

PROFINET

Benefits



Dr. Paula Doyle
Chairman
PI Middle East

Agenda

Uniform
structures
Diagnostics
Performance
Integration
Innovations
Enhancement

PROFINET offers ...

... continuity and uniform structures

... scalable networks and performance

... seamless integration of existing systems

... new, innovative applications

... continuous enhancements

**PROFINET
offers ...**



**... uniform
structures**

Agenda

Uniform
structures

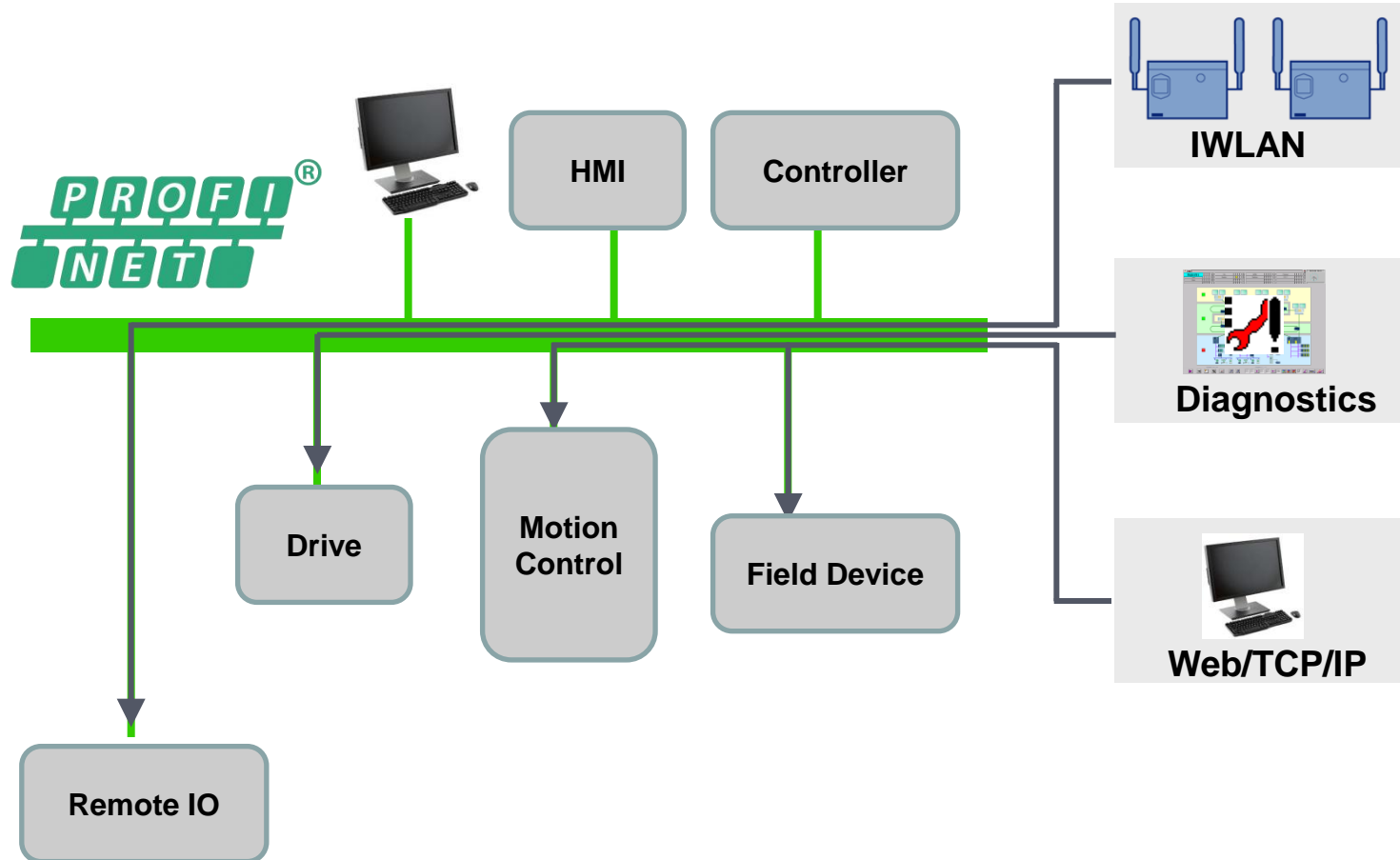
Diagnostics

Performance

Integration

Innovations

Enhancement



Agenda

Uniform
structures

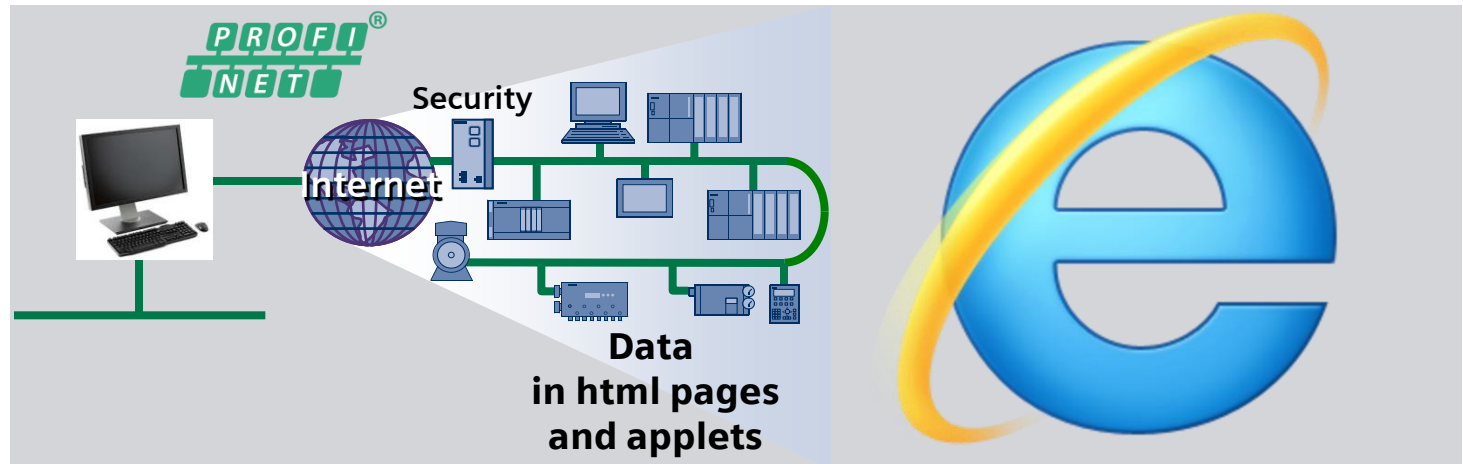
Diagnostics

Performance

Integration

Innovations

Enhancement



Access to your automation from anywhere in the world

- Via the integrated web server in automation devices
- With a standard Internet browser
- Regardless of engineering tool
- Easy remote diagnosis and services

Event-driven message dispatched by SMS or e-mail

PROFINET - innovative communications via TCP/IP and the Internet for automation applications, too!

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

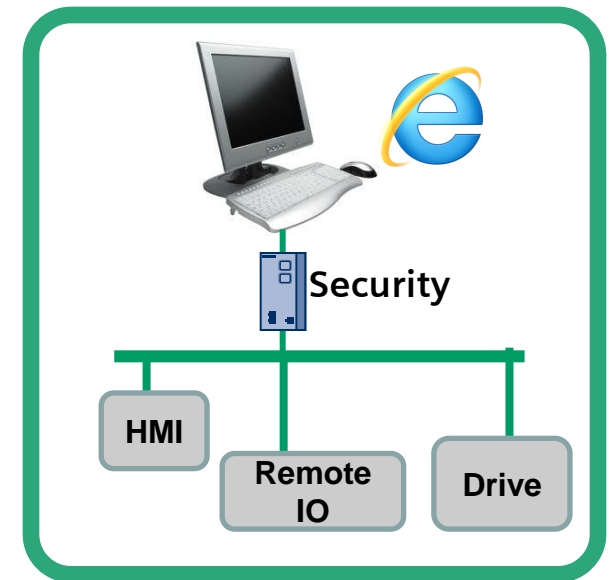
Enhancement

Offers protection from:

- Address errors and improper operation
- Unauthorized access
- Manipulation and espionage

Features

- Standard Security Protocols
- Easy User Interfaces
- Proven and certified security standards
(firewall, VPN, ACL...)



**Boost security and performance
in your production processes!**

Agenda

Uniform
structures

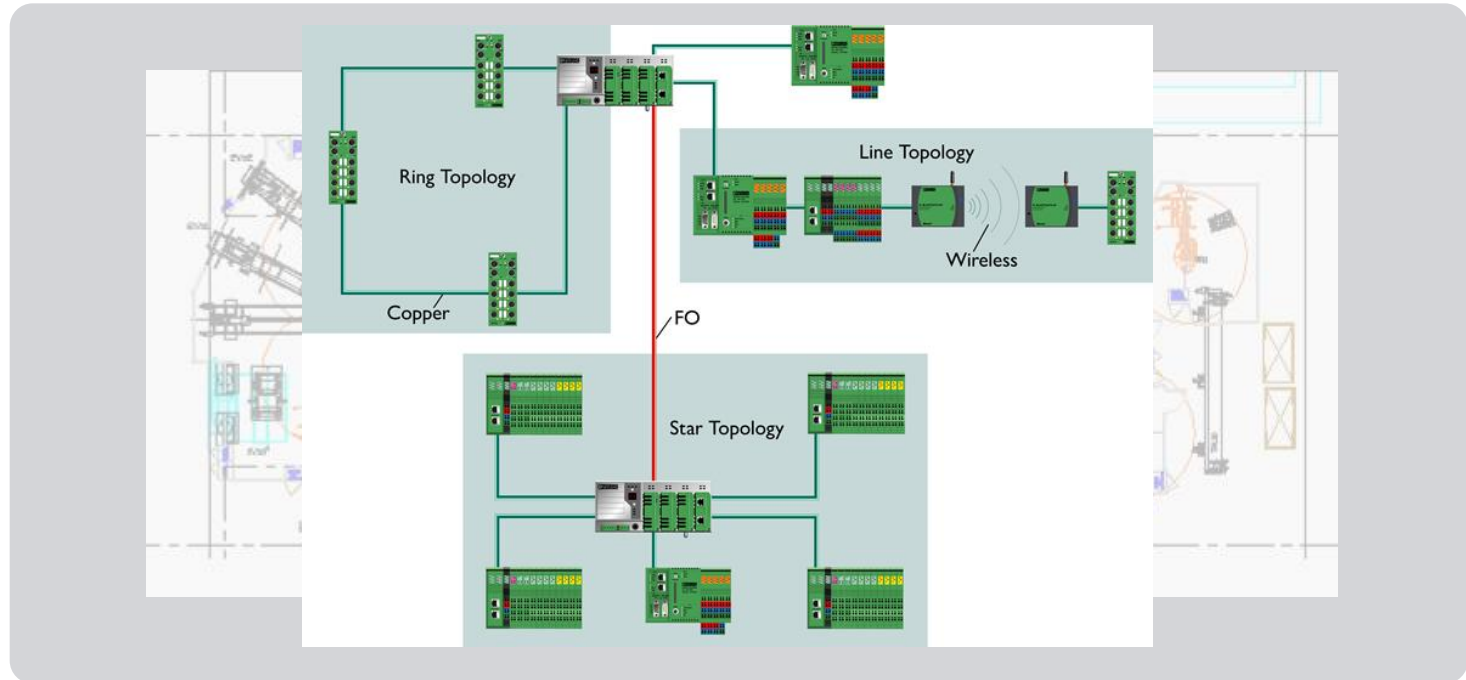
Diagnostics

Performance

Integration

Innovations

Enhancement

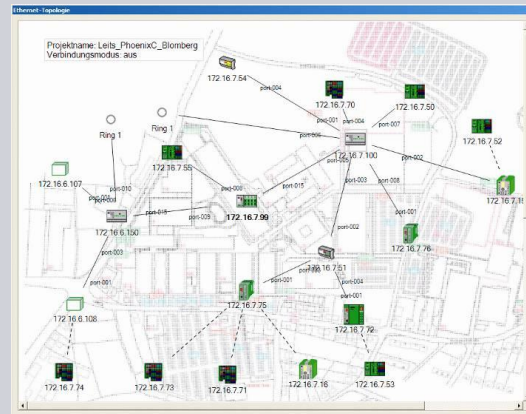


- Bus structure through integration of switch ports in devices
- Tree and star topologies
- Redundant rings with real-time reconfiguration

**Cost reduction and
more flexibility**

High availability

**PROFINET
offers ...**



**...enhanced
diagnostics**

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

Diagnostic overview

- Proven channel diagnosis known from field busses
- Device
- Module
- Channel
- Interrupts

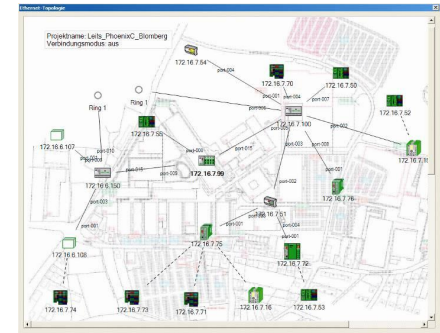
Date/Time arrived	ID	Message text	Status
01/13/2009 03:47:30.354 PM	76	PN device 1 on PN system 100 Slot: 3: Module removed Name: PNx02-IM151-3PN Module: 4DI DC24V HF I/O address: I3	I
Module: CBA/PN#02/PN#02-IM151-8 PN/DP CPU Source: RSE			
01/13/2009 03:46:07.480 PM	75	PN device 1 on PN system 100 Slot: 2: Short circuit on channel 0 Name: PNx02-IM151-3PN Module: 2DO DC24V/0,5A HF I/O address: O2	I
Module: CBA/PN#02/PN#02-IM151-8 PN/DP CPU Source: RSE			
01/13/2009 10:38:55.512 AM	75	PN device 1 on PN system 100 Slot: 2: Short circuit on channel 0 Name: PNx02-IM151-3PN Module: 2DO DC24V/0,5A HF I/O address: O2	I O ...
Module: CBA/PN#02/PN#02-IM151-8 PN/DP CPU Source: RSE			

Easy Localization

- Topology Views
- Simplified Device Name
- Remote access

Integrated Diagnostics for Maintenance & Operations

- Acknowledgement Status
- ...



Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

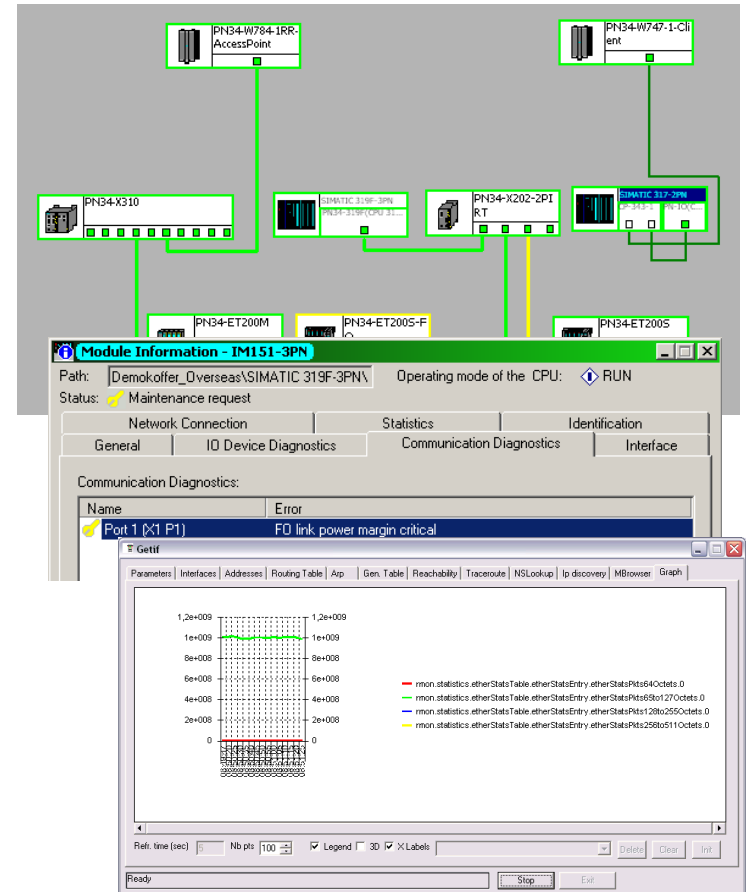
Cable diagnostics as for
device diagnostics

- Same modeling of Ports as of I/O channels
- No additional hardware required

Representation in standard
and topology view

Use of standard Ethernet
mechanisms (SNMP, Link
LEDs..)

Preventative Maintenance



Agenda

Uniform
structures

Diagnostics

Performance

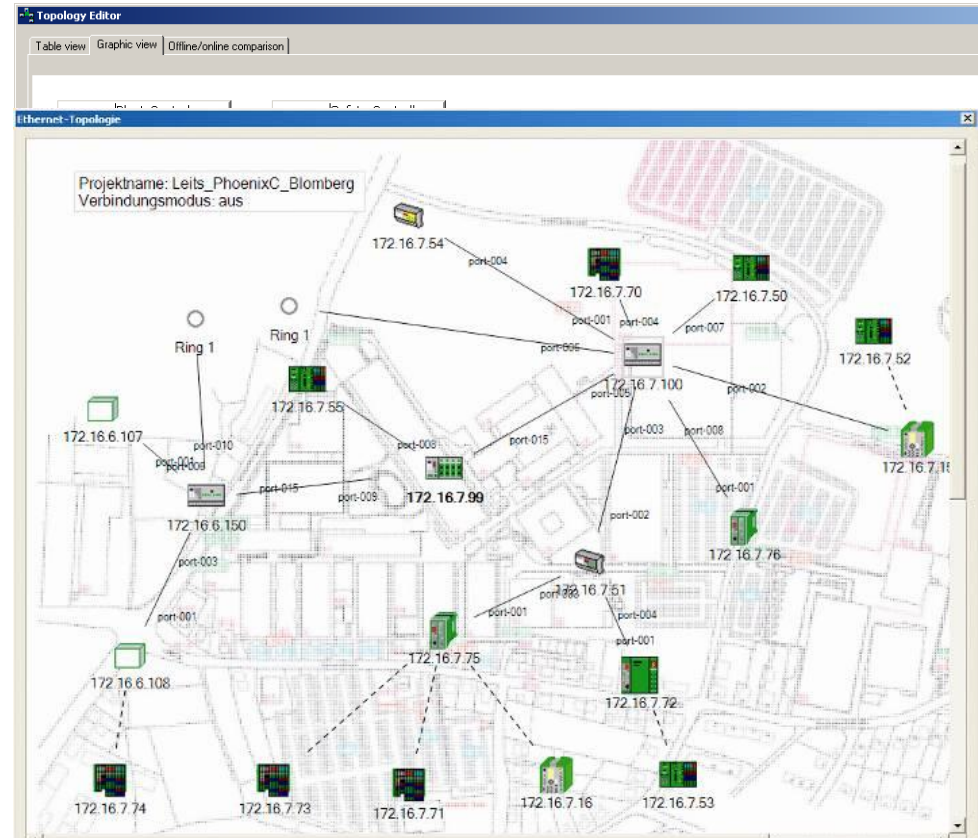
Integration

Innovations

Enhancement

Engineering view in addition to the actual plant structure

- graphical
- tabular
- offline
- online



Fast fault location
Fast access to detailed diagnostics

Presentation of diagnostics and parameter settings

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

SIEMENS SIMATIC 319C-3 PN/CPU 319C-3 PN/DP

English

Diag+ 2

Communication Path: Gerat174.204.4.11 Disconnect

View: Optical PROFINET Diagnostics

Source Print Compare... Save Comparison... Open Comparison... Columns

Test_FO_RFC470PN_180112-mwt_rfc-470-pn-fw382-ts_07-02-2012 11-04-05.diagfo

DNS/PN Name:	Port	dB	Status	Length	DNS/PN Name:	Port	dB	Status
fl-switch-mm-hs2.pybr02	port-001-00004	--	⊖	--	scalance-x202-lemgo-test	port-003	--	⊖
fl-switch-ghs.dtm.testschrank	port-001-00014	15,2	⊕	--	fl-switch-smn-6x2pof-ts-1	port-002	--	⊖
fl-switch-it-1x3pof-lemgo1	port-002	15,6	⊕	--	il-pn-bk-2scij-2	port-001	0,0	⊕
il-pn-bk-2scij-2	port-001	0,0	⊕	48	il-pn-24-2-dio-2scij-1.testschrank.de	port-002	2,6	⊕
fl-switch-ghs.dtm.testschrank	port-001-00009	3,0	⊕	--	il-pn-24-2-dio-2scij-2.testschrank.de	port-001	0,6	⊕
il-pn-24-2-dio-2scij-2.testschrank.de	port-002	14,0	⊕	--	fl-switch-mm-hs1.pybr02	port-002-00002	17,3	⊕
fl-switch-mm-hs.pybr02	port-002-00002	1,6	⊕	--	et200pro-im154-4prnhv50-lemgo-test	port-002	4,8	⊕
il-pn-bk-2scij-2	port-002	0,8	⊕	25	il-pn-bk-2scij-1	port-002	2,2	⊕
et200pro-im154-4prnhv50-lemgo-test	port-001	6,0	⊕	44	il-pn-24-2-dio-2scij-1.testschrank.de	port-001	1,0	⊕
fl-switch-mm-hs1.nuhr02	port-001-00002	16,6	⊕	--	fl-switch-mm-hs2.nuhr02	port-002-00002	14,3	⊕

Project Name: FDTKofferNeu170_81111_D.mwt

Online

Simple access
Regardless of location, even wireless
No engineering

**PROFINET
offers ...**



**...scalable
networks &
performance**

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

You want ...

- Modular plant/machine concepts
- High availability in production
- Larger networks
- Faster production speed without compromising quality
- Advantages of IT in production
e.g. for diagnostics, remote access
...



**With PROFINET you increase productivity
and product quality**

Agenda

Uniform
structures

Diagnostics

Performance

Integration

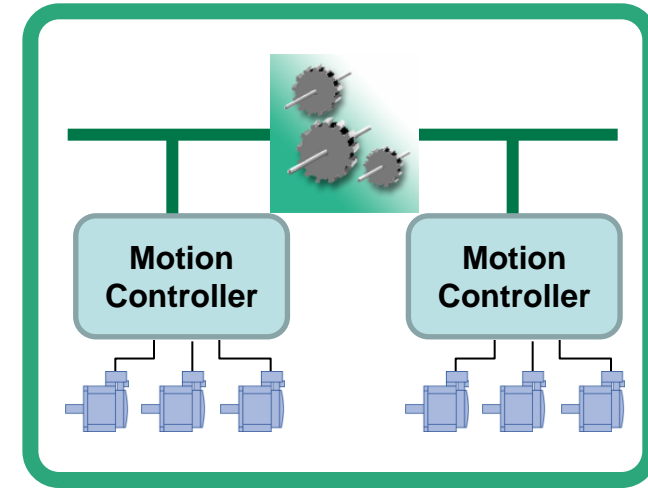
Innovations

Enhancement

- ... permits drive synchronization with the highest precision

- 1us jitter

- ...achieves communication in hard Real-Time for flexible, modular machine concepts



- ...allows large numbers of nodes with minimized response time
 - 100Mbps Ethernet
 - Number of nodes limited by controller potential
- ...offers scalable RT communication in parallel with TCP/IP
 - add an IP Camera?
 - Allow remote diagnostics via browser?

Agenda

Uniform
structures

Diagnostics

Performance

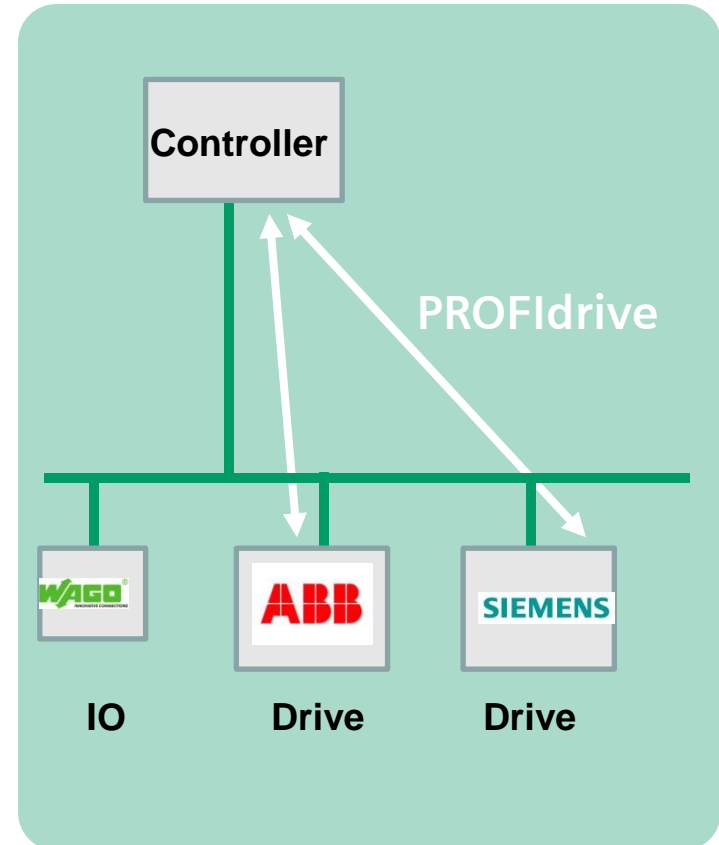
Integration

Innovations

Enhancement

PROFdrive

- Is the application profile for drives on PROFIBUS and PROFINET
- Is cross-vendor and ensures interoperability between drives and controllers
- Offers the same application view as with PROFIBUS and PROFINET
- Is standardized through PROFIBUS & PROFINET International (PI)



Worldwide standard communications for drives

Agenda

Uniform
structures

Diagnostics

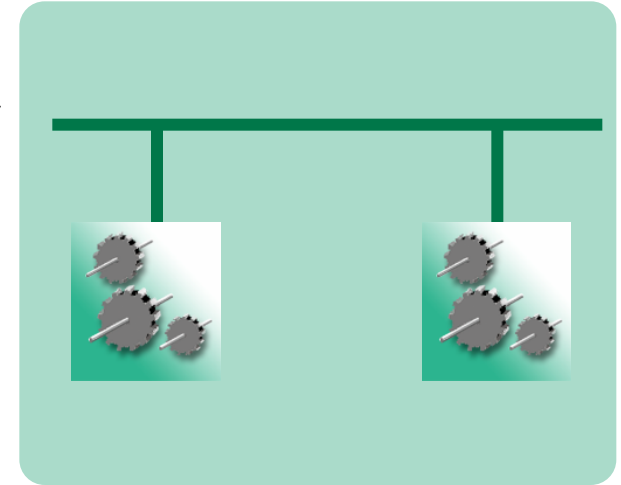
Performance

Integration

Innovations

Enhancement

- Higher productivity due to shorter cycle times
- Greater flexibility due to modular architecture and individual drives
- Real-time and TCP/IP, without compromise
- <1us jitter for motion control
- Scalable without system discontinuity
- Fast start up (<500ms)



Summary

**for increased productivity and
product quality**

**PROFINET
offers ...**



**... seamless
integration of
existing systems**

Agenda

Uniform
structures

Diagnostics

Performance

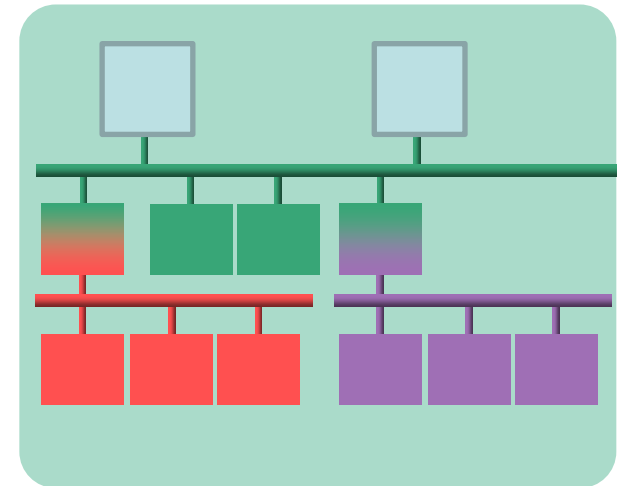
Integration

Innovations

Enhancement

Requirements

- Easily integrate existing fieldbus systems
- Integrate existing Ethernet networks
- Continue using existing user programs
- Continue using existing devices
- Continue using your existing knowledge and tools without a problem



Minimizes the time and expense of setting up your system with or migrating to PROFINET

Agenda

Uniform
structures

Diagnostics

Performance

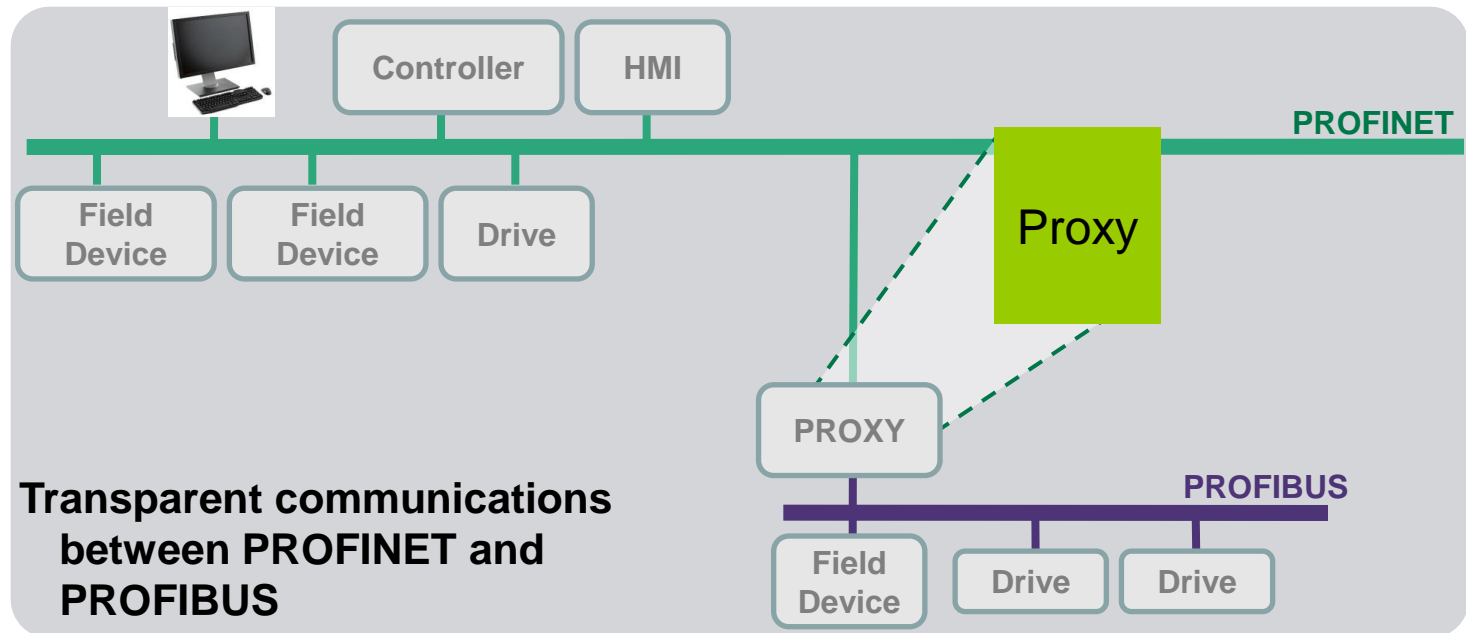
Integration

Innovations

Enhancement

Benefits and added value

- Including gateways for PROFIBUS, Interbus, AS-Interface and other fieldbuses
- Including controllers with PROFINET and PROFIBUS interface



Protects your investment

**Transparent integration
without programming**

Agenda

Uniform
structures

Diagnostics

Performance

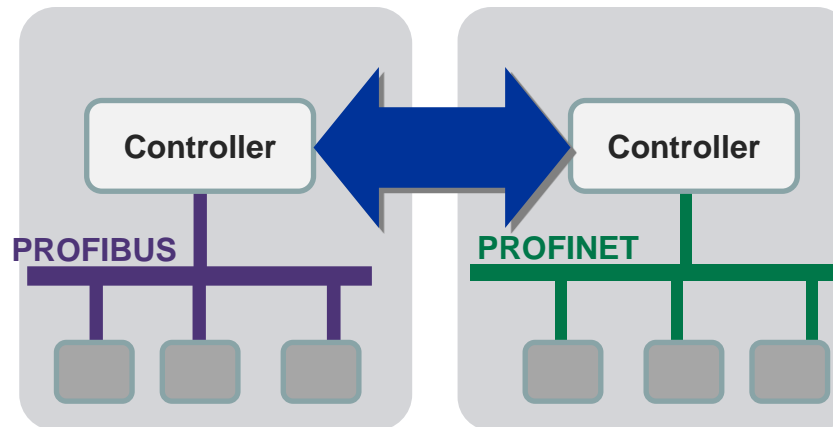
Integration

Innovations

Enhancement

Benefits and added value

- Just reconfigure your hardware...
- ... no reprogramming work necessary
- use the same exact tools with the same look & feel
- same system design for PROFIBUS and PROFINET



Reduce the time and expense of engineering and testing

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

Protect your investment

- Seamless integration of existing fieldbuses
- Easy conversion of existing devices
- No additional tools or training needed

Save costs

- Uses existing Ethernet networks

Uniformity

- Uniform physical network concept

Save time

- Reduces engineering and testing time
- Cuts time needed for migration

Summary

Minimizes the time and expense of setting up your system with or migrating to PROFINET.

**PROFINET
offers ...**



**... new, innovative
applications**

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

PROFINET via WLAN with ...

- Standardized technology
 - IEEE 802.11
 - 2.4GHz & 5GHz
- Easy engineering
(planning, set-up, operation, documentation)
- Network security
- Failsafe communications
 - Certified by TUV
- Mobile HMI

- ...as reliable, rugged, safe and secure as
hard-wired systems!



Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement

...Higher productivity based on

- Increased plant availability compared to mechanical solutions (e.g. trailing cables)

...Lower costs thanks to

- Less maintenance & installation work
- Use of standard components even for failsafe communications

...Greater flexibility and mobility

- Communication from any location
- Easy expandability and modification
- Independence from mechanical bounds



Summary

...greater flexibility and mobility

**PROFINET
offers ...**

**... new,
innovative
applications**



PROFIsafe

**With integrated
safety**

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

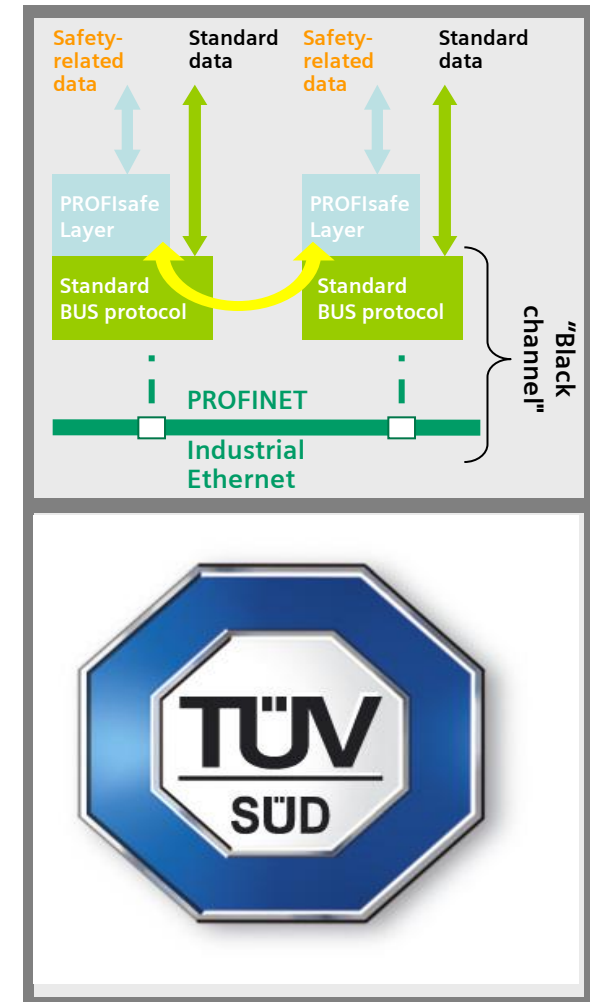
Enhancement

Use of the PROFIsafe profile

- Tested and accepted with PROFINET
- Standard and failsafe communications over the same transmission path
- Can be used for stationary and mobile
Emergency Stop function
- Allows the use of extended safety functions by use of dedicated PROFIsafe devices

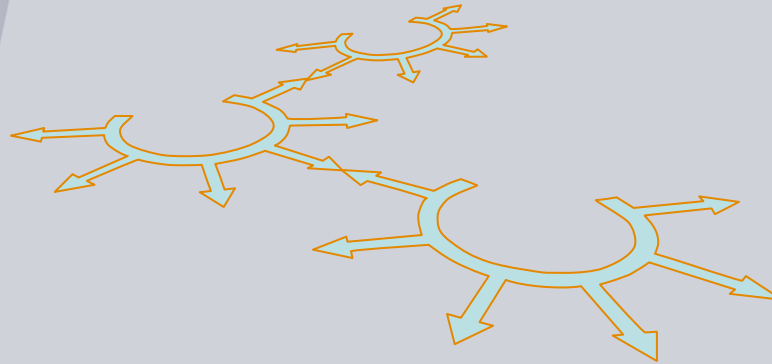
Even wireless...

**Failsafe and available,
just like hard-wired!**



**PROFINET
offers ...**

**... new,
innovative
applications**



**With distributed,
intelligent
structures**

Agenda

Uniform
structures

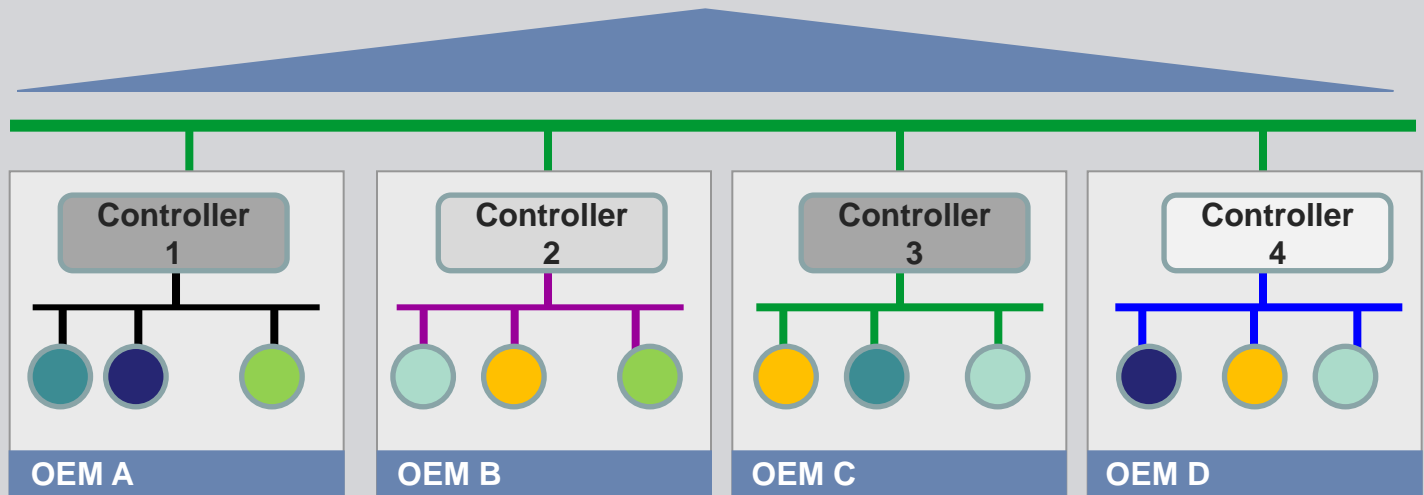
Diagnostics

Performance

Integration

Innovations

Enhancement



The increasing complexity of machines and faster production rates present new engineering challenges.

Agenda

Uniform
structures

Diagnostics

Performance

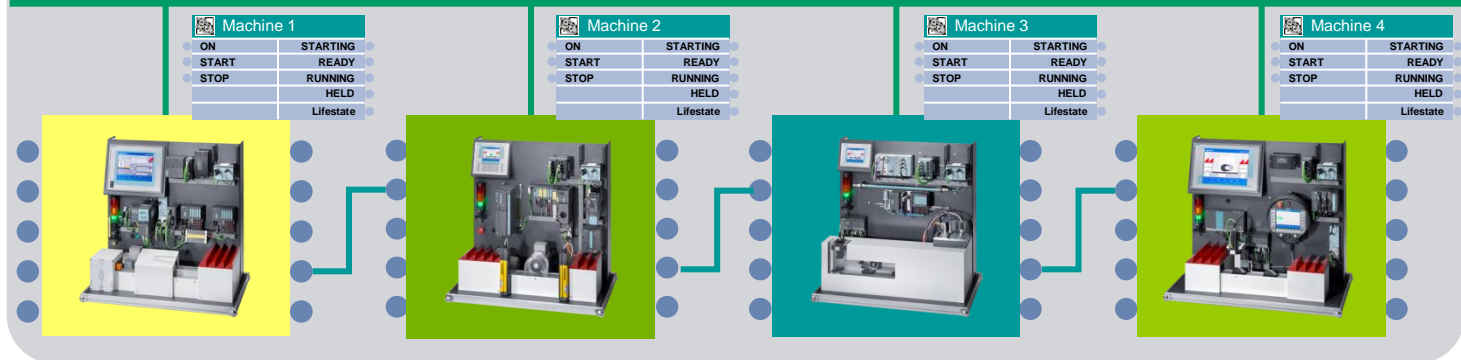
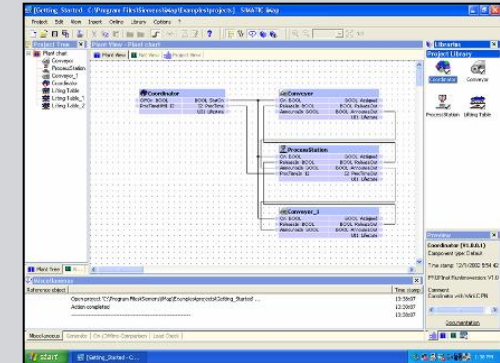
Integration

Innovations

Enhancement

for...

- Plant-wide engineering of machine-machine communications
- System-wide communications based on Industrial Ethernet



PROFINET CBA – Component Based Automation

**PROFINET
offers ...**

**... continuous
enhancement**



Process
industries

Agenda

Uniform
structures

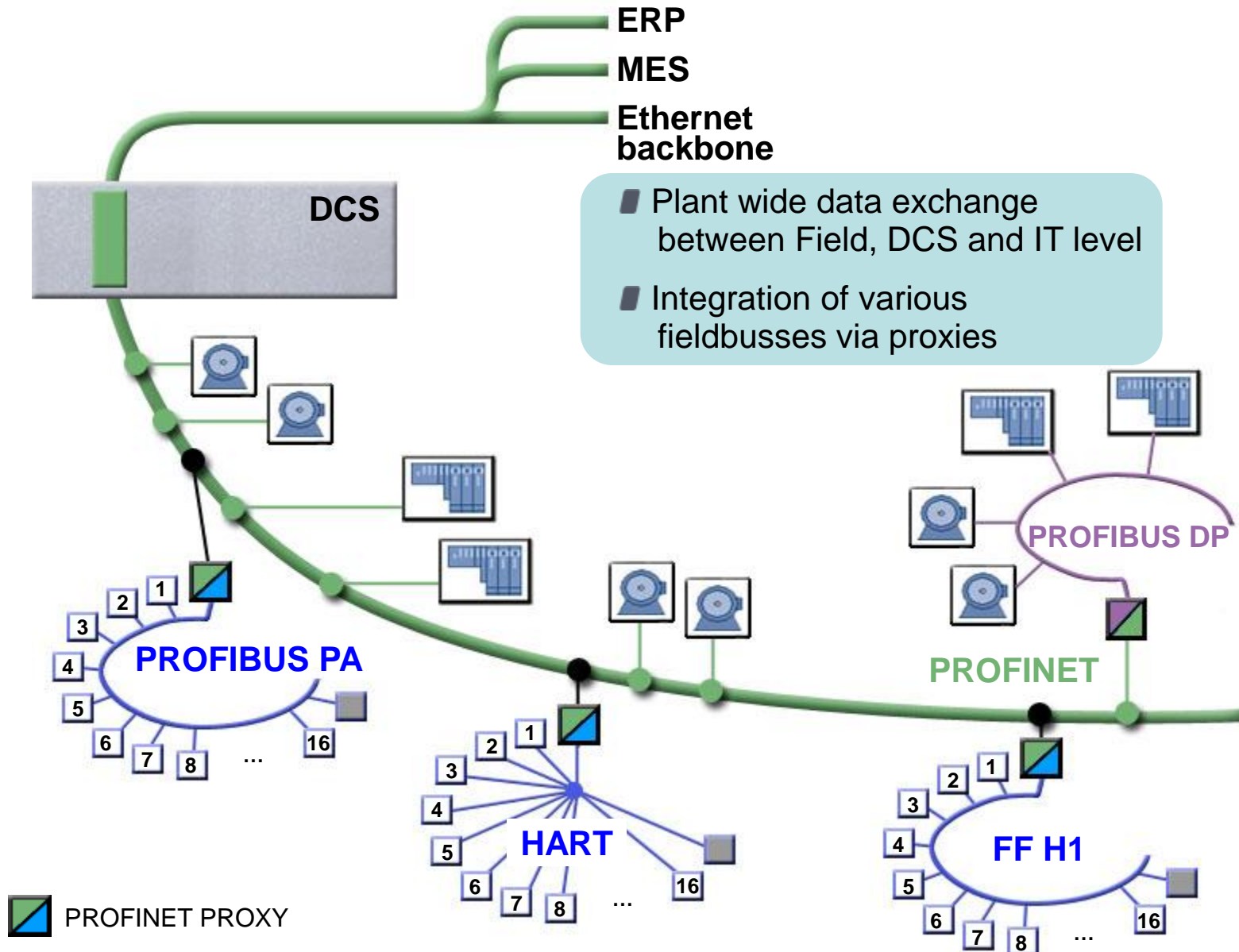
Diagnostics

Performance

Integration

Innovations

Enhancement



Agenda

Uniform
structures

Diagnostics

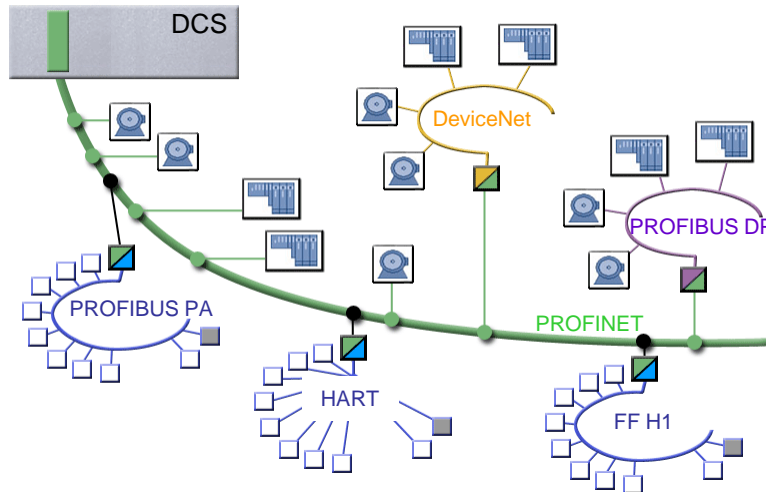
Performance

Integration

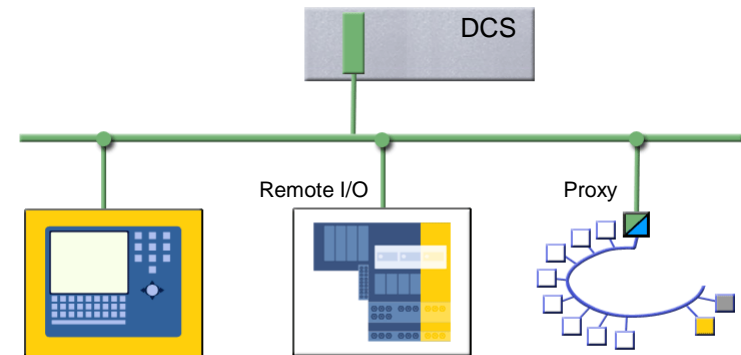
Innovations

Enhancement

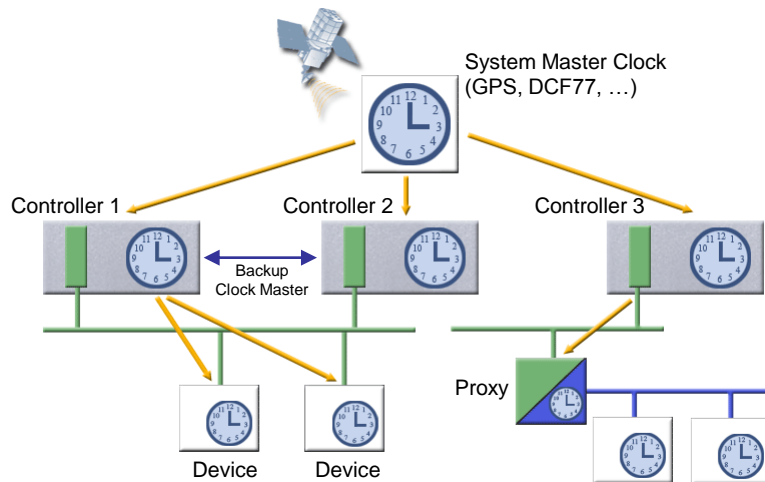
Fieldbus integration



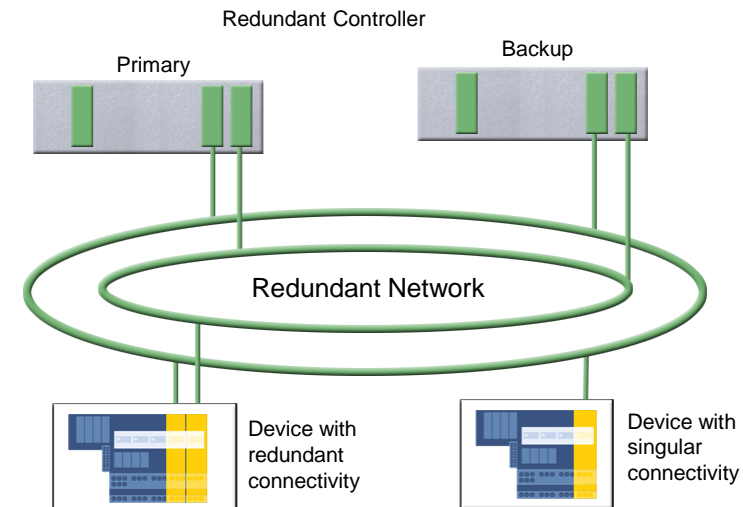
Configuration in Run (CiR)



Time sync / time stamping



Scalable Redundancy



**PROFINET
offers ...**

**... continuous
enhancement**



PROFenergy

PROFenergy

Agenda

Uniform
structures

Diagnostics

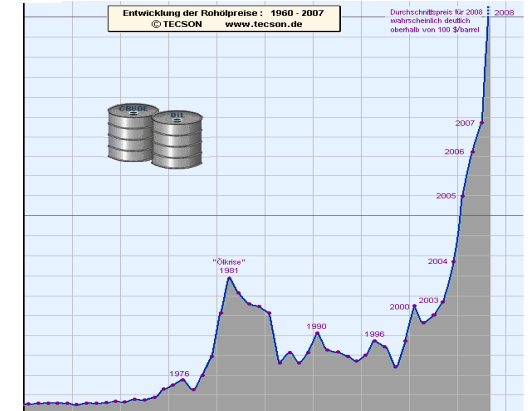
Performance

Integration

Innovations

Enhancement

- PROFINET is the first field bus worldwide with a standardized profile for efficient energy management.
- PROFINET is a synonym for innovation. Requirements from customer side are taken seriously and implemented very fast.
- PROFlenergy generates additional value to your products and safes your business in the long term.



Use PROFlenergy, to save energy and costs!

Agenda

Uniform
structures

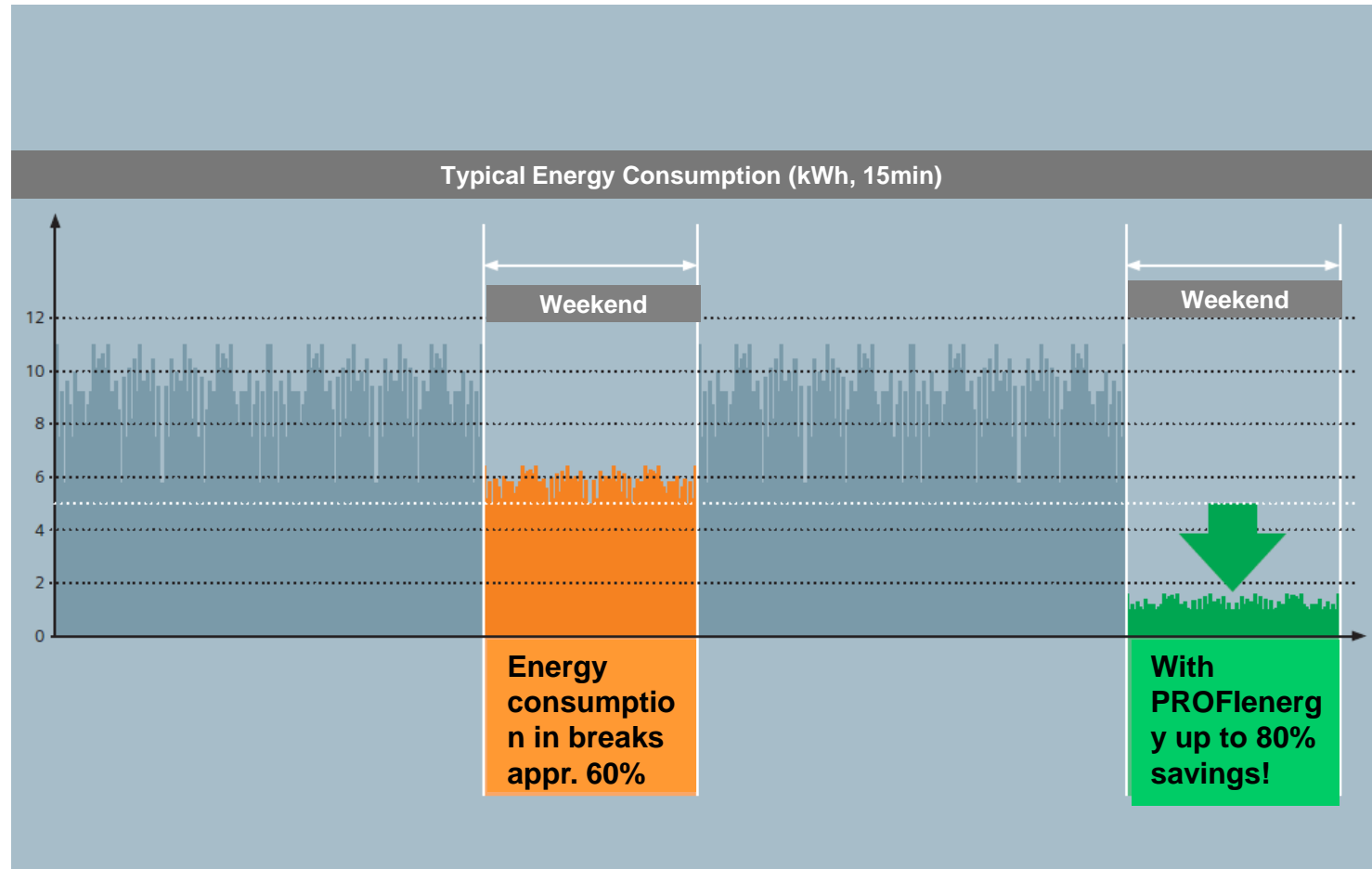
Diagnostics

Performance

Integration

Innovations

Enhancement



Energy consumption during breaks appr. 60%!

Agenda

Uniform
structures

Diagnostics

Performance

Integration

Innovations

Enhancement



Competitive advantage ...
... through marketing of low-energy machines



Investment safeguarding ...
... through simple expansion of existing programs



Low programming requirements ...
... through reloadable function blocks



Fast commencement ...
... through integration into known product families and use of existing mechanisms



Free choice of manufacturer and devices ...
... through manufacturer independent standard



Environmental protection ...
... through lowering energy consumption and CO2 emissions

PROFINET offers ...

- ... more continuity and uniform structures**
- ... more nodes and better performance**
- ... seamless integration of existing systems**
- ... new, innovative applications**
- ... continuous enhancements**

Thank you!

Dr. Paula Doyle

Chairman PI Middle East
paula.doyle@profibus.com
mobile: +971 55 200 2643

