



全球显示产业六大发展趋势

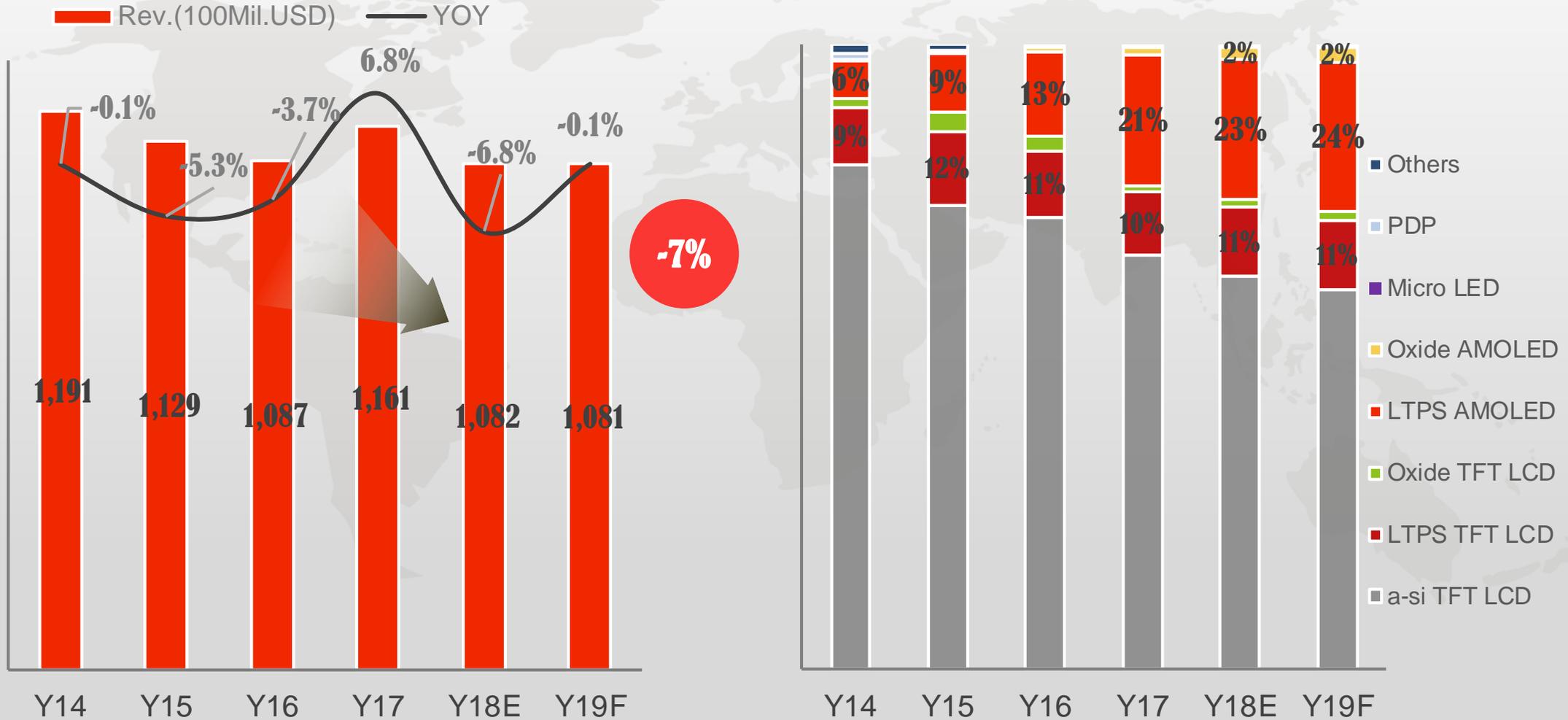
Sigmaintell 2019.6

目录



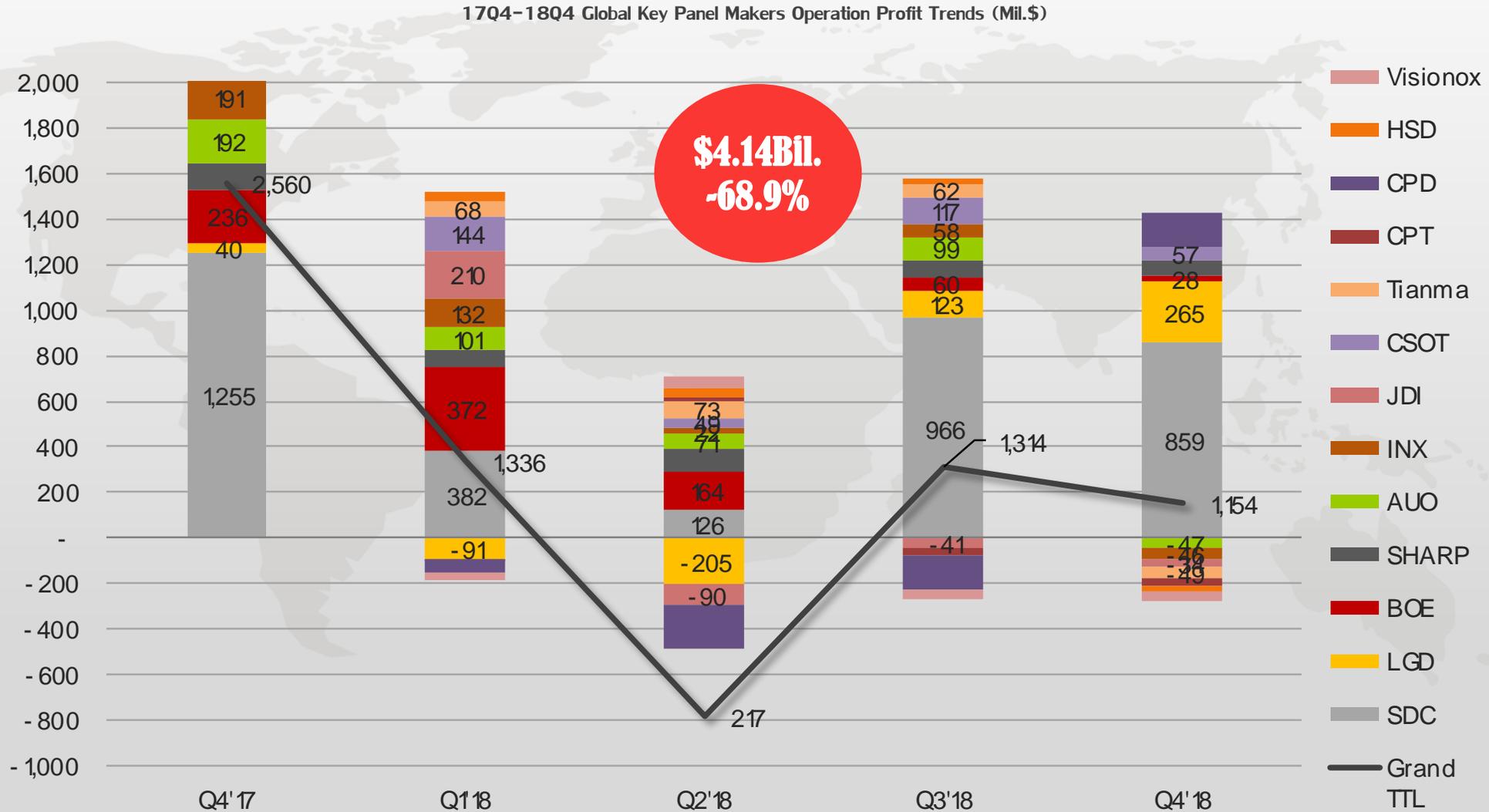
1st. Display industry is eager on technological innovation

Y14 – Y19 Global Display Market Revenue and Structure Trends (Mil.%)



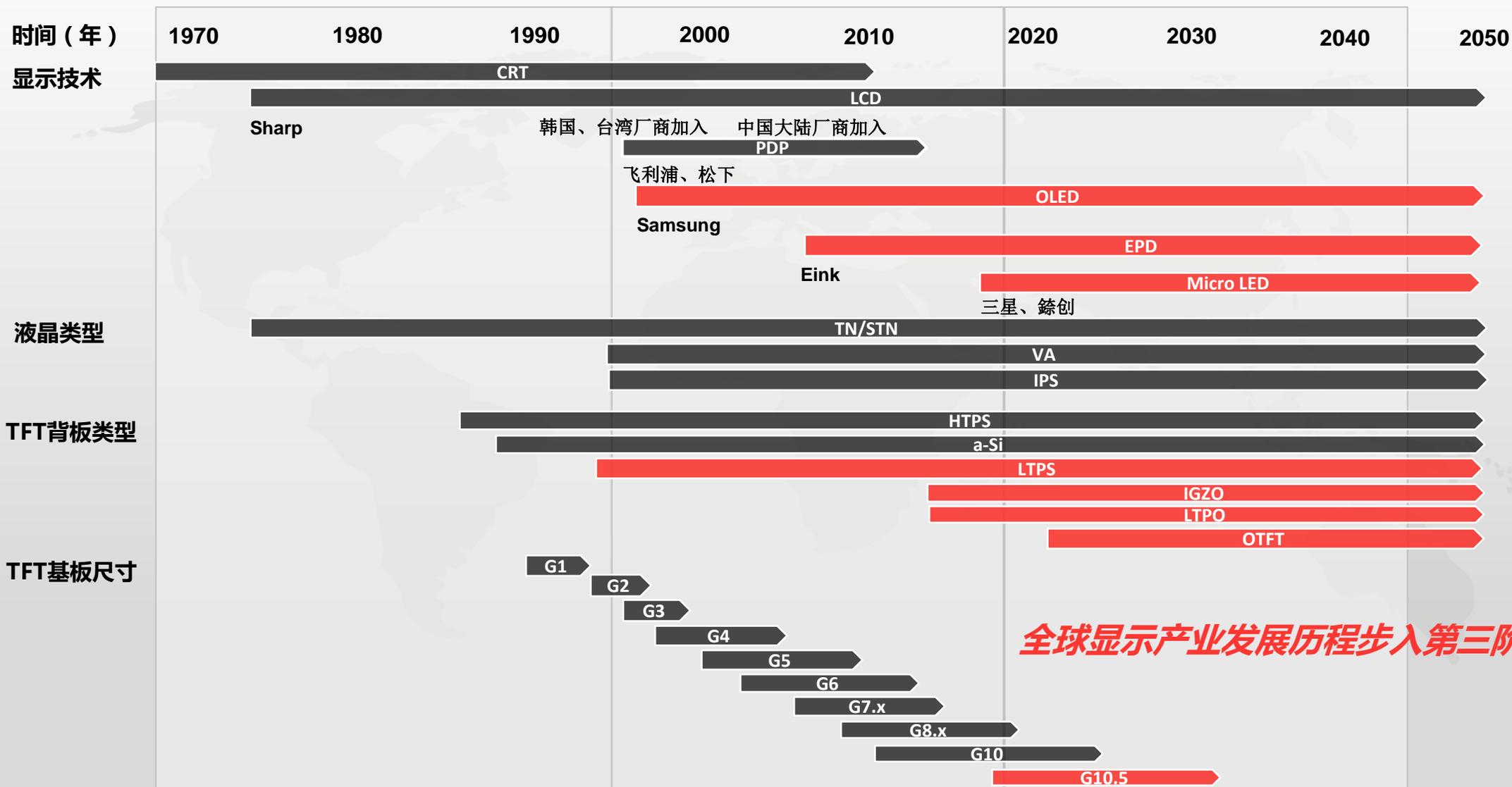
Source : Sigmaintell

1st. Display industry is eager on technological innovation



Source : Sigmaintell

Display industry entering 3rd. stage

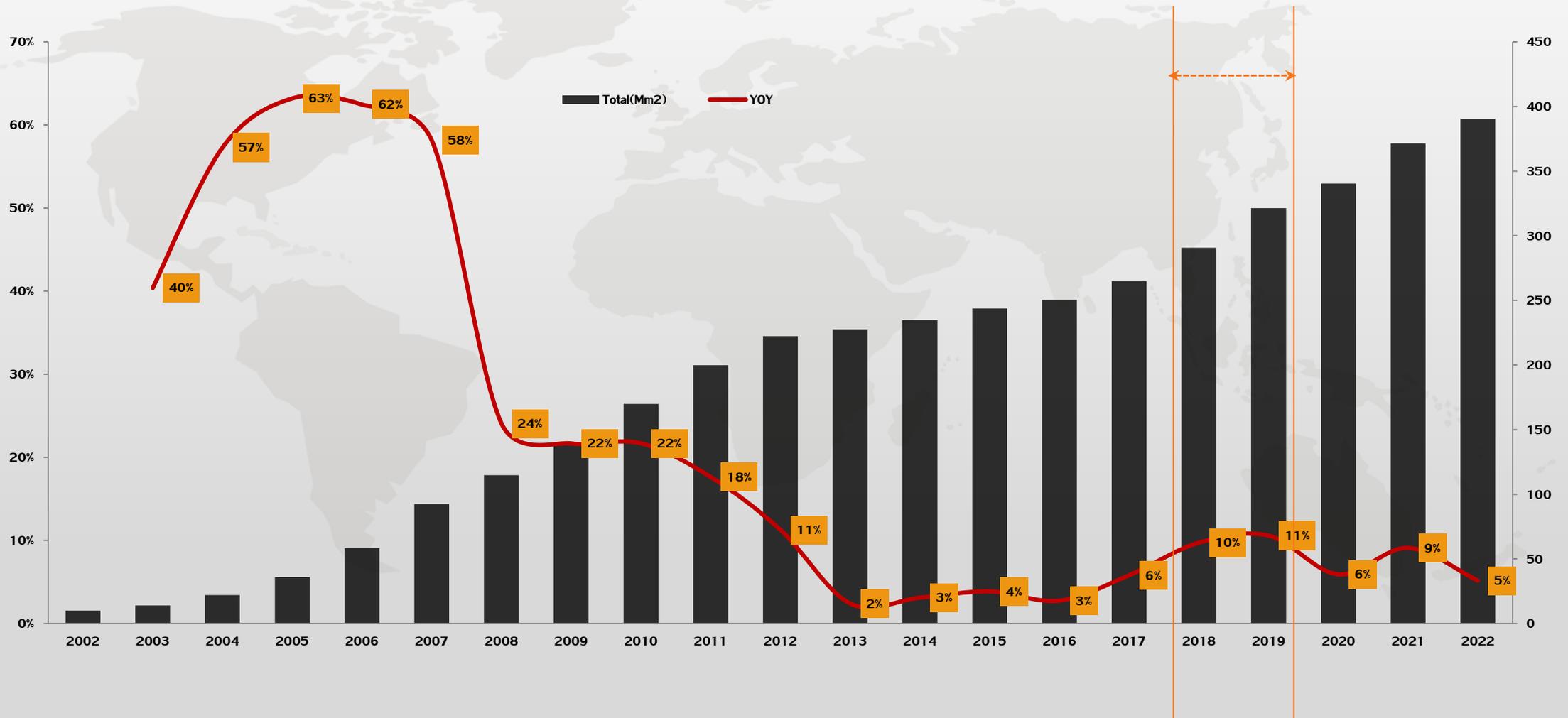


全球显示产业发展历程步入第三阶段

Source : Nikkei BP, Sigmaintell

2nd. Capacity&technology upgrades play key role in the coming years

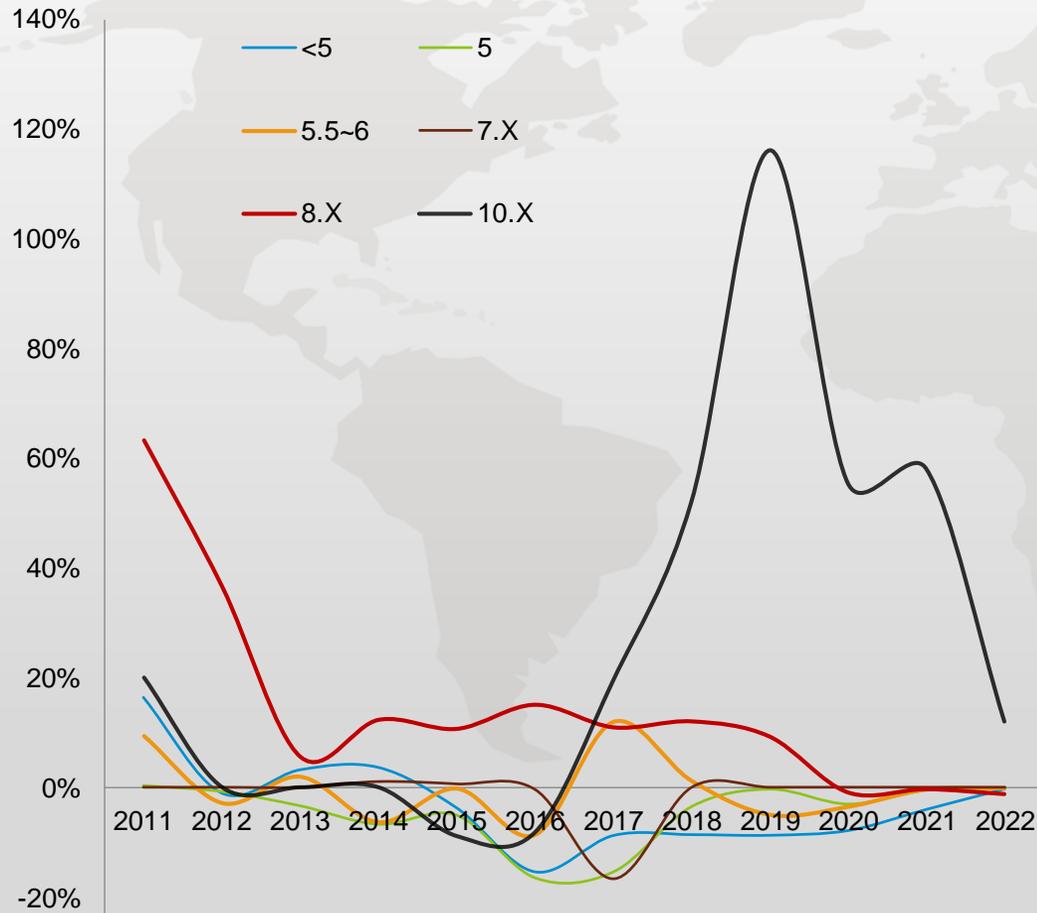
Y2002~Y2022 Global Display Capacity Trend (Mil. m², YoY)



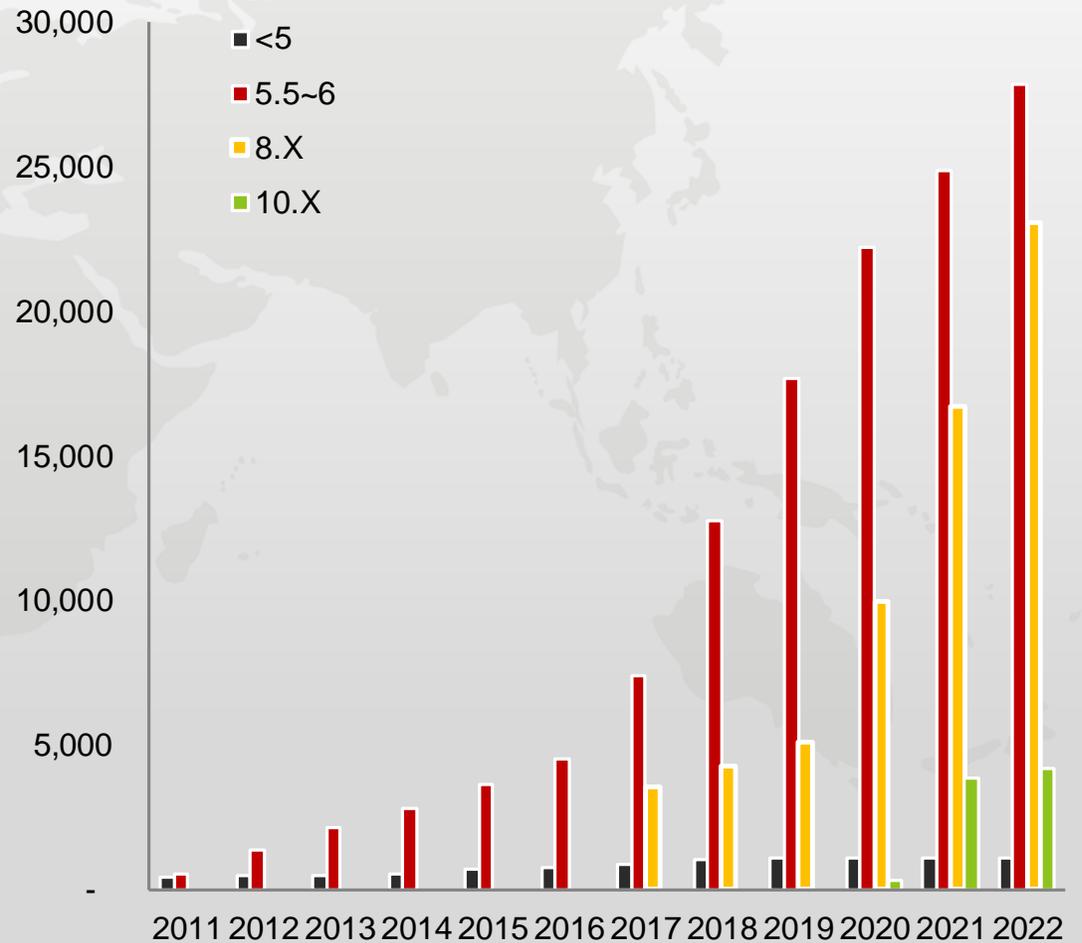
Source : Sigmaintell

2nd. Capacity & technology upgrades play key role in the coming years

Y2011~Y2022 Global LCD Display Capacity Trend
(Year-on-Year growth)



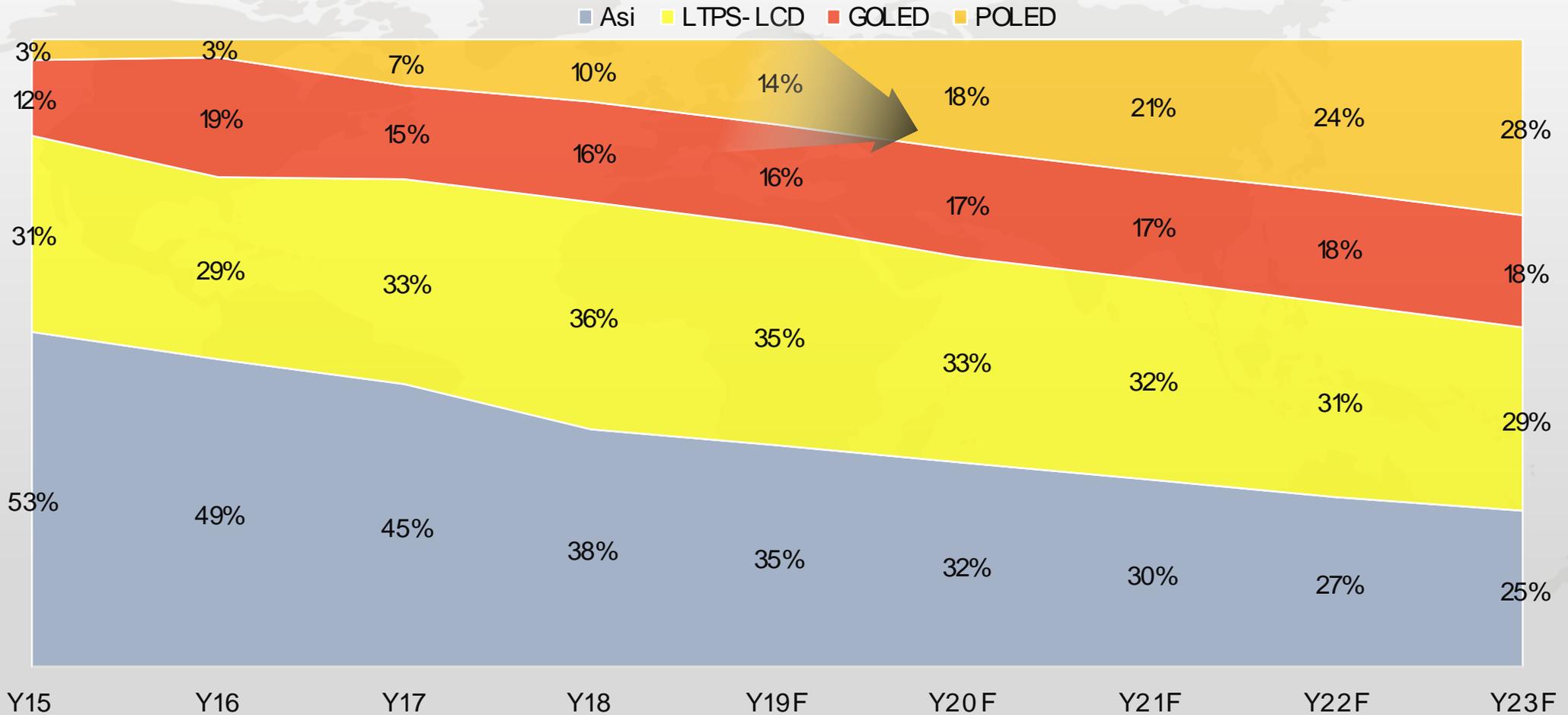
Y2011~Y2022 Global OLED Display Capacity Trend
(000 m²)



Source: Sigmaintell

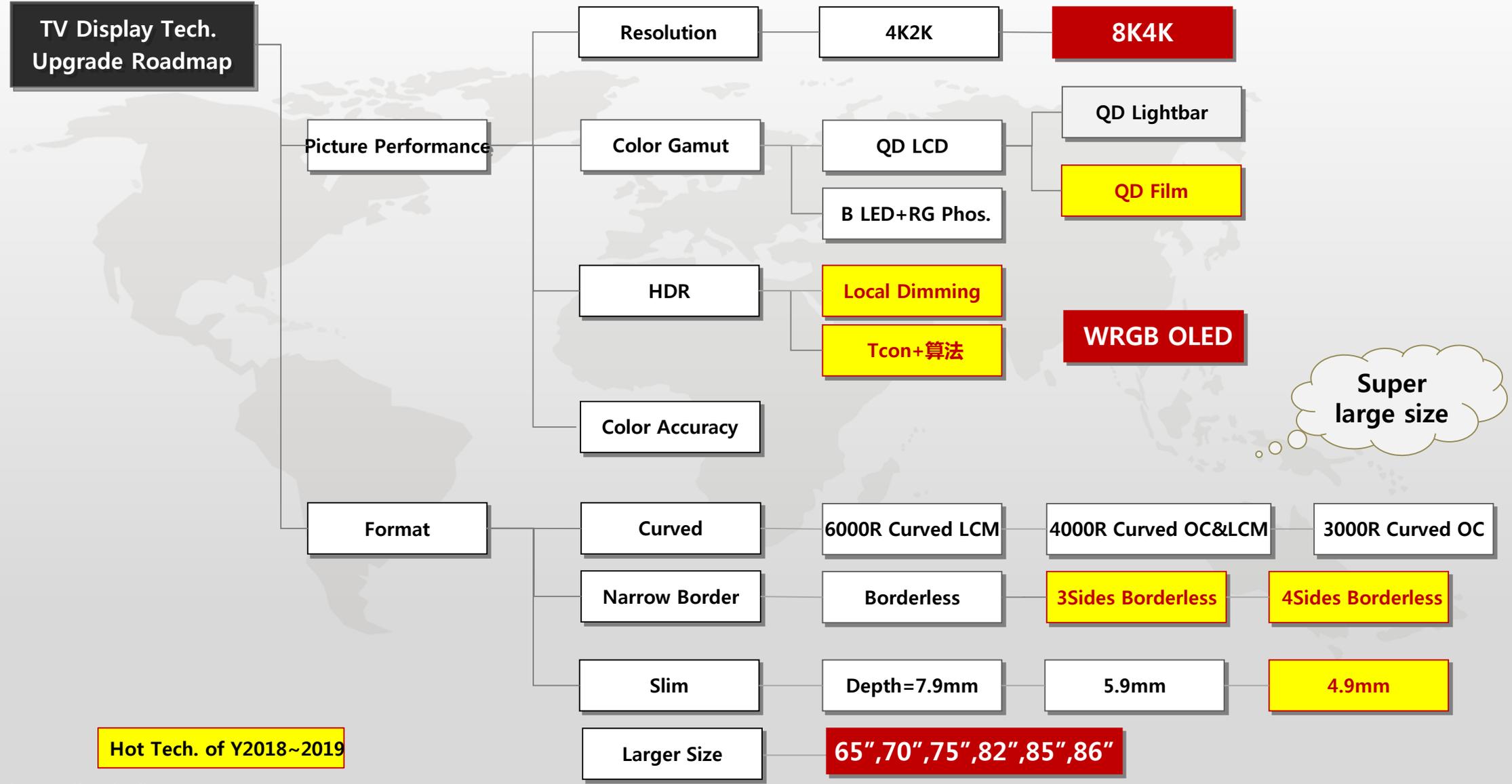
2nd. Capacity & technology upgrades play key role in the coming years

Y2015- Y2023 Worldwide Smartphone Panel Type Trend Forecasts



Source : Sigmaintell

3rd. Bigger size&8K will gain sustainable grow



Hot Tech. of Y2018~2019

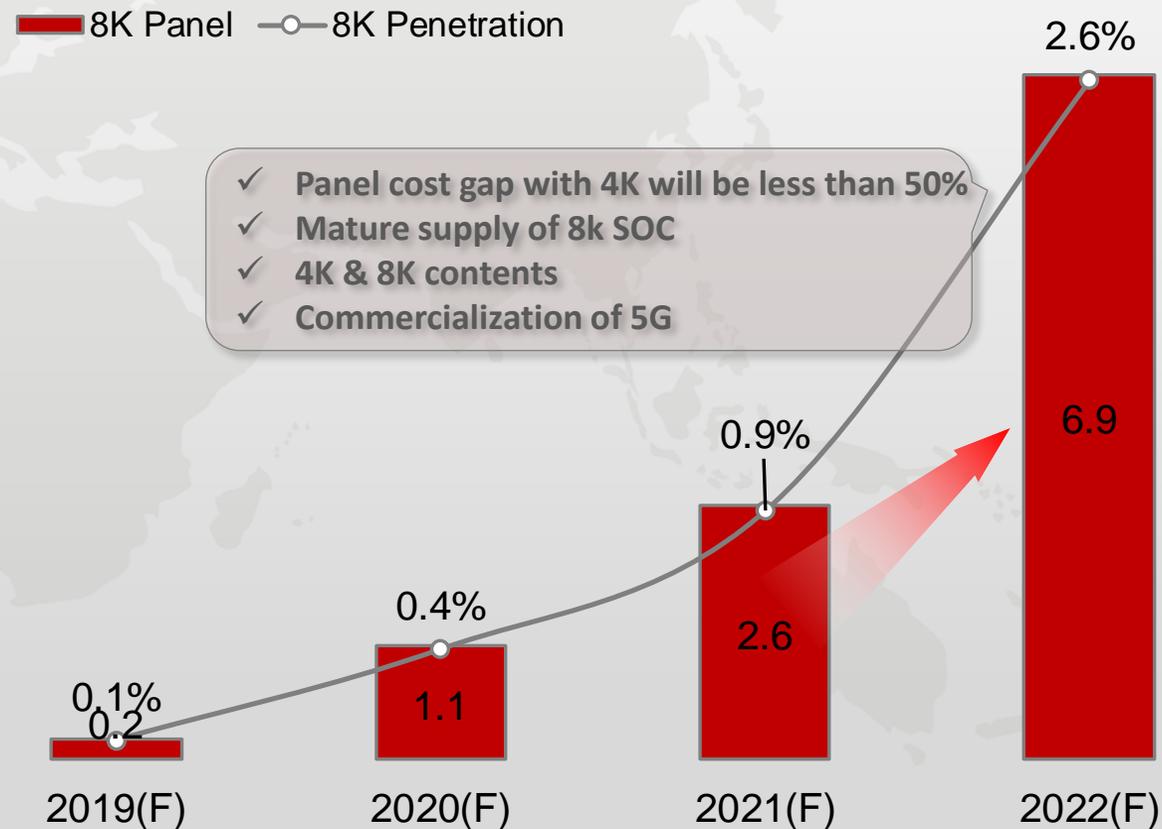
Source : Sigmaintell

3rd. Bigger size&8K will gain sustainable grow

Panel makers 8K products layout
(Unit: Mil,%)

	65"	70"	75"	80"	82"	85"	98"	100"	110"	Remark
LGD			█				█			Sample , Q2'19 MP
SDC	█		█		█		█			MP
INX			█		█	█				Sample , Q2'19 MP
AUO			█			█				MP
BOE			█				█		█	Sample , Q2'19 MP
CSOT			█			█				Sample , Q3'19 MP
CEC							█			Sample
Sharp		█		█						MP

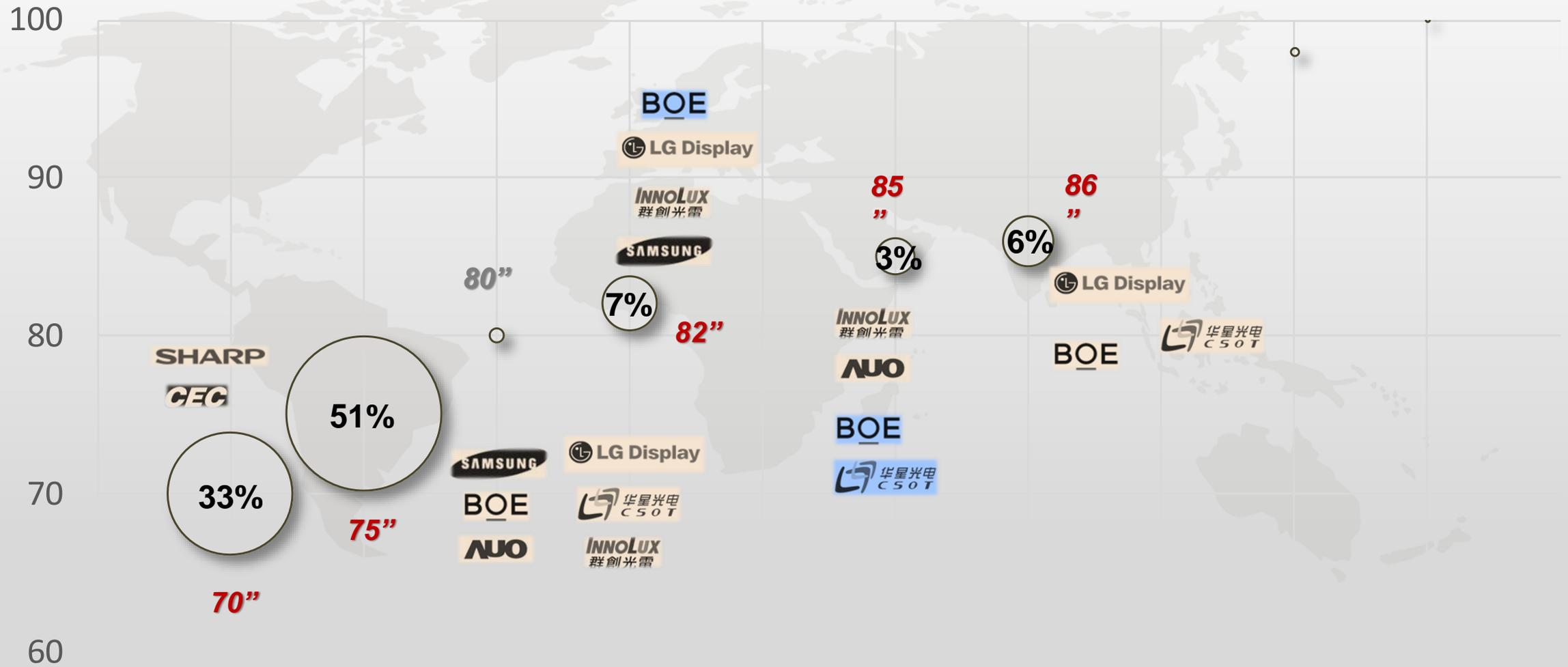
Y2019~2022 8K TV panel penetration trend
(Unit: Mil,%)



Data source: Sigmaintell

3rd. Bigger size&8K will gain sustainable grow

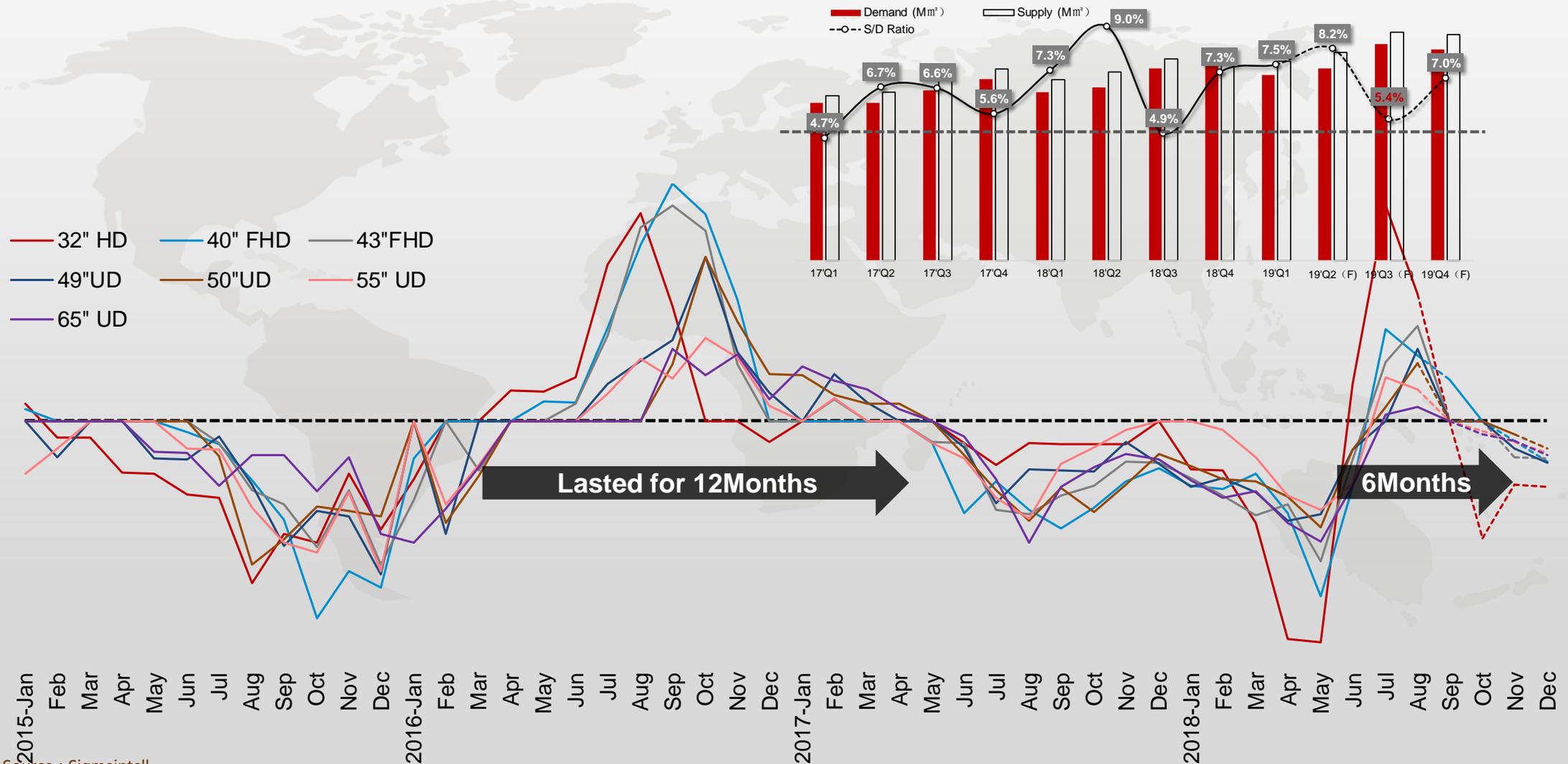
> 65 "Large size LCD panel layout in 2019 (Unit : %)



Data source: Sigmaintell

4th. Crystal cycle broke, supply control is more and more important

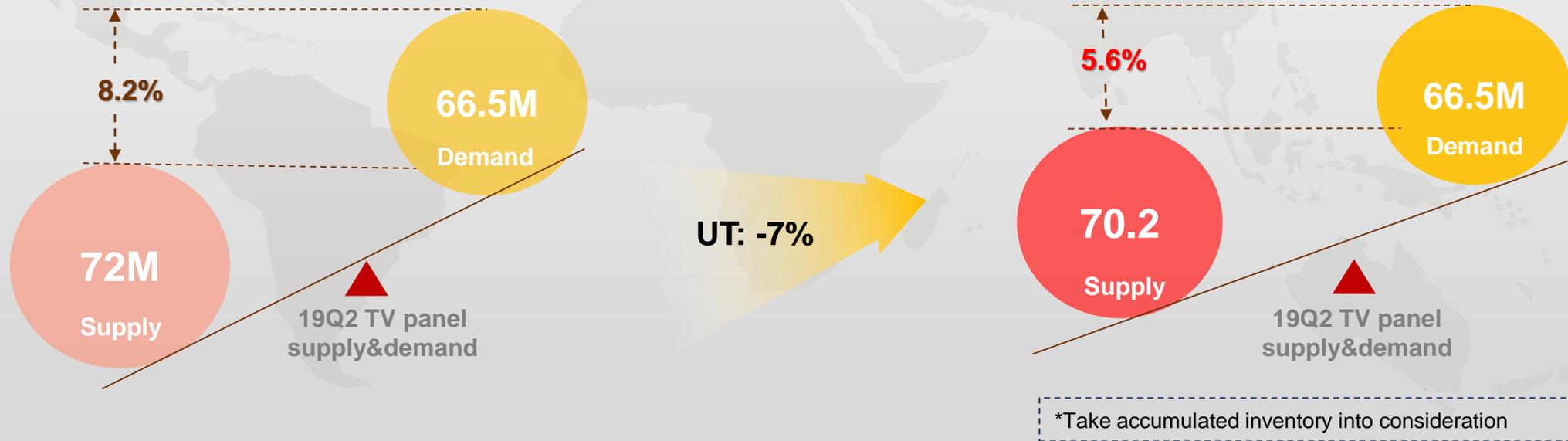
Jan'15~Dec'18 LCD TV Panel Price QoQ Trend (Unit: %)



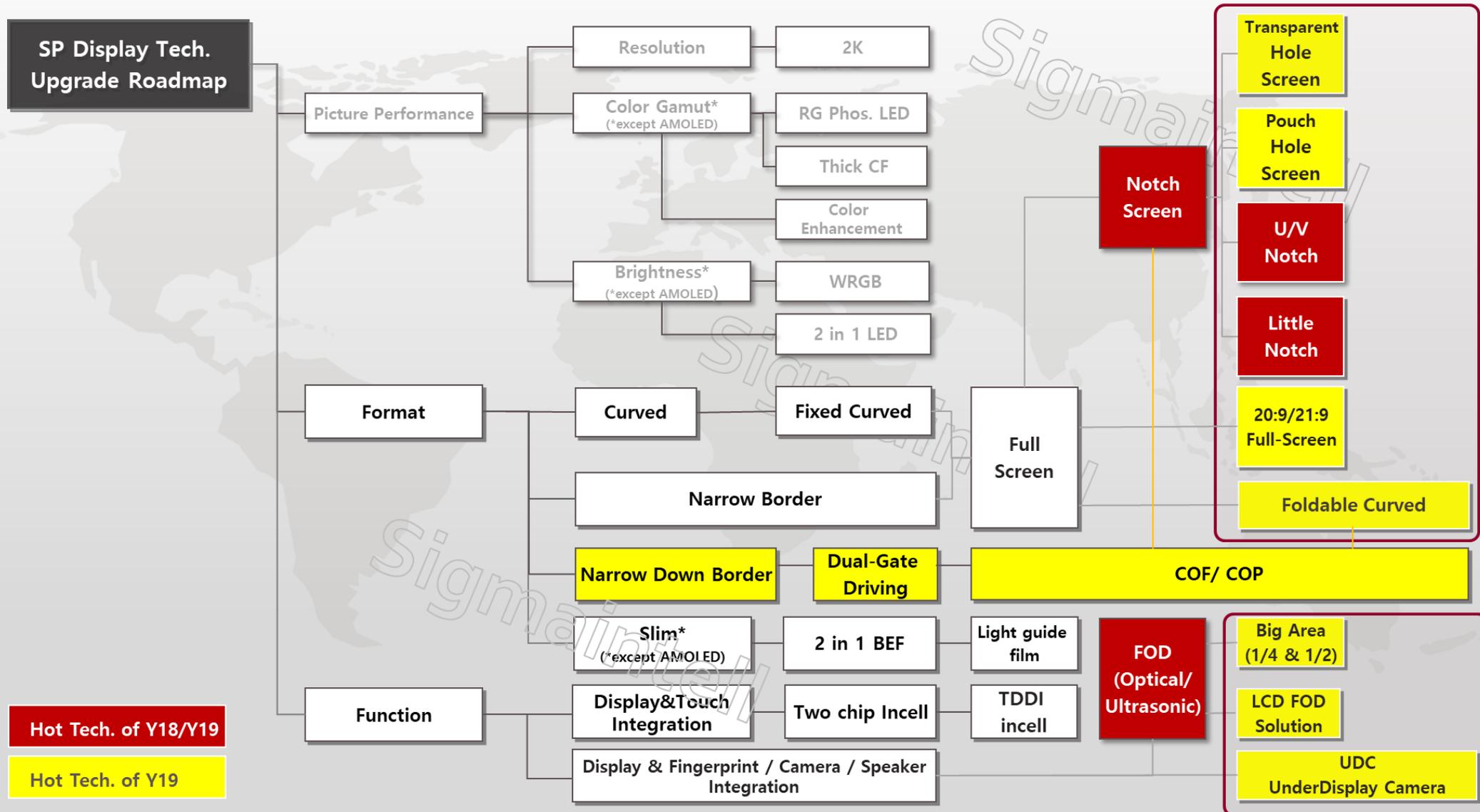
Source : Sigmaintell

4th. Crystal cycle broke, supply control is more and more important

- TV Panel price decreased again in Q2'19, with slightly and very short time price up during Mar.~Apr., the panel makers profit is still suffering loss, supply control is important.
- According to *Sigmaintell Supply&demand model*, if panel makers can decrease utilization by 7% in Q2, market supply&demand would return to balance (balance line is around 5%).

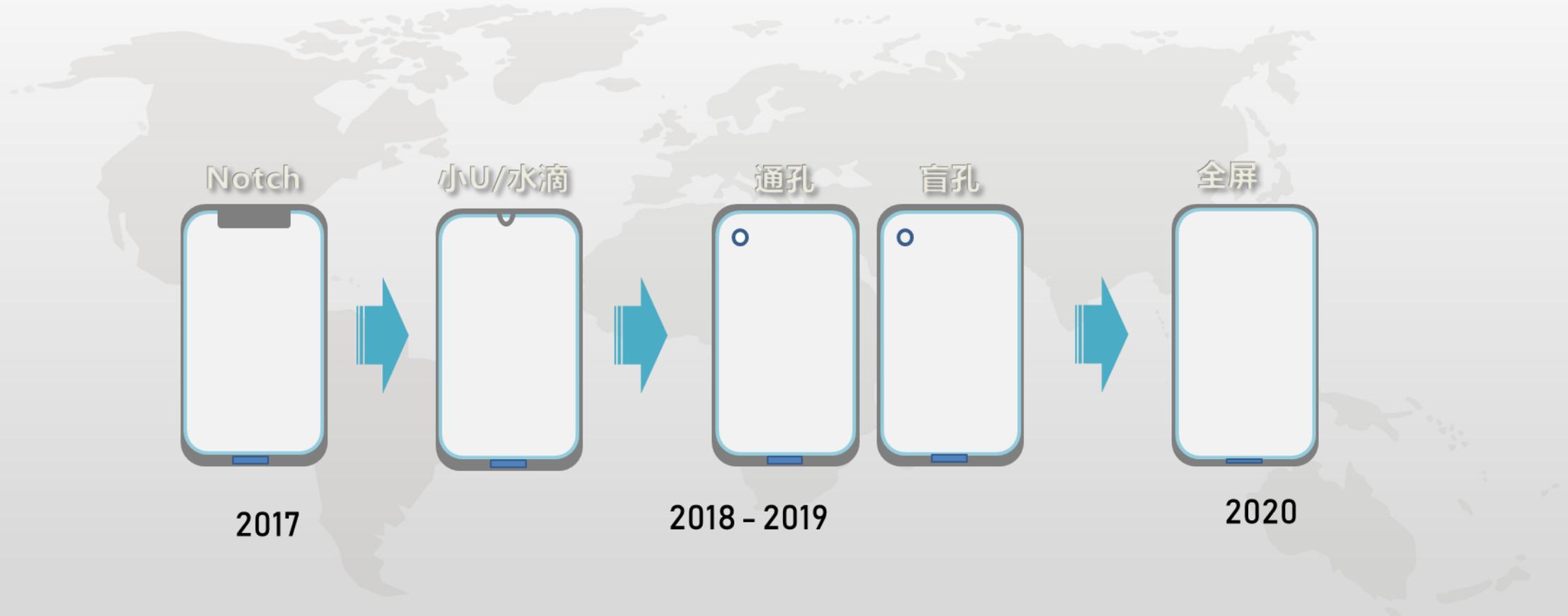


5th. FOD&UDC is coming, sensor integrated in Display will be mainstream



Source : Sigmaintell

5th. FOD&UDC is coming, sensor integrated in Display will be mainstream



5th. FOD&UDC is coming, sensor integrated in Display will be mainstream

Huawei

Honor Series	Capacitive	Goodix/Silead
Huawei Changxiang Series	(coating)	
Honor V Series	Capacitive	Goodix/FPC
Huawei P Series	(Glass)	
Huawei Mate Series	UD (Optical)	Goodix/Synaptics

Xiaomi

Mi Series	UD (Optical)	Goodix
Mix Series		
Mi Series		
Max Series	Rear (Capacitive)	Goodix/FPC
RedMi Note Sereis		
RedMi Sereis		

VIVO

V Series		
Z Series	UD (Optical)	Goodix
X Series		
NEX Series		
Z Series		
V Series	Rear (Capacitive)	Goodix/FPC
X Series	(Glass)	
Y Series		

OPPO

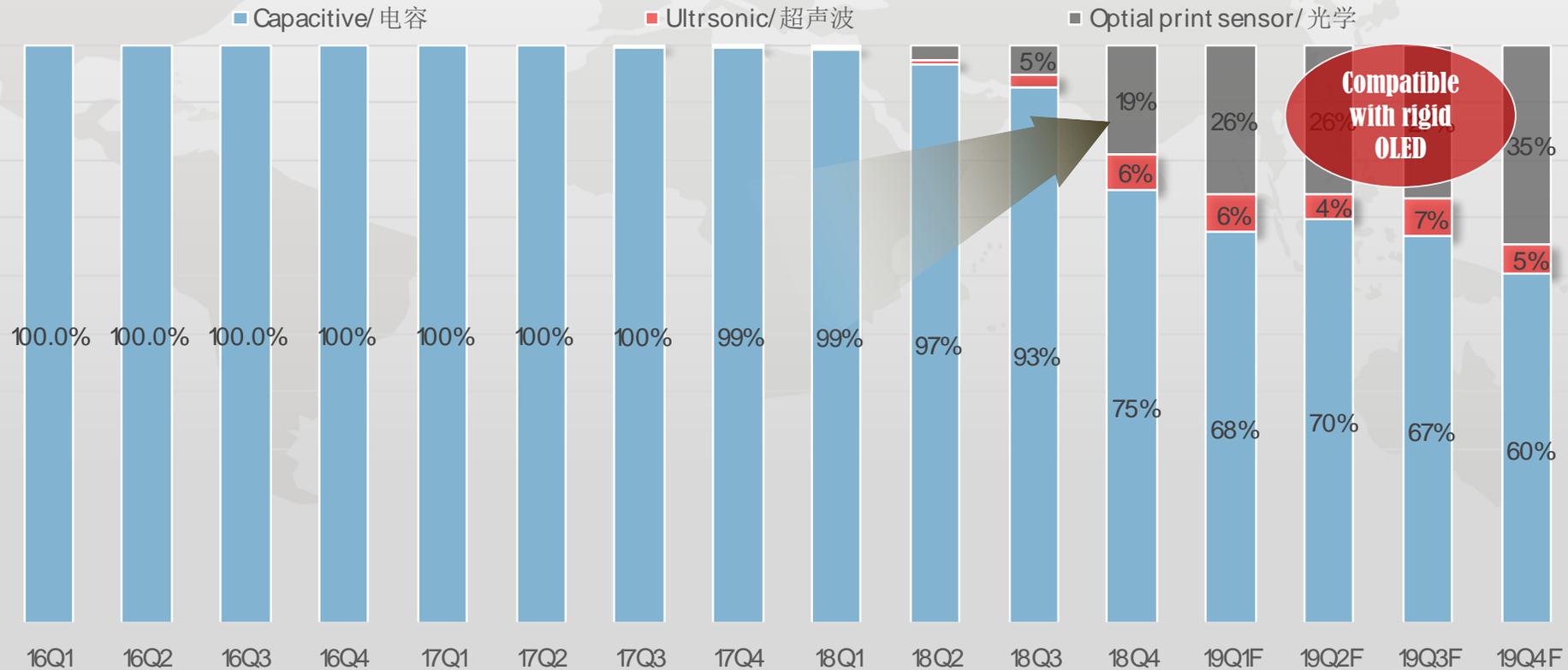
K Series		
R Series	UD (Optical)	Goodix/Silead
Find Series		
F Series		
A Series		
R Series	Rear (Capacitive) (Glass)	Goodix/FPC
Realme Series		
Realme Series		

Source : Sigmaintell

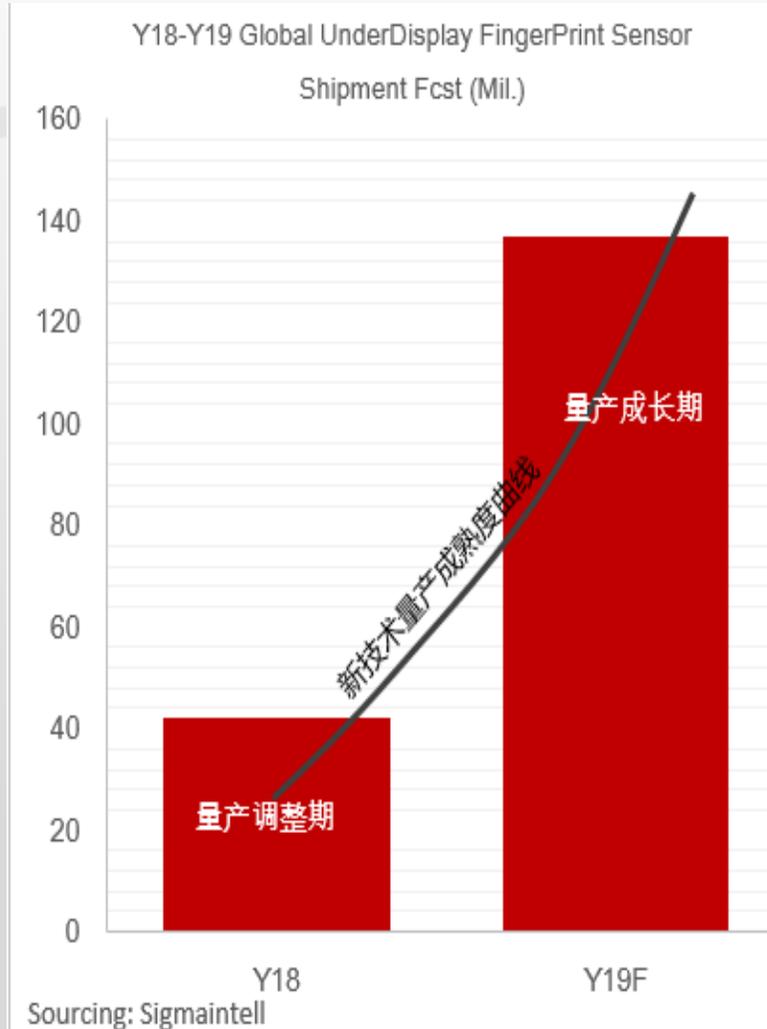
5th. FOD&UDC is coming, sensor integrated in Display will be mainstream

1. The Ultrasonic Fingerprint MS% was up to around **6%** in 18Q4, mainly demand was from Samsung Galaxy S10 series. Sigmaintell fcst it will keep stable at around **5%** in Y19. Total volume will be up to **54mil.**in Y19 and YoY increasing around **172%**.
2. In 18Q4, the MS% of Optical fingerprint was up to **19%** sharply. Total volume will be up to **281mil.** And YoY increasing around **372%** in Y19.

Y16-Y19 Global Fingerprint developing trends by Type (%)



5th. FOD&UDC is coming, sensor integrated in Display will be mainstream



1. 指纹传感器 (屏下指纹)



2. 摄像头传感器 (屏下摄像头)

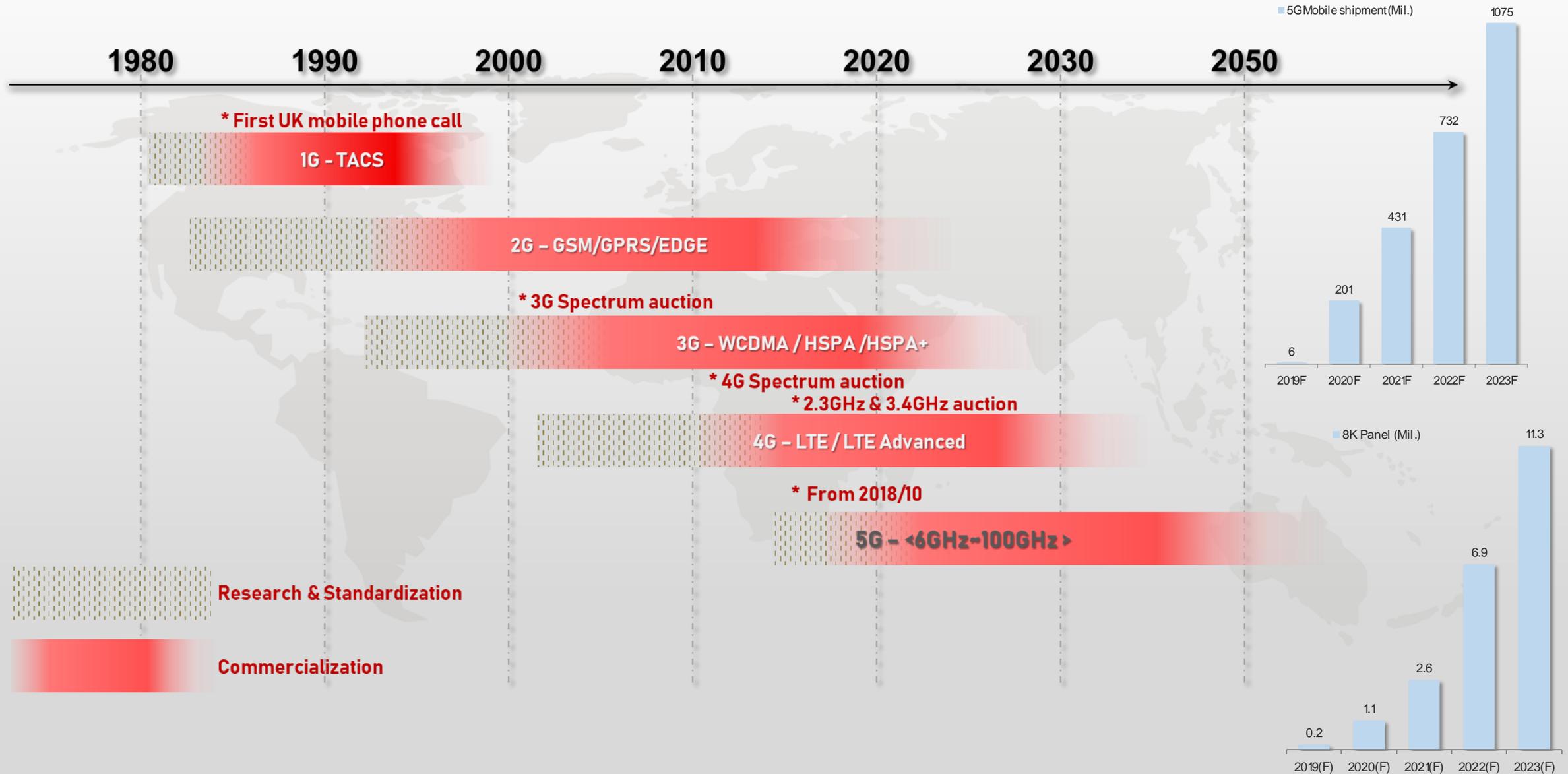


3. 声学传感器 (屏幕发声)



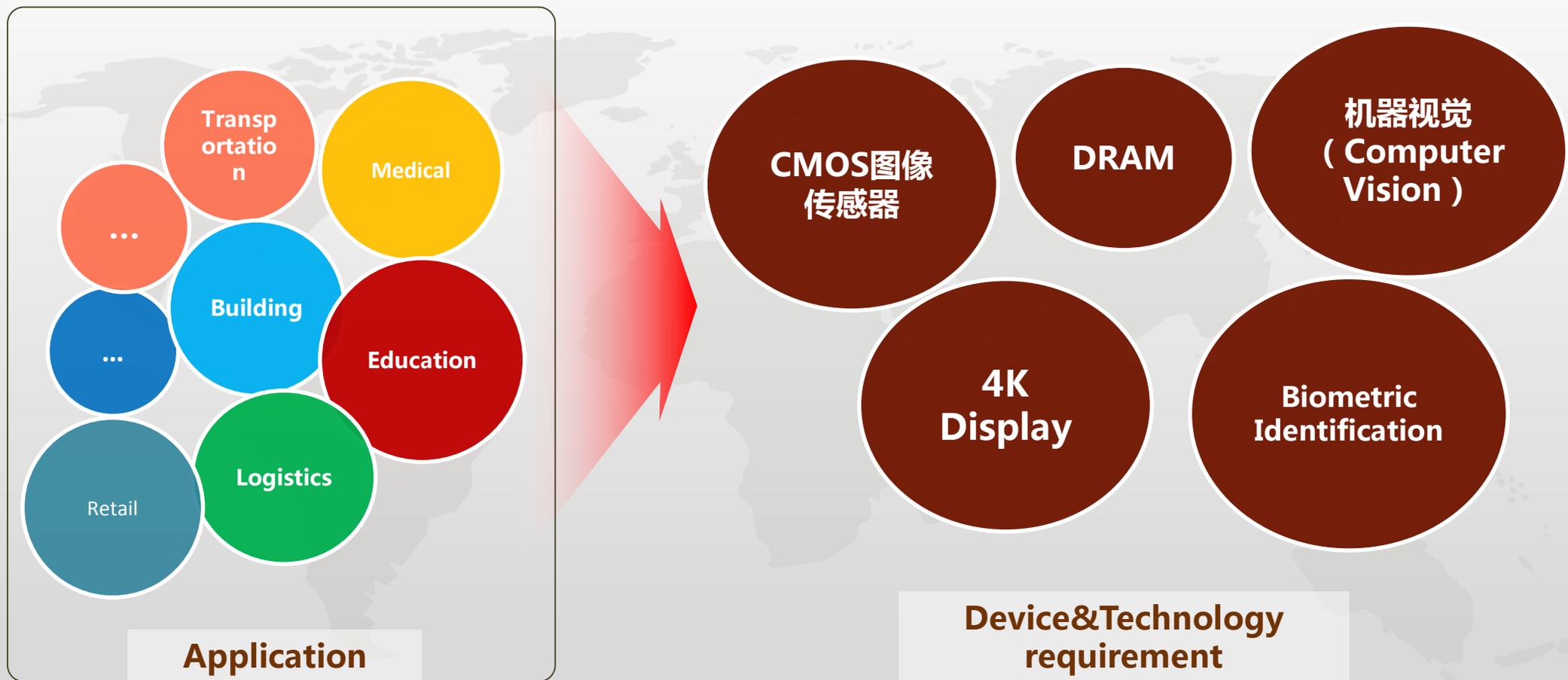
4.5G射频传感器

6th. 5G – Drive demand booming on 5G smartphone&8K TV from 2021~2022



Source : The Ministry of industry, Sigmaintell

6th. 5G is ON, driving innovation application growing



6th. 5G is ON, driving innovation application growing

Y2017-Y2019 IWB Market Scale in large size market

Y17 Globa 65"+ LCD Panel distribution



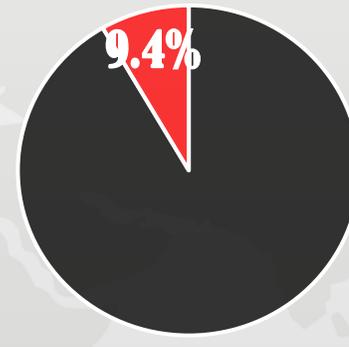
■ TVs ■ Whiteboards

Y18 Globa 65"+ LCD Panel distribution



■ TVs ■ Whiteboards

Y19 Globa 65"+ LCD Panel distribution



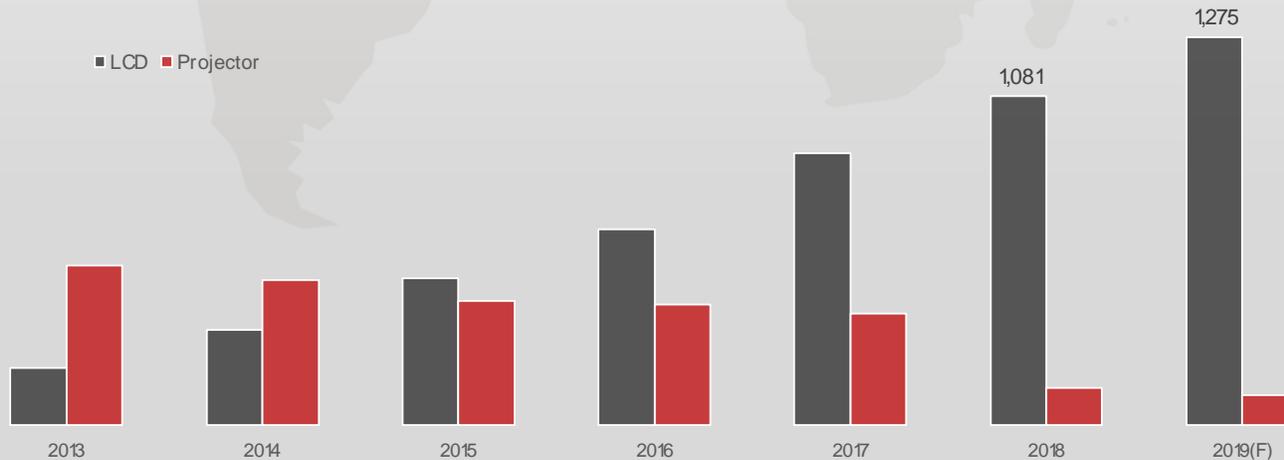
■ TVs ■ Whiteboards

Y22 Globa 65"+ LCD Panel distribution



■ TVs ■ Whiteboards

■ LCD ■ Projector



Source : Sigmaintell

6th. 5G is ON, driving innovation application growing

-5.0%

Smartphone - Y18
1364Mil.

+4.0%

TV - Y18
239Mil.

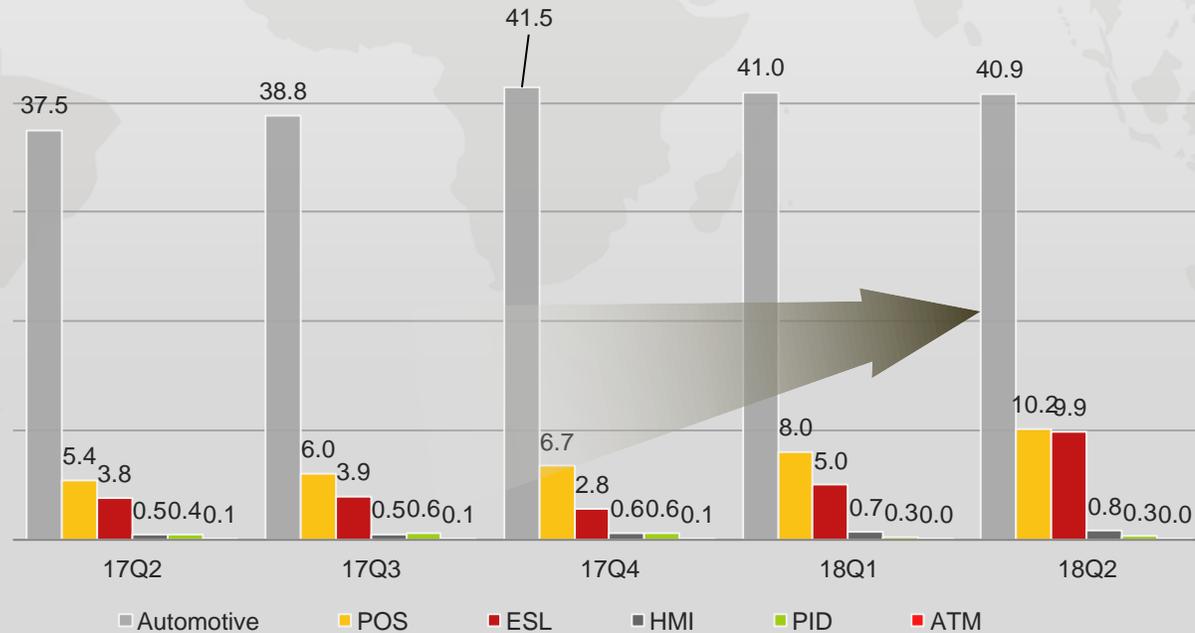
+1.1%

NB - Y18
157Mil.

+5.1%

MNT - Y18
135Mil.

17Q2-18Q2 Global Innovation Application Display Shipment Trends (Mil.)



Evolution on Smart Car/Retail/manufacture Will push demand grow on Automotive, POS, PID and HMI displays.

Source : Sigmaintell

Summary



1st. Display industry is eager on technological innovation.

2nd. Display and capacity technology evolution play key role in coming years.

3rd. With supply grow and cost down, bigger size and 8K will gain sustainable grow

4th. *Crystal cycle* broke, supply control becomes much more important

5th. With FOD&UDC evolution, display integrated with sensor will become mainstream

6th. 5G accelerate demand on AMOLED, 8K and application innovation for displays from 2021~2022.



Thank you

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