Digitalizacija in izzivi pri konvergenci IT in OT storitev

4. april 2023

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“Megatrends” shaping consumer behavior are having a major impact on the industry

Climate change

Reduction of carbon-footprint. Leads to CO_2 neutrality in production.

Individualization

The need for individual products leads to lot size one in the production.

Globalization

Global crises put supply chains under pressure. Leads to better security of supply in production.

Digitalization

Technologies enable seamless data management flow and connected systems.

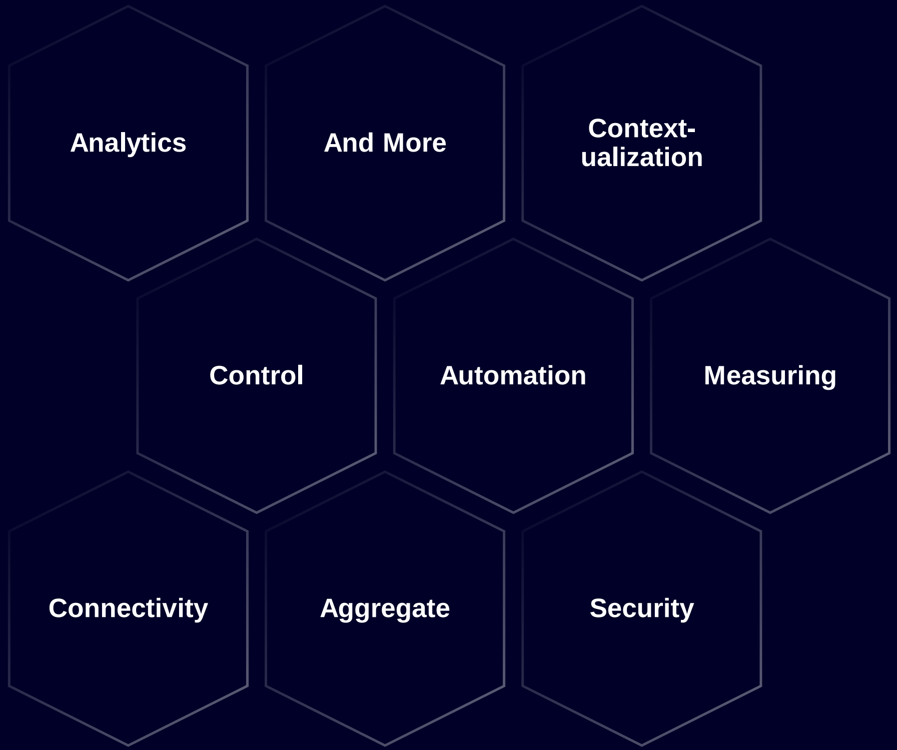
More Sustainability

More Flexibility

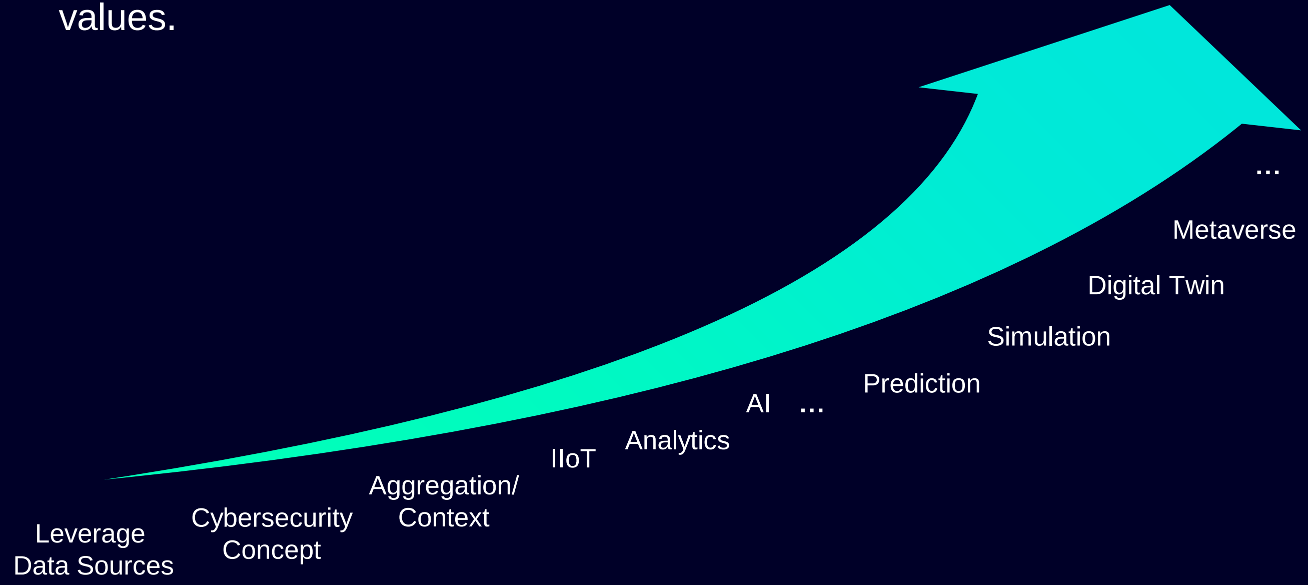
More Efficiency & Resilience

More Transparency & Quality

Digital Transformation can only be enabled by the Integration of technologies and domains across OT and IT



OT and IT still separated systems leveraging own values.



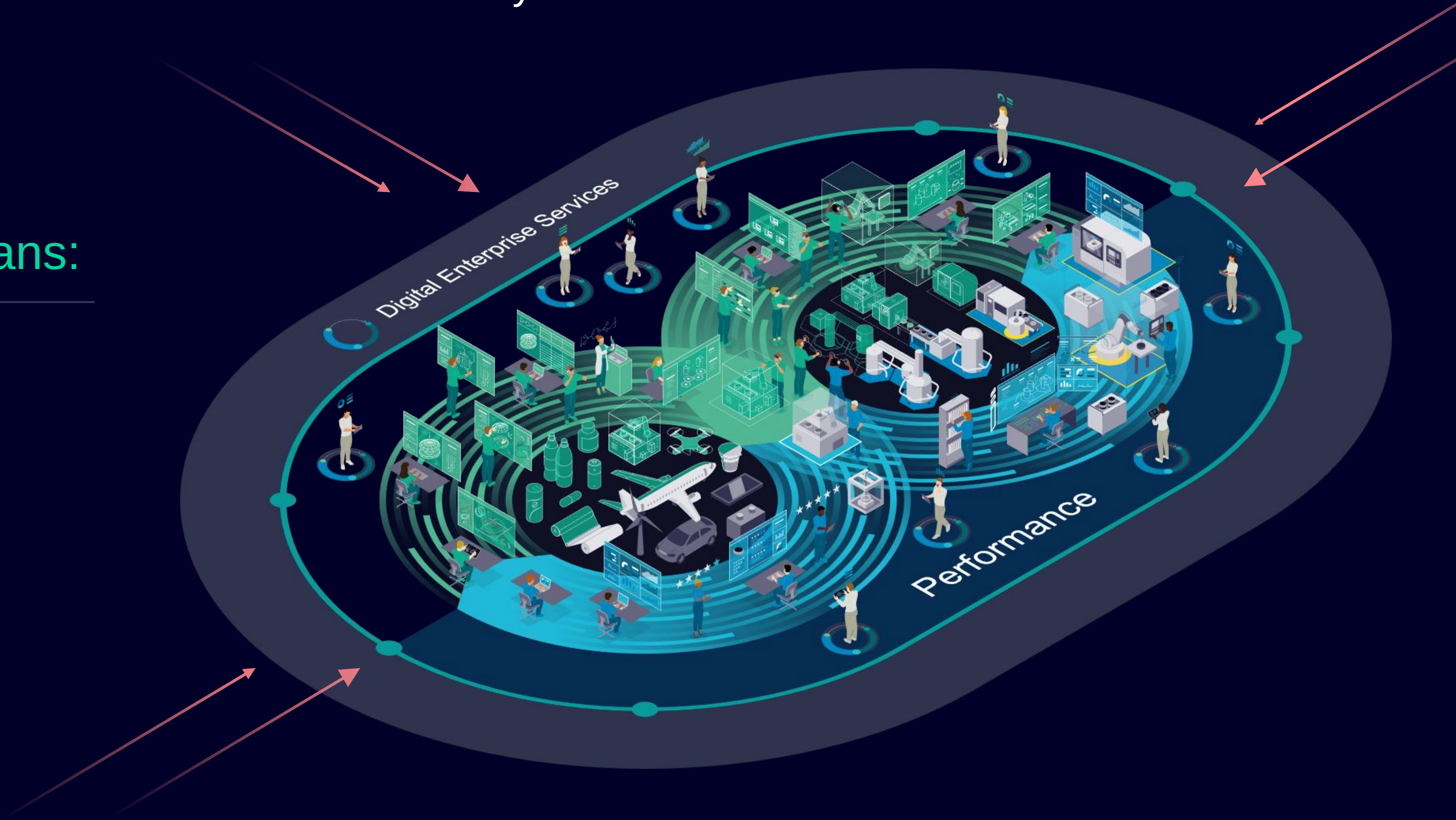
OT and IT must come together in an orchestrated integration Journey. Manufacturers are in different stages in this Journey.

Machines & automation systems are part of the IoT

This means OT/IT integration across all areas and layers

OT/IT converge means:

- 👍 **More connectivity**
- 👍 **More data**
- 👎 **New cyber-risks**



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Next gen automation

Transformation of our TIA pyramid to higher IT share

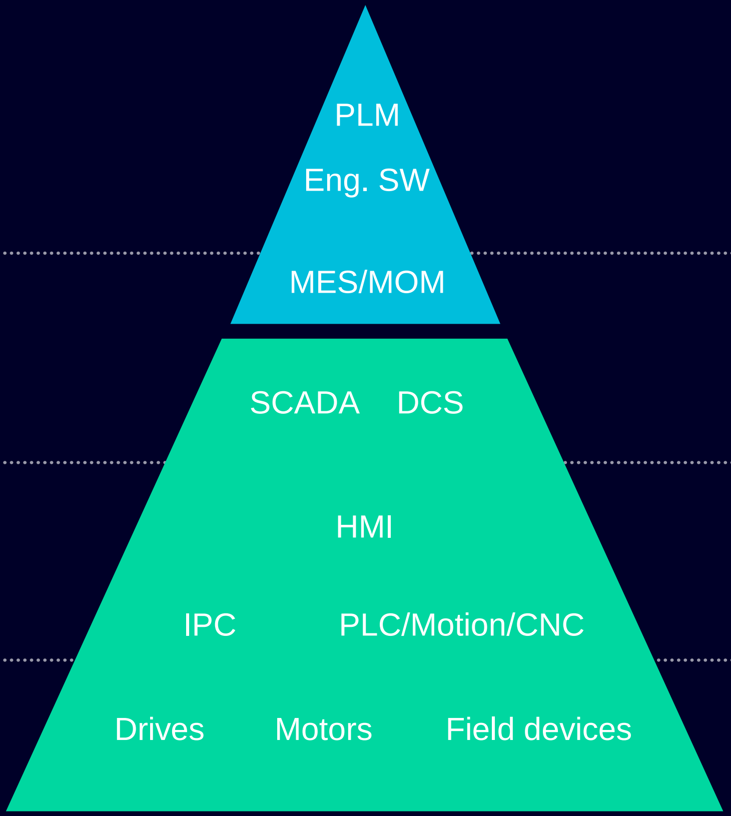
From …

Enterprise IT, Engineering software, …

Operations

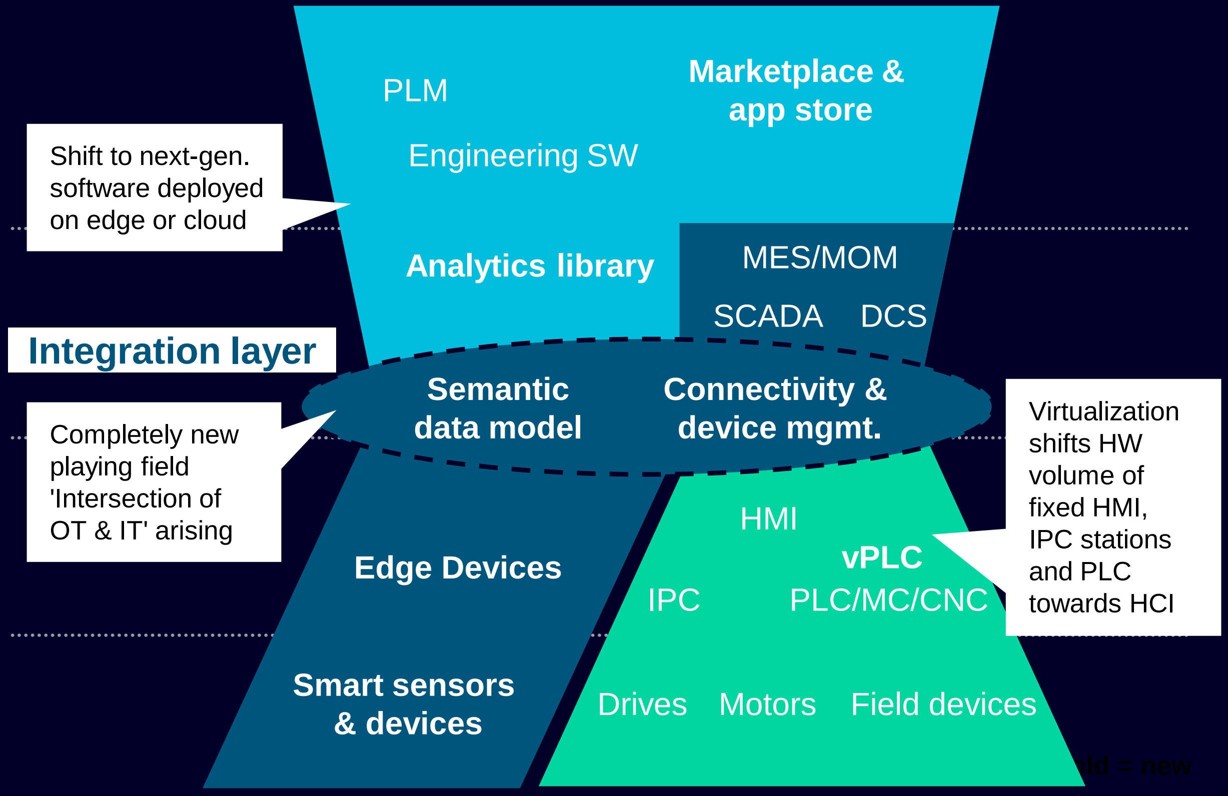
Control

Sense & Act



… to

Not exhaustive, schematic



Shift to next-gen. software deployed on edge or cloud

Completely new playing field 'Intersection of OT & IT' arising

Virtualization shifts HW volume of fixed HMI, IPC stations and PLC towards HCI

Note: HCI = Hyperconverged Infrastructure

🟩 OT 🟦 IT ▨ Intersection of OT & IT

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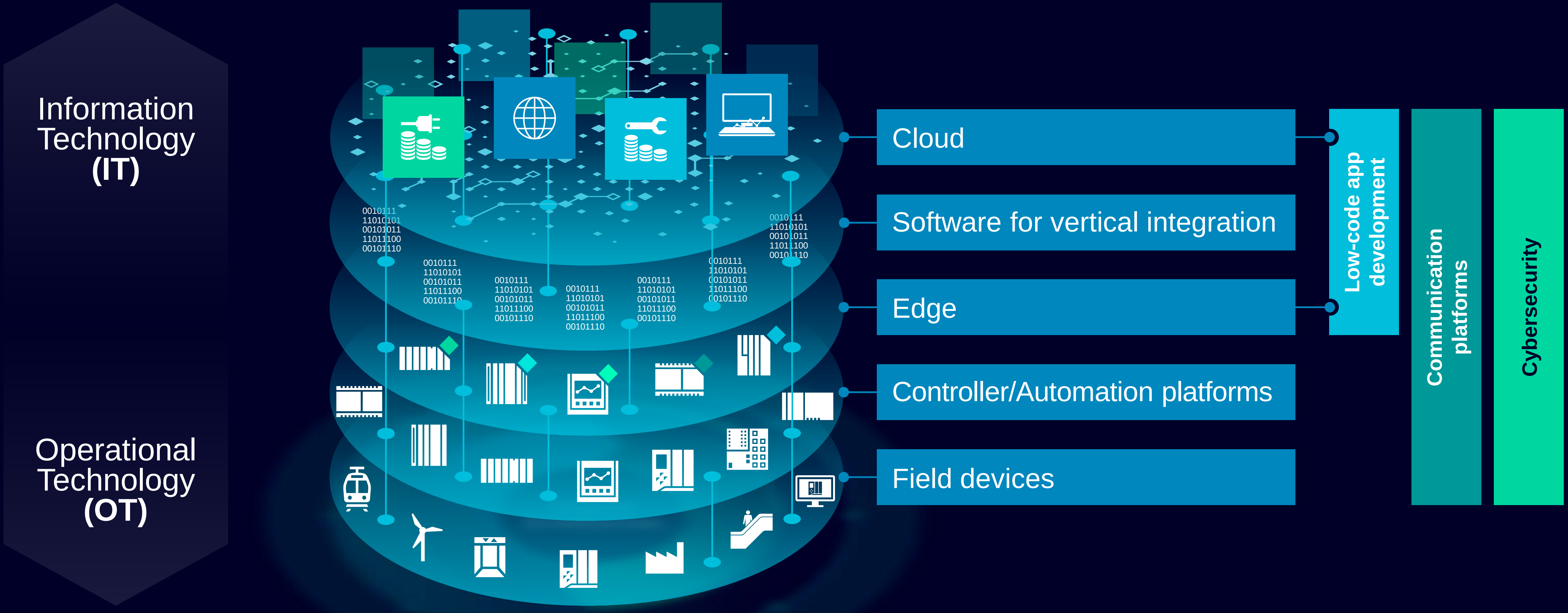
IT/OT integration across all areas and layers

Cybersecurity is a must have in IT **and** OT!



Information Technology (IT)

Operational Technology (OT)

Cloud

Software for vertical integration

Edge

Controller/Automation platforms

Field devices

Low-code app development

Communication platforms

Cybersecurity

Office (IT) and Industrial (OT) Communications are Fundamentally Different

IT Network		OT Network
Confidentiality Integrity Availability		**Availability** Integrity Confidentiality
Data transfer	**Purpose**	Production, control
IT / Network experts	**Responsibility**	Electro technical qualified personel
Controlled environment (Datacenter, office)	**Location**	Production, close to machines
~10ms (VoIP)	**Real-time**	128us (motion control, IRT)
Hierarchical, vertical communication	**Topology**	Flat, horizontal communication
Business hours	**Availability**	24/7 production
2-5 years, patching and upgrades	**Lifecycle**	10+ years, limited patching or updates

The security needs of industrial control systems differ greatly from those of office IT

IT Security

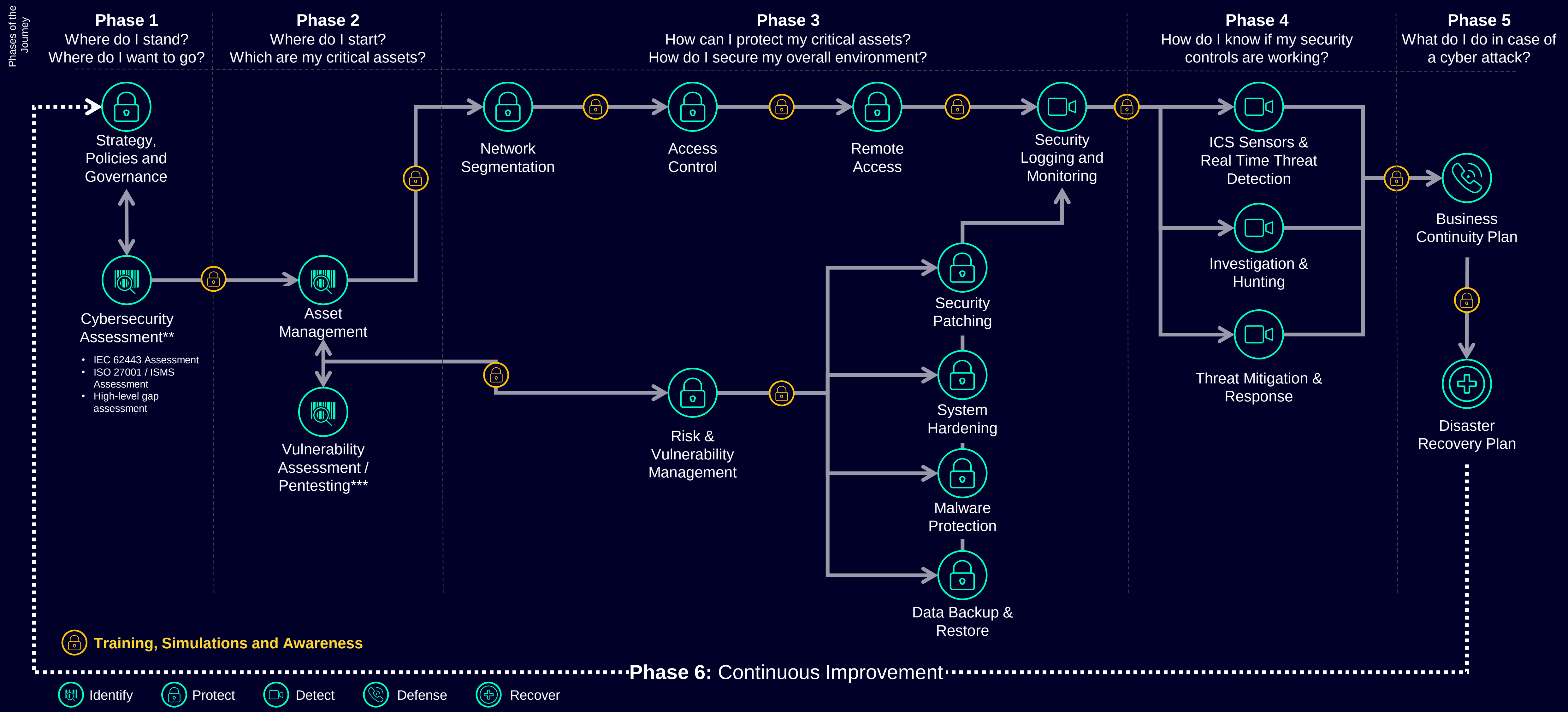
Confidentiality

Industrial Security

Availability and Safety

3-5 years	**Asset lifecycle**	20-40 years
Forced migration (e.g. PCs, smart phone)	**Software lifecycle**	Usage as long as spare parts available
High (> 10 “agents” on office PCs)	**Options to add security SW**	Low (old systems w/o “free” performance)
Low (mainly Windows 10)	**Heterogeneity**	High (from Windows 95 up to 10)
Standards based (agents & forced patching)	**Main protection concept**	Case and risk based

Cybersecurity step by step



Phases of the Journey

Phase 1
Where do I stand?
Where do I want to go?

Phase 2
Where do I start?
Which are my critical assets?

Phase 3
How can I protect my critical assets?
How do I secure my overall environment?

Phase 4
How do I know if my security controls are working?

Phase 5
What do I do in case of a cyber attack?

Strategy, Policies and Governance

Cybersecurity Assessment**

- IEC 62443 Assessment
- ISO 27001 / ISMS Assessment
- High-level gap assessment

Asset Management

Vulnerability Assessment / Pentesting***

Network Segmentation

Access Control

Remote Access

Security Logging and Monitoring

Risk & Vulnerability Management

Security Patching

System Hardening

Malware Protection

Data Backup & Restore

ICS Sensors & Real Time Threat Detection

Investigation & Hunting

Threat Mitigation & Response

Business Continuity Plan

Disaster Recovery Plan

Training, Simulations and Awareness

Phase 6: Continuous Improvement

Identify · Protect · Detect · Defense · Recover

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> The highest priority within automation is to maintain the control of process and production.
>
> Any measurement to avoid the spread of any security threat may not interfere with this goal.

Thank You!

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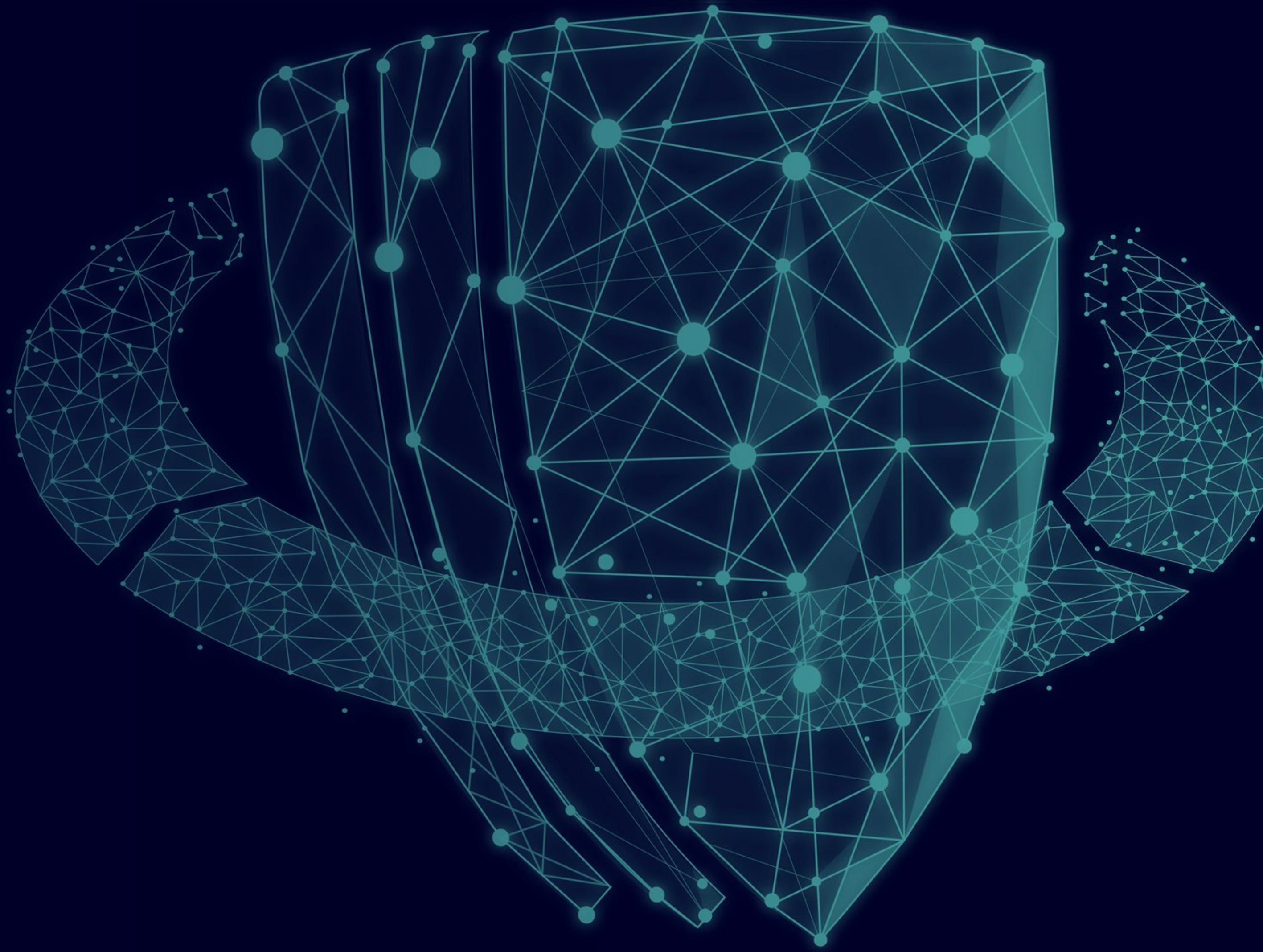

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