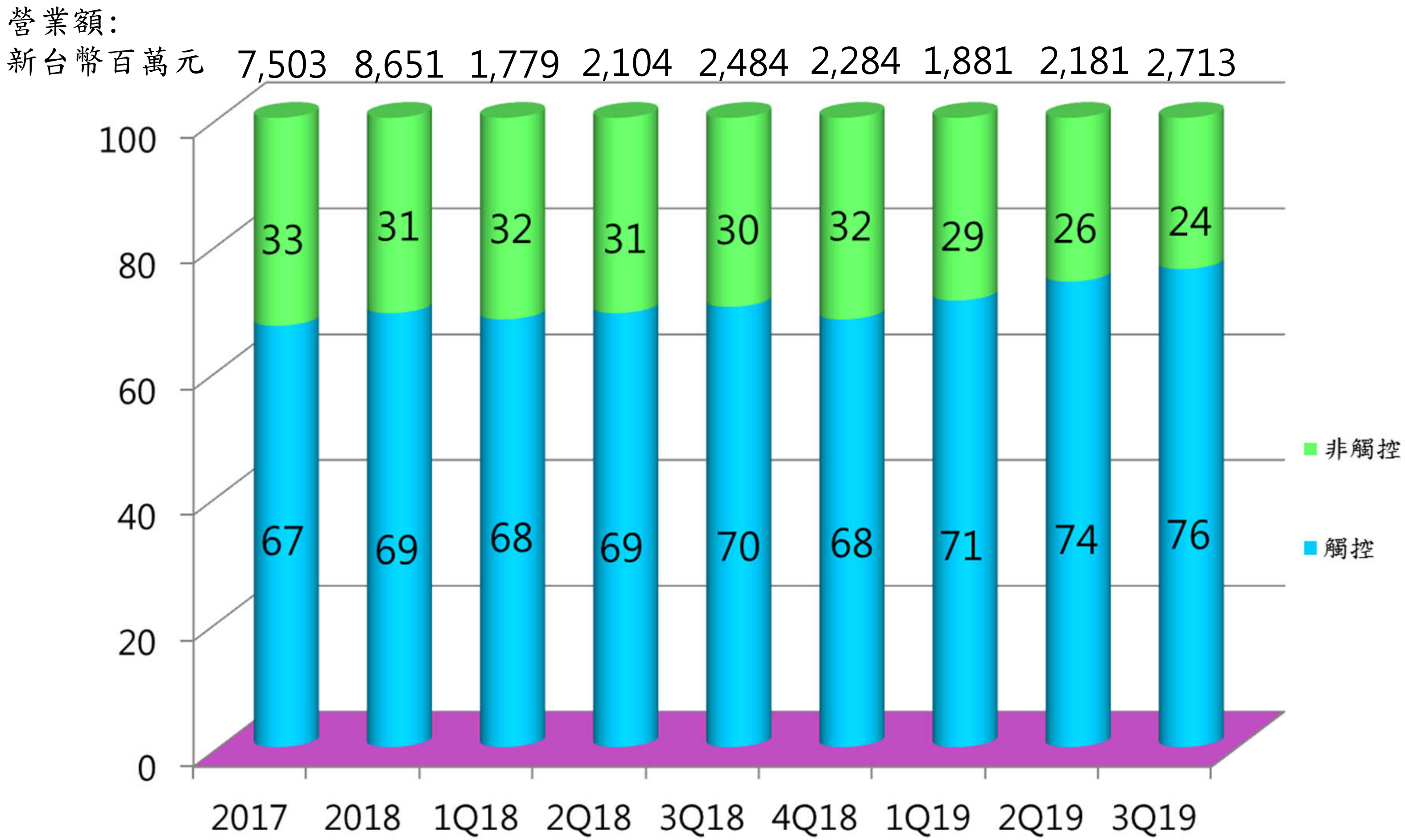
ELAN Smart-Input™ Solutions

Dual Transformation through AI

義隆採用AI技術強化產品性能並提供完整的智慧化解決方案

ELAN Microelectronics Corporation

產品線業績比例（合併營收）



- 觸控產品：觸控螢幕晶片，觸控板，生物辨識晶片
- 非觸控產品：微控制器，指向裝置，關係企業產品

合併損益表 - 2019年第3季 vs. 2018年第3季

單位:新台幣佰萬元

	2019年第3季	%	2018年第3季	%	YoY(%)
營業收入淨額	2,713	100.0	2,484	100.0	9.2
營業毛利	1,286	47.4	1,146	46.1	12.2
銷售費用	116	4.3	97	3.9	
管理費用	91	3.4	86	3.5	
研發費用	428	15.7	396	15.9	
營業淨利	651	24.0	567	22.8	14.8
業外收入及支出	185	6.8	24	1.0	
稅前淨利	836	30.8	591	23.8	41.5
稅後淨利	677	25.0	472	19.0	43.4
本期淨利歸屬於					
母公司業主	686		480		
非控制權益	(9)		(8)		
*每股盈餘（元）	2.35		1.28		83.6

* 股數: 2019年第3季為3.04億股、2018年第3季為4.34億股 (財務資料來源:會計師核閱)
* 減資登記日: 2018/08/29
* 每股盈餘係按加權平均流通在外股數計算

合併損益表 - 2019年第3季 vs. 2019年第2季

單位:新台幣佰萬元

	2019年第3季	%	2019年第2季	%	QoQ(%)
營業收入淨額	2,713	100.0	2,181	100.0	24.4
營業毛利	1,286	47.4	1,005	46.1	28.0
銷售費用	116	4.3	91	4.2	
管理費用	91	3.4	82	3.7	
研發費用	428	15.7	375	17.2	
營業淨利	651	24.0	457	21.0	42.5
業外收入及支出	185	6.8	73	3.3	
稅前淨利	836	30.8	530	24.3	57.7
稅後淨利	677	25.0	424	19.4	59.7
本期淨利歸屬於					
母公司業主	686		434		
非控制權益	(9)		(10)		
*每股盈餘（元）	2.35		1.49		57.7

*目前股數: 3.04億股 (財務資料來源:會計師核閱)

*每股盈餘係按加權平均流通在外股數計算

合併損益表 – 2019年第1季~第3季

單位:新台幣佰萬元

	2019年第1季	%	2019年第2季	%	2019年第3季	%	2019年第1季~3季	%
營業收入淨額	1,881	100.0	2,181	100.0	2,713	100.0	6,775	100.0
營業毛利	856	45.5	1,005	46.1	1,286	47.4	3,147	46.5
銷售費用	62	3.3	91	4.2	116	4.3	269	4.0
管理費用	81	4.3	82	3.7	91	3.4	254	3.7
研發費用	366	19.5	375	17.2	428	15.7	1,169	17.3
營業淨利	347	18.4	457	21.0	651	24.0	1,455	21.5
業外收入及支出	131	7.0	73	3.3	185	6.8	389	5.7
稅前淨利	478	25.4	530	24.3	836	30.8	1,844	27.2
稅後淨利	384	20.4	424	19.4	677	25.0	1,485	21.9
本期淨利歸屬於								
母公司業主	395		434		686		1,515	
非控制權益	(11)		(10)		(9)		(30)	
*每股盈餘(元)	1.36		1.49		2.35		5.20	

*目前股數: 3.04億股 (財務資料來源:會計師核閱)
*每股盈餘係按加權平均流通在外股數計算

股利發放比例

單位：新台幣元

年	每股盈餘	股利			發放比例 (%)
		合計	現金	股票	
2018	5.35	5.00	5.00	0.00	93.5
2017	2.58	2.58	2.58	0.00	100.0
2016	1.57	1.57	1.57	0.00	100.0
2015	1.98	2.03	2.03	0.00	102.6
2014	3.61	3.66	3.66	0.00	101.3
2013	3.8	3.53	3.53	0.00	92.9
2012	3.02	3.00	3.00	0.00	99.5

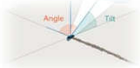
- *2018年第四季減資三成*
- *2018 每股盈餘是以新股本及實際流通在外股數計算*

獲利金雞母--筆電應用晶片

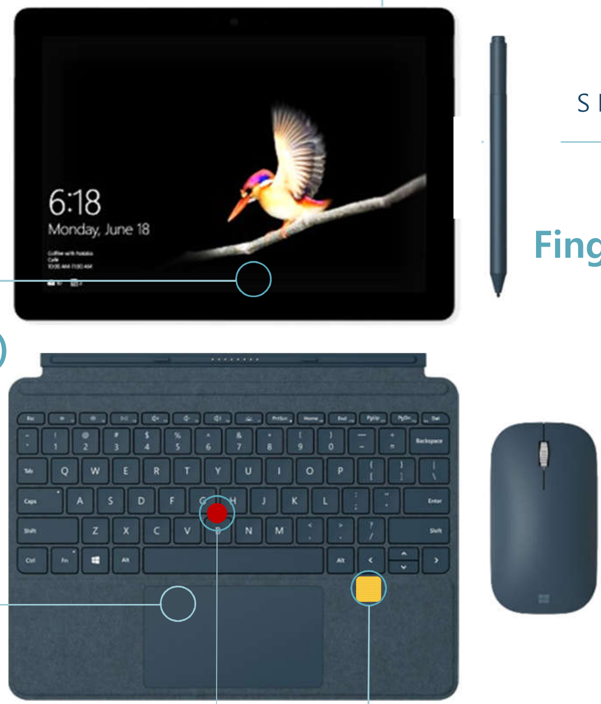
SMART HUMAN INTERFACE LEADER

Touchscreen Controllers (World Wide #1)

MPP Standard & MPP Pro



Tilt Sensing



Fingerprint-ID (World Wide Top 2)

MOH (Encryption)
MOC (Secure Bio)

FIDO Dongle | FP Keycap

FP Mouse | FIDO Mouse

Touchpad Modules (World Wide #1)

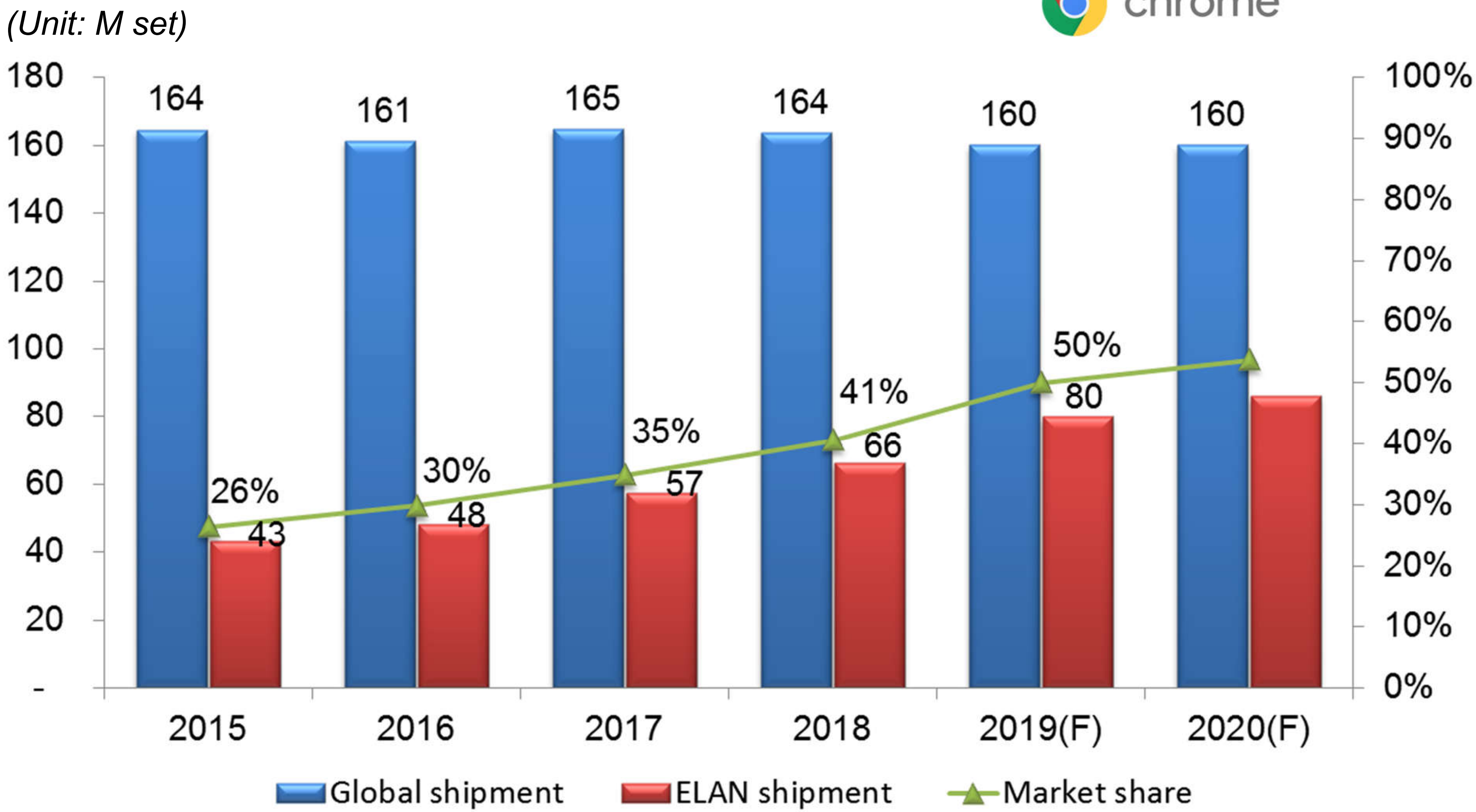
Touchpad | Lighting-Pad | ID-Pad

Point Stick (World Wide #1)

Point Stick Generations

筆電觸控板的出貨量
全球筆電市場 vs.義隆市佔率

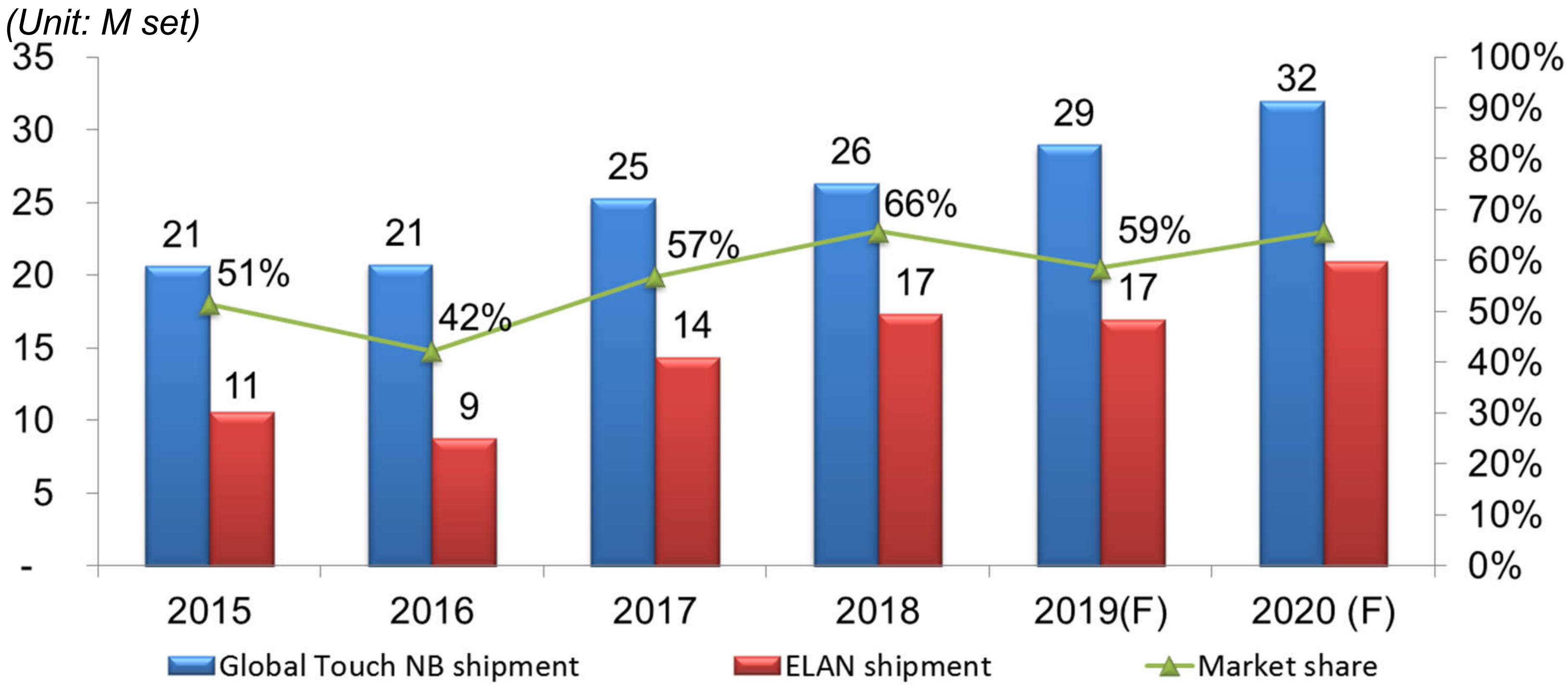
Microsoft
chrome



Source: TrendForce (Forecast), TRI, ELAN

ELAN

觸控螢幕筆電專用晶片出貨量
全球筆電市場 vs. 義隆市佔率



	2015	2016	2017	2018	2019(F)	2020(F)
Global NB Q'ty	147	148	149	146	145	145
Penetration Rate	14%	14%	17%	18%	20%	22%

* PS.: Global Touch NB Q'ty excluding Apple which does not support touchscreen function

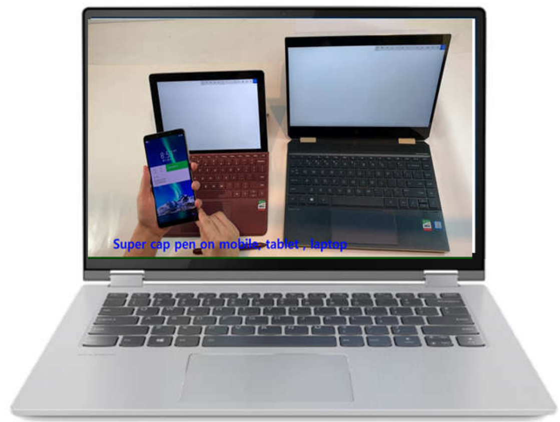
Source: TrendForce (Forecast), TRI, NB Players, ELAN

義隆主動筆晶片可以充分支援各種跨平台的行動裝置

Infinix Note 6

Surface Go

Laptop



Active Stylus and Pencil

微軟 Surface系列產品

所有系列產品都與觸控筆相容

Tablet with KB Cover	Tablet with KB Cover	Clamshell	Detachable Clamshell	AIO Desktop
Surface Go 10” ($399+)	Surface Pro 12.3” ($799+)	Surface Laptop 13.5” ($799+)	Surface Book 13.5”/15.6” ($1,499+)	Surface Studio 28” ($2,999+)
 Demo				

Microsoft Surface

Source: MSFT

市場趨勢 -- 雙螢幕筆電

HP Omen X 2S

with ELAN Touchscreen Inside

Surface Neo

MS In-house

ASUS Zenbook Pro Duo

with ELAN Touchscreen/Pen x 2 & Lighting-Pad Inside

義隆主動筆晶片的功能能支援各項協定及各種規格

2018 Recap:
- Shipped over 9 Million Touch IC with Pen Support
- 60% Overall Market Share for Touch IC on NB PC

Screen Size:
5.7″ 8″ 10.1″ 11.6″ 12″
12.5″ 13.3″ 14″ 15.6″ 17.3″

Stack-Ups:
OGS OGM Metal-Mesh
On-Cell In-Cell

Pen Protocol:
MPP1.51/2.0/2.5 TDI
AES1.0/AES2.0/WGP
USI

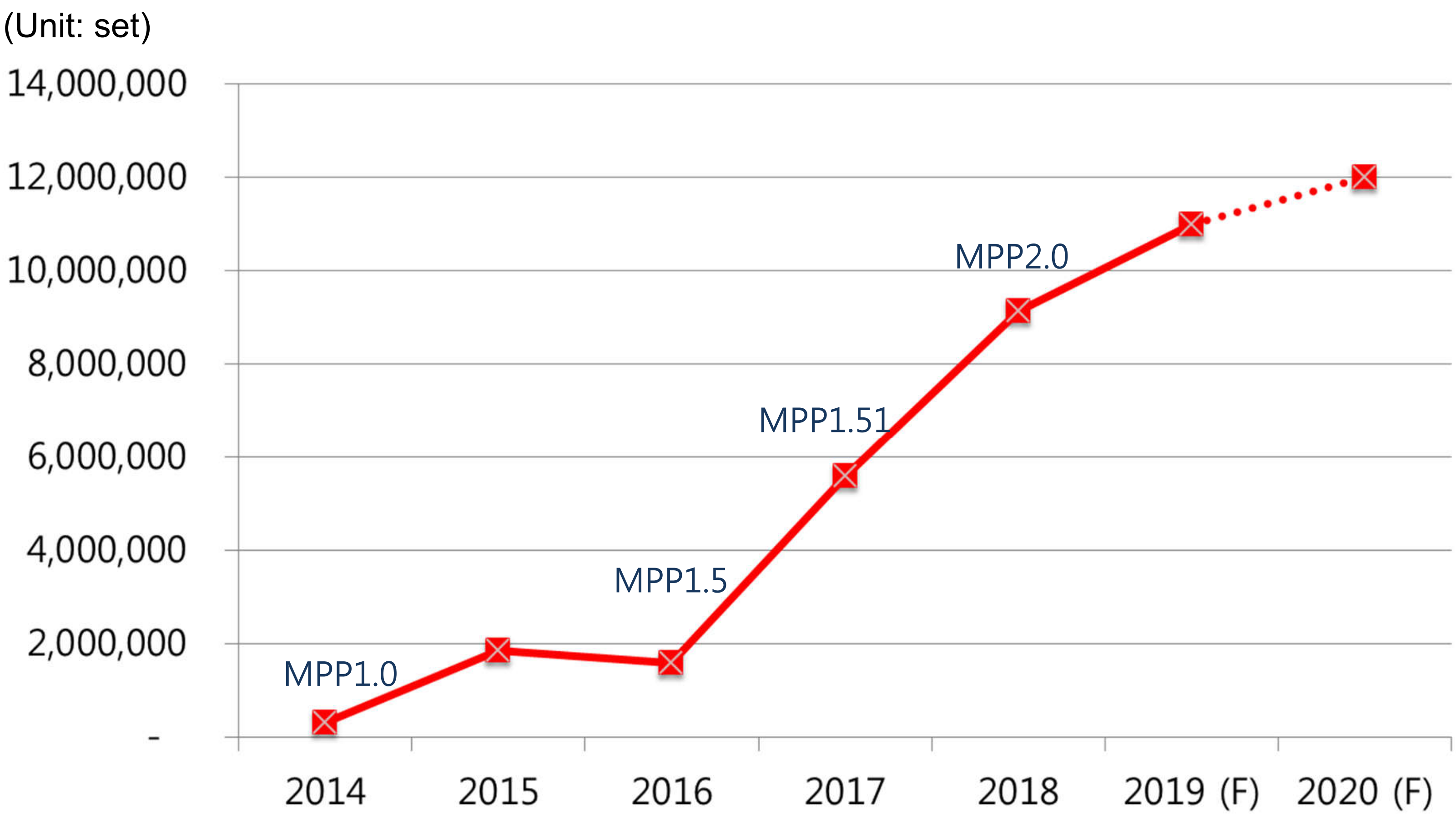
Display

Display/Resolution:
HD FHD WXGA
QHD UHD

LCD OLED

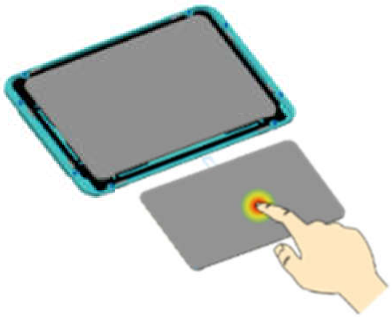
Brands:
acer ASUS DELL HUAWEI
Infinix Lenovo Microsoft Surface hp FUJITSU

高毛利觸控螢幕帶筆功能晶片的出貨趨勢



智慧型附觸覺功能的觸控板上市

ELANs HapticPad (Gen1)



Feature:

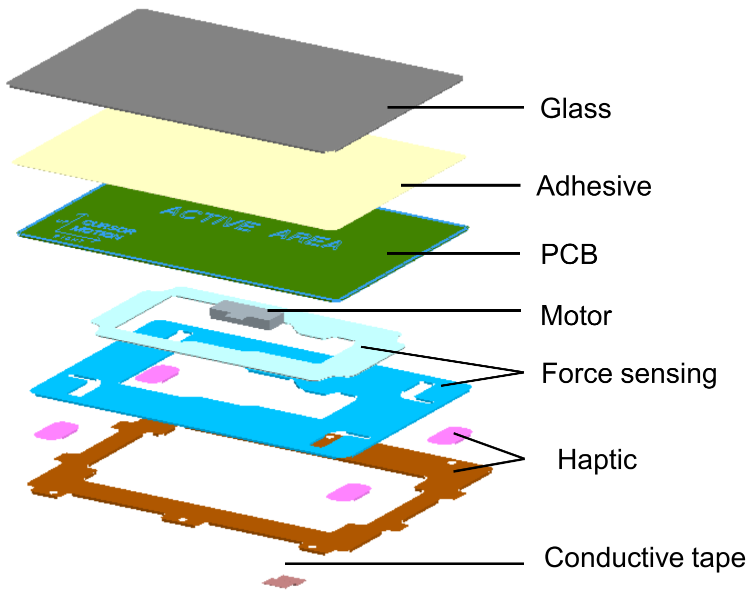
- Entire Touchpad with Click Function
- Multiple Pressure Levels Application
- ELAN provides Total Solution with Excellent and Uniformity Haptic Feeling

ELANs HapticPad with Pen (Gen2)

Feature:

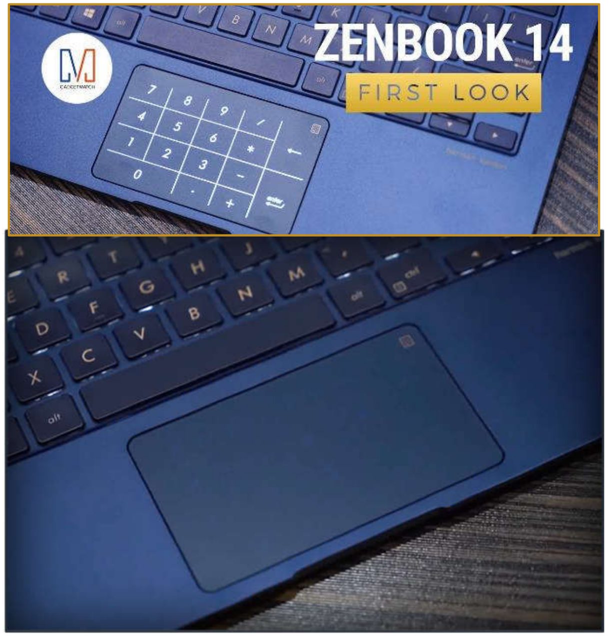
- **Active Pen support as Graphic Tablet**
- Click Feedback when Finger-Only
- Entire Touchpad with Click Function
- Multiple Pressure Levels Application
- ELAN provides Total Solution with Excellent and Uniformity Haptic Feeling

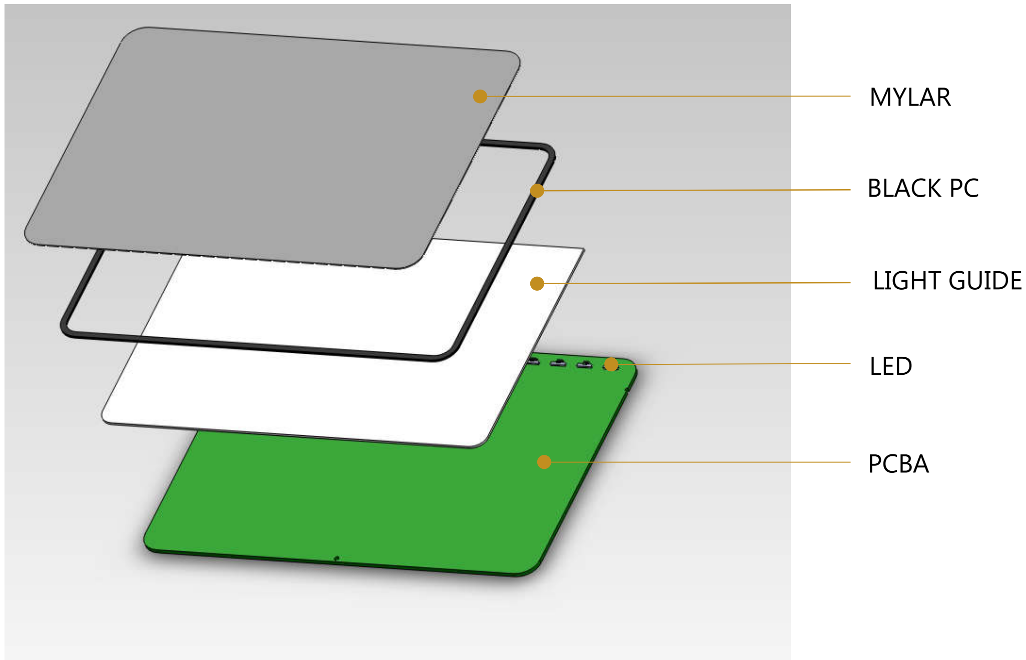
HapticPad



Unit: mm

智慧型具發光功能的觸控板





Feature:

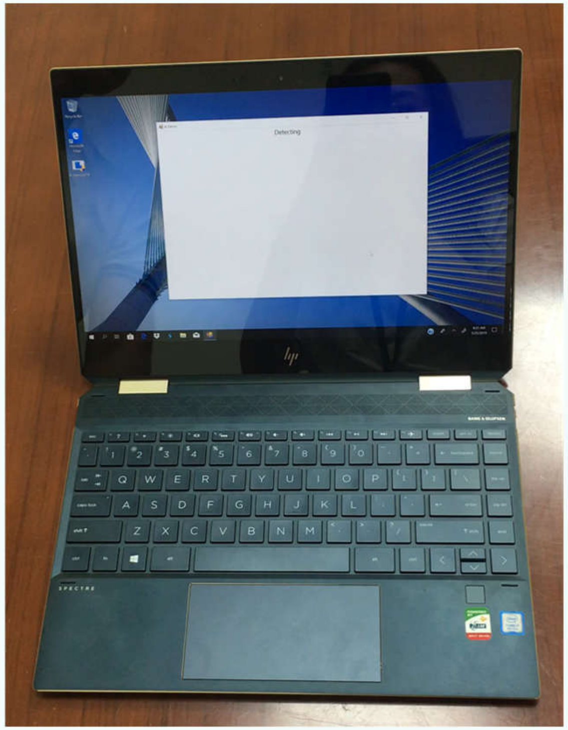
- Switch between Trackpad and Virtual Number Pad
- Short-Cut Keys

指向裝置

Dual Transformation:
AI Transformation for Current Products

義隆既有產品AI化 提升市場競爭力

觸控板模組產品AI化 提升產品效能



NFC Card

Smart Phone

Palm Rejection

Water Droplet

Accidental Contact

義隆全力支援2020上半年最新款上市的微軟Windows Hello規格

Tightening of FRR Requirement while requesting for Enhanced Anti-Spoofing Feature

- FAR < 0.001% @ Large Area Sensors (160x160 pixels);
  FAR < 0.002% @ Small Area Sensors (<160x160 pixels)
- Effective, real world FRR with Anti-Spoofing or liveness detection 10% ➡ 5%
- Presentation Attack Detection Measures are required

Recommendation	SAR	Attacks Covered	Justification
Cooperative Presentation attacks that capture 3D information of a fingerprint	<10%	Cooperative Play-Doh presentation attacks Dental grade silicone presentation attacks	Cooperative Presentation attacks are like sharing your password with someone; equivalent to sharing the user gesture
3D Printed presentation attacks	<10%	3D reconstruction of a fingerprint via a series of images being 3D printed as a presentation attack	This method may arise as a more consistent means of spoofing as time and technology progresses

SAR : Spoof-Accept-Rate

防假指紋欺騙接受率測試比較表

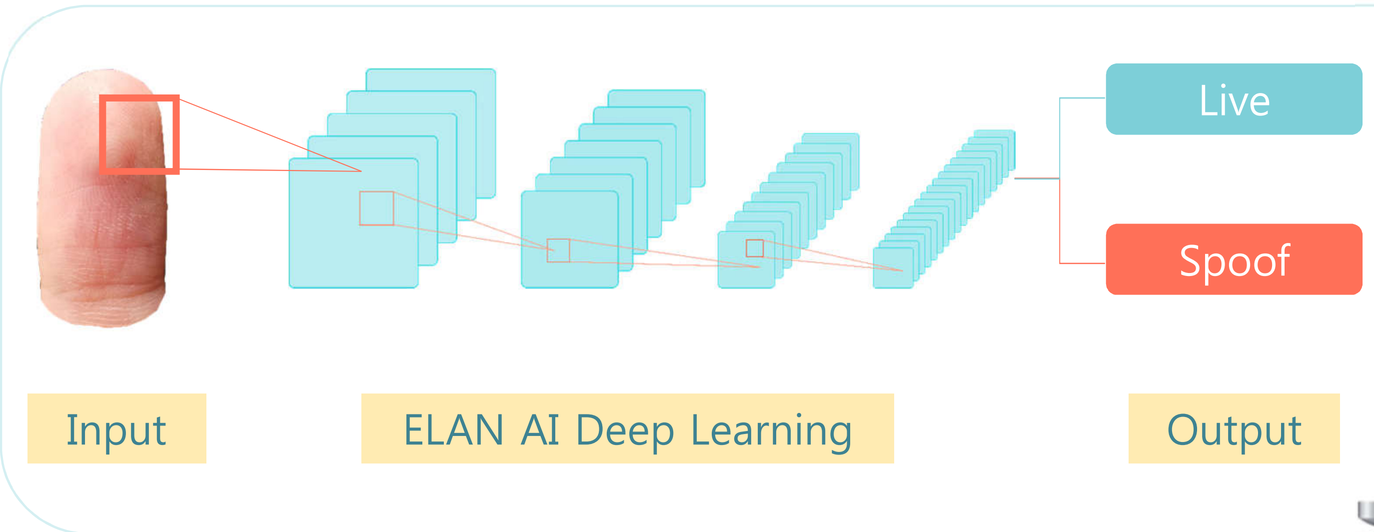
ELAN's SAR leads the Industry

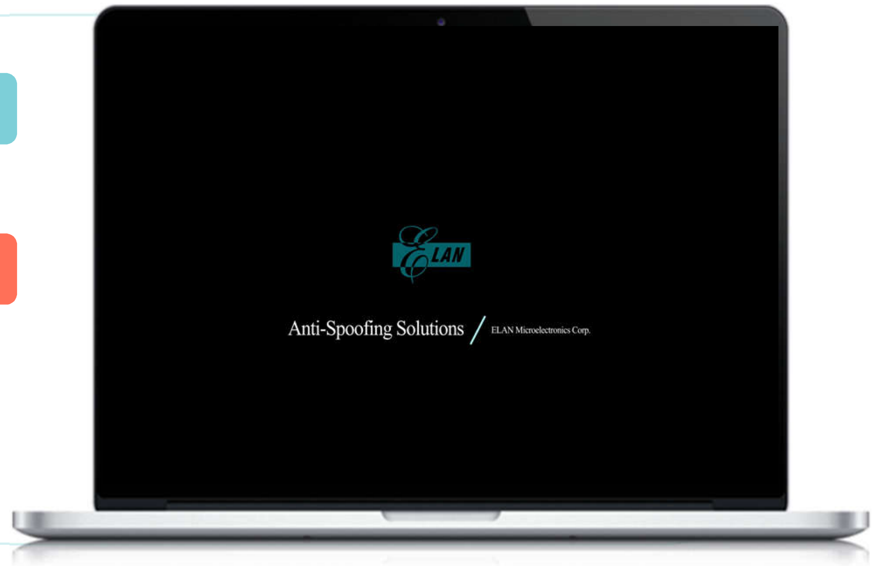
Sensor Vendor	Picture	MSFT Spec	ELAN	Competitor 1	Competitor 2
FRR(%) with Anti-Spoofing		**10% → <5%**	Meet	Meet	Meet
3D SAR(%) Gelatin		**<10%**	0	56.11%	1.67%
3D SAR(%) Silicon		**<10%**	1.67%	77.78%	25.56%

- Effective, real world FRR with Anti-Spoofing or liveness detection 10% → 5%

義隆採用AI深度學習技術有效提升防假指紋的效能

ELAN vs. Competitors

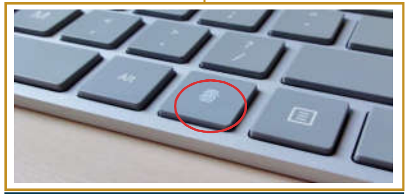




指紋辨識感測晶片應用於筆電滲透率持續向上

Fingerprint on C cover
Supply Chain Overhead
Double Tooling Charge

Smart-ID™ Button



Smart-ID™ KeyCap

Smart-ID™ Pad
✓ Seamless Integration
✓ Better User Experience

2020 & 2021 Opportunity

- Gain Market Share (MOC ASP & Penetration Rate)
- Fingerprint Solution on NB with 3D Anti-Spoofing

安卓陣營也提出防假指紋的規格

	SAR	FRR	FAR
Requirement	<=7%	<10%	<0.002%

Change Summary

Here's the summary of the changes being planned for the Q CDD

1. Adding a new tier of biometrics - Biometrics can be in one of 3 tiers based on SAR:
   a. Strong (SAR <= 7%)
   b. Weak (7% < SAR <= 20%)
   c. Insecure/Convenience (SAR > 20%)
2. Strong Biometrics have the same requirements as in P
3. Weak Biometrics
   a. Are subject to a 8-hour timeout before needing to fall back to pin/pattern/password
   b. Cannot be exposed to applications at all. This implies it isn't usable for payments, etc.
   c. Need to ensure that their biometric pipeline is secure

- [C-SR] Are STRONGLY RECOMMENDED to have a false rejection rate of less than 10%, as measured on the device.
- [C-SR] Are STRONGLY RECOMMENDED to have a latency below 1 second, measured from when the biometric is detected, until the screen is unlocked, for each enrolled biometric.

Planned Changes

- *Planned changes are highlighted in blue but are subject to change*

(Current section 7.3.10 for easier comparison)

7.3.10. Biometric Sensors

If device implementations include a secure lock screen, they:

- SHOULD include a biometric sensor.

If device implementations include one or more biometric sensors, they:

- [C-1-1] MUST have a false acceptance rate not higher than 0.002%.
- [C-1-2] MUST disclose that this mode may be less secure than a strong PIN, pattern, or password and clearly enumerate the risks of enabling it

Flexible OLED (軟性有機發光二極體) @ SID Show

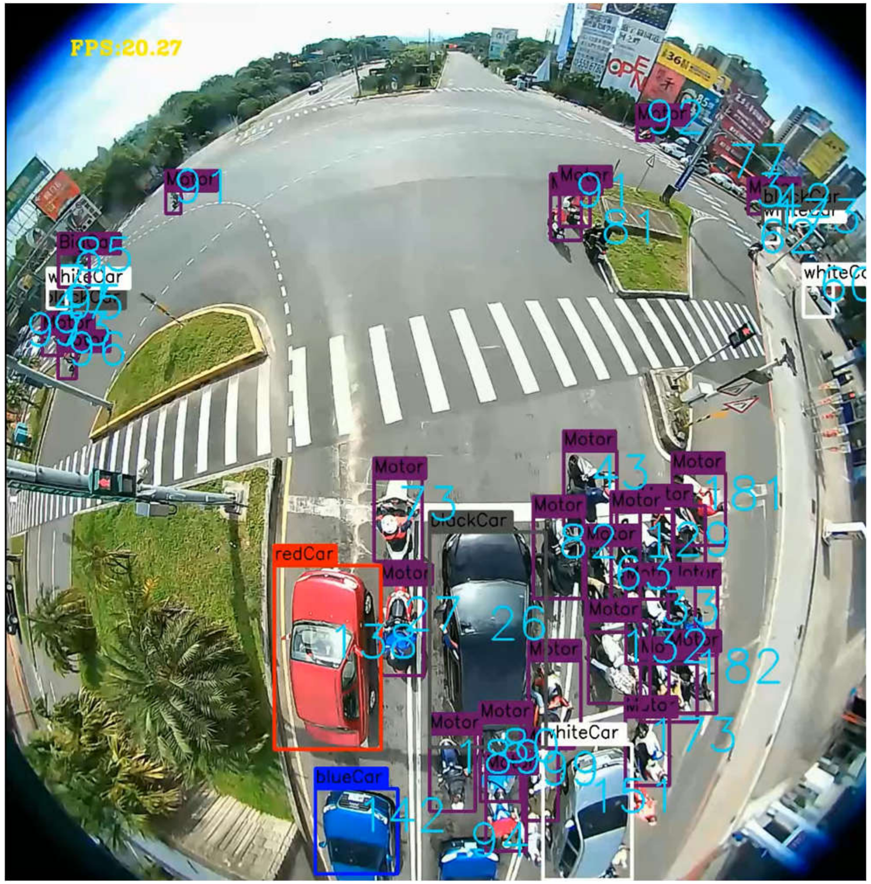
7.77″ QXGA
Foldable AMOLED

7.77″ Demo

Dual Transformation:
AI Transformation for New Products

義隆採用AI技術應用於新產品 擴大市場版圖

義隆採用AI技術應用於智慧城市交通車流解決方案



Intelligent City Traffic Flow Analytics

AI 360° Fisheye Image

Smart Car Flow Detection Technology

COMPUTEX TAIPEI 2019 Best Choice Award

2020年的市場商機

1. 觸控板模組

- 朝市占率持續擴大的方向行進
- 增加產品功能帶動售價提升
  - ✓ 智慧型附觸覺功能的觸控板
  - ✓ 智慧型具發光功能的觸控板
  - ✓ 整體解決方案

2. 觸控螢幕晶片

- 觸控筆電的滲透率提升
- 增加產品功能帶動售價提升
  - ✓ 觸控螢幕模組
  - ✓ 新規格上市
  - ✓ 新機種上市

3. 指紋辨識感測晶片

- 指紋辨識感測晶片在筆電的滲透率持續提升

4. 指向裝置–獲得新訂單

5. 智慧型手機市場:有機發光二極體 & 薄膜電晶體面板皆能支援

- 觸控螢幕帶筆功能的晶片及觸控與驅動整合帶筆功能的晶片


ELAN
25TH
Anniversary
AI Transformation