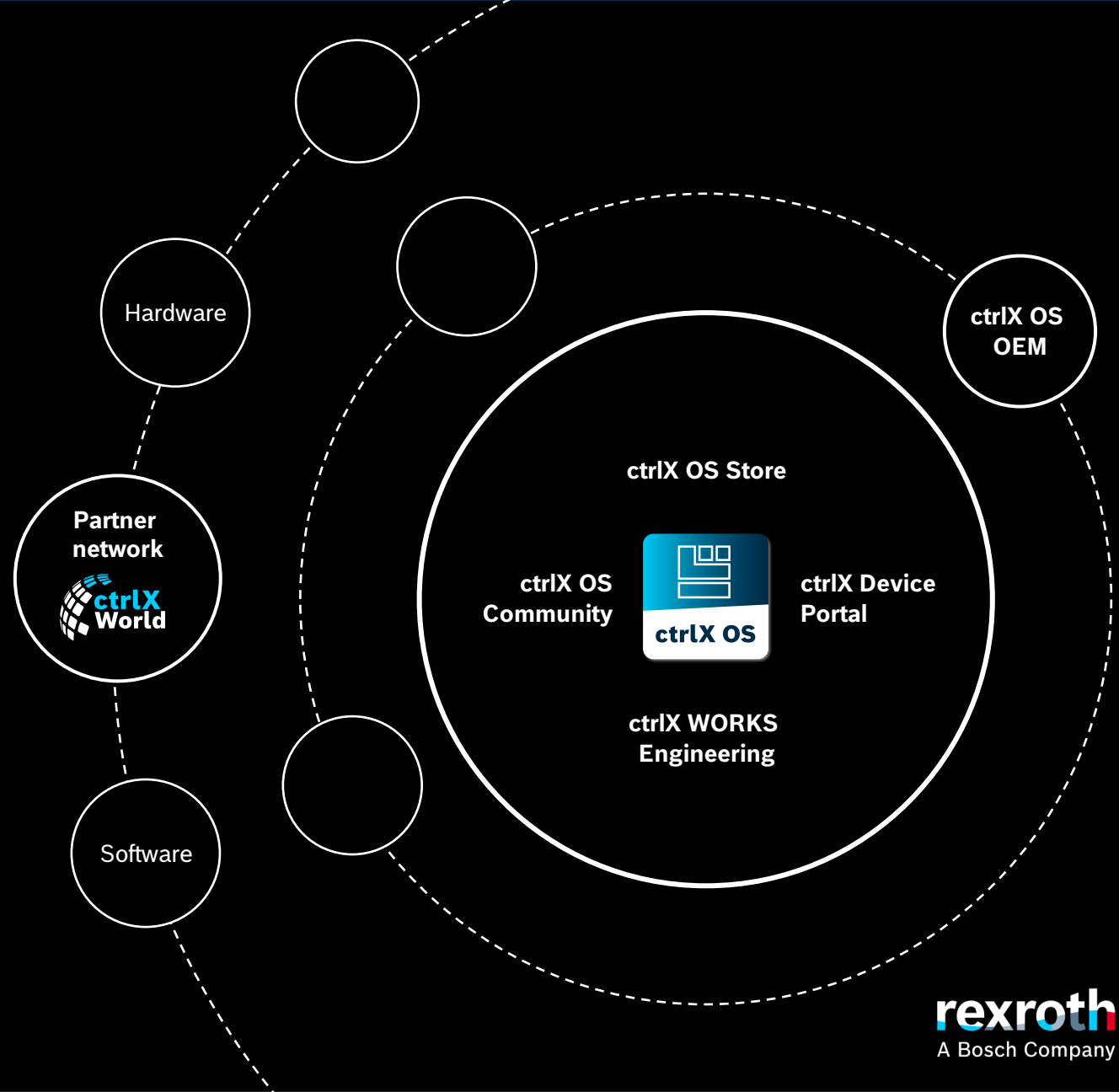


Digital services for more efficiency



ctrlX OS Ecosystem

**Together,
we are faster,
stronger and
better!**





www.ctrlx-os.com