Q1 2022 Investor Conference

May 11th, 2022

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Contents

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Review of Operations

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Q1 2022 Financial Results

(thousands of NT dollars)

	Q1 2022	Q4 2021	Change (QoQ)	Q1 2021	Change (YoY)
Revenue	727,107	631,398	15.2%	596,734	21.8%
Gross Margin	100%	100%	-	100%	-
Operating Expenses	313,846	299,677	4.7%	259,023	21.2%
Operating Income	413,261	331,721	24.6%	337,711	22.4%
Operating Margin	56.8%	52.5%	4.3ppts	56.6%	0.2ppt
*Net Income	366,019	287,263	27.4%	292,982	24.9%
Net Margin	49.8%	45.2%	4.6ppts	48.8%	1.0ppt
EPS (NT$)	4.91	3.86	27.2%	3.93	24.9%
ROE	55.0%	51.4%	3.6ppts	54.6%	0.4ppt

*Net income attributable to Shareholders of the Company

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Revenue in Different Stream

22Q1 in comparison to 21Q4

Revenue Breakdown

Royalty
73.6%
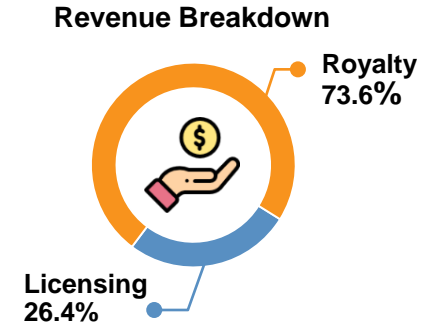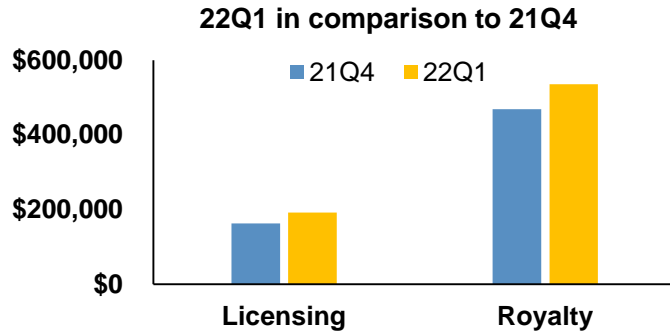
Licensing
26.4%

Revenue

NT$ Thousands	Q1 2022	Q4 2021	Change (QoQ)	Q1 2021	Change (YoY)
Licensing	191,608	162,632	17.8%	176,993	8.3%
Royalty	535,499	468,766	14.2%	419,741	27.6%
Total	727,107	631,398	15.2%	596,734	21.8%

US$ Thousands	Q1 2022	Q4 2021	Change (QoQ)	Q1 2021	Change (YoY)
Licensing	6,875	5,855	17.4%	6,241	10.2%
Royalty	19,384	16,788	15.5%	14,788	31.1%
Total	26,259	22,643	16.0%	21,029	24.9%

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Revenue by Technology

- The royalty revenue of NeoFuse up 19.1% QoQ and up 56.2% YoY due to the increasing penetration rate of OLED, ISP, Network-related, DRAM and others.
- PUF-based revenue is expected to see significant growth in Q2 and H2.
- Royalty for MTP grew by 64.0% QoQ and 99.2% YoY for MCU, Wireless Charger and others.

Technology	Q1 2022								
	Total Revenue			Licensing Revenue			Royalty Revenue		
	% of Q1 Revenue	Change (QoQ)	Change (YoY)	% of Q1 Licensing	Change (QoQ)	Change (YoY)	% of Q1 Royalty	Change (QoQ)	Change (YoY)
NeoBit	33.4%	9.3%	1.0%	18.3%	49.0%	28.2%	38.8%	4.6%	-2.5%
NeoFuse	59.2%	19.5%	50.1%	64.8%	20.4%	36.9%	57.2%	19.1%	56.2%
PUF-Based	1.0%	-61.3%	34.2%	3.6%	-63.4%	25.8%	0.1%	125.2%	100.0%
MTP	6.4%	55.6%	-27.5%	13.3%	49.3%	-52.5%	3.9%	64.0%	99.2%

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Royalty Revenue by Wafer Size

Q1 Royalty Breakdown

12-inch 49.3%

8-inch 50.7%
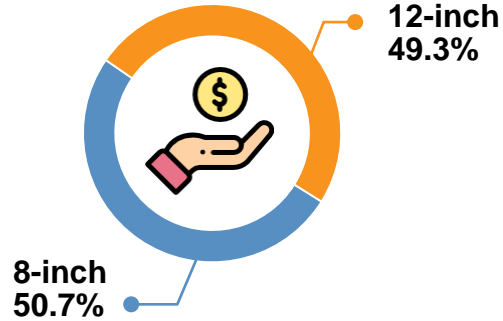
- 8-inch wafers contributed 50.7% of royalty, up 15.0% sequentially and 17.9% YoY due to wafer shipment increase from PMIC, MCU, sensors and others.

- 12-inch wafers contributed 49.3% of royalty, up 13.4% QoQ and 39.3% YoY due to continuous production from OLED, Networking, ISP, DTV, DRAM and others.

Wafer Size	Q1 2022		
	% of Q1	**Change (QoQ)**	**Change (YoY)**
8-Inch	50.7%	15.0%	17.9%
12-Inch	49.3%	13.4%	39.3%

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Future
Outlook

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Core Technology

✓ eMemory's IP seeks to penetrate across all the applications

✓ **Product Applications:**

eMemory's IPs are already applied into different applications, which includes PMIC, LCD Driver, Sensors, RFID, OLED Driver, Connectivity IC, DTV, STB, SSD Controller, Bluetooth, TDDI, MCU, Finger-print Sensor, Smart Meters, Surveillance, ISP, CIS, DRAM, Embedded Flash, IoT, AI and FPGA.

✓ **Future Target:**

AP, GPU, CPU, DPU, and Autonomous Driving

Security

✓ **Product Application with PUF-based Security IP:**

PUF-based security IPs are being applied in AI, IoT, AIoT, GPS, CPU, DPU, and SSD Controller.

✓ **PUF-based Security Solutions:**

Automotive, Communication, Networking and Vertical Market.

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Our Perspectives

Licensing & Royalty

✓ **Licensing:**

- License revenue will grow due to the continued strong demand for our IPs, especially NeoFuse and PUF-related solutions.

✓ **Royalty:**

- Royalties will continue their growth momentum with increasing wafer shipment and wafer ASP.
- 8-inch royalties will continue to grow due to the demand and content increase for PMIC, MCU, Fingerprint, and Sensor-related in 5G, Automotive, and IoT-related applications.
- 12-inch royalties will have strong growth with increasing penetration rate in OLED, ISP, DTV, STB, WiFi 6/6E, Network-related, DRAM and others.
- Royalties for 12/16nm and 7nm FinFET have continued to contribute in the first-quarter and is expected to be the next growth driver after 28nm.

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Our Perspectives

✓ **New Business Development:**

- The focus of our new application development is in the field of security.
- Business activities for PUF-based security solutions are continuing to progress in IoT, Industrial IoT, AI, Blockchain, FPGA, Data Processor Unit (DPU), Mobile Storage (UFS) and Automotive applications.
- OTP/PUFrt plays an important role as the root of trust in the Armv9 Confidential Computing Architecture by providing the moat fundamental security protection for the next decade of confidential computing.
- Began to license security IPs in Intel foundries.

✓ **New IP Technology Development:**

- N4 and N5 are on the verification stage with customers' request for adoption.
- ReRAM IP is being designed into AI applications.
- NeoFlash is being licensed to multiple foundries for specialty processes such as BCD.

New Business & IP Technology Development

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Why PUF is Pivotal for Metaverse Security

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What is Metaverse?

> "
>
> In the future, instead of just doing this over a phone call, you'll be able to sit as a hologram on my couch, or I'll be able to sit as a hologram on your couch, and it'll actually feel like we're in the same place, even if we're in different states or hundreds of miles apart.
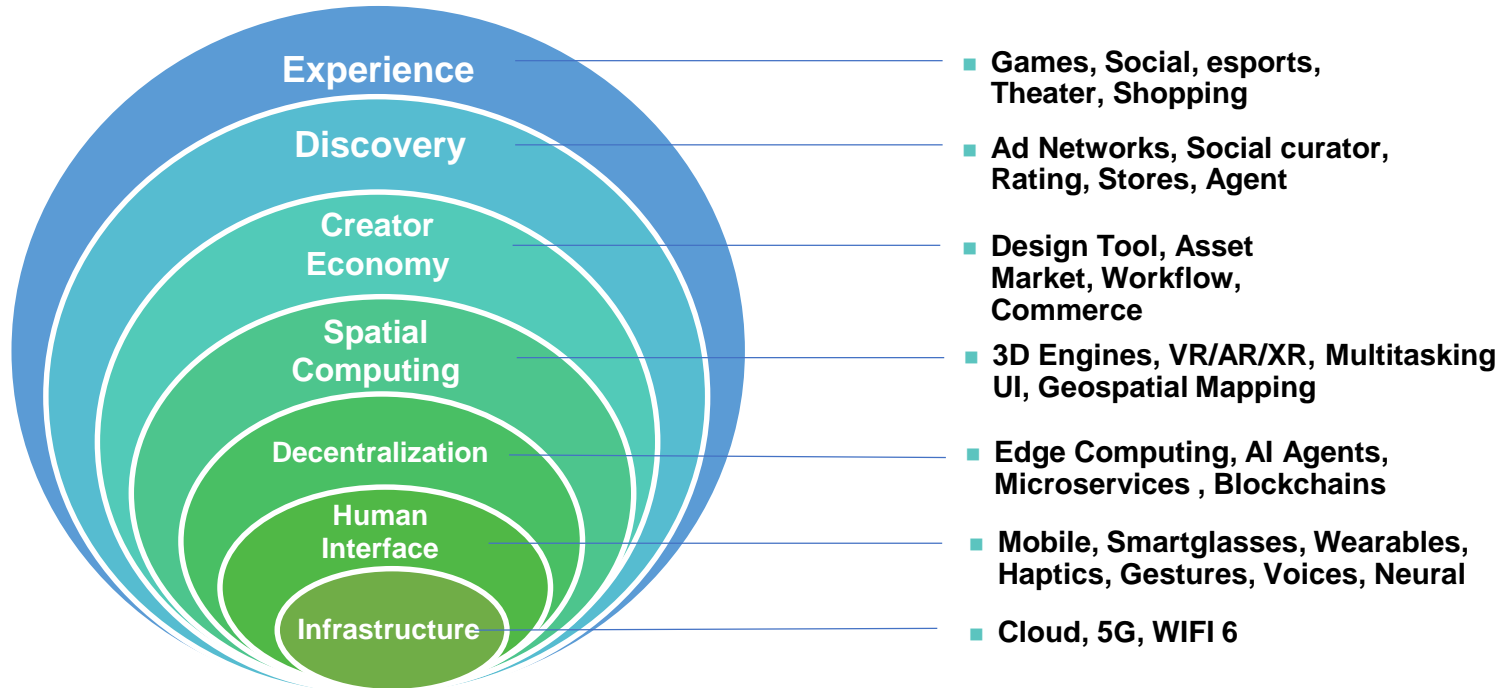>
> **Mark Zuckerberg**

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Seven Layers of Metaverse

Metaverse is layered into different levels for different roles.

Consumers are in Experience and Discovery layers while the inner layers are for creators and service/equipment providers.

Experience — Games, Social, esports, Theater, Shopping

Discovery — Ad Networks, Social curator, Rating, Stores, Agent

Creator Economy — Design Tool, Asset Market, Workflow, Commerce

Spatial Computing — 3D Engines, VR/AR/XR, Multitasking UI, Geospatial Mapping

Decentralization — Edge Computing, AI Agents, Microservices , Blockchains

Human Interface — Mobile, Smartglasses, Wearables, Haptics, Gestures, Voices, Neural

Infrastructure — Cloud, 5G, WIFI 6

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Security Needs in Metaverse

While all activities that occur in the Metaverse go through multiple layers, they are realized by some, if not all, of the six core technologies.

Digital Asset NFT

Crypto Transaction

Blockchain

Confidentiality

IoT

Interactivity

Connected Data

Connected Device

Network

Game

Authentication

Artificial Intelligence

Personal Identity

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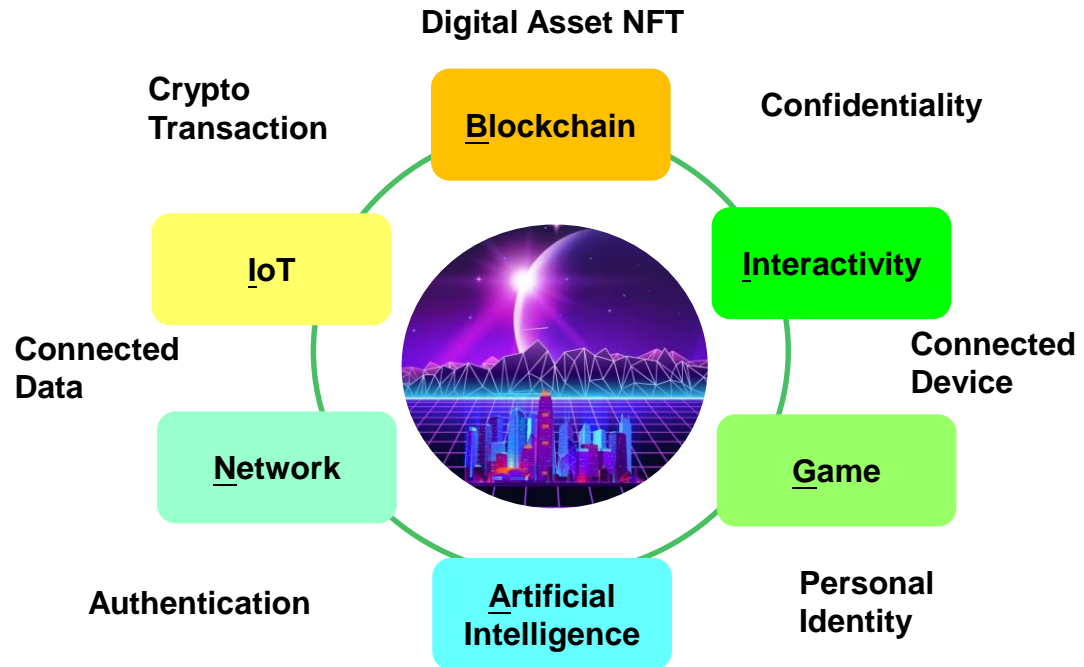
Metaverse Ecosystem

Within the 7 layer ecosystem, major brands are investing and embracing the Metaverse

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Scenarios in Metaverse

Below are some possible every-day scenarios in the Metaverse and their corresponding layers.

	Logging into Metaverse	Virtual Movie Gathering	Being Called Into a Meeting
Experience		V	V
Discovery		V	V
Creator Economy		V	V
Spatial Computing	V	V	V
Decentralization		V	V
Human Interface	V	V	V
Infrastructure	V	V	V

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Why PUF is Pivotal to Metaverse Security?

PUF, a digital fingerprint, provides a unique identity when entering Metaverse.

eMemory patented Quantum Tunneling technology creates the most optimal PUF, utilizing silicon variations from manufacturing to generate keys.

PUFsecurity's integrated solution derives truly secret keys to protect the identity, assets and transactions.

Protect device firmware to ensure normal operation and avoid potential threats.

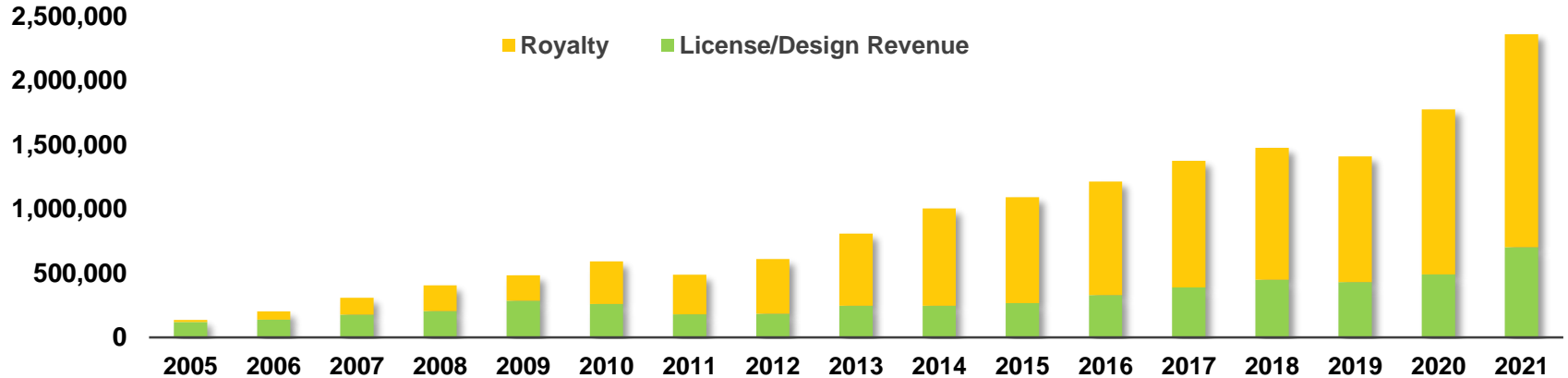Use PUF-based NFT to uniquely identify any virtual object in the Metaverse.

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Q&A

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Appendix

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Company Overview

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

Revenue Trend

(Unit: NT$ 1,000)

Legend: Royalty / License/Design Revenue

Years: 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021

Founded
In 2000
Based in Hsinchu, Taiwan. IPO in 2011. Over 41M wafers shipped.

1000+
Patents Issued
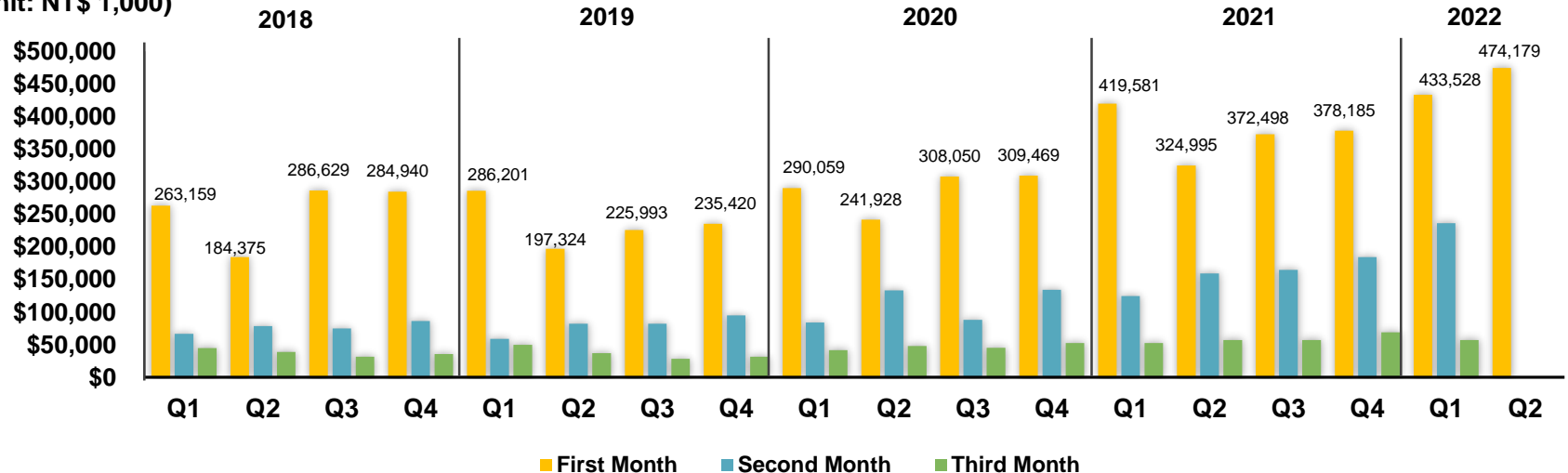202 pending patents. 305 employees with 69% R&D personnel.

Best IP Partner
With TSMC
TSMC Best IP Partner Award since 2010.
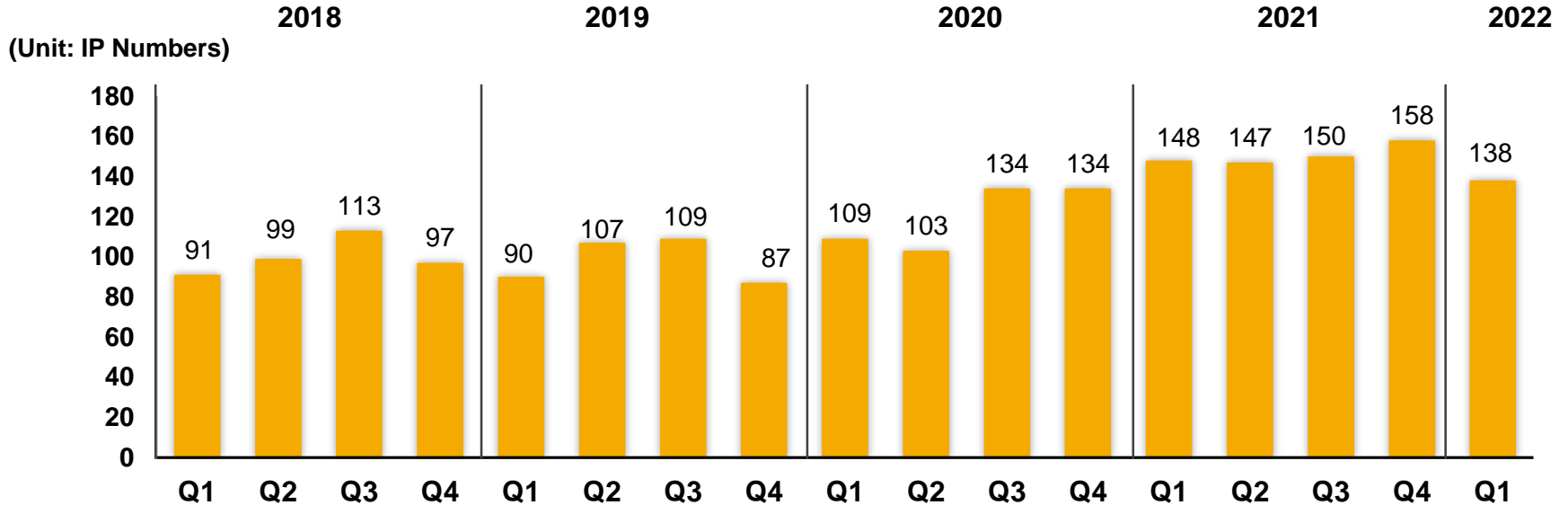
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Quarterly Revenue Pattern

✓ 1st month: Receive License Fees of the month and Royalty from most foundries on previous quarter's wafer shipments.

✓ 2nd month: Receive License Fees of the month and Royalty from other foundries.

✓ 3rd month: License Fees Only.

(Unit: NT$ 1,000)

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Quarterly Number of New Tape-outs

(Unit: IP Numbers)

	2018				2019				2020				2021				2022
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
	91	99	113	97	90	107	109	87	109	103	134	134	148	147	150	158	138

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Worldwide Customers

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

Country	Foundry	IDM	Fabless
Taiwan	4	1	324
China	9	0	979
Korea	4	0	94
Japan	4	7	75
North America	1	1	319
Europe	2	1	198
Others	1	0	83

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Business Model

✓ Recurring royalty is the backbone of our business

Revenue Breakdown

License Fee 25-30 %
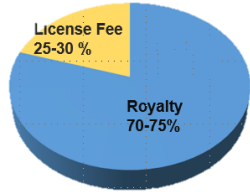
Royalty 70-75%

✓ 70-75% revenue are from royalty based on wafer production
✓ More adoption = more volume shipment
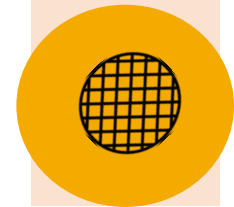✓ More advanced node wafers = higher ASP per wafer
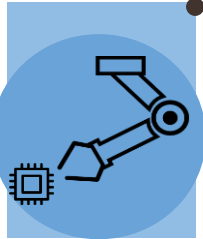
1-4 years

1-4 years

License Fee
Foundries Process Development

Design License Fee
Fabless Product Development

Royalty
Wafer Mass Production

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Technology Licenses

Number of Licenses

Year	2016	2017	2018	2019	2020	2021	2022 Q1
License	43	20	26	18	28	32	11

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.

■ No. of Cumulative Technology Licenses of the Previous Years
■ No. of New Technology Licenses in the Corresponding Period

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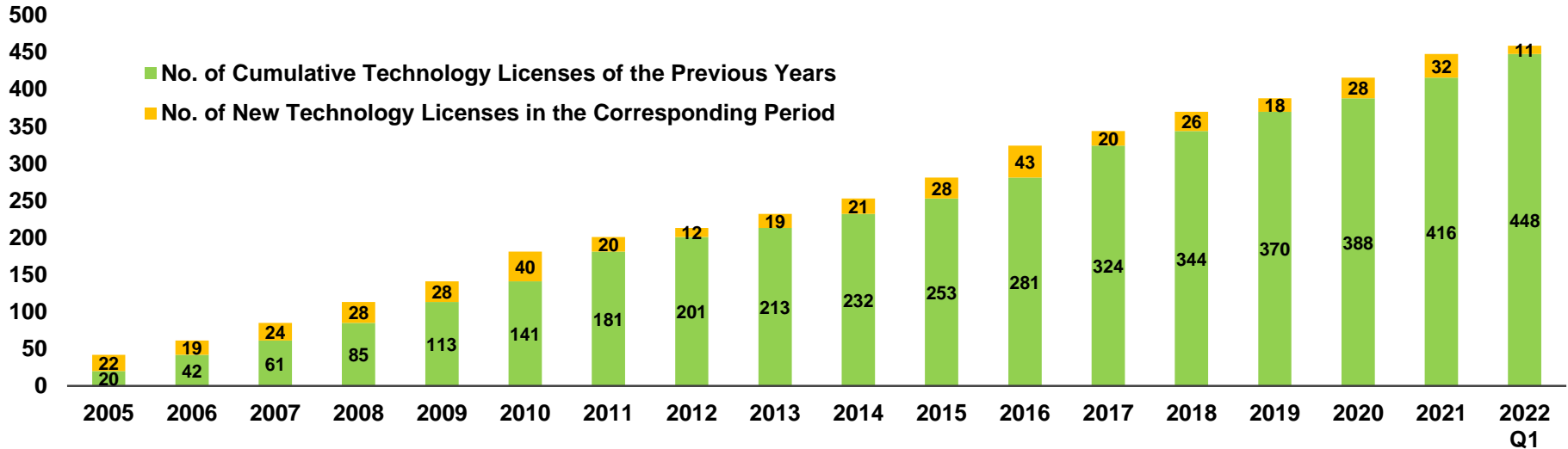
New Technology Under Development

✓ New technologies are being developed for 111 platforms by Q1 2022.

✓ 11 licensing contracts were signed.

Technology	5/6nm	7/10nm	12/16nm	22/28nm	40nm	55/65nm	80/90nm	0.11~0.13um	0.15~0.18um	>0.25um
NeoBit	-	-	-	-	-	1	1	12	12	1
NeoFuse	1	1	5	8	4	11	8	2	1	-
PUF-Based	1	-	1	-	-	1	-	-	-	-
MTP	-	-	-	3	-	7	2	7	21	-

Note: As of March 31st, 2022

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Technology Development

✓ Developments by process nodes

12" Fabs	Production	Development	IP Type	Process Type
5/6nm	2	2	OTP, PUF	FF
7/10nm	2	1	OTP, PUF	FF, FF+
12/16nm	6	6	OTP, PUF	FF, FF+, FFC. FFC+, LPP
22/28nm	42	11	OTP, PUF, MTP	LP/ULP/ULL, HPC/HPC+, HV-OLED, DRAM, SOI, ReRAM MRAM
40nm	21	4	OTP, PUF, MTP	LP/ULP, E-Flash, HV-DDI/OLED, ReRAM
55/65nm	33	20	OTP, PUF, MTP	LP/ULP, E-Flash, HV-DDI/OLED, DRAM, CIS, BCD, PM
80/90nm	22	8	OTP, MTP	HV-DDI/OLED, LP, Generic ,BCD, CIS
0.11/0.13um	20	2	OTP, MTP	HV-DDI, BCD, Generic
0.18um	1	8	OTP, MTP	BCD, Generic
Total	149	62		

8" Fabs	Production	Development	IP Type	Process Type
80/90nm	9	3	OTP	HV-DDI, LL, BCD
0.11/0.13um	75	19	OTP, MTP, PUF	HV/HV-MR, BCD, LP/LL, CIS, Green, Flash, SOI, Generic
0.152/0.16/0.18um	219	26	OTP, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Generic
0.25um	42	1	OTP	BCD
0.3/0.35um	53	0	OTP, MTP	UHV, BCD
0.4/0.5um	11	0	OTP	UHV, BCD
Total	409	49		

Note: As of March 31st, 2022

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