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SIMATIC PCS neo

Enter a new world of process control

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[siemens.com/simatic-pcs-neo](https://www.siemens.com/simatic-pcs-neo)

The future of process industries
in the context of digitalization

Holistic Digital Twin

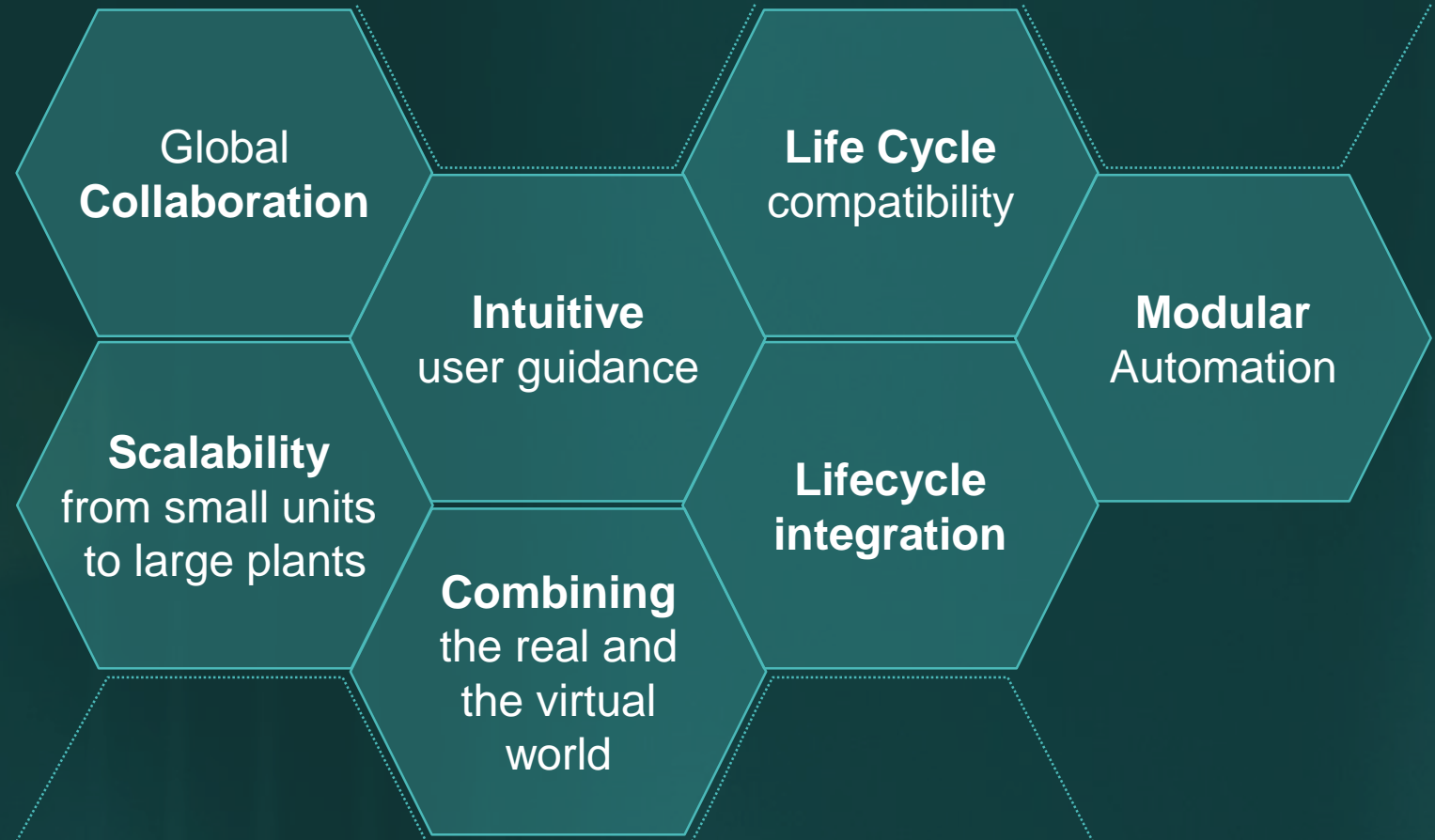
For each process object and the
whole plant



Industry requirements for Distributed Control Systems in the context of digitalization

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Process Industries



Process Automation – THINK neo.

How to find the perfect way between innovation and continuation

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The journey begins with SIMATIC PCS 7 State-of-the-art Process Control System

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V6

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

V7

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

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

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

V8.2

- 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

V9.0

SP2

- **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

1997

2003

2007

2011

2014

2016

2017

SIMATIC PCS 7 V9.0 - overview

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Hardware

CPU 410E

Special offer for very small applications
(200 POs)



CPU 410-5H

Scalable CPU for all applications



CPU 410SIS

Exclusive for SIMATIC SIS compact



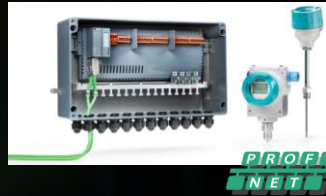
SIMATIC ET 200SP HA



SIMATIC ET 200SP



SIMATIC CFU



SIMATIC ET 200iSP



+ High plant availability

- Redundant PROFINET communication down to field level
- High-performant and compact
- Use in hazardous areas
- Push-in technology
- Redundant PROFINET-Interface, I/O modules and power supply

+ Flexible

- PROFINET communication
- Push-in technology
- Compact design
- System-integrated PROFInergy

+ Reduction in cabling cost

- Field distributor brings PROFINET down to the field level
- Exchange of field devices and expandability during operation without interruption

+ Hazardous areas

- Redundante PROFIBUS communication
- Suitable for gas/dust atmospheres in Ex zone 1, 2, 21 or 22

Software

PCS 7 Advanced Process Library (APL)

Standardized modular software functions for process control and visualization
Ready-made and tested function blocks, faceplates and symbols

PCS 7 Industry Library (IL)

Expansion of the APL standard library by characteristic industry functions.
Modules for HVAC, integration of Package units.

PCS 7 Condition Monitoring Library (CML)

Expansion of the APL standard library with functions for monitoring of pumps and control valves.

PCS 7 Advanced Process Graphics

Providing graphical objects for a task related design and intuitive visualization of plant situation.

SITRANS Library

Integration of SIMATIC software, SITRANS and SIPART process instruments into the SIMATIC PCS 7 based on APL.

Aspects of digitalization

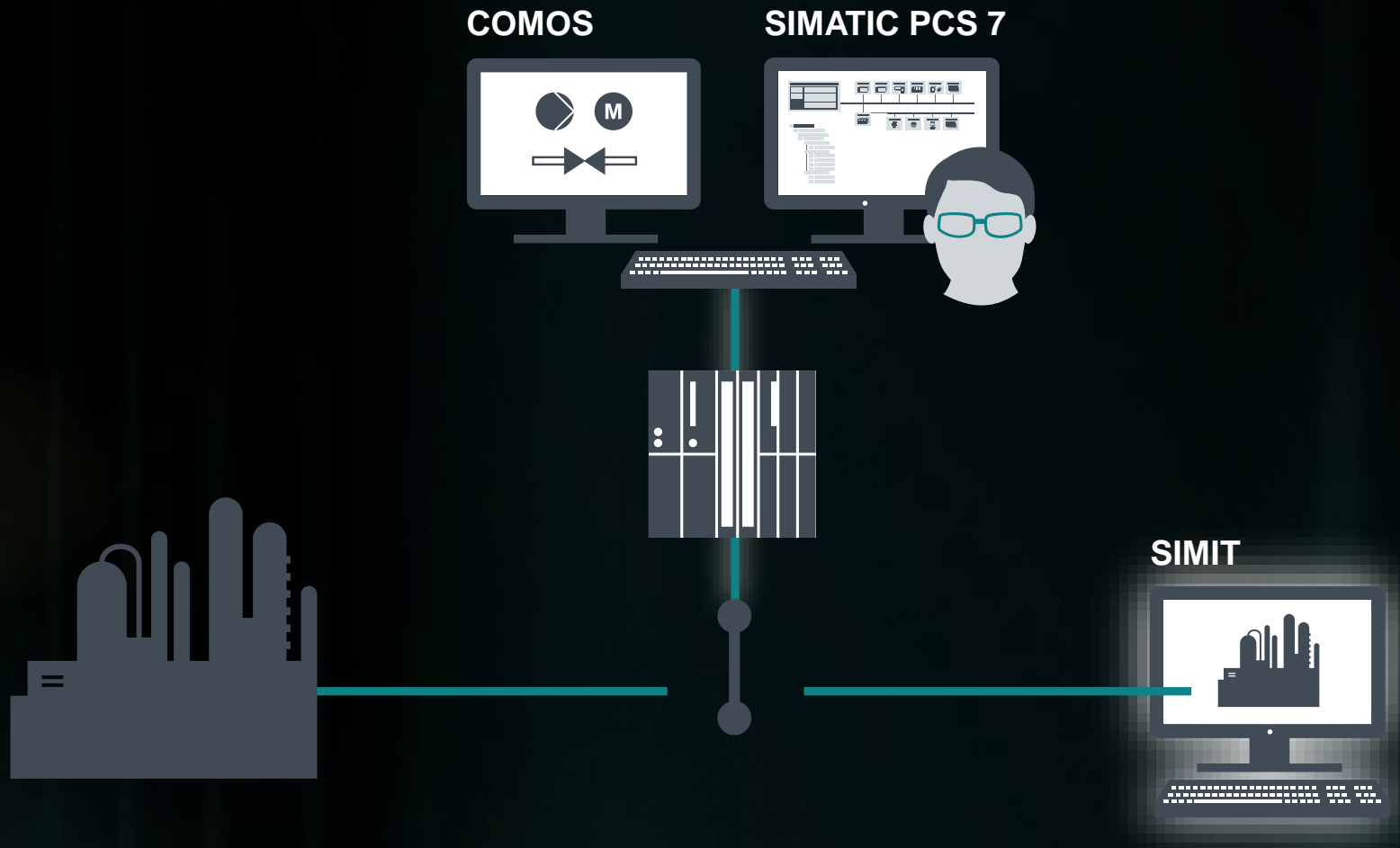
Integrated engineering on one database

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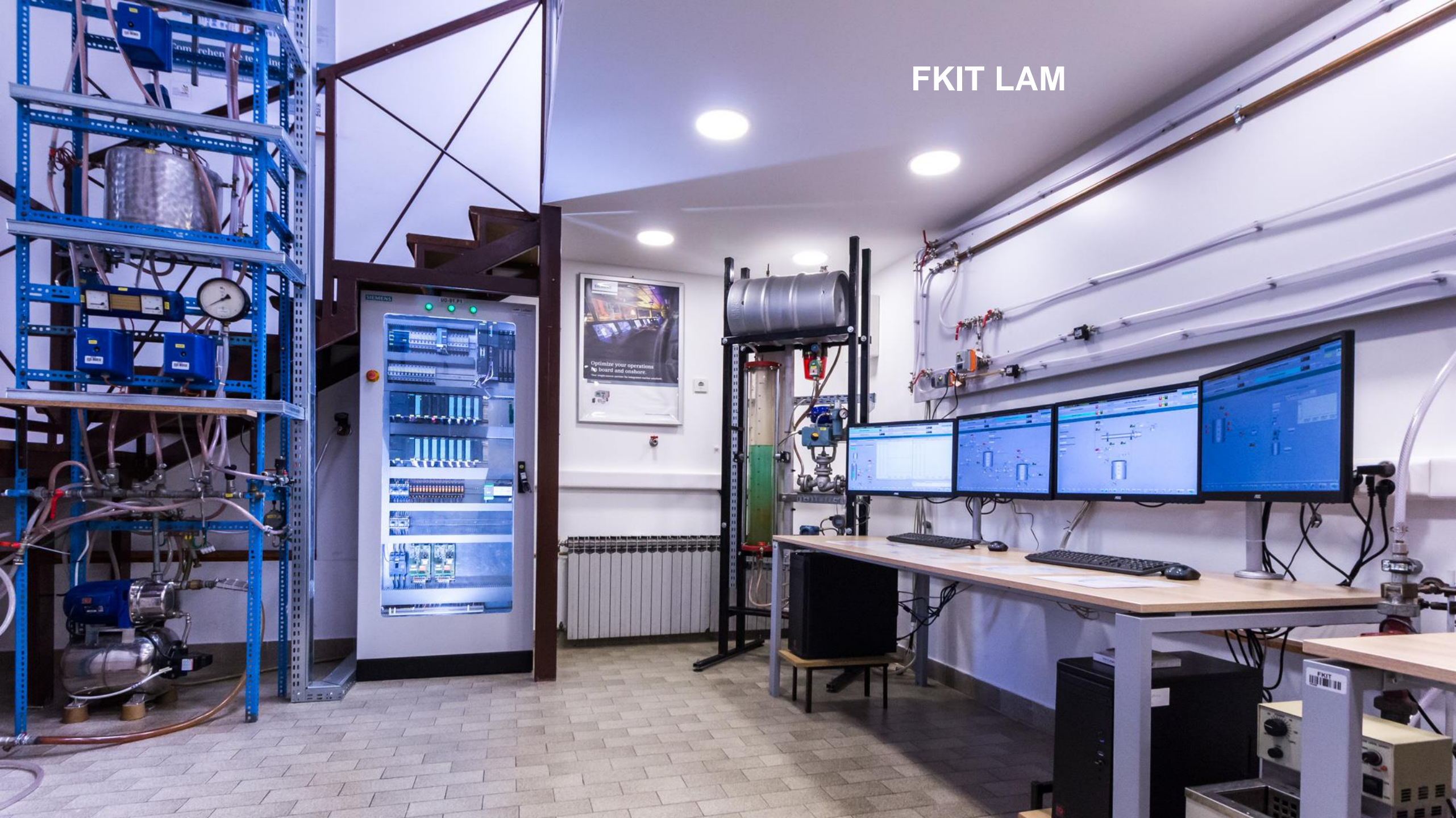
Unique and seamless data integration from engineering to simulation to plant operation with COMOS, SIMATIC PCS 7, Plant Automation Accelerator and SIMIT



Innovative



FKIT LAM



Riding the wave of innovation in Process Automation

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We already laid the foundation in the last years to make our customers ready for innovation – Investment protection as we understand it – also in the future!

SIMATIC PCS neo
New System Software

SIMATIC PCS 7 Version 9.x
Hardware Innovations

SIMATIC PCS 7 Version 8.x
System Software Innovation

2011-2016

2017

2019

Software Evolution: Application Architecture
Control Module Types, Advanced Process Library, ...

Hardware Evolution

PROFINET for Process Industry, SIMATIC ET 200SP HA, SIMATIC CFU, ...

Saves
your
know-
how!

Protects
your HW
invest!

SIMATIC PCS neo

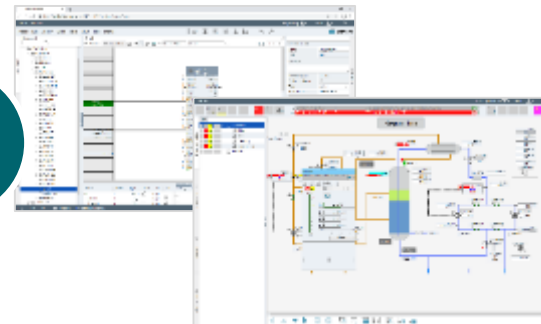
Motivation for a new Software Architecture

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SIMATIC PCS 7 Version 9 Hardware



New System Software



... using the same
application architecture
as SIMATIC PCS 7...

SIMATIC PCS neo - introducing with a clear market focus

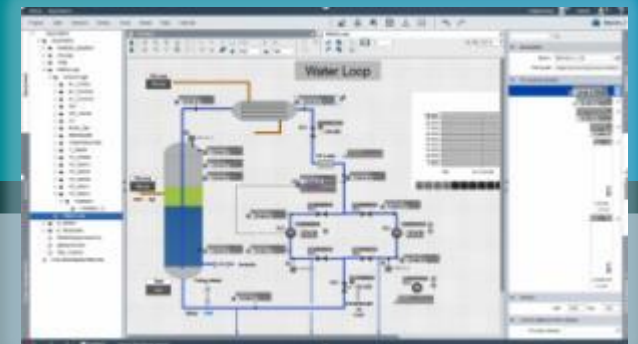


SIMATIC PCS 7

- Widest range of applications for all process industries
- Continuous processes, as well as batch and regulated industries
- Greenfield and brownfield

SIMATIC PCS neo

- Petrochem, water and plant infrastructure
- Continuous processes, from process modules to world-scale plants
- Greenfield



Software Evolution

Control Module Types, Advanced Process Library, ...

Hardware Evolution

PROFINET for Process Industries, SIMATIC ET 200SP HA, SIMATIC CFU, ...

Industry focus for starting phase of V3



Water

- Possible: all applications without desalination*
- Limitations: tele control



F&B

- Conti processes (e.g. sugar)



Pharma

- Possible: auxiliary plants (water treatment, HVAC), energy data management, pilot plants / test plant
- Limitations: Main process, GMP**, Audit-trail, Batch



Chemicals

- Possible: non critical conti plants (e.g. bio fuels), auxiliary plants (e.g. water treatment), pilot plants / test plant
- Limitations: batch, integrated failsafe

SIMATIC PCS neo addresses the broad market as it is later aiming at all industries!

Any concrete opportunity needs individual evaluation!

There are four possible situations for your Plant ... in the starting phase ...

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Greenfield and brownfield projects

Evaluation of User Requirements

Greenfield Projects with
requirements covered by
SIMATIC PCS neo

Projects with requirements not
yet covered by SIMATIC PCS
neo

Evolution of SIMATIC PCS 7 systems

There is no need to switch now

Plant with
SIMATIC PCS 7 V9

Plant with SIMATIC PCS 7
older than V9

Select SIMATIC PCS 7 V9

Keep
„Ready for future switch“
criteria –

Operate SIMATIC PCS 7 V9

You can already adapt to
„Ready for future switch“
criteria.

Operate SIMATIC PCS 7

If you want to modernize now,
go to SIMATIC PCS 7 V9.0

SIMATIC PCS 7 V9

You define when you switch! ... with the lowest effort conversion/ evolution

SIMATIC PCS neo

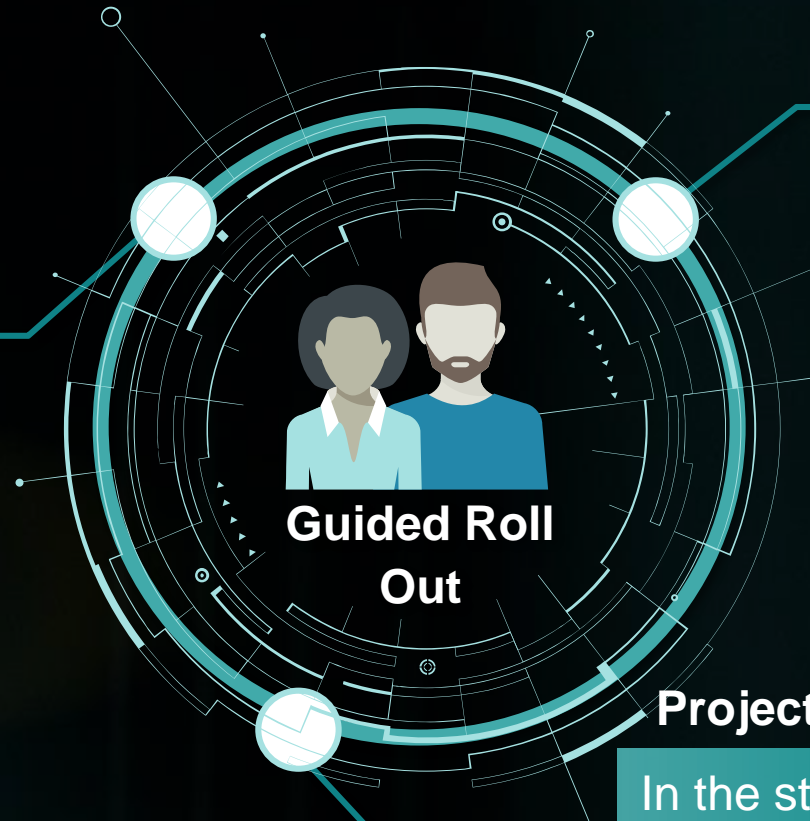
For any situation
and requirements
Siemens provides
the best individual
portfolio-strategy
and long-term
solution!

The perfect fit: Roll-out phase under special attention



Requirement evaluation

Not all features and functions are directly available in the first roll-out phase, SIMATIC PCS neo specialists will evaluate every project opportunity very individually measured at the customers industry and special requirements



Ordering process

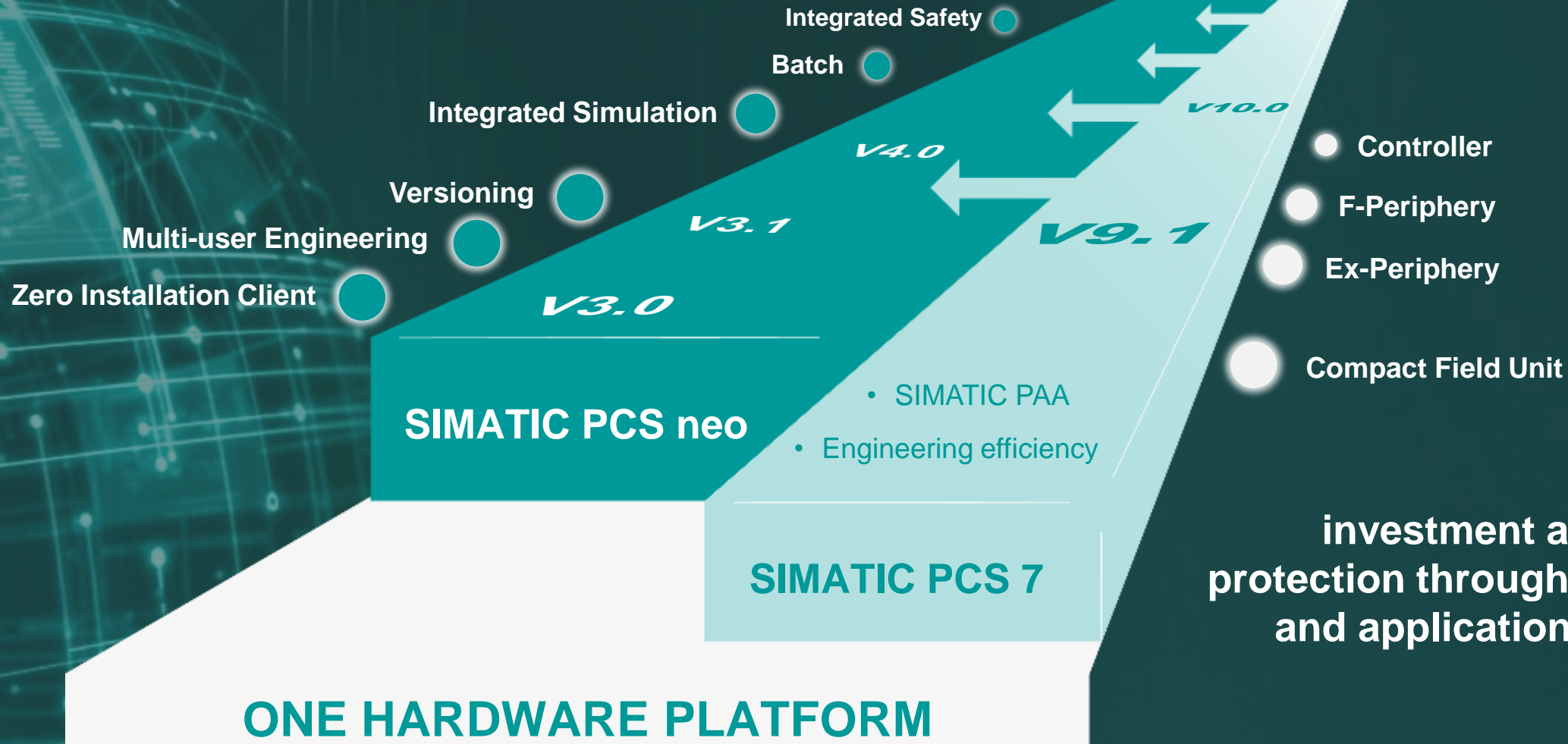
In the first steps there are no prices available in the Industry Mall – The pricing and ordering phase will be a guided consulting process tailored to the customers needs

Project execution

In the starting phase every SIMATIC PCS neo project is either realized by our own Siemens Solution Business or through a Solution Partner/End Customer with intensive support by a PUSA (Project under special attention) team

Siemens DCS portfolio with PCS 7 and PCS neo covers all customer requirements ... and allows an easy switch

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Customers can define the time to switch.

Maximum investment and know-how protection through common HW and application architecture!



Object-oriented Data Management

Always up-to-date and consistent information



neo System Access

Direct and secure connection to the system via web - anywhere, anytime and device independent



neo Usability

Easy and intuitive GUI; all tasks in one workbench (Administration, Engineering, Monitoring & Control)



SIMATIC PCS neo

New system software, completely web-based (HTML5)



neo Collaboration

Multi-user web engineering; global collaboration on a new level; highly efficient



neo Scalability

From smallest applications to world-scale plants



Support of the open MTP standard

Modularization and package unit integration made easy

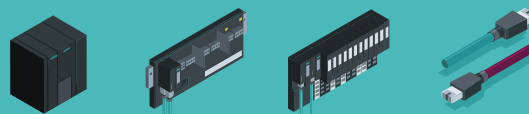


Investment Protection



Common Application Architecture with SIMATIC PCS 7

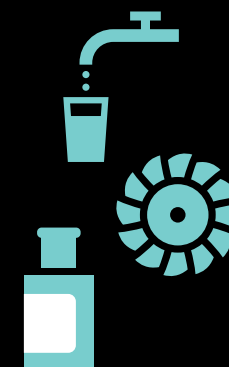
APL, CMT, Technological Products, COMOS, PAA, Recipes...



Common Hardware and Network Platform with SIMATIC PCS 7

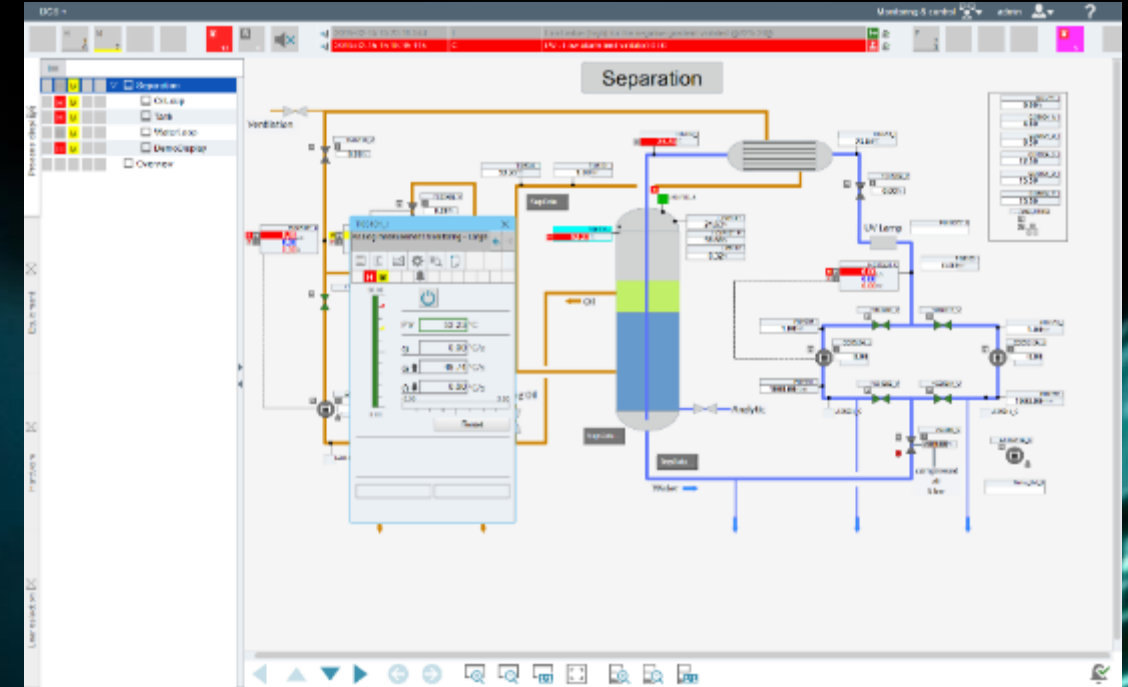
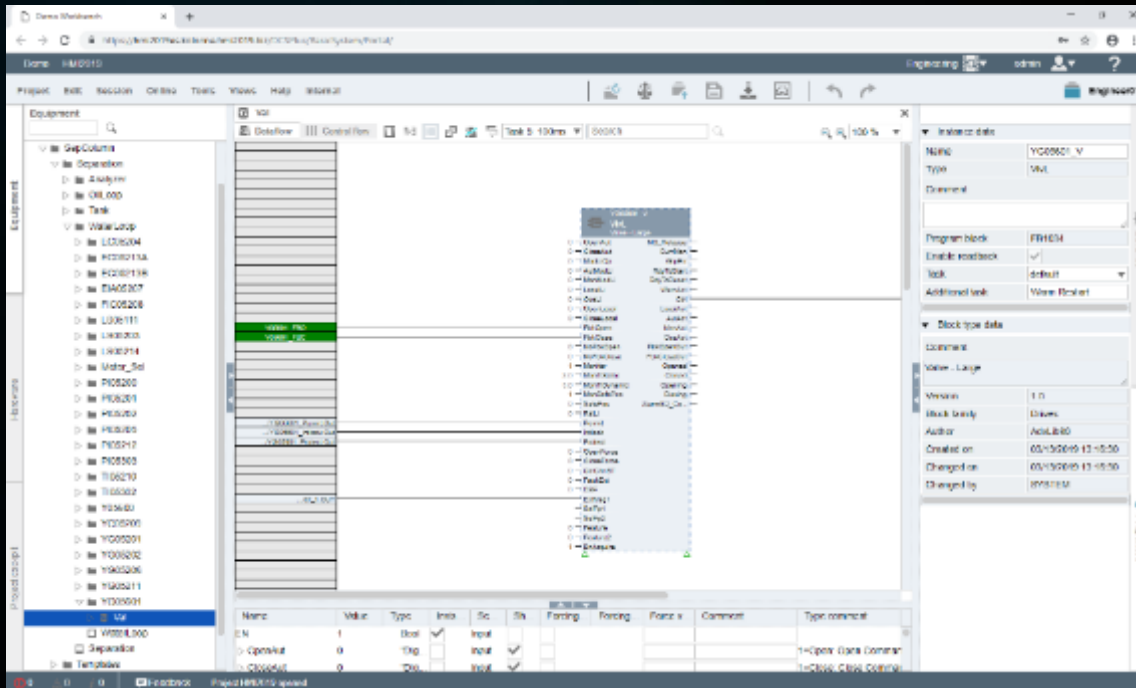


Know-how Protection

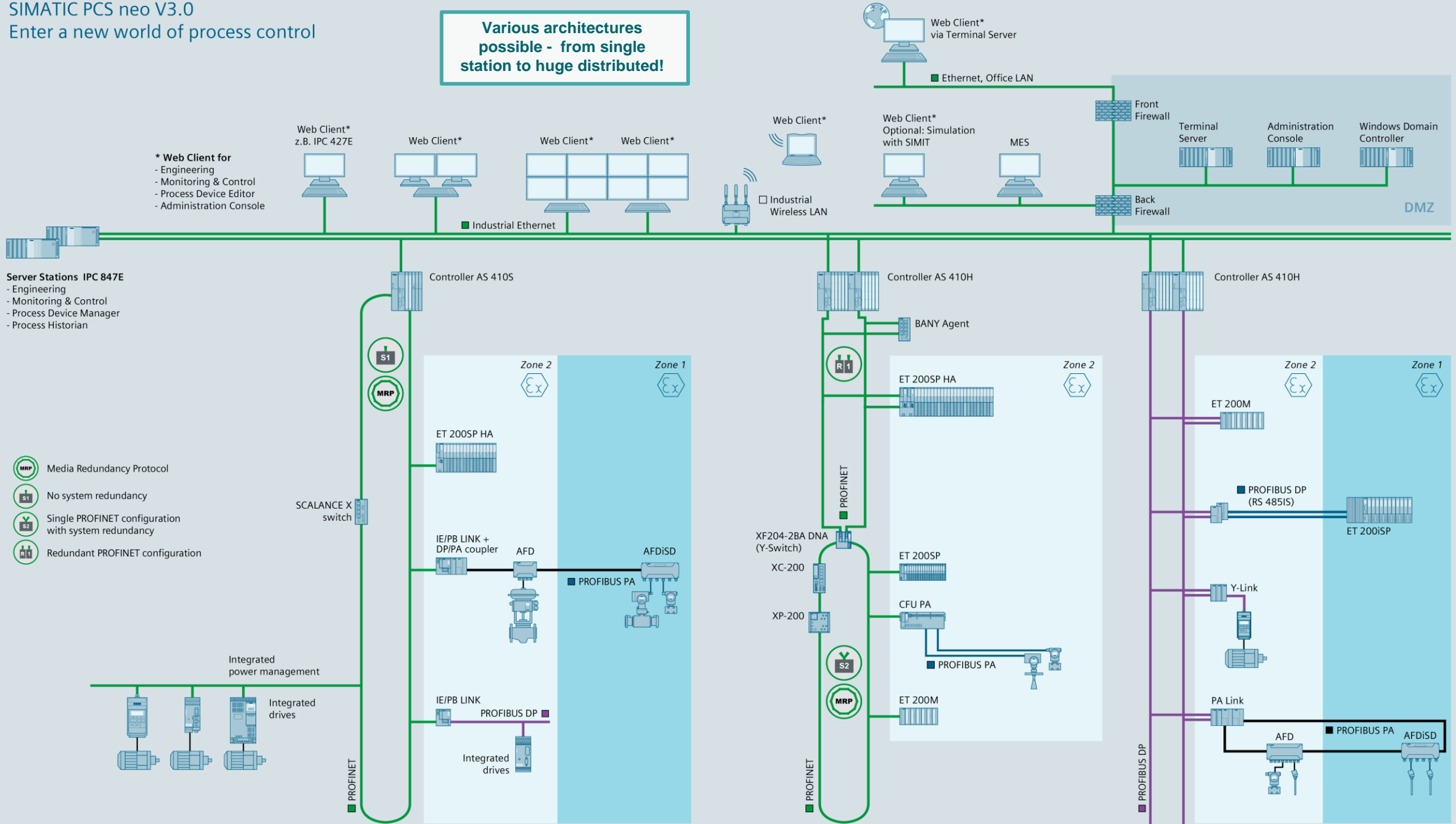


Take a closer look ... From Engineering to Monitoring & Control

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Various architectures
possible - from single
station to huge distributed!



Process Automation – THINK neo.

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neo System Access

Imagine your experts have immediate access to your engineering projects and operation processes from anywhere using only a secure web connection.

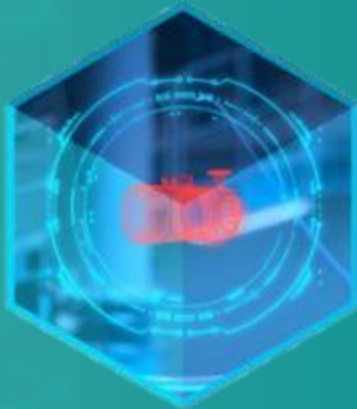


neo Scalability

Whether you supply small units or managing an entire production site – imagine a system that can be seamlessly upgraded and expanded during operation.

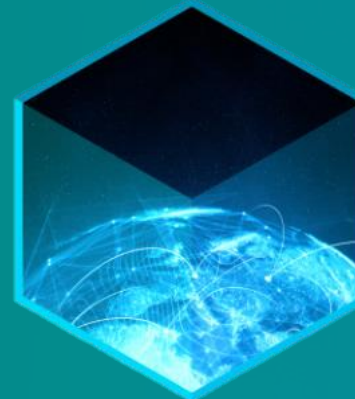
neo Usability

Interaction with the system will take place clearly and easily via a highly intuitive user interface – so you can focus on what really matters in your business.



neo Collaboration

Think to count on a system that enables a secure connection of all users and external suppliers at the same time.



neo Cyber Security

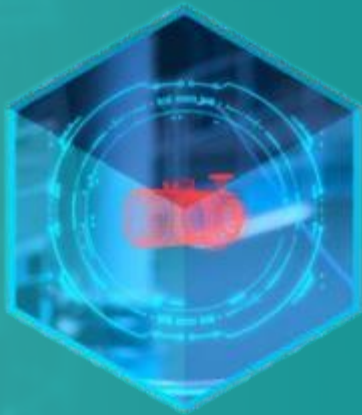
“Security in Depth” because security is top priority. Plant security, Network Security, Web Security, System Integrity, Security Standards, Charter of Trust



Process Automation – THINK neo.

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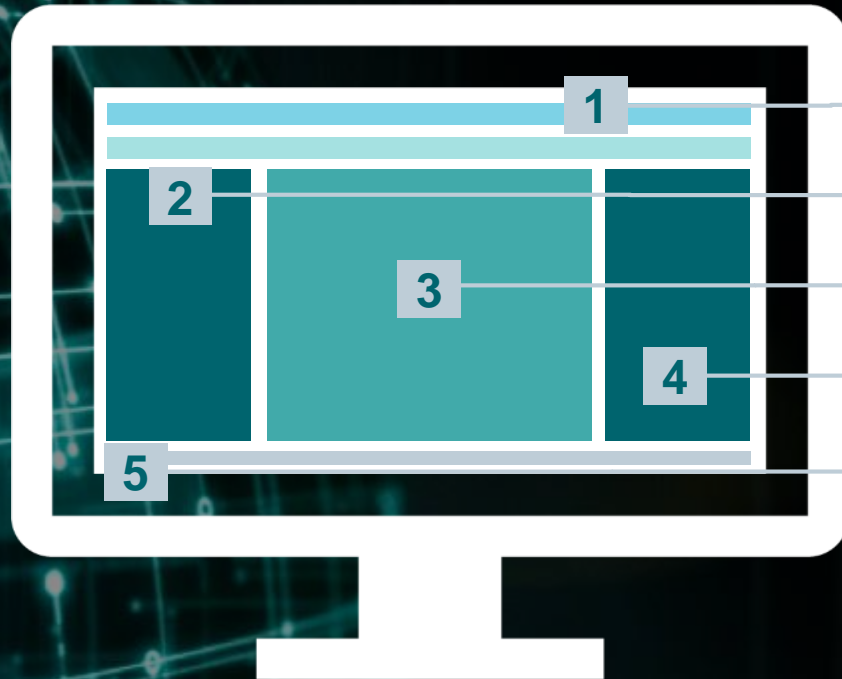
neo
Usability



neo Usability

The new Workbench Concept

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- 1 Header**
- 2 Navigation**
- 3 Content**
- 4 Sidebar**
- 5 Feedback bar**

- Highly intuitive User Interface
- One workbench for all applications and tasks
- Reduced workflows, steps and complexity
- Guides new users
- Maximum efficient engineering

One easy to use workbench for all tasks and users!

neo Usability

One object-oriented system platform

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- Consistent data management thanks to object-oriented data model
- A change in the process object is immediately updated in all its other facets

Easy handling and change of objects – with a few clicks to any information!

Process Automation – THINK neo.

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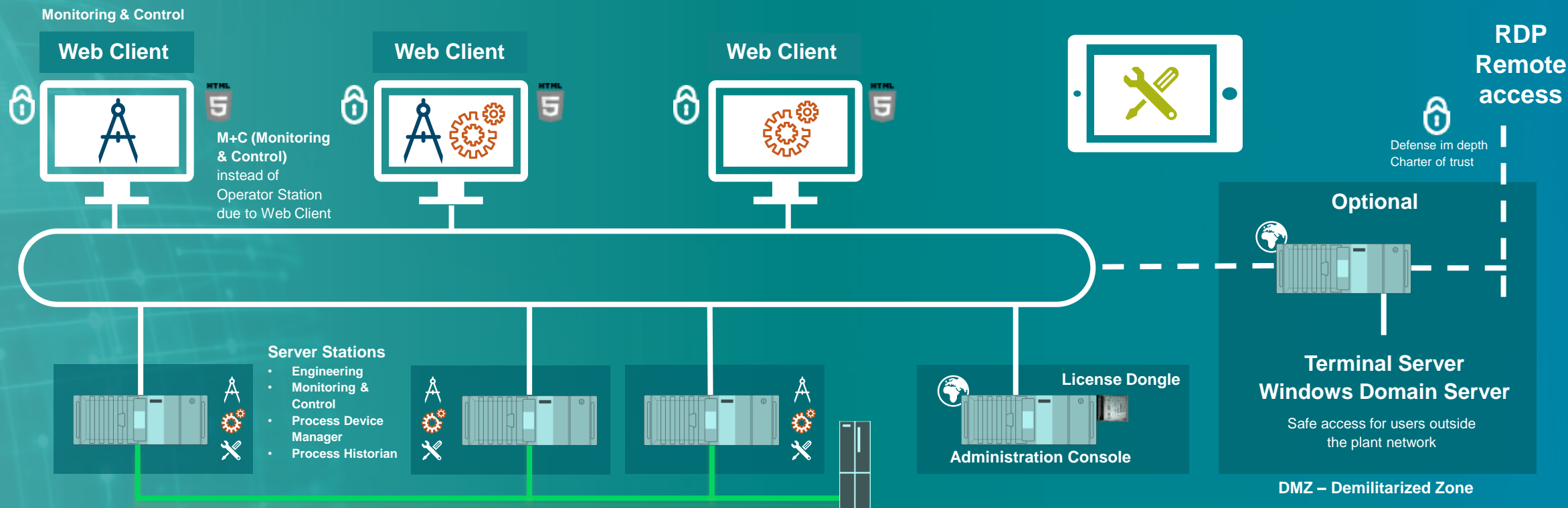
neo
System Access



neo System Access

Zero Installation Client, Plant Central Software Licenses Management

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SIMATIC PCS neo needs no internet connection if you need no remote access/ cooperation in operation phase!
A terminal server can be added as an additional protection layer to protect DoS attacks (via change of protocol to RDP).

The possibilities of system access allows new ways of cooperations and business models between all partners in plant engineering and operation like Solution Partners, End Users, EPCs and Siemens. An important ability also in the future of modular plants.

Process Automation – THINK neo.

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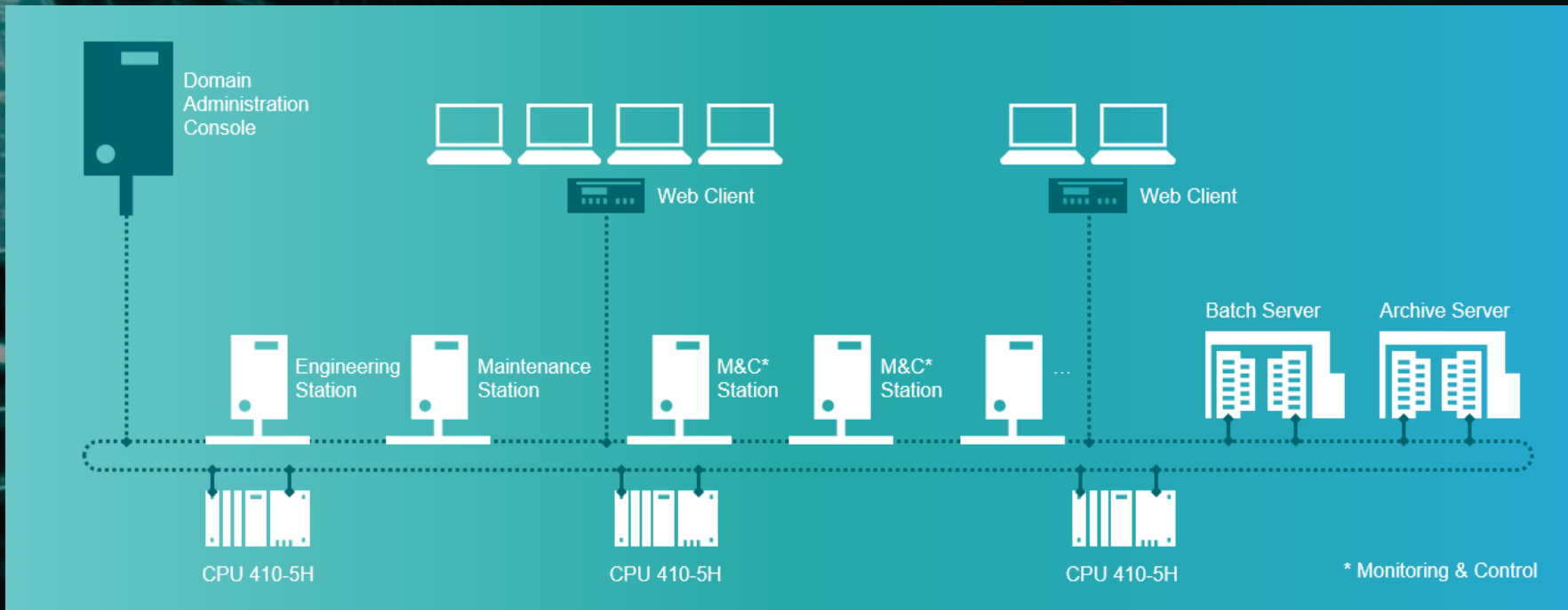
neo
Scalability



neo Scalability

Highly flexible plant architecture – one example of many possible

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- Completely HTML5-based system setup
- Flexible web-applications within a web-frontend-backend-architecture
- Immediately start working with your Web Client
- Add further stations (Office PCs) flexibly – only HTML5-webbrowser required
- Access all assigned content (Engineering, M&C, etc.) through your web-client

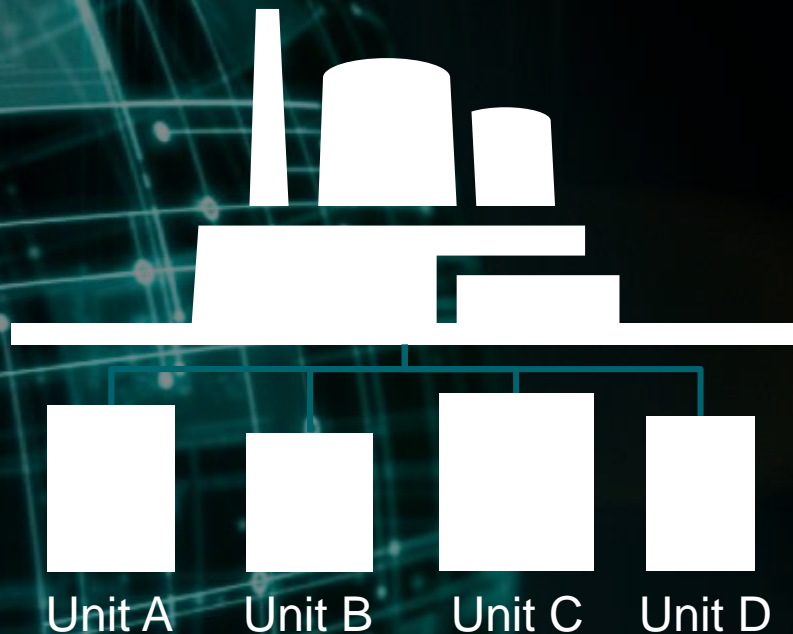
**SIMATIC PCS neo architecture adaptable to all requirements -
from smallest lean systems with one single station up to huge redundant systems.**

neo Scalability: Modular Automation*

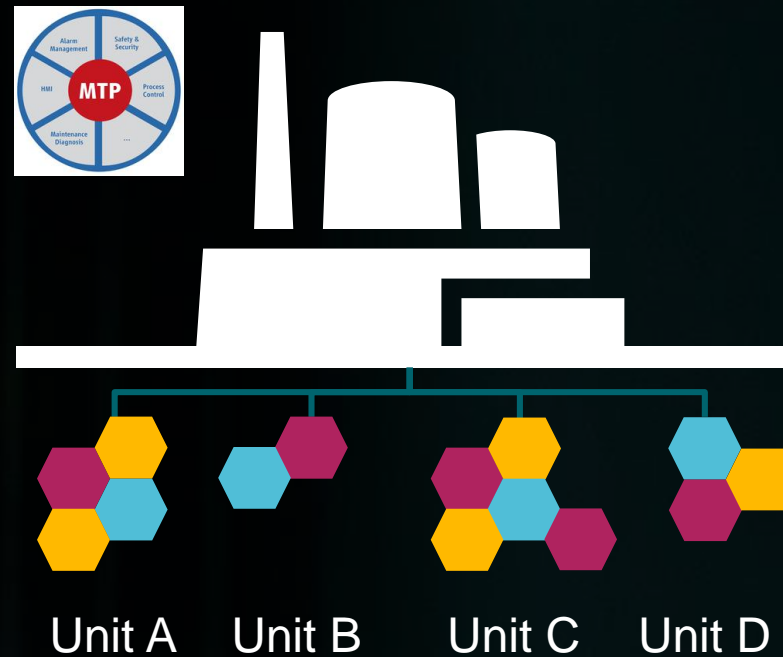
A major lever to boost engineering efficiency

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From modularization of a plant ...



... to modular production



- Modules/ Package units with an own automation interoperate with an orchestration DCS System via the open Industry Standard MTP defined in working groups at ZVEI, NAMUR and ProcessNet.
- Better interoperability with easy and flexible integration of manufacturer independent process modules.
- Plug-and-Produce on the technological level.
- Supervisory control of large hierarchical systems, with the comfort of an integrated Process Control approach.

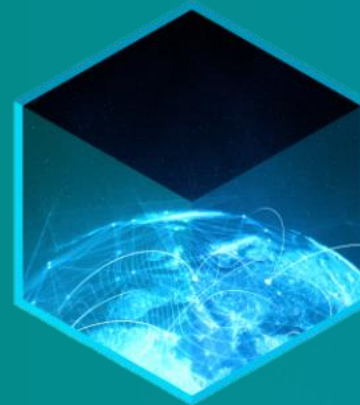
SIMATIC PCS neo realizes the modular plant approach and MTP in it's complete engineering philosophy!

Process Automation – THINK neo.

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neo
Collaboration



SIMATIC PCS neo

Multi-user Engineering builds on 3 major pillars*

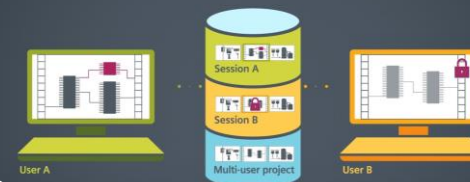
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Secure Access to Engineering Project



- Easily give access to the experts who need it.

Intelligent Session Management



- Real co-working in one file
- Lock parts for you (transparently shown to all project members)
- Afterwards publish changes to the team



HW Independence



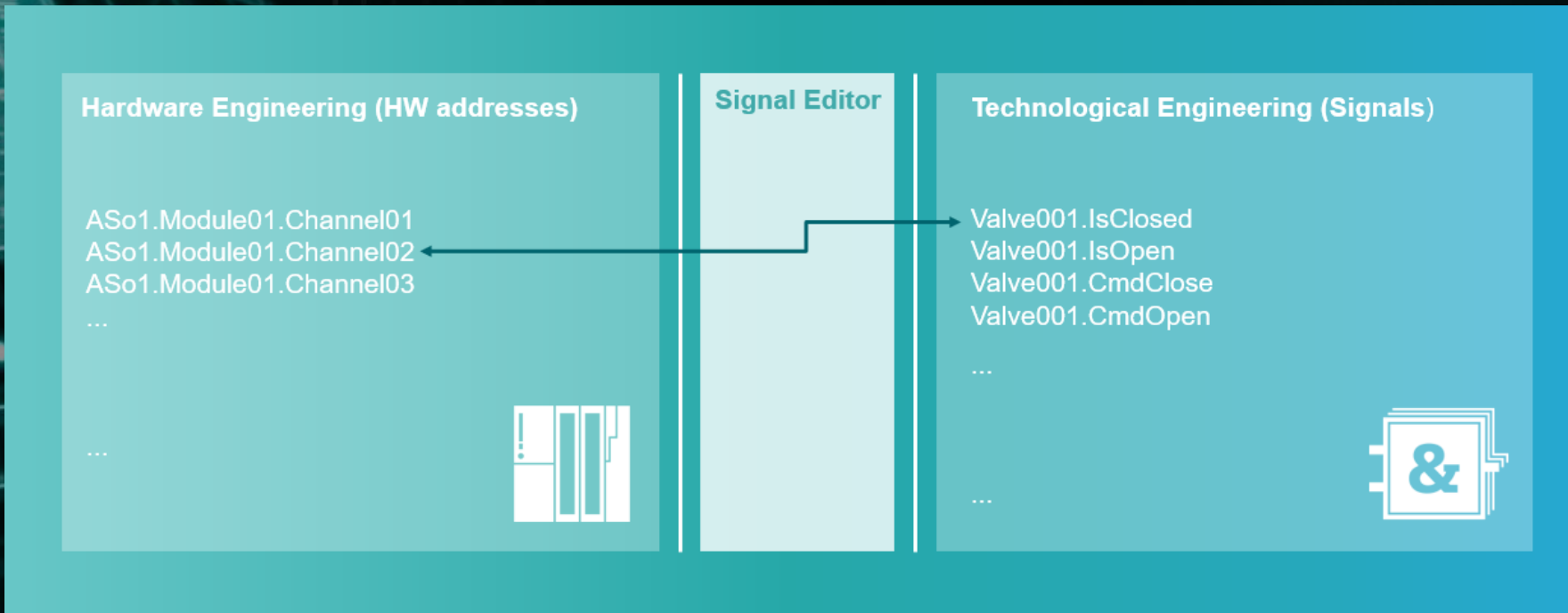
- Using any device at any time
- For modern working structures in the process industries (Future of Work)

*simplified scheme

neo Collaboration

Flexible, late hardware binding

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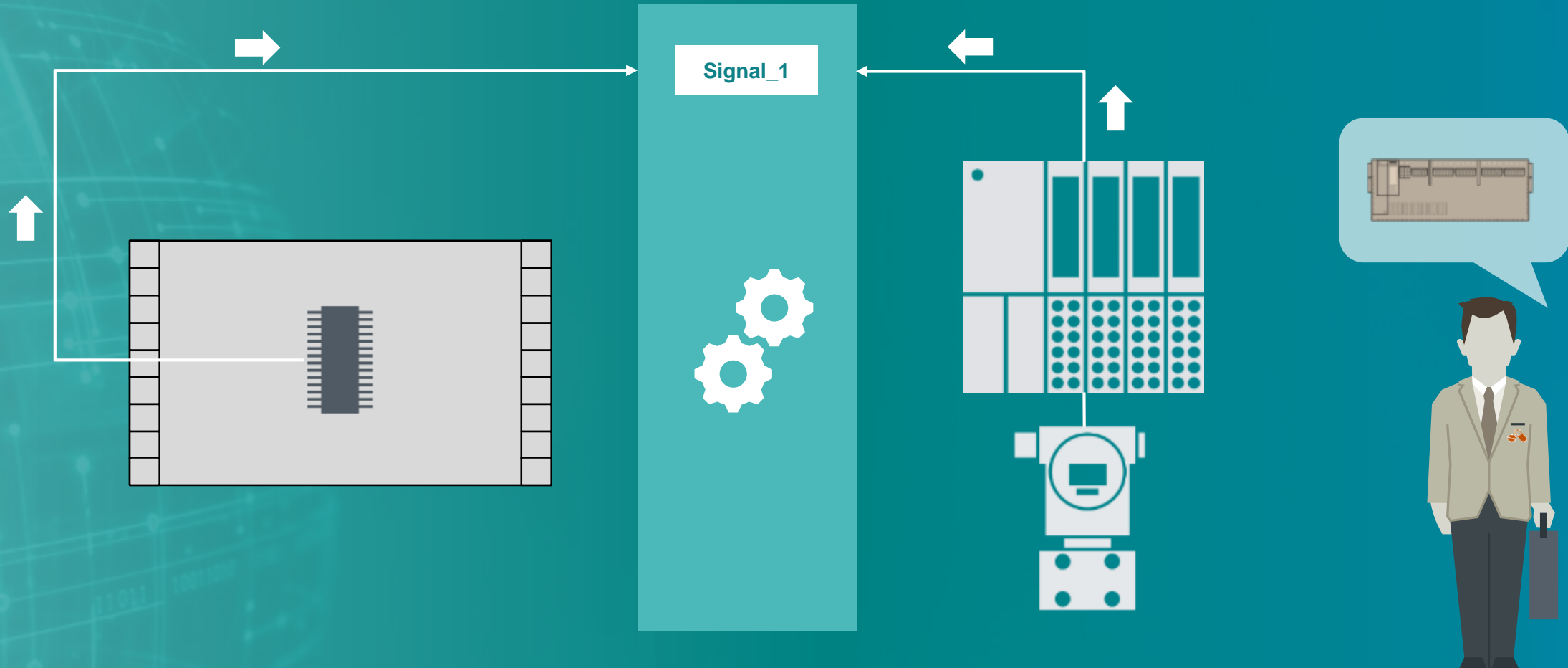
- Possibility of parallel Hardware and Technological Engineering
- Change hardware at any time
- Flexible project engineering
- Complete projects faster and more flexible
- Ensure highest project accuracy

Realizing tasks in the order that fits best to the project – independent from any system restrictions!

neo Collaboration

Flexible, late hardware binding

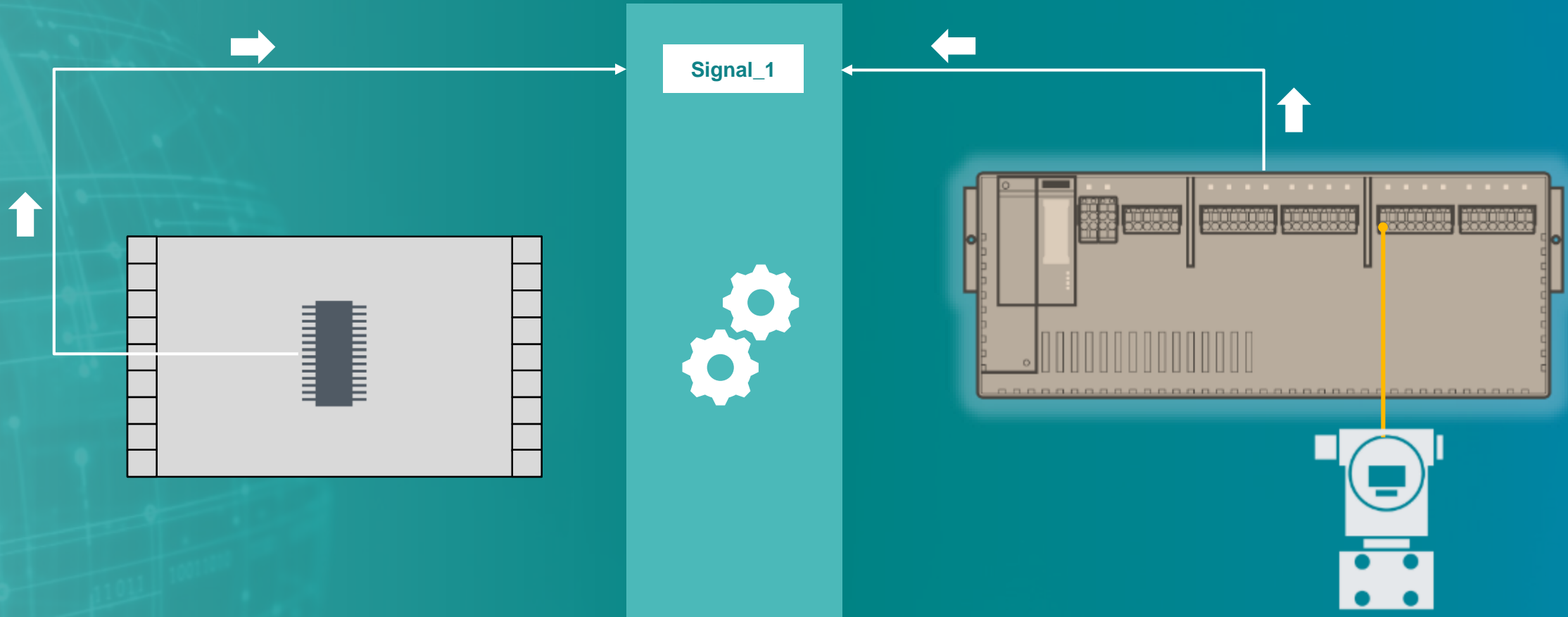
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neo Collaboration

Flexible, late hardware binding

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Process Automation – THINK neo.

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Cyber Security



SIMATIC PCS neo Security as a top priority today and tomorrow

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Security by Default

- SIMATIC PCS neo provides Security - right from the Installation
- Security-measures are pre-selected by default

Secure Access

- All functions require Authentication and Authorization (single sign-on)
- 2-factor Authentication

Central Administration

- Transparency on configured Security settings
- Ease of Administration to maintain Protection-Level over the plant lifecycle

Security by Design

- Communication security based on certificates
- IEC 62443-conform development process

Defense in Depth

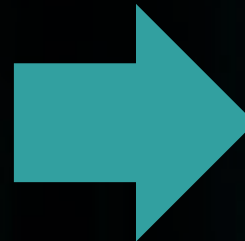
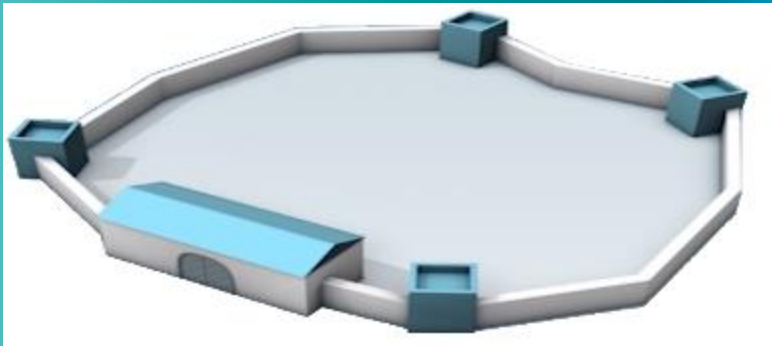
- Proven security portfolio, e.g. Firewalls, Network Components, Virus Scanners, Whitelisting

Defense-in-Depth Security Architecture

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Security measures in the past

- Simple protection systems
- One gate / single access point
- Simple overcoming of security measures possible



Defense in depth security measures

- Deep graded security architecture / protection systems
- Several different security measures
- Difficult access for an attacker
- An attacker has to invest a lot of efforts and time against each measure adopted



Defense-in-Depth Security Architecture

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Plant security

- Physical access protection
- Process and guidelines
- Holistic security monitoring

Network security

- Cell protection
- Firewalls and VPN

System integrity

- System hardening
- Process and guidelines
- Patch Management
- Detection of attacks
- Authentication and access protection

The Hardware and Network Platform of SIMATIC PCS neo

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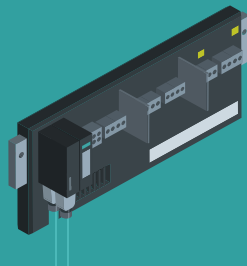


SIMATIC PCS neo

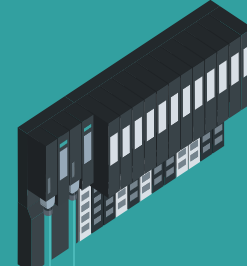
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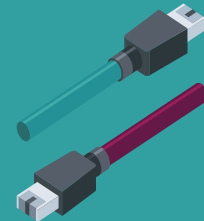
SIMATIC CPU 410-5H



Compact Field Unit (CFU)



ET 200SP HA



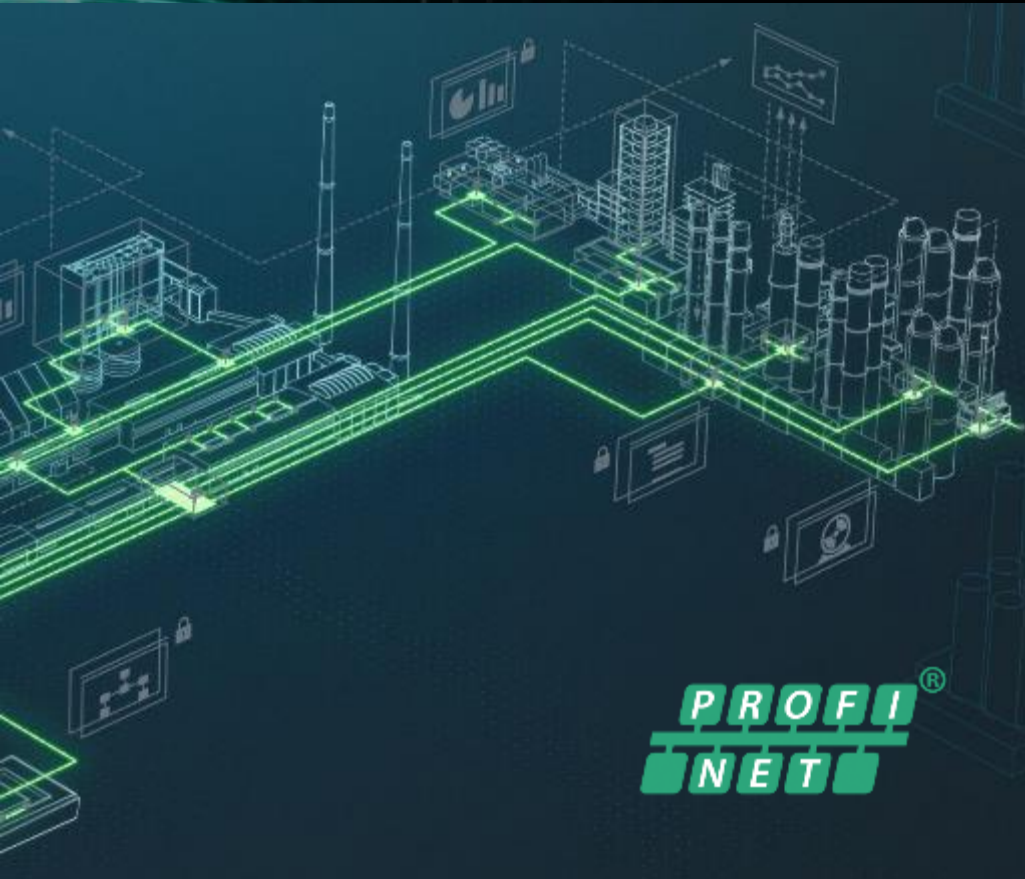
PROFINET/PROFIBUS

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Common Hardware and Network Platform with SIMATIC PCS 7

SIMATIC PCS neo - Innovative I/O periphery & controller hardware with PROFINET communication

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SIMATIC PCS 7 Version 9 opens up new opportunities with its new hardware platform based on PROFINET standard.

PROFINET Key Features

- **Highest availability on demand**
 - Scalable Redundancy
 - Configuration in Run
- **Ease of use**
 - Plug & Produce
- **Ethernet in the field**
 - Higher data rate for more data
 - Seamless horizontal and vertical integration
- **Flexible architectures**
- **Investment protection**

PROFINET for communication down to the field level is the basis for digitalization

SIMATIC PCS neo

The flexible and high available I/O hardware platforms

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SIMATIC ET 200SP HA



High plant availability

- Redundant PROFINET communication down to field level
- Redundant I/O modules and power Supply
- High diagnostics and high density
- For harsh environment from -40 to +70° C
- For central and remote applications
- Direct 1:1 field wiring saves marshalling

SIMATIC ET 200SP



Flexible

- PROFINET communication
- Push-in technology
- Compact design with small footprint

SIMATIC CFU



Reduction in cabling cost

- Field distributor brings PROFINET down to the field level
- Smart combination of Standard DI/DO and Profibus PA channels
- Plug & Produce with late hardware binding
- Exchange of field devices and expandability during operation
- Fast commissioning, servicing and life cycle costs

SIMATIC ET 200iSP



Hazardous areas

- Redundant PROFIBUS communication
- Suitable for gas/dust atmospheres in Ex zone 1, 2, 21 or 22
- Modular and flexible engineering, commissioning and cabling with low effort

High-End Rack PC for Industry (SIMATIC IPC647E / IPC847E) - The basis PC Hardware for SIMATIC PCS neo V3.0

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+ More user-friendly

- New enclosure concept (front door, LEDs, drives)
- Easy modification

+ Latest technology and top system performance

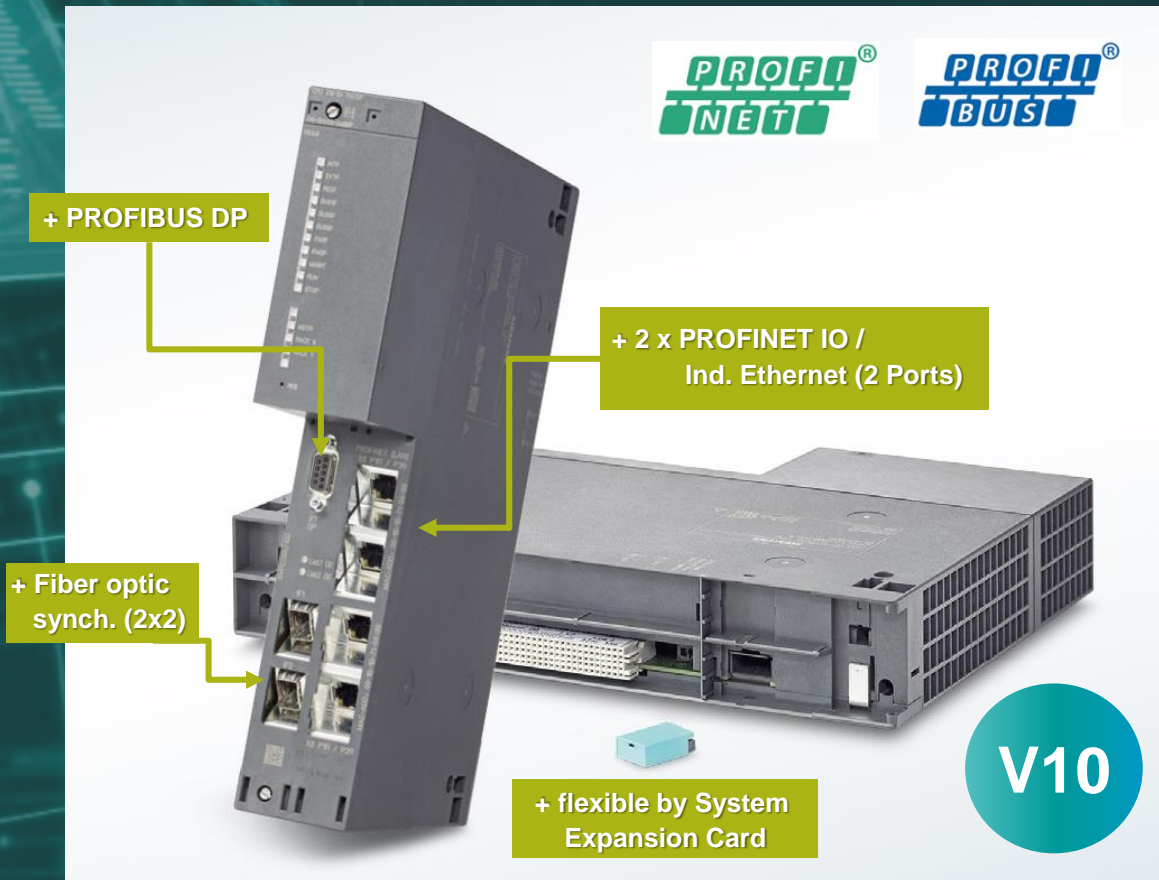
- Intel Xeon / Core i processors ("Coffee Lake" / 8th Generation)
- DDR4 memory, up to 64 GB, ECC opt.
- USB 3.1 Gen 2 and Type C
- M.2 NVMe SSD internal (PCIe 3.0 x4)
- 3x graphics interfaces with support for 4K monitors
- Windows Server 2016

+ Greater flexibility and security

- More PCI Express slots / all generations 3 in IPC847E
- 3x Gigabit Ethernet
- TPM 2.0 (optional)

SIMATIC PCS neo builds on the most advanced automation controller SIMATIC S7-410

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Investment Protection

- Same S7-410 Hardware as in PCS 7
- Usage in Neo by simple firmware upgrade to V10



Integrated Interfaces

- 2 x PROFINET IO or Ind. Ethernet (each with 2 ports)
- 1 x PROFIBUS DP
- 2 x two wire fiber optic for flexible CPU redundancy



Robust Design

- Conformal coating
- Enhanced temperature range up to 70° C
- Additional security (SysLog support, field interface locks)
- Memory self healing mechanism

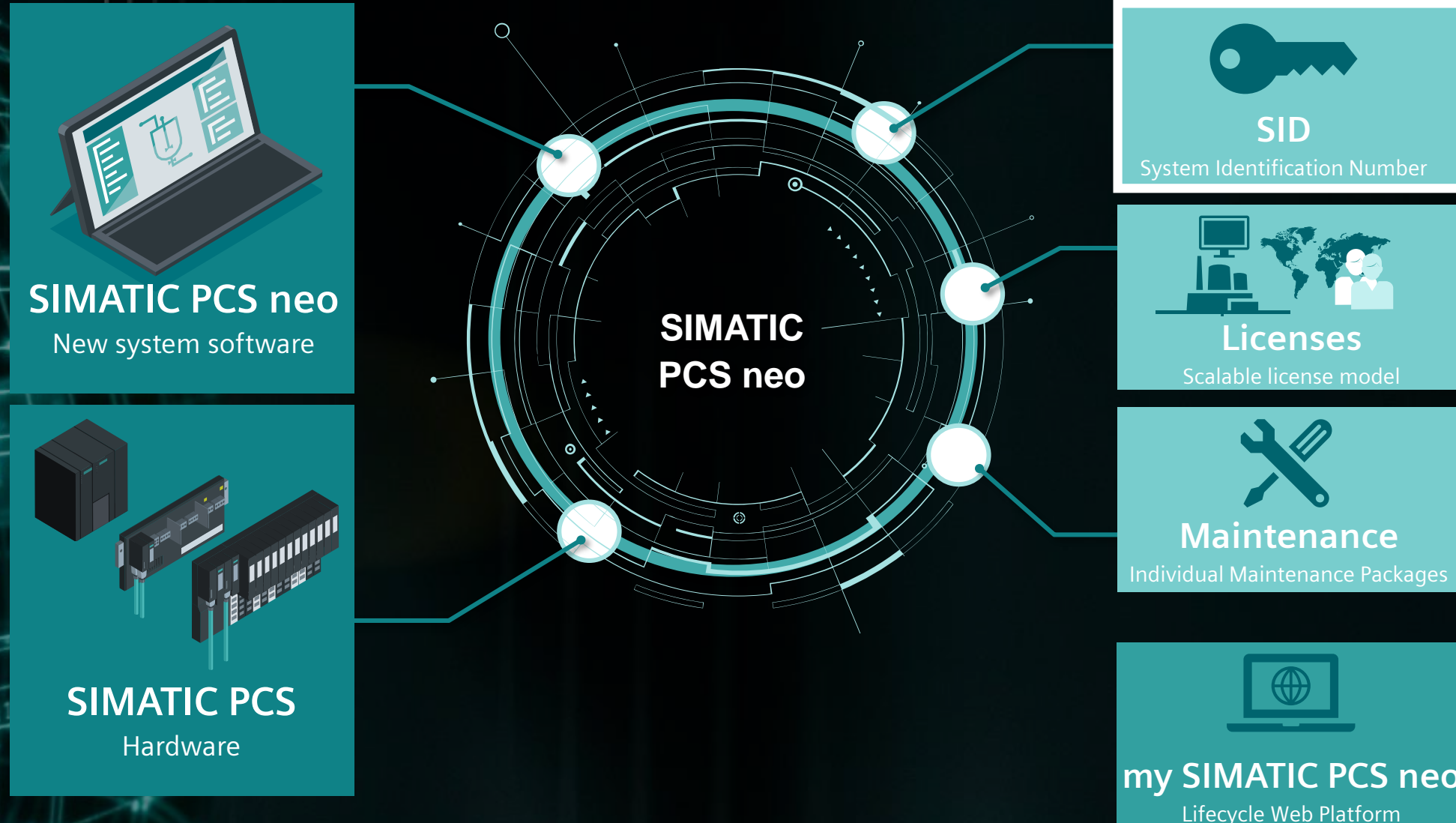


Optimized for Process Control

- System Expansion card allows “Pay what you use”:
No “Pre-Payment” for reserve capacity
- One CPU Hardware for all automation tasks

SIMATIC PCS neo – More than just a new system

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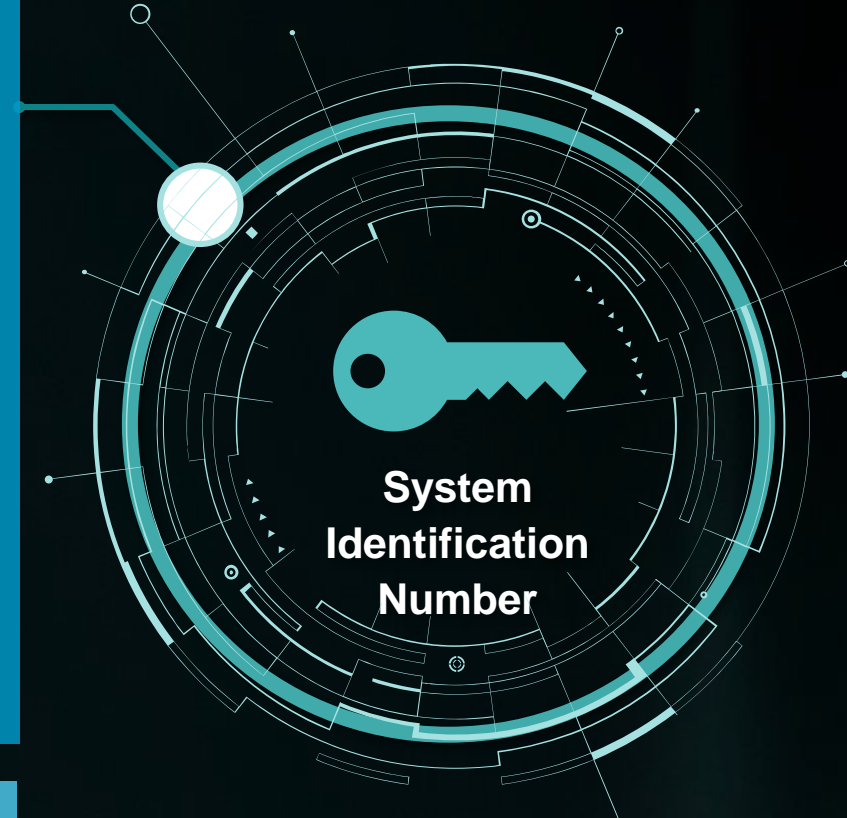
System Identification Number (SID)

Register once – and benefit for the entire plant lifecycle!

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Key benefits:

- The “**house number**” of each SIMATIC PCS 7 and SIMATIC PCS neo system/plant in the field
- Your exclusive key to efficient support and optimum plant protection
- Quicker, more specific assistance saves time and shortens, or entirely prevents, plant downtimes
- Rapid, holistic fault rectification, based on the current plant configuration
- Long-term error correction by documenting all previous queries
- Optimum maintenance tailored to your installation using our Software Maintenance Packages
- Maximum system transparency for our customers over the entire lifecycle
- Free registration



Customer



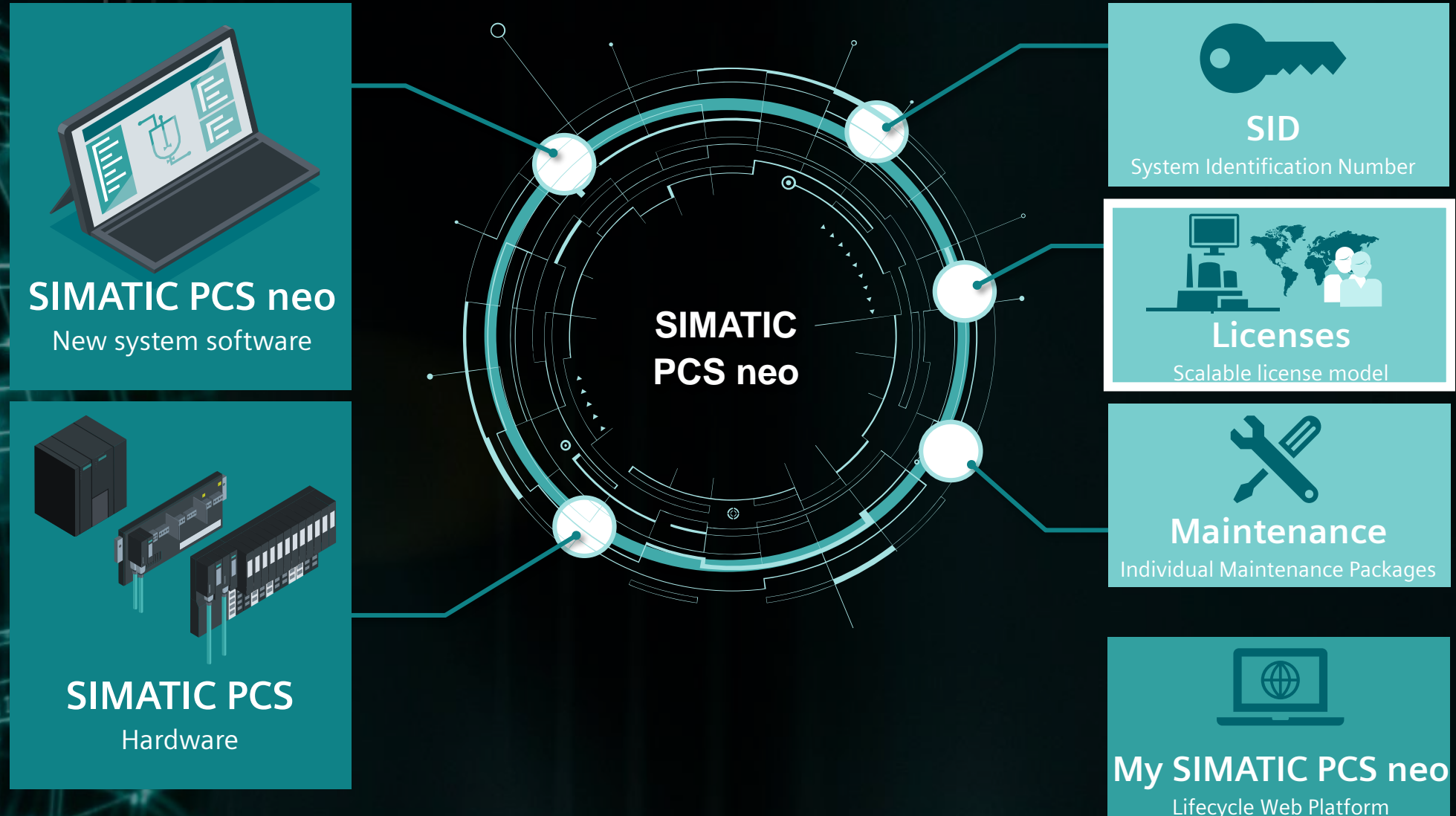
Plant
Location



SID

SIMATIC PCS neo – More than just a new system

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Perpetual and SW maintenance for V3 as the starting point for dynamic pricing models defined



PCS neo
V3

Perpetual SW license + yearly SW maintenance fee
SW license (and HW) with an onetime upfront payment in combination with a maintenance contract and fee.

Initial payment perpetual + SW
Maintenance periodical

With the Perpetual license model we lay the foundation to think about further payment models together with our customers.

Future

Subscription

Software rental in combination with maintenance/service on a contract base.

Periodical fix payment during
contract duration

Pay per Use

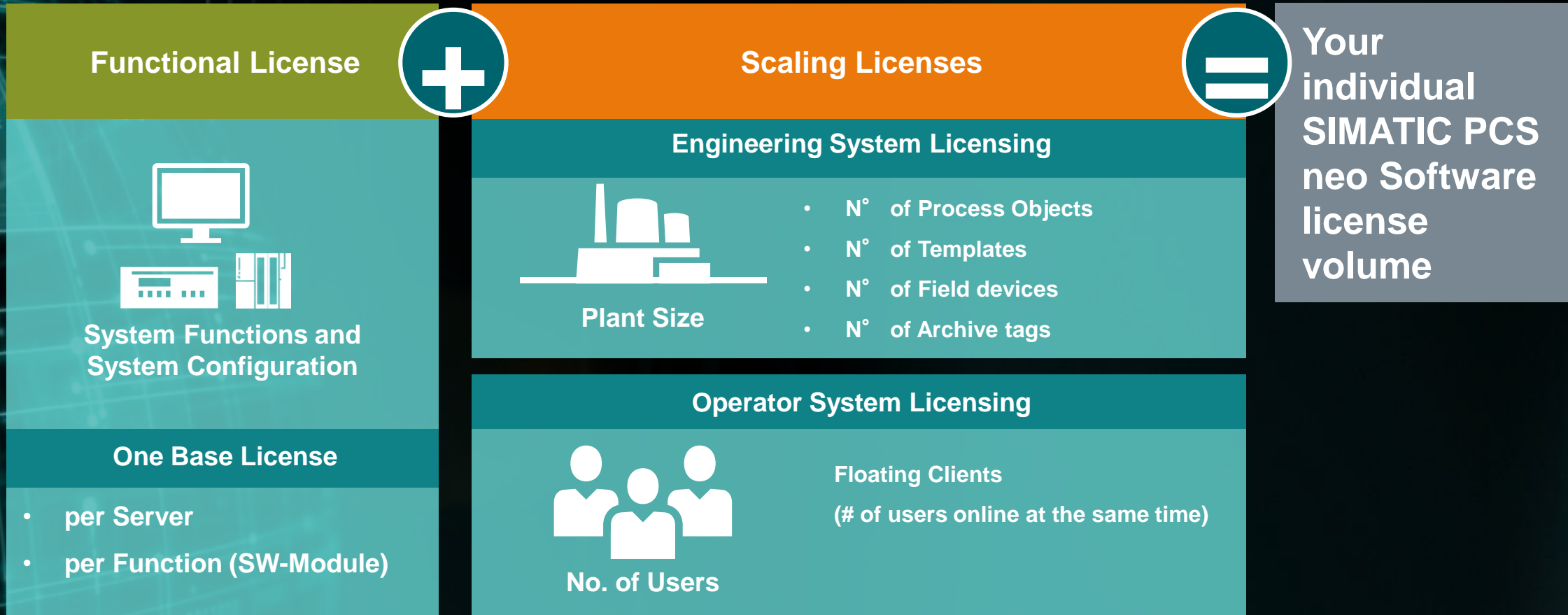
Software on a contract base per use.

By intensity of use

Simplified and customer-oriented license concept

Licenses and prices are scaling in 3 dimensions

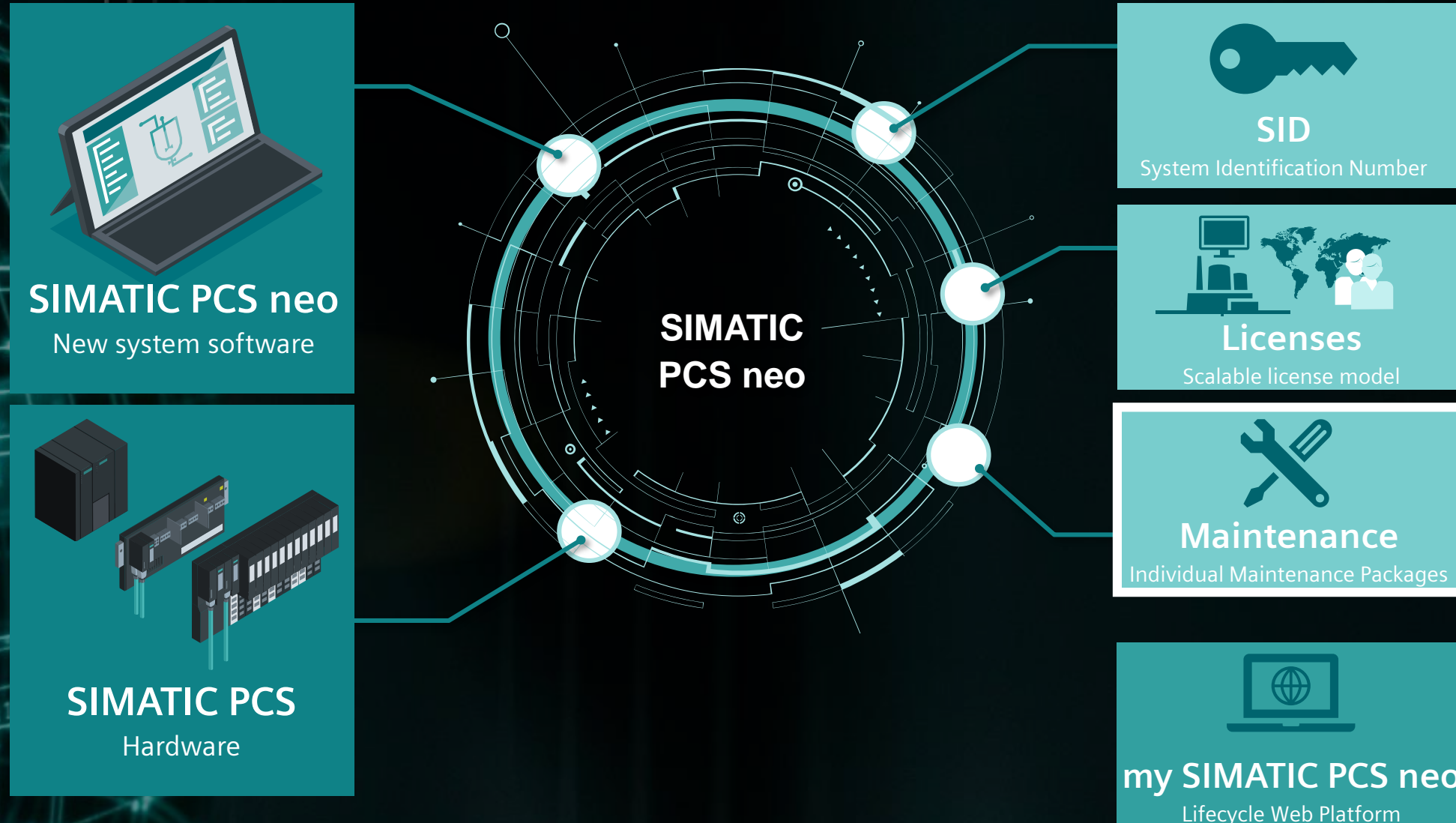
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- Customer and market oriented total price
- Easy to understand
- Easy to calculate during bid process

SIMATIC PCS neo – More than just a new system

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The flexible Software Maintenance concept across the entire lifecycle



Motivation:

- One key aspect of the new SIMATIC PCS neo license and maintenance concept are Software Maintenance Packages
- Based on a regular fee, the Software Maintenance packages provide our customers with a clear framework how to keep their plants running over the lifecycle and even to regularly update their plants
- In order to match the needs of our customers best, different Software Maintenance Packages will be offered, starting with the Starter Software Maintenance Package for SIMATIC PCS neo V3.0
- Software will always be sold together with Software Maintenance, independent from the channel. The Software Maintenance Packages are necessary to receive Upgrades, Updates and Technical Support.


Key benefits:

- Keeps customer's plant running and up-to-date and provides individualized support at transparent & predictable pricing framework
- A common Software & Software Maintenance contract offers our customers the advantages right from the start and ensures less administration effort



5 KEY TAKEOUTS

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PCS 7 is active DCS capable to cover comprehensive tasks in process industries, with new versions in development!

PCS neo is future oriented DCS currently with limitations!

Focus is on migration of existing systems to latest version of PCS7 (V9.0 SP2)!

NO pressure on migration to PCS neo!

Investment protection on field level is not endangered!

SIMATIC PCS neo

Enter a new world of process control

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THANK YOU!

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