



Pushing Performance

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Fast Track Switches

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Automation IT

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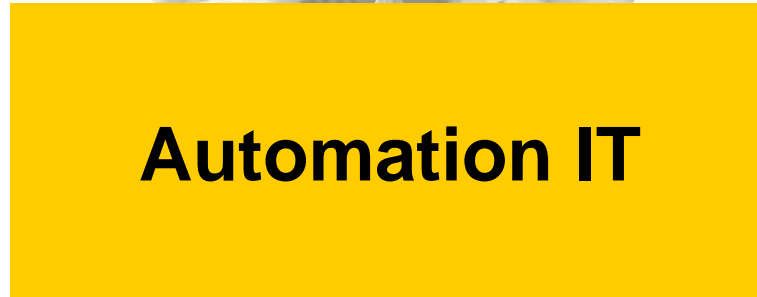
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Office IT



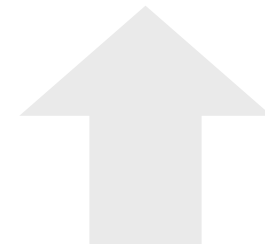
Automation IT



Industrial Automation



*Ethernet
IEEE 802.3*



**One network for all applications:
In the office, in the production area, in the plant and in the
machine**



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Features

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FTS 3000 – Family

Mechanical Features



Mechanical Features

- **Small Form factor**
- **6/8/10 Ports Copper RJ45 (10/100 Mbit/s), 2 Slots for SFP Modules (FTS 3082-ASFP)**
- **Robust metal Housing (Aluminium , anodized)**
- **Redundant Power Supply**
- **Designed for industrial environment**



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Features

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FTS 3100s-A

Functional Features



Functional Features

- **Fast Track Switching**
 - Detects Realtime Frames (RT)
 - Accelerates RT Frames
 - Overtakes Non-Realtime Frames (NRT)
- **Configurable via USB Port**
- **Quality of service**
- **Memory card (SD)**





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FTS 3100s-A

Configurable Features



Configurable Features (via USB)

- Port mirroring
- Port-specific configurations
- Selection of Industrial Profile
- User specific Profile
- NRT-Bandwidth Management





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FTS Manager

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FTS Manager



Easy configuration:

default settings suitable for most applications

checkboxes for all main functions

Versatile custom settings:

supports also new/own protocols

logic operation

NRT Bandwidth Control

Free of charge:

available on CD coming with the switch

download from HARTING.com

For Windows PCs with USB-Interface



FTS Manager – Custom Settings



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FTS Manager

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FTS Manager v1.01

File Help

default
FTS 3100s-A (2078.110.1000)

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GENERAL CUSTOM

PROFINET as Identifier 1 EtherNet/IP as Identifier 2 Modbus TCP as Identifier 3

CUSTOM

	active	compare 8Bit	compare 16Bit value mask	offset (0-45)	behind MAC	skipVLAN	IPdata	Offset+2Byte	IP Protocol
Identifier 1	<input type="checkbox"/>	<input type="checkbox"/>	0x 0000	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifier 2	<input type="checkbox"/>	<input type="checkbox"/>	0x 0000	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifier 3	<input type="checkbox"/>	<input type="checkbox"/>	0x 0000	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifier 4	<input type="checkbox"/>	<input type="checkbox"/>	0x 0000	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

INPUT LOGIC RESULT OUTPUT LOGIC

	Identifier 1	Identifier 2	Identifier 3	Identifier 4	Logic 2	Logic 3	Logic 4	AND	OR	RESULT INVERT
Logic 1	ON <input type="checkbox"/> inverted <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logic 2	ON <input type="checkbox"/> inverted <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logic 3	ON <input type="checkbox"/> inverted <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logic 4	ON <input type="checkbox"/> inverted <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Load from Memory Card Load from Switch

Exit Send to Memory Card Default Settings Send to Switch

Progress Bar Connect Online



FTS 3100-A/FTS 3082-ASFP/ FTS 3060-A

Functional Features



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Functional Features

- **Fast Track Switching**
 - Detects Realtime Frames (RT)
 - Accelerates RT Frames
 - Overtakes Non-Realtime Frames (NRT)
- **Full managed Switch**
- **Configuration via Web, SNMP**
- **Memory card (SD)**





FTS 3100-A/FTS 3082-ASFP/ FTS 3060-A

Functional Features

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Managed Features (abstract) - general

- SNMP v1, v2c, v3
- VLAN
- STP/RSTP for Redundancy
- 802.1x – Support and Radius Client
- IGMP Snooping (v1, v2, v3)
- DHCP Client, DHCP Relay Agent, DHCP Option 82
- Alarms (Email, SNMP-Traps)
- Logfile, MAC-Address Table, Statistics...

Features

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FTS 3100-A/FTS 3082-ASFP/ FTS 3060-A

Functional Features

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Managed Features FTS

- PROFINET I/O – Stack
 - Engineering
 - Configuration
 - Diagnosis
- Selection of Industrial Profile
- User specific Profile
- NRT-Bandwidth Management

Features

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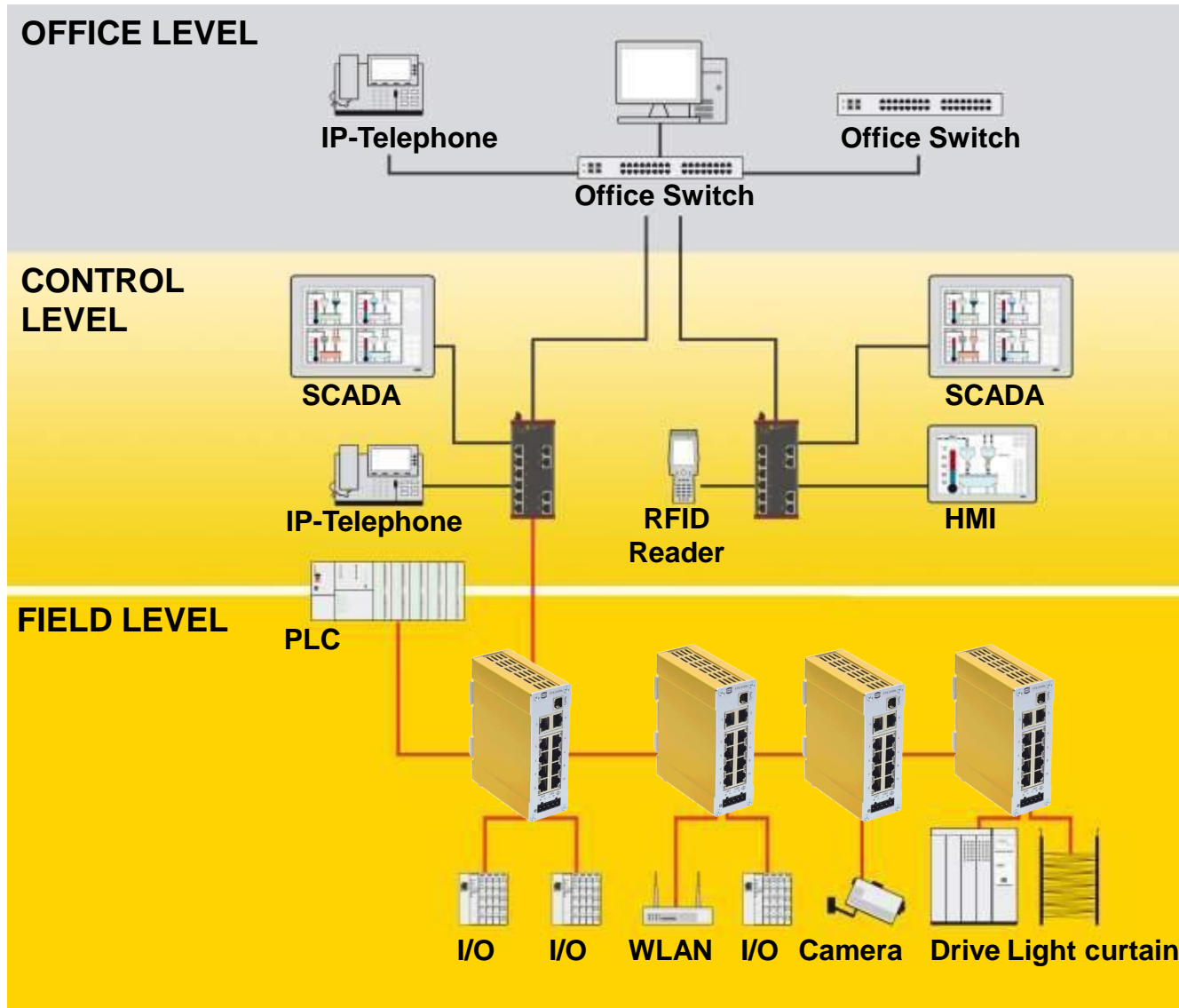
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Ethernet in the system levels





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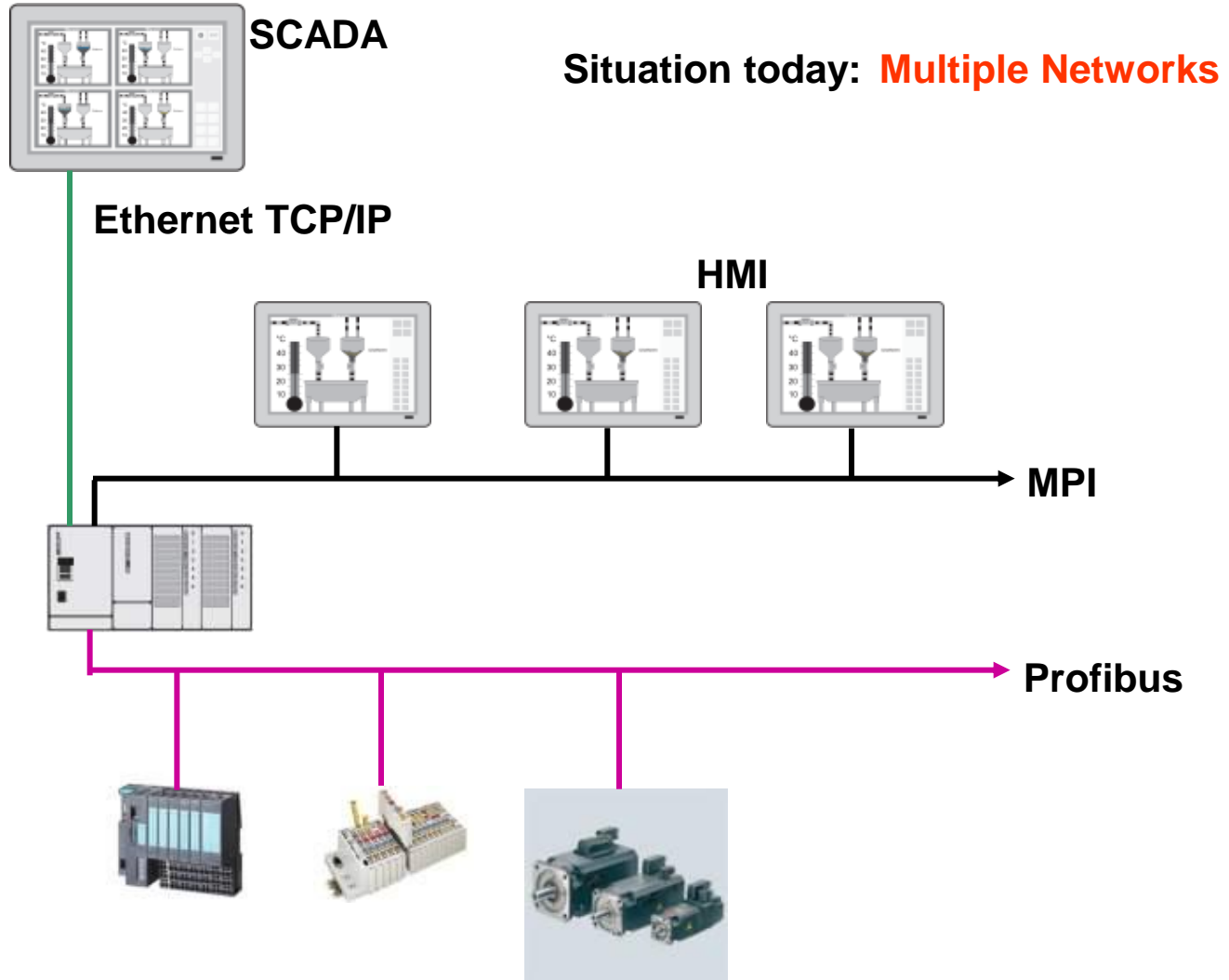
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Applications

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Applications Example





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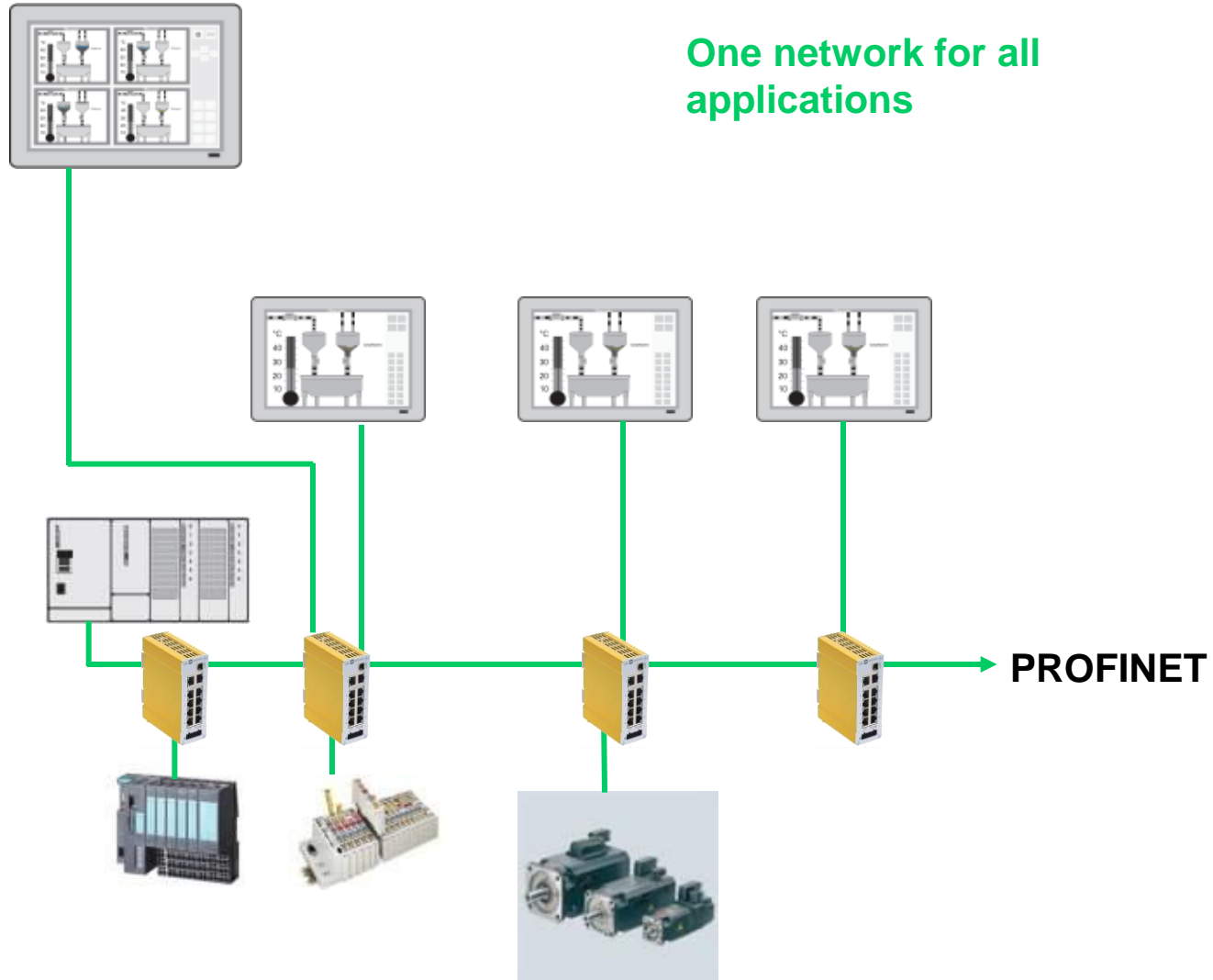
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Applications

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Applications Example with FTS





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Applications: Ethernet in field level

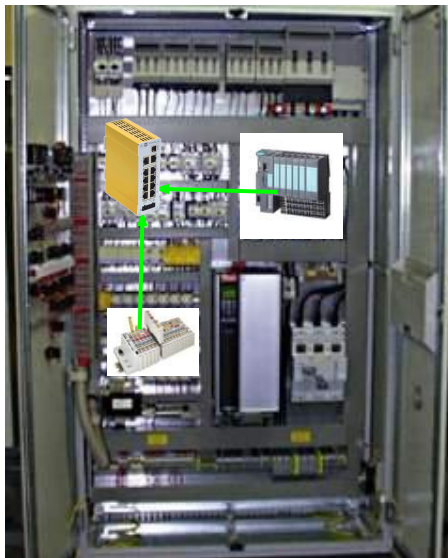
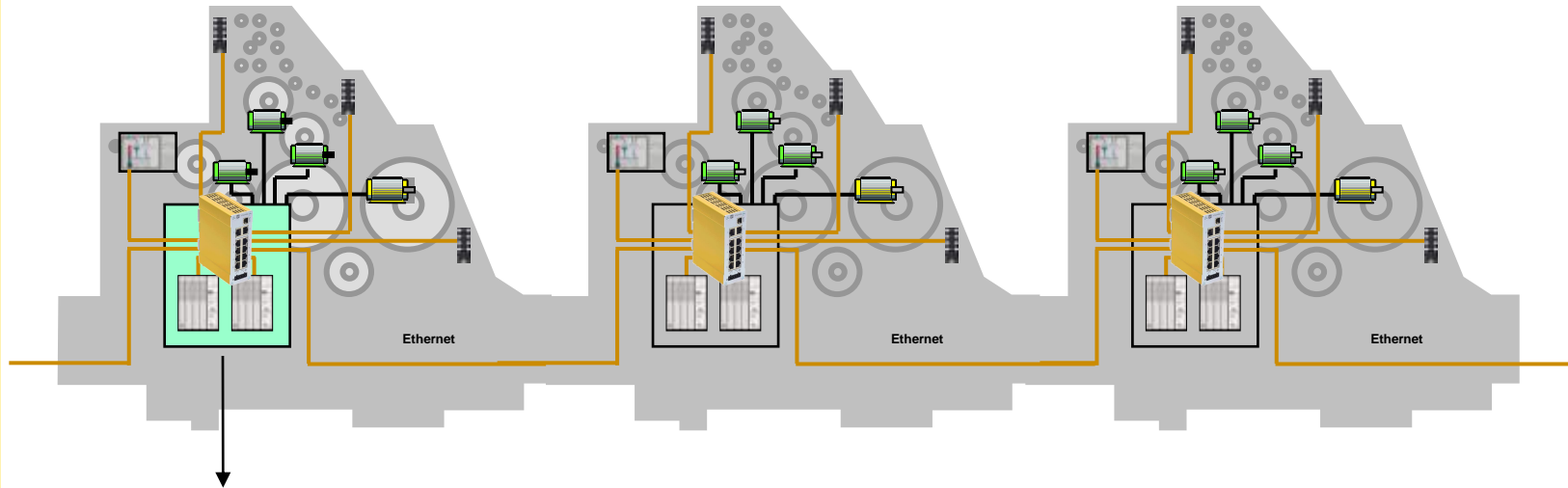
Example from machinery

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FTS stands for:

- Seamless and open for unchanged Ethernet profiles (PROFINET, Ethernet/IP, Modbus TCP ...)
- High liberty and flexibility in planning and topology
- Easy network structures, less switches
- No Chips in end devices

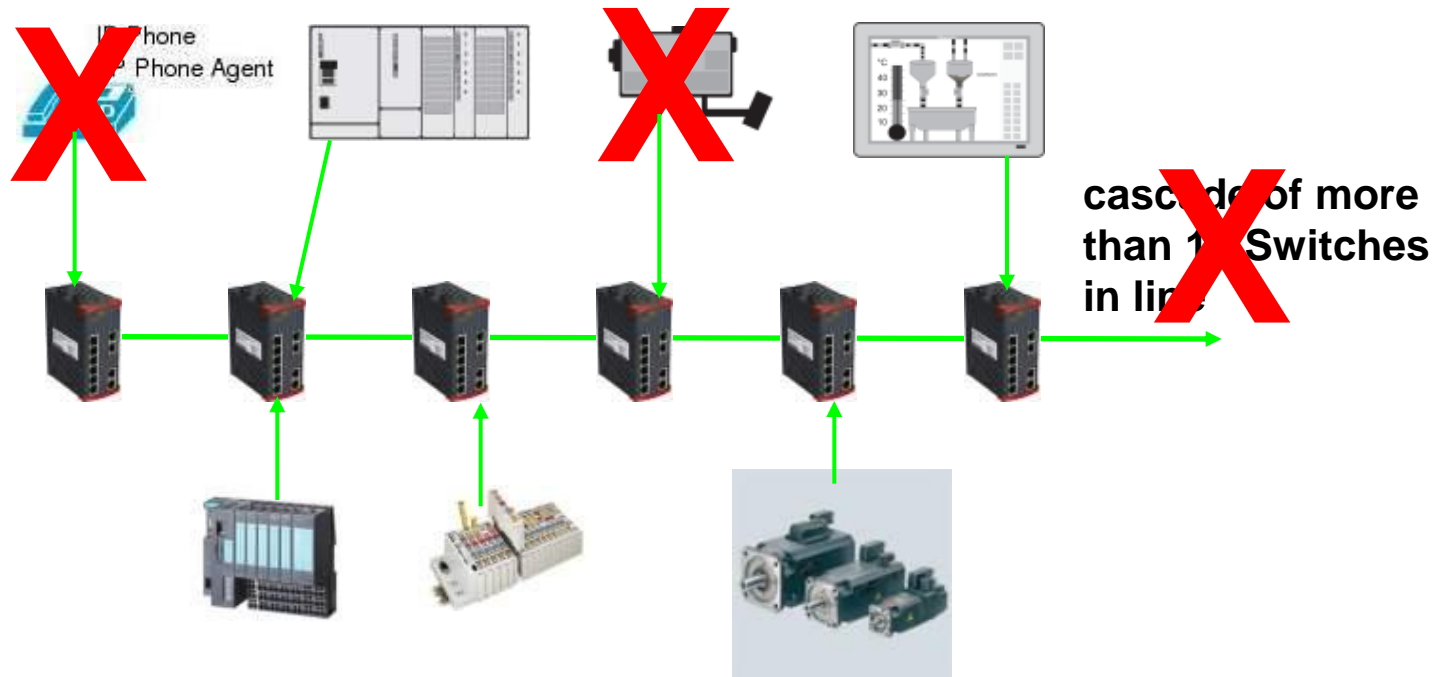


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Requirements for Ethernet in the field level

Example from automation

Example 1: Line topology with Profinet RT **WITHOUT** Fast Track Switches
Requirements: **Determinism** and cycle time **~1ms**



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Requirements for Ethernet in the field level

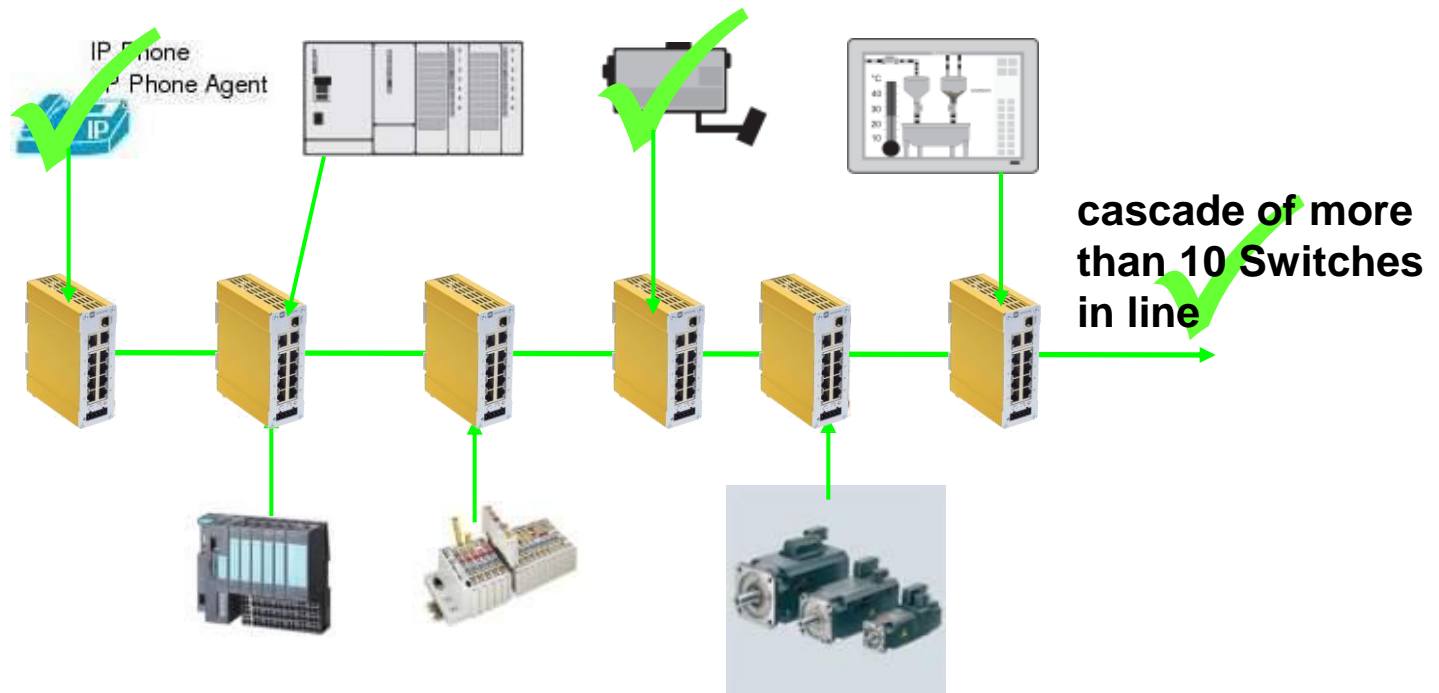
Example from automation

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Example 2: Line topology with Profinet RT **WITH** Fast Track Switches
Requirements: **Determinism** and cycle time **~1ms**

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Applications



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Different Automation Systems

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Competitors

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	Automation device with Standard Ethernet Interface	Infrastructure Components	Determinism << 5 ms	Quantity of Available devices	Open vertical Integration	Application for FTS
PROFINET RT	Yes	Switches	No	Large	Yes	Yes
PROFINET IRT	No	Switch (ERTEC)	Yes	Small	Yes	No
Ethernet/IP	Yes	Switches	No	Large	Yes	Yes
EtherCAT	No	None (Ring)	Yes	Small	No	No
SERCOS III	No	None (Ring)	Yes	Small	No	No
Modbus TCP	Yes	Switches	No	Small	Yes	Yes
Powerlink	No	Hubs	Yes	Small	No	No

Green...Application for FTS

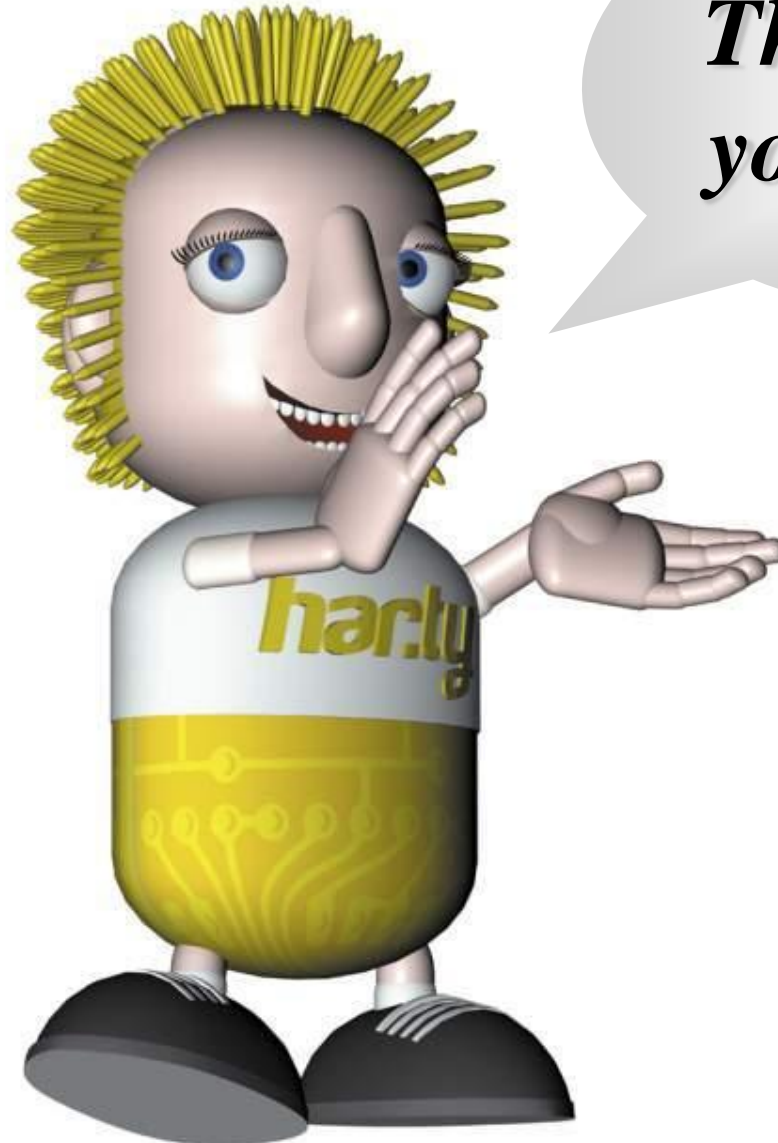


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*Thank you for
your attention*