China Mobile Hong Kong ushers in a whole new era with its 5G technology

The telecom giant is well poised to introduce innovative 5G services to improve all facets of our lives

中國移動香港憑藉其 5G 技術開創電訊新世代

電訊巨擘蓄勢待發以其創新 5G 服務為人們帶來更優質生活

Interviewed by: Mr. Sutton Cheung
採訪者：張悅賓先生

Mr. Sean Lee 李帆風先生
Director and Chief Executive Officer China Mobile Hong Kong Co. Ltd.
董事兼行政總裁 中國移動香港有限公司

China Mobile Hong Kong (CMHK) is a leading telecommunications operator that provides a wide array of services, including mobile services, home broadband services, cloud services and data centres services, to enrich end-user experience and the betterment of our daily lives.

In order to support Smart City development and foster innovation in Hong Kong, particularly on 5G & IoT technologies, CMHK has been collaborating with Hong Kong Applied Science and Technology Research Institute (ASTRI) and Hong Kong Science and Technology Parks Corporation (HKSTP) on 5G technology and projects such as applications of AR/VR in entertainment and education, high-security authentication systems in payment services. CMHK has been awarded as the Hong Kong International Airport 5G Infrastructure contractor.

As Hong Kong's first mobile operator to rollout 5G services in April 2020, CMHK is committed to presenting a superior and unparalleled 5G network experience to its customers leveraging its leading 5G technology and abundant spectrum resources. Meanwhile, CMHK has launched a 5G Cloud gaming service called ^UGAME^ which will enable high-quality gaming without the need for downloads. Players can easily access the games via cloud services to eliminate localised storage, while devices can be linked to HDTV with latency within milliseconds.

5G is revolutionising telecommunication

Sean Lee, Director and CEO of China Mobile Hong Kong, believes that the launch of 5G marks a powerful shift in the telecom industry. 3G revolves around people, 4G revolves around people and information, and now, 5G revolves around machine-to-machine communication. Lee regards 5G as a vital part of the fourth industrial revolution, and the connections enabled by 5G are like nerve endings, with massive numbers of connections, super speed, and ultra-low latency. The advantages of 5G will benefit a number of industries, including entertainment, education, health, and security.

中國移動香港（CMHK）是一家領先市場的電訊營運商，提供廣泛及多元化服務，包括流動通訊服務、家居寬頻、雲端服務及數據中心服務等，藉此豐富用戶的體驗，為人們帶來更優質的生活。

為了促進智慧城市發展及香港科技創新，尤其是在 5G 及 IoT 技術方面的應用，CMHK 積極與香港應用科技研究院（應科院）和香港科技園（HKSTP）攜手合作，進行各項 5G 技術及項目研發，例如 AR/VR 在娛樂和教育上的應用，以及高安全性認證的支付服務。CMHK 更被香港機場管理局選為香港國際機場 5G 基建的營運商。

於 2020 年 4 月，CMHK 成為香港首家推出 5G 流動通訊服務的電訊營運商，CMHK 充分利用其領先的 5G 技術及豐富的頻譜資源，致力為客戶提供超卓的 5G 網絡體驗。同時，CMHK 更推出 5G 雲端遊戲服務 - UGAME，玩家只需連接至雲端平台即可隨時暢玩遊戲，不但不受裝置容量限制，更可將終端連接至 HDTV 屏幕，輕鬆體驗高清、流暢的高質雲端遊戲。

5G 正在顛覆電訊業

中國移動香港有限公司董事兼行政總裁李帆風先生認為，5G 的推出標誌著電訊業的一個革命性轉變。過往，3G 以人為導向，4G 以人和訊息為導向，如今，5G 則是以機器對機器的通訊為導向。李先生指出 5G 是第四次工業革命的重要部分，由 5G 支援的連接就如同神經末梢一樣，具有龐大數量的連接，並且具備超高速和超低時延的特性。5G 技術將會惠及眾多行業，包括娛樂、教育、醫療和保安等。

Lee notes that 5G connects devices like never before by eliminating the undesirable aspects of both Bluetooth and Wi-Fi. Bluetooth is restrained to devices in close physical proximity, while Wi-Fi only allows devices to be connected within a given area. Multiple overlapping Wi-Fi networks create interference, making it difficult to maximise and stabilise overall connectivity. Alternatively, 5G stabilises connections within a given area, thereby allowing devices to be connected regardless of physical location. And its ability to access data gives rise to many initiatives, including CMHK's Artificial Intelligence as a Service (AIaaS).

Artificial Intelligence as a Service

People will soon be able to use Augmented Reality equipped with facial/pattern recognition capabilities. This will enable them to use AR to identify famous paintings (and immediately learn about the painting's history), identify products and the best prices in supermarkets, see real-time translations and other lifestyle-enhancing usages.

Security guards will be able to use AR to detect and identify residential tenants - rather than relying on memory. The advent of 5G and AI technology in addressing complex problems and improving customer experience mean there will be many more timesaving and efficiency-driving applications to rollout.

With regards to e-learning, VR technology makes classes interactive. Instead of textbooks providing just pictures and written descriptions, Virtual Reality enables students to observe great architecture in detail and even major historical battles. In fact, you can virtually stand in the middle of a computer-generated battle when armies collide, giving students a truer impression of historical conflicts.

李先生指出 5G 是以前所未有的方式連接終端設備，可以大大改善以往利用藍牙和 Wi-Fi 連接未如理想的情況。藍牙僅限於連接位置接近的終端設備，而 Wi-Fi 則只容許在特定範圍內的終端設備連接，而且多個重疊的 Wi-Fi 網絡亦會互相產生干擾，難以達致穩定及有效的連接性。相反，5G 不但能在特定範圍內提供穩定連接，也能夠讓終端設備連接不受地理位置所局限，其存取數據的能力更催生多項創新研發，包括 CMHK 日後有機會提供的人工智能服務（AIaaS）。

人工智能的應用前景

在不久的將來，人們便可利用配備人臉 / 模式識別的擴增實境（AR），享受更多姿多彩的生活體驗，例如以 AR 識別名畫，並即時了解該幅畫的歷史；又可在超級市場裡辨別產品和最優惠價格；又可進行實時翻譯，讓日常生活變得更豐富多彩。

於工作方面，保安人員可以利用 AR 識別住戶身份，而不再是單靠記憶。5G 和 AI 技術的出現令複雜的問題迎刃而解，大大改善人們生活體驗，相信日後將有更多方便、省時和高效率的應用應運而生。

就電子學習方面，VR 技術促進互動教學，教育已不再局限於教科書上的圖畫及內容描述。學生透過 VR 可以近距離觀摩宏偉建築的細節，甚至感受歷史上重要的戰役；事實上，只要戴上 VR 眼鏡，便仿如置身於戰鬥現場一樣，目擊軍隊衝鋒陷陣的情景，讓學生對歷史事件有更真實、更具體的體會。

These immersive VR experiences can be shared among thousands of people and are a far more effective pedagogical tool than traditional lectures. In time, people will be able to use 360-degree cameras to capture precious moments such as weddings, birthdays; graduations; courtroom cases - that can all be viewed later via VR.

In terms of e-health, individuals wearing devices with sensors (wearables) let machines collect data on their vital signs. AI can monitor these vital signs and detect any abnormalities, thereby predicting illnesses before they arise. AI health will enable remote surgery development, so that surgeons can conduct operations remotely via machines, overseeing the procedures without being physically present.

An increasingly popular AI health application is ultrasound imaging (often installed in ambulances) to quickly detect if there are problems with the patient's internal organs. Doctors can complete the ultrasound process without the patient being at the hospital.

Lee notes that the above applications comprise just a fraction of what 5G can enhance. Meanwhile, he is aware that technological advances will raise public concerns, and that it is essential to review security measures and our reliance on data usage. For example, the emphasis on mass connections and personal information collection may raise privacy concerns, especially when individuals do not want their sensitive data to be accessed by third parties.

Yet, Lee stresses that 5G networks are incredibly secure; there have not been any security breaches since the launch of 4G and with upgraded security measures, 5G will be more secure than ever. However, users should be wary of apps or public Wi-Fi, which have security limitations.

Building a Smart City with Superior Coverage and Stable Connection

A smart city relies on constant data flows, and 5G technology can greatly reduce hiatus in data transmissions. Businesses will be moved into the online world, including daily activities like paying bills at restaurants or hailing a cab. With adequate data access, users are able to complete e-payments anytime. A stable 5G network can guarantee smooth transactions.

5G network can improve the wellbeing of Hong Kong citizens as well. Lee suggested the government providing mobile coverage in remote places such as hiking areas so hikers can call emergency services if they need help. Even though building network service in these areas could cost a lot, Lee thinks that it is worth doing so as this is a matter about people's safety.

這些猶如親歷其境的 VR 體驗可以與成千上萬的人同步分享，比起傳統教學工具更具效益。將來更可使用 360 度攝錄機捕捉如婚禮、慶生、畢業典禮等重要時刻，並通過 VR 日後重溫。

在醫療健康方面，人們只需佩戴具有傳感器的穿戴裝置，即可讓機器收集生命體徵的數據，通過 AI 的監測，若有任何異常情況出現，病患就可以及早治理。AI 醫療保健有助推動遠程手術發展，讓外科醫生通過機器進行遙距手術，無需親身臨場監督手術過程。

綜觀來說，超聲波成像（通常安裝在救護車中）是其中一個逐漸被普遍採用的 AI 醫療保健應用。這可快速檢查病人的內臟器官有否出現問題，並讓醫生在病人送達醫院前完成超聲波檢查。

李先生指出，以上這些都只是一部份由 5G 技術推動而研發出來的創新應用。他表示，科技的急速發展及進步亦會引起大眾對網絡安全的關注，因此審視安全措施及數據應用尤其重要，例如：龐大的連接和個人資料收集可能會引起私隱問題，而人們普遍不希望被第三方取得其個人敏感資料。

然而，李先生強調 5G 網絡的安全性相當高。既然自 4G 推出以來，亦沒出現任何安全漏洞，而 5G 網絡的安全措施更有所提升，所以 5G 網絡將比以往更加安全。然而，用戶仍需保持謹慎，並對具有安全限制的應用程式或公共 Wi-Fi 提高警覺。

建設智慧城市有賴覆蓋良好及連接穩定的網絡

智慧城市依賴穩定的數據傳輸，而 5G 技術正正能夠大幅減少傳輸中斷的情況。企業服務將進入線上世界，融入人們日常生活，例如在餐廳使用電子支付或召喚搭乘服務。具備足夠的數據傳輸，用戶可以隨時完成電子支付，而穩定的 5G 網絡可確保交易過程順暢。

此外，5G 網絡更可以改善香港市民的福祉。李先生建議政府在一些遠足徑等偏遠地區提供流動網絡覆蓋，以便遠足者在遇到緊急事故時可以致電求助。儘管在這些地區建立網絡的成本十分高，但李先生認為這是關乎到人們的生命安全，因此絕對值得去做的。

Opportunities in the Greater Bay Area

Lee advocates more cross-border applications and cooperation in the Greater Bay Area. To grab new business opportunities between neighbouring cities, CMHK founded "The Greater Bay Area 5G Industry Alliance" in August 2019. Mutual cooperation and exchange, as well as collaboration across industries and among Mainland China, Hong Kong and Macau, including the joint R&D of products and services based on 5G technology are encouraged.

Lee pointed out that there are many talented individuals in the region that can share their knowledge to innovate new applications, such as using facial recognition to go through customs, single IoT networks, and autonomous driving initiatives. "We are in the early stages of 5G and CMHK has plans to utilize 5G to its full capacity," Lee remarked.

抓緊大灣區的發展機遇

伴隨大灣區的發展，李先生倡議推動更多跨境應用和合作。為了抓緊大灣區城市群的新機遇，CMHK 於 2019 年 8 月成立了「大灣區 5G 產業聯盟」，促進中國內地、香港及澳門的交流，以至進行產業合作等，包括 5G 及相關技術的產品和服務的合作研發，加快大灣區的 5G 發展。

李先生指出，大灣區內有很多專業人才，透過與他們的分享與交流，有助推出更多創新的應用，例如使用人臉識別來通過海關檢查、單一 IoT 網絡和無人駕駛應用等。最後，李先生表示：「雖然我們現正處於 5G 發展的早期階段，但 CMHK 早已有全盤發展藍圖，將會充分利用 5G，發揮其最大效用。」