

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

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議程

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

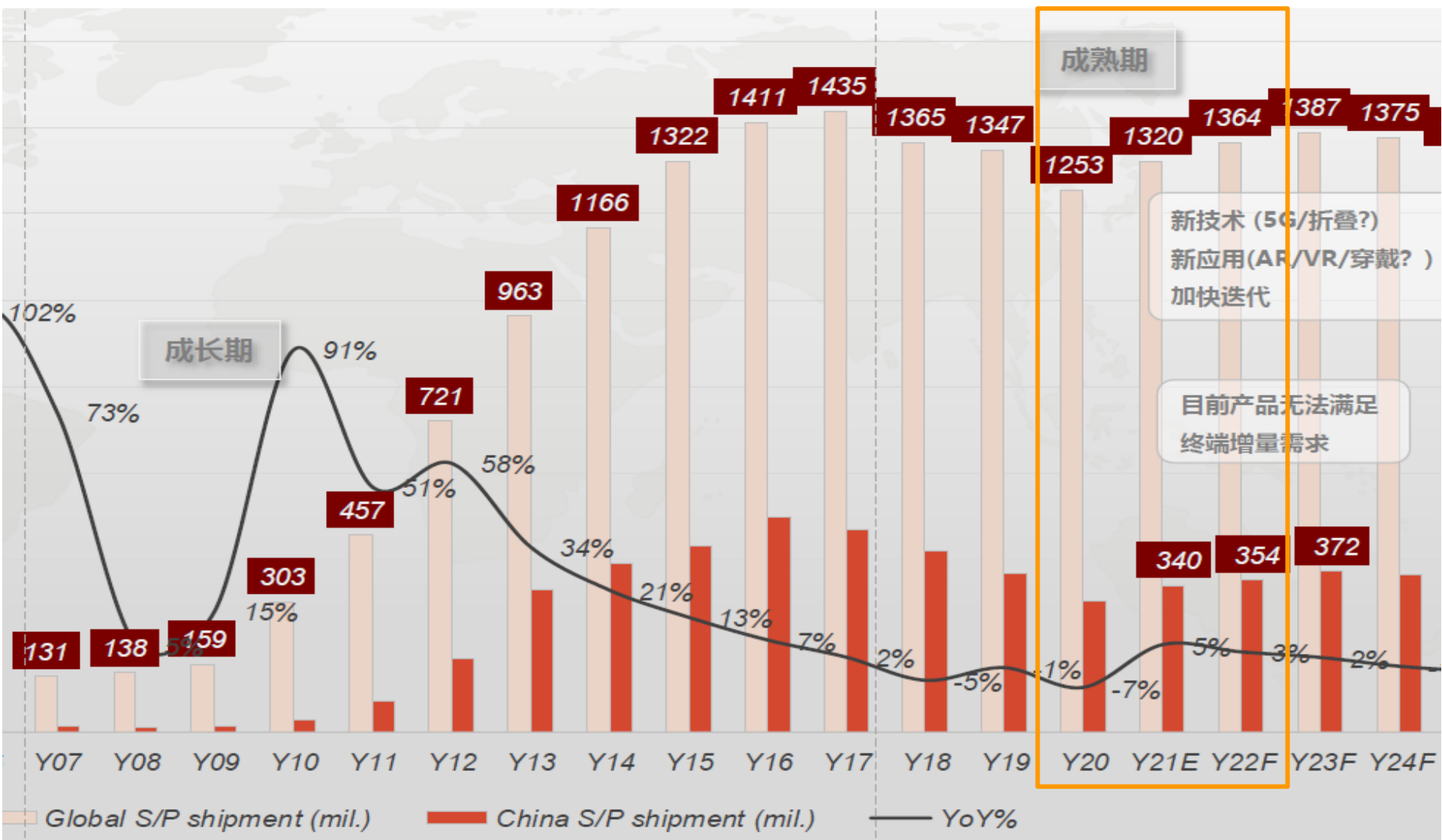
Company Name	Sensortek Technology Corp.	
Founded	December 1, 2009	
Capitalization	NT 489,126,180	
Chairman and CEO	Sheng-Su Lee	
Number of Employees	170	
Location	Tai Yuen Hi-Tech Industrial Park, Jhubei City, Hsinchu County	
Products	• 光學感測晶片 Optical Sensor - 近接感測晶片 Proximity Sensor (PS) - 環境光感測晶片 Ambient Light Sensor (ALS) - 色彩感測晶片 Color Temperature Sensor (RGB) - 閃頻偵測晶片 Flicker Detection Sensor • 微機電感測晶片 MEMS Sensor - 加速度感測晶片 Accelerometer Sensor (GS)	
Listing	Taipei Exchange Market (TPEX) 06/08/2020 (上櫃) Emerging Stock Market (TESM) 06/18/2019 (興櫃)	

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
- 2021: [Optical] high sensitivity PS+ALS (x10) for AMOLED screens
[Optical] Under display & slit type PS+RGB for screens

II. 市場概況

全球智慧型手機銷量預估



III. 公司產品

光學感測晶片 → 手機顯示屏應用

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)
- G4: PS + RGB sensors (2021)
 - Slit type & under display
 - For better reading experience



PS + ALS shipment

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



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



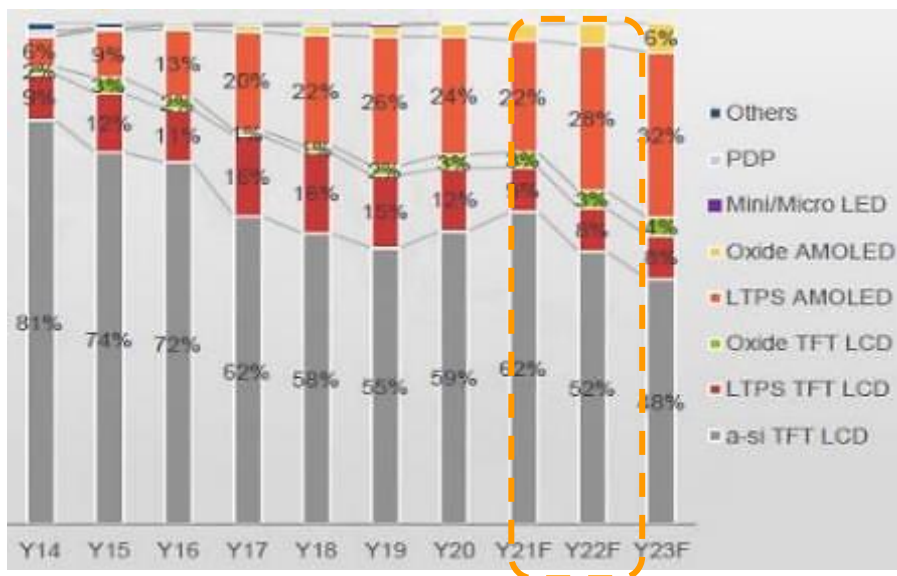
感度及功能提升 → 平均價格提升

G1: PS + ALS visible solution 1x

G2: PS + ALS invisible solution → 3x → 6x → 10x sensitivity (MP in 2021)
- Under-display solution for AMOLED display

G3: PS + RGB visible solution (2019) 1x

G4: PS + RGB invisible solution (2021) → 3x (MP in 2021)



Sensitivity & Feature Upgrades → ASP Boosts

感度及功能提升 → 平均價格提升

Upgrading because of increases in...

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

光學感測晶片 → 手機後相機應用

Camera RGB sensors 色溫感測晶片 (2021)

White balance correction

協助後相機白平衡校正

Flicker detection sensors 閃頻偵測晶片 (2021)

Flicker detection

協助消除光源物理閃爍



Camera RGB sensors

Used for white balance correction. Different light sources come with different color temperatures, which can create unrealistic color casts in photos. White balance is the process of removing such color casts so that objects that appear white in person are rendered white in the photo.

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。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。



Flicker detection sensors

Detects the 50 Hz or 60 Hz flickers produced by incandescent or fluorescent lights. Helps eliminate the streaks and distortion effects caused by the flickering.

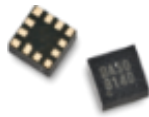
用於檢測環境中由白熾燈或螢光燈所產生的50Hz或60Hz光源物理閃爍。協助手機攝像頭之圖像系統能夠消除人造光源的閃爍而出現的條紋和失真效果。

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-sensor shipment

2018 : > 30M pcs

2019 : > 55M pcs

2020 : > 80M pcs

✓ G-sensors for smartphones

✓ Low power g-sensors for wearable & IoT devices



屏幕旋轉
Screen rotation



遊戲
Game control



自動靜音
Automatic mute

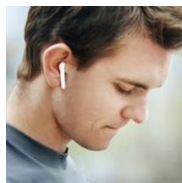


光學感測晶片 + 微機電感測晶片 穿戴裝置與非手機領域應用

True wireless stereo (TWS) earbuds

Accelerometers → click detection 敲擊偵測

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



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



Gesture control



On/off control



Proximity detection
(ELA)



Ambient dimming control
(Smart speaker)



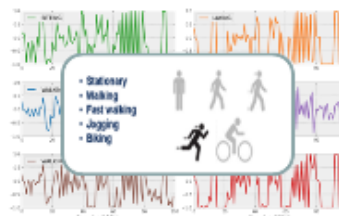
Smart watches & fitness trackers

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



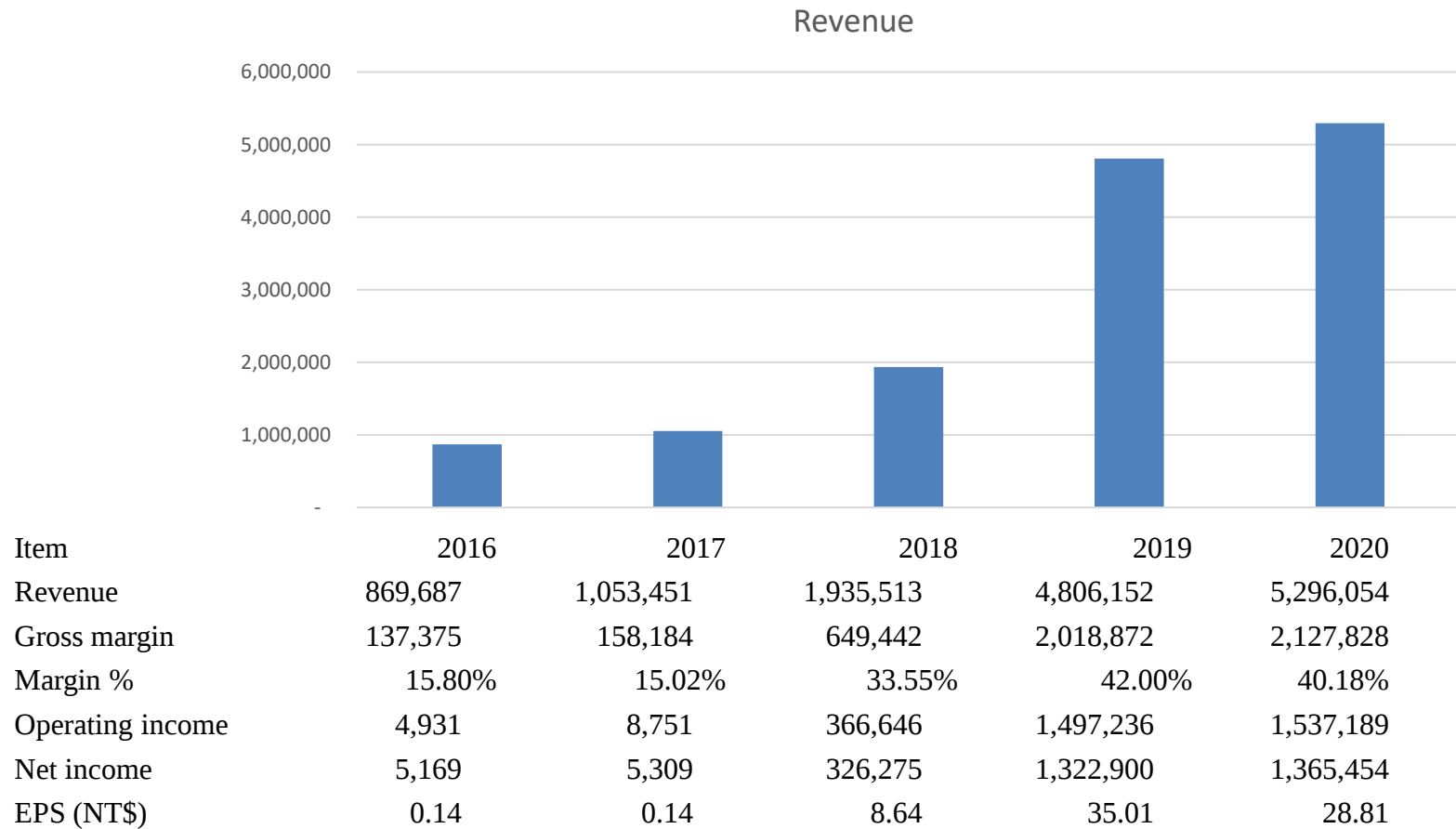
睡眠偵測 / 久坐提醒 Sleep quality monitoring



IV. 經營實績

經營實績

Unit: NT 1,000



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

損益表

Item	Q1-Q3 21		Q3 21		Q2 21		Q1 21		2020 Annual		Q1 - Q3 20		Q3 20	
	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales
Net Sales	4,692,621	100%	1,925,603	100%	1,498,477	100%	1,268,541	100%	5,296,054	100%	3,875,528	100%	1,500,516	100%
Gross Profit	2,158,404	46%	921,187	48%	724,261	48%	512,956	40%	2,127,828	40%	1,596,045	41%	626,215	42%
Operating Expense	608,378	13%	241,225	13%	199,247	13%	167,906	13%	590,639	11%	431,670	11%	175,320	12%
Operating Income	1,550,619	33%	680,546	35%	525,018	35%	345,055	27%	1,537,189	29%	1,164,375	30%	450,895	30%
Income before Tax	1,589,236	34%	702,069	36%	536,490	36%	350,677	27%	1,550,117	29%	1,177,198	31%	451,245	30%
Net Income*	1,336,223	29%	589,738	30%	450,917	30%	295,568	23%	1,365,454	26%	1,036,500	27%	397,497	26%
EPS	27.32	-	12.06	-	9.22	-	6.04	-	28.81	-	22.10	-	8.13	-

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	2021/9/30	2021/6/30	2021/3/31	2020/12/31	2020/9/30	2020/6/30	2020/3/31
Total Assets	6,973,430	7,034,889	6,546,874	6,213,228	5,665,950	5,920,992	3,937,918
Current Assets	5,628,478	5,738,903	5,288,197	5,718,727	5,500,709	5,785,995	3,824,883
Cash & Equivalents	2,338,478	3,402,027	2,215,010	3,086,052	1,743,561	1,895,897	1,471,630
AR	814,803	489,591	450,143	452,893	489,647	470,727	542,826
Inventory	413,657	425,377	305,180	320,395	382,448	605,743	595,547
Total Liability	2,168,520	2,793,386	2,780,120	1,665,215	1,459,386	2,121,747	2,581,779
AP	914,921	802,201	688,059	759,395	616,844	527,754	816,834
Shareholder Eqt.	4,804,910	4,241,503	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

2020之前



2021: 三種感測晶片投入手機應用

Flagship
旗艦機

Addressable Market
300-400M/year

Opticals for Displays
Under display
PS+ALS
Visible
PS+RGB

Opticals for Cameras
RGB + flicker sensors

High end
高階機

Addressable Market
300-400M/year

Opticals for Displays
Slit type
PS+ALS
Under display
PS+ALS

Opticals for Cameras
RGB + flicker sensors

Mid range
中階機

Addressable Market
400-500M/year

Opticals for Displays
Slit type
PS+ALS

Opticals for Cameras
Flicker sensors

Low end
低階機

Addressable Market
400-500M/year

Opticals for Displays
Slit type
ALS only

MEMS
Accelerometers

展望未來

Flagship 旗艦機

Addressable Market
300-400M/year

Opticals for Displays
Under display
PS+ALS (VCSEL)
Visible
PS+RGB (VCSEL)

Opticals for Cameras
RGB + flicker sensors

High end 高階機

Addressable Market
300-400M/year

Opticals for Displays
Slit type
PS+ALS (IR LED / VCSEL)
Under display
PS+ALS (VCSEL)

Opticals for Cameras
RGB + flicker sensors

MEMS
Accelerometers
+ Gyroscopes

Mid range 中階機

Addressable Market
400-500M/year

Opticals for Displays
Slit type
PS+ALS (IR LED)

Opticals for Cameras
Flicker sensors

MEMS
Accelerometers
+ Gyroscopes

Low end 低階機

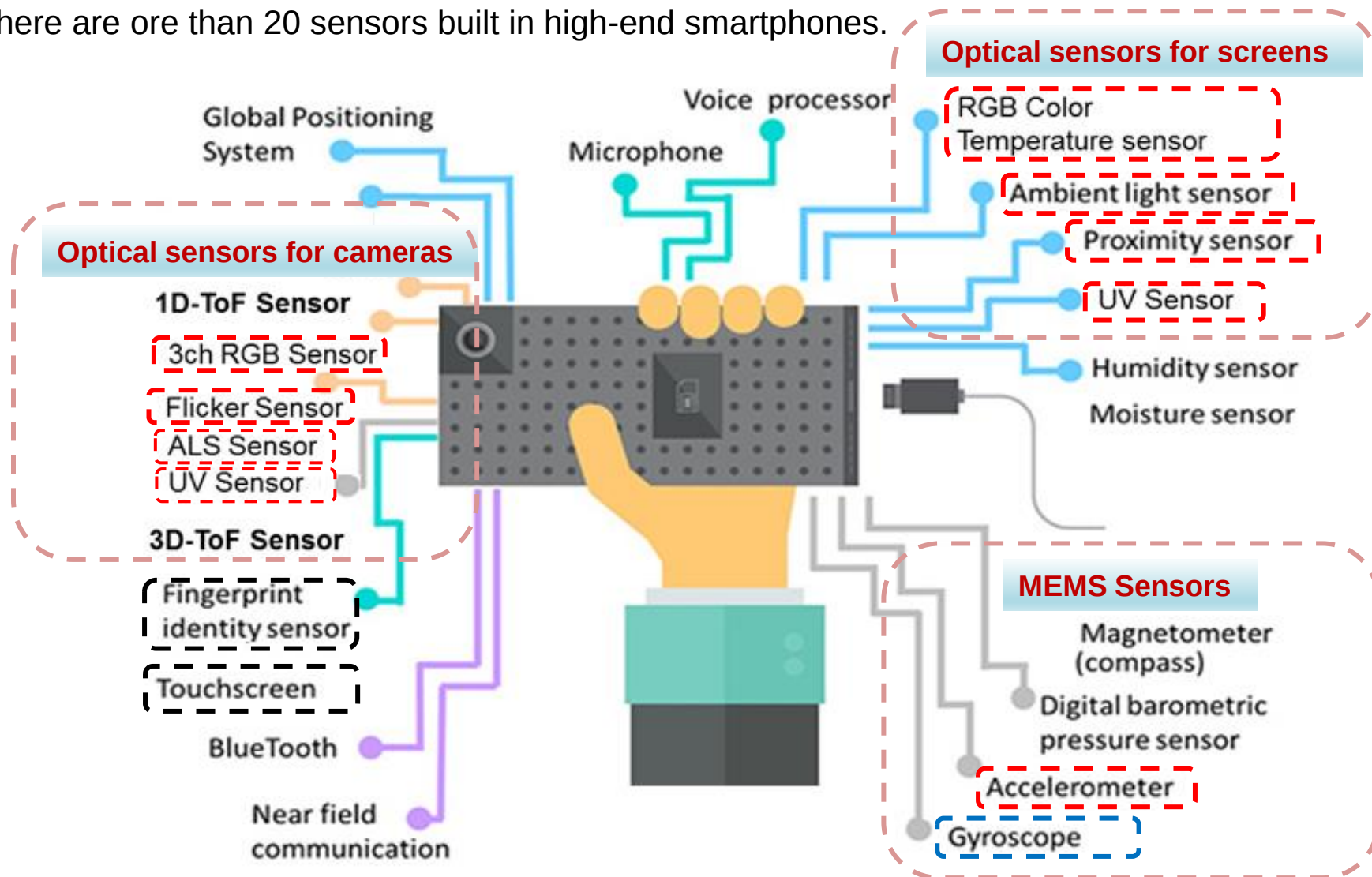
Addressable Market
400-500M/year

Opticals for Displays
Slit type
ALS only

MEMS
Accelerometers

敬請期待

There are ore than 20 sensors built in high-end smartphones.



成長動能

1. Optical sensors for smartphone screens (前螢幕應用) :
 - High sensitivity PS+ALS (x6, x10) → ASP boosts driven by the popularity of AMOLED
 - PS+RGB → color temperature sensors in high-end smartphones
2. Optical sensors for smartphone cameras (後相機應用) :
 - RGB sensors → white balance correction in high-end smartphones
 - flicker sensors → flicker detection in high-end smartphones
3. MEMS sensors for smartphones (加速 MEMS sensor 在智慧手機應用) :
 - G-sensors → entry-level smartphone market
 - Gyroscopes (under development)
 - mid-range to high-end smartphones
4. Other applications (拓展其他非手機應用) :
 - TWS: proximity sensors & accelerometers
 - Smart watches: ambient light + UV, accelerometers
 - Smart speakers: ambient light sensors
 - AR & VR glasses : proximity sensors & gyroscopes
 - ...and more (e.g. auto & industrial)



謝謝

Strategic Marketing Director

Jacky Chou 周德雲
+886-3-5601000 ext 2206
jacky_chou@sitronix.com.tw

Investor Relations Officer

Vivian Mao 毛廷方
+886-3-5601000 ext 2395
vivian_mao@sitronix.com.tw

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昇佳電子股份有限公司