



ememory

**A Leading Logic NVM
Company**

January, 2015

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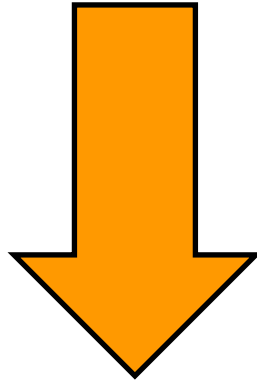
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Outline

- **Business Model**
- **Review of Operations for 3Q**
- **Growth Opportunity and Future Outlook**
- **Q & A**

What's Logic Non-Volatile Memory (NVM)

Embedded NVM = LOGIC + 10 Masks

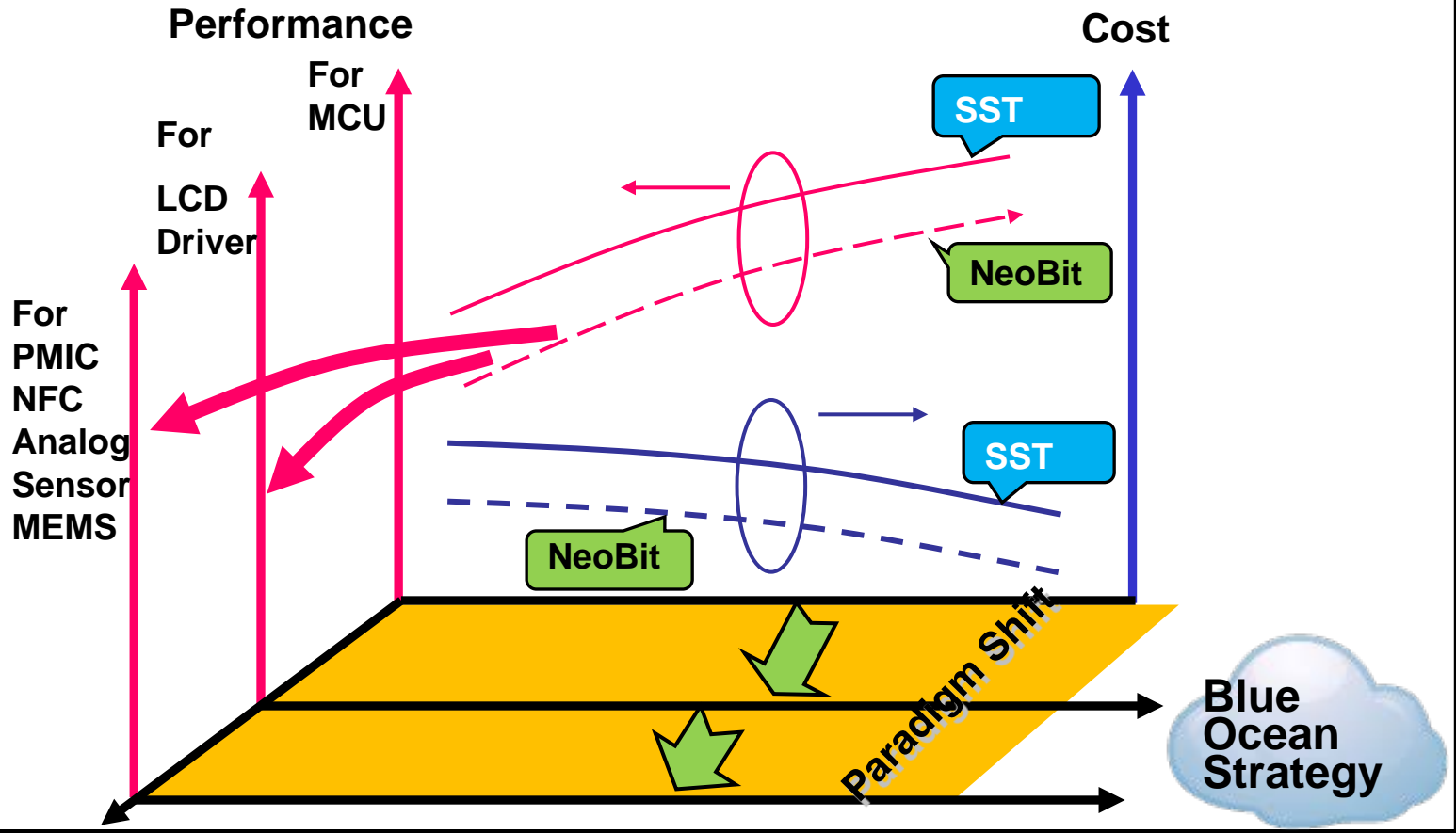


*30% more
cost reduction*

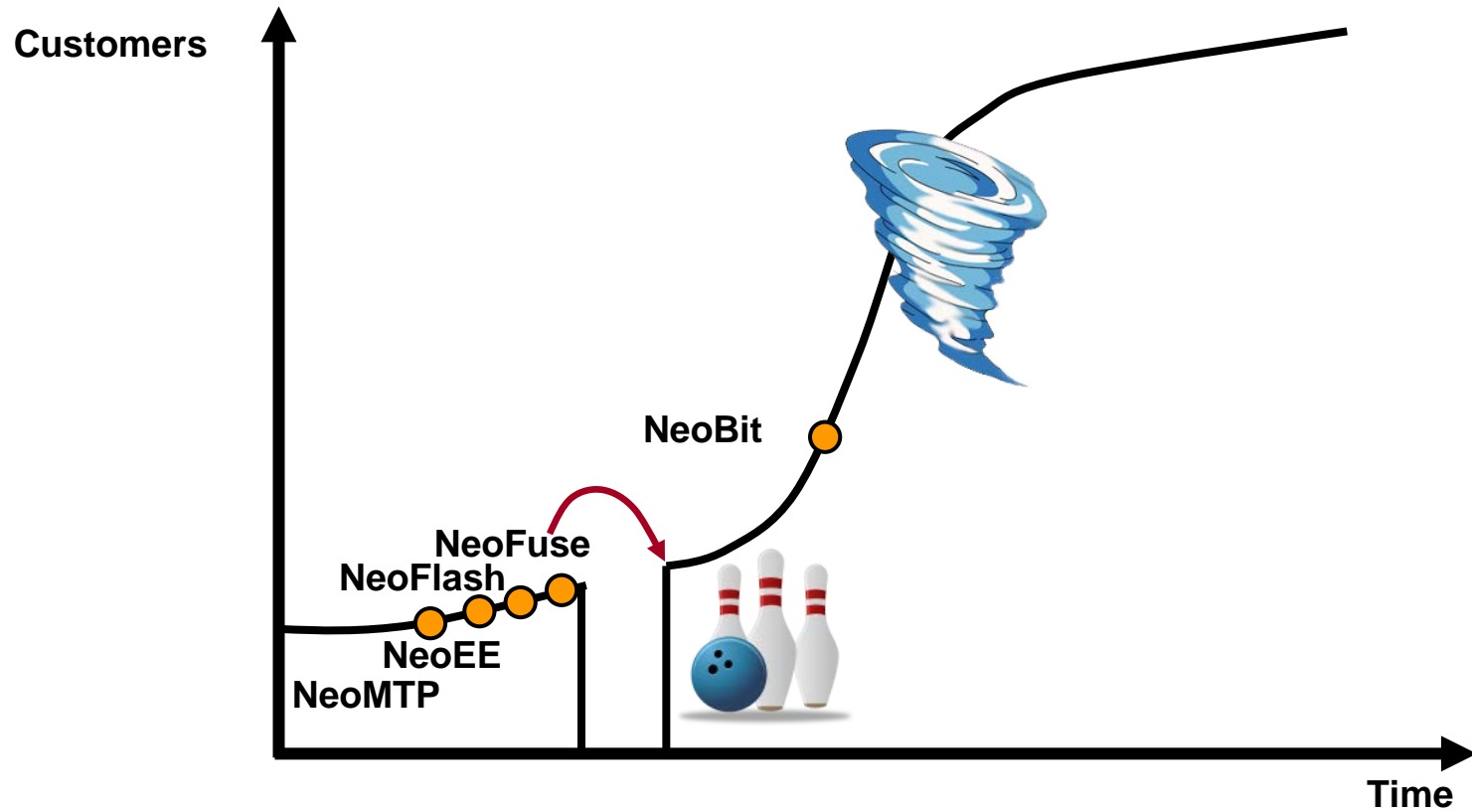
Embedded LOGIC NVM = LOGIC

What We Have Done

● *Innovation, Innovation, and Innovation !*

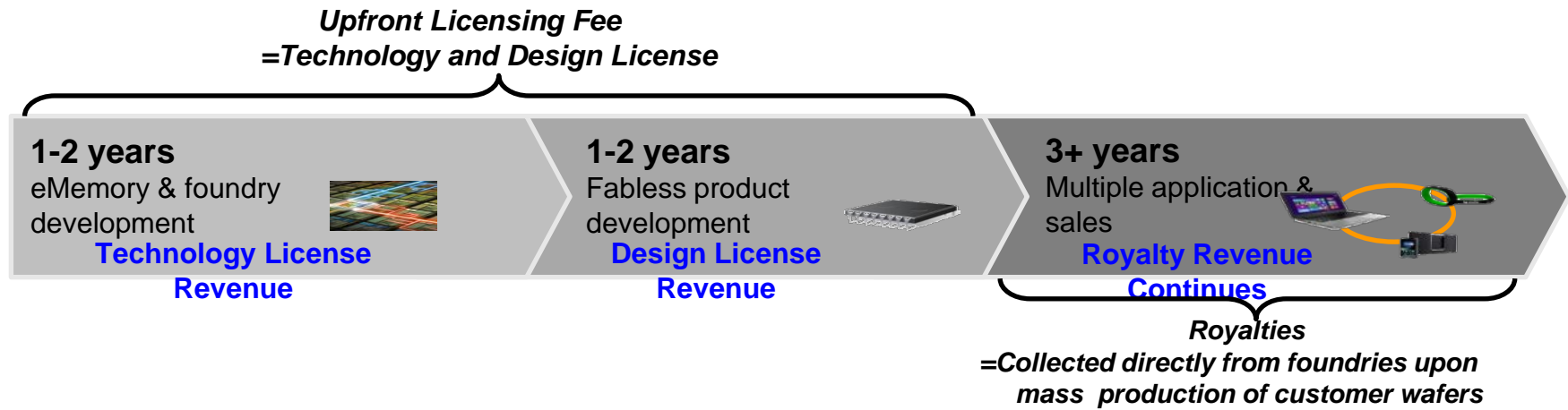


Crossing the Chasm



Business Model

- Founded in 2000. First customer engaged in 2002. Achieved profitability in 2005 and IPO in 2011. The largest logic non-volatile memory IP company, 216 employees (150 R&D).
- Since its IPO, the company initiated no new fund raising or bank debt, and has distributed in excess of 100% of earnings in cash dividends.
- **Growth Indices:** 1) No. of on-going technology platforms
2) No. of design licenses
3) Royalty



Worldwide Customers



Foundry



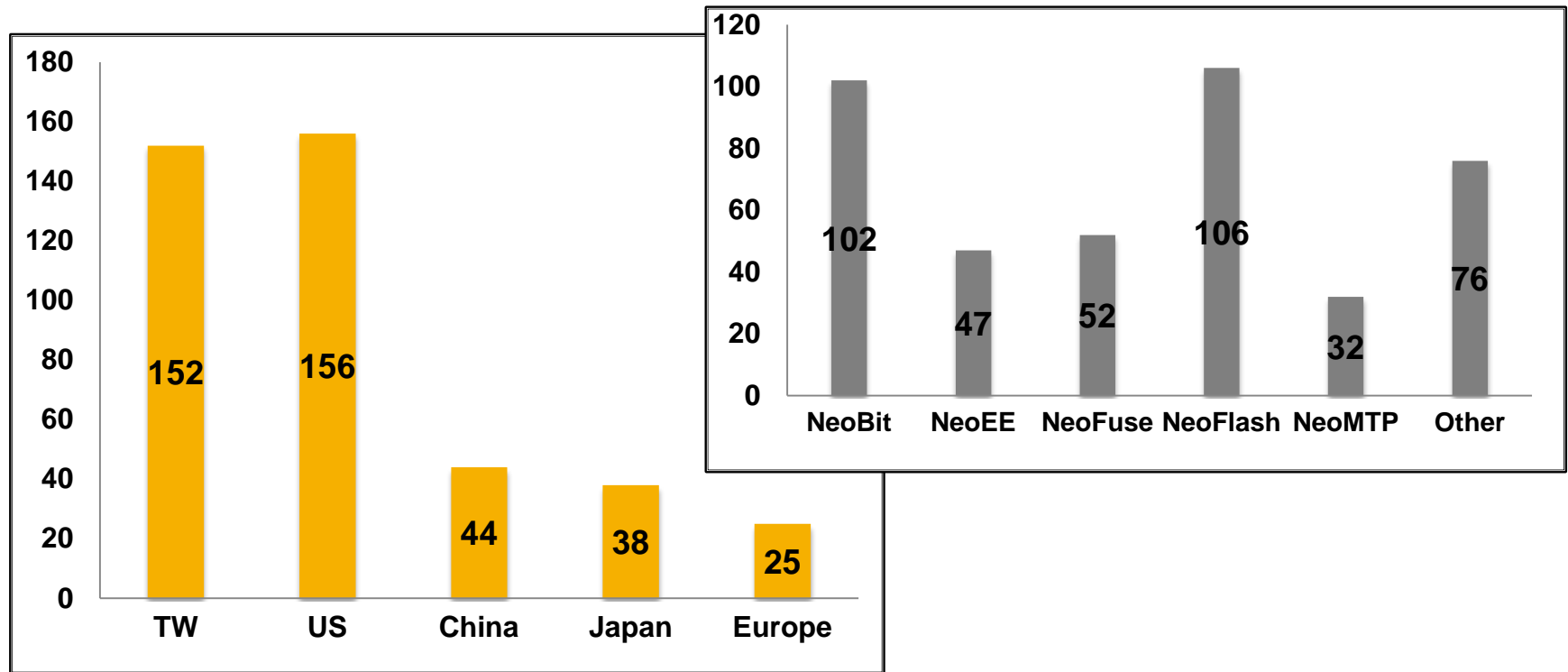
IDM



	Taiwan	China	Korea	Japan	North America	Europe	Others
Foundry	5	6	3	2	1	0	1
IDM	0	0	0	8	2	1	0
Fabless	202	280	49	30	118	60	28

Patent Portfolio

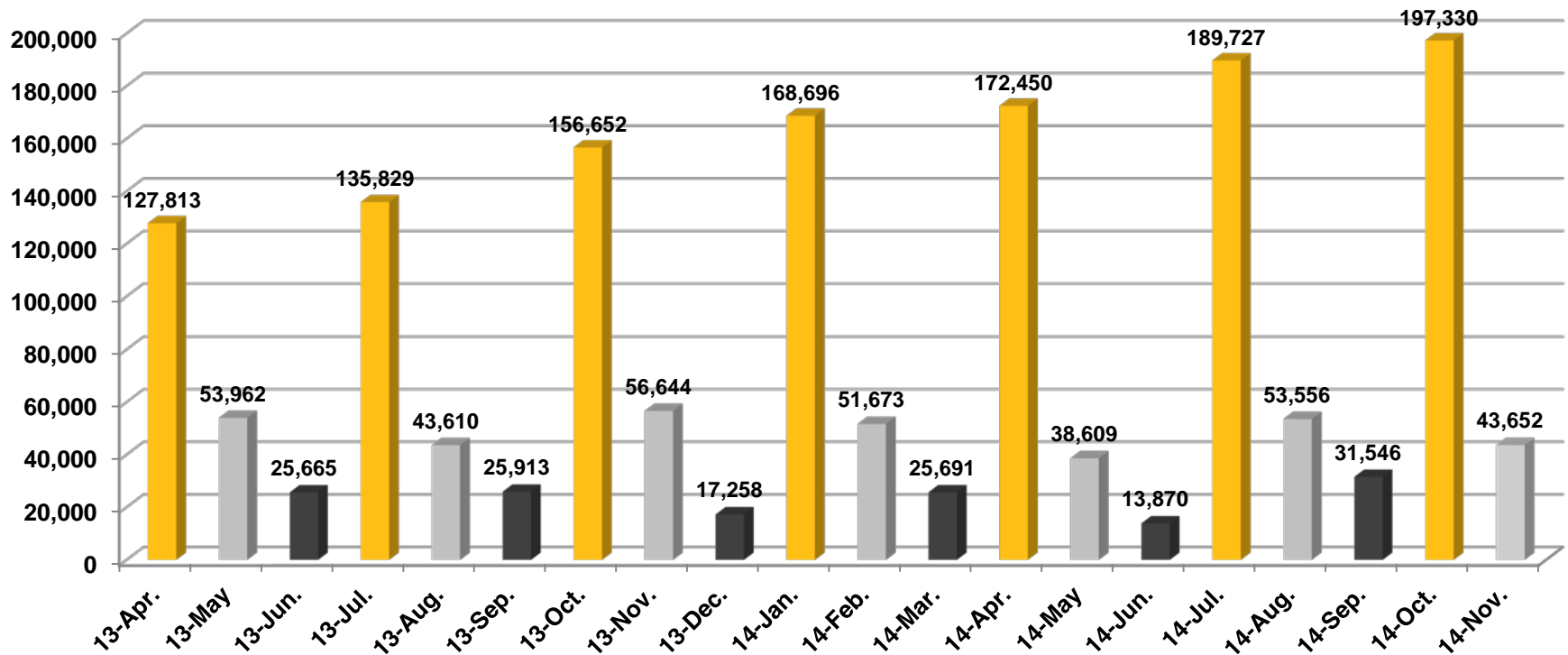
	2Q14	3Q14	Diff.
Pending	136	160	+24
Issued	236	255	+19
Total	372	415	+43



Quarterly Revenue Pattern

- The quarterly royalty from most of foundries are collected at first month of each quarter and from some other foundries are collected at second month, and none at third month.

Unit : NTD Thousands



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3Q Revenue Breakdown

Unit: NTD thousands

	3Q14	2Q14	QoQ Growth Rate	3Q13	YoY Growth Rate	1Q-3Q14	1Q-3Q13	YoY Growth Rate
Royalty	212,848	167,731	26.90%	148,297	43.53%	551,594	388,949	41.82%
Licensing	61,981	57,198	8.36%	57,055	8.63%	194,224	188,755	2.90%
Total	274,829	224,929	22.18%	205,352	33.83%	745,818	577,704	29.10%

Unit: Number of contract

		3Q14	2Q14	1Q-3Q14	1Q-3Q13
Technology License		5	6	17	14
Design License	NRE	22	12	67	39
	Usage	88	86	264	230

Financial Income Statement

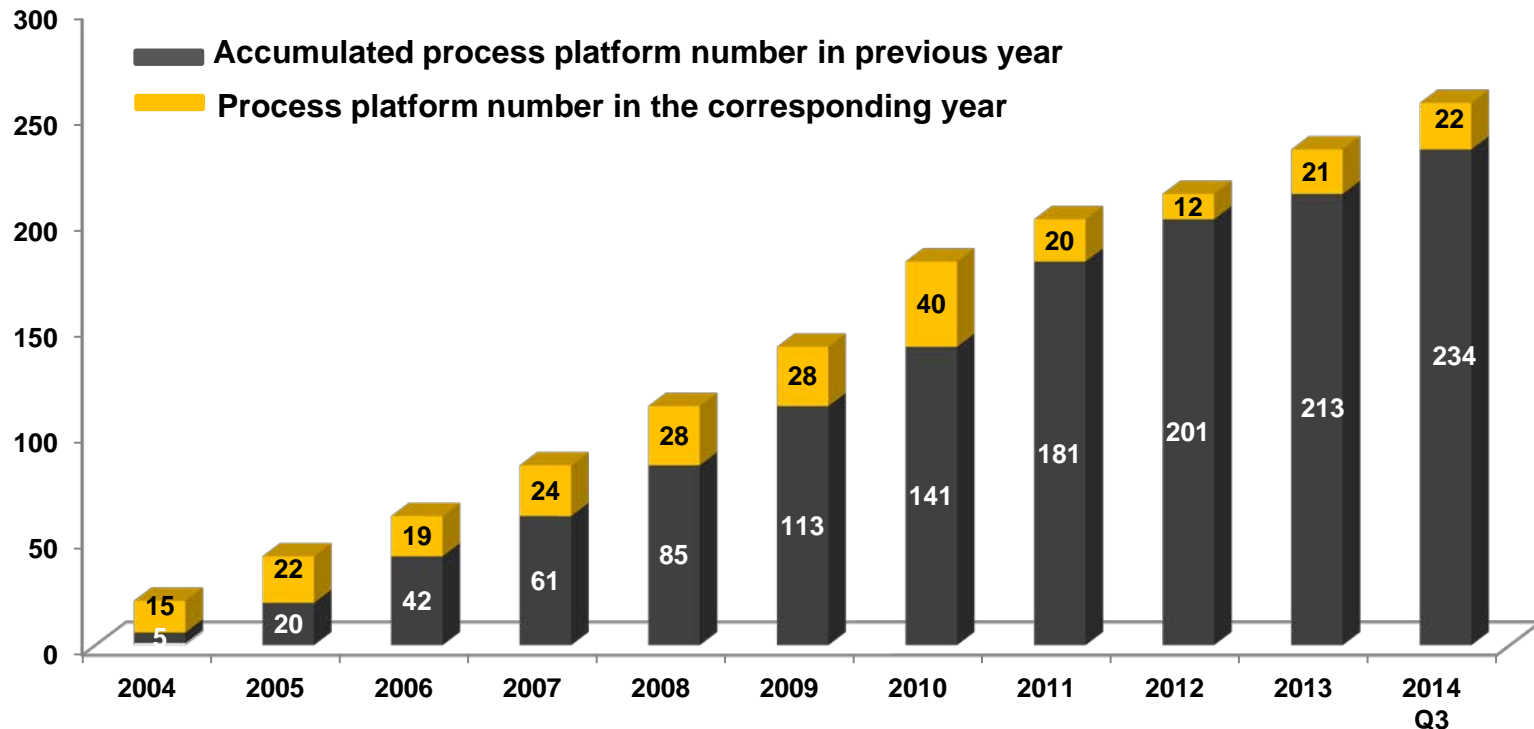
Unit: NTD thousands	3Q14	1Q-3Q14	1Q-3Q13	YoY
Revenue	274,829	745,818	577,704	29.1%
Gross Margin	100%	100%	100%	-
Operating Expenses	135,695	391,820	343,813	14.0%
Operating Margin	50.6%	47.5%	40.5%	+7.0ppts
Non Operating Income	1,852	6,943	654	961.6%
Net Income	124,352	317,673	199,372	59.3%
Net Margin	45.2%	42.6%	34.5%	+8.1ppts
EPS (Unit: NTD)	1.64	4.19	2.66	57.5%
ROE	29.7%	25.3%	17.2%	+8.1ppts

Technology License Statistics

Unit: Number of contract

Year	2012	2013	1Q-3Q2014
License number	12	19	17

Note: The terms (including number of process platforms and licensing fees) for each technology license are set contractually. Payments are made according to set milestones, and there are no particular seasonal factors involved.



Current Technology Development Platform

- Total (As of November) : **82**
- **32** for NeoBit, **28** for NeoFuse, **2** for NeoFlash, **13** for NeoEE, and **7** for NeoMTP.

	16nm	28nm	40nm	55/65nm	80/90nm	0.11~ 0.13um	0.15~ 0.18um	>0.25 um	Total
NeoBit	-	-	-	1	1	11	17	2	32
NeoFuse	1	7	4	9	1	4	2	-	28
NeoFlash	-	-	-	1	-	1	-	-	2
NeoEE	-	-	2	-	1	4	5	1	13
NeoMTP	-	-	-	1	2	2	2	-	7

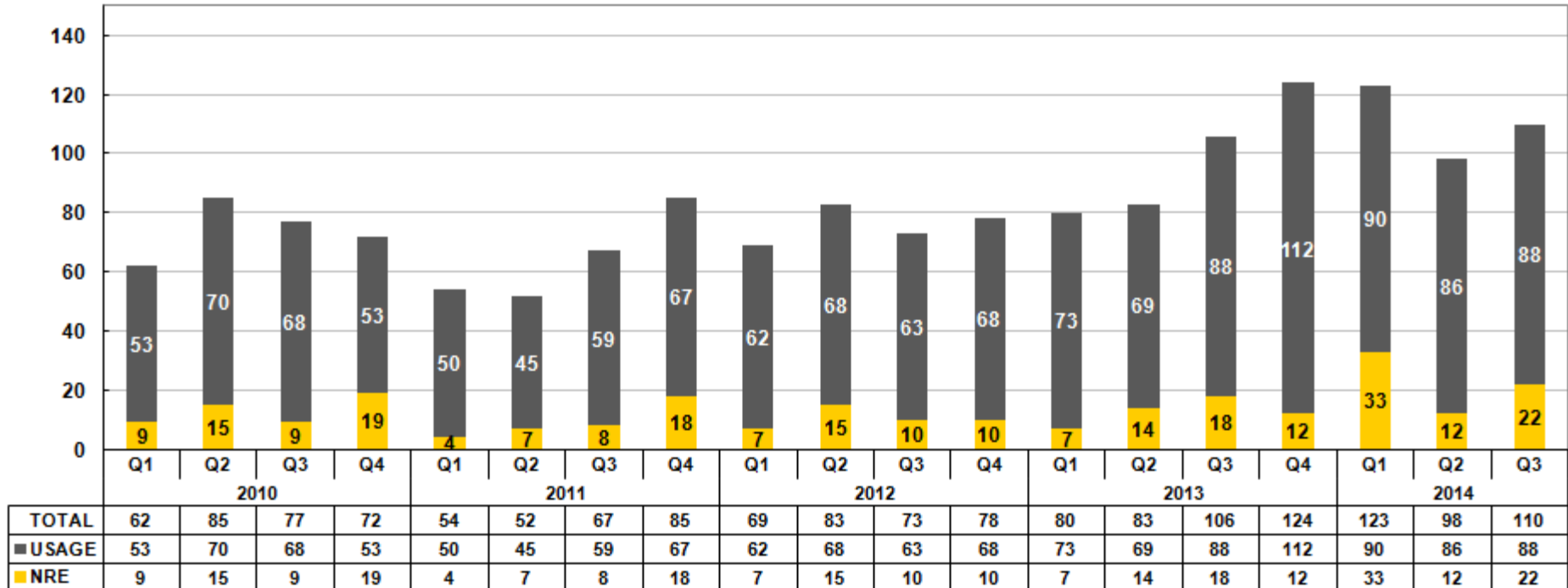
Current Technology Development Platform

12" Fabs	Production	Development	NVM Type	Process Type
16nm	0	1	OTP	FF+
28nm	2	7	OTP	LP/HPM, HLP/HPM, LPS
40nm	1	6	OTP, MTP	HV-DDI, LP
55/65nm	7	12	OTP, MTP, Flash	LP, HV-DDI, HV-OLED, DRAM, CIS
80/90nm	4	5	OTP, MTP	HV-DDI, HV-OLED, LP
0.13/0.11um	3	6	OTP, Flash	HV-DDI, BCD, Generic
0.18um	0	1	OTP	BCD

8" Fabs	Development	NVM Type	Process Type
0.13/0.11um	16	OTP, MTP, Flash	HV-DDI, BCD, LP, RF, CIS, LL
0.18/0.16/0.152um	25	OTP, MTP	Generic, LP, LL, MR, HV, Green, BCD
0.25um	2	OTP, MTP	BCD
0.35um	1	OTP	UHV

Quarterly Design Licensing (New Tape Out)

- Total **331** NTO as of 3Q 2014 (**393**@2013, **303**@2012, **258**@2011)

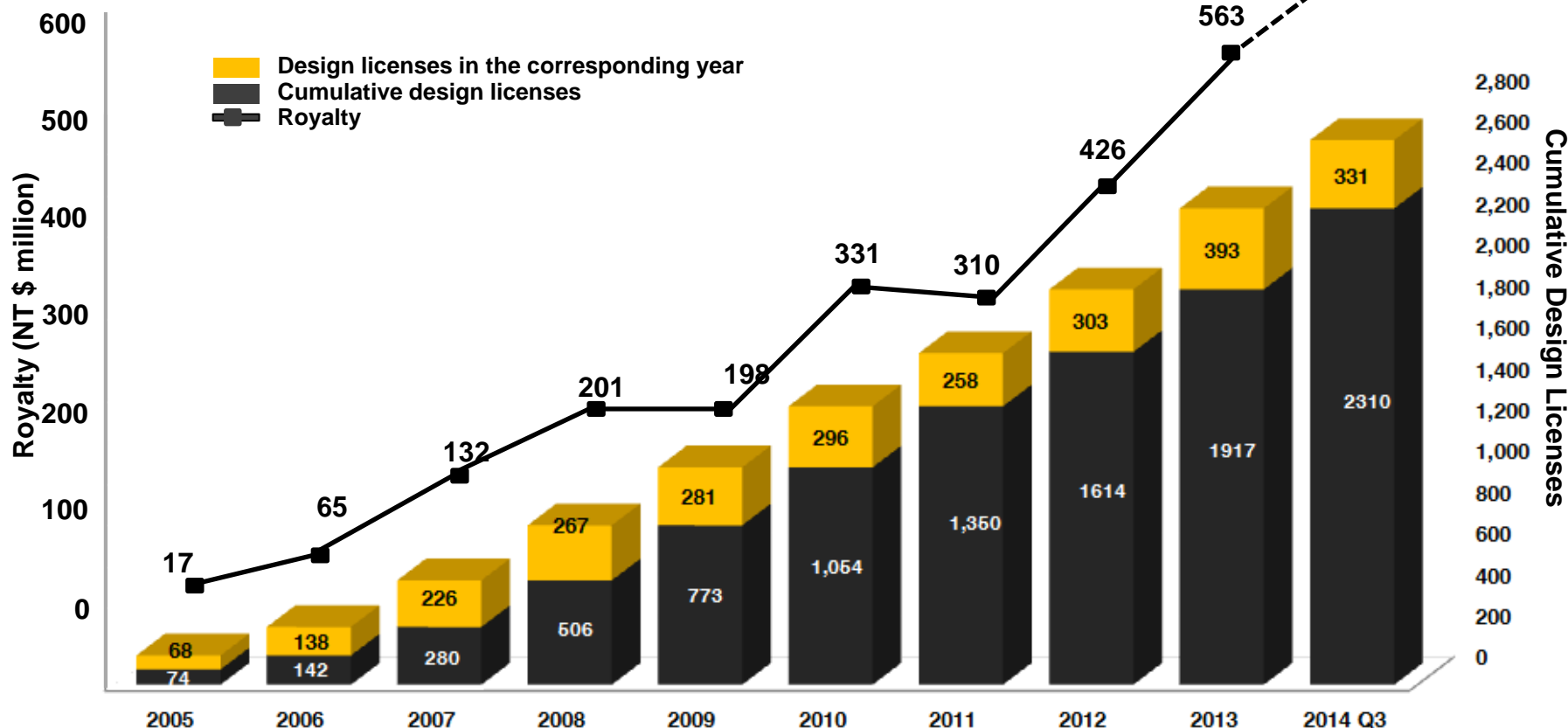


Usage : Usage of pre-qualified and verified IP (charged by per product tape out or annual package), the cycle time from design implementation to royalty payments for mass production is faster, typically less than one year.

NRE: NRE covers the customization of IP that must undergo new verification or qualification. It typically requires 1 to 1.5 years before resulting in royalty revenue.

Accumulated Licenses Drive Future Royalties

Accumulated design licenses > 2,641

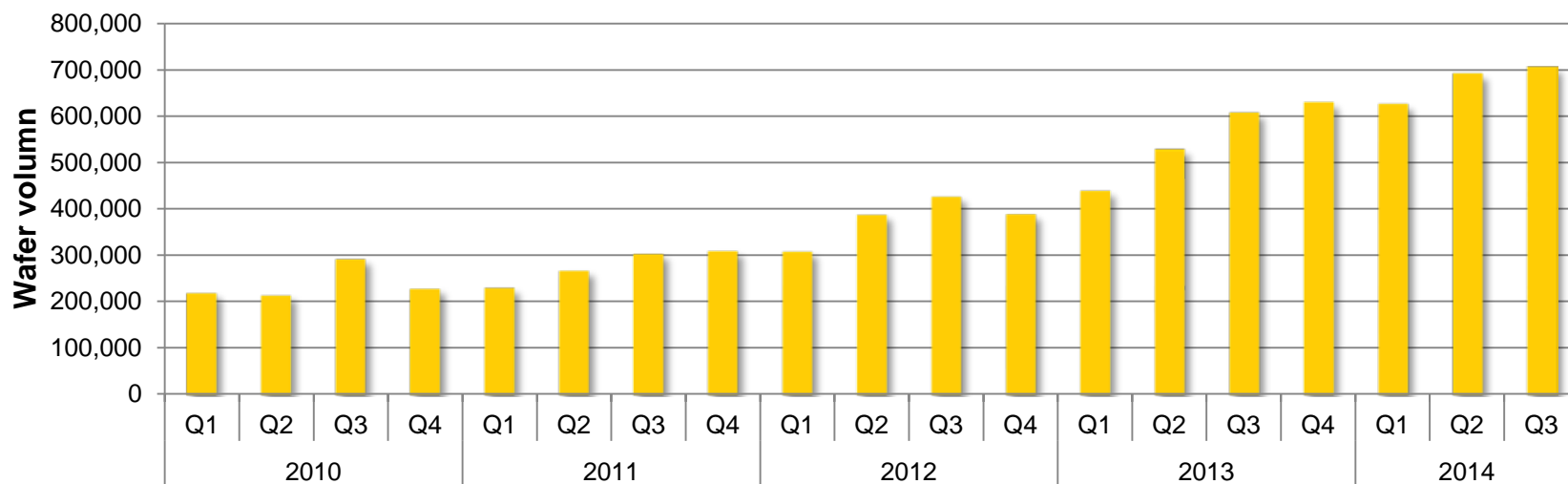


note 1: Due to the 2009 recession, royalty income was down annually 1.5%.

note 2: Pre-payment of royalty fees by a single customer contributed to 2010 annual growth of 67%, causing a drop of 6.3% in the following year, 2011.

note 3: CAGR for 2009-2013 was 30%.

Wafer Production Volume



embedded eMemory IP in T Company (\$revenue); * % of Process node in T company total revenue in 3Q14

	Process node	*% of T	3Q14	2Q14	1Q-3Q14	1Q-3Q13
8"	0.5+	1%	0%	0%	0%	0%
	0.25/0.35	4%	33.5%	34.2%	30.5%	25.6%
	0.15/0.18	13%	13%	13.3%	13.3%	9.4%
	0.11/0.13	3%	21%	20.4%	20.8%	20.2%
12"	90nm	6%	16.4%	18.3%	16.3%	3.9%
	65nm	13%	0%	0%	0%	0%
	40/45nm	17%	0%	0%	0%	0%
	28nm	34%	0%	0%	0%	0%
	20nm	9%	0%	0%	0%	0%
8"		21%	16.5%	17%	16.1%	13.2%
12"		79%	1.4%	1.6%	1.4%	0.65%
Total		100%	4.5%	5.1%	4.5%	3.7%

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Applications by Technology

12"

8"

16/20nm

28nm

40nm

55/65nm

80/90nm

110/130nm

160/180nm

250nm

350nm

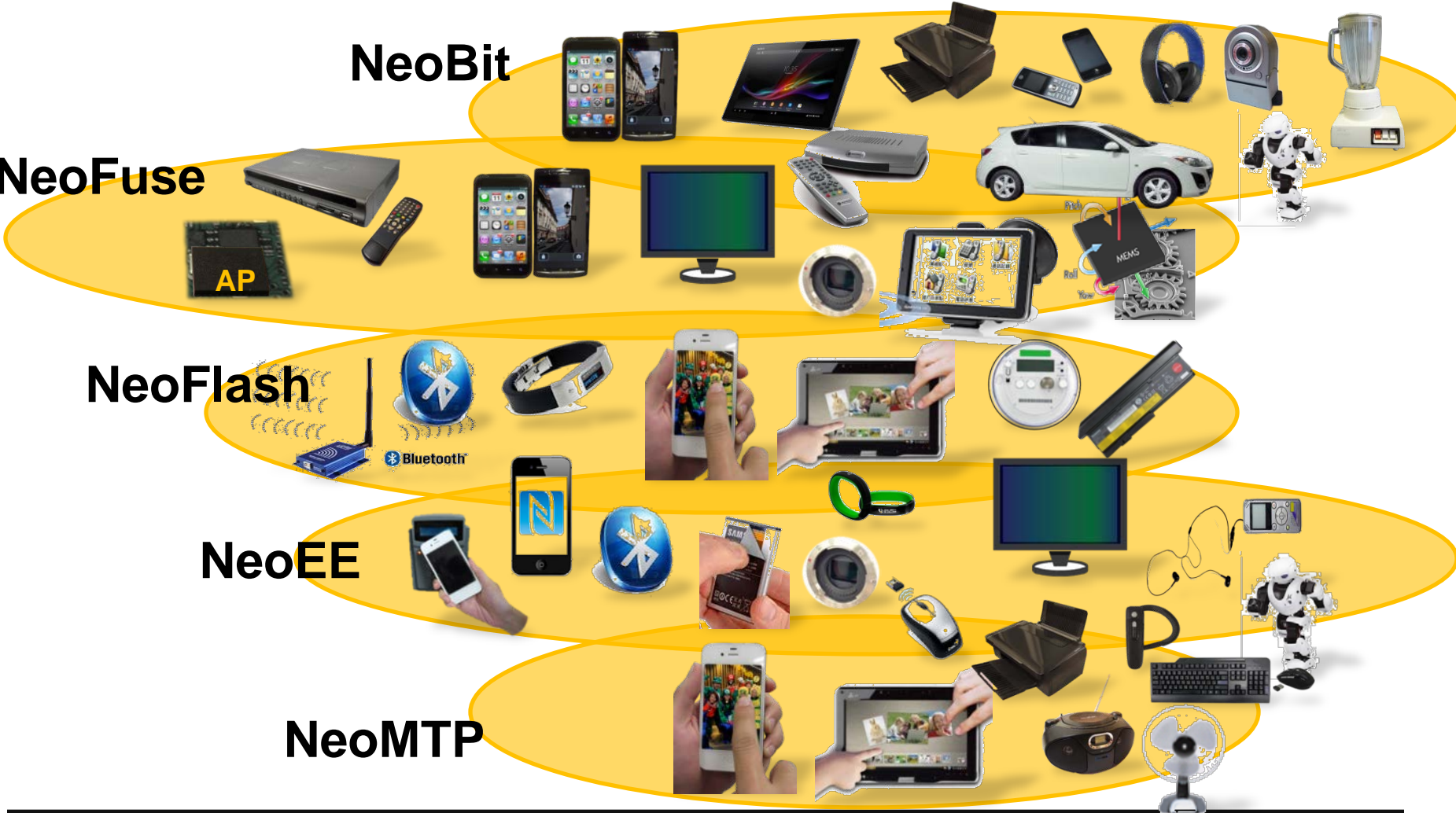
NeoBit

NeoFuse

NeoFlash

NeoEE

NeoMTP

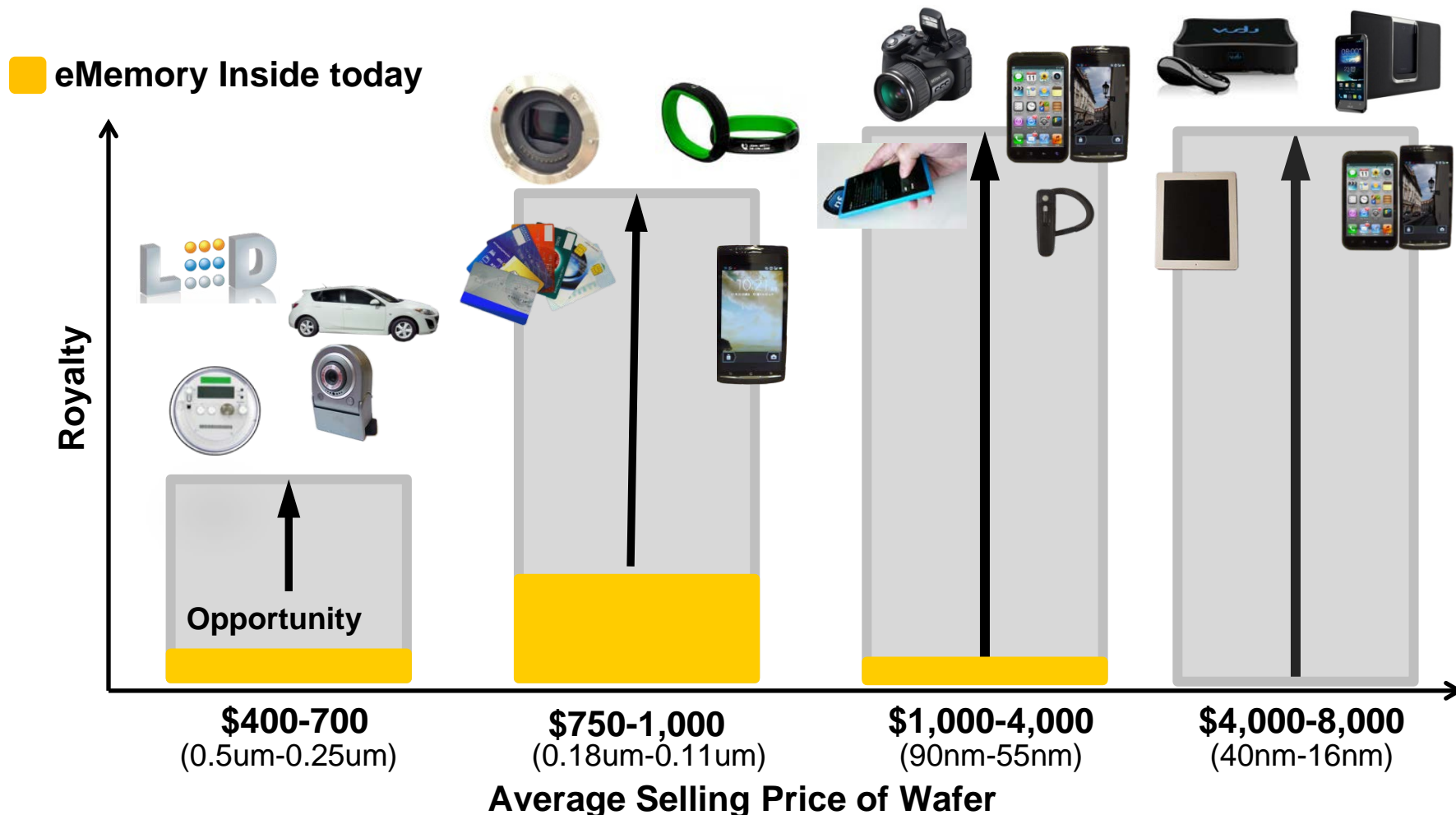


eMemory's NVM Technologies

- **Logic NVM portfolio offers one-stop-shop solution.**
 - › Compatible to any process
 - › Robust structure
 - › Low process cost
 - › Competitive macro sizes
 - › Easy integration
 - › Easy porting

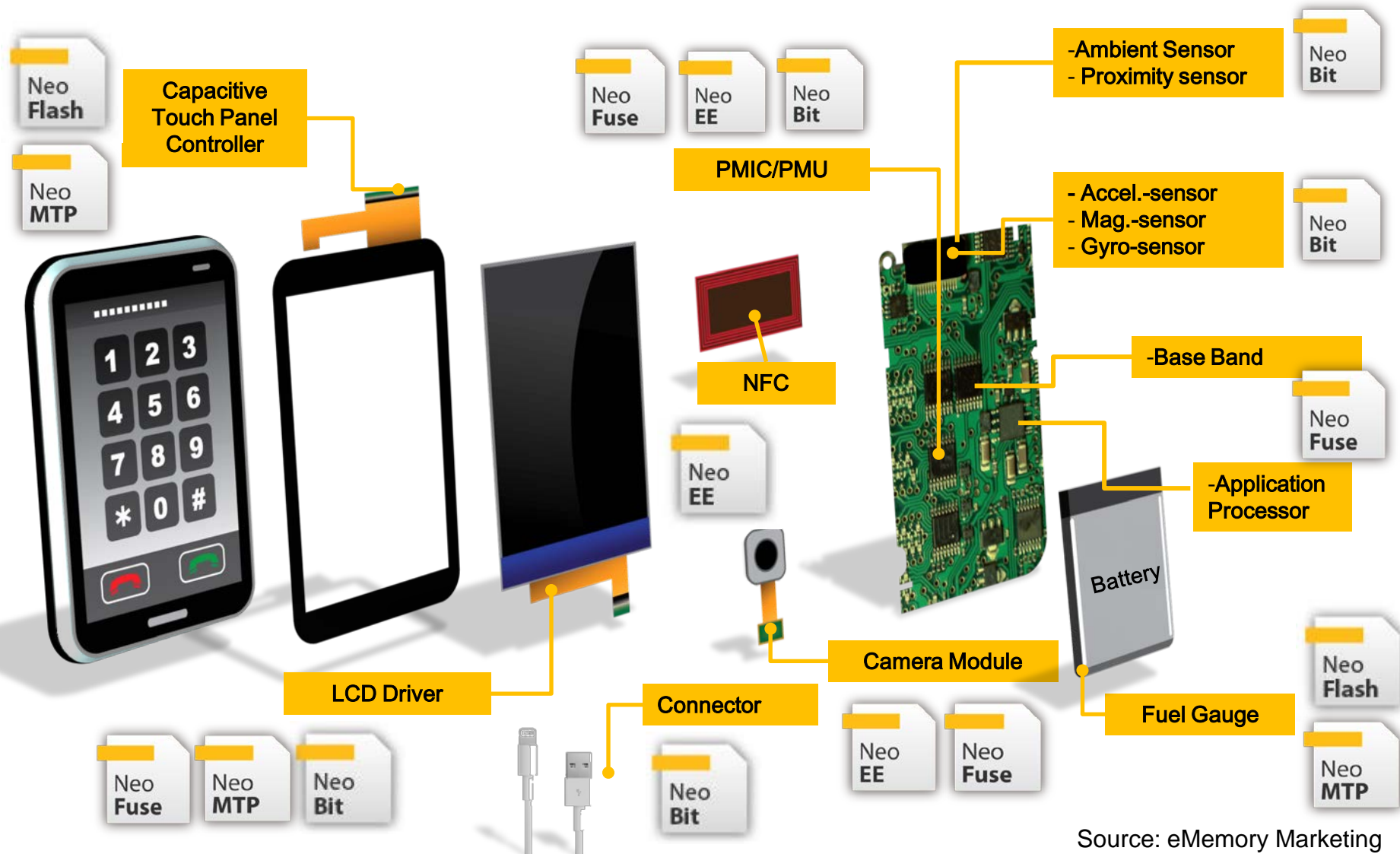
eMemory's NVM Technology	OTP			MTP	
	NeoBit	NeoFuse	NeoFlash	NeoEE	NeoMTP
Product Type	OTP	OTP	Flash	EEPROM	MTP
Endurance (Cycles)	10	10	1K~10K	10K~100K	1K~10K
Additional Mask Steps	0	0	2-3	0	0
Technology	Floating gate	Anti-Fuse	SONOS	Floating gate	Floating gate
Scalability	Simple	Simple	Simple	Simple	Simple
Memory Density	HD < 512Kb GHD < 16Mb	< 4Mb	< 2Mb	< 4Kb	< 512Kb

Opportunity at all Price Points



Note: 2.2 million 8" equivalent wafers with eMemory IP were shipped in 2013. (~5% of WW foundry shipment)

eMemory IP in Smart Phone



3Q14 Wafer Demand by IC Type

IC Type	Equ. to 8-inch wafer (K)
AP	4964
PMU	4756
CIS sensor	4226
Fingerprint	4000
Smart card controller	3000
Base Band	2935
LCD driver (with TCON)	2013
Gauge IC	627
Touch panel controller (C)	556
Connectivity	395
STB controller	335
TV controller	327
Wifi controller	245
LED driver	243
DC-DC/AC-DC	176
Accelerator sensor controller	124
Light snesor	121
Bluetooth controller	121
Gyroscope sensor controller	104
TAG IC	76
DVD controller	67
MCU (8bits, LV/3.3V)	56
MCU (8bits, LV/3.3V)	56
P-Gamma	52
MCU (8bits, pure 5V)	51
NB CAM controller	42
Pressure sensor controller	20
Touch pad controller	18
PC CAM controller	15
Touch panel controller (R)	5
TCON (w/o driver)	4

2014.8.29 updated

Advanced LCD Driver ICs

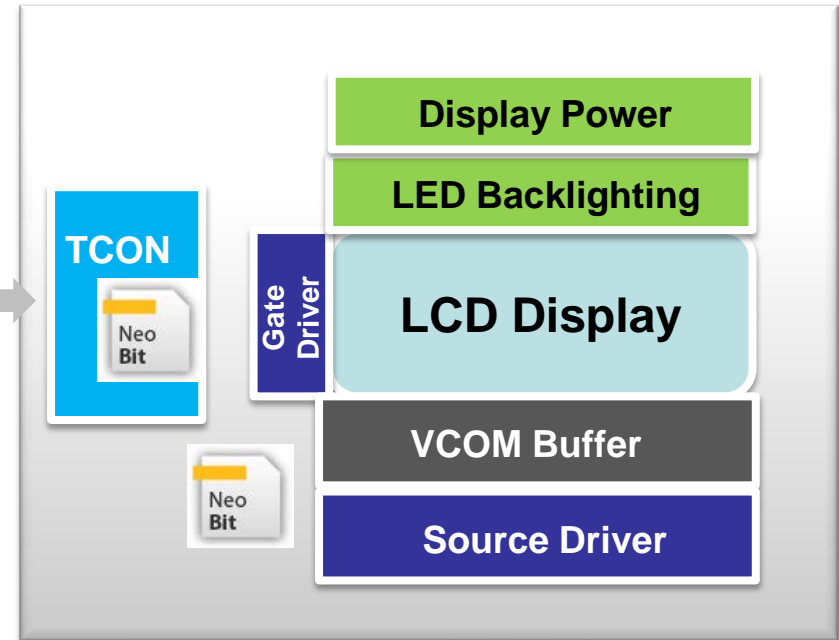
Process Technology : 0.11um HV/80nm HV/55nm HV



I/F
(LVDS, MIPI,...)



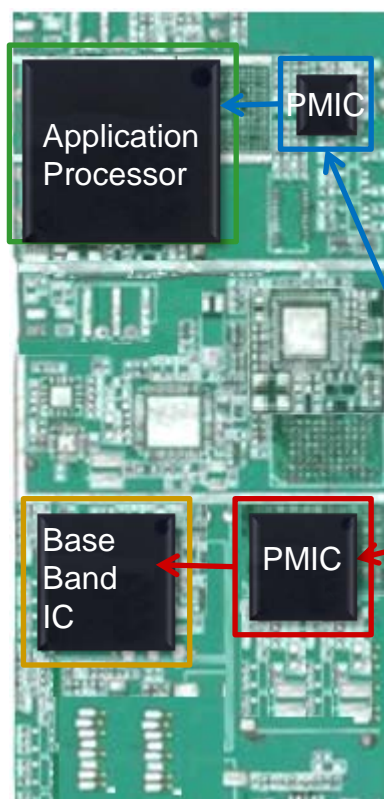
DDI



Density	Endurance	NVM Type	Purpose	NVM Usage
2K8~4K8	1	OTP	Trimming	1. Accuracy enhancement 2. Mismatch cancellation
			Code Storage	1. Gamma Correction Table 2. Timing Control Pattern 3. Color Engine Enhancement

Power Management ICs for Baseband and Application Processor

Process Technology : Advanced 0.25um BCD/ 0.18um BCD/ 0.13um BCD
Mature 0.18um/0.16um/0.152um Logic



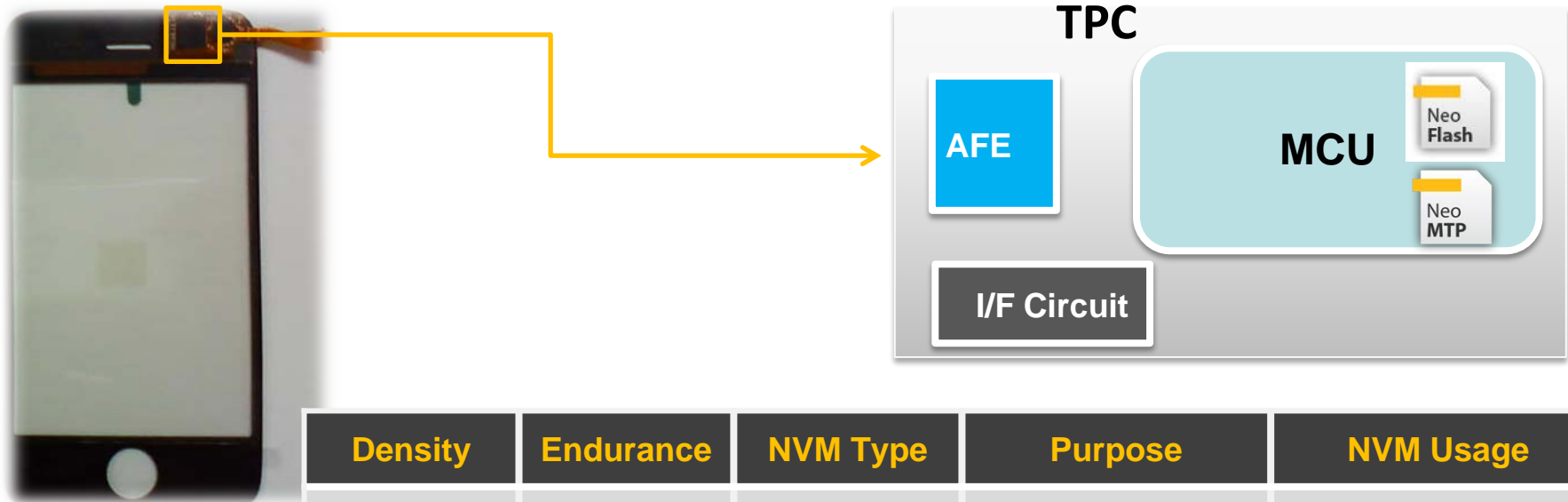
Density	NVM Type	Purpose	NVM Usage
2Kb~4Kb	OTP	Trimming	DC/DC, Bandgap
		Parameter Setting	Design flexibility & Performance optimization
		Code Storage	Start-up behavior & smart power saving algorithm

PMIC



Touch Panel Controller ICs

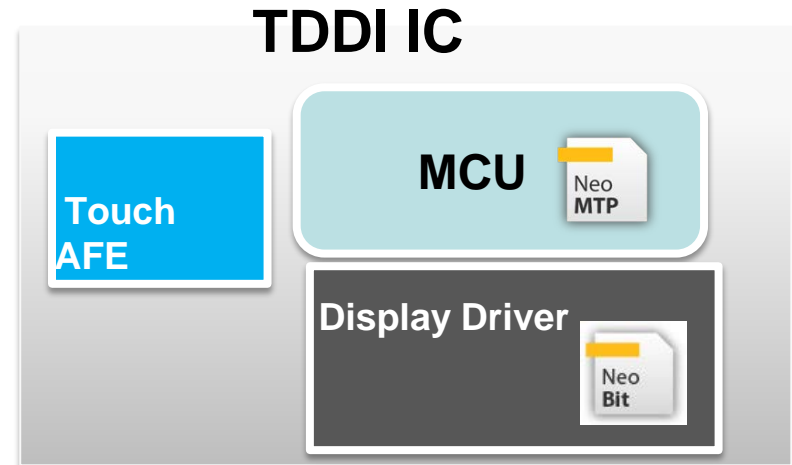
Process Technology : 0.16um HV/0.11um G



Density	Endurance	NVM Type	Purpose	NVM Usage
16K8~32K8	<1000	MTP	Code Storage	F/W code
			Parameter setting	Customized model and performance optimization

In-Cell Touch Panel Controllers ICs

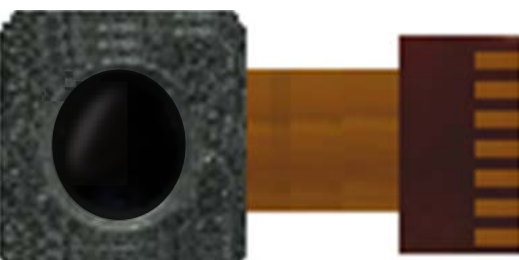
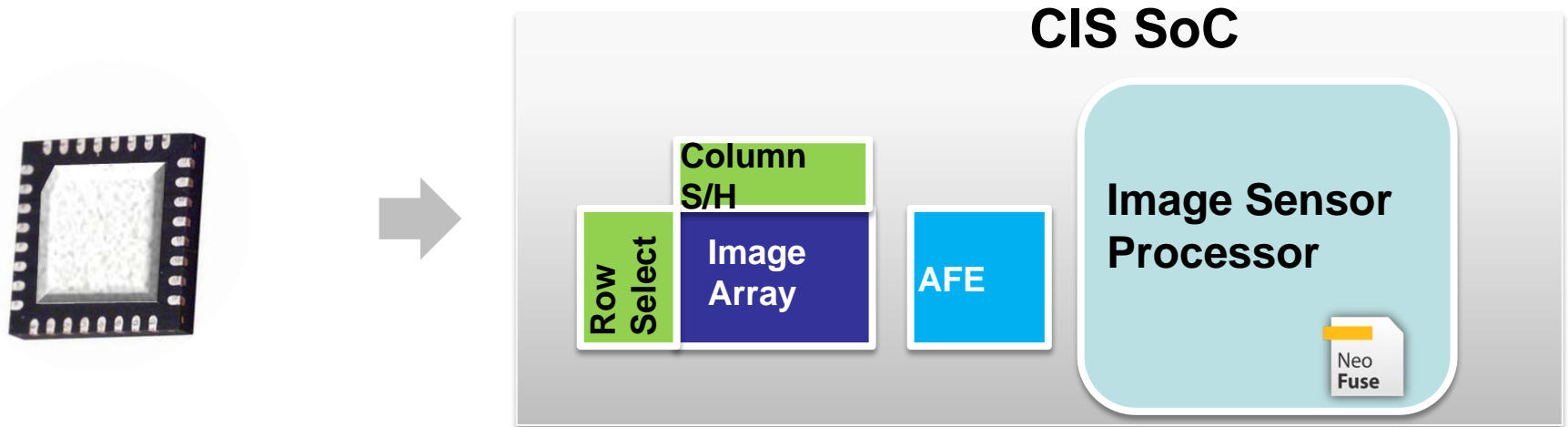
Process Technology : 0.11um HV/80nm HV/55nm HV



Density	Endurance	NVM Type	Purpose	NVM Usage
2K8~4K8	1	OTP	Trimming	Accuracy
			Code Storage	Gamma Table
16K8~32K8	<1000	MTP	Code Storage	Touch F/W Code
			Parameter setting	Performance Optimization

CMOS Image Sensor

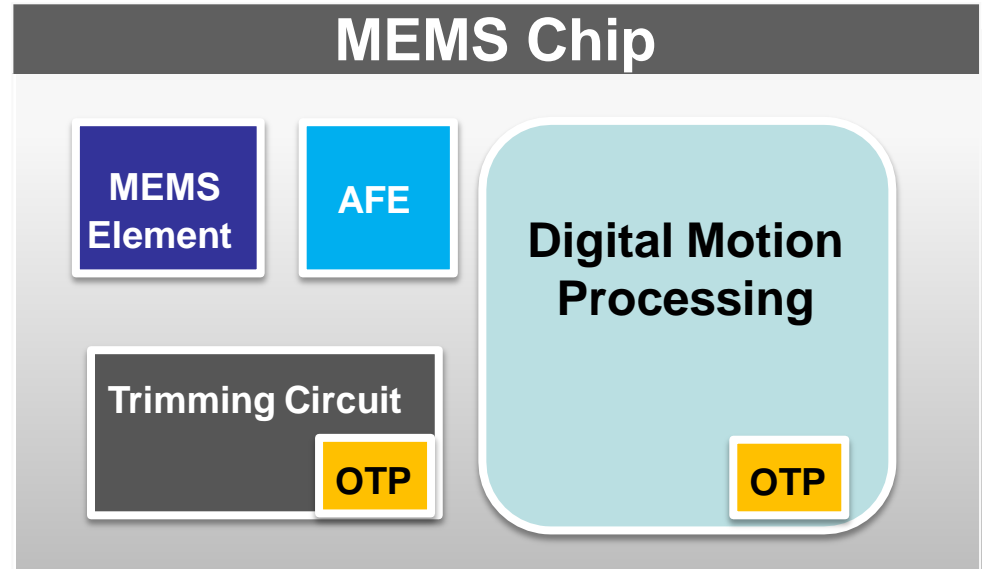
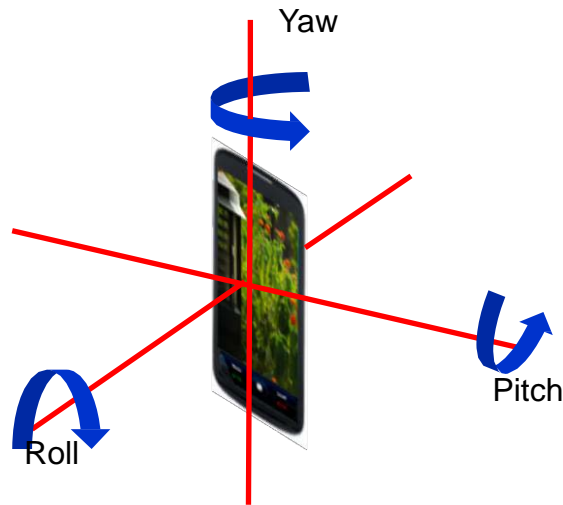
Process Technology : 0.11um CIS/90nm CIS/65nm CIS



Density	Endurance	NVM Type	Purpose	NVM Usage
2Kb~4Kb	1	OTP	Identification Setting	Product Code
			Parameter Setting	Start-up Initial Setting
32K8	1	OTP/ROM	Code Storage	Boot Load

MEMS

180/160/15x nm HV/Logic for MEMS Controller



Density	NVM Type	Purpose	NVM Usage
2Kb~4Kb	OTP	Trimming	Factory trimming
		Parameter Setting	Signal filtering
		Code Storage	Geometric computation

Security & Protection

Authorized Product



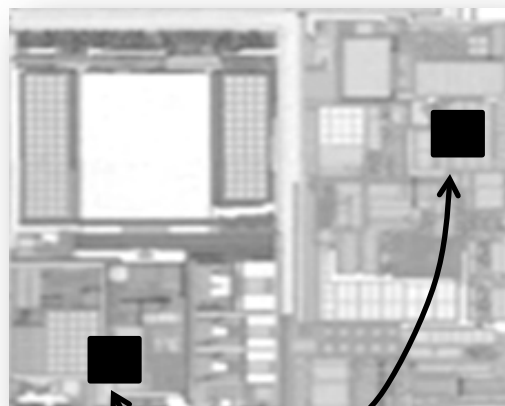
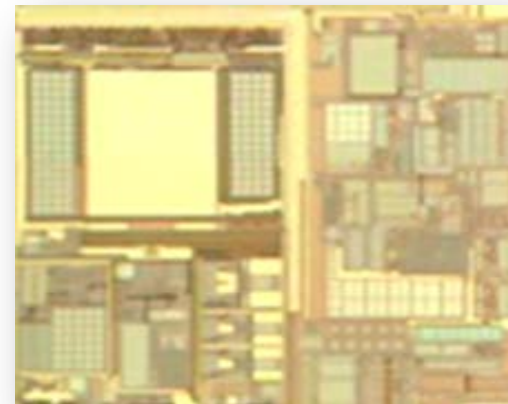
**reverse
copy**

re-produce



without protection

Fake Product

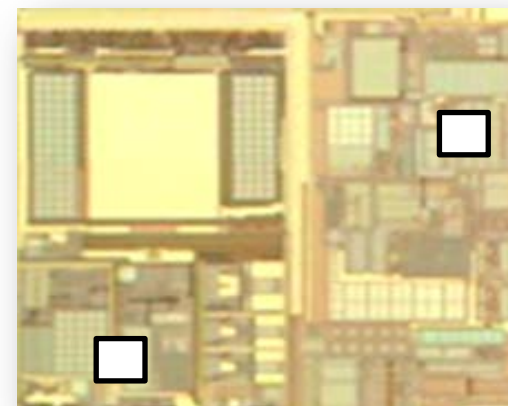


**reverse
copy**

re-produce



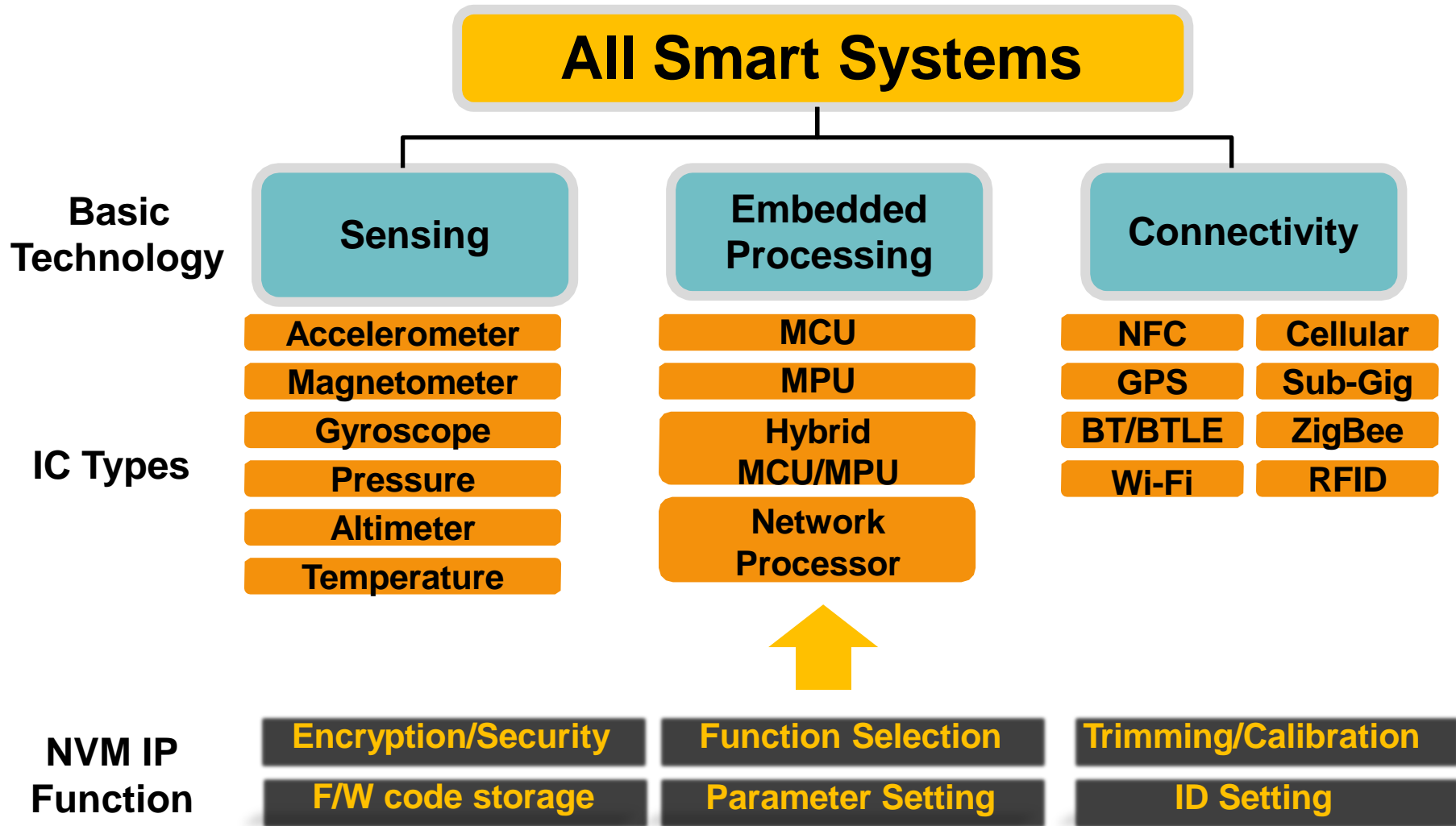
with protection



**Security IP/Code by
Authorized Use**

**Can NOT Work w/o
Security IP/Code**

NVM IP Demand in IoT



Replacement of Embedded Flash for Competitiveness Improvement

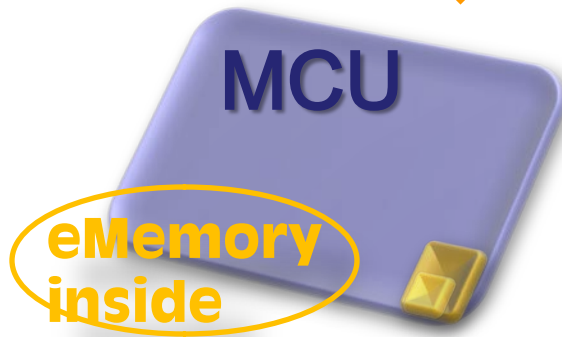


product design & manufacturing by
embedded Flash
Logic Process + 10 Masks



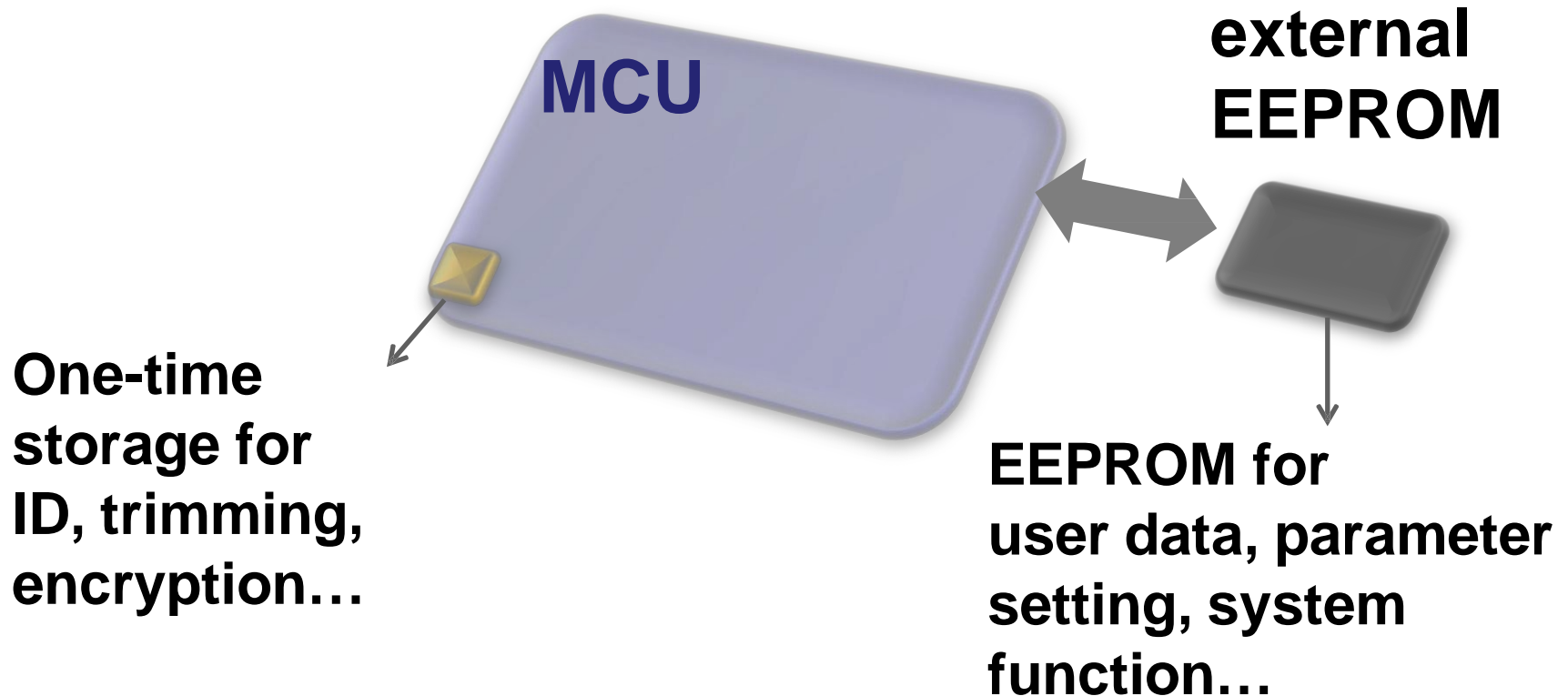
*30% more
cost reduction*

*wafer cost &
testing time*



product design & manufacturing by
Embedded Logic NVM (OTP/MTP)
Logic Process

MCU Applications with EEPROM



NeoBit + NeoEE

Hybrid NVM solution (NeoBit + NeoEE) with customized SPEC & optimized size



- **One single IP by integration of NeoBit & NeoEE**
- **Help for system size reduction**

Key Growth Drivers

Growth in value per mobile devices

- More chip applications per smartphone/tablet product.

Growth into more markets

- From consumer electronics and mobile devices to wearable devices.
- Adding new NVM product lines further enable more product applications.

Growth in more advanced technology

- Higher royalty per wafer is contributed from more advanced technology nodes.

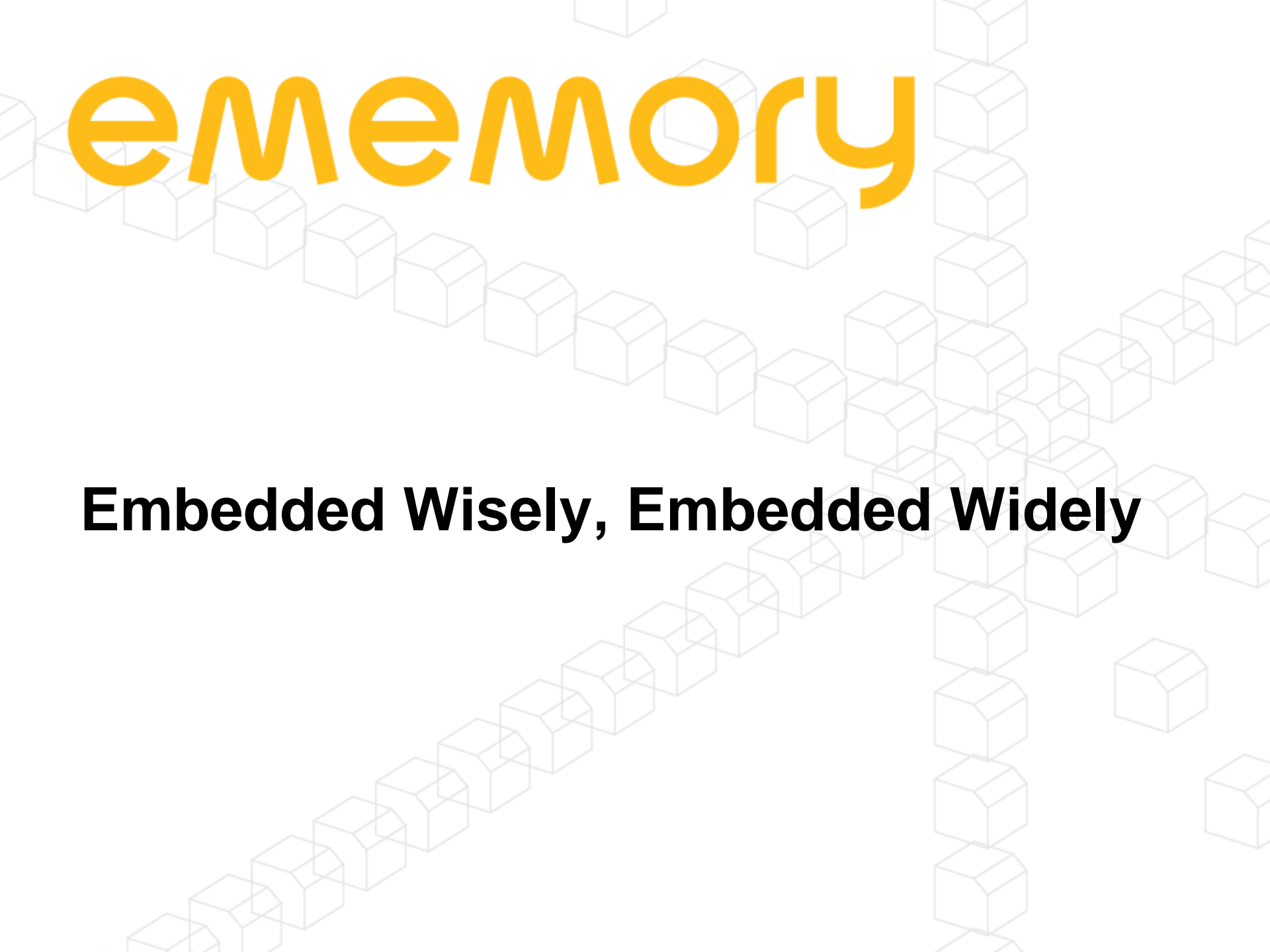
IoT great era

- Embedded Logic NVM will be a must.

Outlook for 4Q and Beyond

- **We foresee sustainable growth momentum in the coming quarters.**
- **Our penetration into advanced technology nodes is accelerating.**
- **The needs for low cost, low power and increased security are accelerating the adoption of eNVM in a diverse range of IoT-related applications.**

Q & A



ememory

Embedded Wisely, Embedded Widely