# PCS 7 V10 Innovations / Roadmap Update

The cornerstones of the AE Portfolio

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# SIMATIC PCS 7
## More than 20 years of SIMATIC PCS 7 Innovations

**V9.1**
- Windows 10 LTSC 2019 and Server 2019
- WinCC V7.5 SP2
- ES enhancements and consolidation
- CM Plant generator
- PAA innovations
- Enhanced SMMC
- New Hardware support
- New PCS 7 Software Media Carrier (USB Stick)
- Merging of the Software Media Packages PCS 7 EU and ASIA to one data carrier
- Integration of PUD Manager V2.1
- Replacement of CHM help format (will be replaced by XML for PUD)
- Update synchron-ization with frequent update collections

**V9.0**
- **Digitalization down to the field level:**
- PROFINET
- SIMATIC ET200SP HA
- SIMATIC CFU
- SIMATIC S7-410 Entry CPU
- SIS compact
- **Software Innovations:**
- Plant Automation Accelerator
- SIMATIC Batch
- SIMATIC PDM 9.1
- SIMIT 9.1
- Operator Station
- Library enhancements
- Process Historian
- SIMATIC Management Console

**V8.2**
- Logic Matrix
- SFC Calculations
- Windows 10
- Windows Server 2012
- Customization of OS Management Console
- WinCC WebUX
- Measuring point browser
- Trend configuration
- Tags Group View
- Configuration dialog for Web Publishing
- Load Management
- TeleControl/RTU3030
- PowerControl improvements
- Library improvements
- SIMATIC PDM V9.0

**V8.1**
- Selective Download
- Type Change Online
- Support of different library versions
- SIMIT
- Advanced Process Graphics
- ConMon Function Blocks
- Model Predictive Control 10x10
- SEC Online Upgrade
- SIMATIC ET 200SP
- Increased quantity structure
- Integr. Comfort Panels

**V8.0**
- SIMATIC PCS 7 CPU 410-5H
- Digital Plant @ PCS 7
- Improved Engineering Efficiency
- PROFINET
- Integration of Switchgear
- Scalable Archiving and Reporting
- Windows 7/Server 2008
- PowerControl

**V7**
- Multiuser Engineering
- Advanced Process Library
- Alarm Management
- Advanced Process Control
- PA/FF Redundancy
- Open PCS 7
- TeleControl

**V6**
- Flexible Redundancy
- Safety Matrix
- Batch
- Web OS
- RouteControl
- Plant Asset Management

| 1997 | 2003 | 2007 | 2011 | 2014 | 2016 | 2017 | 2021 |

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# Strategy Highlights of SIMATIC PCS 7
## Roadmap of Innovations

**SIMATIC PCS 7**

| | | | | |
|---|---|---|---|---|
| Windows 10 LTSC 2019 / Server 2019 | | Windows 10 IoT LTSC 2021 / Server 2022 | | Windows 11 IoT LTSC 2024 / Server 2024 → **Operating Systems** |
| Internet Explorer | Edge in Compatibility Mode | | | **Supported Browsers** |
| Email notification for MS Defender Events | EndPoint Protection | | | **Security** |
| | PN-APL supported | PN Certified 3rd Party Field Device availability | CFU PN-APL w/Scalance ; w/ MI | **Profinet over APL** |
| | MTP Supported | | | **MTP** |
| | | PH: Engineering Log | | **Management of Change** |
| | | User Access Rights | | **UMAC** |

PH/IS Migration 2014 → 2020

| V9.1 SP1 | **V9.1 SP2** | V10.0 | V10.0.1 | V10.1 | ● ● ● |
|---|---|---|---|---|---|

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V8.2 LSS Link  https://support.industry.siemens.com/cs/ww/en/view/109801288

V9.0 LSS Link  https://support.industry.siemens.com/cs/ww/en/view/109815433

# SIMATIC PCS 7
## System Roadmap

current planning status

| 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |

**PCS 7 V9.1**

**V9.1 SP1**

**V9.1 SP2**

**PCS 7 V10.0**

PCS 7 V8.2
Announcement Product Phase-out

**PCS 7 V8.2  LSS**

**PCS 7 V9.0  LSS**

LSS – Legacy System Service
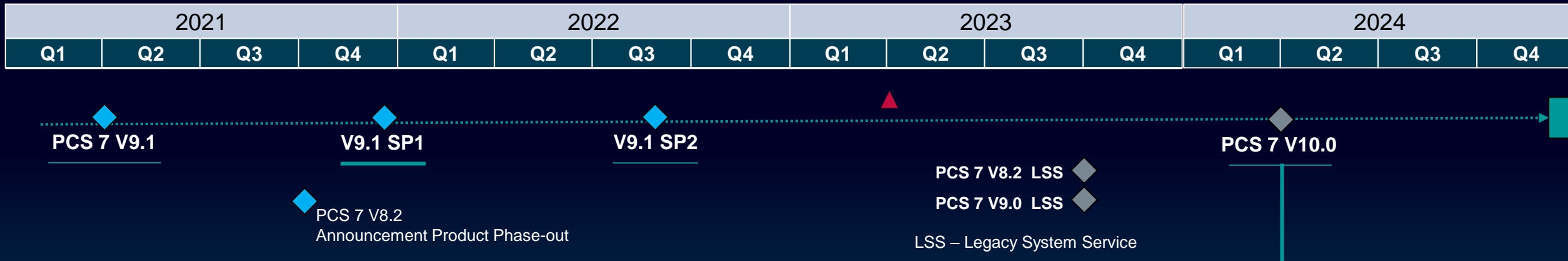
## Planned Software topics:

➢ **Windows 10 Enterprise 2019/2021 LTSC and Windows Server 2019/2022**

➢ **WinCC V8.0 (Adds: PCS 7 WebClient based on WinCC ViewerRT – no IE11 Dependencies)**

➢ **Step 7 V5.7.1 (SNMP default  off)**

➢ **Management of Change (GMP Regulations - Leverage PH)**

➢ **ES User rights Management (User Permissions for engineering tasks)**

➢ **SMMC fully automated MS Defender Report**

➢ **PH v2023 – MSSQL 2019, 3rd Party Data via OPC UA**

## Planned Hardware topics :

➢ **Completion of ET 200 SP HA portfolio**

➢ **Completion of CFU portfolio**

➢ **CN 4100 Integration & Maintenance Station**

➢ **Support PA-Profile V4.x field devices**

➢ **PROFINET S2/S1 Link**

➢ **CPU 410 FW V8.3**

**Topics to follow:**

➢ **RACK IPC: 547J / 647E / 847E (547K)**
➢ **BOX IPC: BX-39A / PX-39A  (427G/477G)**
➢ **OS Client 227G / 277G**
➢ **Restore images for Microsoft Hyper-V**

**PRELIMINARY as of March 2023**

◆ Planned

◆ Released

# Digital Upgrade Twin: Time-Limited Licenses to support Upgrades to PCS 7 V9.1.2 (V10)

Production Plant with **PCS 7 V8.0 Project**



**PCS 7 V8.0 Licenses**

**Product Manager  Review/Approval required to Quote and Order**

Production Plant with **PCS 7 V9.1 Project**

**PCS 7 Upgrade Licenses**

**PCS 7 V9.1 Licenses**
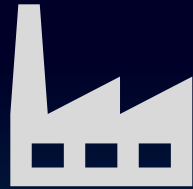


**Upgrade the PCS 7 Project**

**Test Environment PCS 7 V9.1.2, Test Packages with a <u>fixed</u> end date of September 30, 2023**



## Upgrade Order

- **New Hardware**
- **PCS 7 Test Packages**
- **SIMIT Test Packages**
- **PCS 7 Upgrade Licenses**
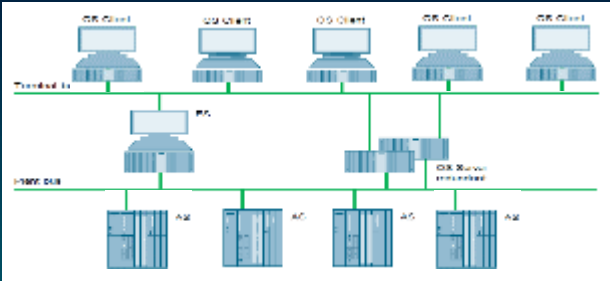
**PCS 7 Test Package includes:**
- **Time Limited PCS 7 V9.1 licenses (fixed end date not related to purchase date or start of usage)**
- **x1 package for each PCS 7 Station in the Test Environment.**
  - **Test Package Basic (without Batch)**
  - **Test Package Extended (with Batch)**
- **<u>SIMIT V11.0 PoC Package</u> + Dongle w/ SIMIT L and x2 VC valid for x3 months (Evalution for Single One-Time Use)**

- Exchange of plant hardware from test environment
- PCS 7 V8.0 licenses are upgraded to PCS 7 V9.1 licenses

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# Based on PCS 7 V9.1 SP2 and is time limited to September 30, 2023

## Test Package Basic – 6ES7658-5LX68-1YA6  $500.00
## DL- 6ES7658-5LX68-1YH6

- Unlimited Count Relevant Licenses
- PCS 7 AS Engineering
- PCS 7 OS Engineering
- Version Cross Manager
- Version Trail
- IEA
- S7-PLCSIM
- F-Systems
- Safety Matrix
- Maintenance Station ES
- Management Console
- OpenPCS 7
- PDM
- Route Control
- PCS 7 Open OS

- OS Client
- SFC Visualization
- Logic Matrix
- OS Single Station
- OS Server
- OS Redundancy
- WebServer
- TeleControl
- PowerControl
- Process Historian
- Information Server
- WinCC User Archives
- Hardnet-IE S7
- Hardnet-IE S7 Redconnect
- Softnet-IE (supports BCE)
- Softnet-IERedconnect VM

## Test Package Extended – 6ES7658-5LX68-2YA6   $1,675.00
## 6ES7658-5LX68-2YH6

- **Test Package Basic – Plus:**
- Batch Server
- Batch API
- Batch Client
- Batch Recipe System

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# SIMIT News

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# SIMIT
## System Roadmap

| 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |

**SIMIT V10.3**       **SIMIT V11**     **SIMIT V11 SP1**     **SIMIT V11.1**
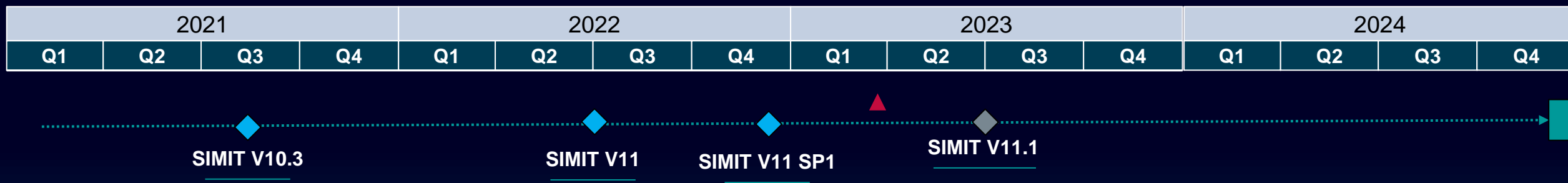
| SUS Packages to purchase before June's V11.1 release | |
|---|---|
| 6DL8913-0BX00-0AV8 | SIMIT SUS ENGINEERING M DL |
| 6DL8913-0CX00-0AV8 | SIMIT SUS ENGINEERING L DL |
| 6DL8913-0DX00-0AV8 | SIMIT SUS ENGINEERING XL DL |
| 6DL8913-0DA00-2YV8 | SIMIT VC FULL SUS 1 Controller DL |
| 6DL8913-0DB00-2YV8 | SIMIT VC FULL SUS 5 Controller DL |

**SIMIT Features**

✓ Simulate Hardware Faults with the SIMIT VC (channel/wire break)

✓ Simulate redundant failures

✓ Proof Of Concept Offer

✓ Improved integration with PSE/gPROMS (High fidelity Process Simulator)

✓ Inclusion of all newly released HW devices

✓ Improved re-use of Snapshots and VC imports

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# SIMIT V11 Player

## SIMIT Player

- **Target Use Case:**
  - **Operator Training Systems**
- **~ 40% less than full SIMIT Engineering**

## Notables

- No engineering
- Same installation / no additional installation necessary
- **VCs still required**
- Possible functions:
  - Load, start and stop projects
  - Adapt project to the target system (e.g. IP, PC name, …)
  - Snapshots

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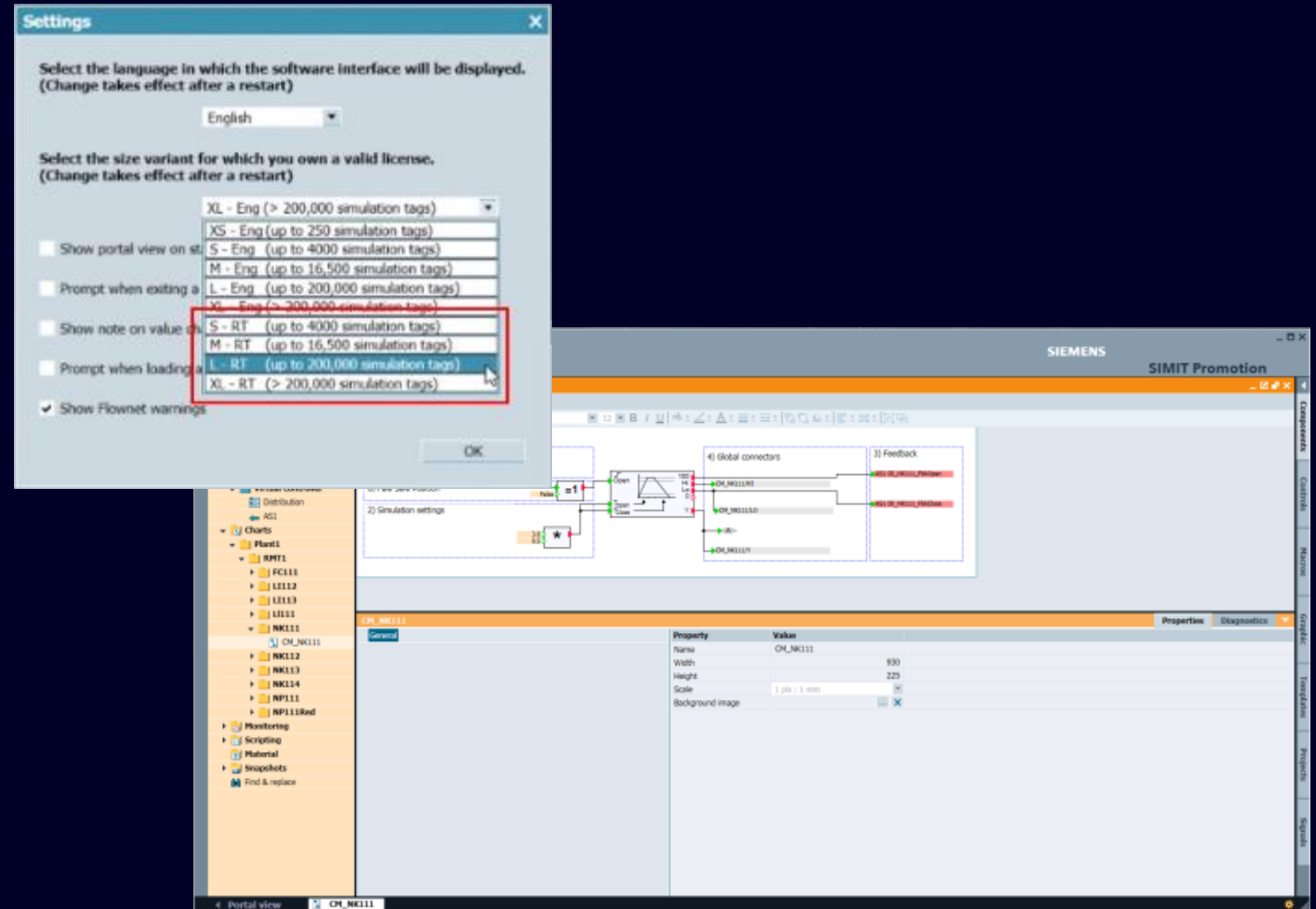
# PoC Package (Proof of concept)

- Available for customers running a Proof of concept with SIMIT
- Postal delivery only (assumes you do not have a Dongle)
- Valid for 3 months (starting from 1$^{st}$ usage)
- **Only one package per customer**
- Consists out of the following packages:
  - SIMIT L
  - All libraries
  - Component type editor
  - 2x Virtual Controller

- Can be ordered with one MLFB, no additional dongle and license carrier required
  - Single Package – S79220-C1911-F888 ($475)

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# SIMIT product packages and libraries

## SIMIT product libraries

**STANDARD, DRIVES**
Signals, Logic, Drives, Misc.
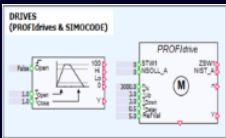
**FLOWNET** 🔑
Water/Steam, Ideal gas Liquid
with constant density/
heat capacity
Ideal gas
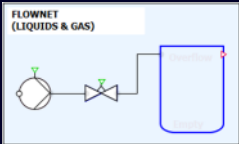
**CHEM-BASIC** 🔑
Mixing/Separation 2 liquids,
liquid with solids

**SITRANS PI Library**
SITRANS Process Instrumentation

**SIMIT Solution Device Library** 🔑
APL based component library
for device level creation

**MLFB:**
**6DL5274-0AA20**

**SIMIT Solution Water Library AddOn** 🔑
Extends FLOWNET, plant simulation of
fresh water production, reverse osmosis
processes and pipelines
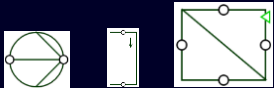
**MLFB:**
**6DL5274-3AH43**

**Coming soon**

## SIMIT solution libraries

**Multi Component FLOWNET Library** 🔑
Concentration, Liquid and Gas
Material database, thermodynamic
modeling

**Electrical Network ELN** 🔑
Electrical generators, consumers,
energy optimization,
SIPROTEC (PB)
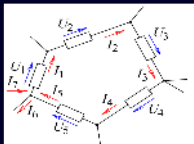
**Power Plant Library** 🔑
Vaporizer, Benson,
Steam turbine

🔑 = Add-on

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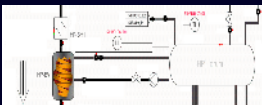
# Advanced Physical Layer

The "other" APL ☺

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# PROFINET over APL Development Plan – In Planning

SIMATIC AS 410FH

**S2**

PROFINET

CFU PA

PROFIBUS-PA

PROFIsafe
Field Devices

SIMOCODE PRO

SCALANCE XF204-2BA

**100BASE-TX**

**Switch XF204-2BA**

*APL Coupler*

**APL 10MBit/s**

Line or star-topology

**TRUNK side**
(1000m)

**MRP**

*APL Coupler*

**SPUR side**
(200m)

**APL 10MBit/s**
(Ex i)

*APL field devices* e.g. positioner PS2,
pressure transmitter P320/420 and flow meter

APL CFU
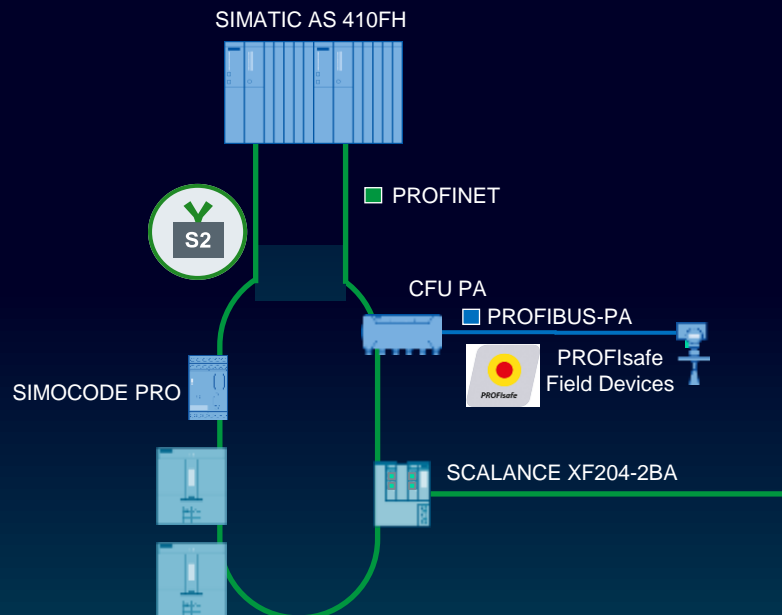
- Dedicated PROFINET Network with up to 25 Devices V9.1 SP2
  - PCS 7 V10 will perform testing for larger applications
- Opportunity to start evaluating this new technology in an "offline-test" environment.
- Third Party PROFINET Certified APL Devices supported via GSDML.

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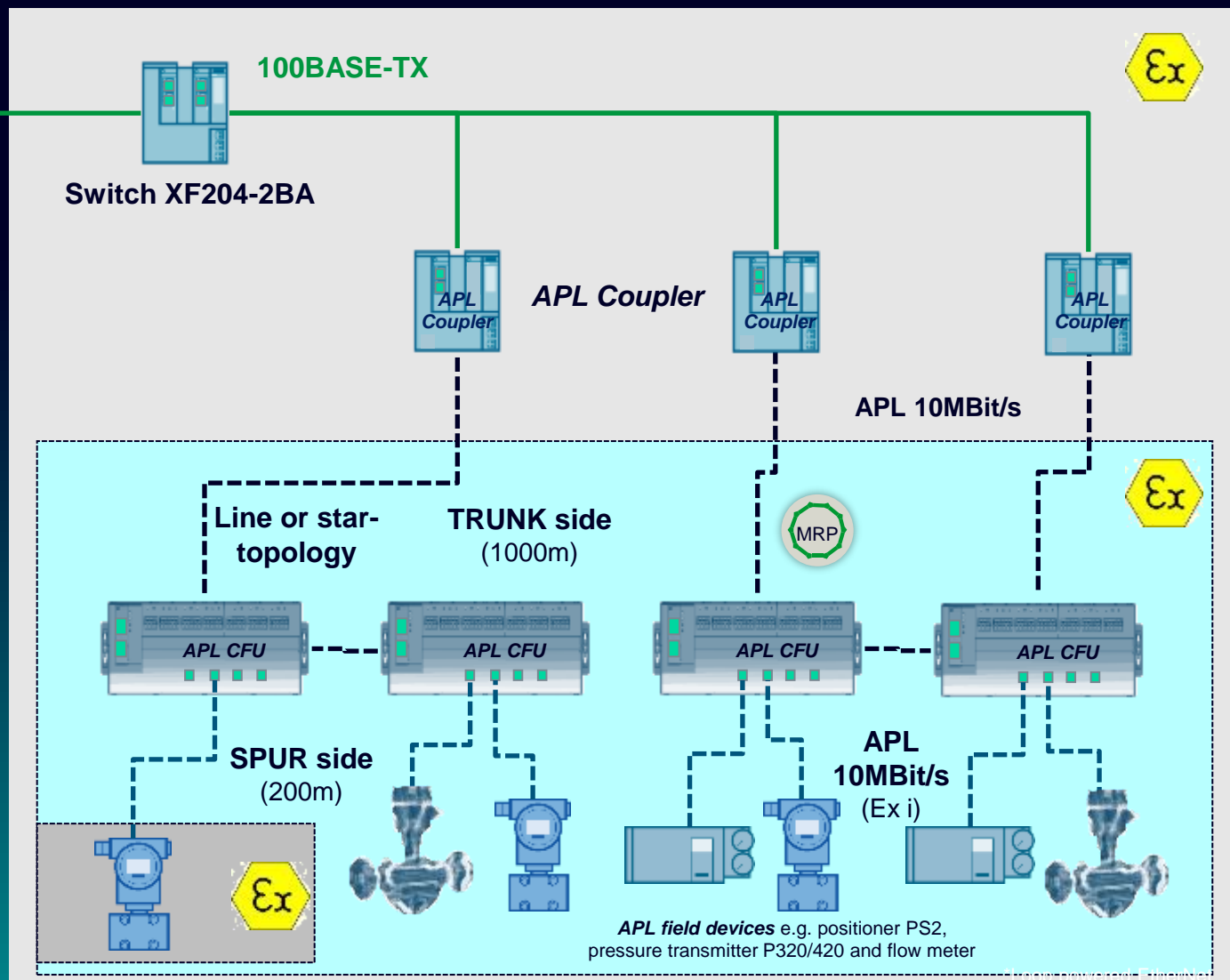
# SIMATIC CN 4100
# Release 2 -  SIMATIC PCS 7

Maximum connectivity

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# SIMATIC CN 4100



**Object-oriented Protocol Engineering**

- Protocol function block libraries
- Stand-alone tool for SIMATIC PCS 7(CNET)

Plant bus

**AS 410-5H**

S7 COMM

**CN 4100**  OPC UA Server

IEC 61850 / IEC 60870

Switchgear

Power Integration

3rd-party PLC/Device

2023-2025*

**CN 4100**

OPC UA Client/ MODBUS/TCP

MODBUS/TCP **or** OPC Server

**CN 4100**

MODBUS RTU

Serial MODBUS RTU Slave (RS232/RS485)
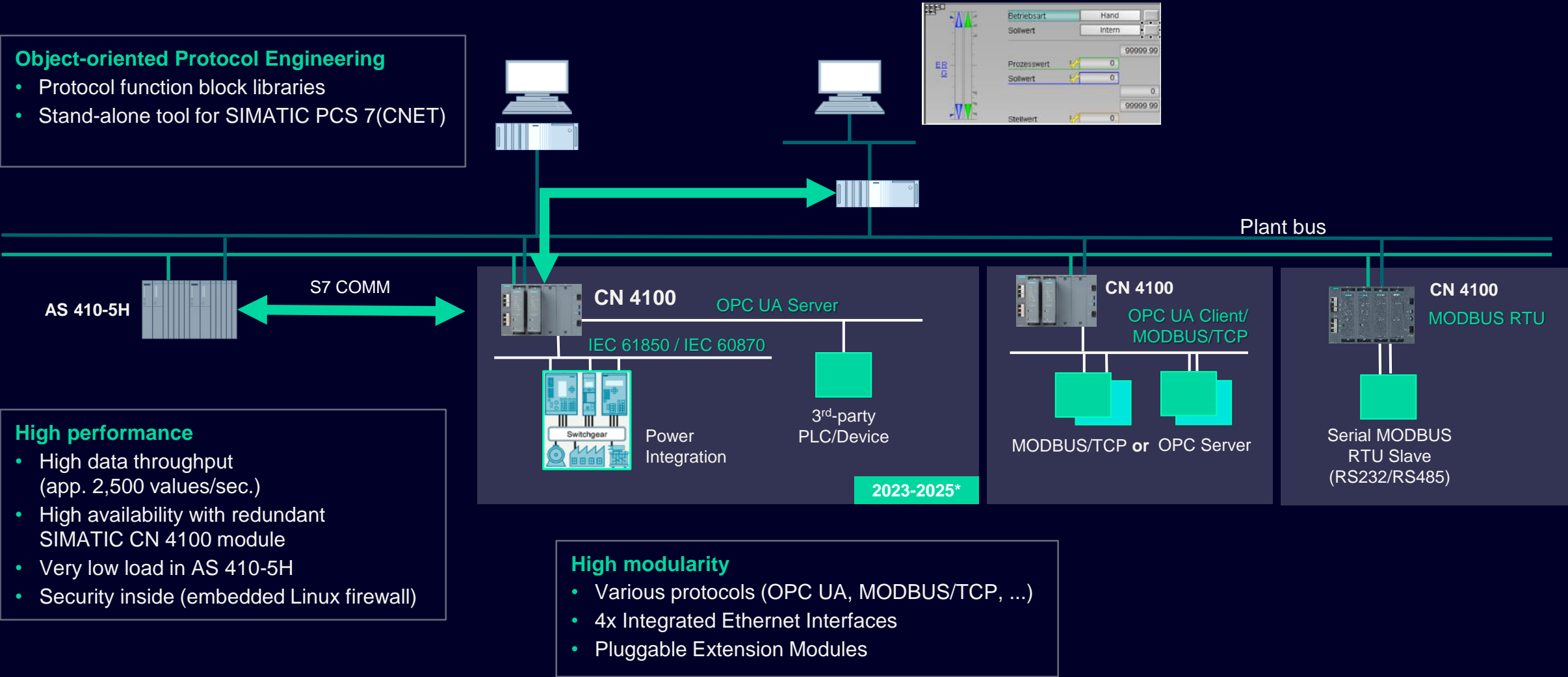
**High performance**

- High data throughput (app. 2,500 values/sec.)
- High availability with redundant SIMATIC CN 4100 module
- Very low load in AS 410-5H
- Security inside (embedded Linux firewall)

**High modularity**

- Various protocols (OPC UA, MODBUS/TCP, ...)
- 4x Integrated Ethernet Interfaces
- Pluggable Extension Modules

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# Module Type Package

MTP: Streamlining how you integrate Package Units into the DCS

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# Introduction of MTP – Module Type Package
## Modularization and easy module integration

## Fixed Plant

PU A    Unit A    Unit B    PU B

## Modular Plant

MTP
Alarm Management | Safety & Security
HMI | Process Control
Maintenance Diagnosis | ...

PEA A    Unit A    Unit B    PEA B
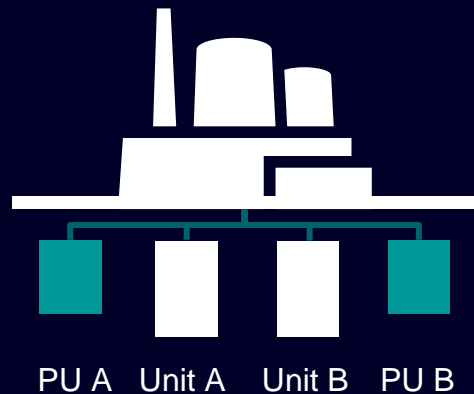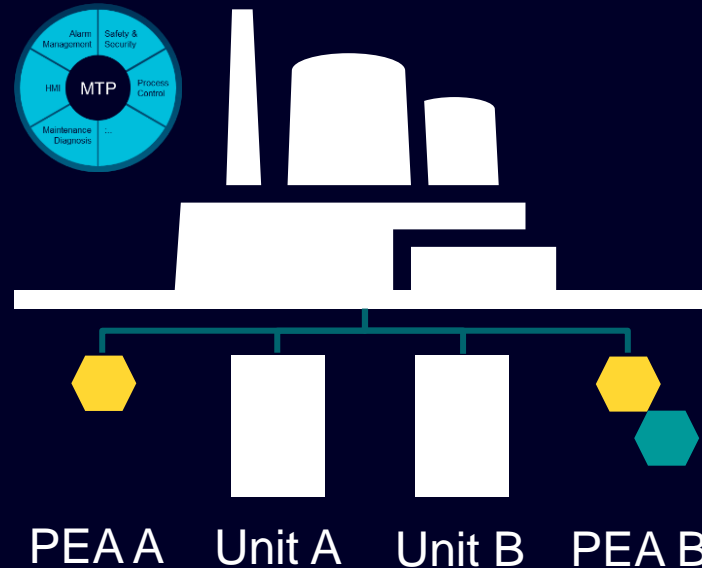
### Main Benefits

- Reduced planning effort
- Reduced coordination
- Easy and fast integration due to pre-tested PU

## Flexible Modular Plant

MTP
Alarm Management | Safety & Security
HMI | Process Control
Maintenance Diagnosis | ...

PEA A    PEA B    PEA C    Unit A
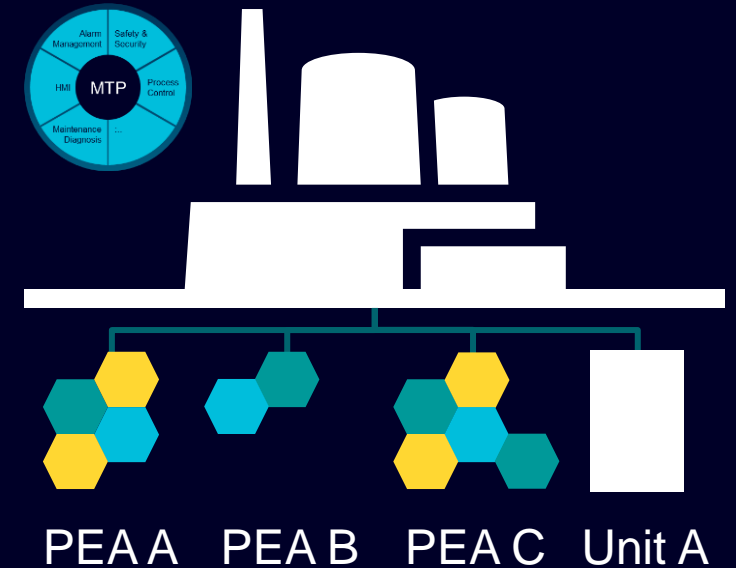
### Main Benefits

- Increased flexibility
- Higher quality
- Shorter time-to-market
- Engineering reduction
- Test reduction

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# Those participating in the standard



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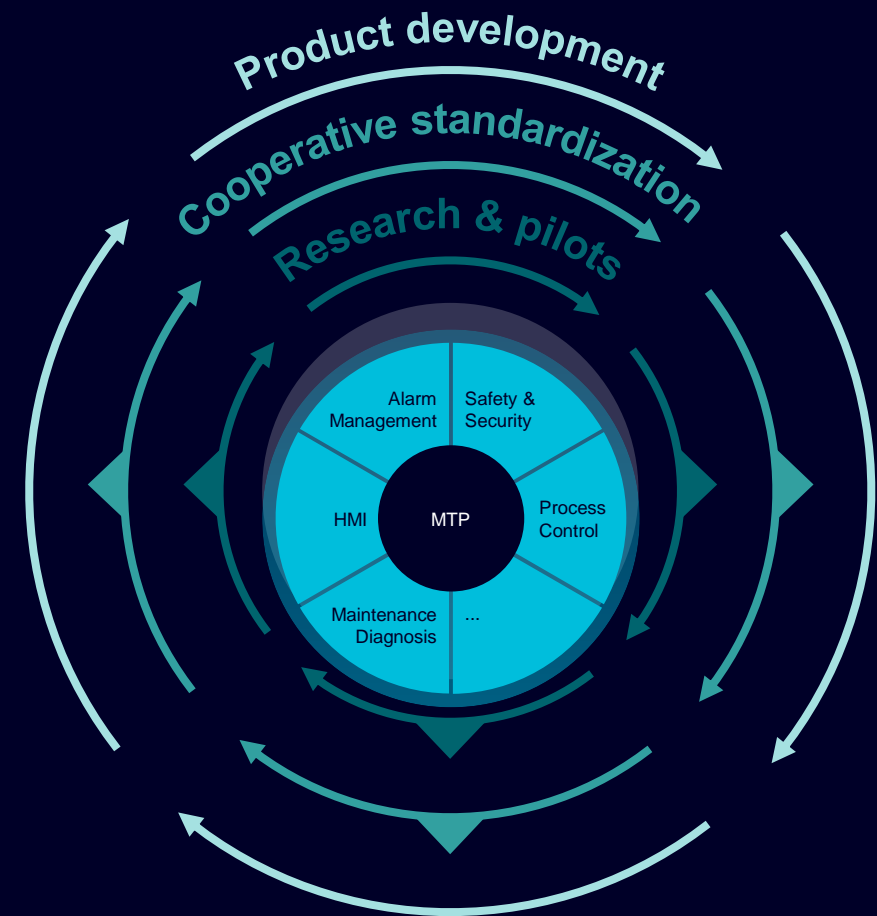
**Status 01-2023**

| 2658-x | Title | WG | CP | ID | PD | IR | PR | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | Basic Concept | ■ | ■ | ■ | ■ | ■ | ■ | Released |
| 2 | HMI – Concept | ■ | ■ | ■ | ■ | ■ | ■ | Released |
| 3 | HMI – Interfaces | ■ | ■ | ■ | ■ | ■ | ■ | Released |
| 4 | Process Control | ■ | ■ | ■ | ■ | ■ | ■ | Released |
| 5 | Runtime – Concept | ■ | ■ | ■ | | | | Work in progress |
| 5.1 | Runtime – OPC UA | ■ | ■ | ■ | | | | Work in progress |
| 6 | Alarm Mgmt. – Concept | ■ | ■ | ■ | ■ | | | Released for comment |
| 7 | Alarm Mgmt. – Modelling | ■ | ■ | ■ | ■ | | | Released for comment |
| 7.1 | Alarm Mgmt. – OPC UA | ■ | ■ | ■ | | | | In review |
| 8 | Safety – Concept | ■ | ■ | | | | | Concept development |
| 9 | Safety – Interfaces | | | | | | | – |
| 10 | Diag./Maint. – PEA[1] | ■ | ■ | | | | | Concept development |
| 11 | Diag./Maint. – Plant | | | | | | | Concept development |
| 12 | Validation/Comissioning | | | | | | | – |

**Released with PCS 7**

Product development
Cooperative standardization
Research & pilots

Alarm Management | Safety & Security | HMI | MTP | Process Control | Maintenance Diagnosis | ...

**1** Process Equipment Assembly | WG: Working Group established | CP: Concept Paper | ID: Internal Draft | PD: Public Draft | IR: Internal Release | PR: Public Release

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# SIMATIC Process Function Library (PFL)

+ Standard Advanced Process Library function blocks and faceplates in TIA Portal.

+ Ready to use with MTP

+ Optimized for TIA Portal with S7-1500 controller & WinCC Unified.

+ Supports virtual commissioning based on PLCSIM Advanced and SIMIT with ready to use SIMIT templates tailored to PFL

+ Standardization & Upgrades to new versions reduces engineering & life cycle costs



HMI Block Icons and Faceplates

TIA Portal

Engineering

WinCC Unified

S7-151x

Function Blocks & Services

Modular production with "Module Type Package (MTP)" - Module design with TIA Portal - ID: 109783062 - Industry Support Siemens.

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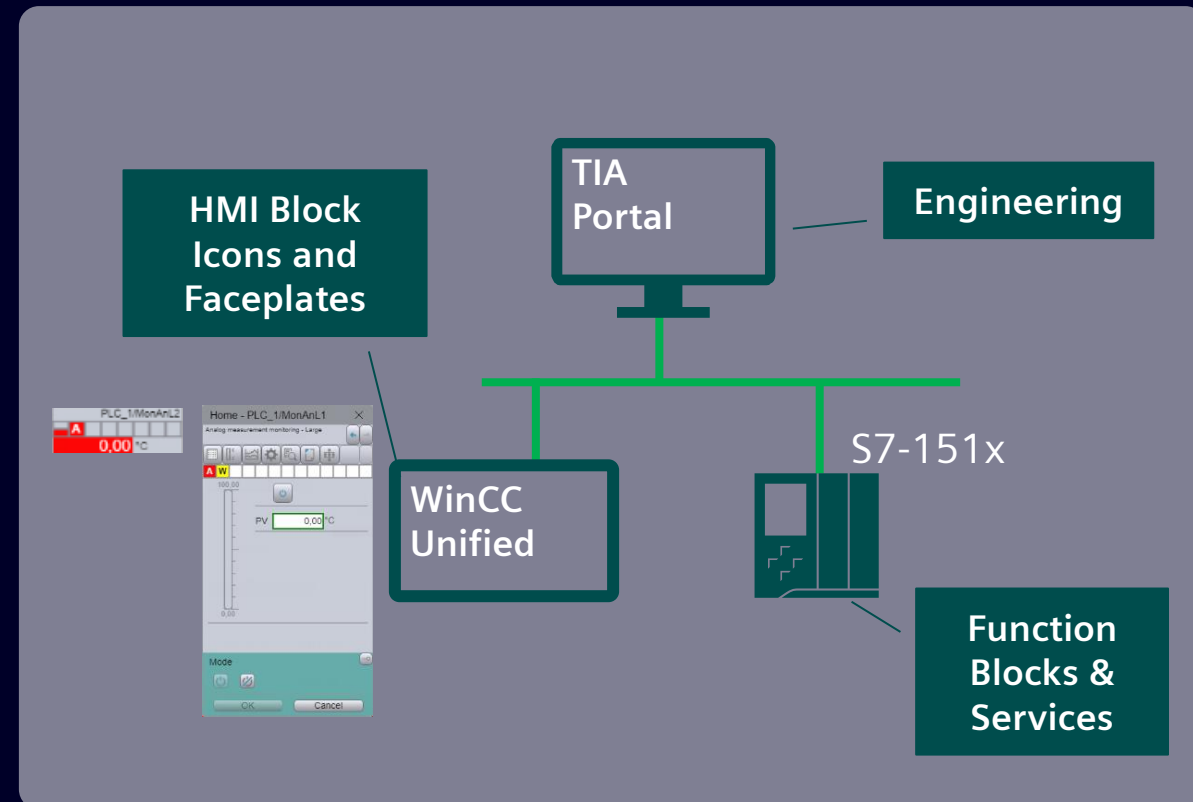
# PCS 7 and TIA Portal Integration via MTP

**PCS 7 Control System at V9.1.1 and V9.1.2**

OS Clients

Common APL Style of the "MTP Skid"

Ethernet

Redundant OS Servers

Open OS Runtime

Open OS V9.1.1 Engineering
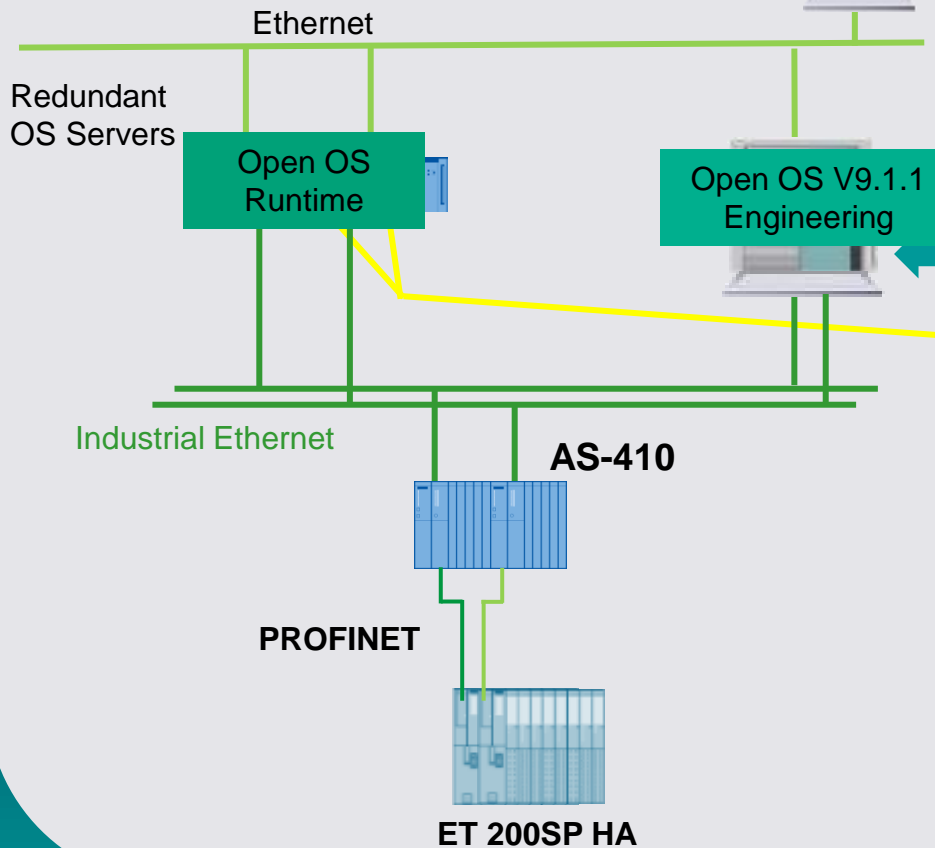
DBA w/MTP Converter

xml

MTP File Creator

**OPC UA**

Industrial Ethernet

**AS-410**

**PROFINET**

**ET 200SP HA**

**MTP Skid**

**TIA Portal Engineering**

**Local HMI**

**S7-1500**

**PROFINET**

**Configured using the PFL, which is based on the PCS 7 APL. Includes CFC, Block Icons, and Faceplates.**

**ET 200SP HA**

**PFL – Process Function Library**

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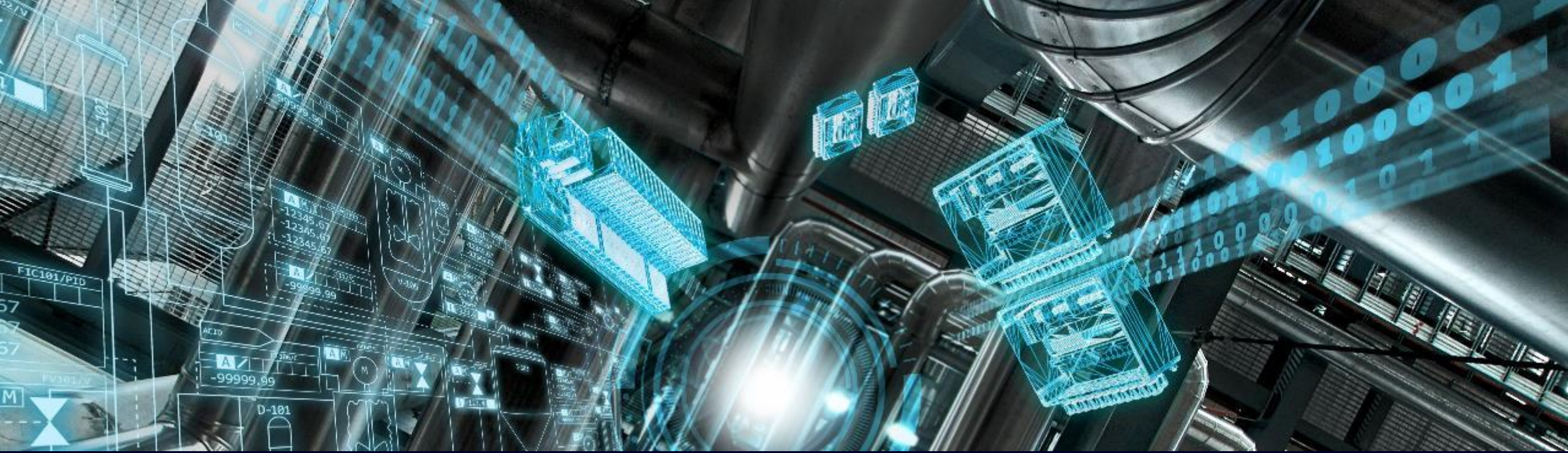
# Innovations in Hardware Technology

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# SIMATIC ET 200iSP: goes PROFINET!
## PROFINET Interface Module

| SIMATIC ET 200iSP PN IM ✓ | 6ES7152-1BA00-0AB0 |
|---|---|

**Released November 2022**

**PROFINET (2x ports):**

- Redundancy (MRP/S2/R1)
- Configuration in Run (CiR/H-CiR)
- Shared Device (up to 4x Controller)
- 2x pluggable Ex-opt iS fiber optic SFP-Transceiver for up to 1km glass FO cable
- Online addressing via Engineering Station. No DIP switches.
- Support of Failsafe I/O Modules (up to SIL3)

**Highest robustness for harsh environment:**

- -20°..+70°C
- conformal coating
- NE21 conform
- operation up to 2,000m
- Installation up to Ex zone 1

**System precondition:**

- PCS 7: V9.1 SP 2 UC1 – R1 w/CiR – HCiR
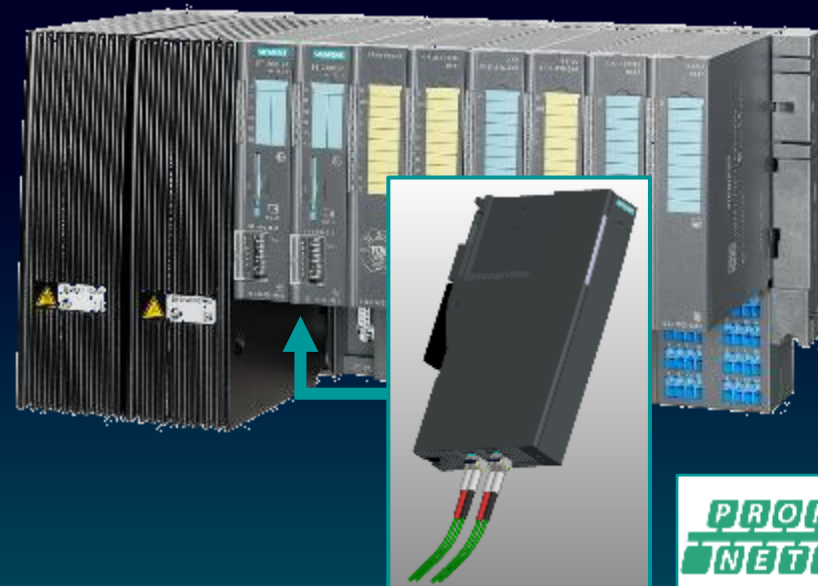
**Completion of „PROFINET story":**
mix of PROFIBUS DP and PROFINET not longer required

**Investment protection:** installed base migrated to PROFNET by replacing interface module (no changes of existing Terminal Modules)

**"Built-in" media converter:** No need of additional converter for intrinsically safe PROFIBUS (RS485iS Coupler) and Fiber Optic (OLM)

**IM152-1PN will provide a multimode transceiver (50/125µm and 62.5/125µm) with a LC duplex connector.**

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# Profinet S2/S1 Link (6GK1411-1BB00)  Planned with PCS 7 V10.0
## Connect single (S1) PROFINET devices to Redundant Controller



Controller S7-410-5H
Redundant Automation Station

■ ■ PROFINET, redundant

XF204-2BA

R | 1

Y-Switch

S2

Fiber Sync Cable

XP-200

PN S2/S1 Link
(x2 IE/PB Link HA)

SIMOCODE    Integrated S120 Drives

MRP

S1

Up to a Max. of x32 PN S1 Devices

For example: SINAMICS G120 Drives

CFU PA

■ PROFIBUS-PA

MRP    MRP is in planning for a later release
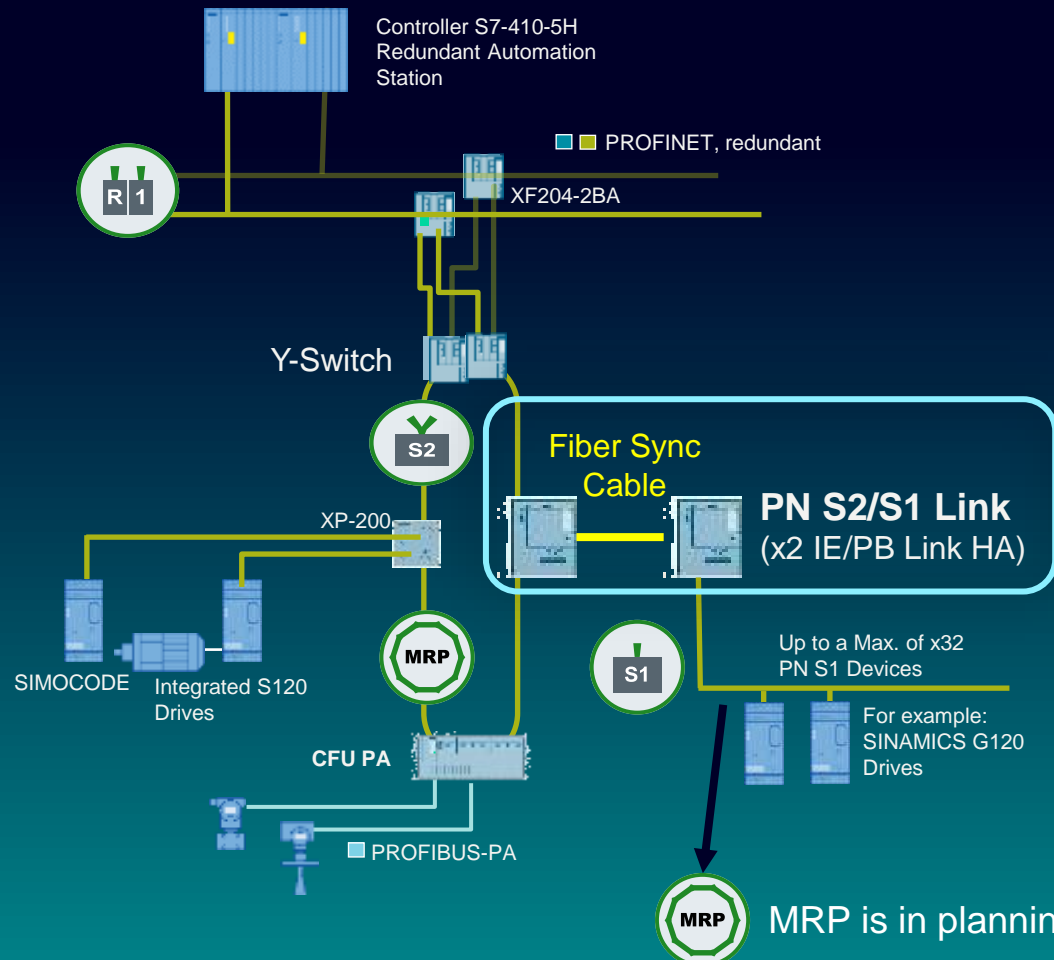
## Benefits

- PROFINET S2/S1 Link supports the connection of S1 devices to a Redundant Automation System (S2 or R1 via Y-Switch) with full functionality.

- Based on x2 IE/PB Link HA with Bus Adapter modules and Fiber Sync Cable.

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# SIMATIC PN/PN Coupler
## Installation Into a S2 Network

**S7-410-5H (X1)**

PN/PN Coupler
(IO-Device/IO-Device)

subnet 1

S2

X1   X2

subnet 2

S2   S1

network/potential separation
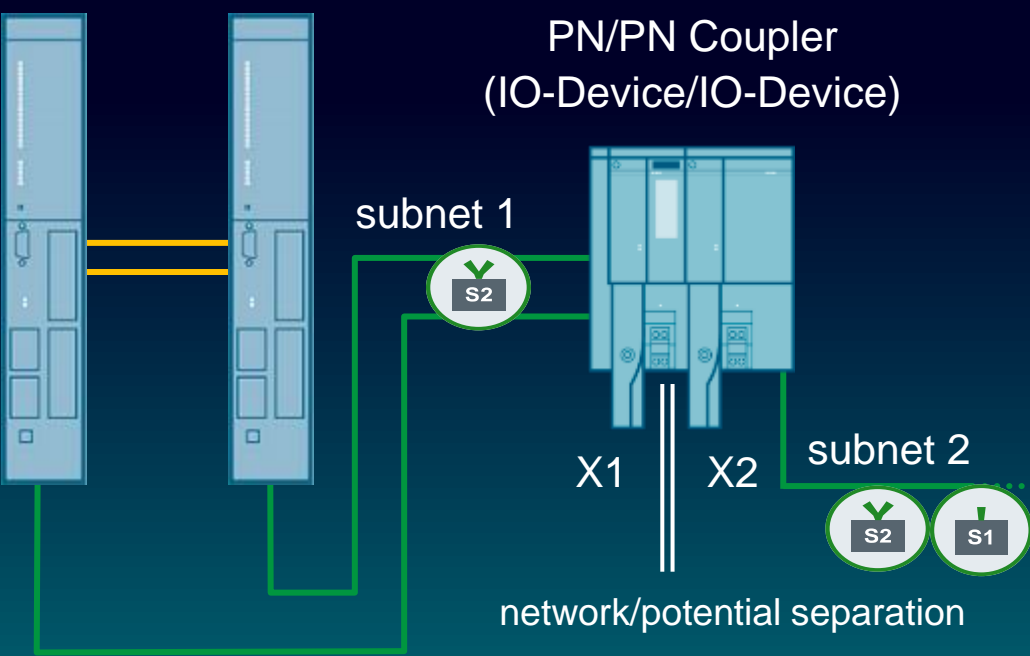
**PN/PN Coupler**

| X1 | | X2 | |
|---|---|---|---|
| Slot 0 | | Slot 0 | |
| X1 | | X2 | |
| | | | |
| Slot 1 | In 4 | Slot 1 | Out 4 |
| Slot 2 | Out 2 | Slot 2 | In 2 |
| Slot 3 | In 12   Out 4 | Slot 3 | Out 12   IN 4 |
| Slot 4 | In 4 | Slot 4 | Out 4 |
| Slot 5 | Out 8 | Slot 5 | In 8 |
| Slot 6 | In 16 | Slot 6 | Out 16 |
| Slot 7 | In 2 | Slot 7 | Out 2 |
| Slot 8 | Out 16 | Slot 8 | In 16 |

**Options (X2)**

| S7-1500 | S7-300 | S7-1200 | S7-410-5H |
|---|---|---|---|
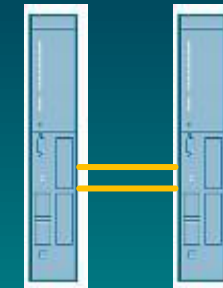
Example:
Data transfer with PN/PN Coupler & PCS 7
https://support.industry.siemens.com/cs/ww/en/view/1
09813246

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# Controller for SIMATIC PCS 7
## The Flexible, Scalable AS-410 Supports All Automation Tasks

## Key Benefits

- Scalable Capacity & Redundancy

    - 410E 200 POs

    - **410E 500 POs New and available**

        - **SEC PO 500: 6ES7653-2CD00-0XB0**

    - 410 100 to >2,600 POs

- Conformally Coated (CPU and Bundle)

- Supports TCiR (Type Change in Run)

- Supports PROFINET S1, S2, R1 w/CiR and PROFIBUS

- 2-Step Firmware Update to reduce downtime of individual CPU

- **Cyber Security Built-in**

    - **Syslog for Security Incident Event Management (SIEM)**

    - **Field Interface Security for Profibus DP and PROFINET**

- Future Proof Design



**Firmware V8.2.3**

**Firmware V8.3 planned with PCS 7 V10.0**

➕ **Ready for the future**

SEC Card

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# AS-400 availability until 2035 and beyond
# AS-410 availability until 2040 and beyond



AS400 and AS410 Flyer

Unrestricted © Siemens 2023

**SIEMENS**

# SIMATIC ET 200SP HA: Additional I/O Modules
## Support of ET 200SP CM PtP (MODBUS)

| **ET 200SP CM PtP** ✓ | 6ES7137-6AA00-0BA0 |
| :--- | :--- |
| 6ES7137-6AA01-0BA0 | |
| Base Unit Type A0 **6ES7193-6BP00-0DA0** | |

➔ **Functional replacement of ET 200M CP341**

**Modbus serial (RTU, Server/Client) communication:**
- Up to 8x CM PtP on each PROFINET subnet
- Up to 32 Modbus RTU slaves on each CM PtP
- Baud rate: up to 115,200 bit\s

**Operating temperature:**
- -30°..+60°C
- SIPLUS variant for extended environmental conditions: -40°..+70°C (6AG2137-6AA00-1BA0)

**System precondition:**
- PCS 7:  V9.1 SP2
  (Function blocks Advanced Process Library (APL))

Max. 1200m (RS485/422), 15m (RS232)

Modbus RTU Client

Modbus RTU Client

CM PtP
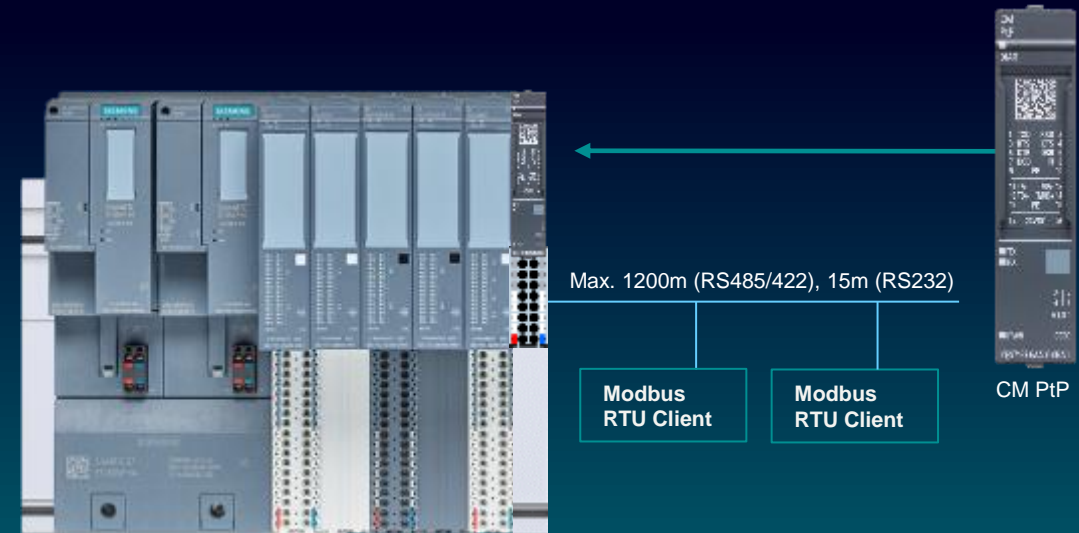
MODBUS serial communication (RTU, Server/Client)

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# SIMATIC ET 200SP HA Planned New Modules

## AI 8x U/I/TC/4x RTD 2-/3-/4-wire
6DL1134-6AF00-0PH1

**Q1/2023**

**Multifunctional**

**Number of channels:**
- 8x analog input voltage / current / Thermocouple / 4x RTD

**Input:**
- 4..20mA (2/4-wire); and 0..20mA (4-wire), ± 20mA (4-wire)
- 1..5V, 0…10V, ±50mV, ±80mV, ±250mV, ±500mV, ±1V, ±2,5V, ±5V, ±10V
- TC Types: B, C, N, E, R, S, J, L, T, K, U, TXK
- RTD Types: Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, LG-Ni1000 | resistor ranges: 150, 300, 600, 3000, 6000Ohm | PTC

**Functionalities:**
- Resolution 15 bit + signs
- Suitable for analog 2-wire and 4-wire transducers
- Common Mode Voltage: 15V between channels
- Interference frequency suppression: 10Hz / 50Hz / 60Hz / 400Hz

**Channel diagnostics:**
- Channel-specific diagnosis (short-circuit, wire-break, support of NE43, overflow/underflow, process alarms, common mode)

**Properties:**
- Isolation tested with 1500 V DC/1 min

## AI 16x I 2-wire
6DL1134-6GH00-0PH1

**Q1/2023**

**Low cost AI!**

**Number of channels:**
- 16x analog input current measurement

**Input:**
- 0 - 10 mA, 0 - 20 mA, 4 - 20 mA (no HART supported)

**Functionalities:**
- Resolution 15 bit + signs
- 16 sensor supplies, 500 mA, with short circuit protection
- Current measuring range according to NAMUR NE43
- Suitable for analog 2-wire and 4-wire transducers (common ground)
- Update rate 16.6 ms @ 50 Hz filtering, 20 ms @ 60 Hz filtering, 100 ms @ 10 Hz filtering
- 2 A/D Converters
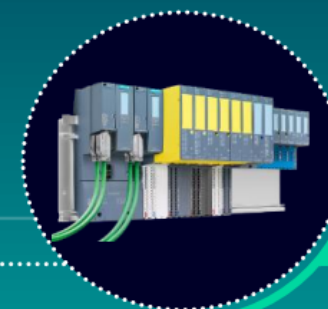- No IO redundancy supported

**Channel diagnostics:**
- Channel-specific diagnosis (Wire-break (4-20mA), overflow/underflow, support of NE43)

**Properties:**
- Isolation tested with 1500 V DC/1 min

- High flexibility due to high functionality

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# SIMATIC ET 200SP HA Planned New Modules

**Q2/2024**

## DI 16x 24 V DC NPN
6DL1131-6BH60-0PH1

**Number of channels:**
- 16 digital inputs, 24 V DC

**Input:**
- Suitable for switches and 2-wire sensors (IEC 61131-2, types 1 and 3)

**Functionalities:**
- M-readding
- Sensor supply
- No IO redundancy supported

**Channel diagnostics:**
- Channel-specific diagnosis

**Properties:**
- Isolation tested with 1500V DC / 1 min

**Q3/2024**

## DQ 8x 24 V DC/2 A
6DL1132-6BH00-0PH1

**Number of channels:**
- 8 digital outputs, 24 V DC

**Output:**
- Output current 2 A per channel, at most 8 A per module
- Suitable for solenoid valves, DC relay contactors, and signal lamps

**Functionalities:**
- de-energize button (sensor supply)
- Short circuit protection, overload protection
- Parameterizable substitute values
- No IO redundancy supported

**Channel diagnostics:**
- Channel-specific diagnostics (wire-break, short circuit to ground and L+)

**Properties:**
- Isolation tested with 1500 V DC/1 min

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# SIMATIC ET 200SP HA
## …New D-SUB Terminal Block for fast wiring and simple field connection

### TERMINAL BLOCK, TYPE H0, D-SUB
6DL1193-6TC00-0DH0

- D-SUB Terminal Block with 32 x I/O connections

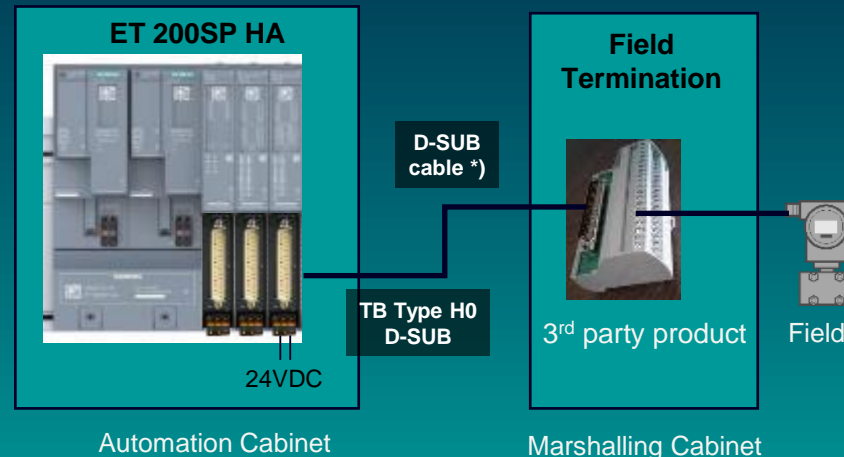### Supported ET 200SP HA Modules

- AI 16xI HART, AI-DI16/DQ16X24VDC HART
- AI 16XTC/8XRTD (no temperature compensation for TC)
- AQ 8xI HART
- DI 16x24VDC, DI 32x24VDC, DI 16XNAMUR
- DQ 16x24VDC/0,5A, DQ 32x24VDC/0,5A
- F-DI 16x 24V DC
- F-DQ 10X24VDC/2A
- F-AI 8xI 2-/4-wire HART

24V DC powering

### SIMATIC TOP Connect Cable
- Pre-assembled D-SUB to ferruled flying leads cable
- 32x wire with 0,14mm²
- label per wire
- 3m: 6ES7923-3BD00-0HB0
- 5m: 6ES7923-3BF00-0HB0
- 8m: 6ES7923-3BJ00-0HB0

### Updated Designs planned for Q1-2023:
- Redundant Terminal Blocks
- Isolated Terminal Blocks

**ET 200SP HA**

**D-SUB cable *)**

**TB Type H0 D-SUB**

24VDC

**Field Termination**

3rd party product

Field

Automation Cabinet

Marshalling Cabinet
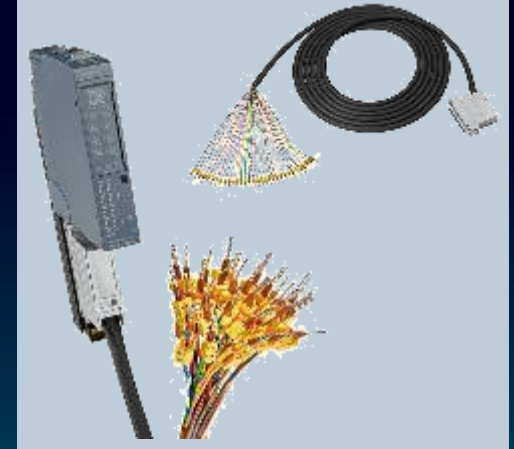
### Learn more!
SIMATIC ET 200SP HA - Assembling the IO Rail - YouTube

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# ET 200M Support Roadmap

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# SIMATIC ET 200M Product Life Cycle
## *Stages & Duration*

PA FAQ   https://support.industry.siemens.com/cs/us/en/view/109809934

FA & PA FAQ  https://support.industry.siemens.com/cs/ww/en/view/109809890

**Minimum 10 years of part availability**

**Extended Life Cycle Contracts by CS**

**Status**

**1** Phase-out announcement of ET 200M Systems will be in **October 2023**

**2** Available as "New Part" until Product Cancellation **October 2025.**  New Parts will be available longer.

**3** **10** years spare parts availability until **October 2033**

- Exceptions for individual modules possible in case of:
  - ✓ *Short-term component phase-out*
  - ✓ *Tightening of applicable standards*
- Pricing subject to change throughout life cycle as costs change
- A recommended alternative is offered in some special cases

| Active | Passive |

**Extensions up to 2036-41**

| New Part | Spare Part |

**Life Cycle Contract**

**Repairs & Support**

**1** **Phase-out Announcement**

**2** **Product Cancellation**

**3** **Product Discontinued**

**End of Life Cycle**

**October 1, 2023**          **October 1, 2025**                    **October 1, 2033**

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# SIMATIC ET 200SP HA: Migration

https://support.industry.siemens.com/cs/us/en/view/109809934

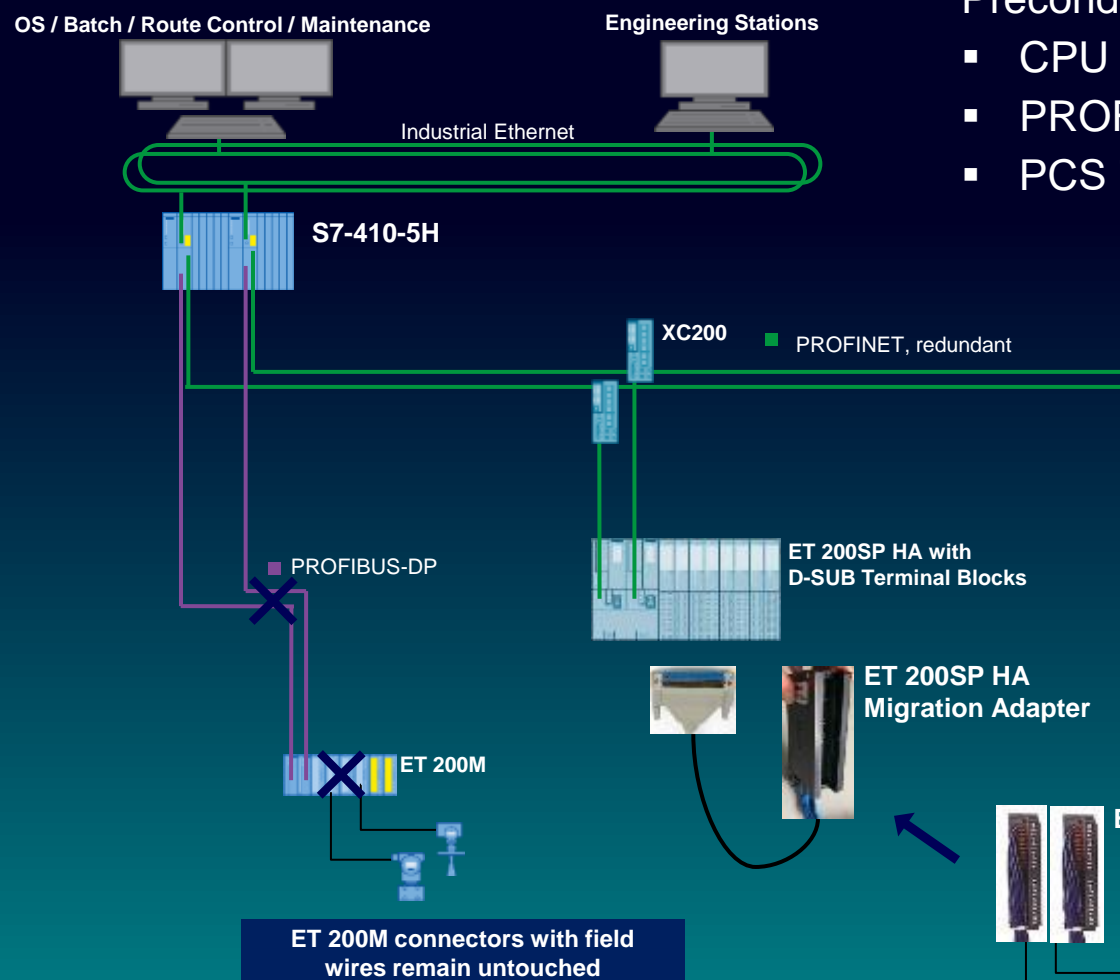## Migration adapters for fast and error-free hardware exchange



Preconditions for migration:

- CPU S7-410-5H
- PROFINET cabling and SCALANCE
- PCS 7 ≥ V9.0

OS / Batch / Route Control / Maintenance

Engineering Stations

Industrial Ethernet

S7-410-5H

XC200

PROFINET, redundant

PROFIBUS-DP

ET 200SP HA with
D-SUB Terminal Blocks

ET 200SP HA
Migration Adapter

ET 200M

ET 200M connector

**ET 200M connectors with field
wires remain untouched**

280 mm
11.0236"
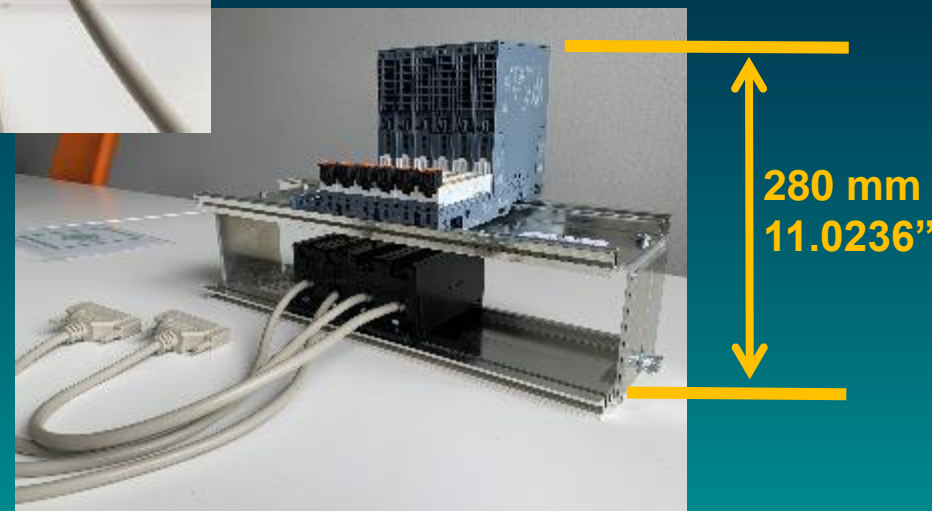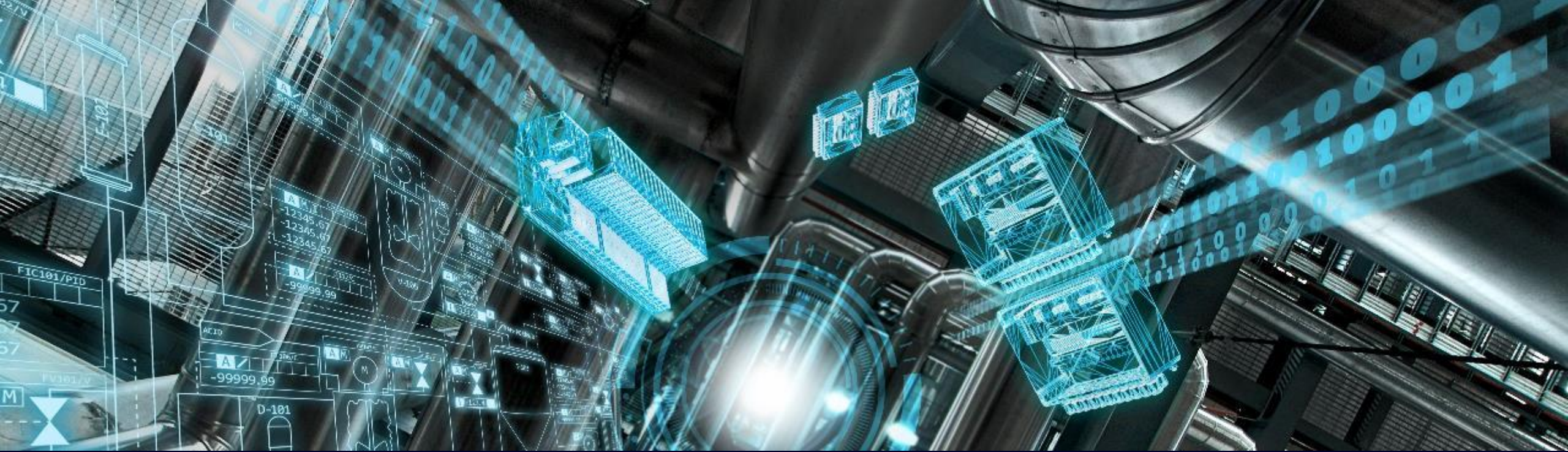
## Adapter Planned Availability:   Q2-2023

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# ET 200SP HA Migration Adapters
## Dimensions



40 mm

155 mm

90 mm

ET 200MP rail, eg 830mm
6ES7590-1AJ30-0AA0



170 mm

280 mm

90 mm

110 mm
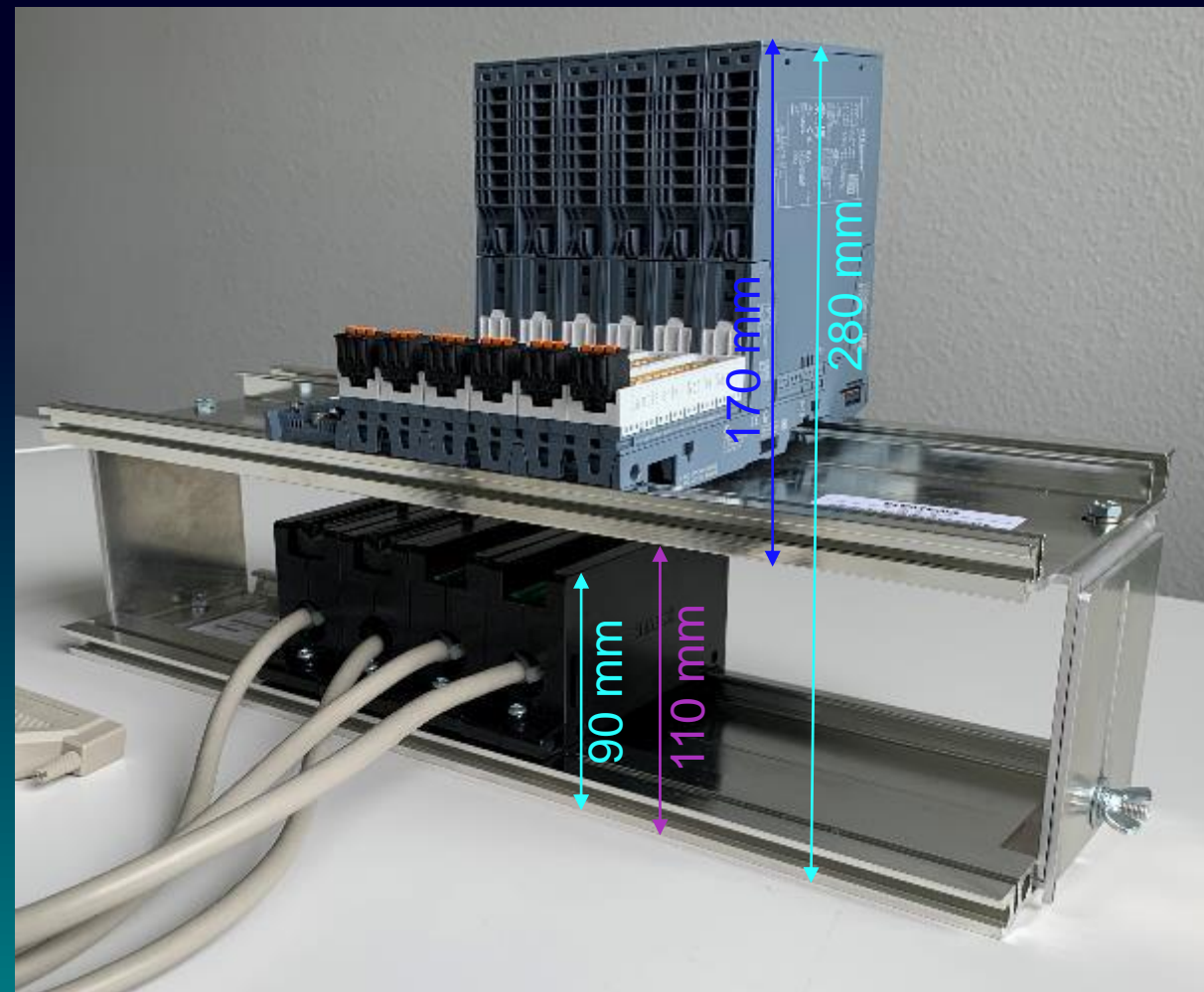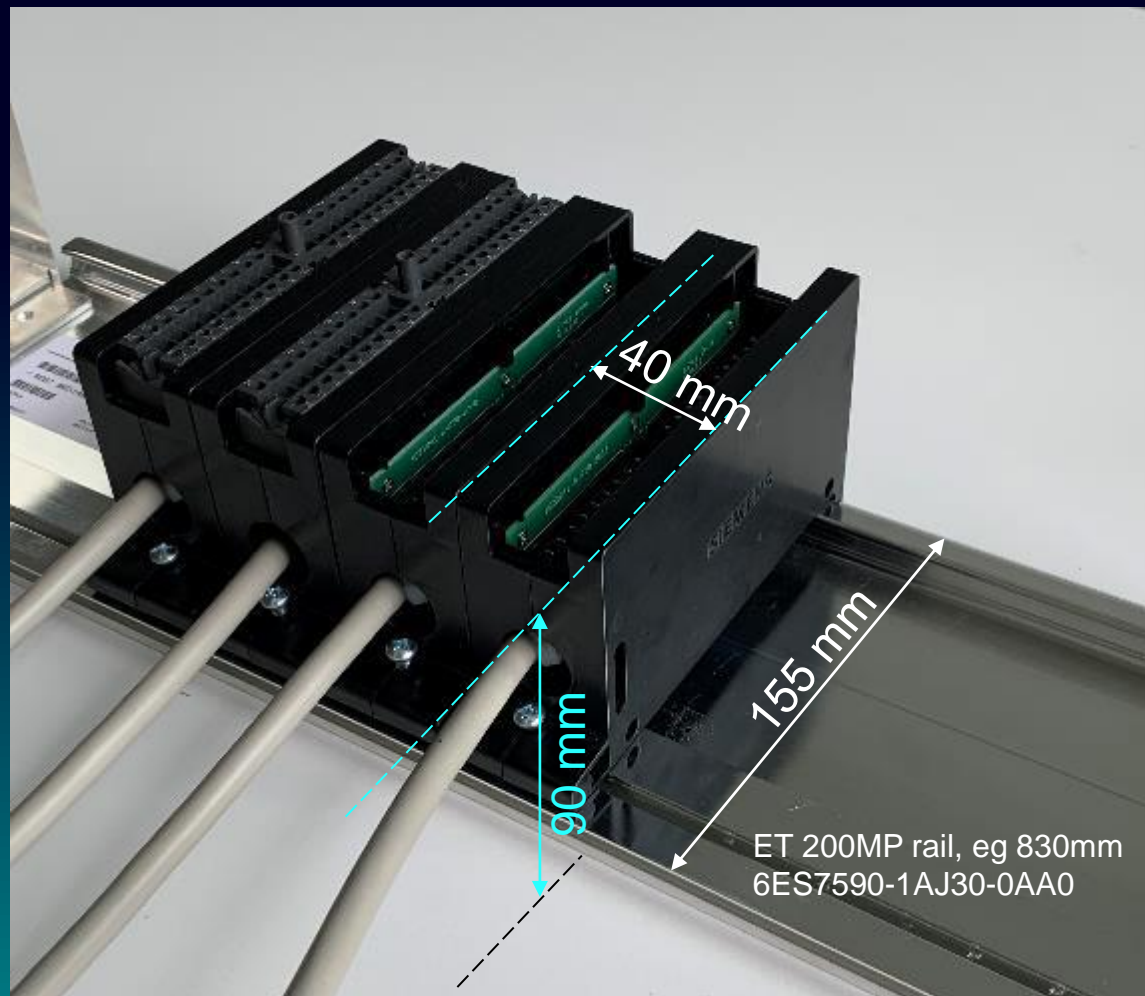
Installation metal supports (2 pcs)
6EZ2041-8HR35-0BG0

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# PROFIBUS PA and the Compact Field Unit (CFU)

**SIEMENS**

# SIMATIC CFU: CFU with PROFIBUS PA goes Intrinsically Safe!
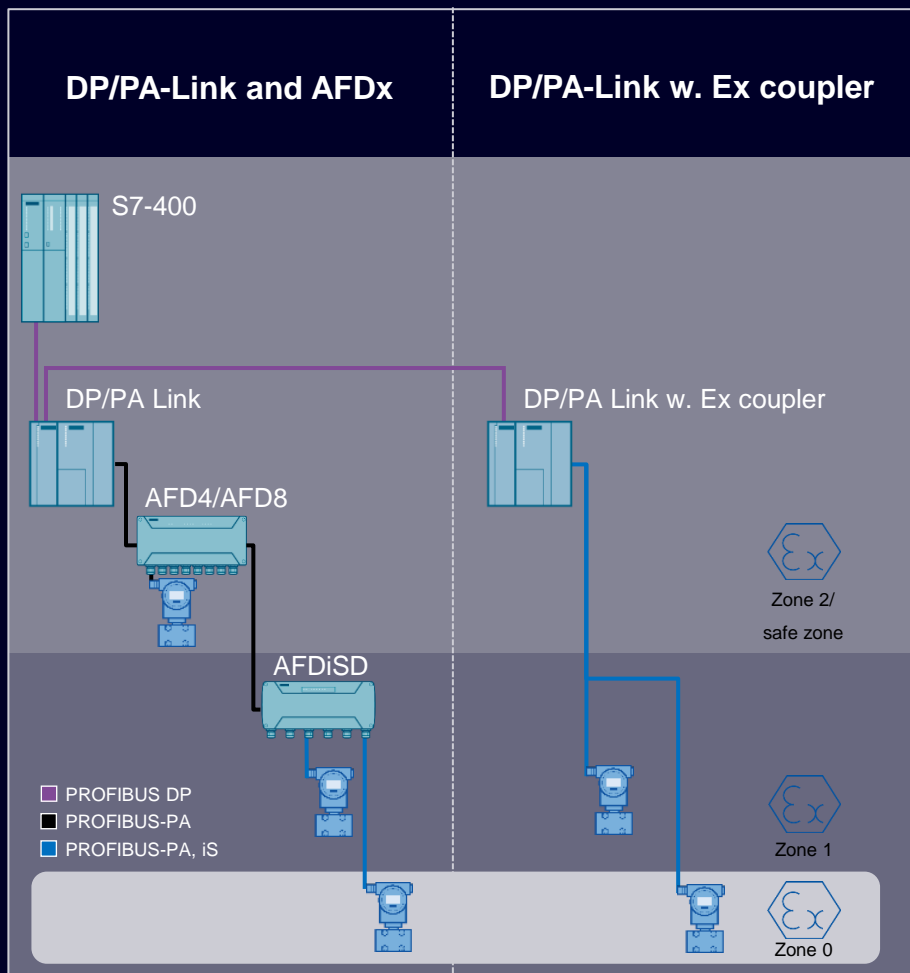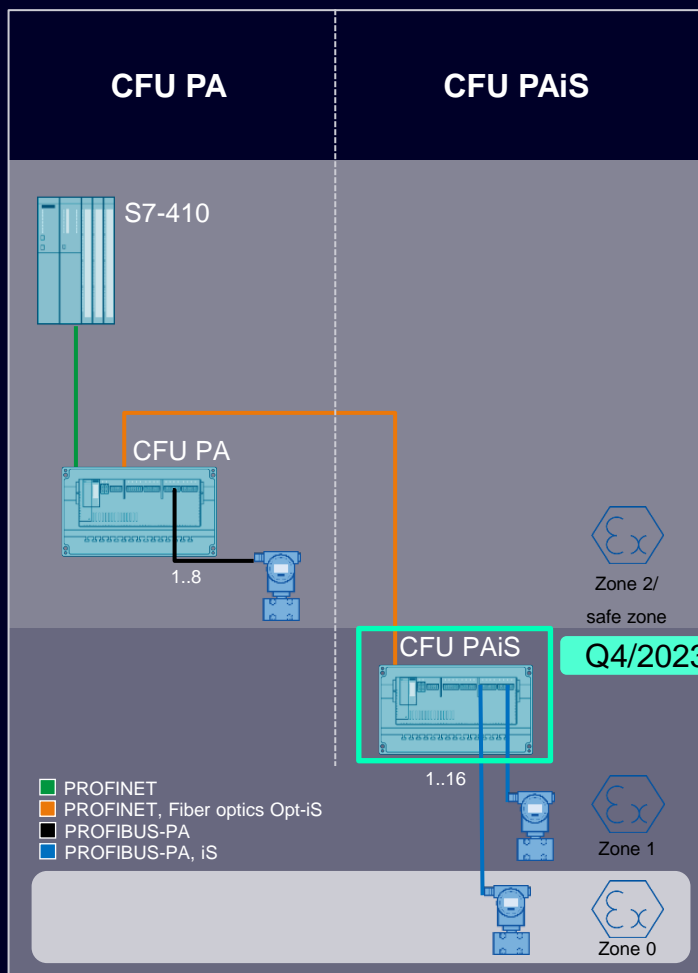## … Portfolio completion CFU for PROFIBUS PA

**Traditional fieldbus installation**

**State-of-the-art installation**

| DP/PA-Link and AFDx | DP/PA-Link w. Ex coupler |
| --- | --- |

S7-400

DP/PA Link

DP/PA Link w. Ex coupler

AFD4/AFD8

AFDiSD

Ex Zone 2/ safe zone

□ PROFIBUS DP
■ PROFIBUS-PA
■ PROFIBUS-PA, iS

Ex Zone 1

Ex Zone 0

| CFU PA | CFU PAiS |
| --- | --- |

S7-410

CFU PA

1..8

CFU PAiS

Q4/2023

1..16

■ PROFINET
■ PROFINET, Fiber optics Opt-iS
■ PROFIBUS-PA
■ PROFIBUS-PA, iS

Ex Zone 2/ safe zone

Ex Zone 1

Ex Zone 0

## CFU exclusive

## More flexibility through consistent decentralization
Up to 70% less terminations required and cabling reduction of 30% and more!

## PROFIBUS PA easier as ever before
Time for device integration reduced from 30 minutes and more to less than 1 minute! That's Plug-and-Produce!

Simple as PROFINET over APL!

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# SIMATIC CFU: CFU with PROFIBUS PA goes Intrinsically Safe!
## … CFU PAiS in detail

## SIMATIC CFU PAiS

**V10**

**PROFINET (2x ports):**

- Redundancy (MRP/S2)
- Configuration in Run (CiR/H-CiR)
- 2x pluggable Ex-opt iS fibre optic SFP-Transceiver for up to 3km glass FO cable

**Redundant 24V DC (IP30 covered)**

**PROFIBUS PA (16x channels):**

- Intrinsically safe: Ex-ia, bus powered (13,5V / up to 40mA)
- Cable-length up to 120m
- 4x pluggable connector, each for 4-channels with Push-In
- Support of PROFIBUS PA Profile 4.0
- Support of PROFIsafe

**Highest robustness for harsh environment:**

- -40°..+70°C
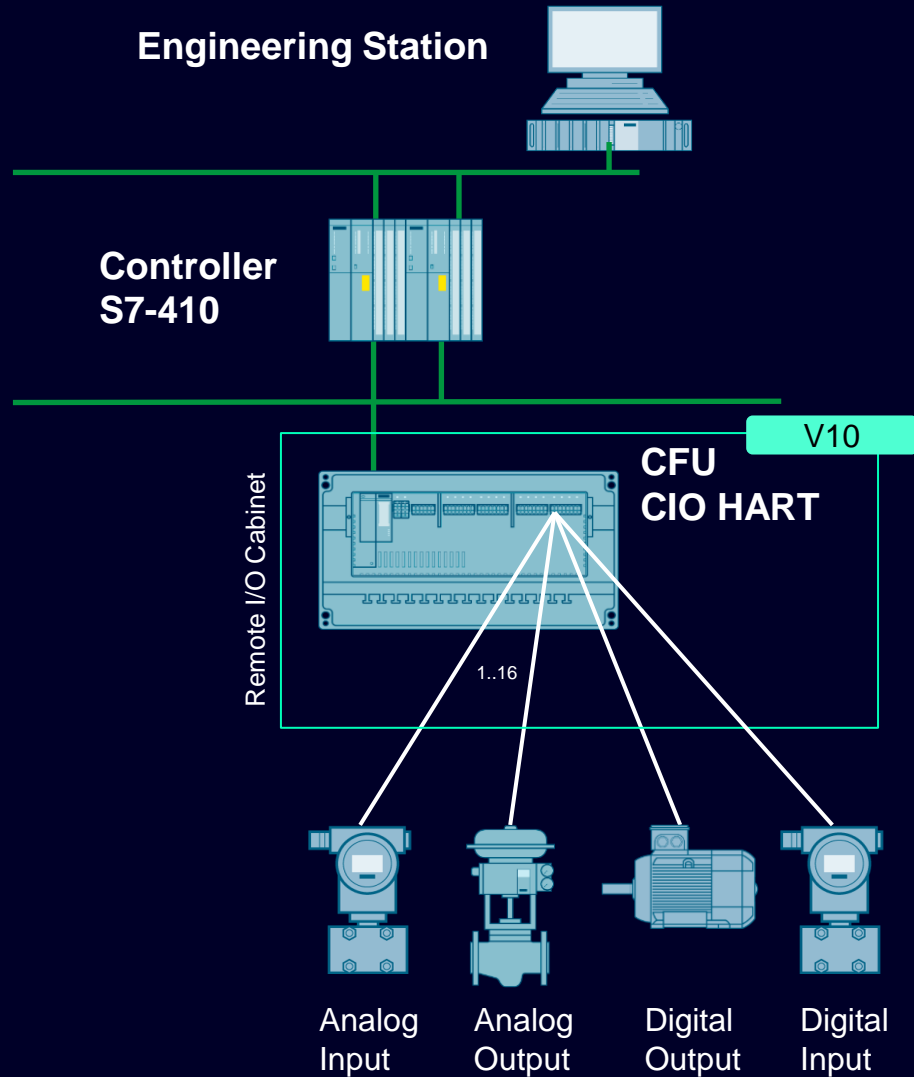- conformal coating
- NE21 conform
- Installation up to Ex zone 1

**Plug-and-Produce:**
automatic device detection, addressing and 1-to-1 replacement

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# SIMATIC Compact Field Unit (CFU) – Configurable I/O
## … Standardization & Late Binding with configurable I/O's

**Engineering Station**

**Controller
S7-410**

Remote I/O Cabinet

**CFU
CIO HART**

V10

1..16

Analog
Input

Analog
Output

Digital
Output

Digital
Input

- Application Engineering independent from Hardware Engineering

- Early standardized cabinet design with maximum flexibility since
  - all channels can be configured at a later stage as AI, AQ, DI, DQ

- Very less spare parts since only
  - 1 I/O card type is needed for
  - all 4 signal types

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# SIMATIC CFU: CFU with HART and free configurable I/O!
## … CFU CIO HART in detail

| SIMATIC CFU CIO HART | V10 |
|---|---|

**PROFINET (2x ports):**
- Redundancy (MRP/S2)
- Configuration in Run (CiR/H-CiR)
- BusAdapter (RJ45/FC/LC/Media Converter)

**Redundant 24V DC**

**Free configurable I/O (16-channels):**
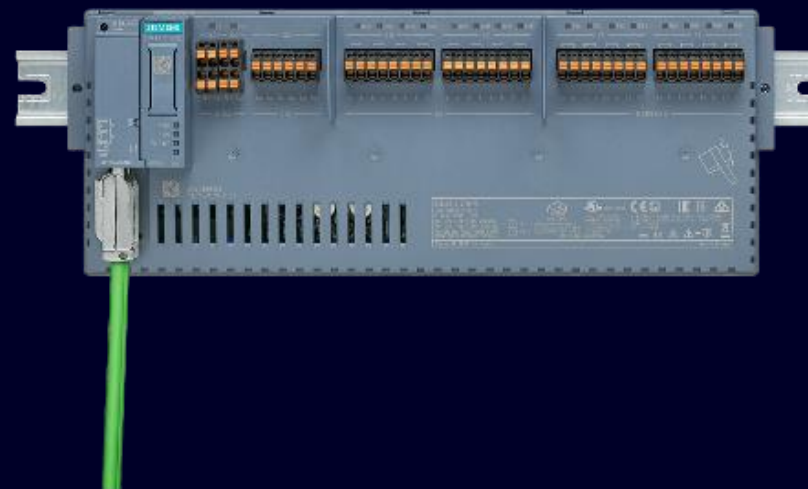- 2-wire / free wiring of the sensorics shall be possible (left+, right-)

**AI/AQ:**
- 0-20 mA, 4-20mA, 4-20mA with HART

**DI/DQ:**
- Several modes available: Standard-DI, DI-Namur, DI Open-Collector
- Counter up to 5kHz
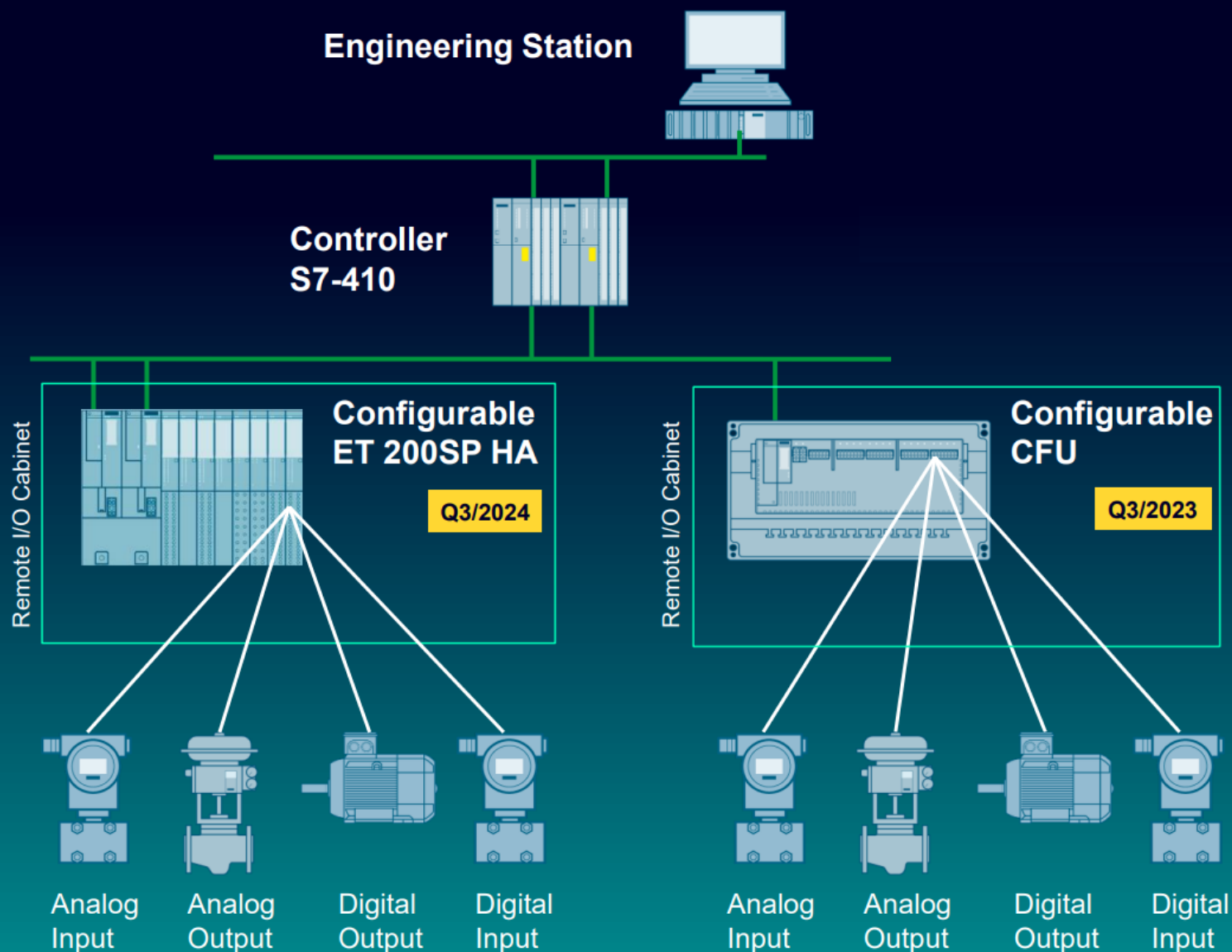- 24VDC, 0.5A per channel; DQ: 2A (1 channel per each 4-channel-group)

**Highest robustness for harsh environment:**
- -40°..+70°C / conformal coating / NE21 conform
- Installation up to Ex zone 2

**HW binding at latest stage:**
channel-wise free configurable I/O

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# SIMATIC CFU: CFU with HART and Freely Configurable I/O



Engineering Station

Controller
S7-410

Remote I/O Cabinet

Configurable
ET 200SP HA

**Q3/2024**

Remote I/O Cabinet

Configurable
CFU

**Q3/2023**

Analog Input | Analog Output | Digital Output | Digital Input

Analog Input | Analog Output | Digital Output | Digital Input

- Application Engineering independent from Hardware Engineering

- Early standardized cabinet design with maximum flexibility since
  - all channels can be configured at a later stage as AI, AQ, DI, DQ

- Very less spare parts since only
  - 1 I/O card type is needed for
  - all 4 signal types

- I/O redundancy supported for ET 200SP HA

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