Nanya Technology

Morgan Stanley Asia Corporate Day 2017

Presentation to Investors & Analysts, September 4th-5th, 2017

Dr. Pei Ing Lee, President & Spokesman

Safe Harbor

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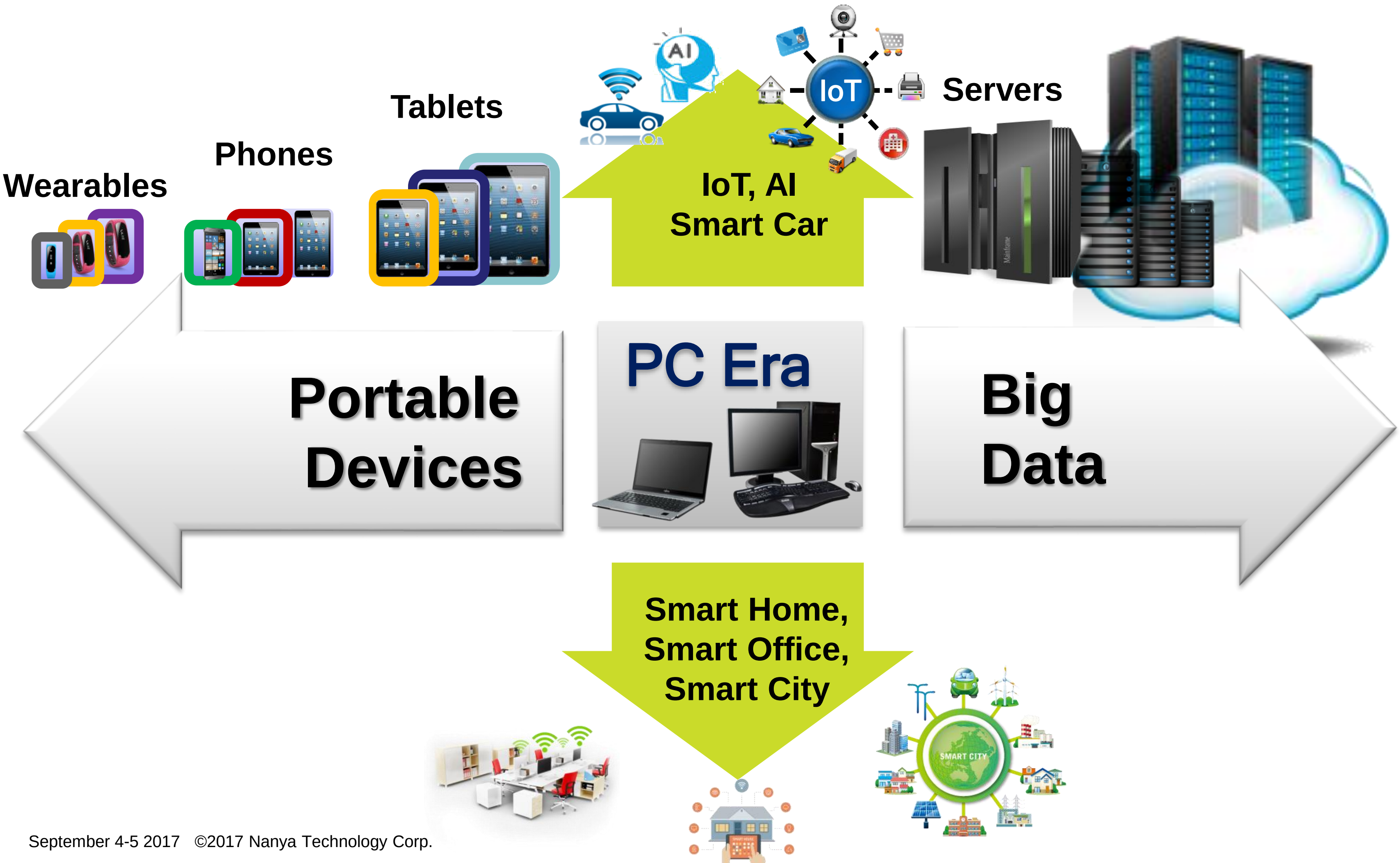
Outline

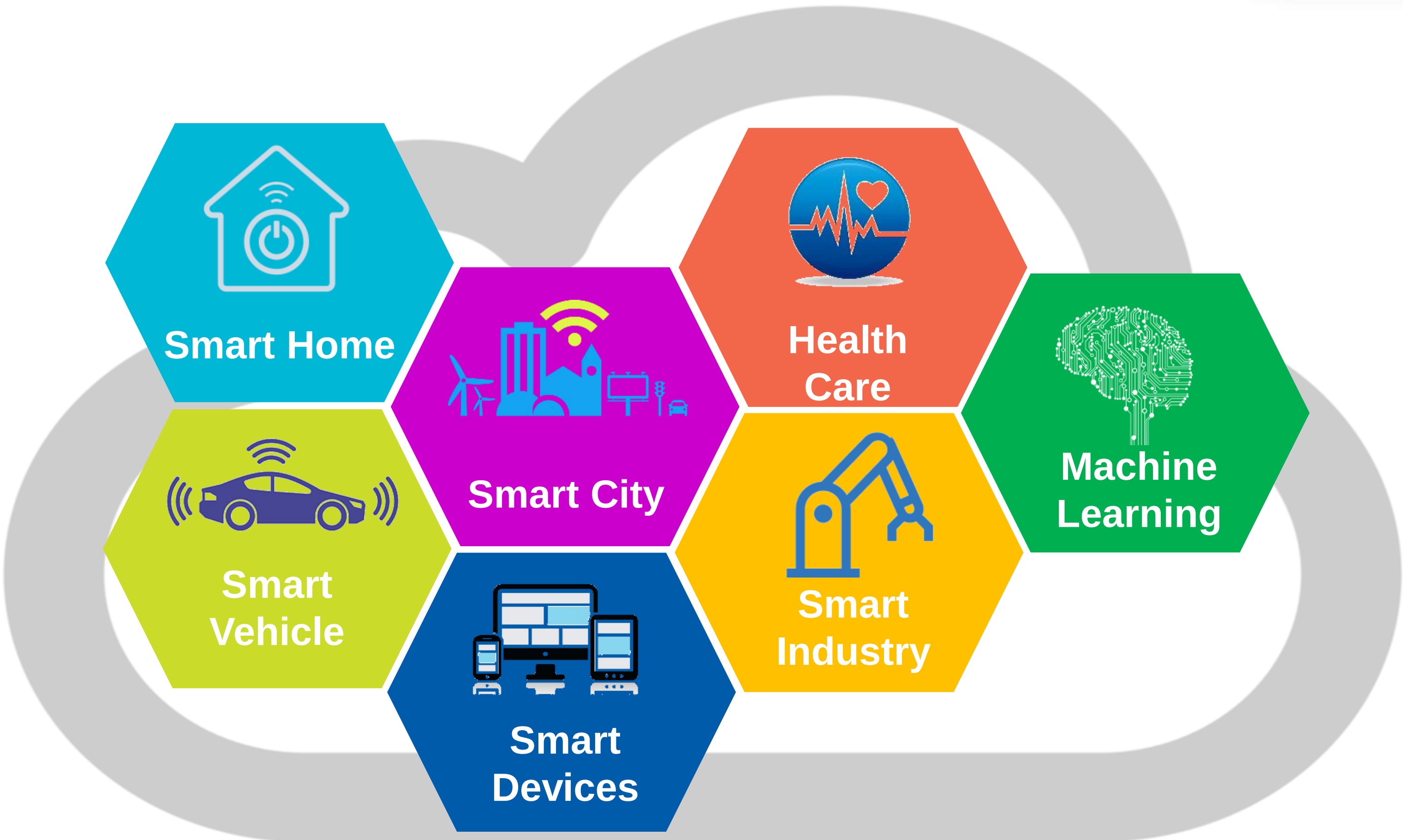
01.	**DRAM Industry Landscape**
02.	NTC Overview
03.	Business Strategy

DRAM Essential to Electronic Devices

- Diversified applications create segmented opportunities

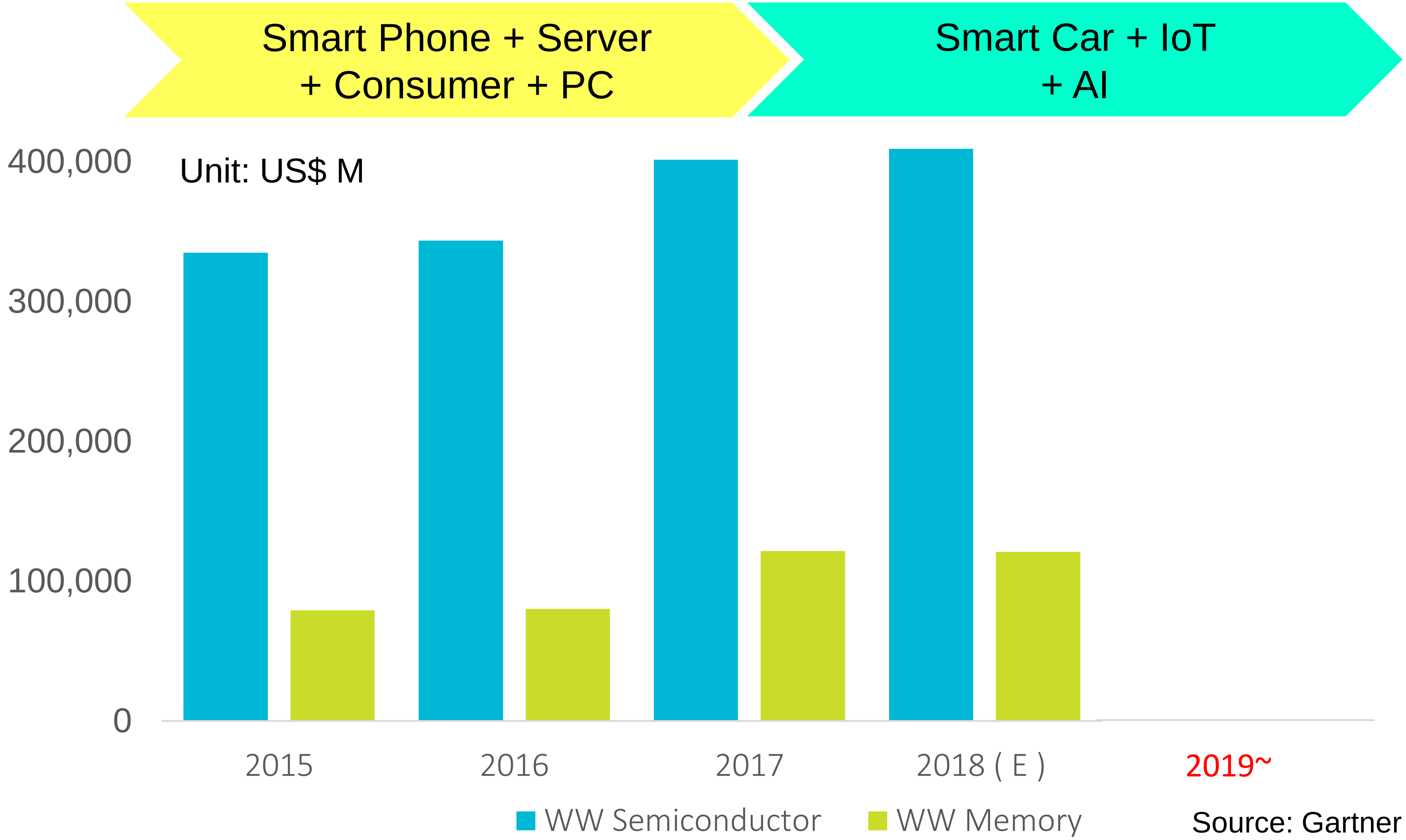


Vigorous Development of New Data Era



- New data era has been expediting the proliferation of semiconductor
- Memory (DRAM and NAND) plays as key semiconductor components

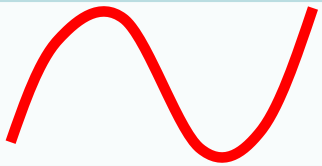
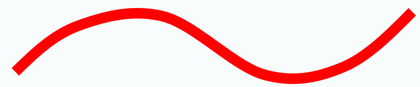
Strong Momentum of Semiconductor Industry



Source: Gartner

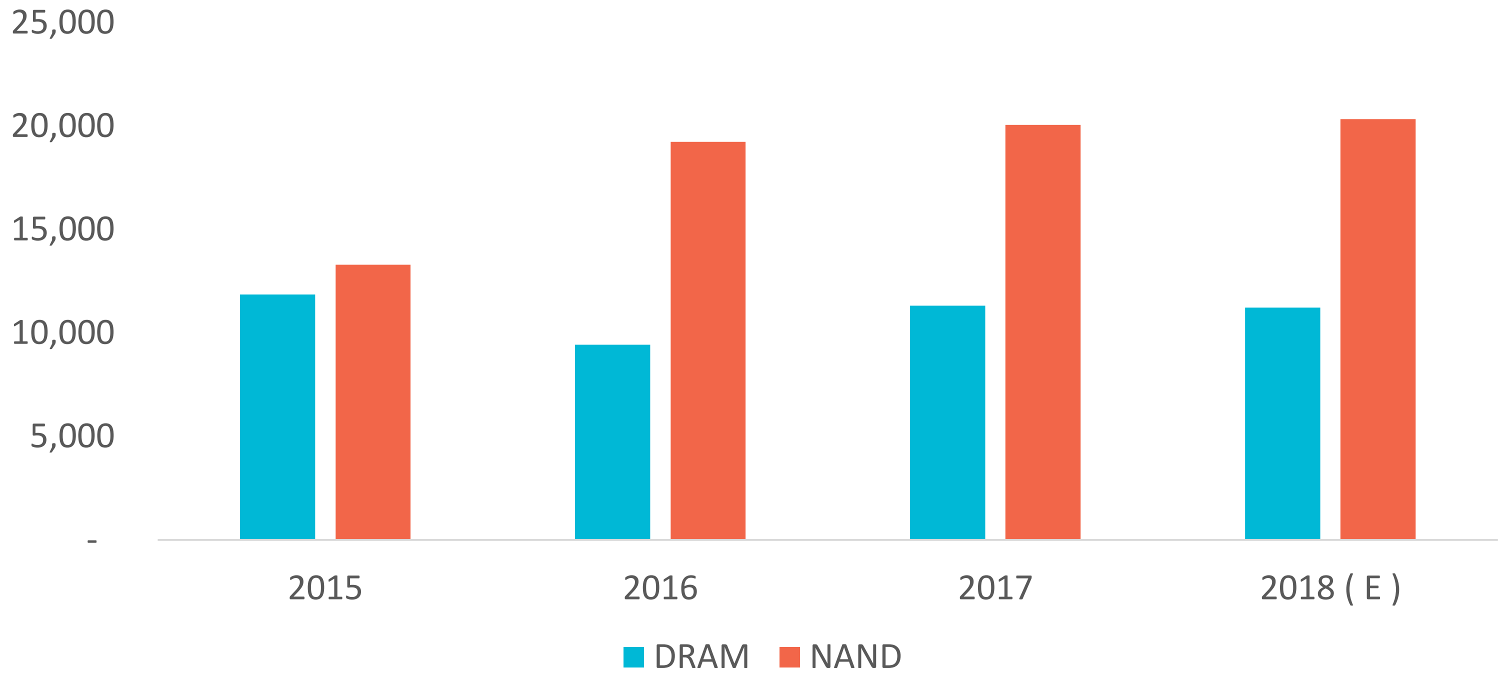
- In 2017, 17% YoY and US$401.4B revenue of semiconductor is forecasted
- In 2017, 52% YoY and US$121.7B market size of memory is predicted

Stable DRAM Industry Structure

		~2013	2013~2017	2018~
Market	ASP Fluctuation			
Supply	Supplier	>40 (Keen Competition)	3 Major + 1 Medium + 2 Small (Oligopoly)	3 Major + 1 Medium + 2 Small (New comers facing enormous barrier)
	Technology, Cost & Product	Cost down due to rapid technology conversion	Product portfolio diversified and technology conversion slowed down	New generation product and cost reduction continue slowing down
Demand	Driving Force	PC	Smart Phone, Server, Consumer , PC	Smart Phone, Server, Consumer, PC, Smart Car, IoT, AI
	Product Spec.	Standard module	eMCP, Component, Module, SiP	eMCP、Component, Module, SiP, TSV

Memory Capex Allocation Shift

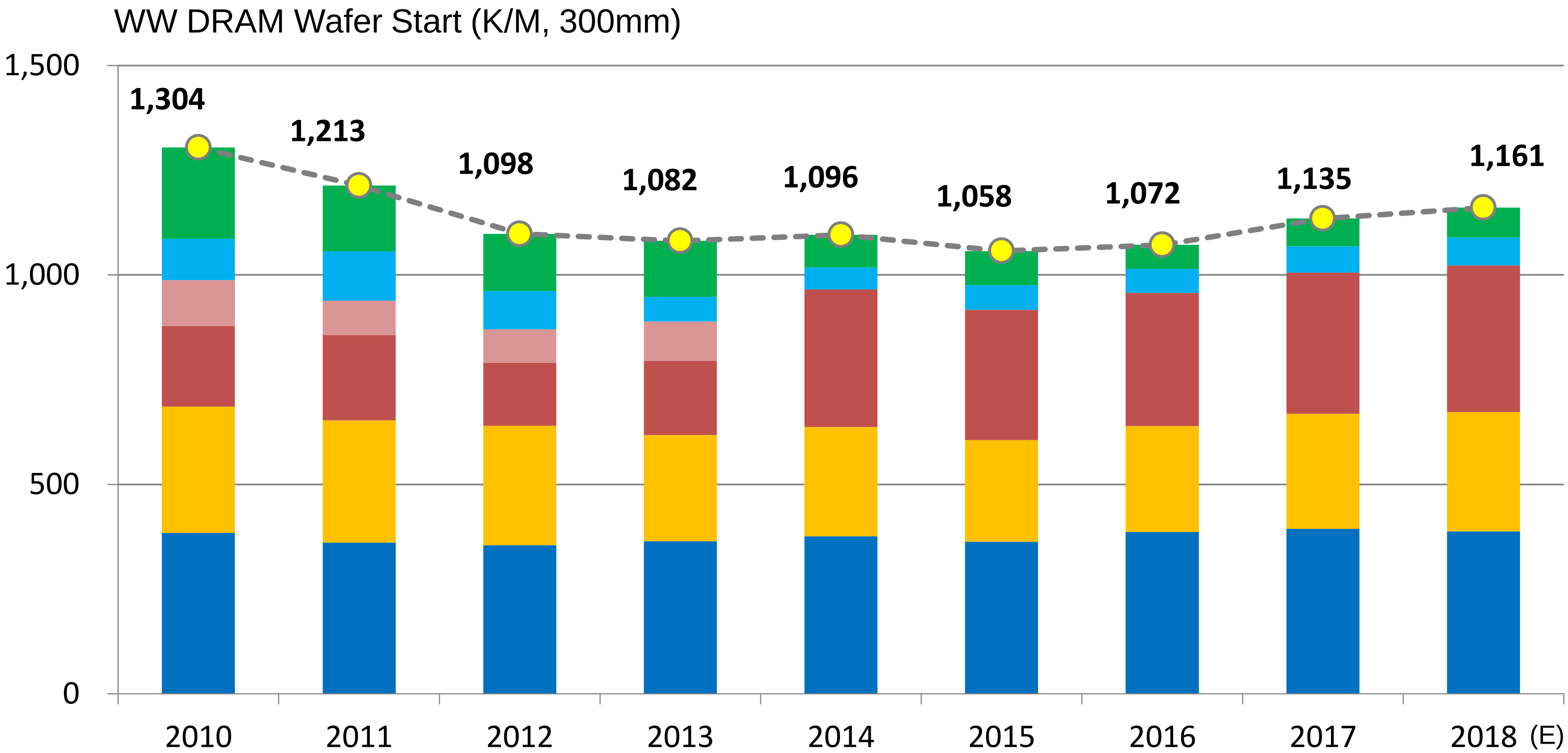
Unit: US$ M



Source: Gartner

- Significant NAND capex expected for 3D NAND
- DRAM capex mainly for technology conversion and maintaining current capacity level
- Capacity non-exchangeable between NAND and DRAM
- Annual bit growth forecast: DRAM 20%~25%, NAND>45%

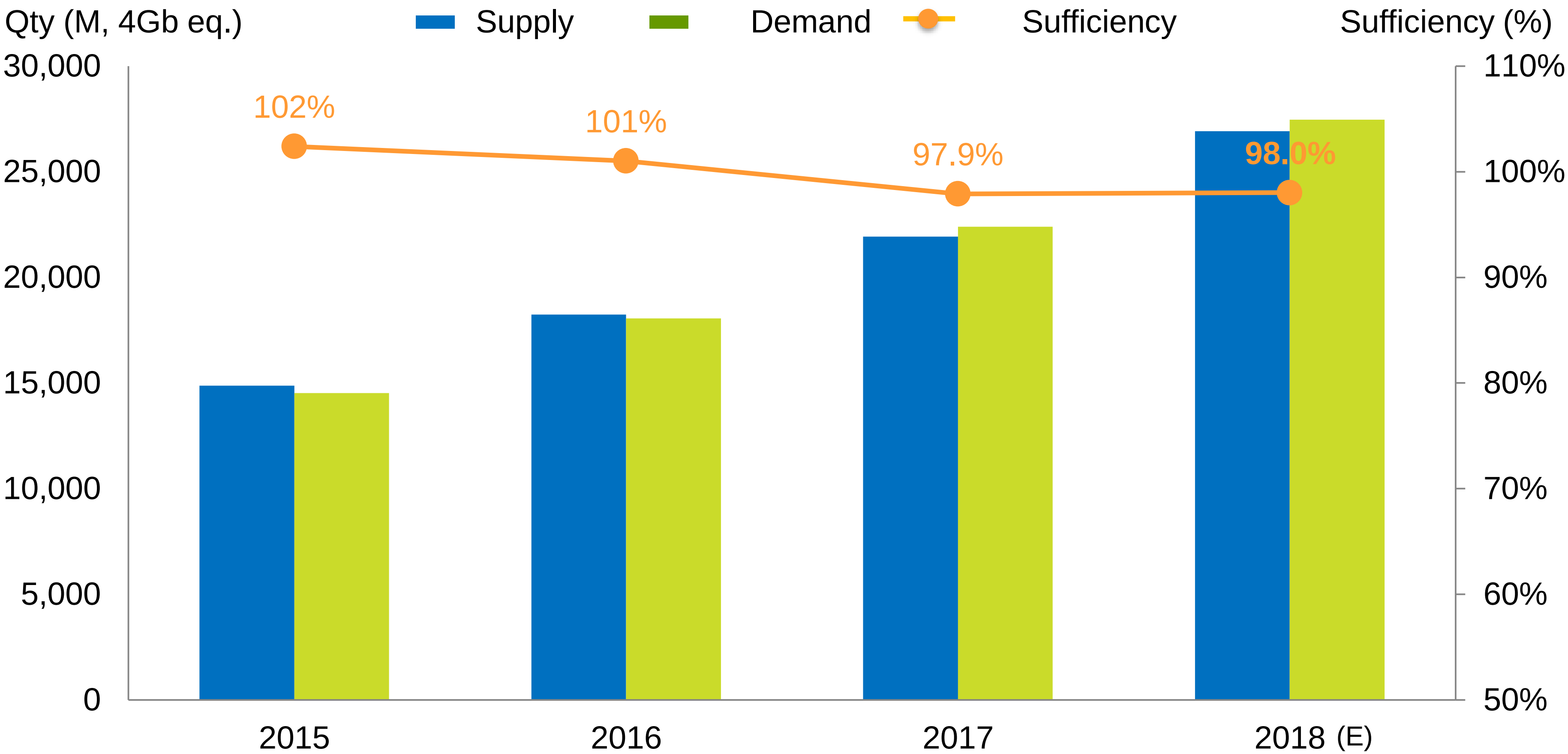
WW DRAM Capacity



Source: DRAMexchange, NTC MKT

- WW DRAM capacity at the level of 1,100K/M
- No major capacity expected to come on-line in 2018

DRAM Supply and Demand Growth



Source: Gartner, IHS, DRAMexchange, NTC MKT

- 2017~2018 DRAM market conditions are expected to stay stable
- Supply growth contributed mainly by technology conversion
- Demand growth driven by smart phone, server and specialty applications

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Nanya Technology Overview

IDM Company

- Founded in 1995,
  IPO in 2000
- DRAM Process, Design, Production & Sales
- Headquarters:
  New Taipei, Taiwan
- Employees: >2,700
- Focus on value-added DRAM market
- Formosa Plastics Group (FPG) has 75.8% equity ownership

Technology & Capacity

- **Technology** :
  - Plan to ramp 20nm to 38K WSPM in 1H'18
  - 20nm Product offerings: DDR3/DDR4, LPDDR3/ LPDDR4X
- **Capacity:**
  - Current: 60,000 WSPM(12")
  - 2018: 68,000 WSPM(12") (38K 20nm + 30K 30nm)

*WSPM: Wafer Starts Per Month

Partnerships

- **Technology license form MU**
  Option rights to license Micron 1x and 1y nm technologies and products.
- **Shareholding in Micron**
  (as of July 31st, 2017)
  - Sold 21.5% of Nanya original investment
  - Own 4.07% of Micron's share

Worldwide Coverage & Location

Q2’17 P&L Results

*Percentage Points

Amount in Million NT$	Q2'17 Audited		Q1'17 Audited		QoQ (PPT* Delta)	Difference
Net Sales	**12,626**		**12,231**		+3.2%	• ASP increased 4.6% QoQ • Bit shipment increased 1.7% QoQ • FX impacted revenue -3.0%
Gross Margin (Loss) Gross Margin(%)	**5,544**	***43.9%***	**4,901**	***40.1%***	+3.8%	• Q2’17 Gross Margin increased NT$ 643M, mainly due to ASP increase
Operating Income (Loss) Operating Margin(%)	**4,167**	***33.0%***	**3,853**	***31.5%***	+1.5%	• Approx. NT$ 356M R&D expense increased (2.8% negative impact to OPM) mainly for 20nm preparation and product development
Net Income (Loss) Net Margin (%)	**6,490**	***51.4%***	**3,275**	***26.8%***	+24.6%	• NT$4,819M realized gain from MU share disposal • Q2 recognized NT$ 1,731M surtax on undistributed earnings and NT$ 228M tax reduction for 2016 R&D Investment • ECB valuation negative NT$ 857M (Q2’17: NT$ -1.013B, Q1’17: NT$ -156M) • Exchange loss decreased NT$ 489M (Q2’17: NT$ -86M, Q1’17: NT$ -575M)

P&L Results

NT$B: Billion

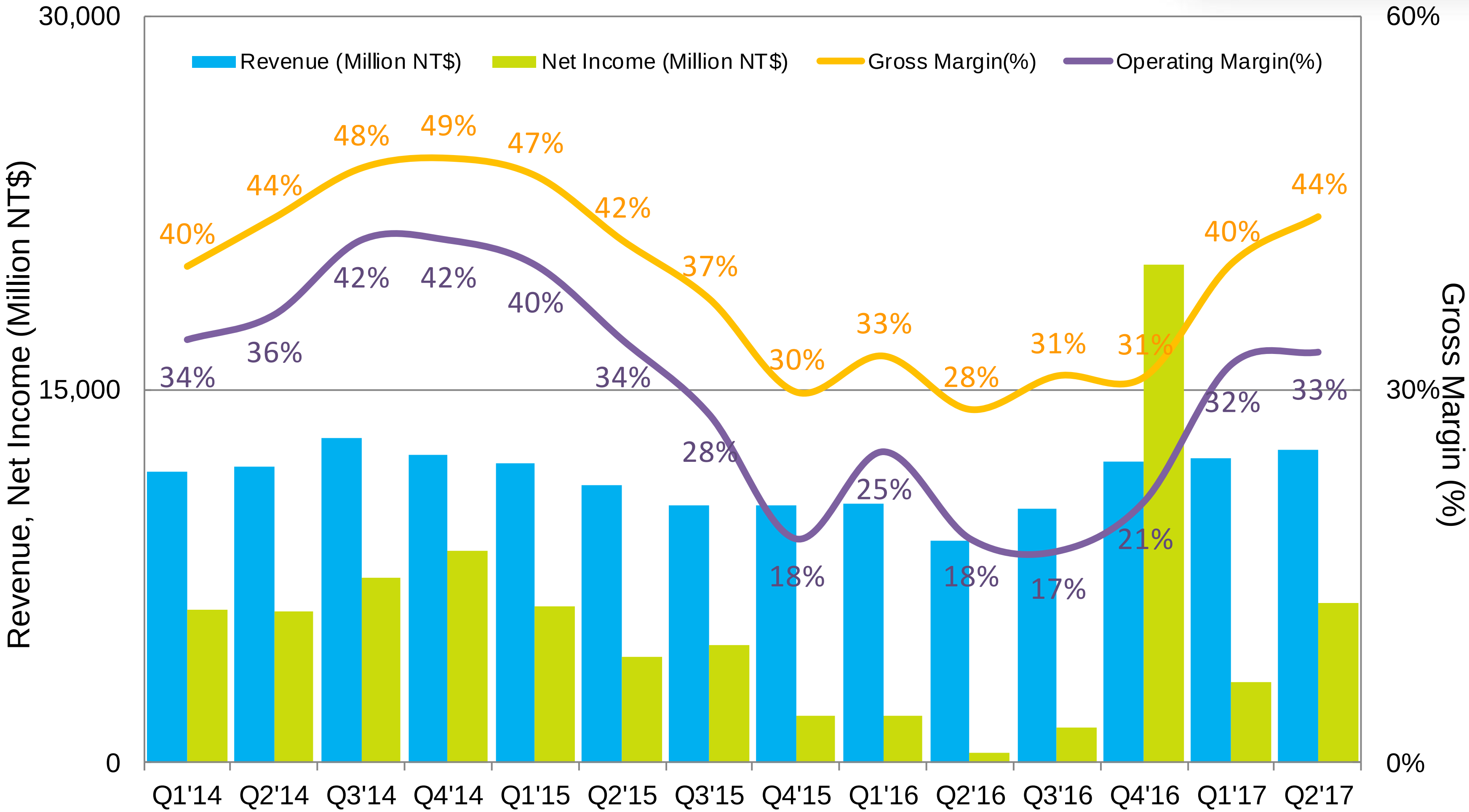
	1H'2017	1H'2016	Growth Rate
Revenue	24.9B	19.3B	*28.6%*
Gross Profit *Gross Margin (%)*	10.4B *42.0%*	5.9B *30.7%*	*76.0%*
Operating Income *Operating Margin (%)*	8.0B *32.3%*	4.3B *22.2%*	*87.2%*
Non-operating Income	3.3B	(1.4B)	
Net Income *Net Margin (%)*	9.8B *39.3%*	2.2B *11.6%*	*334.9%*
Capital	27.5B	27.5B	
EPS	**3.55**	0.82	

Company highlights

- 1Q'17 Net Income of NT$ 3,275M, Net Margin 26.8%, EPS NT$ 1.19
- 2Q'17 Net Income of NT$ 6,490M, Net Margin 51.4%, EPS NT$ 2.36

* Financial numbers are reviewed by CPA

Financial Highlights



- Gross Margin resumed to 40% in Q1’2017
- Better operating performance expected in Q3’17, due to seasonality and contribution from 20nm products

Investment of Micron Private Placement

The Investment as of 2016/12/02		Realized Gain (2017/06/14~2017/07/31)		Unrealized Gain (2017/07/31)	
Volume	**57,780,138 shares**	Shares sold	**12,396,617 shares**	Shares held	**45,383,521 Shares** Approx. **4.07%** of Micron's Interest
Purchase price (per share) & EX rate	**US$ 17.29** (EX rate 31.488)	Average Sale Price	**US$ 31.23** (Weighted average EX rate 30.326)	Market Price	**US$ 28.12** (EX rate 30.227)
Investment amount	**NT$ 31,457,097,237**	Realized Gain (A)	**NT$ 4,982,801,244**	Unrealized Gain (B)	**NT$ 13,867,194,435**
Share-holding	Approximately **5.26%** of Micron's interest	Total Gain (A + B)	**NT$ 18,849,995,679**		

1H'17 Cash Flows

(Unit: Million NT$)	1H'17	2016	2015
Beginning Balance	**9,102**	**3,104**	**7,268**
Cash from Operating Activities	8,511	15,945	18,522
Capital expenditures	-18,311	-22,336	-3,842
Long-term & Short-term loans	9,992*	-6,351	-14,382
Investments and others	13,722**	18,740	-4,463
Ending Balance	**23,015**	**9,102**	**3,104**
Free Cash Flow (1)	**-9,800**	**-6,391**	**14,680**

(1) Free Cash Flow = Cash from operating activities – Capital expenditures

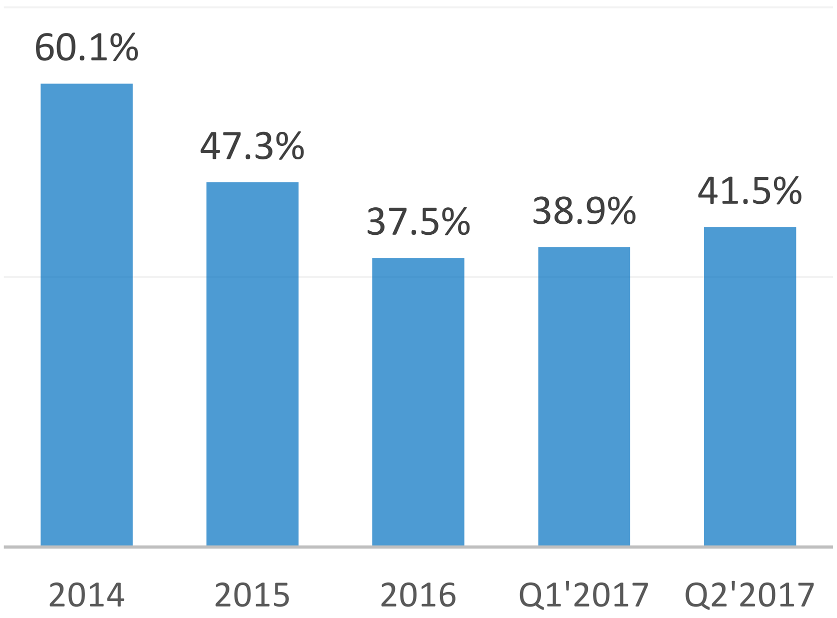
* Mainly due NT$15.68 billion from ECB issuance & debt repayment

** Mainly from the proceeds of Micron shares disposal of NT$11.0 billion

Annual financial numbers are audited by CPA and approved by BoD

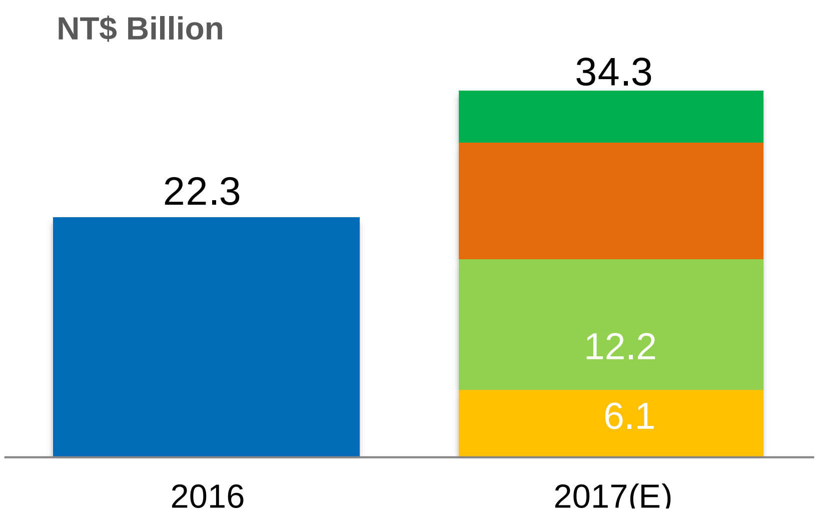
Debt Ratio & CAPEX

Debt to Asset Ratio



- Debt ratio 41.5% at the end of the 30th of June, 2017

CAPEX



- NT$55.7B CAPEX approved by BoD for 20nm 38K WSPM migration

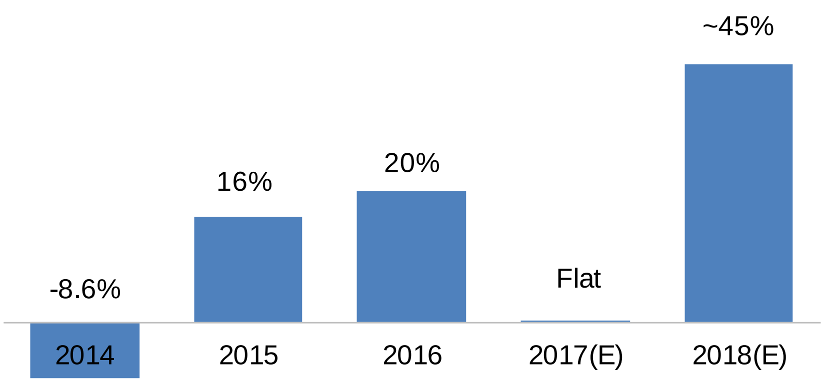
20nm Conversion

Q2'17	2H'17	1H'18	2H'18	2019~
Production	8Gb DDR4	8Gb LPDDR3	LPDDR4X	Continuous Optimization

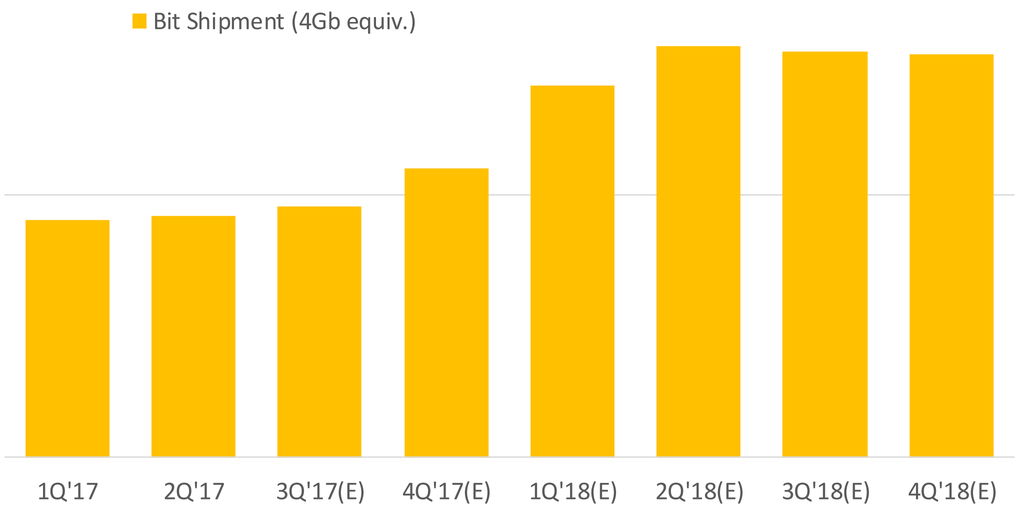
20nm Monthly Wafers Input Plan	• >10K / month in Q3'17 • 30K / month in Q4'17 • 38K / month in 1H'18
Product Delivery	• 4Gb DDR3 shipment commenced in Q2'17 • 8Gb DDR4, 2Gb DDR3 in 2H'17 • 8Gb LPDDR3 offering in 1H'18 • LPDDR4X offering in 2H'18
Monthly Wafer Capacity *WSPM: wafer starts per month	• 20nm technology to reach 38K WSPM in 2018. • Total capacity will amount to 68K WSPM (20nm + 30nm)
Product Line-up	• DDR3/DDR4 • LPDDR3/LPDDR4X • Custom

Bit Shipment

Annual Bit Shipment



Quarterly Bit Shipment



- Q3'17 bit shipment forecast to increase by mid single digits % and Q4 bit shipment to grow double digits
- 2017 bit shipment growth is expected to be flat
- Expected ~45% bit shipment growth in 2018, mainly contributed by 20nm conversion

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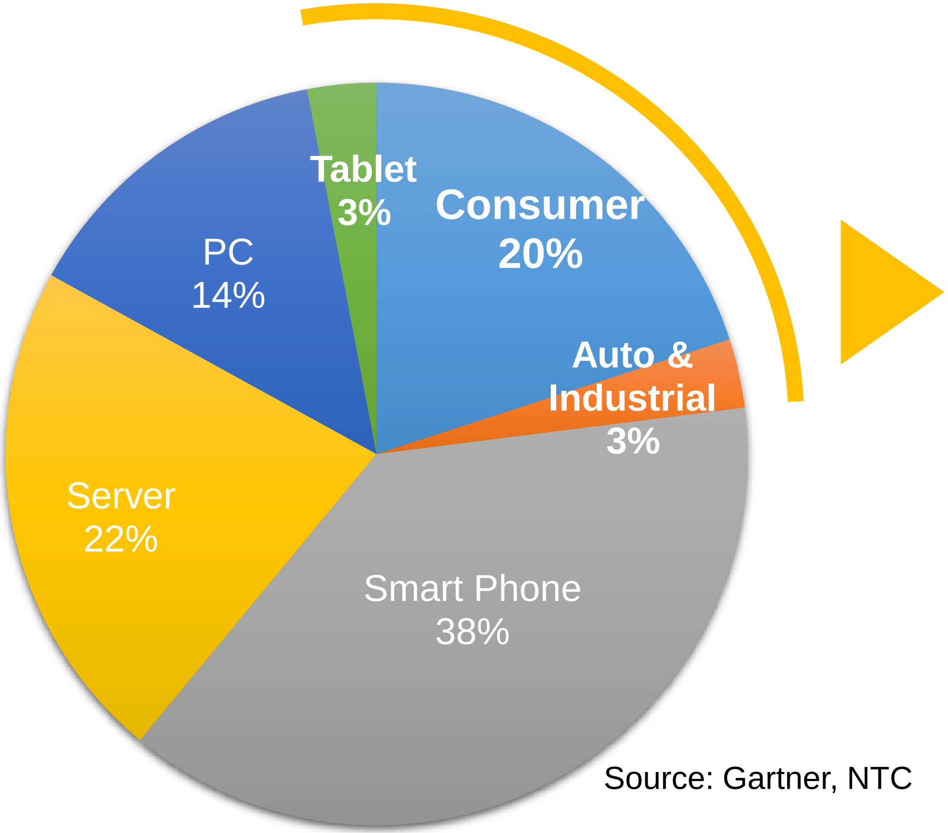
Nanya Established Stronghold in Specialty

2017 DRAM Demand



Source: Gartner, NTC

Specialty DRAM Market Characteristics

- Increased customers basis
- Diversified product spec
- Long-life and stable supply
- Demand growth
  - Solid in Consumer
  - Strong in Auto
  - Emerging (IoT…)

- 20nm enhances Nanya Technology competitiveness in specialty market as well as participation in other major segments

2018 Specialty DRAM Driving Forces

Application	System Shipment (M set)	2018/2017 DRAM Demand Growth	DRAM Driving Force
Networking	421	27%	4G
STB	316	37%	4K ULTRAHD
SSD	231	82%	128GB ~ 512GB
DTV	228	17%	4K ULTRAHD
Auto	95	101%	Infotainment ADAS

Source: Gartner, IHS, NTC MKT

Nanya Specialty DRAM Product Portfolio

Technology	30/42nm	20nm
Spec.	• DDR/DDR2/DDR3 • LPDDR1/LPDDR2/LPDDR3 • Custom	• DDR3/DDR4 • LPDDR3/LPDDR4X • Custom
Density	512Mb/1Gb/2Gb/4Gb	1Gb/2Gb/4Gb/6Gb/8Gb
Grade	Commercial/Industrial/Automotive	
Lifecycle	Long-life and stable supply	

Key Takeaways

- Tight supply continued in Q4'17, solid ASP movement
- 2018 DRAM market in balance and overall healthy environment
- Nanya Technology Operation Focuses:
  - 20nm execution better than expected, >10% QoQ bit shipment growth in Q4'17
  - 20nm capacity ramp-up, ~45% YoY bit output in 2018 forecasted
  - 20nm product design and production efficiency to further enhance competitiveness
  - 20nm + 30/42nm comprehensive product offering & long-term commitment to specialty DRAM market

NANYA

Thanks & Questions

