Investor Presentation

eMemory Technology Inc.

March 2019

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Agenda

Company Overview
- ☐ Key Facts
- ☐ People & Innovation
- ☐ Achievement
- ☐ IP Portfolio

Technology
- ☐ Essential Parts of SoC
- ☐ Diversified IP Platform
- ☐ Different Application

Business
- ☐ Monetization Model
- ☐ Mechanics
- ☐ Core Business
- ☐ Growth Business

Finance
- ☐ Earning Quality
- ☐ Growth Drivers
- ☐ Financial Statements

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Company Overview

Key Facts

- **Founded 2000**
- **IPO 2011**
- **Headquartered Hsinchu, Taiwan**
- **Over 1,500 customers worldwide**

People & Innovation

- 250 employees (70% IP developers)
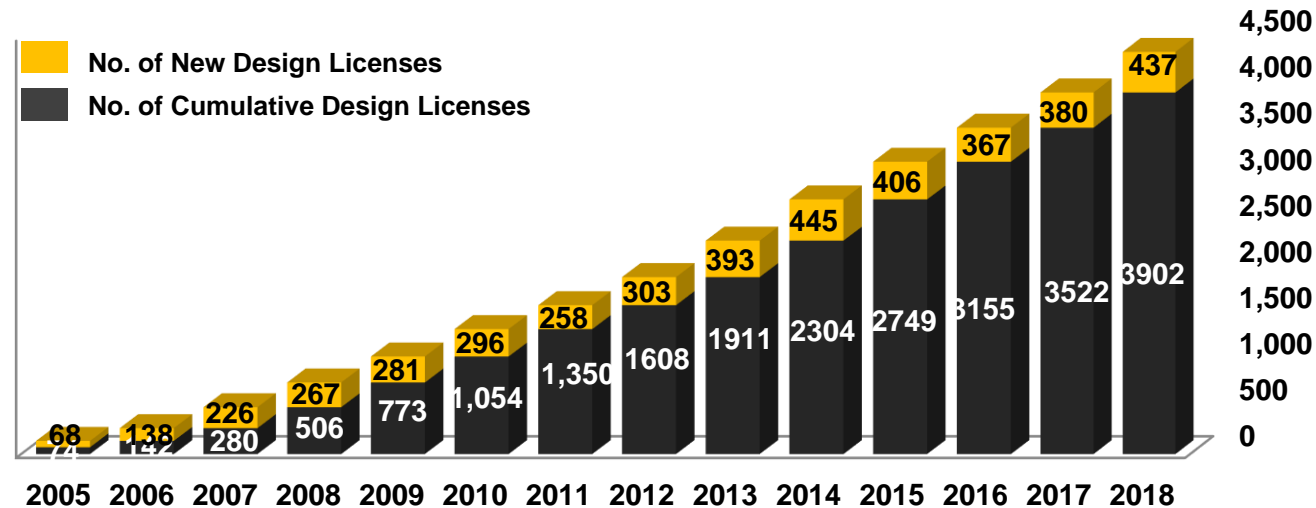- > 4,300 customer tape outs
- Over 600 patents Issued, another 235 pending

Achievement

- The world's largest NVM IP provider
- Over 23 million of wafers shipped
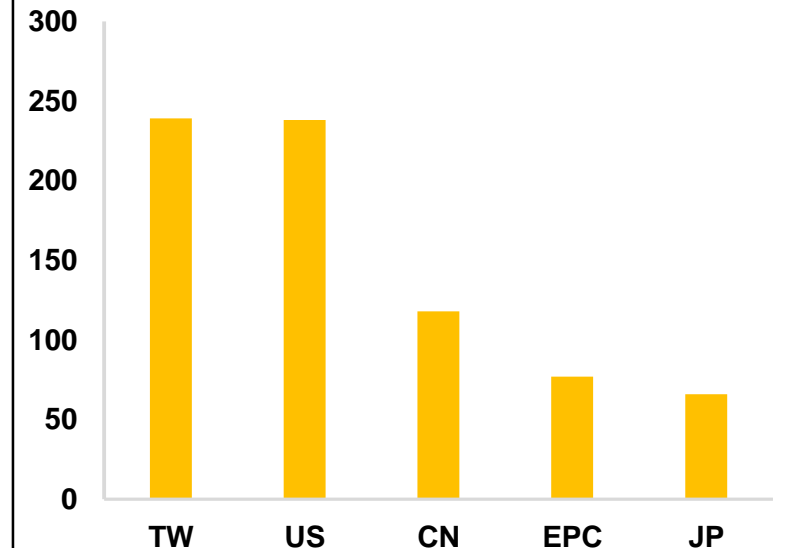- TSMC Best IP Partner Award since 2010

IP Portfolio

- NeoBit
- NeoFuse
- NeoEE
- NeoPUF
  -NeoPUF Entropy
  -NeoPUF Key Manager

Worldwide Customers

Global Customers

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

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Company Overview

People & Innovation

- ☐ **250 employees (70% IP developers)**
- ☐ **> 4,300 customer tape outs**
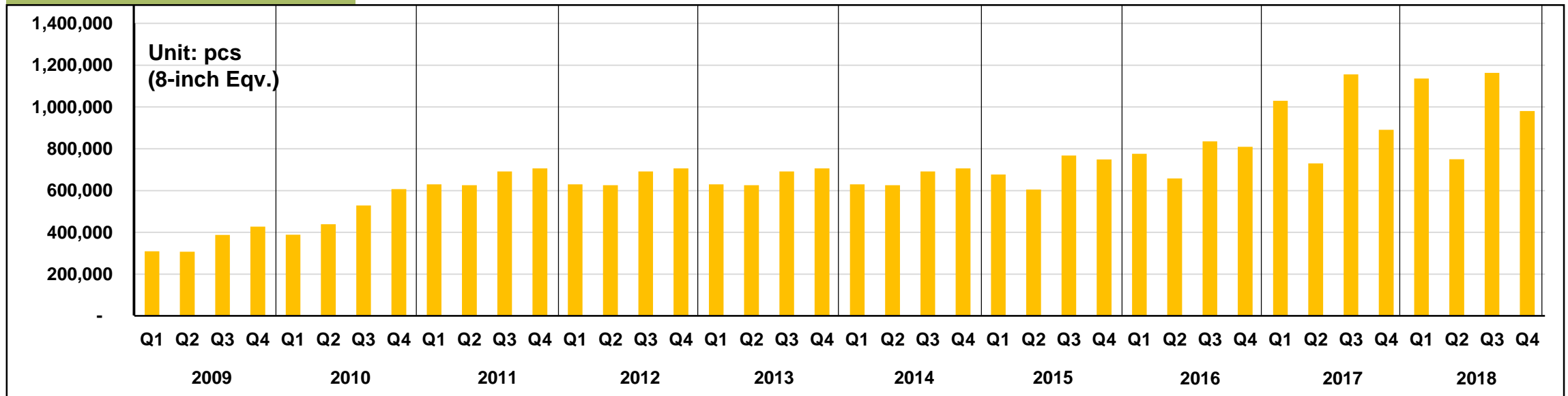- ☐ **Over 600 patents Issued, another 235 pending**

Cumulative Tape outs

Legend:
- ☐ No. of New Design Licenses
- ☐ No. of Cumulative Design Licenses

Year	New Design Licenses	Cumulative Design Licenses
2005	68	—
2006	138	142
2007	226	280
2008	267	506
2009	281	773
2010	296	1,054
2011	258	1,350
2012	303	1608
2013	393	1911
2014	445	2304
2015	406	2749
2016	367	3155
2017	380	3522
2018	437	3902

Patent Number

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Company Overview

Achievement

- ☐ **The world's largest NVM IP provider**
- ☐ **Over 23 million of wafers shipped**
- ☐ **TSMC Best IP Partner Award since 2010**

Licensed Wafer Shipments

Unit: pcs (8-inch Eqv.)

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Company Overview

Key Facts

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People & Innovation

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Achievement

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IP Portfolio

- NeoBit
- NeoFuse
- NeoEE
- NeoPUF
  - -NeoPUF Entropy
  - -NeoPUF Key Manager

IP Portfolio

Neo Bit
- Our First One-time programmable memory
- Floating gate technology
- Most widely used OTP IP

Neo MTP
- Multi-time programmable memory
- Up to 1K endurance cycles
- Cost-effective

Neo EE
- EEPROM solution
- Low Power
- Up to over 500K endurance cycles

Neo Fuse
- Advanced One-time programmable memory
- Antifuse technology
- Secure storage, code protection
- 7nm technology

Neo PUF
- Security solution based on PUF
- Device Unique ID & Entropy
- Enable authentication, encryption, secure boot etc.
- 7nm technology

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Technology

Essential Parts of SoC

- ☐ Low Power
- ☐ Programmable/ Configurable
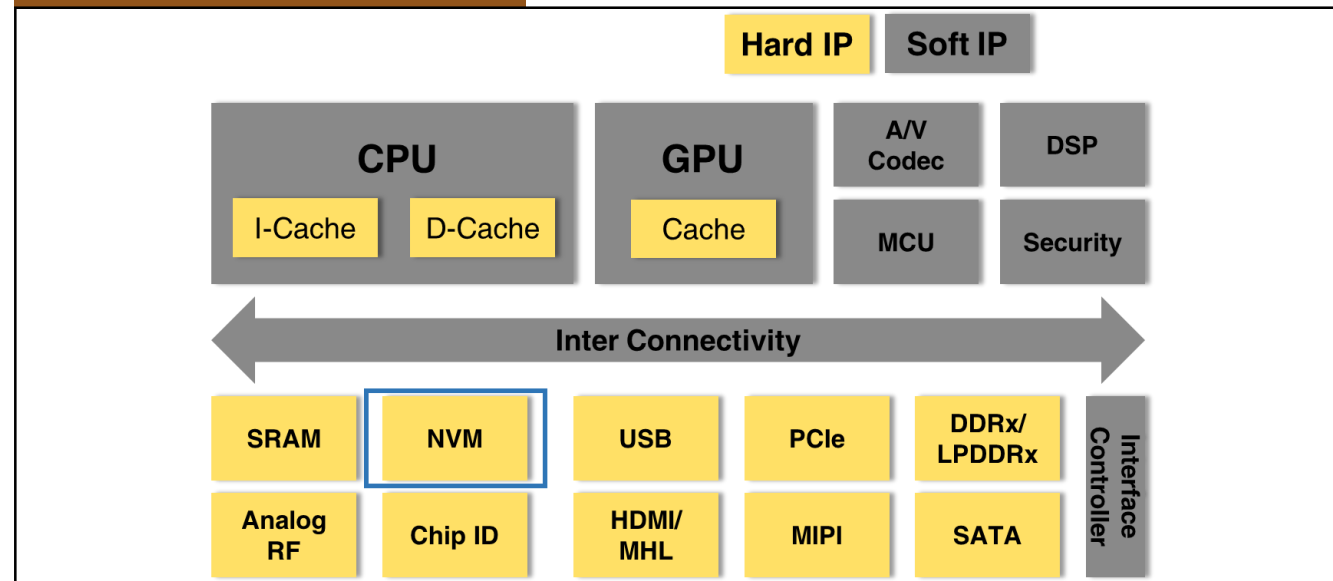- ☐ Unclonable (PUF)
- ☐ Unpredictable
- ☐ Unique

Diversified IP Platform

- ☐ Application by nodes
- ☐ Application by price point

Different Application

- ☐ Solutions in smartphones
- ☐ Solutions in auto
- ☐ Solutions in AP & STB
- ☐ Solutions in IoT

SoC Design

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Technology

Essential Parts of SoC
- ☐ Low Power
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Diversified IP Platform
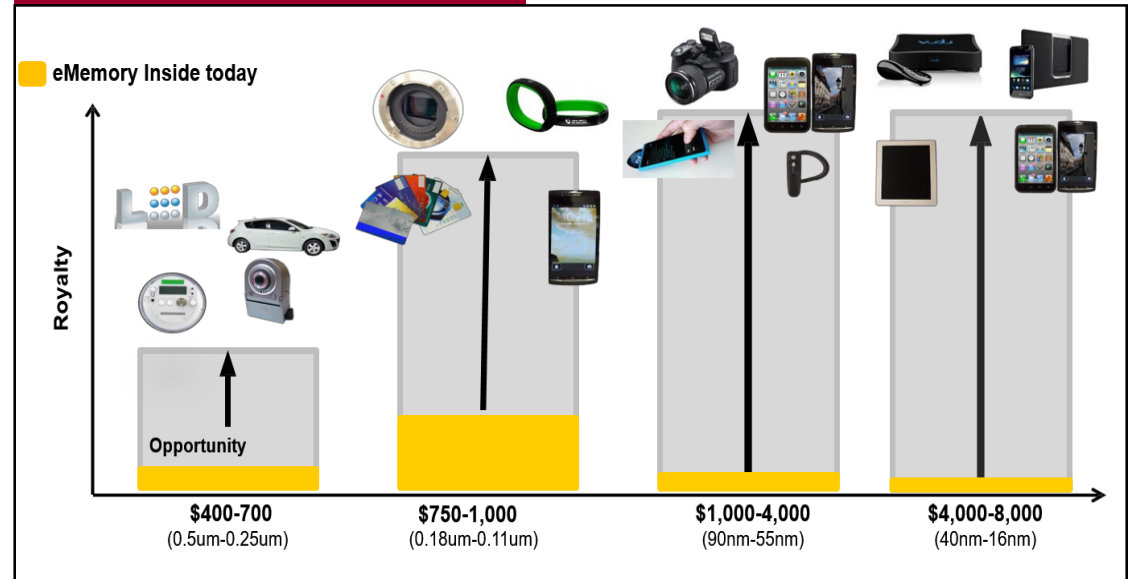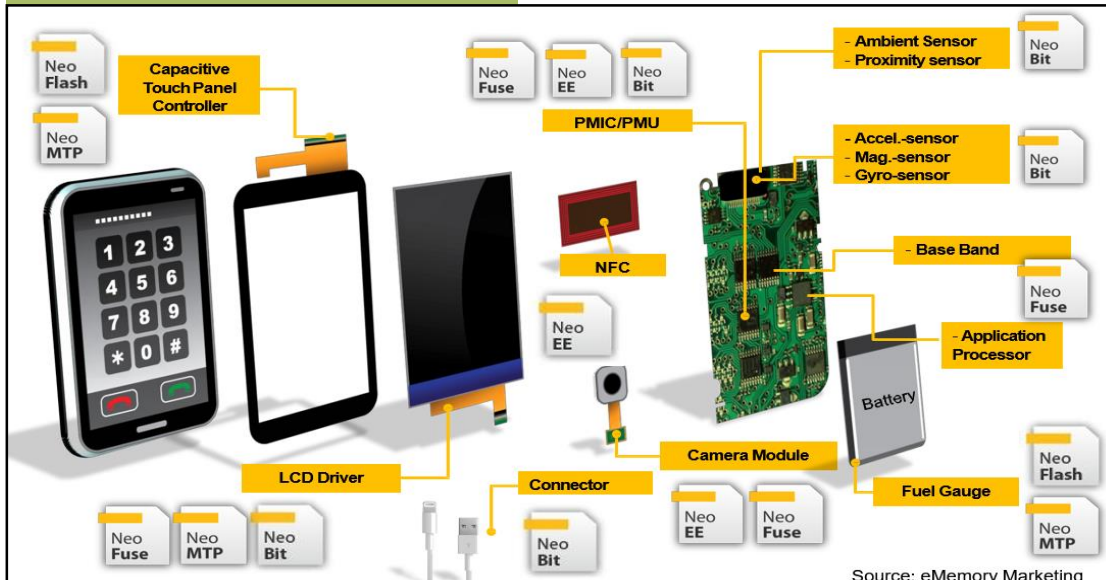- ☑ Application by nodes
- ☑ Application by price point
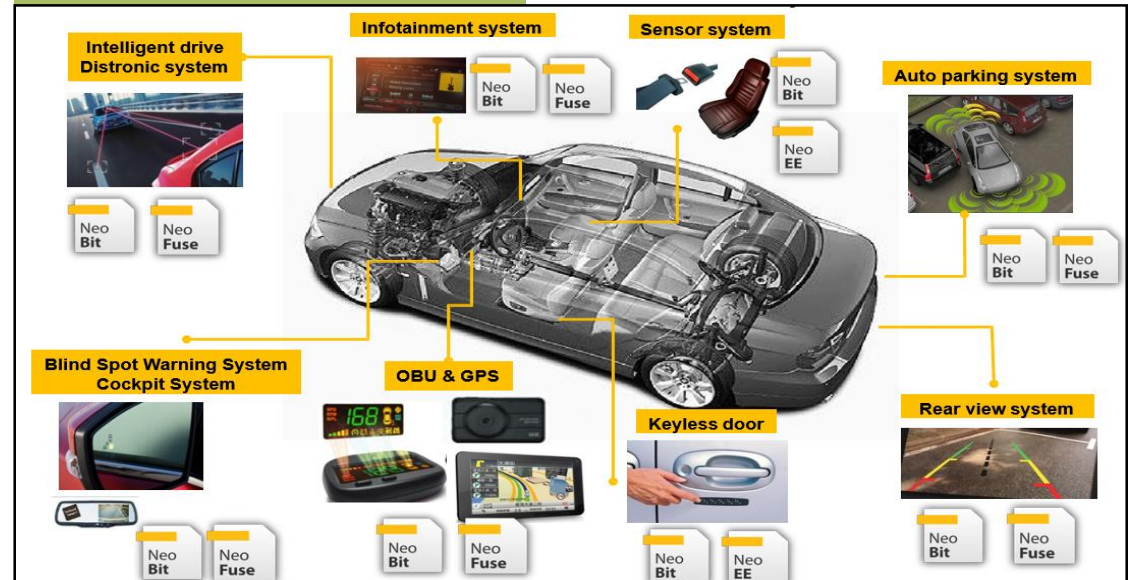
Different Application
- ☐ Solutions in smartphones
- ☐ Solutions in auto
- ☐ Solutions in AP & STB
- ☐ Solutions in IoT

Application by node

Application by price point

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Technology

Different Application

- ☐ **Solutions in smartphones**
- ☐ **Solutions in auto**
- ☐ **Solutions in AP & STB**
- ☐ **Solutions in IoT**

Solutions in smartphones

Source: eMemory Marketing

Solutions in auto

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Technology

Solutions in AP & STB

Trimming · **Security** · **Identification Setting** · **Parameter Setting** · **Data/Code Storage** · **Function Selection** · Neo Fuse
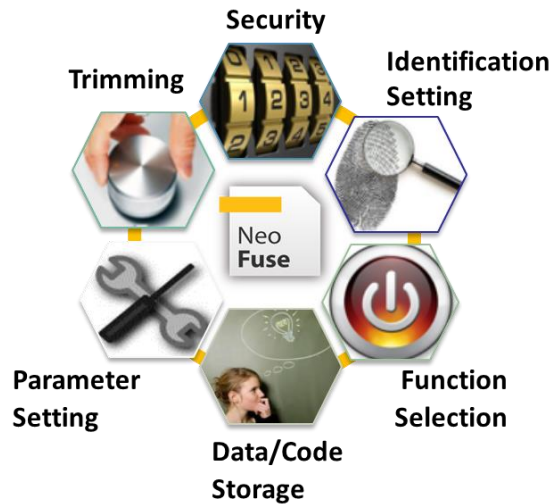
- Larger NVM density for increasing functions
- Low power operation
- Vulnerability is getting more attention

Solutions in IoT
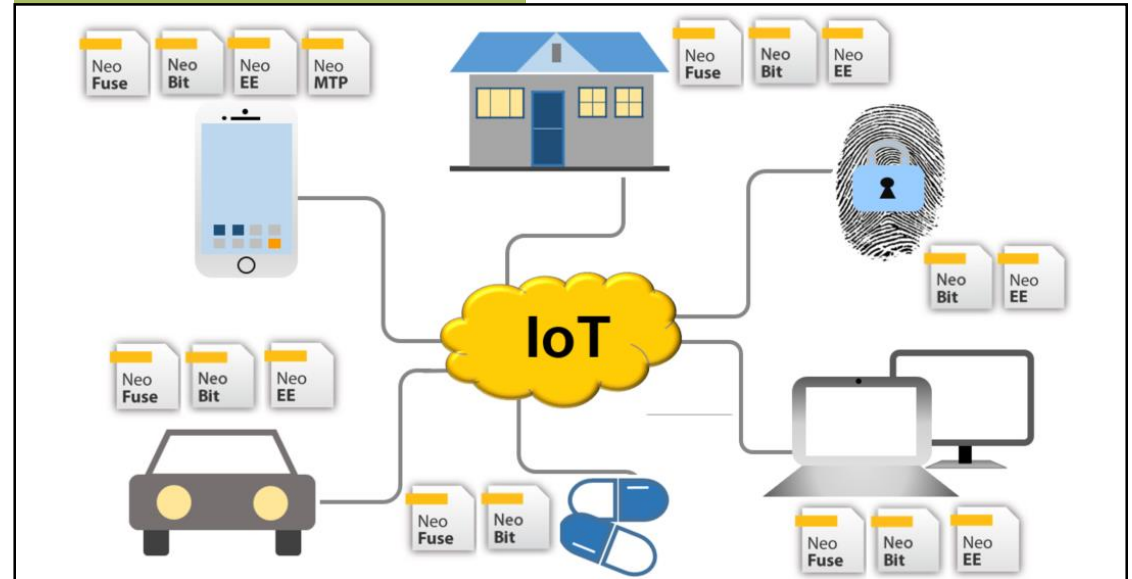
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Business

Monetization Model	Mechanics	Core Business	Growth Business
☐ **Design and technology license fee**	☐ Straightforward and accurate collection	☐ Two structural trends	☐ Security structural trends
☐ **Royalty fee to follow**	☐ All ecosystem members aligned	☐ Low power solution	☐ Prevention/Access
☐ **High operating leverage**	☐ Highly cash generative	☐ Programmable	☐ Authentication
☐ **Strong margin profile**		☐ Cash cow	☐ Authorization

Timeline
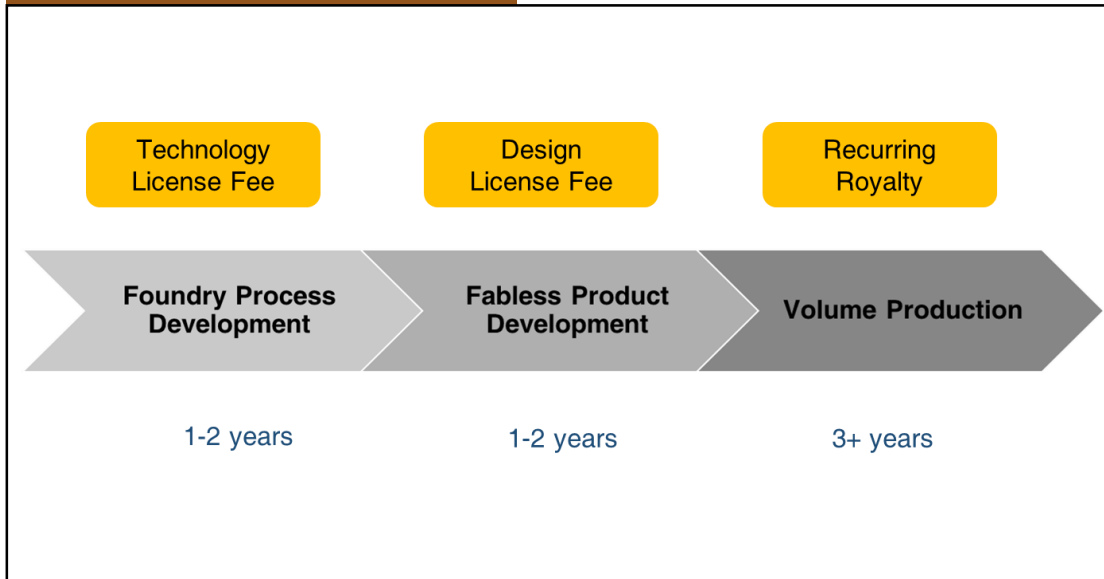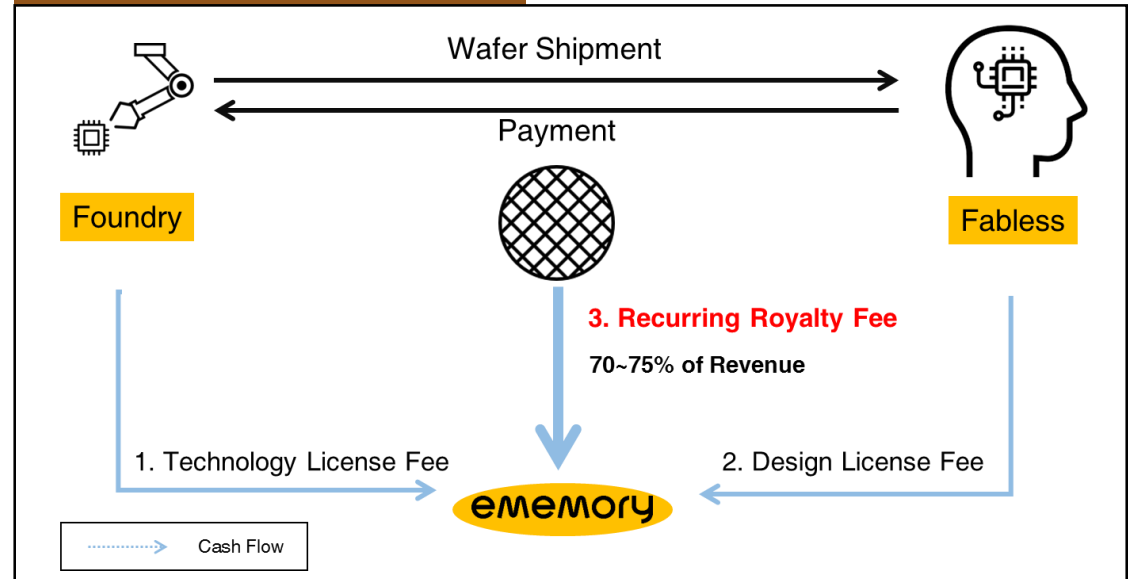
Technology License Fee	Design License Fee	Recurring Royalty

Foundry Process Development	Fabless Product Development	Volume Production
1-2 years	1-2 years	3+ years

Monetization

Wafer Shipment

Payment

Foundry

Fabless

3. Recurring Royalty Fee

70~75% of Revenue

1. Technology License Fee

2. Design License Fee

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Cash Flow

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Business

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Mechanics

- Clients pay a low reference design fee initially, and a royalty fee during manufacturing—traditional IP model

- Partner foundries collect royalty fee from the clients using a percent of wafer price—accurate collection

- Foundries are willing to collect because they keep a small portion of the payment—foundries incentivized

- This business revenue is cyclical due to fact that payment is the 1st month of every quarter—just like a utility

Partner Foundries

Business

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Power Consumption

Trend 1 -- Devices continue to need to be more power efficient
Why? Battery chemistry has not evolved for decades. Devices are getting smaller but consume much more. Power savings must be designed "in" for an increasingly mobile world.

SOLUTION: Low power memory is essential and we are much lower-consuming than peers

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Programmable IC

Trend 2 – The investment in an IC is high. If the design fails, one has to start over. Or, if an IC is designed improperly and installed, a recall or fix requiring a swap out will be costly. A "programmable" IC fixes this.
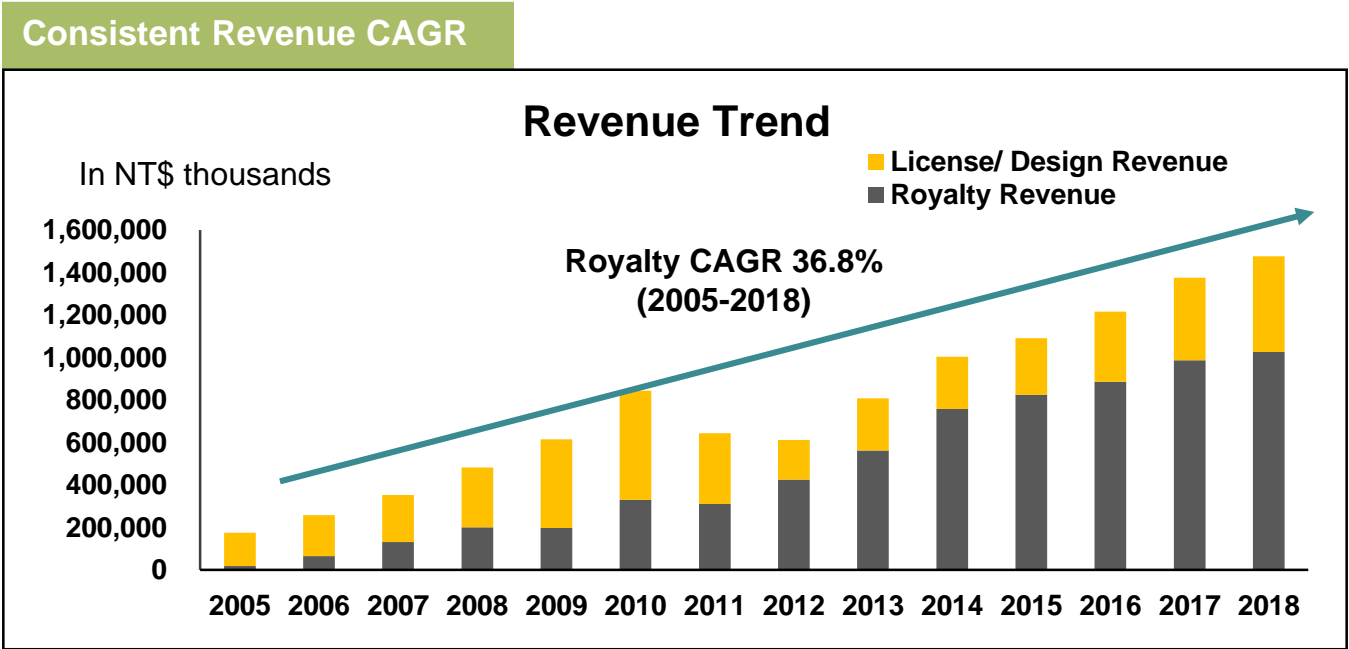**Why?** A programmable IC saves on re-design cost, speeds up time-to-market, and simplifies the design to enhance commercial success rate.

SOLUTION: Embedded memory can be use to adjust the IC for calibration. This fixes the initial design issue without recalls or swapping out any components.

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Business

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Consistent Revenue CAGR

Revenue Trend

In NT$ thousands

■ License/ Design Revenue
■ Royalty Revenue

Royalty CAGR 36.8%
(2005-2018)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018

y-axis: 0, 200,000, 400,000, 600,000, 800,000, 1,000,000, 1,200,000, 1,400,000, 1,600,000

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Business

Monetization Model	Mechanics	Core Business	**Growth Business**
☐ Design and technology license fee	☐ Straightforward and accurate collection	☐ Two structural trends	☐ **Security structural trends**
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☐ Strong margin profile		☐ Cash cow	☐ **Authorization**

Prevention/ Access

Set up Box with hardware access key
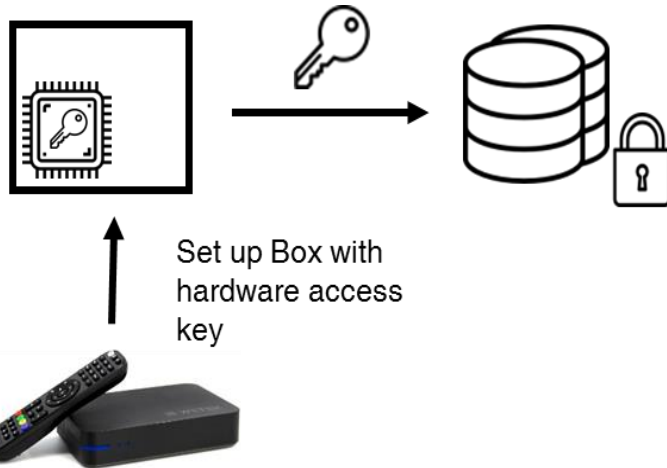
CASE:
Many consumer devices are **hacked** where content is downloaded and stolen for free…songs, movies, video games, etc.

SOLUTION:
Use a **hardware access key** instead of software that can be easily hacked or as an additional layer of protection, prevents content theft.

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Authentication

ID & Authentication Data
Integrity Access Control

Cloud Processing

HW Protection Invisible
Key for Anti-Cloning

Security IP/ Code
by Authorized Use
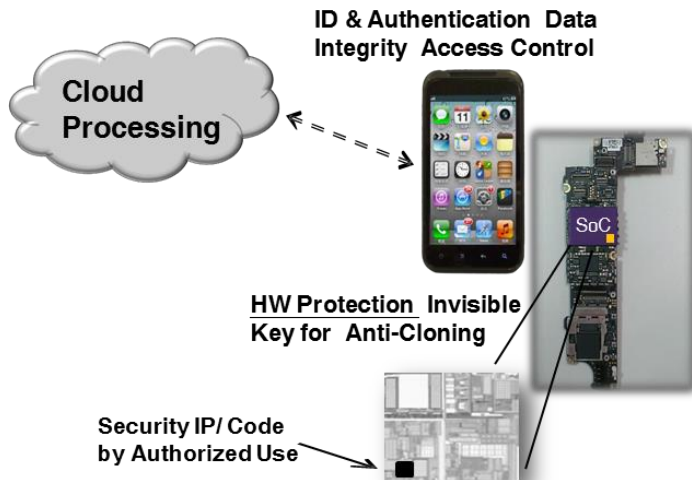
CASE:
With IoT and Cloud devices, authentication is critical before sensitive data is exchanged. Also, with proliferation of fintech, additional security is needed.
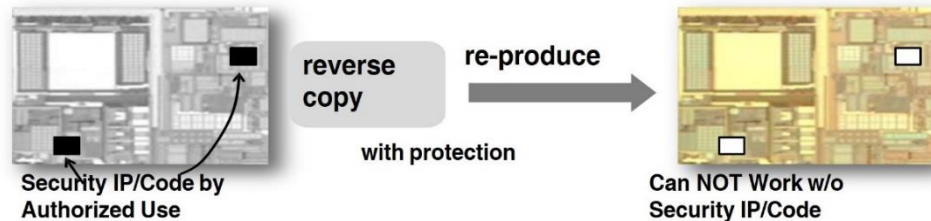
SOLUTION:
Generate a **unique code similar to a fingerprint** ID for each chip. Then the system can verify authenticity of each device, prevents intrusion into the ecosystem.

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Business

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☐ Strong margin profile		☐ Cash cow	☐ **Authorization**

Authorization

Security IP/Code by Authorized Use

reverse copy

with protection

re-produce

Can NOT Work w/o Security IP/Code

CASE:
Competitors want to **reverse-engineer** products.

SOLUTION:
Embed an invisible **security IP/code** that is needed to allow the IC to work. A competitor can copy the components but still cant enable the chip to work, prevents cloning.

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Business

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Unique Fingerprint ID

Chip A

Chip B

Different Chip Fingerprint
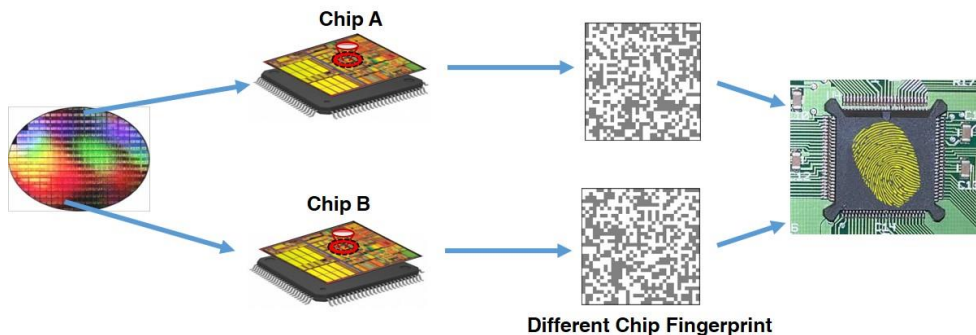
CASE:
Copycat ICs that looks like the original are inserted into devices during manufacturing for **spying and sabotage**.

SOLUTION:
Generate a **unique code similar to a fingerprint** ID for each IC component. Then the system can verify authenticity of each component, prevents spying.

Finance

Growing Rev. / Limited R&D

Revenue CAGR 13% (2011-2018)

(K NTD)

Legend: Revenue, R&D Expense

Growing EPS

EPS CAGR 22% (2011-2018)

Legend: EPS

Growing Cash Dividend

Dividends CAGR 18% (2011-2018)

Legend: Cash Dividend

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Finance

Growth Drivers

☑ **Usage Fee Growing Up**

☑ **Growth of New products**

Usage Fee Growing Up

(K NTD)

Usage Fee per Tape out
CAGR 12.4% (2013-2018)

Usage Fee is growing up because of more advanced node contribution
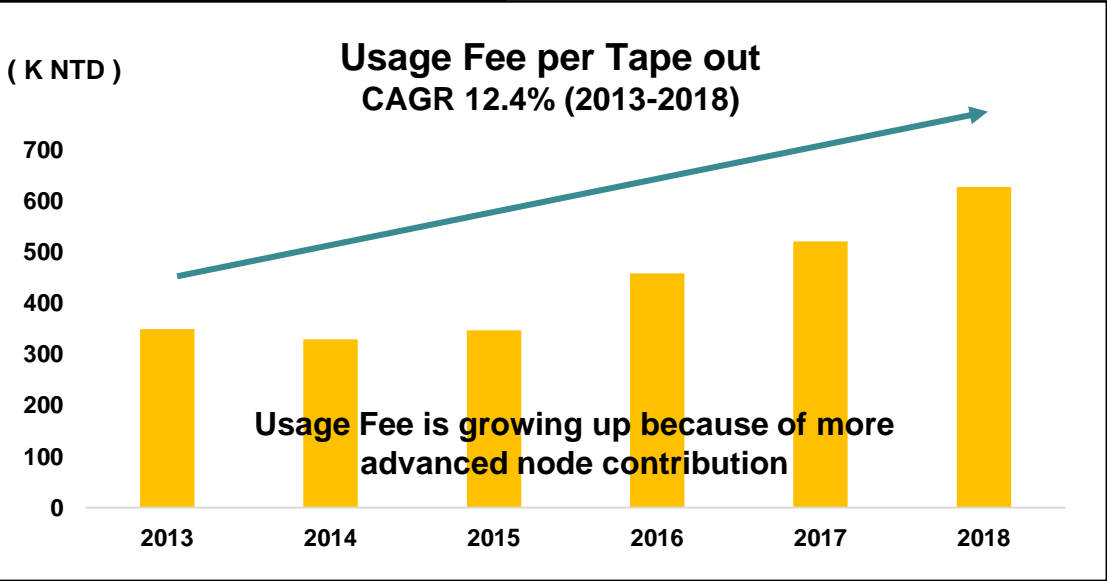
Entering Latest Process Node

Tape Outs/ Year	0.15um/ 0.18um	0.11um/ 0.13um	80nm/ 90nm	55nm/ 65nm	40nm	28nm	25nm	16nm	7nm
2013	265	47	12	2					
2014	313	63	2	25		1			
2015	263	75	15	27		3			
2016	199	70	24	21	10	2		1	
2017	212	65	28	19	24	9			
2018	229	73	29	17	41	12	4	1	1

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Finance

Growth Drivers

☑ **Usage Fee Growing Up**

☑ **Growth of New products**

More adoption of New Product

Revenue (K NTD)

Licensing — Royalty

22.0% 2018
11.6% 2017
11.6% 2017
13.0% 2018

NeoFuse   MTP

Comparison between FY 2017 and FY 2018
(% of Revenue marked in red)
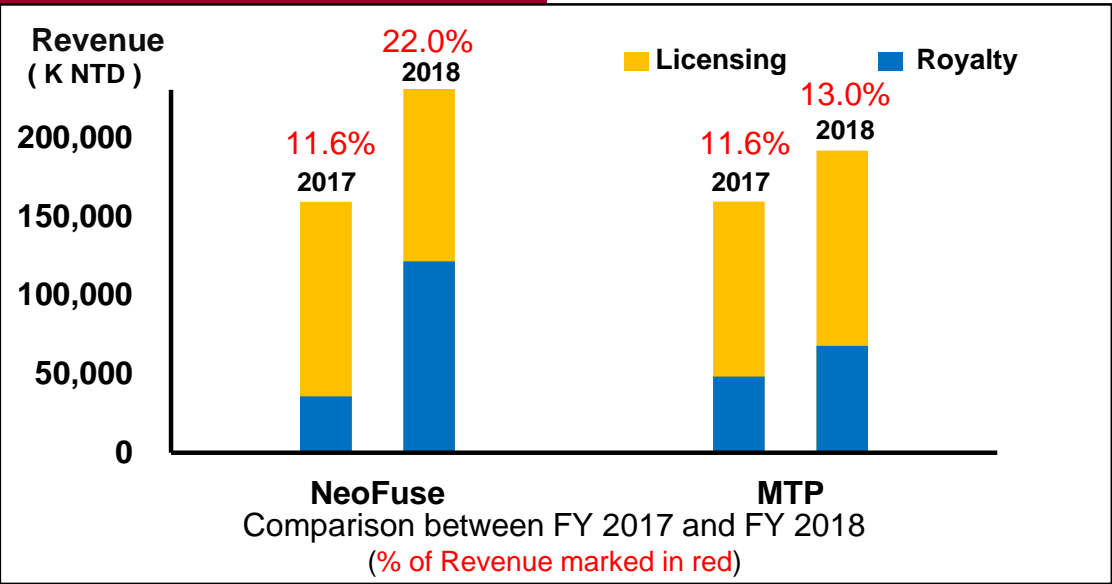
More Advanced Node Projects

Number of Tape outs   2016 2017 2018

40nm   22 nm/ 25nm/ 28nm

The price for 28nm is about 30% higher than 40nm
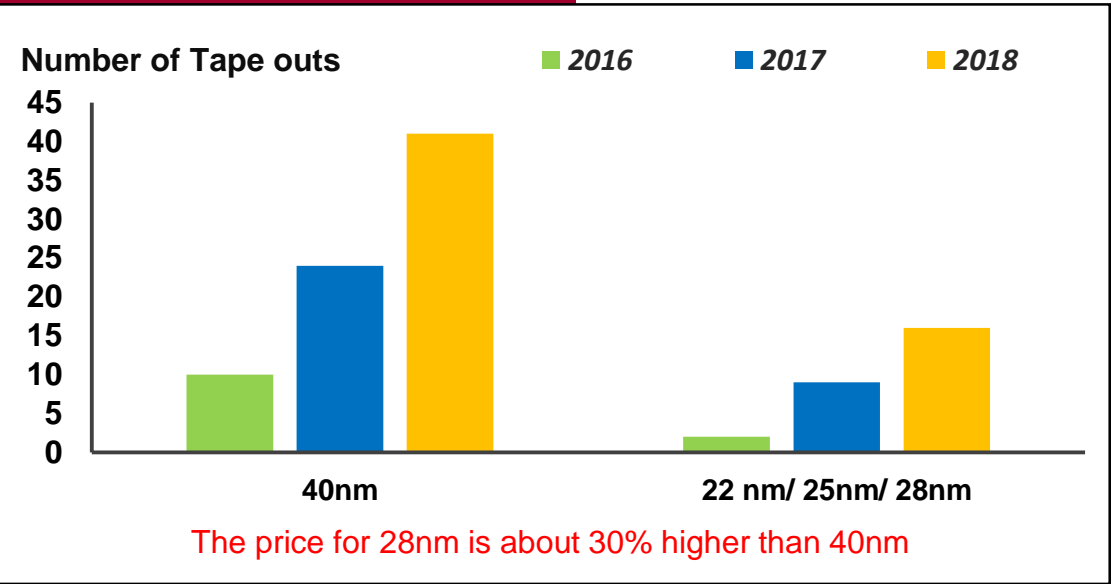
NeoFuse = Advanced Node   MTP = Multi Time Programmable

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Finance

Latest Income Statement

In NT$ thousands	Q4 2018	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%
EPS (Unit: NTD)	2.20	2.23	1.55	-1.3%	41.9%
ROE	34.5%	34.8%	23.6%	-0.3ppts	10.9ppts

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Finance

Financial Statements

- ☐ **Latest Income Statement**
- ☐ **Revenue breakdown**
- ☐ **FY Income Statement**
- ☐ **Consolidated Balance Sheet**

Revenue Breakdown

Revenue Breakdown

Royalty 69.3%
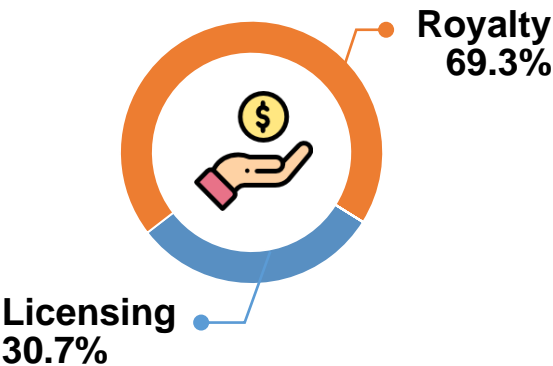
Licensing 30.7%

Growth Rate

K NTD	Q4 2018	Q3 2018	Q4 2017	QoQ	YoY	2018	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%

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Finance

Financial Statements

☑ **Latest Income Statement**

☑ **Revenue breakdown**

☑ **FY Income Statement**

☑ **Consolidated Balance Sheet**

FY Income Statement

In NT$ thousands	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Revenue	1,476,516	1,375,758	1,215,459	1,091,620	1,003,977
Gross Margin	100%	100%	100%	100%	100%
Operating Expenses	803,781	772,940	685,650	570,403	540,286
Operating Income	672,735	602,818	529,809	521,217	463,691
Operating Margin	45.6%	43.8%	43.6%	47.7%	46.2%
Net Income	613,106	598,709	534,917	479,111	418,604
Net Margin	41.5%	43.5%	44.0%	43.9%	41.7%
EPS (Unit: NTD)	8.13	7.90	7.06	6.32	5.52
ROE	32.3%	30.0%	28.6%	26.6%	24.3%

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Finance

Consolidated Balance Sheet

In NT$ thousands	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Cash	1,302,003	1,663,684	1,501,611	1,367,019	1,323,163
Accounts Receivable	158,335	82,457	66,501	55,539	50,344
Inventories	0	0	0	0	0
Other Current Assets	23,267	20,836	15,497	16,695	8,724
Total Current Assets	**1,483,605**	**1,766,977**	**1,583,609**	**1,439,253**	**1,382,231**
Short-term Loans	0	0	0	0	0
Accounts Payable	0	0	0	0	0
Accrued Liabilities and Others	349,772	316,139	254,608	200,260	182,173
Total Current Liabilities	**349,772**	**316,139**	**254,608**	**200,260**	**182,173**
Current Ratio (x)	4.2	5.6	6.2	7.2	7.6
Net Working Capital	**1,133,833**	**1,450,838**	**1,329,001**	**1,238,993**	**1,200,058**

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Thank You

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March 2019