Third Generation Semiconductors: Enabling AI in a Net-Zero Future

GSA Global Semiconductor Conference

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Americo Lemos, CEO

IQE

Architects of tomorrow


Connectivity is
no longer optional
Architects
of tomorrow


Third Generation
Semiconductors
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Sense
Architects
of tomorrow

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of tomorrow


Power
Architects
of tomorrow


Enabling an
intelligently connected,
immersive,
low carbon world
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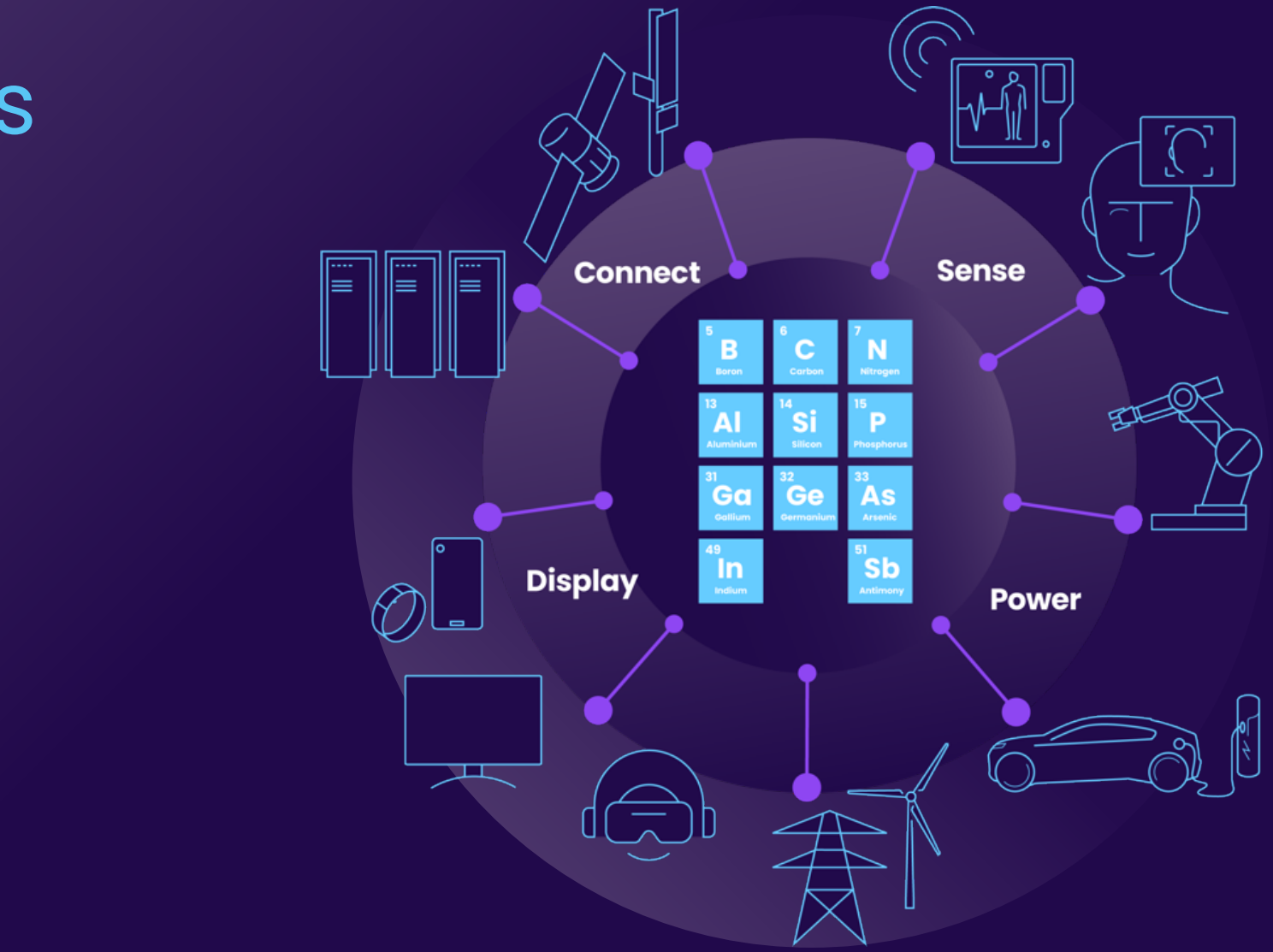
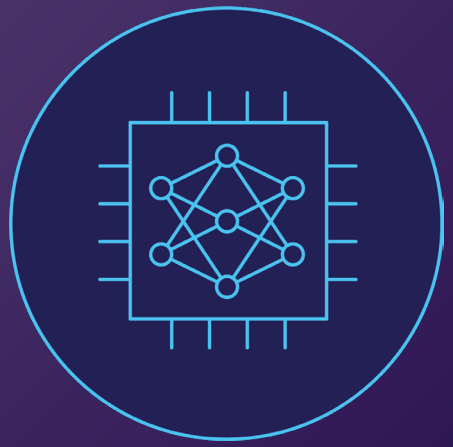
Compound semiconductors

Third Generation Semiconductors



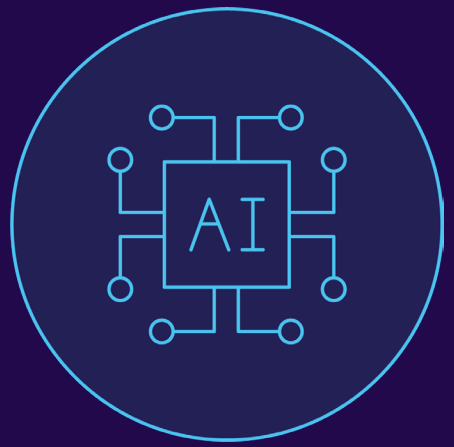
AI is here

Collect, transfer and compute masses of data



Hardware is the fundamental enabler

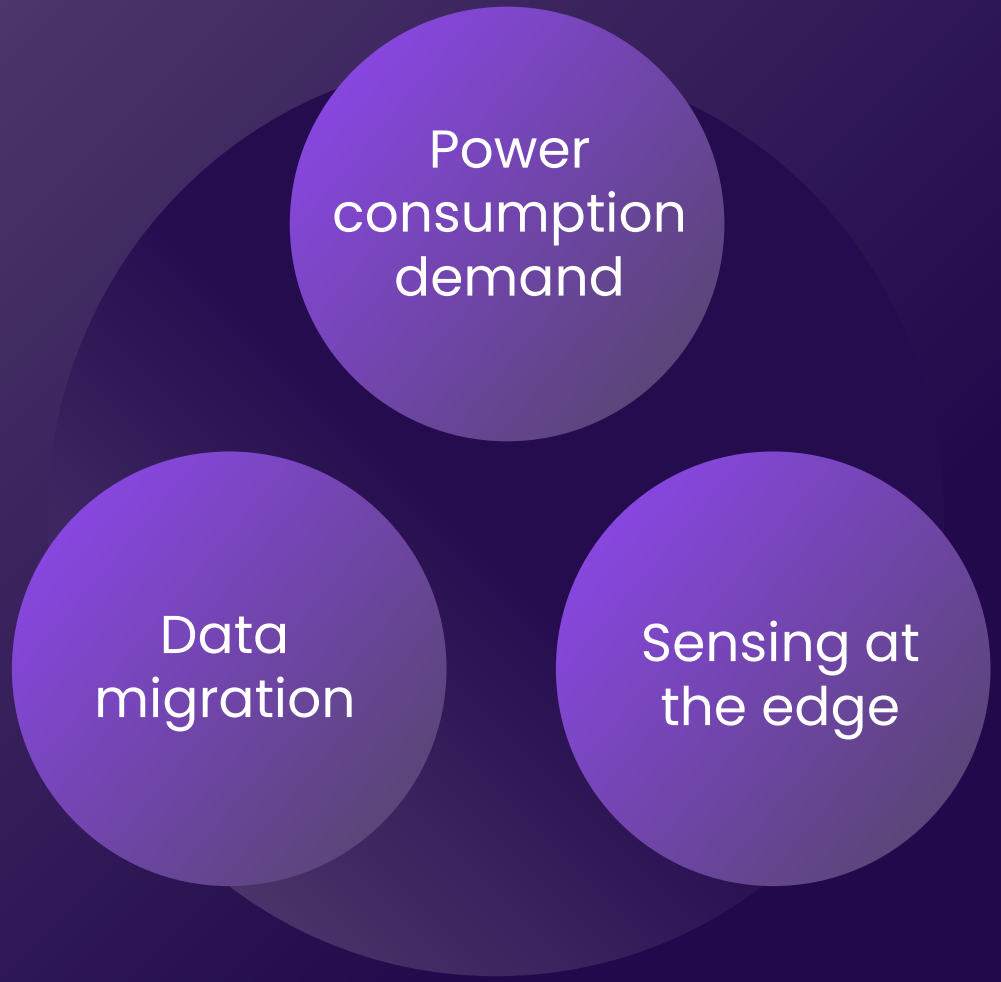
40-50% of technology value stack*



Compound semiconductors are critical to AI architecture

*McKinsey

Demand for AI will create bottlenecks

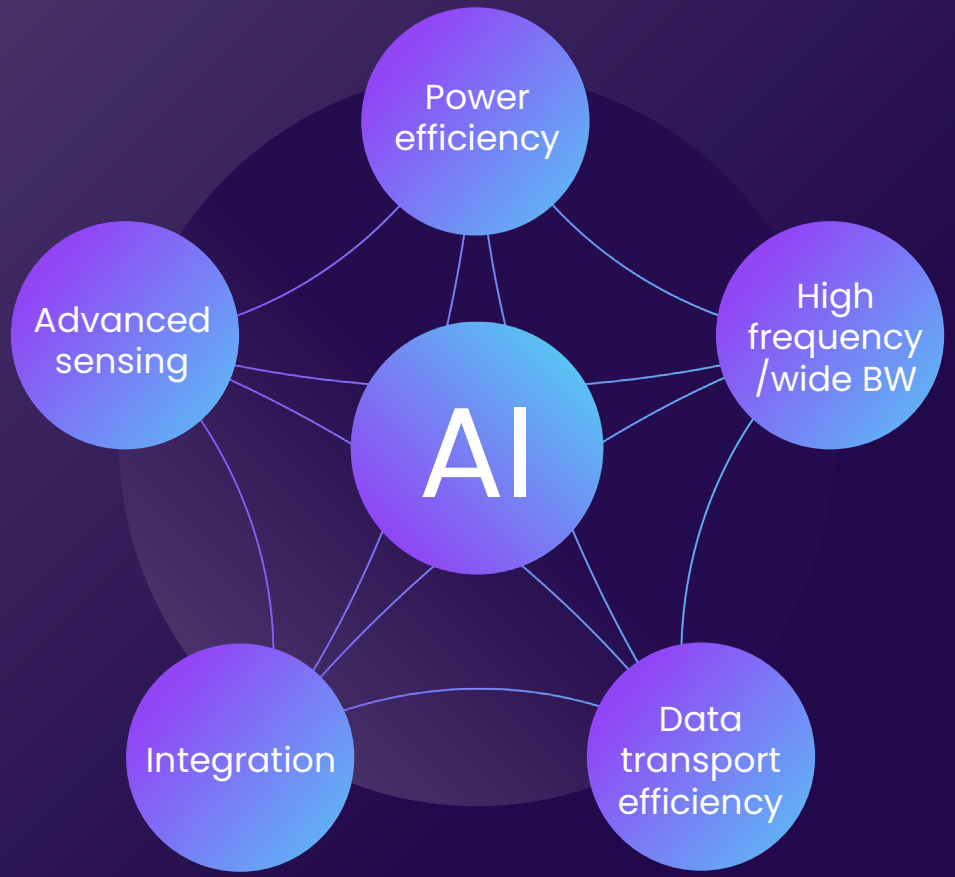


Demand on ecosystem is multi-dimensional

There is not enough power in the core architecture to deliver the future of AI

Innovation in materials, architectures and cooling technologies is required

Unlocking AI bottlenecks with compound semiconductors



Compound semiconductors are complementary to Silicon

Diversification of materials with focus on energy efficiency is needed

Enabling AI in a Net Zero future

Compound semiconductors underpin sustainable growth of the AI ecosystem

Accurate sensing
VCSELs, lasers, detectors

Ultra-low latency networks
GaN RF, GaAs HBT

Smart processing
Photonics - InP, VCSEL

Smart connected Devices

Autonomous vehicles

5G/6G

Wi-Fi 6/e

Data Centre

Edge AI

Efficient power conversion

GaN Power

Rethinking power architecture in data centres

Data centres consumed

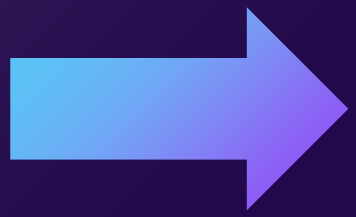
1%

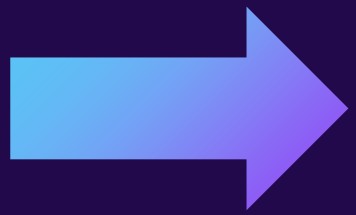
of global electricity in 2023

Projected to consume

8%

by 2030





Data centres contributed

0.3%

to overall carbon emissions in 2023

Projected to contribute

2%

by 2030

Source: *enelx.com

Rethinking power architecture in data centres

GaN is the answer

GaN conductivity

1000x

than silicon*

Up to

40%

power savings compared to silicon*

- Higher frequency
- Compact & higher power density
- Lower switching loses
- Improved thermal performance

Source: *Datacentredynamics.com

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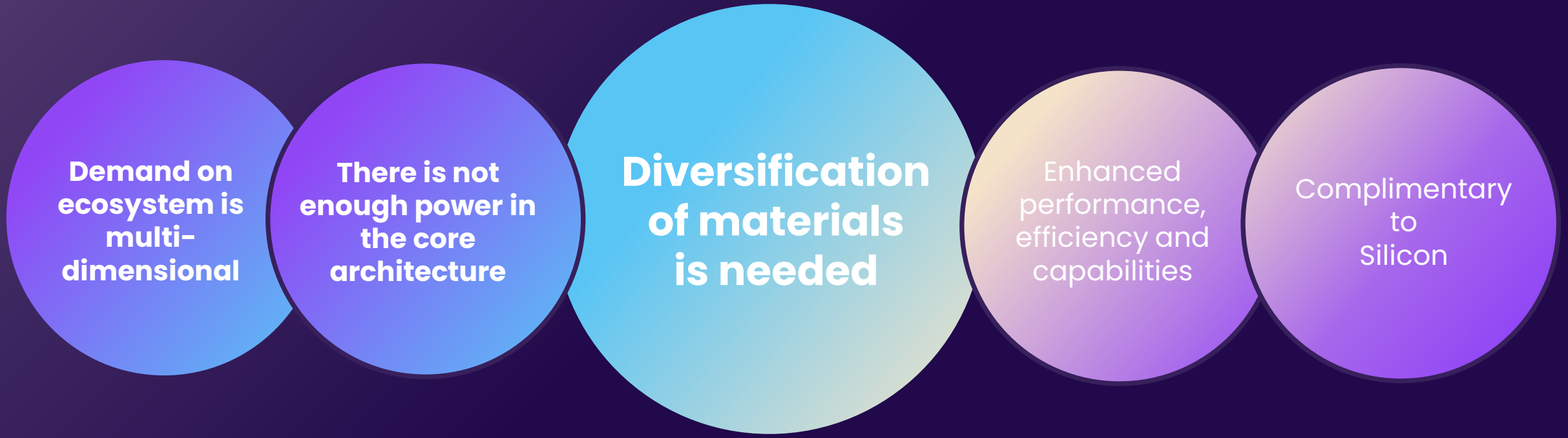

Thank you

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of tomorrow