



# Q4 2018 Investor Conference

**Charles Hsu**

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A hand is shown dropping a coin into a stack of coins. A small plant is growing out of the stack. The background is a warm, golden-brown color with a bokeh effect.

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A hand is shown dropping a coin into a stack of coins. To the left, a small green plant with three leaves is growing out of a stack of coins. The background is a warm, golden-yellow color with a blue brushstroke effect on the right side.

# Review of Operations

# Q4 Financial Results

Revenue increased both quarter on quarter and year on year.

(thousands of NT dollars)

	Q4 2018 (Unaudited)	Q3 2018	Q4 2017	change (QoQ)	change (YoY)
Revenue	406,752	393,225	321,866	3.4%	26.4%
Gross Margin	100%	100%	100%	-	-
Operating Expenses	222,532	204,342	185,484	8.9%	20.0%
Operating Income	184,220	188,883	136,382	-2.5%	35.1%
Operating Margin	45.3%	48.0%	42.4%	-2.7ppts	2.9ppts
Net Income	163,611	168,572	117,659	-2.9%	39.1%
Net Margin	40.2%	42.9%	36.6%	-2.7ppts	3.6ppts
EPS (Unit: NTD)	2.20	2.23	1.55	-1.3%	41.9%
ROE	34.5%	34.8%	23.6%	-0.3ppts	10.9ppts

# FY2018 Financial Results

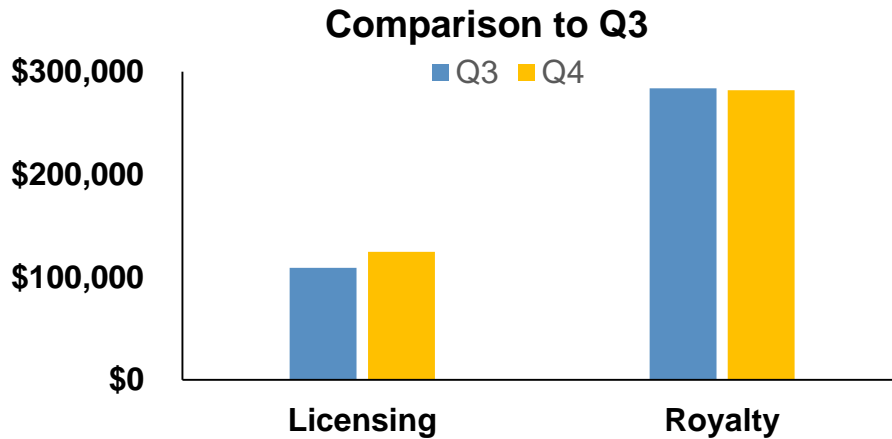
Revenue increased by 7.3%; EPS increased by 2.9%.

(thousands of NT dollars)

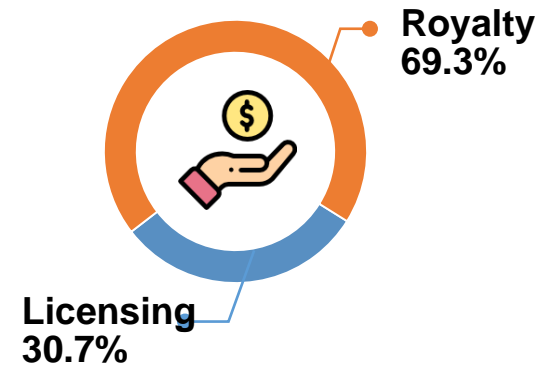
	FY 2018 (Unaudited)	FY 2017	change (YoY)
Revenue	1,476,516	1,375,758	7.3%
Gross Margin	100%	100%	-
Operating Expenses	803,781	772,940	4.0%
Operating Income	672,735	602,818	11.6%
Operating Margin	45.6%	43.8%	1.8ppts
Net Income	613,106	598,709	2.4%
Net Margin	41.5%	43.5%	-2.0ppts
EPS (Unit: NTD)	8.13	7.90	2.9%
ROE	32.3%	30.0%	2.3ppts

# Q4 Revenue in Different Stream

FY 2018 licensing increased 15.9% while Royalty increased 4.0% over last year.



## Revenue Breakdown



### Revenue

Thousands of US dollars	Q4 2018	Q3 2018	Q4 2017	QoQ	YoY	2018	2017	YoY
Licensing	4,061	3,581	2,620	13.4%	55.0%	14,949	12,787	16.9%
Royalty	9,143	9,301	8,066	-1.7%	13.4%	34,116	32,311	5.6%
Total	13,204	12,882	10,686	2.5%	23.6%	49,065	45,098	8.8%

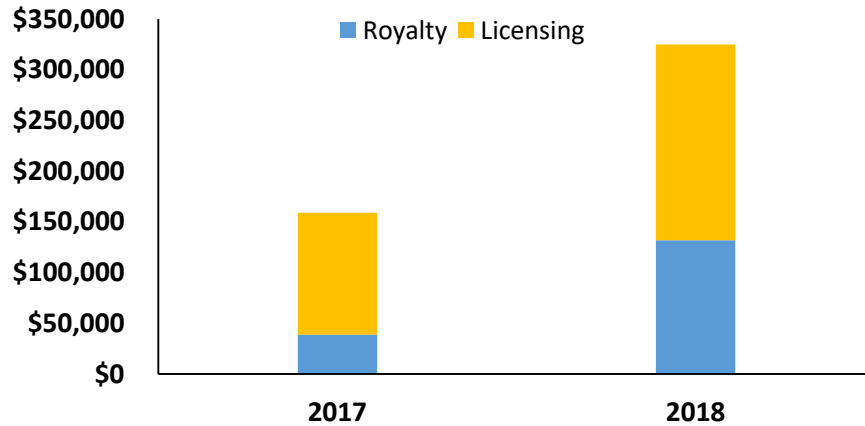
Thousands of NT dollars	Q4 2018	Q3 2018	Q4 2017	QoQ	YoY	FY 2018	FY 2017	YoY
Licensing	124,726	109,257	78,811	14.2%	58.3%	449,806	388,184	15.9%
Royalty	282,026	283,968	243,055	-0.7%	16.0%	1,026,710	987,574	4.0%
Total	406,752	393,225	321,866	3.4%	26.4%	1,476,516	1,375,758	7.3%



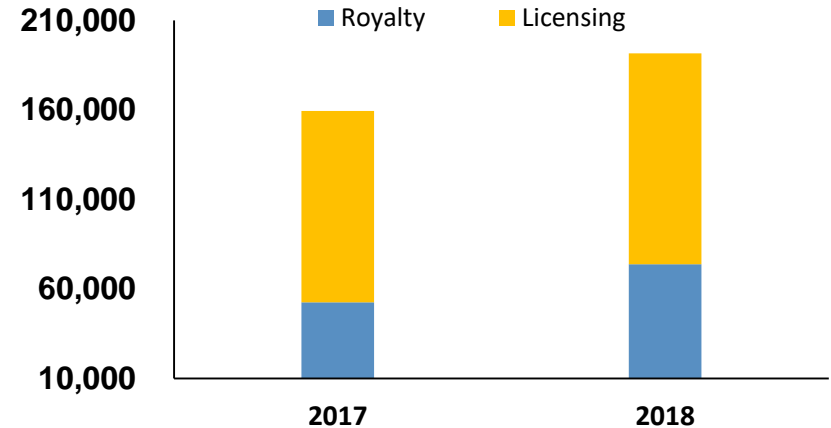
# Previous efforts are cashing in

NeoFuse has 104.4% growth, and MTP has 20% growth.

NeoFuse's revenue comparison to 2017



MTP's (NeoMTP+NeoEE) revenue comparison to 2017



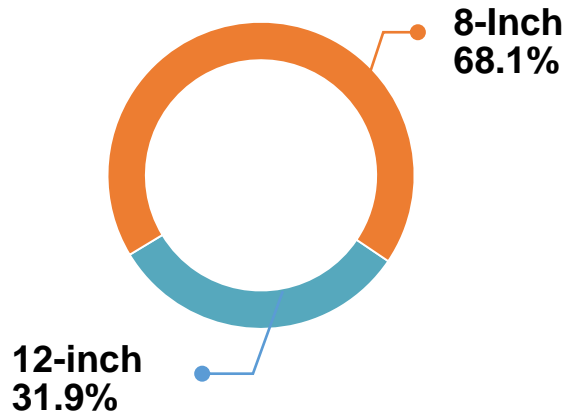
Thousands of NT dollars		NeoBit	NeoFuse	NeoPUF	MTP		Total
					NeoEE	NeoMTP	
Royalty	2018	821,075	131,849	-	67,213	6,573	1,026,710
	2017	896,192	38,839	-	39,581	12,962	987,574
	YoY	-8.4%	239.5%	-	69.8%	-49.3%	4.0%
Licensing Fee	2018	136,069	193,375	2,610	56,489	61,263	449,806
	2017	161,171	120,242	-	53,081	53,690	388,184
	YoY	-15.6%	60.8%	-	6.4%	14.1%	15.9%
Total	2018	957,144	325,224	2,610	123,702	67,836	1,476,516
	2017	1,057,363	159,081	-	92,662	66,652	1,375,758
	YoY	-9.5%	104.4%	-	33.5%	1.8%	7.3%

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# Royalty Revenue by Wafer Size

Royalty from 12 inch increased due to new applications.

## Q4 Royalty Breakdown



- ✓ In 2018, the royalty contribution from 12 inch wafers is about 32.6% of total, whereas it was 27.3% in 2017.
- ✓ 12 inch royalty revenue increased 24.3% in 2018 due to mass production of new applications. Q4 2018 declined 23.3% QoQ was due to two 12 inch foundries recognizing royalty in Q1 and Q3, but increased 67% YoY.
- ✓ 8 inch royalty declined 3.7% in 2018 due to wafer price erosion, customers' migration into 12 inch wafer, and new 8 inch customers' product not in mass production yet.

## Royalty (thousands of NT dollars)

Wafer Size	Q4 2018		FY 2018		
	% of Q4	Change (QoQ)	Change (YoY)	% of FY 2018	Change (YoY)
8-Inch	68.1%	15.2%	1.5%	67.4%	-3.7%
12-Inch	31.9%	-23.3%	67.0%	32.6%	24.3%

# Future Outlook



# Growth Engine for 2019

Expect growth momentum continue to 2019 and beyond.

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## License



- ✓ **Technology license:**
  1. More technologies to license, covering legacy to advance process nodes.
  2. Expand our business into more foundries, IDMs and DRAM partners.
- ✓ **Design license:**
  1. Increasing IP number of our library
  2. More applications drive more customers design cases.
  3. Higher ASP of NeoFuse design license fee.

## Royalty



- ✓ **8 inch :**

Mass production of leading US customers' PMIC related products and under-glass finger print sensors.
- ✓ **12 inch:**

Mass production of new application, e.g. networks IC, DTV, STB, SSD controller, Bluetooth, OLED driver, TDDI, smart meter, surveillance and DRAM.

“Innovation  
distinguishes  
between a leader  
and a follower.”

-Steve Jobs



## Future Technology Development

- ✓ Continue developing 7nm & 5nm technology platform.
- ✓ Work with leading IDMs on emerging memory MRAM and ReRAM.
- ✓ Partnership with largest processor IP company to embed NeoFuse and NeoPUF as root of trust into secure processor.
- ✓ Establish NeoPUF based security IP.



# Q&A



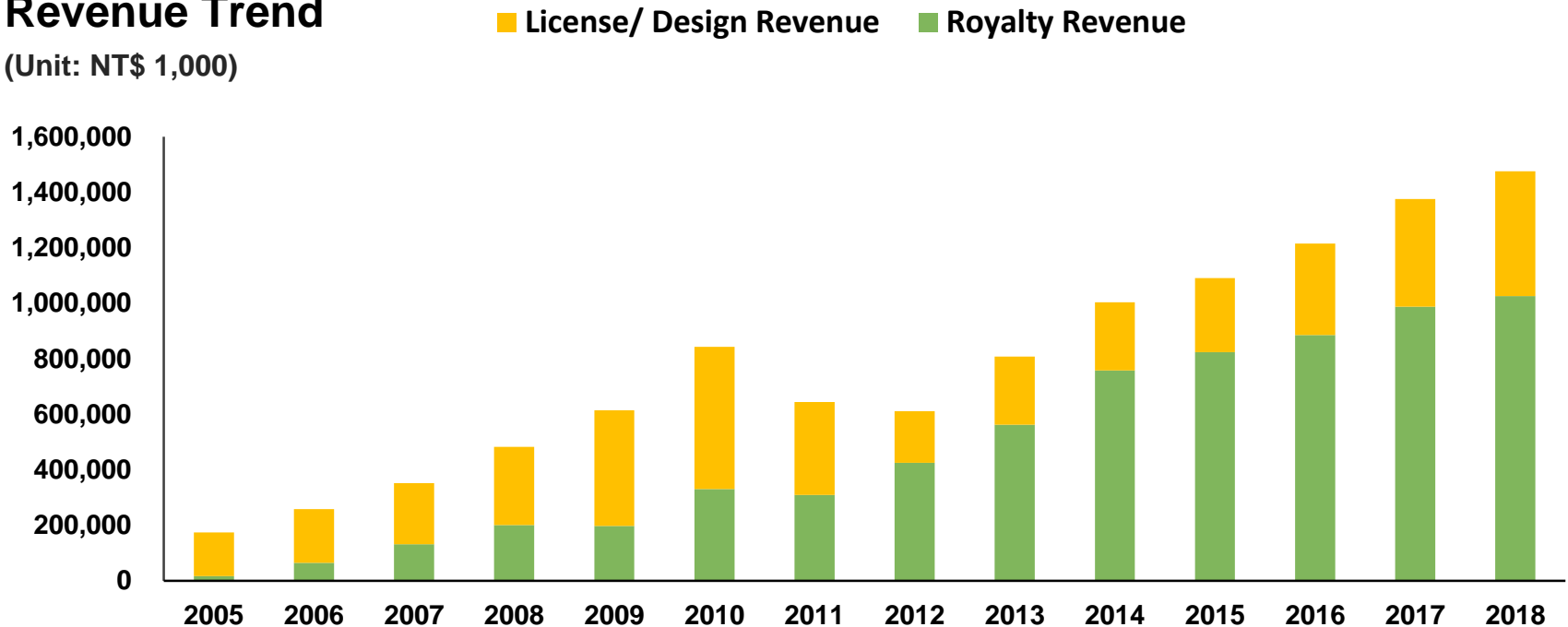
# Appendix

# Company Overview

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

## Revenue Trend

(Unit: NT\$ 1,000)



**Founded**  
In 2000

Based in Hsinchu, Taiwan.  
IPO in 2011

**600+**  
Patents Issued

235 pending patents. 250  
employees with 70% R&D  
personnel

**Best IP Partner**  
With TSMC

TSMC Best IP Partner Award  
since 2010.

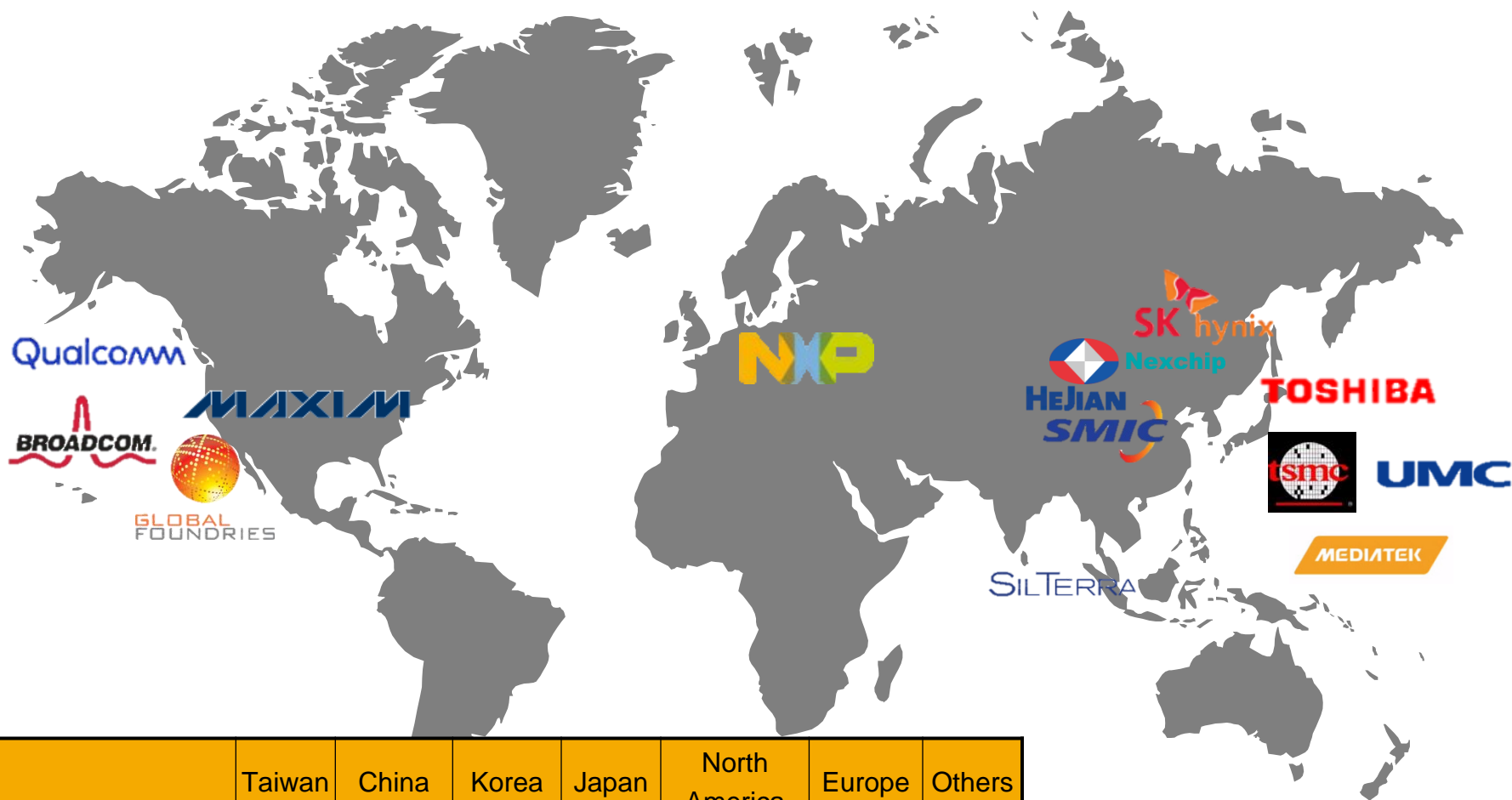
**ememory**

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# Worldwide Customers

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

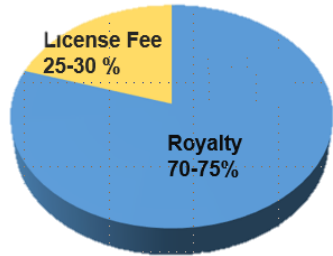


	Taiwan	China	Korea	Japan	North America	Europe	Others
Foundry	5	7	4	3	1	2	1
IDM	1	0	0	7	1	1	0
Fabless	269	632	79	56	268	127	69

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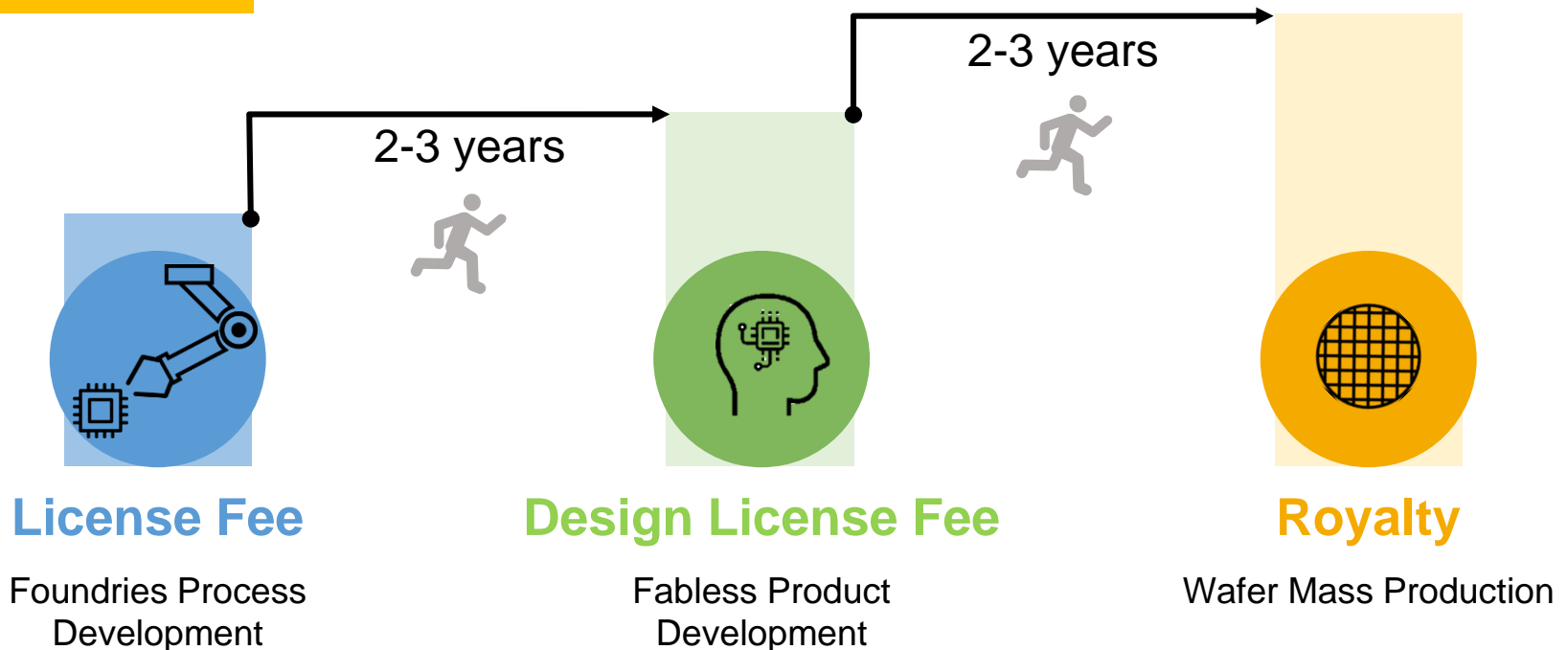
# Business Model

Recurring royalty is the backbone of our business



**Revenue  
Breakdown**

- ✓ 70-75% revenue are from royalty based on wafer production
- ✓ More adoption = more volume shipment
- ✓ More advanced node wafers = higher ASP per wafer



**License Fee**

Foundries Process  
Development

**Design License Fee**

Fabless Product  
Development

**Royalty**

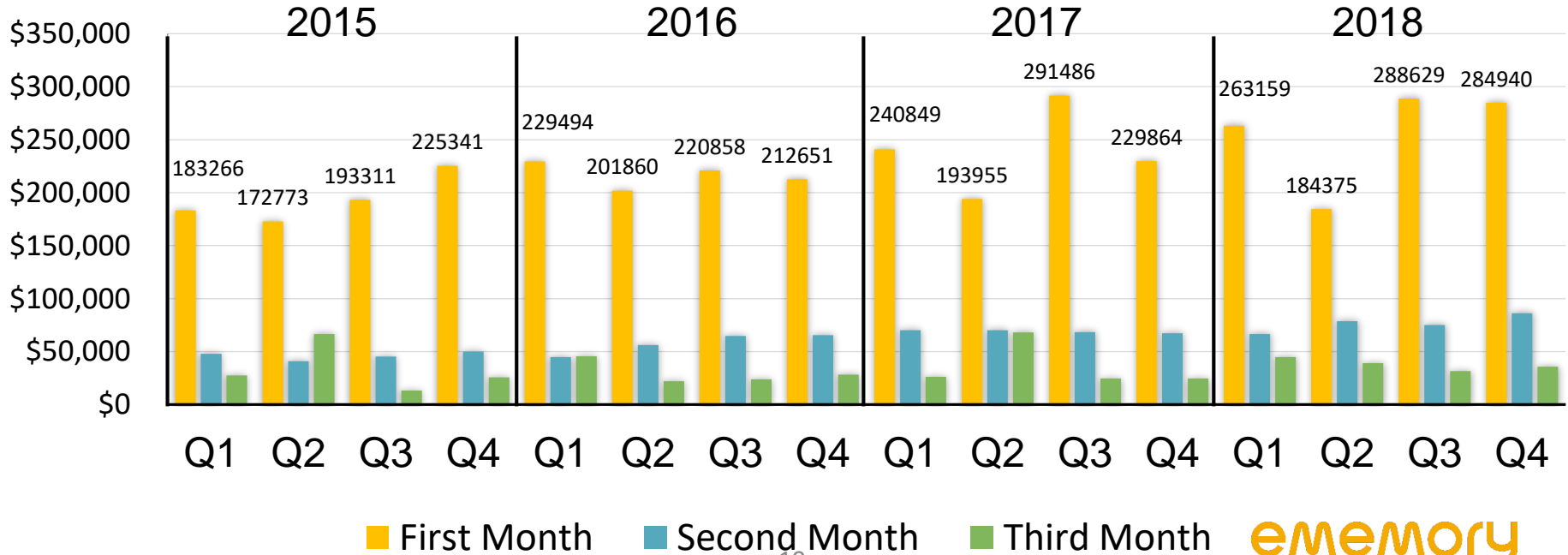
Wafer Mass Production

# Quarterly Revenue Pattern

eMemory's revenue are mostly received in the first month of the quarter

- ✓ 1<sup>st</sup> month: Receive **License Fees** of the month and **Royalty** from most foundries on previous quarter's wafer shipments
- ✓ 2<sup>nd</sup> month: Receive **License Fees** of the month and **Royalty** from other foundries
- ✓ 3<sup>rd</sup> month: **License Fees** Only.
- ✓ Two foundries pay royalty semiannually, reported in Jan and July Revenue.

Thousands of NT dollars



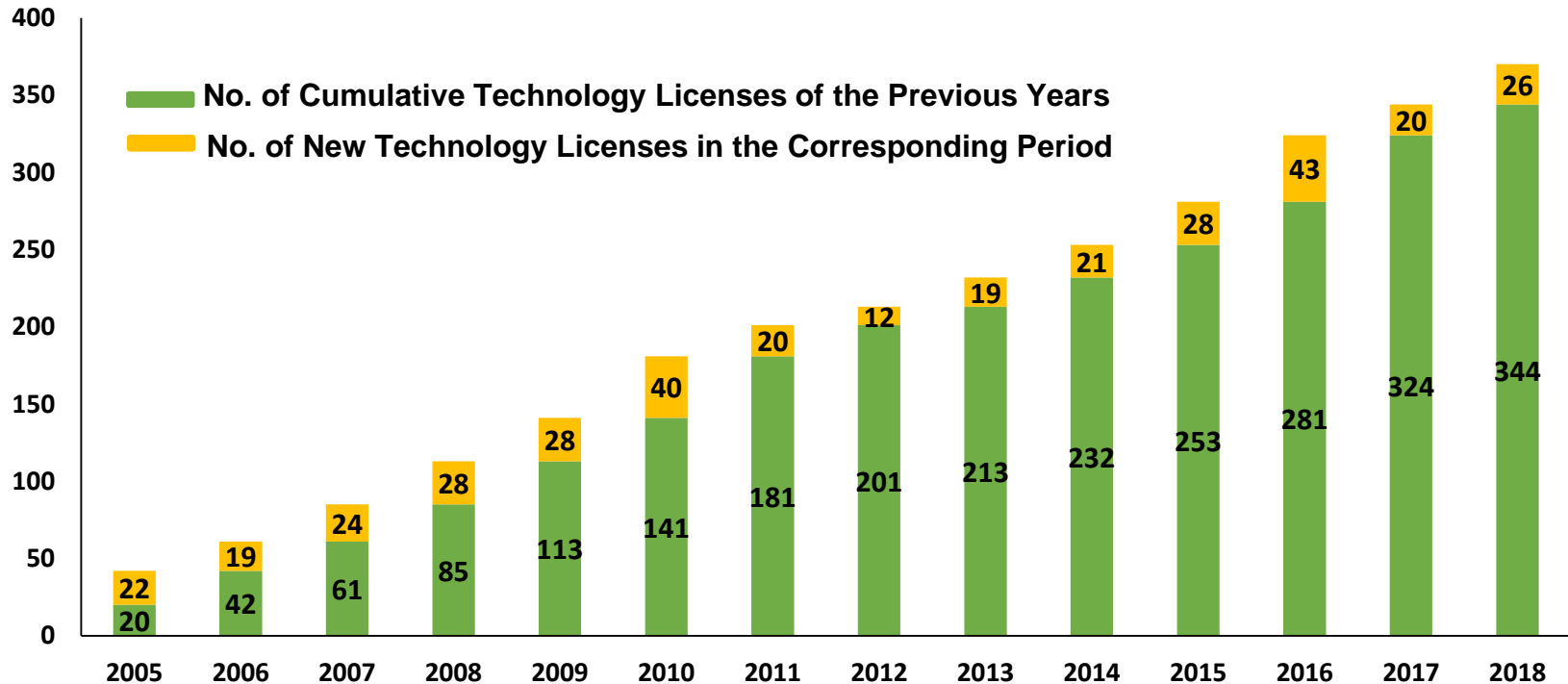
# Technology Licenses

## Cumulative technology licenses

### Number of Licenses

Year	2015	2016	2017	2018
License	28	43	20	26

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 Technology under Development

Products in different process nodes

- New technologies being developed for 92 platforms by Q4 2018.
- 7 licensing contracts were signed, 2 for NeoBit, 3 for NeoFuse, 1 for NeoEE, and 1 for NeoMTP.

	7/10nm	12/14/16nm	22/28nm	40nm	55/65nm	80/90nm	0.11~ 0.13um	0.15~ 0.18um
<b>NeoBit</b>	-	-	-	-	1	1	9	7
<b>NeoFuse</b>	2	2	12	6	7	9	3	2
<b>NeoPUF</b>	-	-	2	2	2	-	-	-
<b>NeoEE</b>	-	-	-	-	-	1	3	5
<b>NeoMTP</b>	-	-	-	-	2	-	5	9

As of Dec 31<sup>st</sup>, 2018

# Technology Development

Developments by process node

12" Fabs	Production	Development	IP Type	Process Type
7/10nm	0	2	OTP	FF, FF+
12/14/16nm	3	2	OTP	FF, FF+
22/28nm	15	14	NeoPUF, OTP	ULP/HPM, HPC/HPC+, HV-OLED, DRAM, SOI
40nm	10	8	NeoPUF, OTP, MTP	LP/ULP, HV-DDI/OLED, eFlash
55/65nm	19	12	NeoPUF, OTP, MTP	LP/ULP, HV-DDI/OLED, CIS, eFlash, DRAM, BCD, PM
80/90nm	10	6	OTP, MTP	HV-DDI/OLED, LP, eFlash, Generic
0.13/0.11um	12	6	OTP, MTP	HV-DDI, BCD, Generic
0.18um	1	0	OTP	BCD
<b>Total</b>		<b>50</b>		

8" Fabs	Development	IP Type	Process Type
90nm	5	OTP	HV-DDI, LL, BCD
0.13/0.11um	14	OTP, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Flash, SOI
0.18/0.16/0.152um	23	OTP, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Generic
0.25um	0	OTP, MTP	BCD
0.35um	0	OTP	UHV
<b>Total</b>	<b>42</b>		

Note: As of Dec. 31<sup>st</sup>, 2018



**THANKS**

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