Driving the AI revolution at Infineon
@ GSA Asia Pacific Executive Forum

Claire Wang, EVP & COO Power & Sensor Systems at Infineon Technologies
October 30th 2024

Infineon is a global leader in power systems and IoT

Global leader

in automotive, power management,
energy efficient technologies and IoT

~58,600

employees[1]

Market position

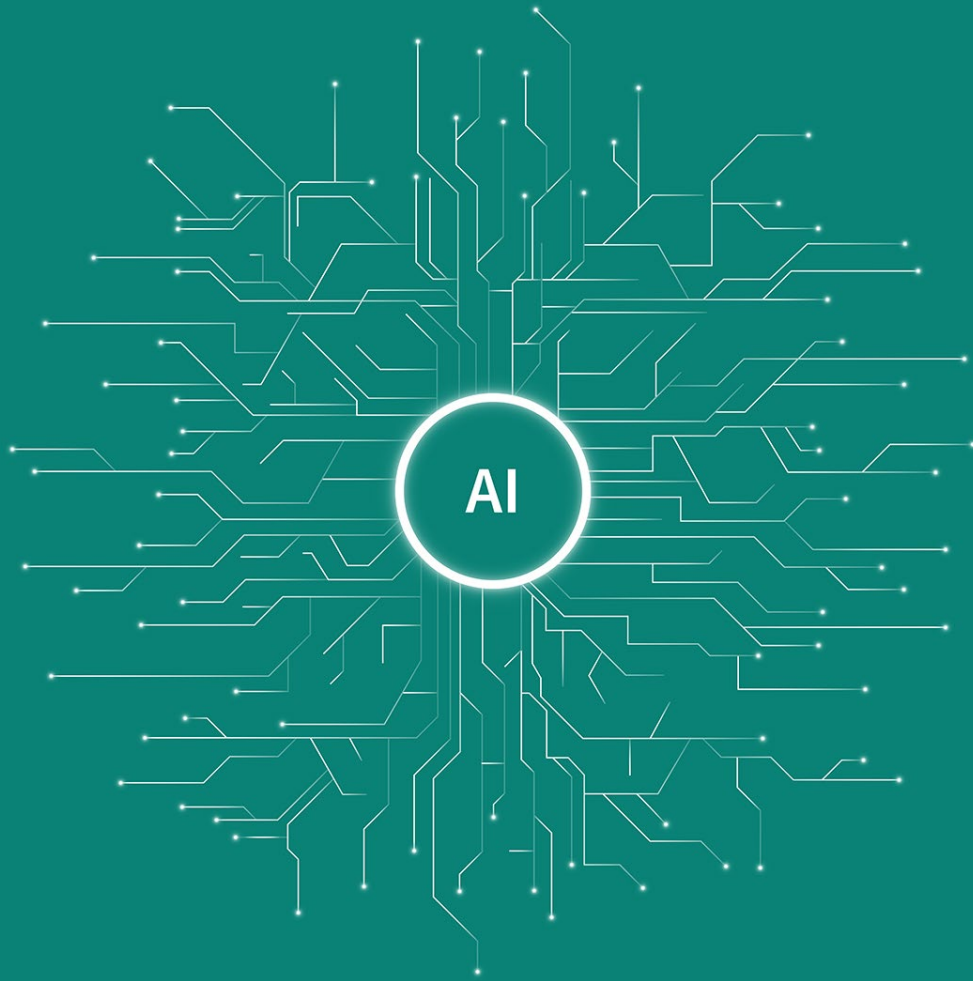| Automotive	Power	Microcontroller
#1	**#1**	**#5**
TechInsights, March 2023	Omdia, September 2023	Omdia, November 2023

Decarbonization and digitalization
are driving the growth of Infineon's target markets

[1] As of 30 September 2023
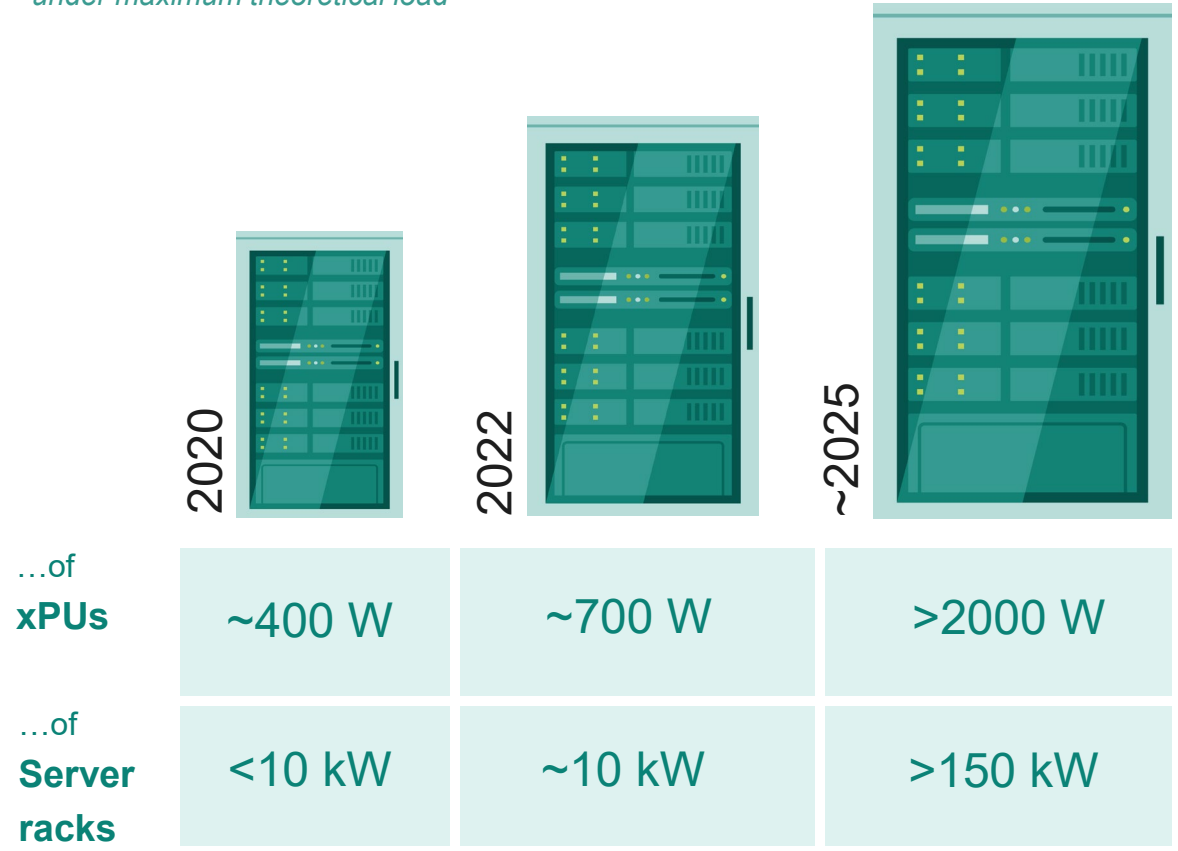
Paving the way for sustainable AI innovations

We unleash the full potential of AI for greener data centers, smarter devices and optimized solutions

We power AI
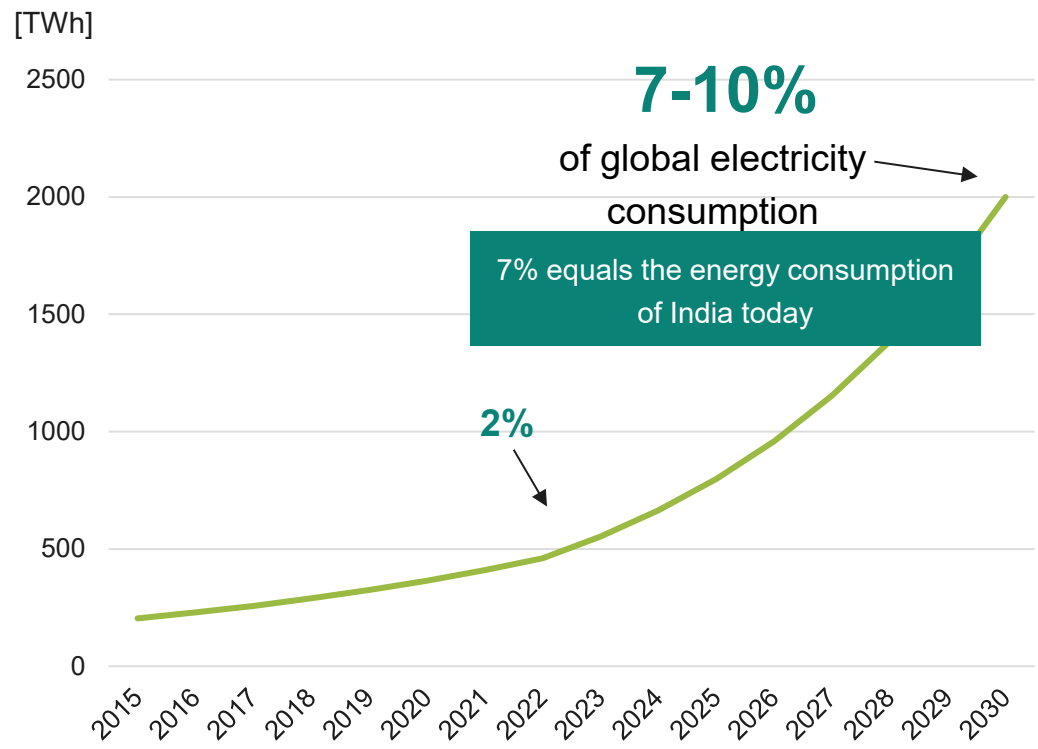## Power management cannot be an afterthought

Exemplary development of power consumption* / rack density…
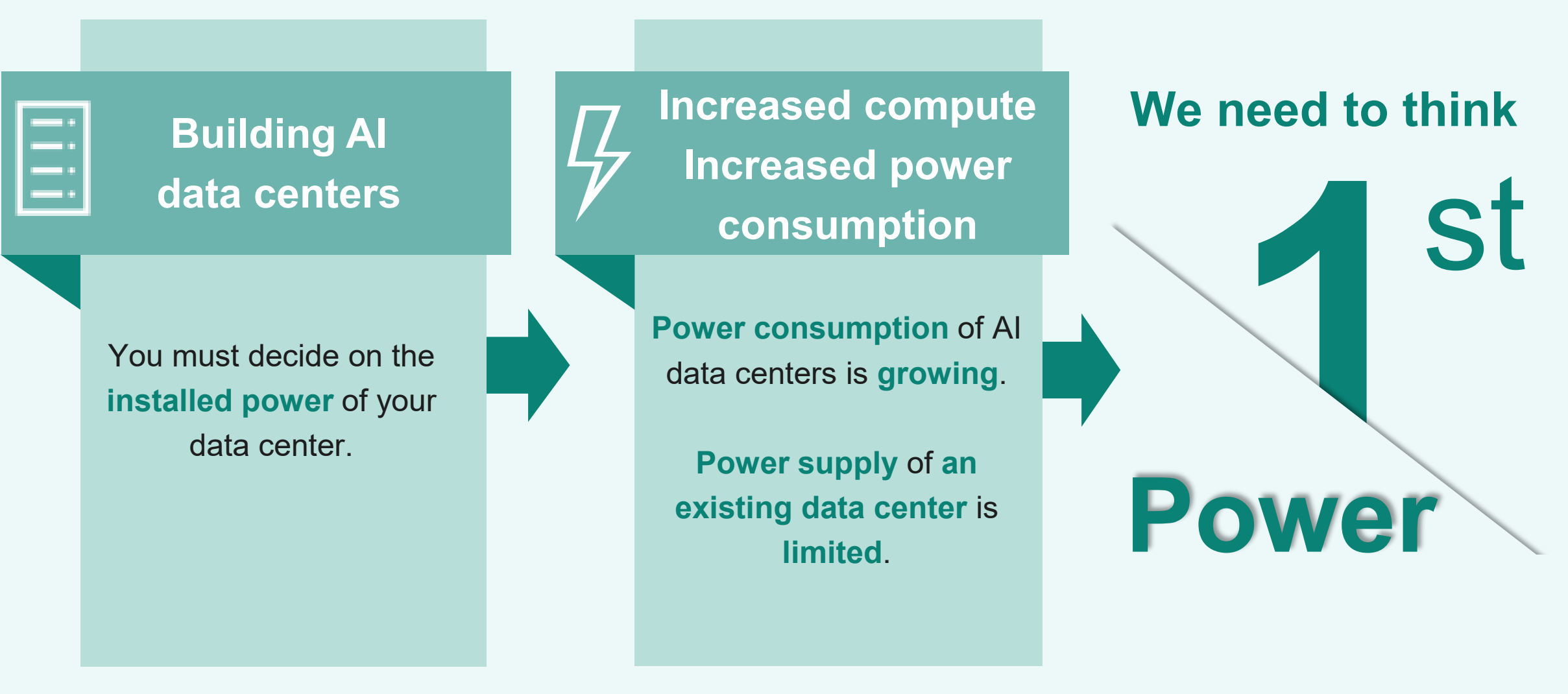
*under maximum theoretical load

Projected electricity consumption of data centers

	2020	**2022**	**~2025**
…of xPUs	~400 W	~700 W	>2000 W
…of Server racks	<10 kW	~10 kW	>150 kW

Sources: Anandtech, Ramboll

[TWh]

7-10%
of global electricity consumption

7% equals the energy consumption of India today

2%
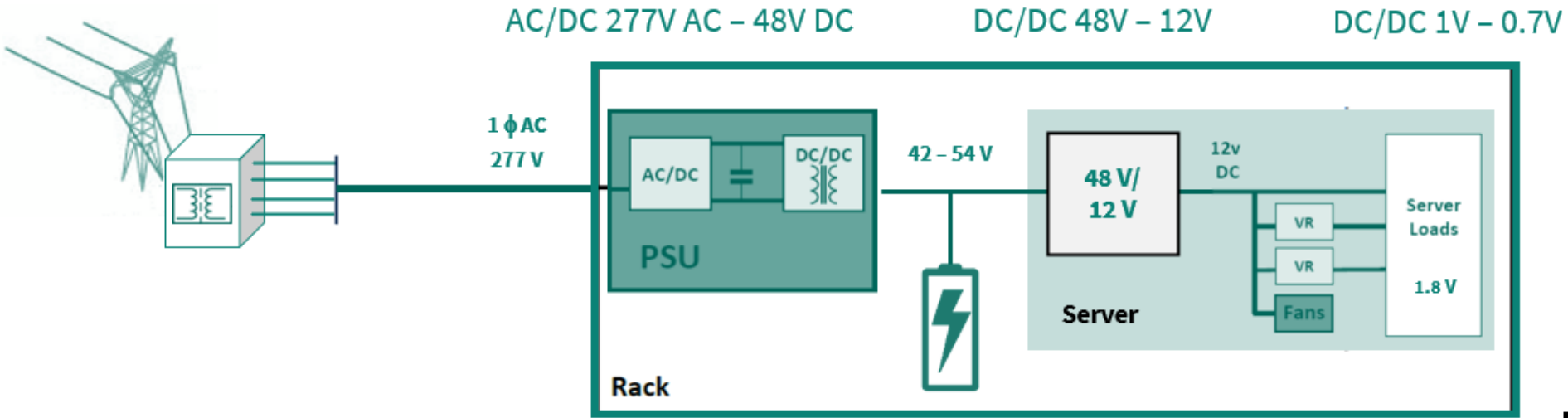
Sources: IEA including crypto mining energy use; Infineon assumption and calculation; McKinsey, BCG

Thinking power first needs to be part of the solution

Building AI data centers

You must decide on the **installed power** of your data center.

Increased compute Increased power consumption

Power consumption of AI data centers is **growing**.

Power supply of **an existing data center** is **limited**.

We need to think

1st
Power

Energy efficient power semiconductors:
Reduction of losses > 50%!

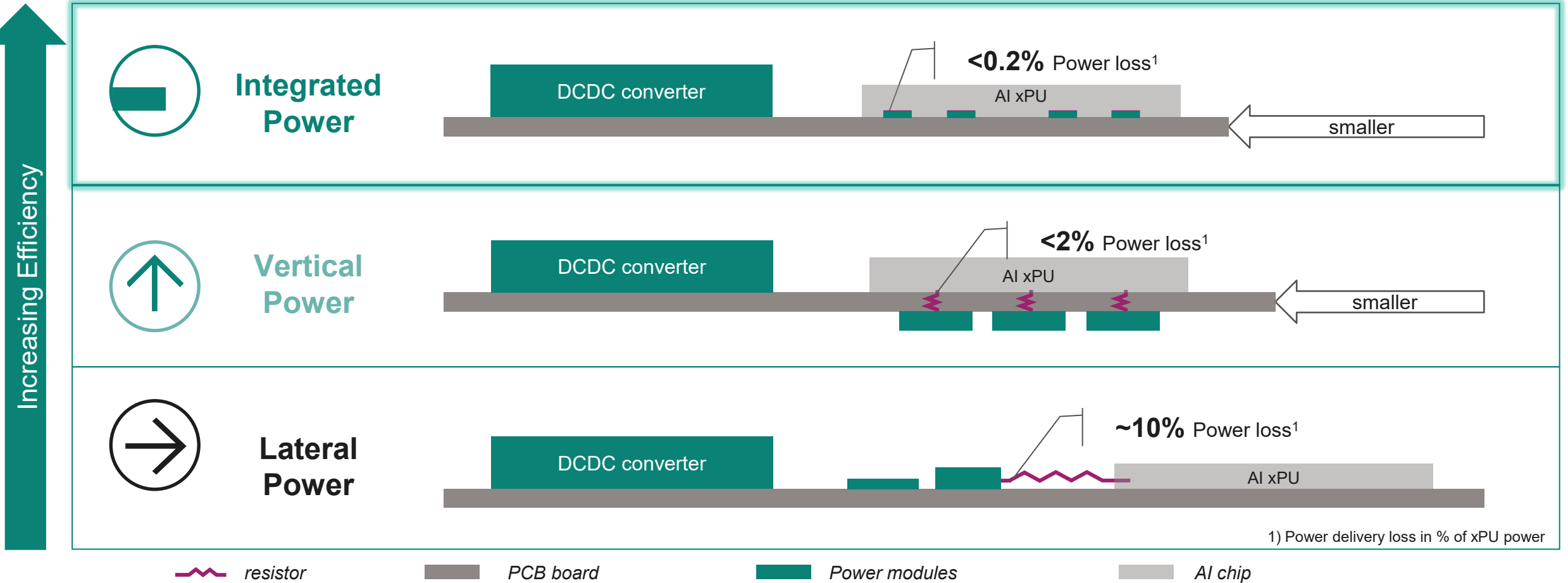|	AC/DC 277V AC – 48V DC	DC/DC 48V – 12V	DC/DC 1V – 0.7V	Power flow efficiency
Average Efficiency (2024)	96%	96%	90%	83%
Efficiency potential from most modern power semiconductors (2024)	98%	98%	95%	**91%** Using GaN, SiC & vertical power modules

Infineon's industry leading innovations promote energy-efficient technologies that can avert the power struggle AI is facing

Increasing Efficiency →

Integrated Power

DCDC converter

<0.2% Power loss[1]

AI xPU

smaller

Vertical Power

DCDC converter

<2% Power loss[1]

AI xPU

smaller

Lateral Power

DCDC converter

~10% Power loss[1]

AI xPU

1) Power delivery loss in % of xPU power

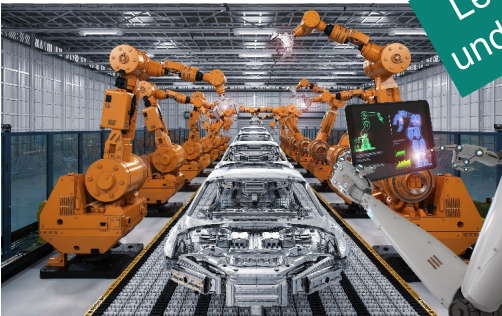∿ *resistor*　　　■ *PCB board*　　　■ *Power modules*　　　■ *AI chip*

Power modules drive higher density and efficiency by exponentially reducing power losses

We enable AI - new sensors and transition to the edge will drive strong evolution of many manufacturing environments

Complexity of function/ services and level of interaction

PAST: Model based control drives >99% of today's robots

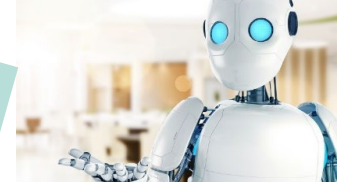*Learning and adaptation understanding & semantics*

interactive & adaptive

augmented & mobile

TODAY: AI-supported, interactive, flexible manufacturing environment

Virtualization, Digital-Twin Redesign of OT/IT

FUTURE: next level of adaptive optimization in manufacturing metaverse

towards
**sustainable,
energy efficient,
transparent**
manufacturing

At Infineon we proudly power & enable AI…

We power AI

- **From grid to core** – offering energy efficient solutions covering the entire power flow
- **>22 M. metric tons CO_2 equivalents** could be saved by using Infineon products in all data centers worldwide

This equals the CO_2 emissions of 5.7 coal fired plants in 1 year

We enable AI
Our **Sensor** and **Microcontroller solutions** enable AI to collect necessary information and compute on the edge

… and contribute to Decarbonization & Digitalization

Source: epa