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Smart Buildings at Infineon

An overview

Infineon Technologies AG
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A Smart Building becomes smart through its connected and intelligent devices



Elements of a Smart Building

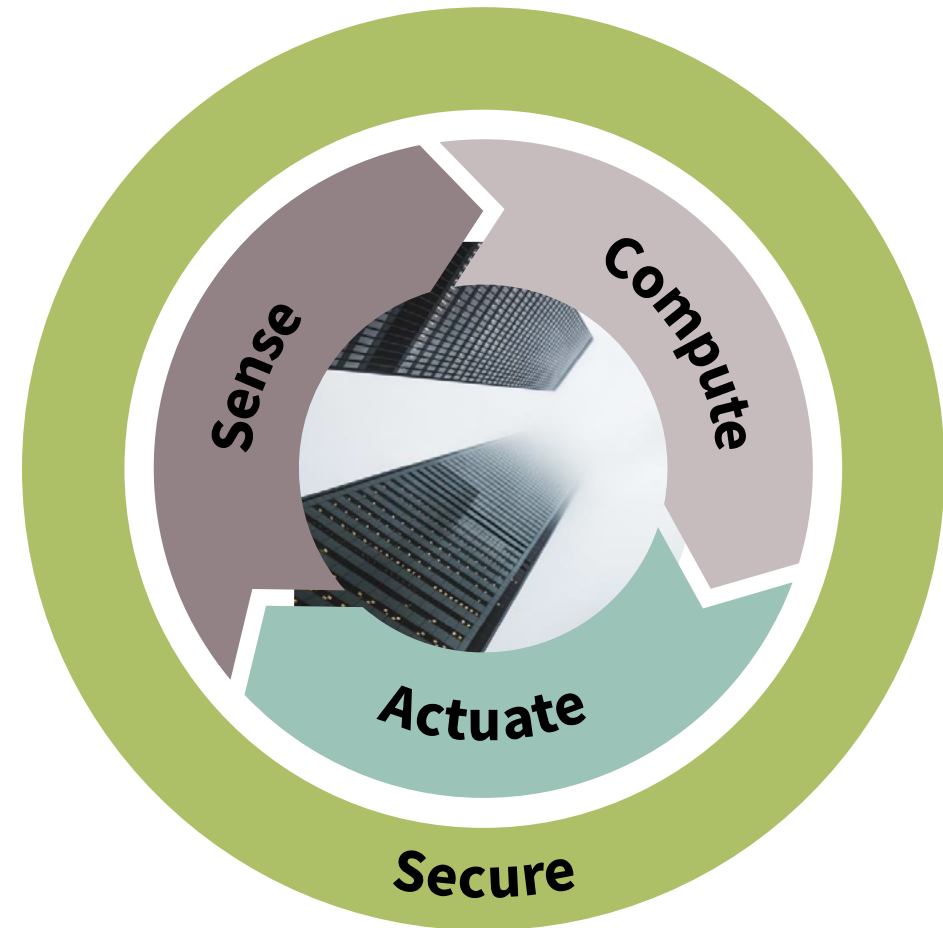
- > Connected devices and domains (example: lighting, HVAC, security)

Activities of a Smart Building

- > Collect data and information from an array of connected devices in a distributed (edge computing) or centralized manner (Building Management System)
- > Process collected data
- > Provide insights based on data to building operators
- > Takes automated operating decisions based on data analyses

Benefits of a Smart Building

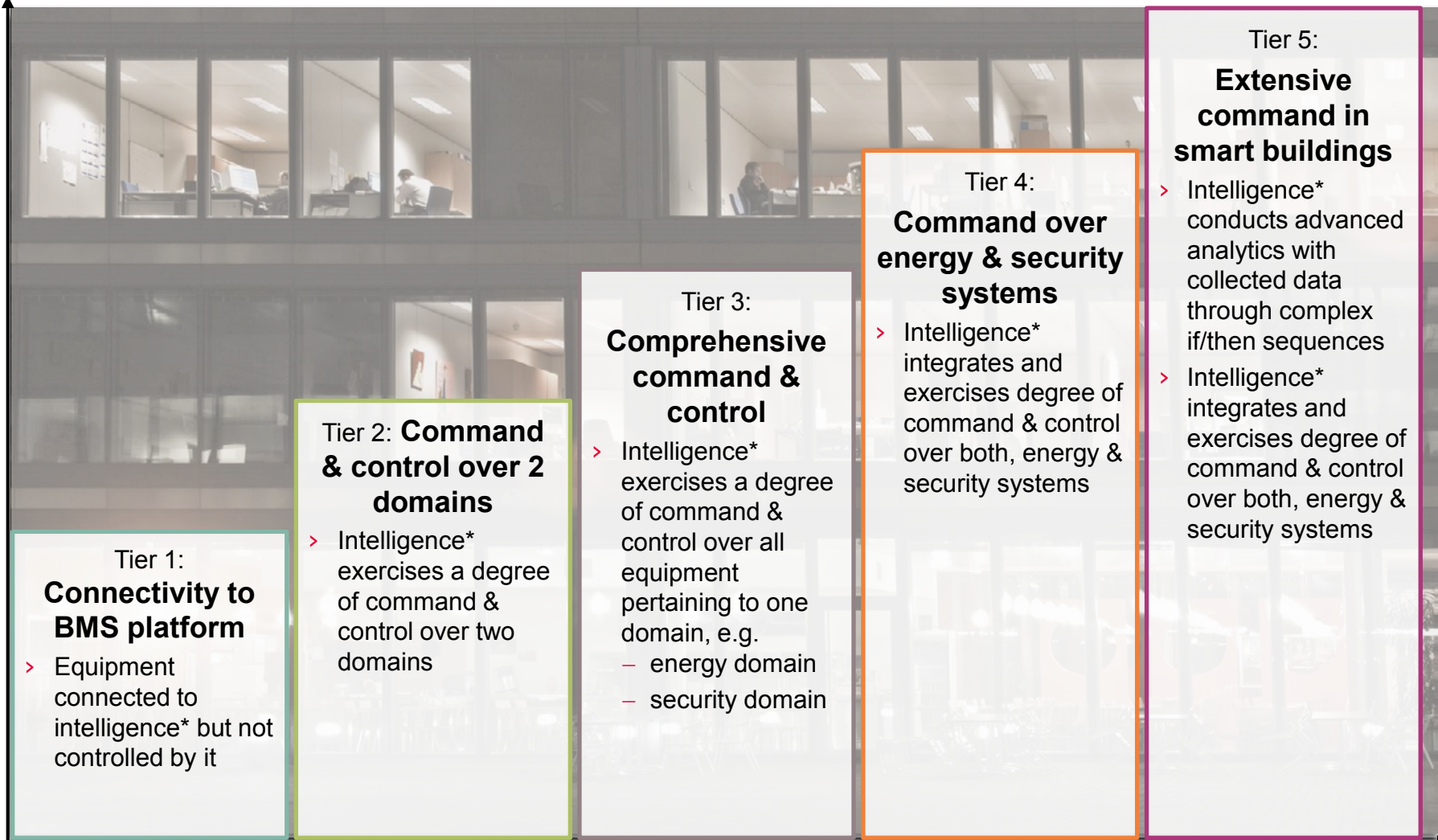
- > Higher energy efficiency and reduced emissions
- > Higher occupants' convenience & satisfaction



Similar to autonomous driving five tiers of integration can be differentiated



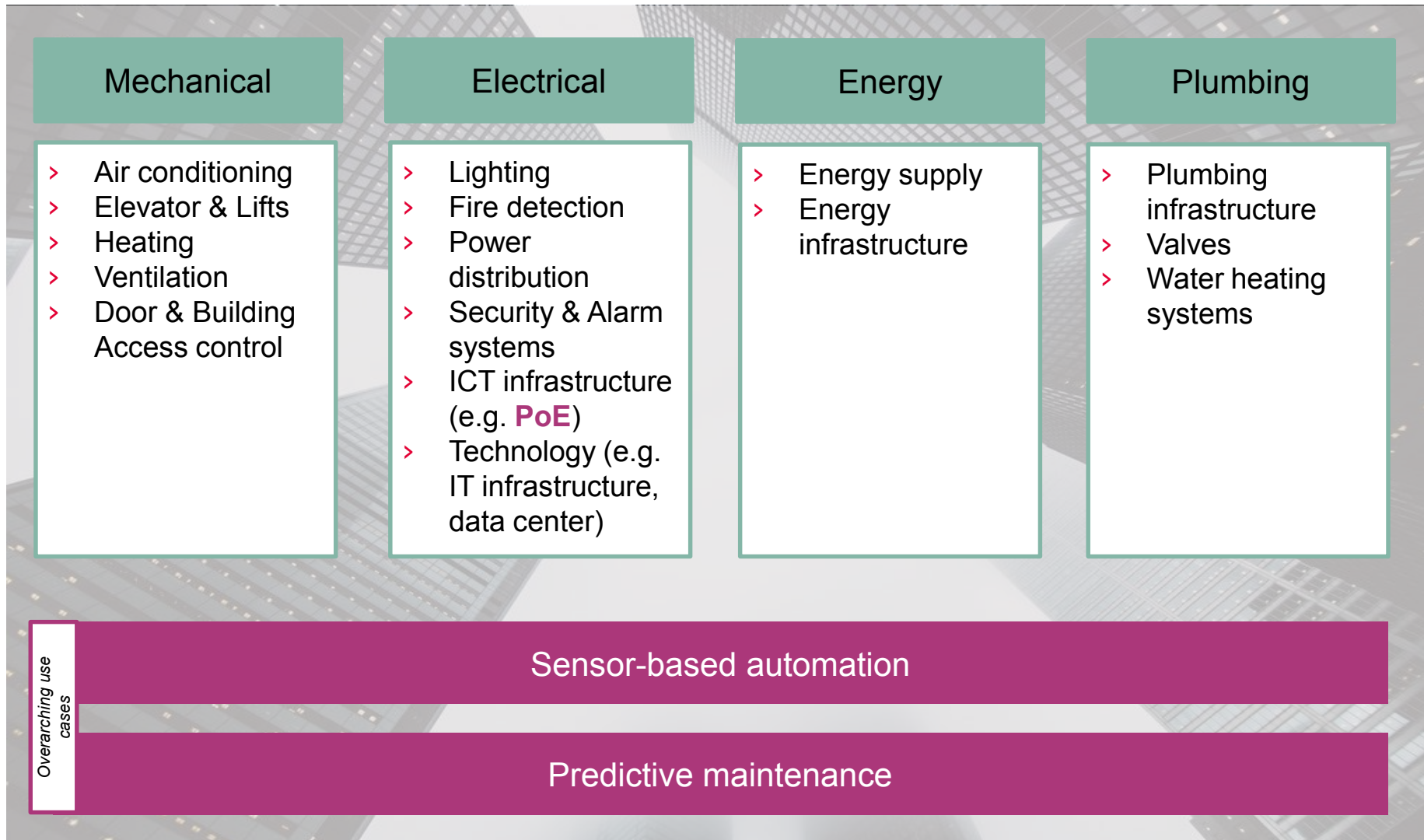
Level of Integration & Smartification



*e.g. building management system

Level of Smart Building

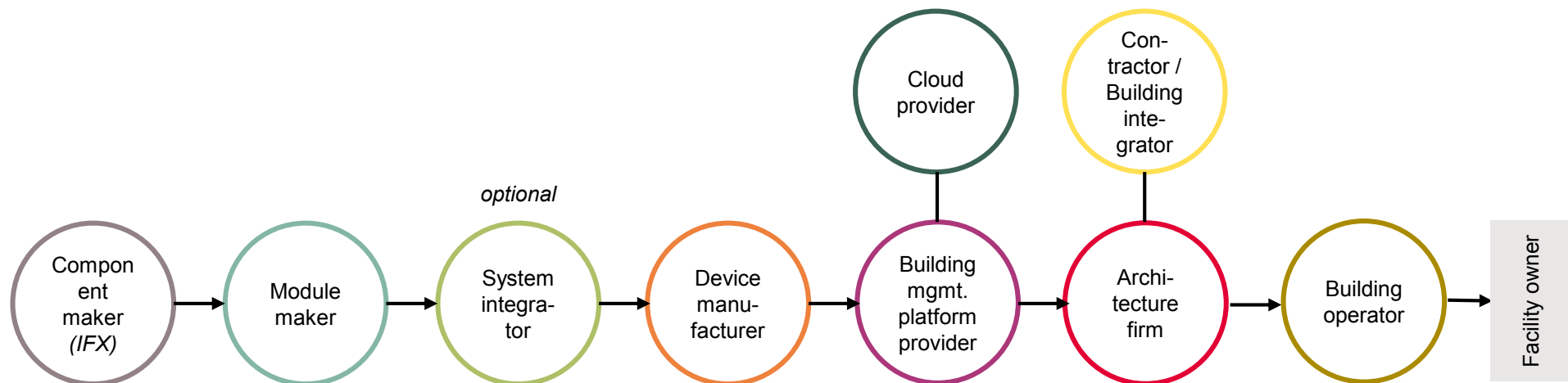
A Smart Building consists of many different elements



The Smart Building value chain includes several players from different industries






Generic value chain / ecosystem overview



Infineon partners along the value chain to drive together **innovative projects** in the area of Smart Building

Infineon has defined three pillars of activities for Smart Building



	 Power over Ethernet	 Condition Monitoring & Predictive Maintenance	 Sensor-based automation
Pillar	<ul style="list-style-type: none"> > New standard IEEE 802.3bt opening PoE up for new applications > Provides now power up to 100 W (PSE) / 71 W (PD) 	<ul style="list-style-type: none"> > (Real-time) data-driven maintenance strategy aiming at predicting and preventing devices' failure 	<ul style="list-style-type: none"> > Autonomous automation of devices based on information provided by sensors (e.g. occupancy, temperature)
Infineon offering	<ul style="list-style-type: none"> > Broad high- and low-voltage MOSFET portfolio > Highly efficient and reliable power ICs > Long standing expertise in SMPS design 	<ul style="list-style-type: none"> > Set of sensors and microcontrollers to enable effective data collection and processing > Proven collaboration along value chain 	<ul style="list-style-type: none"> > Set of sensors and microcontrollers to enable effective data collection and processing > Ecosystem of module makers and partners
Benefits in a building	<ul style="list-style-type: none"> > Lower infrastructure and installation costs > Easier device management by enabling individual IP for each device > Flexible device placement independent from available power sockets 	<ul style="list-style-type: none"> > Increase of user experience thanks to less break-down of devices > Reduced maintenance costs thanks to maintenance based on device's needs instead of pre-planned schedules 	<ul style="list-style-type: none"> > Flexible operation of devices leading to reduced facility operating costs > Retrieving of enhanced information such as people flow and heat mapping to optimize space utilization

We have a broad portfolio for different applications in Smart Buildings, incl. sensors for data collection



Microphone		Pressure		Environmental		3D Radar		3D ToF	
	No distortions		Best-in-class resolution		World smallest form factor		Highest energy efficiency		Best-in-class resolution
	Receive clear audio signals		Measure height		Measure CO2		Biometrics		3D mapping
Smart Ears, Smart Feeling, Smart Nose					Smart Eyes & Sixth Sense				
Magnetic & Current Sensors		Connectivity and RF		Microcontroller		Embedded Security		Power IC Solutions	
	High variety of types and applications		Backhaul enablement		Functional safety		Hardware security & authentication		Best-in-class solutions
	Motor control, switches, metering, etc.		5G		Industry 4.0, Autonomous cars, etc.		TPM, mobile phone, edge devices, etc.		Power supplies & control, LED driver, etc.

Summary

Smart Buildings are on the rise to make buildings more efficient, greener and comfortable for its tenants

Smart Buildings **collect a variety of data** from connected devices, process and **analyse the collected information** and take **automated operation decisions** for optimization

Infineon offers a **broad range of products** for Smart Buildings, starting from **sensors** for data collection, **microcontrollers** for data processing and **power semiconductors** for efficient operations as well as **embedded security products**

Infineon focuses on **Power over Ethernet, Condition Monitoring & Predictive Maintenance** and **Sensor-based Automation** as most requested Smart Building use cases

As the Smart Building value chain can be quite complex, Infineon offers an **extensive partner network** to offer the **most suitable solution** to customers





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