PLANT

of the Future

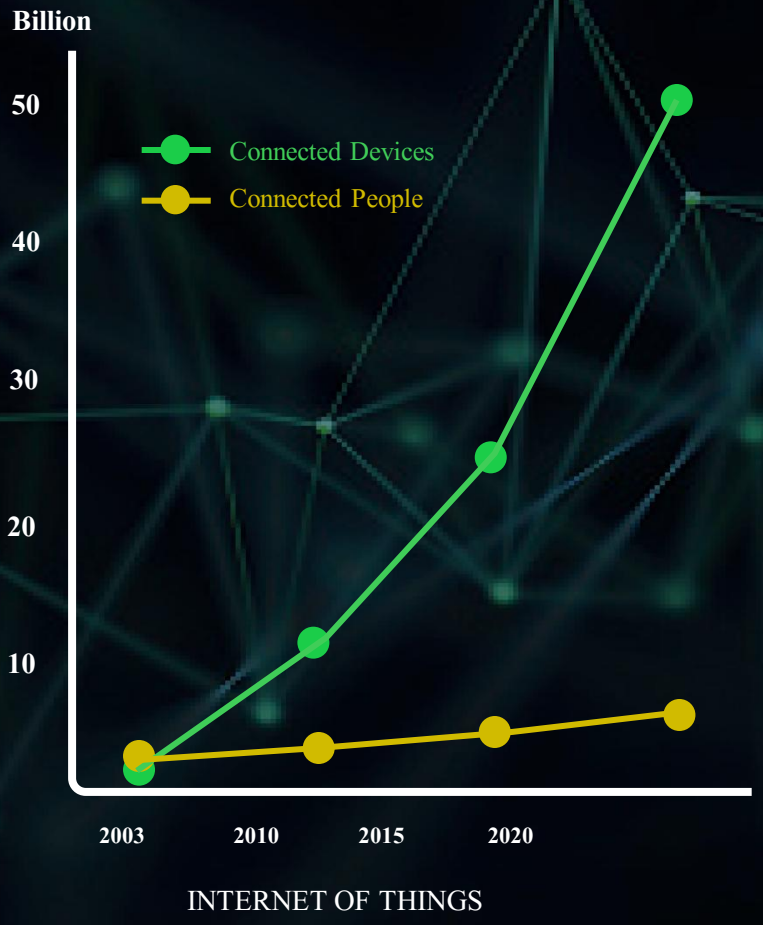
16 Maart 2016

Rob van den Bos / Product Manager Automation

16 maart 2017 ••• Hart van Holland Nijkerk

Industrial Ethernet

Making Demand CONNECTED and EFFICIENT



INTERNET OF THINGS

Source : Cisco, Internet World Statistics

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Making Demand CONNECTED and EFFICIENT

IoT

ACCELERATION

Driven by pervasive penetration of

MOBILITY & ANALYTICS

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Making Demand CONNECTED and EFFICIENT

IoT

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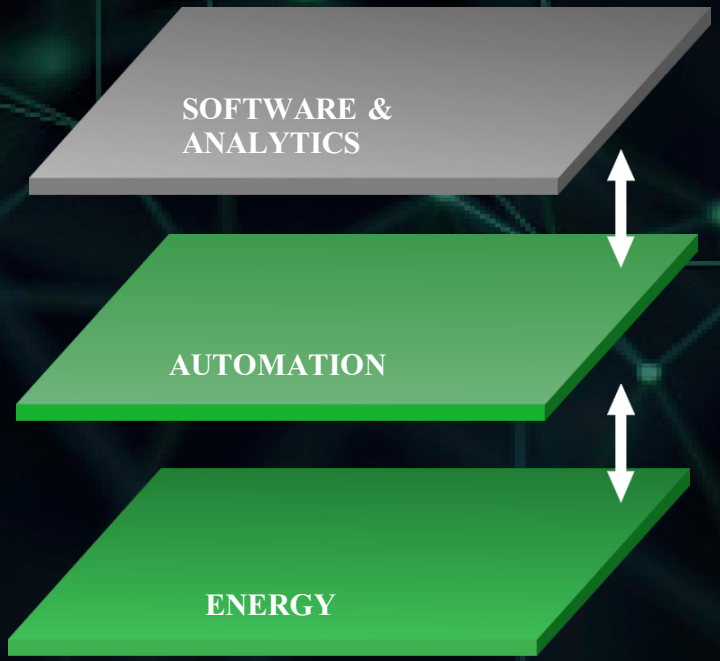

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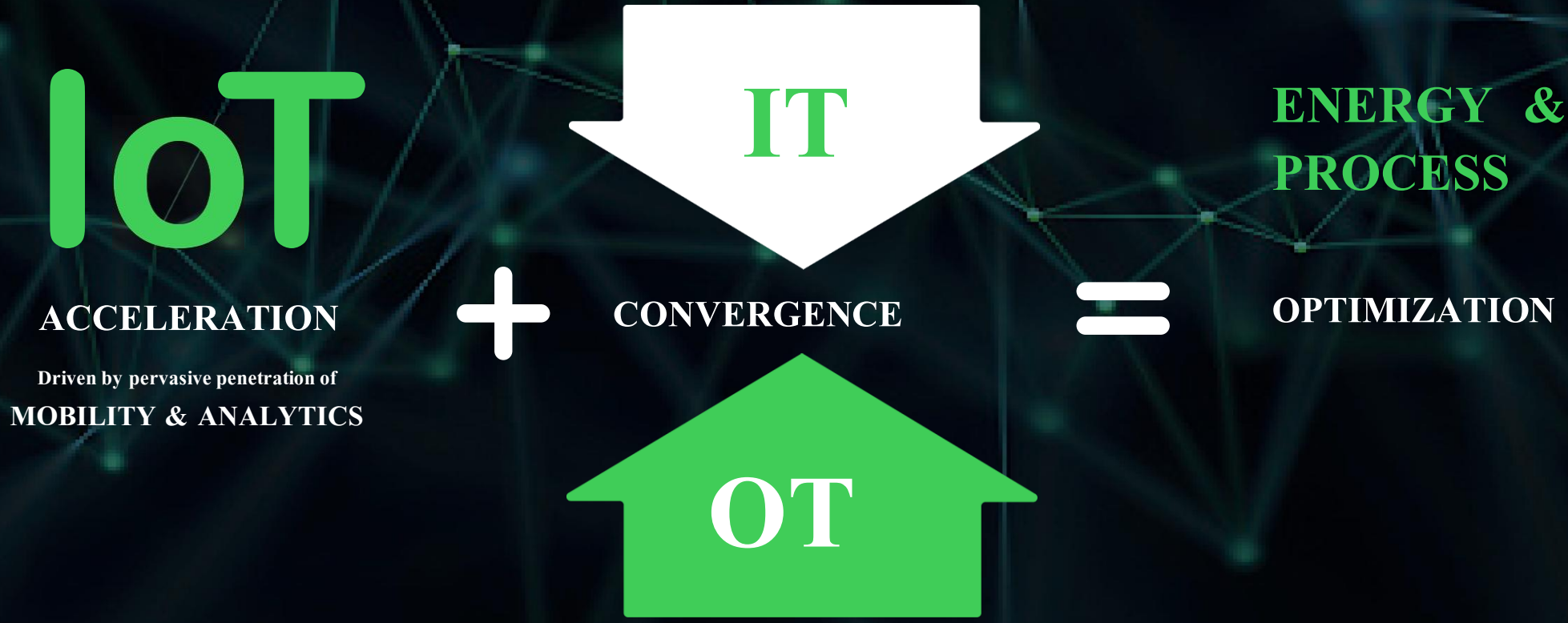
Making Demand CONNECTED and EFFICIENT



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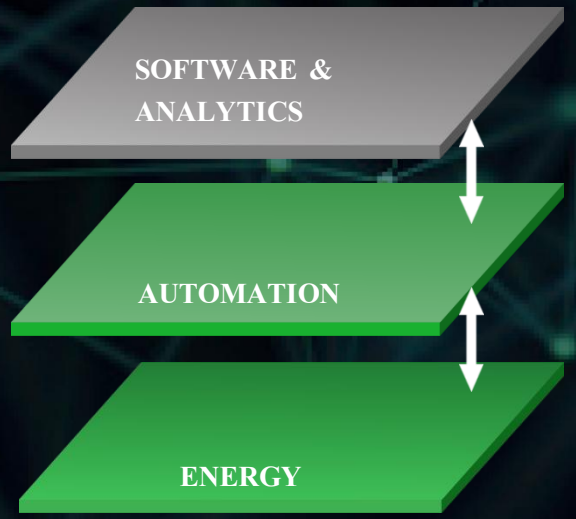
Schneider Electric



Serves

4

Markets

70% world energy consumption

>30%	Building & Residential	>82% Buildings
~2%	Data Centers & Networks	
>30%	Industry	~58% Industry
	Infrastructure	~79% Infrastructure

Massive Untapped Efficiency Potential

Source: World Energy Outlook 2012, OECD / IEA, Internal analysis

What's driving DIGITIZATION in industries?

CONNECTIVITY

- Lower cost of sensors
- Standards-driven connectivity

MOBILITY

- Pervasive and affordable communication
- Rich UI
- Recognition of operator

CLOUD

- Massive aggregation of data
- Stakeholder sharing
- Concentration of specialists

ANALYTICS

- New functionalities
- Artificial intelligence optimizing performance at all levels

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For business, IT-OT convergence is a critical st

IT today: Managing a world of "Persons"

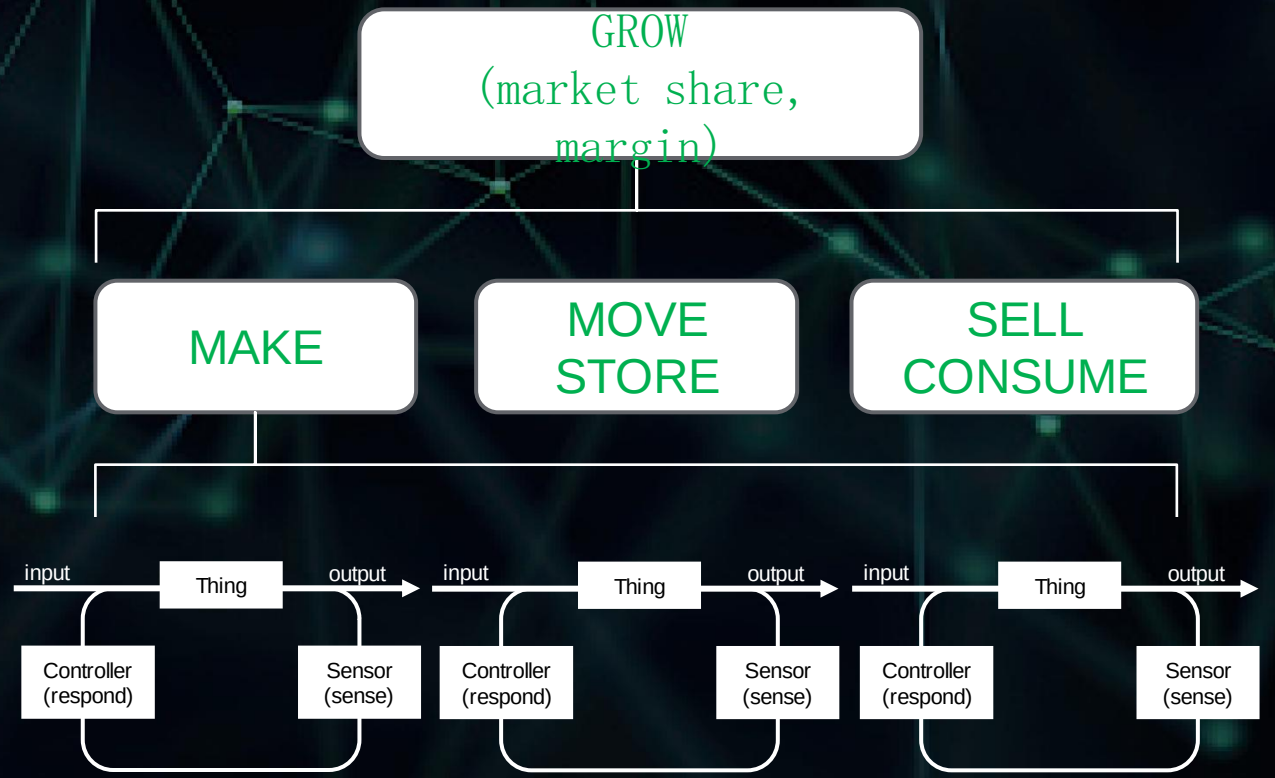
Current Reality

Some "people"

Some "times"

Some "places"

Some "things"



Financial Control Loop
"Did I make money?"
[Days - Weeks]

Operational Control Loop
"Did I fulfill the order?"
[Minutes - Hours]

Process Control Loop
"Did I execute the task?"
[Real-Time]

Tomorrows Reality

Any "people"

Any "time"

Any "where"

Any "things"

OT today: Controlling a world of "Things"

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INNOVATION FOR VALUE

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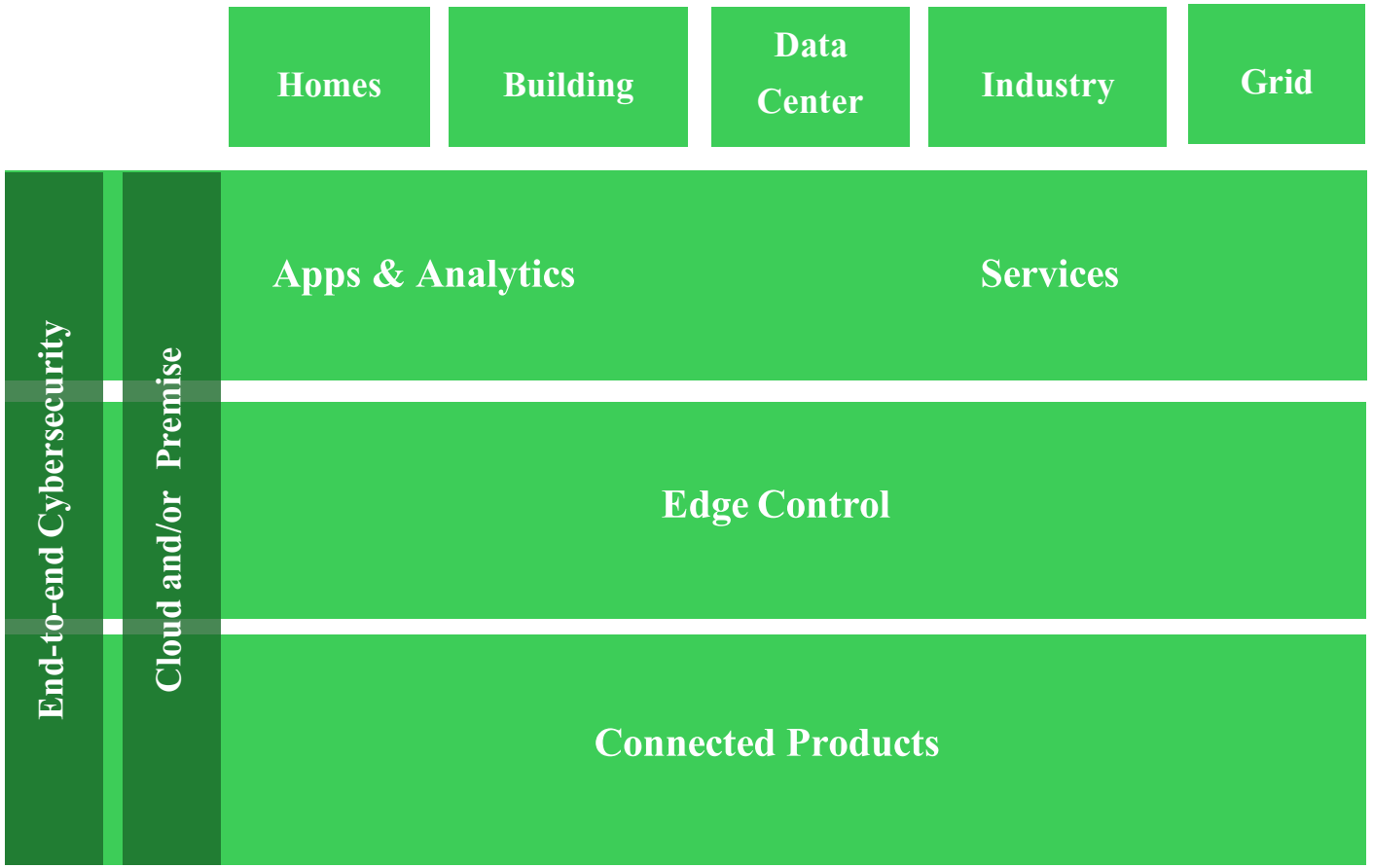
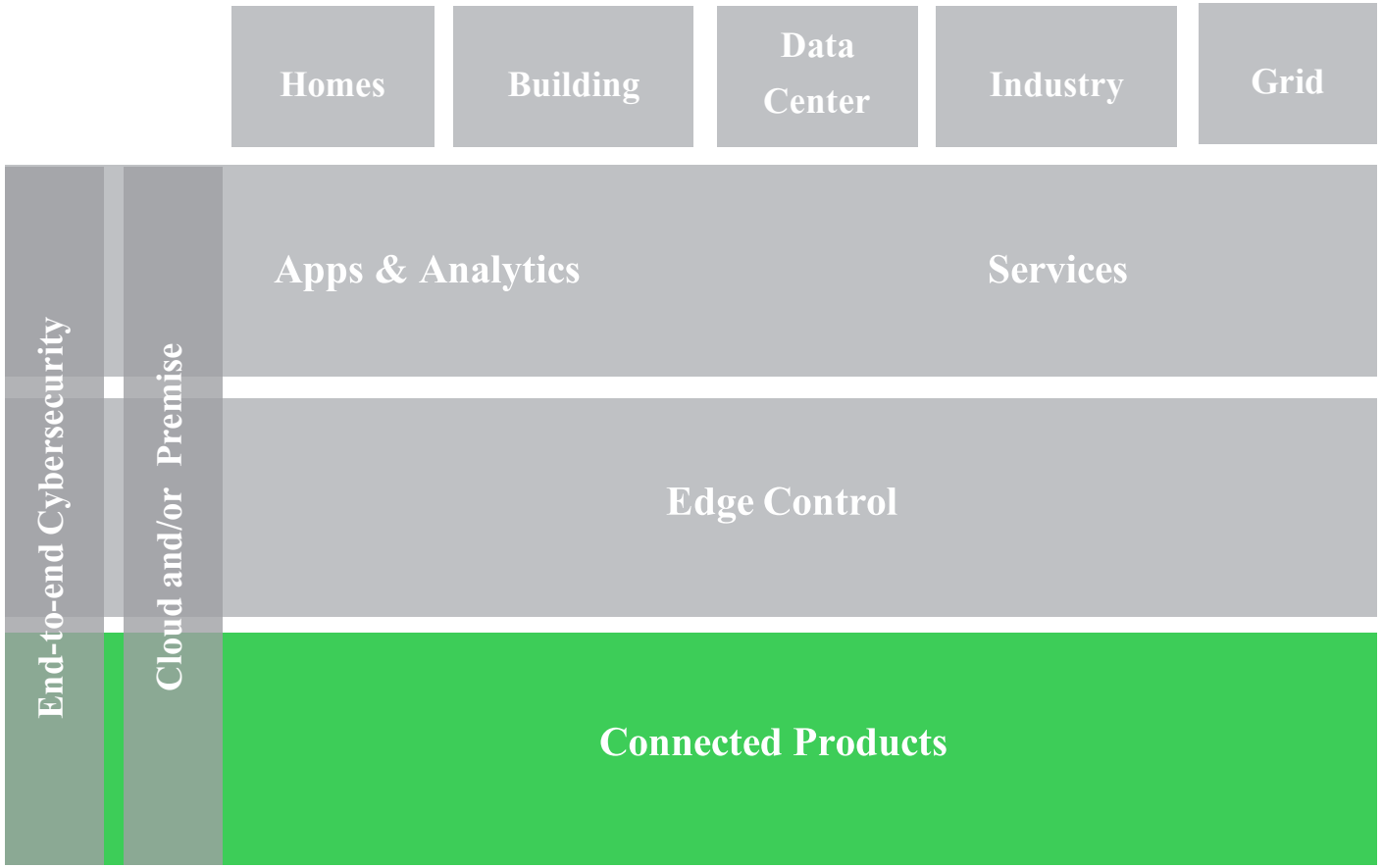
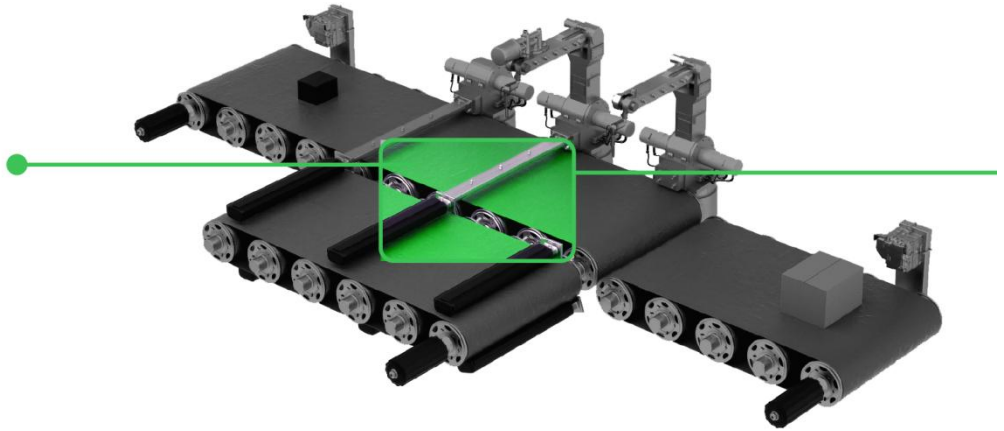
EcoStruxure™



Connected products: the smart “things”

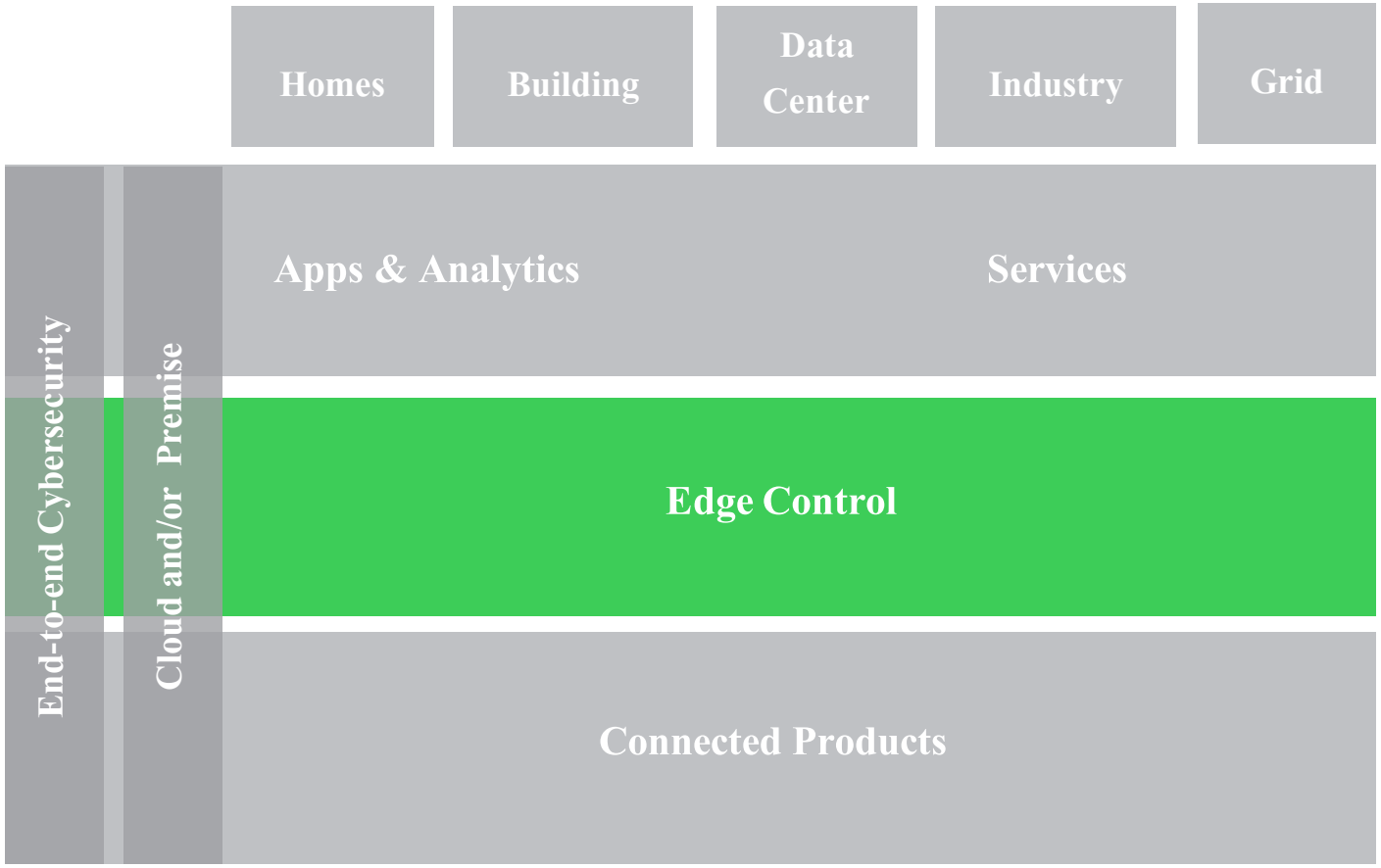




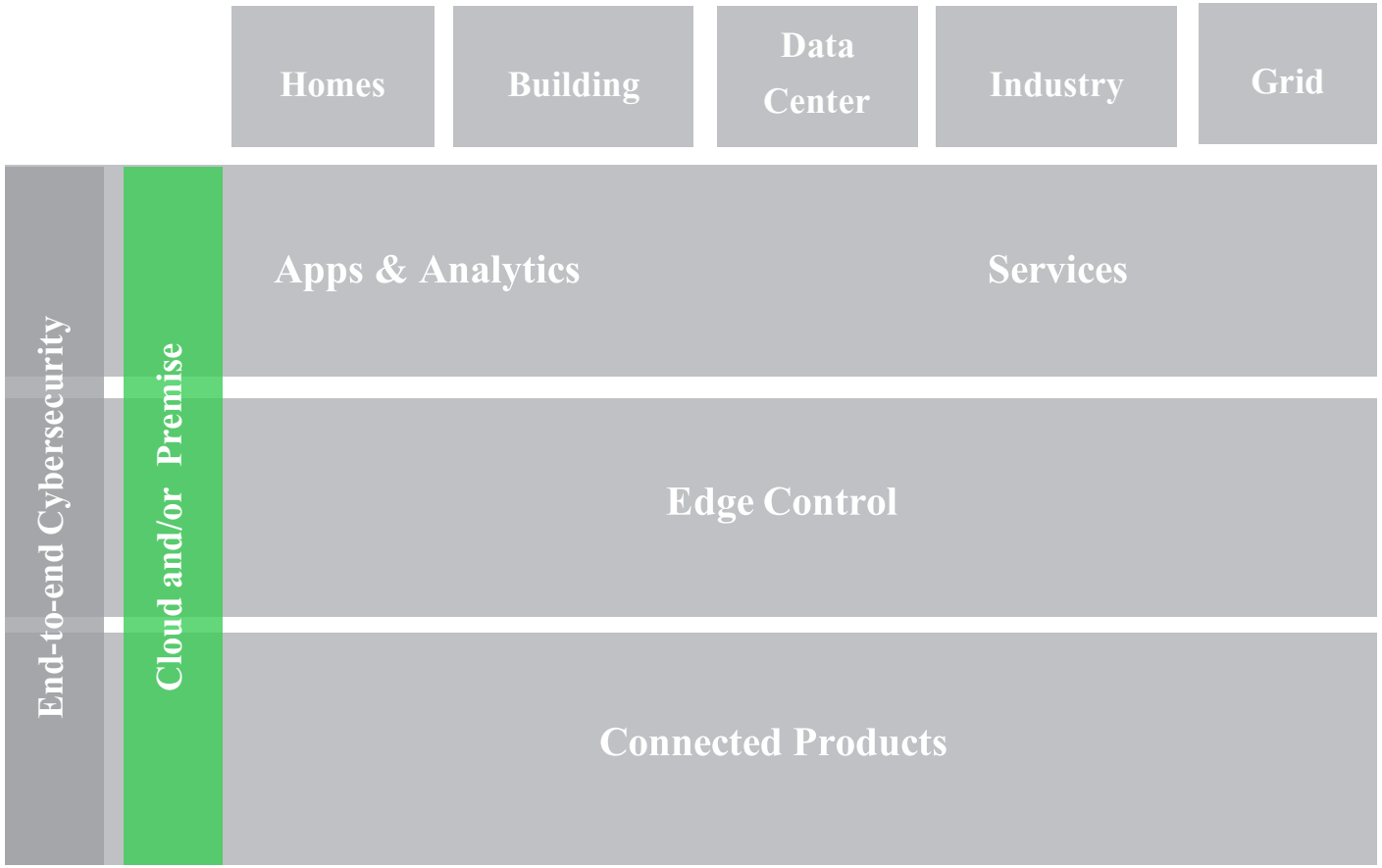
A range of variable speed drives for smart machines

Achieve Maximum Flexibility
Extended Machine Availability
Full Connectivity & Integration

Edge Control: constant on-premise reliability

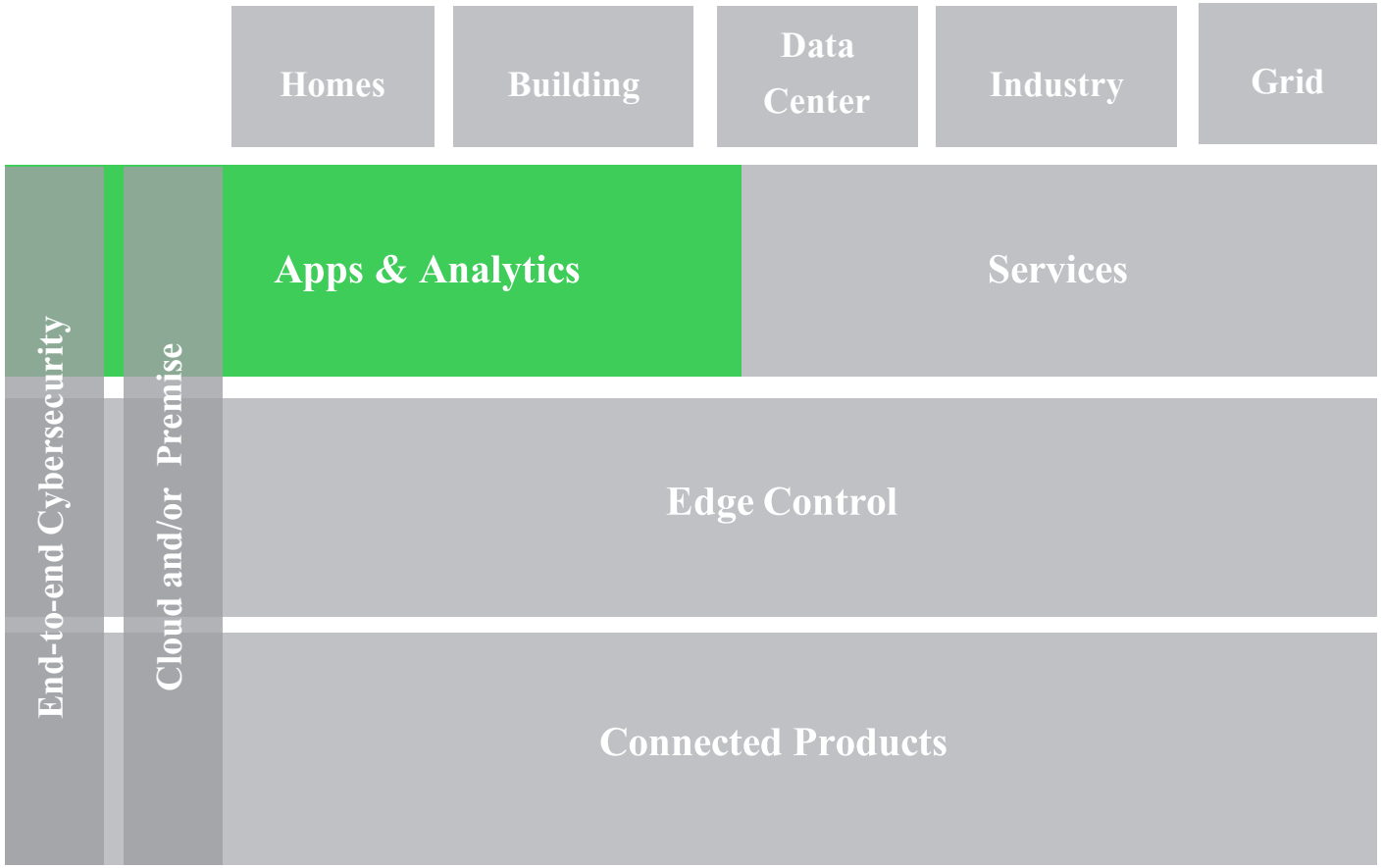


EcoStruxure Cloud: Enabling new apps and services



EcoStruxure™ Cloud

Apps & Analytics

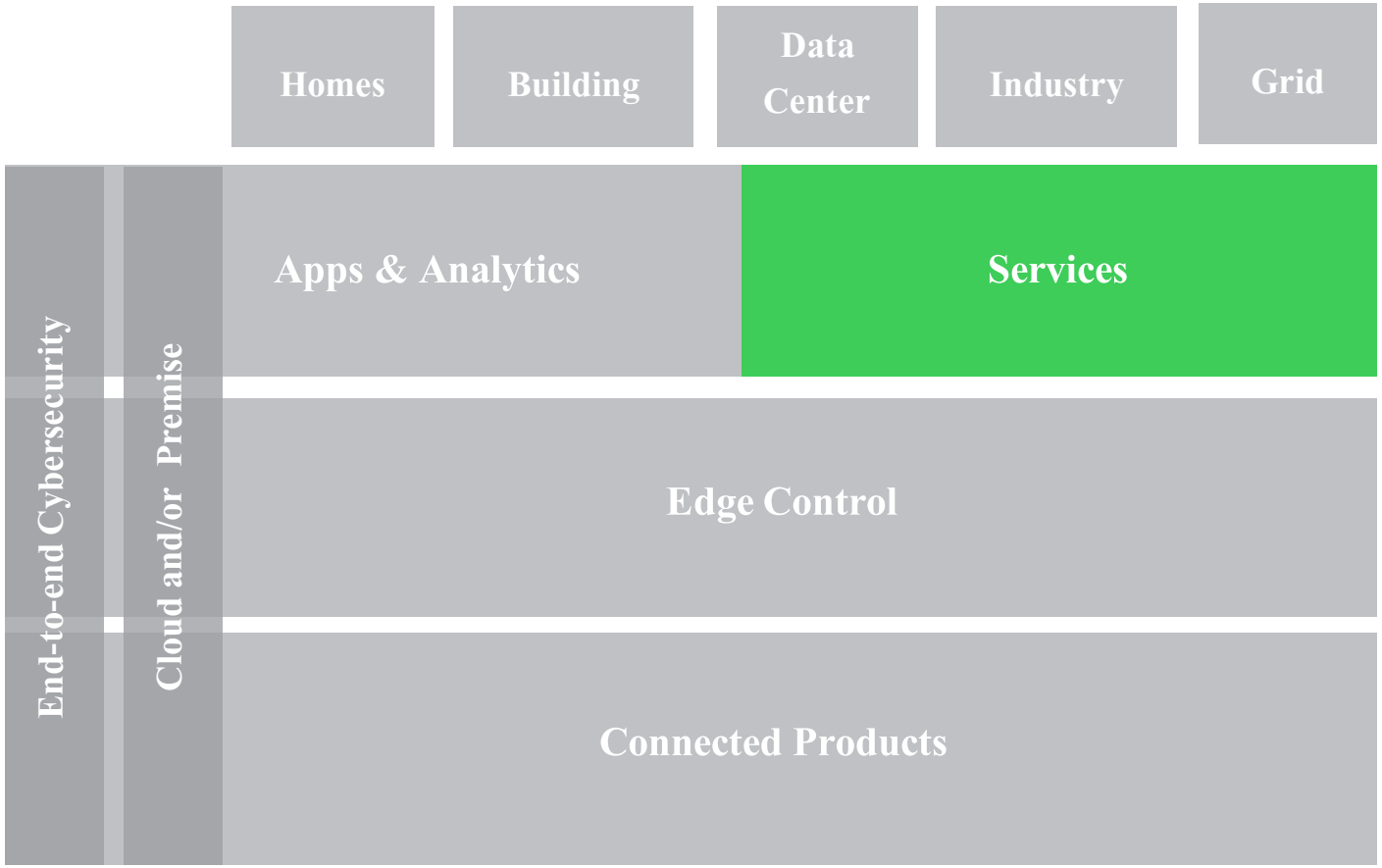


Augmented Operator

An intuitive User Interface for increased Efficiency, Error Free operations and Quicker Autonomy

Smart Glance

Services: The new frontier of value



- Remote Monitoring
- Engineering in the Cloud
- Asset Performance Management
- Energy Performance Management

DO YOU REMEMBER?

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Do you remember...?

Now consider the revolution brought on by the introduction of the Smart Phone

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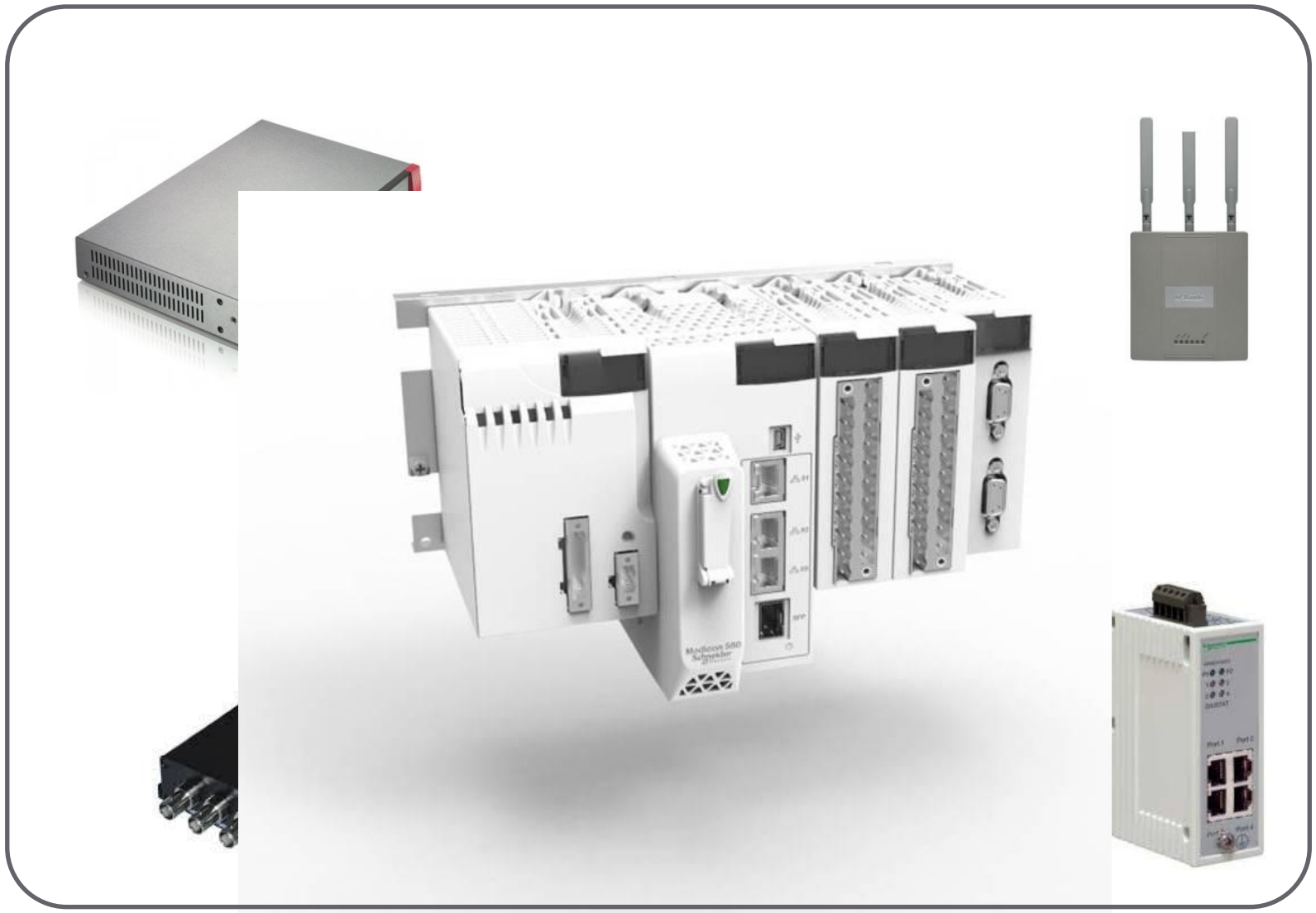
Do you remember...?

And now consider the new era ushered in by the M580 ePAC!



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The Plant of the Future will excel in 3 areas

1

Asset Performance

Cloud-based apps

Wireless connectivity

Low-power WAN

Low-cost sensors

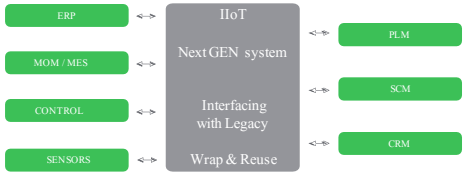
2

Augmented Operators

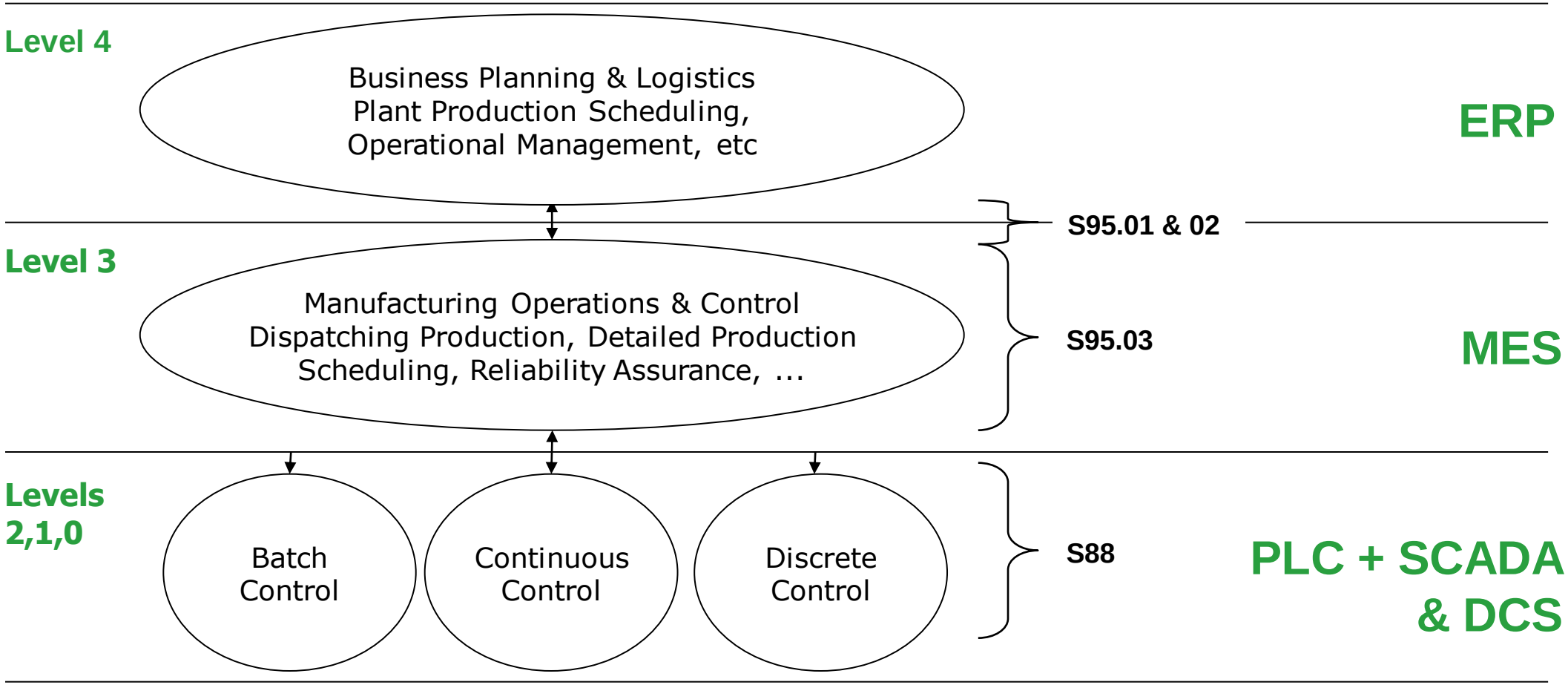
SmartGlance

3

Smart Enterprise Control



Use the ISA95 structure / Hierarchical Activity Model



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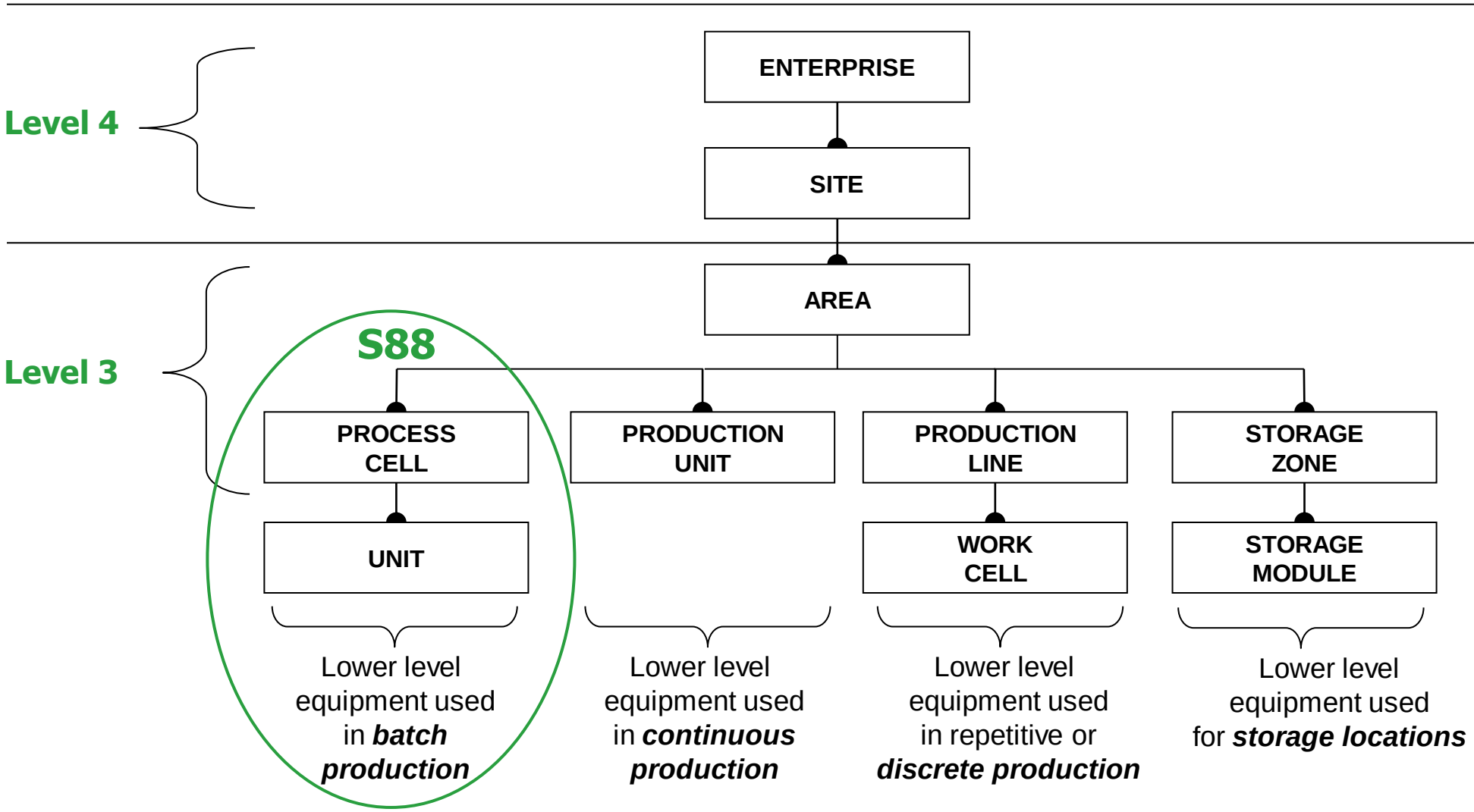
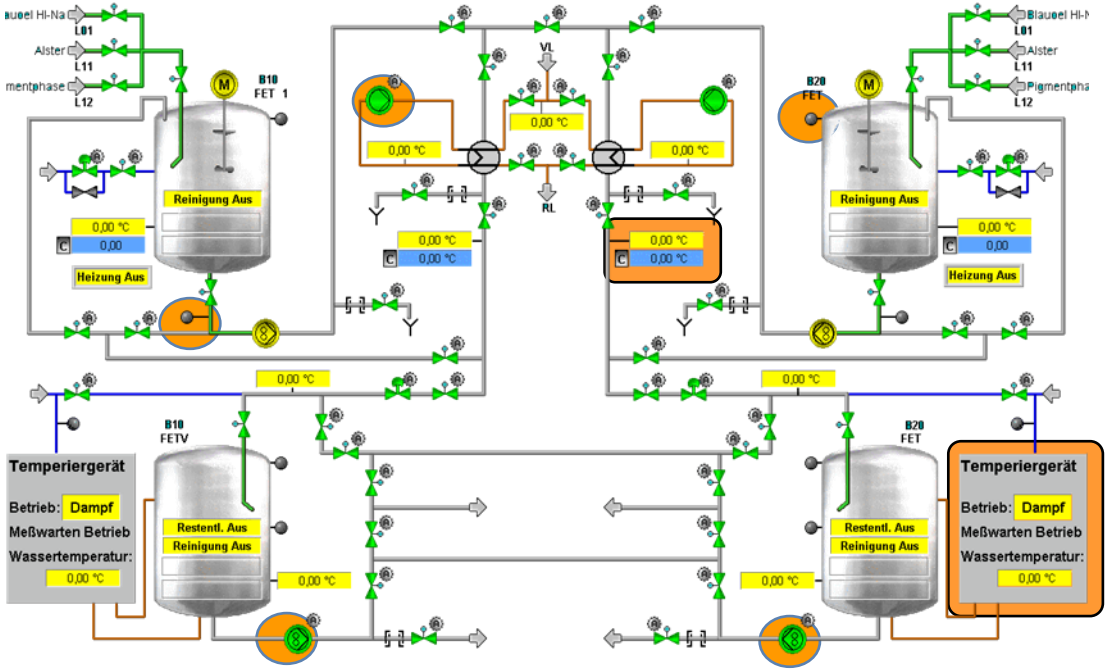
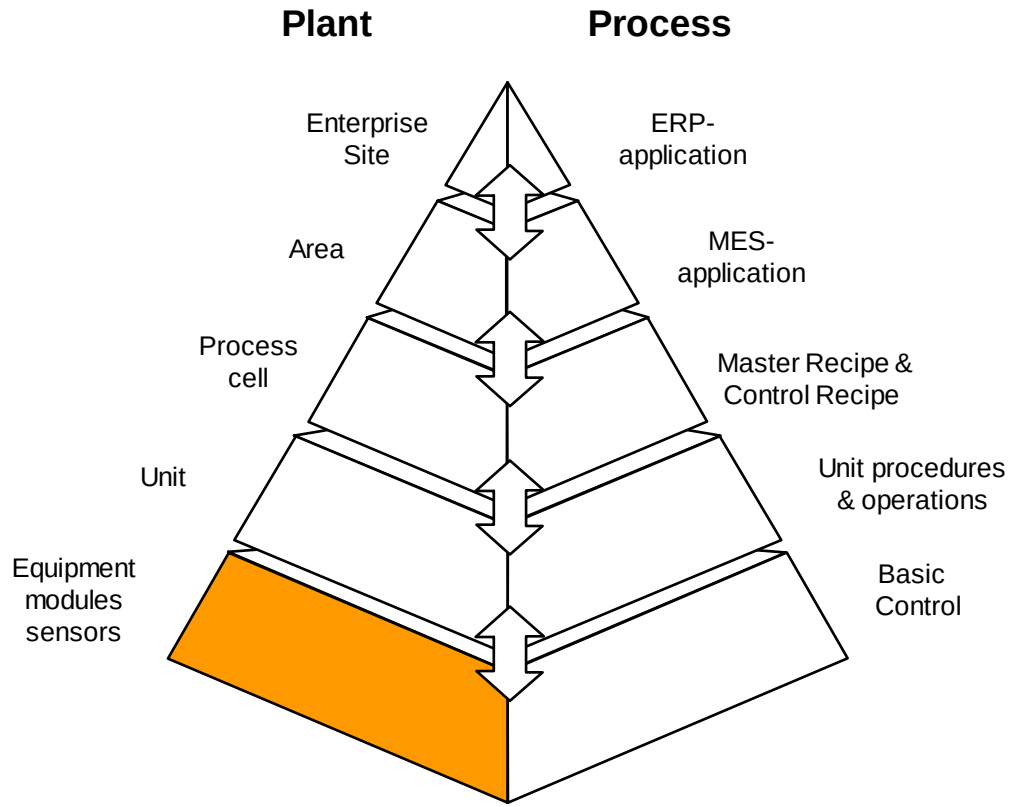


Use the S88 structure for FLEXIBLE Batch Processing





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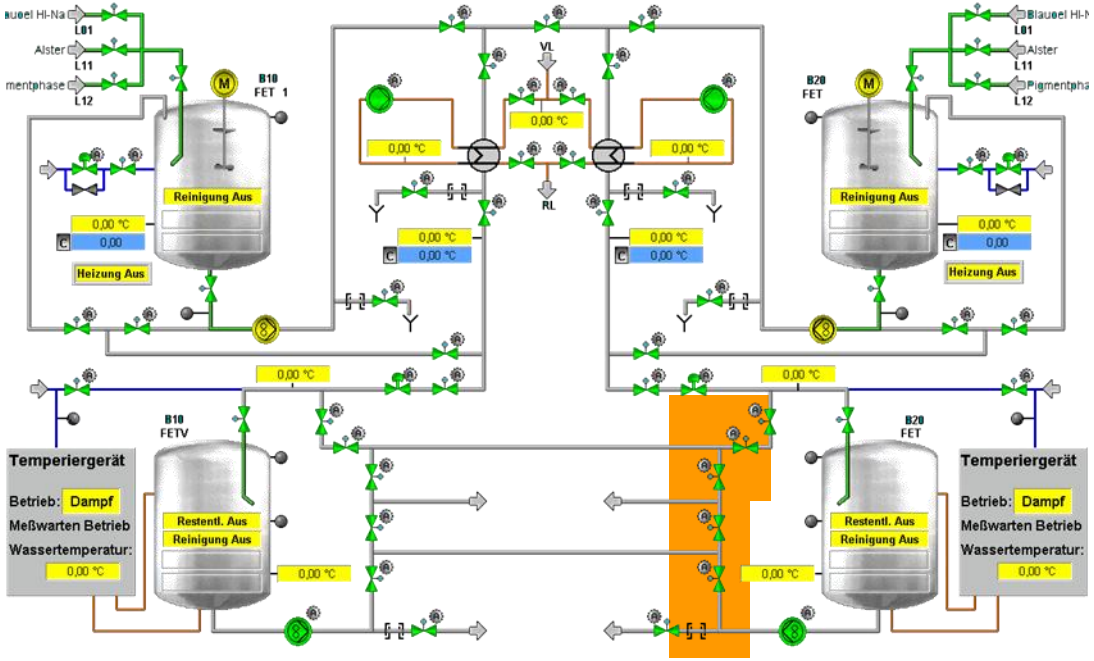

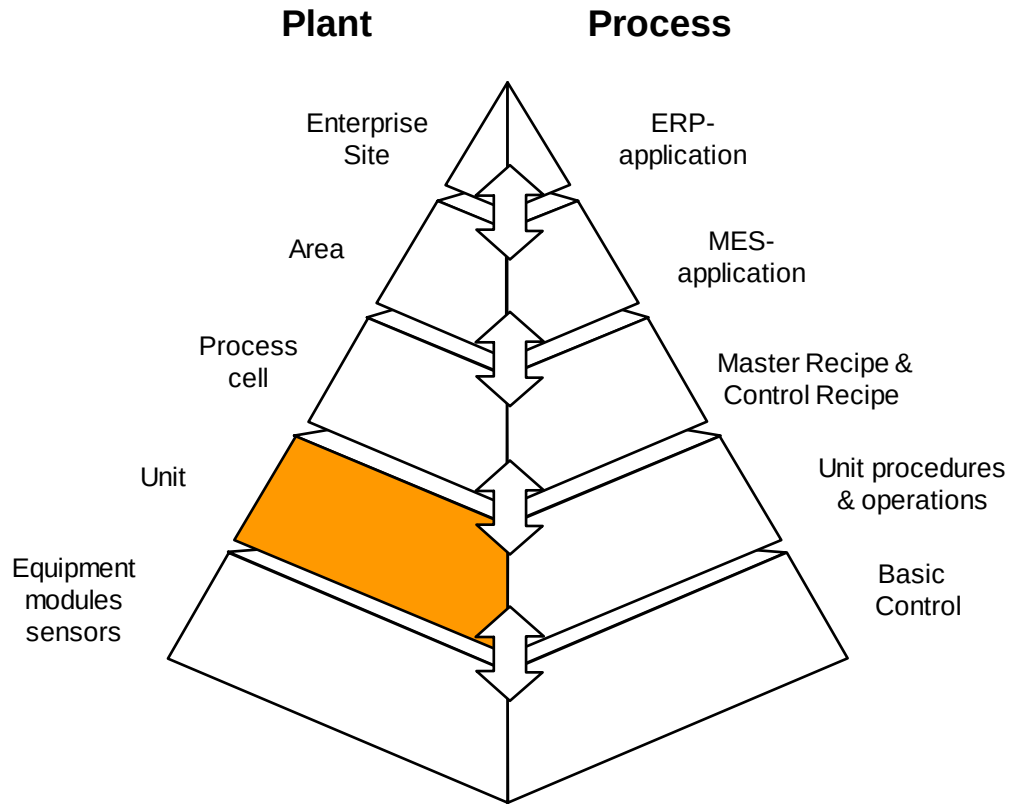

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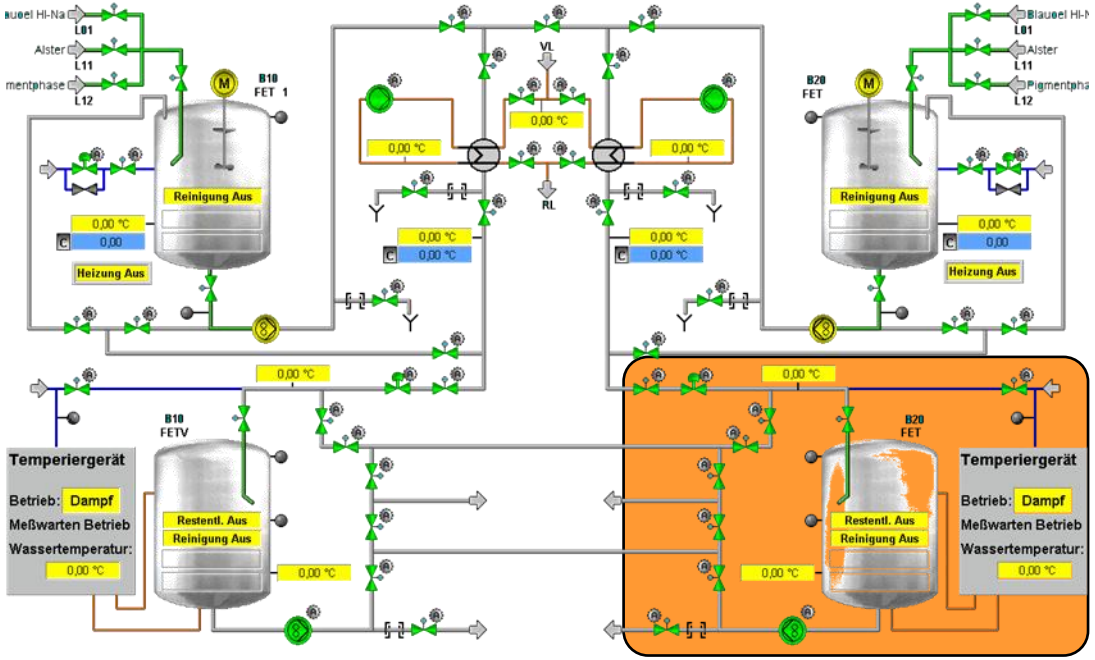

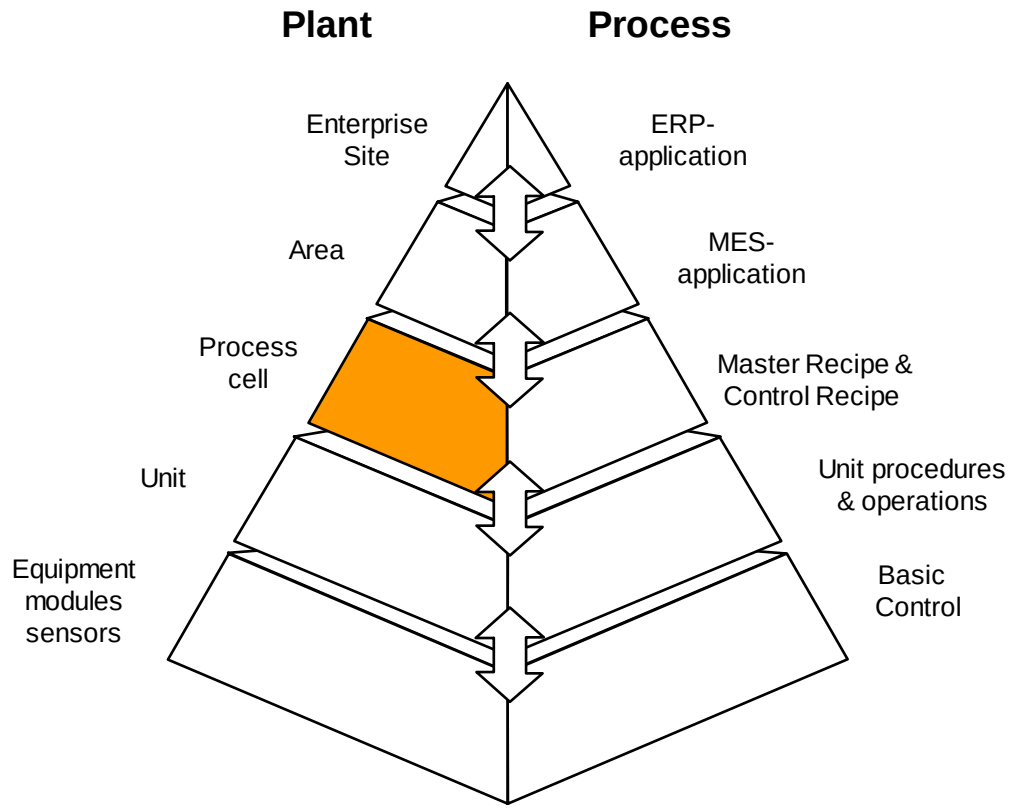

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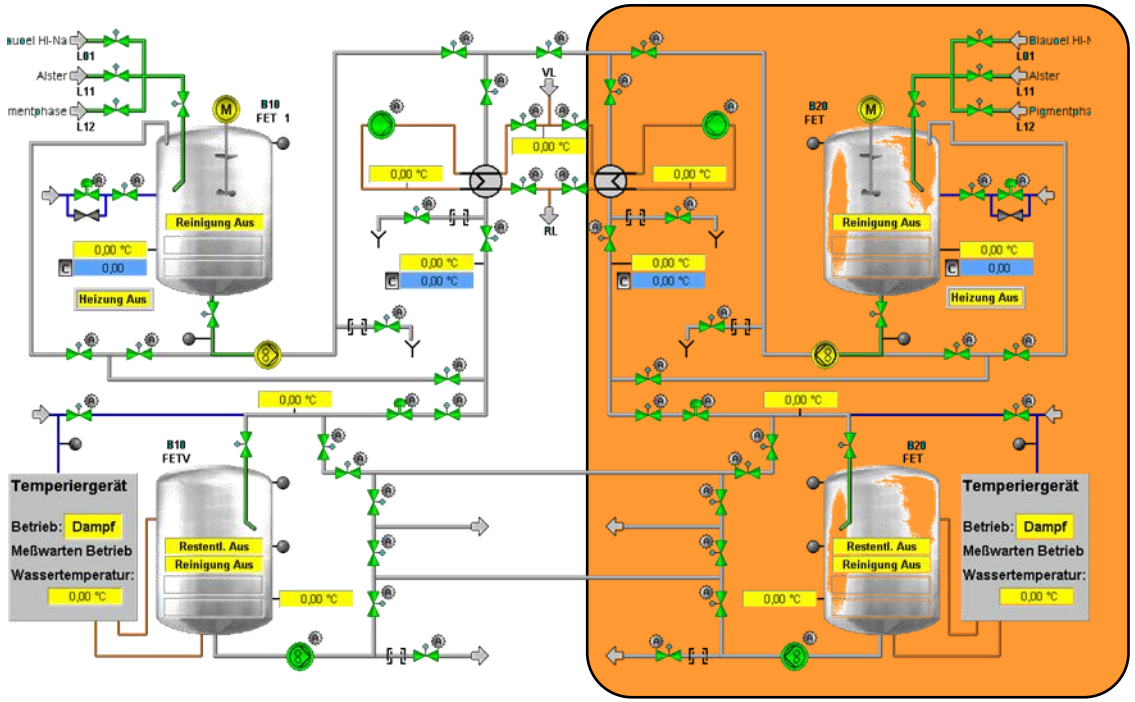

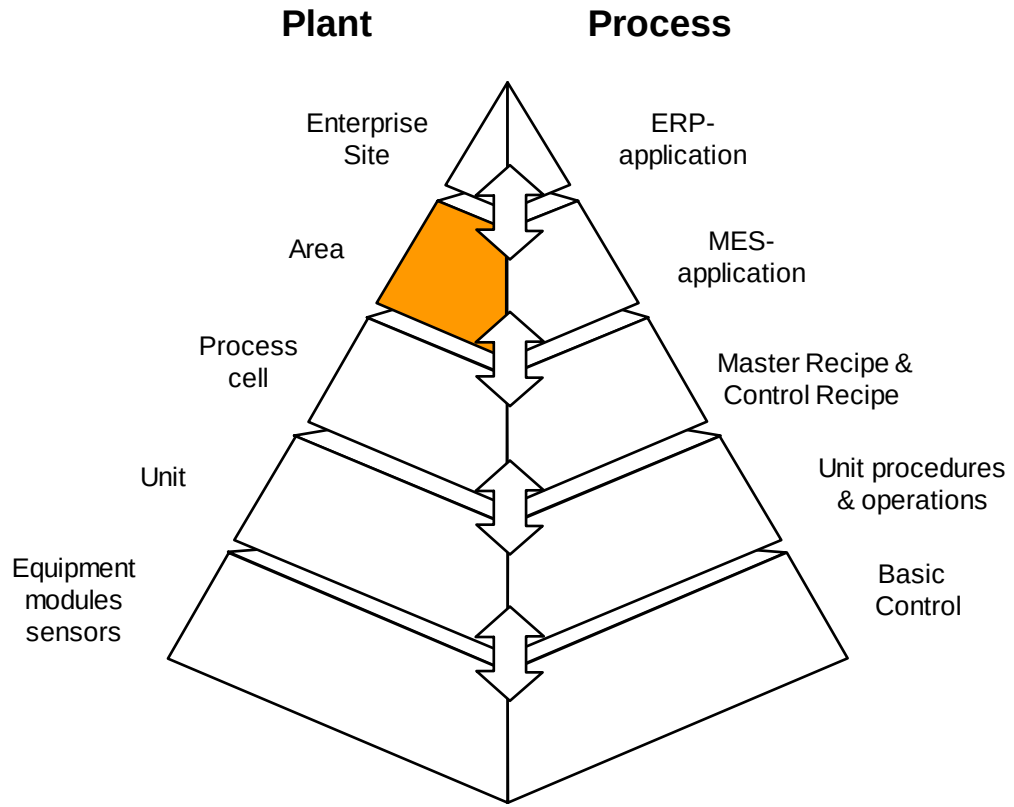

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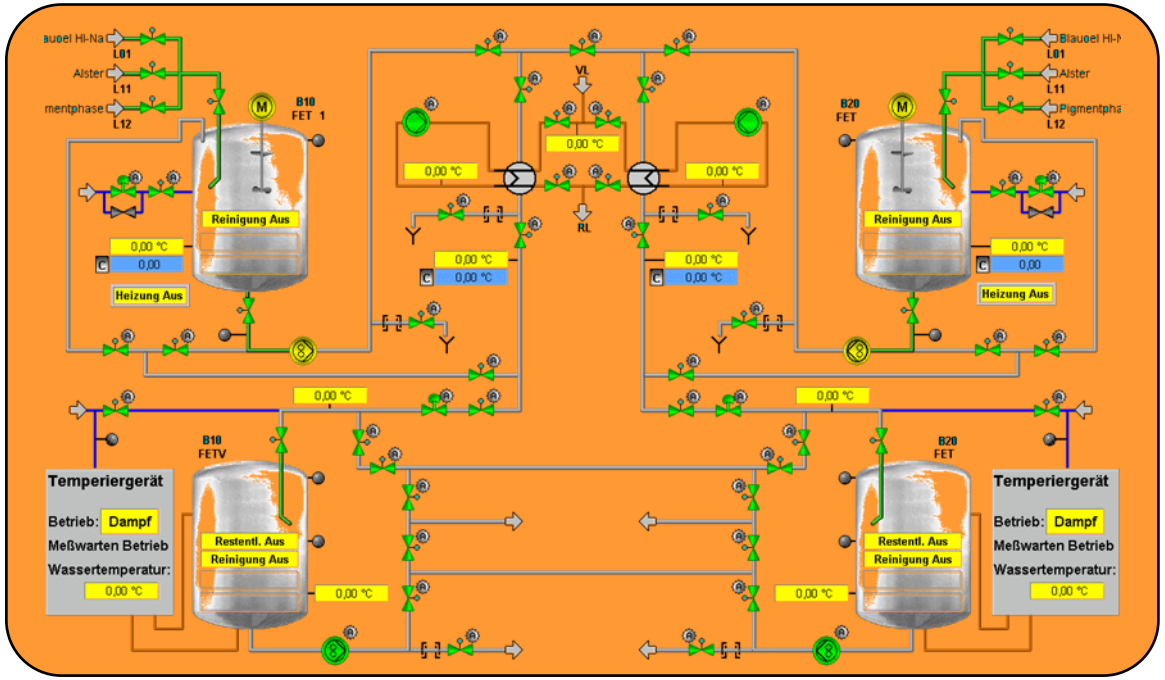

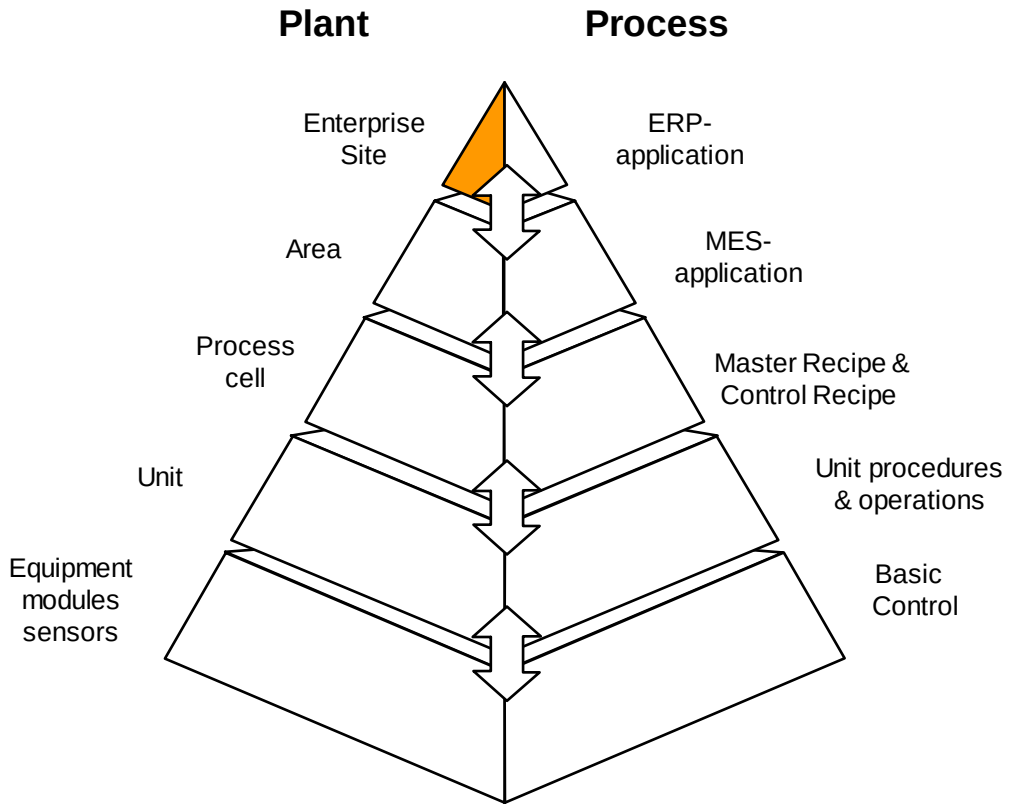

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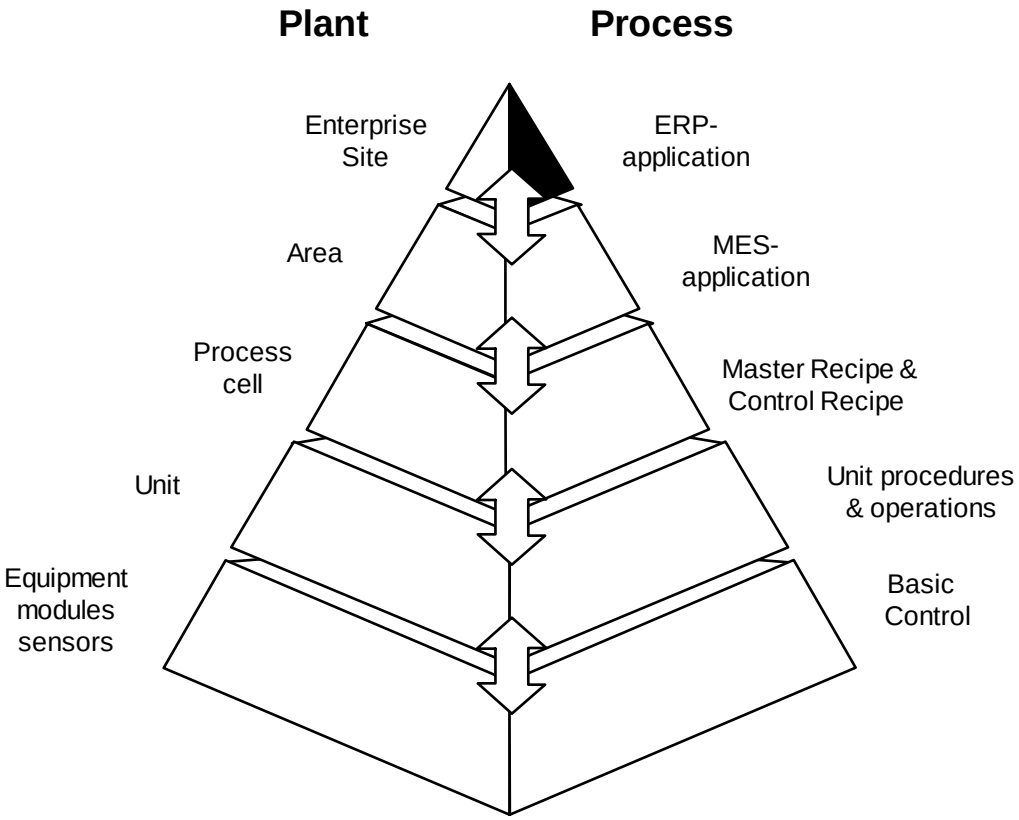

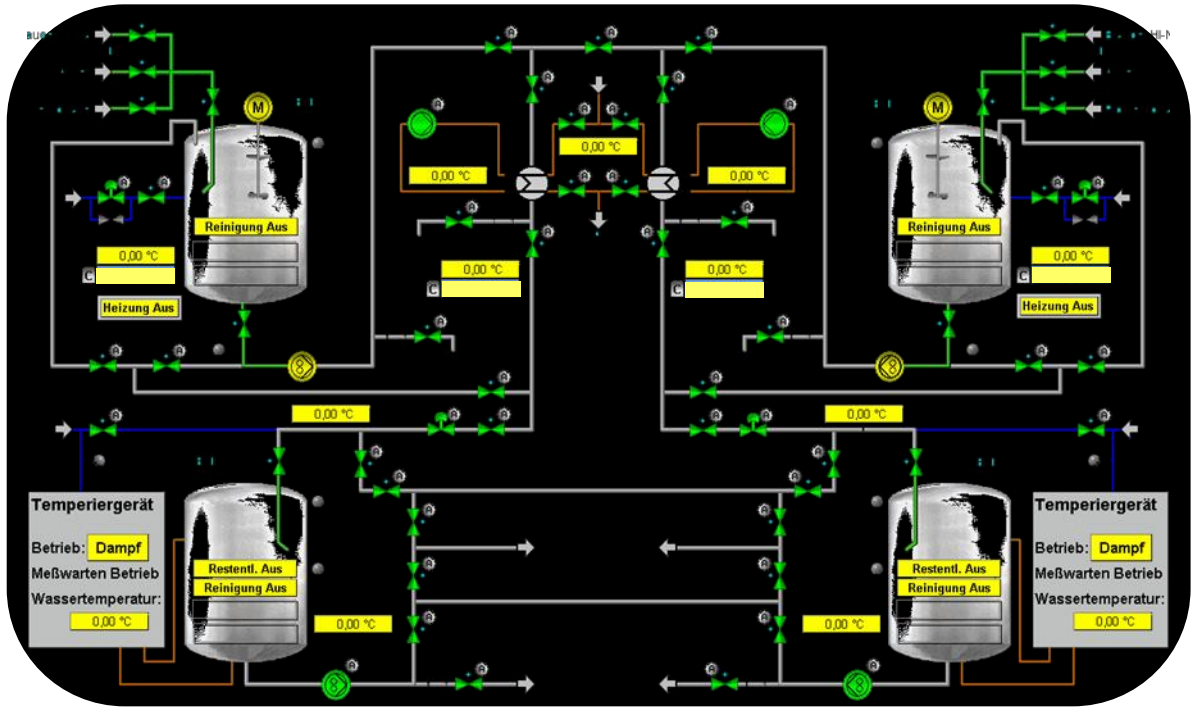

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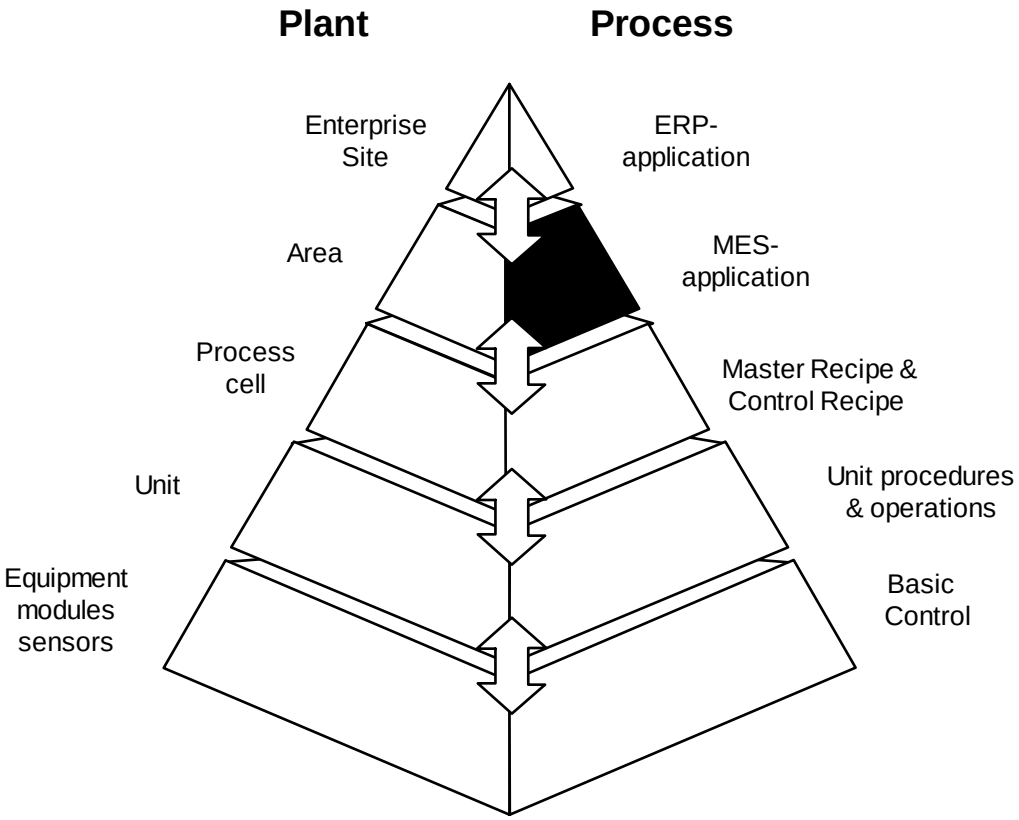

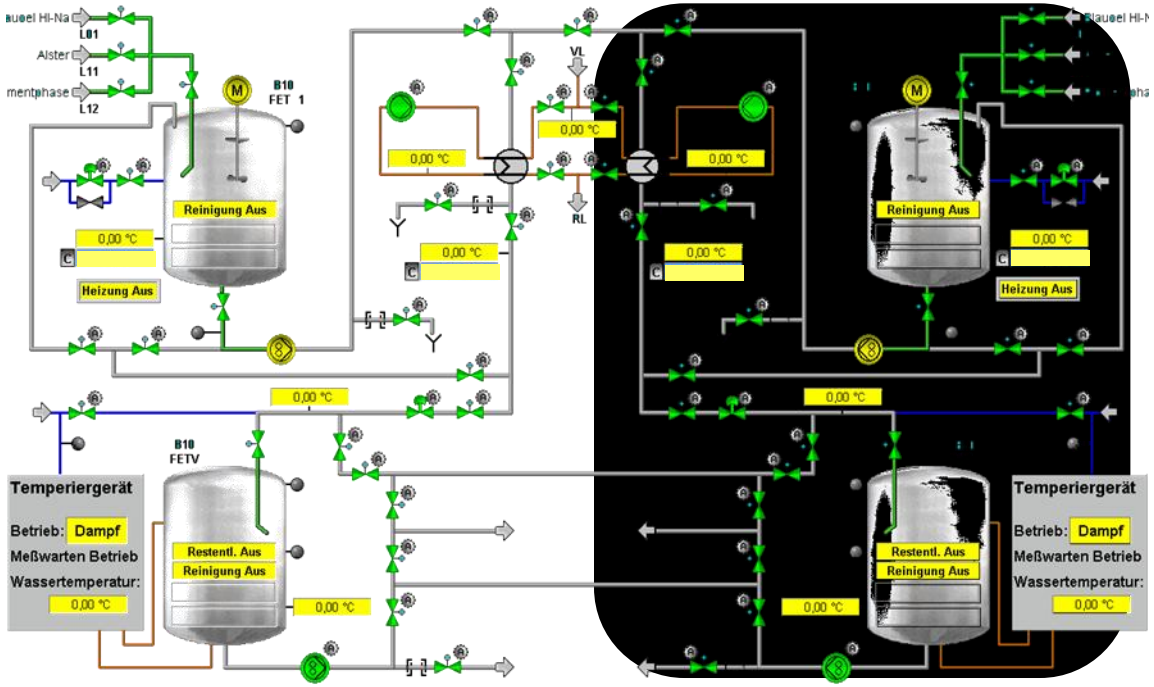

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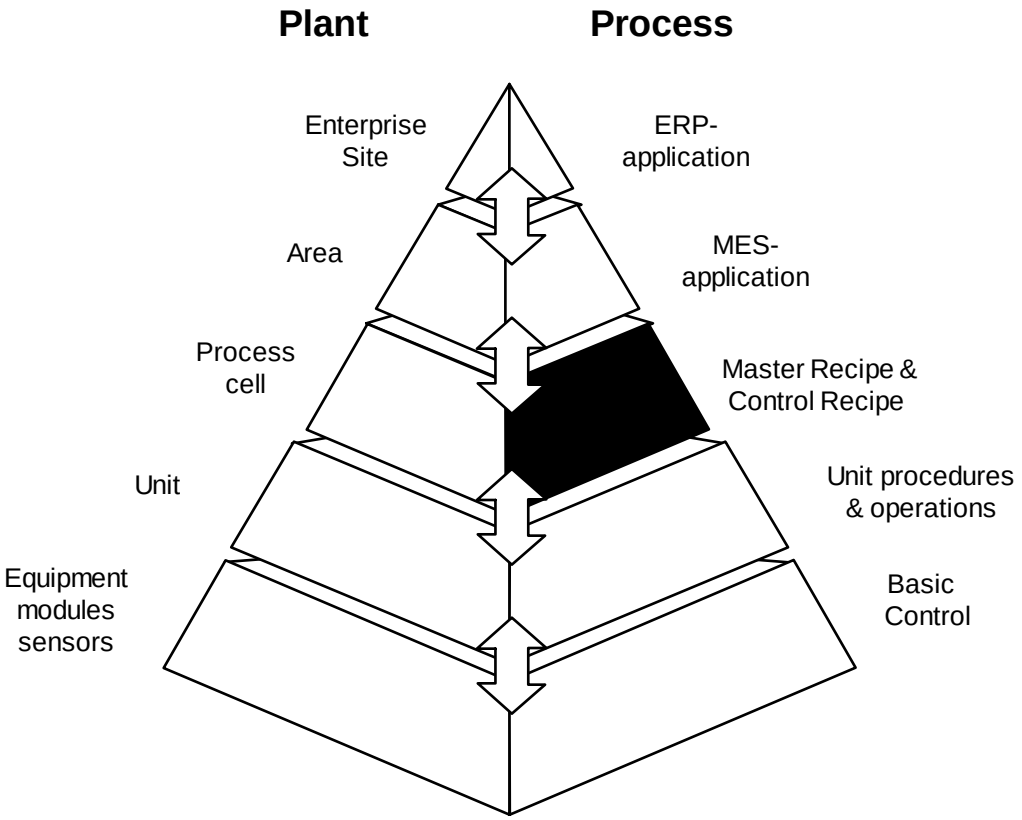

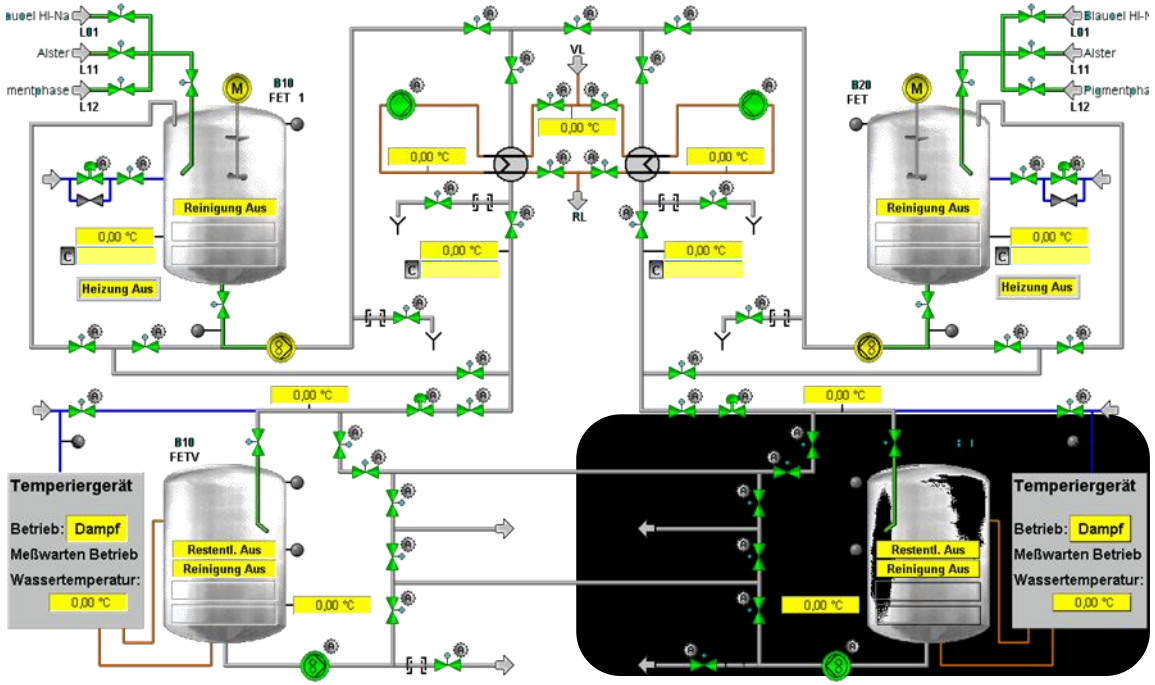

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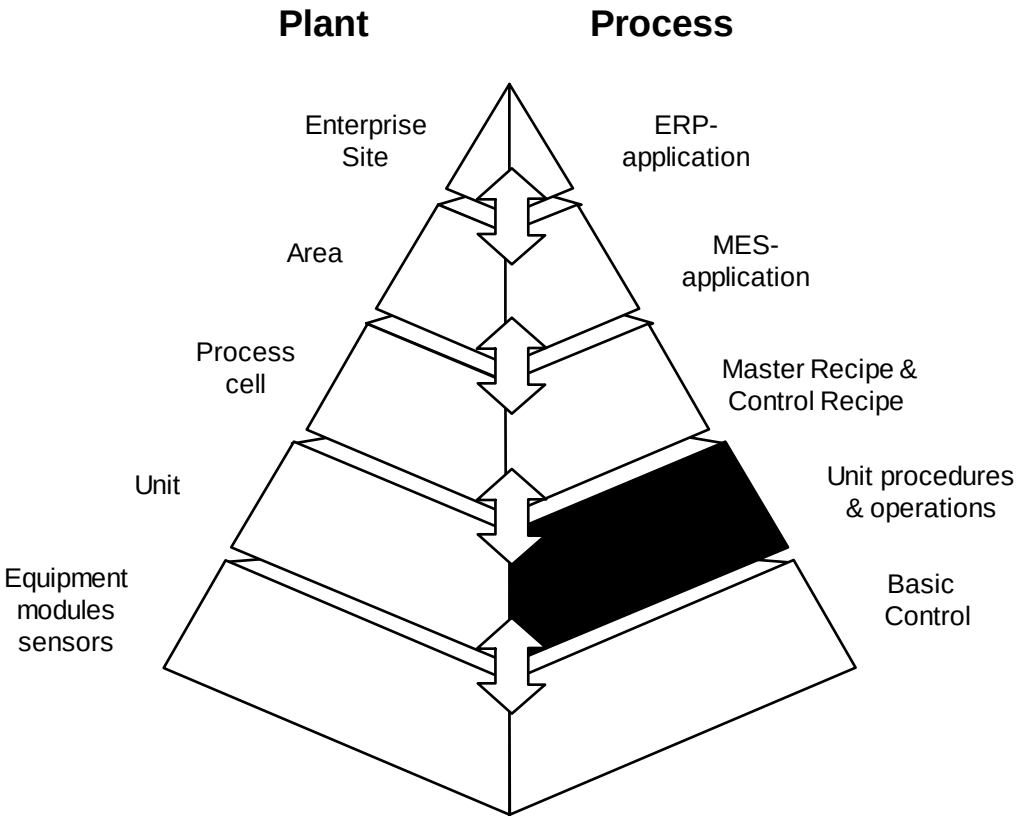

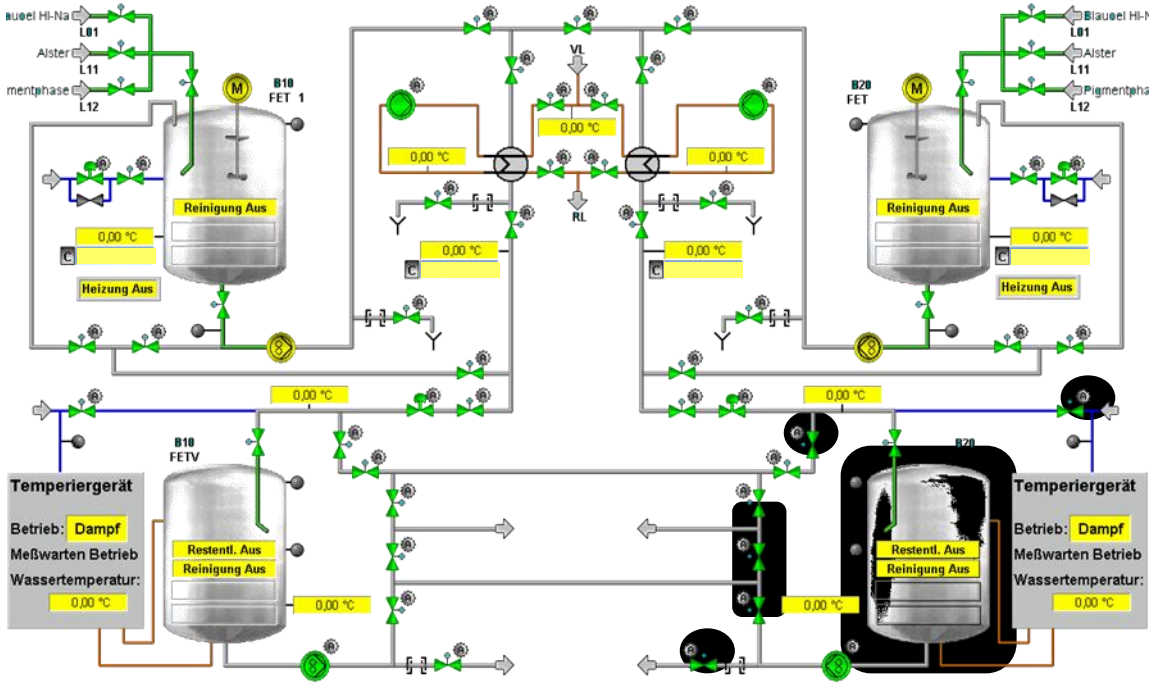

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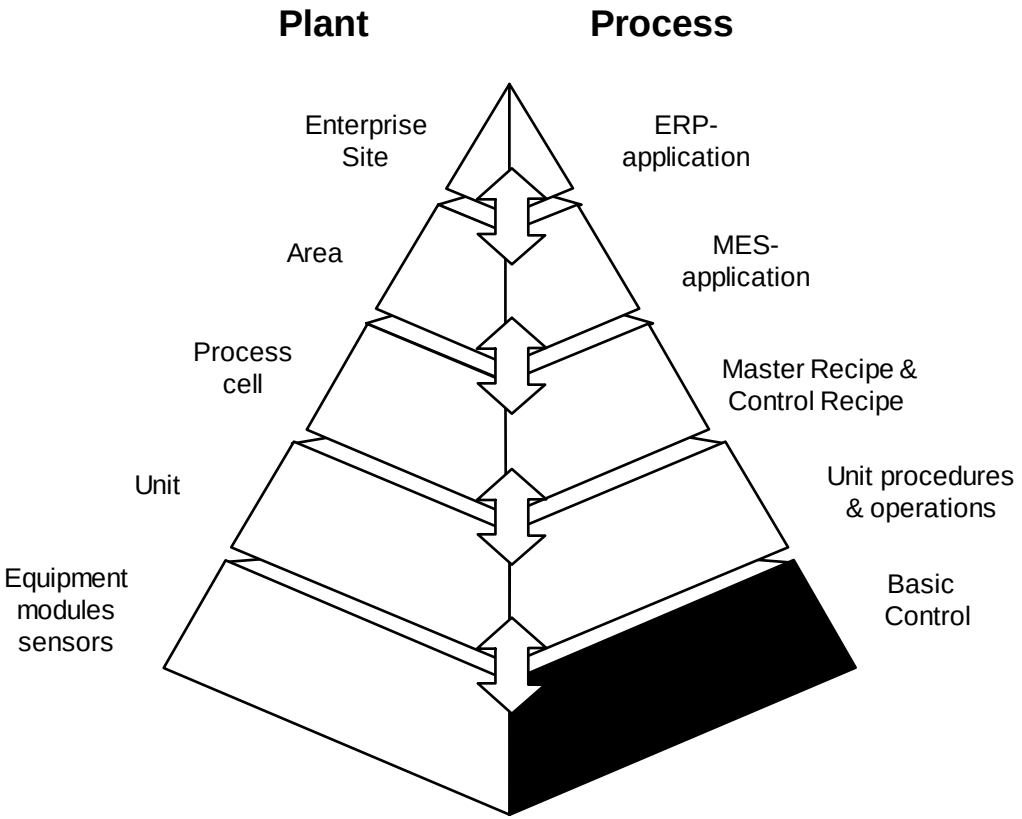
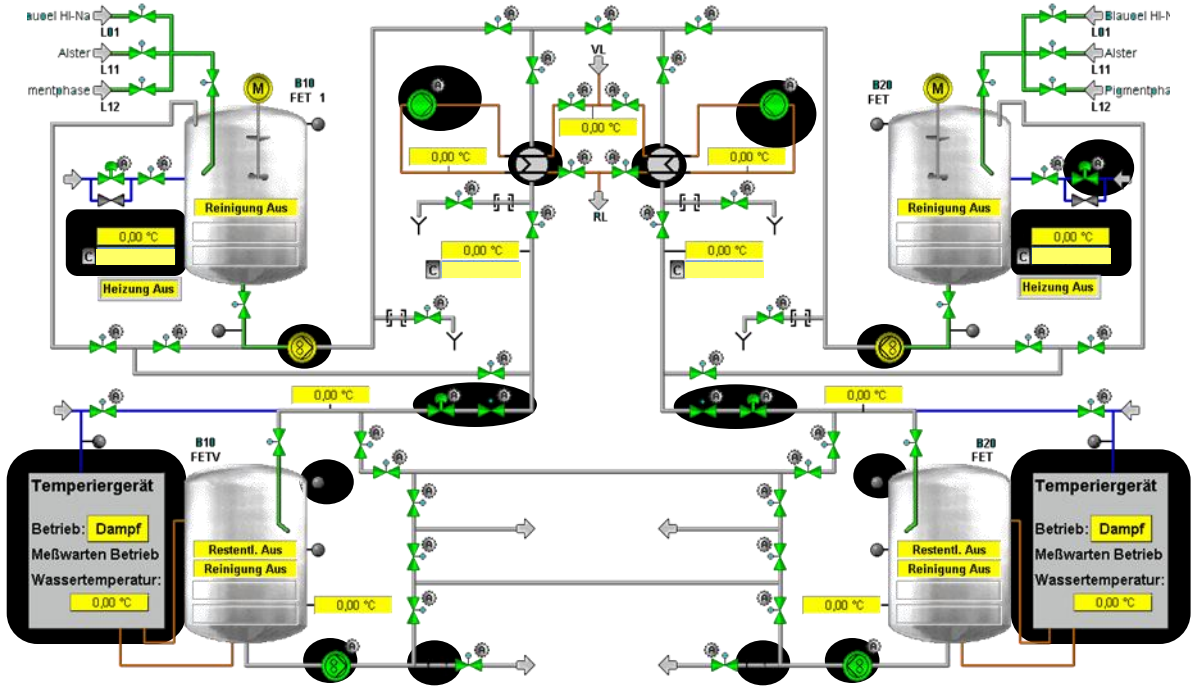
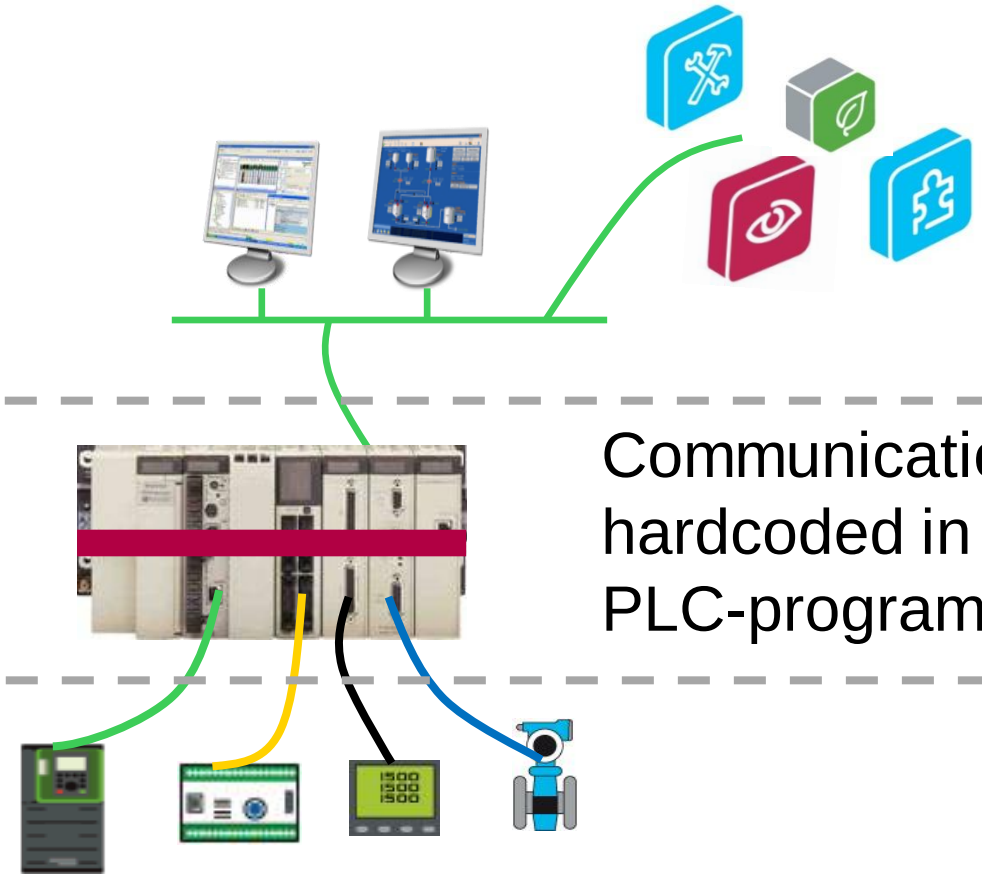




Fully **transparent & open** architecture

Now we provide a totally transparent and open architecture **from bottom to top**. since Ethernet communication is also integrated as the **backbone** of the **M580 system bus**.

From slow Data Processing via heterogeneous networks...



Supervision & asset mngt level

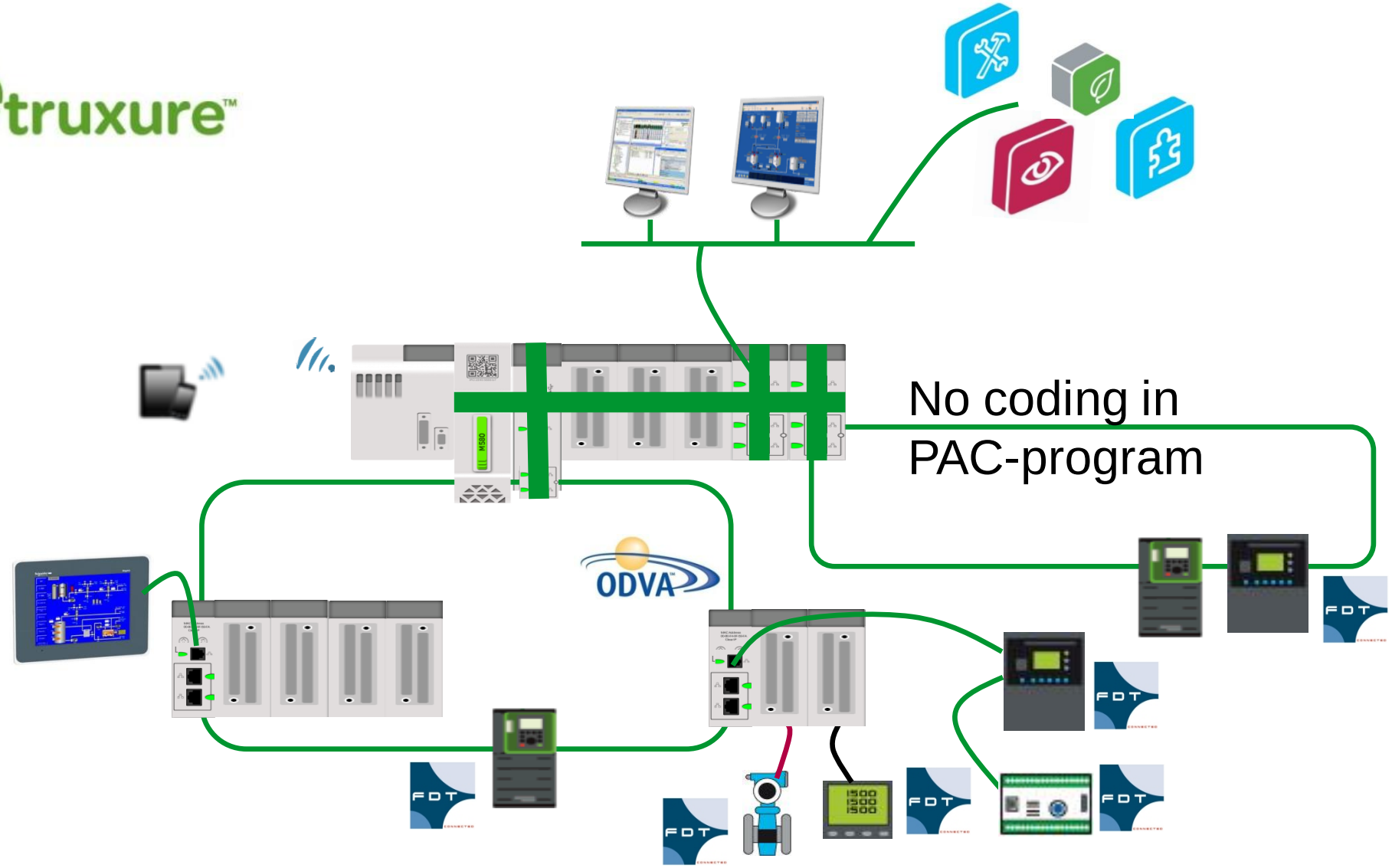
Control level

Field level

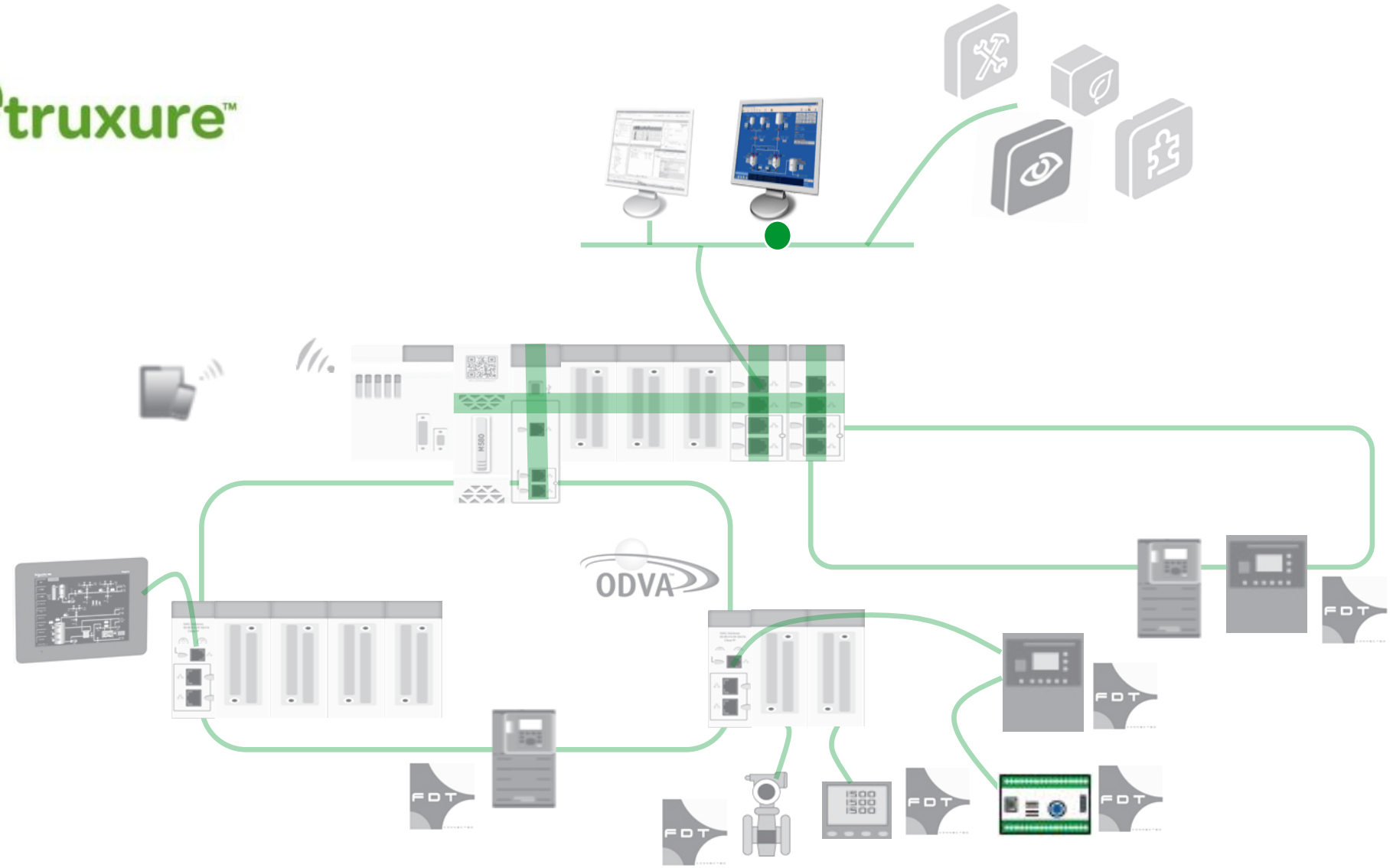
Communication hardcoded in PLC-program

No network continuity

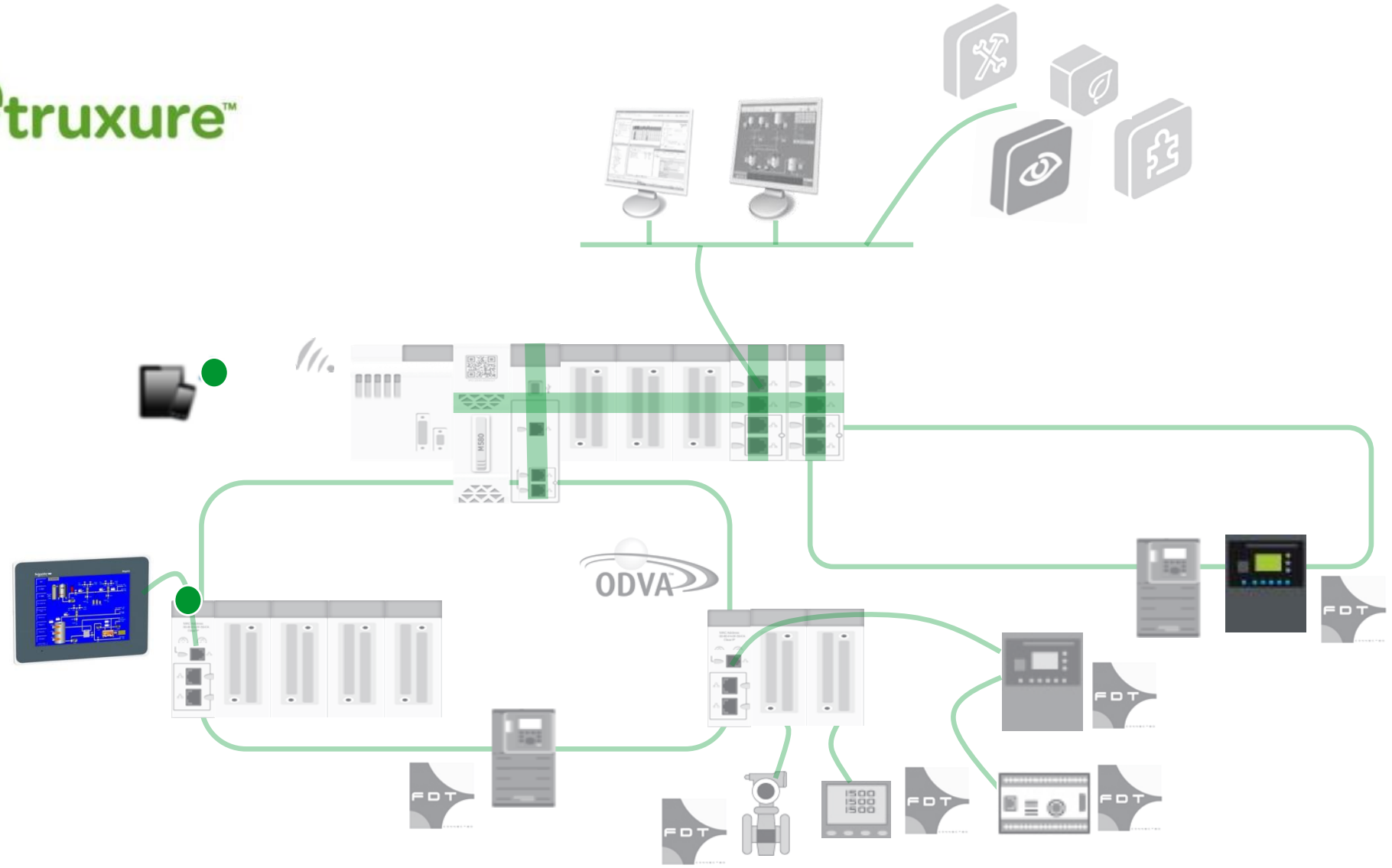
...to very FAST Data Processing via a single Ethernet backbone



Bottom-to-top FLEXIBLE & TRANSPARANT Data Processing



The right data at the right time in the right location



Open network continuity

Smart Data & Cyber Security

Smart Data, direct from the source requires strong functionality in **Cyber Security**. Doing this both on system level as well as on product level

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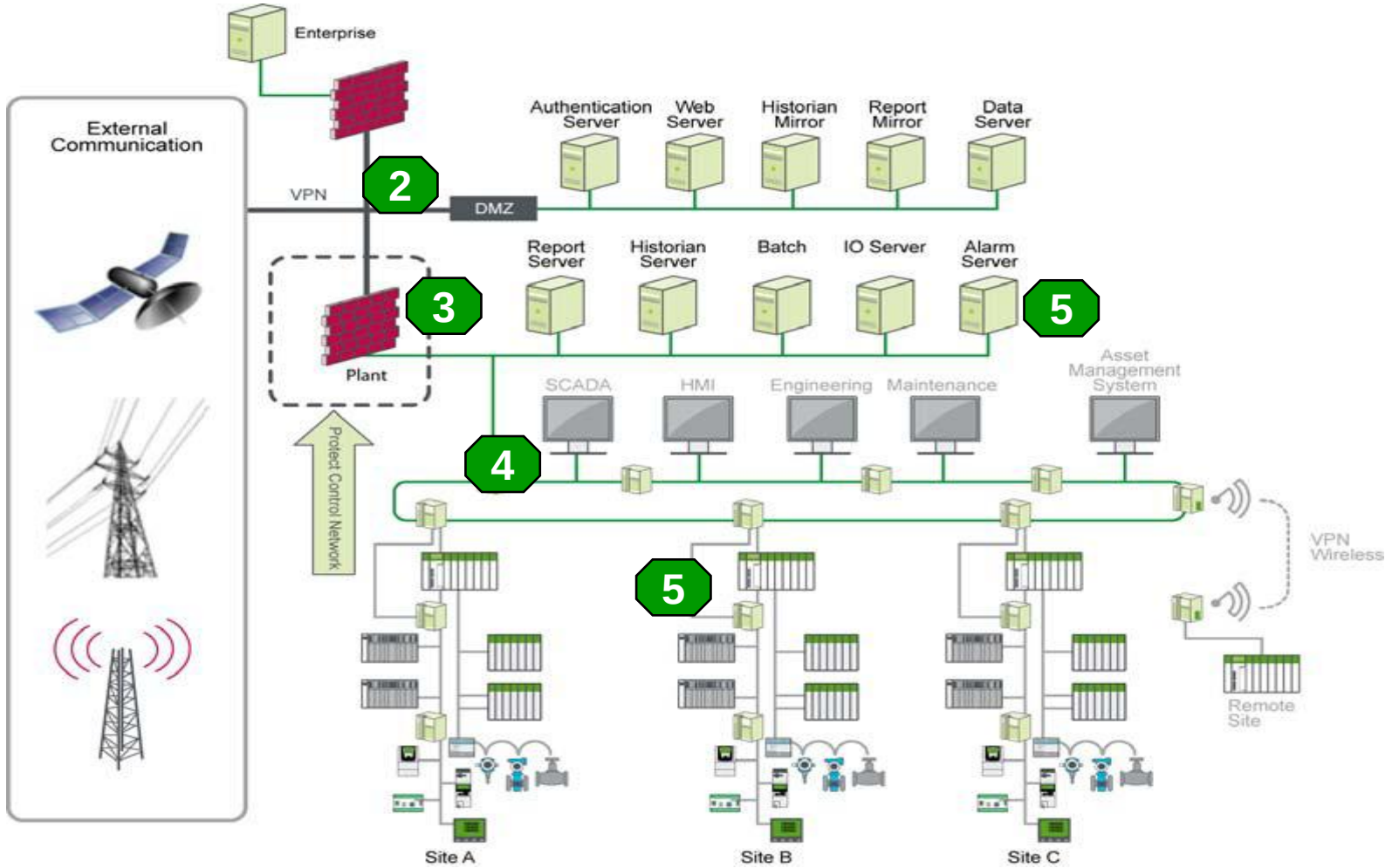
Defense-in-Depth Approach

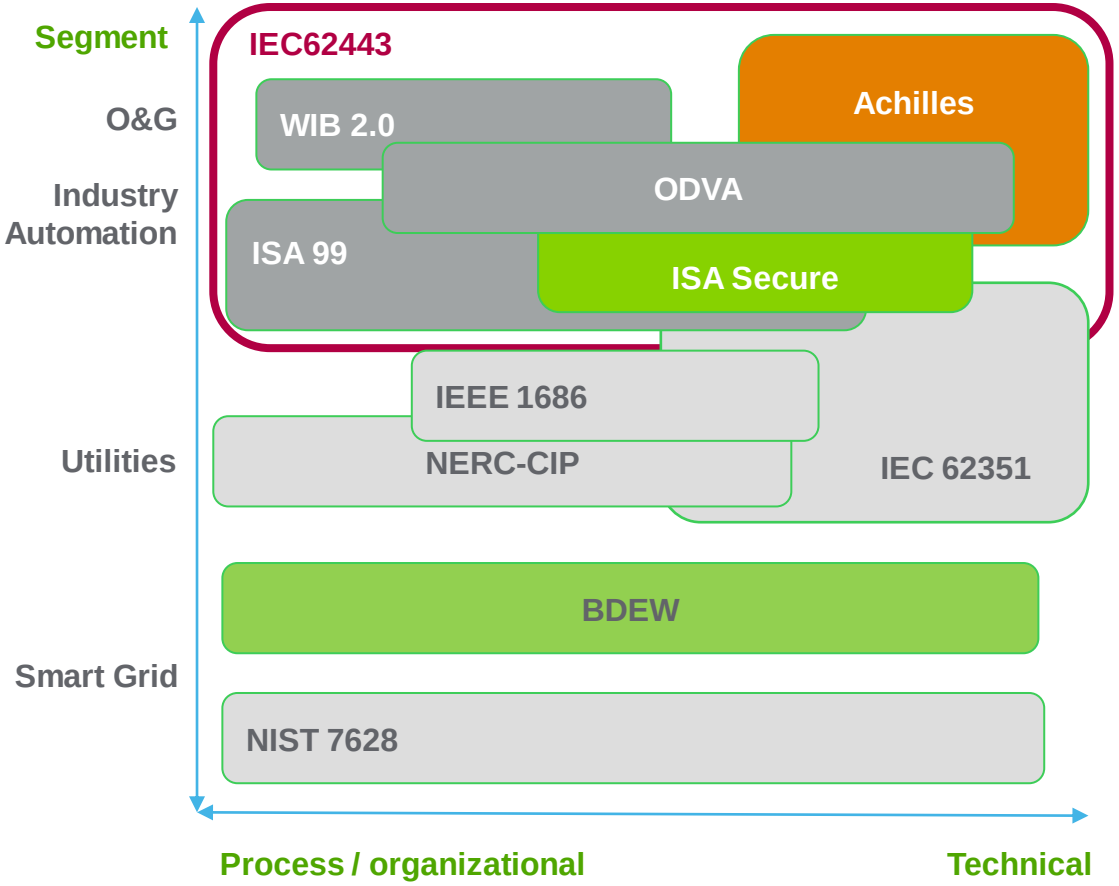


6 key steps:

1. Security Plan
2. Network Separation
3. Perimeter Protection
4. Network Segmentation
5. Device Hardening
6. Monitoring & Update

Cybersecurity Ready

voldoet aan cybersecurity standaarden



Geïntegreerde Security functies zoals gedefinieerd door de standaarden:

IEC62443

- Evolutie van ISA99. Dekt apparaten systemen en gebruik van systemen af

Achilles Level 2

- Gedetailleerde inspectie van TCP/IP verkeer
- Omvat Ethernet, ARP, IP, ICMP, TCP en UDP
- Toont de robuustheid aan tegen een gedefinieerde set van testen

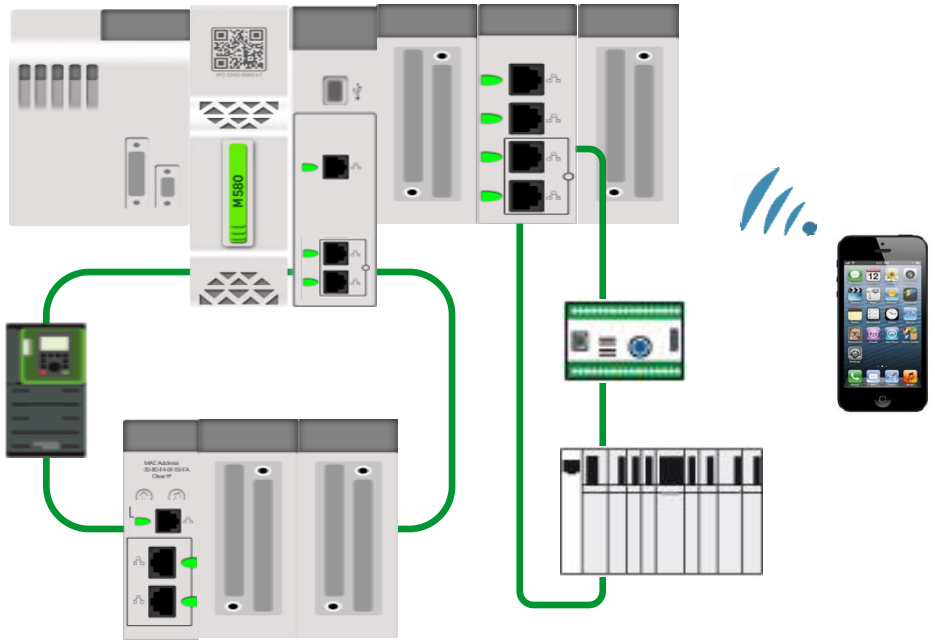
Integrated architecture

Simplify **cabling, power supply, configuration, troubleshooting,**

to a cost effective **architecture,** with reduced **footprint**

Integrated modules: Switches , WiFi access point, optical fiber converter, serial, AS-i, CANopen*, and Profibus* gateways, routers*…

Discover what an Agile PAC means



Flexible in Design & Architecture

- Ethernet integrated in the controller
- Simple integration of core devices (FDT/DTM)
- Flexible & scalable topologies

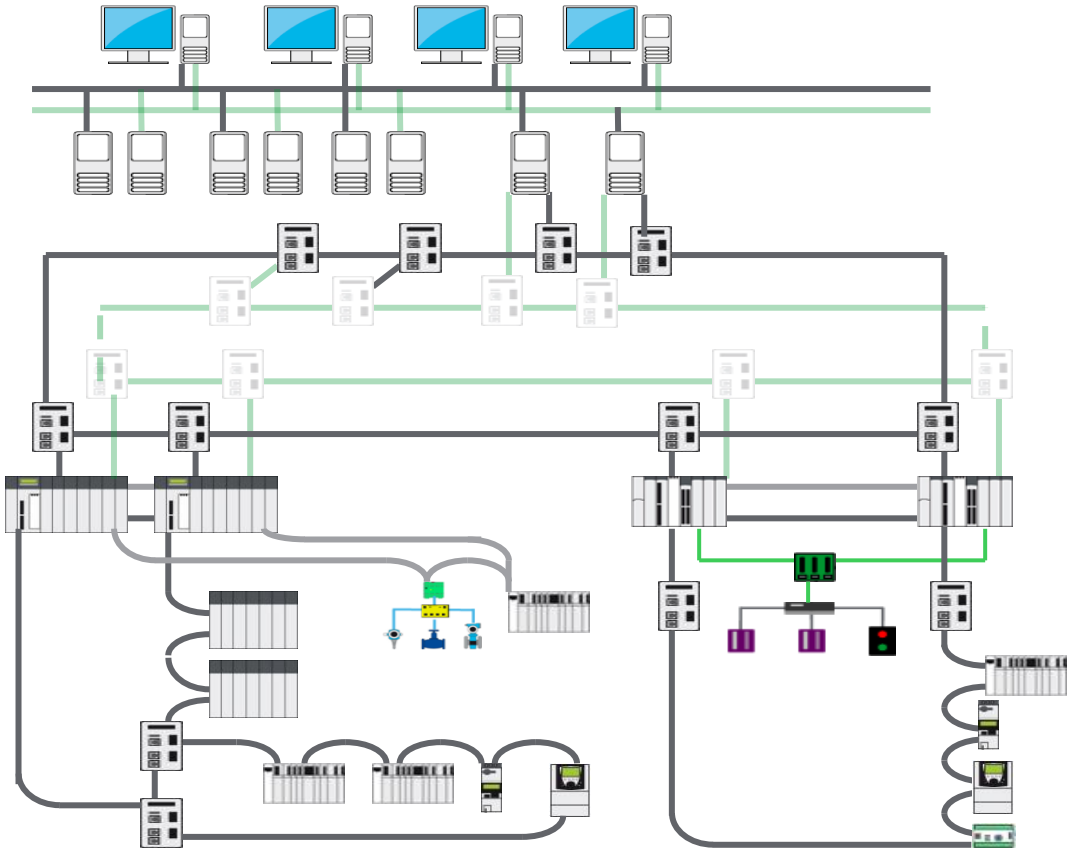
Flexible in Operations

- Change Configuration On The Fly (CCOTF)
- System Time Stamping (no programming)

Flexible in Maintenance

- Full system diagnostic from your smart phone

High Availability



Plant**Struxure**™

99.9996% availability

CCOTF = Change Configuration On the Fly

No stoppage of the proces when:

- An I/O drop is added to the system
- An I/O module is added and configurated
- An I/O channel is configurated

Automatic update of all variables
from PAC to SCADA via Speedlink Dynamic.

Hot swap for all X80 modules.

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Low-power WAN

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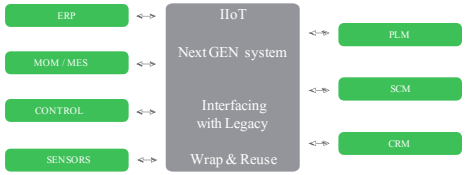

Bezoek onze stand om dieper op de materie in te gaan

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