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SAMSUNG MEMORY

Investor Presentation

2023

CONTENTS

- BUSINESS UPDATE
MEMORY MARKET OPPORTUNITIES
SAMSUNG STRATEGY

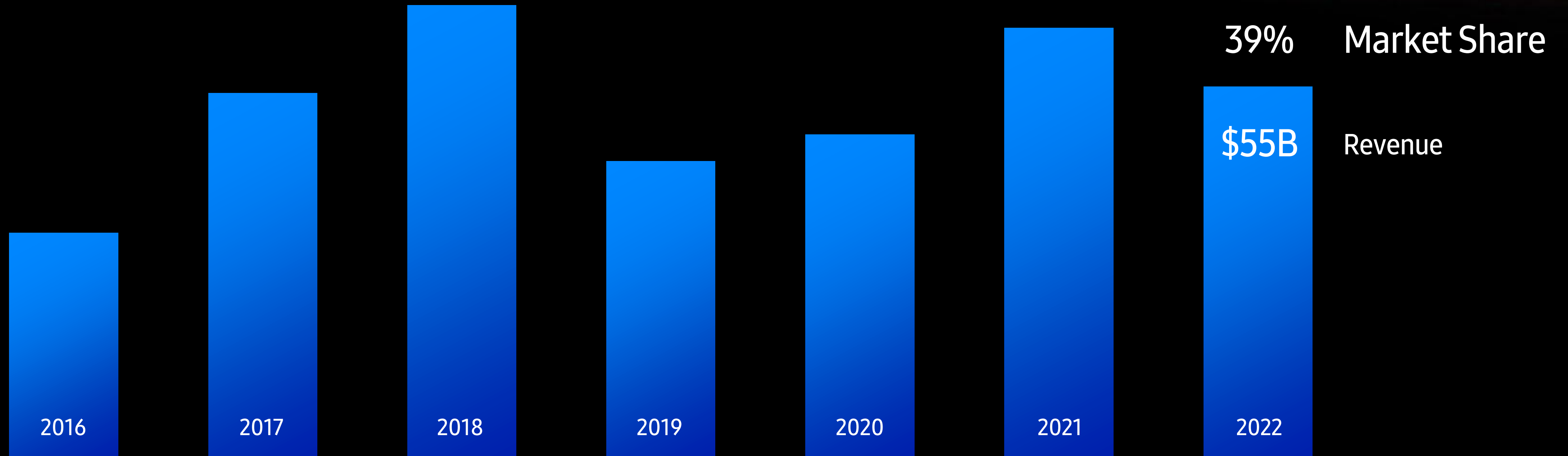
SAMSUNG MEMORY BUSINESS REVIEW

#1 in Memory Worldwide Since 1993, Well Balanced DRAM/NAND Portfolio

2022 Market Share

DRAM **43%**

NAND **35%**



MEMORY BIZ. PARADIGM SHIFT LED BY SAMSUNG

Samsung is Powering the Technologies that bring Innovation to Lifestyle

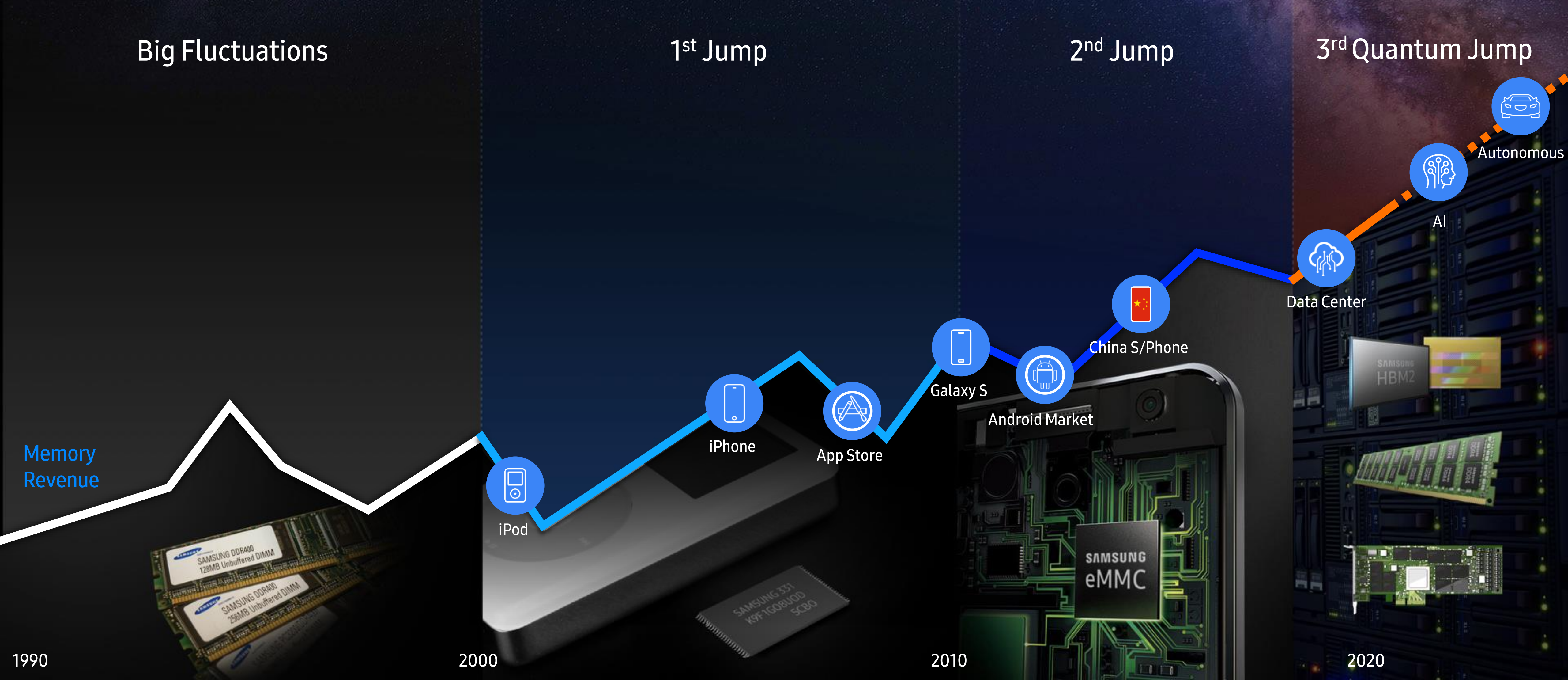
Big Fluctuations

1st Jump

2nd Jump

3rd Quantum Jump

Memory Revenue



Autonomous

AI

Data Center

China S/Phone

Android Market

Galaxy S

iPhone

App Store

iPod

2020

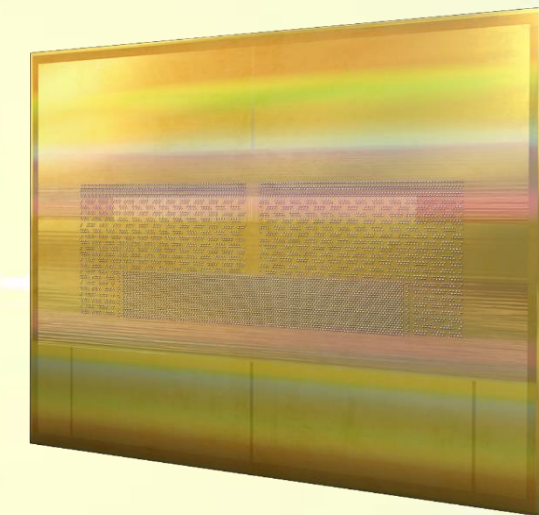
2010

2000

1990

Beyond The Boundary

HUMAN



Samsung Memory

AI

CONTENTS

- BUSINESS UPDATE
- MEMORY MARKET OPPORTUNITIES
- SAMSUNG STRATEGY

SPREAD-OUT OF PUBLIC CLOUD

Explosive Growth of Data

1st WAVE



Cloud Service Providers

2016

2nd WAVE



.Com & Forbes Top100

3rd WAVE



Telcos

2020

THE FLOOD OF DATA

4TH WAVE



AI



Automotive

2023

SMART CITY & AUTONOMOUS CAR FUELED BY 5G NETWORK

Huge Amounts of Data Generated by Hyper-connected Devices

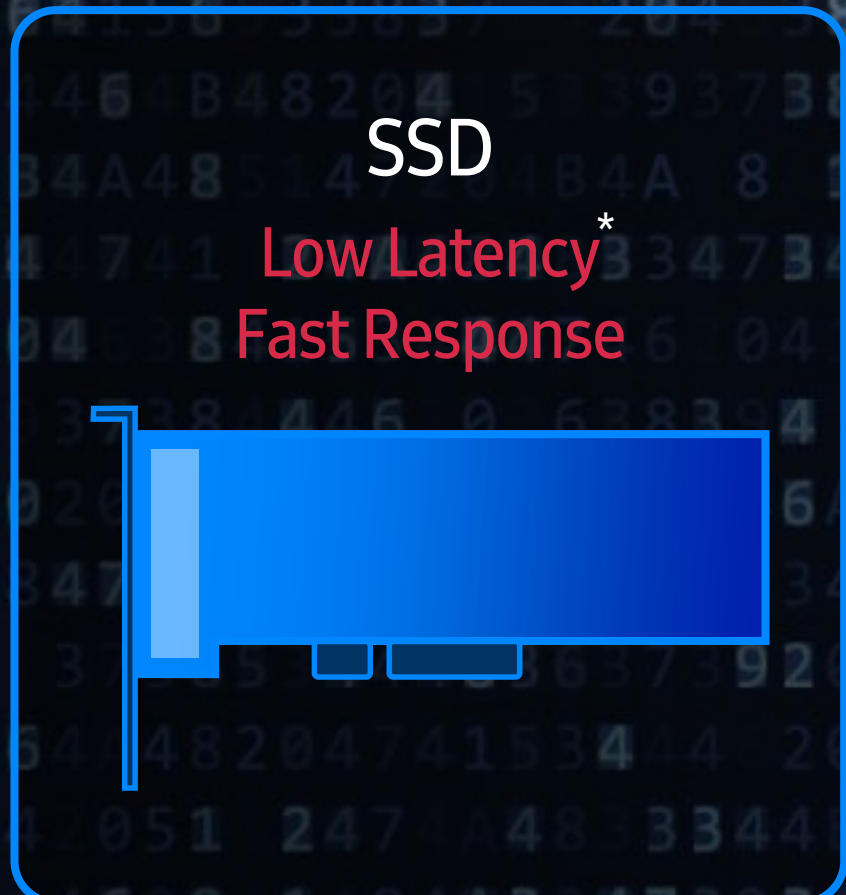
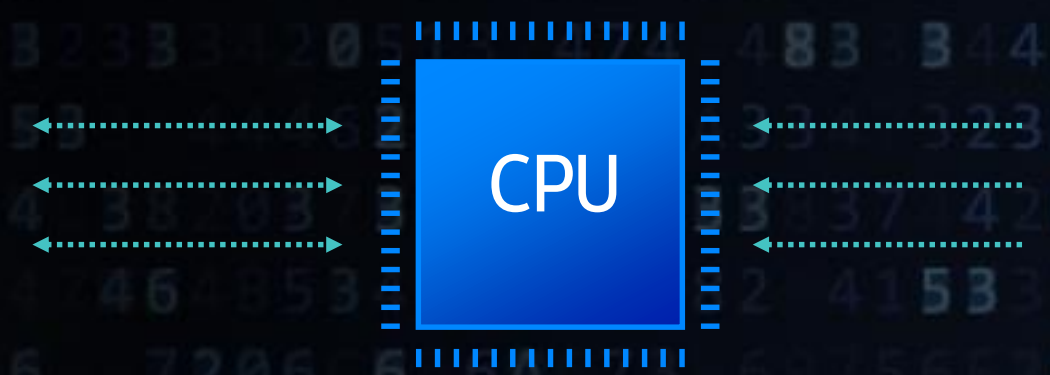
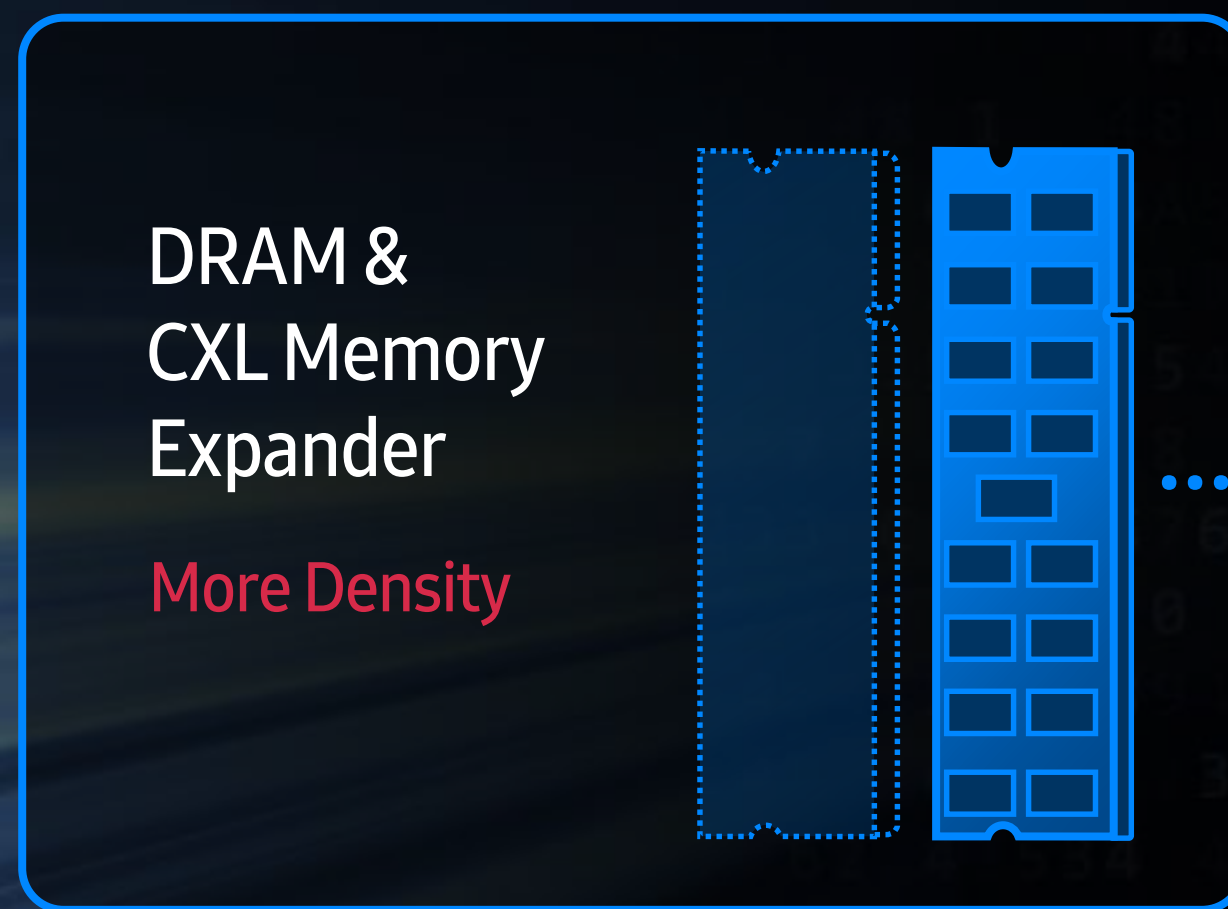


MARKET OPPORTUNITY IN BIG DATA ANALYTICS

Demand Increase for High Density & Performance Memory to Enhance Computing Power



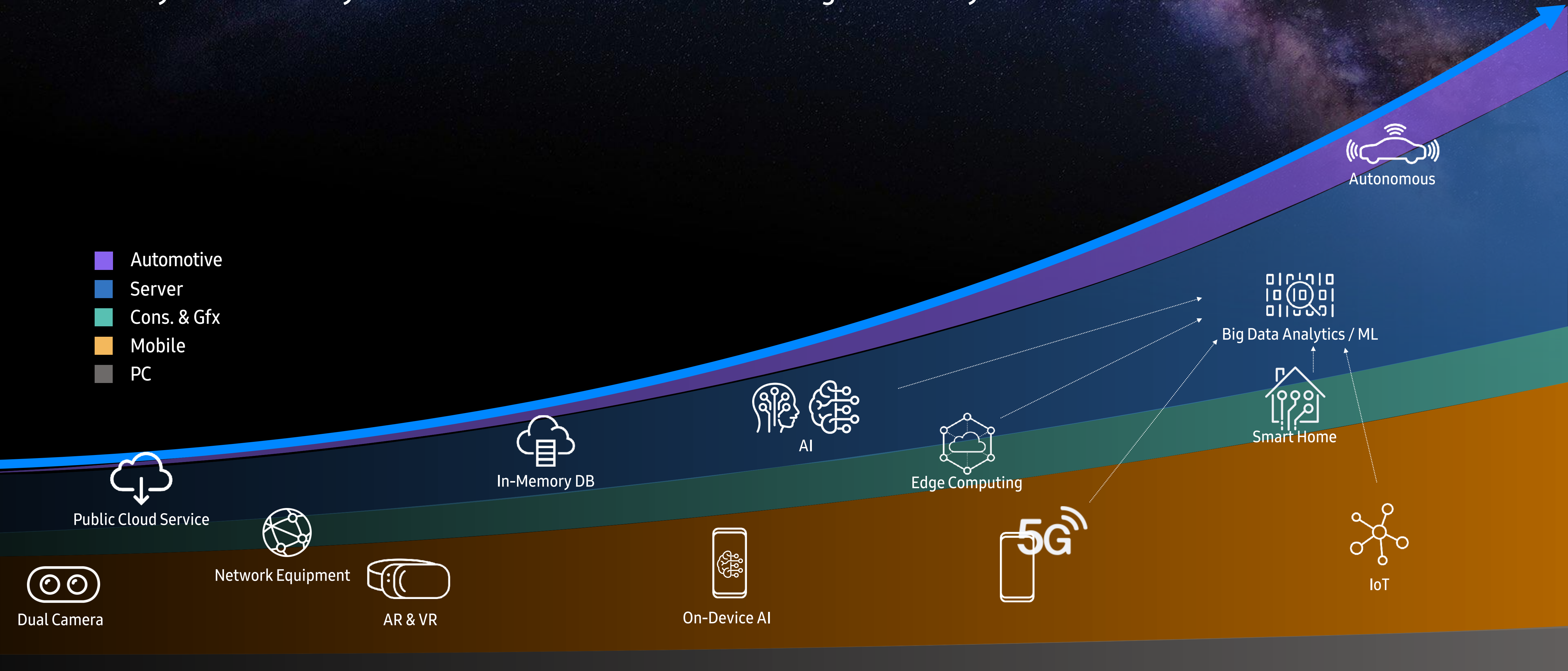
**CLOUD
BIG DATA**
Un-structured Data



* Latency: Time Delay between input and output in a system

CONTINUOUS GROWTH OF MEMORY DEMAND

Memory Growth led by Server & Mobile devices based on Big Data Ecosystem



- Automotive
- Server
- Cons. & Gfx
- Mobile
- PC

2017

2023

CONTENTS

BUSINESS UPDATE

MEMORY MARKET OPPORTUNITIES

- SAMSUNG STRATEGY

SAMSUNG STRATEGY

Break-through
Technology

—
TECH LEADERSHIP

Enhanced
Solutions

—
S/W & CONTROLLERS

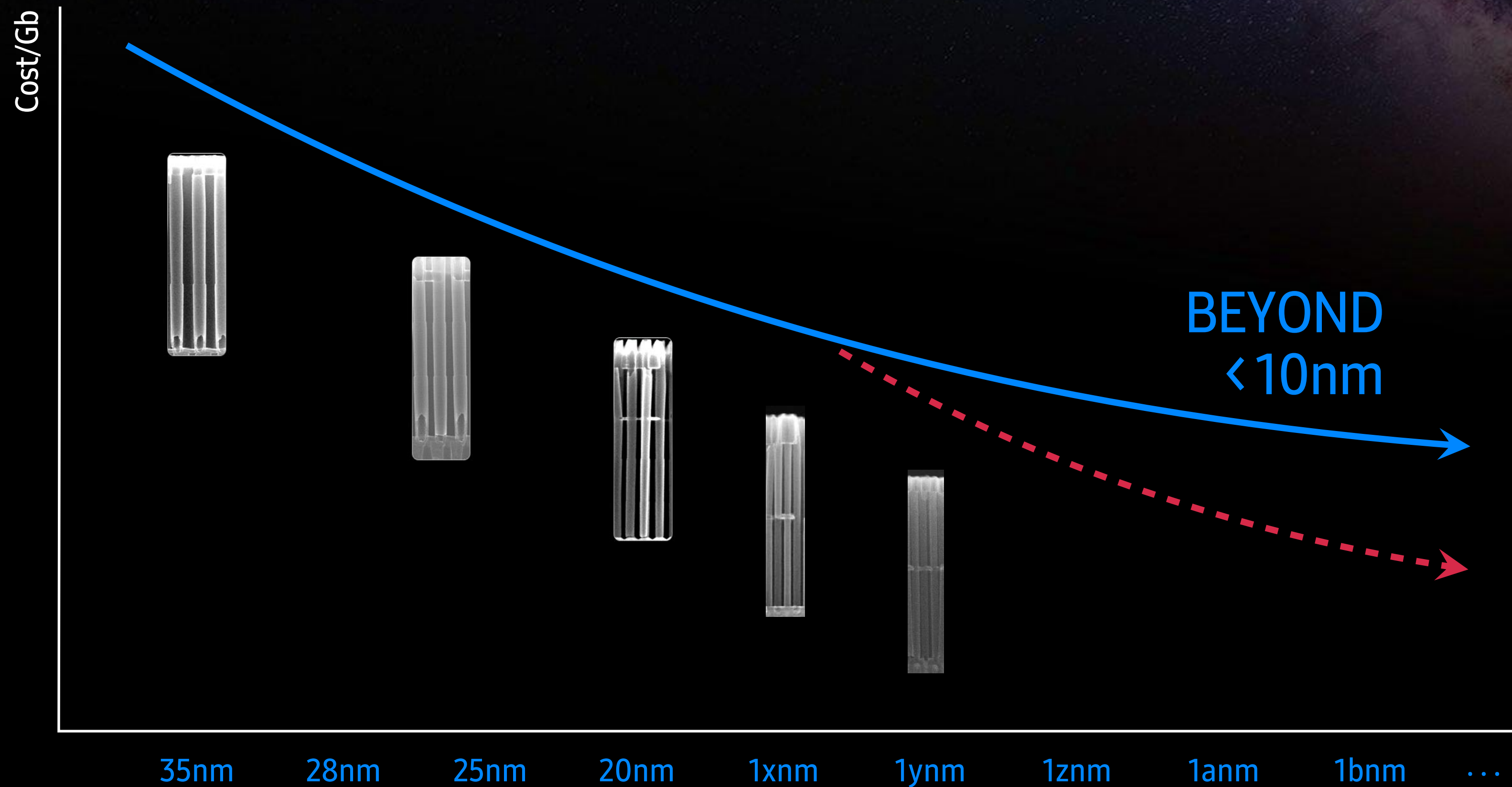
Advanced
Manufacturing

—
EFFICIENCY & FLEXIBILITY

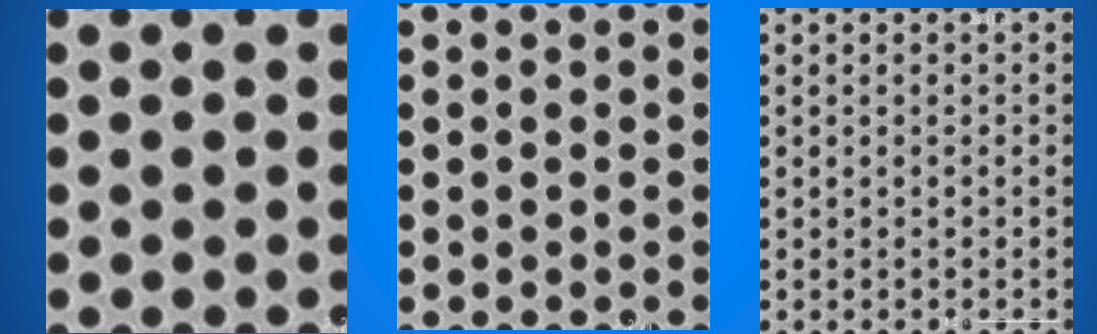
CONTINUOUS TECHNOLOGY SCALING

Thru Technology Evolution

DRAM



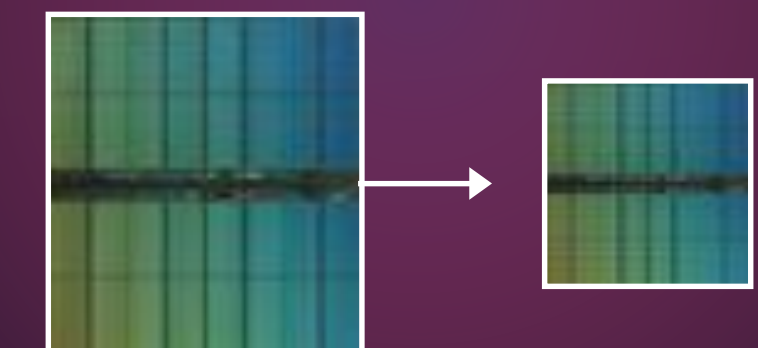
FUTURE DRAM TECHNOLOGY



DPT QPT EUV

- *DPT : Double Patterning Technology
- *QPT : Quadruple Patterning Technology
- *EUV : Extreme Ultra Violet

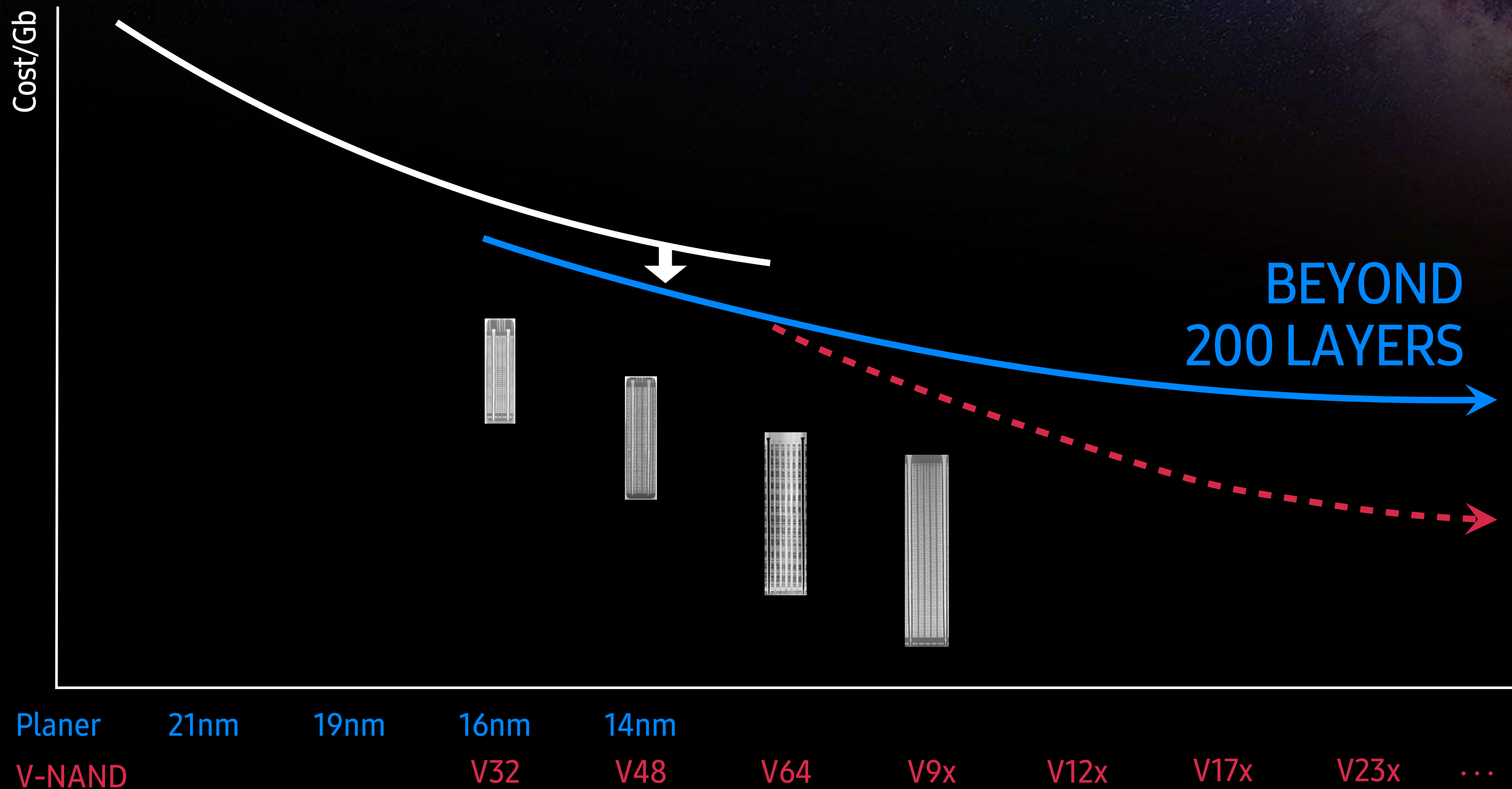
ADVANCED DESIGN TECH



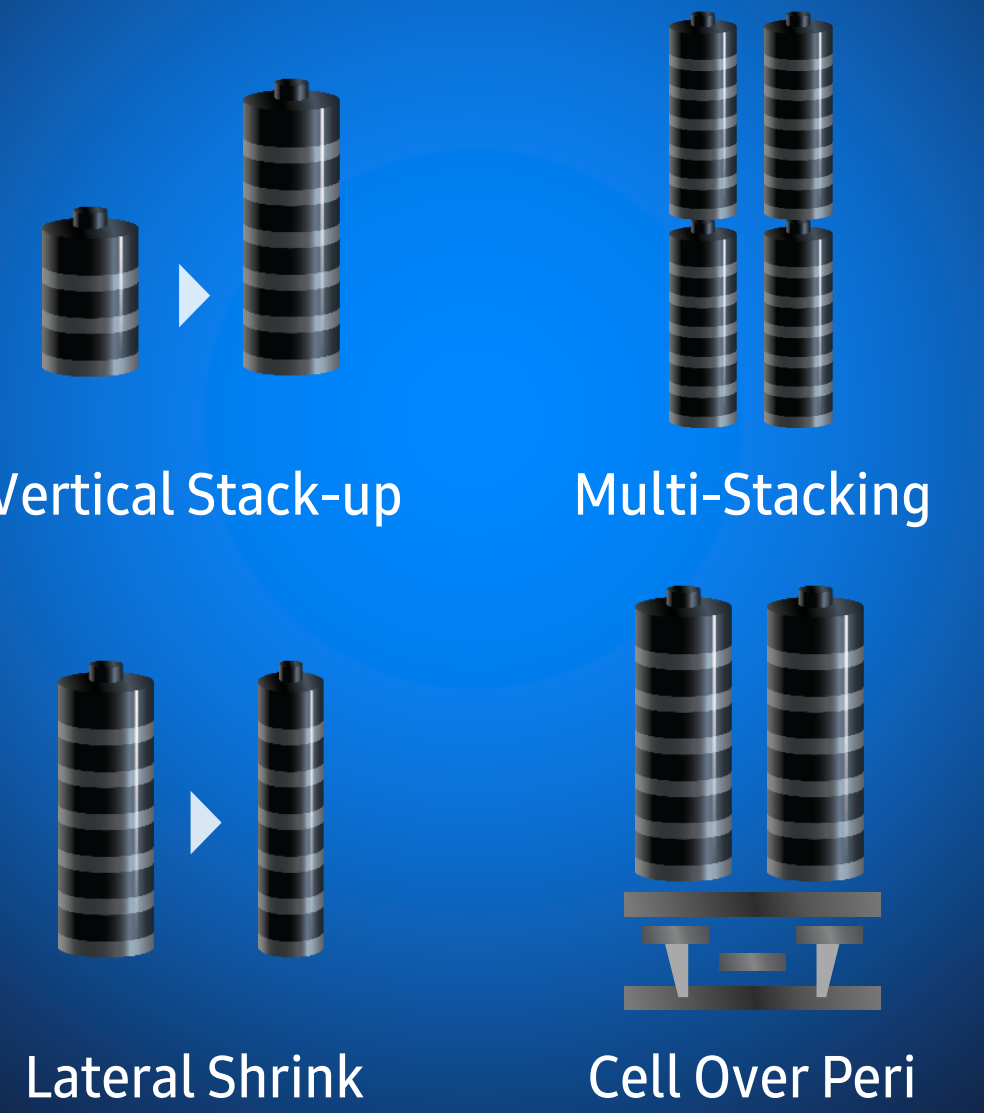
PUSHING THE LIMITS OF V-NAND

Thru Innovative Layer Stacking Technology

NAND



FUTURE V-NAND TECHNOLOGY



QLC



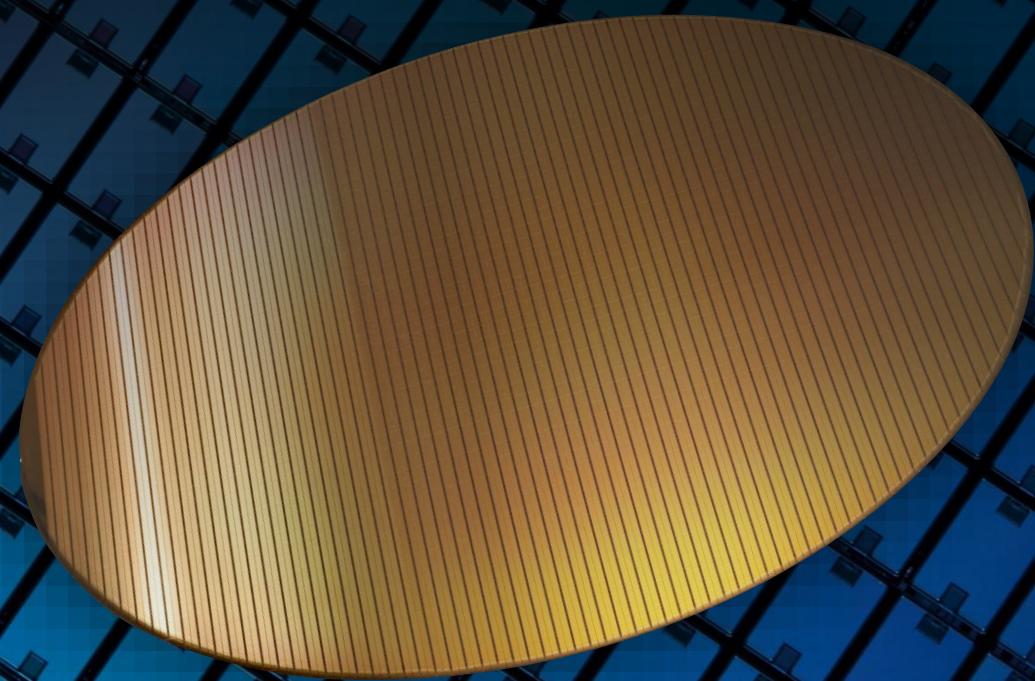
* QLC: Quad-Level Cell

UNIQUE CAPABILITIES FOR DIFFERENTIATED SOLUTIONS

Integrating Key Components to Deliver Value-added Solutions

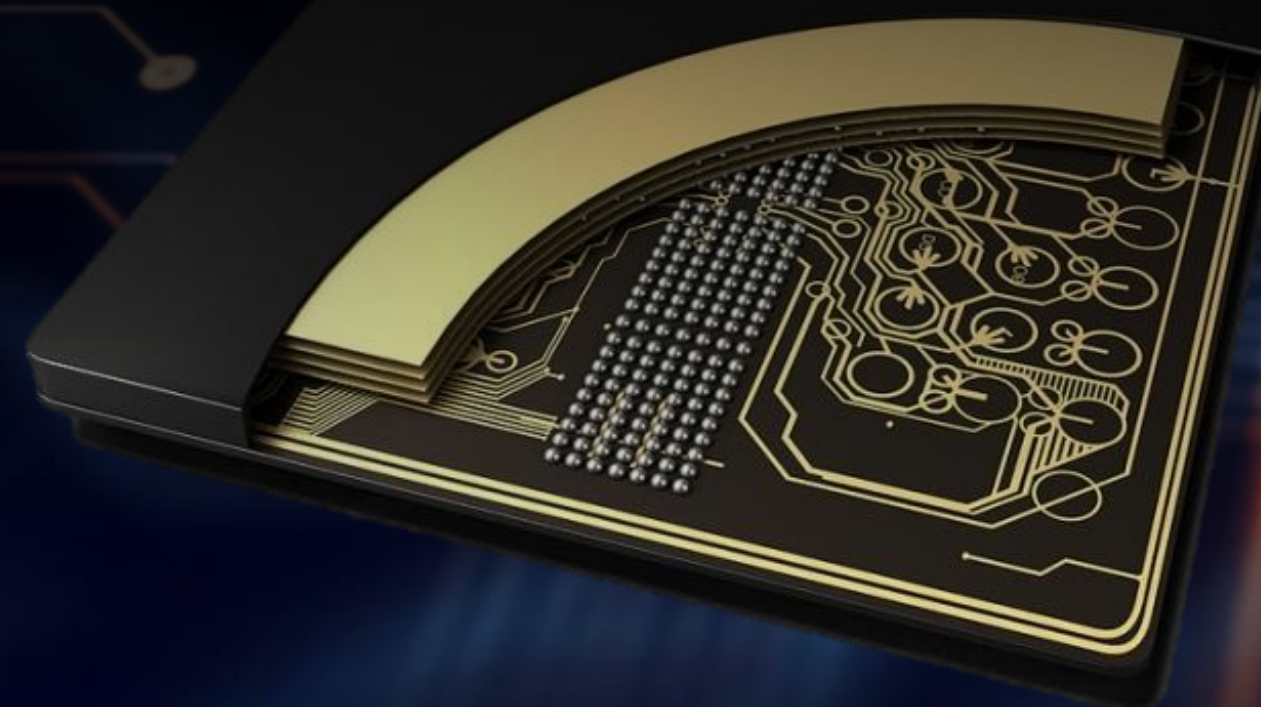
ADVANCED PROCESS TECHNOLOGY

Wafer / Chip



ADVANCED PACKAGING TECHNOLOGY

Stacking / TSV



VERTICAL INTEGRATION

Software & Logic (Controller)



Smaller



Higher Density



Less Power Consumption



Faster



Thinner



Smaller



No Performance Loss



Customized



Expandable



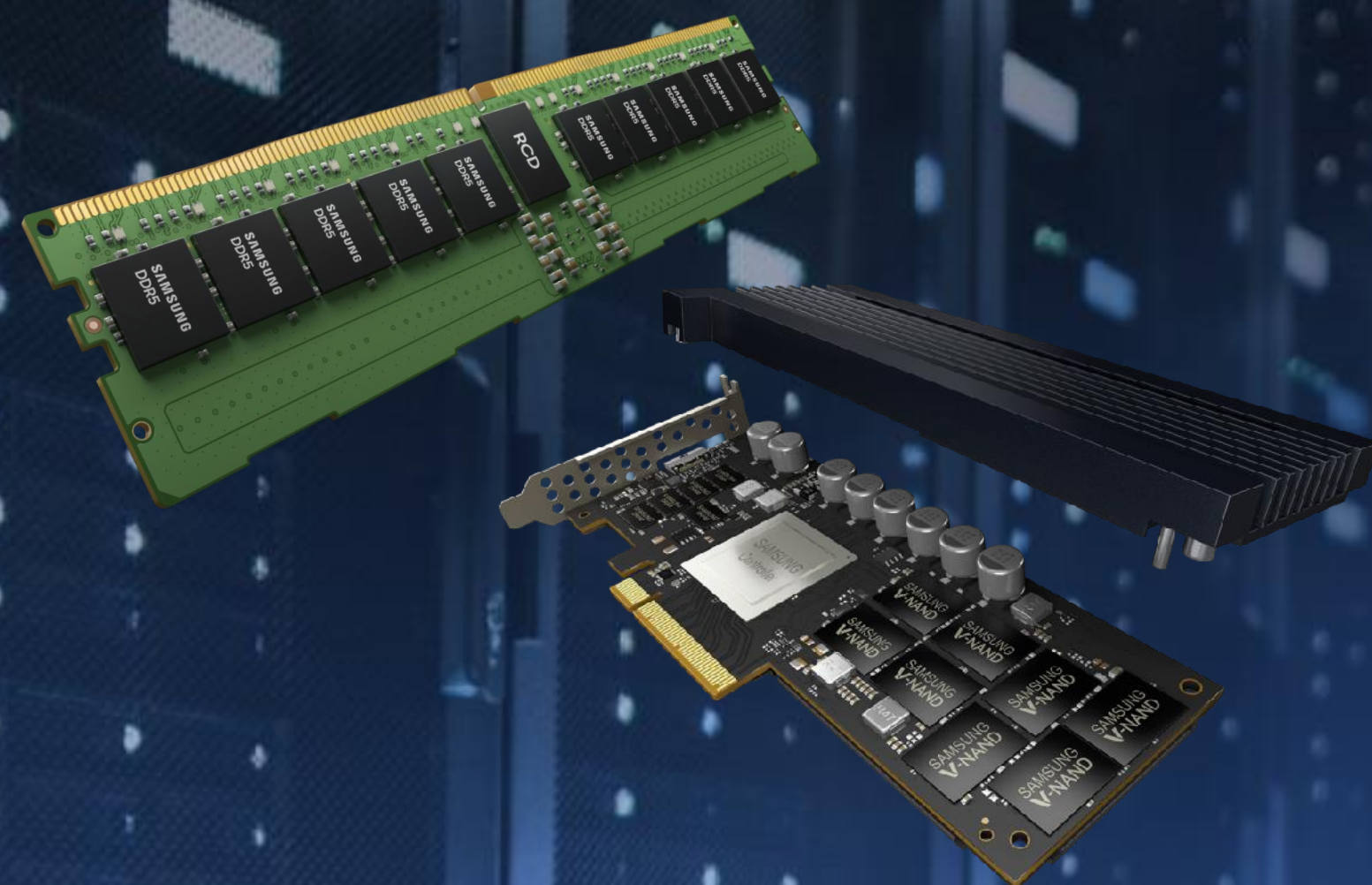
Smarter



Secure

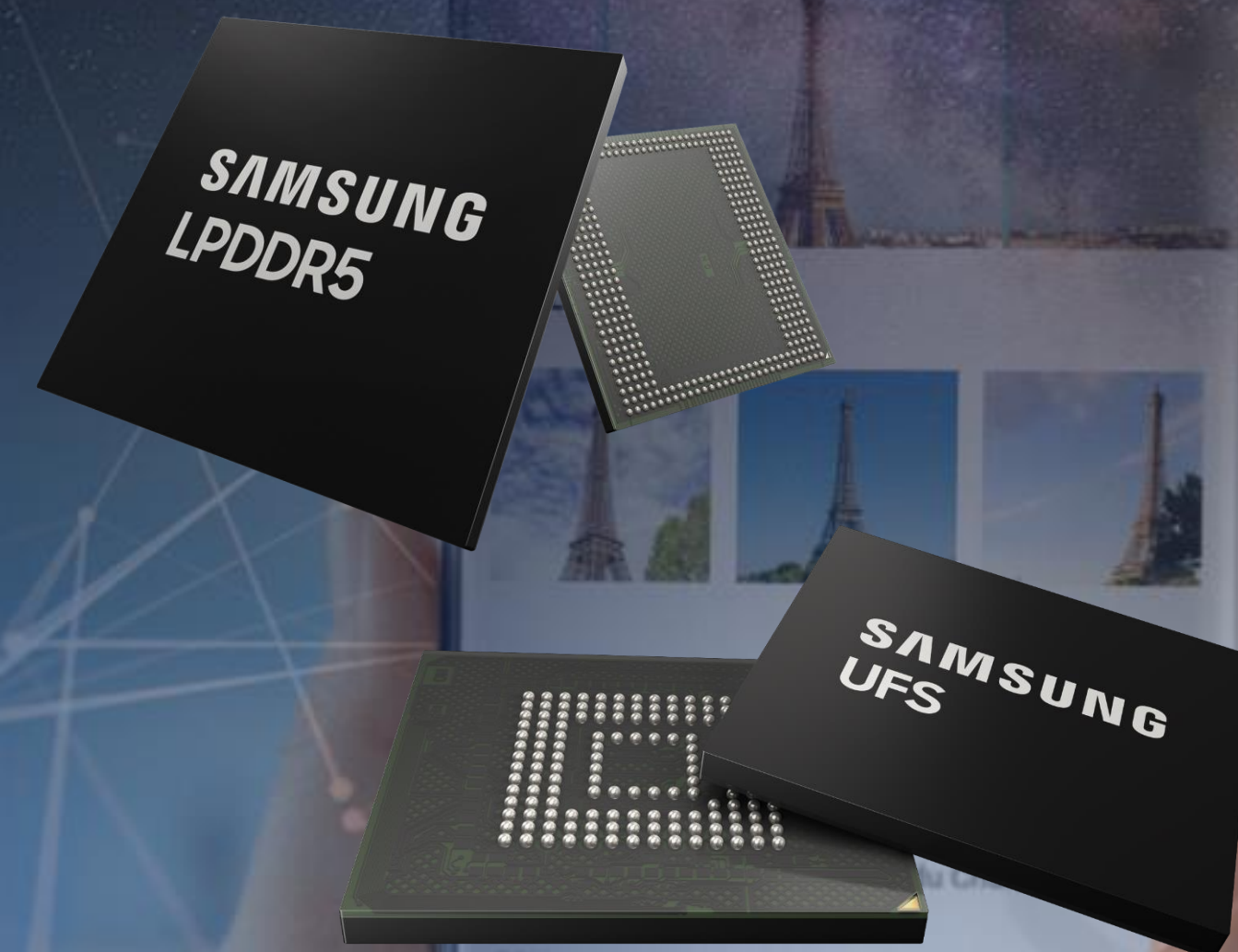
SAMSUNG SOLUTIONS FOR THE 5G ERA

Enhanced Processing for Massive Data with Lower Latency & Less Power Consumption



FASTER DATA RATES WITH LOW POWER

5G



3DS RDIMM, Z-SSD

Low Latency *

High Capacity

Stable QoS

LPDDR5/5X

Higher Speed

Lower Power Consumption

Smaller Package

* Latency: Time Delay between input and output in a system

SAMSUNG SOLUTIONS FOR ARTIFICIAL INTELLIGENCE

Superlative Performance and High Reliability Using Less Energy

ENHANCED PERFORMANCE
FOR DATA-INTENSIVE TASKS



24GB HBM3^{*}

Fastest Performance

Energy Efficiency

32TB SAS SSD, 16TB NVMe SSD

Largest Density

Higher Reliability

Unparalleled Performance

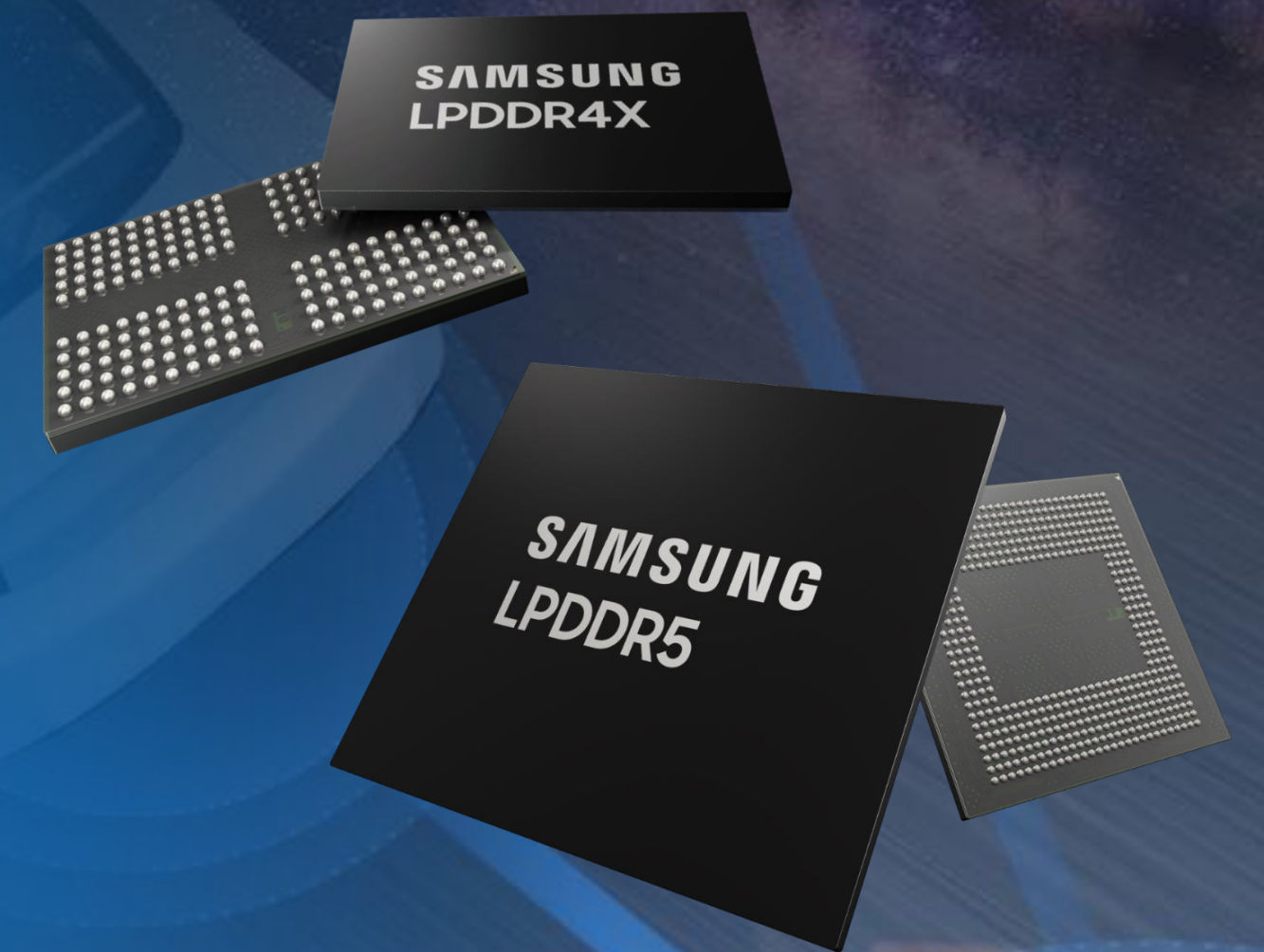
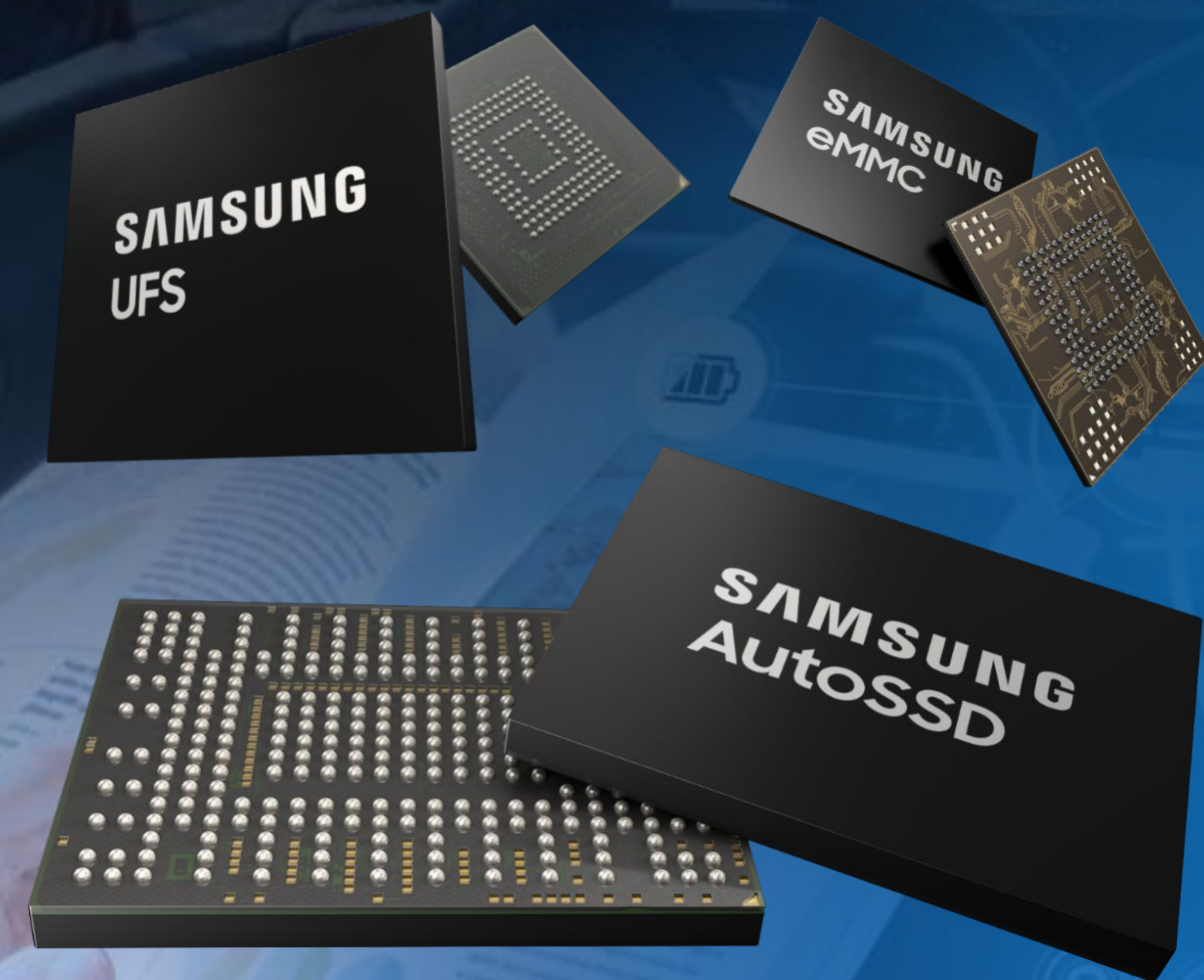
* HBM: High Bandwidth Memory

SAMSUNG SOLUTIONS FOR AUTOMOTIVE INDUSTRY

Advanced Total Memory Solution for Autonomous Driving Technology

Dedicated Support for automotive

Full Memory Line-ups
Quality & Longevity
Full In-house Solution



Automotive Storage

- High Density
- High Performance
- High Reliability

Automotive DRAM

- High Bandwidth
- Lower Power Consumption
- Higher Reliability

APPLICATION-ORIENTED LINE MANAGEMENT

2-Track Strategy for Efficient Production & Capacity Allocation

ARTIFICIAL
INTELLIGENCE

HIGH
PERFORMANCE
COMPUTING

AUTOMOTIVE

INDUSTRIAL

NETWORK

PERFORMANCE
Leading Process Technology

FLEXIBILITY
DRAM/NAND Conversion

LONGEVITY
Proven Process Technology

EVOLUTION TO SMARTER FACTORY

Customer Value Improvement through High Productivity and Enhanced SCM

SCM

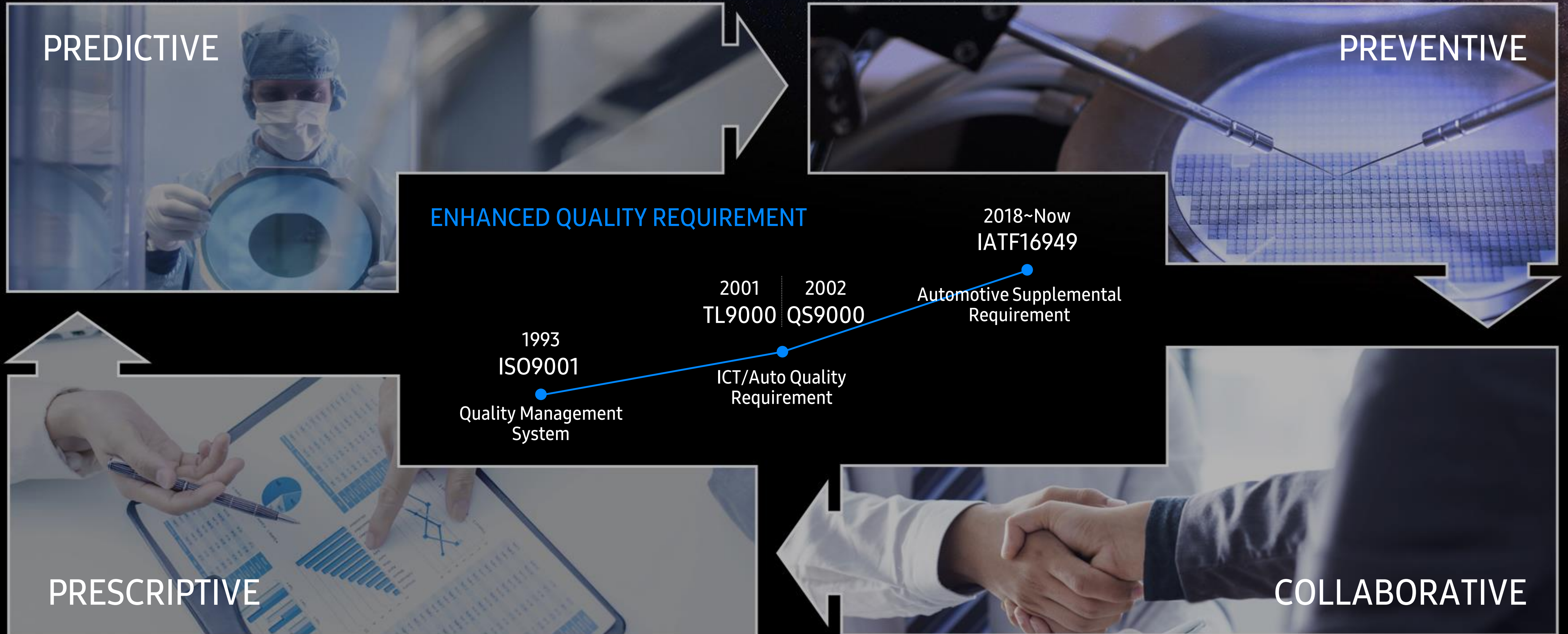
PRODUCTIVITY



* SCM: Supply Chain Management

QUALITY BY DESIGN

Meet the Industry Standard and Expectation of AI & Automotive Customers



Placing Memory at the Forefront of Future Innovation and Creative IT Life

Technology

Leading Technological
Breakthroughs

Customers

Supporting Customers'
Future Innovation

Employees

Fostering Employees'
Creativity

Society

Enriching a New Way of
Digital Life