

PROFINET – Solution Platform for Process Automation

Roma, 13 Novembre 2019







High availability and flexibility for changes

■ Availability

- Continuous operation for many years
- Any stop = Loss of production = High costs

■ Redundancy

- Single failures shall not take down the process
- Redundancy increases availability
- Scalable redundancy through the entire system

■ Changes during operation

- Continuous modification of plants during operation
- Add new or change existing automation functions



State-of-the-Art

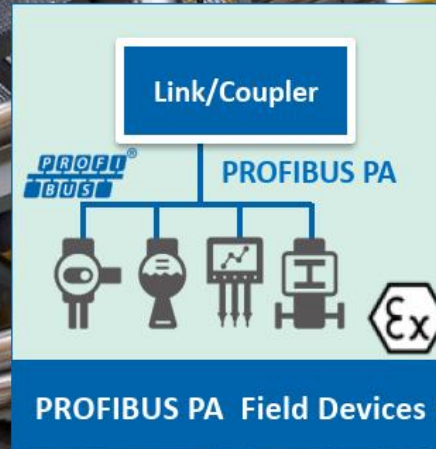
- Suitable for hazardous areas
- Communication and bus-powering
- Process automation topologies

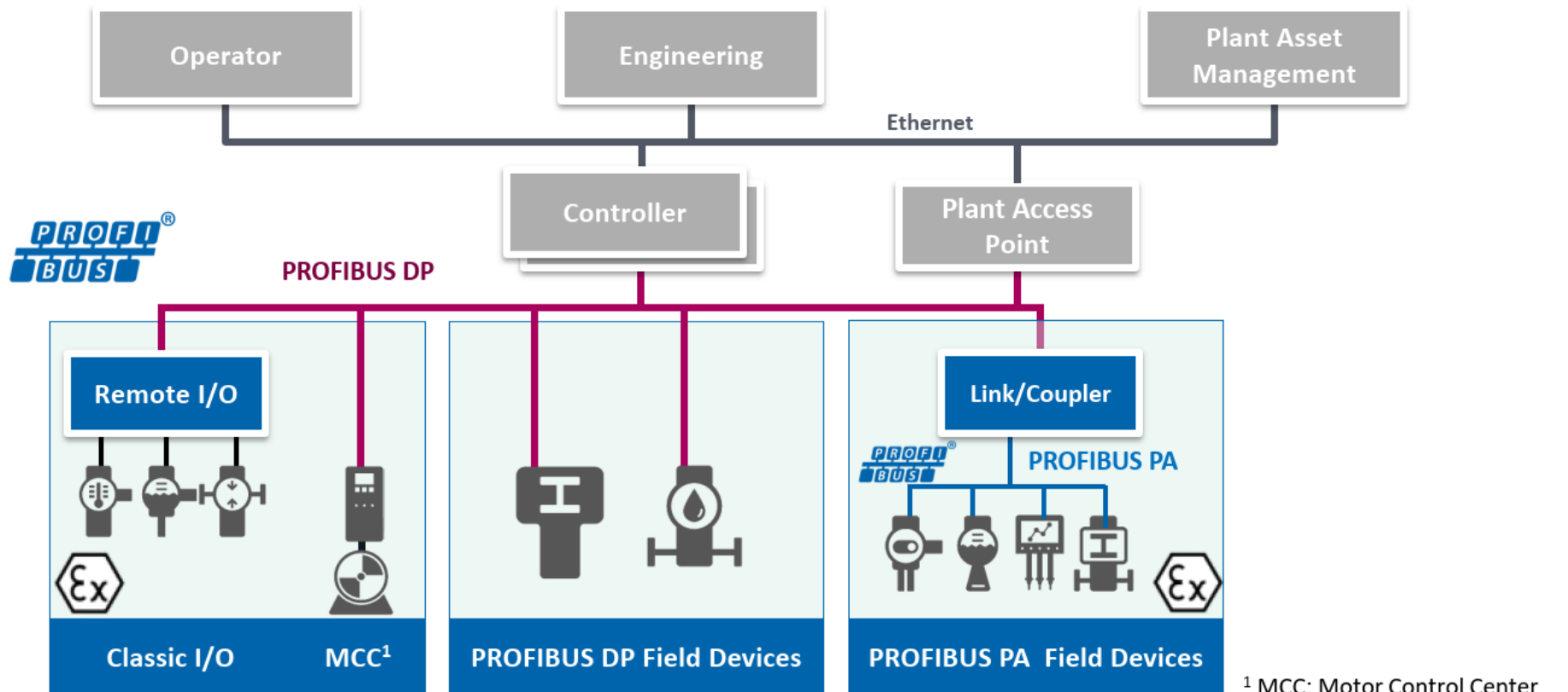
Future-Proof

- Investment protection through proxies
- FDI technology

Digital on the last mile

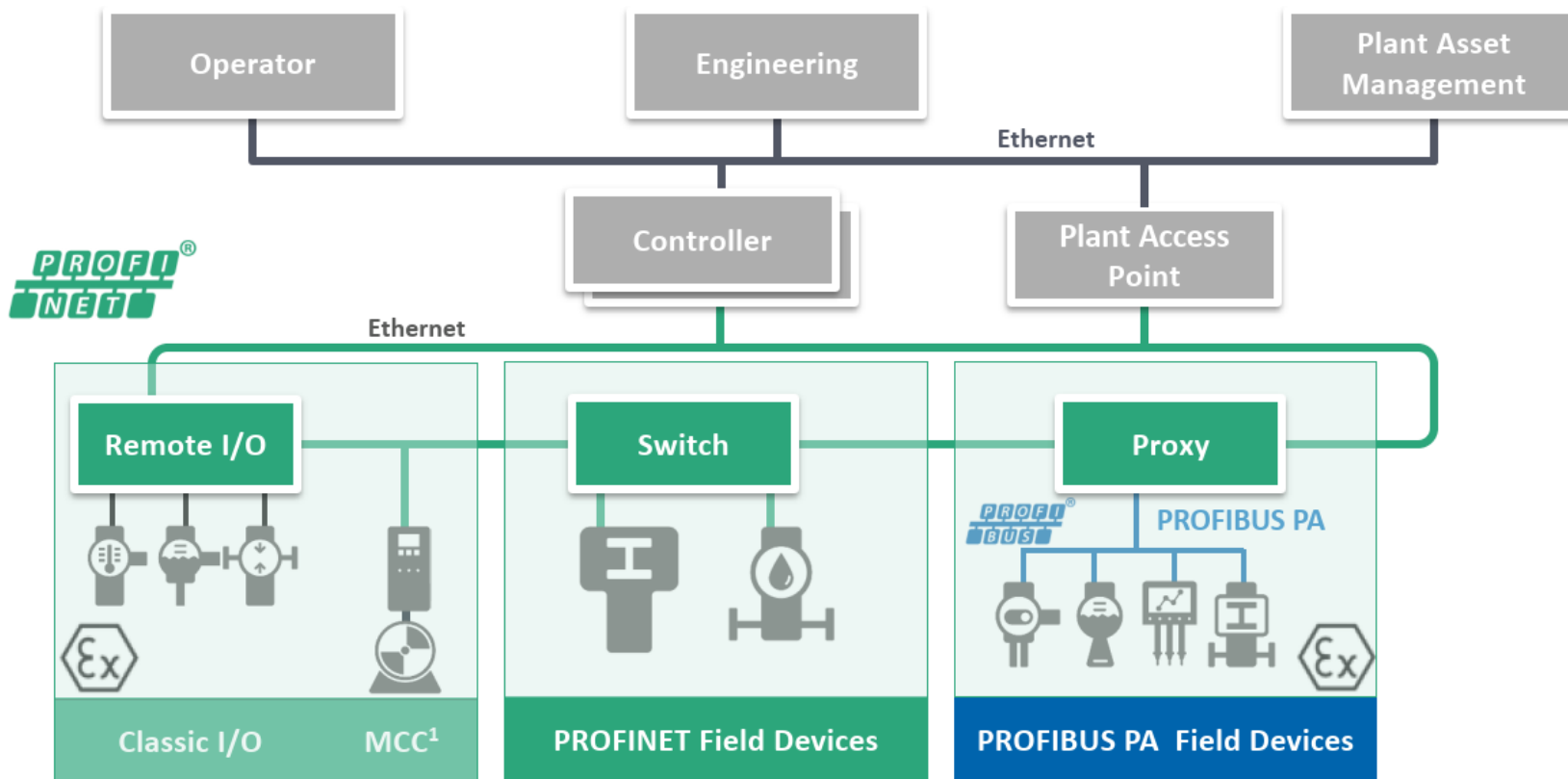
- NE107 diagnostics
- Remote configuration
- Easy device exchange with PA Profile





¹ MCC: Motor Control Center

PROFINET in Process Automation Flexible Platform available today



PROFINET in Process Automation

More than just a new Standard

- Flexible, powerful, reliable communication
- Seamless redundancy / availability approach
- Configuration during operation
- NE107 diagnostics and NE131 device standard parameters
- Easy device replacement with PA Profile 4
- Many more ... - all covered by standards and profiles

Update of learning
outcomes required

PI Certified
PROFINET PA Engineer?





Vertical Integration

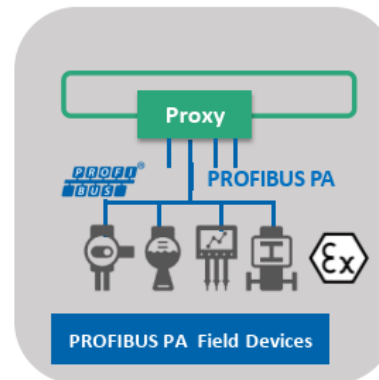
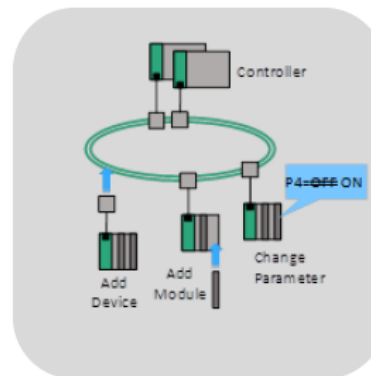
- Integration of Process Data into supply chains
- Enabling Industrie 4.0 solutions
- Full Plant Asset Management

Explicit Market Request

- Ethernet communication for Process Control demanded in NAMUR NE 168

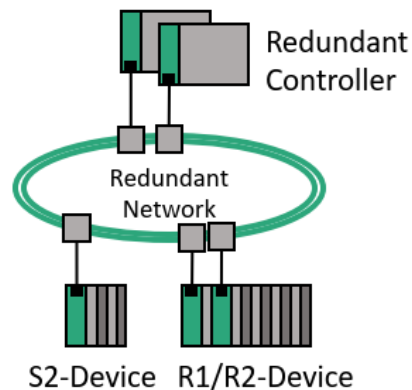
Important Features and Advantages

- Scalable redundancy solutions
- Dynamic reconfiguration during operation
- Easy Integration of PROFIBUS PA systems using Proxy technology

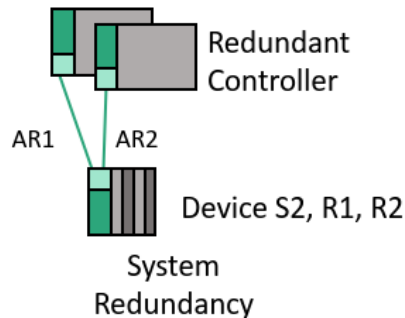




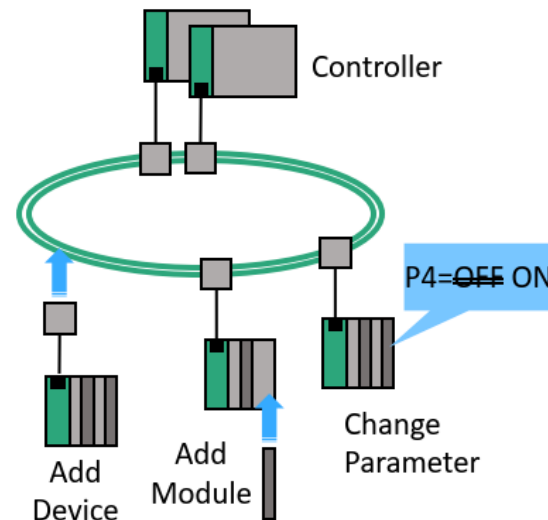
Of course, with PROFINET!



■ Scalable network redundancy



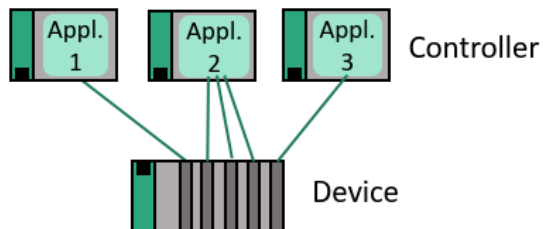
■ System redundancy



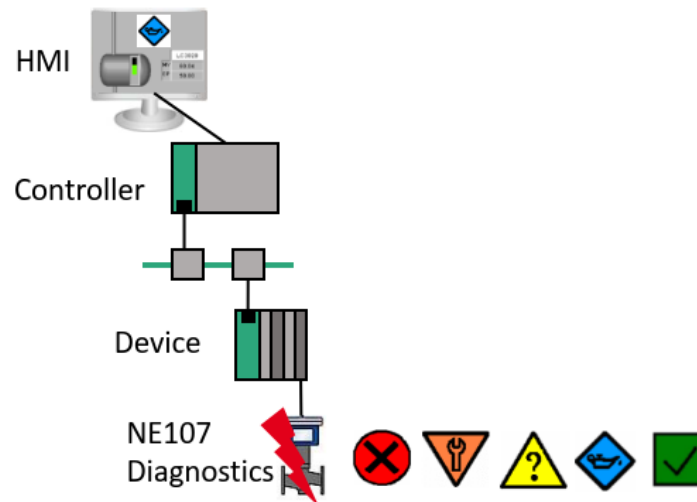
■ Dynamic reconfiguration



Of course, with PROFINET!



■ Shared Device



■ Diagnostics

PROFINET in Process Automation

Controller and remote I/Os Available today



Controller



Remote I/Os

Examples: ABB, Pepperl+Fuchs, R. Stahl, SIEMENS, Turck (see [PI Product Finder](#))

PROFINET in Process Automation

PN-PA Proxy solutions available today



- Power supply and communication for PROFIBUS PA devices
- Automatic system integration via GSDML generator and/or gateway driver
- Redundancy of gateways and power supplies
- S2 or R1 redundancy available



Examples: Pepperl+Fuchs, Phoenix Contact, SIEMENS, Softing (see [PI Product Finder](#))

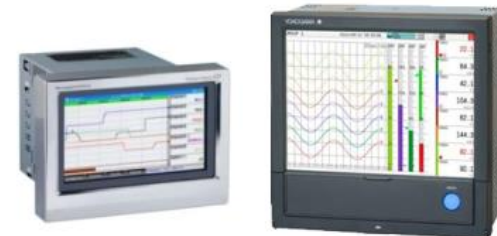
PROFINET in Process Automation Devices available today



Coriolis flowmeters



Electromagnetic flowmeters



Data Manager / Recorder



HART Multiplexers



Network Infrastructure



Actuators

Examples: AUMA, Endress+Hauser, KROHNE, Phoenix Contact, Schildknecht, Siemens, Thorsis, Yokogawa
(see [PI Product Finder](#))



How to ensure
interoperability?



■ High Availability

- Specified within the PROFINET standard
- Clear definitions for controllers and devices (PA requirements)

■ PI Guidelines

- PA view of the relevant PROFINET features
- Summarized and easy to understand

■ Certification of High Availability devices

- Independent Certification Partners (PITLs)
- Ensured Interoperability



☒ Optional Features:	Legacy, MRP, System redundancy S2, Dynamic reconfiguration
☒ Application Class	HighAvailability
☒ Netload Class	II

According to the requirements
for certification of PROFIBUS and PROFINET products*,
issued in circulation by August 03, 2021 the certificate is valid for life.

Board of PROFIBUS Nutzerorganisation e. V.

(Karlsson Schneider)
Karlsson Schneider

(Dr. Jörg Hähnschel)
Dr. Jörg Hähnschel

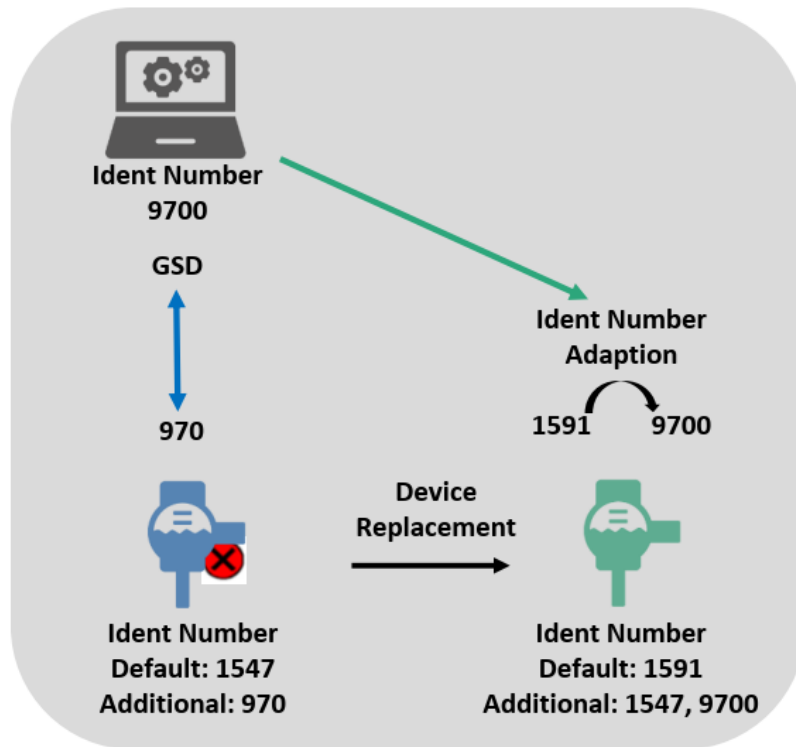


■ Device Interoperability / availability

- Device exchange during plant operation without interference with network configuration
- Profile for Process Automation Devices

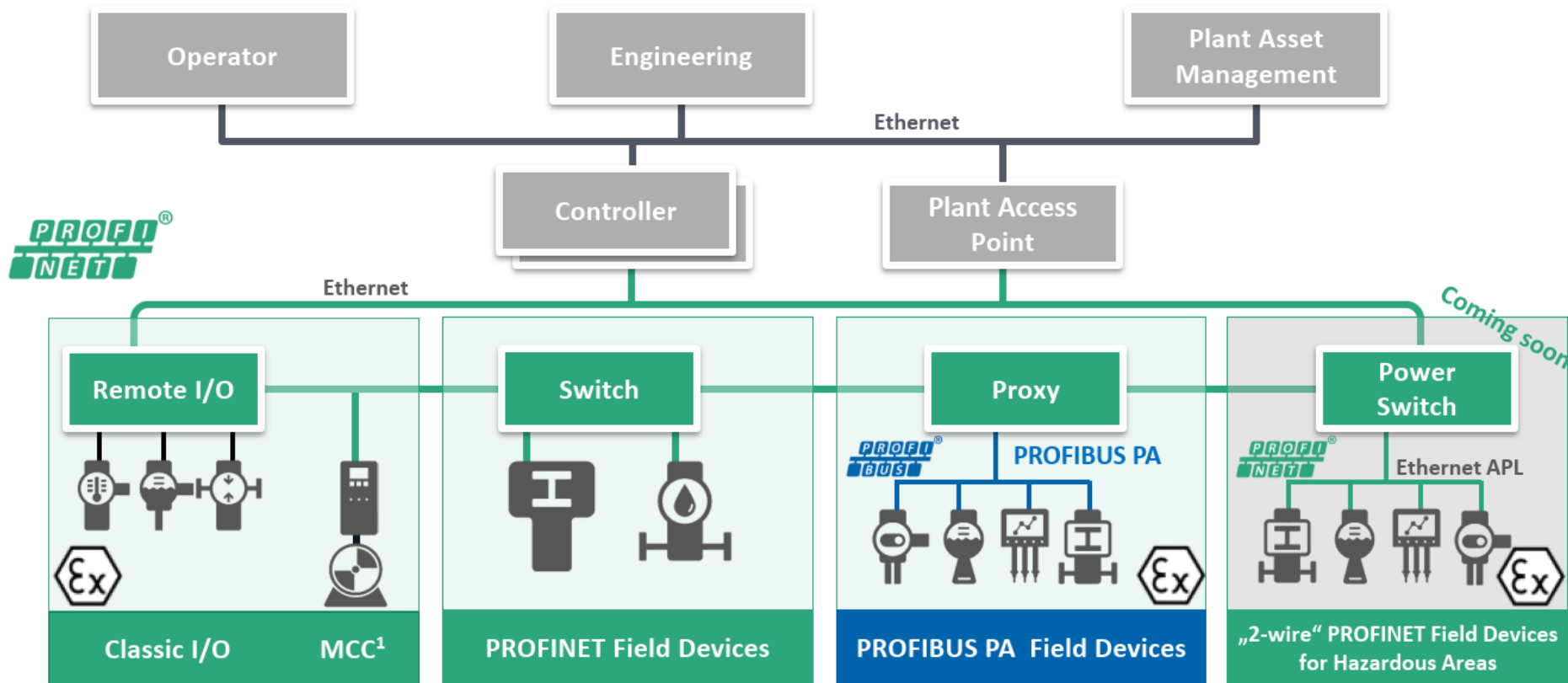
■ PA Profile 4 for PROFINET

- Independent of field device manufacturer and software edition of the device
- Same definition of cyclic measured control data (format, number, meaning)
- The generic Profile-GSDs define uniform measuring, control and diagnosis for any device class (Flow, Pressure, Level. ...) for simple DCS integration

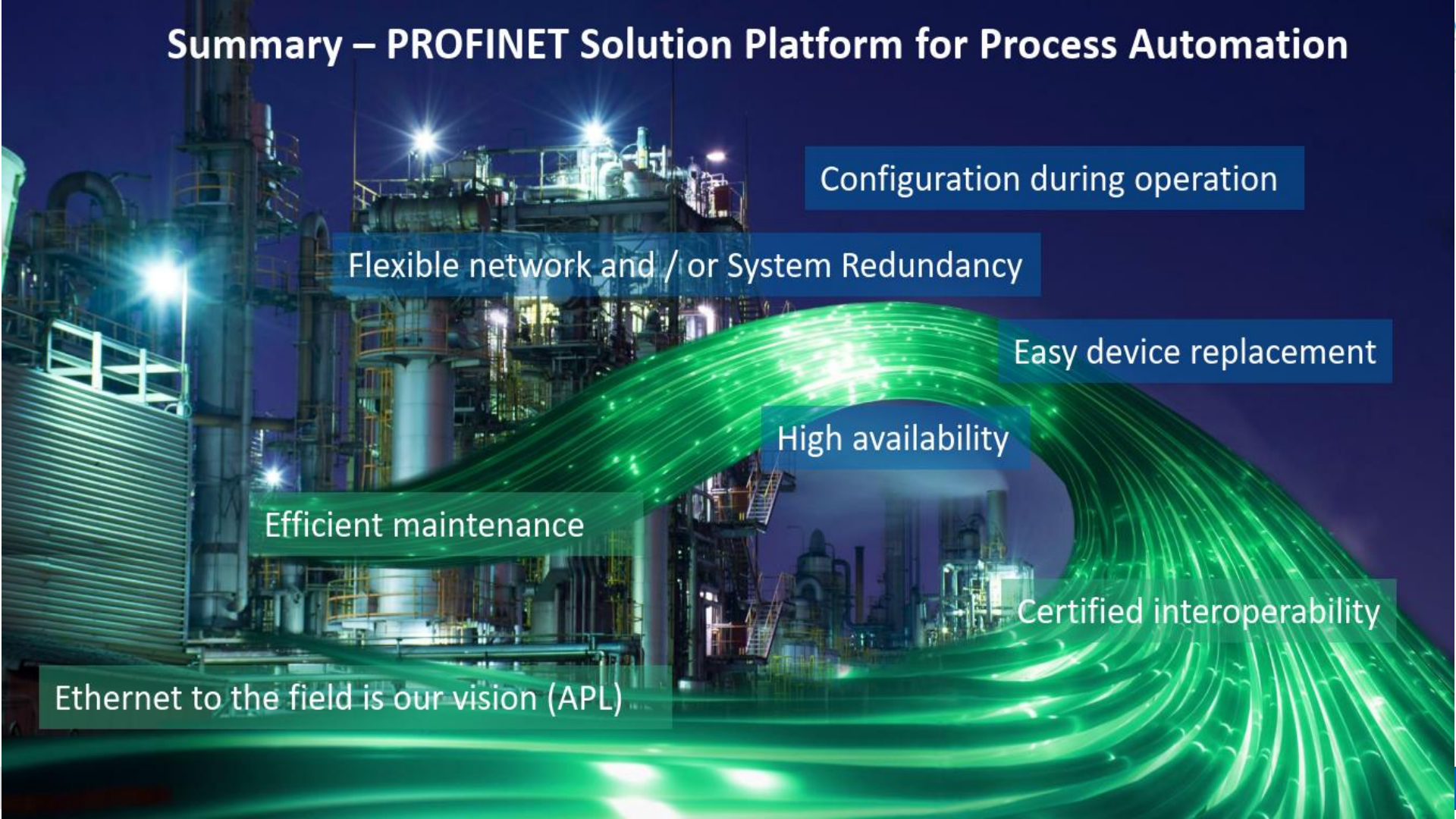


**PROFIBUS PA forever?
I want Ethernet everywhere!**





Summary – PROFINET Solution Platform for Process Automation

The background image shows a complex industrial facility, likely a refinery or chemical plant, at night. The scene is illuminated by various lights, creating a high-contrast environment. Overlaid on this image is a large, flowing, green, wavy line that represents a data stream or network flow, curving from the left towards the right side of the frame.

Configuration during operation

Flexible network and / or System Redundancy

Easy device replacement

High availability

Efficient maintenance

Certified interoperability

Ethernet to the field is our vision (APL)

