

# Sensortek Technology Corp.

## 昇佳電子股份有限公司

### 論壇簡報



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昇佳電子股份有限公司

# 免責聲明

- This presentation includes forward-looking statements. All statements, other than statements of historical facts, that address activities, events or developments that Sensortek Technology Corp. expects or anticipates will or may occur in the future (including but not limited to projections, targets, estimates and business plans) are forward-looking statements.
- Sensortek's actual results or developments may differ materially from those indicated by these forward-looking statements as a result of various factors and uncertainties, including but not limited to material cost increase, market demand, change in legal, financial and regulatory frameworks, government policies, financial market conditions, and other risks and factors beyond our control.
- Sensortek does not undertake any obligation to publicly update any forward-looking statement to reflect events or circumstances after the date on which any such statement is made or to reflect the occurrence of unanticipated events.

# 議程

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I. 公司簡介

II. 市場概況

III. 公司產品

IV. 經營實績

V. 未來發展

# I. 公司簡介

# 關於我們

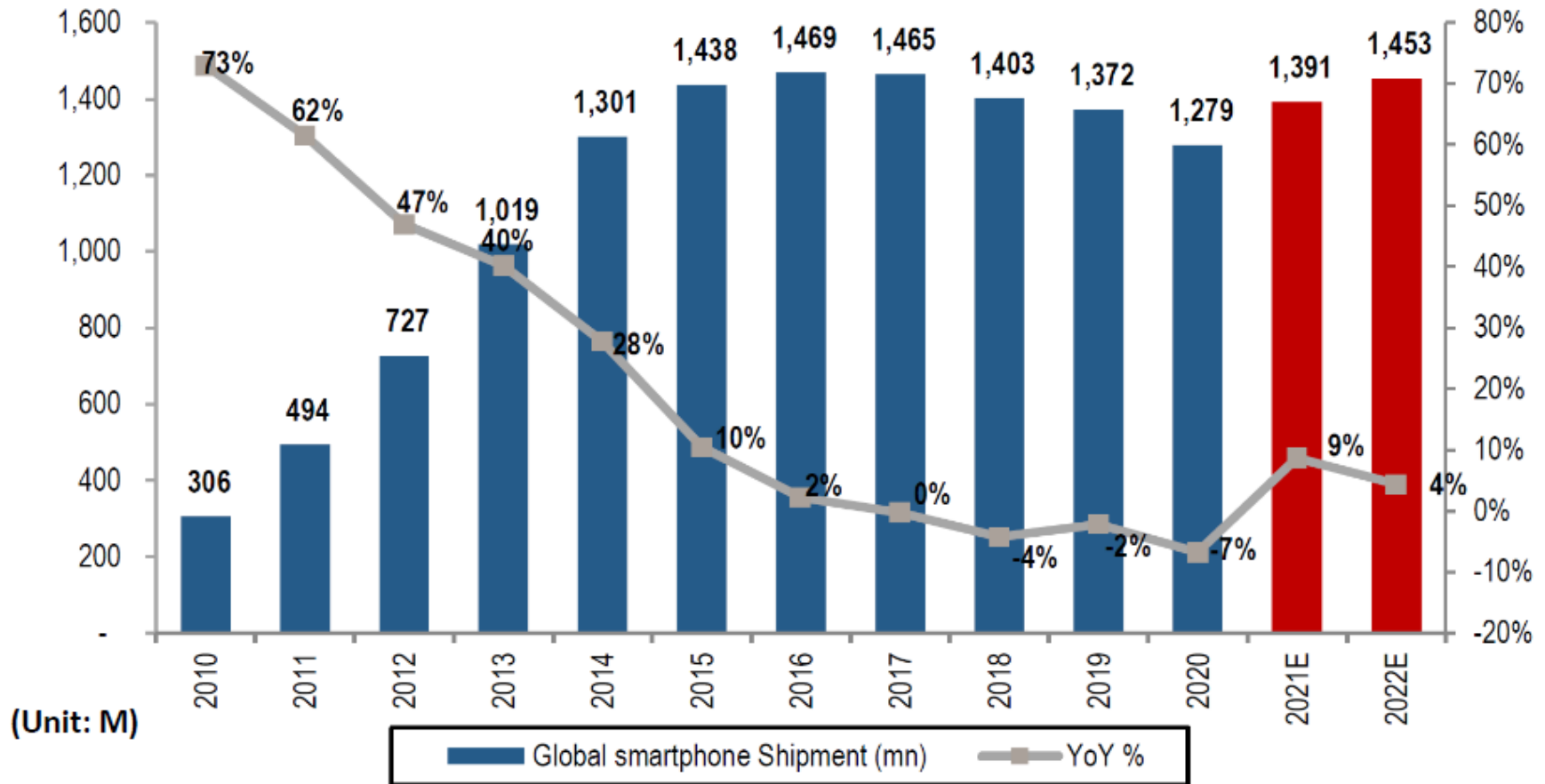
Company Name	Sensortek Technology Corp.	
Founded	December 1, 2009	
Capitalization	NT 489,126,180	
Chairman and CEO	Sheng-Su Lee	
Number of Employees	163	
Location	Tai Yuen Hi-Tech Industrial Park, Jhubei City, Hsinchu County	
Products	<ul style="list-style-type: none"> <li>• <b>光學感測晶片 Optical Sensor</b> <ul style="list-style-type: none"> <li>- 近接感測晶片 Proximity Sensor (PS)</li> <li>- 環境光感測晶片 Ambient Light Sensor (ALS)</li> <li>- 色彩感測晶片 Color Temperature Sensor (RGB)</li> </ul> </li> <li>• <b>微機電感測晶片 MEMS Sensor</b> <ul style="list-style-type: none"> <li>- 加速度感測晶片 Accelerometer Sensor (GS)</li> </ul> </li> </ul>	
Listing	上櫃 Taipei Exchange Market (TPEX) 06/08/2020 興櫃 Emerging Stock Market (TESM) 06/18/2019	

# 里程碑

- 2009: Team established
- 2010: [Optical] Proximity (PS) & ambient light sensors (ALS)
- 2012: [MEMS] Accelerometers (g-sensors)
- 2013: Spinoff
- 2017: [Optical] Invisible PS+ALS solution
- 2018: [Optical] Under display & slit type PS+ALS solution  
[MEMS] Low-power g-sensors
- 2019: [Optical] RGB sensors for smartphone screens  
Listed at the Emerging Stock Market (TESM) 興櫃
- 2020: Listed at the Taipei Exchange Market (TPEX) 上櫃  
[Optical] RGB + flicker sensors for smartphone cameras

## II. 市場概況

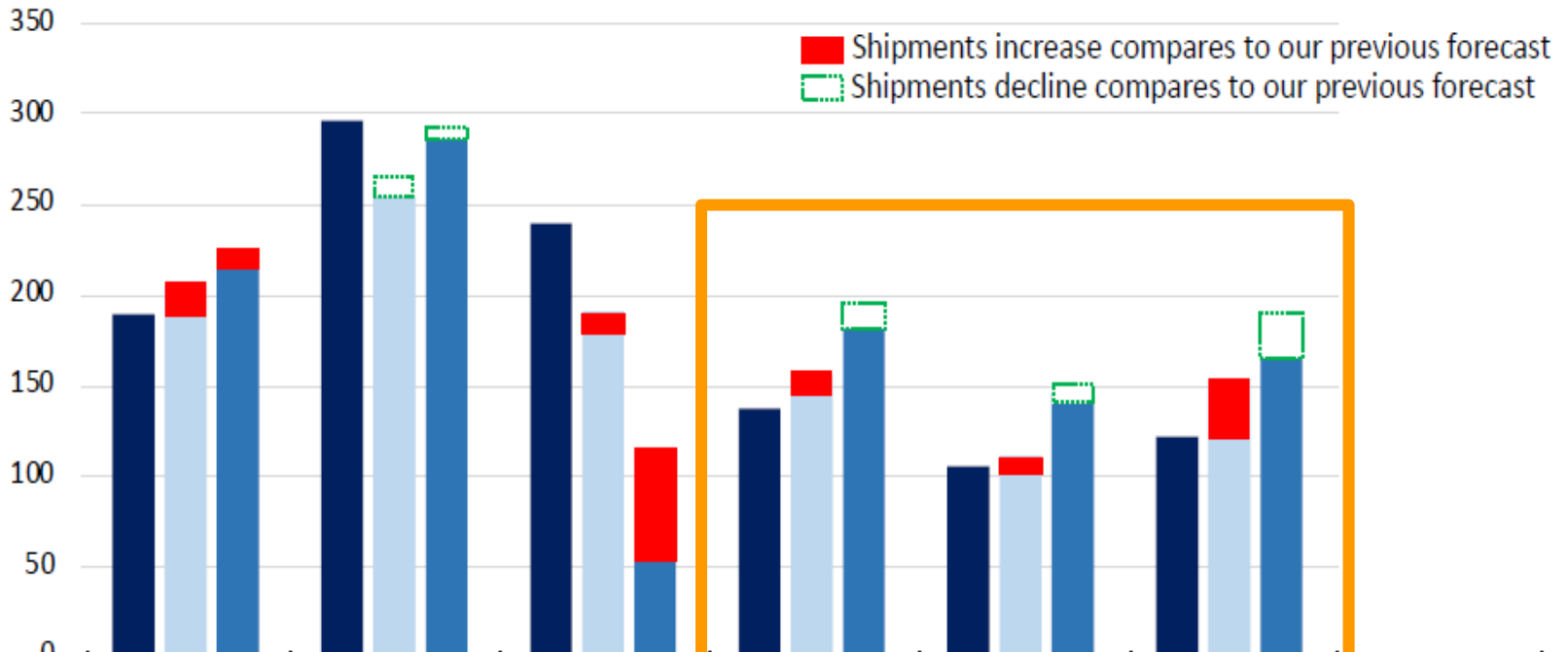
# 全球智慧型手機銷量預估



Source: IDC



# 各品牌智慧型手機銷量預估



(Unit: M)	Apple	Samsung	Huawei	OPPO	Vivo	Xiaomi	Total
<b>Y2019</b>	189	296	239	147	105	121	<b>1370</b>
<b>Y2020 FCST</b>	<b>200~205</b>	<b>250~260</b>	<b>185~190</b>	<b>155~165</b>	<b>105~115</b>	<b>150~155</b>	<b>1250~1300</b>
<b>Y2021 FCST</b>	<b>220~230</b>	<b>285~295</b>	<b>110~120</b>	<b>190~200</b>	<b>140~150</b>	<b>185~195</b>	<b>1340~1390</b>

\*Note: Our forecast of OPPO now includes shipments of Realme and OnePlus, Huawei includes New Honor

## III. 公司產品

# 光學感測晶片

## Proximity Sensors (PS)

近接感測晶片 → 關屏防誤觸  
turns off the display (anti-touch)



## Ambient Light Sensors (ALS)

環境光感測晶片 → 調節螢幕亮度  
screen brightness control

- G1: PS + ALS 2-in-1 visible solution (2010)
- G2: PS + ALS 2-in-1 invisible solution (2018)
  - Under-display 屏下方案 for AMOLED displays
  - Slit type 狹縫方案 for TFT displays



## Color temperature Sensors (RGB)

色溫感測晶片 → 調節螢幕色溫  
screen color temperature control

- G3: PS + RGB sensors (2019)
  - for better reading experience

## 3CH RGB sensor

色溫感測晶片 → 協助後相機白平衡校正  
white balance correction (2020)

## Flicker detection sensors

閃頻偵測晶片 → 協助消除光源物理閃爍  
Flicker detection (2020)

### Waterdrop Screen

- 狹縫(Slit) ALS/PS
- 狹縫(Slit) PS / 屏下 ALS
- 前攝旁 ALS/PS  
(Aside of Front Facing Camera)



### Bezel-less Screen

- 屏下(Under-display) ALS/PS
- 狹縫(Slit) PS / 屏下 Under-display ALS



# 近接感測晶片 + 環境光感測晶片 → 前螢幕應用

G1: PS + ALS visible solution 1x

G2: PS + ALS invisible solution → sensitivity 3x → 6x → 10x

- Under-display solution for AMOLED

G3: PS + RGB visible solution

G4: PS + RGB invisible solution

感度及功能提升 → 平均價格提升

水滴屏 (Teardrop-shaped)



全景屏 (Full screen)



瀏海屏 (Notch type)



開孔屏 (Apature type)



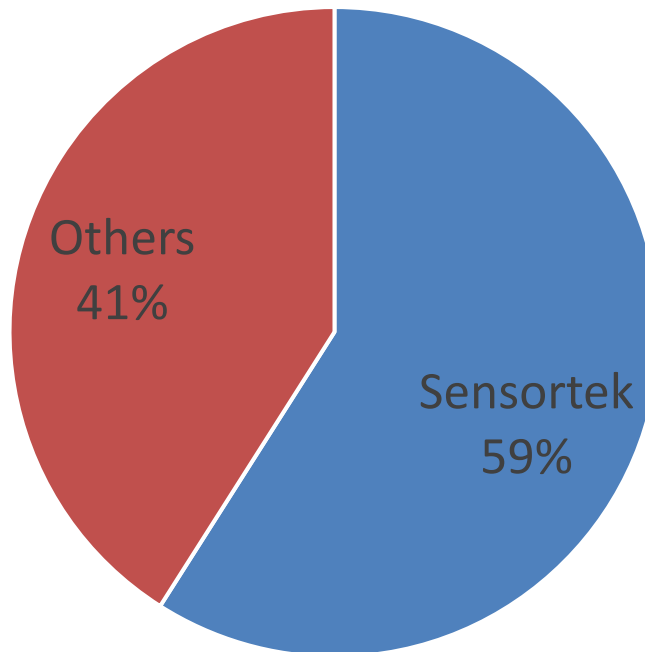
16:9 → 18:9 → 19:9 ...

Upgrading because of increases in...

1. Display resolution
2. PPI density  
(resulting in a decrease in light transmittance)
3. AMOLED penetration rate

# 近接感測晶片 & 環境光感測晶片 出貨量及市占率

2018: > 340M pcs  
2019: > 650M pcs  
2020: > 720M pcs



# 3ch RGB sensor 色溫感測晶片 → 後相機應用

## 手機後相機搭配 RGB sensor 的用途

### 3ch RGB sensor for smartphone camera

The environment has a lot of kinds of light, and these lights have different color temperatures. Therefore, when the mobile phone camera takes pictures, these lights need to be corrected to appear normal white. 環境中充斥著各種不同的光線，這些光線有著不同的色溫，因此手機數位相機在進行拍照時，需要對這些光線進行校正，才能呈現出正常的白色。

Method: **White balance correction** automatically according to the color temperature measured by the RGB color temperature sensor and the image sensor.

作法：依據 **RGB**色溫感測器、影像感測器所測量的色溫來自動**校正調整白平衡**。



- |   |                     |
|---|---------------------|
| 1. White balance (automatic) using lighting               | 1. 白平衡(自動) 使用閃光燈    |
| 2. White balance (automatic) without lighting             | 2. 白平衡(自動) 不使用閃光燈   |
| 3. White balance (fluorescent lamp) does not use lighting | 3. 白平衡 (日光燈) 不使用閃光燈 |
| 4. White balance (warm light) without lighting            | 4. 白平衡 (暖色燈) 不使用閃光燈 |
| 5. White balance (cold light) without lighting            | 5. 白平衡 (冷色燈) 不使用閃光燈 |
| 6. White balance (daylight) without lighting              | 6. 白平衡 (白晝燈) 不使用閃光燈 |

# Flicker sensor 閃頻感測晶片 → 後相機應用

手機後相機搭配 Flicker sensor 的用途

## Flicker sensor for smartphone camera

1. Used to detect the physical flicker of the 50Hz or 60Hz light source produced by incandescent or fluorescent lamps in the environment.  
用於檢測環境中由白熾燈或螢光燈所產生的50Hz或60Hz光源物理閃爍。
2. Assist the image system of the mobile phone camera to eliminate the streaks and distortion effects caused by the flickering of artificial light sources.  
協助手機攝像頭之圖像系統能夠消除人造光源的閃爍而出現的條紋和失真效果。



# 微機電MEMS感測晶片

## Accelerometers (G-sensors)

Rotation detection

加速度感測器 → 屏幕旋轉偵測



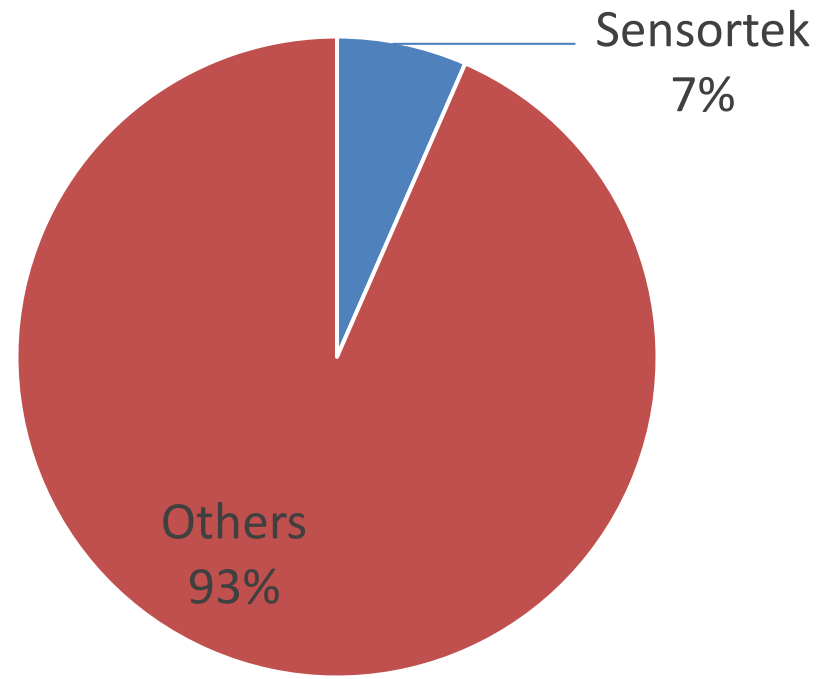
- √ G-sensors for smartphones
- √ Low power g-sensors for wearable & IoT devices





# 加速度感測晶片 出貨量及市占率

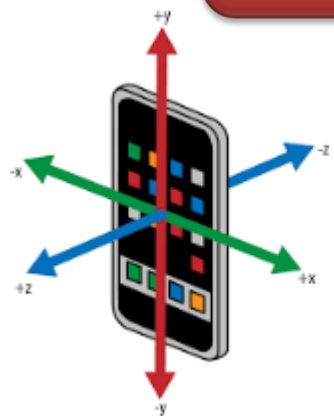
2018: >30M pcs  
2019: >55M pcs  
2020: >80M pcs



# 加速MEMS陀螺儀感測晶片研發

- 轉屏
- 敲擊
- 遊戲
- 計步

**加速度計**  
Accelerometers  
(G-sensors)



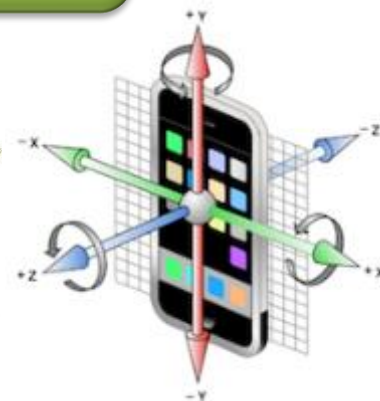
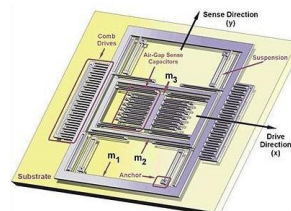
**MEMS Sensor**

**6軸  
IMU**

- AR/VR
- 室內導航
- 3D遊戲
- 姿態辨識

**陀螺儀**  
Gyroscope

- 遊戲旋轉
- 空中指標
- 光學防抖
- 環景照相



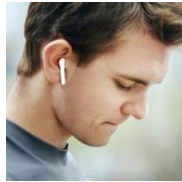
1. 提升整合度 (3 Axis → 6 Axis)
2. 支持中高階手機2 in 1應用需求

# 光學感測晶片 + 微機電感測晶片 穿戴裝置與非手機領域應用

## True wireless stereo (TWS) earbuds

Accelerometers → click detection 敲擊偵測

Proximity sensors → on/off switch 功能啟用開關



FreeBuds 3

### 敲擊偵測 Click detection

- 有來電時 Incoming call
  - 單擊接聽 Click to answer
  - 雙擊拒接 Double click to reject
- 音樂播放 Music mode
  - 單擊暫停 Click to pause
  - 雙擊換曲 Double click to switch

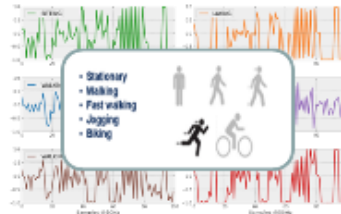
## Smart watches & fitness trackers

Accelerometers → motion detection 移動偵測

Optical sensors → heartbeat detection 心律偵測 & UV sensors 紫外線感測



運動偵測 / 計步  
Motion detection



抬手亮屏 / 動態心率輔助  
Heartbeat detection

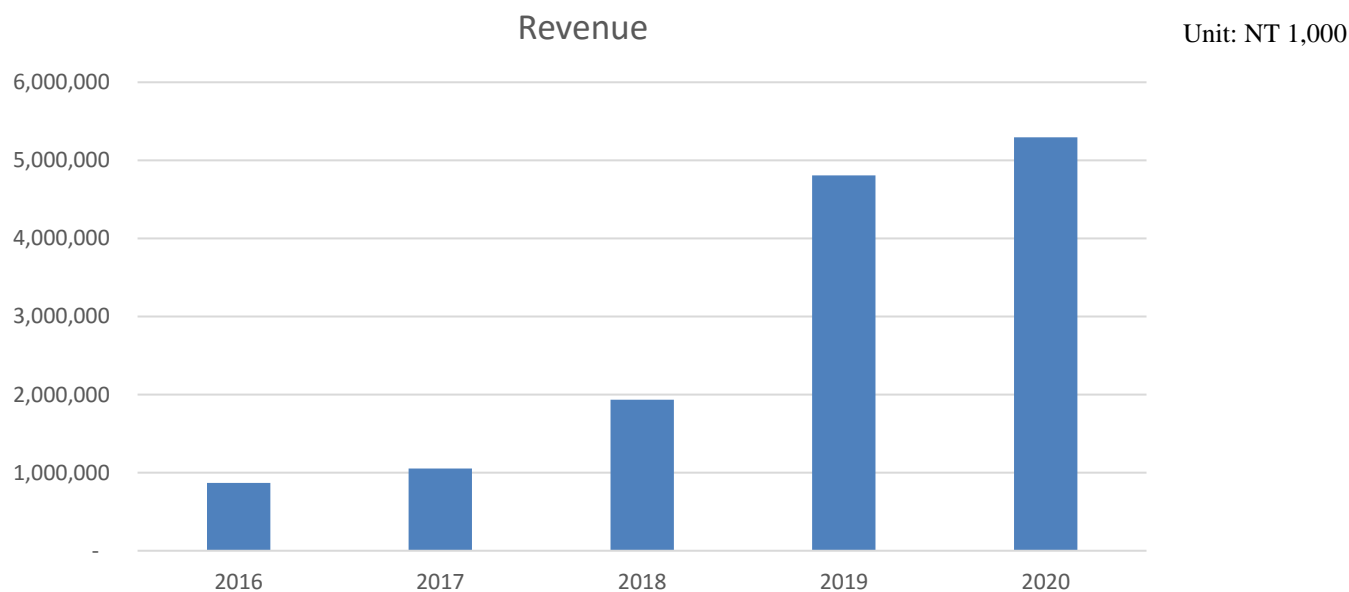


睡眠偵測 / 久坐提醒  
Sleep quality monitoring



# IV. 經營實績

# 經營實績



Item	2016	2017	2018	2019	2020
Revenue	869,687	1,053,451	1,935,513	4,806,152	5,296,054
Gross margin	137,375	158,184	649,442	2,018,872	2,127,828
Margin %	15.80%	15.02%	33.55%	42.00%	40.18%
Operating income	4,931	8,751	366,646	1,497,236	1,537,189
Net income	5,169	5,309	326,275	1,322,900	1,365,454
EPS (NT\$)	0.14	0.14	8.64	35.01	28.81

Note: The EPS values listed here are based on the capital of 37,781 thousand shares.

# 損益表

Item	Q1 21		Q1~Q4 20		Q4 20		Q3 20		Q2 20		Q1 20	
	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales
Net Sales	1,268,541	-	5,296,054	-	1,420,526	-	1,500,516	-	1,024,529	-	1,350,483	-
Gross Profit	512,956	40%	2,127,828	40%	531,783	37%	626,215	42%	420,572	41%	549,258	41%
Operating Expense	167,906	13%	590,639	11%	158,969	11%	175,320	12%	112,178	11%	144,172	11%
Operating Income	345,055	27%	1,537,189	29%	372,814	26%	450,895	30%	308,394	30%	405,086	30%
Income before Tax	350,677	27%	1,550,117	30%	372,919	27%	451,245	30%	311,413	30%	414,540	31%
Net Income*	295,568	23%	1,365,454	26%	328,954	23%	397,497	26%	274,929	27%	364,074	27%
EPS	6.04	-	28.81	-	6.73	-	8.13	-	5.93	-	8.03	-

Unit: NT\$ thousands (except EPS)  
Accounting standard: IFRS

\* Listed on the English translation of our financial statements as  
"Profit (loss), attributable to owners of parent"

## 資產負債表

Item	2021/3/31	2020/12/31	2020/9/30	2020/6/30	2020/3/31
Total Assets	6,546,874	6,213,228	5,665,950	5,920,992	3,937,918
Current Assets	5,288,197	5,718,727	5,500,709	5,785,995	3,824,883
Cash & Equivalents	2,215,010	3,086,052	1,743,561	1,895,897	1,471,630
AR	450,143	452,893	489,647	470,727	542,826
Inventory	305,180	320,395	382,448	605,743	595,547
Total Liability	2,780,120	1,665,215	1,459,386	2,121,747	2,581,779
AP	688,059	759,395	616,844	527,754	816,834
Shareholder Eq.	3,766,754	4,548,013	4,206,564	3,799,245	1,356,139

Unit: NT\$ thousands  
Accounting standard: IFRS

# V. 未來發展



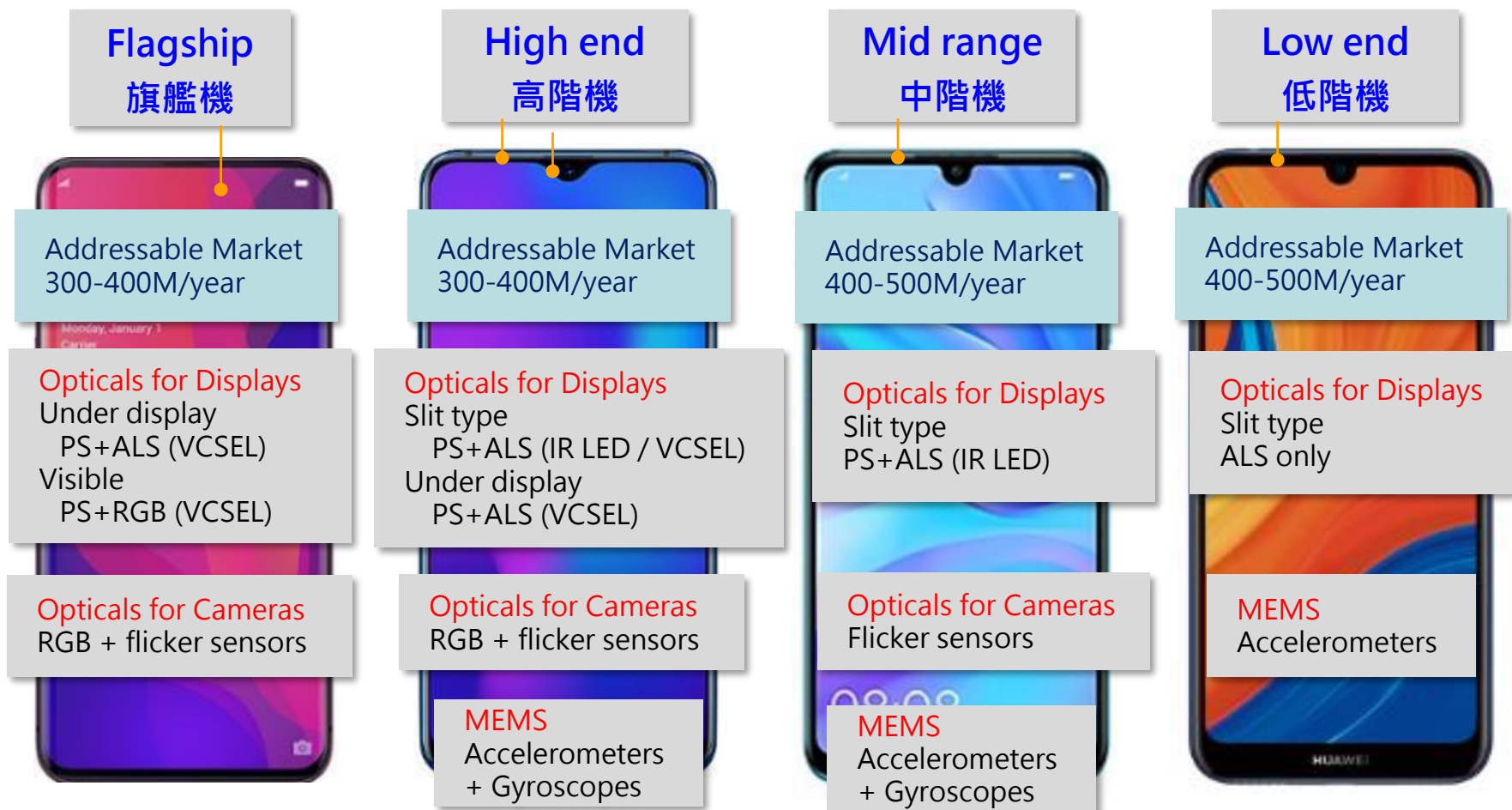
# 未來研發計畫

1. **Optical sensors for smartphone screens** 前螢幕應用
  - PS + ALS visible solution 調整顯示亮度
  - High-sensitivity PS + ALS invisible solution → 3x → 6x → 10x sensitivity
  - PS + RGB visible solution 調整顯示色溫 → invisible solution (coming soon!)
2. **Optical sensors for smartphone cameras** 後相機應用 white balance correction 白平衡校正
  - 3-channel RGB sensors → 6-channel for better color detection (coming soon!)
  - Flicker sensors 閃頻偵測
3. **MEMS: Gyroscopes** 加速MEMS陀螺儀感測器開發
  - Accelerometers + Gyroscopes (2 in 1) for high-end smartphones (coming soon!)
4. **Other applications** 其他非手機之應用
  - TWS: proximity sensors & accelerometers
  - Smart watches: ambient light + UV, heartbeat sensors, accelerometers
  - Smart speakers: ambient light sensors
  - ...and more (e.g. auto & industrial)

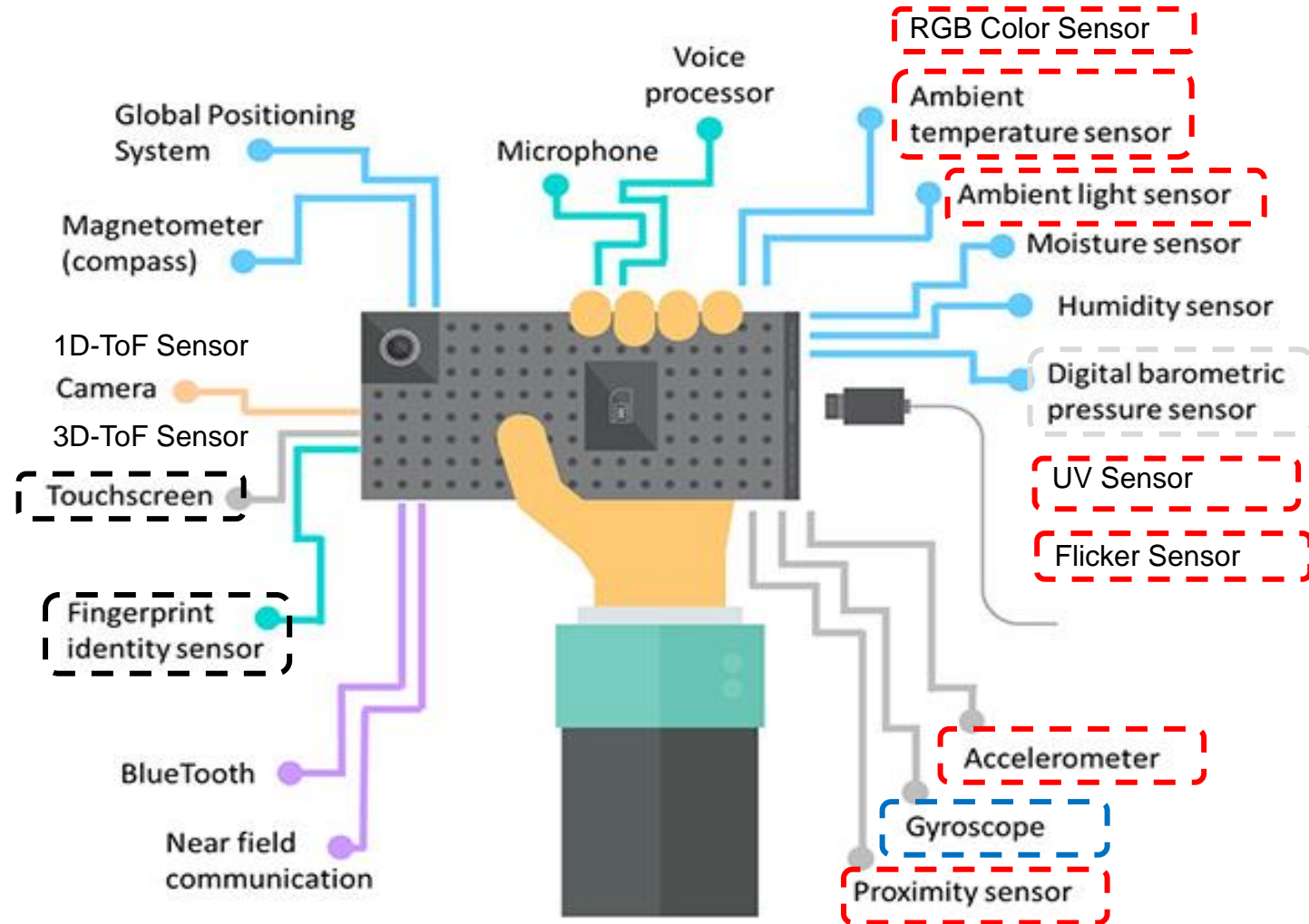
# 2020 之前



# 展望未來



# 敬請期待





# 謝謝

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