

# **Kioxia**

# **Corporate Strategy Meeting**

**Kioxia's Medium- to Long-Term Growth Strategy in the Age of AI**

**Kioxia Holdings Corporation**

**June 5th, 2025**

# Agenda

1. Our Role in the Generative AI Revolution
2. Flash Memory Market Growth and Our Long-Term Financial Model
3. Storage Strategy for Generative AI
4. Our Leadership in Flash Memory Technology
5. Manufacturing and Capital Investment Strategy
6. Q&A

**Nobuo Hayasaka**  
President and CEO

**Junichiro Yaguchi**  
Managing Executive Officer, CSO

**Masashi Yokotsuka**  
Managing Executive officer  
Vice president, SSD div.\*

**Hiroo Oota**  
Executive Vice President and  
Executive Officer

**Tomoharu Watanabe**  
Executive Vice President and  
Executive Officer

# Disclaimer

Forward-looking statements included in this presentation are prepared based on our expectations and projections in light of the information currently available to us, which involve various risks and uncertainties (including, but not limited to, economic trends, market demand and the highly competitive semiconductor industry). Such risks and uncertainties may cause our actual results to be materially different from any future results expressed or implied by these forward-looking statements. We undertake no obligation to update any forward-looking statement included herein.

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The long-term financial model in this presentation material is neither a financial forecast nor a projection of future results. The long-term financial model contains forward-looking statements, which represent our expectations if a set of assumptions (including those regarding future market trends) that we believe are reasonable prove to be true, in the absence of other unanticipated factors. Such assumptions are based on currently available information only. We cannot guarantee that they would not differ from actual results in the future, which could be caused by a variety of factors, such as supply chain disruptions, material suspensions of operations at our production plants, rapid and sharp changes in financial market conditions, and changes in governmental policies with respect to the semiconductor industry. Nothing in this presentation material should be regarded as a representation by any person that the KPIs in the long-term financial model will be achieved.

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# **Our Role in the Generative AI Revolution**

**Nobuo Hayasaka**  
**President and CEO**

# We Have Been Behind Turning Points in Flash Memory

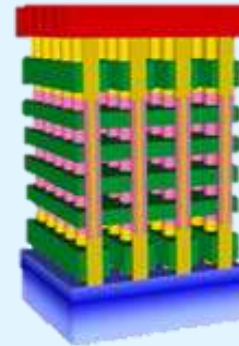
## 1987

Invention of NAND Flash Memory



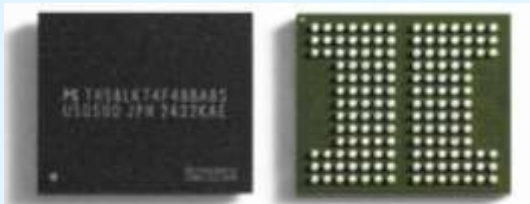
## 2007

Announcement of 3D Flash Memory,  
“BiCS FLASH™”



# Kioxia's Achievements in FY2024

July 24

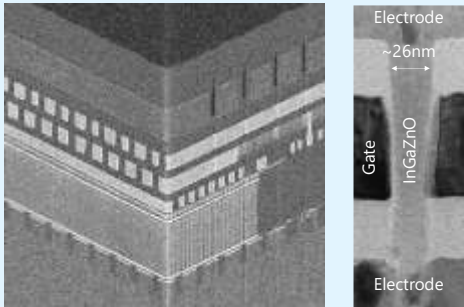


Industry's largest capacity

Sample shipment

Announced the 8th Generation  
BiCS FLASH™ 2Tb QLC  
Industry's largest capacity  
Sample shipment

December 24



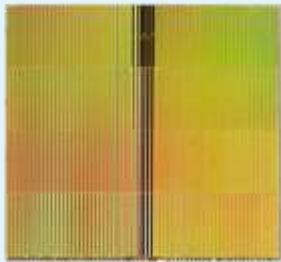
275Mbit 4F2 DRAM array and OSFET

@2024 IEEE

Conference presentation

New DRAM technology  
using oxide semiconductors, etc.  
(OCTRAM)

February 25



332Layer BiCS FLASH™

@2025 IEEE

Conference presentation

Presentation  
on next generation 3D  
Flash memory technology  
Conference presentation

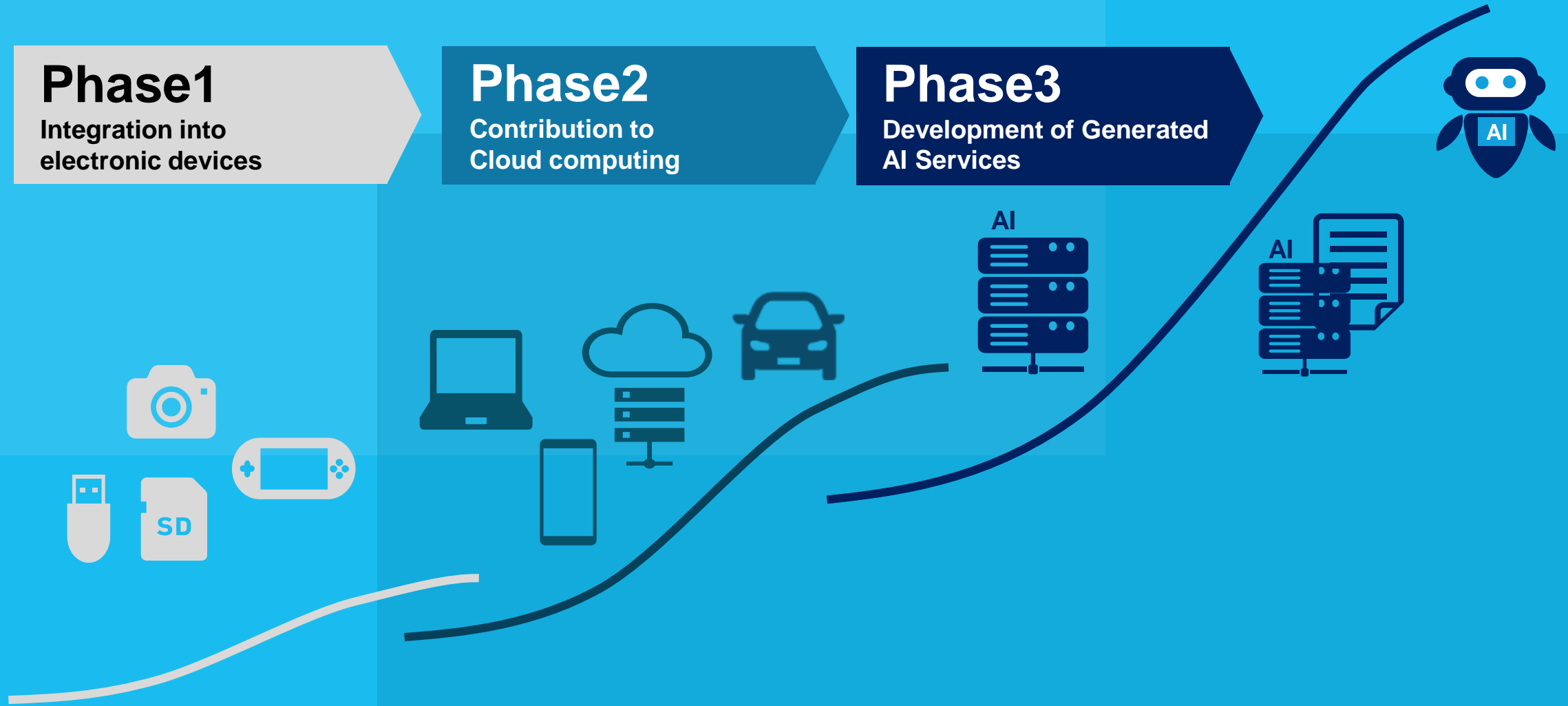
March 25



Sample shipment

Development of high-capacity  
122.88 TB enterprise SSD

# The Evolving Use Cases of Flash Memory



# Data is the Infrastructure of our Daily Lives

AI creates value from data in all industries



Space Exploration



Transportation



Retail



Entertainment



Energy



Healthcare



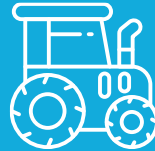
Manufacturing



Finance



Education



Agriculture

## Data Center



Database



Network



Data Security



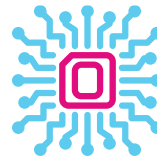
Server



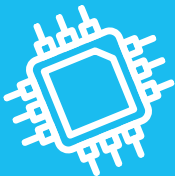
Backup



Cloud



Technology

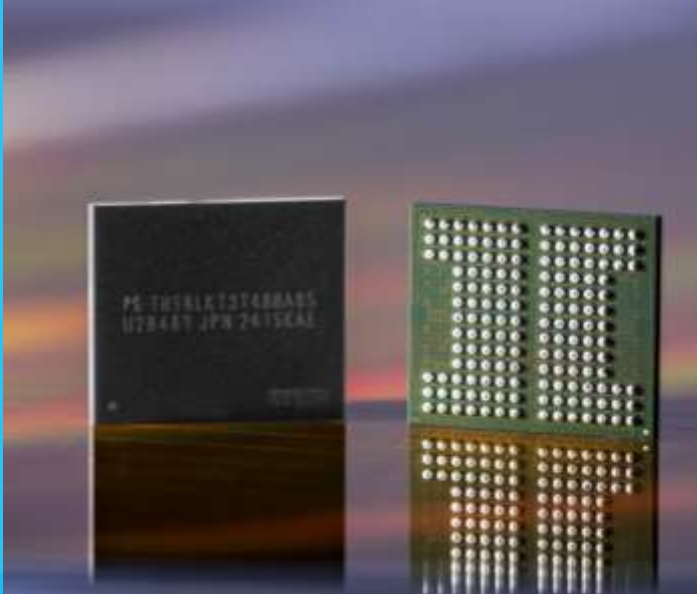


**Constant provision of optimal data access  
for all processes of value creation**





## Technology



## Scale



## Partnership



**With a stable production foundation and industry-leading technology,  
we are building the core of the information infrastructure  
together with our partners.**

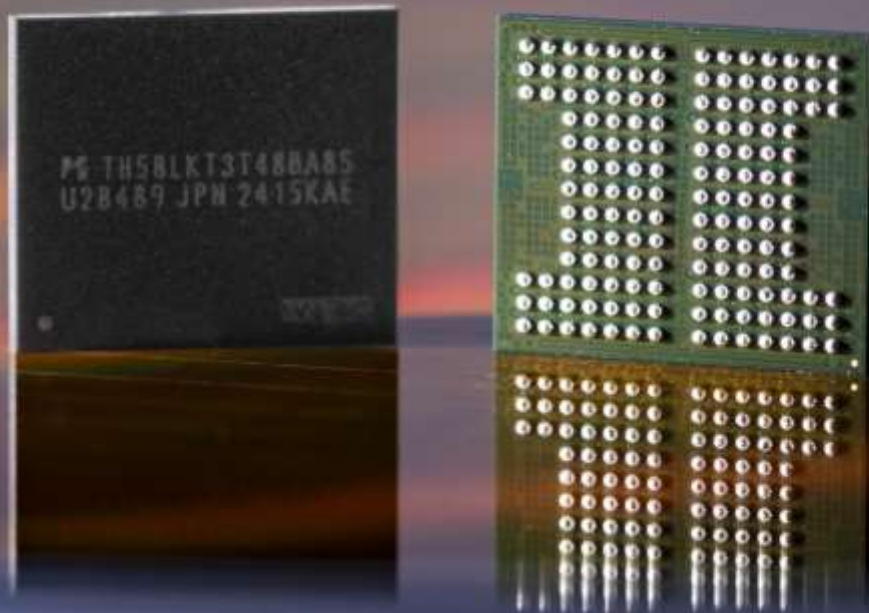
# Technology

**A Technology Leader in Flash Memory,  
Creating World Firsts**

**Development of competitive memory  
devices in pursuit of bit density**

**Development of high-capacity and  
high-performance SSDs tailored  
to usage scenarios**

**Technological proposals with new  
concepts for SCM and HDD replacement**



# Scale

## Leading Global Flash Memory Production Facilities Leveraging Economies of Scale

- Enjoying cost benefits from a 25-year partnership with Sandisk
- Smooth mass production through data integration and AI utilization between Yokkaichi and Kitakami plants
- Expansion of product lineup with reduced investment through Dual-Axis Strategy







# Partnership

## Partnerships with Leading Companies in Each Market

- Business relationships with clients that hold significant market share in the smartphone and PC sectors

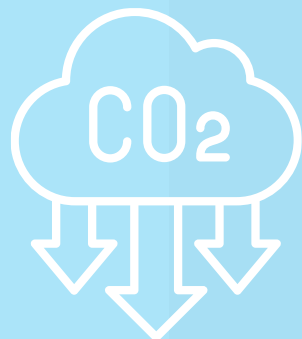
- Collaboration with top companies in the server market

- Expansion of Business with Hyperscalers

- Building a robust supply chain with equipment manufacturers, material suppliers, and OSATs

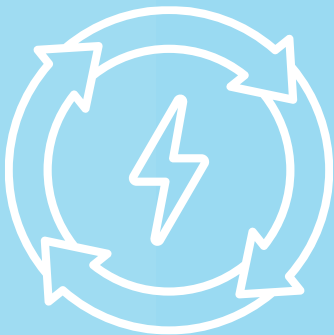
# Environmental contributions to society

## During **Product Manufacturing** Reduction of Greenhouse Gas Emissions



- Promotion of Energy Conservation and Adoption of Renewable Energy: Targeting procuring 100% of our energy from renewable sources by FY2040
- Net-zero Greenhouse Gas Emissions: Aiming for net-zero Scope 1 greenhouse gas emissions and Scope 2 emissions by FY2050

## During **Product Use** Improvement in Energy Consumption Efficiency



- Efforts to Reduce Power Consumption per Bit Targeting a 50% Reduction in Energy Consumption from FY2017 to FY2025

**Uplifting the world  
with "memory"**

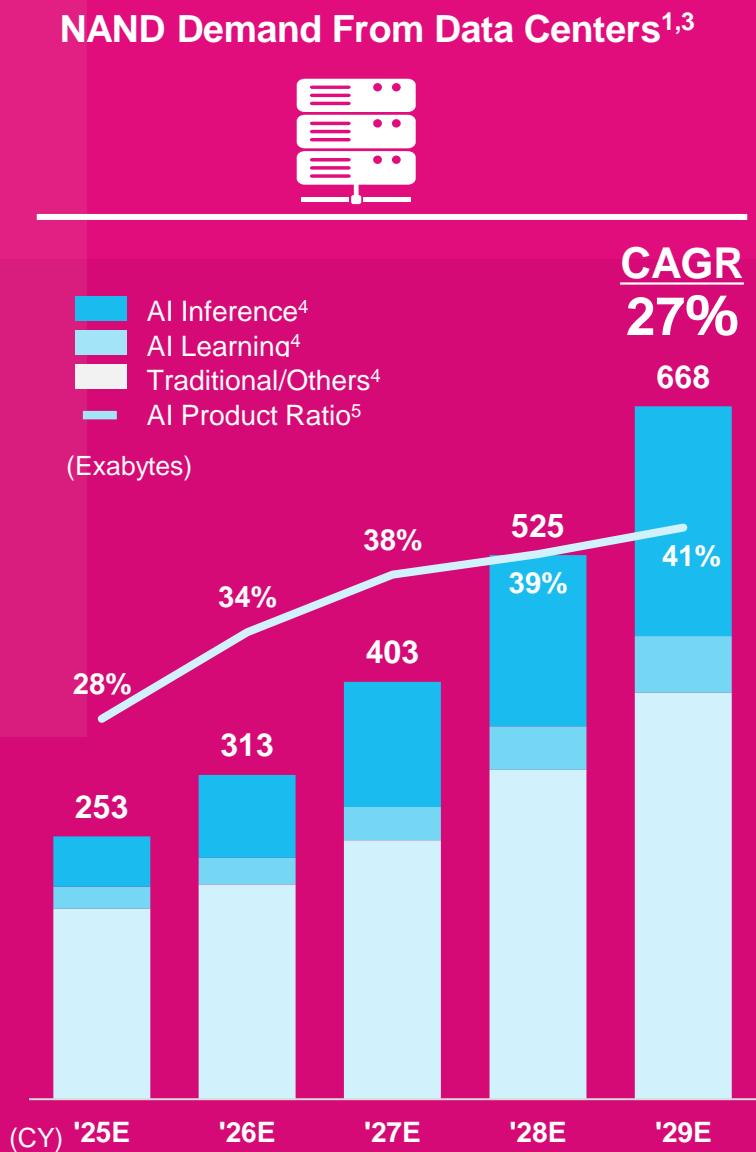
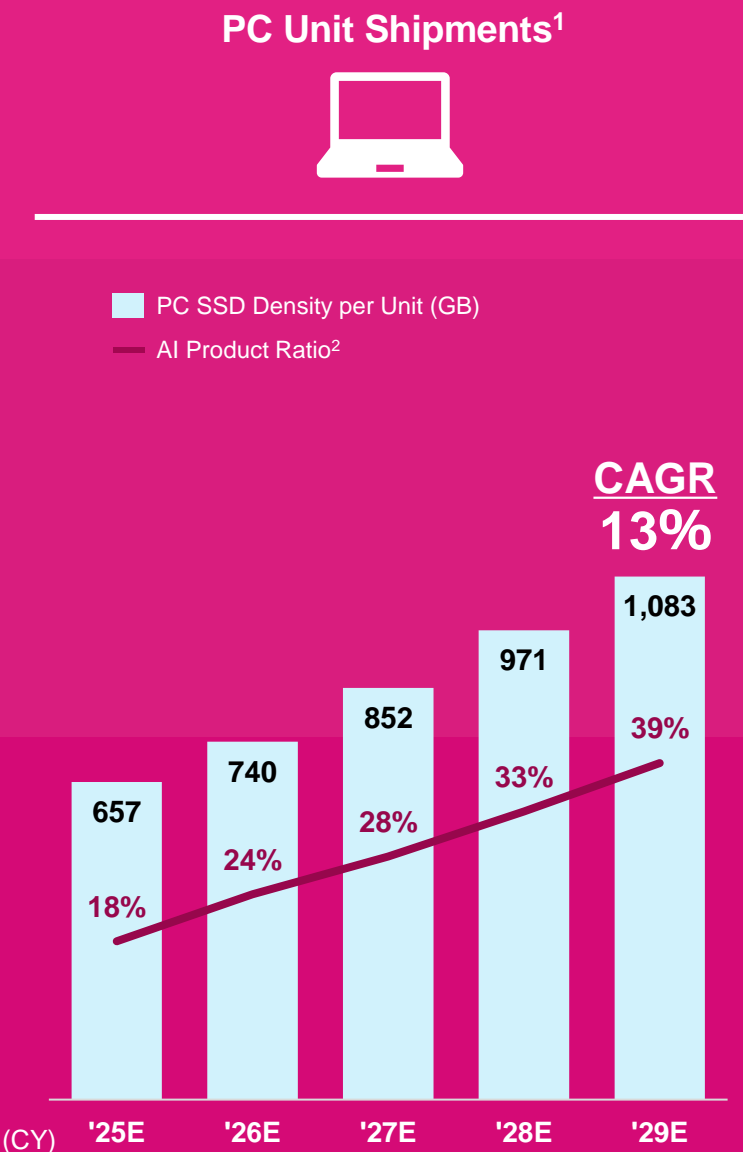
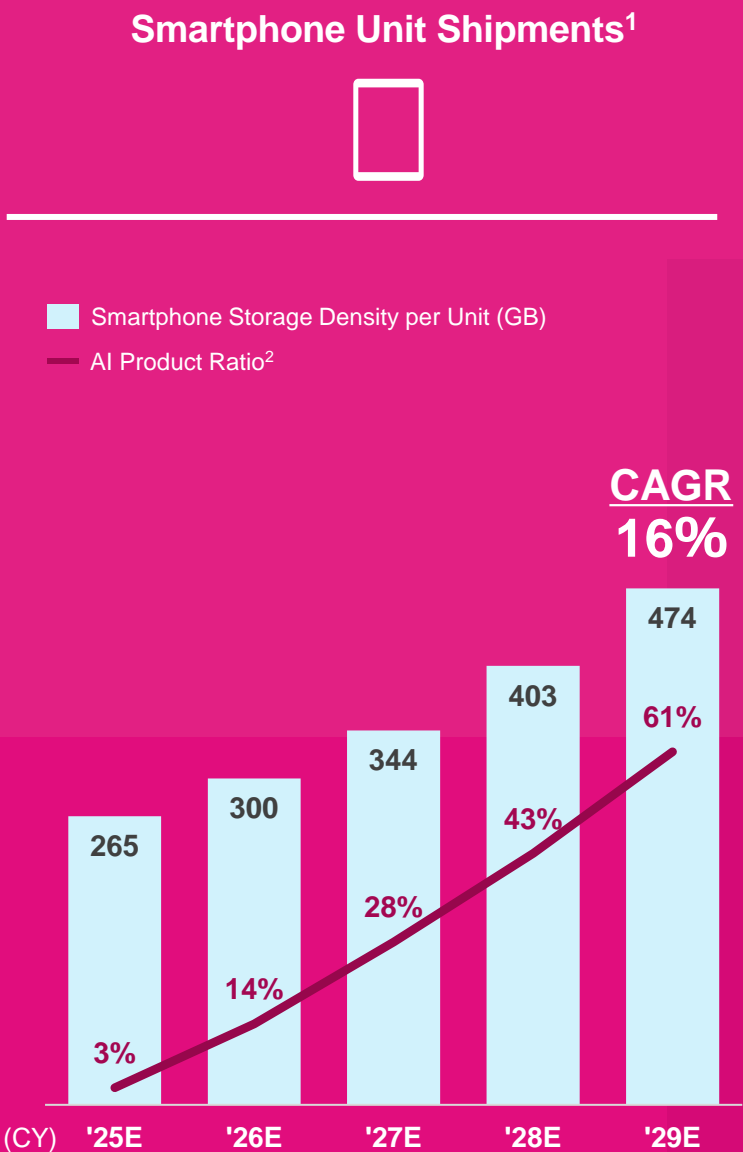


# Flash Memory Market Growth and Our Long-Term Financial Model

**Junichiro Yaguchi**

**Managing Executive Officer, CSO**

# AI Driving Flash Memory Demand Surge Across All Applications

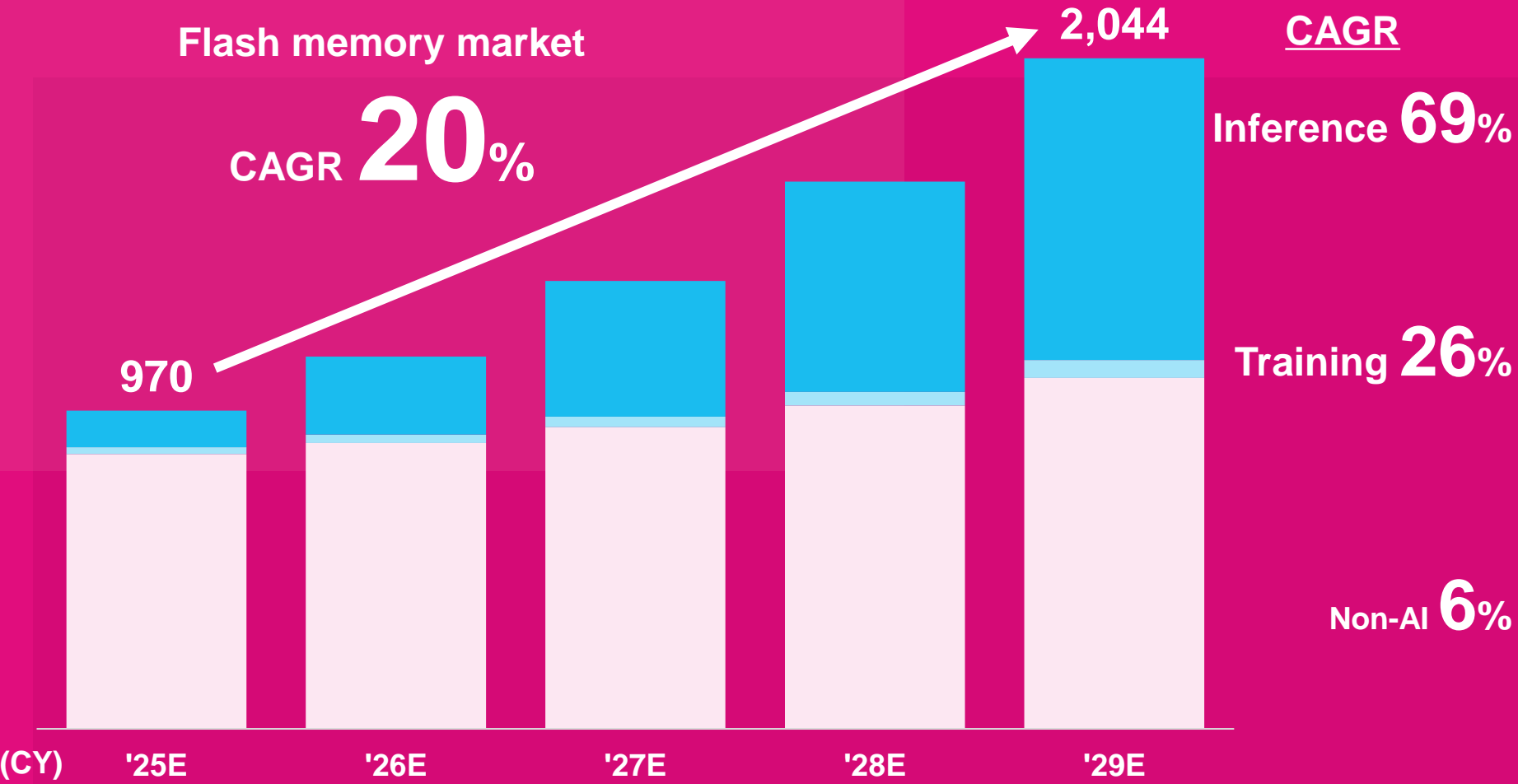


<sup>1</sup> Source – TechInsights “NAND Market Report Q2 2025”  
<sup>2</sup> Based on shipments. Generative AI smartphones / PCs are envisioned as smartphones / PCs equipped with locally stored large language models (LLMs) and dedicated logic ASICs for AI processing  
<sup>3</sup> Demand forecast is based on NAND consumption (server sales, datacenter buildouts, etc.), not NAND/SSD sales by the memory suppliers to the datacenter operators and traditional enterprise OEMs. <sup>4</sup> Refer to footnote 3 on page 17 <sup>5</sup> Based on bit demand



# Flash Memory Market Driven by Generative AI<sup>1,2</sup>

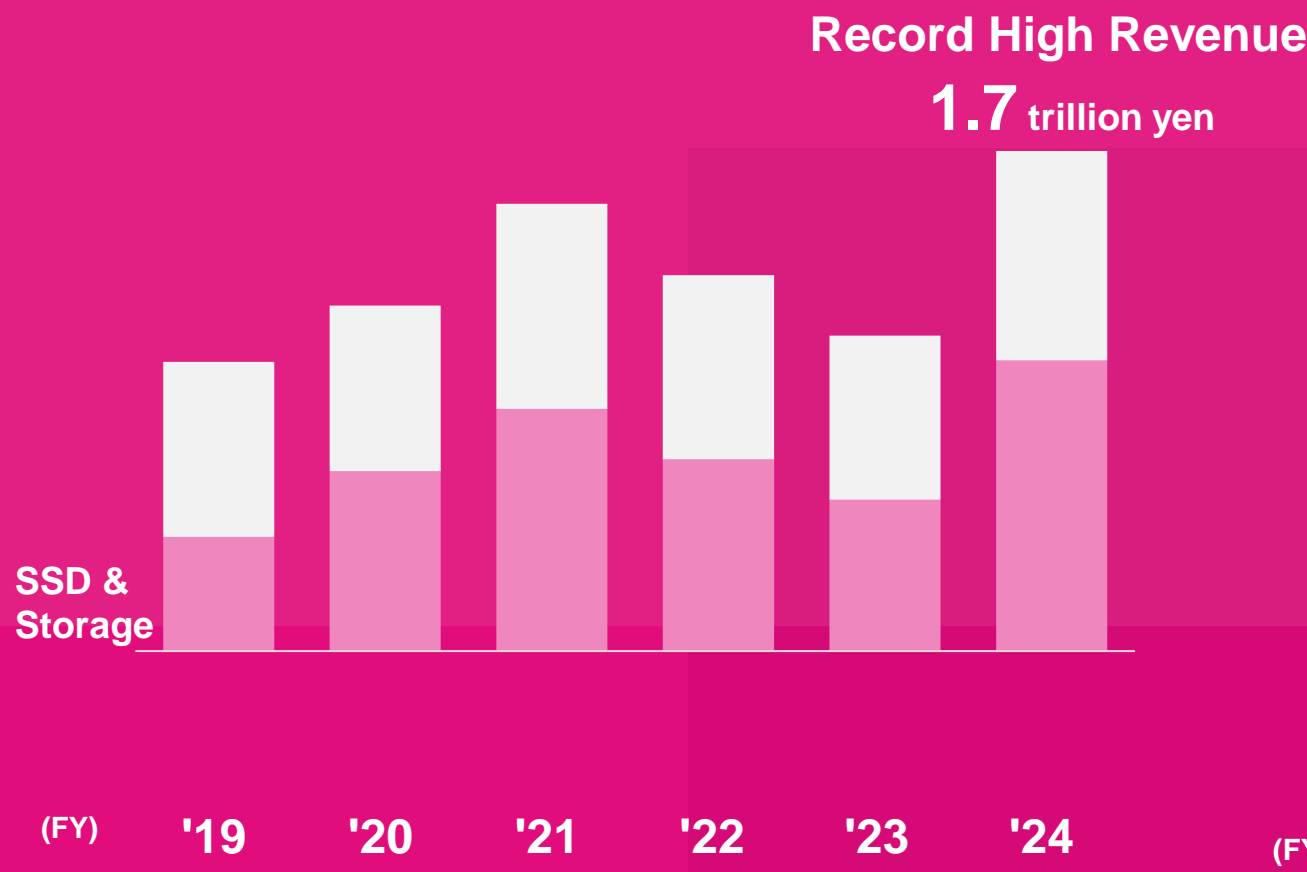
## Bit Demand Related to AI (EB)<sup>3,4</sup>



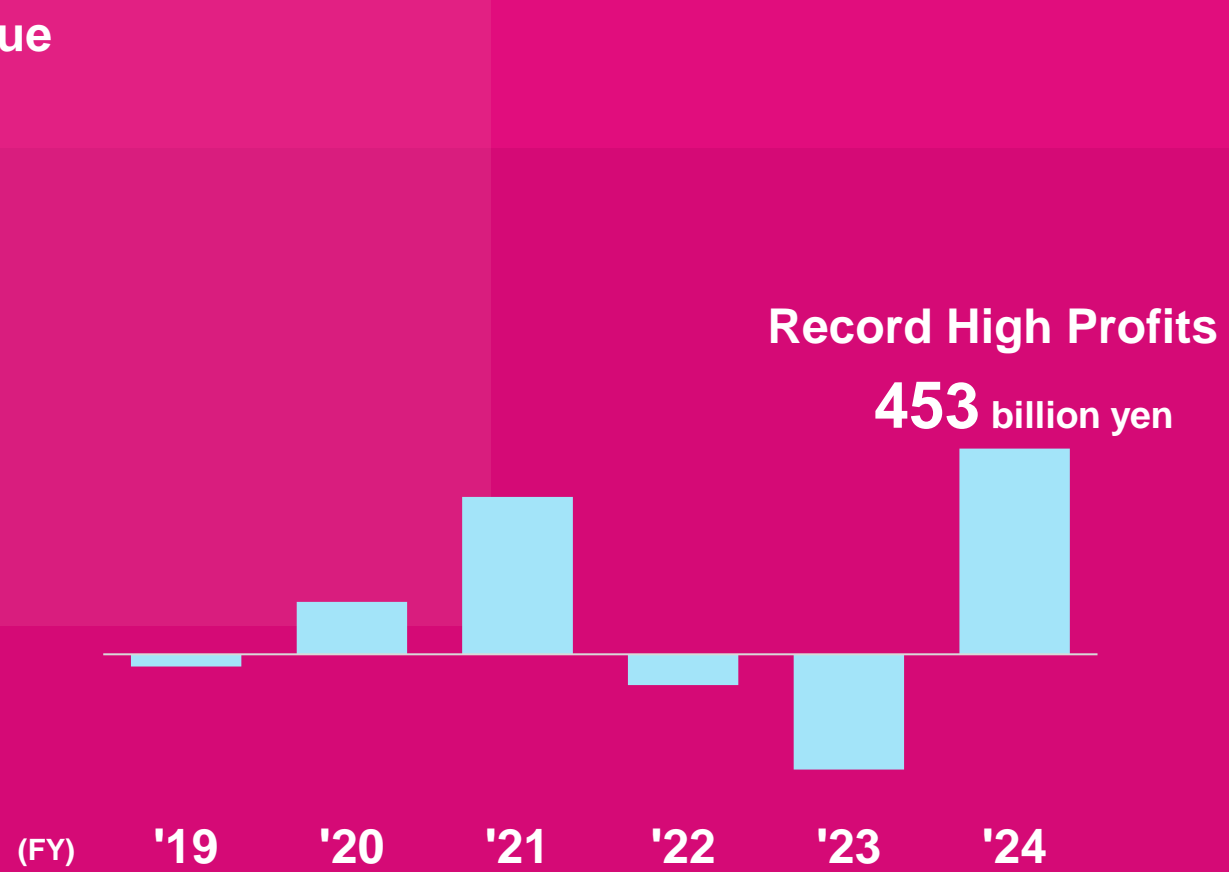
<sup>1</sup> Source – TechInsights Inc. “NAND Market Report Q2 2025”  
<sup>2</sup> Demand forecast is based on NAND consumption (server sales, datacenter buildouts, etc.), not NAND/SSD sales by the memory suppliers to the datacenter operators and traditional enterprise OEMs.  
<sup>3</sup> AI inference / training SSD refers to any SSD primarily used to support AI inference / training workloads (either server- or storage-attached)  
<sup>4</sup> Generative AI smartphones/PCs are envisioned as devices equipped with locally stored large language models (LLMs) and dedicated logic ASICs for AI processing. Since no such devices exist in the market yet, the modeled forecasts are based on assumptions and estimations and are subject to high uncertainty.

FY2024 Results

Revenue



OP (Non-GAAP base)



In FY2024, Achieved Record High Revenue and Profits

# Resource allocation for growth

Capital  
Expenditures



Ratio to Revenue of

**20%** or below

R & D



Ratio to Revenue of

**8-9%**

Recruitment



Approx.

**700** People per year

※Kioxia Group as a whole

# Long-Term Financial Model

## Growth



In Line with Expected NAND Market Growth<sup>1</sup>

**20%**

※CY25-29

## Profitability



Annual cost reduction per GB mid-**10%** range

Operating margin<sup>2</sup> mid-**20%** range

## Financial Stability



Net Debt/EBITDA<sup>3</sup>

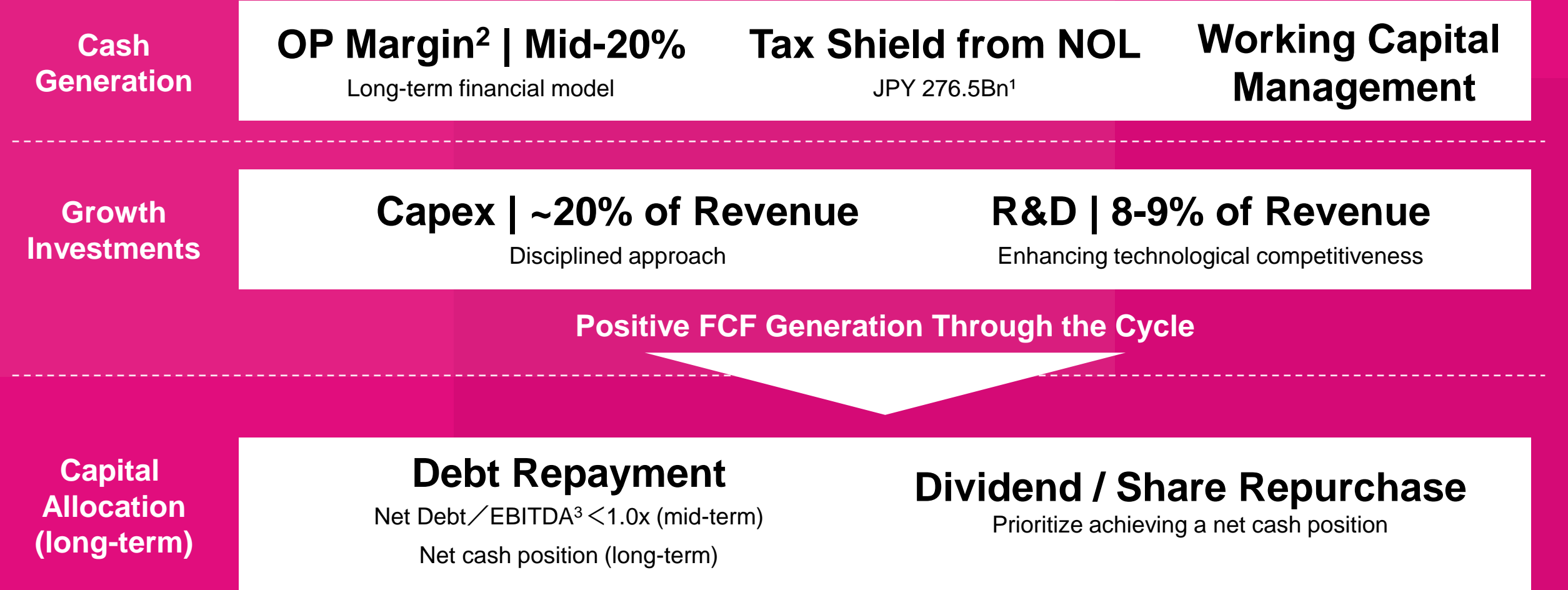
Medium term **<1.0**

Long term **Net cash position**

\*See DISCLAIMER on page 3 of this document.

# Capital Allocation Policy

Aim to enhance financial soundness for sustainable growth through the cycle



<sup>1</sup> After-tax amount of tax loss carryforwards (NOL) as-of March 31, 2024   <sup>2</sup> Non-GAAP basis   <sup>3</sup> LTM Non-GAAP basis

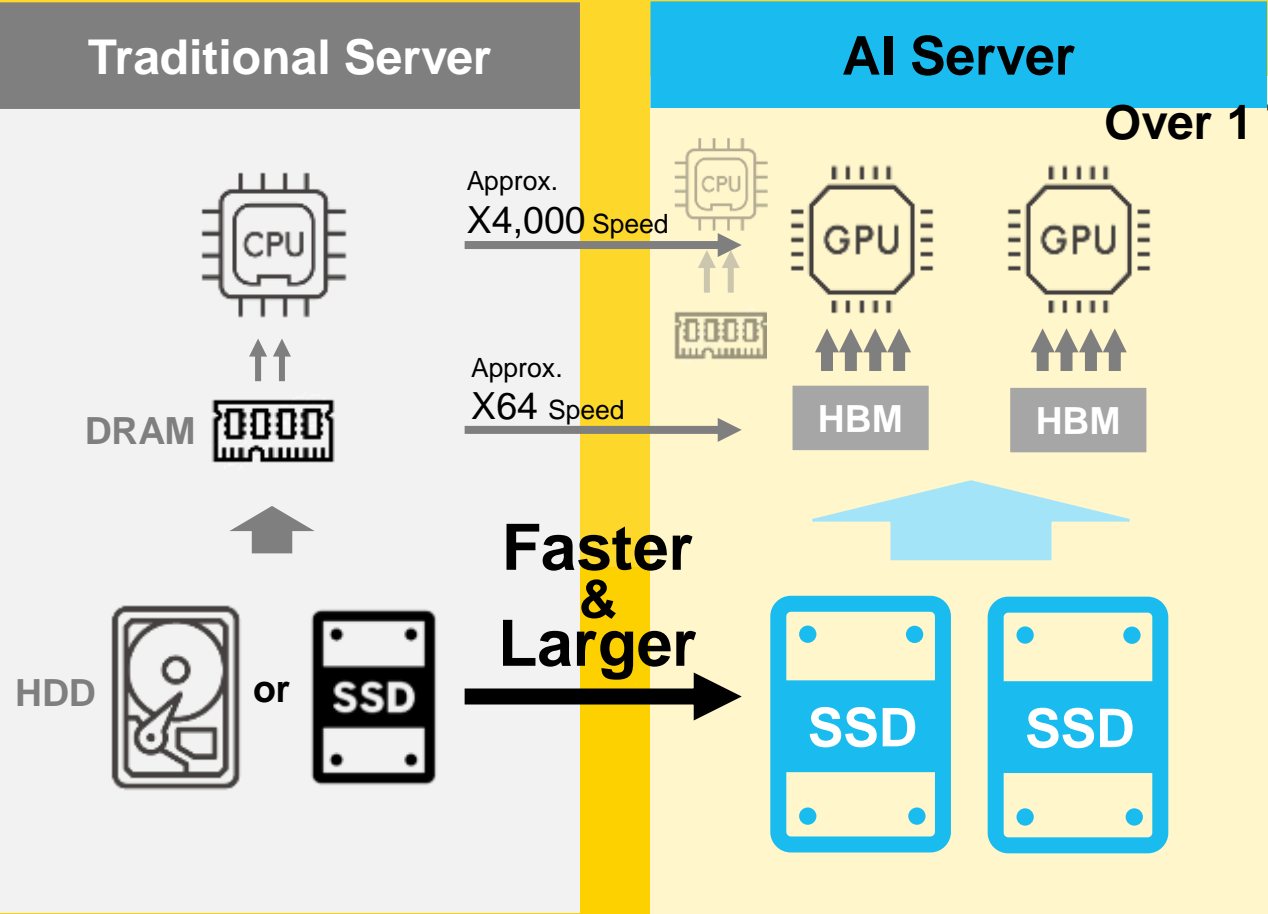
# Storage Strategy for Generative AI

**Masashi Yokotsuka**

**Managing Executive officer, Vice president of SSD div.**

# The importance of SSD in AI systems

AI servers require large-capacity and high-speed data transfer.

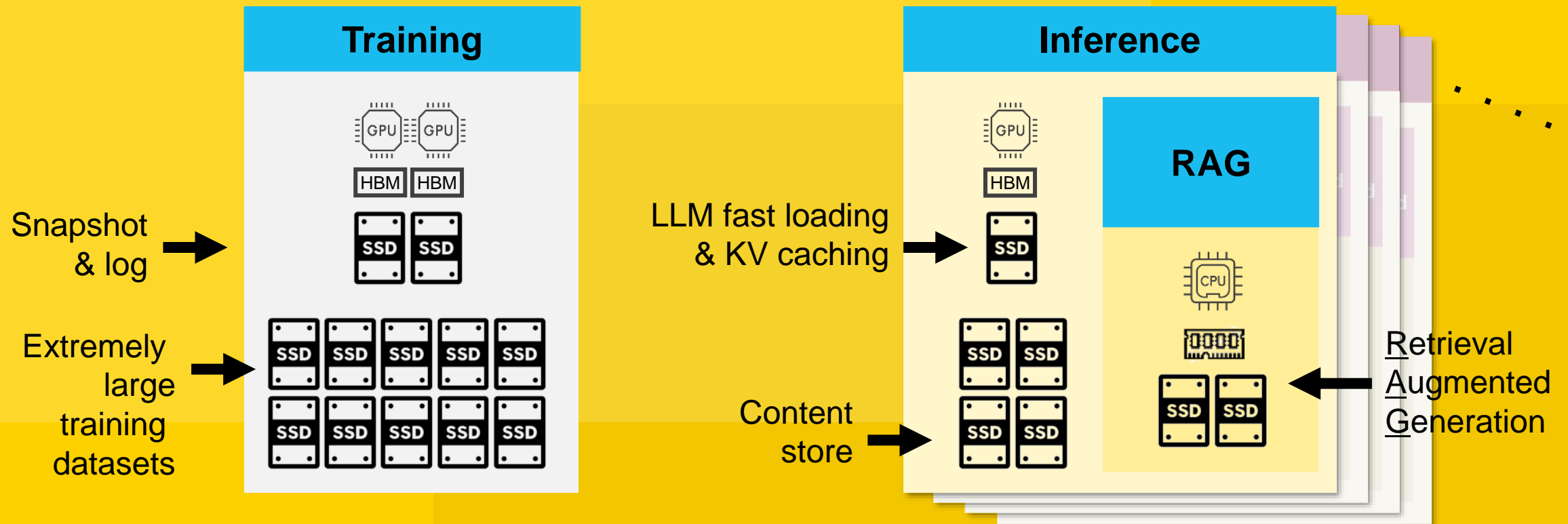


	Performance	Power	Capacity
HBM	✓✓✓✓	✓✓	✓
DRAM	✓✓✓	✓✓	✓✓
SSD	✓✓	✓✓✓✓	✓✓✓
HDD	✓	✓✓	✓✓✓✓

From the perspectives of capacity, performance, and power efficiency, SSD is the best choice.

# SSD Demand Expected to be Driven by AI Inference

Inference systems and inference servers will be needed for as many services and users as there are.



What is required of SSDs :

- Higher-performance
- Larger Capacity
- Better Power Efficiency



Performance  
SSD

equipped with an in-house  
controller supporting PCIe® 5.0

Best-in-class PCIe® 5.0 SSD

CM9



DC optimized PCIe® 5.0 SSD

XD8



Capacity SSD

equipped with BiCS  
FLASH™ Generation 8,  
2Tb QLC monolithic chip

LC9



Mission Critical Ready QLC SSD

Single-Port / Dual-Port 2.5-inch : **122.88 TB\***

2025/E

\* 122.88TB is capacity of current product. Future capacity planned to be larger.

# Our strength

Combining Flash technology with enterprise experience to deliver reliable SSDs to customers.

## Flash Memory Technology Leadership

BiCS FLASH™ generation 8



Higher Interface Speed



Read Latency



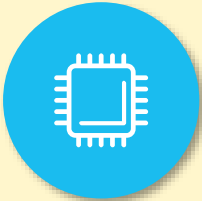
Write Power Efficiency



Bit Density



## In-house unified Ent. & DC R&D platform



SSD HW

PCIe5.0  
DC Form factor  
PLP function



SSD FW

Powerful ECC  
Advanced Security  
Customization



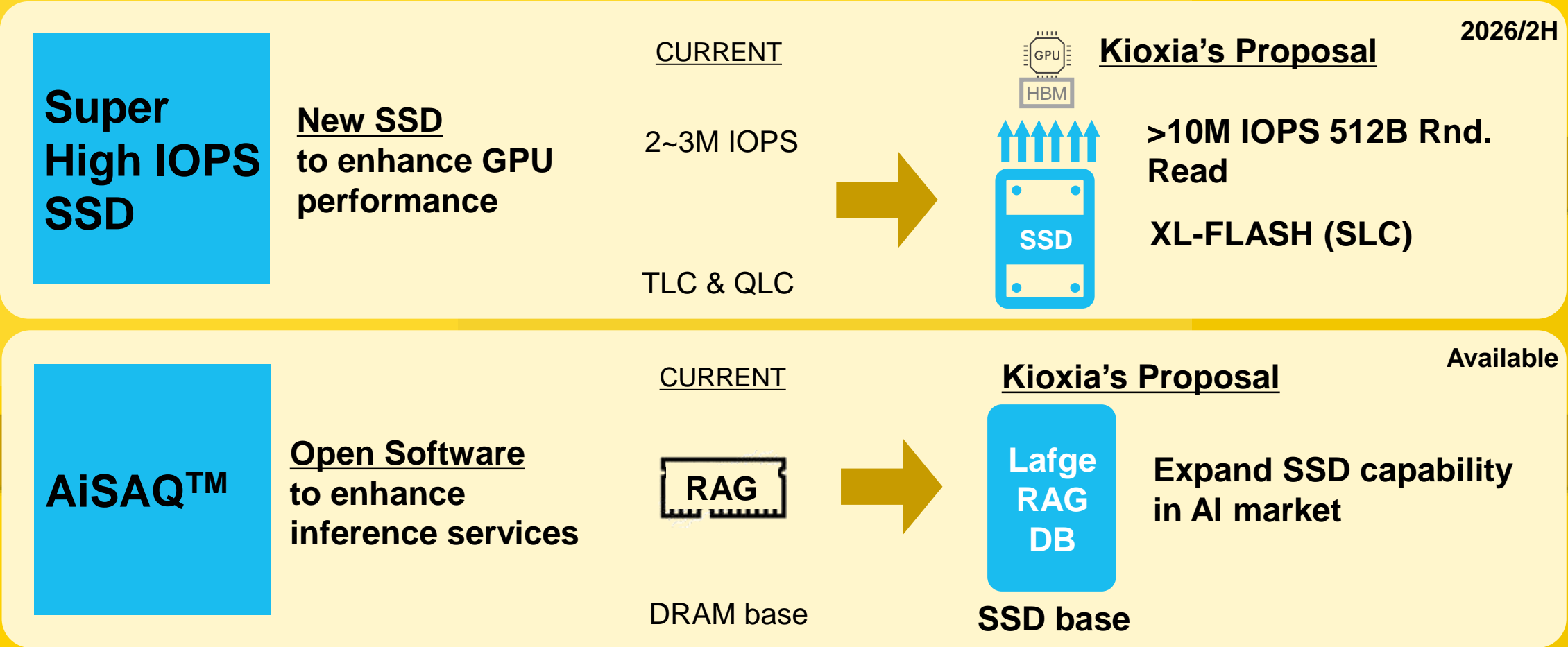
15yr+ Engagement In Enterprise

Lead new tech trends with key customers



# Our proposal

As experts in Flash Memory and SSD, Kioxia contributes to the growth of AI systems and the market by collaborating with technology leaders and leading customers.

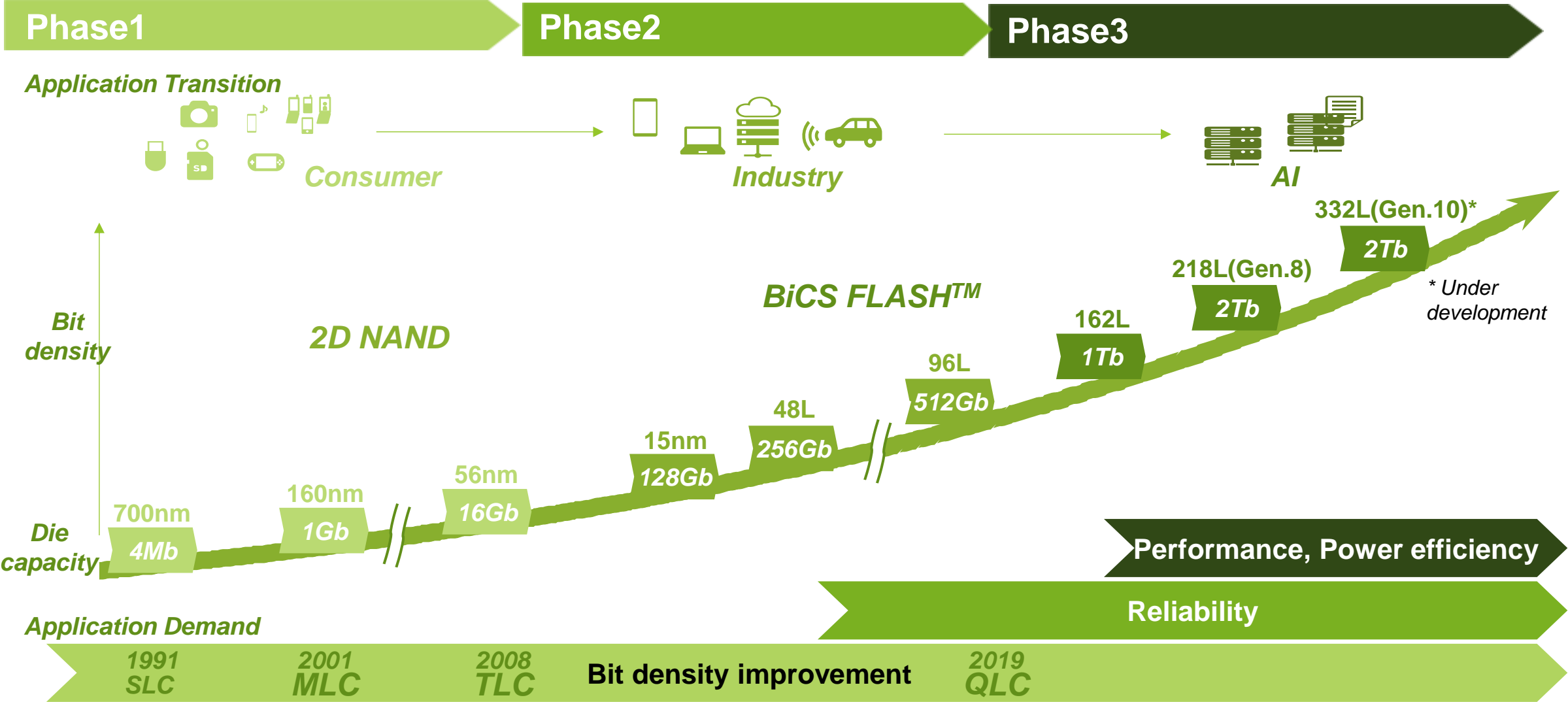


# **Our Leadership in Flash Memory Technology**

**Hiroo Oota**





**Executive Vice President and Executive Officer**

# Kioxia is the Pioneer in Flash Memory

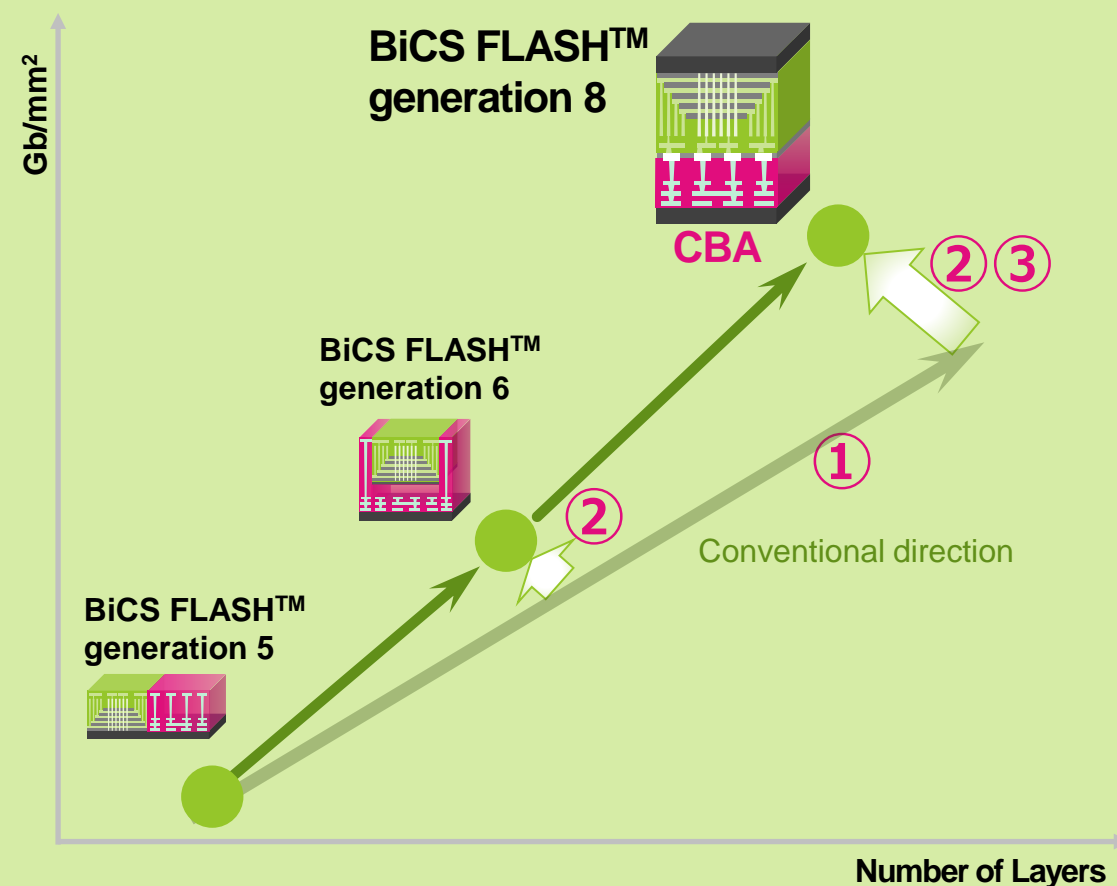


# Technological Leadership Enables Highest Bit Density

## Bit Density Improvement Technologies and Relationship with Investment

	Technology	Initial Investment
①	 <b>Vertical Scaling</b> Stacking	\$\$\$
②	 <b>Lateral Shrink</b> High-density Memory Hole	-
③	 <b>New Architecture</b> CBA	\$
④	 <b>Logical Shrink</b> QLC	-

## Significant Bit Density Improvement through Lateral Shrink & CBA

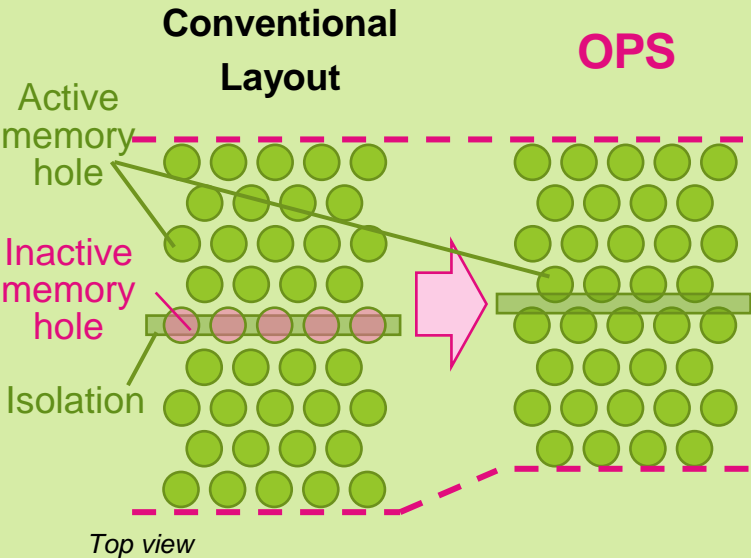


# Key Technologies Enabling Highest Bit Density

## ② Lateral shrink

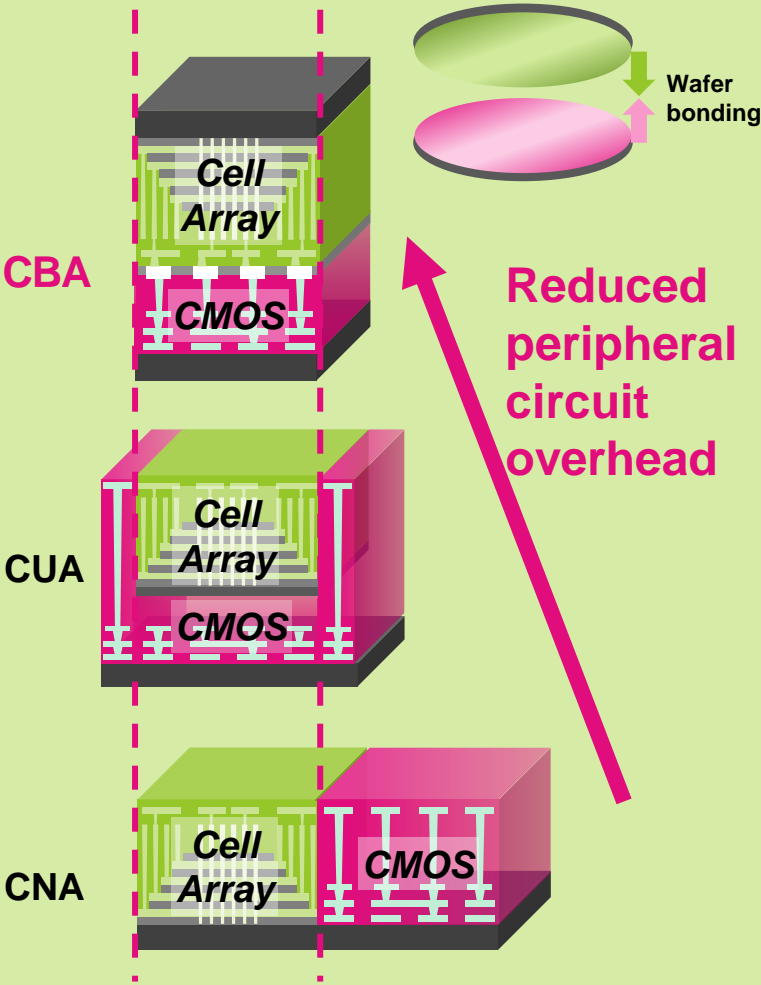
World's first

Eliminated inactive memory holes used for isolation



OPS : Qn Pitch SGD  
SGD : Select Gate Drain

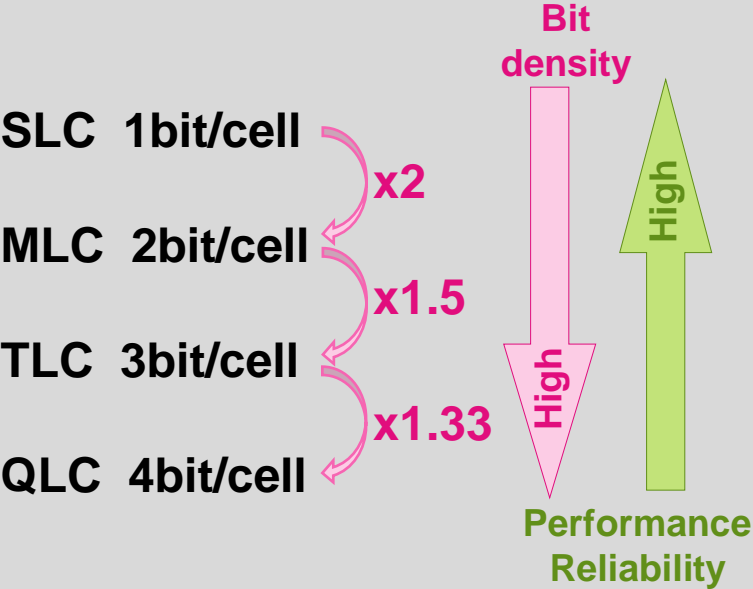
## ③ New Architecture



## ④ Logical Shrink

World's first

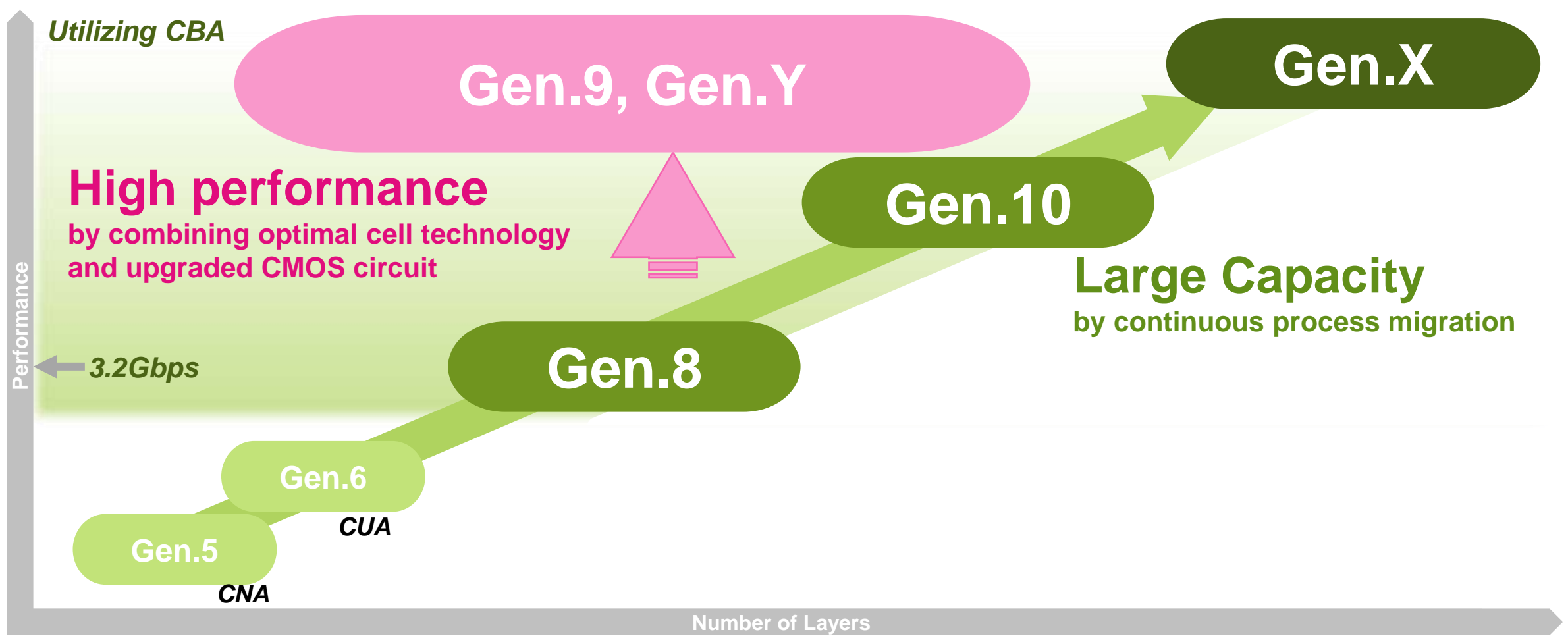
Realized 4 bit per cell from BiCS FLASH™ generation 4



- ✓ TLC optimal for performance
- ✓ QLC optimal for capacity

# BiCS FLASH™ Road Map

Dual-Axis Strategy enables optimal CAPEX spending and maximizes GB output and offers high performance flash memory for wide variety of applications

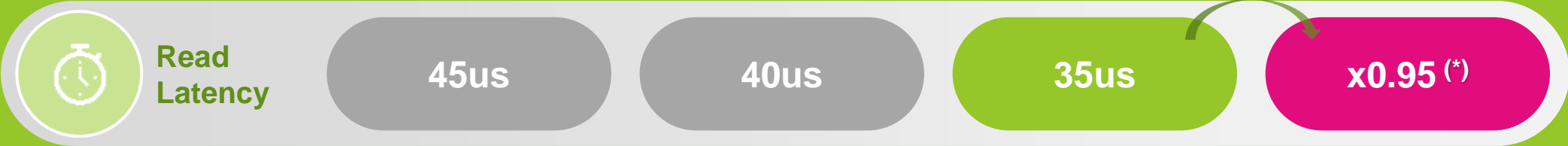
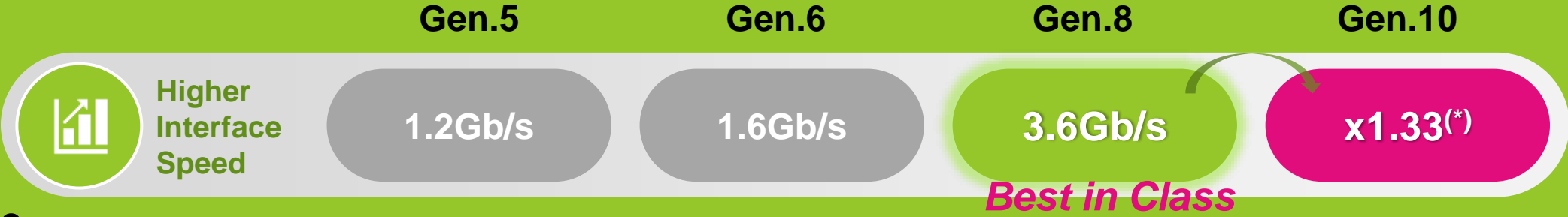


CBA : CMOS directly Bonded to Array

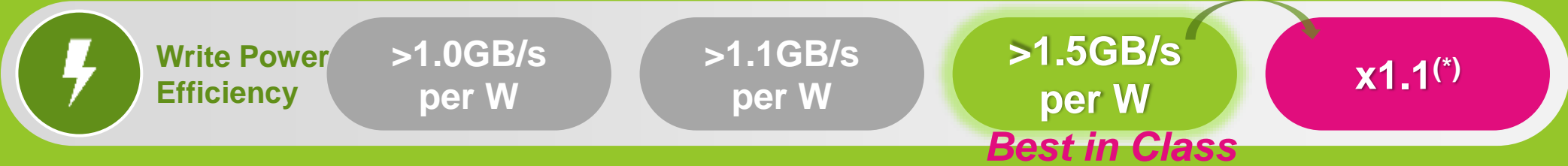


# Performance & Bit Density Improvement Across the BiCS FLASH™ Generations

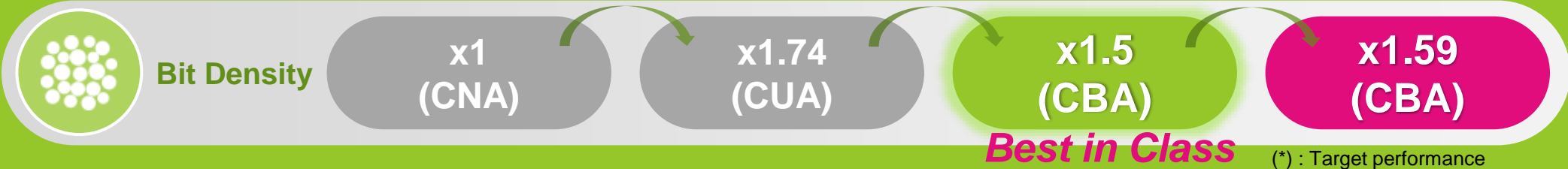
## Performance



## Power Efficiency



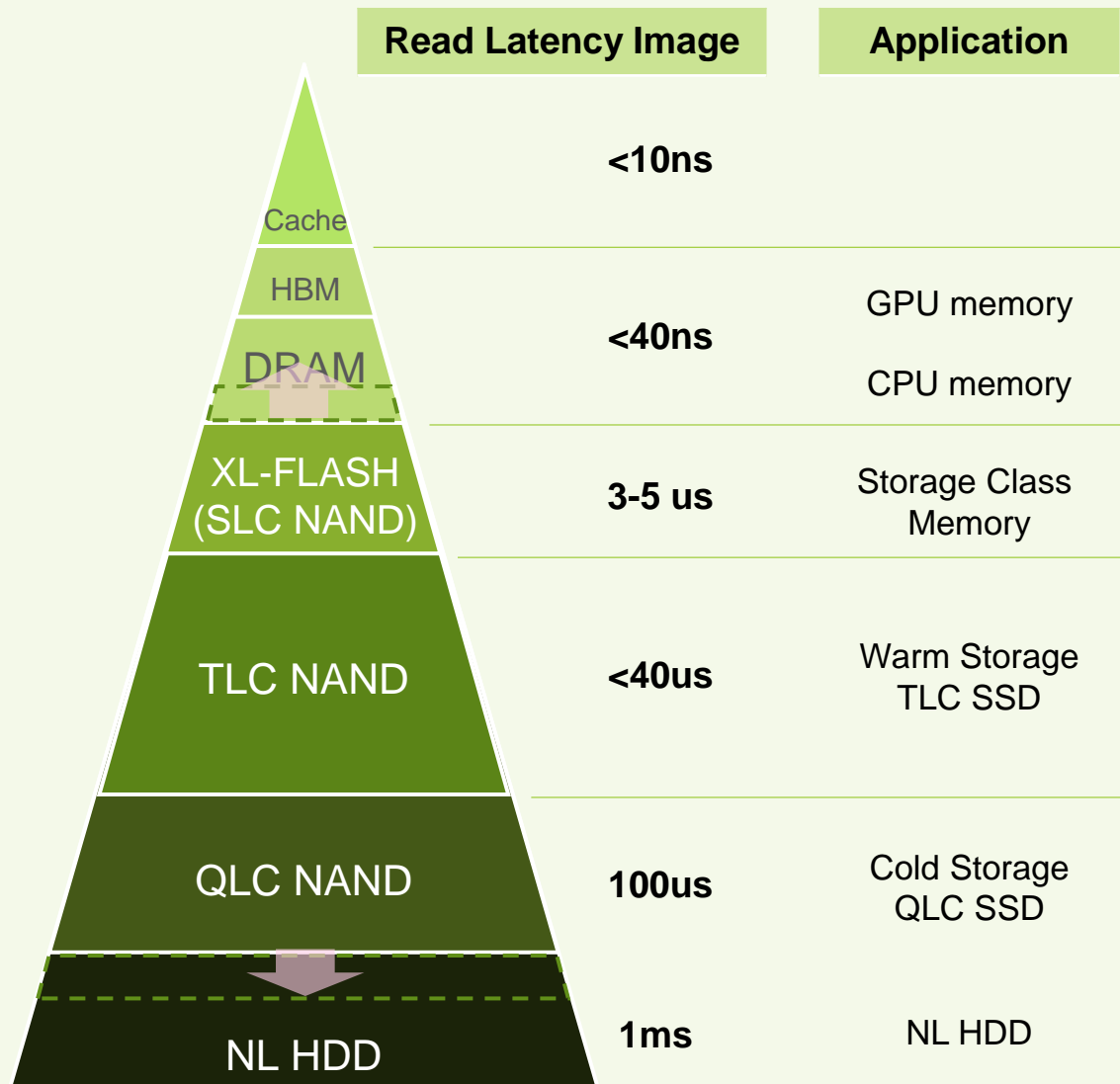
## Bit Density



(\*) : Target performance

Gen.9 : Performance improvements are similar to Gen.10

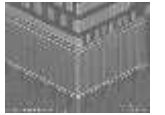
# Targeting New Applications with New Memory Solutions



## OCTRAM (Research & Development Phase )

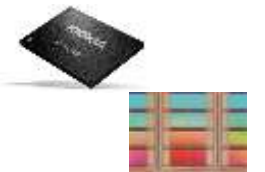
- 4F2 layout
- Targeting AI and post-5G system memory requiring low power consumption

OCTRAM :  
Oxide-Semiconductor  
Channel Transistor  
DRAM



## XL-FLASH for AI Era (Currently in Production)

- Roughly 10 times faster and durable than typical TLC NAND
- Targeting AI applications such as:
  - ✓ Super High IOPS SSD (Sample in 2026/2H)
  - ✓ CXL attached XL-FLASH (Sample in 2026/2H)



## Large Capacity QLC (Currently in Production)

- QLC SSDs are in data centers today
- Targeting NL HDD replacement with cost oriented QLC NAND.
- ✓ Targeting development of large capacity QLC SSDs that can compete with NL HDD in terms of TCO (Total Cost of Ownership)

# **Manufacturing and Capital Investment Strategy**

**Tomoharu Watanabe**

**Executive Vice President and Executive Officer**

# Kioxia's Operational Excellence

High Yield Rate and Productivity Achieved in Yokkaichi & Kitakami

Main synergy



Quick Ramp



High Yield from Initial Stage



Improved Throughput



Quick action by AI



**Yokkaichi Plant**

7 fabs and memory R&D center



**Kitakami Plant**

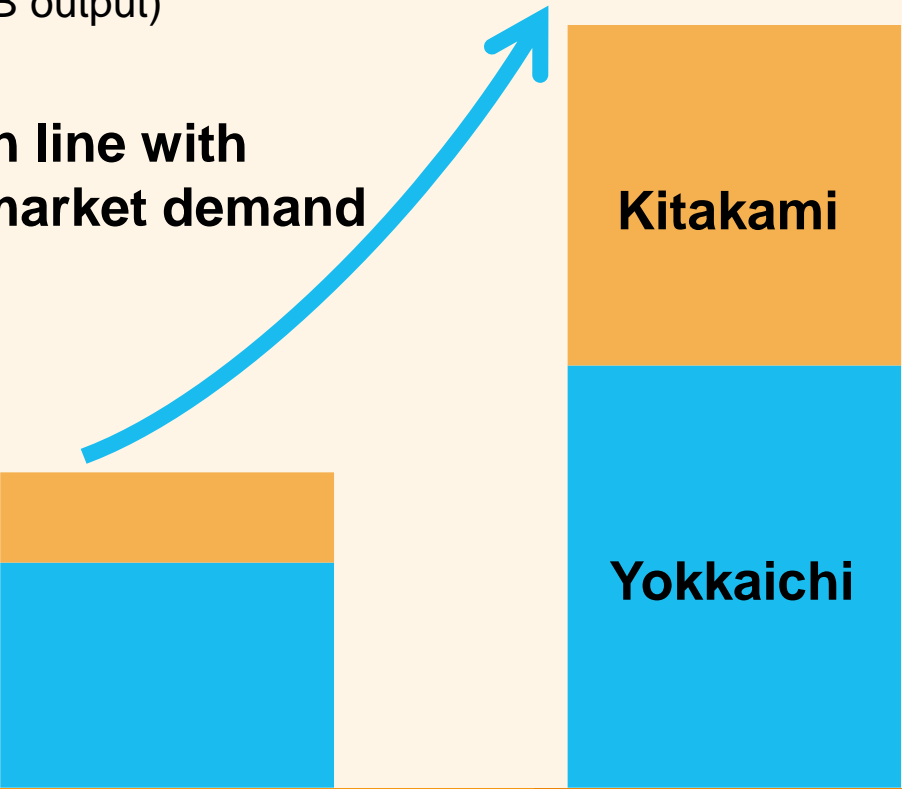
2 fabs

# Manufacturing Allocation Strategy

## Frontend Allocation

(GB output)

In line with  
market demand



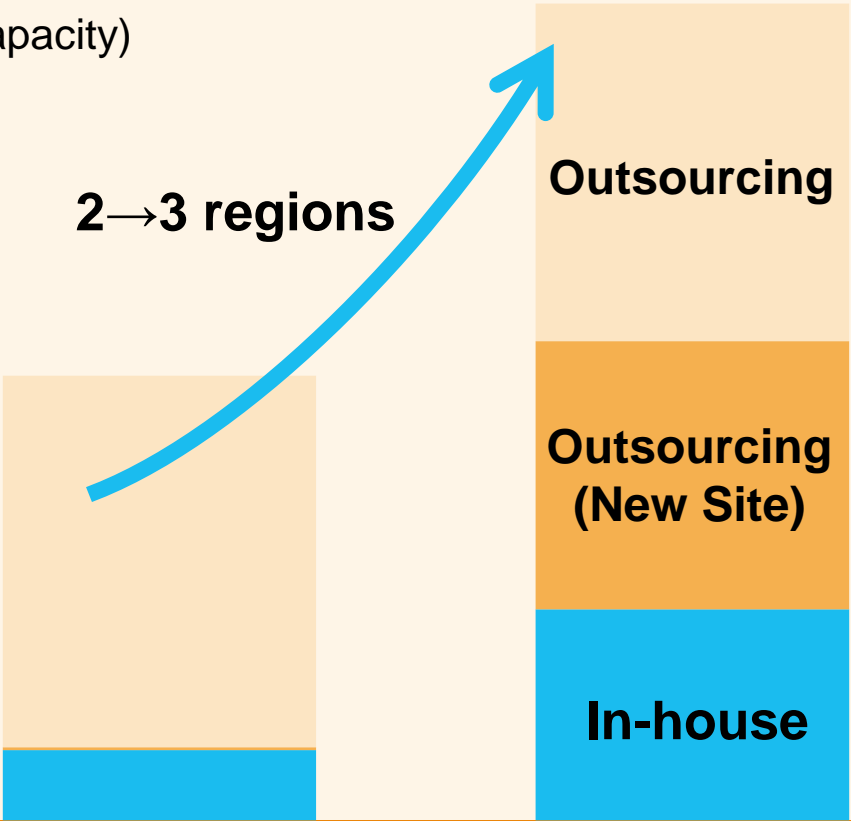
FY24

FY29E

## Backend Allocation

(Capacity)

2→3 regions



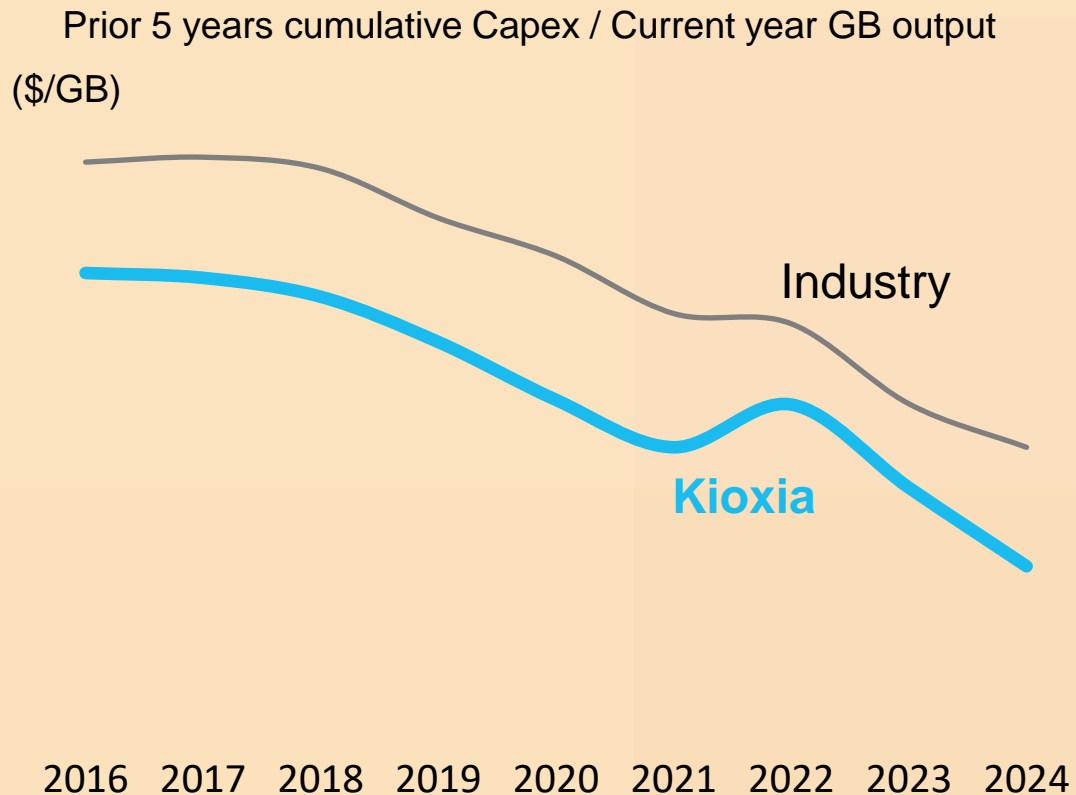
FY24

FY29E

# Effective Capex Control

## Manufacturing Capacity Expansion While Keeping Financial Discipline

### Capital Efficiency\*



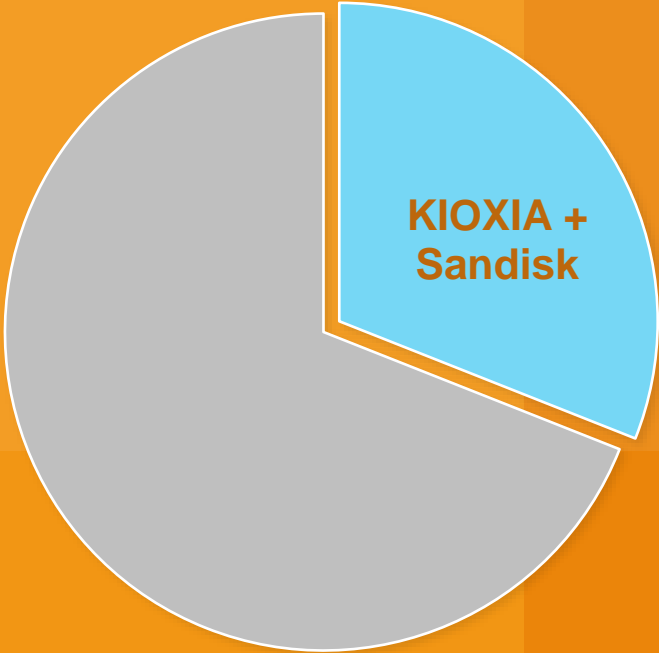
- ✓ Investment in mass production for future growth
- ✓ R&D investment to keep technology leadership

# Keep Leading Position in Flash Memory Production

Manufacturing Capacity Expansion to Keep Leading Position

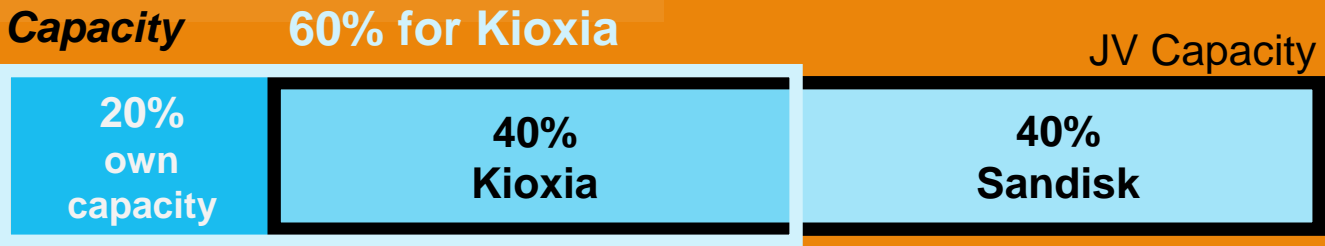
## Top Class Flash Memory Player

NAND Production GB<sup>1</sup>



Kioxia + Sandisk Approx. 30%

- ✓ Kioxia owns the facilities and controls 100% of manufacturing operation
- ✓ Majority of engineering resources
- ✓ 60% of total capacity



# Commitment to supply chain risk management

Kioxia assesses and stays aware of its supply chain risks to minimize its business risks

## BCP management based on strong partnership with suppliers



**Geopolitical Risks**



**Environmental Regulations**



**Disasters and Incidents**



**Key Message for Today**

## Key Message for Today

**Market**

With the widespread adoption of generative AI, the storage market is expected to continue expanding, particularly driven by inference workloads.

**Value  
Proposition**

Maintaining technology leadership through innovation  
By developing competitive devices, we address the increasingly diverse storage needs—including high performance, large capacity, and low power consumption

**Profitability**

Improving profitability and strengthening our financial foundation through disciplined capital investment and strategic resource allocation

**We aim to enhance our corporate value by contributing to society through providing a foundation for data utilization and pursuing sustainable growth**

**KIOXIA**