力旺電子(3529)
A leading Logic NVM Company

Sep. 12, 2014

智慧財產權聲明

本文件內之資訊，包括文字、圖片或其他檔案等，其所有權及智慧財產權皆屬力旺電子所有，本文件之內容包含力旺電子之機密資訊。請尊重智慧財產權，並予以保密，在未取得力旺電子書面同意前，不得複製、使用本文件或將其揭露予第三人。

eMemory, NeoBit, NeoFuse, NeoFlash, NeoEE與NeoMTP皆為力旺電子在台灣或其他國家之註冊商標或服務標章。

投資安全聲明

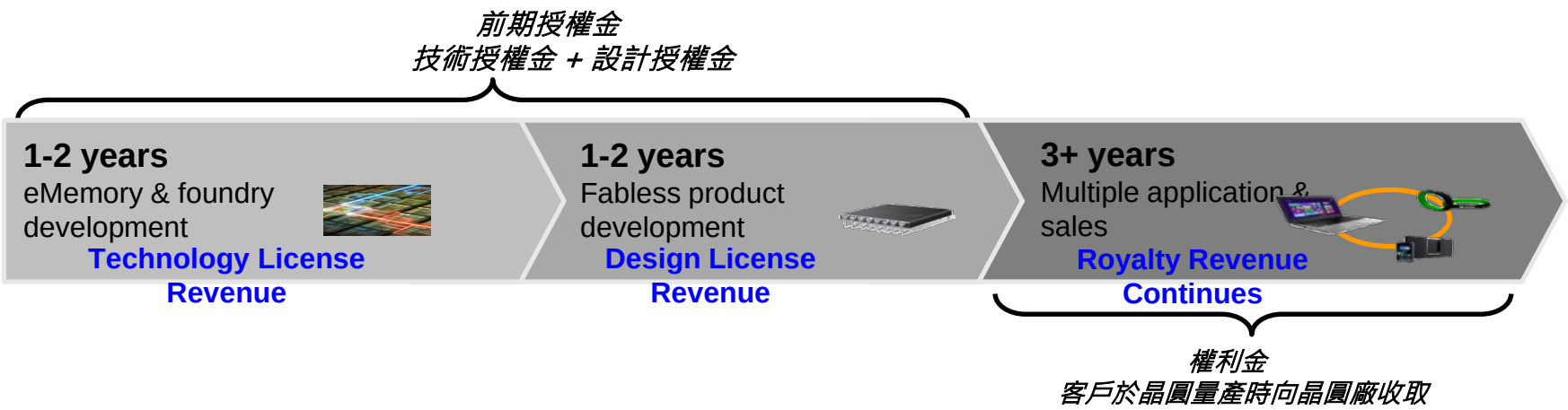
除簡報內所提供之歷史信息外，簡報事項係屬預測性陳述，受到風險及不確定性因素影響，可能造成實際結果與陳述內容發生不符，這些不確定性因素包括：技術平台是否順利導入利用、IP是否被客戶接受、客戶產品大量量產之能力及時間、產業及市場對半導體產品之供給及需求移轉、終端市場之穩定性及其他風險等。

大綱

- 營運模式
- 第二季及上半年營運回顧
- 應用及成長機會
- 未來展望
- Q & A

營運模式

- 2000年成立，2002年第一個客戶，2005年開始獲利，2011年掛牌上市，掛牌以來，無市場籌資，無銀行借款，現金配股率超過100%。
- 全世界最大的logic non volatile Memory IP公司，212員工，149個研發人員。
- 成長性指標: 1) 正在晶圓廠建構的製程平台數
  2) Usage 設計授權數
  3) 權利金



全球客戶

	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

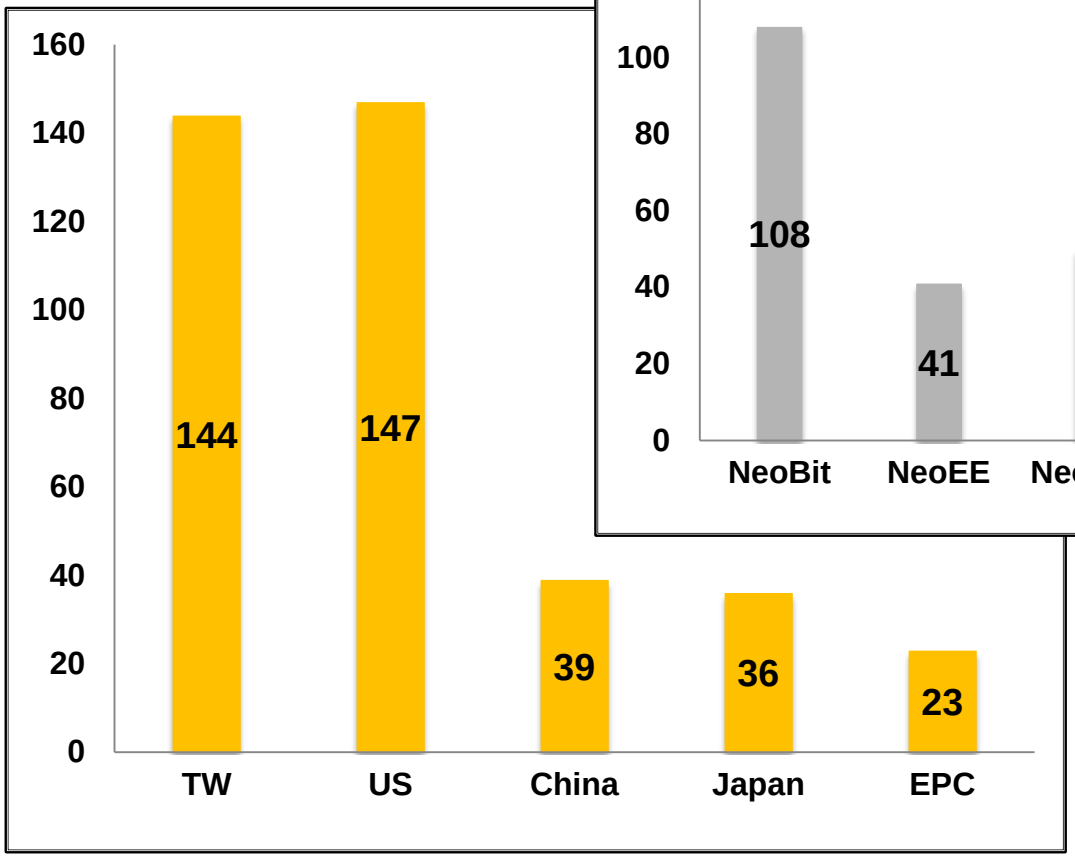
Foundry

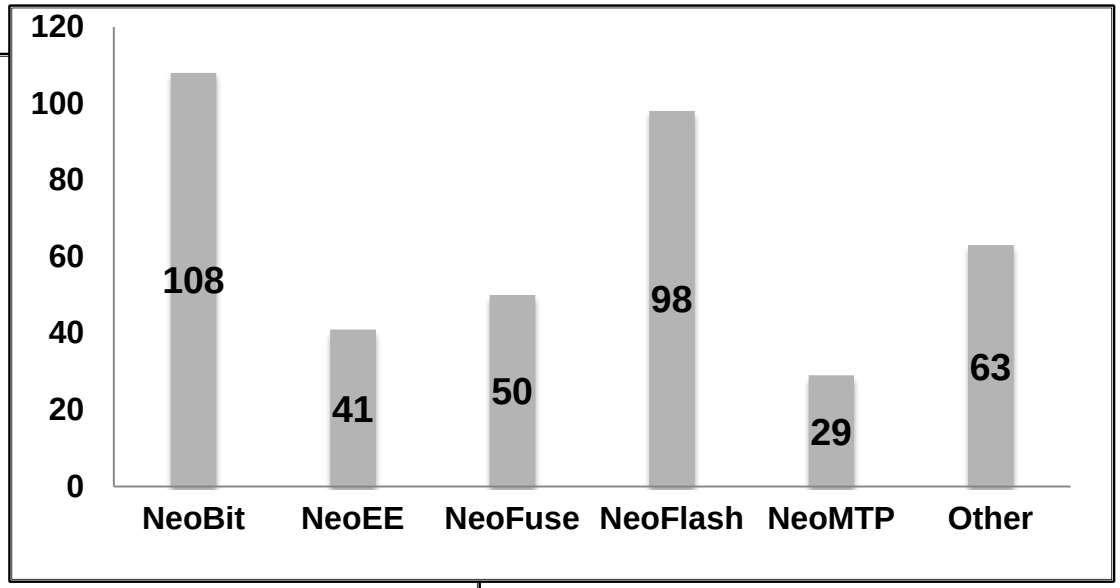
IDM

專利佈局

截至2014年7月，已領證之專利計有239件，申請中之專利150件

總計 389 件專利佈局

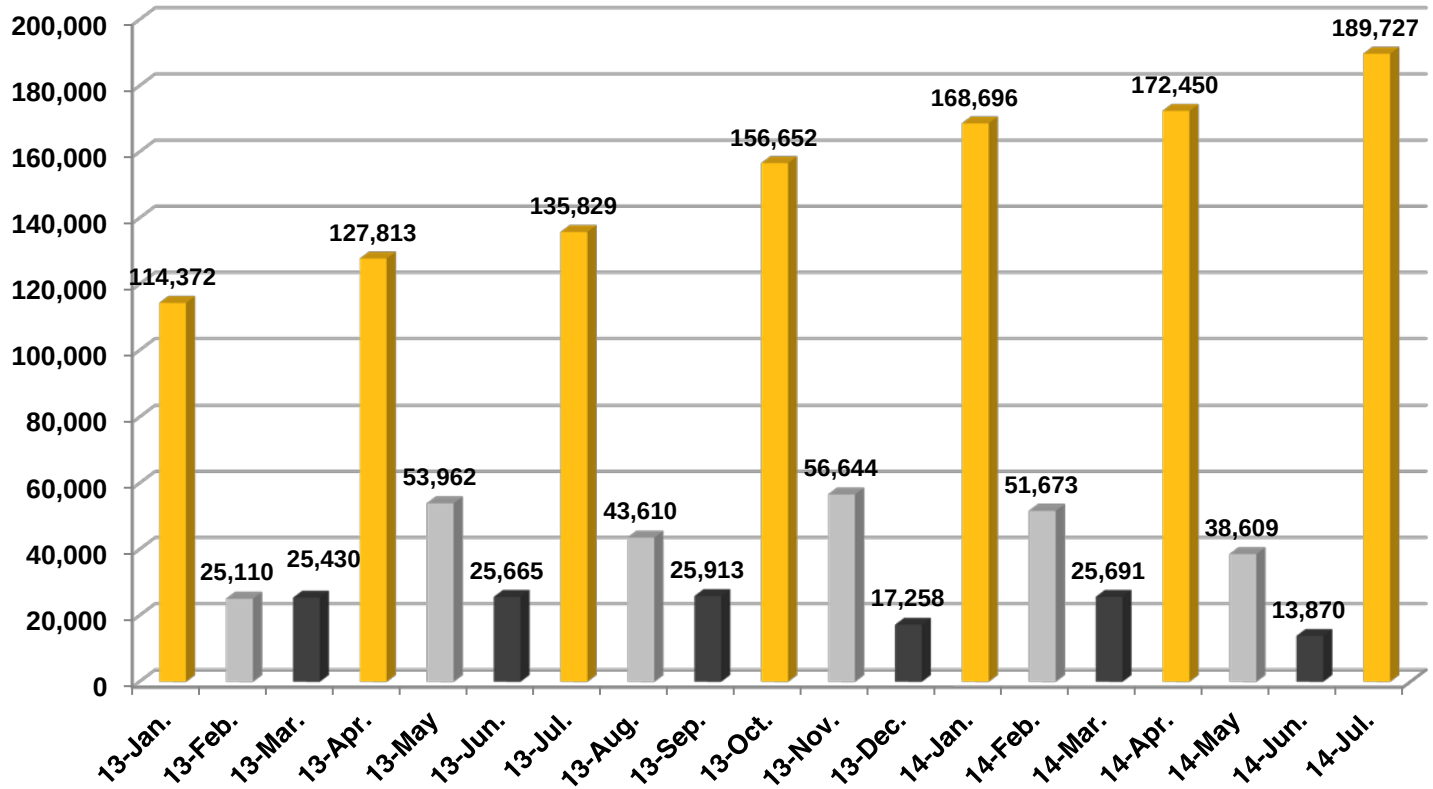




每季營收模式

- 每季第一個月認列絕大部份晶圓廠前一季使用本公司IP的出貨晶圓權利金及當月產生的技術授權金及設計授權金；第二個月則是少部份晶圓廠權利金及當月授權金；第三個月則無權利金收入，只有授權金。

Unit：NTD Thousands



大綱

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第二季各項營收

單位：新台幣仟元

	2Q14	1Q14	QoQ Growth Rate	2Q13	YoY Growth Rate	1H14	1H13	YoY Growth Rate
權利金	167,731	171,015	-1.92%	126,492	32.60%	338,746	240,652	40.76%
授權費	57,198	75,045	-23.78%	80,948	-29.34%	132,243	131,700	0.41%
合計	224,929	246,060	-8.59%	207,440	8.43%	470,989	372,352	26.49%

單位：專案數

		2Q14	1Q14	2Q13	1Q13
技術授權數		6	6	8	4
設計授權數	NRE	12	33	14	7
	使用費	86	90	69	73

綜合損益表

綜合損益表項目 (單位:台幣仟元)	1H14	1H13	YoY
營業收入淨額	470,989	372,352	26%
營業毛利率	100%	100%	-
營業費用	256,125	226,630	13%
營業淨利率	46%	39%	+7ppts
營業外收入及支出	5,091	4,054	26%
本期淨利	193,321	127,721	51%
純益率	41%	34%	+7ppts
每股盈餘 (單位: 台幣元)	2.55	1.71	49%
權益報酬率	24%	17%	+7ppts

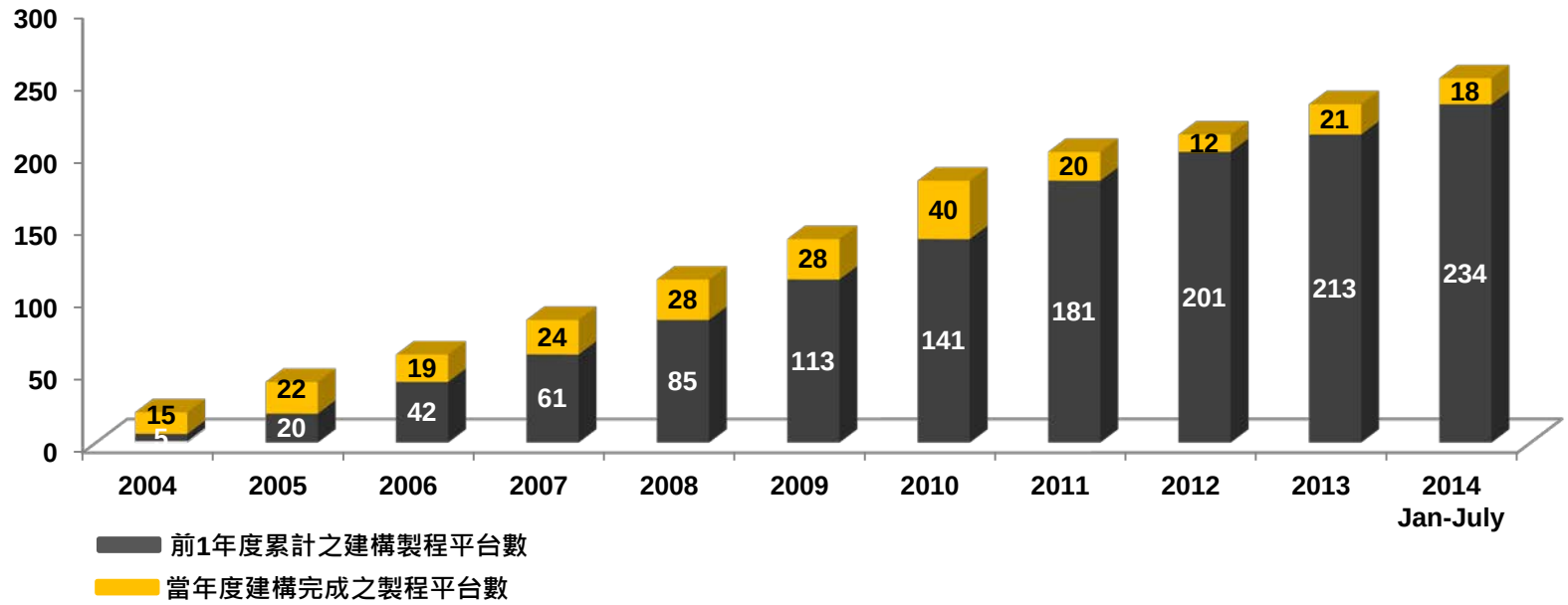
技術授權合約數

年度	2012	2013	1Q2014	2Q2014
授權數	12	19	6	6

註: 與晶圓廠簽訂的技術授權合約所含的技術製程及授權金視合約內容而定，無特別季節性因素。

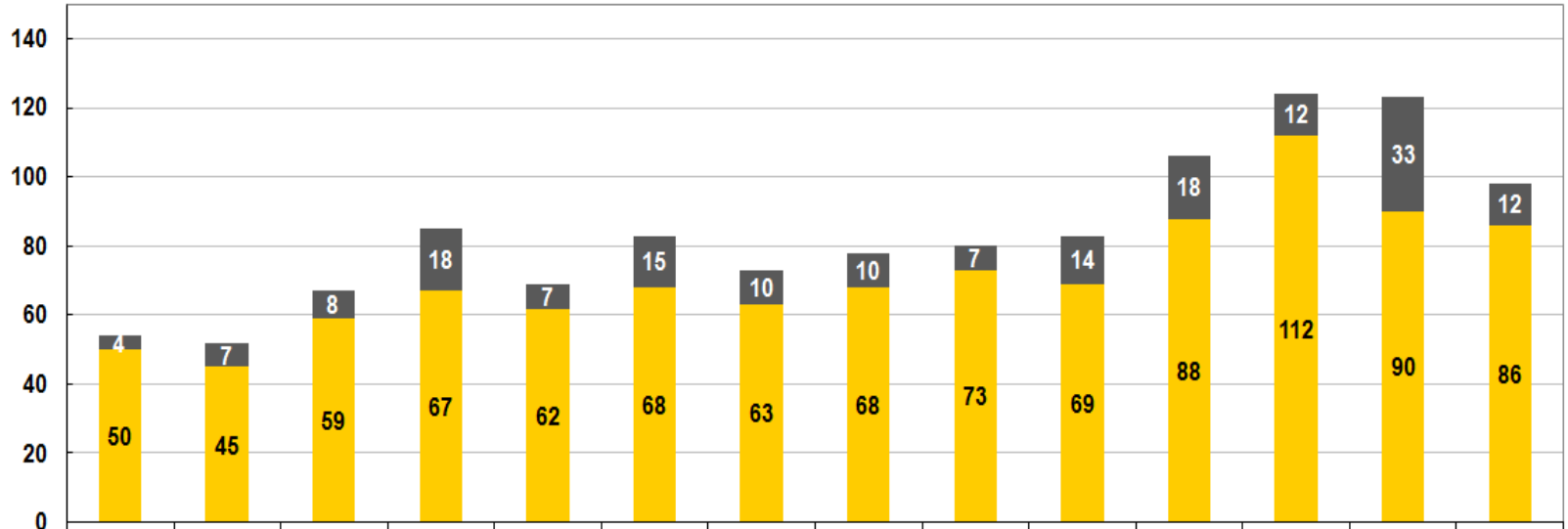
目前還在建構中的技術製程有64個，其中：

25 個 NeoBit、23 個 NeoFuse、11 個NeoEE 、1個NeoFlash、4 個NeoMTP



每季設計授權合約數(New Tape Out)

2014上半年共有221件NTO（393@2013, 303@2012, 258@2011)

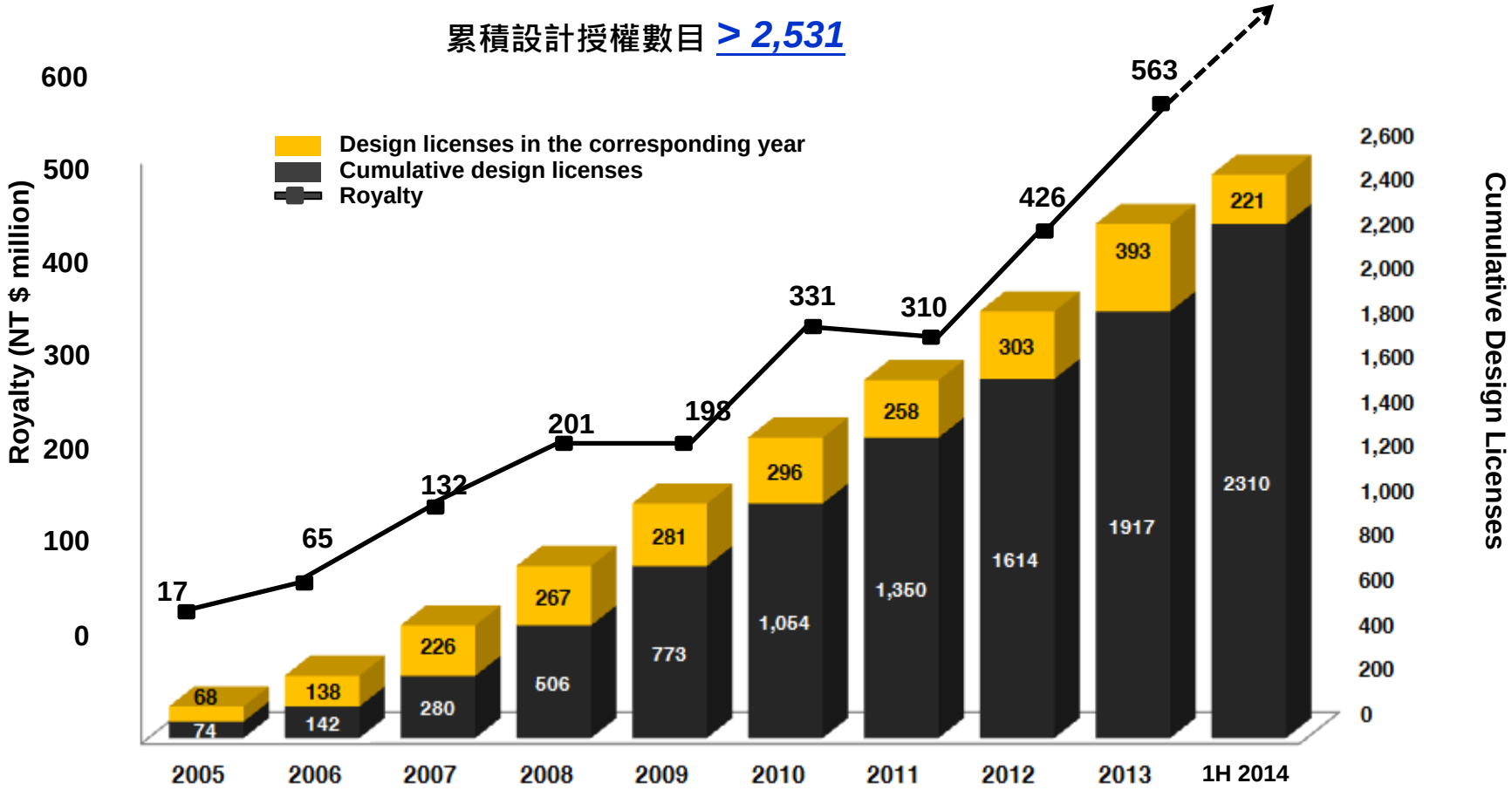


	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	2011				2012				2013				2014	
TOTAL	54	52	67	85	69	83	73	78	80	83	106	124	123	98
NRE	4	7	8	18	7	15	10	10	7	14	18	12	33	12
USAGE	50	45	59	67	62	68	63	68	73	69	88	112	90	86

NRE: 客製化的IP，需重新認證，導入到權利金貢獻約1-1.5年

Usage：使用架上已認證及有量產經驗的IP，按年費(不計使用次數)或單次使用收費，設計導入到量產權利金貢獻時間約1年以內。

權利金取決於過去累積的設計授權數目



註1. 2009年因整體半導體景氣衰退，權利金年衰退1.5%。

註2. 2011年因2010年單一客戶預付權利金，導致2010年成長67%，2011年年衰退6.3%。

註3. 2009-2013年權利金年複合成長率為 30%。

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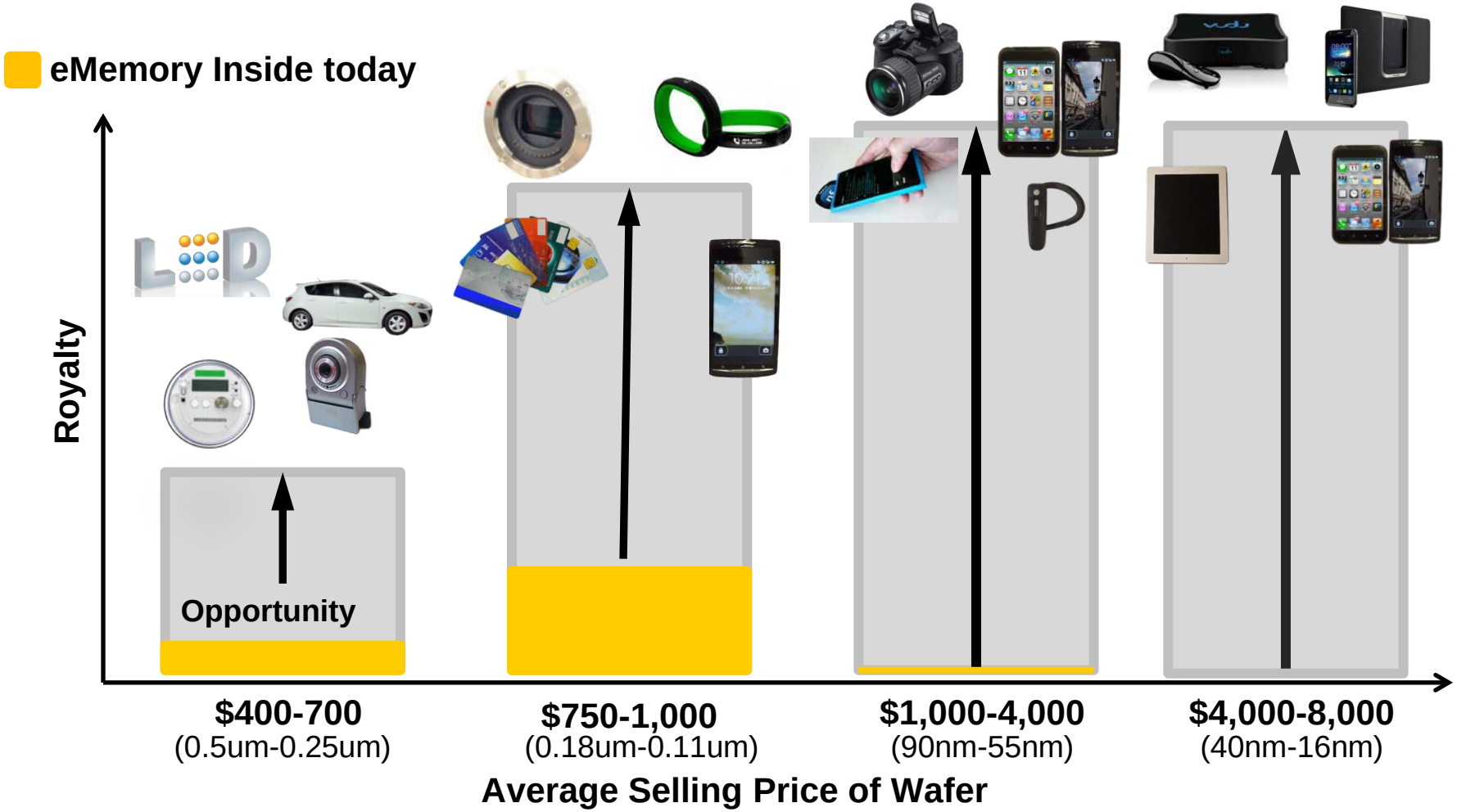
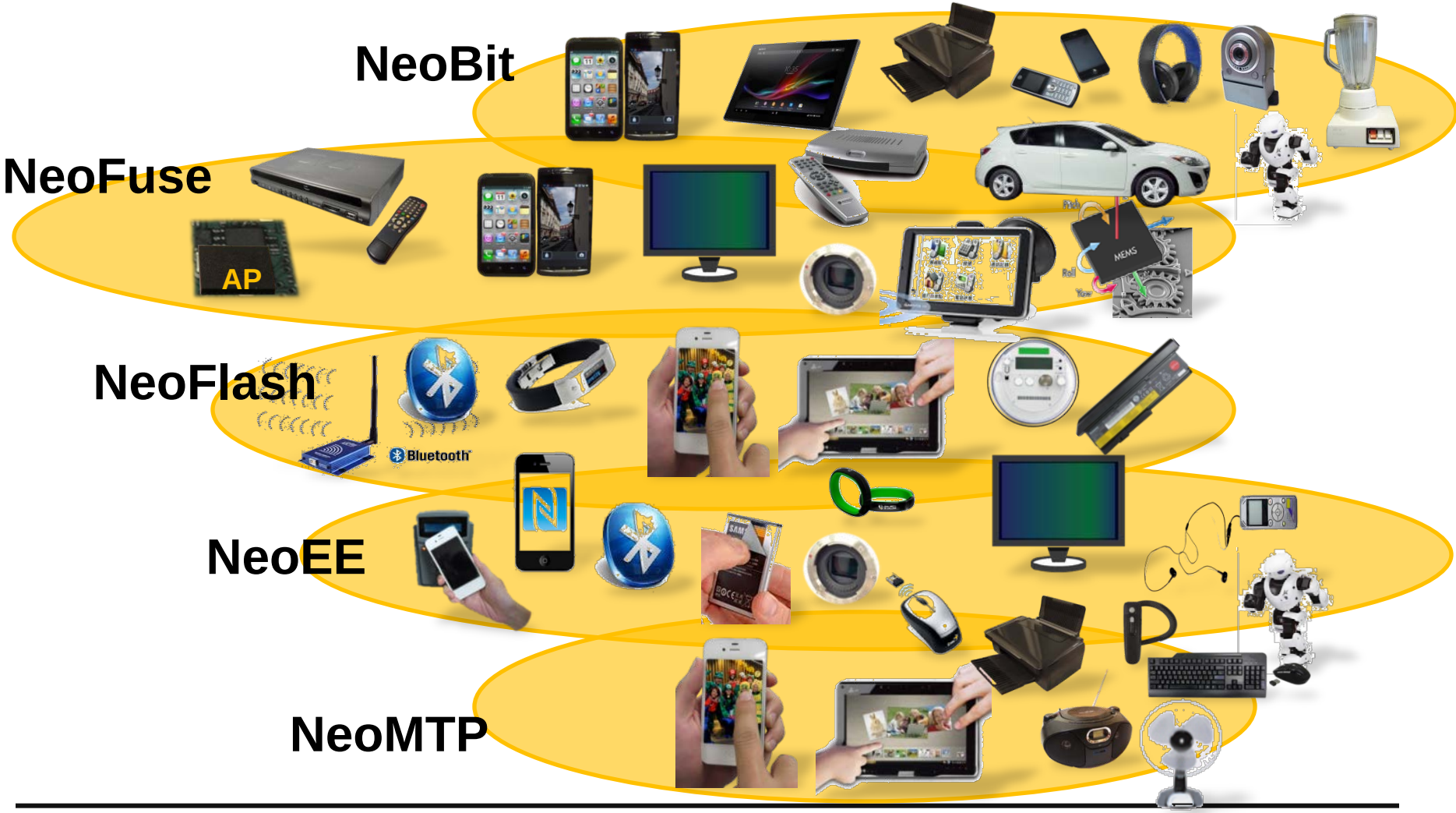
商機與潛力



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

力旺IP的應用

12"					8"			
16/20nm	28nm	40nm	55/65nm	80/90nm	110/130nm	160/180nm	250nm	350nm

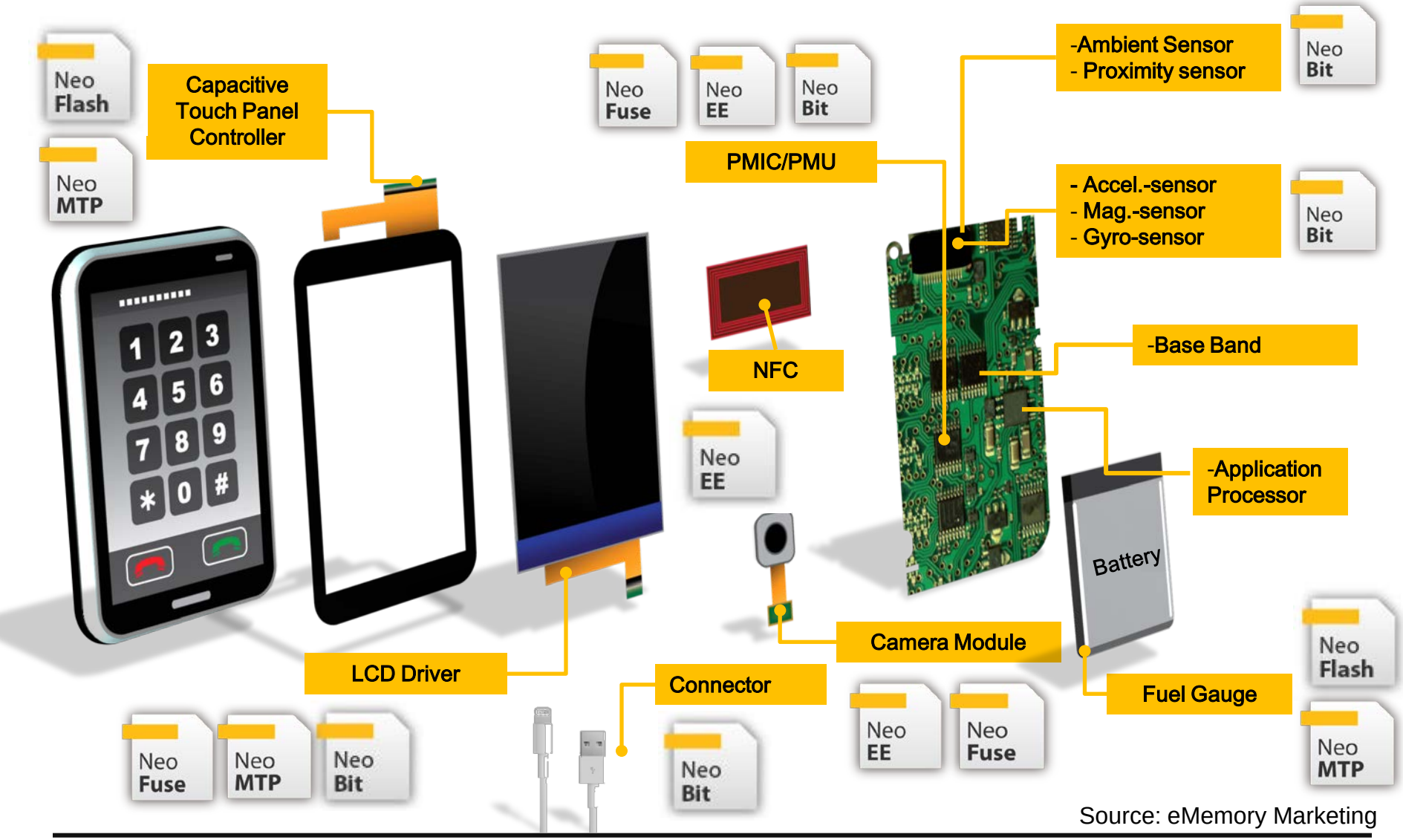


力旺之NVM技術

- **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

智慧型手機中力旺 IP 的應用



Source: eMemory Marketing

3Q14 按IC種類之晶圓需求

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

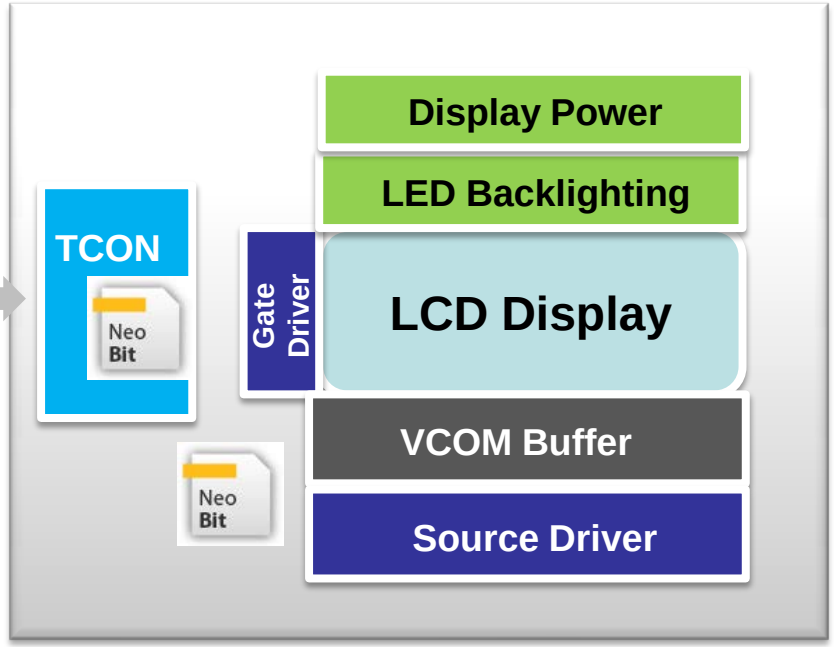
2014.8.29 updated

先進液晶顯示驅動晶片

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

I/F
(LVDS, MIPI,…)

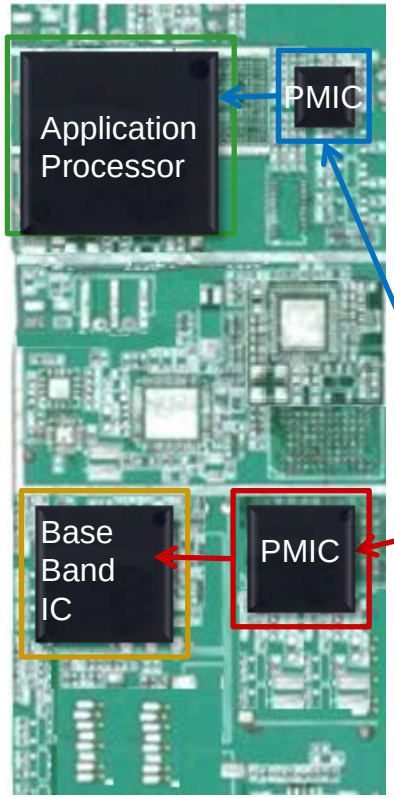
DDI



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

應用於Baseband與Application Processor的電源管理晶片

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

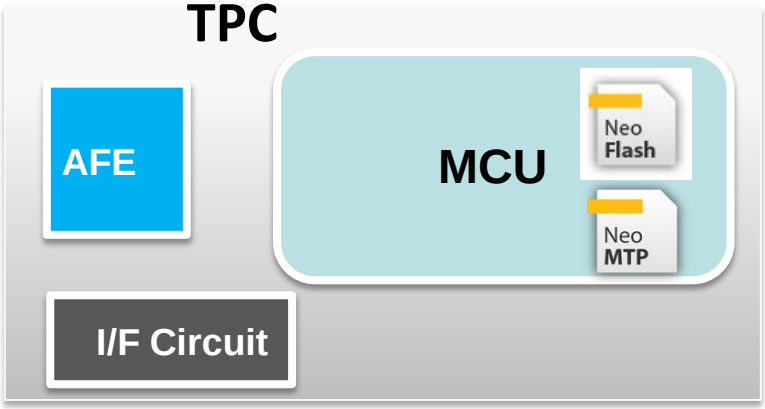


Density	NVM Type	Purpose	NVM Usage
2Kb~4Kb	OTP	Trimming	DC/DC, Bandgap
		Parameter Setting	Design flexibility & Performance optimization
		Code Storage	Start-up behavior & smart power saving algorithm

PMIC Neo Bit

觸控面板控制器晶片

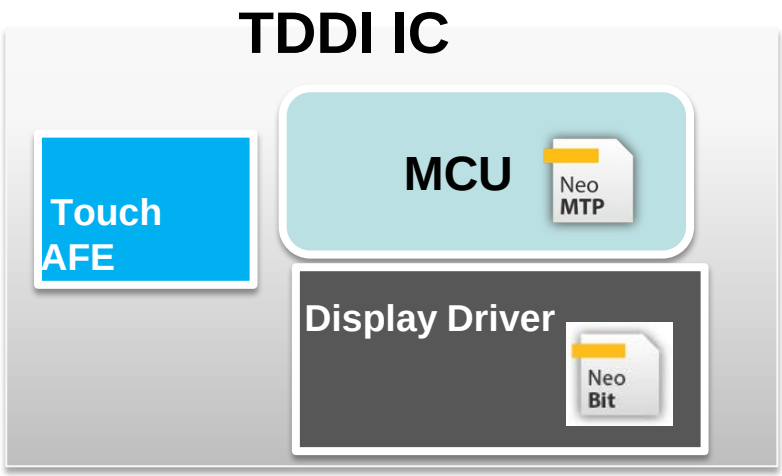
Process Technology : 0.16um HV/0.11um G



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

內嵌式觸控面板控制器晶片

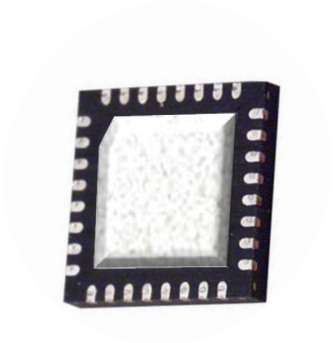
Process Technology : 0.11um HV/80nm HV/55nm HV

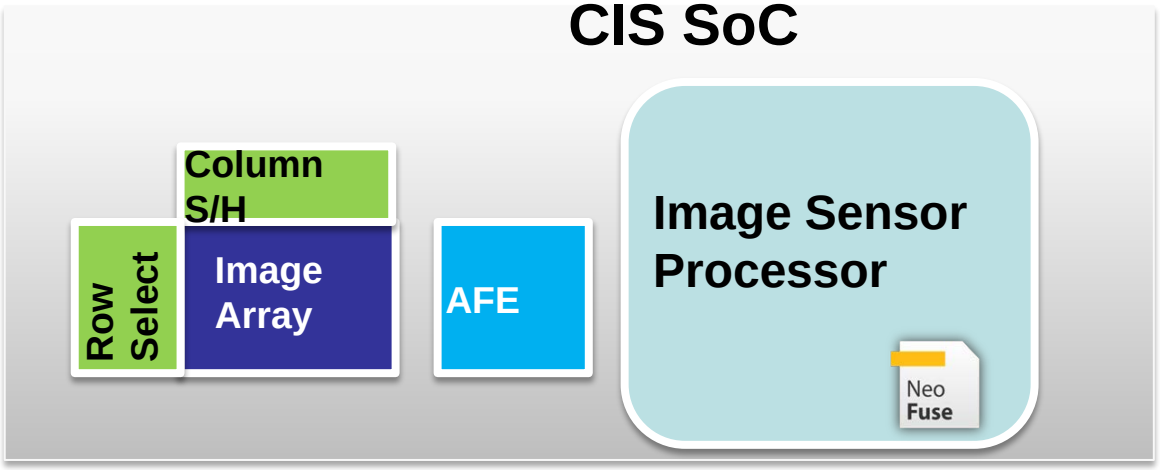


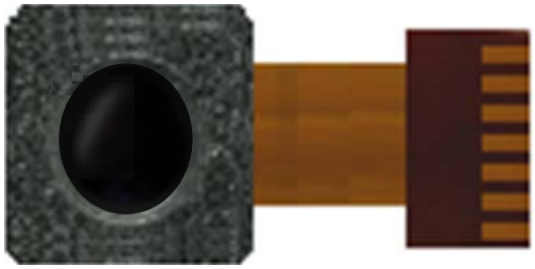
Density	Endurance	NVM Type	Purpose	NVM Usage
2K8~4K8	1	OTP	Trimming	Accuracy
			Code Storage	Gamma Table
16K8~32K8	<1000	MTP	Code Storage	Touch F/W Code
			Parameter setting	Performance Optimization

CMOS 影像感測器

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

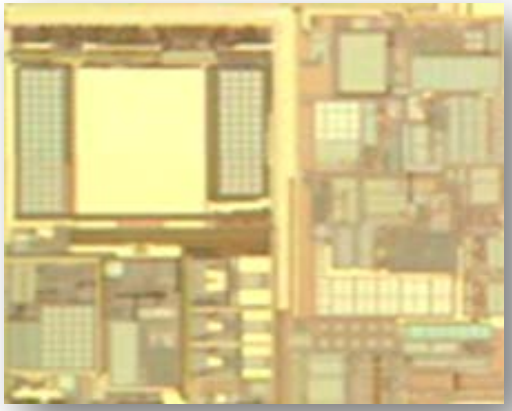
資料防護

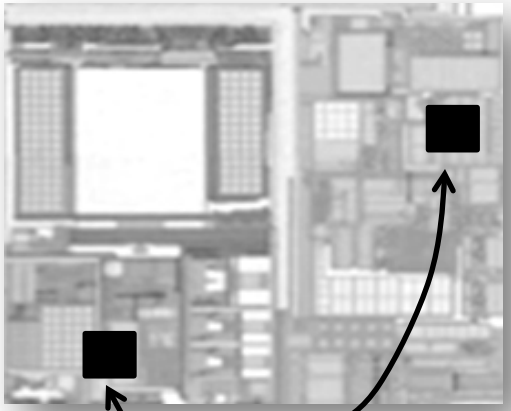
Authorized Product **Fake Product**

reverse copy

re-produce

without protection

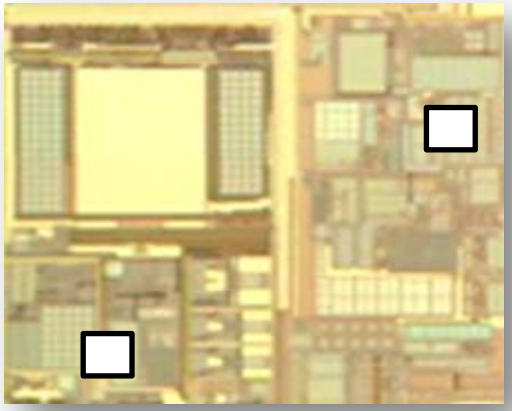




reverse copy

re-produce

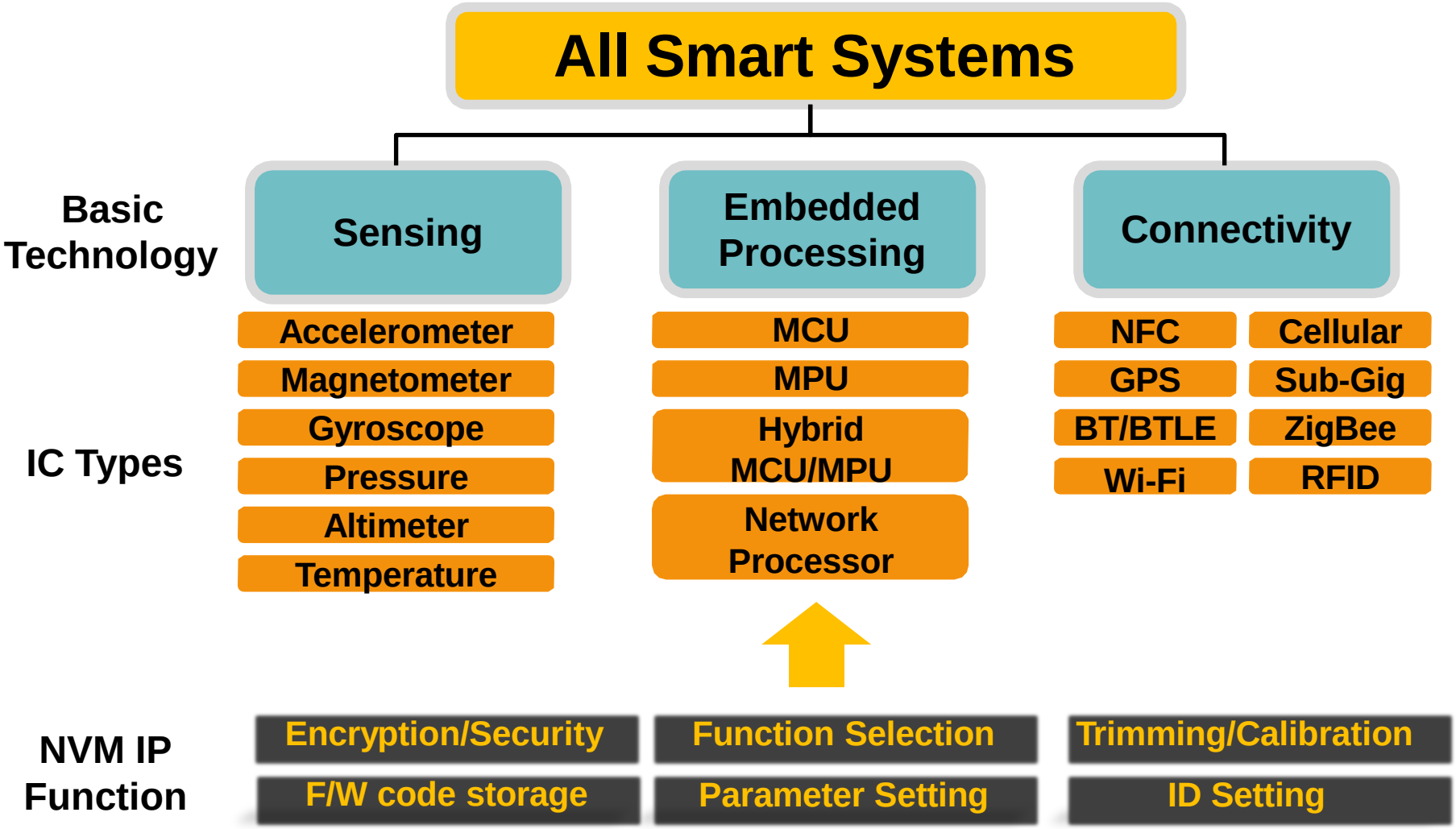
with protection



Security IP/Code by Authorized Use

Can NOT Work w/o Security IP/Code

在IoT中之NVM IP 需求

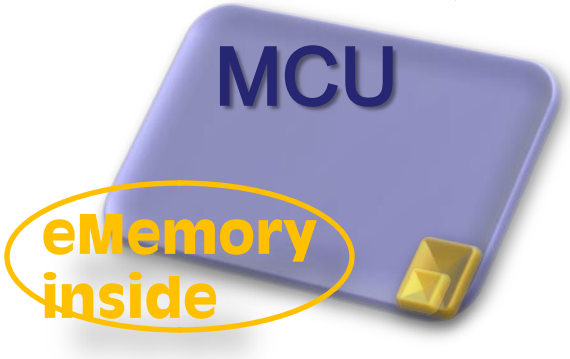


取代嵌入式快閃記憶體之競爭優勢

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

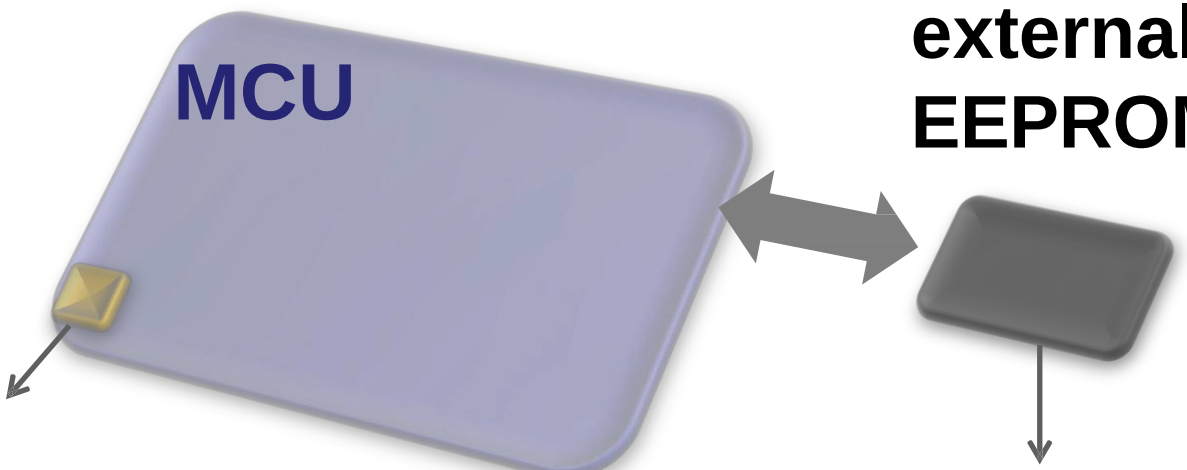
30% more cost reduction

(wafer cost & testing time)



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

EEPROM應用於MCU



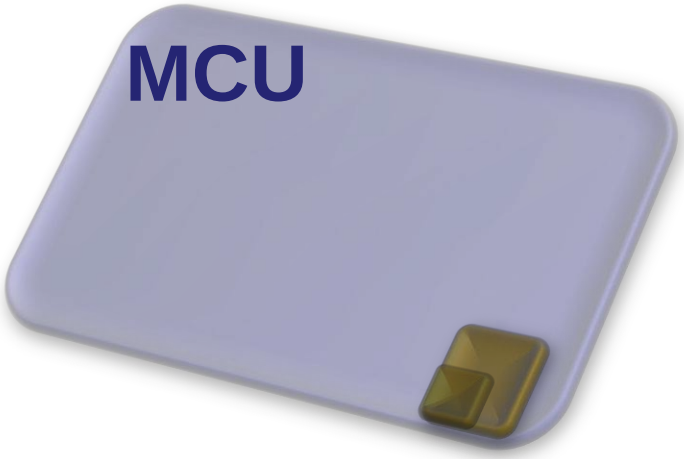
external
EEPROM

One-time
storage for
ID, trimming,
encryption…

EEPROM for
user data, parameter
setting, system
function…

NeoBit + NeoEE

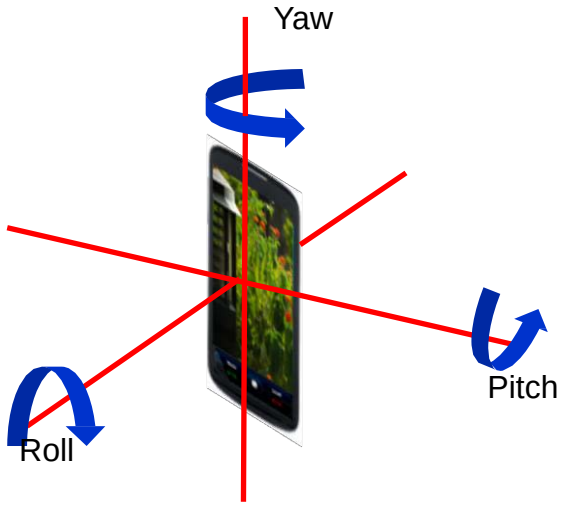
Hybrid NVM solution (NeoBit + NeoEE) with customized SPEC & optimized size

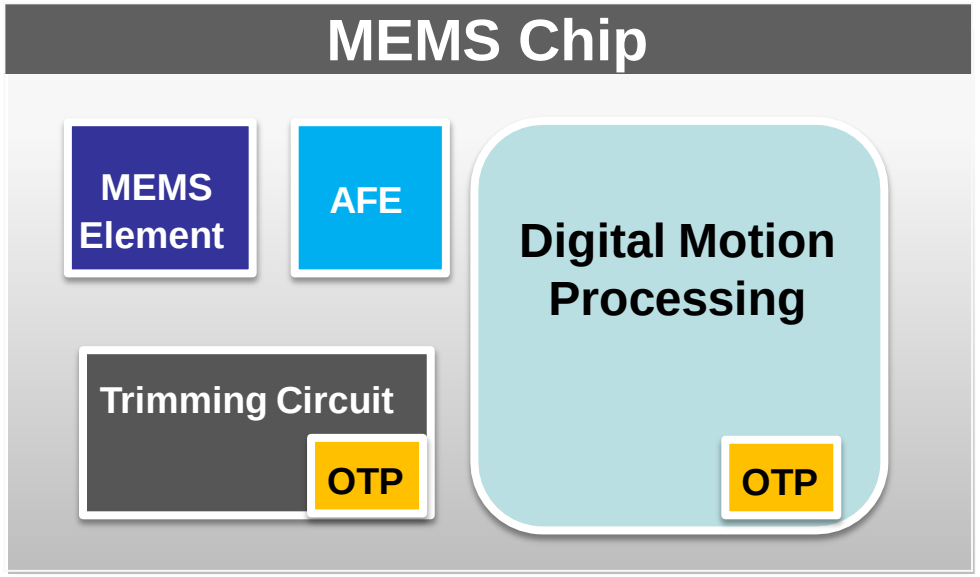


- **One single IP by integration of NeoBit & NeoEE**
- **Help for system size reduction**

微機電系統(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

大綱

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3Q 與未來展望

- 未來兩季營收兩位數成長。
- 在領先晶圓代工廠的滲透率持續增加，預期此趨勢將持續延續，並滲透進各種不同應用端及製程領域，及擴展到其他晶圓代工廠。

使用eMemory IP佔T公司各製程營收比例

	製程	*% of T	2Q13	1Q14	2Q14
8”	0.5+	1%	0%	0%	0%
	0.25/0.35	4%	16.8%	23.8%	34.2%
	0.15/0.18	14%	9.8%	14.7%	13.3%
	0.11/0.13	3%	15.4%	21%	20.4%
12”	90nm	7%	4.7%	15.3%	18.3%
	65nm	15%	0%	0%	0%
	40/45nm	19%	0%	0%	0%
	28nm	37%	0%	0%	0%
8”		22%	11%	16%	17%
12”		78%	0.5%	1.4%	1.6%
Total		100%	3.1%	4.7%	5.1%

* 在2Q14 該製程佔T公司整體營收比例

關鍵成長驅動力

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.

Q & A

ememory

Embedded Wisely, Embedded Widely