

Samsung Foundry

-

Adding one more Dimension

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Agenda

1.

**Semiconductor
Industry
Trend**

2.

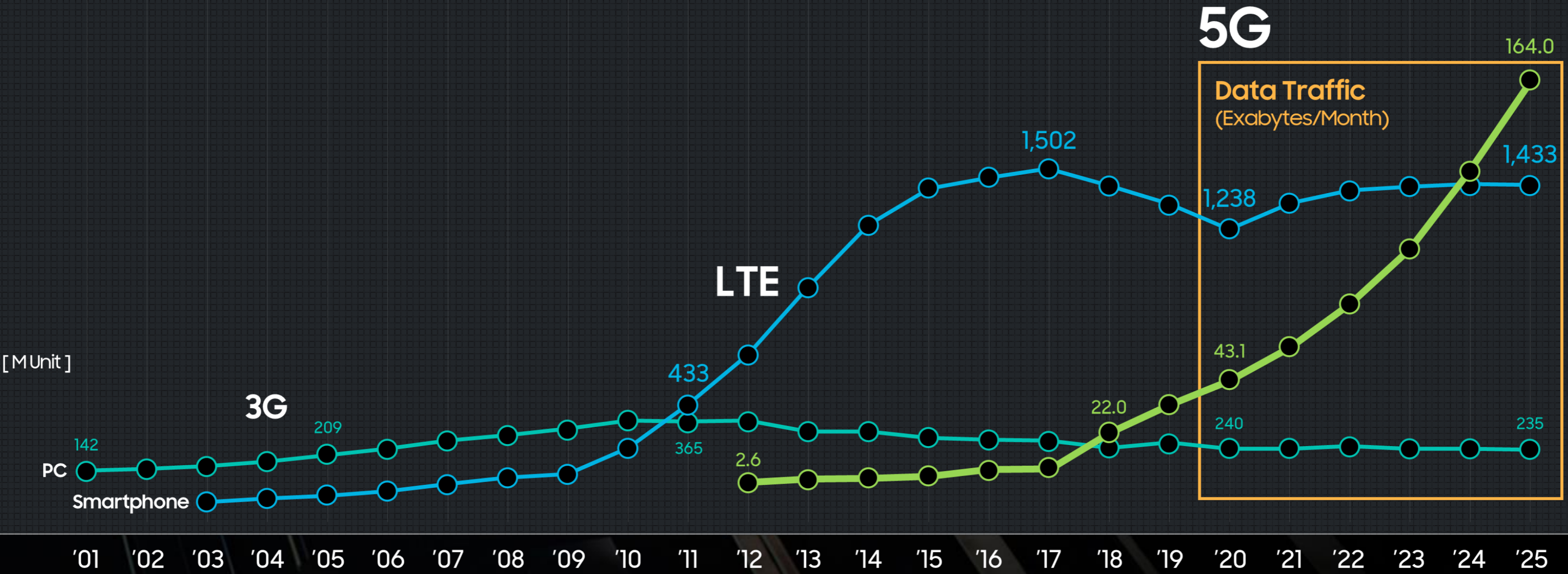
**Innovations in
Samsung Foundry
Technology**

1

Semiconductor Industry Trend

Semiconductor Industry on the Move

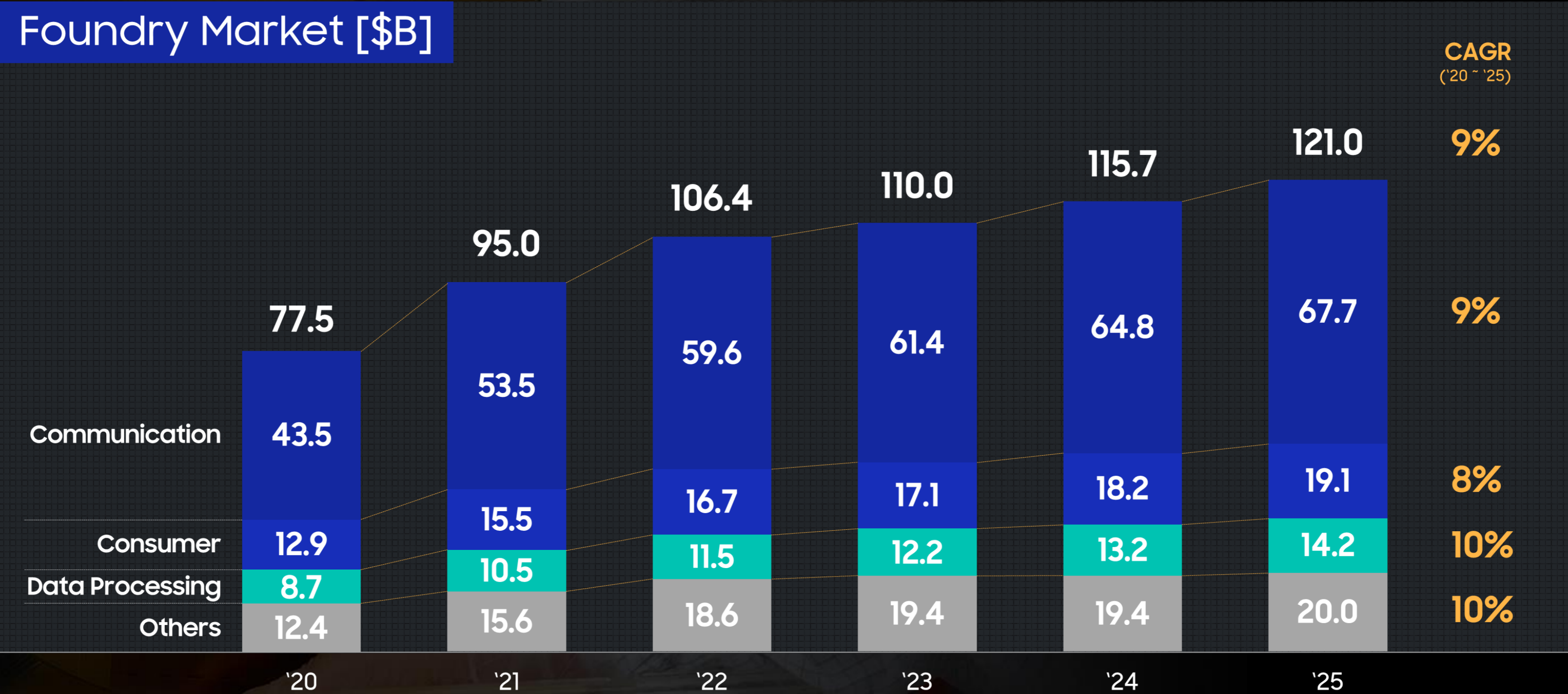
- Semiconductor market is being driven by PC → Smart phone → Era of data
- COVID-19 pandemic increases the data traffic and fuels the growth of data infrastructure



Source: Gartner, IDC etc.

Foundry Market Growth Trend

- 5G mobile & HPC/AI applications will drive the growth of the Foundry market

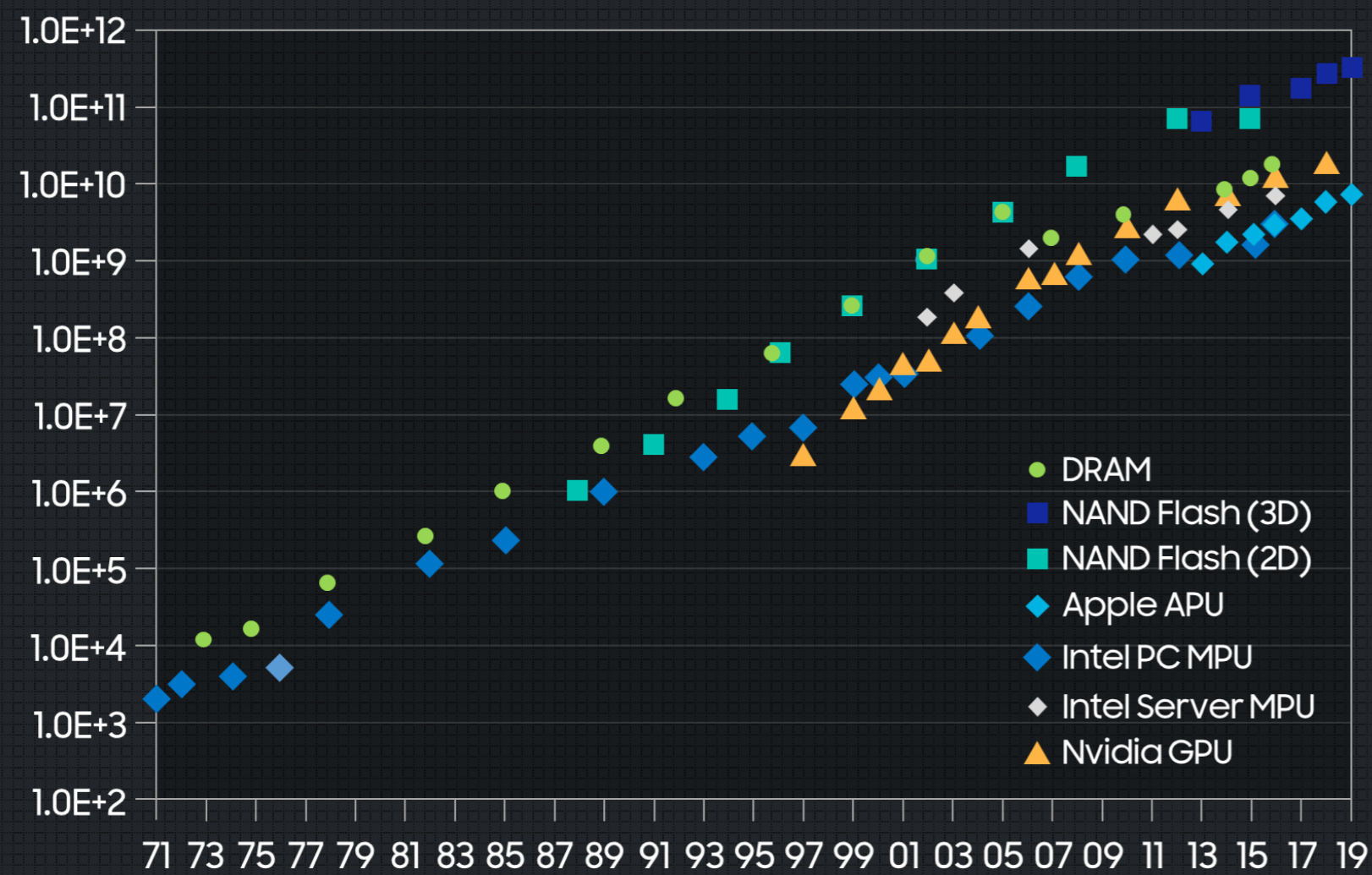


Source: Gartner, '21

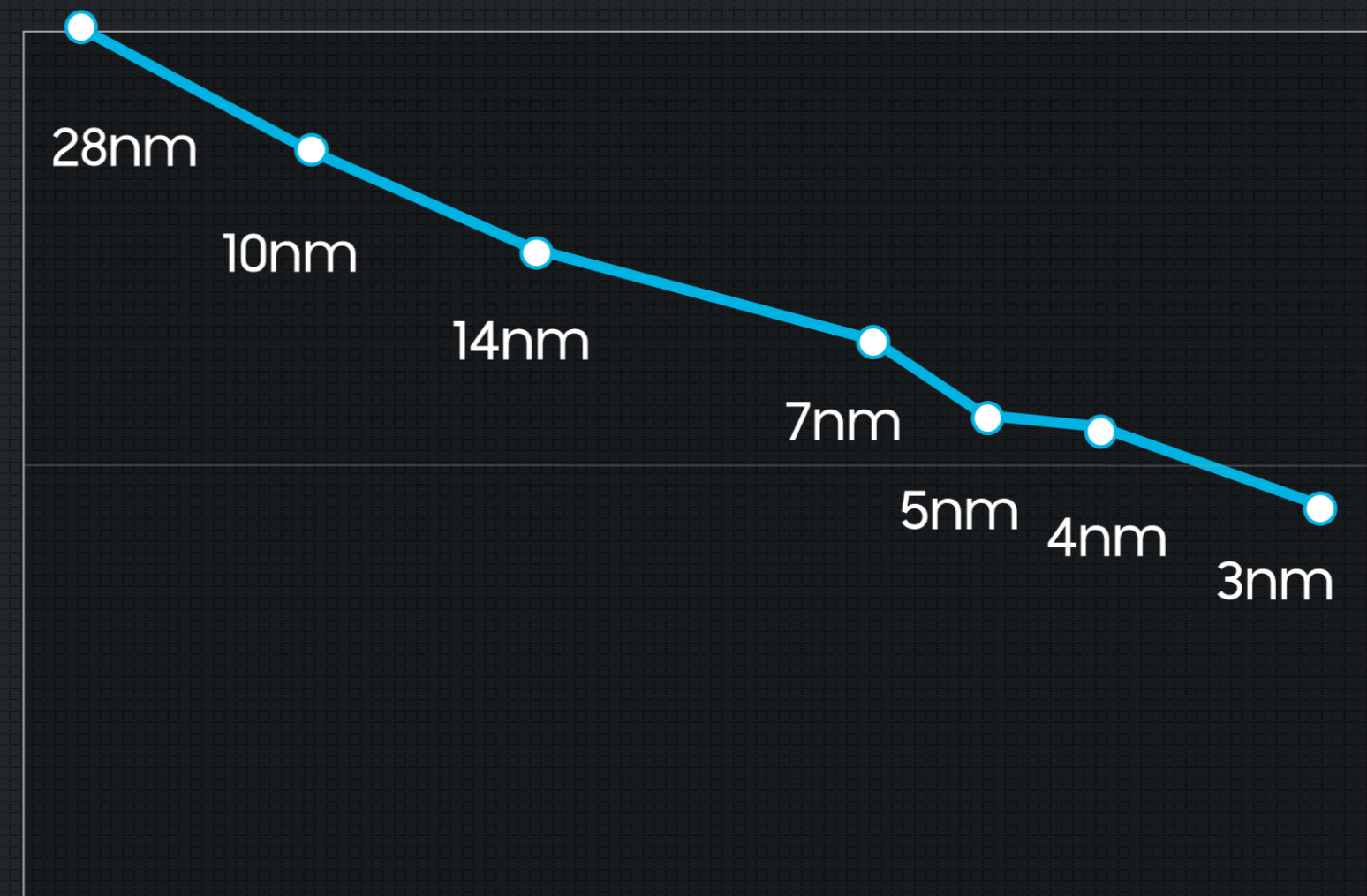
Technology Scaling Trends

- Moore's law is driving force of semiconductor technology and market
- Solutions evolving from pitch scaling to Logic scaling(DTCO) and System scaling(STCO)

Technology Count Trend



Technology Scaling Trend



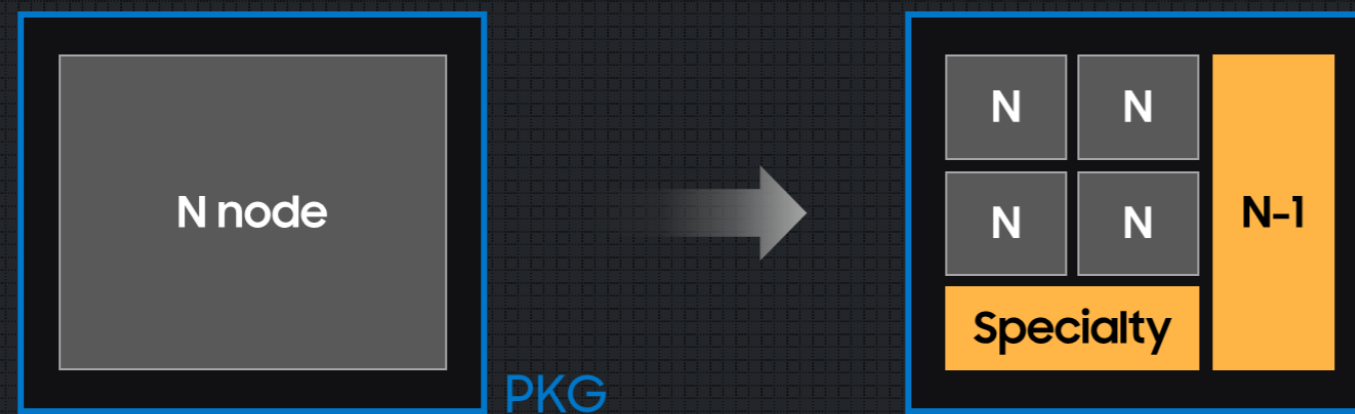
* Source: Intel, SIA, Wikichip, IC insights

Heterogeneous Integration

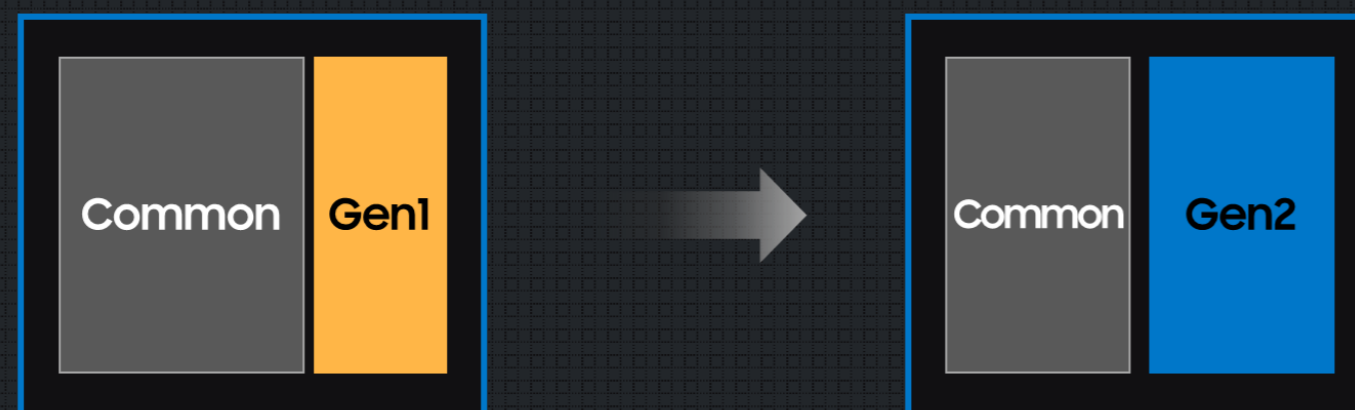
- Process migration costs and risks increased due to huge development costs of leading edge technology
- Reducing development time and cost is possible using Heterogeneous Integration

Cost Reduction

- High yielding smaller chips & optimal process selection

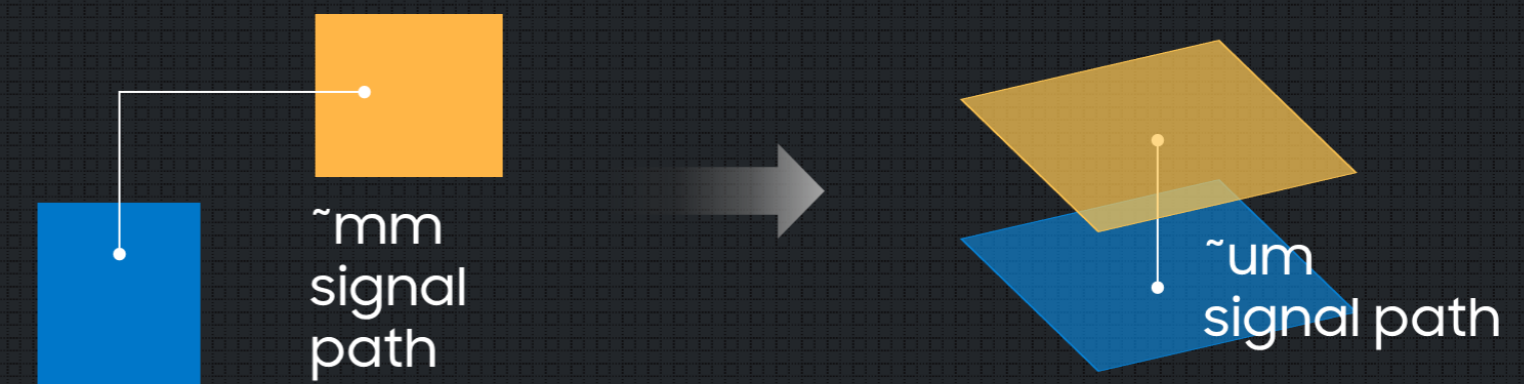


- Modular design, design reuse and mix & match

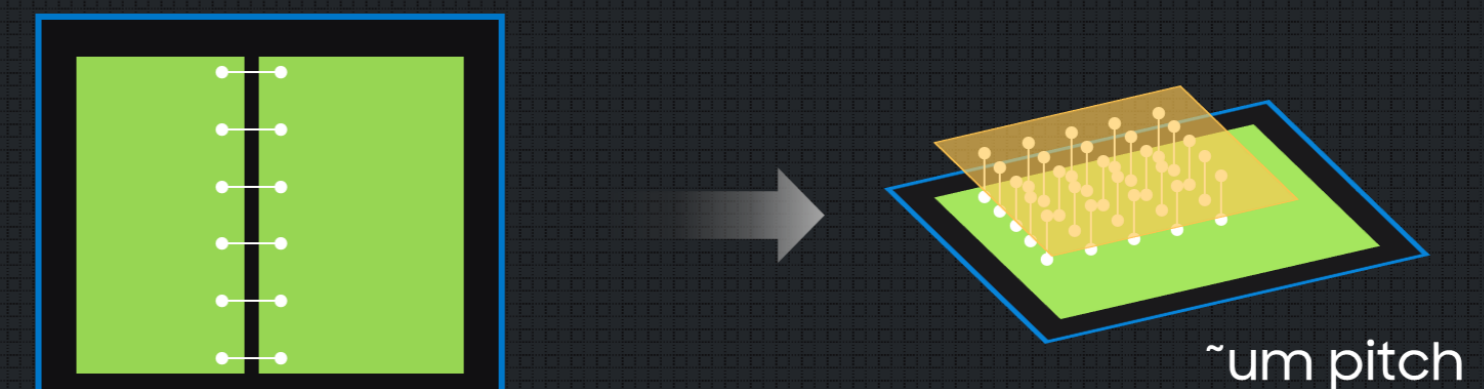


Performance Enhancement

- Interconnect path reduction



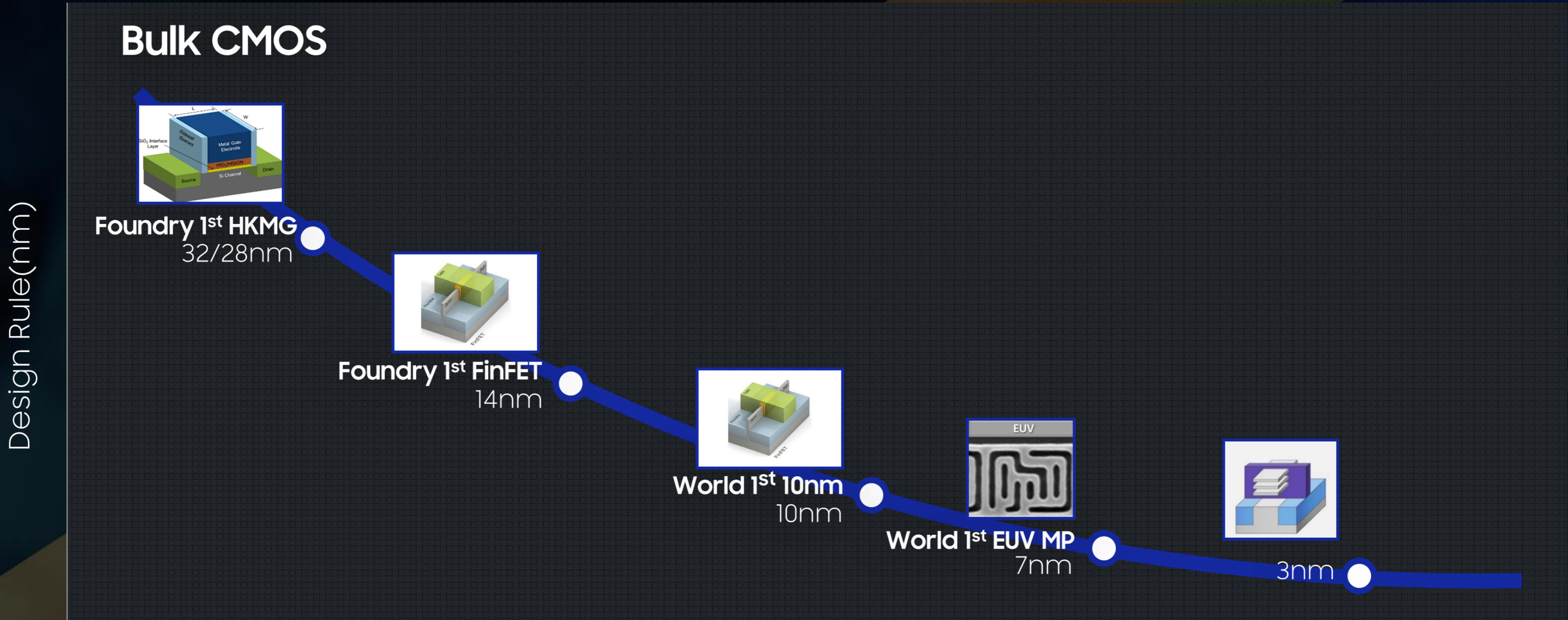
- Fine pitch & massive interconnect



2

Innovations in Samsung Foundry Technology

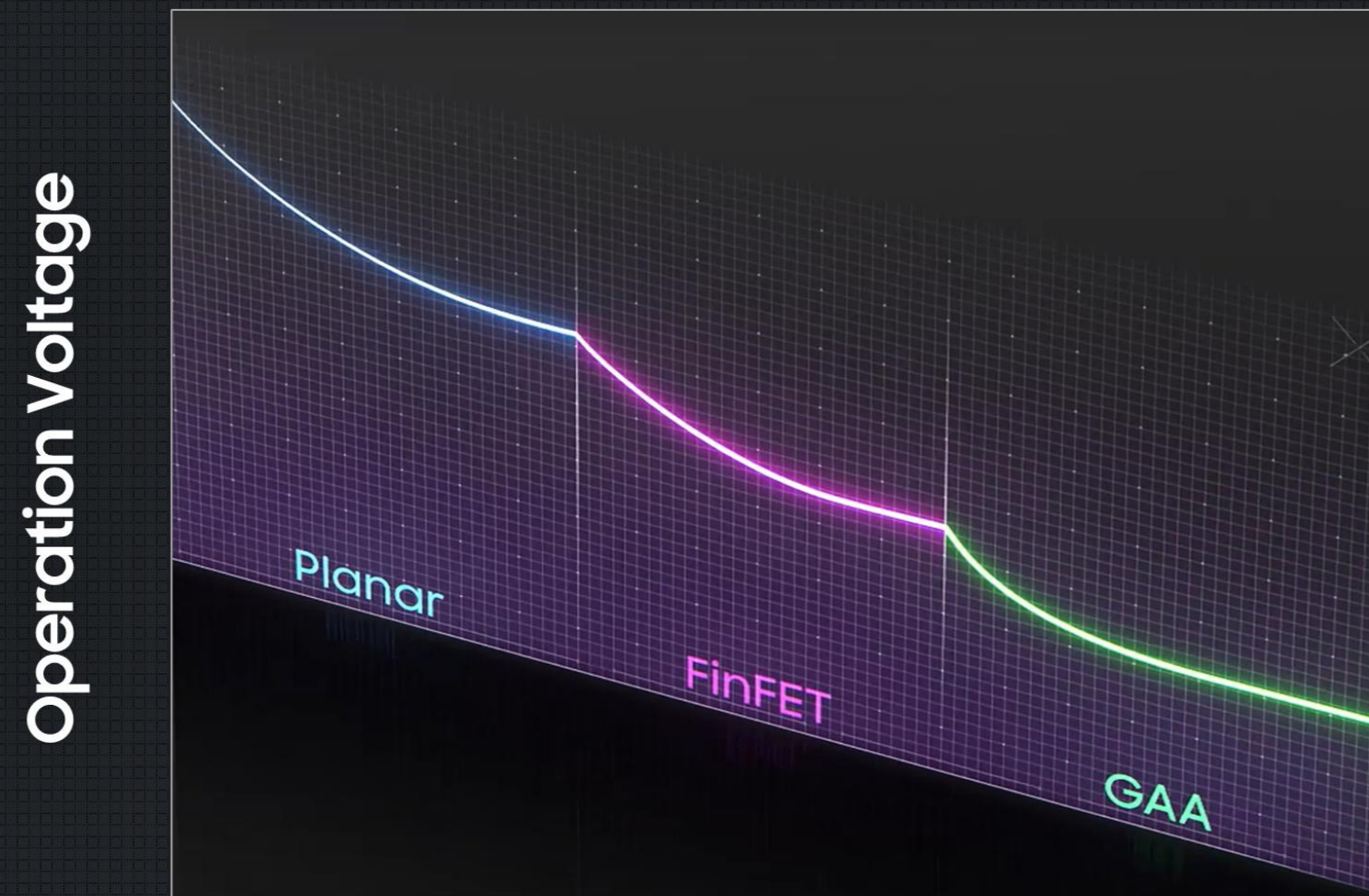
Process Technology Leadership



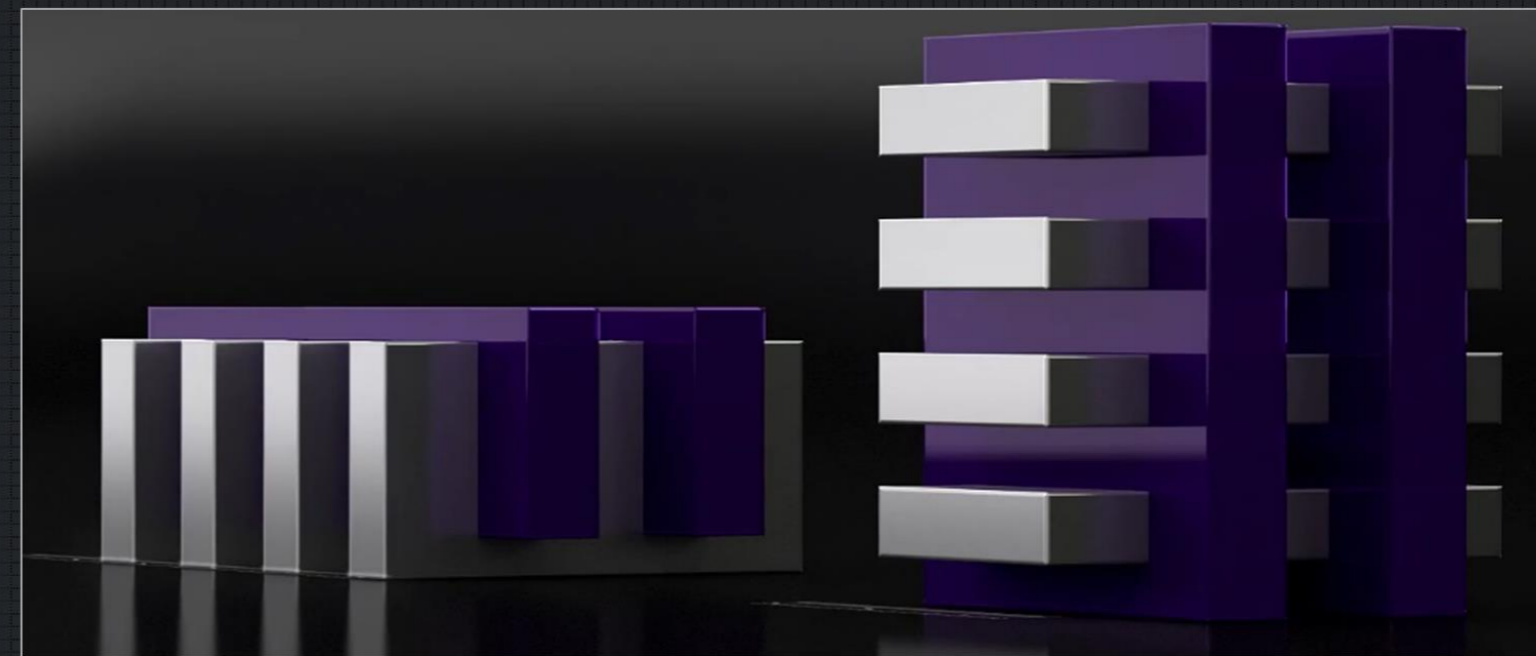
GAA, Revolutionary Transistor

- Samsung's patented version of GAA, MBCFET™, uses nanosheet architecture, enabling current per stack
- "Gate All Around" improves SCE and lowers power consumption by VDD scaling
- "Multi-Bridge Channel" enhances current drivability and improve performance

Voltage scaling capability



Stackable for higher speed



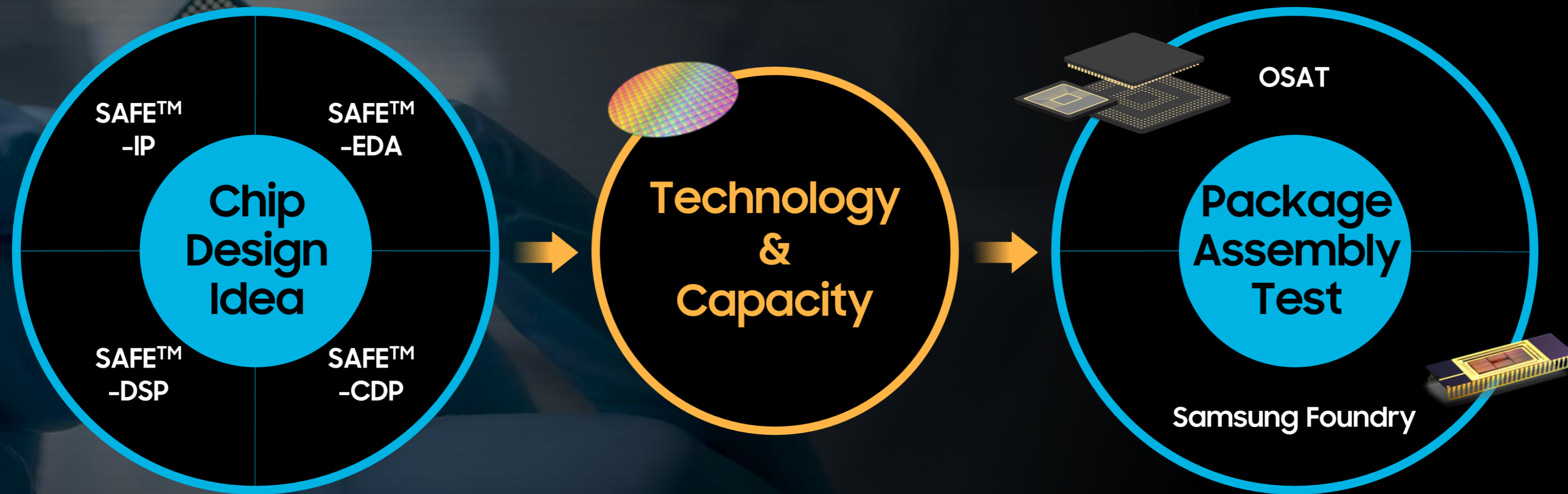
Gate
Channel
Planar FET
(1 Gate on channel)

Gate
Channel
FinFET
(3 Gates on channel)

Gate
Channel
Gate-All-Around
(4 Gates on channel)

Samsung Advanced Foundry Ecosystem (SAFE™)

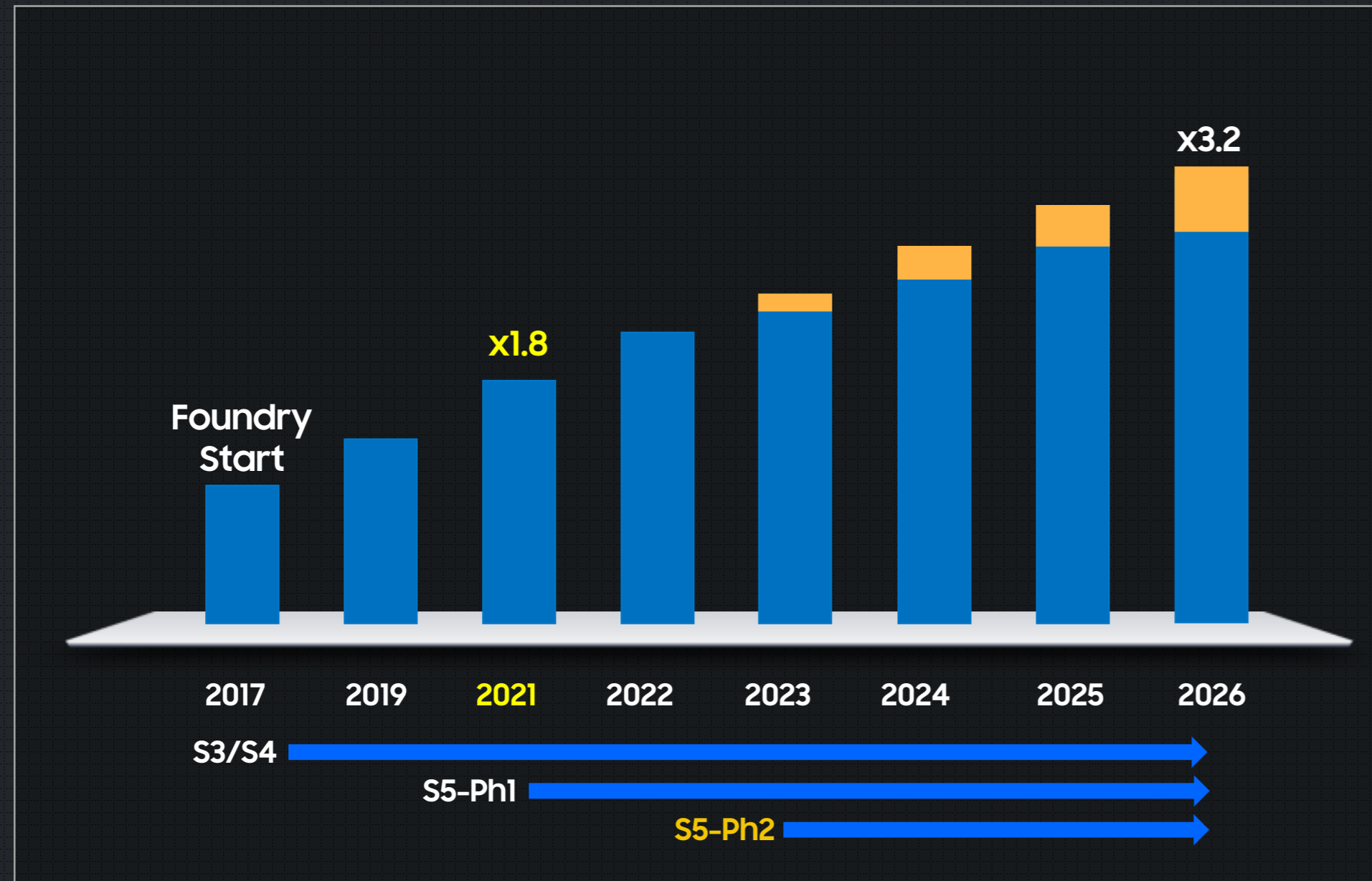
- “Complete Foundry Solution” for the future of the semiconductor industry
- “One Stop” on-line design platform provides competitive and differentiated solutions to variety of customers



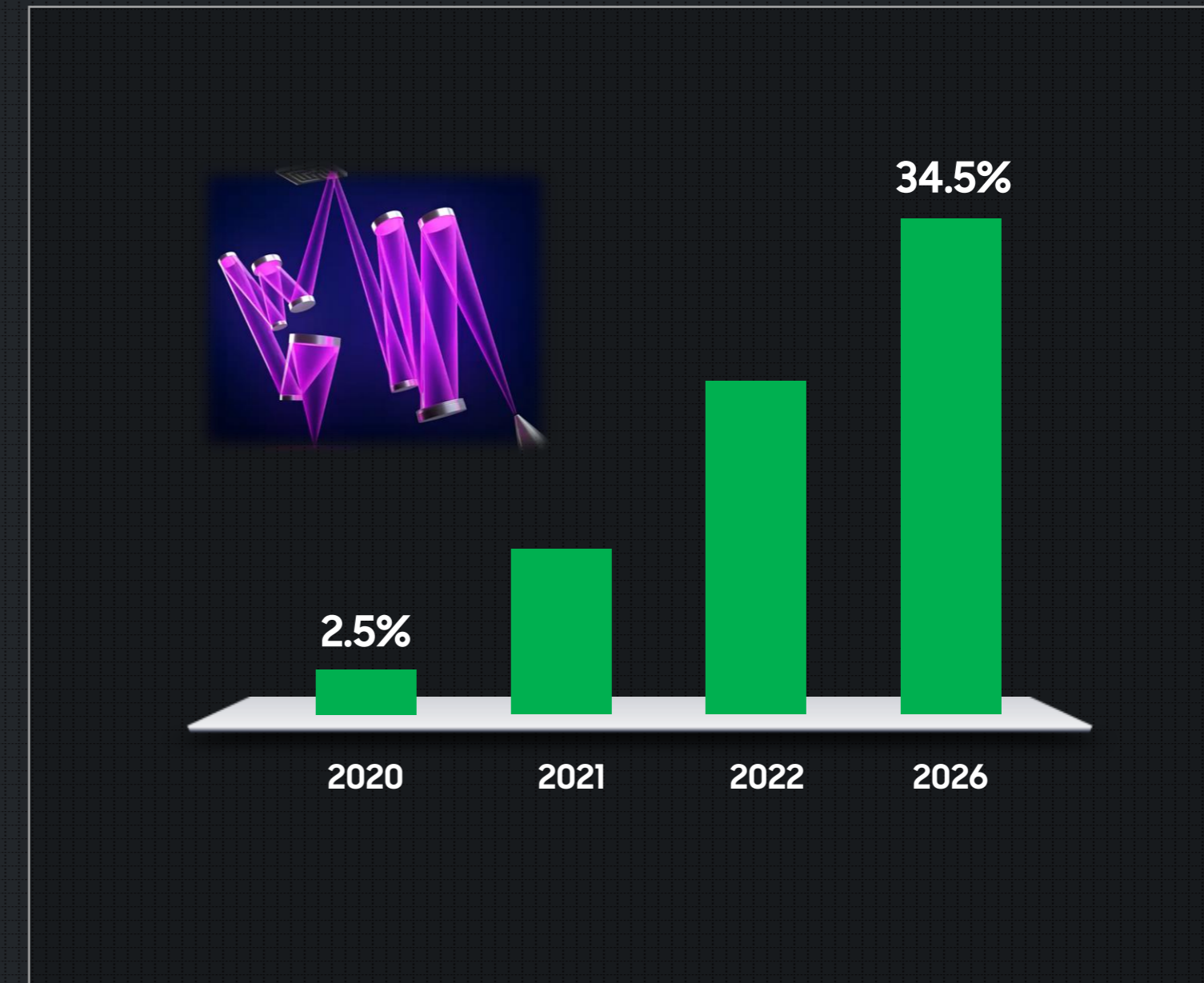
Samsung Foundry Capacity Growth

- Continued build-up of capacity
- Rapid growth of advanced technology capacity

Mid-term Capacity Plan



Capacity Plan for 5nm & below



SAMSUNG