



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

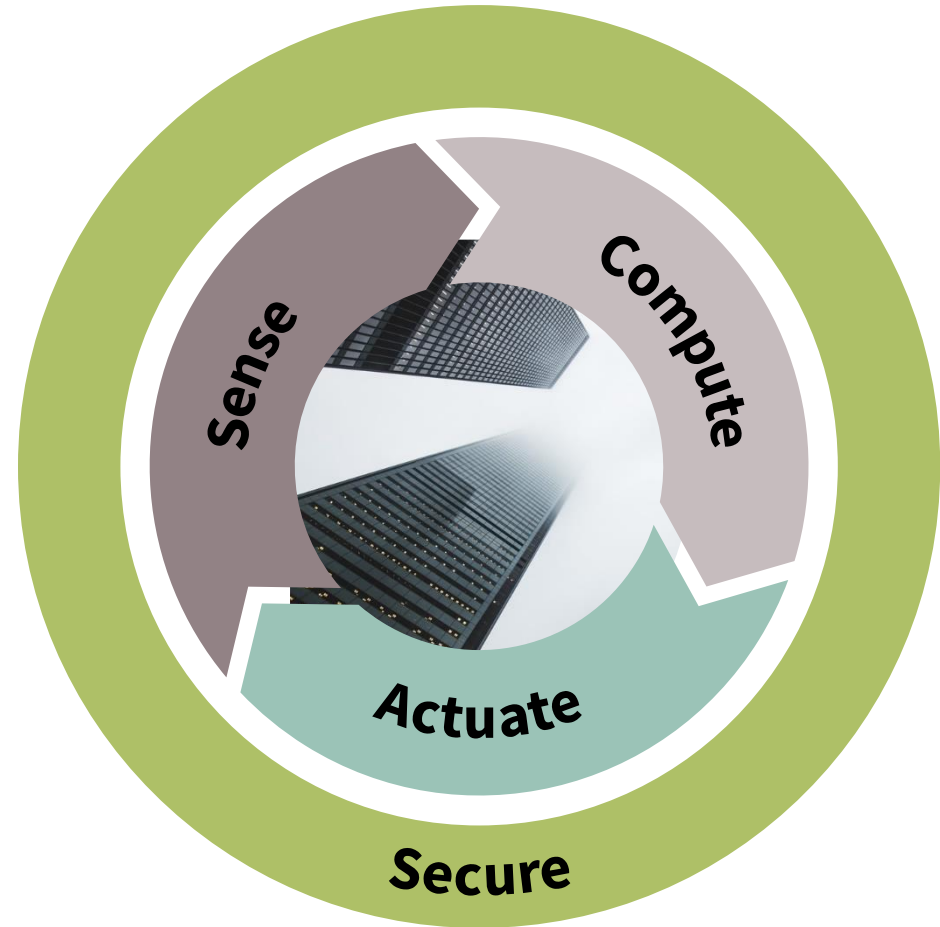
- > Connected devices and domains (example: lighting, HVAC, security)

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

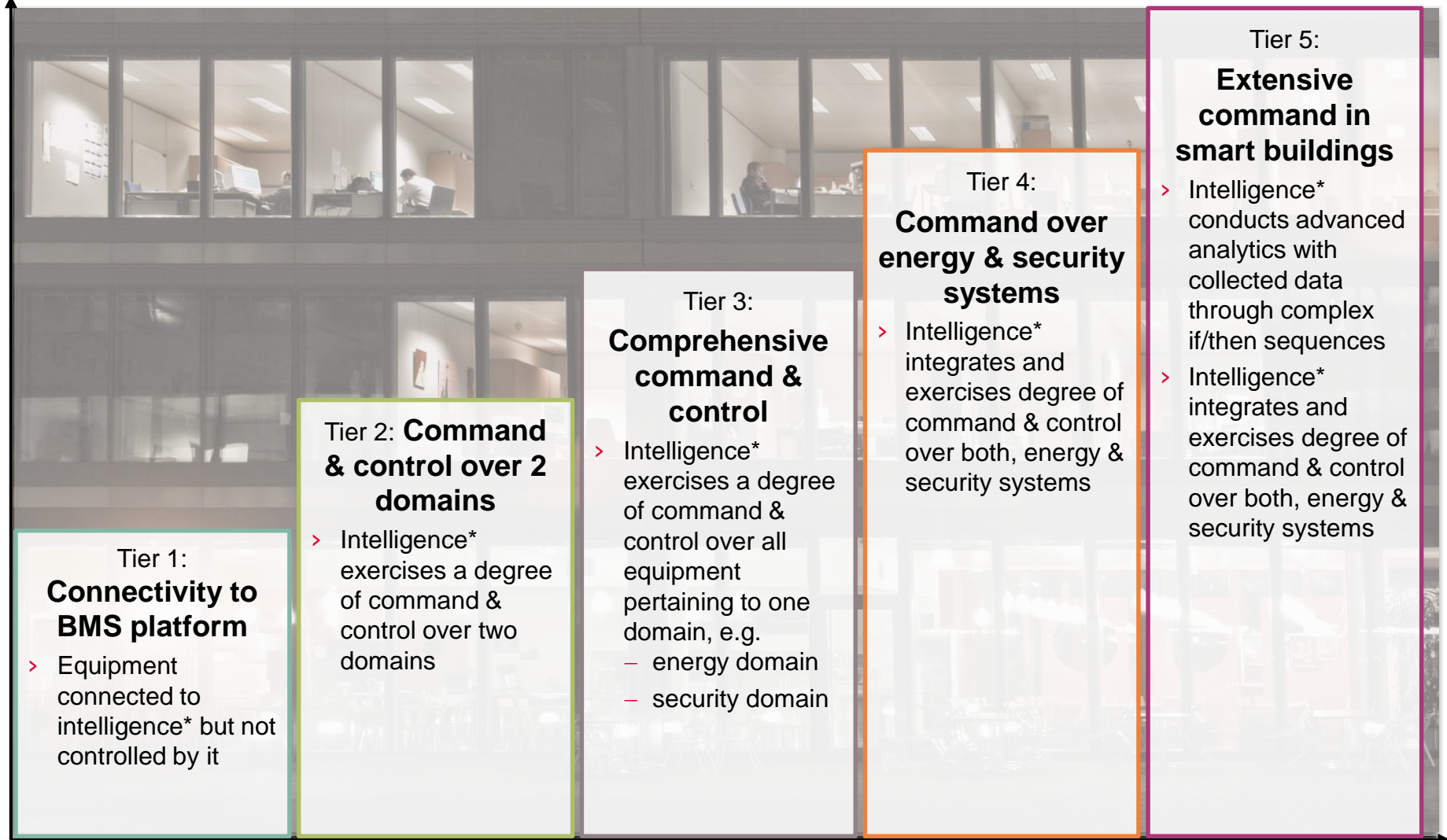
Benefits of a Smart Building

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



Similar to autonomous driving five tiers of integration can be differentiated

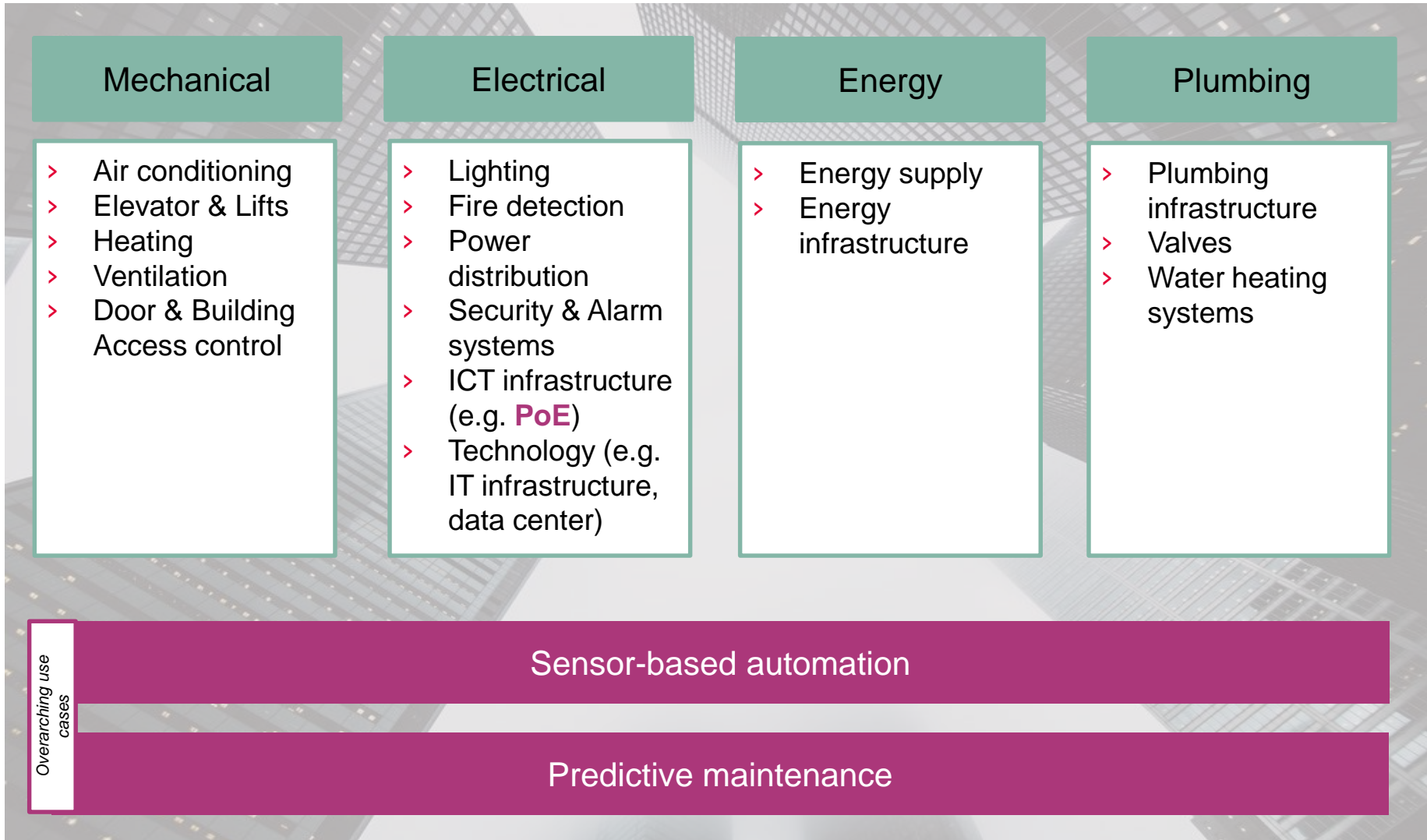
Level of Integration & Smartification



*e.g. building management system

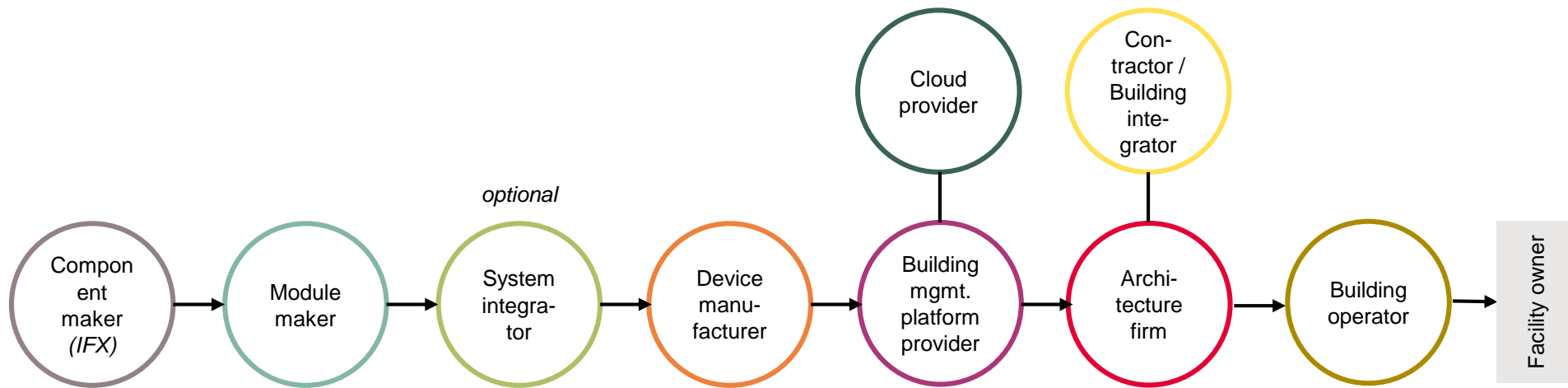
Level of Smart Building

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

- > New standard **IEEE 802.3bt** opening PoE up for new applications
- > Provides now power up to 100 W (PSE) / 71 W (PD)

- > (Real-time) data-driven maintenance strategy aiming at predicting and preventing devices' failure

- > Autonomous automation of devices based on **information provided by sensors** (e.g. occupancy, temperature)

Infineon offering

- > Broad high- and low-voltage **MOSFET portfolio**
- > Highly **efficient and reliable** power ICs
- > **Long standing expertise** in SMPS design

- > Set of **sensors and microcontrollers** to enable effective data collection and processing
- > **Proven collaboration** along value chain

- > Set of **sensors and microcontrollers** to enable effective data collection and processing
- > **Ecosystem** of module makers and partners

Benefits in a building


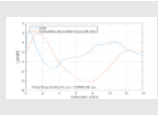
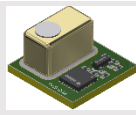


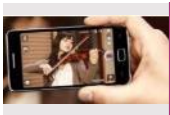

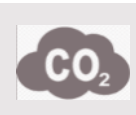
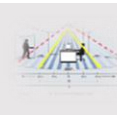













- > **Lower** infrastructure and installation **costs**
- > **Easier device management** by enabling individual IP for each device
- > **Flexible device placement** independent from available power sockets

- > **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

- > 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 CO ₂	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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