DEFENCE AND SPACE

TO Innovation

Connectivity/Interoperability Priorities

July 2021

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IIoT@Airbus Defence and Space Operations

Airbus Defence and Space delivers a wide range of products & services to their customers through the Operations perimeter. In these highly heterogeneous facilities the use of digital technologies offers great opportunities to improve working conditions, efficiency and flexibility. Specifically the use of IoT based applications can help to e.g. gather data, facilitate decision making and improve production quality. Special attention is required for the secure and compliant application given the special business background.

Content/Overview

(I)IoT – (Industrial) Internet of things

1. Introduction with diverse DS Operations Landscape in terms of sites/products/systems
2. Innovation Strategy with planned IoT activites
3. IoT enabled use cases
4. Security aspects & Summary

One Prime Operations

Central functions inside Operations

Quality

and

Procurement, Supply Chain & Logistics

together with

Manufacturing

delivering products and services in four areas

FALs
Final Assembly Lines for A400M, Eurofighter, MRTT, LTA

MRO
Maintenance Repair and Overhaul for Spanish and German air forces

Plants
Component manufacturing and assembly for Airbus Commercial and Defence & Space, Ariane, Boeing, Dassault

Space
Satellite structure and payload manufacturing, ENS & Telco satellite assembly, integration and testing

Defence & Space Operations Overview

~9500 FTEs

12 industrial sites

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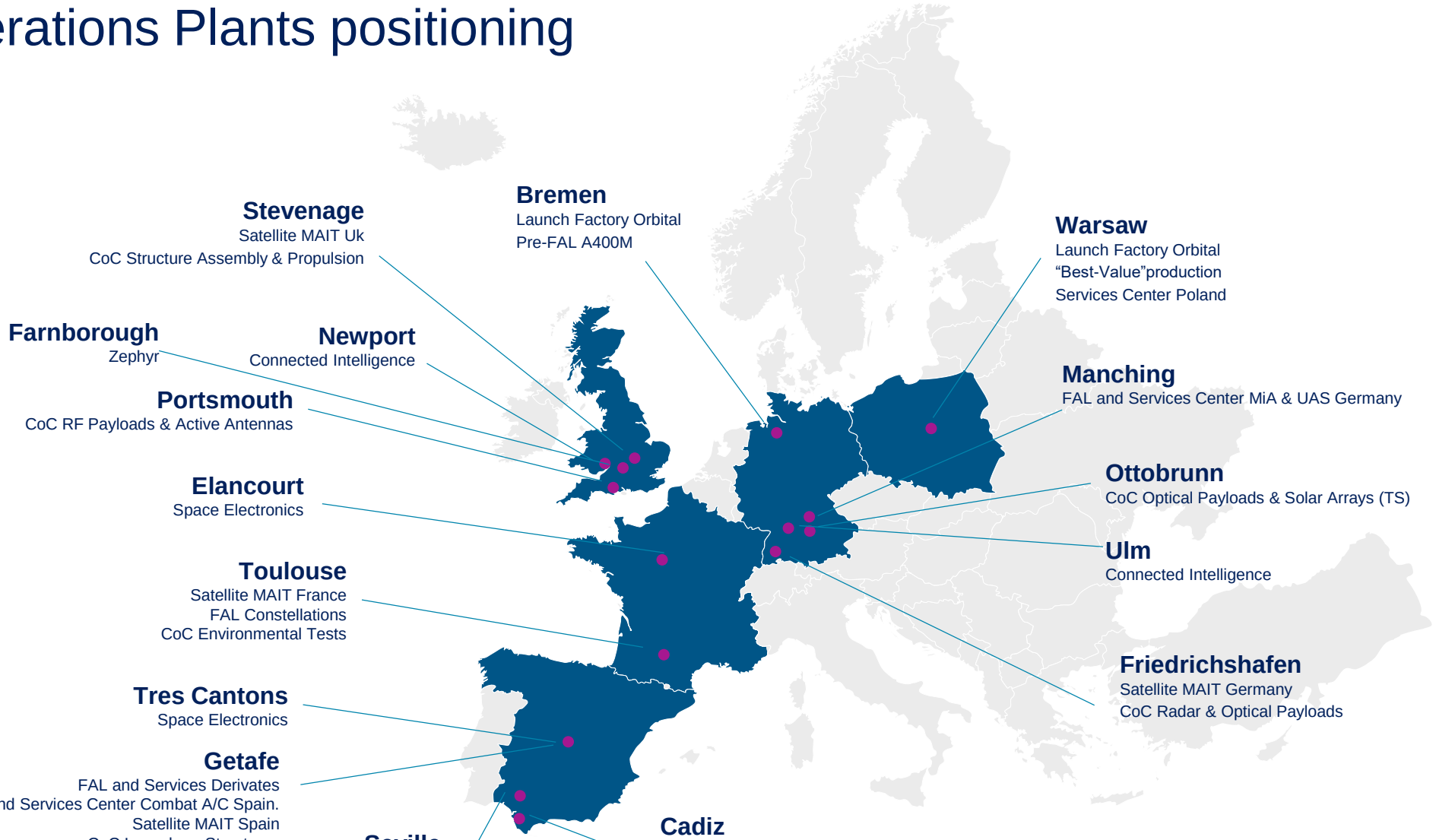
Operations Plants positioning



Stevenage
Satellite MAIT Uk
CoC Structure Assembly & Propulsion

Bremen
Launch Factory Orbital
Pre-FAL A400M

Warsaw
Launch Factory Orbital
“Best-Value”production
Services Center Poland

Farnborough
Zephyr

Newport
Connected Intelligence

Manching
FAL and Services Center MiA & UAS Germany

Portsmouth
CoC RF Payloads & Active Antennas

Ottobrunn
CoC Optical Payloads & Solar Arrays (TS)

Elancourt
Space Electronics

Ulm
Connected Intelligence

Toulouse
Satellite MAIT France
FAL Constellations
CoC Environmental Tests

Friedrichshafen
Satellite MAIT Germany
CoC Radar & Optical Payloads

Tres Cantons
Space Electronics

Getafe
FAL and Services Derivates
FAL and Services Center Combat A/C Spain.
Satellite MAIT Spain
CoC Launchers Structures

Cadiz
CoC Composites
CoC Nacelles and Automated Assembly
Launch Factory SPF and SMHF

Seville
FAL A400M
FAL and Services Center Transport LTA
Pre-FAL & Launch Factory MiA and UAS
CoC & Launch Factory Electrical

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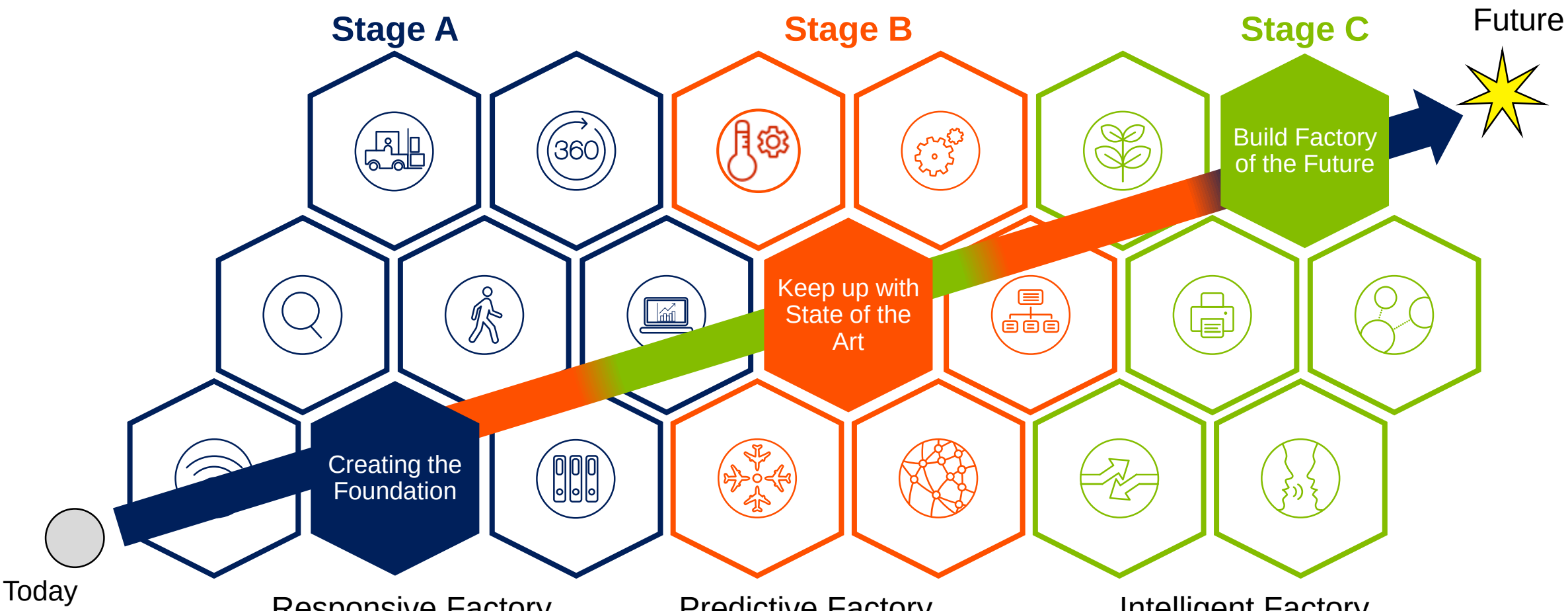
Strategy for transformation and IoT application



Responsive Factory

- Connectivity
- Real time information
- Algorithm planning

➢ **IoT gathers data**

Predictive Factory

- Forecast
- Simulations/Scenarios
- Rule-based

➢ **IoT communication centralized**

Intelligent Factory

- Autonomous Systems
- Self-learning algorithms
- Digital Assistants

➢ **IoT communication distributed**

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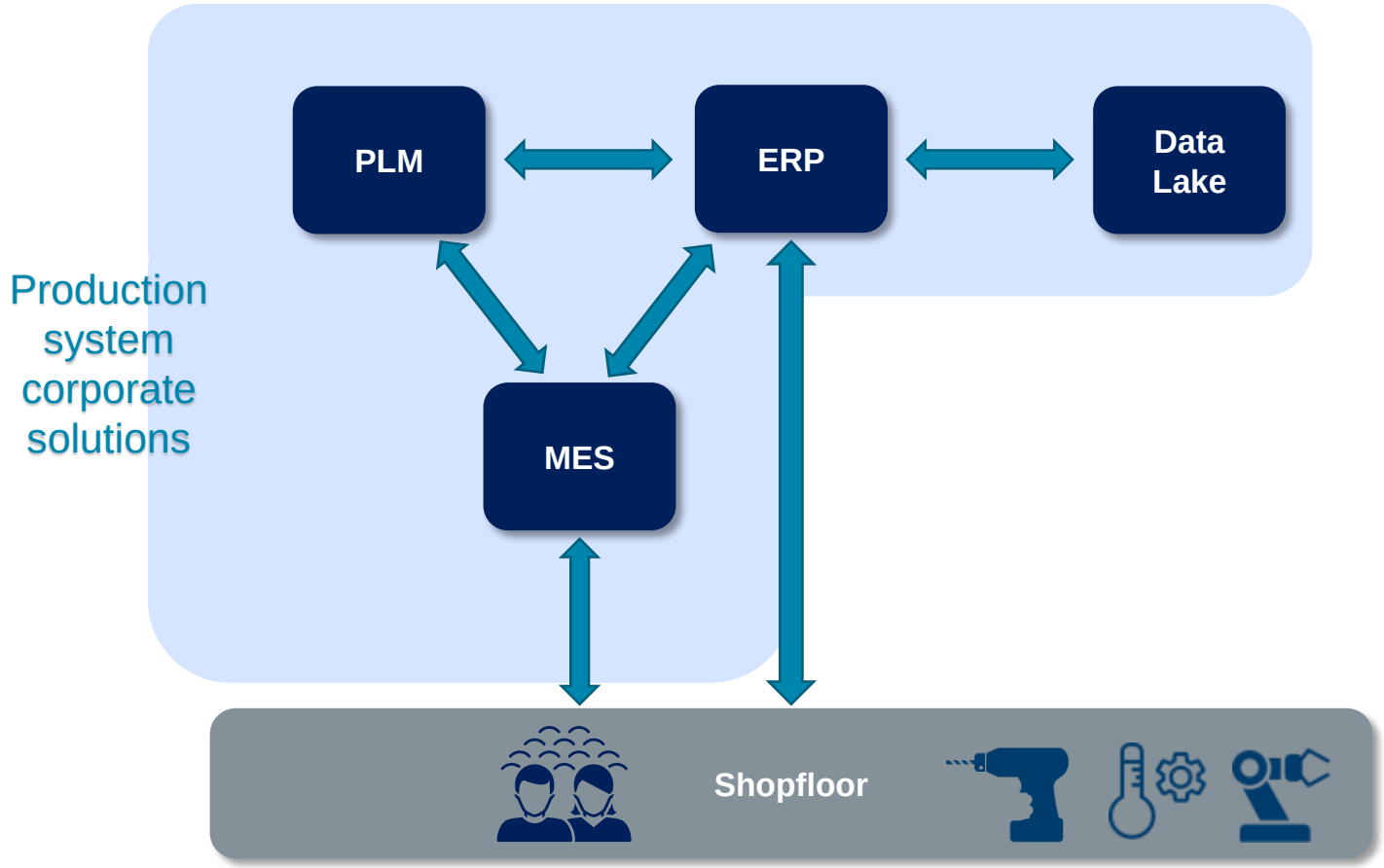
• Potential Enabled capabilities based on IoT



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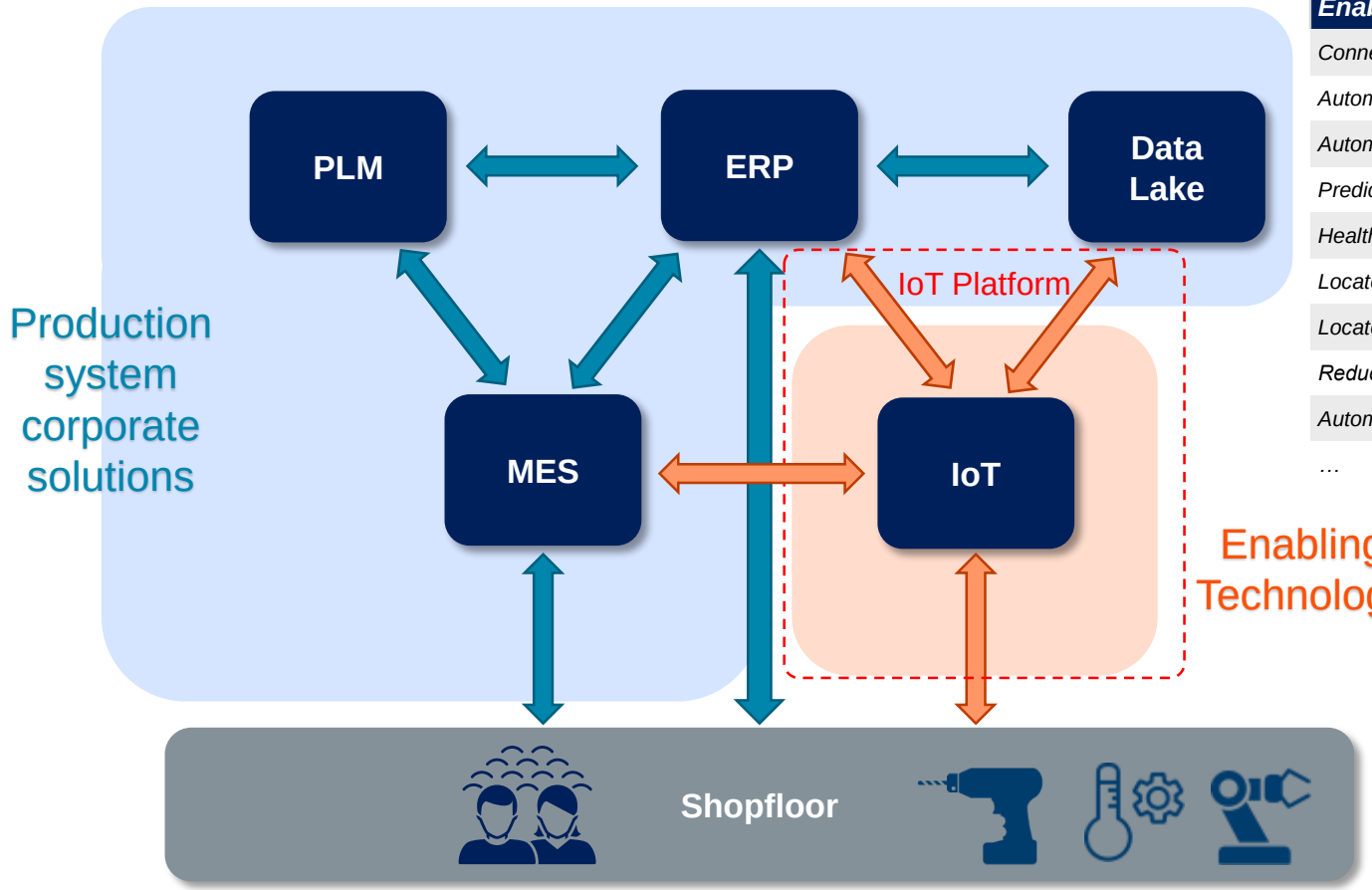
• Potential Enabled capabilities based on IoT



Enabled Capabilties
Connect Machines to Network
Automated delivery of materials to Point of Use
Automatic tool configuration via MES/ERP/DDMS
Predictive analysis / AI for quality analysis
Health monitoring & predictive maintenance
Locate and trace parts
Locate Components & Industrial Means
Reduce environmental waste (energy, heat, …
Automation of document generation & editing
…

#	Use Cases
1	*GAP GUN*
2	*Robotic Connection (Roboshave)*
3	*Autoclaves Connection*
4	*Smart assets*
5	*AGV Connection*
6	*SMART BONDING*
7	*H&S Monitoring*
8	*Indoor Asset tracking*
9	*CBM and predicitions in legacy machinery*
…	…

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IoT Needs building on security

1: Have one universal IoT Platform

2: Have a solution for tracking parts (onsite and through the supply chain) and industrial means

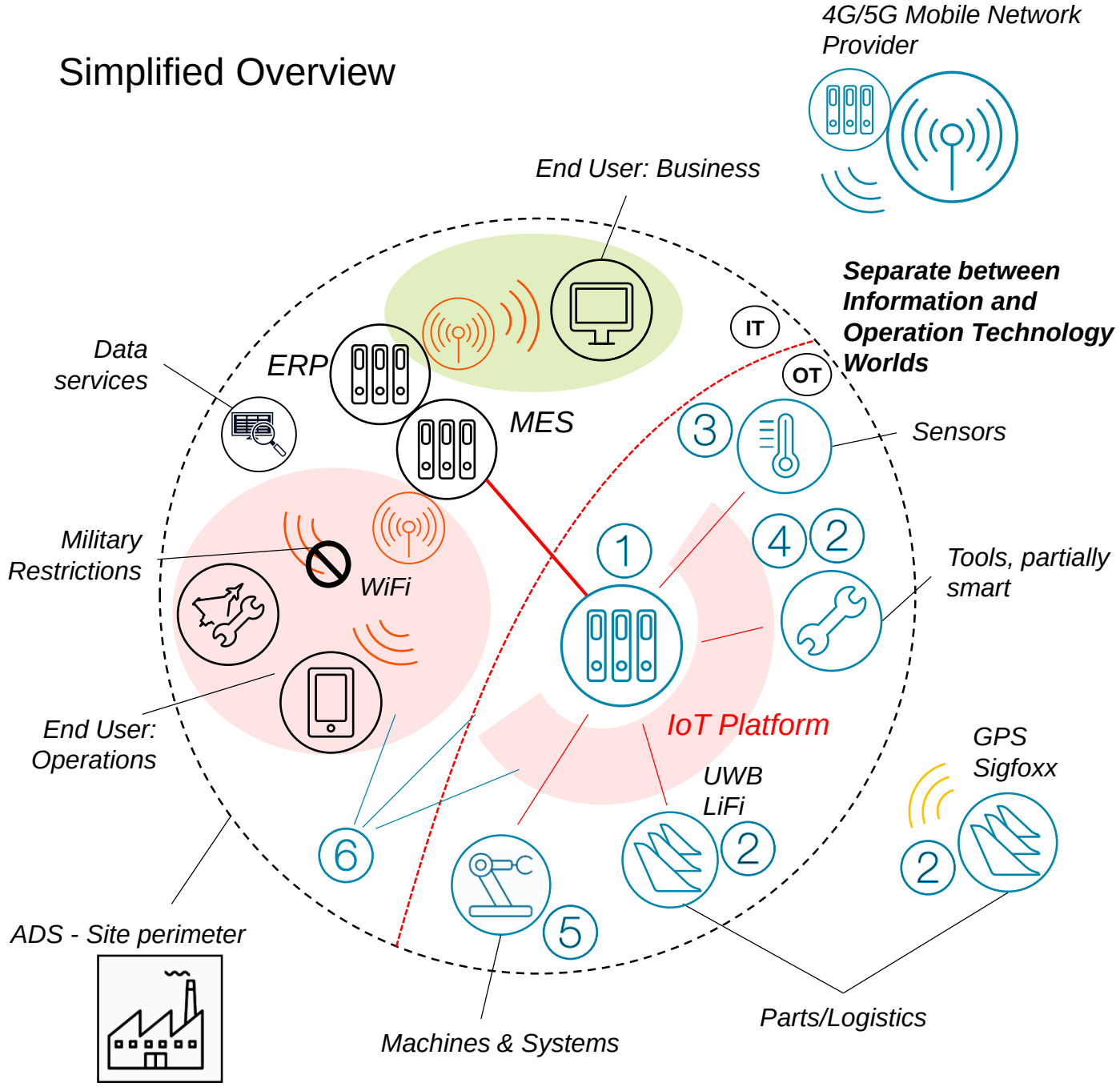
3: Ability to connect sensors monitoring all resources (machines, buildings, etc.)

4: Configure tools and record measurements

5: Capability to connect and control all relevant machines, legacy or new

(6): Provide the connectivity to enable these capabilities
→ Legal limitations regarding data classification and use of wireless technologies

Simplified Overview



Thanks !

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