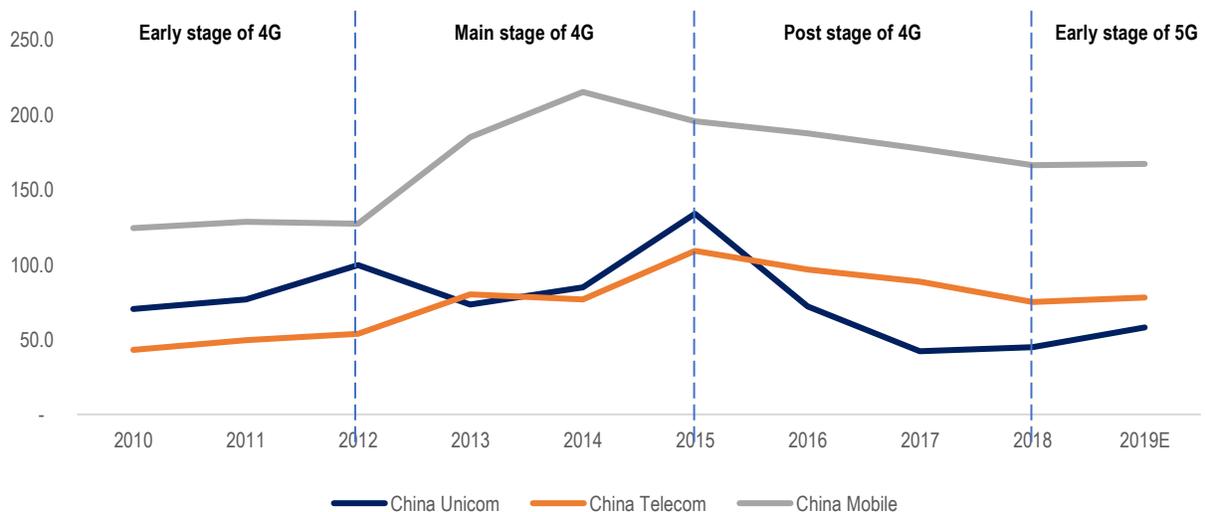




Telecom investment cycle of China

Figure 1: China Big3 telecom operators' capex cycle (RMB bn)



Source: Company data, AMTD Research

AMTD comments: On 6 Jun, MIIT officially released 5G license for commercial use in China. China Telecom, China Unicom, and China Mobile plans to invest about RMB9bn, RMB6.0-8.0bn, and no more than RMB17.2bn in 5G in 2019, respectively. Given the more complex use environment of 5G, we expect the larger investment scale of 5G in the following years. Downstream sectors, such as equipment manufacturing, telecom modules, and 5G applications/services will benefit successively. In China, telecom infrastructure investment is mainly carried out by Big 3 telecom operators. From the chart above, we can see that China 4G construction was started at around 2012 to 2013, and lasted for 3 years till 2015. After that, the total capex slowed down and the sector was entering post-4G era. With the 5G license announcement, the new round of construction has begun in China.

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News updates

6 Jun 2019

5G/Services

China

MIIT released 5G license for commercial use in China

On 6 Jun, the Chinese MIIT officially released the 5G license for commercial use to China Telecom, China Mobile, China Unicom and CBN. Last December, main carriers obtained 5G medium and low-frequency test frequency licenses, with the 3400MHz, 3500MHz, 2600MHz/4900MHz frequency bands for China Telecom, China Unicom, and China Mobile, respectively. The carriers planned to invest RMB32.2bn to 34.2bn in total on 5G this year. China Tower will participate in building 5G base stations. (Source: [Xinhuanet](#))

5 Jun 2019

AI

Huawei

Huawei acquired Vocord at \$50mn for facial recognition

According to Russia's media, Huawei had purchased Vocord, a Russian security tech company, at about \$50mn for its facial recognition engine. The transaction was reportedly completed in May through a Moscow-based joint venture of Huawei's Russian subsidiary and Huawei Digital Technology (HK). The joint venture will gain the intellectual property rights to Vocord's patents and equipment. (Source: [Sputnik](#))

4 Jun 2019

Semiconductor

Global semiconductor sales down 14.6% YoY in April

According to SIA, worldwide sales of semiconductors were \$32.1bn in April 2019, down 14.6% YoY and down 0.4% MoM. Regionally, sales increased slightly MoM in Japan (2.5%) and China (1.8%), but decreased in Europe (-1.2%), Asia Pacific/All Other (-2.0%), and the Americas (-3.0%). On a year-to-year basis, sales were down across all regional markets: Europe (-8.0%), Asia Pacific/All Other (-10.7%), China (-10.9%), Japan (-10.9%), and the Americas (-29.5%). (Source: [SIA](#))

4 Jun 2019

Internet

Google, Facebook, Apple, Amazon facing US anti-trust probes

The U.S. government is preparing anti-trust probes into the four tech giants, with Amazon and Facebook under the watch of the FTC, and Apple and Google under the Justice Department. The two agencies will decide on whether to start formal investigations later on, which may cost time, as a previous FTC probe of Google took over two years. The move comes as politicians face increasing pressure to apply tougher regulation on those tech giants, and even break up the companies because they have too much power and are harming users and business rivals. (Source: [Reuters](#))

4 Jun 2019

Smartphone

Apple

Apple unveiled software updates and new devices at WWDC 2019

At WWDC 2019, Apple announced a slew of software updates for its ecosystem devices, including the iPhone, iPad, Mac desktops and laptops, Apple TV, and Apple Watch, and showed off its new Mac Pro, a powerful computing device that hasn't been updated the design since 2013. (Source: [Engadget](#))

AMTD comments: The highlights from WWDC this year are the latest update to iOS, and new watchOS, iPadOS, tvOS and macOS. The Apple Watch will get its own app store and will allow it to run more independently from iPhone. The iPad will have its own OS to maximize the user experience. All of these software upgrades will meaningfully contribute to the App Store growth, in our view, reinforcing its strategy shift to the services company.

4 Jun 2019

Infineon to buy Cypress Semiconductors for €9bn

Semiconductor

Infineon

Cypress

Germany's chipmaker Infineon Technologies has agreed to buy US rival Cypress Semiconductor for €9bn (US\$10.1bn). Infineon would pay US\$23.85 per Cypress share, representing a 46% premium to the target company's 30-day average price. This transaction will bring growth potential for Infineon in automotive, industrial and IoT sectors. The deal also needs to be approved by the regulators. (Source: [FT](#))

4 Jun 2019

Samsung teamed up with AMD to bring Radeon to smartphones

Semiconductor

Samsung

AMD

AMD and Samsung announced a multi-year strategic partnership in ultra-low power, high-performance mobile graphics IP based on AMD Radeon graphics technologies. As part of the partnership, Samsung will license AMD graphics IP and will focus on advanced graphics technologies and solutions that are critical for enhancing innovation across mobile applications including smartphones. (Source: [Techradar](#))

AMTD comments: This strategic cooperation will help AMD promote high-performance Radeon graphics cards to the mobile market, extending its user base and ecosystem of graphics cards, in our view.

3 Jun 2019

Google to invest €600mn each in data center in both of Belgium and Finland

Cloud/laaS

Alphabet

Google will spend €600mn (US\$670mn) building a fourth data center in Saint-Ghislain, Belgium, and construction is expected to finish in 2021. Last week, Google also announced to invest another €600mn (US\$670mn) in a new data center in Hamina, Finland, amid a push by its parent Alphabet Inc. to invest heavily in servers and feed demand for faster access to files and media. Google currently has 58 data centers around the world, and has invested more than €4.3bn in five such facilities since 2007 in Europe. (Source: [Reuters](#))

AMTD comments: in 2018, Alphabet total Capex amounted to US\$25bn, of which US\$9bn was spent on Information Technology Assets, including data center. The company will continue to invest heavily in this area and announced a US\$13bn data center building program across the US during 2019.

3 Jun 2019

Japan to establish 5G base stations on 200,000 traffic signals

5G/Infrastructure

Japan

Japan government may allow its four major carriers to set up 5G base stations on 200,000 traffic signals to create "trusted mesh networks" in a cost and time efficient way. The four companies, NTT Docomo, KDDI, SoftBank and Rakuten, will invest about 1.6tn yen (US\$14.8bn) in total over five years through FY2024. The plan, included in a draft IT strategy blueprint, was expected to be approved by mid-June. (Source: [NikkeiAsianReview](#))

3 Jun 2019

Huami to collaborate with Qualcomm to launch smart wearables

Cloud/IoT

Xiaomi

Qualcomm

Qualcomm and Huami, the sole partner of Xiaomi wearables, have reached cooperation in smart wearable products. The new AMAZFIT product of Huami, to be launched on 11 June, will integrate Qualcomm Snapdragon mobile platform and support the full-network eSIM independent call function. This is the first Huami's wearable device with 4G connection. (Source: [GizChina](#))

30 May 2019

Cloud/IoT

Amazon

Developers in the UK and Germany can now monetize Alexa skills

In-skill purchasing (ISP) is now generally available for Alexa skills published in Germany and the UK. ISP enables Alexa skill developers and content creators to make money by selling premium content that enriches the voice experience. (Source: [Amazon](#))

AMTD comments: when voice has become a new traffic portal for the Internet, smart speakers are now playing a very important role in e-commerce. Amazon has precisely positioned the relationship between devices and services, at the same time, developed an open voice platform – Alexa, to empower the devices to handle more diversified demand. According to the company, Amazon Alexa now has over 50,000 skills, working with 20,000 devices, used by 3,500 brands. Monetizing Alexa skills will motivate skill developers and further drive business growth for both device makers and e-commerce.

31 May 2019

Module

Ethernet switch and router trackers markets surged 1Q19

According to IDC, in 1Q19, the Ethernet switch market (Layer 2/3) revenue reached \$6.8bn, +7.8% YoY, while total enterprise and service provider router market arrived at \$3.6bn, +8.2% YoY. In terms of region, the Asia/Pacific (excl. Japan) Ethernet market grew by 8.6% YoY, in particular, China and Taiwan grew strongly by 11.7% and 15.3% YoY, respectively. For routers, the major service provider segment accounted for 75.3% of revenues, +7.1%, and enterprise segment grew by 11.9%. (Source: [IDC](#))

30 May 2019

Cloud/IoT

Baidu

Baidu Cloud unveiled 9 products to its IoT ecosystem

At ABC Summit 2019, Baidu Cloud unveiled a brand-new upgrade for its TianGong IoT Service Platform and another 9 new products on its IoT ecosystem. The company said the new generation of intelligent IoT platform covered three aspects: 1) combination of edge and cloud computing; 2) breakthroughs in the dimensions of time and space; 3) intelligent data application within specific scenarios. The new launches included intelligent edge BIE 2.0, three types of IoT intelligent edge hardware, space-based map service, freight path planning, intelligent scheduling ROS, and industry solution of its Xiaodu Smart Speaker. (Source: [Sina](#))

30 May 2019

Module

TCL

TCL to start mass production of flexible AMOLED products in 4Q19

TCL Group said its LTPS-AMOLED flexible production line in Wuhan had commenced operation, with a planned production capacity of 45K per month. TCL had also reached an agreement with some top-class phone manufacturers and the mass production of its flexible AMOLED products is expected in 4Q19. The management believed that TCL's Huaxing Optoelectronics will achieve double-digit growth in annual sales and profit. (Source: [GizChina](#))

29 May 2019

Semiconductor

MediaTek

MTK announced the first 7nm 5G SoC

In Computex, MTK unveiled an unnamed new SoC with an integrated 5G modem, to power the first wave of high-end 5G phones. It would feature ARM's latest Cortex-A77 CPU and new Mali-G77 GPU IP, both announced two days ago. The chipset was built on TSMC's new 7nm process-node, and integrated MTK's own Helio M70 modem IP. The chip will start sampling by 3Q19 and volume shipment is likely to be in late 2020. (Source: [AnandTech](#))

AMTD comments: MTK aims to tap into the premium market again with this newly announced 5G chip after its previous premium Helio X30 chip failed to attract significant takers.

29 May 2019

Qualcomm released Snapdragon XR Smart Viewer Reference design

Module

Qualcomm

Ahead of AWE 2019, Qualcomm unveiled a new Qualcomm Snapdragon XR Smart Viewer Reference Design to help hardware companies to create lightweight augmented reality glasses. The design is built on Qualcomm Snapdragon XR1, and has the following features: movement tracking, hand tracking, eye tracking, six-degrees of freedom controllers, display, and standalone mode. It would support both AR and VR contents and could be controlled via PC or a smartphone. (Source: [Qualcomm](#))

29 May 2019

Telstra rolled out Australia's first 5G service

5G/Services

Australia

Telstra, the largest mobile carrier in Australia, launched 5G wireless networks service and released a 5G smartphone from Samsung Electronics on May 28, ahead of the original schedule of March 2020. Telstra is rolling out 5G service initially in parts of 10 cities, including Sydney, and the number would be increased to 35 in 2020. The price of a 5G plan offering 160 gigabytes of data and unlimited calling is AUD\$154 per month, including a Samsung Galaxy S10 handset. (Source: [NikkeiAsianReview](#))

27 May 2019

Alibaba invested RMB3.6bn in China TransInfo

Cloud/IoT

Alibaba

China TransInfo (CTFO) announced that Alibaba acquired a 15% stake in the company at RMB16.12 per share with a total consideration of RMB3.6bn. After that, Alibaba became the second largest shareholder of the company. The two parties will work together to accelerate the mass deployment of intelligent public transport solutions and cloud-based services for public security over the next three years. (Source: [CTFO](#))

AMTD comments: Ali Cloud launched "ET City Brain 2.0" in Hangzhou last September. With the strategic investment in China TransInfo, Ali Cloud now can promote the "cloud + edge + end" full link solution in smart transportation area.

27 May 2019

AMD revealed 7nm Radeon RX 5700 series 'Navi' GPU

Semiconductor

AMD

In Computex 2019 in Taipei, AMD revealed the 7nm Navi Radeon GPU range, starting with the RX 5700 and a brand-new RDNA 7nm architecture. Compared with RX Vega, AMD said Navi will offer 25% better performance per clock and 1.5x performance per watt. AMD looks to be targeting Nvidia's RTX 2070 with their Navi cards. Per a demo, they showed an RX 5700 outperforming the RTX 2070 by 10%. (Source: [Forbes](#))

AMTD comments: AMD has been working with Google to supply Radeon technology in the gaming cloud since 2016. We believe AMD will benefit from gaming cloud growth.

27 May 2019

RaonTech developed 0.37-Inch LCoS micro-display

Module

RaonTech

RaonTech, an AR (Augmented Reality) and VR (Virtual Reality) display manufacturer, developed a new 0.37" full HD (1080P) LCoS micro-display to target various wearable device markets, such as AR/VR/MR smart glasses, HMD, HUD, and projectors. It is suitable for wearable devices as it reduces battery consumption through low-power technology. (Source: [ETNews](#))

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We, Brian Li and Michelle Li, hereby certify that (i) all of the views expressed in this research report reflect accurately our personal views about the subject companies and their securities; and (ii) no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed by us in this research report, nor is it tied to any specific investment banking transactions performed by AMTD Global Markets Limited.

As of the date the report is published, Brian Li holds financial interest in the securities of Amazon mentioned in the report.

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