



eMemory

Investor Presentation

eMemory Technology Inc.

March, 2018

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eMemory – the Embedded IP Expert

- **Key Summary**
- **Value Creations**
- **Financials**

Company Overview

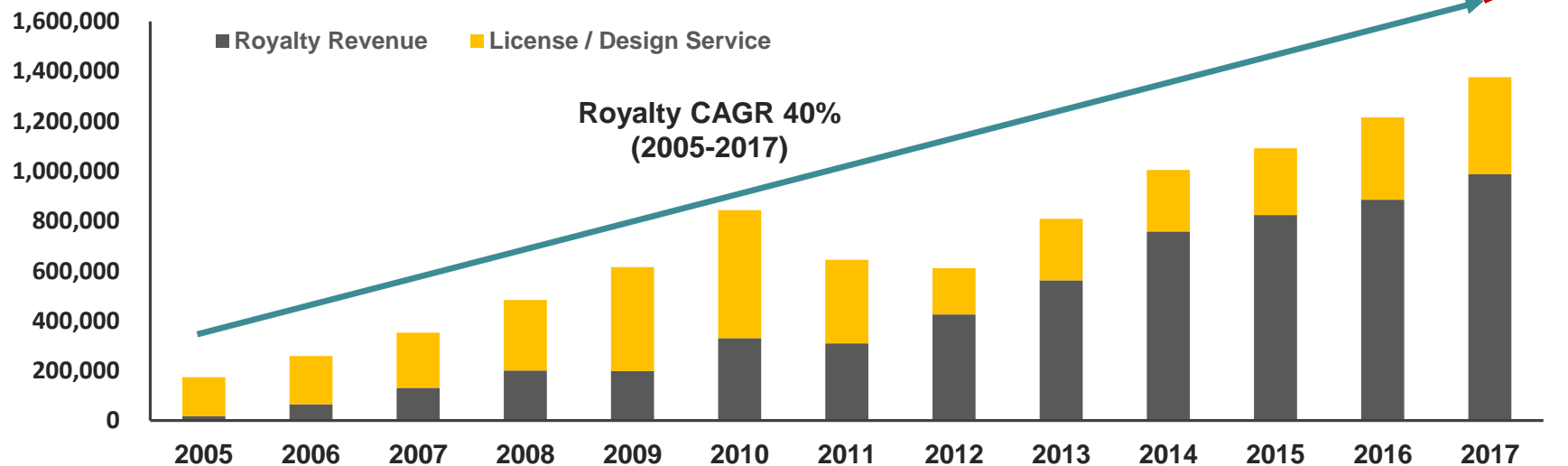
eMemory is the global leader of embedded non-volatile memory IP

Key Facts

- Headquartered in Hsinchu (Taiwan), founded in 2000, IPO in 2011
- 100% gross margins, 48.6% OP margins
- Ranking no. 7 semiconductor IP vendor
- Over 19 mlns of wafers shipped.
- Over 510 patents Issued, another 240 pending
- 238 employees (70% R&D personnel)
- Largest embedded NVM IP vendor
- TSMC Best IP Partner Award since 2010

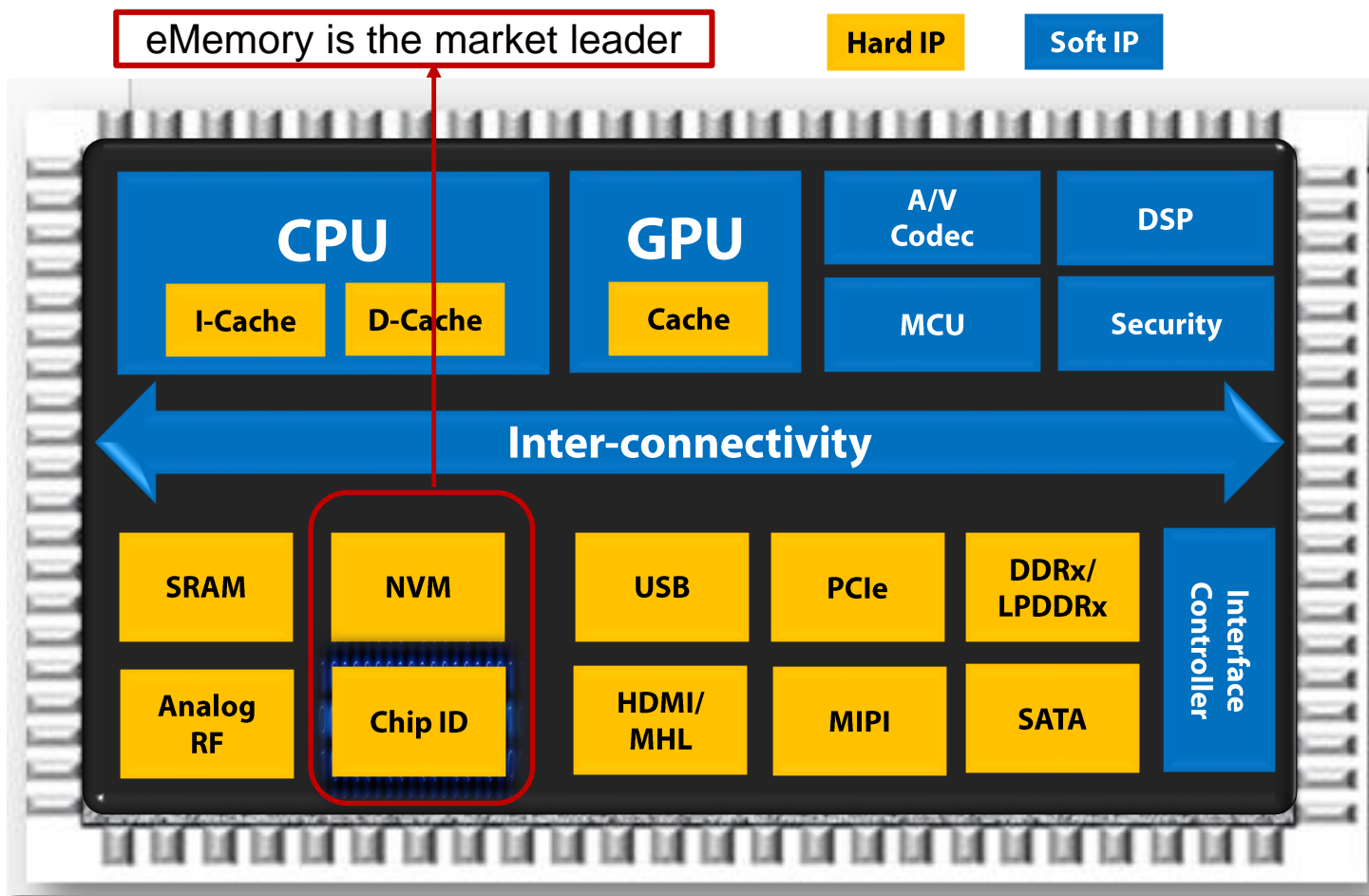
Revenue Trend

(Unit: NT\$ 1,000)



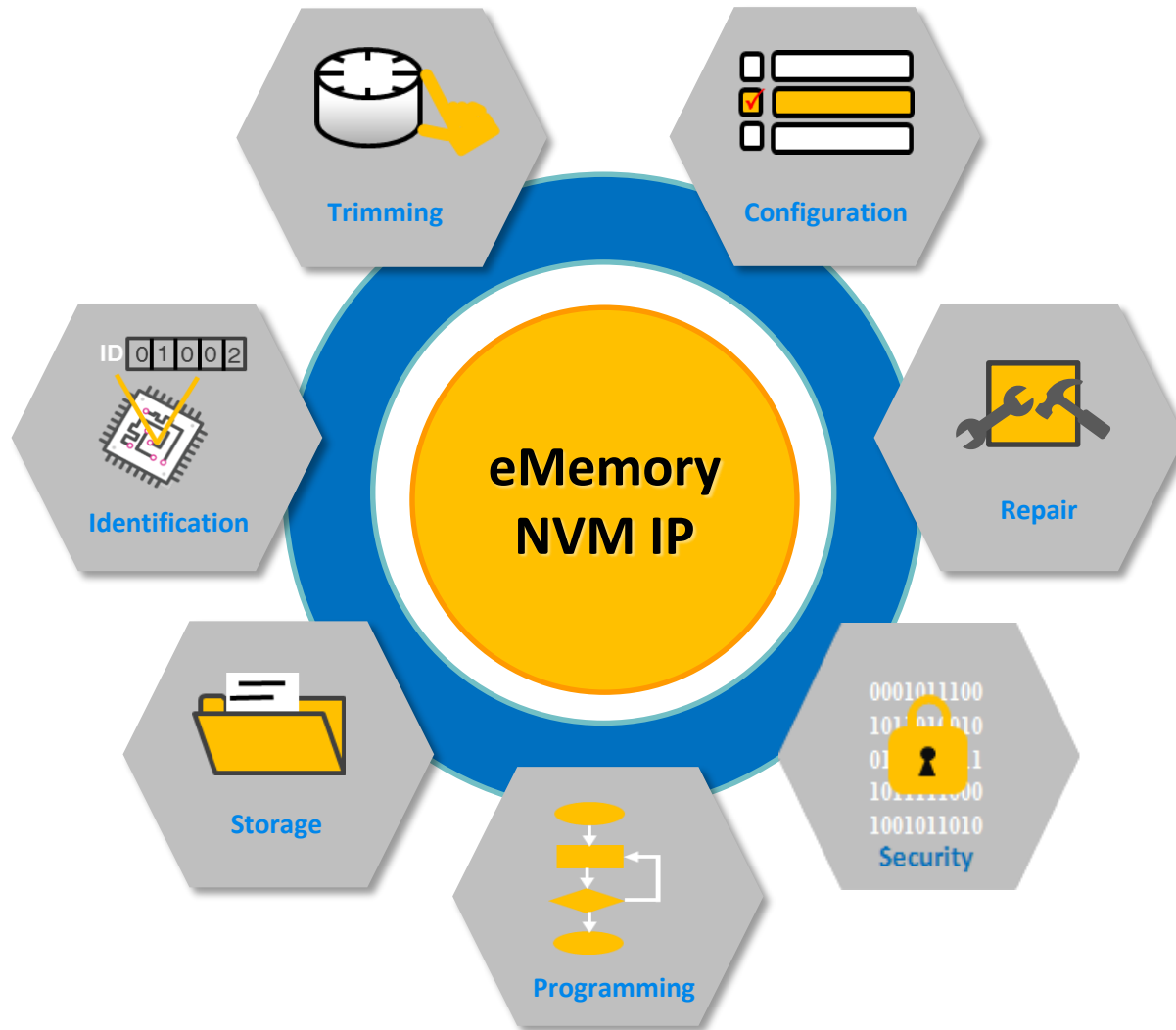
Leading Silicon IP Provider

eMemory's embedded Non-Volatile Memory and Chip ID are foundation IP of SoC



eMemory's Embedded NVM

eMemory's solutions can help customers effectively reduce time and development costs.



Worldwide Customers

Our IP solutions are adopted by leading foundries, IDMs and fabless worldwide

Global Customers

	Foundry	IDM	Fabless
Taiwan	5	0	261
China	8	0	513
North America	1	2	242
Europe	2	1	111
Korea	3	0	71
Japan	4	8	52
Others	1	0	53



Foundry

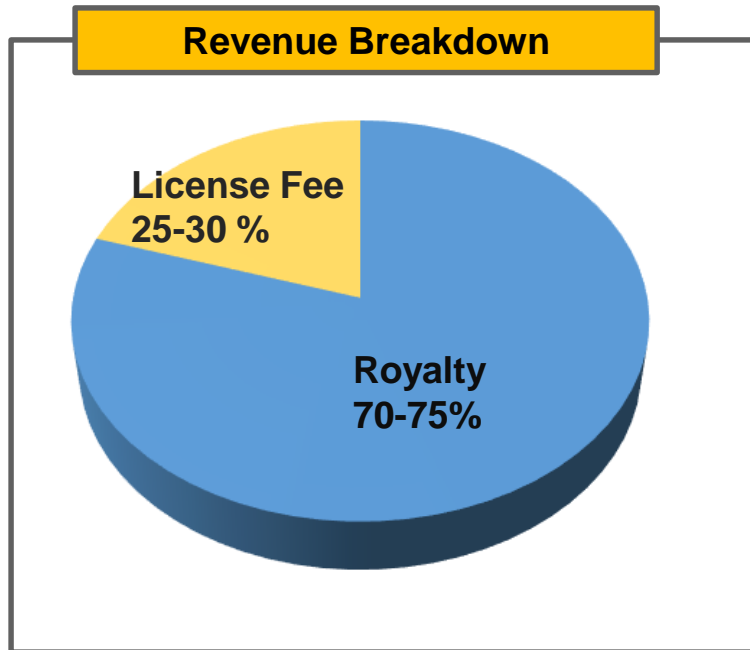


IDM

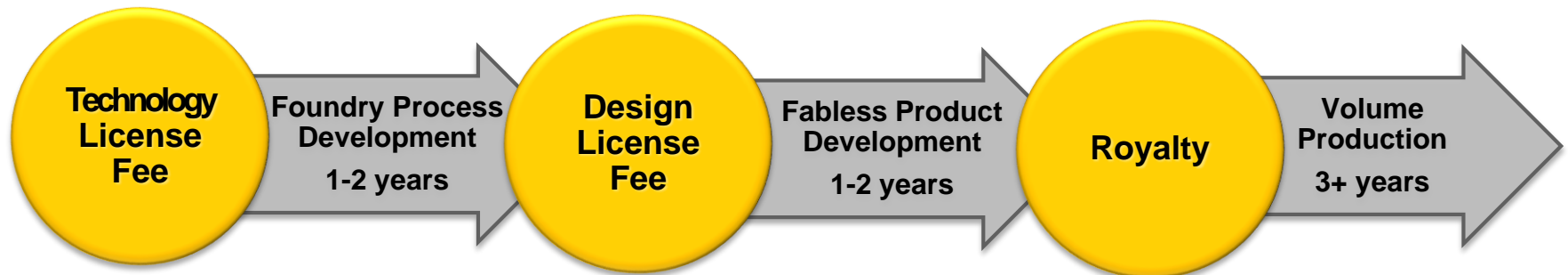


Business Model

Recurring royalty is the backbone of our business

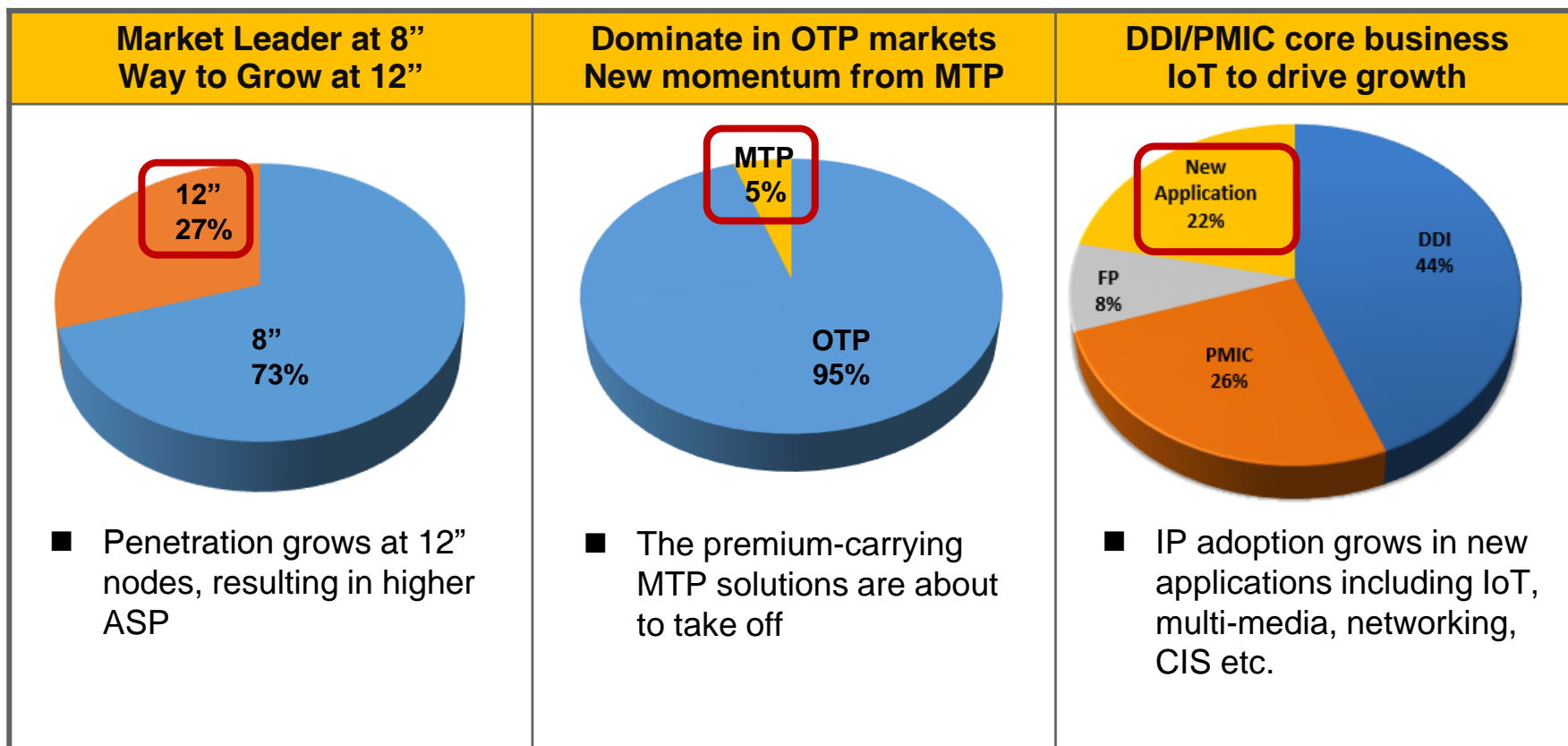


- Royalty rates are based on IP type and wafer price
- Royalty is collected by foundry partners base on wafer volume production
- Royalty revenue is a key growth driver:
 - More adoption = more volume shipment
 - More advanced node wafers = Higher ASP per wafer
- $\text{Royalty} = \text{Wafer Volume} * \text{ASP per wafer}$



Growth Engines

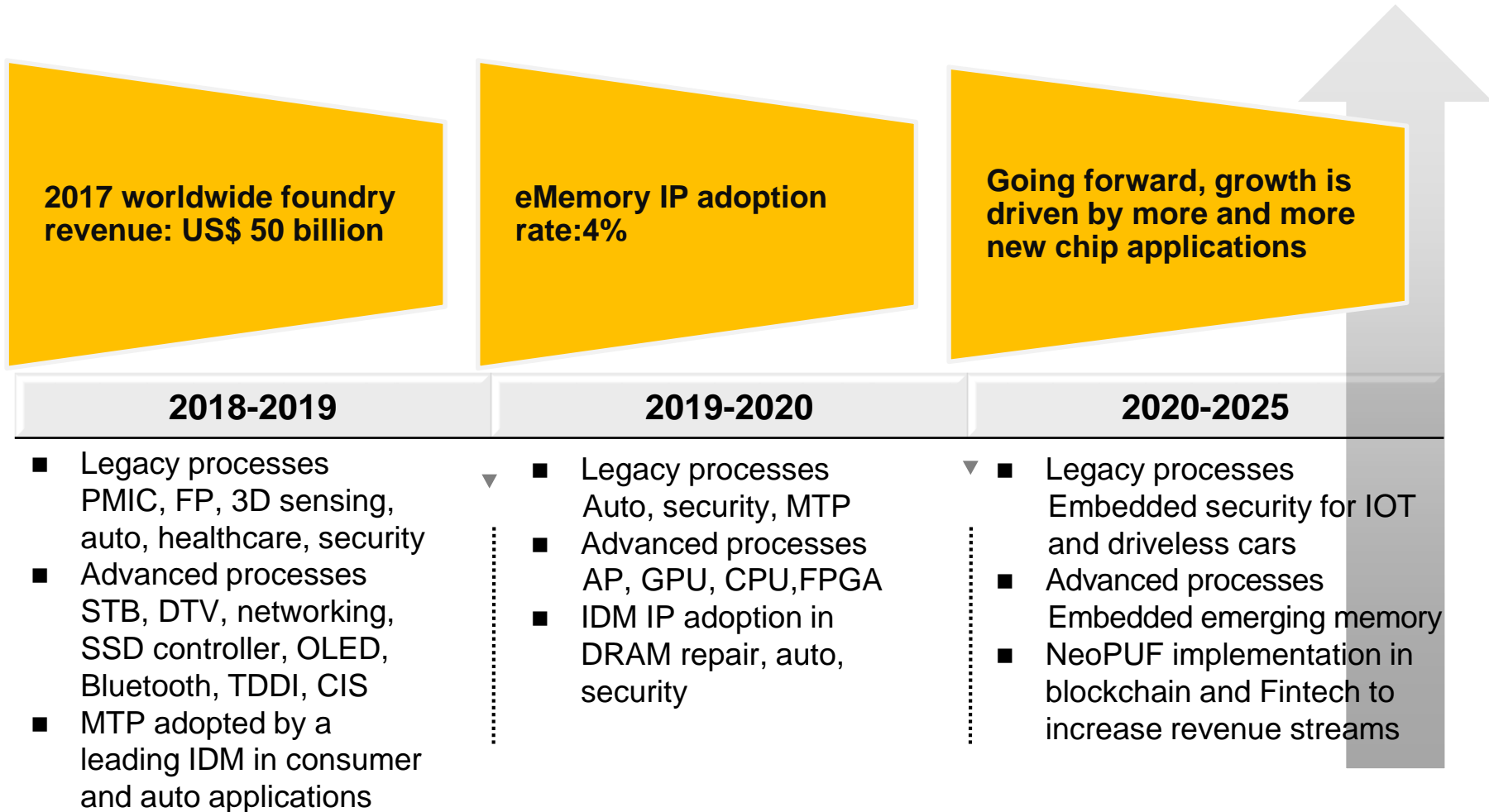
What supports our current growth, What drives our **Future Growth**



As of 2017

Growth Prospects

Our near-term, medium-term and long-term growth engines



eMemory – the Embedded IP Expert

- Key Summary
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eMemory's Solutions for Various Applications

Display Driver IC

MDDI, SDDI, TDDI, OLEDDI

- Trimming

PMIC

Mobile PMIC, Motor Drivers, Type-C

- Trimming
- Storage

Sensor Controller

MEMS, FPC, CIS

- Trimming
- Storage
- Identification

Multi-Media

DTV, STB, SSD, AP, Game Console

- Security

Connectivity IC

BT, BLE, WiFi

- Storage
- Security
- Identification

MCU

- Trimming
- Storage
- Identification
- Security

Autotronic & Automotives

- Trimming
- Storage
- Identification
- Security

Camera Module

CIS sensor, ISP, AF, OIS

- Trimming
- Storage
- Identification

RFID/NFC tag

- Trimming
- Storage
- Identification

DRAM

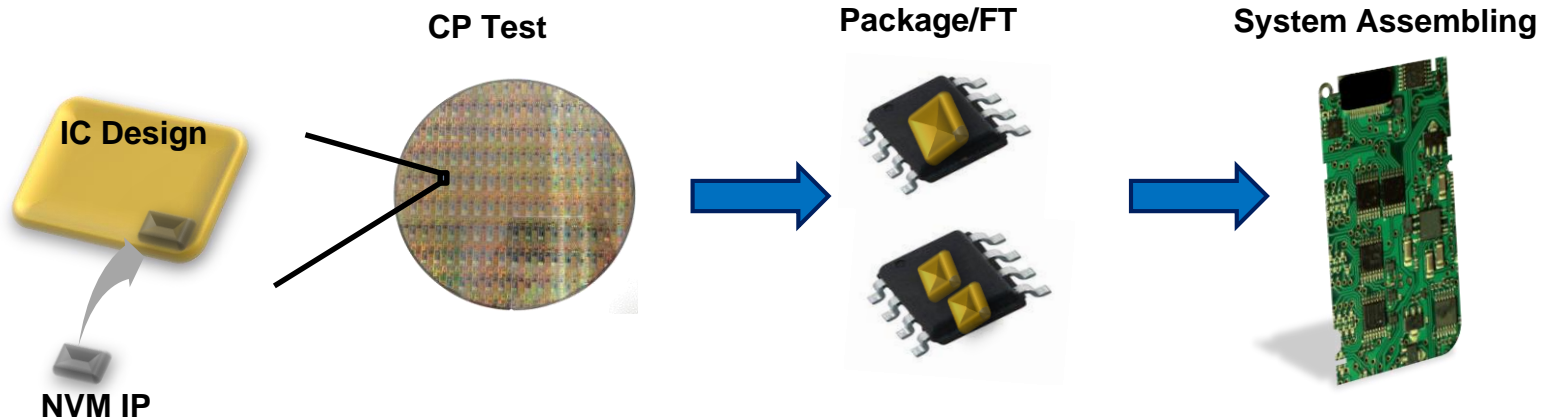
- Repair

Embedded NVM Usage

eMemory's embedded NVM creates value for customers

Cost Reduction

Programmable, Configurable



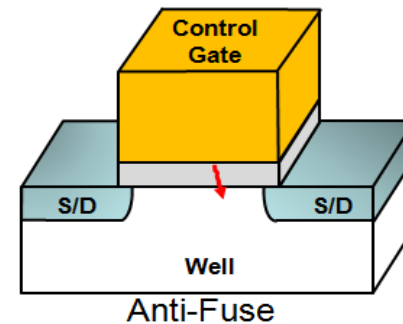
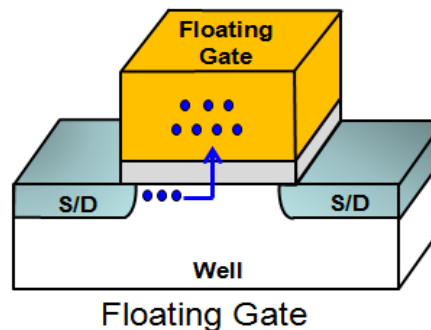
Security

Secure Data Storage

eFuse Key: Data is easily observed



Invisible Hardware Key : Data is hard to be detected



Embedded NVM Usage

Security

Secure Data Storage

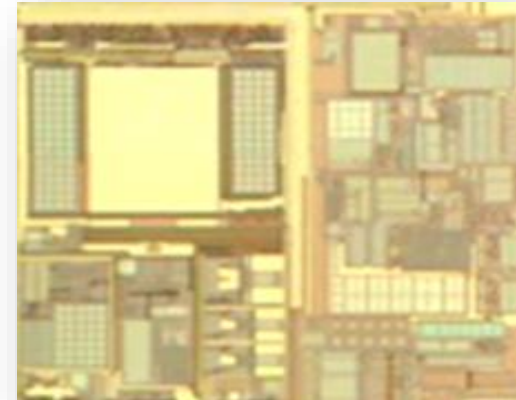
Authorized Product



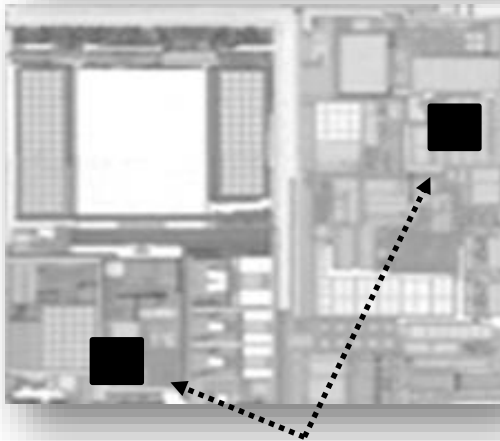
Without protection



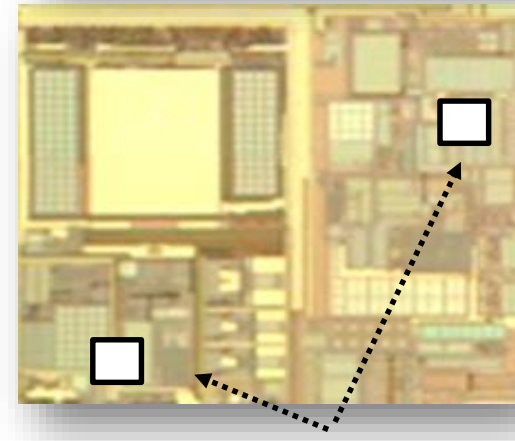
Fake Product



With protection



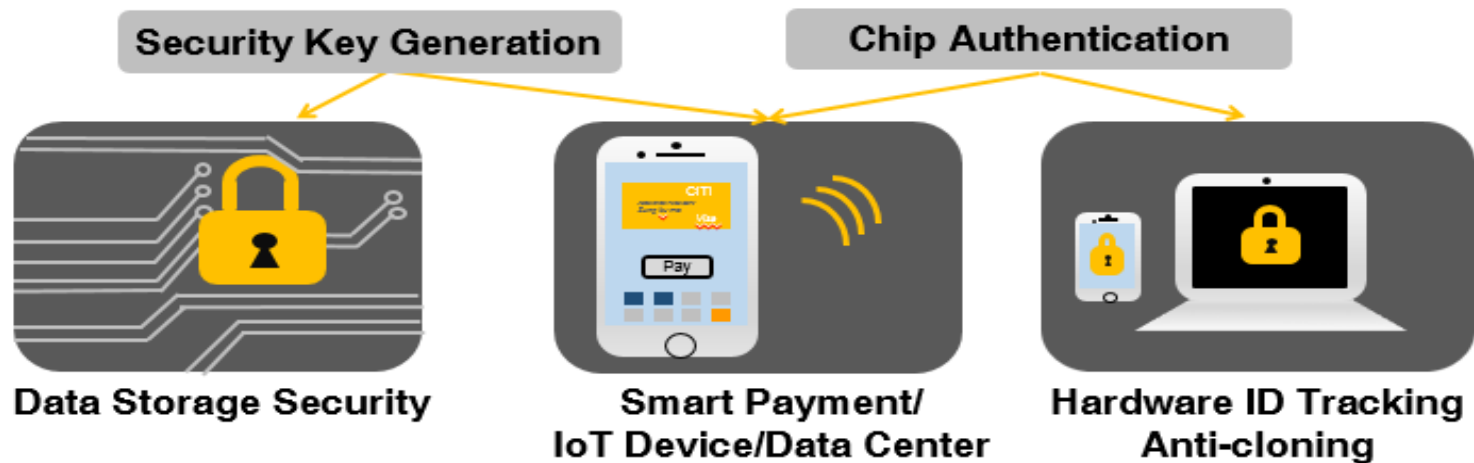
Security IP/Code by Authorized Use



Can NOT Work w/o Security IP/Code

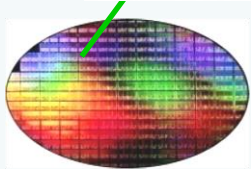
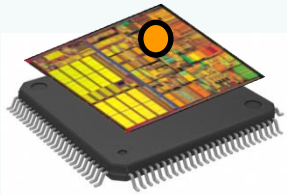
New invention - NeoPUF technology

- Authentication & Security Everywhere



Secure HW& SW from Chip-level

NeoPUF

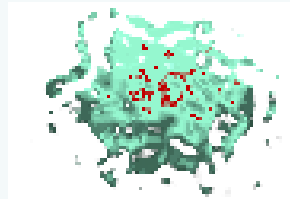


Chip Fingerprint



Unique Keys

Key Generation



Entanglement

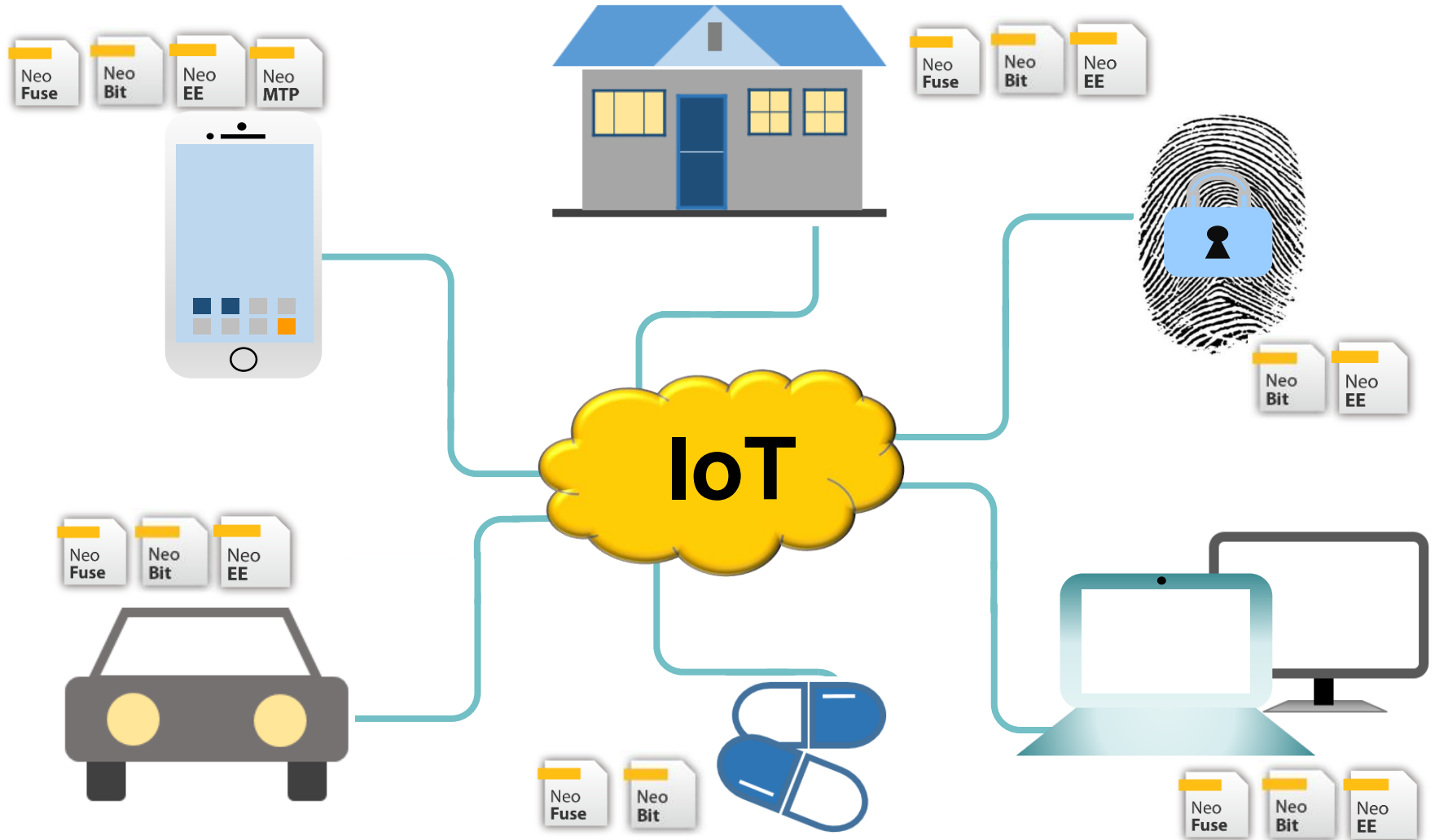


Cryptography



Crypto Engines

eMemory IP in IoT



eMemory – the Embedded IP Expert

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Q4 Revenue Breakdown

Revenue (thousands of NT dollars)

	Q4 2017	Q3 2017	QoQ	Q4 2016	YoY	2017	2016	YoY
Licensing	78,811	101,087	-22.0%	79,684	-1.1%	388,184	330,087	17.6%
Royalty	243,055	283,336	-14.2%	226,543	7.3%	987,574	885,372	11.5%
Total	321,866	384,423	-16.3%	306,227	5.1%	1,375,758	1,215,459	13.2%

Revenue (thousands of US dollars)

	Q4 2017	Q3 2017	QoQ	Q4 2016	YoY	2017	2016	YoY
Licensing	2,620	3,340	-21.6%	2,515	4.2%	12,787	10,256	24.7%
Royalty	8,066	9,341	-13.6%	7,170	12.5%	32,311	27,422	17.8%
Total	10,686	12,681	-15.7%	9,685	10.3%	45,098	37,678	19.7%

Number of Licenses

		Q4 2017	Q3 2017	2017	2016
Technology Licenses		3	4	20	43
Design Licenses	NRE	15	23	55	56
	Usage	78	87	325	311

Confidential

Financial Income Statement

Amount in Thousands of NT Dollars, except margins/EPS/ROE

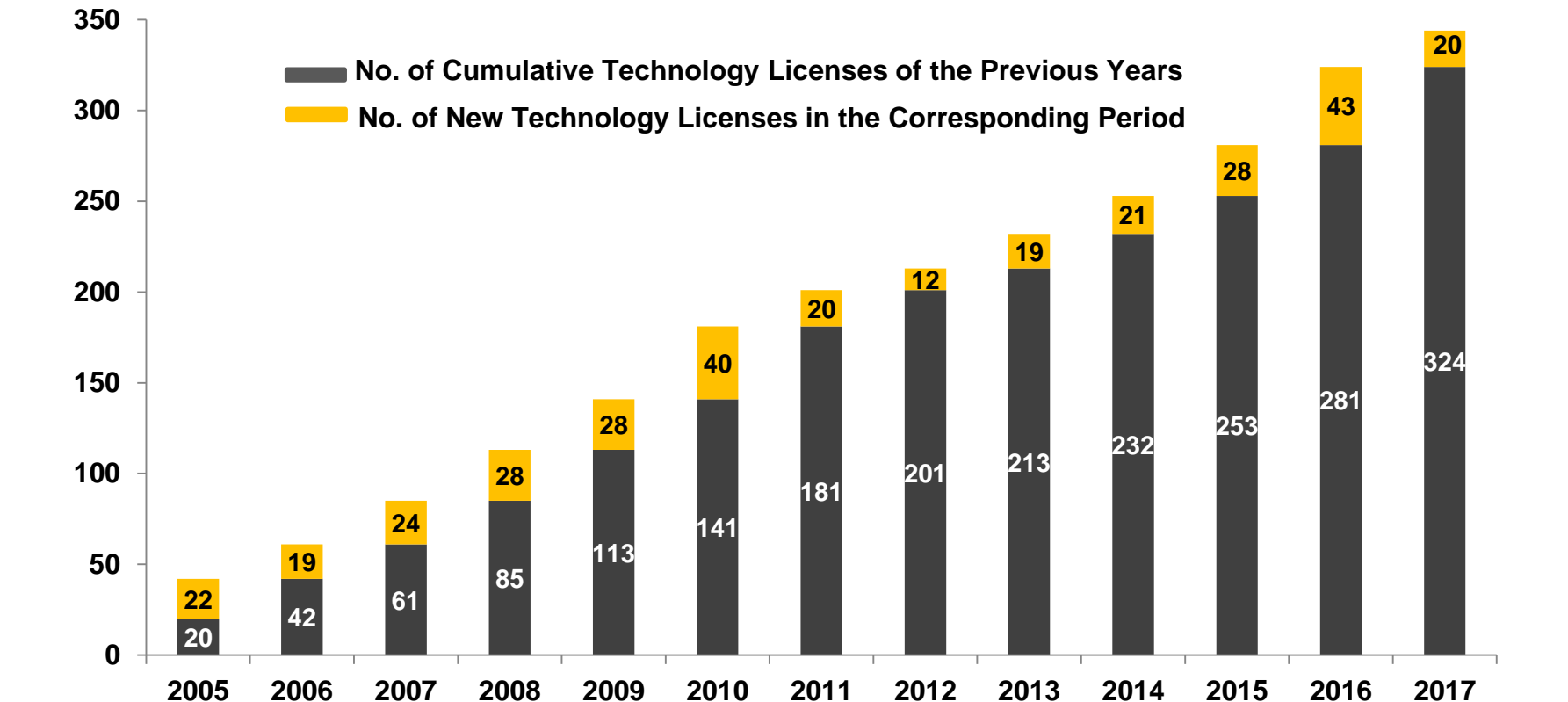
	Q4 2017	Q3 2017	change (QoQ)	2017	2016	change (YoY)
Revenue	321,866	384,423	-16.3%	1,375,758	1,215,459	13.2%
Gross Margin	100%	100%	-	100%	100%	-
Operating Expenses	185,484	205,291	-9.6%	772,940	685,650	12.7%
Operating Margin	42.4%	46.6%	-4.2ppts	43.8%	43.6%	0.2ppts
Net Income	117,659	194,062	-39.4%	598,709	534,917	11.9%
Net Margin	36.6%	50.5%	-13.9ppts	43.5%	44.0%	-0.5ppts
EPS	1.55	2.56	-39.5%	7.90	7.06	11.9%
ROE	23.6%	40.2%	-16.6ppts	30.0%	28.6%	1.4ppts

Technology Licensing

Number of Licenses

Year	2014	2015	2016	2017
License	21	28	43	20

Note: 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.



New Technologies Under Development

- New technologies being developed for **106** platforms by Q4 17.
- **18** for NeoBit, **40** for NeoFuse, **3** for NeoPUF, **18** for NeoEE, and **27** for NeoMTP.

	7/10nm	12/14/16nm	28nm	40nm	55/65nm	80/90nm	0.11~ 0.13um	0.15~ 0.18um	>0.25 um
NeoBit	-	-	-	-	1	-	7	10	
NeoFuse	3	3	10	4	8	7	1	4	-
NeoPUF	-	-	1	-	2	-	-	-	-
NeoEE	-	-	-	-	-	-	2	16	-
NeoMTP	-	-	-	1	2	2	7	15	-

As of Dec. 31st, 2017

Application Markets

12"

8"

7nm	10nm	12/14/16nm	28nm	40nm	55/65nm	80/90nm	110/130nm	160/180nm	250nm	350nm
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NeoBit



NeoFuse



NeoFlash



NeoEE

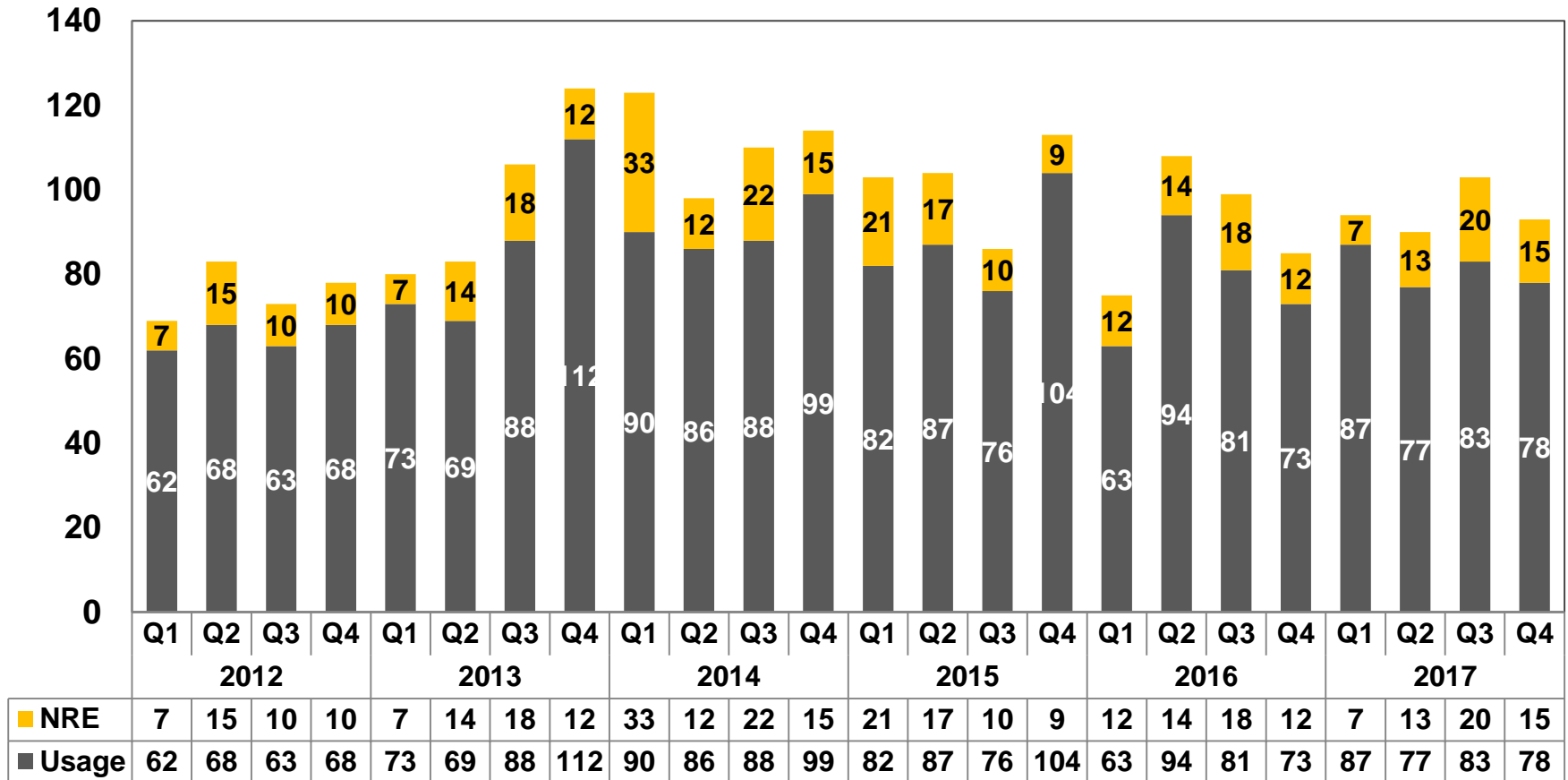


NeoMTP



Design Licensing (New Tape-Out)

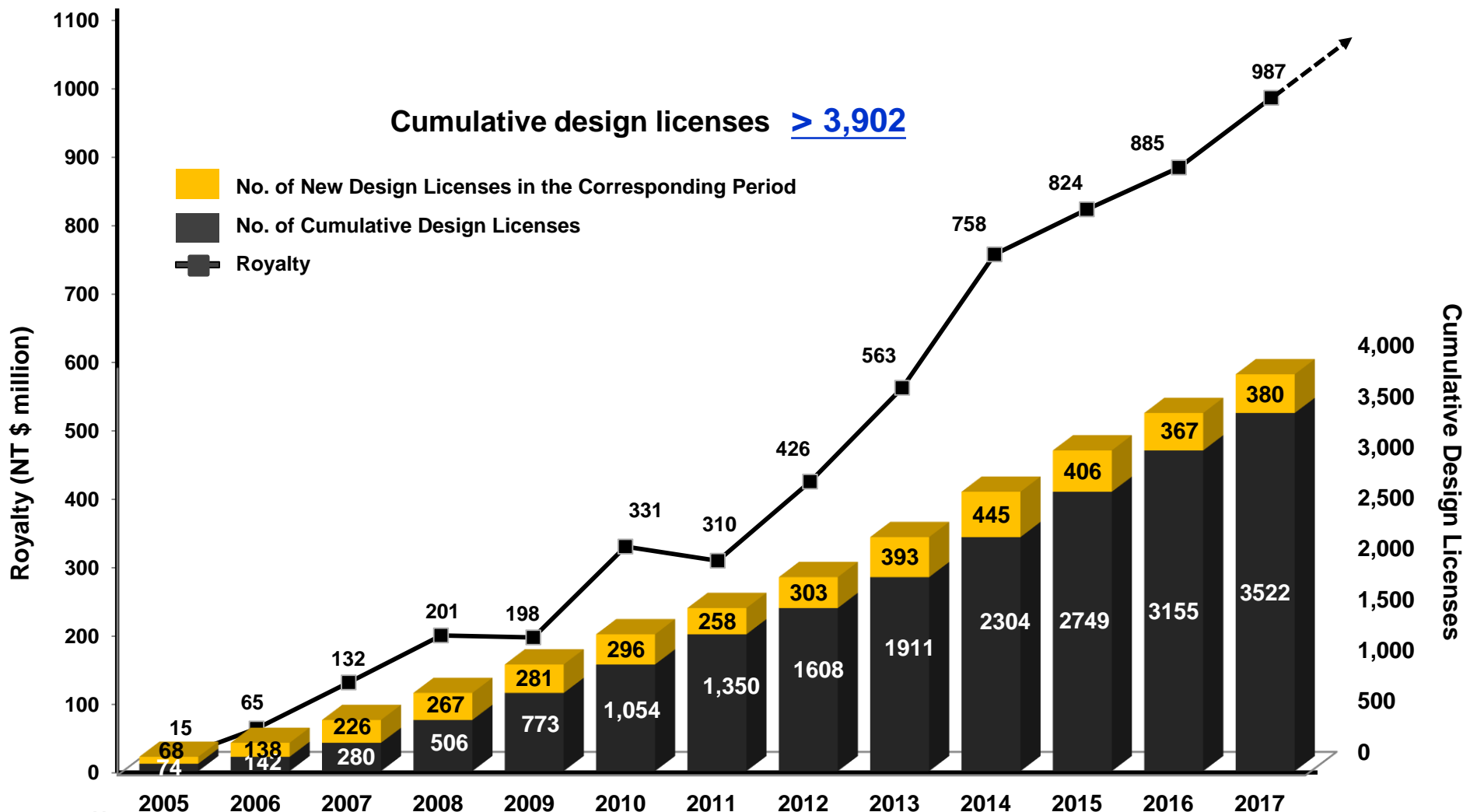
- A total **380** NTO in 2017 (**367**@2016, **406**@2015, **445**@2014, **393**@2013)



Note*: As the applications of MCU at several foundries have gradually entered mass production, and the business model of the main foundry partner which provides green process has shifted to — eMemory licenses IP cell to the foundry for it to provide direct design service to customers - as the result, the new tape out number of MCU has been affected, but the royalty coming from IP cell usage continues to roll in.

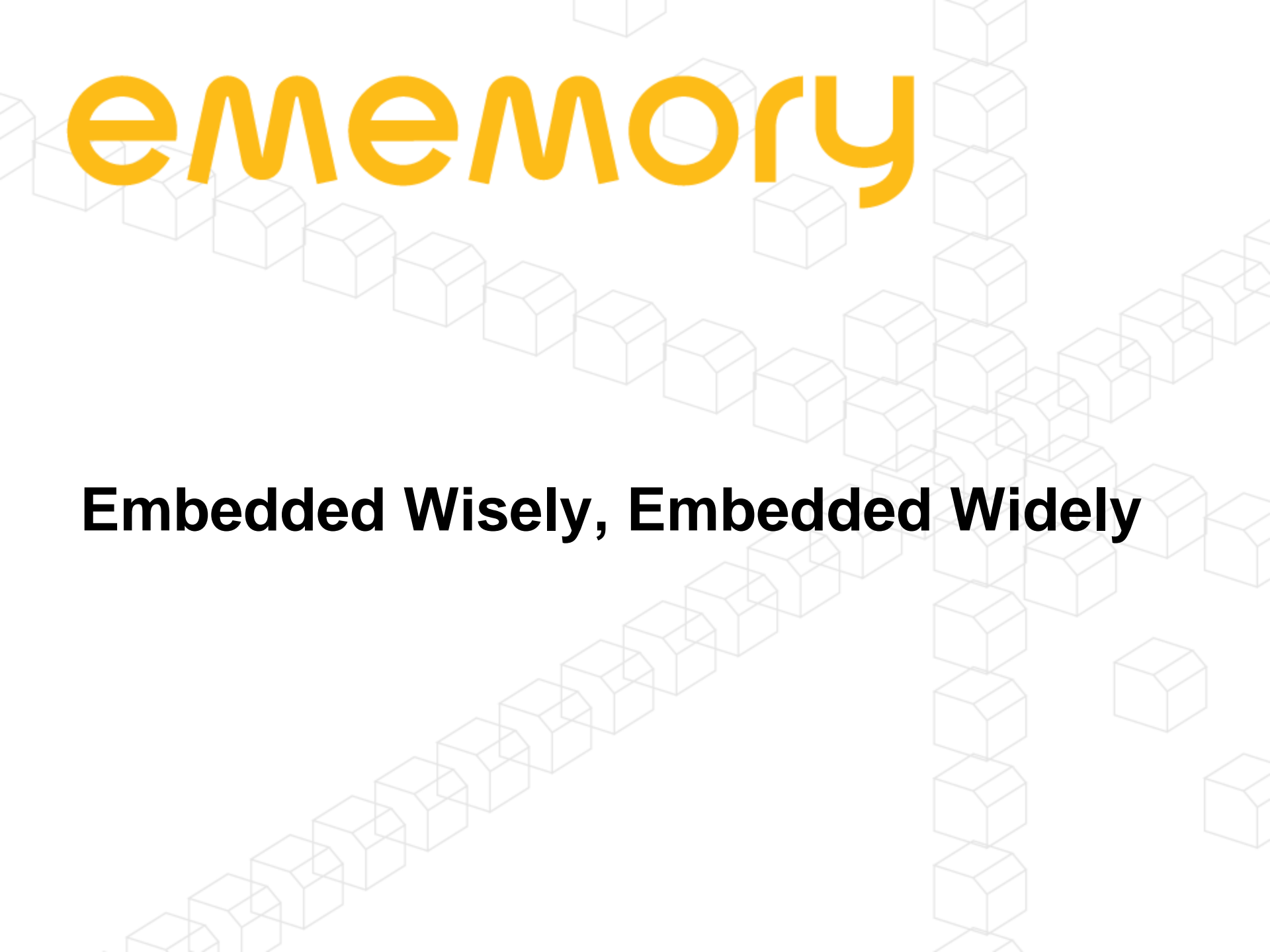
In summary, even the new tape out number of MCU is lower than before; the corresponding wafer output and royalty continue to grow.

Cumulative Licenses Drive Future Royalties



Note

- 1: Due to the 2009 recession, royalty income was down 1.5% from the previous year.
- 2: Prepaid royalty from a single customer contributed to 2010 annual growth of 67%, followed by a drop of 6.3% in 2011.
- 3: CAGR for 2009-2013 was 30%.



ememory

Embedded Wisely, Embedded Widely