



Siemens Desigo PXC – New Generation

- Spring 2022 Update -

PXC7 and ABT4.4

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Agenda

- Where are we now
- The Desigo “PXC” product family
- What’s new – spring 2022
- The PXC7 modular controller and its features
- The ABT 4.4 and its new features
- Upcoming features and timeframes
- Bacnet/SC
- Recap: benefits and pitfalls of the new PXC
- Discussion and questions

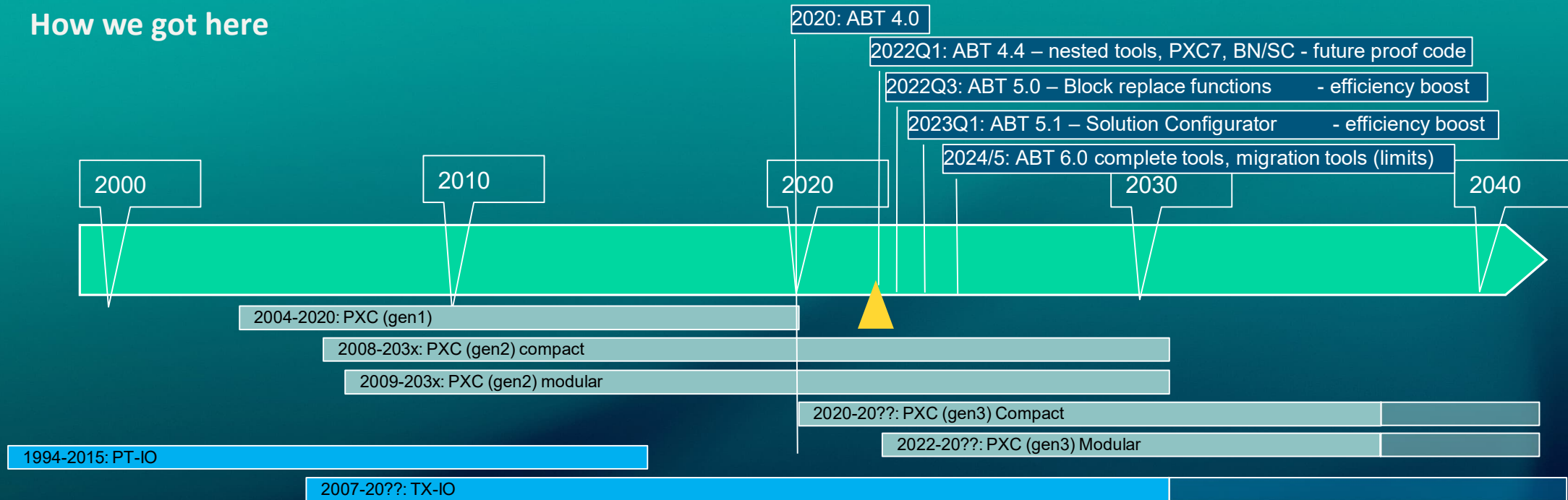
| The Desigo PXC Product Family

Note:

*The official product family name is Desigo PXC.
For practical purposes PXC product generations are
separated as generation 1, 2 and 3.*

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How we got here



2004: PXC gen1 + PTM-IO
PXC 64/128U



2008: PXC gen2 + TX-IO
PXC 12...36/50/100/200E.D

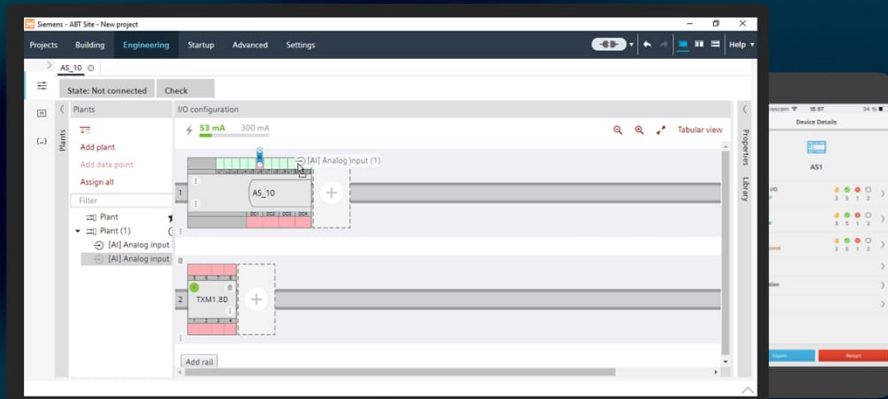


2020 PXC gen3 + TX-IO
PXC4/5/7

The Desigo PXC Product Family

-> What PXC is all about: ABT Site and PXC controllers

- PXC is the New Generation of Automation devices for Siemens Desigo primary control systems.
- PXC features improved and completely new hardware for primary controllers: PXC 4, 5, 7 and their variants.
- PXC features redesigned programming tool: ABT Site.
 - All PXC product family programming and configuring will be done with ABT Site.
 - XWP will only be used with PXC gen1 & 2 –devices.



**HVAC Modular
Controllers**
PXC7.xxx



**Integration
Controllers**
PXC5.xxx



**HVAC Compact
Controllers**
PXC4.xxx

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The Desigo PXC Product Family -> The Complete PXC Product Family



Desigo PXC controllers

Freely programmable HVAC controllers



Desigo PXC controllers

Freely programmable Integration controllers



Desigo TX-I/O modules

provide a wide range of input and output modules



Desigo Control Point

Embedded building operations touch panels



Desigo Control Point

Embedded building operations web servers



Desigo CC

- Desigo CC and CC Compact



Desigo DXR controllers

Freely programmable room controllers: DXR and PXC3



Desigo Engineering Framework - Suite of tools

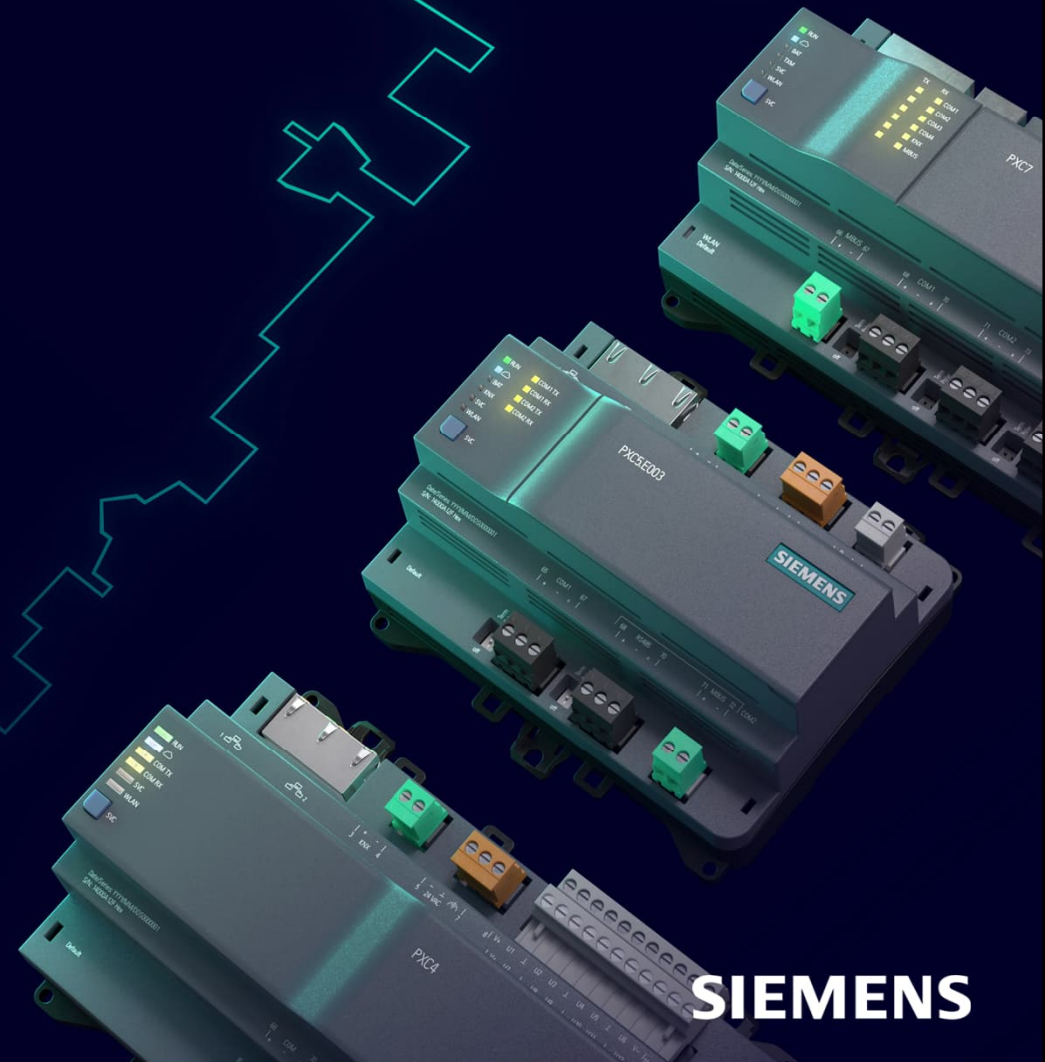
- ABT Site
- ABT Go
- ABT Pro (Only for DRA)



The Desigo PXC Product Family
-> Hardware: Controllers

Desigo PXC – Ready to control

High-performing automation
for all buildings.



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The Desigo PXC Product Family

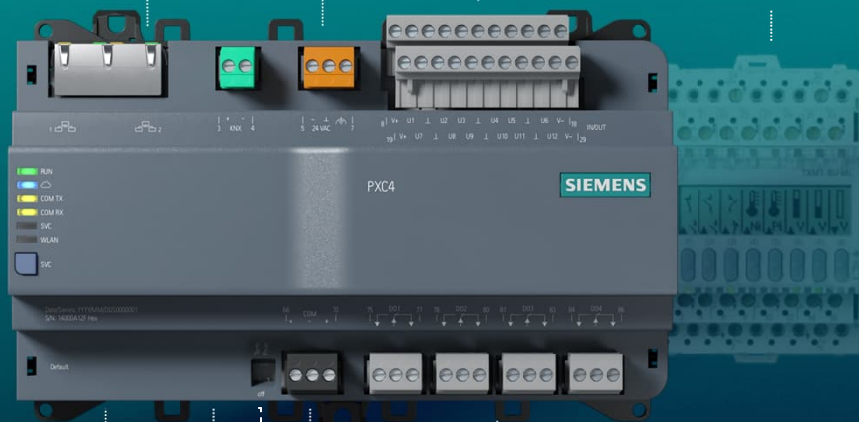
-> Hardware: PXC4

BACnet/IP
(IPv4)
Modbus TCP

24VAC On-board IO
12 universal IO

TX-I/O
Modules

Expandable
to total 40 IO's
(internal PSU of 300 mA
for 4 modules)



Desigo PXC4.x16

.E16 = BACnet IP
.M16 = BACnet MS/TP

- > Compact controller for HVAC plants
- > Integrated IO and extendable with TX-IO

Super-cap
Battery free

On-board IO
4 relay outputs

Termination and
polarity switches

Cloud connectivity
Wireless access
Small footprint

BACnet MS/TP

Modbus RTU

40 Modbus data points
(via TCP and / or RTU)

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The Designo PXC Product Family

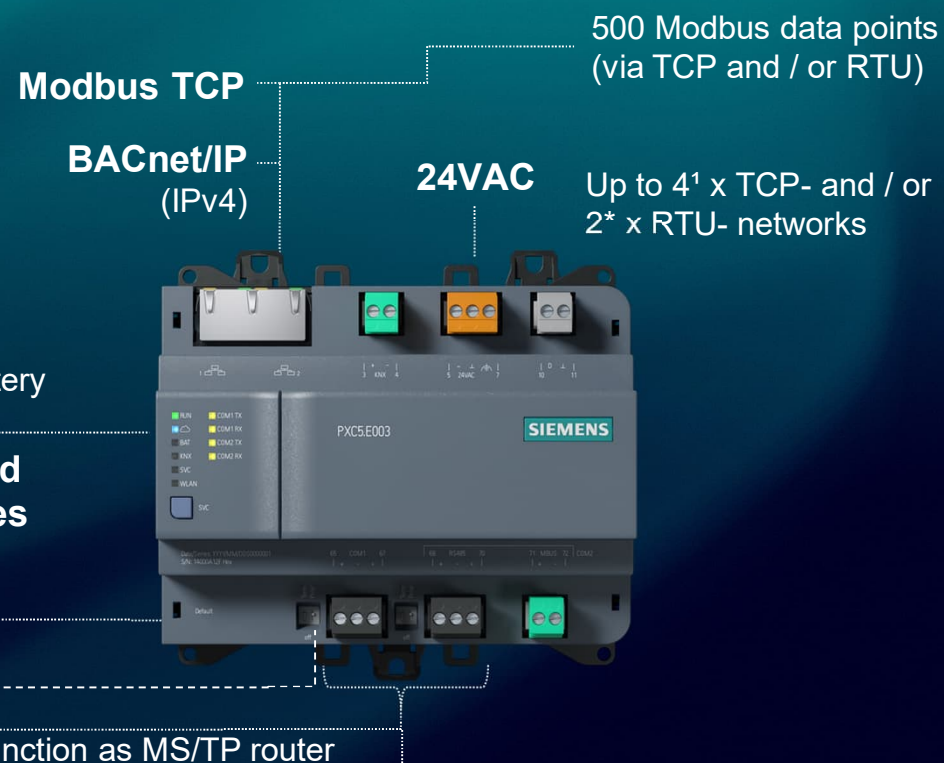
-> Hardware: PXC5

Designo PXC5.Exxx

.E003= BACnet/IP

-> For system functions and integration

-> No physical IO



2 serials. Either Modbus RTU or MS/TP

Modbus RTU

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The Desigo PXC Product Family

-> Hardware: PXC7

Cloud/Wan

BACnet/IP
(IPv4)

24VAC

TX-I/O
Modules

Expandable
to total 64 modules
(internal PSU of 300 mA
for 4 modules)

Modbus TCP

WLAN

Super-cap
Battery free

Termination and
polarity switches

Cloud connectivity
Wireless access
Small footprint

Up to 4 serials. Either Modbus RTU or MS/TP

Modbus RTU

40 Modbus data points
(via TCP and / or RTU)

Desigo PXC7.Exxxx

.E400S = BACnet/IP, Small
.E400M = BACnet/IP, Medium
.E400L = BACnet/IP, Large

- > Modular controller for HVAC plants
- > Extendable with TX-IO
 - > 64 modules with normal mode
 - > 8 modules with event mode

The Desigo PXC Product Family

-> Main features compared to classic

Integrated Fieldbus support



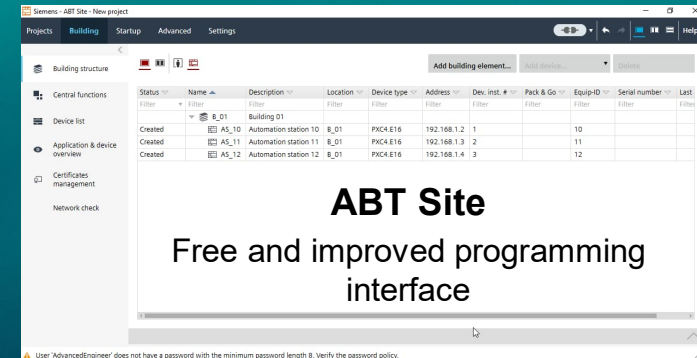
Termination and polarity DIPS



Daisy Chained Network (upto 20)



Wireless tool access



BACnet/SC
TCP, SSL based secure communication



RT uptime of 7 days.
With optional CR2032 battery uptime of 10 years

Cloud connection



For remote programming and diagnostics
Development on-going, stay tuned

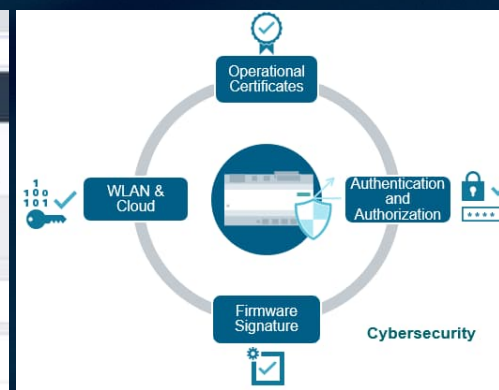
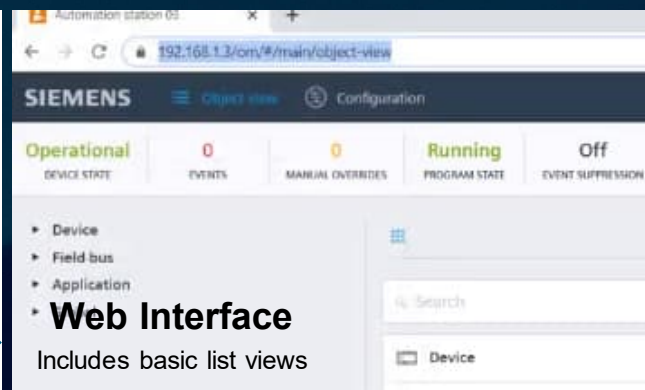
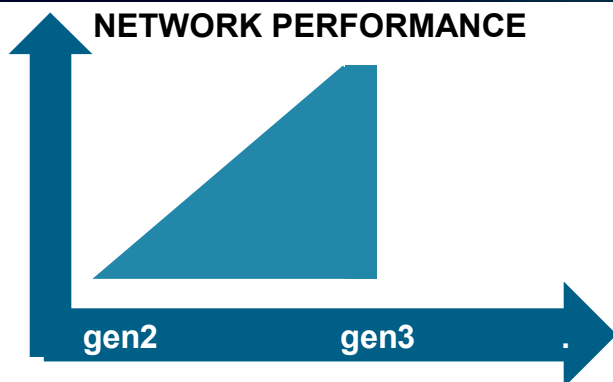


TXM1.4D3R



Integrated 300mA TX-PSU

NETWORK PERFORMANCE



The Designo PXC Product Family
-> Hardware: Control Point servers and panels

Control Point 2.0



The Desigo PXC Product Family

-> Hardware: Control Point - Portfolio

Panels with integrated Control Point Web server

- All in one solution
- Can be connected from Client panels or any other device with browser

Panels without Control Point Web server

- Has a browser to connect other web servers.

Control Point Web Server without panel

- Runs a Control Point Web server
- Can be connected from Client panels or any other device with browser



BACnet touch panels

PXM50.E, PXM40.E and PXM30.E



Touch panel clients

PXM50-1, PXM40-1 and PXM30-1



BACnet Web server

PXG3.W200-2 and PXG3.W100-2

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The Desigo PXC Product Family

-> Hardware: Control Point - Features

Control point is a web server providing graphical userinterface, graphics and other basic building management system (bms) features.

Key features:

- Tool free device commissioning using just web a browser
- ABT commissioning for project management
- Independent simultaneous multiuser support
- User management (all the way to point level)
- 3rd party Bacnet device integration
- Panels powered by 24VAC or PoE (excluding PXM30)
- Automatic brightness adjustment
- Multitouch capacitive touchscreens
- Harmonized user interface with PXC web UI
- Native HTML5 graphics and animations
- Kiosk-mode for uninterrupted use
- Alarm management and renotification via email
- Energy dashboards (W200 only)
- Automatic trend data export (W200 only)
- Documents (Upload PDF files to the server) (W200 only)



The Desigo PXC Product Family

-> Hardware: Control Point – 2.0

More powerful server

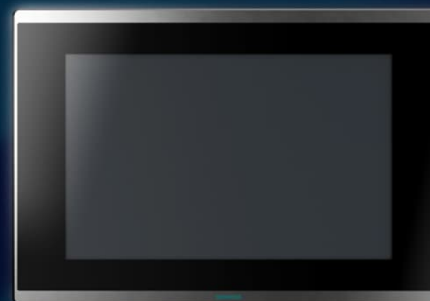
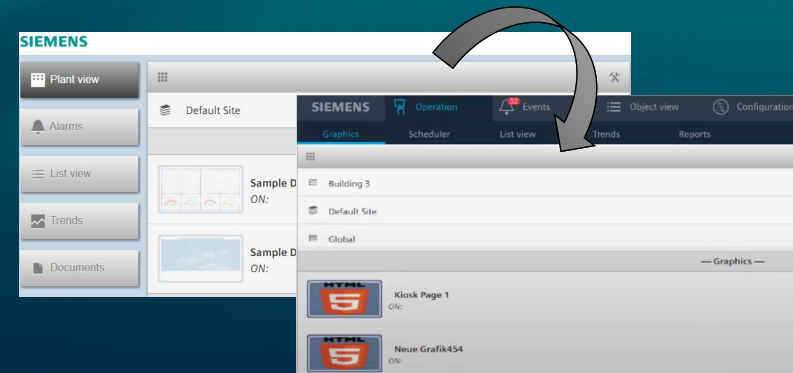
- CPU and RAM upgrade

Improved UI

- Harmonized with PXC web UI
- Easier navigation and scheduler edit
- Offline version upgrades later

Rev. B panels

- With Reset feature



All Control Point hardware supports ver. 2.0

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The Desigo PXC Product Family
-> Software: The improved ABT Site

Desigo ABT Site

Commissioning & Programming Tool



The Desigo PXC Product Family

-> Software: Tool for all devices

Able to program and configure all PXC (gen3) product family devices

Sensors



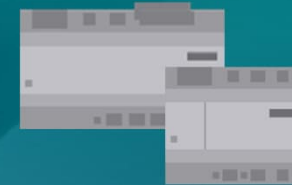
Damper actuators



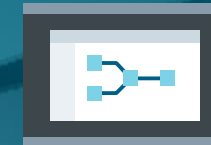
Intelligent valves



Actuating controllers



Automation controller



Embedded Building management



Room automation stations

...
More to come

The Desigo PXC Product Family

-> Software: All in One -Tool

One Tool

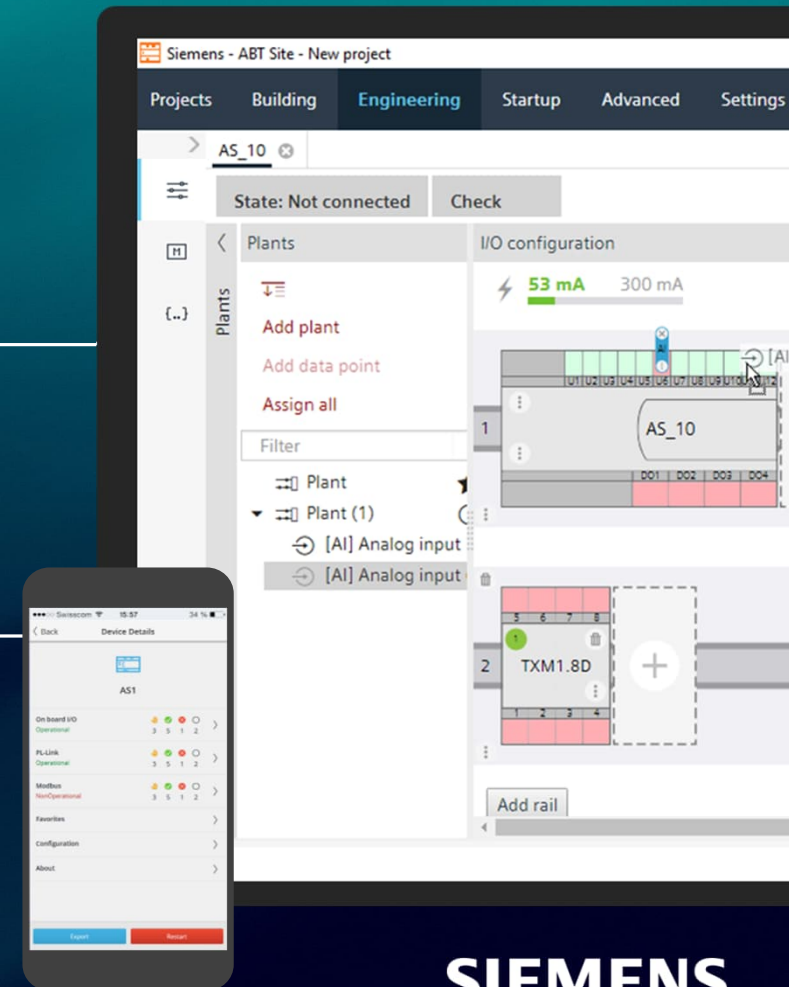
One main tool. No external tools or multiple toolsets for separate tasks.

Start Fast

Easy to learn and maintain.

Work Easy

Modern user interface. Graphical tools, online editors and easy integration tools.



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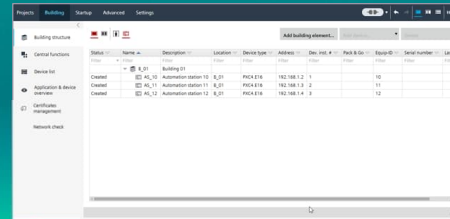
The Desigo PXC Product Family

-> Software: Easy to learn commissioning steps

1

Set up project

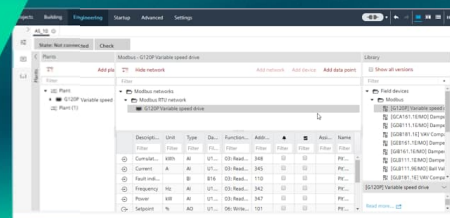
Project Settings and Building View



2

Set up data points

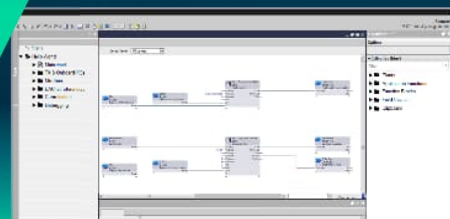
I/O Configuration and Modbus editor



3

Program device

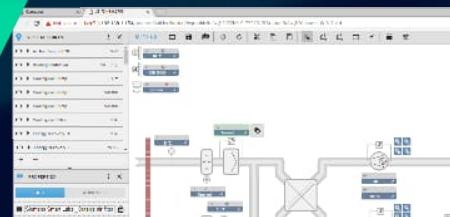
Field programming editor



4

Create graphics Desigo Control Point

Desigo Control Point Offline engineering



Top Functions

Very easy Modbus-integrations with all new fieldbus editor

-> faster & easier commission with tracing and online changes.

No license needed

-> easier PC-management

More control

-> BACnet instance numbers can be changed manually

-> system parameters are easy to change

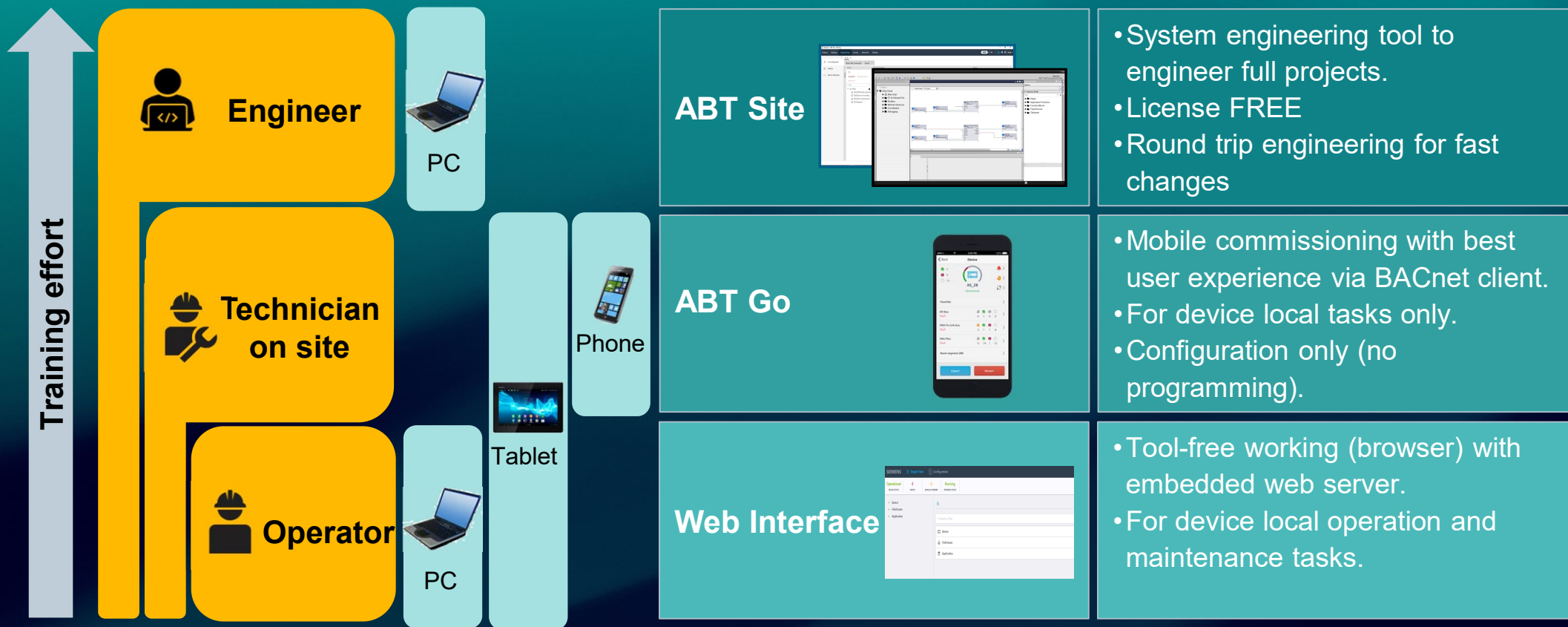
Faster to work with

-> Undo-redo

-> fast filter and library functions

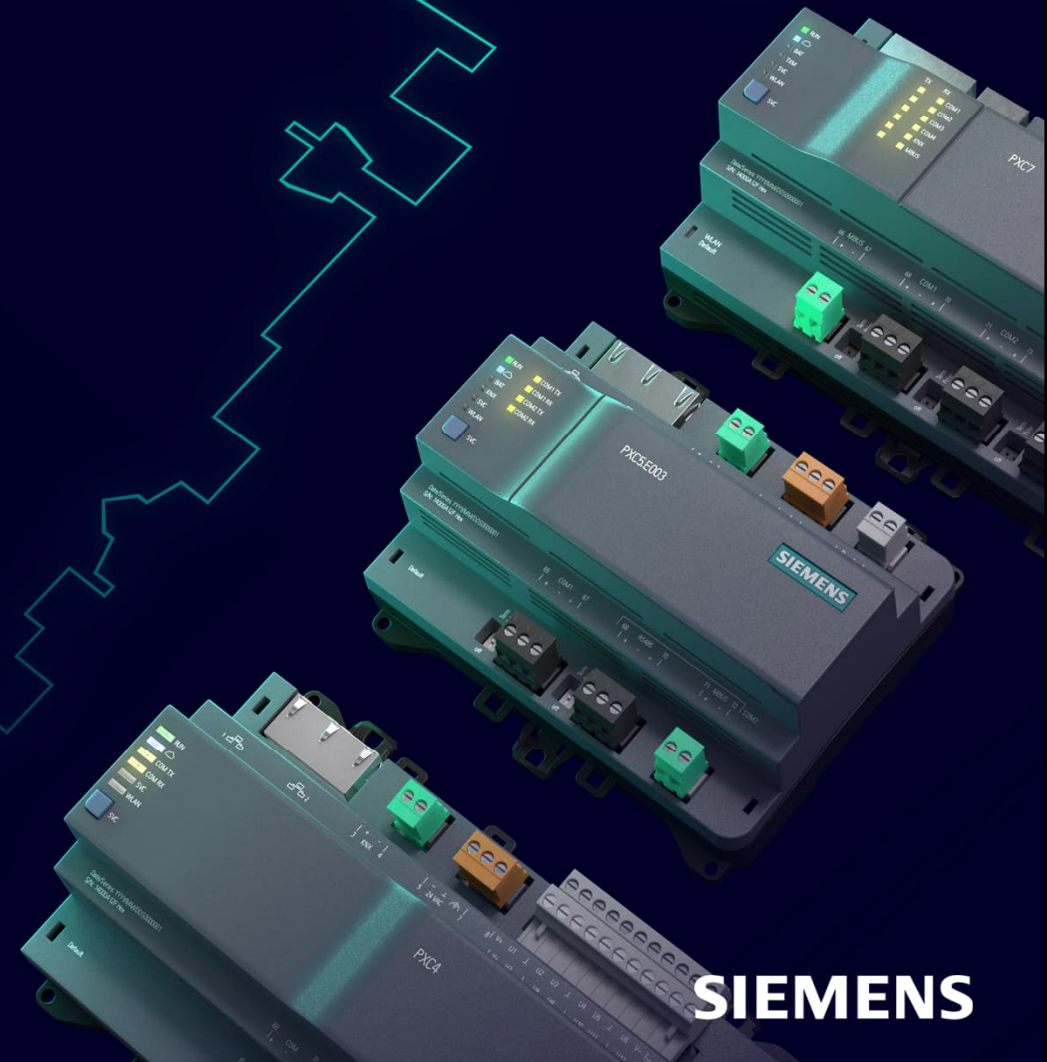
The Desigo PXC Product Family

-> Software: Right tool for each purpose



The Desigo PXC Product Family
-> Hardware: Device Limits

Desigo PXC Device Limits



The Desigo PXC Product Family

-> Hardware: Control Point – Device Limits



	PXM30.E	PXM50.E PXM40.E	PXG3.W100-2	PXG3.W200-2
Generic data point operation	All data points of all assigned devices			
Alarming	All data points of all assigned devices			
Graphical operation (BACnet objects) ¹⁾	500	1,000	1,000	2,000
Haystack interface (BACnet objects) ¹⁾	500	1,000	1,000	2,000
Online trends	20	20	20	50
Graphics (average complexity)	20	20	20	50
Technical limits				
Connected operating clients ²⁾	5			
Rooms ³⁾	20			
BACnet IP controllers	50			
BACnet MSTP controllers	10			
BACnet LON controllers	10			

Recommendation for sales estimates

- Factor **2.5** between physical I/Os and BACnet objects for primary plant graphics (e.g. 1 physical I/O = 2.5 BACnet objects).
Different factors for room graphics, depending on the use case (technical graphics, end user, floor plans).
 - Connection of more clients is possible but will have an impact on performance if same user operation is carried out simultaneously (e.g. graphic rendering).
 - Max. number of rooms also depends on the complexity of rooms (e.g. HVAC only, or room with lighting, shading, and HVAC).
- See technical documentation for further details

The Desigo PXC Product Family

-> Hardware: PXC – Device Limits



	PXC7S	PXC7M	PXC7L	PXC4E16	PXC4M16	PXC5	PXC50	PXC100	PXC200	PXC36	PXC00	PXC001
Physical IO points (TX)	100	200	400	16	16	0	80	200	350	36	0	0
Integration IO points (fieldbus)	100	200	400	40	40	500	400	600	1000	64	2000*	250-2000
Total IO points (TX + fieldbus)	100	250	600	80	80	500	400	600	1000	364	2000	250-2000
MS/TP support	0	2	4	1	1	2	-	-	-	-	-	-
Alarms	>500	>500	>500	100	100	>500						
Trend blocks	600	600	600	40	40	200	100	200	350	100	200	600
Trend entries	250 000 10 000 /dp	250 000 10 000 /dp	250 000 10 000 /dp	20 000	20 000	100 000	400 000	400 000	400 000	100 000 400 000	400 000	400 000
Schedulers	20	40	60	5	5	20	50	50	50	15	50	50
Schedulers: switching points per day	20	20	20	20	20	20	20	20	20	10	20	10
Calendars	20	40	60	5	5	20	50	50	50	10	50	50
BACnet objects	1000	2000	5000	300 (220)	300 (220)	1500	4000	4000	4000	4000	4000	4000
Web interface / system wide operation	Yes/Yes	Yes/Yes	Yes/Yes	Yes/no	Yes/no	Yes/Yes	no	no	no	no	no	no
Bacnet SC / IP / LON	X / X / -	X / X / -	X / X / -	X / X / -	X / - / -	X / X / -	- / X / X	- / X / X	- / X / X	- / X / X	- / X / X	- / X / X
Time master RTC	yes	yes	yes	yes	yes	yes	Site-primary server functionality					
Device monitoring: Life check	yes	yes	yes	no	no	yes						
Supervisory functions (time sync, life check)	250	250	250	no	no	250						

Values subject to change. Double check the latest values from datasheets.

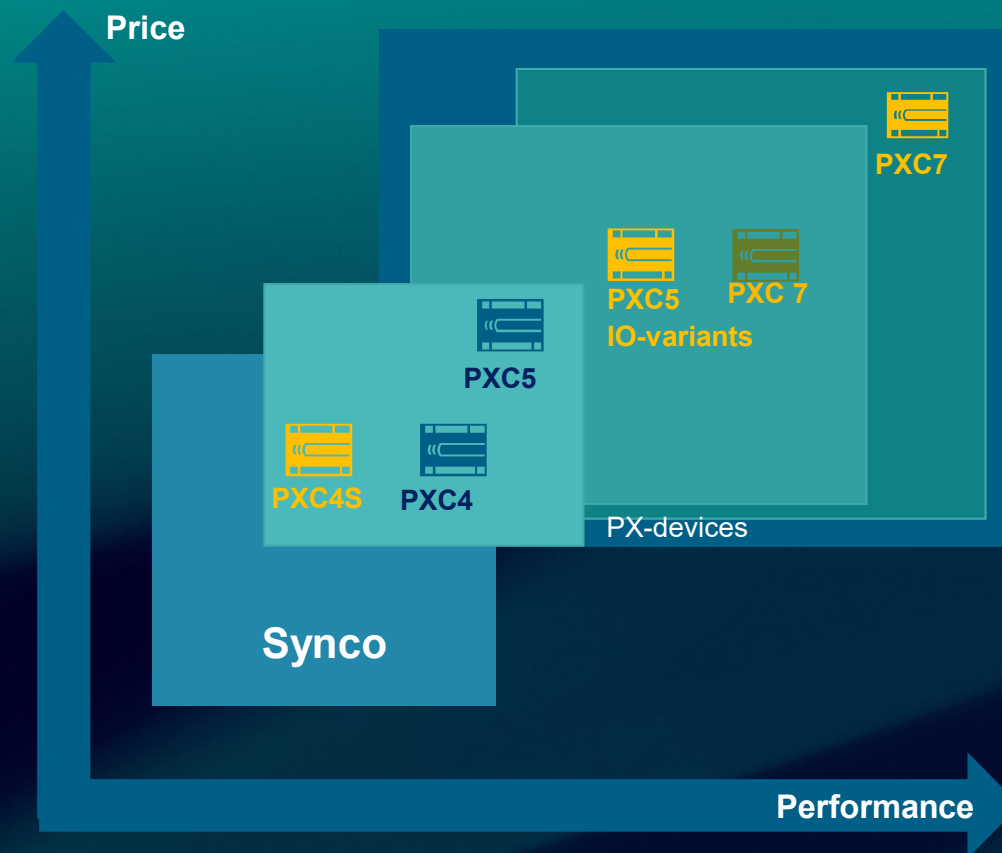
The Design PXC Product Family
-> Portfolio range

Portfolio range



The Designo PXC Product Family

-> Portfolio range – ongoing development

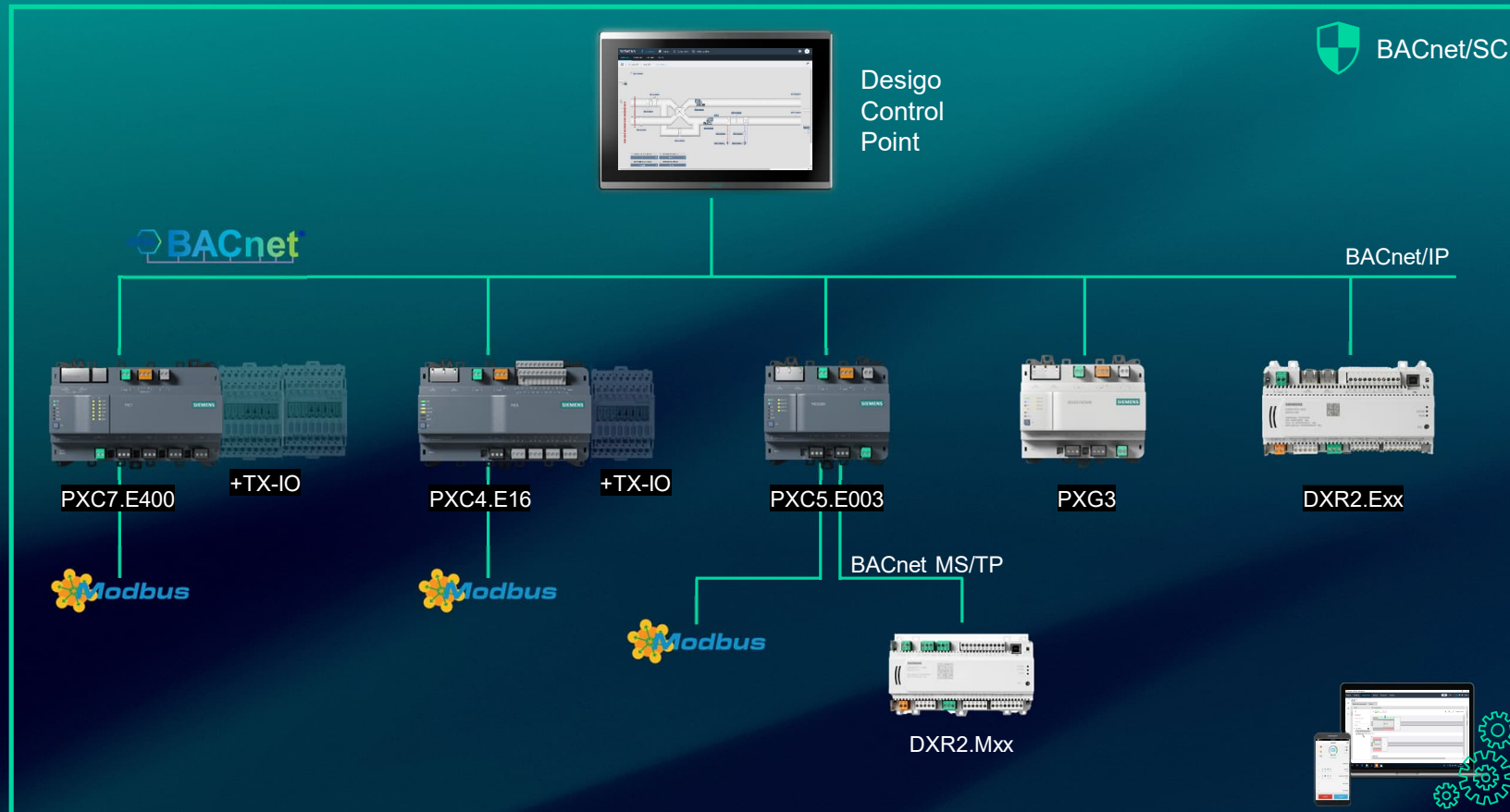


Development is ongoing:

- New device variants will arrive
- Current devices will receive new features via Firmware updates
- New commissioning and editing features will be added

The Designo PXC Product Family

-> Portfolio range – System Range

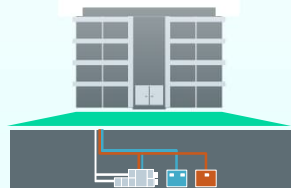
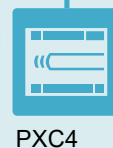


The Designo PXC Product Family

-> Portfolio range – Complete scale from small to large



Automation controls



From small ...

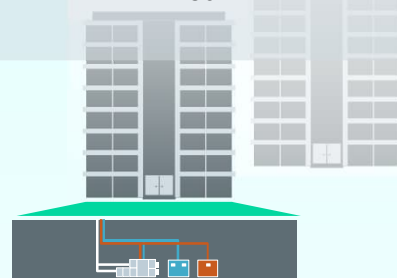
Designo Control Point



Designo CC



3rd
Integration

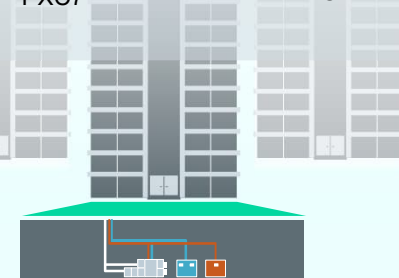


... to medium ...

Designo CC



3rd
Integration



... to large plants and projects

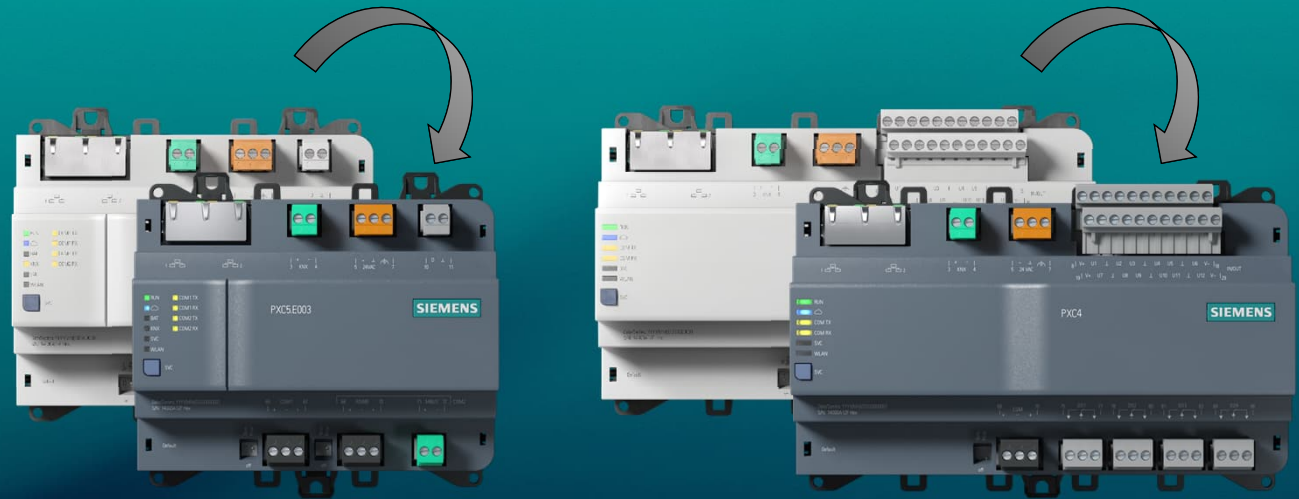
What's new – spring 2022



What's new – spring 2022
-> Changes and new features

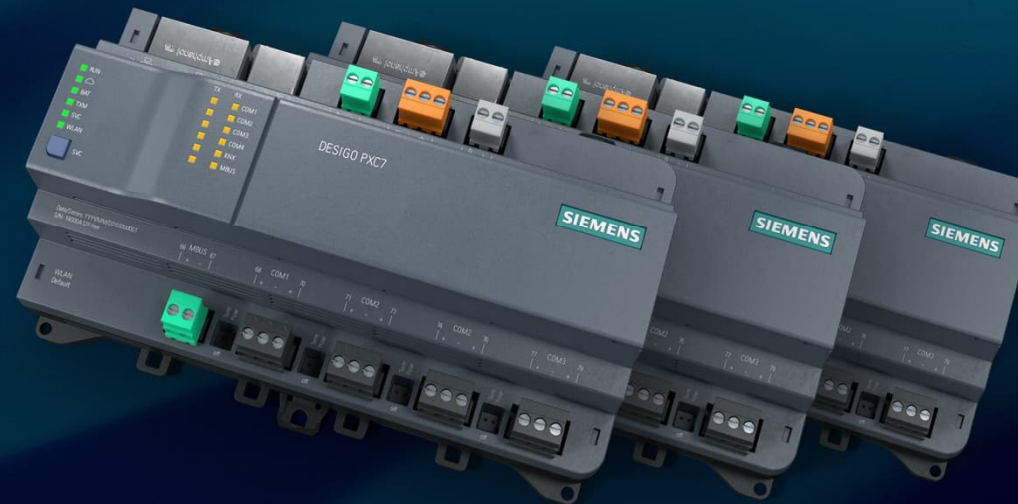
New Colour

- From white to gray



The PXC 7

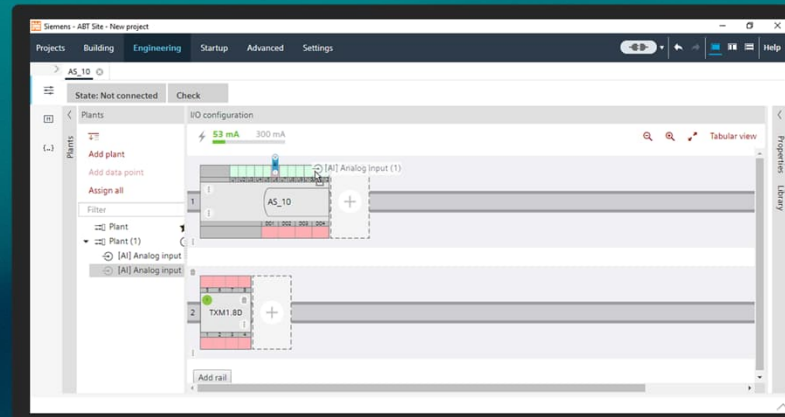
- HVAC controller with 3 different versions



What's new – spring 2022
-> Changes and new features

ABT Site 4.4

New features



BACnet/SC

Brand BACnet protocol with End-to-End Encryption



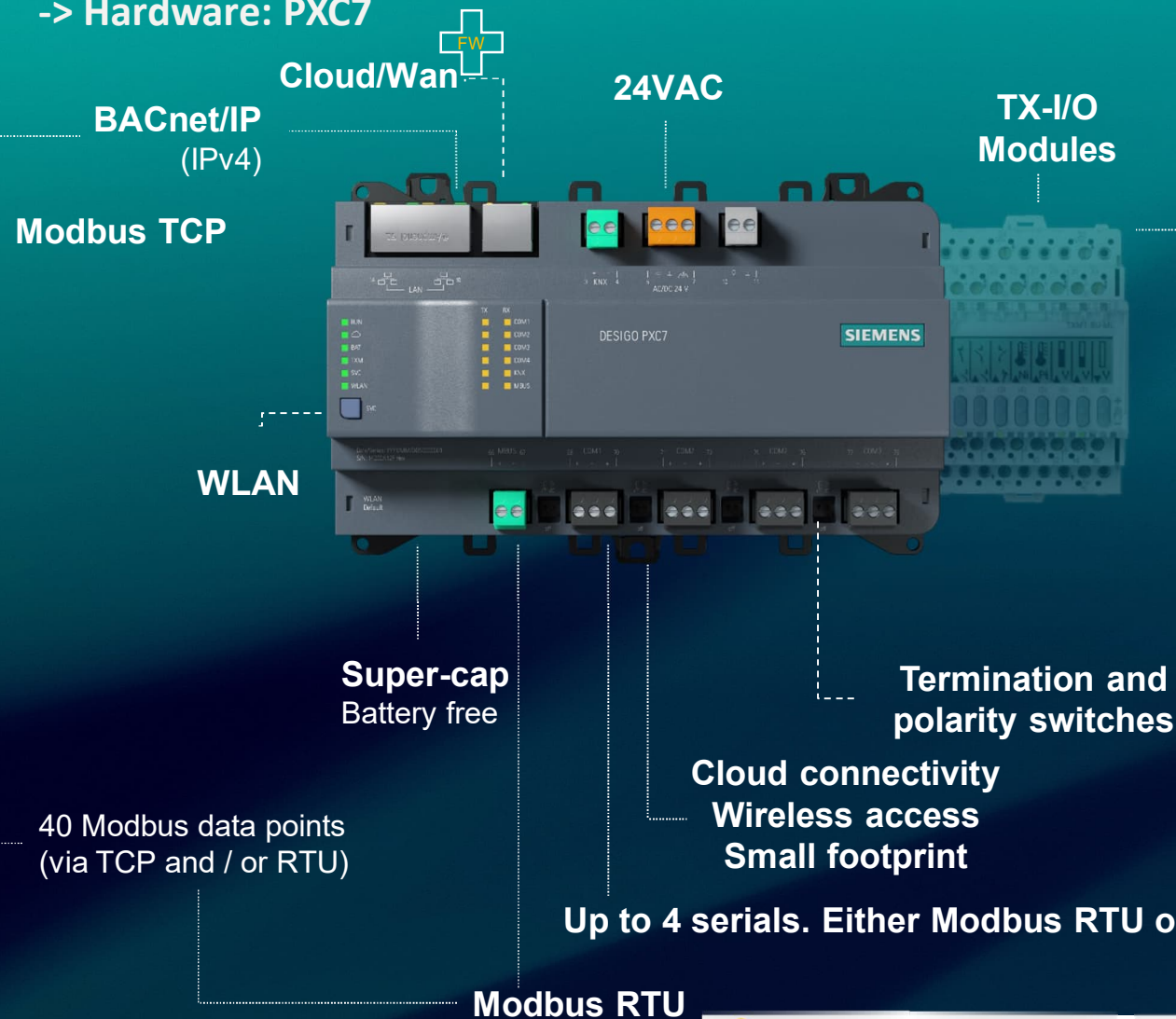


The PXC7 modular controller and its features

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The PXC7 modular controller and its features

-> Hardware: PXC7



Expandable
to total 64 modules
(internal PSU of 300 mA
for 4 modules)

Desigo PXC7.Exxxx

- .E400S = BACnet/IP, Small - PXC50
- .E400M = BACnet/IP, Medium - PXC100
- .E400L = BACnet/IP, Large - PXC200

- > Modular controller for HVAC plants
- > Extendable with TX-IO
 - > 64 modules with normal mode
 - > 8 modules with event mode



| The ABT 4.4 and its new features

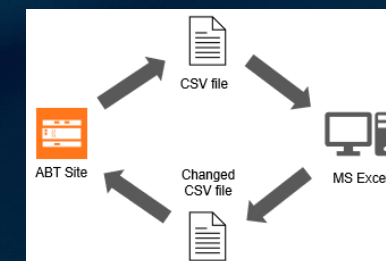
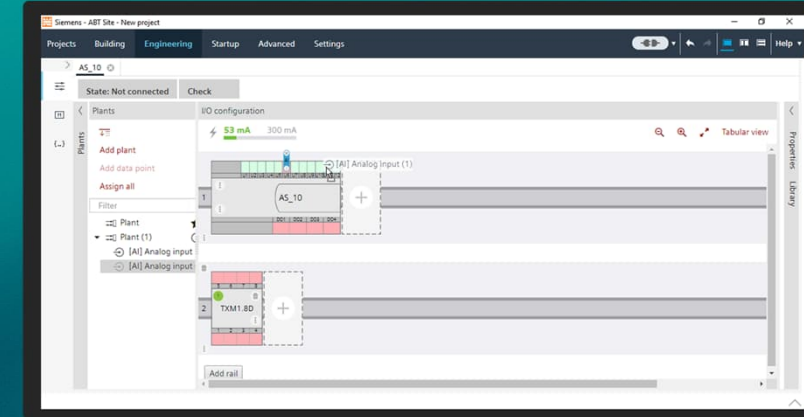
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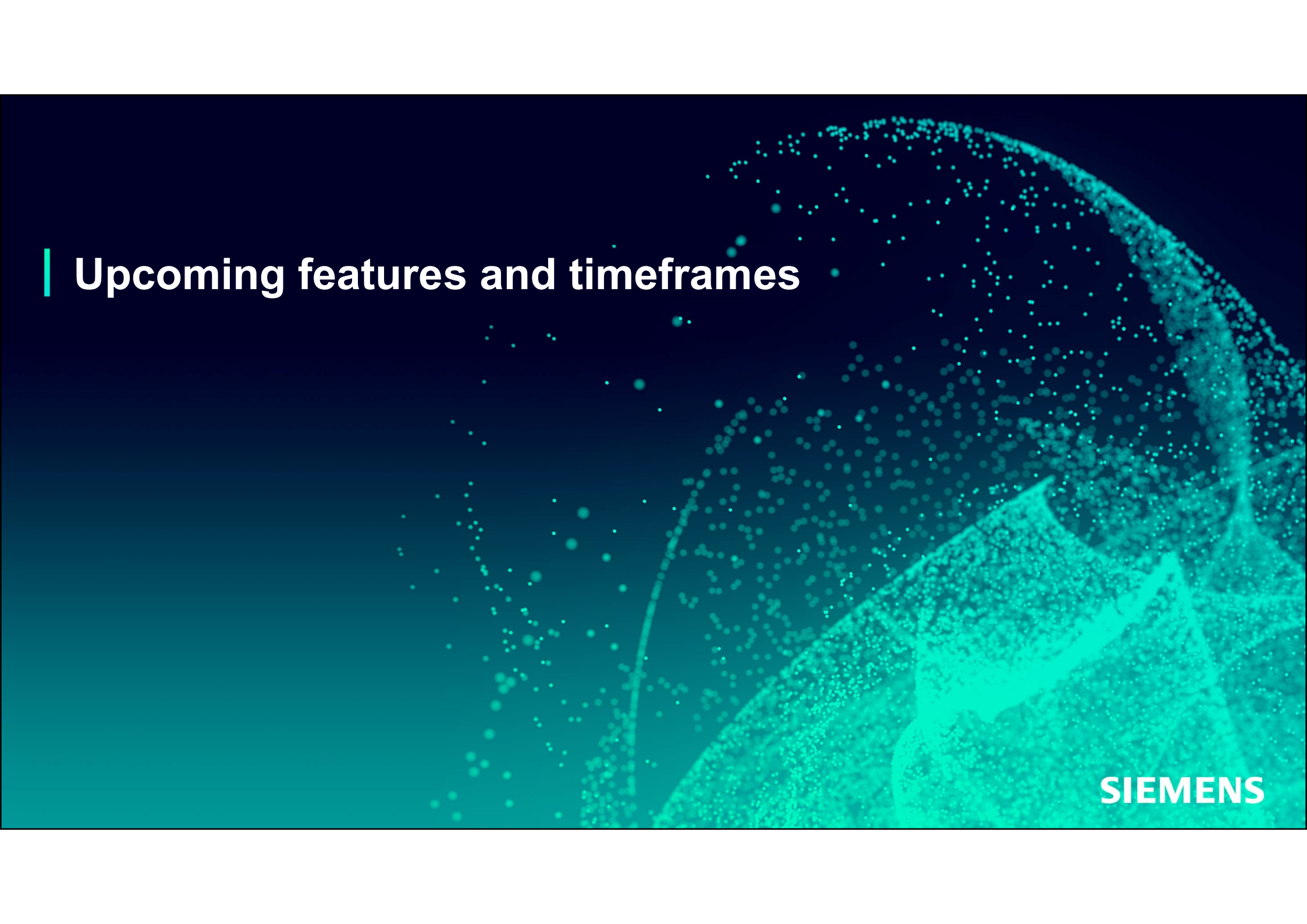
The ABT 4.4 and its new features

-> Changes and new features

Lots of new features

- BACnet / Secure Connect – set up BACnet/SC networks and manage certificates
- Modular programming with support for future versions
- Set custom instance numbers for BACnet-objects
- PXC5 BACnet Objects count increase:1000->1500
- Event Mode for TX-modules (rev. D): Faster cycle-times for time critical applications
- ABT Site PXC Simulator updates for PXC 7 and save IO state
- ABT GO updates
- PXC Simulator and Save functionality
- Modbus Gateway-support
- Modbus communication failure suppression
- WLAN setting changes reset improvement





| Upcoming features and timeframes

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Upcoming features and timeframes

-> There will be more

Bellow are listed features that are currently confirmed. More will follow.

Hardware:

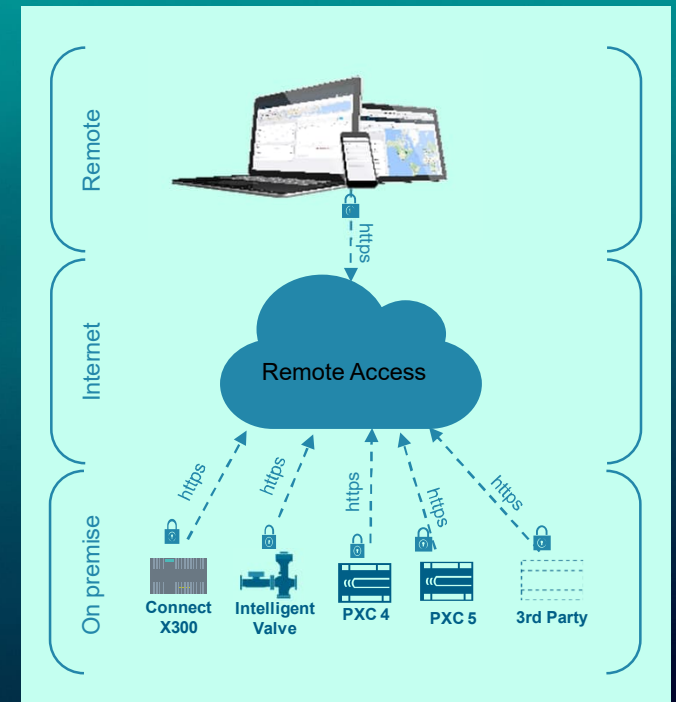
- PXC5 with IO

Software:

- Full library set and replacement functions (ABT 5.0)
- Configurator (ABT 5.1)
- Extended configurator (ABT 6.0)
- Minor improvements
- KNX PL-Link
- KNX
- MBUS
- BOS-functions

Cloud

- Cloud services improve and get more features



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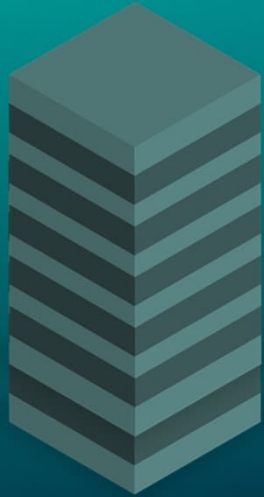


BACnet Secure Connect

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BACnet Secure Connect

-> Why BACnet/SC



Buildings in the past: Local

- **Isolated** on site communications
- Mainly **local** operation
- **Little** attack surface

Buildings today: Connected

- **Converged** IT↔OT
- **Cloud + Mobile** Operation
- **Increased** attack surface



>> More Security features **needed**

BACnet Secure Connect

-> What BACnet/SC offers and what it does not

What BACnet/SC is

- A point to point traffic **encryption** to prevent tampering
- An **authentication** mechanism to restrict access to a project
- An **IT-friendly** way to do secure Building Automation communication with State-of-the-art security
- **Cost efficient**: Blend nicely into existing “IT mainstream” landscape
- Backward **compatibility** and step-wise extension

What BACnet/SC is not

- A silver bullet against all kinds of cybersecurity risks
- Effortless security layer – it needs knowledge and setting up

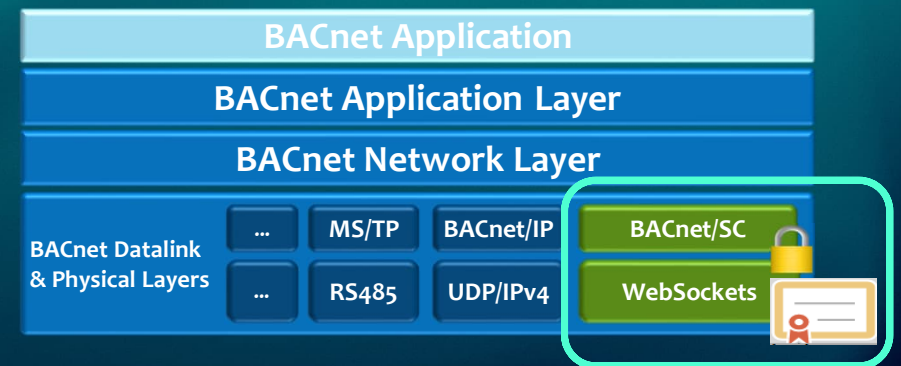
BACnet Secure Connect

-> What is BACnet/SC's features

Key features



- A new **BACnet datalink** (like BACnet MS/TP or BACnet/IP)
 - Mix-and-match with other BACnet flavors
- Application layer untouched
- Built on TLS 1.3, a sophisticated IT encryption standard
- Does not depend on UDP-based network broadcast messaging
- Works easily with firewalls and routers (compared to UDP based traffic)

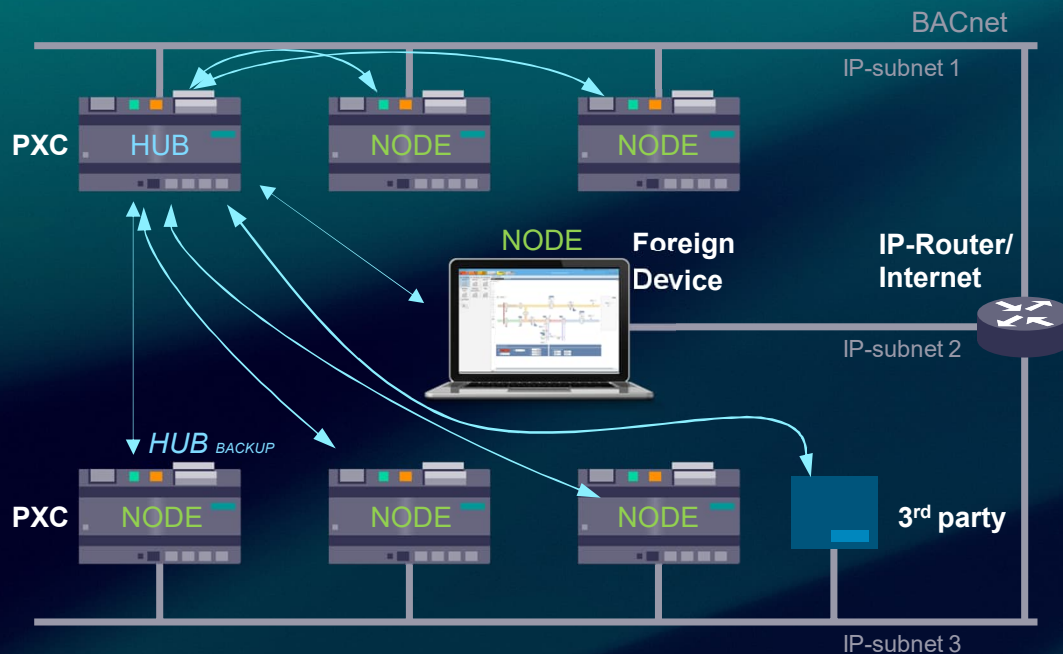


BACnet Secure Connect -> BACnet/SC vs. BACnet/IP

Based on: IPv4, TCP
Uses broadcasts / BBMD: No
Encrypted: Yes

Pros: Secure, No BBMD needed, Firewall/IT friendly
Cons: Additional setup, Hub-based communication

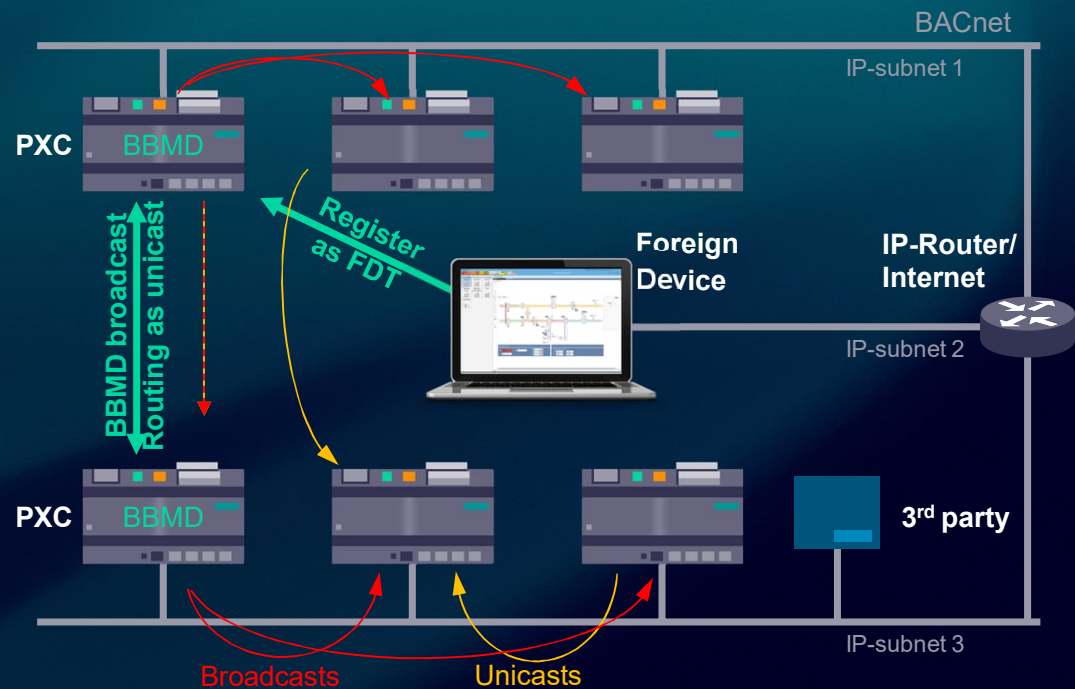
BACnet/SC



Based on: IPv4, UDP
Uses broadcasts: Yes
Encrypted: No

Pros: easy to setup and scale
Cons: unprotected, uses broadcasts, firewall settings

BACnet/IP





| Recap: benefits and pitfalls of the new PXC

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BACnet Secure Connect

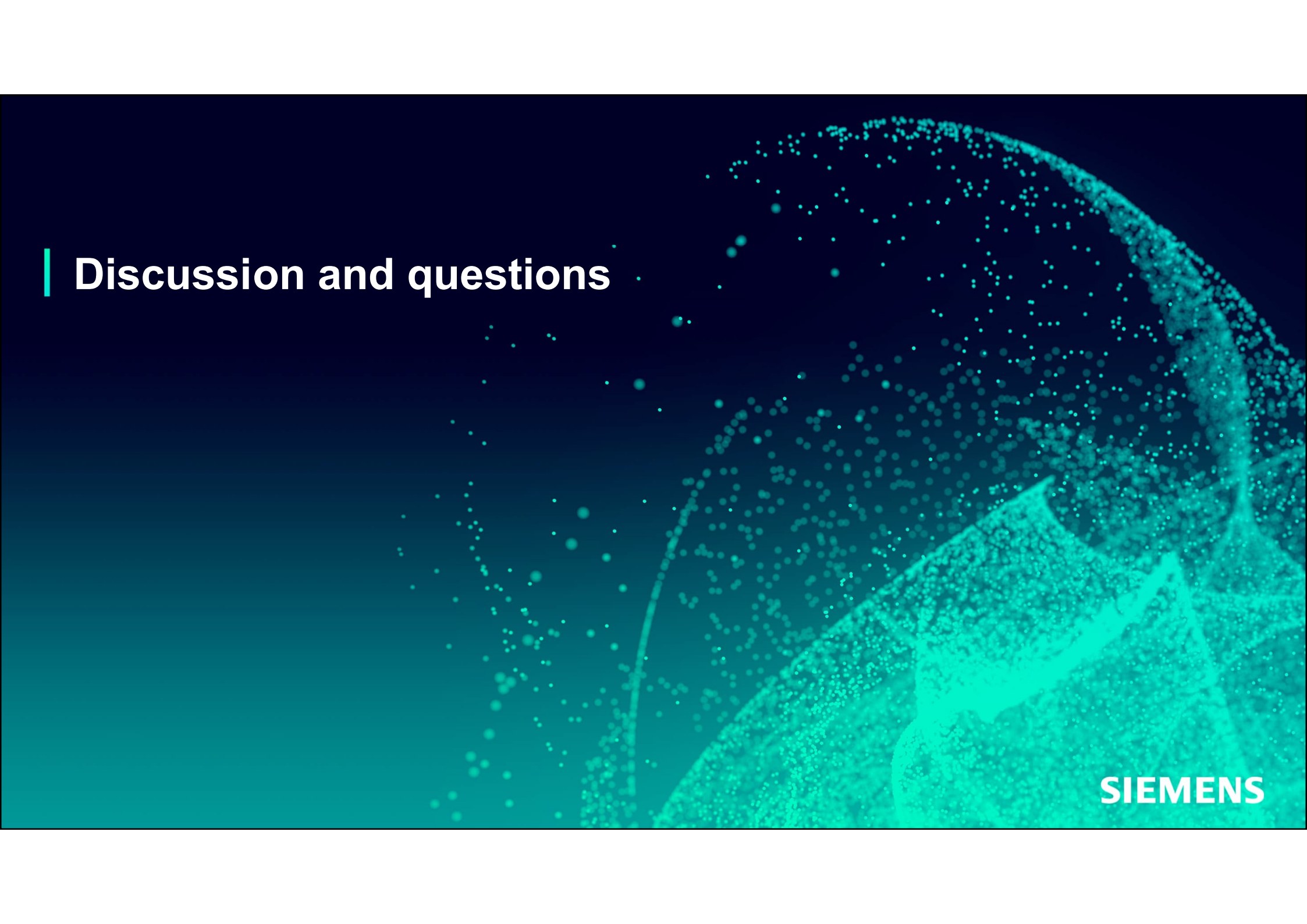
-> BACnet/SC vs. BACnet/IP



- There will be more features
- With PXC Device range scale from small sites to large
- TX-IO is supported
- Brand new and easy to use programming environment.
- Device management can be done online: FW updates, IP-changes, device resets + much more.
- Efficient and intuitive fieldbus editor opening new possibilities.
- Reduced proprietary features – increased BACNet functions.
- BACnet/SC
- Siemens is front runner with BACnet/SC with hub functionality for 100 devices.
- + lots and lots more



- Programming is not backwards compatible.
- There are still some major programming efficiency to come (mass editing, search functions, block replacements)
- More strict point limits and variation between devices. – Be carefull selecting devices –
- No global calendars
- Project conversions after major version changes
- Alarm reno-options: CP needed for emails and no direct SMS options.
- Not all features are there yet



| Discussion and questions

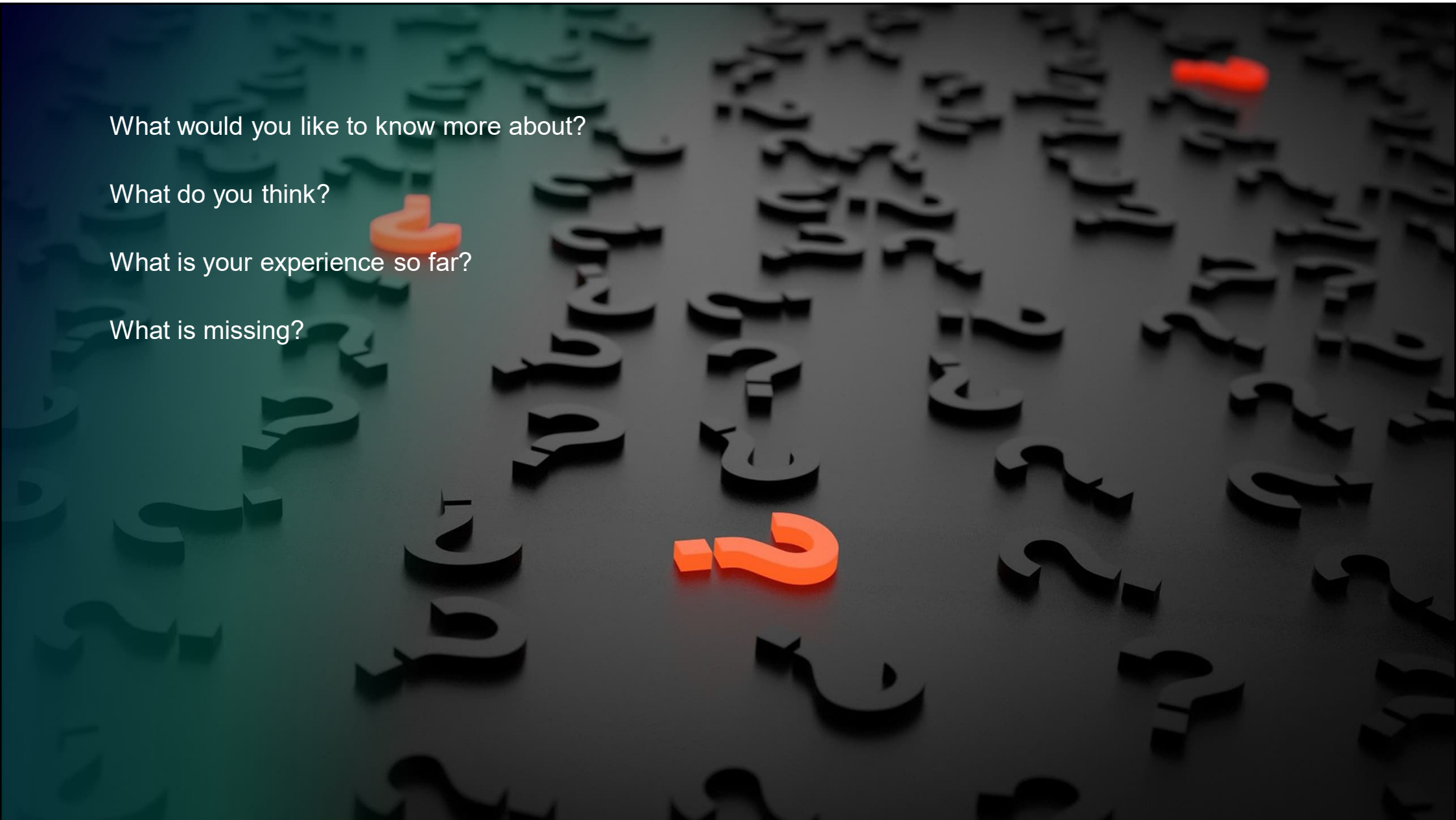
SIEMENS

What would you like to know more about?

What do you think?

What is your experience so far?

What is missing?



Training links



Official web pages:

<https://new.siemens.com/global/en/products/buildings/automation/desigo/automation-controls/desigo-pxc.html>

E-learnings on YouTube:

PXC, Introduction: <https://www.youtube.com/playlist?list=PL5tF4NCM4CmwNjFopvPztJahmiFJIBTdD>

PXC, Commissioning: <https://www.youtube.com/playlist?list=PL5tF4NCM4CmzX9o43eP1dLffVIY-5qs1m>

PXC, Introduction: https://www.youtube.com/playlist?list=PL5tF4NCM4Cmwv_0MK89OmDkUfQKQM2bA2

PXC, Commissioning: <https://www.youtube.com/playlist?list=PL5tF4NCM4Cmw-DzA8kHieaF7Wu34hvo2O>

And of course there are information and data sheets available at HIT-Portal. Also ABT Sites help is filled with info about programming.

Certificate management:

https://extranet.w3.siemens.com/datapool/industry/buildingtechnologies/public/ba/desigo_certificate_management/CM_MainProject.mp4