ServiTecno
Technology 4.0 da 40 anni

SAVE

Nuove soluzioni verso la Cyber Security OT by design:

Soluzioni “off-the-shelf” per la protezione dei ICS e SCADA

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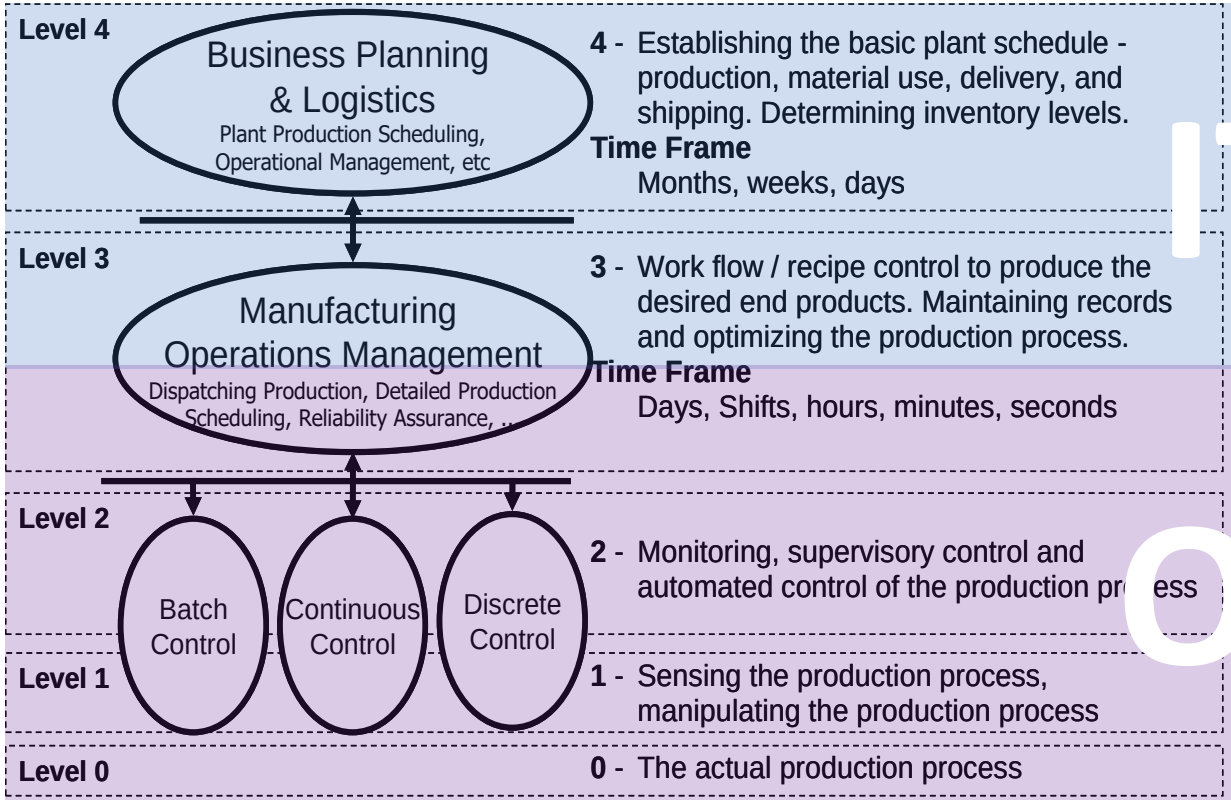
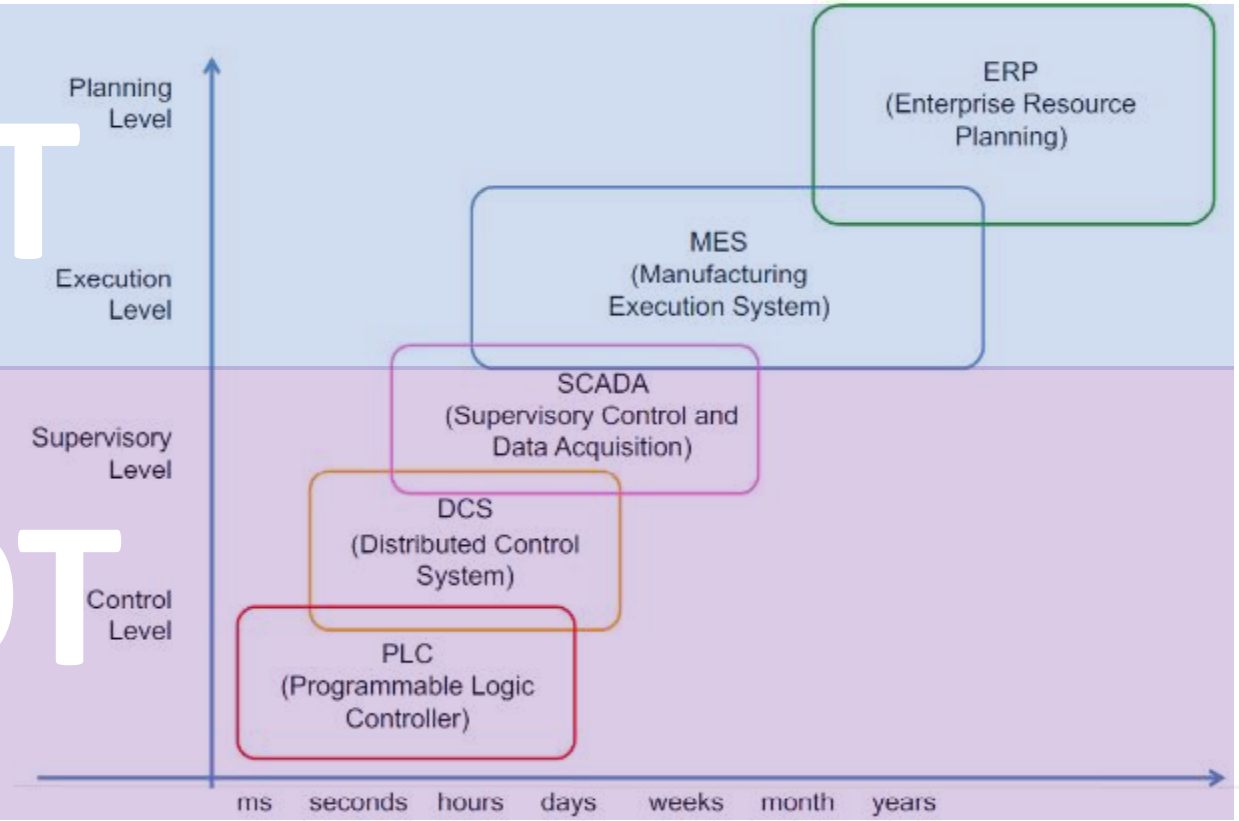
Cos'è IT e cos'è OT





IT vs OT paradigmi differenti

Obiettivi organizzativi
- Standardizzazione prevalente

Skills del personale
- Informatici, networking, amministrativi e gestionali

Tecnologia
- Scenario non-deterministico
- Sistemi non-real-time o al massimo near realtime
- Propensione verso sistemi cloud-based
- Protocolli informatici (livello 7 applicazione)

Sviluppo dei progetti
- Progetto coordinato dall'interno, con risorse esterne
- Progetto globale «corporate»

Requisiti Cogenti «Hot topics»
- Data Integrity
- Data Security
- Patent Infringment
- Business Continuity (management)

VS

Obiettivi organizzativi
- Integrazione Multi-brand

Skills del personale
- Elettrici, meccanici, conduzione di processo

Tecnologia
- Sistemi prevalentemente deterministici
- Sistemi strettamente real-time
- Propensione verso sistemi «ibridi»
- Protocolli «fisici» industriali

Sviluppo dei progetti
- Progetto completamente esternalizzato
- Progetto locale: Impianto, linea, macchina

Requisiti Cogenti «Hot Topics»
- People Safety
- Business Continuity (making)
- Service Continuity

Digitalizzazione

Convergenza IT - OT

Tutti gli standard informatici aziendali:

- Web,
- Networking,
- Cloud,
- Gestionale (ERP, MRP, MES)
- Cyber Security
- …

Tutti i sistemi di automazione, controllo, supervisione, storicizzazione, misura, analisi real-time di impianti, linee, macchine e in generale del processo produttivo:

- PLC
- DCS
- CNC
- SCADA
- Robot
- Historian
- Sensori
- Attuatori

…

La «Fisica» del Controllore (PLC) e dei Protocolli

Sensori

Relais

Istruzioni di lettura e scrittura

INPUT I/O

CPU

Comunicazione

OUTPUT I/O

Azionamenti

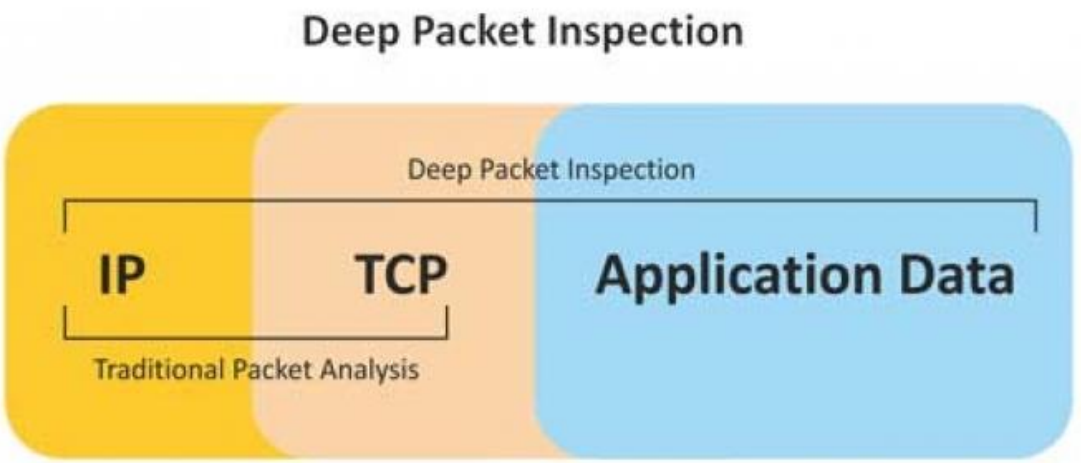
Attuatori

Swithes

SCADA

Impianto

Protocol DPI (Deep Packet Inspection)

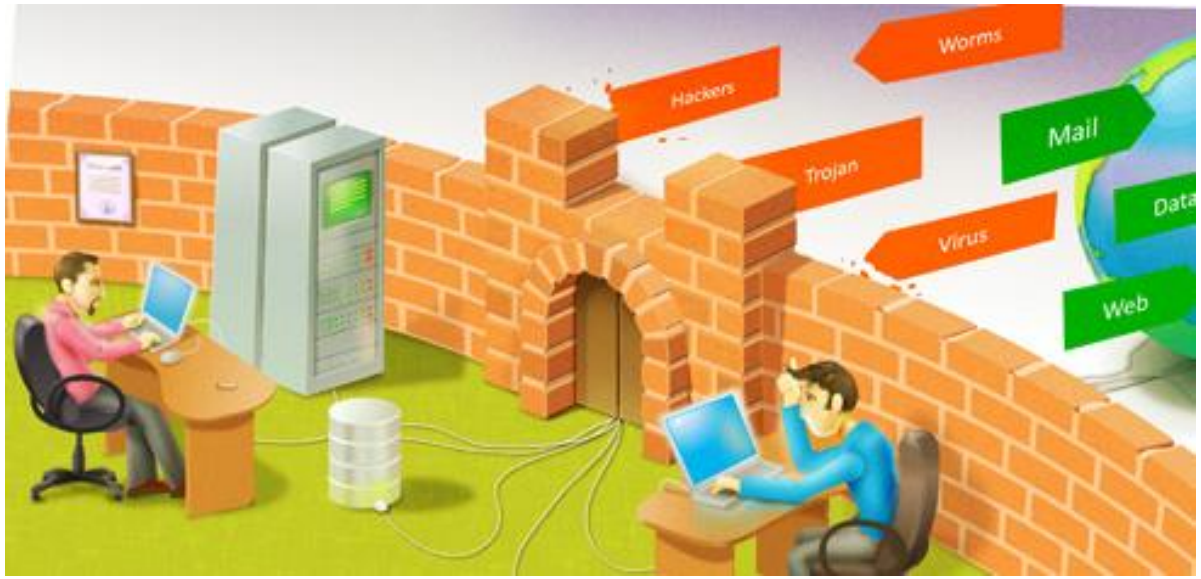


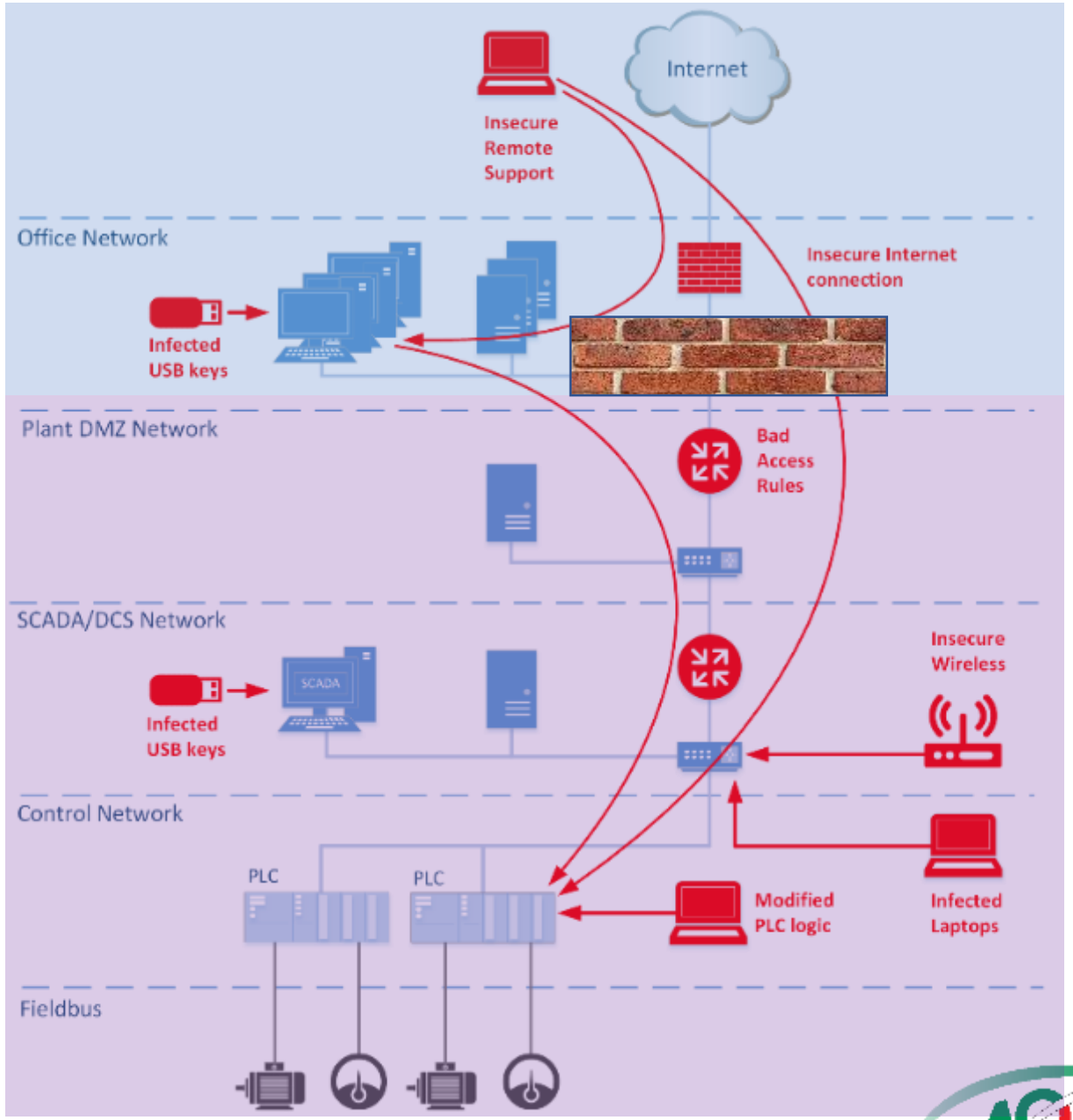
Function type			Function name
Data Access	Bit access	Physical Discrete Inputs	Read Discrete Inputs
		Internal Bits or Physical Coils	Read Coils
			Write Single Coil
			Write Multiple Coils
	16-bit access	Physical Input Registers	Read Input Registers
		Internal Registers or Physical Output Registers	Read Multiple Holding Registers
			Write Single Holding Register
			Write Multiple Holding Registers
			Read/Write Multiple Registers
			Mask Write Register
			Read FIFO Queue
	File Record Access		Read File Record
			Write File Record

Modbus

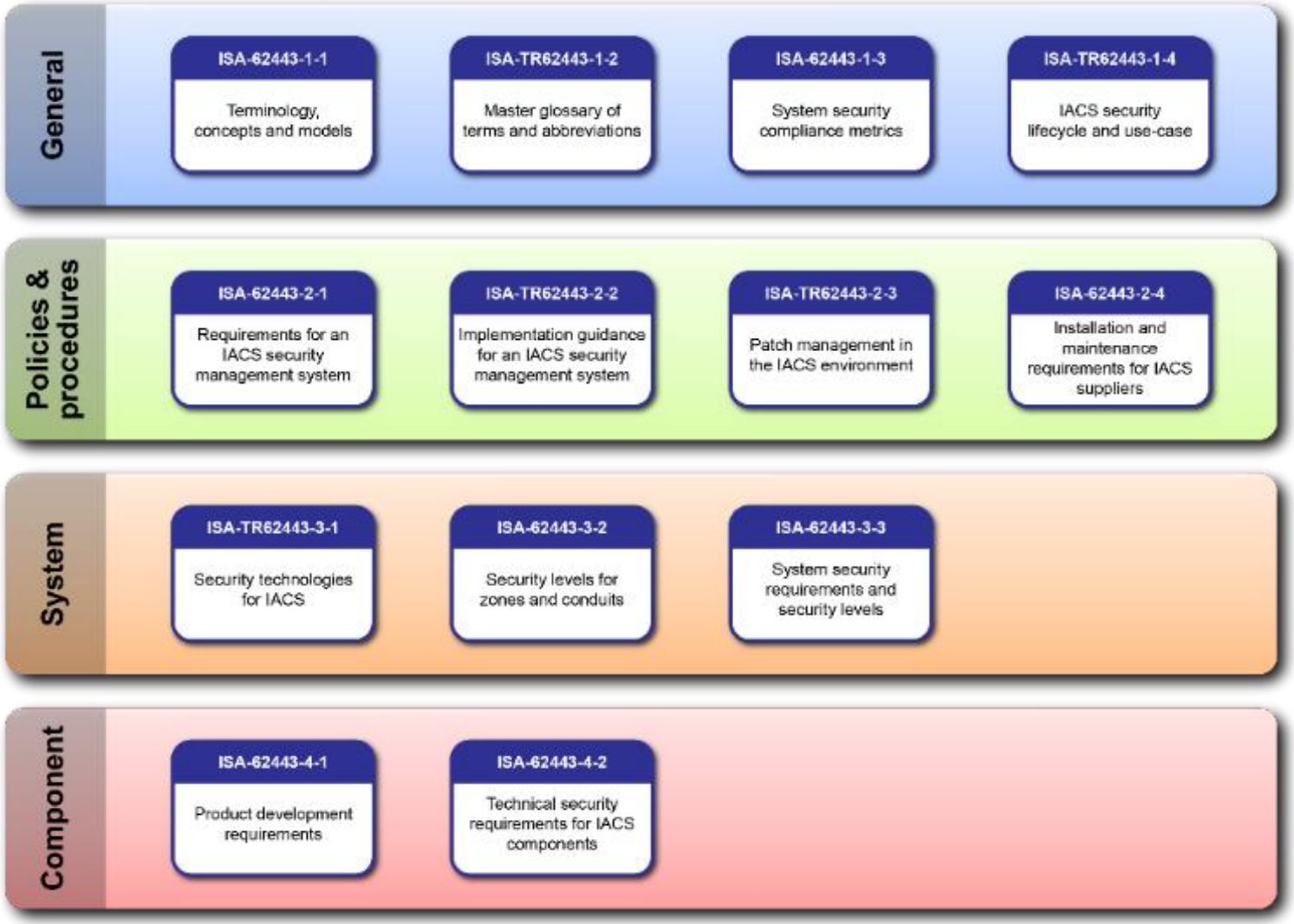
Attacchi e Incidenti informatici

Non ho mai avuto problemi!
Quindi sono a posto…o no?

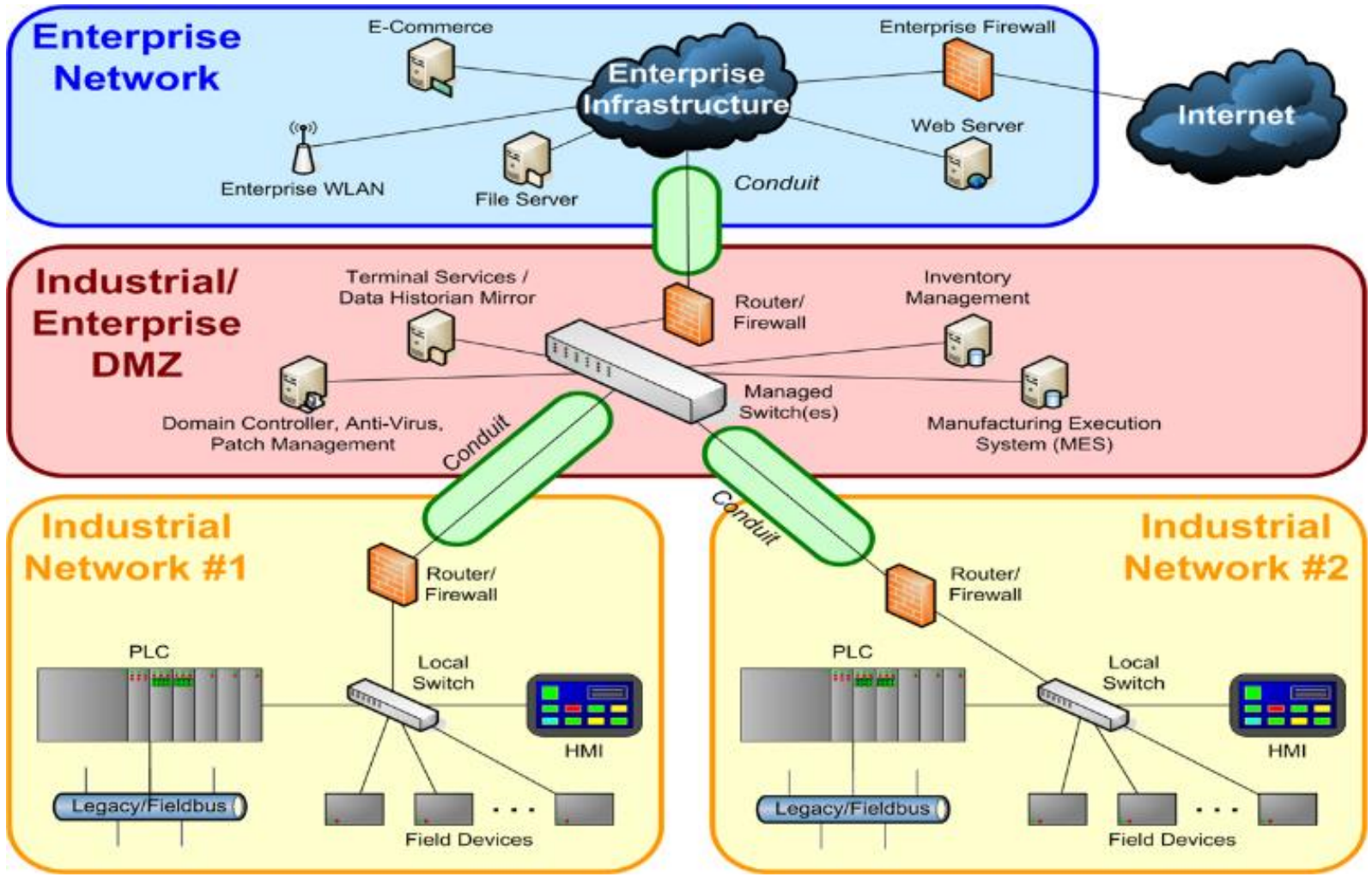




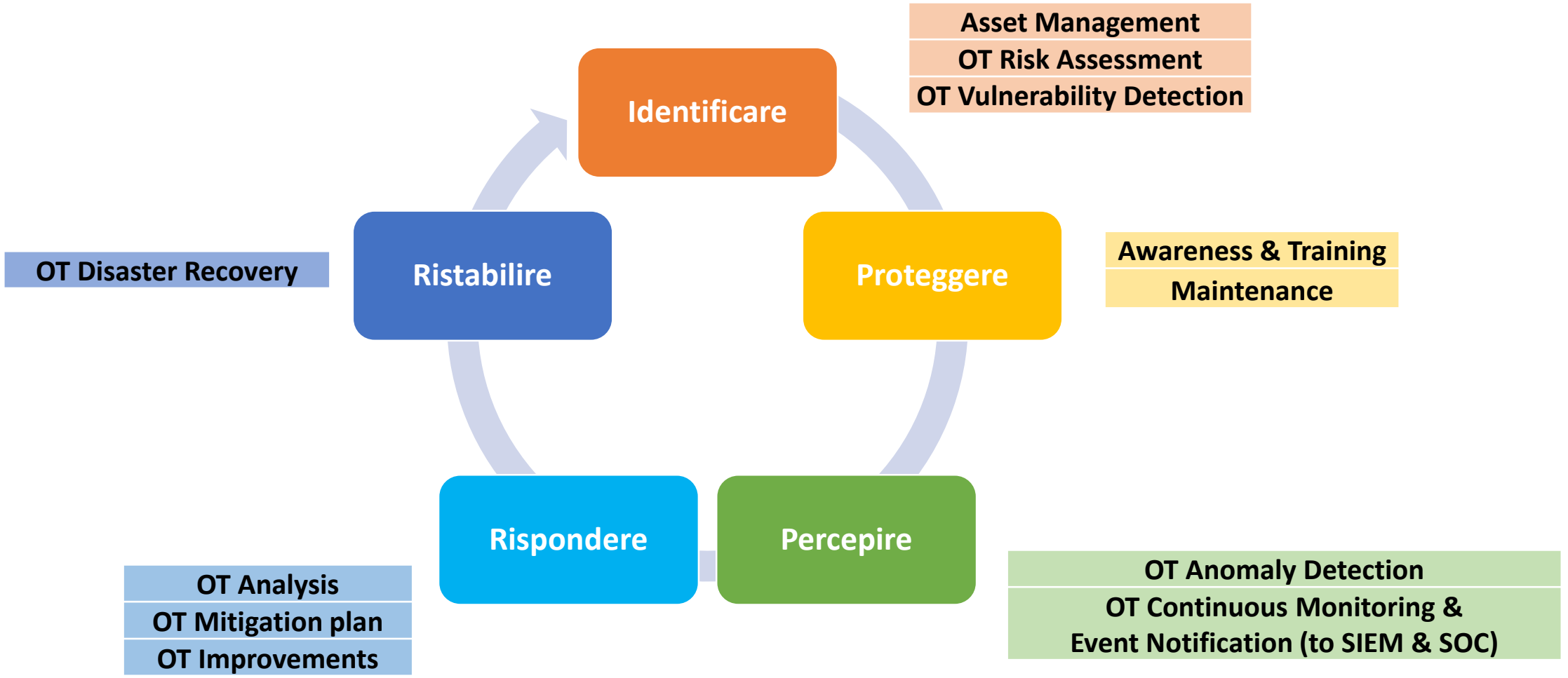
Lo standard di riferimento: IEC 62443 (ISA99)



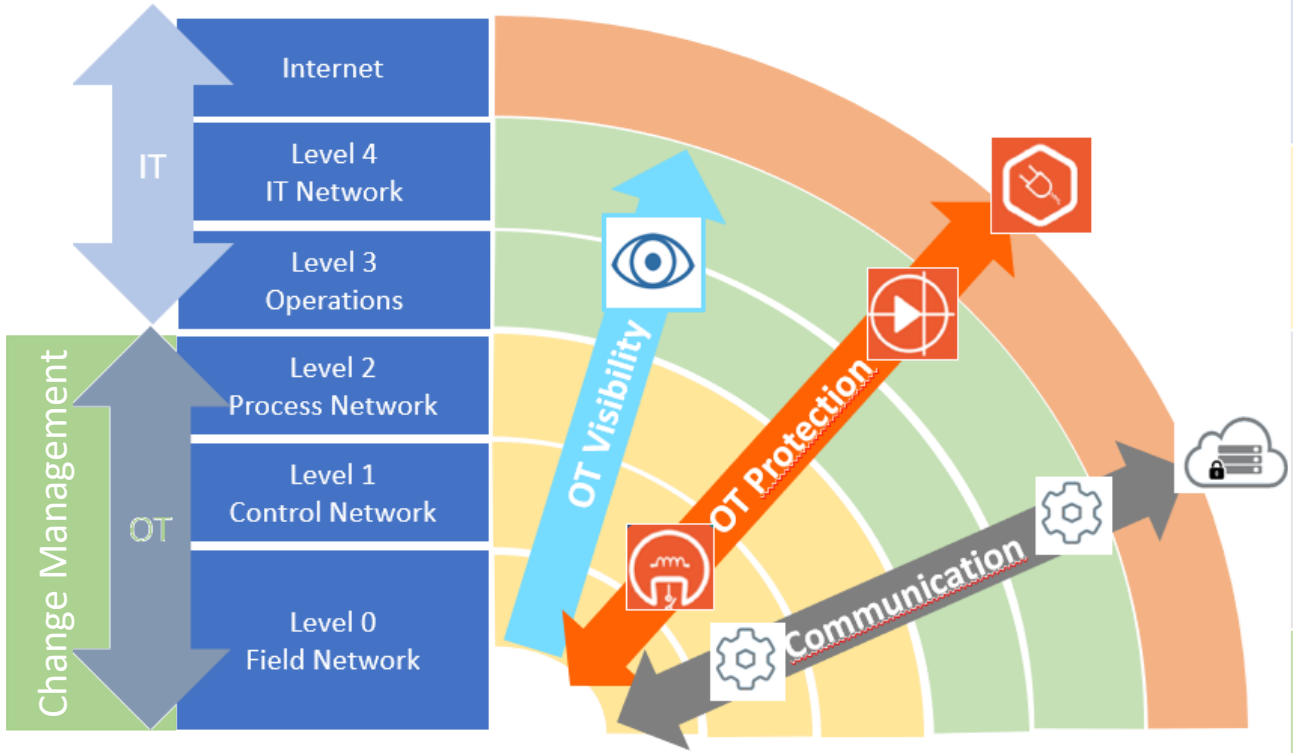
IEC 62443 Architettura di sicurezza logica (Zones & Conduits)



Strategie di Protezione OT: La sicurezza un ciclo virtuoso



Strategie di Protezione OT: Layered Security (NIST)



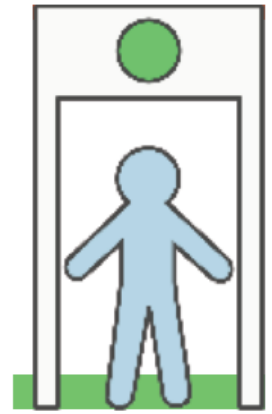
Assessment & Visibility	Identify (Asset Inventory & Intelligence)
	Assess (Vulnerability & Remediation)
	Detect (Anomaly & Threats)
	Act (Dashboard Alerts, Highlights & Notification)
Protection	Access On Site (VPN, High granular access policies)
	OT Segmentation (self configuration, DPI)
	AirGap bridge
Secure Streaming of Data	Data Tunneling (OPC DA/UA, Modbus)
	Data Bridge (OPC DA<->UA, OPC DA/UA<->Modbus)
	Data Gateway (OPC DA/UA, ModBus, MQTT)
	Data Logging (OPC DA/UA, Modbus to SQL)
	Cloud Secure Streaming (VPN)
Change Management & Control	PLC, ICS, SCADA versioned back-up
	SW & configuration scheduled consistency control
	Disaster Recovery

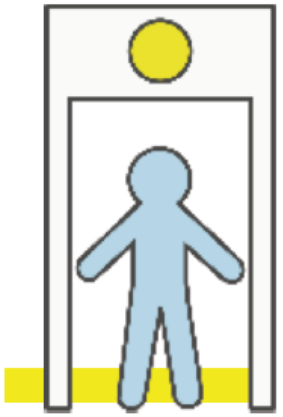
Strategie di Protezione OT: Layered Security (Esempio)

Last line of defense

ID check / Physical inspection
Perimeter protection

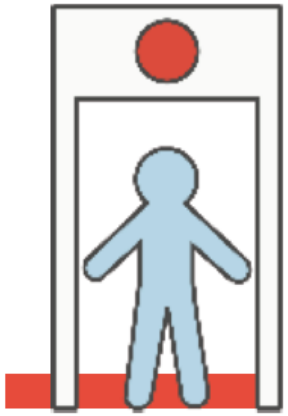
STEP
01





STEP
02

Only ticketed Passengers allowed on board
Segmentation (Authentication / Authorization enforcement)



STEP
03

Reinforced, locked cockpit door
Last line of defense / Endpoint protection

La strategia di Protezione nell'Architettura di Rete

Internet

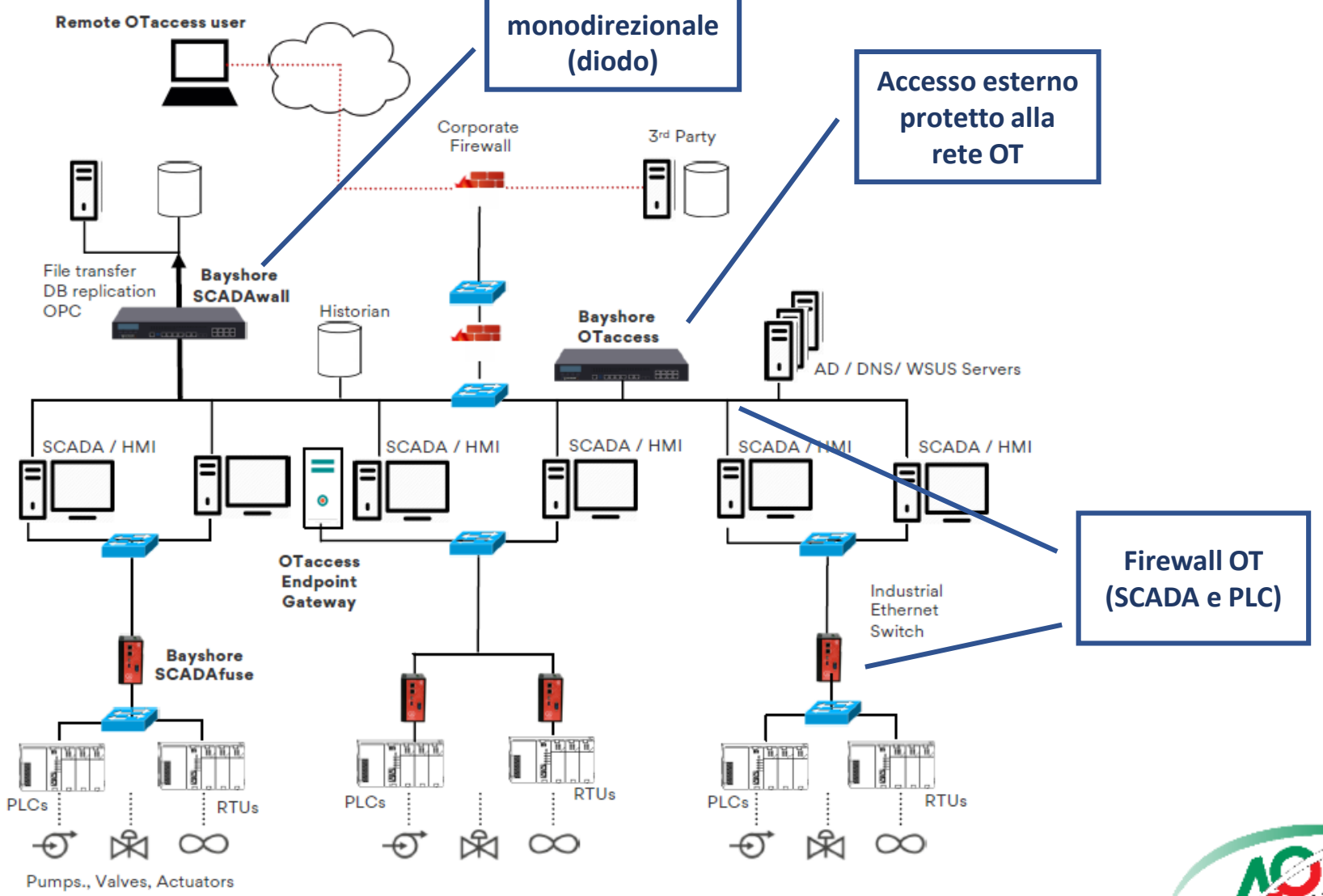
Level 4
IT Network

Level 3
Operations

Level 2
Process Network

Level 1
Control Network

Level 0
Field Network

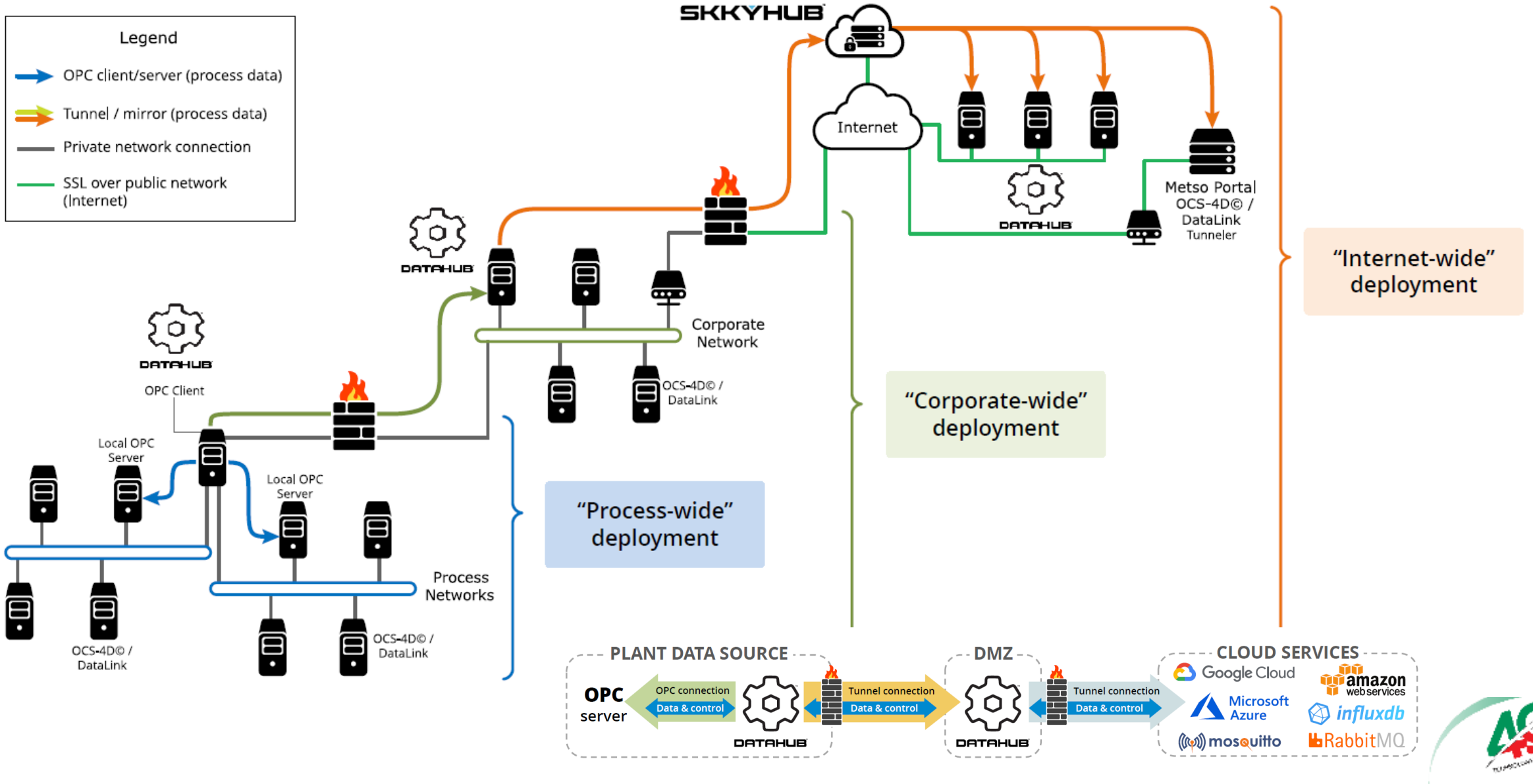


Firewall monodirezionale (diodo)

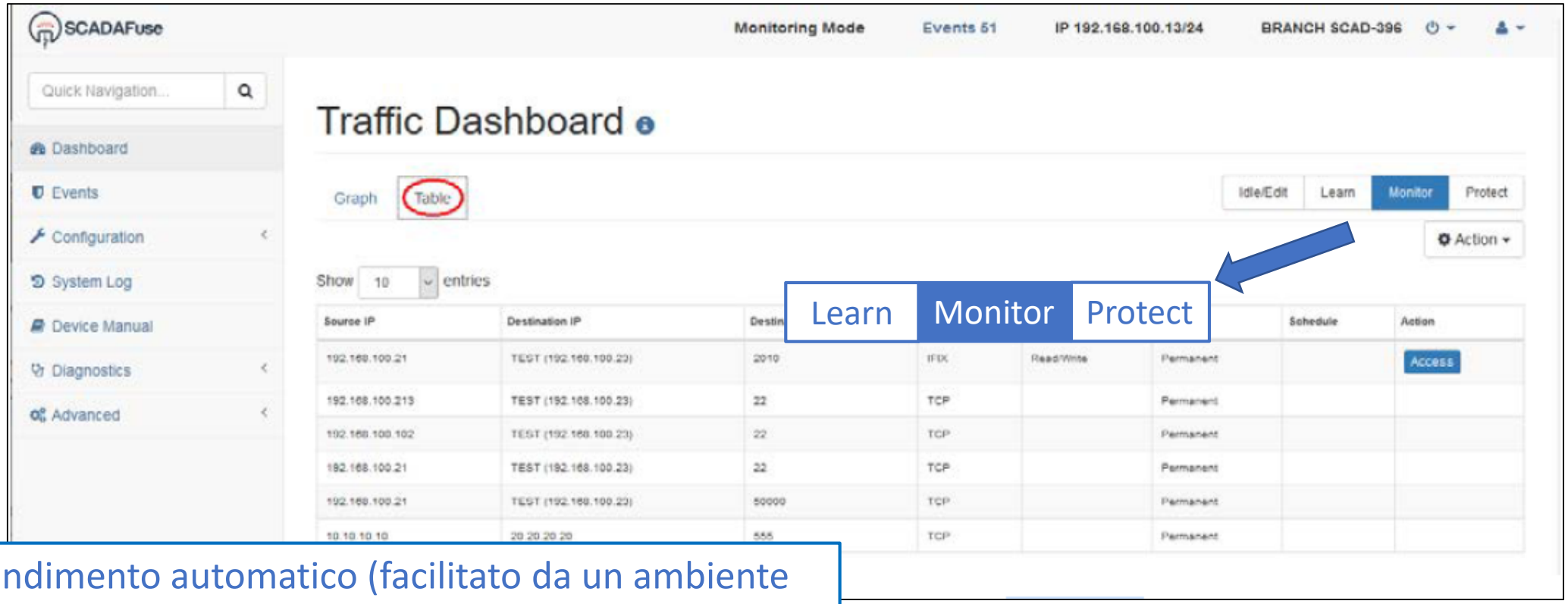
Accesso esterno protetto alla rete OT

Firewall OT (SCADA e PLC)

La strategia di Trasferimento Dati nell'Architettura Corporate



Dispositivi Automaticamente Configurabili

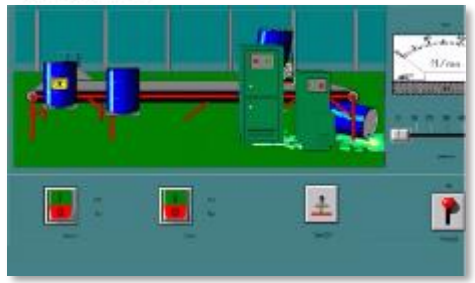


L'apprendimento automatico (facilitato da un ambiente deterministico) permette di abbattere l'onere di configurazione

Change Management & Control

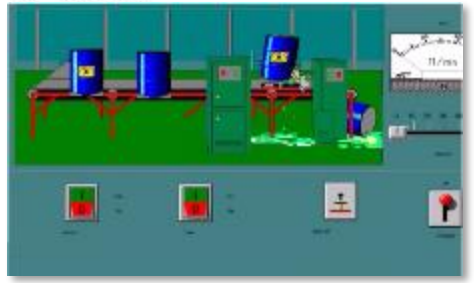
Application Logic from Current (Revision: 13)
Condition: WhileRunning
Trigger Interval: 100ms

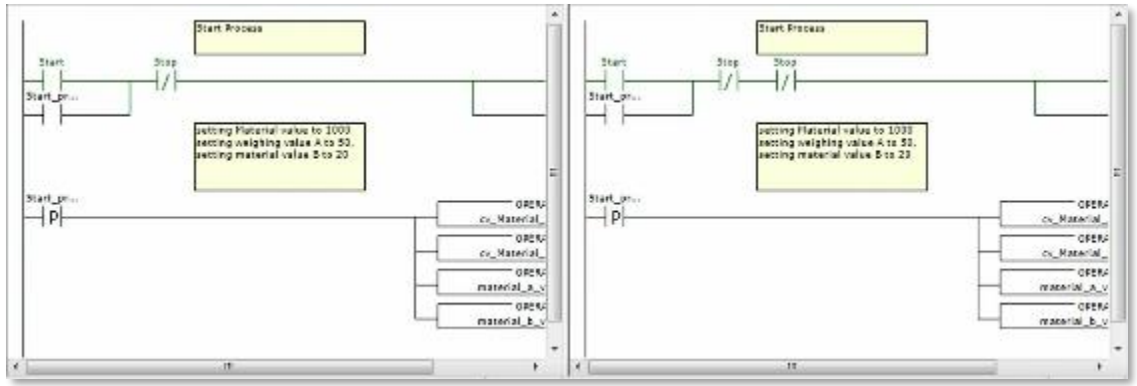
```
1  IF Counter == 0 THEN
2
3  IF Step1 == 0 THEN
4    HistTrend.ChartLength = 192;
5    HistTrend.ChartStart = (10149.707 * 86400.0) + 29700;
6    HistTrend.MinRange = 0;
7    HistTrend.MaxRange = 210;
8    Cursor2 = 0.5;
9    HistTrend.Pen4 = SetPoint.TagID;
10   Pen04 = SetPoint.TagID;
11   Step1 = 1;
12   Cycle = 100;
```



Application Logic from Current (Revision: 12)
Condition: WhileRunning
Trigger Interval: 100ms

```
1  IF Counter == 0 THEN
2
3  IF Step1 == 0 THEN
4    HistTrend.ChartLength = 193;
5    HistTrend.ChartStart = (10149.707 * 86400.0) + 29700;
6    HistTrend.MinRange = 0;
7    HistTrend.MaxRange = 200;
8    Cursor2 = 0.5;
9    HistTrend.Pen4 = SetPoint.TagID;
10   Pen04 = SetPoint.TagID;
11   Step1 = 1;
12   Cycle = 100;
```





Domande?

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