PI
PROFIBUS • PROFINET

PROFIBUS®

Open Solutions for the World of Automation

PROFINET®

House keeping points – Visits, Phones & Fires.

Visits – Toilets are through double doors to the right

Phones – Please switch off or set to Silent

Fires – If alarm sounds, follow Siemens staff, back outside by reception where you came in, turn right, head towards grass between main building and employee car park where you will find ‘Visitors’ assembly point.

Agenda

Practical Aspects of Profibus & Profinet in Factory Automation

October 5th 2010

Profibus & Profinet Update - Figures & Functions	**Mark Freeman**
Practical steps for a successful Profibus project	**Xiu Ji**
Coffee (approx 11.00am)	
Introduction to Profinet	**Andy Verwer**
Using Industrial Ethernet Networks for Profinet	**Peter Brown**
Lunch (approx 12.30pm)	
Commissioning & Maintenance - Fault Finding Demo	**Andy Verwer**
Coffee (approx 2.00pm)	
Profinet Configuration – Incl. Profibus Integration and ProfiSafe	**Peter Brown**
Summary and Next Steps	**Bob Squirrell**
Close @ 3.30pm	

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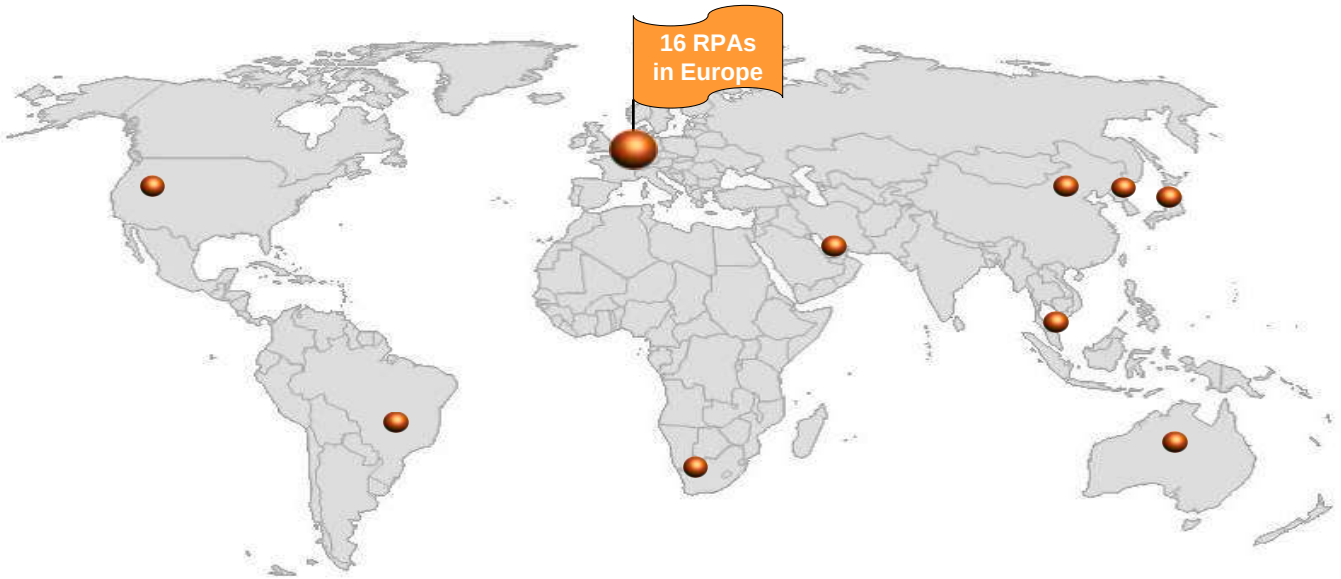
Who is PI ?

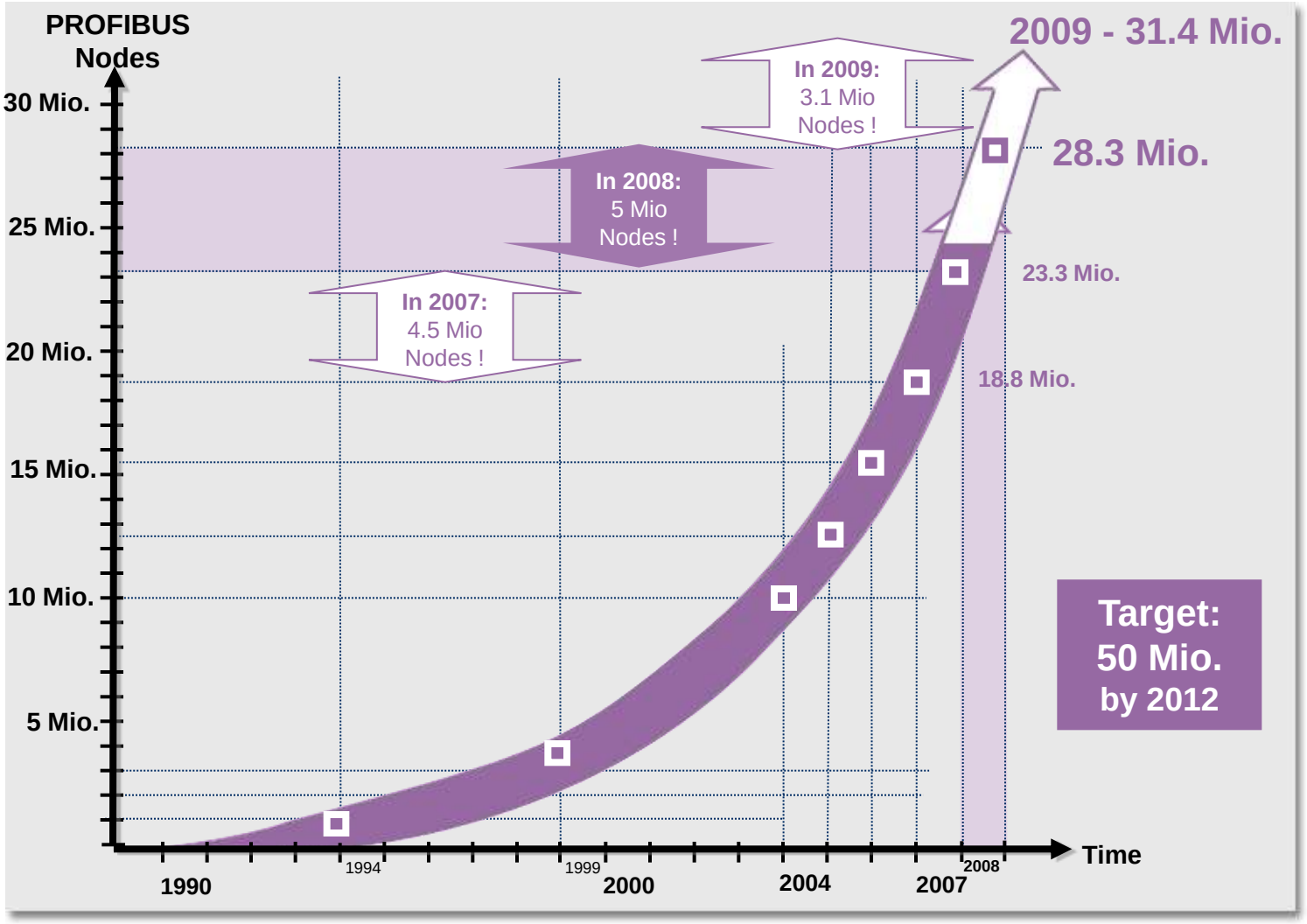
PROFIBUS & PROFINET International:

- 25 Regional PI Associations (RPA)
- 37 Competence Centers in 22 countries
- 12 PI Training Centers (PITC) in 9 countries
- 10 Test Labs in 6 countries
- >1,400 member companies worldwide
- >2,500 products
- 2 technologies: **PROFIBUS + PROFINET**



PROFIBUS Nodes

- PI Group
- Profibus
- Profinet
- ProfiEnergy



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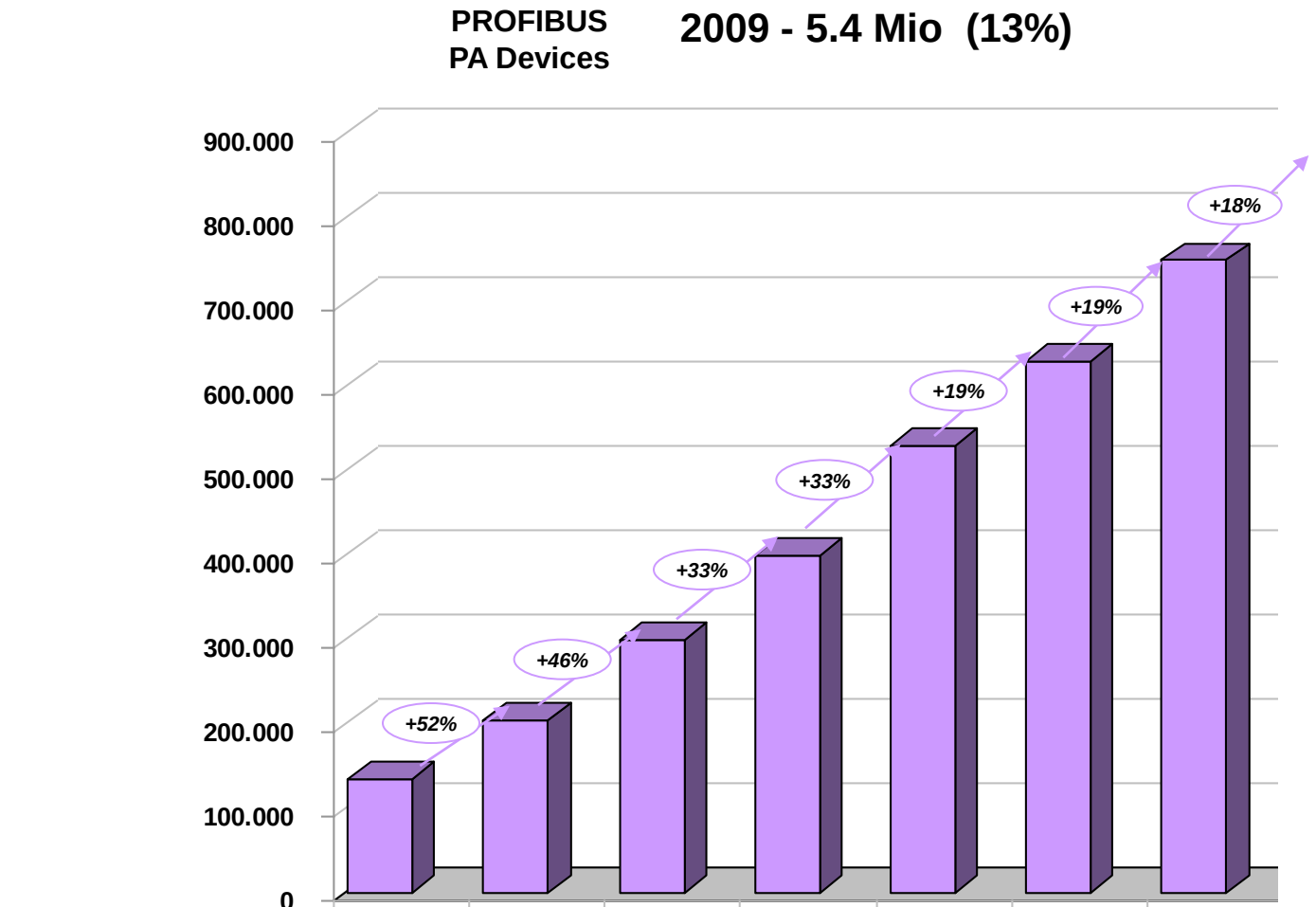
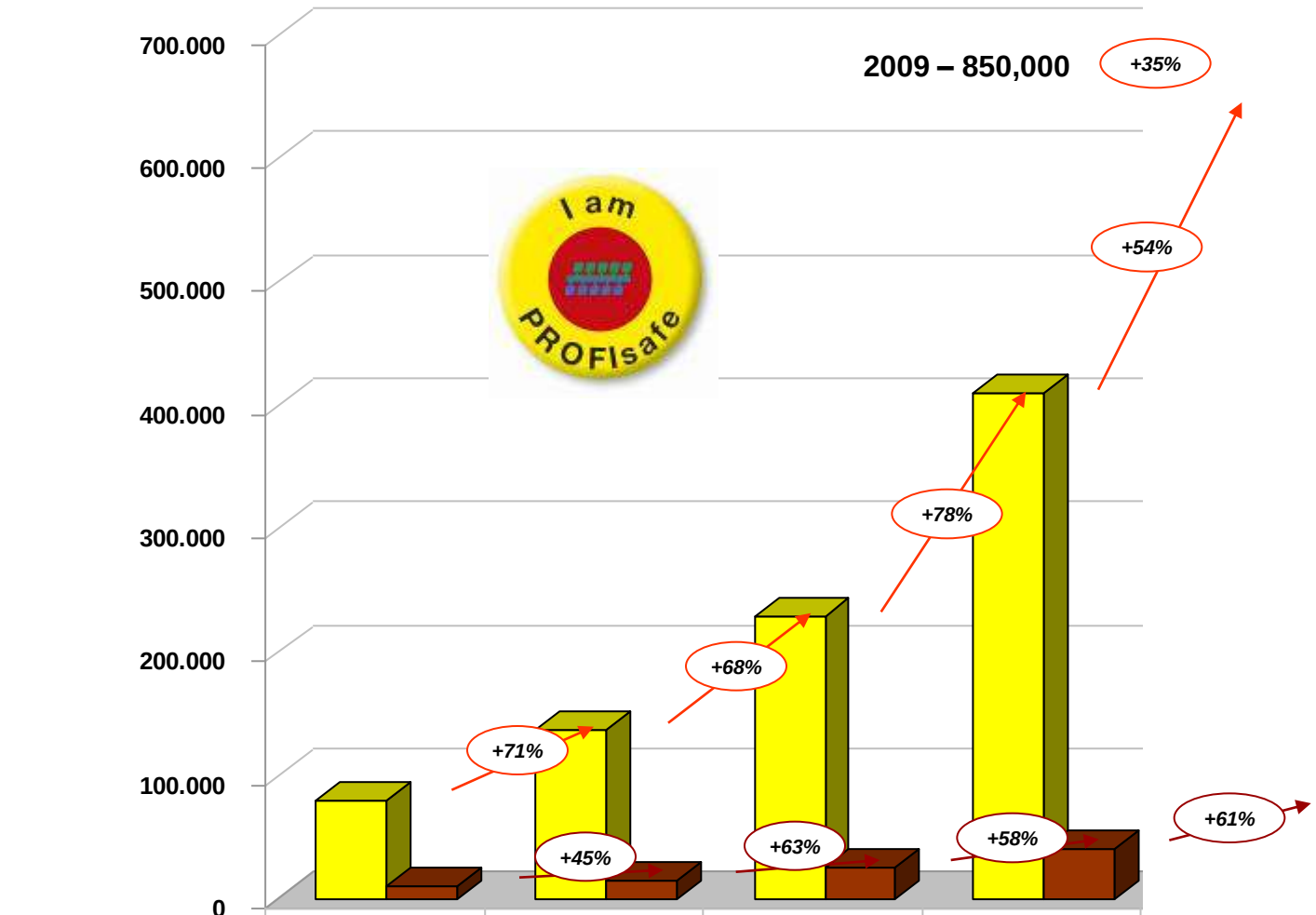


	2001	2002	2003	2004	2005	2006	2007
PROFIBUS PA Devices	135.000	205.000	300.000	400.000	530.000	630.000	750.000
PROFIBUS Nodes in PA			Mio 1.6	Mio 2.1	Mio 2.8	Mio 3.3	Mio 4.0

PROFIsafe Nodes/Systems

- PI Group
- Profibus
- Profinet
- ProfiEnergy



	2004	2005	2006	2007
PROFIsafe Nodes	80.000	137.000	230.000	410.000
PROFIsafe Systems	11.000	16.000	26.000	41.000

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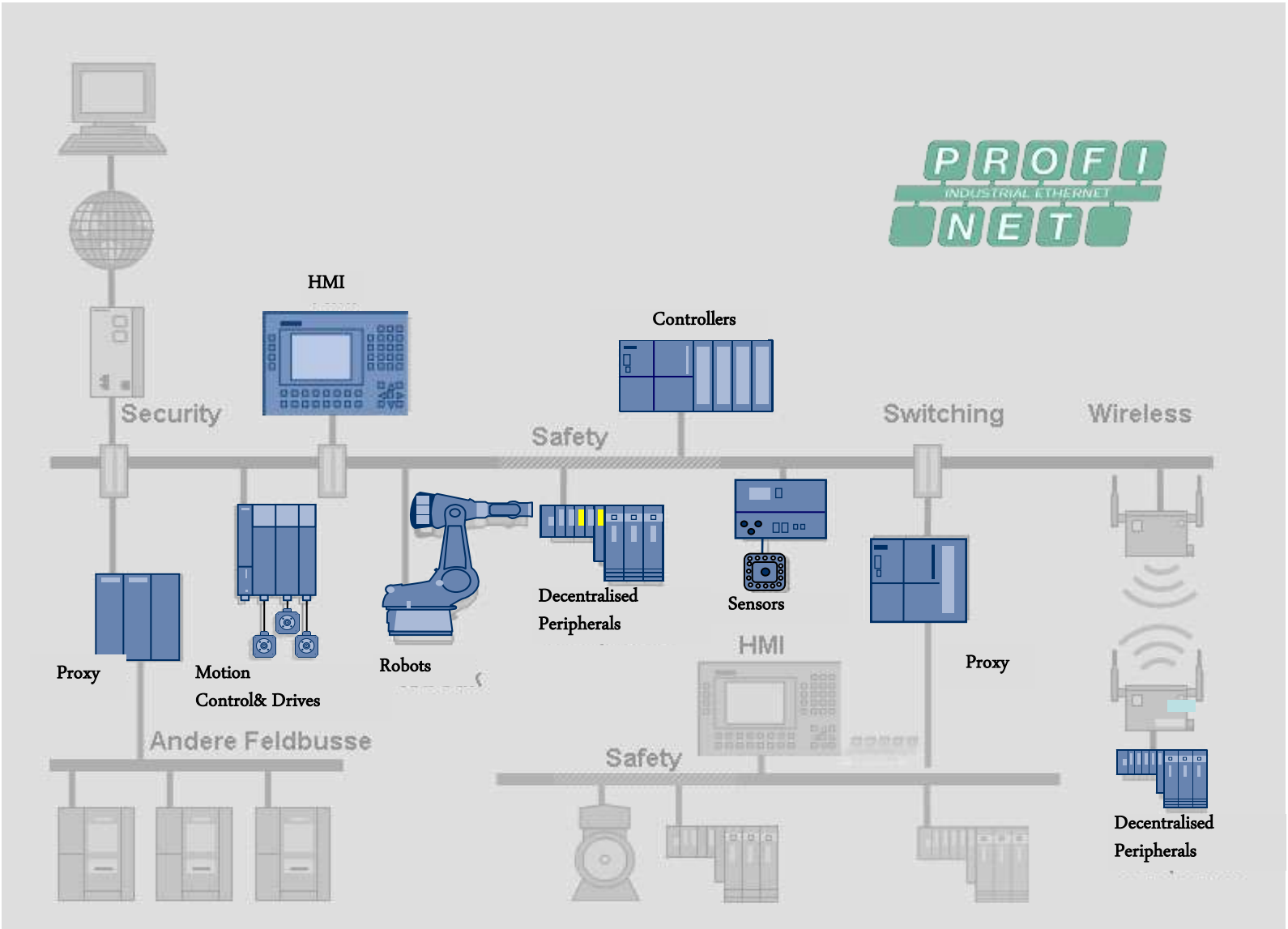
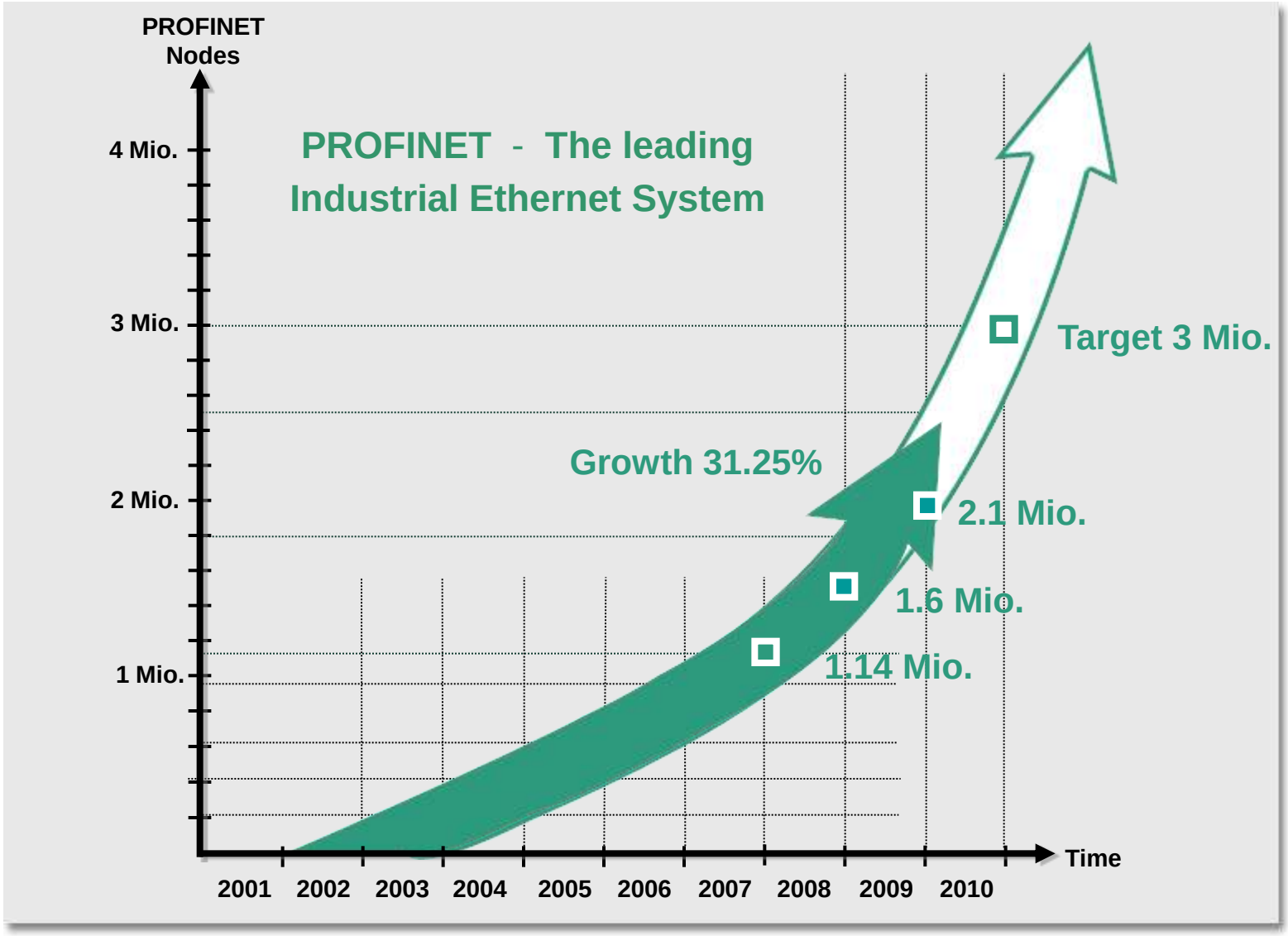
PROFINET: What is counted?

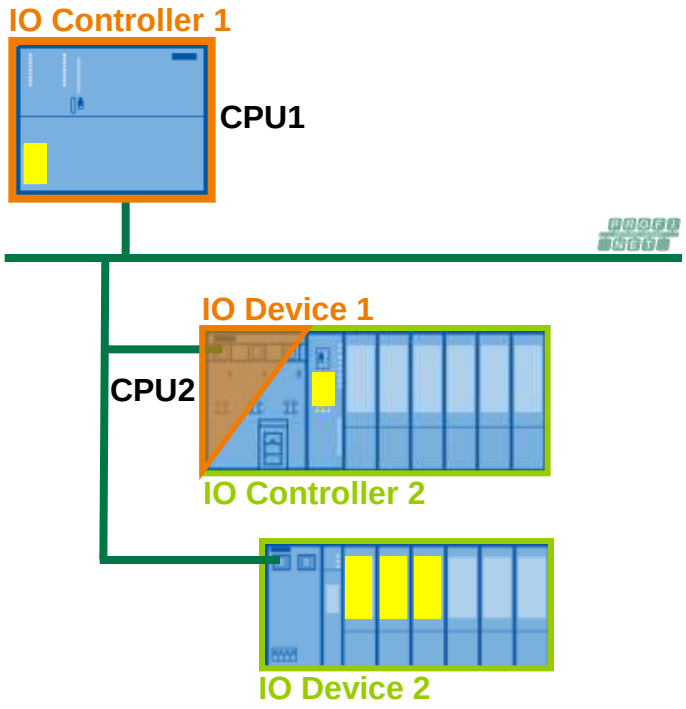


PROFINET Nodes



New Profinet Function - i Device

- An IO controller can also be operated as an IO device
- With IO controller functionality on the same interface



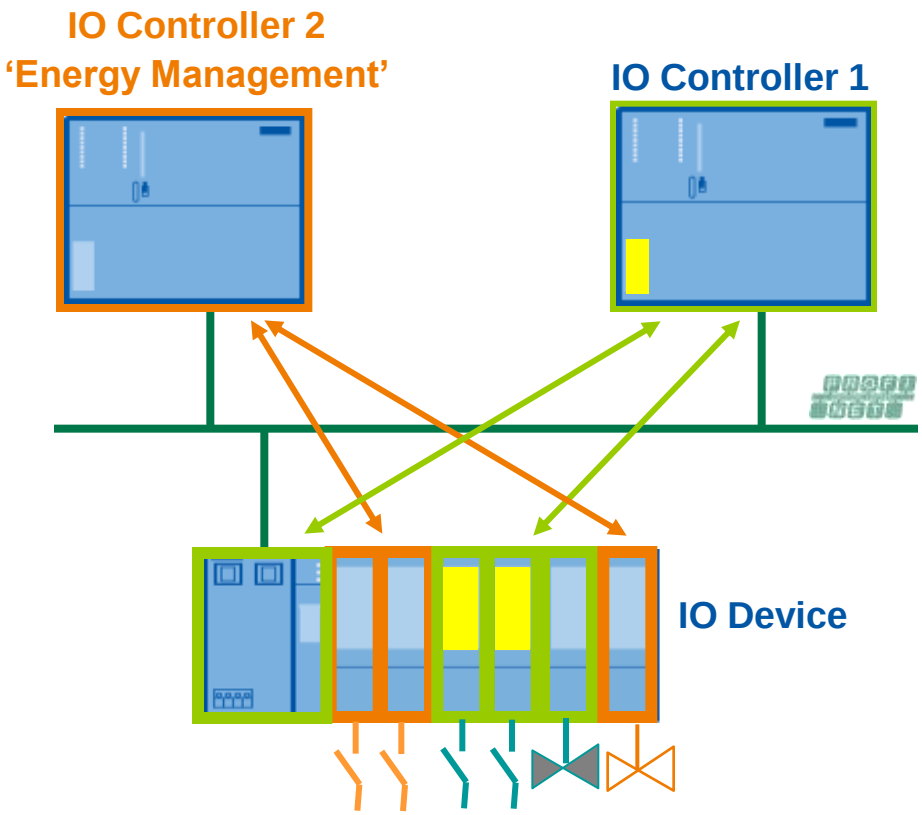
I-Device

- Simple and familiar IO interfacing of CPUs
- Interfacing of CPUs in different projects
- Saves on PN-PN couplers (transparent network)

New Profinet Function - Shared Device

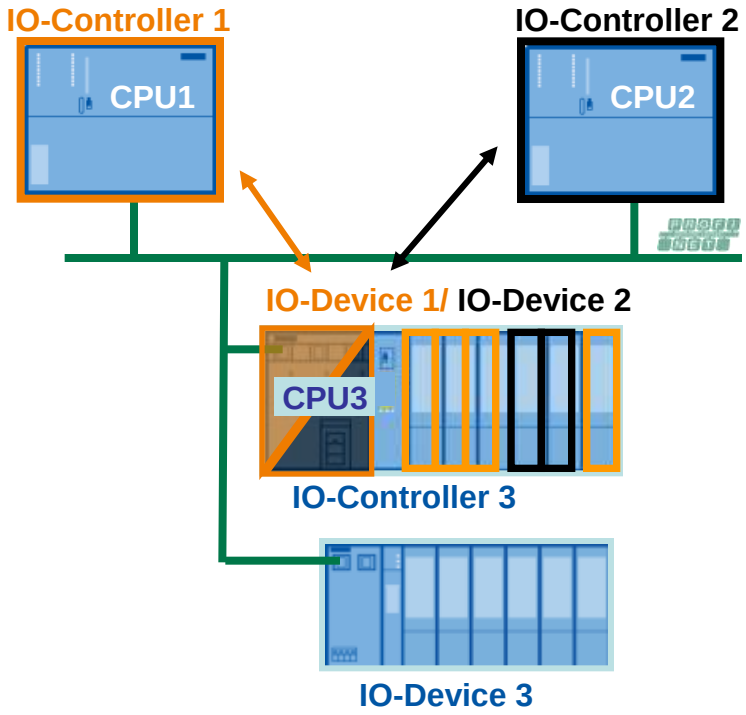
Access to one device from several controllers

- Flexible assignment of channels and modules to different controllers
- For inputs and outputs



New Profinet Function - Shared I-Device

- An IO controller can also be operated as an IO device
- With IO controller functionality on the same interface
- I-Device operates in shared mode



Shared I-Device

- Simple and familiar IO interfacing of CPUs
- Interfacing of CPUs in different projects

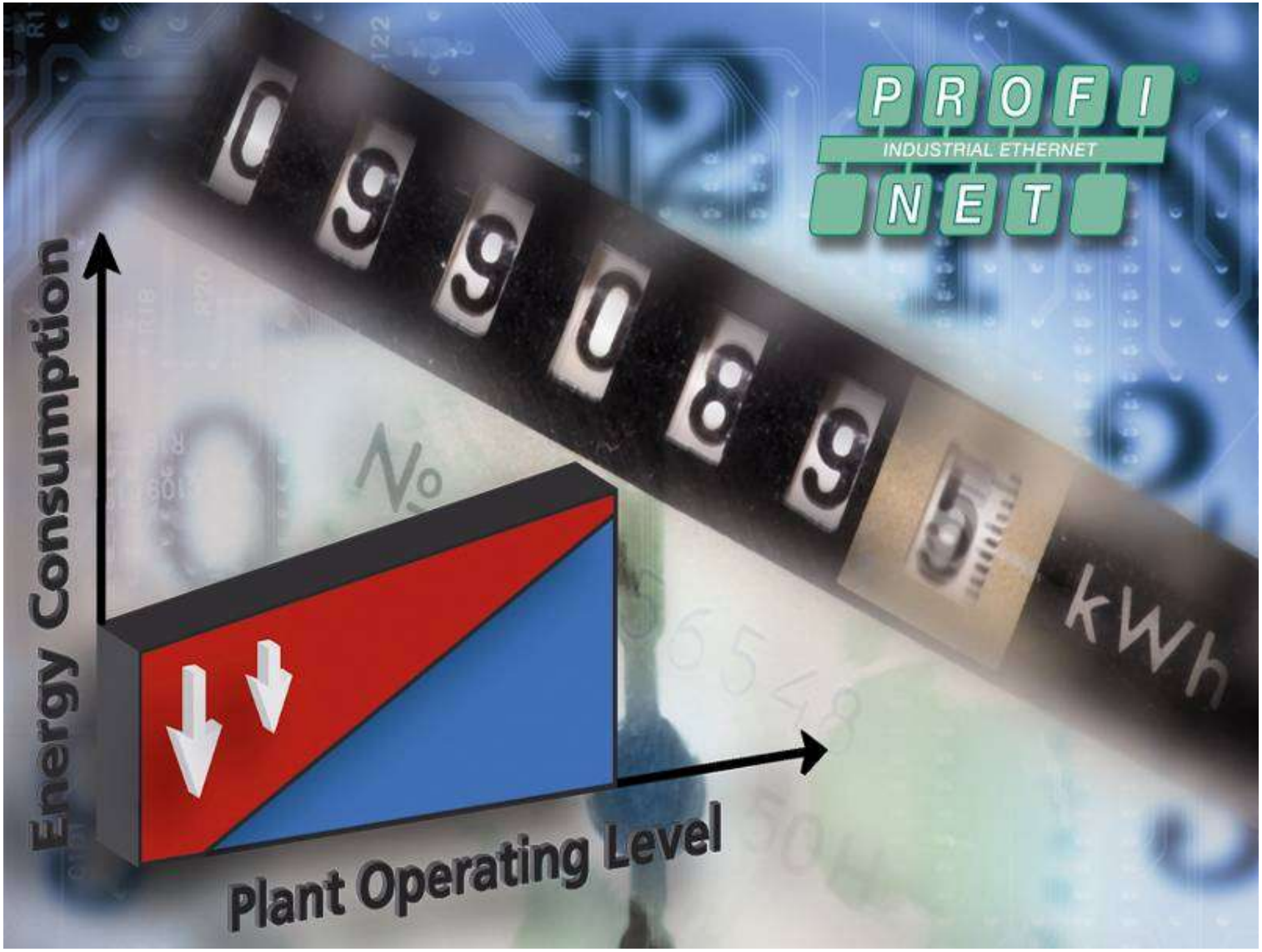
MRP – Media Redundancy Protocol

INTERNATIONAL Standard

- IEC 61158-5-10
- Edition 1.0 2007-12

  - Based on ring topology. The basic concepts of MRP and HSR are identical.
  - Max. number (50) of ring nodes
    - PN IO controller
    - PN IO devices
    - Network infrastructure components (switches)
  - Reconfiguration time 200ms

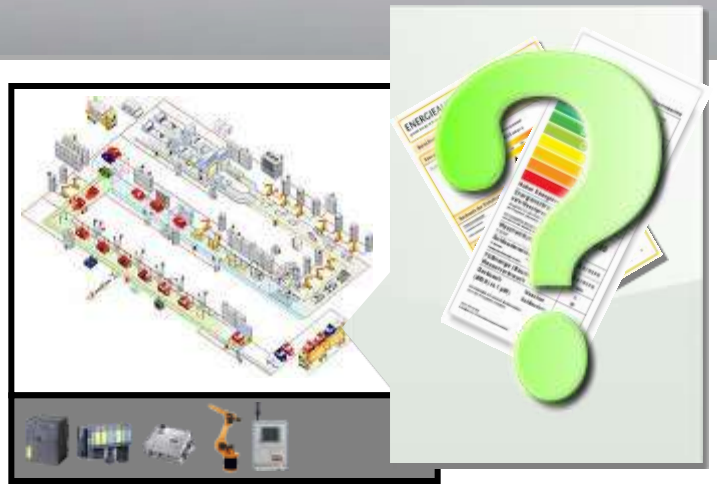
- PI Group
- Profibus
- Profinet
- ProfiEnergy



Saving of Energy is Required everywhere

- PI Group
- Profibus
- Profinet
- ProfiEnergy

... Saving of energy in production ?

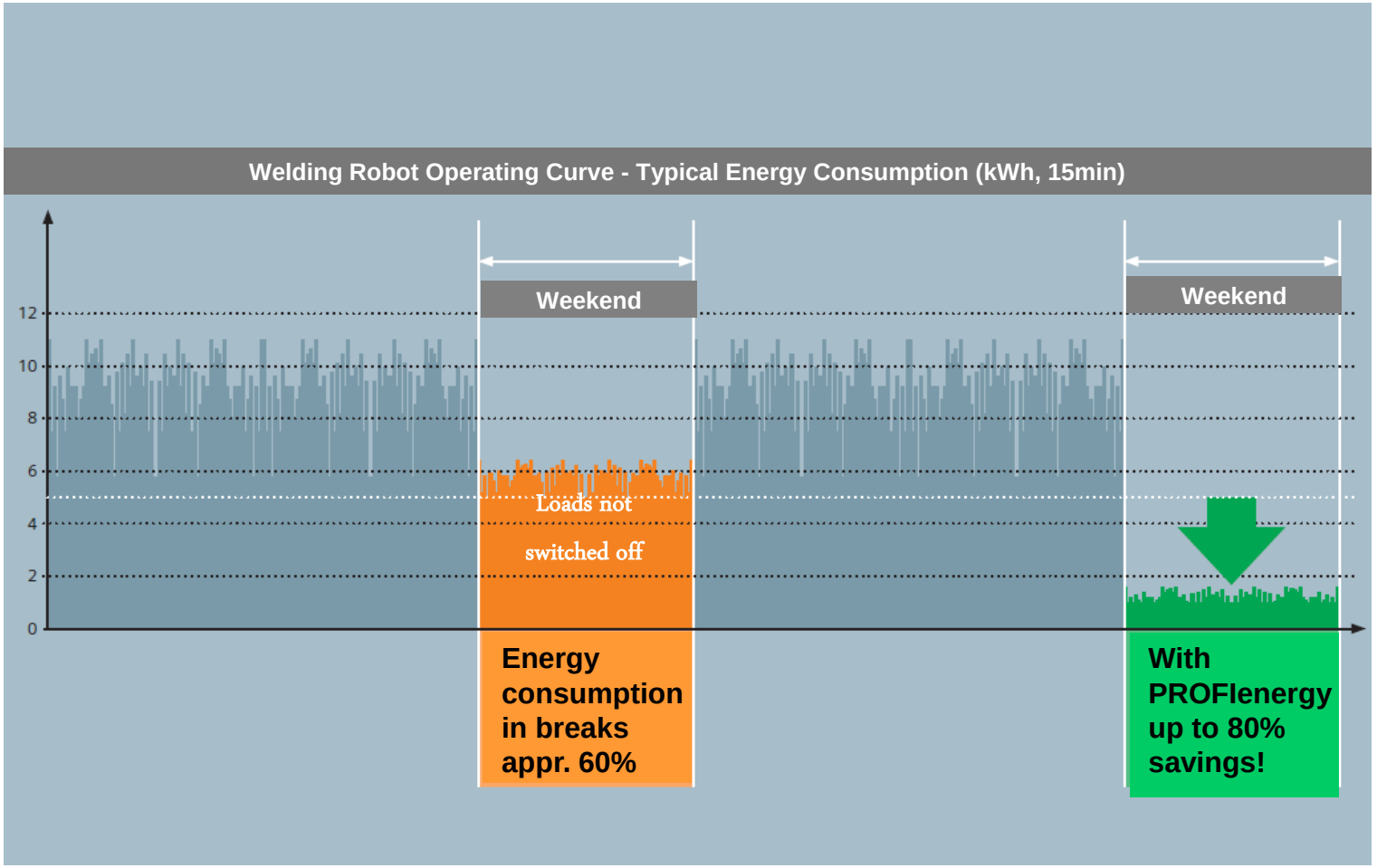


Companies represented on WG

- PI Group
- Profibus
- Profinet
- ProfiEnergy

An Example From The Automotive Industry

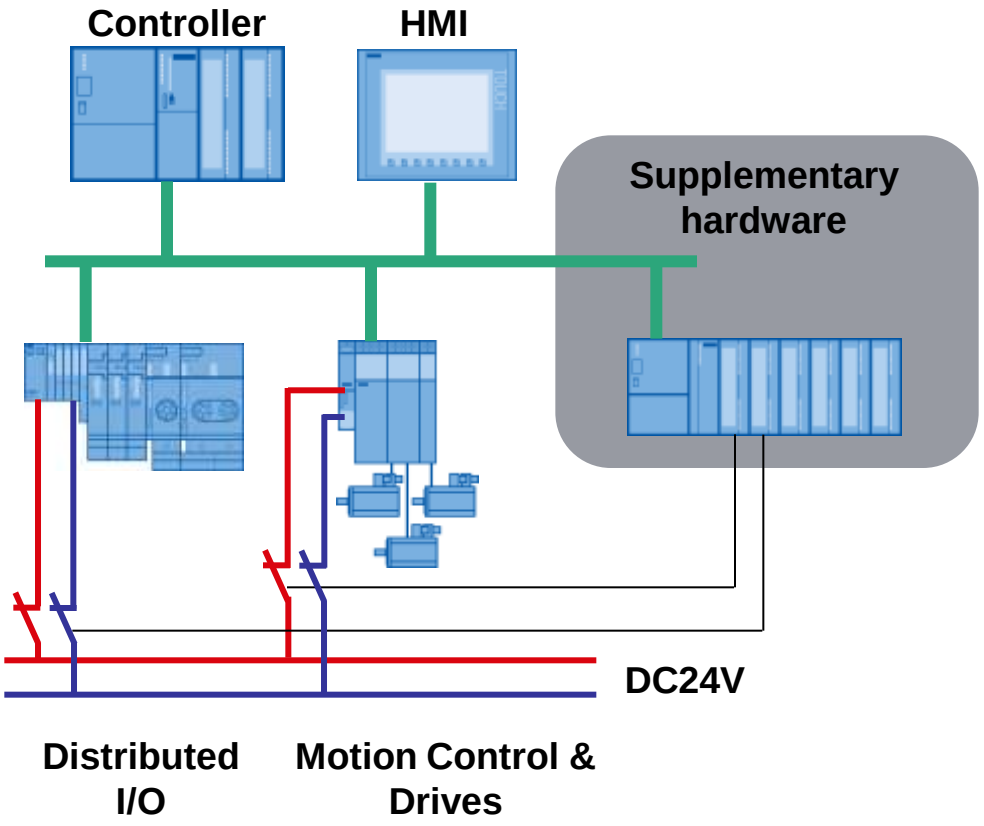
- PI Group
- Profibus
- Profinet
- ProfiEnergy



Energy consumption during breaks approx. 60%!

Weaknesses Of Current Solutions

Why has it not been done before?



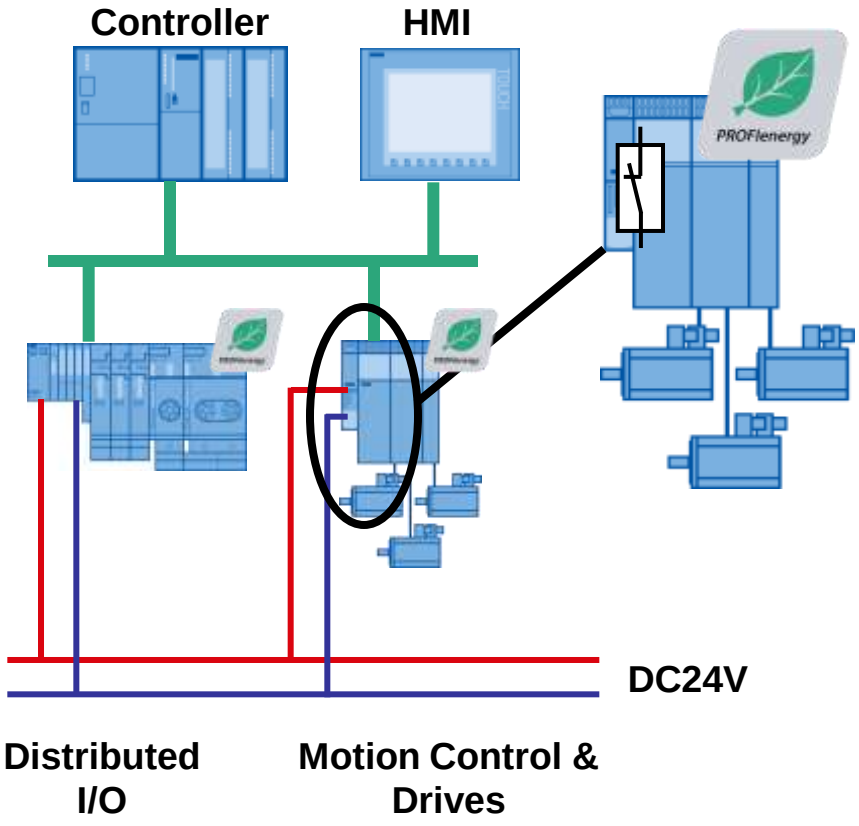
Use of external hardware:

- **Hardwired Relays**
- **Requires space, money and time**
- **Engineering and maintenance required**
- **Manual switch-off:**
- **Frequently only one main switch**
- **Start-up unreliable**

Measures taken are application specific.

Cost soon outweighs the actual savings.

The role of PROFIenergy



- ProfiEnergy is an Application profile of Profinet
- Standardised Commands using Acyclic comms.
- Switching mechanisms reside inside devices
- Pauses could be pre-dertermined, manual, or unexpected
- Intelligent devices decide how to react

Definition:

PROFIenergy is a data interface based on PROFINET which permits coordinated and centrally controlled switching-off of loads in pauses independent of the vendor and device.

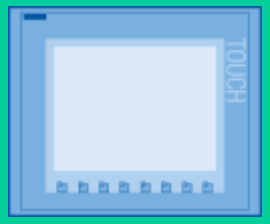
Implementation of PROFIenergy products

- PI Group
- Profibus
- Profinet
- ProfiEnergy

PROFINET Controller

- Sends PROFIenergy commands
- Coordinates switch-on/off sequence
- Info Request option: status information

PROFINET Supervisor



- Reads and visualises status and measured data

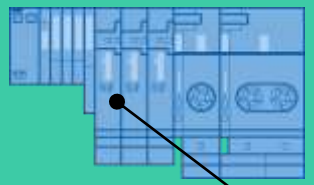
PROFINET

Industrial Ethernet

PROFINET Devices

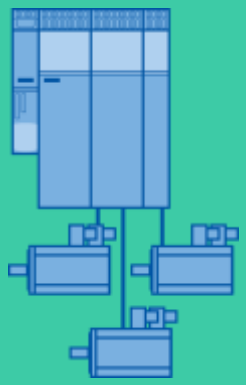
IO-Stations

- Switch off non-required consumers and the encoder supply



Drives

- Switch off the intermediate circuit



Power module

HMI

- Dim/switch off the display

PROFIBUS & PROFINET on the Web

- **PI Group**
- **Profibus**
- **Profinet**
- **ProfiEnergy**

The Industrial Communications Community
Delivering Greater Enterprise Advantage

Leading Fieldbus *Global Organization* *Industrial Ethernet*

Open Solutions for the World of Automation

www.profibus.co.uk

www.profibus.com **www.profinet.com**

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