



丘鈦科技（集團）有限公司

Q Technology (Group) Company Limited

Stock Code 股份代號：1478

**2022 Annual Results
Investor Presentation**
13 March 2023

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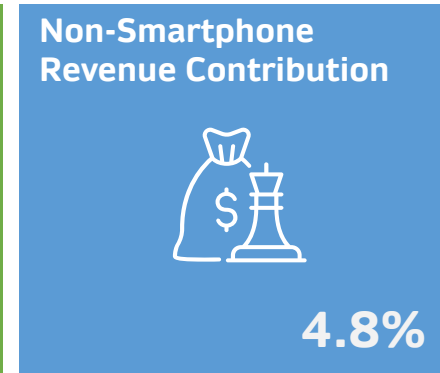
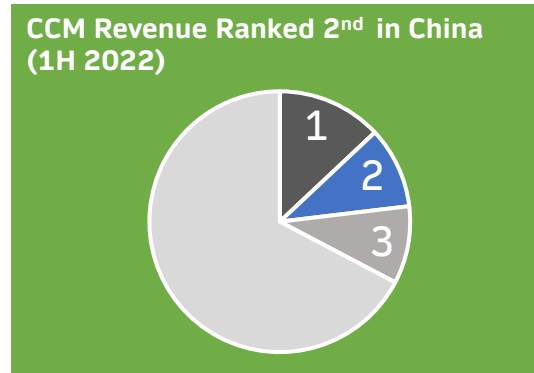
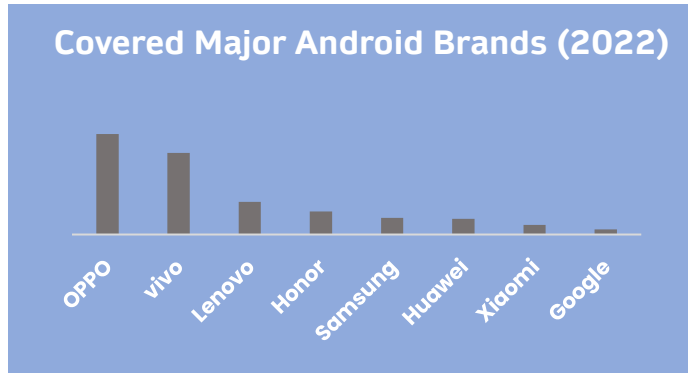
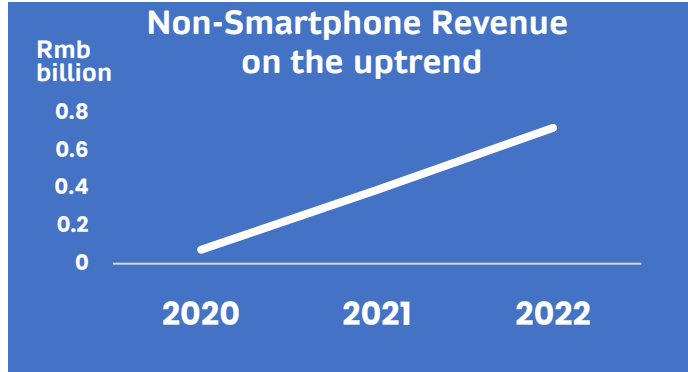
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- 01 **2022 Annual Results Business Review**
- 02 **Smartphone/IoT/Automotive Business Segments Outlook**
- 03 **Five-Year Plan**

»» Operational Performance Billboard

A Leading China Intelligent Vision Enterprise Penetrated into Smartphone, Automotive, IoT and AR/VR Industries



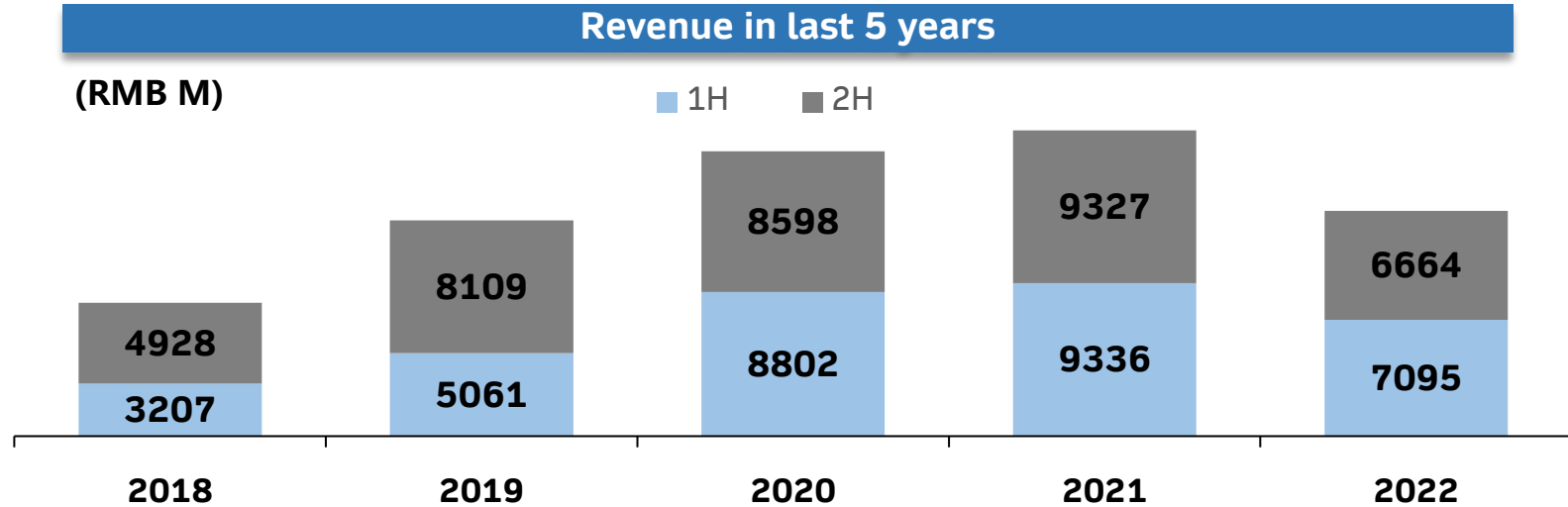
»» Financial Summary



RMB (K)	Annual		YoY Change	2H	1H	HoH Change
	2022	2021		2022	2022	
Phone CCM Sales Volume	417,259K	476,360K	-12.4%	205,891K	211,368K	-2.6%
Other Fields CCM Sales Volume	6,616K	2,970K	+122.7%	4,957K	1,659K	+198.8%
FPM Sales Volume	111,516K	114,582K	-2.7%	60,865K	50,651K	+20.2%
Revenue	13,759,170	18,662,626	-26.3%	6,664,383	7,094,787	-6.1%
Gross Profit	541,342	1,761,982	-69.3%	165,512	375,830	-56.0%
Gross Profit Margin	3.9%	9.4%	-5.5pts	2.5%	5.3%	-2.8pts
OPEX Ratio	4.5%	4.4%	+0.1pts	4.3%	4.8%	-0.5pts
Net Profit/Loss	170,230	862,846	-80.3%	4,700	165,530	-97.2%
Net Profit Margin	1.2%	4.6%	-3.4pts	0.1%	2.3%	-2.2pts
Basic EPS	14.5 cents	73.2 cents	-80.3%	0.5 cent	14.0 cents	-96.4%
Operating Cash Flow	1,048,352	1,596,214	-34.3%	647,939	400,413	+61.8%
ROE	3.6%	18.3%	-14.7pts	N/A	N/A	N/A



Financial Results Impacted by Economic Headwinds and Pandemic



During the Year, revenue was amounted to approx. RMB 13.76 billion, representing a decrease of approx. 26.3% YoY. It was mainly due to:

- 1) Under the impact of COVID-19 pandemic and the slowdown in global economic growth, the global smartphone market, especially high-end models, was in poor demand, and the sales volume of the camera modules (CCM) and fingerprint recognition modules (FPM) adopted in smartphone reported a YoY decline of approx. 12.4% and 2.7%, respectively
- 1) High-end mix of the CCM and FPM adopted in smartphone declined resulted in a YoY decline in ASP of the camera modules and fingerprint recognition modules of approximately 15.8% and 34.8%, respectively.

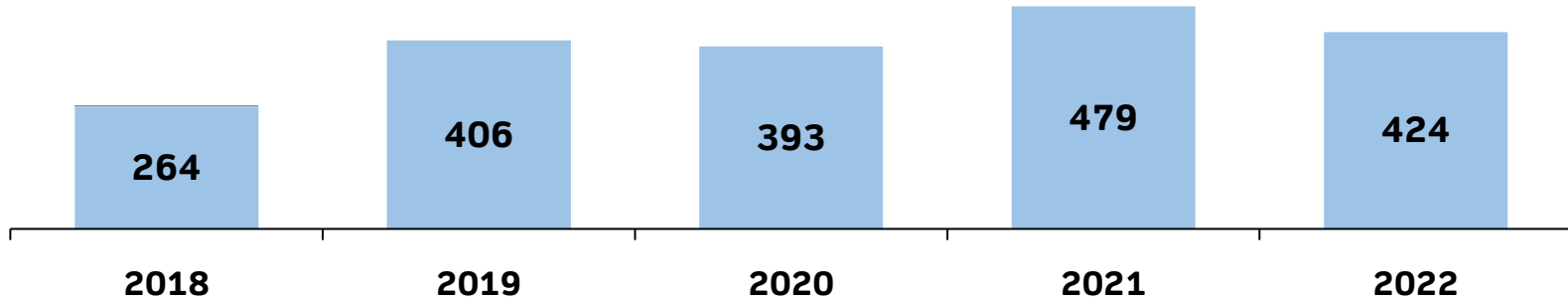


Sales Volume of CCM Declined due to the prolonged effect of COVID-19



CCM Sales Volume in last 5 years

(M pcs)



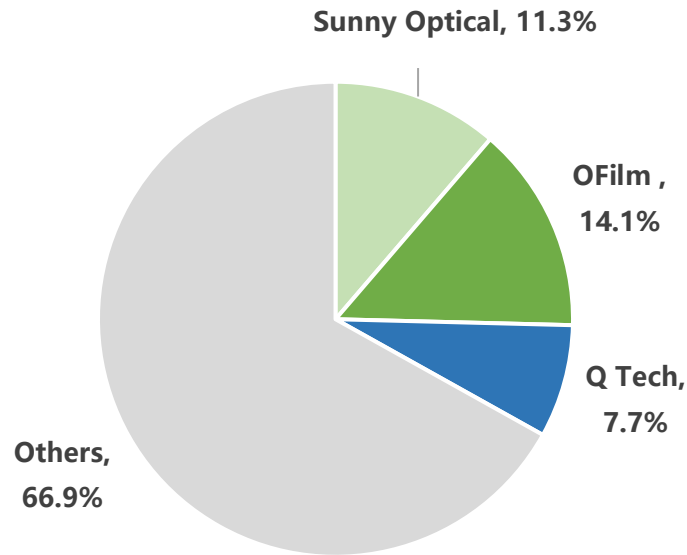
During the Year, Sales Volume of CCM was reported at 424 millions pcs, declined by 11.6% YoY. Among those, the IoT and Automotive CCM product segments, which are with strategic importance, grew 122.7% YoY.

The unstable macro factors and pessimistic forecasts for the economic outlook had a noticeable impact on demand for consumer discretionary products, including smartphones. According to the report from International Data Corporation (IDC), an independent third-party research institute, the global shipment of smartphones in 2022 was 1.2 billion units, being the lowest volume since 2013, with a decrease of 11% YoY, among which the Chinese market was hit particularly hard. The sales volume of smartphones in China in 2022 was only 286 million units (2021: 329 million units), representing a YoY decrease of 13%. It was the biggest drop in ten years and the first time since 2013 that the sales volume fell below 300 million units.

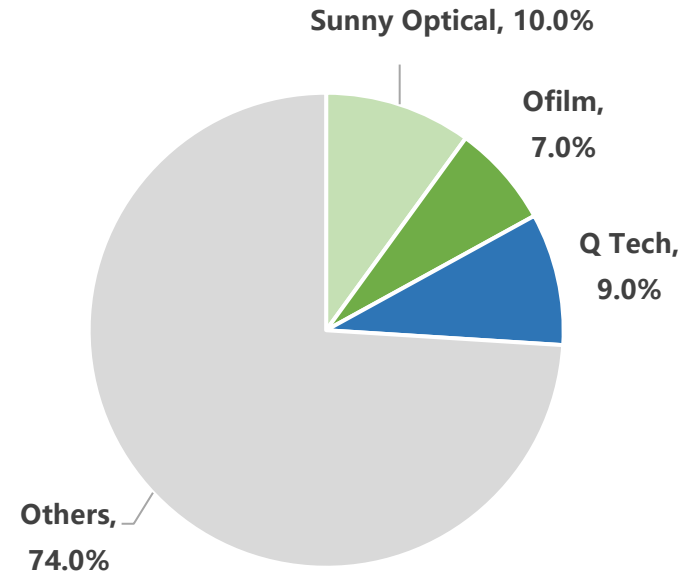
»» Share Gain in Smartphone CCM Market



Market Share of Smartphone CCM by Volume
(Source:TSR)



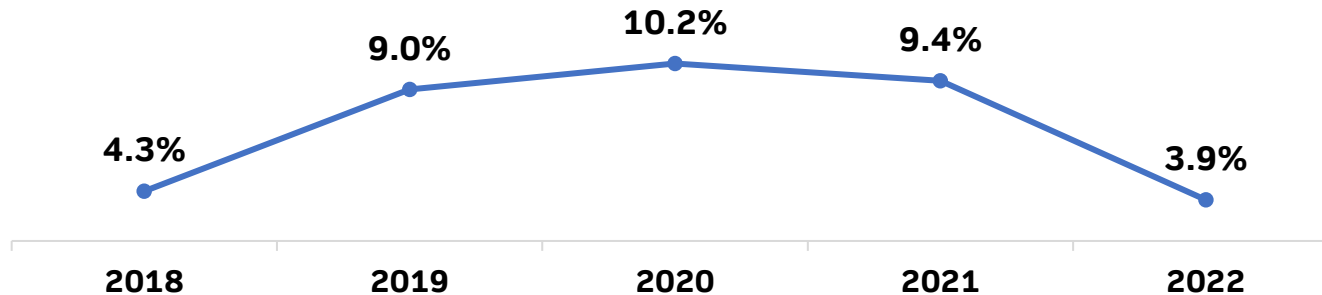
2H 2020



2H 2022

»» Gross Profit Margin Affected Temporarily

5 Years Gross Profit Margin Trend



During the Year, the GP margin of the Group was approx. 3.9% (2021: 9.4%). The decrease of GP margin was mainly due to:

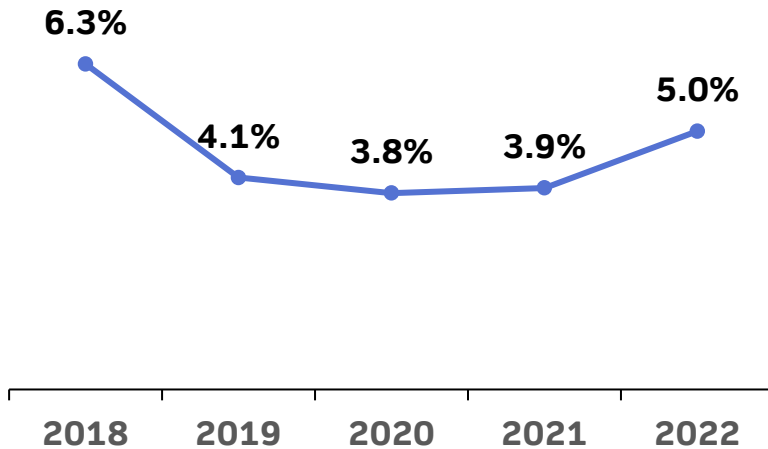
(i) the poor demand for CCM and FPM adopted in smartphone affected by macro factors and intensified market competition led to the squeezed ASP and profit margin (ii) the YoY decline in sales volume of CCM and FPM adopted in smartphone as well as the decline in proportion of high-end products resulted in a decrease in the production capacity utilization rate of the Group, which led to an increase in the unit manufacturing cost (iii) the IoT and automotive CCM businesses were still at a stage of market development, the production capacity utilization rate yet to be improved, which affected the average GP margin (iv) the exchange rate of RMB against USD fluctuated significantly during the Year, with the central parity rate adjusted from 6.3757 at the beginning of the Year to 6.9646 at the end of the Year, representing a depreciation of approximately 9.2%, resulting in a significant increase in the cost of materials imported and settled in USD, which led to a negative impact on GP margin.



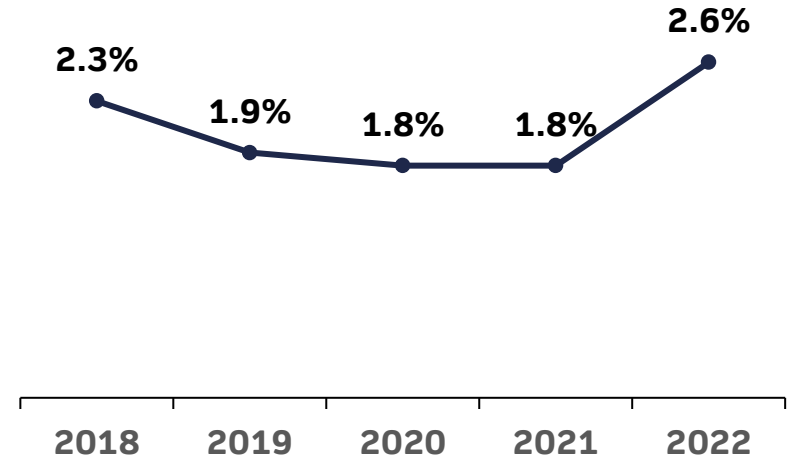
Low Production Capacity Utilization Rate pushed up unit manufacturing cost



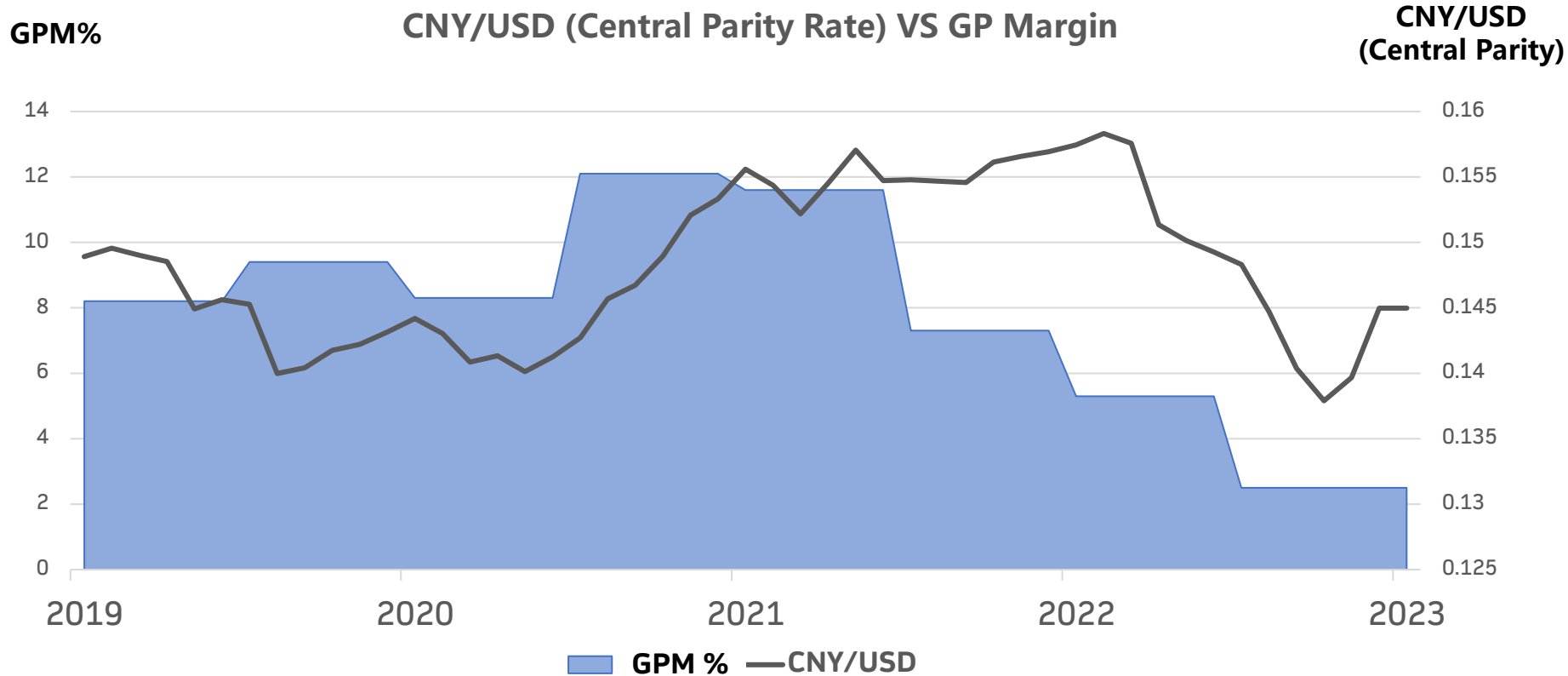
Direct Labour Cost/Revenue



Depreciation Cost/Revenue



»» CNY Depreciation Against USD Caused GP Margin Worsen

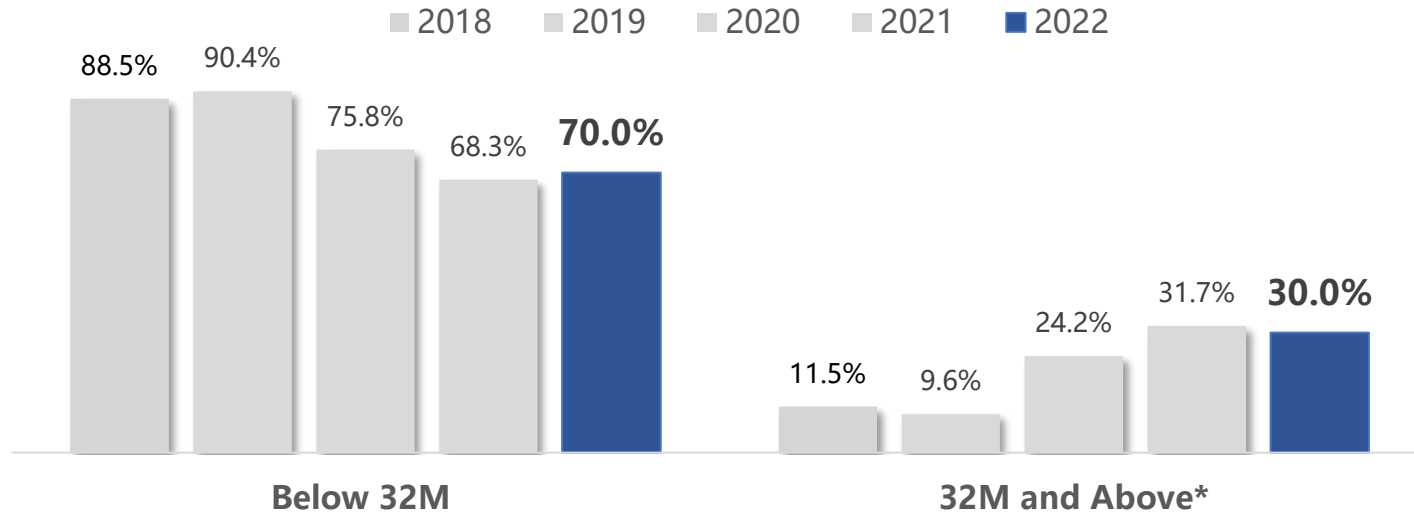


»» CCM Product Mix Temporarily Declined



CCM Product Mix

*Products include 32M megapixels and above's single-camera modules, dual/multi-camera modules, 3D modules, car camera modules, and other camera modules



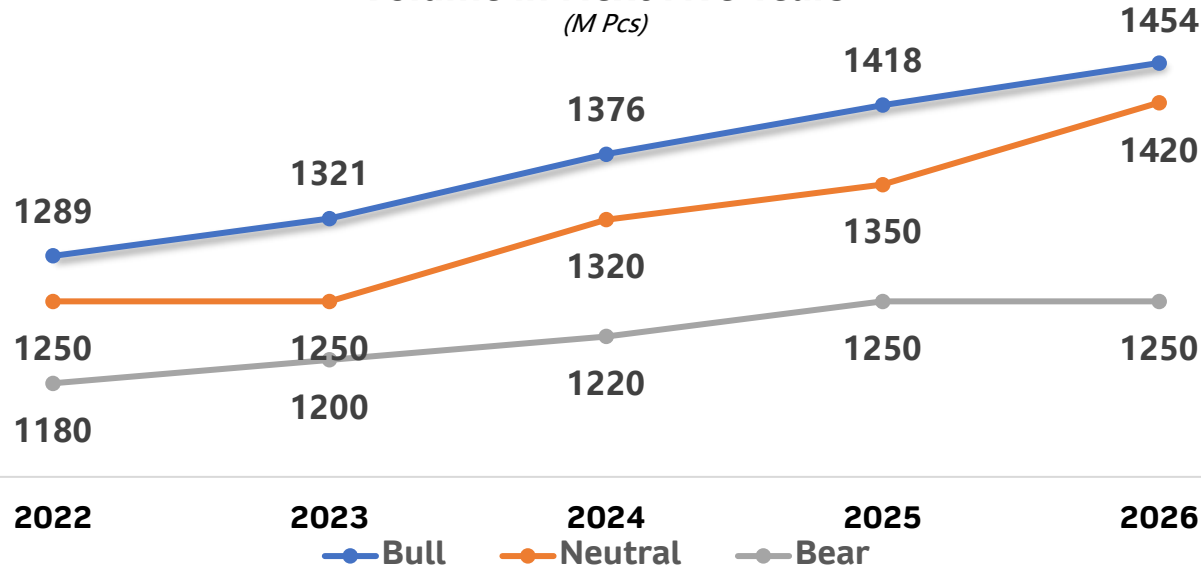
- CCM product mix declined slightly due to the temporarily pullback of China smartphone sales. A recovering growth is expected by the market.
- Business with one overseas big customer increased and the products procured are mainly below 32M as of 2022, though the product mix was improving.
- Sales volume of CCM in 2022 declined 11.6% YoY, lower than the decline of sales volume of China smartphone, implying a gain in market share.



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Three Growth Scenarios of Smartphone Sales Volume in Next Five Years

(M Pcs)



- **Bull case:** Sales volume of high-end smartphones rebound in China and product specs back to an upward trajectory from 2023.
- **Neutral case:** China domestic consumption improve gradually and high-end Android smartphone back to the proportion of 2020-2021.
- **Bear case:** Smartphone upgrades continue to slow down, the replacement cycle continues to lengthen, and the adoption of high-end CCM in low-end phone slowdown.

*Data extracted from independent third-party research, for reference only

»» Smartphone CCM Specs Upgrade Continues

1 + 3 + X

Front Facing

Mainstream

- Front-cam AF
- Miniature

Differentiation

- Under-Display (Large aperture)

Rear Wide Angle

Mainstream

- OIS wider adoption
- Large chip size
- Large aperture

Differentiation

- G+P
- Ultra-thin (Foldable)

Rear Ultra-wide

Mainstream

- Ultra wide angle
- Low distortion

Differentiation

- Fish-eye (> 150°)

Rear Tele Cam

Mainstream

- Large CIS & aperture Periscope
- Wider adoption of periscope

Differentiation

- Tele & Marco combo

Sensing

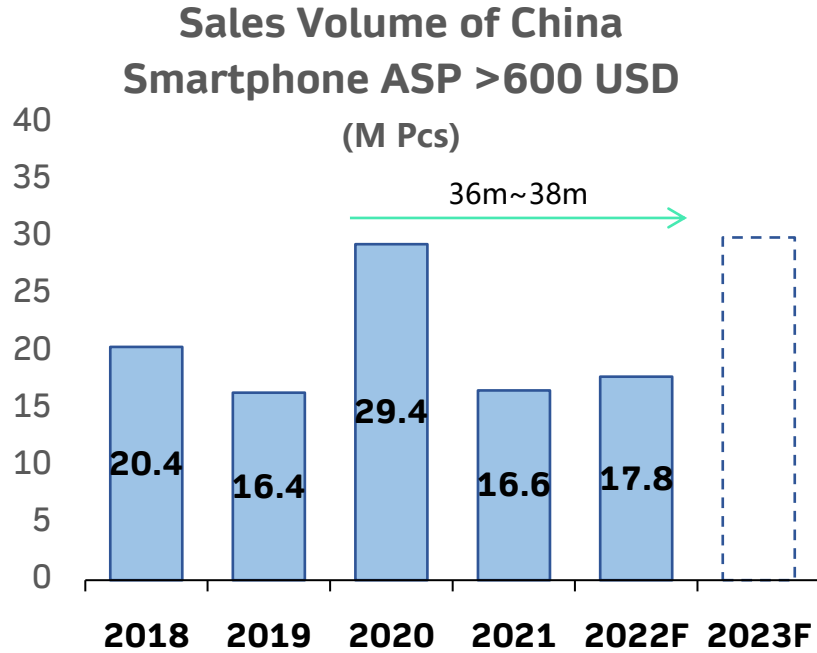
Mainstream

- iToF
- dToF

Differentiation

- Multispectral
- RGB+EVS

»» New Replacement Cycle for China High-end Smartphone could be Coming

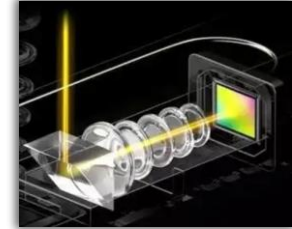


Replacement cycle of smartphone is around 36-38 months
Forecast: A new wave could be coming in next 12 months

Source: Counterpoint & IDC



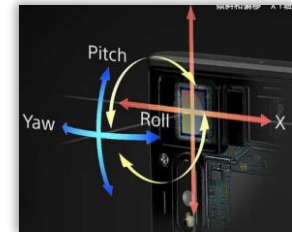
1 Inch CIS camera



Large chip size periscope



Changeable aperture

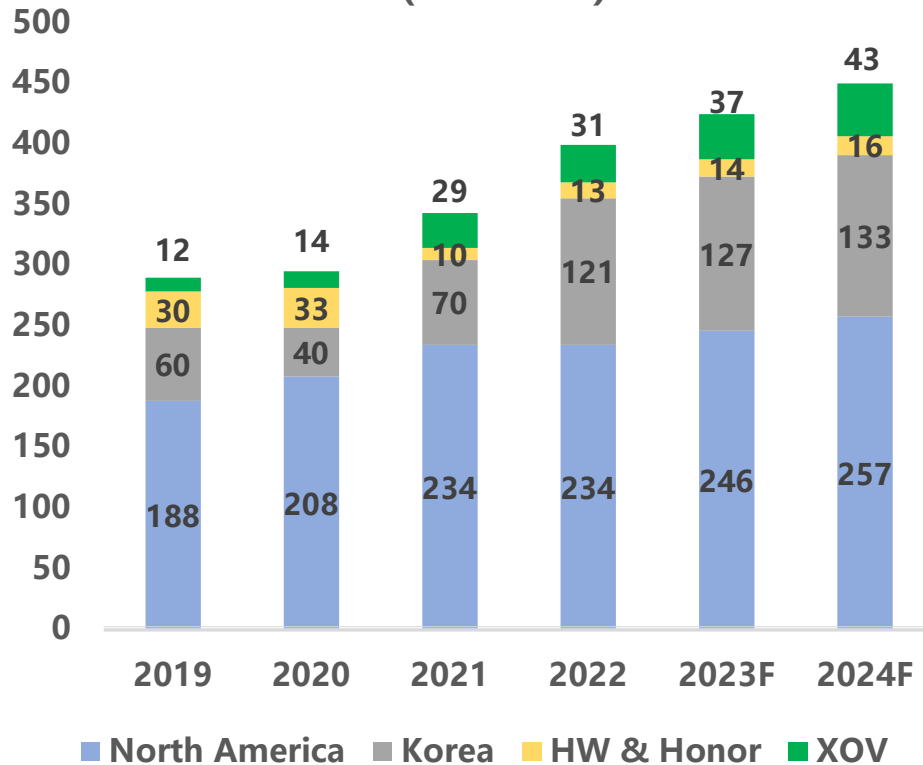


5-Axis OIS

Higher specs for next wave of high-end flagship model

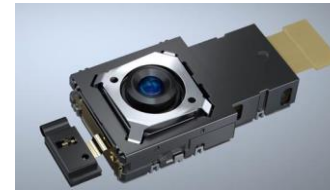
»» Opportunity for Short-to-Medium Term: OIS

Adoption rate of OIS in smartphone*
(Unit: KK)



- Apple and Samsung massively adopted OIS in their high-end models. Comparatively, domestic smartphone adoption rate is only around 10%.
- As more brands embedded OIS in their mid-to-high end new models, we expect the growth of OIS camera will grow steadily

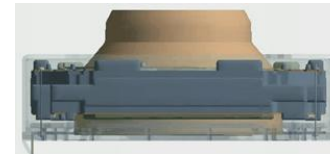
OIS capabilities of QTech



Micro Gimbal



Sensor Shift



Spring Type

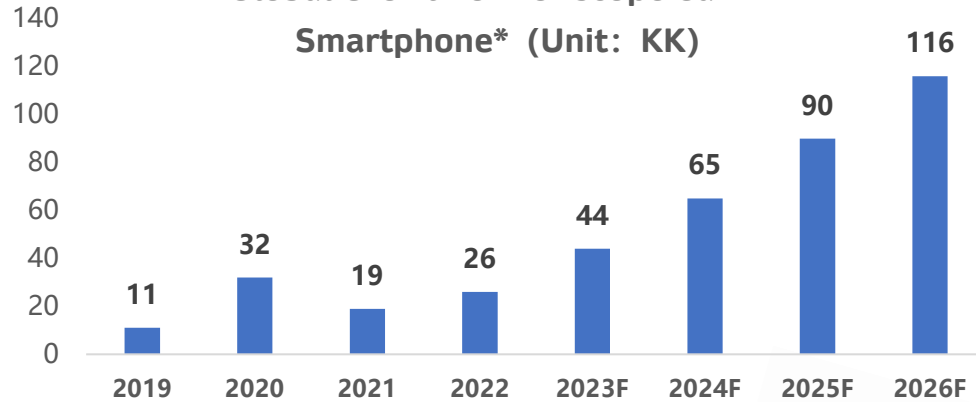


Ball Type

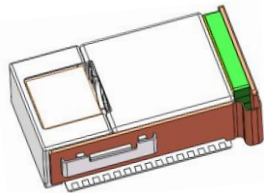
*Data extracted from independent third-party research, for reference only

»» Opportunity for Short-to-Medium Term: Periscope

Global Growth of Periscope Cam in Smartphone* (Unit: KK)



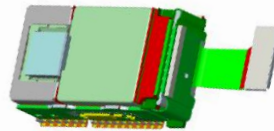
- Market expects iPhone will be installed with a large aperture miniature periscope camera in the 2023 new model
- Current ASP of a standard periscope camera is between RMB 80-120, which is an affordable cost for most flagship models
- Q Tech commenced production for 50M periscope camera for a famous brand in China in March 2023



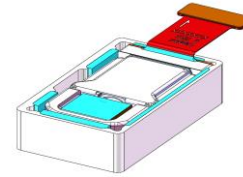
8M 1/4.4\" 5X
FNO:3.4
H=5.2mm



8M 1/3.6\" 10X
FNO:4.4
H=7mm



48M 1/2\" 5X
FNO:4.1
H=6.9mm



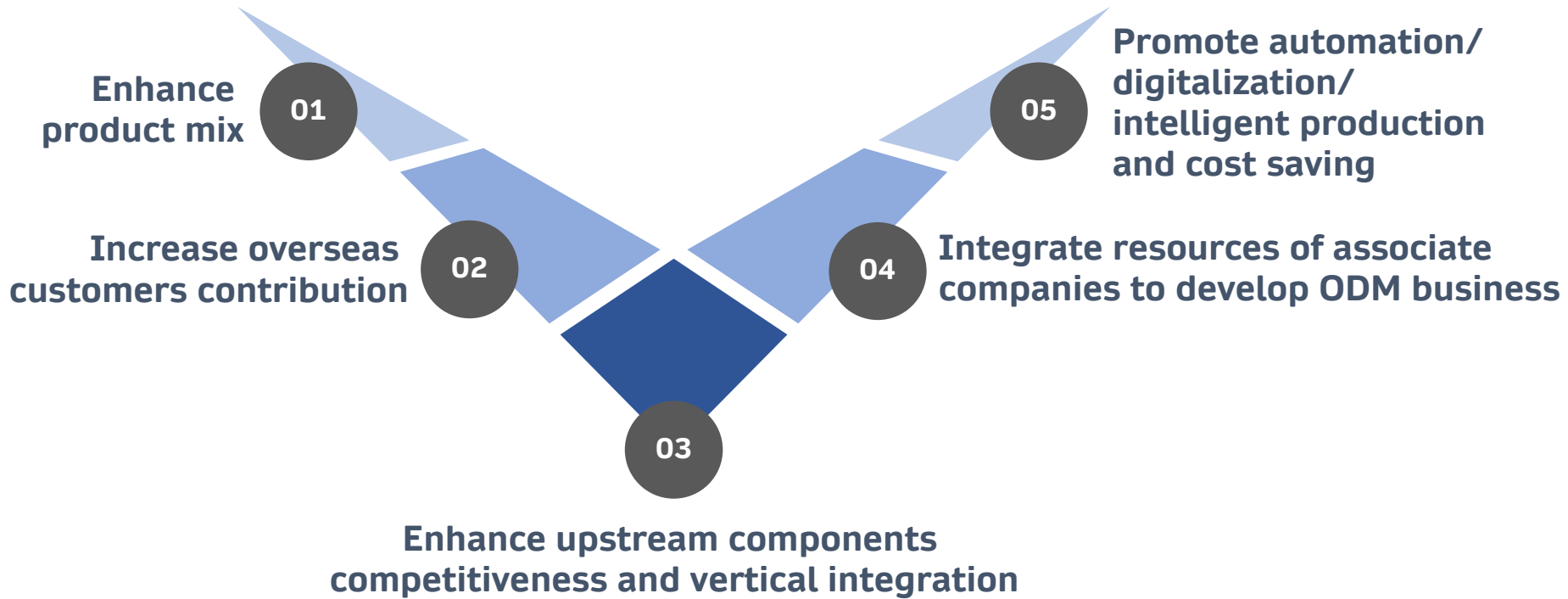
64M 1/2\" 3.5X
FNO:3.5
H=6.9mm

Q Tech promotes large CIS large aperture periscope camera



*Data extracted from independent third-party research, for reference only

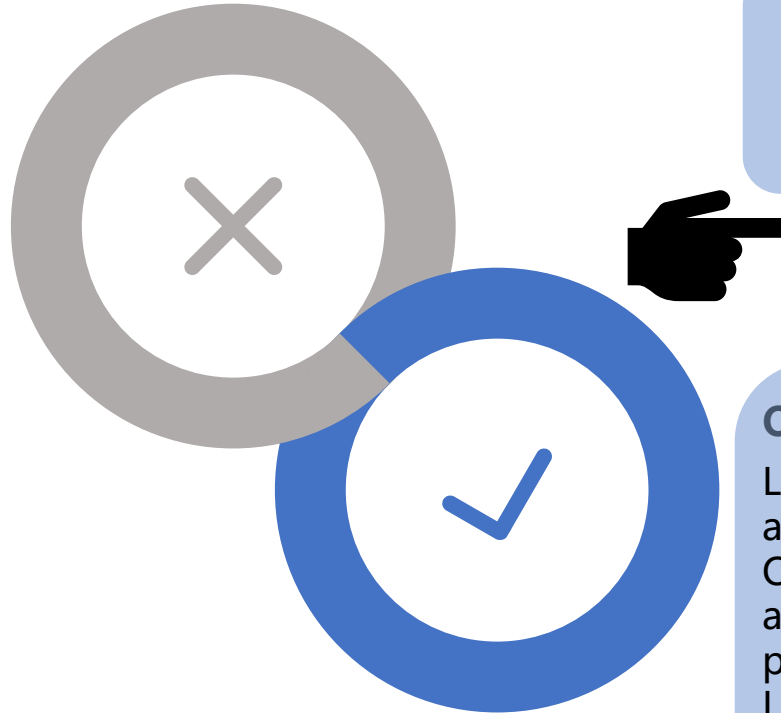
»» Smartphone CCM strategy for short-to-medium term



»» Strategic Position of Automotive CCM business: Tier-1.5

Tier-2 Model

Only manufacture hardware to Tier-1 on demand. Tier-1 is solely responsible for integrating the system with components and ship to carmakers



Goal: To replicate Q Tech market position of Smartphone CCM in Automotive CCM market

QTech Tier-1.5 Model

Leverage on the advantage in algorithm and module design, QTech will provide hardware and software integrated product of CCM, HUD and LiDAR to Tier-1 and they will integrate with system and ship to carmakers



1. Precise Positioning

Positioned as a Tier-1.5 in automotive CCM business, specializing in the manufacture of optical modules, serving the world's leading Tier-1 companies

3. Build Comparative Advantage

Leverage on the experience of scale production and design of smartphone CCM, we will take the lead in entering COB vehicle-mounted modules and use the advantages of latecomers to promote optical module products such as HUD and LiDAR with the latest technology

2. Product Technology Focus

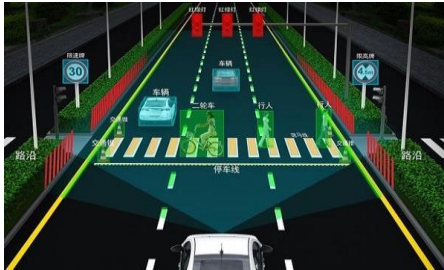
Relying on the company's accumulation in optical ,module, and algorithm technologies, focus on making optical modules

4. Multi-products per Vehicle & Vertical Integration

Promote CCM alongside with other optical module products such as LiDAR and HUD to increase the product content per vehicle

»» Target Multiple Optical Products per Vehicle

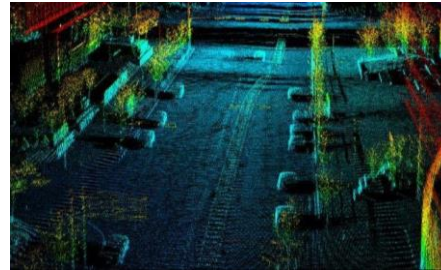
Automotive CCM



Identify human, object, line, signage, color, etc.
Critical sensor for Intelligent driving

- Qualified Customers >20
- Mass Production Projects >10
- Covered ADAS\AVM\In-Cabin

LiDAR



Strong sensing power, real time 3D map generation (high cost)

HUD (Head-up Display)

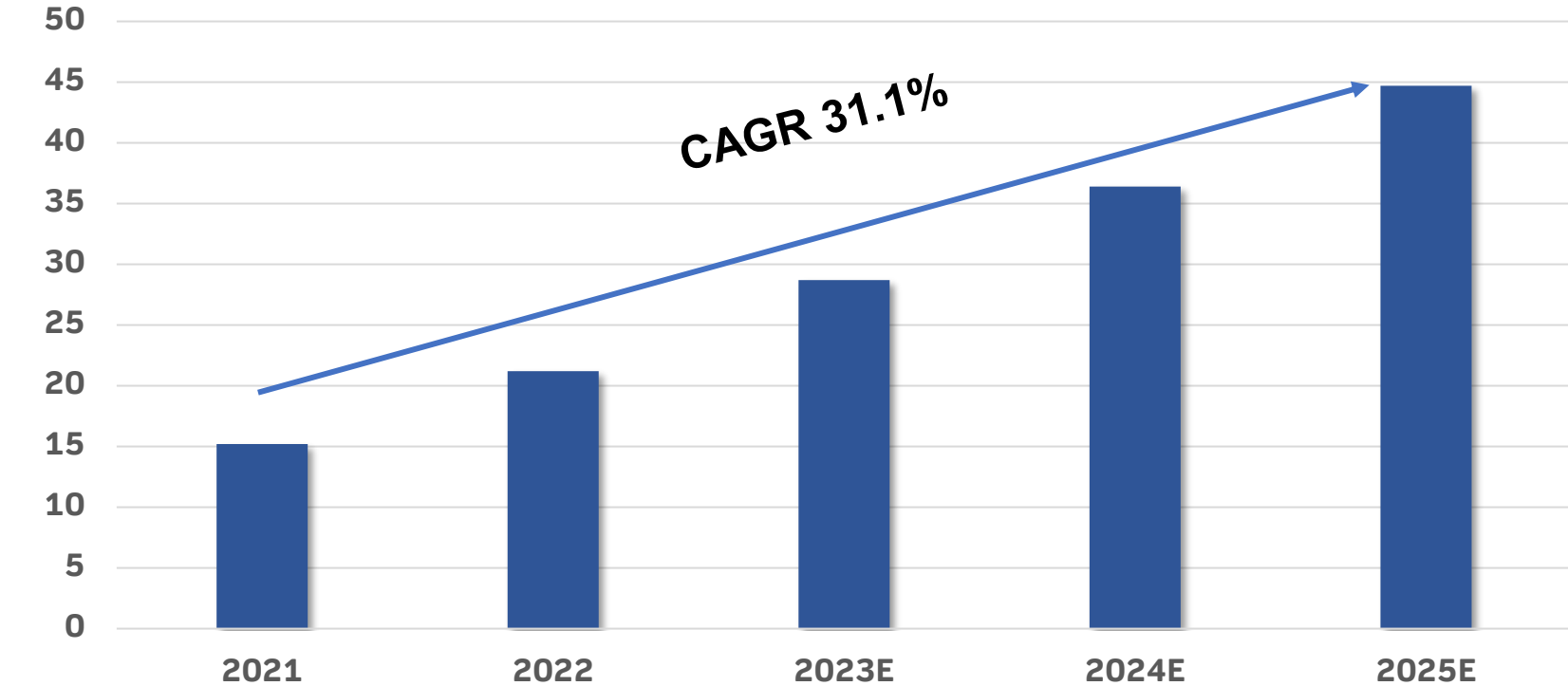


Using the principle of optical reflection, light ray is projected on the glass at the front of the driver's seat to achieve a floating display effect

»» Decent HUD Market Growth to Come

Growth Forecast of HUD Market (Global)

(RMB B)



*Data extracted from independent third-party research, for reference only

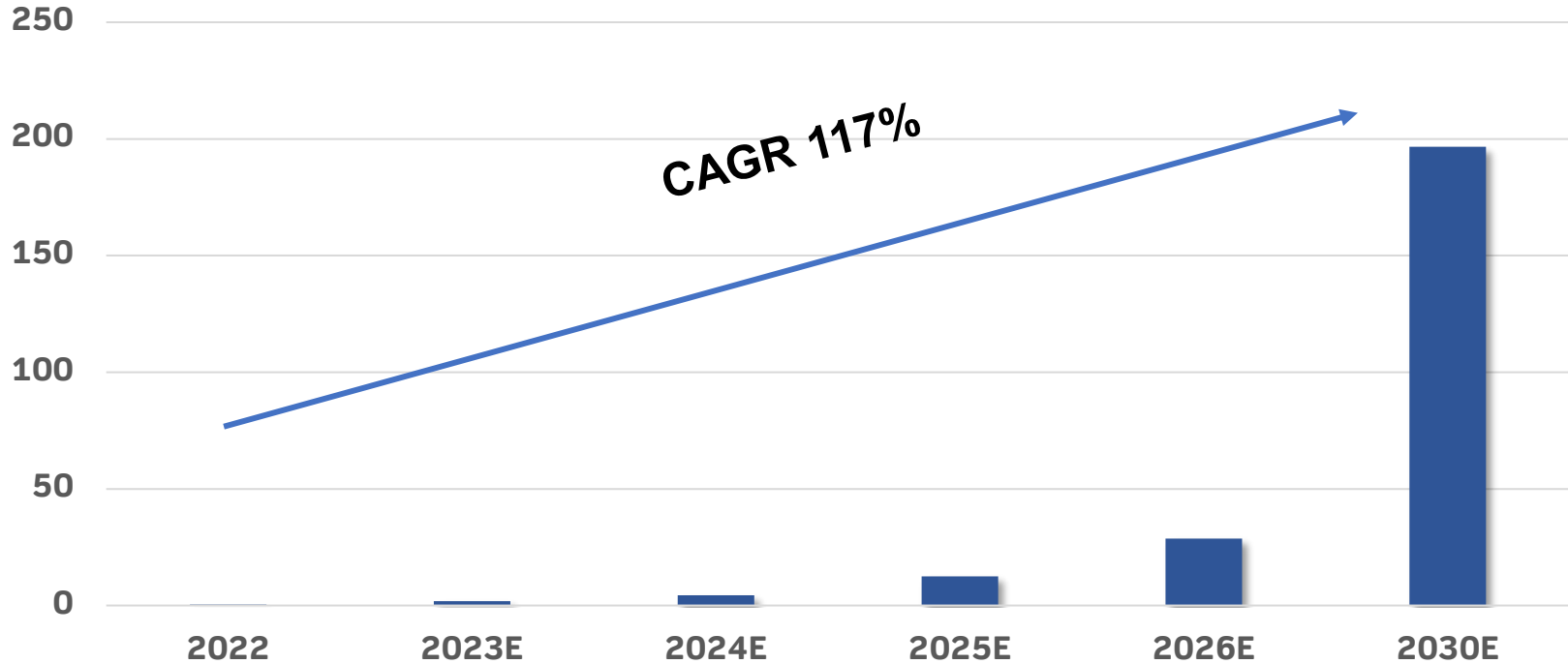
»» High Growth Potential of ADAS LiDAR Market



Growth Forecast of ADAS LiDAR (Global)

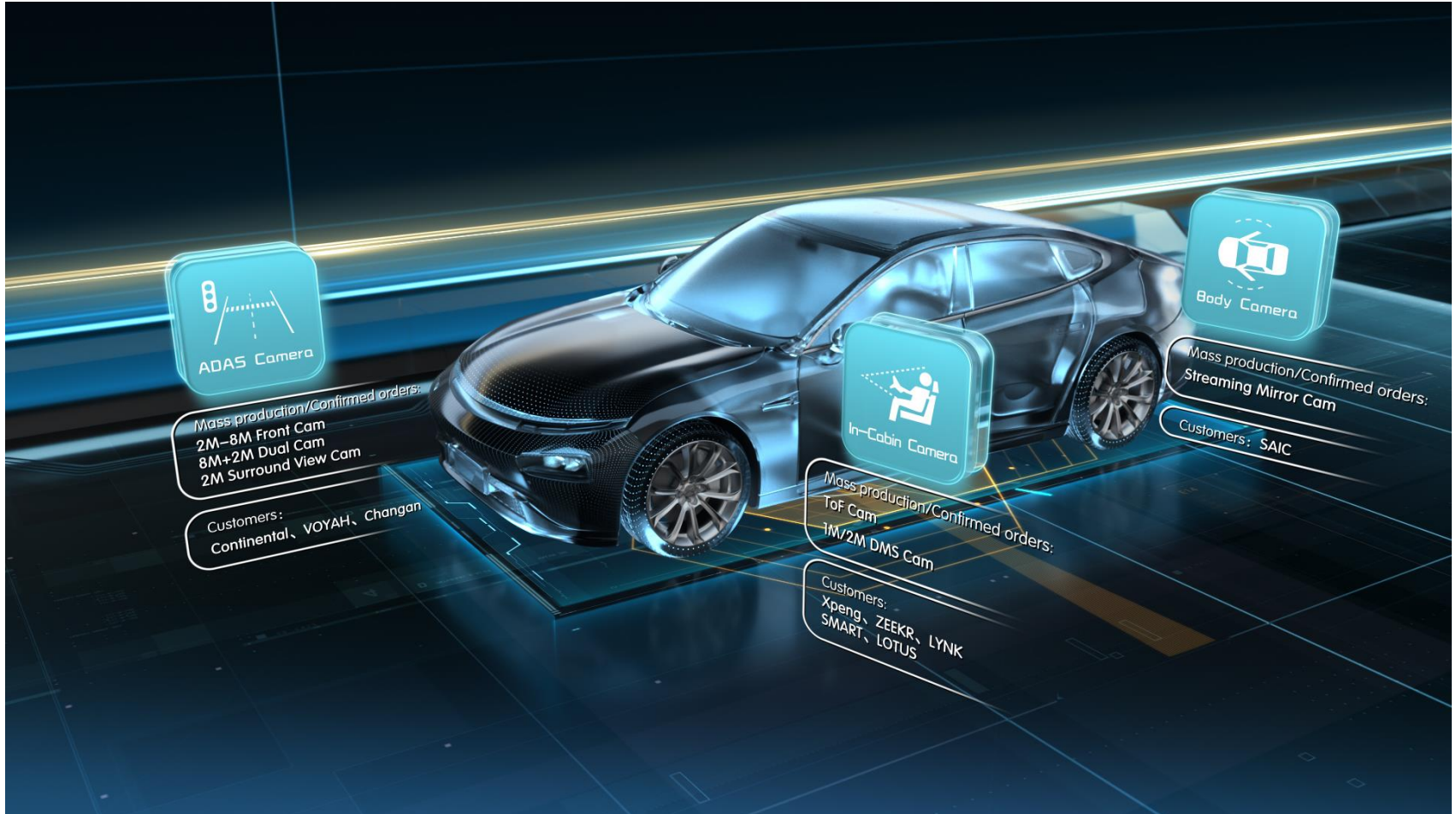
(Source :Frost & Sullivan)

Sales Volume
(M Pcs)



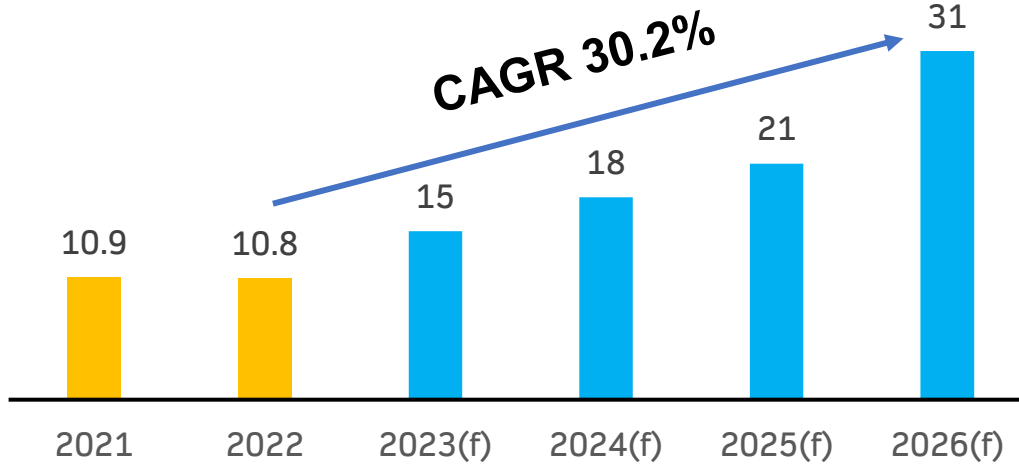
*Data extracted from independent third-party research, for reference only

»» Fully Cover Three Major Types of Vehicle CCM



»» Acceleration of VR Device Market Growth

Global VR Market Forecast* (M pcs)



- Affected by the marco-economy downturn, the total global shipments of VR headsets in 2022 was about 10.8 million units, a year-on-year decrease of 1%, CAGR of 2023-2026 reach 30.2%.
- 5 new devices launches in coming months: PICO 4, Meta Quest Pro & 3, Sony PSVR 2, DPVR E4, HTC Vive Pro2 (**QT products present in two of them**)

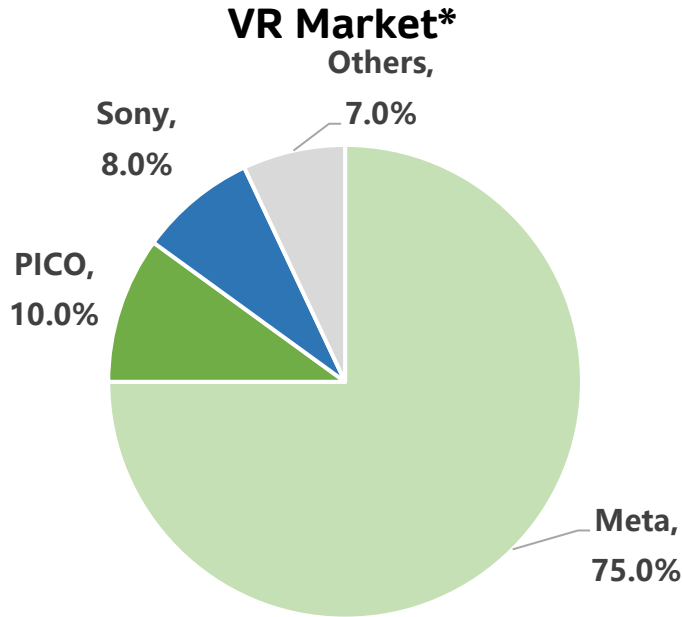


*Data extracted from independent third-party research, for reference only

»» Comprehensive Customers Strategy



Market Share Prediction of 2023



- **Highly competitive, overseas market leader is being catching up**
- **China brands emerged quickly and gaining market shares in domestic market**
- **Market expects Apple will launch the first MR product this year and trigger other handset brands to move forward.**

Category	QT Strategy
US and JP Customers	Overseas sales team is in place, multi-projects in discussion and target to ship small batches in the second half of 2023
Greater China Customers	Covering major VR brands in mainland China and Taiwan, including PICO, DPVR, HTC, iQiyi, etc. New products such as Pancake lens & eye tracking modules will mainly target this group of customers
Android Handset Brands	Benefiting from the long-term cooperative relationship, the sample delivery and new projects launches are smooth. Small batches are expected to be shipped in the second half of 2023

***Data extracted from independent third-party research, for reference only**

»» Camera Usage Per Device Surged

Meta: The Quest Pro adds eye tracking and face tracking modules makes the number of cameras increases from 4 to 10; the handle adopts self-tracking position function, and each equipped with 3 positioning cameras. A total of 16 cameras per set

PICO: Total number of PICO 4 installed cameras has been increased from 4 to 5, with a 16M RGB module added

Quest Pro

摄像头



单个手柄摄像头

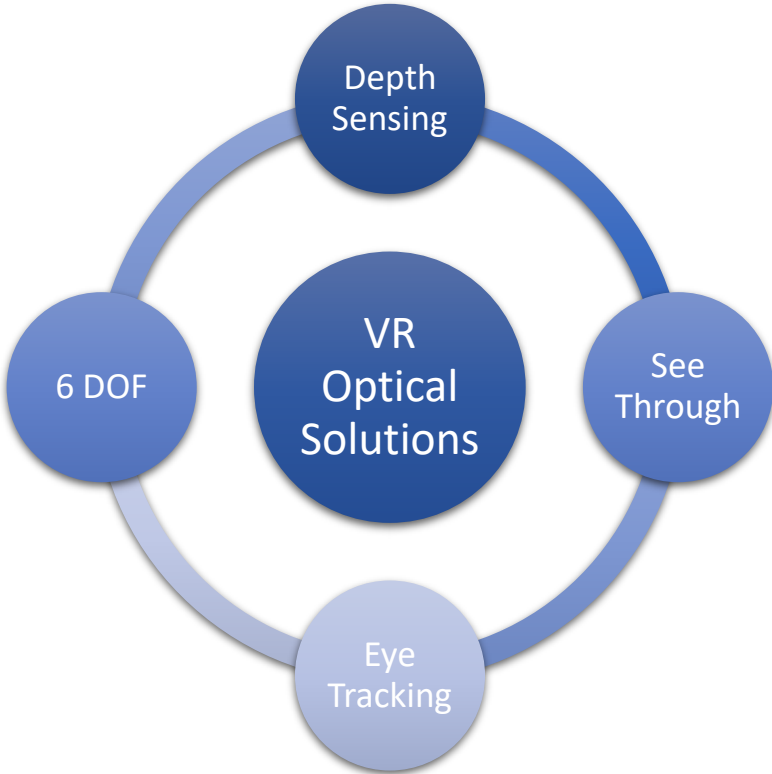


PICO 4

摄像头对比



»»» Functionalities of Various Cameras



- **Head Tracking (6 DoF):**

Function: Motion tracking and head tracking, head positioning and handle positioning

Specs: VGA to 1.3M IR Cam

Quantity per set : >4

- **Video See Through:**

Function: Video and image recording, surrounding information capturing for augmented reality

Specs: 8M to 32M RGB Cam

Quantity per set: 1-2

- **Depth Sensing:**

Function: Depth sensing, gesture control

Specs: ToF VGA+ Algorithm

Quantity per set: 1-2

- **Eye Tracking:**

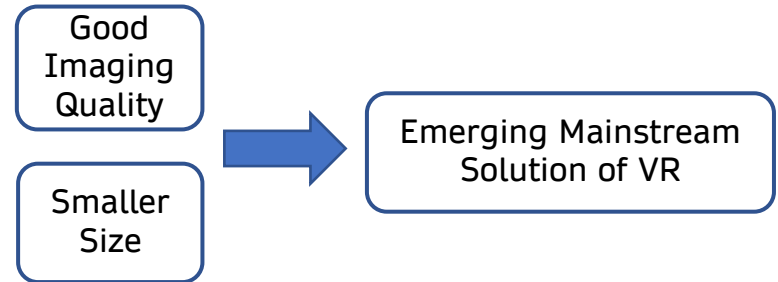
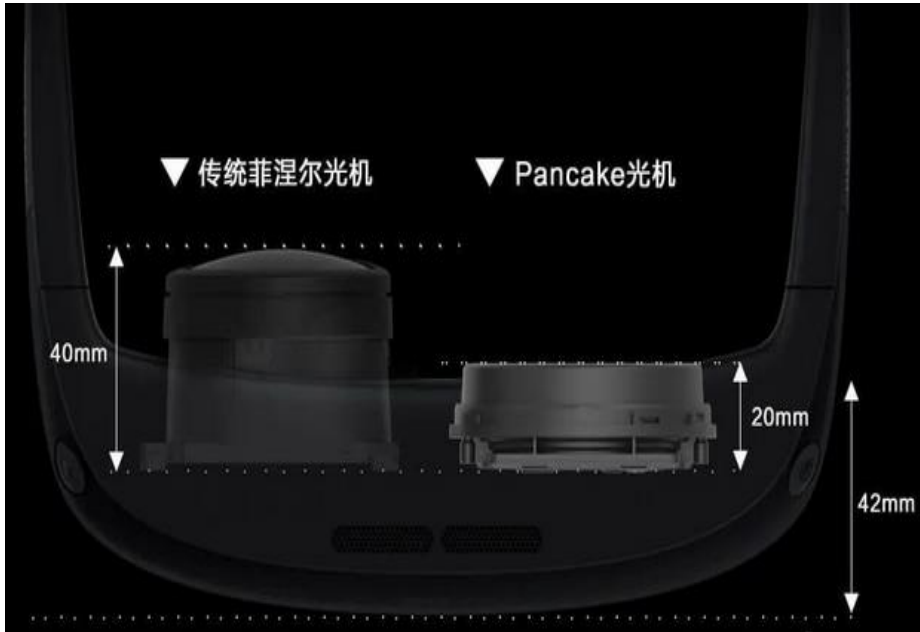
Function: Eye direction tracking to switch content feeding

Specs: VGA IR Cam + Algorithm

Quantity per set: 2-5

»» VR Pancake Lens Module Target Mass production in 2023

- Display module adopting Pancake Optomechanical Design. On the premise of the same optical path, the height of imaging unit is compressed.
- Pancake lens leverage on the properties of polarized light to fold the light path inside the lens to realize an ultra-thin imaging lens in VR
- **Q Tech self-developed 3P pancake lens module design has been well appreciated by customers and expected to commence production in 2023**



»» 2023 Operational Targets

Q Technology



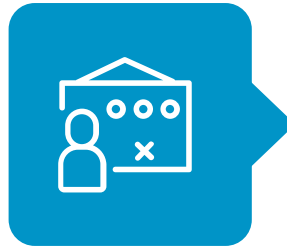
- Sales Volume of 32M and above CCM account for more than 35% of total CCM sales volume
- Growth of the sales volume of CCM for other fields not less than 50%



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»» Four Core Development Principles

New Process, New Technology, New Product
Driven by R&D and production innovation



Local and Overseas Production Bases

Steady expansion in production scale and product offering

Balance Strategy for Development and Risk
Optimize internal resource allocation and business structure



Vertical Integration

Leverage on the CCM product platform, accelerate integration of upstream and downstream supply chain to build the edge as total intelligent vision solution provider

ODM

Upstream Components R&D

Algo/System

Lens R&D

VCM R&D

FPCB R&D

Algorithm

System integration

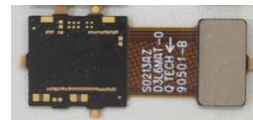
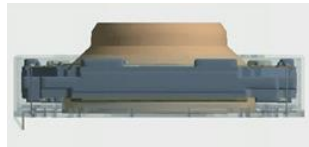
- ❑ 1G+6P, 1P+6P lens
- ❑ 5P/6P/7P RGB lens
- ❑ Periscope, tele, wide-angle
- ❑ 3D lens
- ❑ Pancake lens
- ❑ D-CUT, low reflection coating

- ❑ Open-loop OIS, close-loop OIS
- ❑ Periscope, Piezo, Sensor Shift, Sensor AF
- ❑ Open-loop, close-loop, central AF
- ❑ COP structural product

- ❑ Through hole plate, blind hole plate
- ❑ Nickel Palladium Gold Plate
- ❑ Rigid-flex board

- ❑ 3D Targeting
- ❑ RGBD merge
- ❑ AI recognition
- ❑ Cloud

- ❑ Semi-system integrated
- ❑ IoT system solution
- ❑ Total solution for consumer electronics



»» Core Capabilities of Q Tech



- 1) Competitiveness in CCM business
- 2) Strategic planning of upstream components
- 3) Systematic strategic planning capability

Core Values

**Management
Process:**
IPD, LTC

Technology:
Design/Knowhow/
Machinery/
Software/IT

Industrial 4.0

**Leading Global
Customers**



丘鈦科技(集團)有限公司

THANKS

给 机 器 带 来 光 明