

# The Conspirators

- Make sure your device uses Samsung Memory



**Battery  
Brutus**

**Fiona  
Freeze**

**Loading Ball  
Larry**

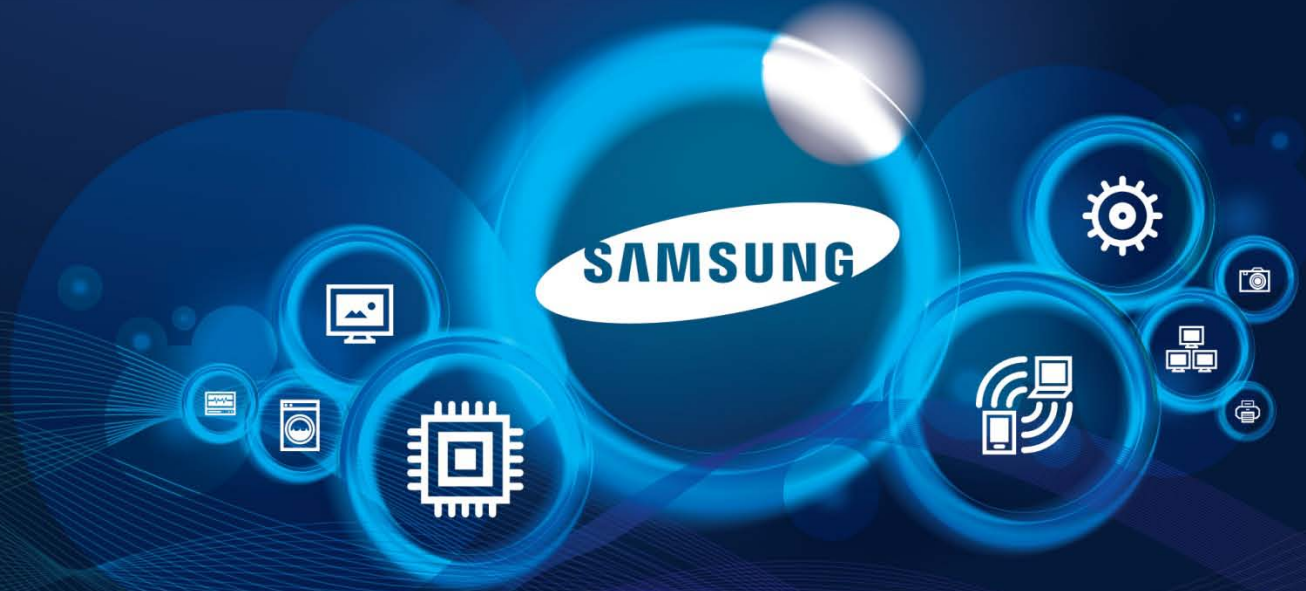
# Memory Business

SAMSUNG  
ANALYST DAY 2013



Dong Soo Jun

President of Memory Business



SAMSUNG  
ELECTRONICS



## **DISCLAIMER**

The materials in this report include forward-looking statements which can generally be identified by phrases such as Samsung Electronics (SEC) or its management "believes," "expects," "anticipates," "foresees," "forecasts," "estimates" or other words or phrases of similar implications. Similarly, such statements that describe the company's business strategy, outlook, objectives, plans, intentions or goals are also forward-looking statements. All such statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those in the presentation files above.

For us, particular uncertainties which could adversely or positively affect our future results include:

- The behavior of financial markets including fluctuations in exchange rates, interest rates and commodity prices
- Strategic actions including dispositions and acquisitions
- Unanticipated dramatic developments in our major businesses including CE (Consumer Electronics), IM (IT & Mobile communications), DS (Device Solutions)
- Numerous other matters at the national and international levels which could affect our future results

These uncertainties may cause our actual results to be materially different from those expressed in this report.



# 1. Paradigm Shift

- Transition from PC's to Mobile

# 2. Strategic Direction

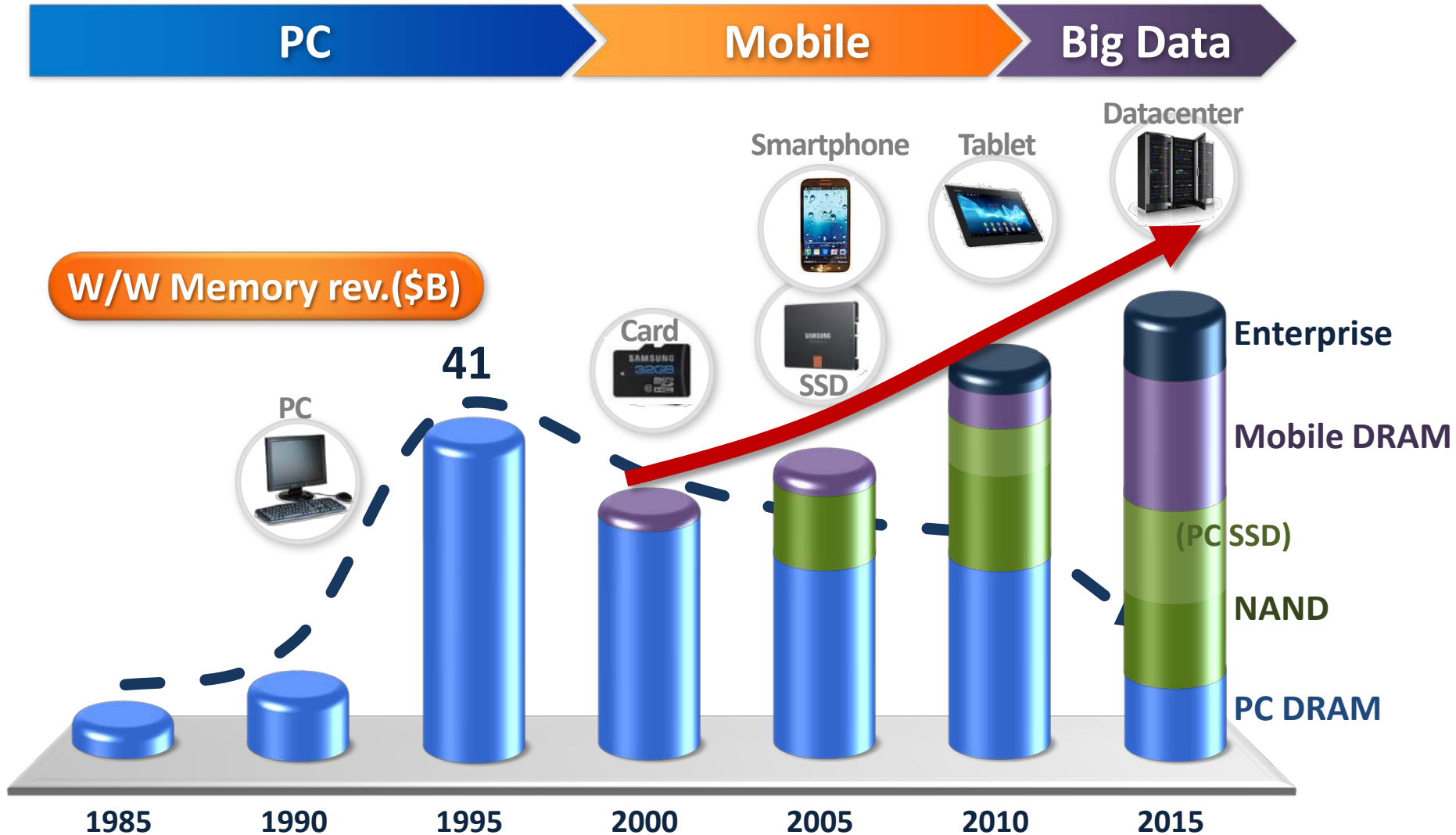
- Stay "One Step Ahead" as Ecosystem Leader
- Exploit Breakthroughs in Technology
- Extend Core Competencies



# Paradigm Shift

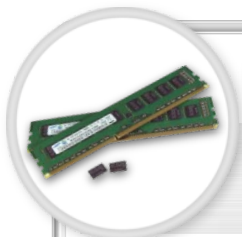
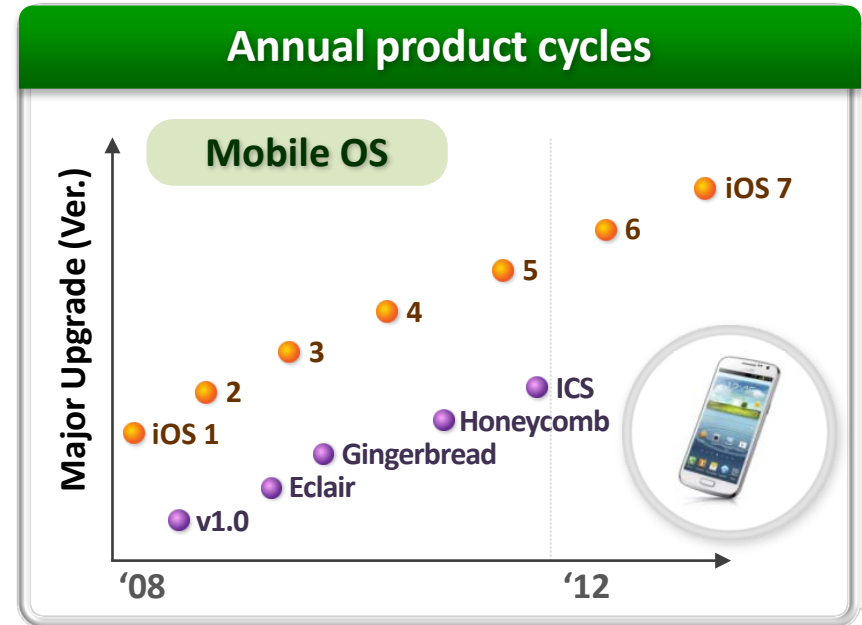
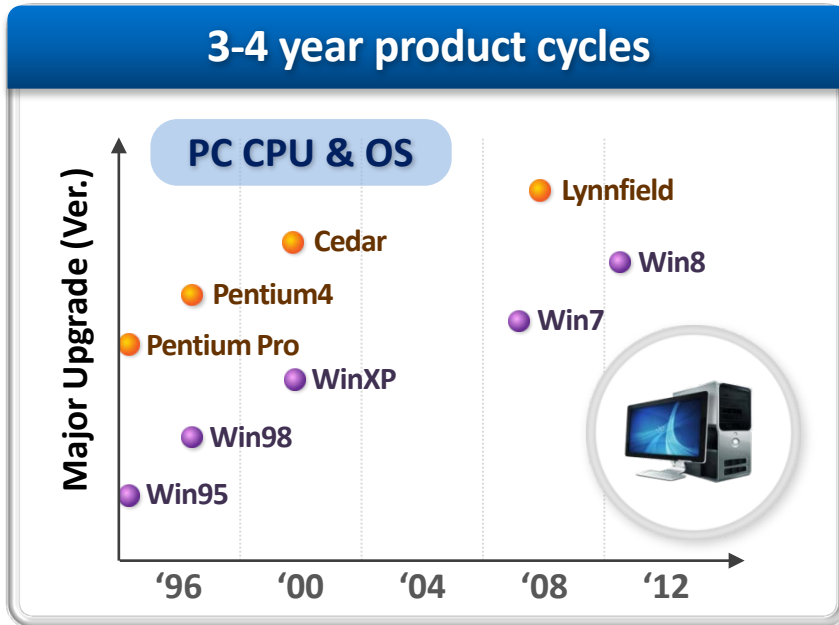


# Memory Market Evolution



(Source: isuppli, Samsung)

- Business cycle accelerates in mobile era



### PC DRAM

SDR → DDR → DDR2



### Mobile DRAM

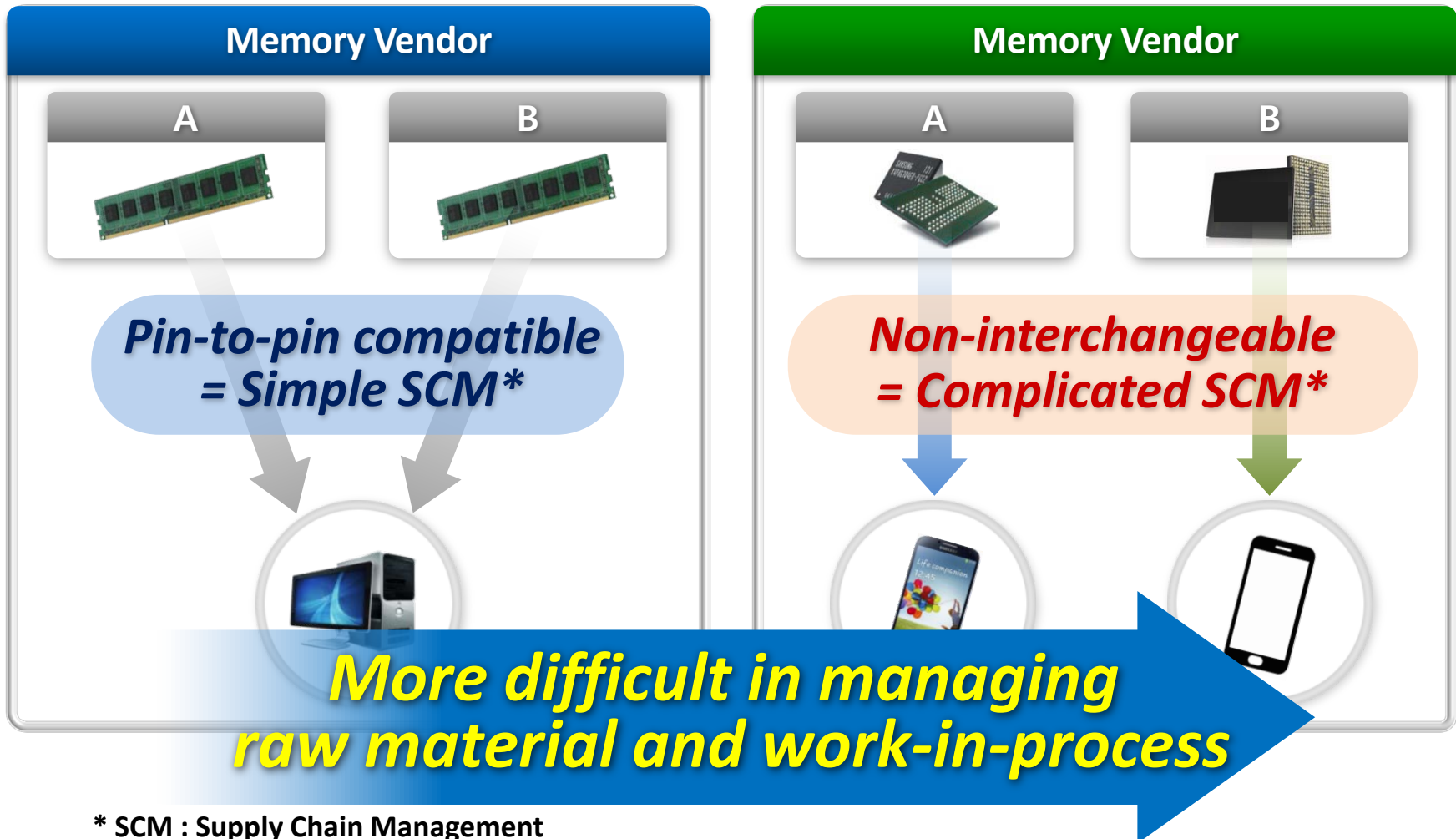
LP3 → LP4

**Faster standardization, development and enabling**

Changes every

# Product Compatibility

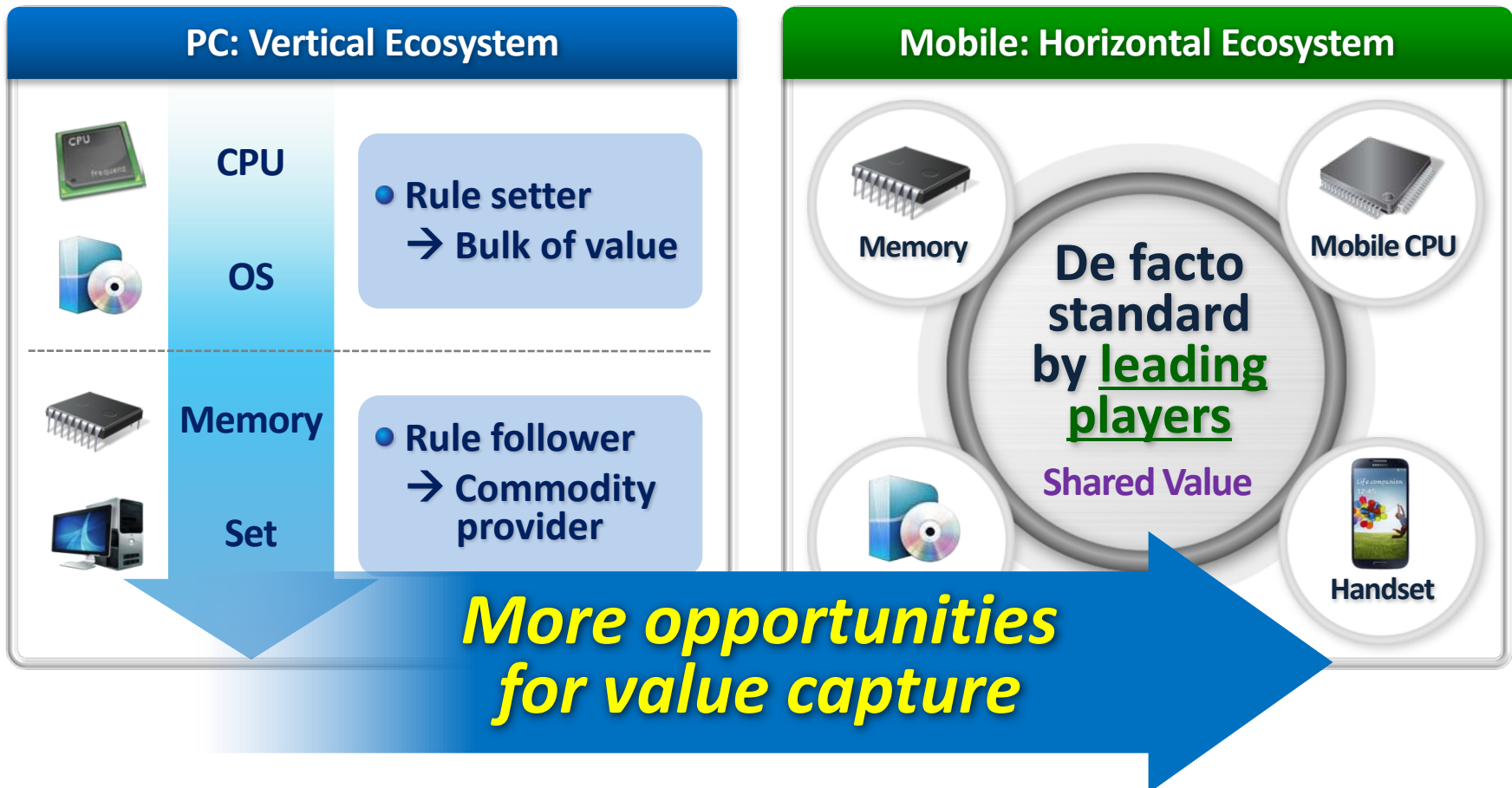
- Interchangeable → Customized



\* SCM : Supply Chain Management

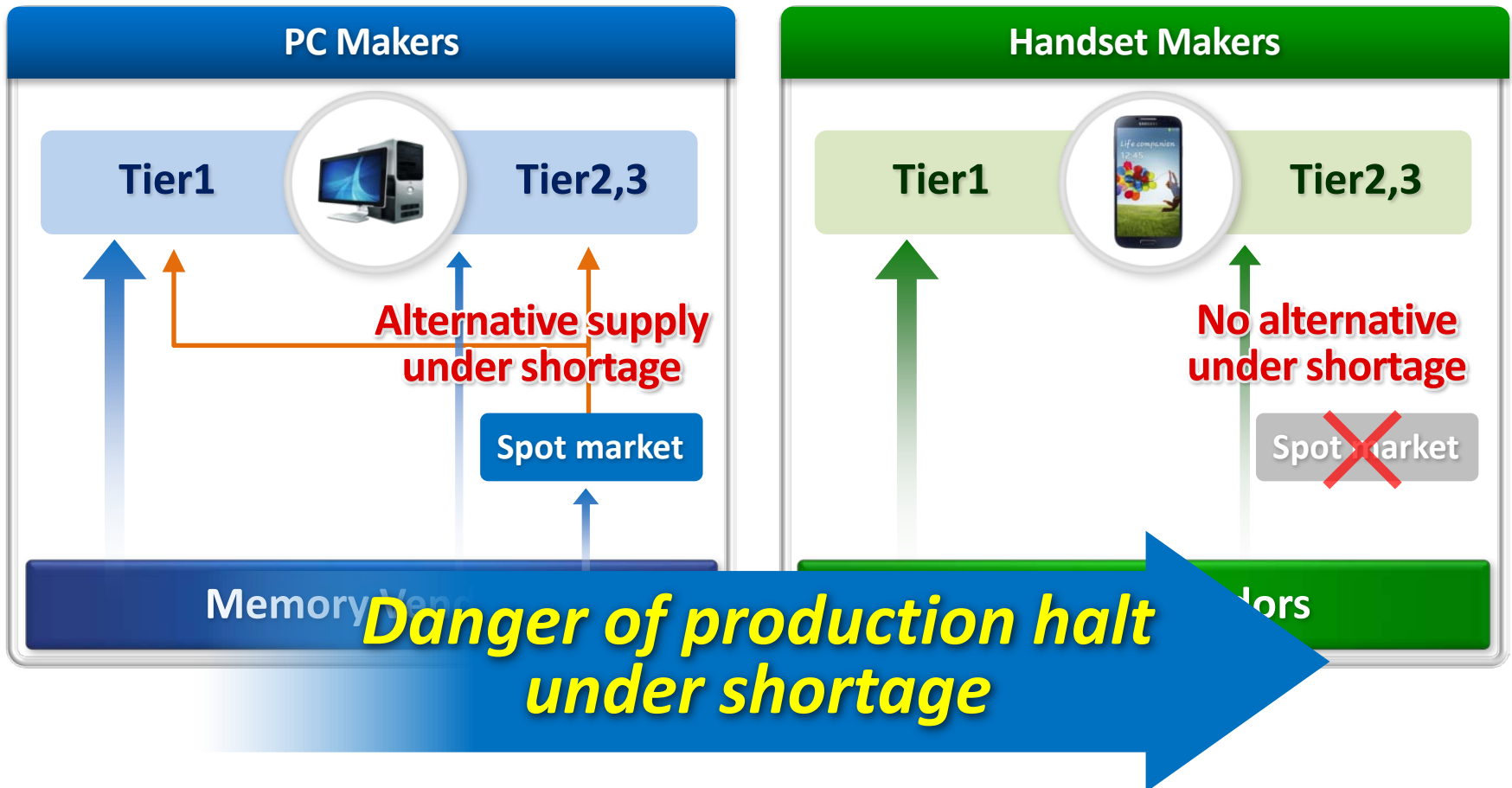


- The mobile value chain is more horizontal
  - Value more evenly distributed amongst key players

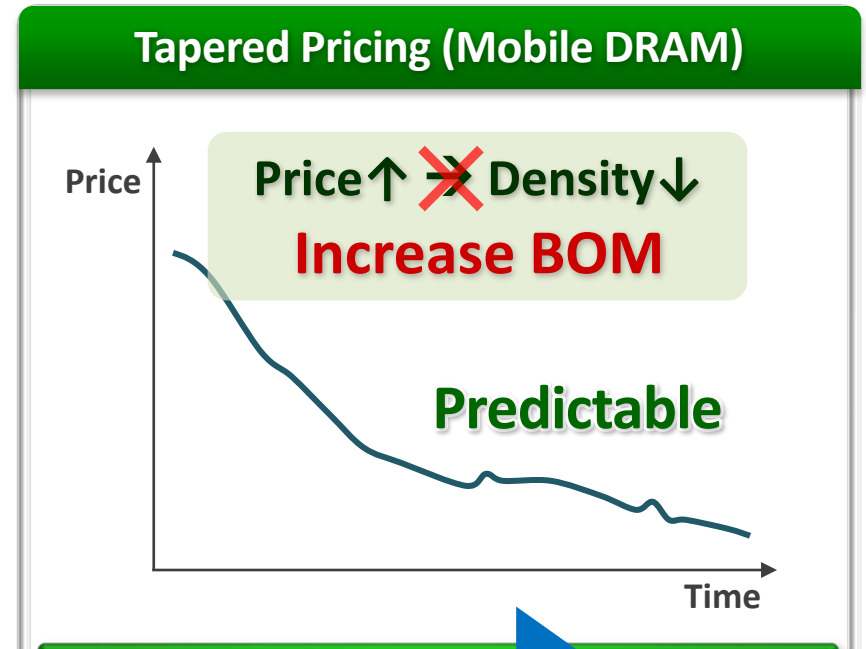
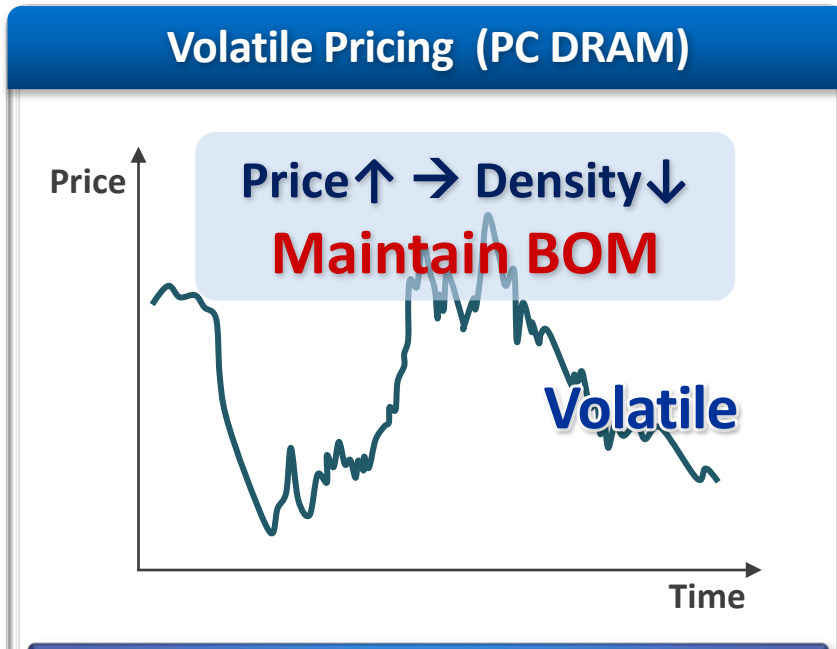


# Selective Relationship

- Supply interruptions possible during memory shortages



- “Tapered Pricing” for visible and predictable memory supply

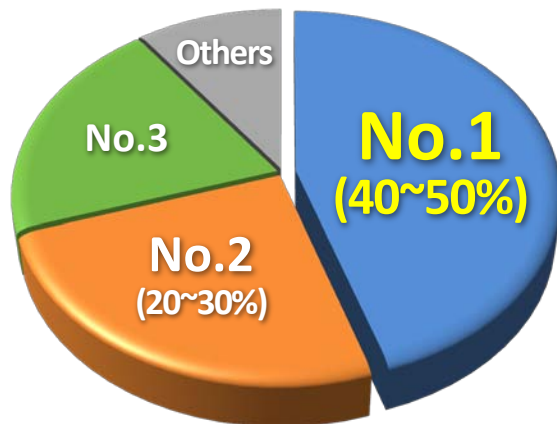


Commodity price **Predictable price and continued cost innovation required**

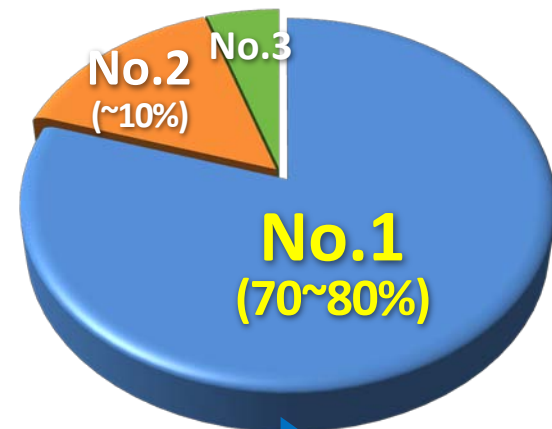
# Winner Takes All

- Design-in at each vendor, 1st mover takes all

Memory vendors' share  
for PC maker 'A'

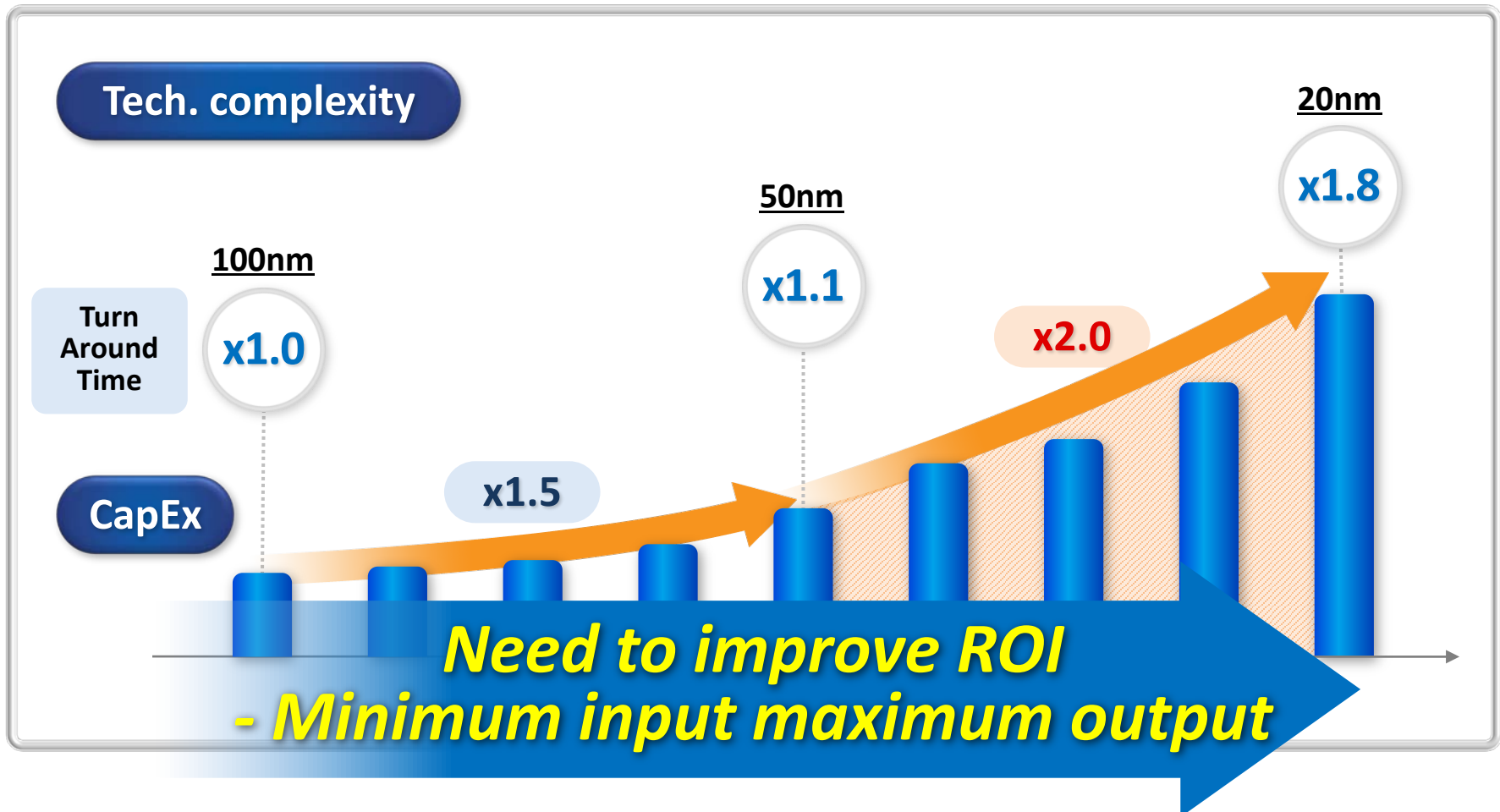


Memory vendors' share  
for handset maker 'B'



***Need to be a first mover,  
Not just fast follower***

- Technology complexity driving greater CapEx



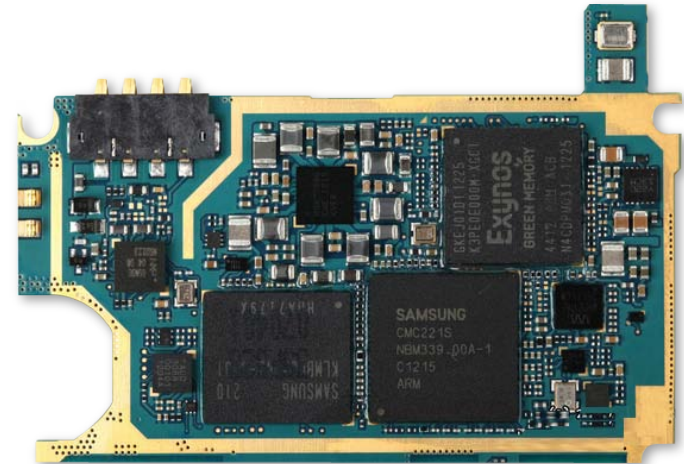
- PC memory is modular, but Mobile memory is embedded  
- Product quality becomes more important

Module type



**\$00** for DRAM mo

Embedded type



board

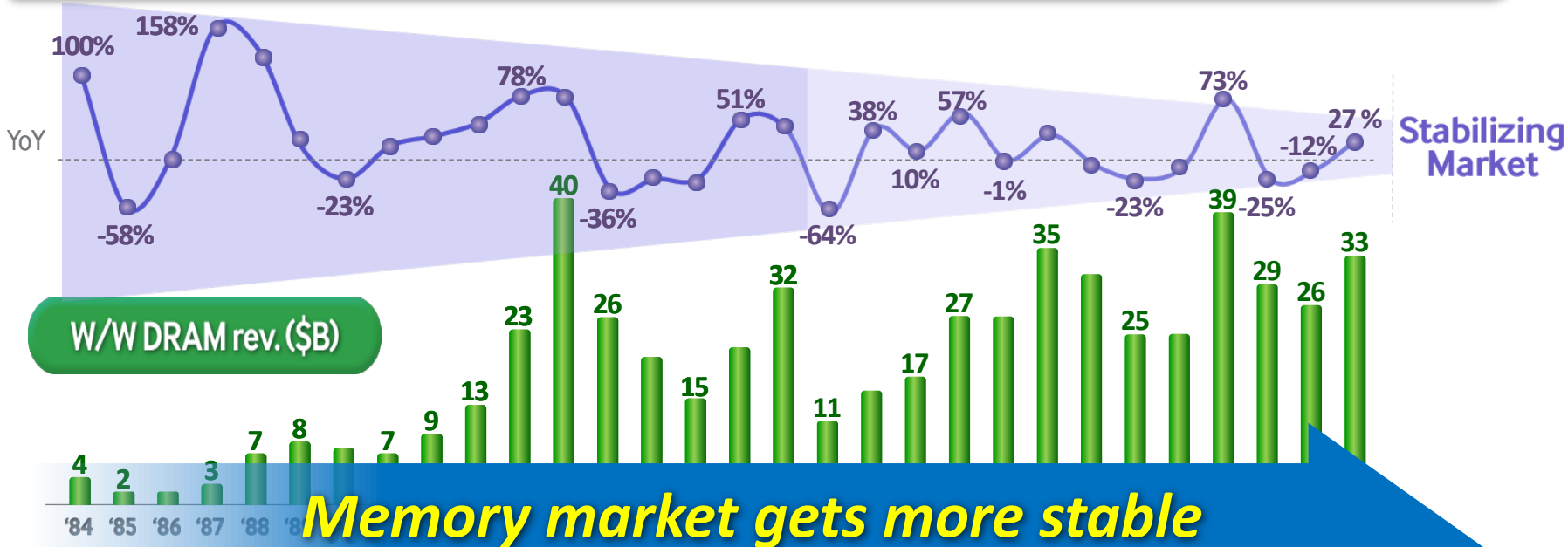
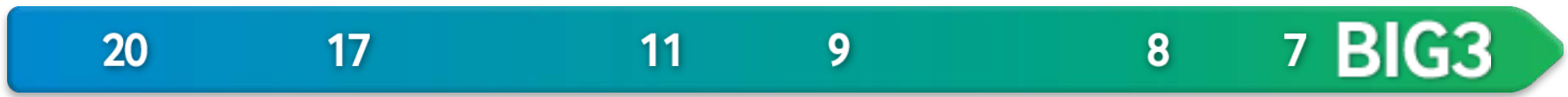
**High risk of  
RMA\* cost and lost business**

\* Return Material Authorization

# Memory Market

- Paradigm shift is reflected in memory market

# of DRAM Vendor



Stabilizing Market

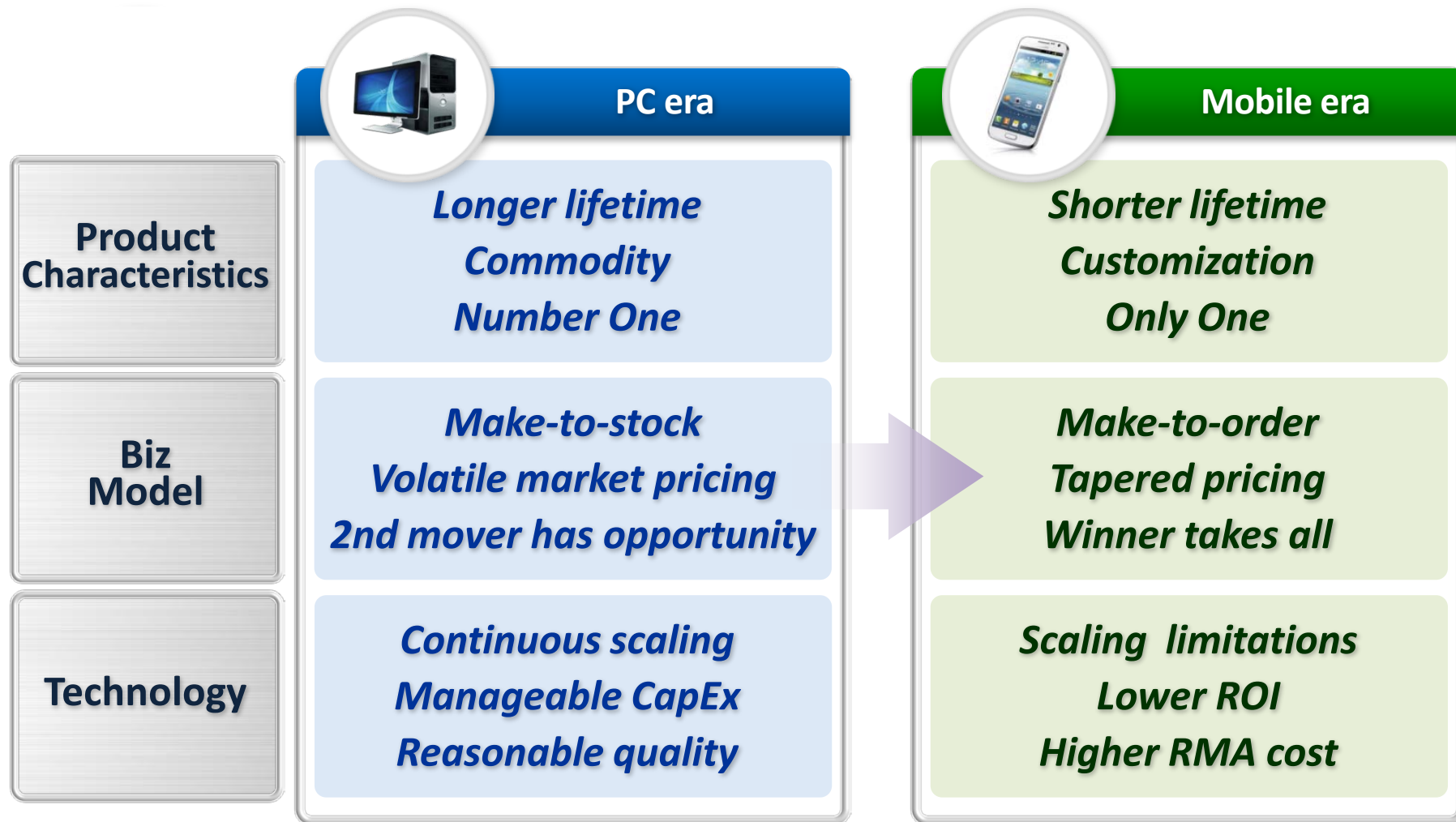
W/W DRAM rev. (\$B)

**Memory market gets more stable due to diminished players and PC DRAM portion**

(Source: isuppli)

# Paradigm Shift

- Radical change of business paradigm







# Strategic Direction

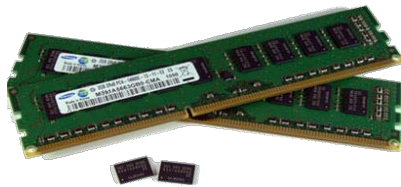
- Stay "One Step Ahead" as Eco-system Leader

# Solutions for One Step Ahead

- Green Memory
  - Value maximizing solution for datacenters

## 5th Generation

SAMSUNG  
GREEN  
MEMORY



**DRAM**

20nm class  
DDR4



**SSD**

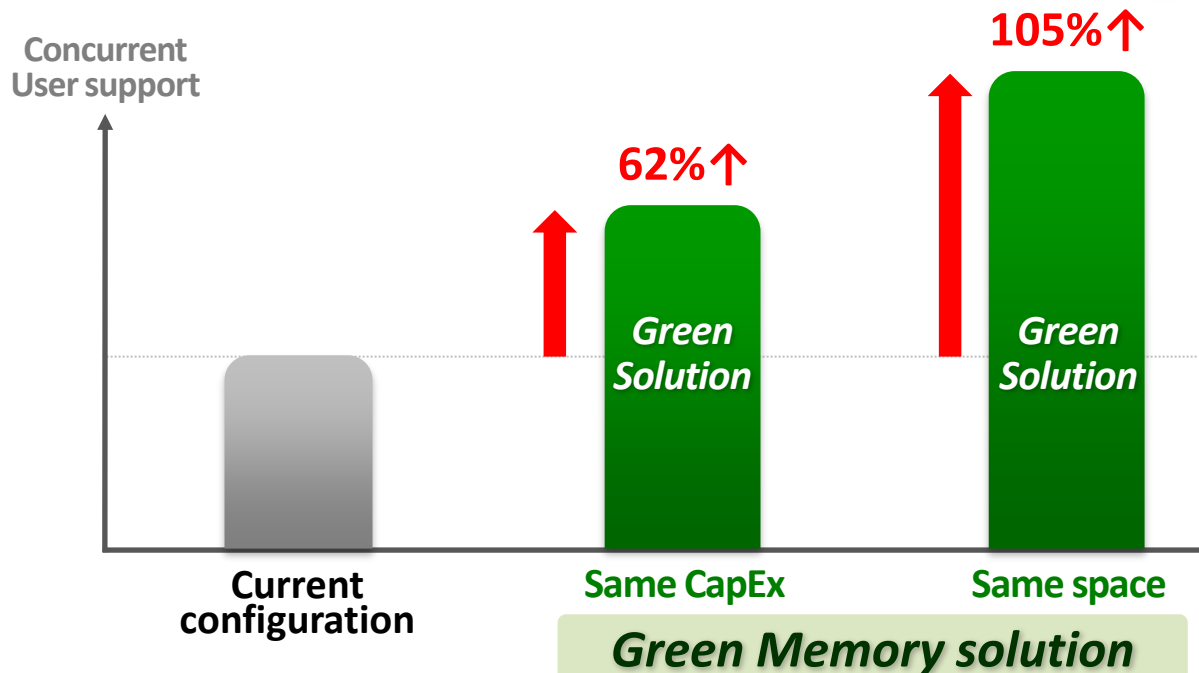
10nm class  
PCIe SSD

# Green Memory Benefits

- Combined benefits of Green Memories provide up to 105% greater operational efficiency

## 5th Generation

SAMSUNG  
GREEN  
MEMORY



# Creating Shared Value

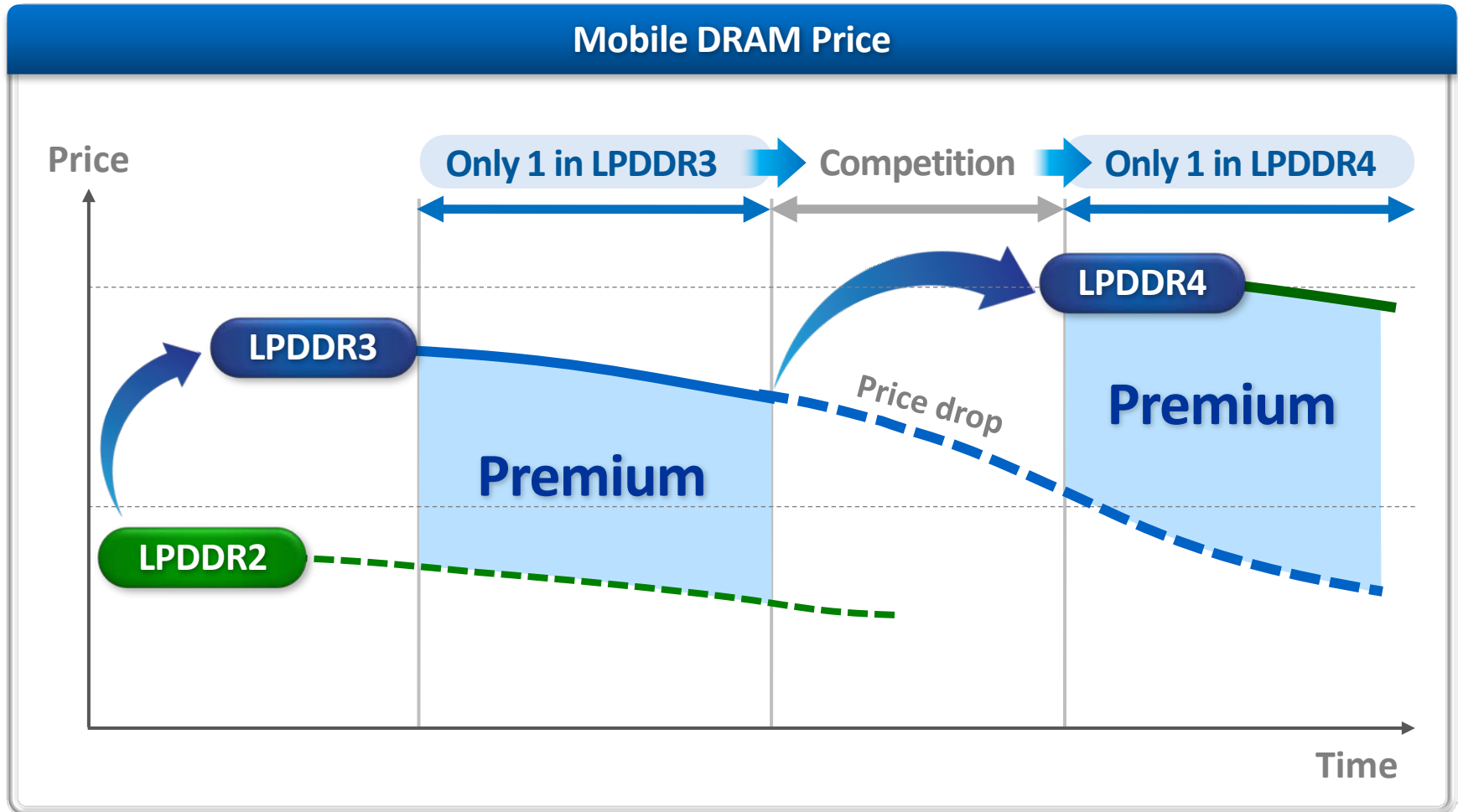
- Creating \$3 Billion value



\* Assumes '14 W/W Server & high-end storage change to 100% Green Memory

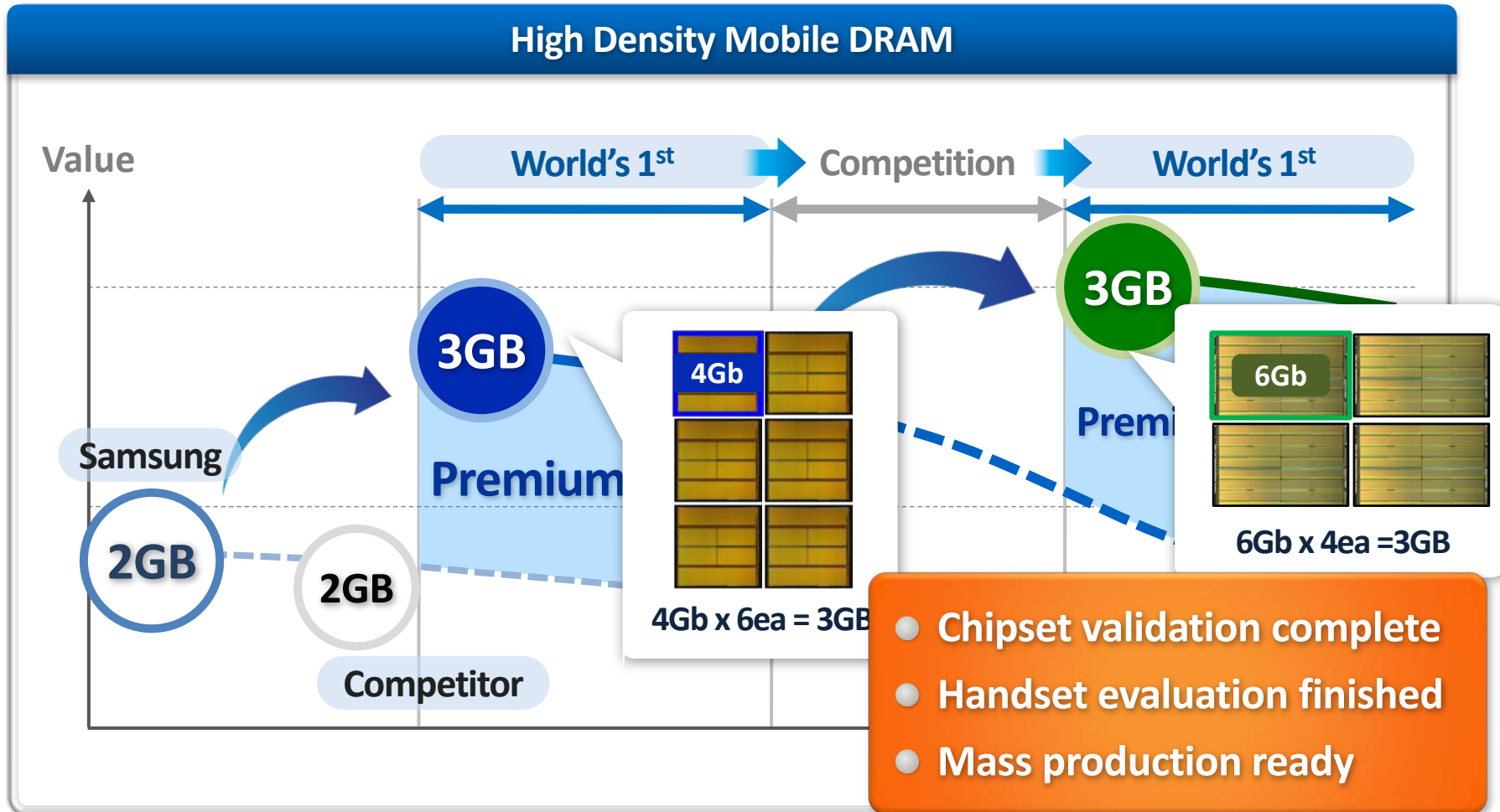
# One Step Ahead

- Continue to secure price premium via tech leadership



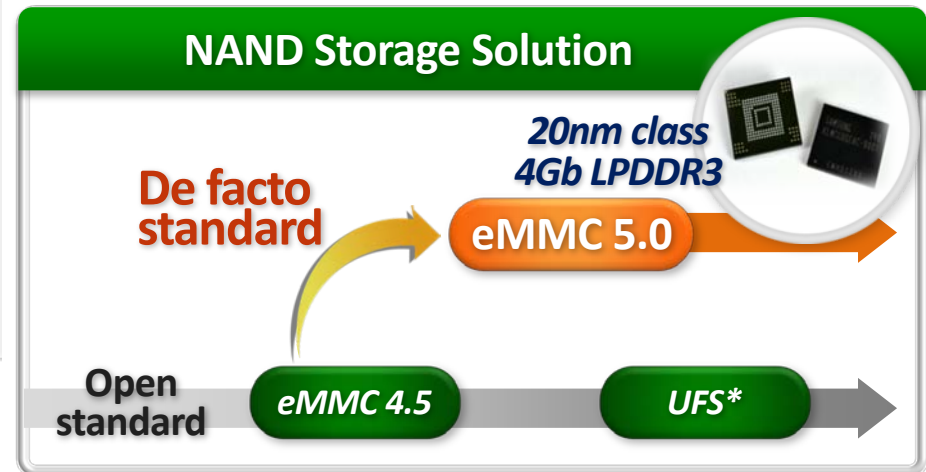
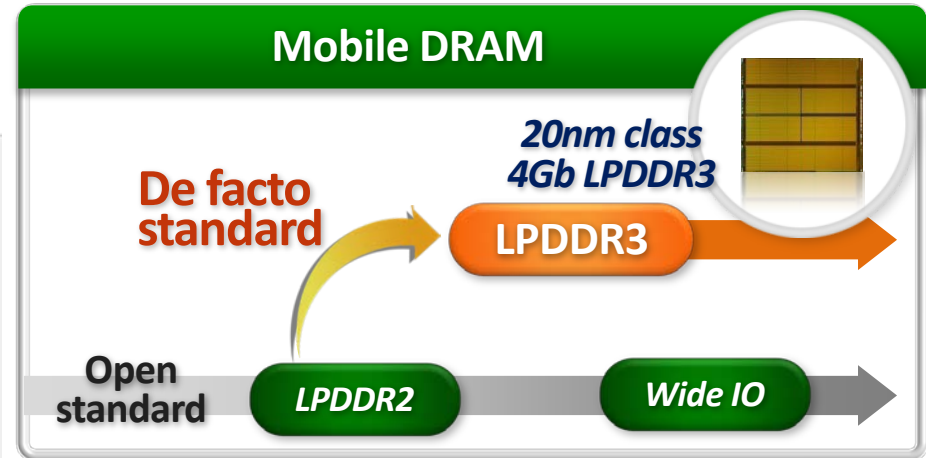
# One Step Ahead

- Continue to secure price premium via tech leadership



# De facto Standard

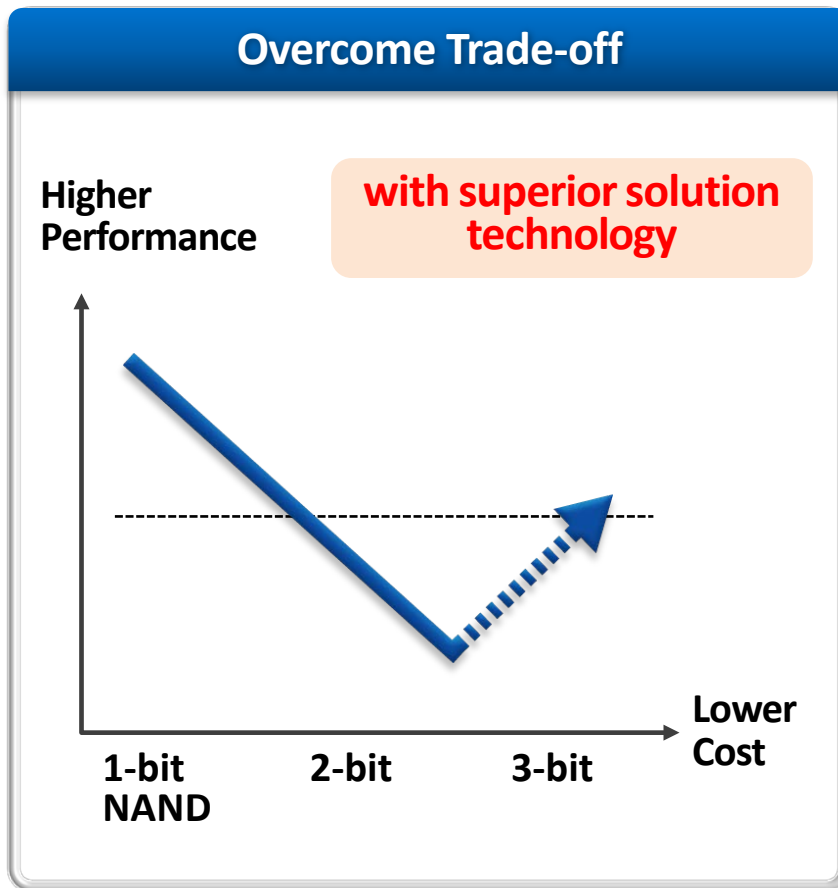
- Cultivate de facto standard via ecosystem leadership



\*Universal Flash Storage

# Enabling Tech for One Step Ahead

- World's first 3-bit NAND flash SSD
  - Comparable performance at a value price



840 ('12)  
840 EVO ('13)



“I’m continually amazed by Samsung's rise to power in the SSD space.” - Anandtech -

“The performance increase is profound. Writes shoot up, while the read results shoot up as well.”  
- Tom's Hardware -



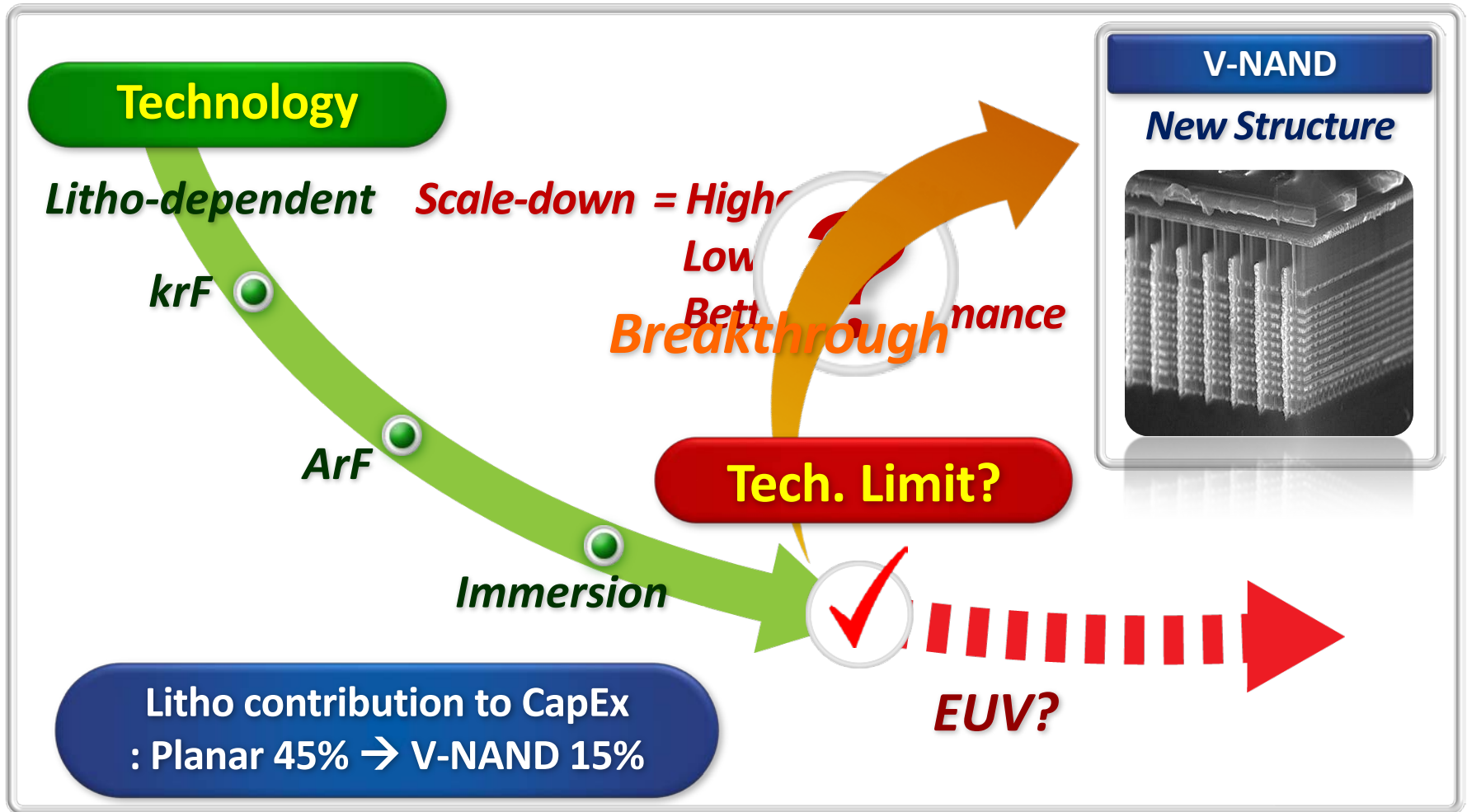


# Strategic Direction

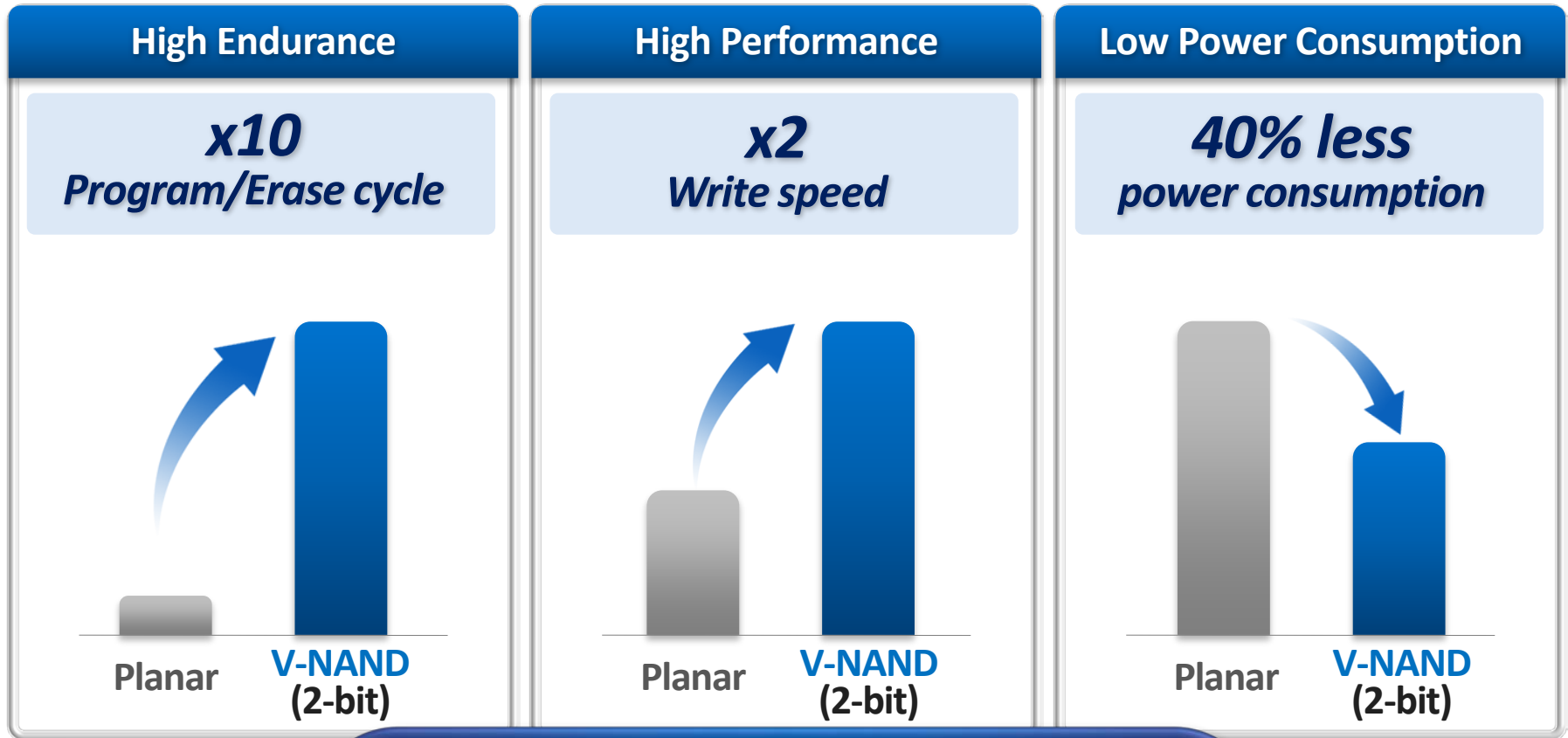
- **Exploit Technology Breakthroughs**

# Technology Paradigm Shift

- Memory process technology no longer lithography dependent



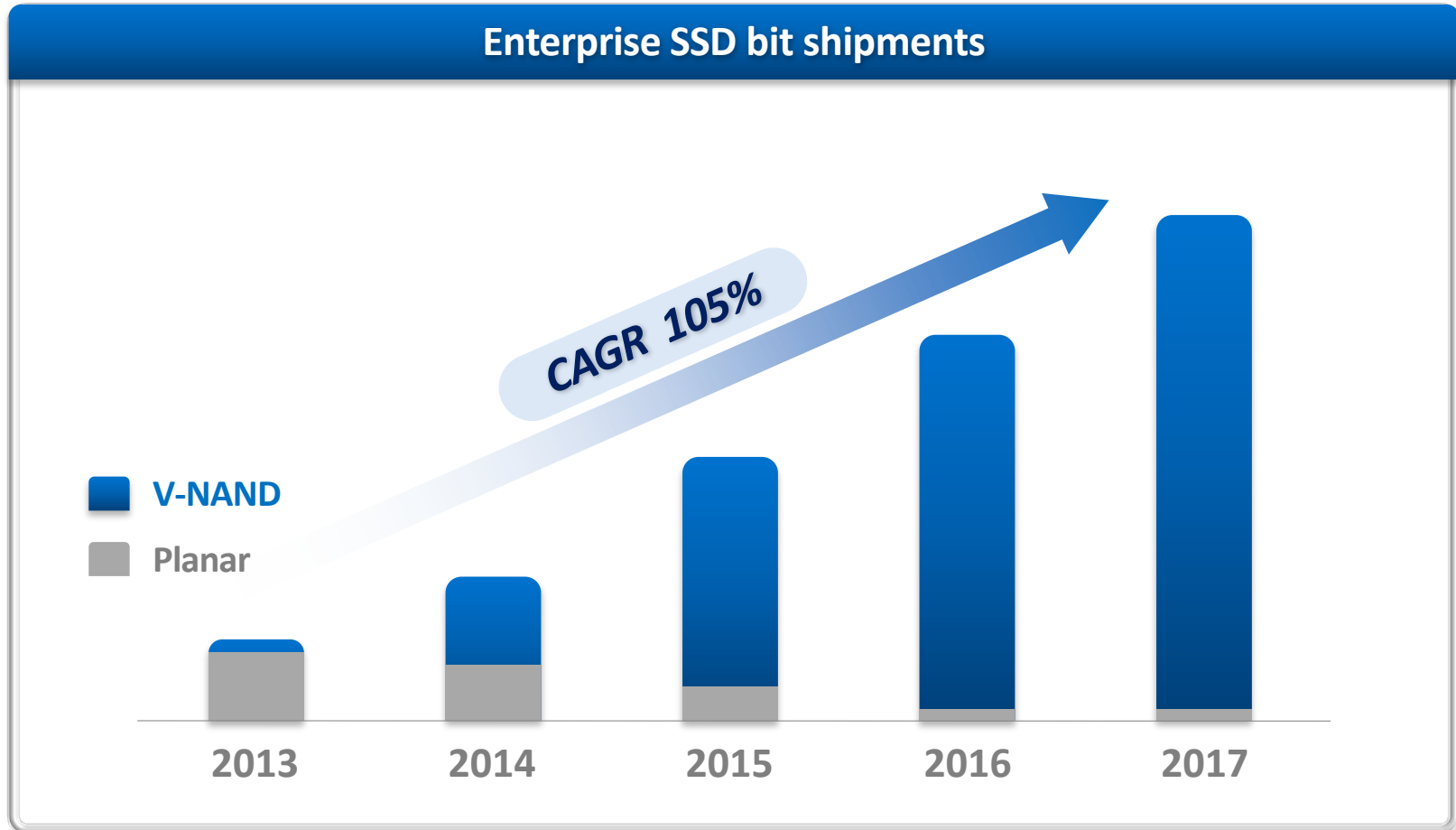
# Value Proposition of V-NAND



**Shipping to datacenter customers and receiving positive feedback**

# V-NAND in Enterprise SSD

- V-NAND will change the server storage industry



- V-NAND can be the most cost effective solution

**V-NAND**  
*Premium Quality*



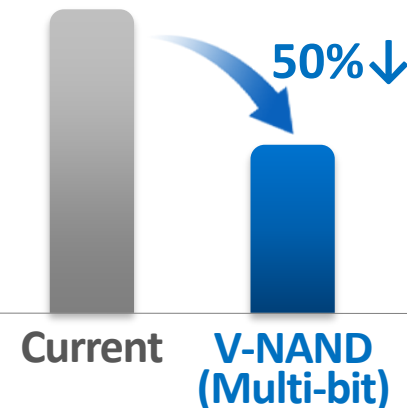
**Samsung's**  
**Multi-Bit Solution**  
**Technology**

2-bit → 3-bit → ...

## Multi-bit V-Solution

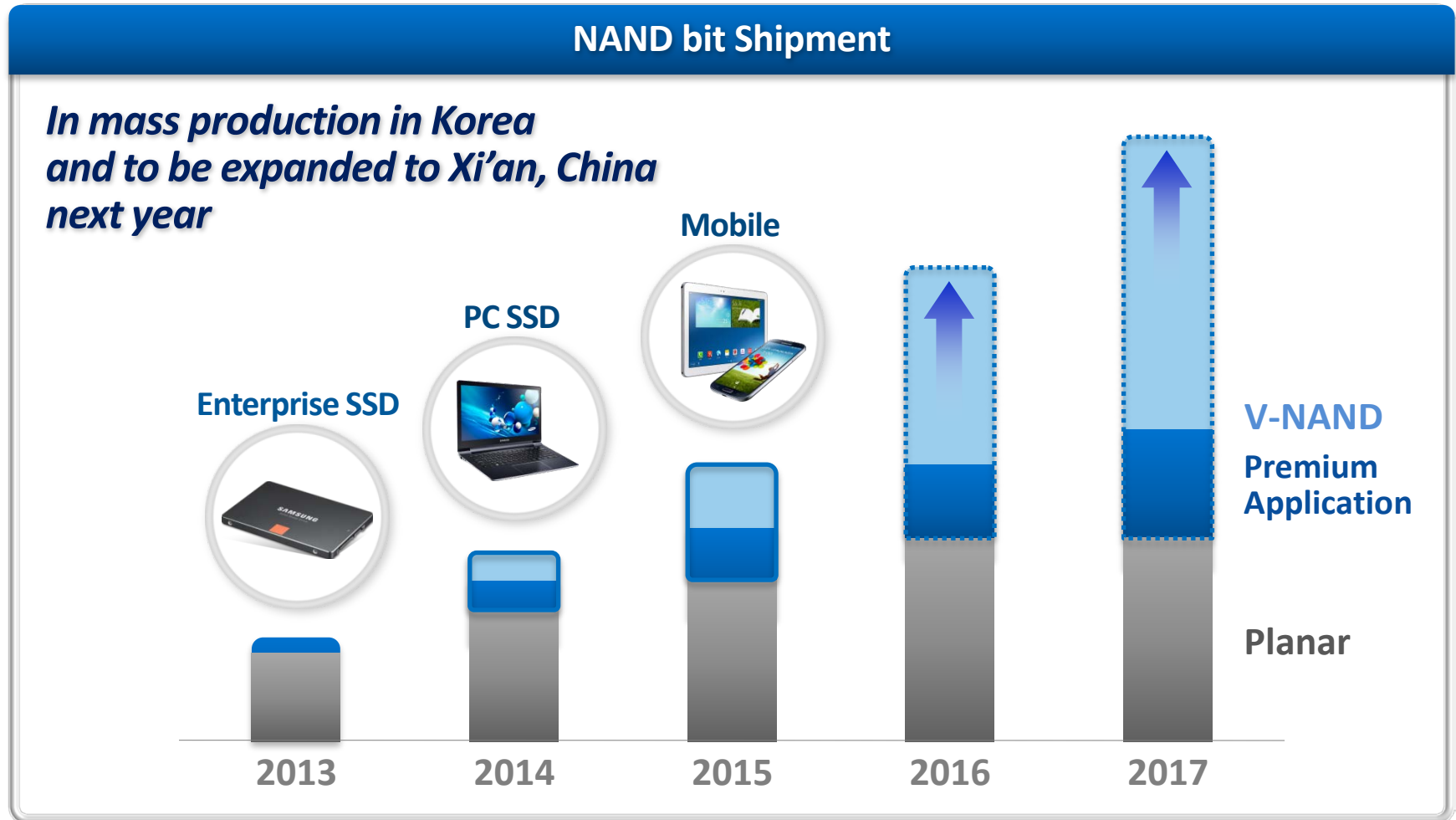
Most Cost Competitive Solution

### SSD Price



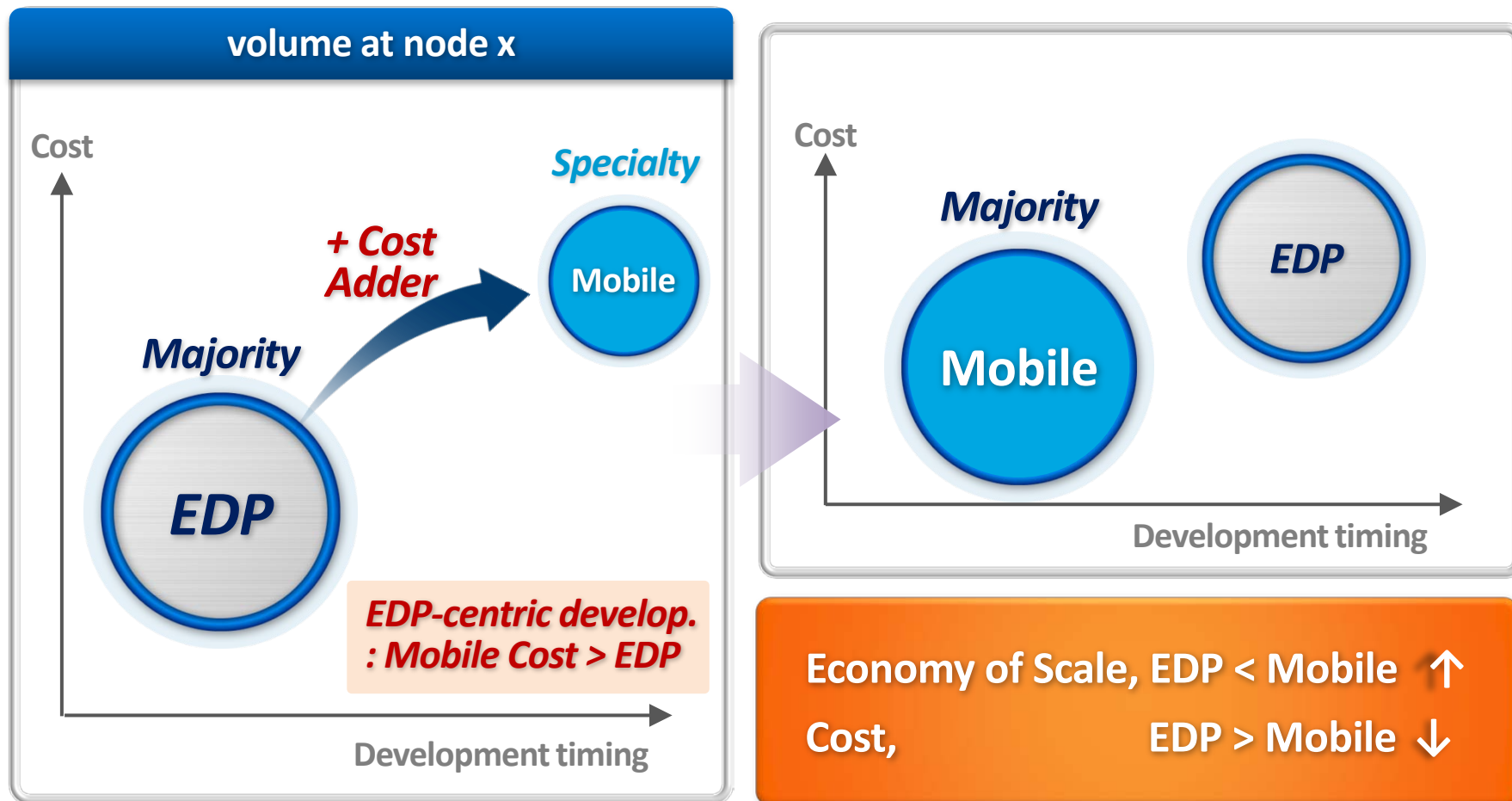
# Creating new demand with V-NAND

- V-NAND will boost NAND demand



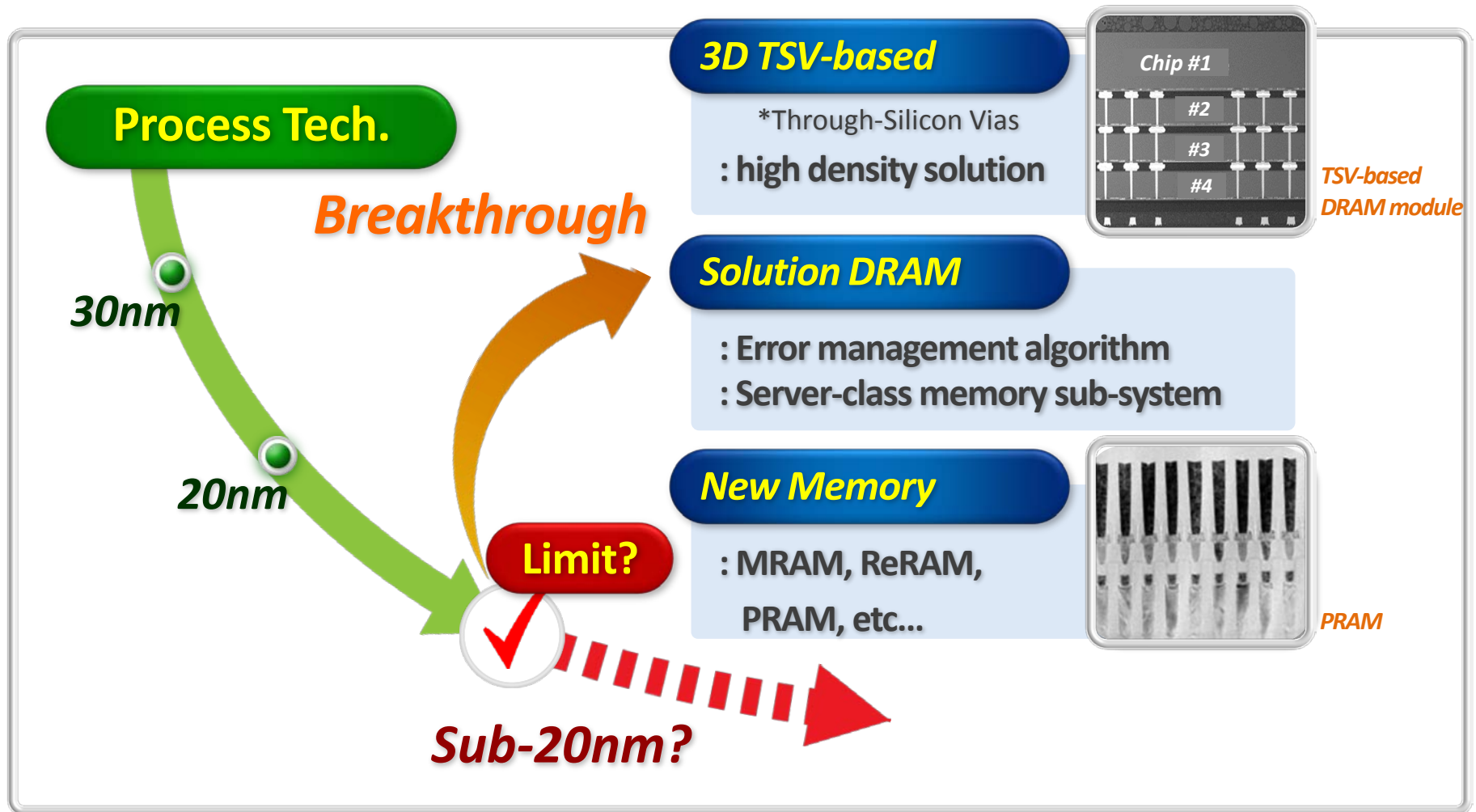
# How to Sustain DRAM Growth?

- Leading technologies will be applied to mobile first as necessitated by increased scale



\* EDP : Electronic Data Processing

- Three-pronged approach to sub 20nm breakthrough







# Strategic Direction

- **Extend Core Competencies**

- To extend core competencies...



## Organization

More customer and market-oriented  
Reinforcing solution engineers



## Capabilities

System knowledge  
Competitive SCM, Quality

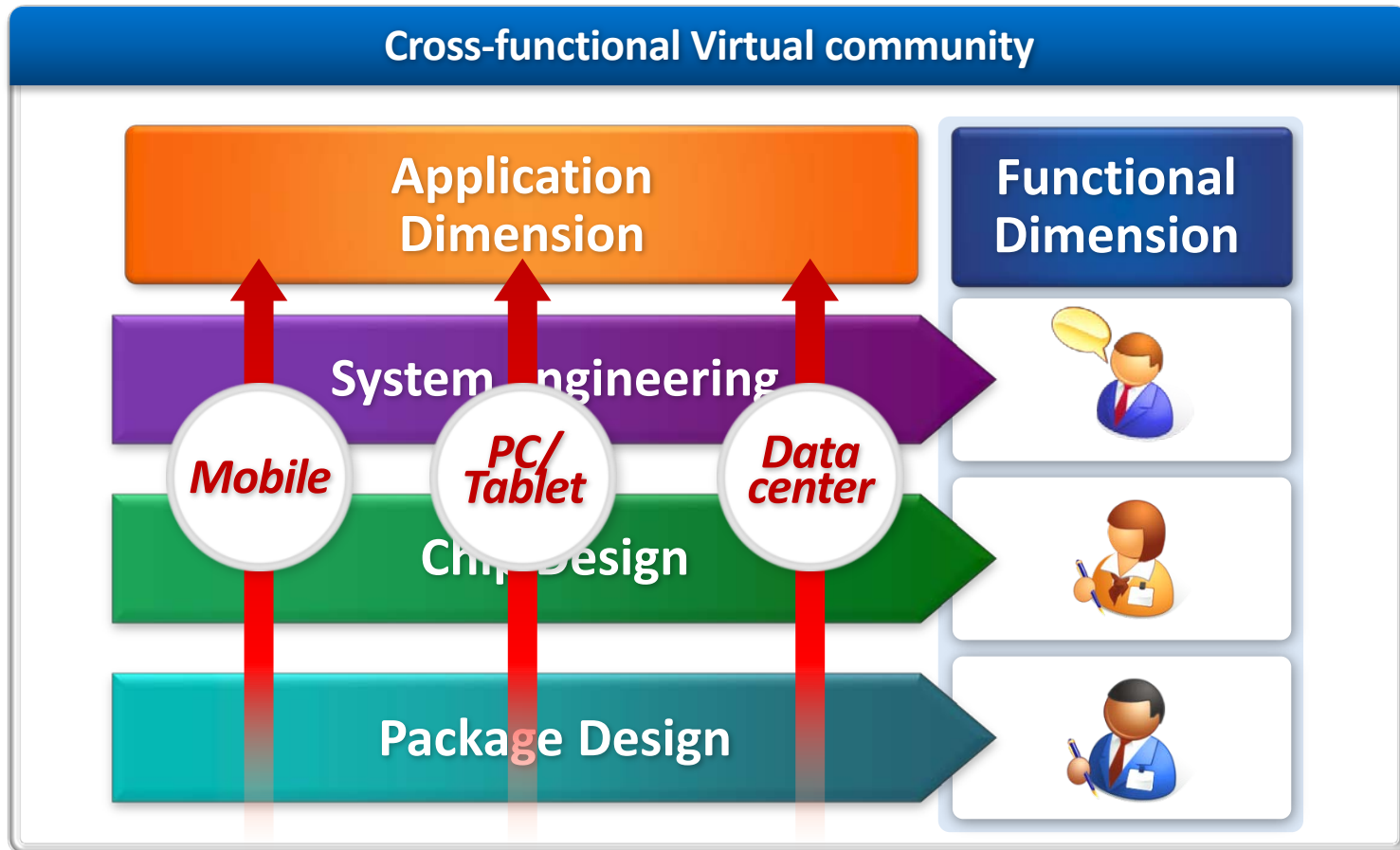


## Collaboration

Open innovation

# Re-align Organization

- Establish application/market-oriented organization

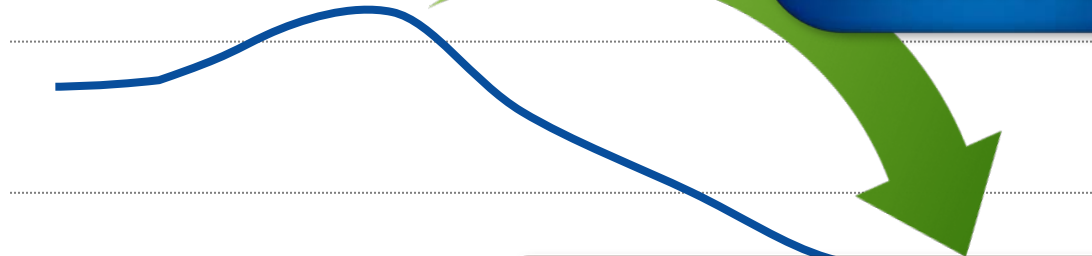


- Samsung's Server DRAM, Top-notch quality

## Low Server DRAM fraction defective

- Statistical methodology, Big data mining
- Root-cause finding through cross-functional collaboration

[ppm]

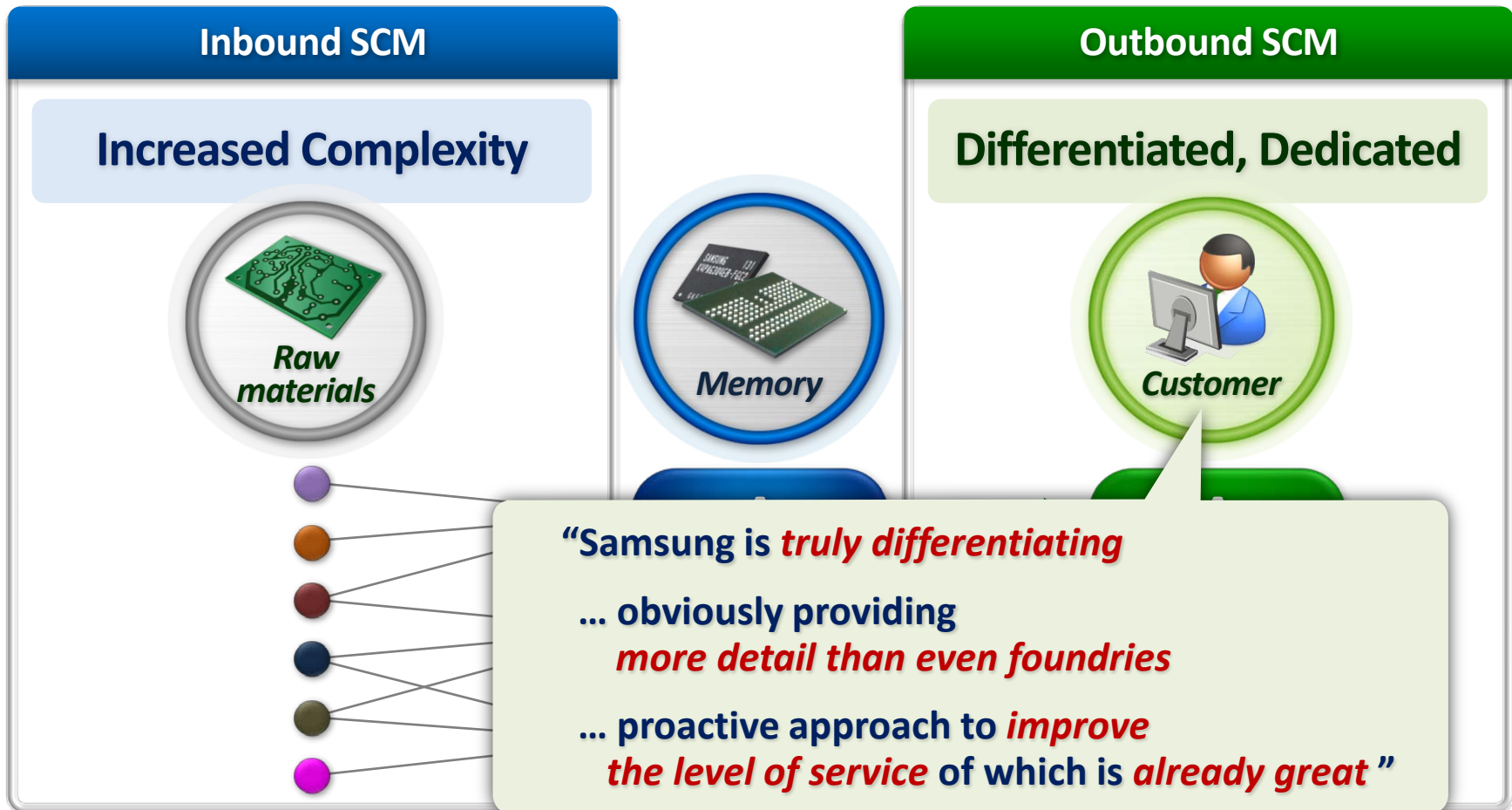


x10 lower  
defective rate

Top-notch quality

→ Leverage for  
competitive mobile DRAM

- Right product, time and place through improved SCM
  - Transformation into manufacturing service provider



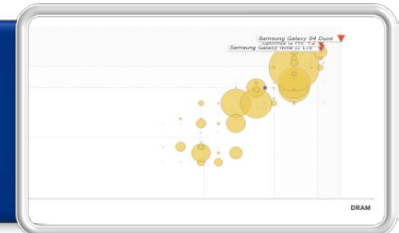
- Smart online service & support



Customer

**Information**

Smartphone trend



**Customize**

Smart architecture design tool



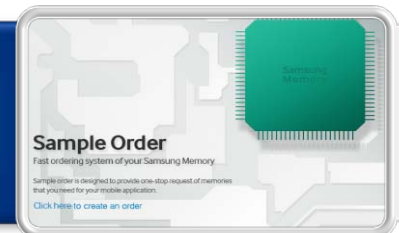
**Recommend**

Alignment with memory solution



**Sample Request**

Sample order and feedback



- Improve solution development capability



# More Values via Open Innovation

- System, Solution and Software to unlock value



**System Knowledge**  
→ Identify opportunities



**Solution Engineering**  
→ Create opportunities



**Software Capability**  
→ Maximize opportunities

## M&A

- Nvelo (SSD S/W), etc.

## Equity Investment

- Storage system start-ups

## Overseas R&D Center

- Tech. sensing, Product enabling

## Academia Collaboration

- Memory system architecture



- To align with the paradigm shift...



# Transformation in progress...

Unpredictable  
& Fluctuating Biz



Stable & Steady  
Growth





# Thank You