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*Think of Frequency
Think of*



法人說明會

105/6/27

議程

- 公司簡介
- 市場概況
- 產品亮點
- 產品發展
- 財務報告
- Q&A





關於 TXC

建立於: 1983

股票代號: 3042

104 年營收: 新台幣 92.67億元

資本額: 新台幣 30.98億元

總市值: 新台幣 140.94億元 (105/6/22)

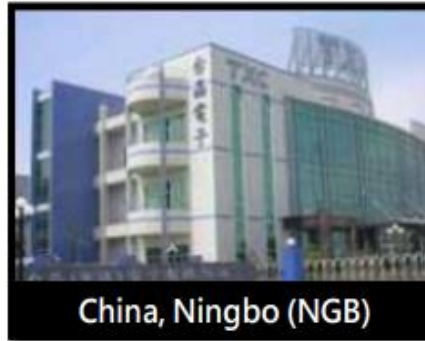
員工人數: 2,550人

生產基地



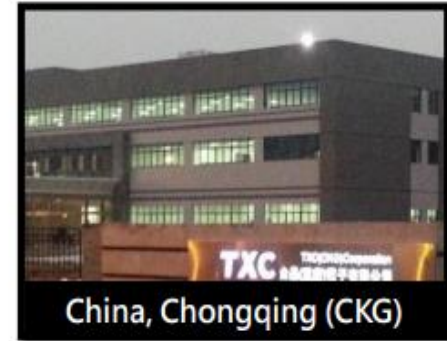
Taiwan, Ping Cheng (PCF)

- kHz/MHz Crystal
- TSX
- XO/SO/MO
- TCXO/VCTCXO
- VCXO
- OCXO
- RTC
- Sensors



China, Ningbo (NGB)

- kHz/MHz Crystal
- TSX
- XO



China, Chongqing (CKG)

- MHz Crystal

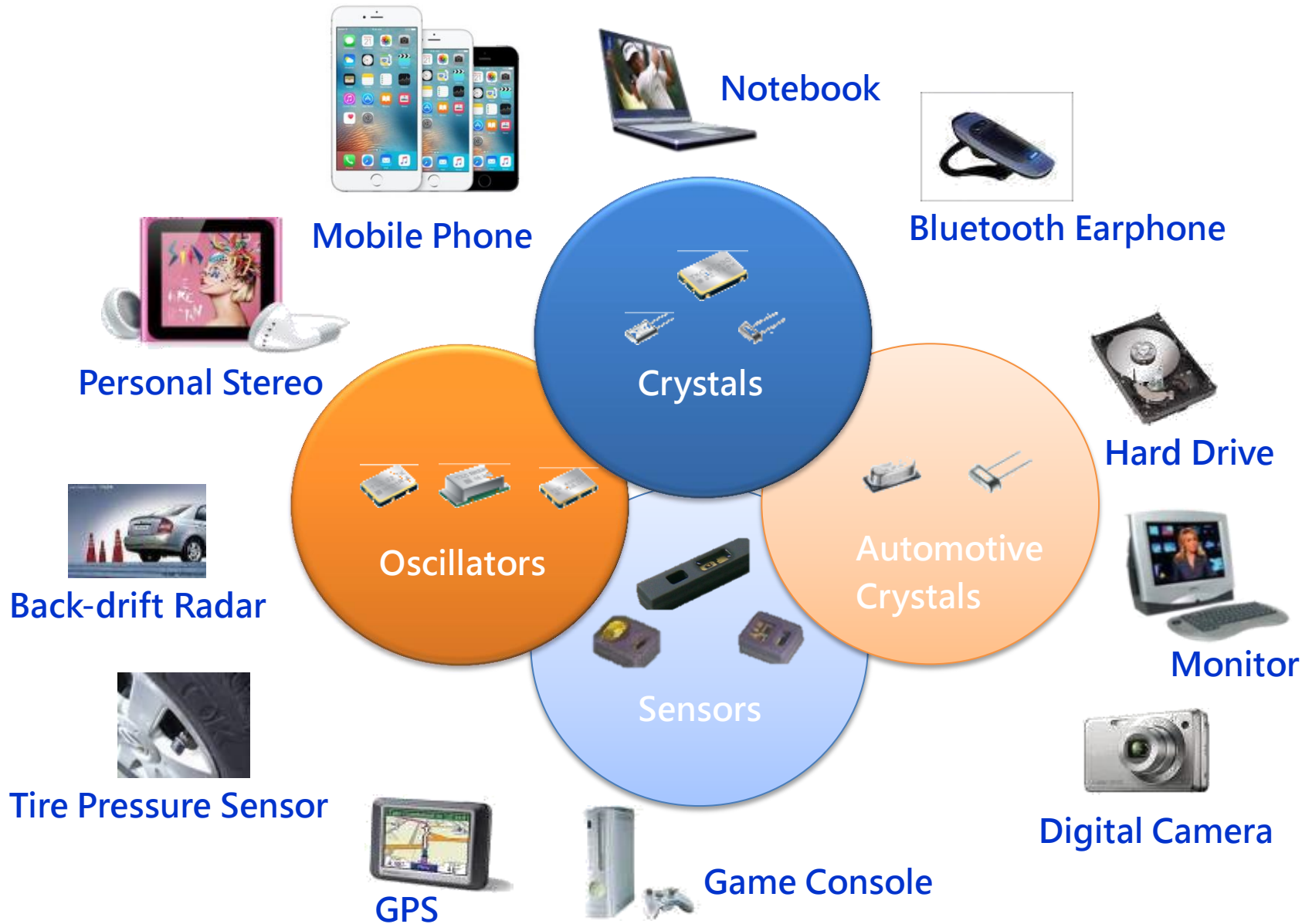
- **3** manufacturing facilities
- **200+** automated production lines
- **300M+** monthly capacity
- **3** R&D centers
- **400+** engineers

業界的最佳選擇

Crystals		Oscillators & Modules			Sensors
✓ Metal Can 	✓ Glass Seal 	✓ Crystal Oscillators (XO) 	SAW Oscillators (SO) 		Light Sensors (3-in-1) 
✓ Seam Seal 	✓ Tuning Fork 	MEMS Oscillators (MO) 	✓ Temperature Compensated (TCXO/VC-TCXO)  		E-compass Sensors (3-Axis/6-Axis) 
✓ Temperature Sensor Crystal (TSX)  		Voltage Controlled (VCXO) 	Oven Controlled (OCXO)  	Real Time Clock (RTC) 	More sensors coming soon

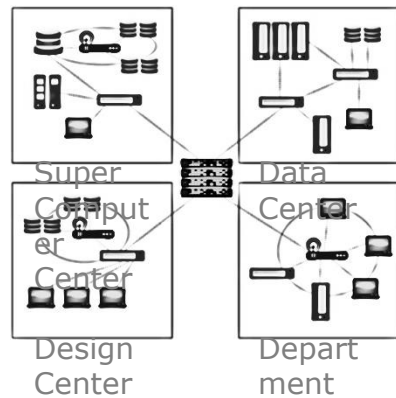
✓ Available for automotive applications

產品應用



應用市場

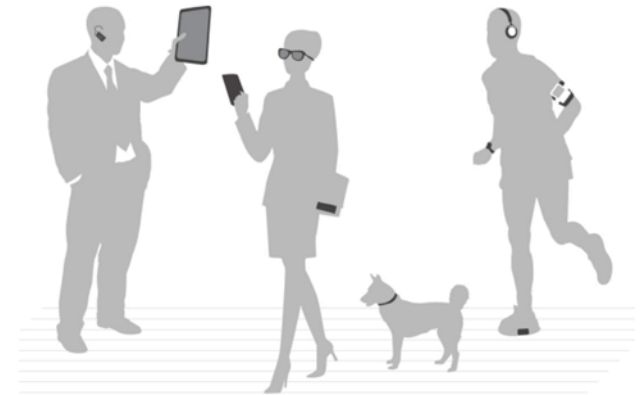
Network, Storage – Low Jitter Solutions (Cloud Computing, Big Data)



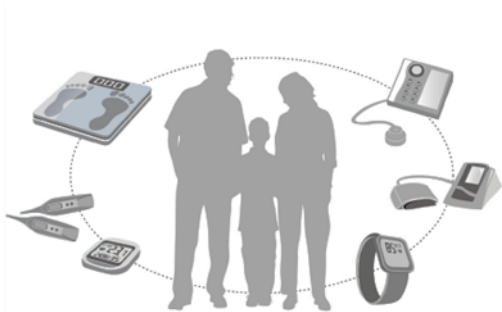
Smart Home, Smart Energy – Small & Thin Solutions (M2M devices)



Smart Wearable – Small & Thin Solutions



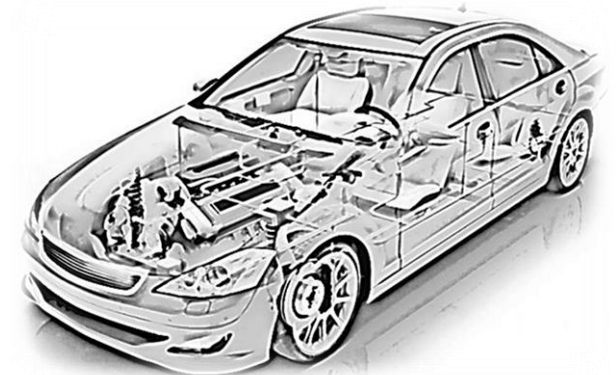
Smart Medical – Small & Thin Solutions... (Medical Devices)



Base Station, Small cell – Ultra Stability Solutions



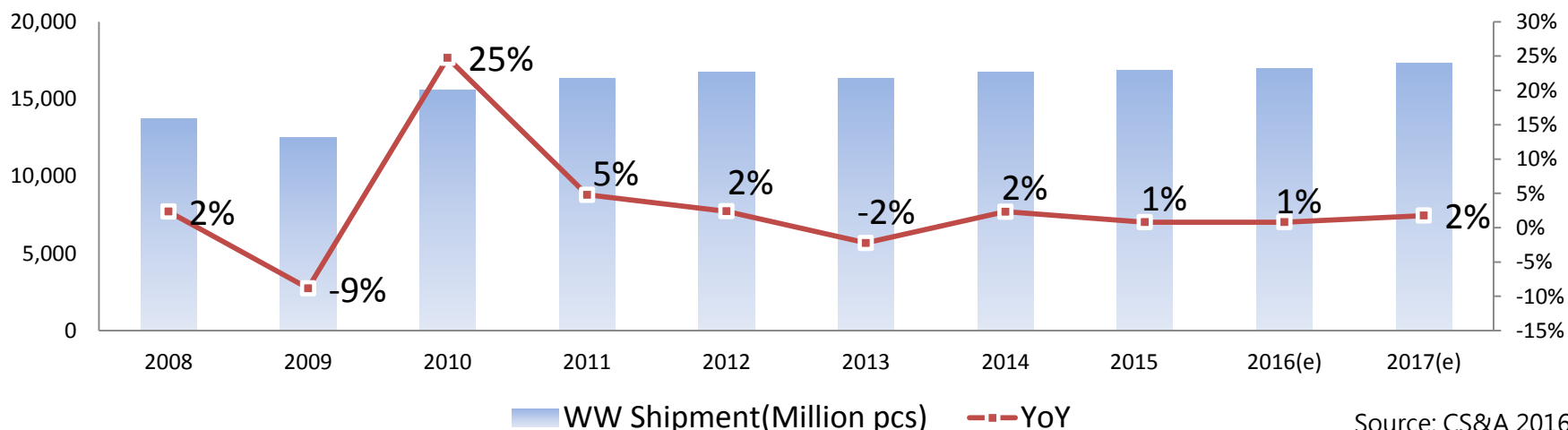
Automotive – High Reliability
Solutions... (connected car)



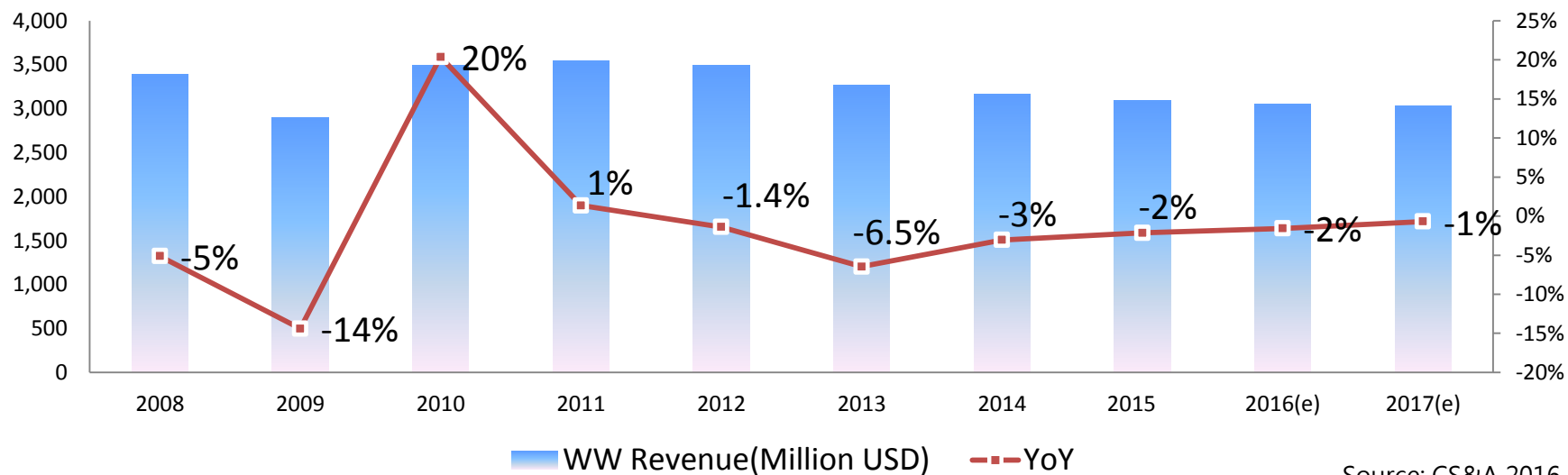


全球石英晶體及震盪器市場概況

全球石英晶體及震盪器出貨量 2008~2017年



全球石英晶體及震盪器營業額 2008~2017年

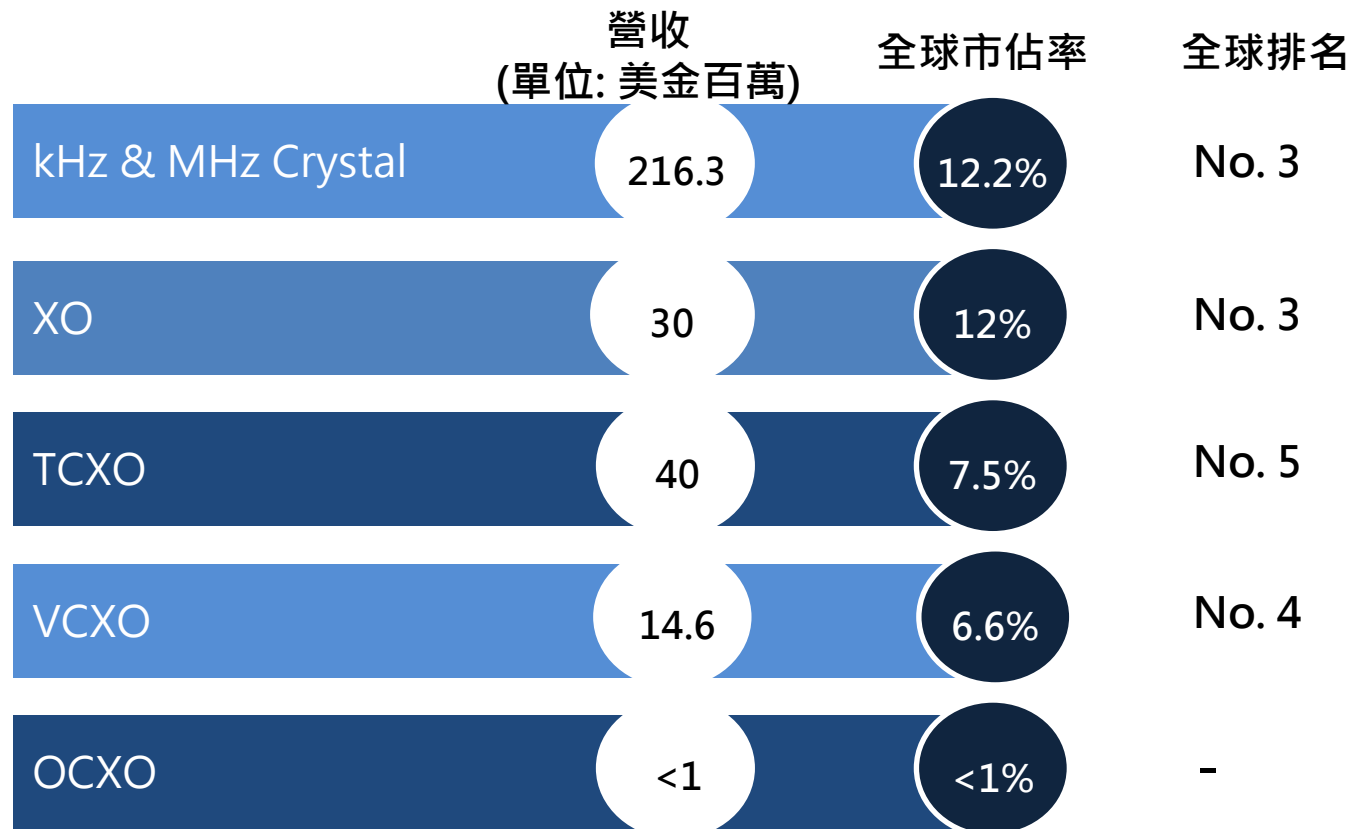


2015 全球排名

2015 Rank	Company Name	2015 Revenue (M)	Percent of Total
1	Epson Toyocom	\$427	14.08%
2	NDK	\$338	11.15%
3	TXC	\$302	9.96%
4	KCD	\$301	9.93%
5	KDS	\$201	6.63%
6	Vectron	\$163	5.38%
7	SiWard	\$95	3.13%
8	Hosonic	\$91	3.00%
9	RIVER	\$77	2.54%
10	Murata	\$69	2.28%
	Other Companies	\$968	31.93%
	Total Revenue	\$3,032	100.00%

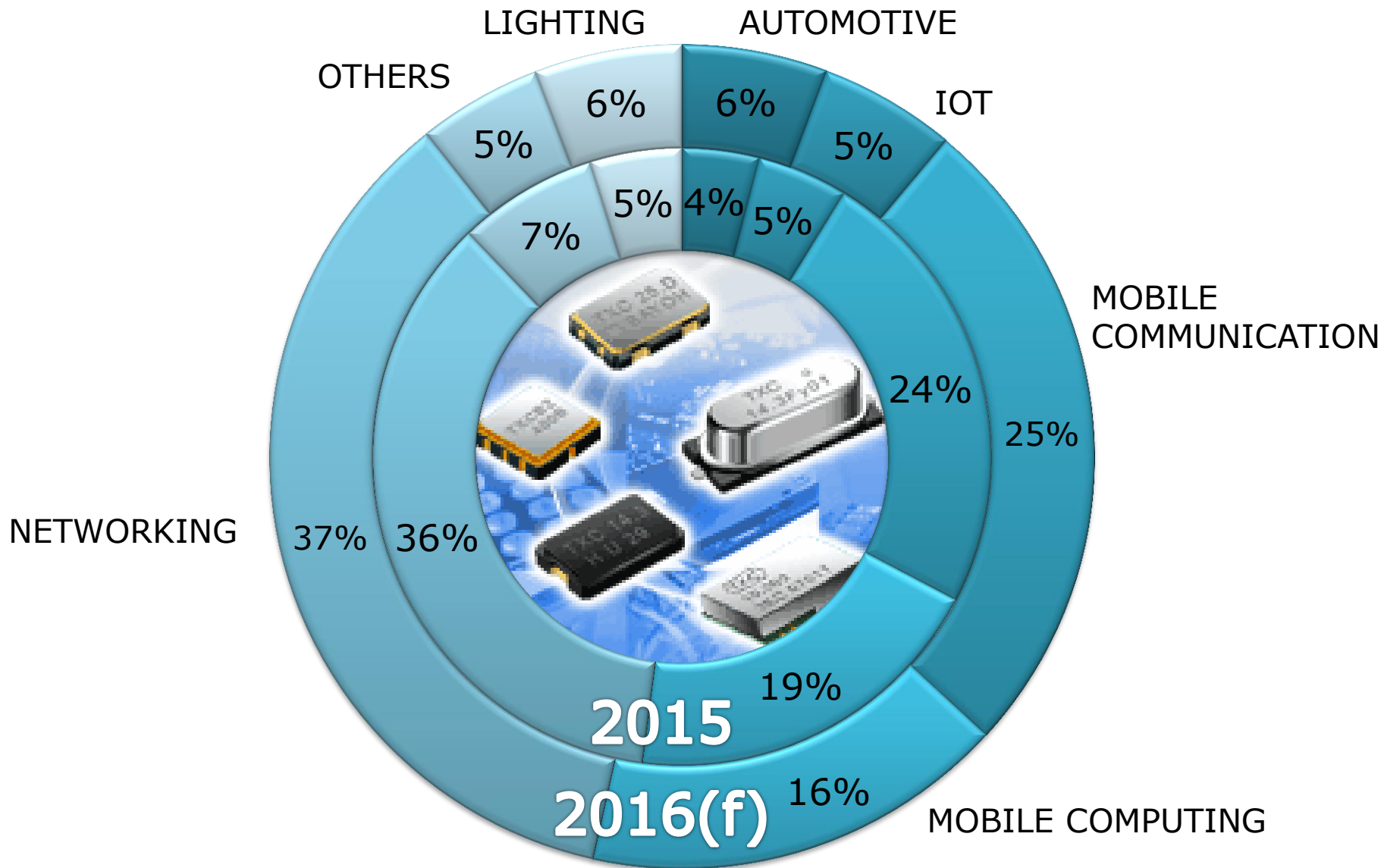
Source: TXC, CS&A 2016

2015全球石英晶體及震盪器銷售紀錄

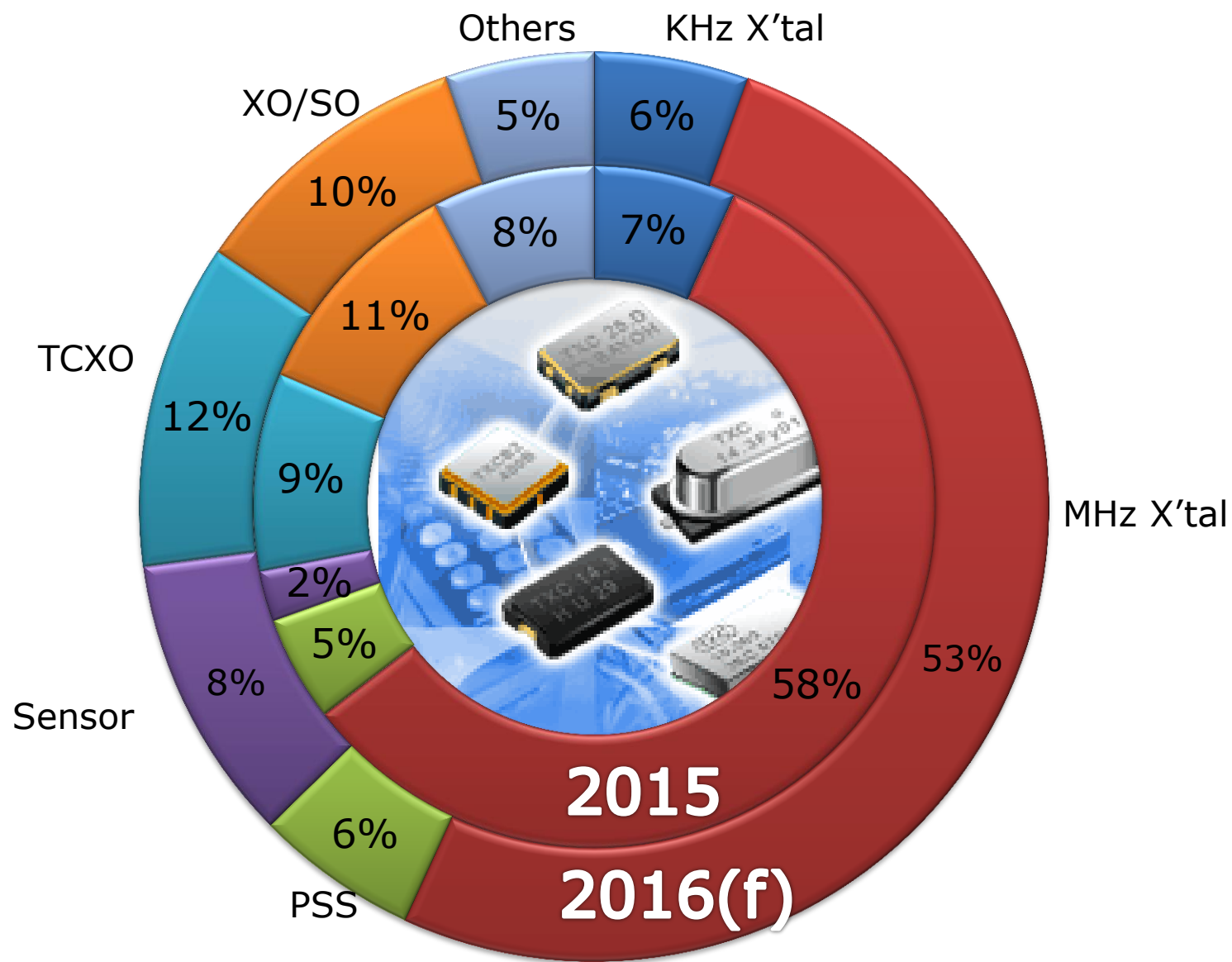


Source: TXC, CS&A 2016

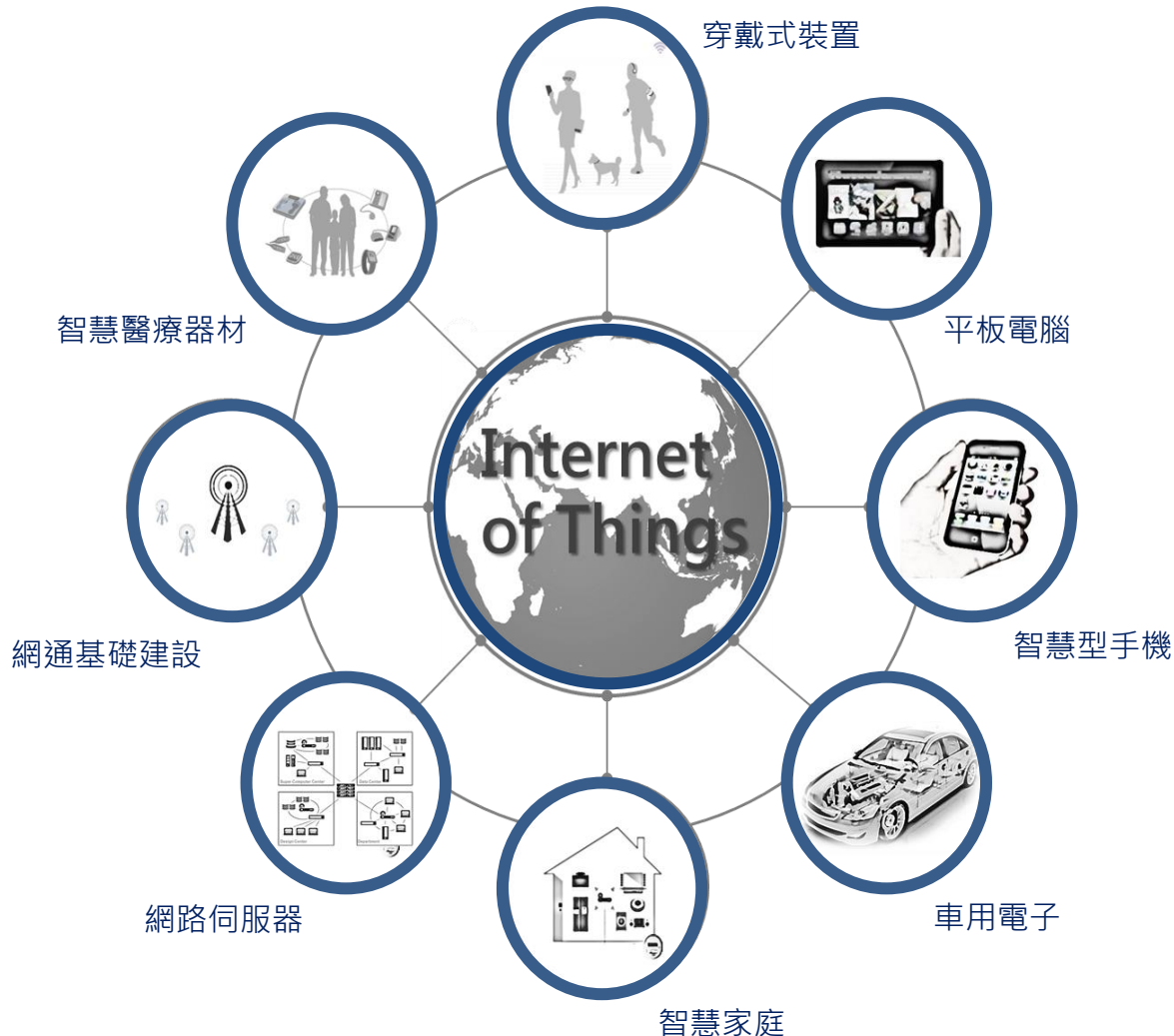
台灣晶技-產業別銷售比重分析



台灣晶技-產品別銷售比重分析



物聯網的時代來臨



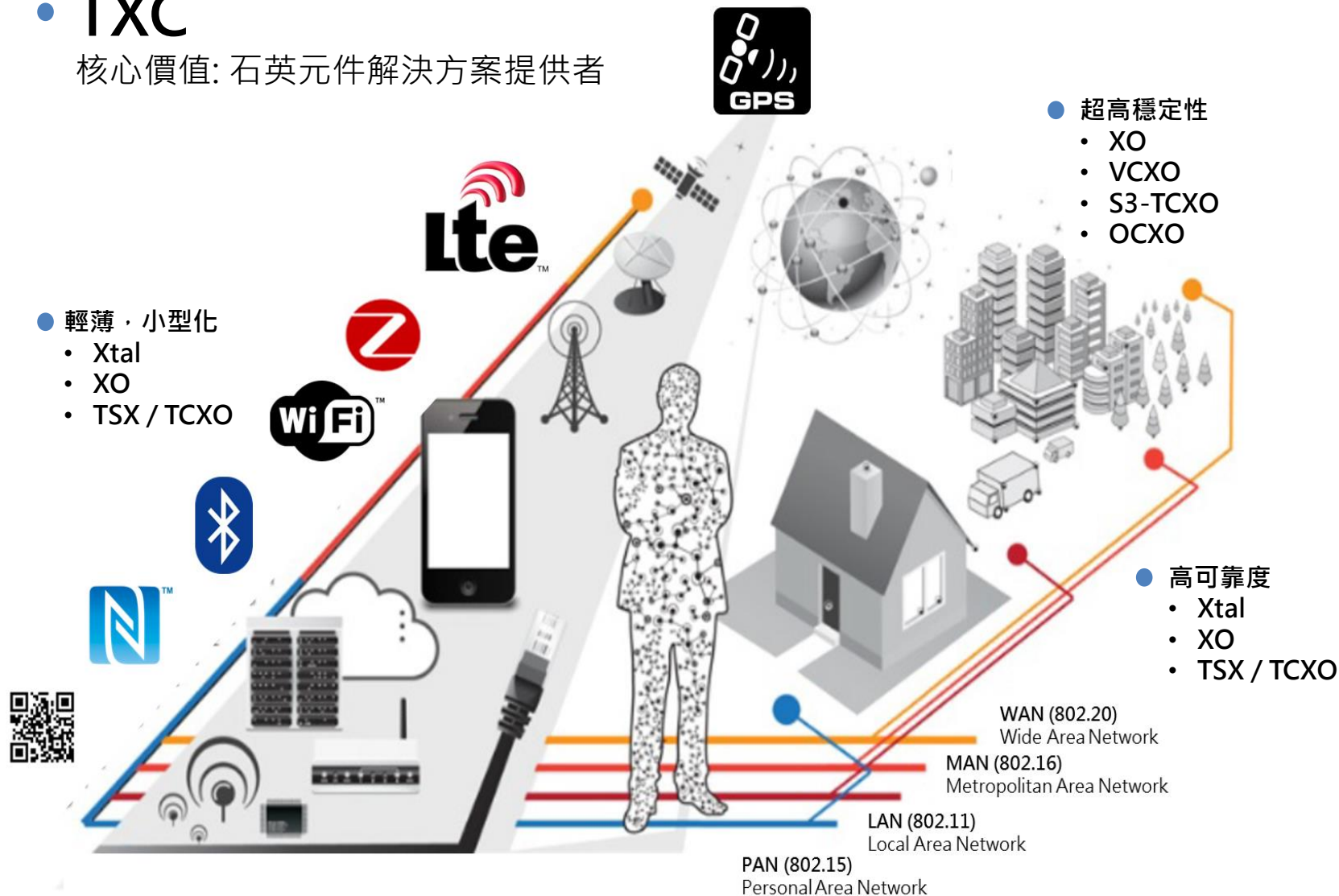
物聯網能連結各種新型智慧型裝置，呈現更多的可能和運用。

○ 台灣晶技的目標市場

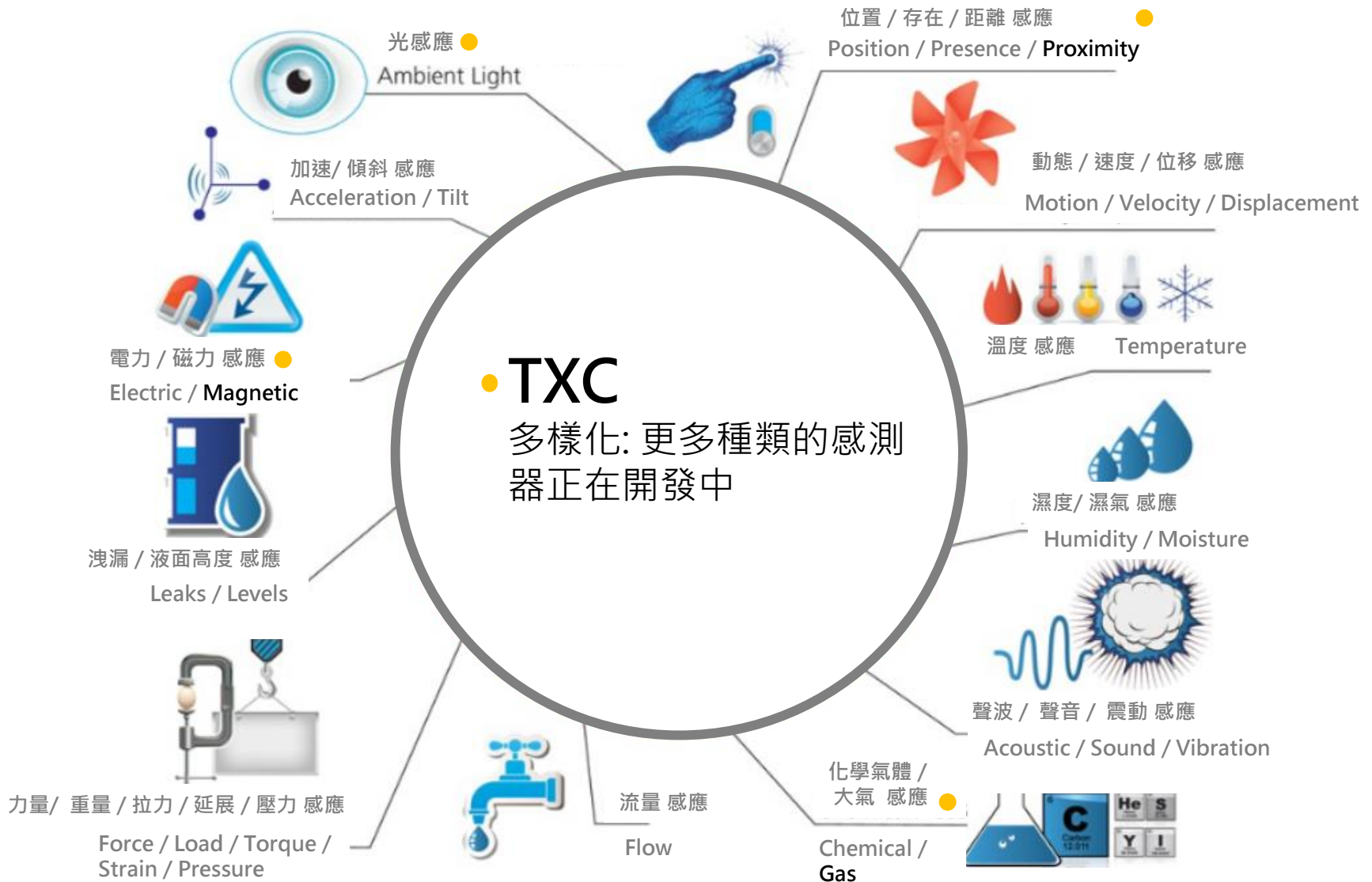
1. 石英元件使各產品互相連結

• TXC

核心價值: 石英元件解決方案提供者



2. 感測元件、感知和測量所有事物



Source: TXC, IDC, ABI



台灣晶技提供低雜訊之石英振盪器元件應用於各種高音質產品



Source: MEIZU, ESS



- HiFi Audio

XO

Phase noise
 $\leq -100\text{dBc/Hz}$ @ 10Hz; (size
2520/2016)

Crystal

45.1584MHz (2016/1612)
49.152MHz (2016/1612)

台灣晶技提供各種輕薄短小且高效能之石英元件，應用在智慧型手機、穿戴產品及智慧家庭產品



- 3G/4G LTE
- WiFi
- BT/BLE
- NFC
- GNSS

Source: Apple, Fitbit, CTimes

QUALCOMM
MEDIATEK

intel

BROADCOM

MARVELL

HISILICON

SPREADTRUM

NXP

Crystal

Smallest and Thinnest
1.2x1.0x0.30mm

TSX

Smallest and Thinnest
1.6x1.2x0.55mm

TCXO/VCTCXO

High stability $\pm 0.5\text{ppm}$
Smallest: 1.6x1.2x0.55mm

微型基地台及基地台等基礎建設相關產品為本公司重要獲利來源

OCXO

Ultra Stability $\pm 3\text{ppb}$
Stratum 3/3E

S3-TCXO

Ultra Stability $\pm 100\text{ppb}$
Stratum 3

VCXO

Ultra Low Jitter $\leq 150\text{fs}$
Frequency up to 2GHz

XO

Ultra Low Jitter $\leq 150\text{fs}$
Frequency up to 2GHz

Crystal

High Stability $\pm 10\text{ppm}$
Frequency up to 400MHz

32kHz RTC

High Stability $\pm 5\text{ppm}$
Temperature Compensated



Base station
(RRU / BBU)



Point to point
microwave
radio



Small cell



E-meter



IP router



FTTH/xPON
OLT

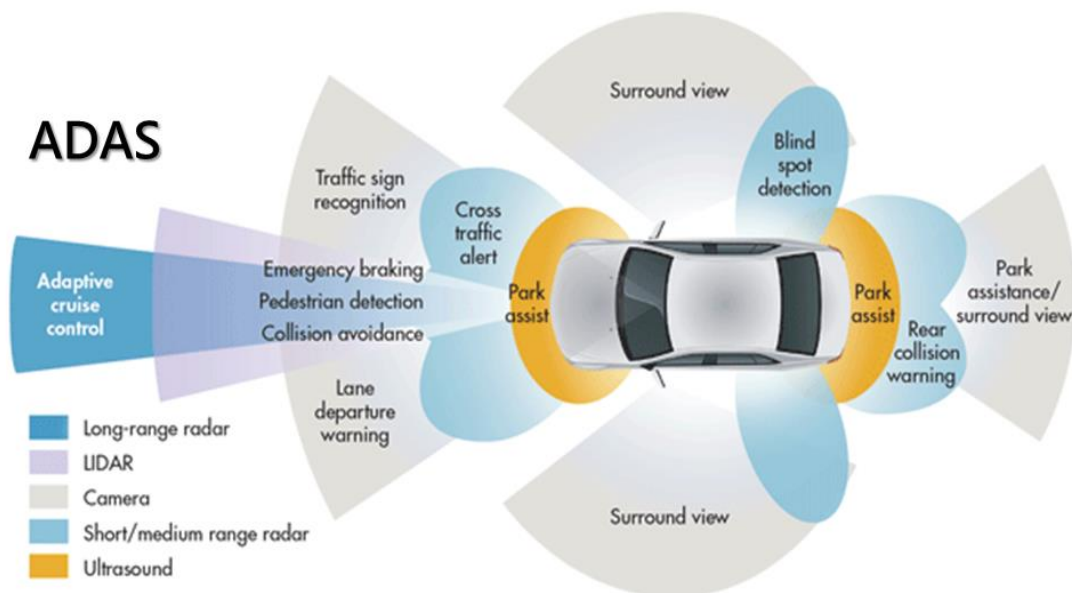


Server /
Storage /
switch

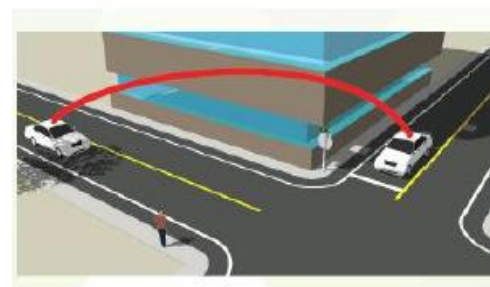
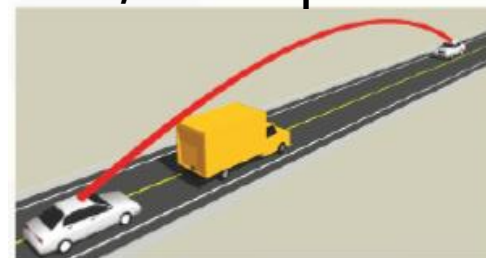


Synch. subsystem
SONET/SDH
DWDM

台灣晶技生產各種高可靠度汽車專用之石英元件 相關產品皆符合AEC-Q100與AEC-Q200之標準



V2X, 802.11p



Crystal (AEC Q200)

Metal Can: -40~105°C
Glass: -40~150°C
Seam: -40~125°C

XO (AEC Q100)

Seam: -40~105°C

TCXO (AEC Q100)

Seam: -40~105°C

Notes: G3: -40~85°C / G2: -40~105°C / G1: -40~125°C / G0: -40~150°C

台灣晶技提供全世界最小的三合一感測元件 可提供手機客戶 “單孔設計” 並同時減少雜訊和干擾



ALS+PS Sensors

PA122/PA22A Combo Ambient Light + Proximity Sensors

- Size: 2.5x2.0mm



產品發展

產品發展藍圖

Seam = Seam Seal
Glass = Glass Seal

2016

2017

2018

Product Size

MHz Crystal

◆ 2520 G1
◆ 1612 Glass
◆ 2016 G2
■ 1612 (G1)
◆ 1210 (G2)
◆ 1612 (G1)
■ 3225 (G0)
■ 2016 (G0)
◆ 1210 Seam
■ 2520 (G0)
■ 1612 (G0)
◆ 1008 Crystal

MHz Crystal Thermistor

◆ 2016 TSX
◆ 1612 TSX
■ 2016 ACAP TSX

KHz Crystal

◆ RTC SOP04 (G2)
◆ RTC 3225

XO/MO/SO

◆ 5032 (G2)
◆ 3225 (G3)
◆ 2520 (G3)
◆ 2016 (G3)
◆ 3225 (G1)
◆ 2520 (G1)
◆ 1612 (G2)
◆ 2016 (G1)
◆ 1612 (G1)

VCXO

◆ 3225 (25~200MHz)
◆ 5032 (25~200MHz)
◆ 7050 (25~200MHz)
◆ 5032 (2 GHz)
◆ 3225 (2 GHz)
◆ 7050 (2 GHz)

TCXO

◆ 3225 (G2)
◆ 2520(G2)
◆ 2016(G2)
■ 3225 TCXO
◆ 7050 S-3 (G2)
◆ 3225 S-3 (G2)
◆ 1612 (G2)
◆ 3225 (G1)
◆ 2520 (G1)
◆ 2016 (G1)

OCXO

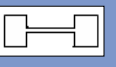
◆ 3627 SC-Cut
◆ 2525 SC-Cut
◆ 1409 AT-Cut
9775 SC-Cut
◆ 7050 SC-Cut

Sensor

◆ 2520 PS+ALS(PA22A)
◆ 4509 PS+ALS(PA233)
◆ 1212 3-Axis E-compass
◆ 2520 PS(PA224)
◆ RGB Sensor
◆ Pressure
◆ 4509 PS+ALS (wide ALS)
◆ 1010 3-Axis E-compass
◆ Pulse Sensor
◆ Gas Sensor
◆ 0808 3-Axis E-compass

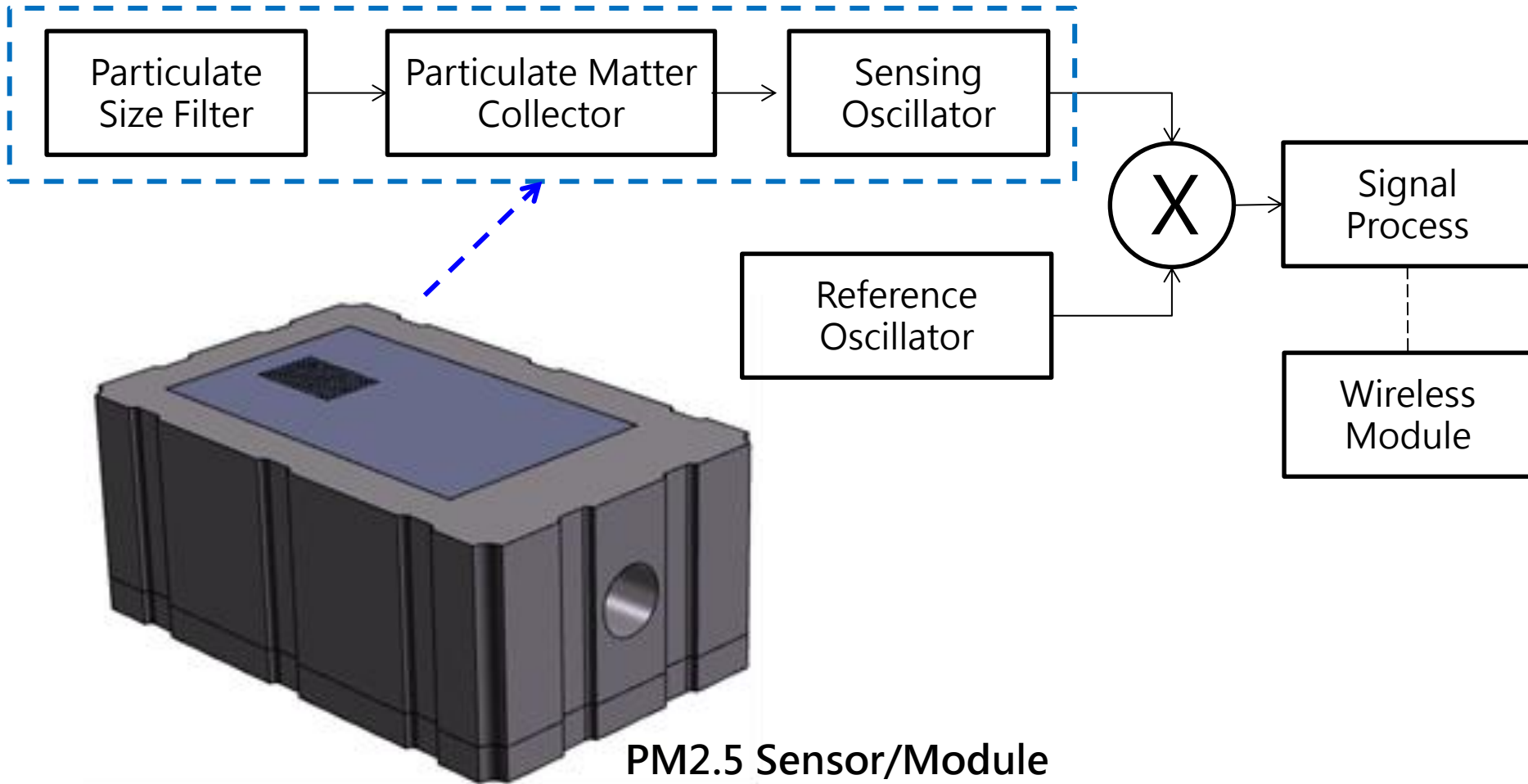
Note : ■ for automotive application

技術發展藍圖

	Present	2016	2017	2018
Quartz Blank (Mechanical Process)	♦ High Speed Beveling  ♦ HFF- Lapping 	- Ultra High Speed Beveling - Plate HFF etching + Polish - Double Rotation Cut		
Quartz Blank (MEMS Process)	♦ Deep Etch ♦ Inverted Mesa (200 MHz)	- Bi-Mesa (For Low MHz & Small Size)  - Inverted Mesa (up to 400 MHz) 		
Circuits (Algorithm)	♦ Discrete Oscillator & Oven Control ♦ Temp Compensation (-40~105) ♦ 3OT / PLL	- OCXO ASIC - High Temp Comp (-40~125) w/ unique algorithm - Ultra low phase noise PLL		
Sealing	♦ Metal Seal – Kovar Seam/AuSn ♦ Glass Seal	- Glass Vacuum Seal - Low stress Direct Seam		
Packaging	♦ Metallic lid ♦ HTCC	- Miniature package - Package with embedded heater - Wafer level trim & package (WLP)		

Design Tools : 3-D Finite Element (Structural/ Thermal/ Electromagnetic)

新產品: PM2.5 感測元件將於2016 Q4發表

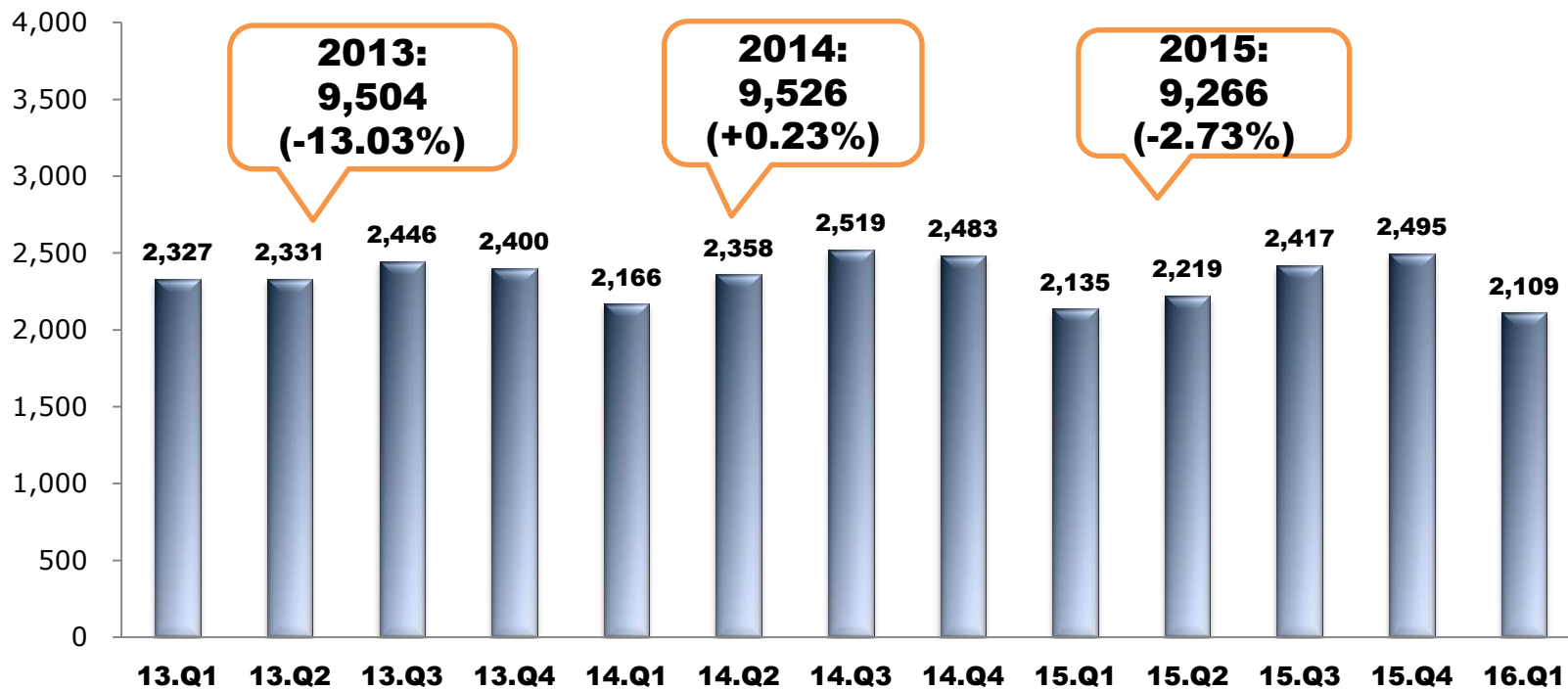




財務報告

營收趨勢

單位：新台幣 百萬

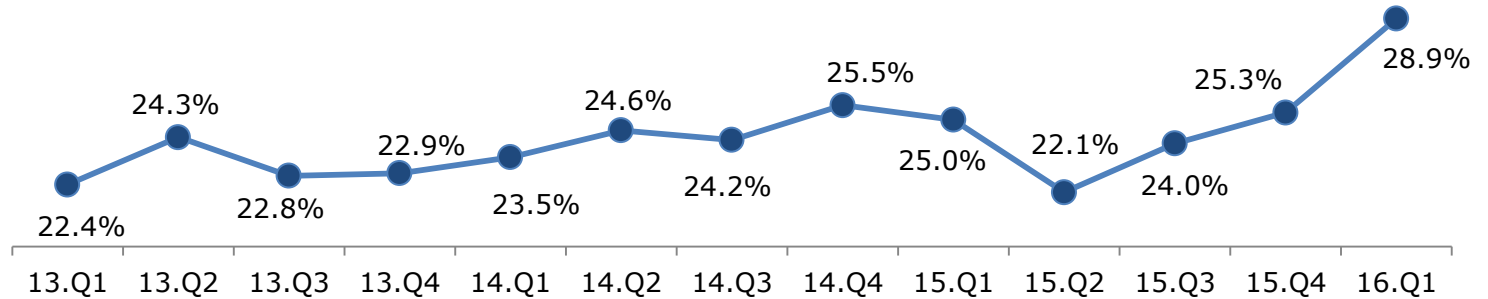


	13.Q1	13.Q2	13.Q3	13.Q4	14.Q1	14.Q2	14.Q3	14.Q4	15.Q1	15.Q2	15.Q3	15.Q4	16.Q1
Revenue (QoQ)	-21.9%	0.2%	4.9%	-1.9%	-9.8%	8.9%	6.8%	-1.4%	-14.0%	3.9%	8.9%	3.2%	-15.5%
Revenue (YoY)	-2.8%	-9.6%	-17.8%	-19.5%	-6.9%	1.2%	3.0%	3.5%	-1.4%	-5.9%	-4.0%	0.5%	-1.2%

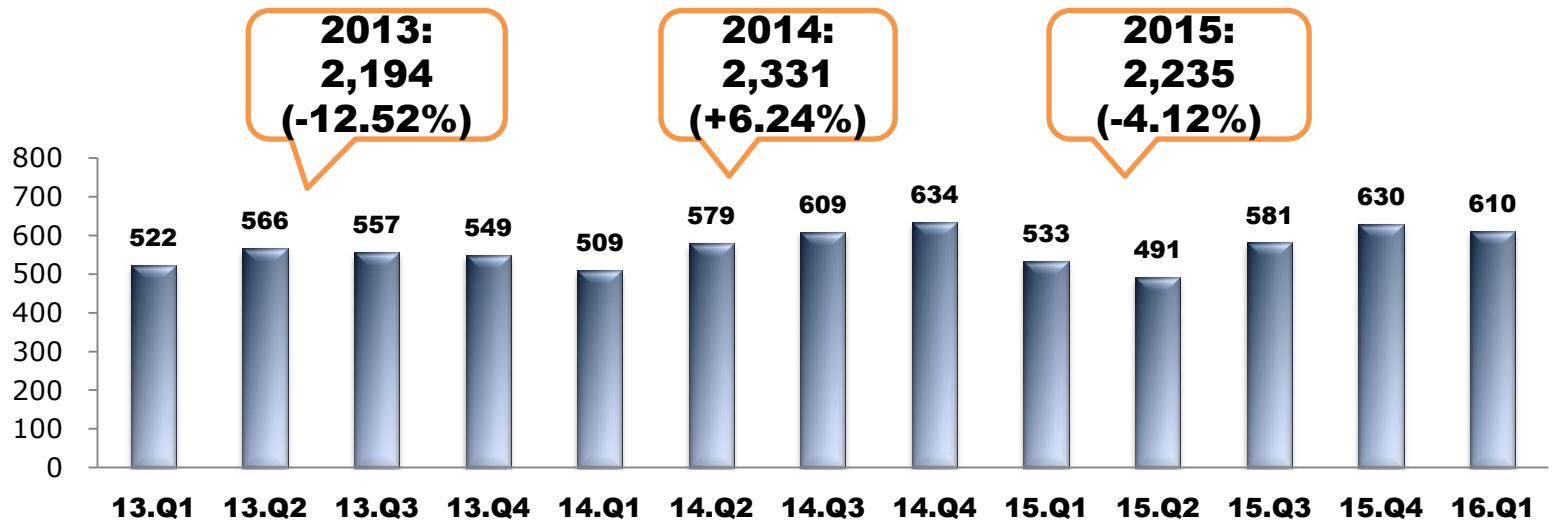
毛利趨勢

單位：新台幣 百萬

Gross Margin



Gross Profit

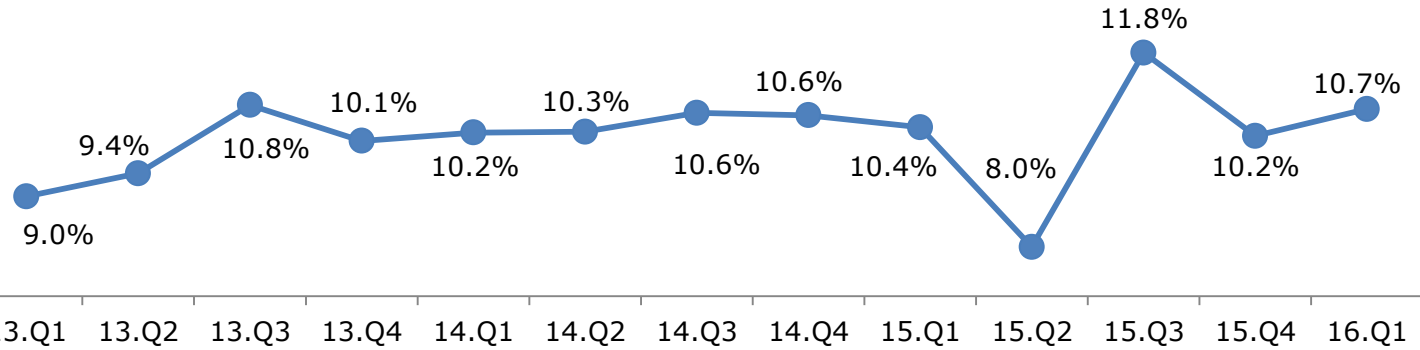


	13.Q1	13.Q2	13.Q3	13.Q4	14.Q1	14.Q2	14.Q3	14.Q4	15.Q1	15.Q2	15.Q3	15.Q4	16.Q1
Gross Profit (QoQ)	-23.6%	8.4%	-1.6%	-1.4%	-7.3%	13.8%	5.2%	4.1%	-15.9%	-7.9%	18.3%	8.4%	-3.2%
Gross Profit (YoY)	0.0%	-8.9%	-18.3%	-19.6%	-2.5%	2.3%	9.3%	15.5%	4.7%	-15.2%	-4.6%	-0.6%	14.4%

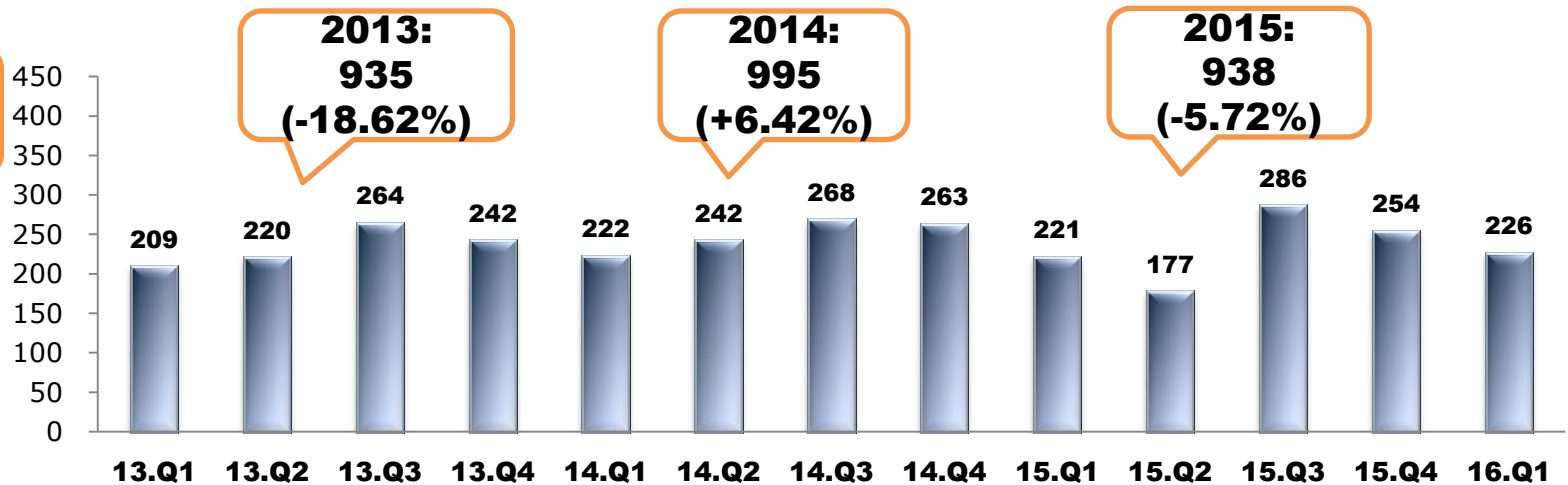
淨利趨勢

單位：新台幣 百萬

Net Margin

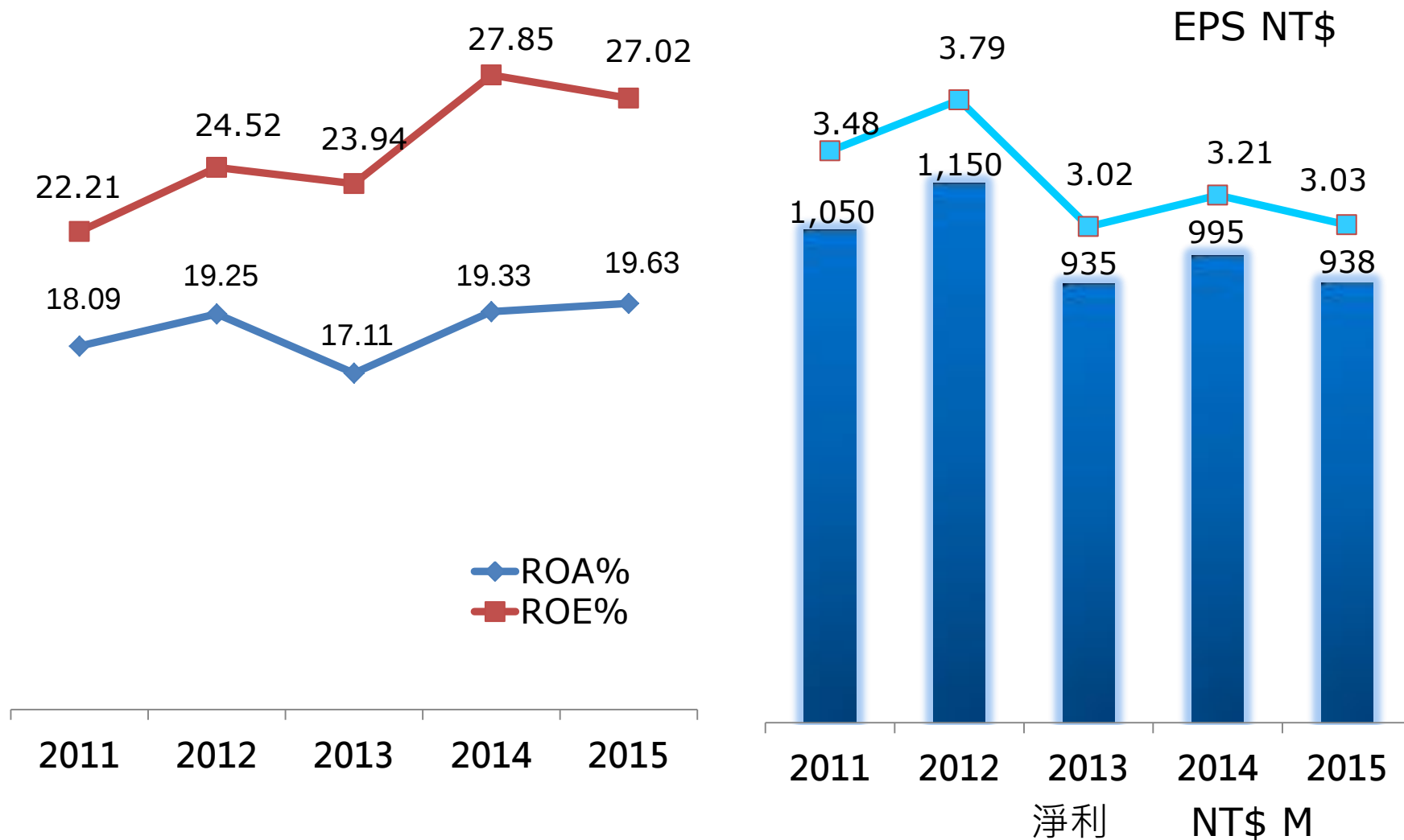


Net Profit



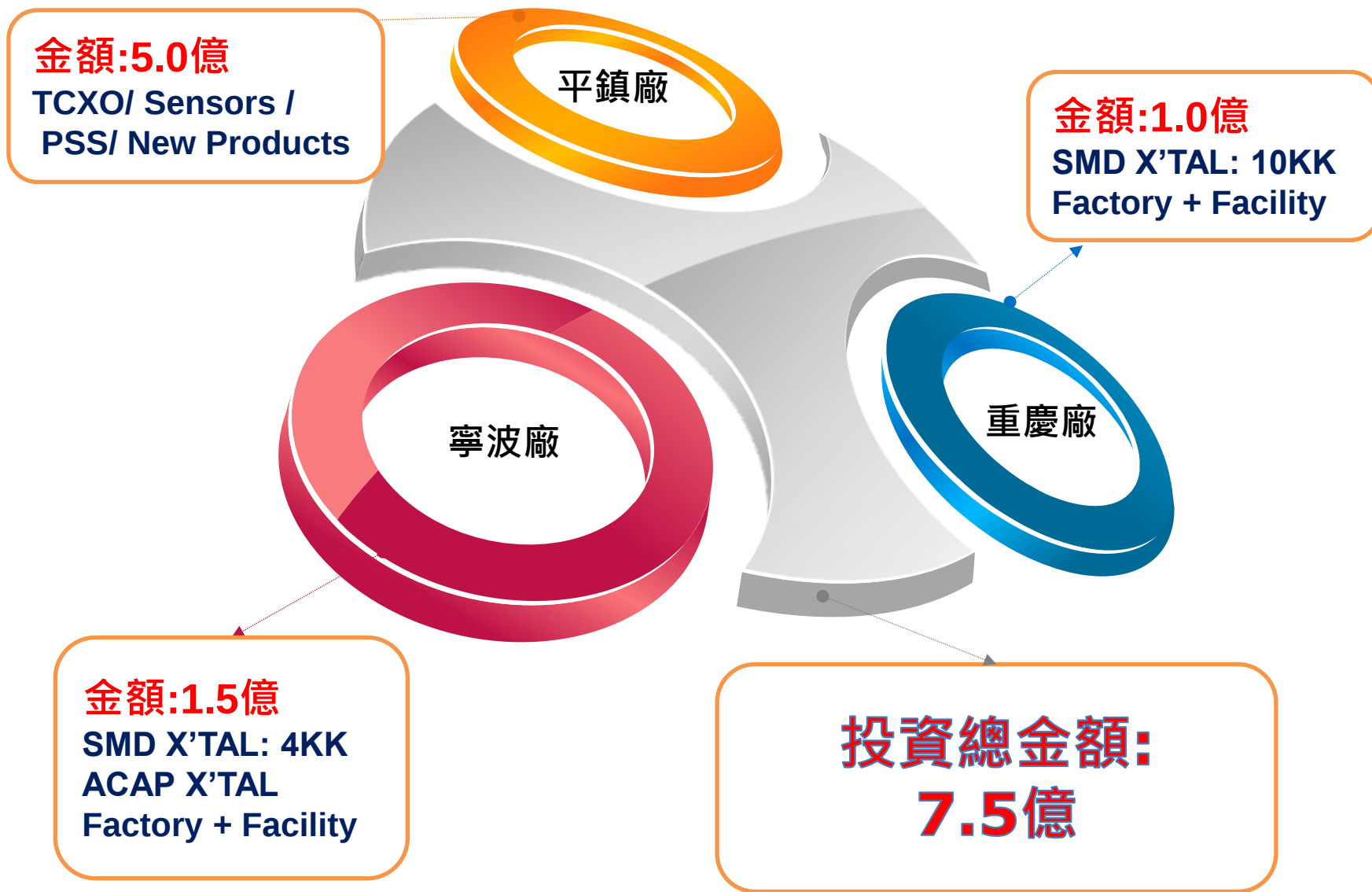
	13.Q1	13.Q2	13.Q3	13.Q4	14.Q1	14.Q2	14.Q3	14.Q4	15.Q1	15.Q2	15.Q3	15.Q4	16.Q1
Net Profit (QoQ)	-35.9%	5.3%	20.0%	-8.3%	-8.3%	9.0%	10.7%	-1.9%	-16.0%	-19.9%	61.6%	-11.2%	-11.0%
Net Profit (YoY)	5.0%	-15.7%	-27.3%	-25.8%	6.2%	10.0%	1.5%	8.7%	-0.5%	-26.9%	6.7%	-3.4%	2.3%

財務摘要



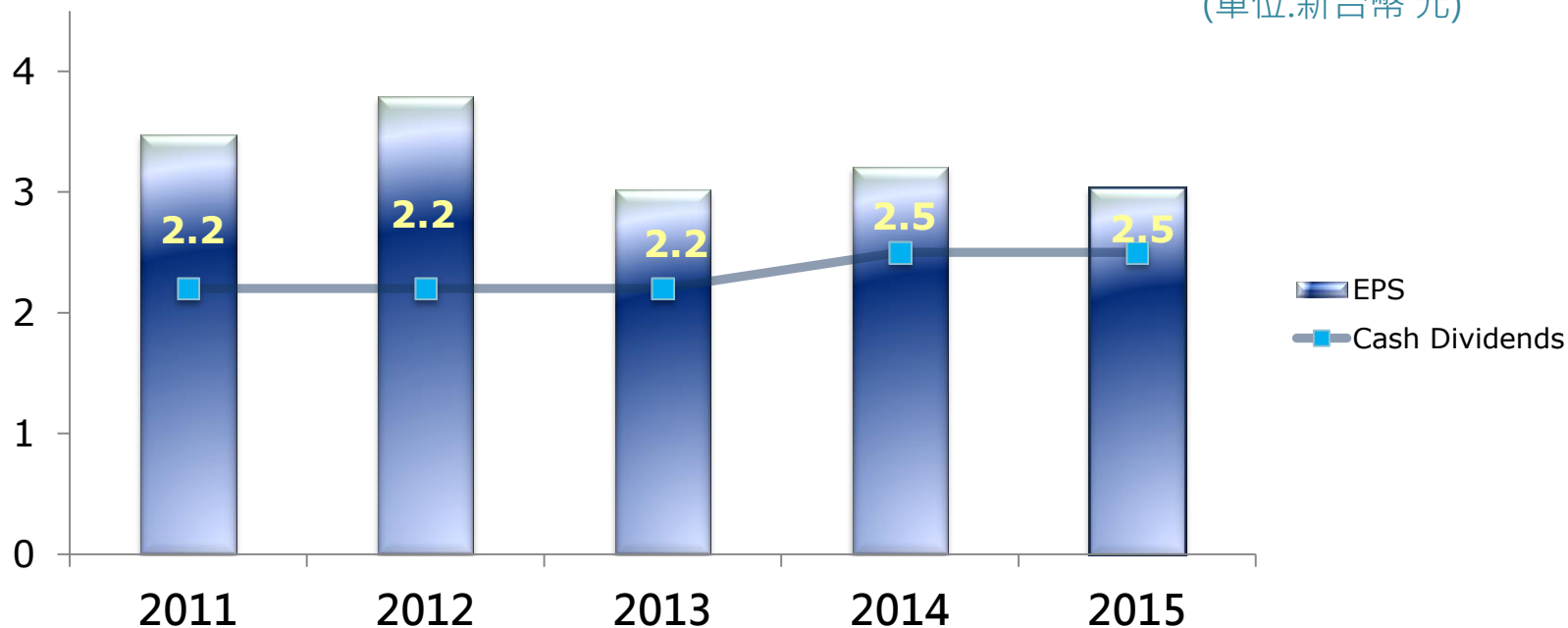
2016年資本支出

(單位: 新台幣 元)



股利政策

(單位:新台幣 元)



每股盈餘	3.48	3.79	3.02	3.21	3.03
現金股利	2.2	2.2	2.2	2.5	2.5
股價 (4/30)	43.55	46.00	43.55	39.90	41.10
股息發放率(%)	63.22	58.05	72.84	77.88	82.51
殖利率(%)	5.05	4.78	5.05	6.27	6.08

總結

01

營收穩健成長，產品組合的改善造就了最佳的毛利

02

2016年毛利率將優於去年

03

汽車、感測元件及網通相關新產品將帶來新的營收動能

04

物聯網(**IOT**)及車聯網 (**V2E**)將為我們拓展更多潛在市場

05

本公司將持續發展新產品並創造新的商機

Think of Frequency,

Think of **TXC**

